Data Wrangling

July 12, 2020

1 Data Wrangling Project

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1.0.1 Summary

The dataset that I will be wrangling (and analyzing and visualizing) is the tweet archive of Twitter user @dog_rates, also known as WeRateDogs. WeRateDogs is a Twitter account that rates people's dogs with a humorous comment about the dog. These ratings almost always have a denominator of 10. The numerators, though? Almost always greater than 10. 11/10, 12/10, 13/10, etc. Why? Because "they're good dogs Brent." WeRateDogs has over 4 million followers and has received international media coverage.

Data Wrangling includes :

- **Gathering** : Gathering includes acquiring of the data from different or sometimes the same source.

- **Assessing** : Assessing the datasets for quality issues and tidyness issues.

- **Cleaning** : Cleaning the datasets for determined issues

- **Analyzing** : Analyzing the datasets for quick insights

1.0.2 Project Workflow:

1) Gathering

```
a)Importing dataset from the downloaded file.
b)Downloading and writing to the file programmatically.
c)Querying the Twitter API for each tweet's JSON data using Python's Tweepy library and store
  set of JSON data in a file called tweet_json.txt file.
```

2) Assessing
3) Cleaning
4) Analyzing

```
[2]: #importing necessary libraries and modules
     import pandas as pd
     import numpy as np
     import requests
     import json
     import tweepy
     import matplotlib.pyplot as plt
     %matplotlib inline
     import seaborn as sns
     import os
```

```
[4]: #changing the working directory
     cd "F:\udacity_off\WeRateDogs"
```

F:\udacity_off\WeRateDogs

1.1 1) Gathering

a) Importing dataset from the downloaded file.

```
[5]: # load WeRateDogs twitter archive data from .csv
     twitterarchive=pd.read_csv('twitter-archive-enhanced.csv')
```

```
[4]: twitterarchive.head()
```

```
[4]:             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  retweeted_status_id  \
     0  This is Phineas. He's a mystical boy. Only eve...                  NaN
     1  This is Tilly. She's just checking pup on you...                   NaN
```

```
2  This is Archie. He is a rare Norwegian Pouncin...                    NaN
3  This is Darla. She commenced a snooze mid meal...                    NaN
4  This is Franklin. He would like you to stop ca...                    NaN

   retweeted_status_user_id retweeted_status_timestamp  \
0                       NaN                         NaN
1                       NaN                         NaN
2                       NaN                         NaN
3                       NaN                         NaN
4                       NaN                         NaN

                                       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
```

b) Downloading and writing to the file programmatically.

```python
[11]: # Get tweet image predictions from URL
      url='https://d17h27t6h515a5.cloudfront.net/topher/2017/August/
      ↪599fd2ad_image-predictions/image-predictions.tsv'
      response=requests.get(url)
```

```python
[17]: # opening and writing to the file
      with open('image-predictions.tsv','wb') as file:
          file.write(response.content)
```

```python
[5]: #loading dataset from the file
     image_pred=pd.read_csv('image-predictions.tsv',sep='\t')
```

```python
[34]: image_pred.head()
```

```
[34]:           tweet_id                                             jpg_url  \
      0  666020888022790149  https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg
      1  666029285002620928  https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg
      2  666033412701032449  https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg
      3  666044226329800704  https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg
      4  666049248165822465  https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg

         img_num                     p1   p1_conf  p1_dog                  p2  \
      0        1  Welsh_springer_spaniel  0.465074    True              collie
```

```
1         1                  redbone   0.506826     True   miniature_pinscher
2         1          German_shepherd   0.596461     True             malinois
3         1       Rhodesian_ridgeback  0.408143     True              redbone
4         1        miniature_pinscher  0.560311     True           Rottweiler

   p2_conf  p2_dog                      p3   p3_conf  p3_dog
0  0.156665    True      Shetland_sheepdog  0.061428    True
1  0.074192    True    Rhodesian_ridgeback  0.072010    True
2  0.138584    True             bloodhound  0.116197    True
3  0.360687    True     miniature_pinscher  0.222752    True
4  0.243682    True               Doberman  0.154629    True
```

c) Querying the Twitter API for each tweet's JSON data using Python's Tweepy library and store each tweet's entire set of JSON data in a file called tweet_json.txt file.

```python
[21]:  # Setup Twitter API access keys and tokens
       consumer_key = 'p7XebYyxUmg8fl1TGsOgw5kk0'
       consumer_secret = 'dphyT2smK4b5j4K8dft38D6Sny3v07J05jXfEknsX0xVJrgqFJ'
       access_token = '251522847-GciqWjnHrZrRfgBPVbq04D6wtSiSC7Eke0y3rVn6'
       access_secret = 'G3INLL944qIUorAuQNJuqyS3O4z7HGSl0GubKS0YCZVh0'
```

```python
[25]:  # Create Twitter API object
       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)
```

```python
[37]:  # Get json data from twitter API and write to file
       df_list=[]
       e_list=[]
       with open('tweet_json.txt','a',encoding='utf-8') as jsonfile:
           for tweetid in twitterarchive.tweet_id:
               try:
                   page=api.get_status(tweetid,extended=True)
                   json.dump(page._json,jsonfile)
                   jsonfile.write('\n')
               except:
                   e_list.append(tweetid)
```

```
Rate limit reached. Sleeping for: 115
```

```python
[123]:  # Make list of dictionaries for conversion to Dataframe
        df_list=[] # empty list to append to
        with open('tweet_json.txt','r',encoding='utf-8') as jsonfile:
            for tweet in jsonfile:
                json_dict=json.loads(tweet)
                tweet_id=json_dict['id']
                retweet_count = json_dict['retweet_count']
                favorite_count = json_dict['favorite_count']
                hashtags=json_dict['entities']['hashtags']
```

```
        if len(hashtags)==0:# if no hashtag, set to NaN
            df_list.append({'tweet_id':int(tweet_id),
                            'retweet_count':int(retweet_count),
                            'favorite_count':int(favorite_count),
                            'hashtags':np.nan})
        else: # if hashtag is present, append as normal
            df_list.append({'tweet_id':int(tweet_id),
                            'retweet_count':int(retweet_count),
                            'favorite_count':int(favorite_count),
                            'hashtags':hashtags[0]['text']})
```

```
[128]: # convert list of dictionaries to DataFrame.
df_tweets=pd.
 ↪DataFrame(df_list,columns=['tweet_id','retweet_count','favorite_count','hashtags'])
```

1.2   2) Assessing

```
[36]: twitterarchive.head()
```

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

```
    retweeted_status_user_id retweeted_status_timestamp  \
0                        NaN                        NaN
1                        NaN                        NaN
2                        NaN                        NaN
3                        NaN                        NaN
4                        NaN                        NaN


                                 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
```

[37]:
```python
#get summary of twitter_archive
twitterarchive.info()
```

```
<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
```

```
[51]: #random sample of 40 entries in the twitterarchive
      twitterarchive.sample(40)
```

```
[51]:              tweet_id  in_reply_to_status_id  in_reply_to_user_id  \
      937    753298634498793472                    NaN                  NaN
      293    837820167694528512                    NaN                  NaN
      1743   679405845277462528                    NaN                  NaN
      2024   671891728106971137                    NaN                  NaN
      323    834089966724603904                    NaN                  NaN
      705    785639753186217984                    NaN                  NaN
      22     887517139158093824                    NaN                  NaN
      1261   710153181850935296                    NaN                  NaN
      1772   678278586130948096                    NaN                  NaN
      872    761371037149827077                    NaN                  NaN
      1568   687818504314159109                    NaN                  NaN
      103    872486979161796608                    NaN                  NaN
      1528   690348396616552449                    NaN                  NaN
      486    814530161257443328                    NaN                  NaN
      432    820749716845686786                    NaN                  NaN
      531    808106460588765185                    NaN                  NaN
      766    777684233540206592                    NaN                  NaN
      508    812503143955202048                    NaN                  NaN
      1176   719991154352222208                    NaN                  NaN
      968    750147208377409536                    NaN                  NaN
      286    838831947270979586                    NaN                  NaN
      1224   714214115368108032                    NaN                  NaN
      1994   672604026190569472                    NaN                  NaN
      1422   698178924120031232                    NaN                  NaN
      1707   680801747103793152                    NaN                  NaN
      2350   666050758794694657                    NaN                  NaN
      1946   673705679337693185                    NaN                  NaN
      1162   723688335806480385                    NaN                  NaN
      1097   736225175608430592                    NaN                  NaN
      863    762471784394268675                    NaN                  NaN
      546    805823200554876929                    NaN                  NaN
      899    758828659922702336                    NaN                  NaN
      2339   666102155909144576                    NaN                  NaN
      2094   670778058496974848                    NaN                  NaN
      1961   673359818736984064                    NaN                  NaN
      389    826476773533745153                    NaN                  NaN
      557    803380650405482500                    NaN                  NaN
      1941   673715861853720576                    NaN                  NaN
      832    768596291618299904                    NaN                  NaN
      191    855851453814013952                    NaN                  NaN

                           timestamp  \
      937    2016-07-13 18:42:44 +0000
```

```
293    2017-03-04 00:21:08 +0000
1743   2015-12-22 20:59:10 +0000
2024   2015-12-02 03:20:45 +0000
323    2017-02-21 17:18:39 +0000
705    2016-10-11 00:34:48 +0000
22     2017-07-19 03:39:09 +0000
1261   2016-03-16 17:18:07 +0000
1772   2015-12-19 18:19:51 +0000
872    2016-08-05 01:19:35 +0000
1568   2016-01-15 02:08:05 +0000
103    2017-06-07 16:14:40 +0000
1528   2016-01-22 01:40:58 +0000
486    2016-12-29 17:54:58 +0000
432    2017-01-15 21:49:15 +0000
531    2016-12-12 00:29:28 +0000
766    2016-09-19 01:42:24 +0000
508    2016-12-24 03:40:19 +0000
1176   2016-04-12 20:50:42 +0000
968    2016-07-05 02:00:06 +0000
286    2017-03-06 19:21:35 +0000
1224   2016-03-27 22:14:49 +0000
1994   2015-12-04 02:31:10 +0000
1422   2016-02-12 16:16:41 +0000
1707   2015-12-26 17:25:59 +0000
2350   2015-11-16 00:30:50 +0000
1946   2015-12-07 03:28:45 +0000
1162   2016-04-23 01:41:59 +0000
1097   2016-05-27 15:58:54 +0000
863    2016-08-08 02:13:34 +0000
546    2016-12-05 17:16:37 +0000
899    2016-07-29 00:57:05 +0000
2339   2015-11-16 03:55:04 +0000
2094   2015-11-29 01:35:26 +0000
1961   2015-12-06 04:34:25 +0000
389    2017-01-31 17:06:32 +0000
557    2016-11-28 23:30:47 +0000
1941   2015-12-07 04:09:13 +0000
832    2016-08-24 23:50:10 +0000
191    2017-04-22 18:31:02 +0000

                                                       source  \
937    <a href="http://twitter.com/download/iphone" r...
293    <a href="http://twitter.com/download/iphone" r...
1743   <a href="http://vine.co" rel="nofollow">Vine -...
2024   <a href="http://twitter.com/download/iphone" r...
323    <a href="http://twitter.com/download/iphone" r...
705    <a href="http://twitter.com/download/iphone" r...
```

```
22     <a href="http://twitter.com/download/iphone" r...
1261   <a href="http://twitter.com/download/iphone" r...
1772   <a href="http://twitter.com/download/iphone" r...
872    <a href="http://twitter.com/download/iphone" r...
1568   <a href="http://twitter.com/download/iphone" r...
103    <a href="http://twitter.com/download/iphone" r...
1528   <a href="http://vine.co" rel="nofollow">Vine -...
486    <a href="http://twitter.com/download/iphone" r...
432    <a href="http://twitter.com/download/iphone" r...
531    <a href="http://twitter.com/download/iphone" r...
766    <a href="http://twitter.com/download/iphone" r...
508    <a href="http://twitter.com/download/iphone" r...
1176   <a href="http://twitter.com/download/iphone" r...
968    <a href="http://twitter.com/download/iphone" r...
286    <a href="http://twitter.com/download/iphone" r...
1224   <a href="http://twitter.com/download/iphone" r...
1994   <a href="http://twitter.com/download/iphone" r...
1422   <a href="http://twitter.com/download/iphone" r...
1707   <a href="http://twitter.com/download/iphone" r...
2350   <a href="http://twitter.com/download/iphone" r...
1946   <a href="http://twitter.com/download/iphone" r...
1162   <a href="http://twitter.com/download/iphone" r...
1097   <a href="http://twitter.com/download/iphone" r...
863    <a href="http://twitter.com/download/iphone" r...
546    <a href="http://twitter.com/download/iphone" r...
899    <a href="http://twitter.com/download/iphone" r...
2339   <a href="http://twitter.com/download/iphone" r...
2094   <a href="http://twitter.com/download/iphone" r...
1961   <a href="http://twitter.com/download/iphone" r...
389    <a href="http://twitter.com/download/iphone" r...
557    <a href="http://twitter.com/download/iphone" r...
1941   <a href="http://twitter.com/download/iphone" r...
832    <a href="http://twitter.com/download/iphone" r...
191    <a href="http://twitter.com/download/iphone" r...


                                                    text  retweeted_status_id  \
937    RT @dog_rates: This is Carly. She's actually 2...         6.815232e+17
293    Here's a pupper before and after being asked "...                  NaN
1743   Crazy unseen footage from Jurassic Park. 10/10...                  NaN
2024   This is Mojo. Apparently he's too cute for a s...                  NaN
323    DOGGO ON THE LOOSE I REPEAT DOGGO ON THE LOOSE...                  NaN
705    This is Pinot. He's a sophisticated doggo. You...                  NaN
22     I've yet to rate a Venezuelan Hover Wiener. Th...                  NaN
1261   This is Lacy. She's tipping her hat to you. Da...                  NaN
1772   Another spooky pupper here. Most definitely fl...                  NaN
872    RT @dog_rates: Oh. My. God. 13/10 magical af h...         7.116948e+17
1568   With great pupper comes great responsibility. ...                  NaN
```

```
103   We. Only. Rate. Dogs. Do not send in other thi...          NaN
1528  This is Oddie. He's trying to communicate. 12/...          NaN
486   This is Alf. Someone just rubbed a balloon on ...          NaN
432   Meet Sunny. He can take down a polar bear in o...          NaN
531   Here we have Burke (pupper) and Dexter (doggo)...          NaN
766   "Yep... just as I suspected. You're not flossi...          NaN
508   I'm happy to inform you all that Jake is in ex...          NaN
1176  This doggo was initially thrilled when she saw...          NaN
968   And finally, happy 4th of July from the squad ...          NaN
286   RT @dog_rates: This is Riley. His owner put a ...  7.838400e+17
1224  Happy Easter from the squad!  13/10 for all ...          NaN
1994  This is a baby Rand Paul. Curls for days. 11/1...          NaN
1422  This is Lily. She accidentally dropped all her...          NaN
1707  Great picture here. Dog on the right panicked ...          NaN
2350  This is a truly beautiful English Wilson Staff...          NaN
1946  This is Dot. He found out you only pretended t...          NaN
1162  This is Reginald. He starts screaming at rando...          NaN
1097  We only rate dogs. Please stop sending in non-...          NaN
863   Meet Glenn. Being in public scares him. Fright...          NaN
546   RT @dog_rates: This is Reginald. He's one magi...  7.841832e+17
899   This doggo is just waiting for someone to be p...          NaN
2339  Oh my. Here you are seeing an Adobe Setter giv...          NaN
2094  "To bone or not to bone?"\n10/10 https://t.co/...          NaN
1961  This is Steve. He was just relaxing in hot tub...          NaN
389   This is Pilot. He has mastered the synchronize...          NaN
557   Meet Sonny. He's an in-home movie critic. That...          NaN
1941  This is a heavily opinionated dog. Loves walls...          NaN
832   Say hello to Oakley and Charlie. They're convi...          NaN
191   Here's a puppo participating in the #ScienceMa...          NaN

      retweeted_status_user_id retweeted_status_timestamp  \
937               4.196984e+09   2015-12-28 17:12:42 +0000
293                        NaN                        NaN
1743                       NaN                        NaN
2024                       NaN                        NaN
323                        NaN                        NaN
705                        NaN                        NaN
22                         NaN                        NaN
1261                       NaN                        NaN
1772                       NaN                        NaN
872               4.196984e+09   2016-03-20 23:23:54 +0000
1568                       NaN                        NaN
103                        NaN                        NaN
1528                       NaN                        NaN
486                        NaN                        NaN
432                        NaN                        NaN
531                        NaN                        NaN
```

766	NaN	NaN
508	NaN	NaN
1176	NaN	NaN
968	NaN	NaN
286	4.196984e+09	2016-10-06 01:23:05 +0000
1224	NaN	NaN
1994	NaN	NaN
1422	NaN	NaN
1707	NaN	NaN
2350	NaN	NaN
1946	NaN	NaN
1162	NaN	NaN
1097	NaN	NaN
863	NaN	NaN
546	4.196984e+09	2016-10-07 00:06:50 +0000
899	NaN	NaN
2339	NaN	NaN
2094	NaN	NaN
1961	NaN	NaN
389	NaN	NaN
557	NaN	NaN
1941	NaN	NaN
832	NaN	NaN
191	NaN	NaN

	expanded_urls	rating_numerator \
937	https://twitter.com/dog_rates/status/681523177...	12
293	https://twitter.com/dog_rates/status/837820167...	12
1743	https://vine.co/v/iKVFEigMLxP	10
2024	https://twitter.com/dog_rates/status/671891728...	11
323	https://twitter.com/stevekopack/status/8340866...	10
705	https://twitter.com/dog_rates/status/785639753...	10
22	https://twitter.com/dog_rates/status/887517139...	14
1261	https://twitter.com/dog_rates/status/710153181...	11
1772	https://twitter.com/dog_rates/status/678278586...	10
872	https://twitter.com/dog_rates/status/711694788...	13
1568	https://twitter.com/dog_rates/status/687818504...	12
103	https://twitter.com/dog_rates/status/872486979...	12
1528	https://vine.co/v/iejBWerY9X2	12
486	https://twitter.com/dog_rates/status/814530161...	12
432	https://twitter.com/dog_rates/status/820749716...	13
531	https://twitter.com/dog_rates/status/808106460...	12
766	https://twitter.com/dog_rates/status/777684233...	12
508	https://m.facebook.com/story.php?story_fbid=18...	13
1176	https://twitter.com/dog_rates/status/719991154...	10
968	https://twitter.com/dog_rates/status/750147208...	13
286	https://twitter.com/dog_rates/status/783839966...	13

1224	https://twitter.com/dog_rates/status/714214115...	13
1994	https://twitter.com/dog_rates/status/672604026...	11
1422	https://twitter.com/dog_rates/status/698178924...	10
1707	https://twitter.com/dog_rates/status/680801747...	10
2350	https://twitter.com/dog_rates/status/666050758...	10
1946	https://twitter.com/dog_rates/status/673705679...	8
1162	https://twitter.com/dog_rates/status/723688335...	12
1097	https://twitter.com/dog_rates/status/736225175...	10
863	https://twitter.com/dog_rates/status/762471784...	12
546	https://vine.co/v/5ghHLBMMdlV,https://vine.co/...	12
899	https://twitter.com/dog_rates/status/758828659...	13
2339	https://twitter.com/dog_rates/status/666102155...	11
2094	https://twitter.com/dog_rates/status/670778058...	10
1961	https://twitter.com/dog_rates/status/673359818...	8
389	https://twitter.com/dog_rates/status/826476773...	12
557	https://twitter.com/dog_rates/status/803380650...	12
1941	https://twitter.com/dog_rates/status/673715861...	4
832	https://twitter.com/dog_rates/status/768596291...	12
191	https://twitter.com/dog_rates/status/855851453...	13

	rating_denominator	name	doggo	floofer	pupper	puppo
937	10	Carly	None	None	None	None
293	10	None	None	None	pupper	None
1743	10	None	None	None	None	None
2024	10	Mojo	None	None	None	None
323	10	None	doggo	None	None	None
705	10	Pinot	doggo	None	pupper	None
22	10	such	None	None	None	None
1261	10	Lacy	None	None	None	None
1772	10	None	None	None	pupper	None
872	10	None	None	None	None	None
1568	10	None	None	None	pupper	None
103	10	None	None	None	None	None
1528	10	Oddie	None	None	None	None
486	10	Alf	None	None	None	None
432	10	Sunny	None	None	None	None
531	10	None	doggo	None	pupper	None
766	10	None	None	None	None	None
508	10	None	None	None	None	None
1176	10	None	doggo	None	None	None
968	10	None	None	None	None	None
286	10	Riley	None	None	None	None
1224	10	None	None	None	None	None
1994	10	a	None	None	None	None
1422	10	Lily	None	None	None	None
1707	10	None	None	None	None	None
2350	10	a	None	None	None	None

1946	10	Dot	None	None	None	None
1162	10	Reginald	None	None	None	None
1097	10	very	None	None	None	None
863	10	Glenn	None	None	None	None
546	10	Reginald	None	None	None	puppo
899	10	None	doggo	None	None	None
2339	10	None	None	None	None	None
2094	10	None	None	None	None	None
1961	10	Steve	None	None	None	None
389	10	Pilot	doggo	None	None	None
557	10	Sonny	None	None	None	None
1941	10	a	None	None	None	None
832	10	Oakley	None	None	None	None
191	10	None	doggo	None	None	puppo

[38]:
```
#checking for duplicated entries in the dataset
twitterarchive.tweet_id.duplicated().sum()
```

[38]: 0

[39]:
```
#summary for df_tweets
df_tweets.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2331 entries, 0 to 2330
Data columns (total 4 columns):
tweet_id          2331 non-null int64
retweet_count     2331 non-null int64
favorite_count    2331 non-null int64
hashtags          19 non-null object
dtypes: int64(3), object(1)
memory usage: 72.9+ KB
```

1.2.1 Quality issues

twitterarchive

- Removing Null tweets and retweets

- Some entries in the 'name' are incorrect - 'an' ,'a', 'the' ,'very' ,etc.

- Converting 'timestamp' to datetime format

- 'tweetid' of type float instead of string

imagepredictions

- tweet_id need to be string

df_tweets

- tweet_id not string

1.2.2 Tidyness

twitter_archive

`doggo, floofer, pupper, puppo columns should be one column named "dog_type"`

image_predictions

None

df_tweets

None

General Tidyness

`twitter_archive, image_predictions, df_tweets should be joined as one table`

1.3 3) Cleaning

```python
[40]: #creating copies of each dataframe
      twitterarchiveC=twitterarchive.copy()
      image_predC=image_pred.copy()
      df_tweetsC=df_tweets.copy()
```

```python
[41]: # Assessing visually
      twitterarchiveC.head()
```

```
[41]:             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  retweeted_status_id  \
```

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


   retweeted_status_user_id retweeted_status_timestamp  \
0                       NaN                        NaN
1                       NaN                        NaN
2                       NaN                        NaN
3                       NaN                        NaN
4                       NaN                        NaN


                                        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
```

```python
# Assessing visually
twitterarchiveC
```

```
              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
5   891087950875897856                    NaN                  NaN
6   890971913173991426                    NaN                  NaN
7   890729181411237888                    NaN                  NaN
8   890609185150312448                    NaN                  NaN
9   890240255349198849                    NaN                  NaN
10  890006608113172480                    NaN                  NaN
11  889880896479866881                    NaN                  NaN
12  889665388333682689                    NaN                  NaN
13  889638837579907072                    NaN                  NaN
14  889531135344209921                    NaN                  NaN
15  889278841981685760                    NaN                  NaN
16  888917238123831296                    NaN                  NaN
```

17	888804989199671297	NaN	NaN
18	888554962724278272	NaN	NaN
19	888202515573088257	NaN	NaN
20	888078434458587136	NaN	NaN
21	887705289381826560	NaN	NaN
22	887517139158093824	NaN	NaN
23	887473957103951883	NaN	NaN
24	887343217045368832	NaN	NaN
25	887101392804085760	NaN	NaN
26	886983233522544640	NaN	NaN
27	886736880519319552	NaN	NaN
28	886680336477933568	NaN	NaN
29	886366144734445568	NaN	NaN
...	...	...	...
2326	666411507551481857	NaN	NaN
2327	666407126856765440	NaN	NaN
2328	666396247373291520	NaN	NaN
2329	666373753744588802	NaN	NaN
2330	666362758909284353	NaN	NaN
2331	666353288456101888	NaN	NaN
2332	666345417576210432	NaN	NaN
2333	666337882303524864	NaN	NaN
2334	666293911632134144	NaN	NaN
2335	666287406224695296	NaN	NaN
2336	666273097616637952	NaN	NaN
2337	666268910803644416	NaN	NaN
2338	666104133288665088	NaN	NaN
2339	666102155909144576	NaN	NaN
2340	666099513787052032	NaN	NaN
2341	666094000022159362	NaN	NaN
2342	666082916733198337	NaN	NaN
2343	666073100786774016	NaN	NaN
2344	666071193221509120	NaN	NaN
2345	666063827256086533	NaN	NaN
2346	666058600524156928	NaN	NaN
2347	666057090499244032	NaN	NaN
2348	666055525042405380	NaN	NaN
2349	666051853826850816	NaN	NaN
2350	666050758794694657	NaN	NaN
2351	666049248165822465	NaN	NaN
2352	666044226329800704	NaN	NaN
2353	666033412701032449	NaN	NaN
2354	666029285002620928	NaN	NaN
2355	666020888022790149	NaN	NaN

```
                      timestamp  \
0      2017-08-01 16:23:56 +0000
```

16

```
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
5      2017-07-29 00:08:17 +0000
6      2017-07-28 16:27:12 +0000
7      2017-07-28 00:22:40 +0000
8      2017-07-27 16:25:51 +0000
9      2017-07-26 15:59:51 +0000
10     2017-07-26 00:31:25 +0000
11     2017-07-25 16:11:53 +0000
12     2017-07-25 01:55:32 +0000
13     2017-07-25 00:10:02 +0000
14     2017-07-24 17:02:04 +0000
15     2017-07-24 00:19:32 +0000
16     2017-07-23 00:22:39 +0000
17     2017-07-22 16:56:37 +0000
18     2017-07-22 00:23:06 +0000
19     2017-07-21 01:02:36 +0000
20     2017-07-20 16:49:33 +0000
21     2017-07-19 16:06:48 +0000
22     2017-07-19 03:39:09 +0000
23     2017-07-19 00:47:34 +0000
24     2017-07-18 16:08:03 +0000
25     2017-07-18 00:07:08 +0000
26     2017-07-17 16:17:36 +0000
27     2017-07-16 23:58:41 +0000
28     2017-07-16 20:14:00 +0000
29     2017-07-15 23:25:31 +0000
...                        ...
2326   2015-11-17 00:24:19 +0000
2327   2015-11-17 00:06:54 +0000
2328   2015-11-16 23:23:41 +0000
2329   2015-11-16 21:54:18 +0000
2330   2015-11-16 21:10:36 +0000
2331   2015-11-16 20:32:58 +0000
2332   2015-11-16 20:01:42 +0000
2333   2015-11-16 19:31:45 +0000
2334   2015-11-16 16:37:02 +0000
2335   2015-11-16 16:11:11 +0000
2336   2015-11-16 15:14:19 +0000
2337   2015-11-16 14:57:41 +0000
2338   2015-11-16 04:02:55 +0000
2339   2015-11-16 03:55:04 +0000
2340   2015-11-16 03:44:34 +0000
2341   2015-11-16 03:22:39 +0000
2342   2015-11-16 02:38:37 +0000
```

```
2343   2015-11-16 01:59:36 +0000
2344   2015-11-16 01:52:02 +0000
2345   2015-11-16 01:22:45 +0000
2346   2015-11-16 01:01:59 +0000
2347   2015-11-16 00:55:59 +0000
2348   2015-11-16 00:49:46 +0000
2349   2015-11-16 00:35:11 +0000
2350   2015-11-16 00:30:50 +0000
2351   2015-11-16 00:24:50 +0000
2352   2015-11-16 00:04:52 +0000
2353   2015-11-15 23:21:54 +0000
2354   2015-11-15 23:05:30 +0000
2355   2015-11-15 22:32:08 +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...
5      <a href="http://twitter.com/download/iphone" r...
6      <a href="http://twitter.com/download/iphone" r...
7      <a href="http://twitter.com/download/iphone" r...
8      <a href="http://twitter.com/download/iphone" r...
9      <a href="http://twitter.com/download/iphone" r...
10     <a href="http://twitter.com/download/iphone" r...
11     <a href="http://twitter.com/download/iphone" r...
12     <a href="http://twitter.com/download/iphone" r...
13     <a href="http://twitter.com/download/iphone" r...
14     <a href="http://twitter.com/download/iphone" r...
15     <a href="http://twitter.com/download/iphone" r...
16     <a href="http://twitter.com/download/iphone" r...
17     <a href="http://twitter.com/download/iphone" r...
18     <a href="http://twitter.com/download/iphone" r...
19     <a href="http://twitter.com/download/iphone" r...
20     <a href="http://twitter.com/download/iphone" r...
21     <a href="http://twitter.com/download/iphone" r...
22     <a href="http://twitter.com/download/iphone" r...
23     <a href="http://twitter.com/download/iphone" r...
24     <a href="http://twitter.com/download/iphone" r...
25     <a href="http://twitter.com/download/iphone" r...
26     <a href="http://twitter.com/download/iphone" r...
27     <a href="http://twitter.com/download/iphone" r...
28     <a href="http://twitter.com/download/iphone" r...
29     <a href="http://twitter.com/download/iphone" r...
...                                                  ...
2326   <a href="http://twitter.com/download/iphone" r...
```

```
2327   <a href="http://twitter.com/download/iphone" r...
2328   <a href="http://twitter.com/download/iphone" r...
2329   <a href="http://twitter.com/download/iphone" r...
2330   <a href="http://twitter.com/download/iphone" r...
2331   <a href="http://twitter.com/download/iphone" r...
2332   <a href="http://twitter.com/download/iphone" r...
2333   <a href="http://twitter.com/download/iphone" r...
2334   <a href="http://twitter.com/download/iphone" r...
2335   <a href="http://twitter.com/download/iphone" r...
2336   <a href="http://twitter.com/download/iphone" r...
2337   <a href="http://twitter.com/download/iphone" r...
2338   <a href="http://twitter.com/download/iphone" r...
2339   <a href="http://twitter.com/download/iphone" r...
2340   <a href="http://twitter.com/download/iphone" r...
2341   <a href="http://twitter.com/download/iphone" r...
2342   <a href="http://twitter.com/download/iphone" r...
2343   <a href="http://twitter.com/download/iphone" r...
2344   <a href="http://twitter.com/download/iphone" r...
2345   <a href="http://twitter.com/download/iphone" r...
2346   <a href="http://twitter.com/download/iphone" r...
2347   <a href="http://twitter.com/download/iphone" r...
2348   <a href="http://twitter.com/download/iphone" r...
2349   <a href="http://twitter.com/download/iphone" r...
2350   <a href="http://twitter.com/download/iphone" r...
2351   <a href="http://twitter.com/download/iphone" r...
2352   <a href="http://twitter.com/download/iphone" r...
2353   <a href="http://twitter.com/download/iphone" r...
2354   <a href="http://twitter.com/download/iphone" r...
2355   <a href="http://twitter.com/download/iphone" r...

                                                    text  retweeted_status_id  \
0       This is Phineas. He's a mystical boy. Only eve...                  NaN
1       This is Tilly. She's just checking pup on you...                   NaN
2       This is Archie. He is a rare Norwegian Pouncin...                  NaN
3       This is Darla. She commenced a snooze mid meal...                  NaN
4       This is Franklin. He would like you to stop ca...                  NaN
5       Here we have a majestic great white breaching ...                  NaN
6       Meet Jax. He enjoys ice cream so much he gets ...                  NaN
7       When you watch your owner call another dog a g...                  NaN
8       This is Zoey. She doesn't want to be one of th...                  NaN
9       This is Cassie. She is a college pup. Studying...                  NaN
10      This is Koda. He is a South Australian decksha...                  NaN
11      This is Bruno. He is a service shark. Only get...                  NaN
12      Here's a puppo that seems to be on the fence a...                  NaN
13      This is Ted. He does his best. Sometimes that'...                  NaN
14      This is Stuart. He's sporting his favorite fan...                  NaN
15      This is Oliver. You're witnessing one of his m...                  NaN
```

```
16     This is Jim. He found a fren. Taught him how t...             NaN
17     This is Zeke. He has a new stick. Very proud o...             NaN
18     This is Ralphus. He's powering up. Attempting ...             NaN
19     RT @dog_rates: This is Canela. She attempted s...     8.874740e+17
20     This is Gerald. He was just told he didn't get...             NaN
21     This is Jeffrey. He has a monopoly on the pool...             NaN
22     I've yet to rate a Venezuelan Hover Wiener. Th...             NaN
23     This is Canela. She attempted some fancy porch...             NaN
24     You may not have known you needed to see this ...             NaN
25     This... is a Jubilant Antarctic House Bear. We...             NaN
26     This is Maya. She's very shy. Rarely leaves he...             NaN
27     This is Mingus. He's a wonderful father to his...             NaN
28     This is Derek. He's late for a dog meeting. 13...             NaN
29     This is Roscoe. Another pupper fallen victim t...             NaN
...                                                  ...             ...
2326   This is quite the dog. Gets really excited whe...             NaN
2327   This is a southern Vesuvius bumblegruff. Can d...             NaN
2328   Oh goodness. A super rare northeast Qdoba kang...             NaN
2329   Those are sunglasses and a jean jacket. 11/10 ...             NaN
2330   Unique dog here. Very small. Lives in containe...             NaN
2331   Here we have a mixed Asiago from the Galápagos...             NaN
2332   Look at this jokester thinking seat belt laws ...             NaN
2333   This is an extremely rare horned Parthenon. No...             NaN
2334   This is a funny dog. Weird toes. Won't come do...             NaN
2335   This is an Albanian 3 1/2 legged  Episcopalian...             NaN
2336       Can take selfies 11/10 https://t.co/ws2AMaNwPW             NaN
2337   Very concerned about fellow dog trapped in com...             NaN
2338   Not familiar with this breed. No tail (weird)...          NaN
2339   Oh my. Here you are seeing an Adobe Setter giv...             NaN
2340   Can stand on stump for what seems like a while...             NaN
2341   This appears to be a Mongolian Presbyterian mi...             NaN
2342   Here we have a well-established sunblockerspan...             NaN
2343   Let's hope this flight isn't Malaysian (lol). ...             NaN
2344   Here we have a northern speckled Rhododendron...          NaN
2345   This is the happiest dog you will ever see. Ve...             NaN
2346   Here is the Rand Paul of retrievers folks! He'...             NaN
2347   My oh my. This is a rare blond Canadian terrie...             NaN
2348   Here is a Siberian heavily armored polar bear ...             NaN
2349   This is an odd dog. Hard on the outside but lo...             NaN
2350   This is a truly beautiful English Wilson Staff...             NaN
2351   Here we have a 1949 1st generation vulpix. Enj...             NaN
2352   This is a purebred Piers Morgan. Loves to Netf...             NaN
2353   Here is a very happy pup. Big fan of well-main...             NaN
2354   This is a western brown Mitsubishi terrier. Up...             NaN
2355   Here we have a Japanese Irish Setter. Lost eye...             NaN

       retweeted_status_user_id retweeted_status_timestamp  \
```

0	NaN	NaN
1	NaN	NaN
2	NaN	NaN
3	NaN	NaN
4	NaN	NaN
5	NaN	NaN
6	NaN	NaN
7	NaN	NaN
8	NaN	NaN
9	NaN	NaN
10	NaN	NaN
11	NaN	NaN
12	NaN	NaN
13	NaN	NaN
14	NaN	NaN
15	NaN	NaN
16	NaN	NaN
17	NaN	NaN
18	NaN	NaN
19	4.196984e+09	2017-07-19 00:47:34 +0000
20	NaN	NaN
21	NaN	NaN
22	NaN	NaN
23	NaN	NaN
24	NaN	NaN
25	NaN	NaN
26	NaN	NaN
27	NaN	NaN
28	NaN	NaN
29	NaN	NaN
...	...	...
2326	NaN	NaN
2327	NaN	NaN
2328	NaN	NaN
2329	NaN	NaN
2330	NaN	NaN
2331	NaN	NaN
2332	NaN	NaN
2333	NaN	NaN
2334	NaN	NaN
2335	NaN	NaN
2336	NaN	NaN
2337	NaN	NaN
2338	NaN	NaN
2339	NaN	NaN
2340	NaN	NaN
2341	NaN	NaN

```
2342                          NaN                    NaN
2343                          NaN                    NaN
2344                          NaN                    NaN
2345                          NaN                    NaN
2346                          NaN                    NaN
2347                          NaN                    NaN
2348                          NaN                    NaN
2349                          NaN                    NaN
2350                          NaN                    NaN
2351                          NaN                    NaN
2352                          NaN                    NaN
2353                          NaN                    NaN
2354                          NaN                    NaN
2355                          NaN                    NaN


                                 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
5      https://twitter.com/dog_rates/status/891087950...                13
6      https://gofundme.com/ydvmve-surgery-for-jax,ht...                13
7      https://twitter.com/dog_rates/status/890729181...                13
8      https://twitter.com/dog_rates/status/890609185...                13
9      https://twitter.com/dog_rates/status/890240255...                14
10     https://twitter.com/dog_rates/status/890006608...                13
11     https://twitter.com/dog_rates/status/889880896...                13
12     https://twitter.com/dog_rates/status/889665388...                13
13     https://twitter.com/dog_rates/status/889638837...                12
14     https://twitter.com/dog_rates/status/889531135...                13
15     https://twitter.com/dog_rates/status/889278841...                13
16     https://twitter.com/dog_rates/status/888917238...                12
17     https://twitter.com/dog_rates/status/888804989...                13
18     https://twitter.com/dog_rates/status/888554962...                13
19     https://twitter.com/dog_rates/status/887473957...                13
20     https://twitter.com/dog_rates/status/888078434...                12
21     https://twitter.com/dog_rates/status/887705289...                13
22     https://twitter.com/dog_rates/status/887517139...                14
23     https://twitter.com/dog_rates/status/887473957...                13
24     https://twitter.com/dog_rates/status/887343217...                13
25     https://twitter.com/dog_rates/status/887101392...                12
26     https://twitter.com/dog_rates/status/886983233...                13
27     https://www.gofundme.com/mingusneedsus,https:/...                13
28     https://twitter.com/dog_rates/status/886680336...                13
29     https://twitter.com/dog_rates/status/886366144...                12
...                                          ...               ...
```

```
2326  https://twitter.com/dog_rates/status/666411507...              2
2327  https://twitter.com/dog_rates/status/666407126...              7
2328  https://twitter.com/dog_rates/status/666396247...              9
2329  https://twitter.com/dog_rates/status/666373753...             11
2330  https://twitter.com/dog_rates/status/666362758...              6
2331  https://twitter.com/dog_rates/status/666353288...              8
2332  https://twitter.com/dog_rates/status/666345417...             10
2333  https://twitter.com/dog_rates/status/666337882...              9
2334  https://twitter.com/dog_rates/status/666293911...              3
2335  https://twitter.com/dog_rates/status/666287406...              1
2336  https://twitter.com/dog_rates/status/666273097...             11
2337  https://twitter.com/dog_rates/status/666268910...             10
2338  https://twitter.com/dog_rates/status/666104133...              1
2339  https://twitter.com/dog_rates/status/666102155...             11
2340  https://twitter.com/dog_rates/status/666099513...              8
2341  https://twitter.com/dog_rates/status/666094000...              9
2342  https://twitter.com/dog_rates/status/666082916...              6
2343  https://twitter.com/dog_rates/status/666073100...             10
2344  https://twitter.com/dog_rates/status/666071193...              9
2345  https://twitter.com/dog_rates/status/666063827...             10
2346  https://twitter.com/dog_rates/status/666058600...              8
2347  https://twitter.com/dog_rates/status/666057090...              9
2348  https://twitter.com/dog_rates/status/666055525...             10
2349  https://twitter.com/dog_rates/status/666051853...              2
2350  https://twitter.com/dog_rates/status/666050758...             10
2351  https://twitter.com/dog_rates/status/666049248...              5
2352  https://twitter.com/dog_rates/status/666044226...              6
2353  https://twitter.com/dog_rates/status/666033412...              9
2354  https://twitter.com/dog_rates/status/666029285...              7
2355  https://twitter.com/dog_rates/status/666020888...              8

      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
5                     10      None   None    None    None   None
6                     10       Jax   None    None    None   None
7                     10      None   None    None    None   None
8                     10      Zoey   None    None    None   None
9                     10    Cassie  doggo    None    None   None
10                    10      Koda   None    None    None   None
11                    10     Bruno   None    None    None   None
12                    10      None   None    None    None  puppo
13                    10       Ted   None    None    None   None
14                    10    Stuart   None    None    None  puppo
```

15	10	Oliver	None	None	None	None
16	10	Jim	None	None	None	None
17	10	Zeke	None	None	None	None
18	10	Ralphus	None	None	None	None
19	10	Canela	None	None	None	None
20	10	Gerald	None	None	None	None
21	10	Jeffrey	None	None	None	None
22	10	such	None	None	None	None
23	10	Canela	None	None	None	None
24	10	None	None	None	None	None
25	10	None	None	None	None	None
26	10	Maya	None	None	None	None
27	10	Mingus	None	None	None	None
28	10	Derek	None	None	None	None
29	10	Roscoe	None	None	pupper	None
...	...	...	...	...	...	...
2326	10	quite	None	None	None	None
2327	10	a	None	None	None	None
2328	10	None	None	None	None	None
2329	10	None	None	None	None	None
2330	10	None	None	None	None	None
2331	10	None	None	None	None	None
2332	10	None	None	None	None	None
2333	10	an	None	None	None	None
2334	10	a	None	None	None	None
2335	2	an	None	None	None	None
2336	10	None	None	None	None	None
2337	10	None	None	None	None	None
2338	10	None	None	None	None	None
2339	10	None	None	None	None	None
2340	10	None	None	None	None	None
2341	10	None	None	None	None	None
2342	10	None	None	None	None	None
2343	10	None	None	None	None	None
2344	10	None	None	None	None	None
2345	10	the	None	None	None	None
2346	10	the	None	None	None	None
2347	10	a	None	None	None	None
2348	10	a	None	None	None	None
2349	10	an	None	None	None	None
2350	10	a	None	None	None	None
2351	10	None	None	None	None	None
2352	10	a	None	None	None	None
2353	10	a	None	None	None	None
2354	10	a	None	None	None	None
2355	10	None	None	None	None	None

```
[2356 rows x 17 columns]
```

```
[45]:  #summary of the data set
       twitterarchiveC.info()
```

```
<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
```

i) Correcting names

```
[46]:  #defining function to correct the names in the 'name' columnn
       def nameclean(name):
           if name[0].islower():
               return 'None'
           else:
               return name
```

```
[47]:  #applying the function to the column
       twitterarchiveC.name=twitterarchiveC.name.apply(nameclean)
```

ii) Removing the replies and retweets

```
[51]:  twitterarchiveCd=twitterarchiveC
```

```
[52]:  # removing the in_reply_to_status_id column , for removing the replies and␣
       ↪retweets
       twitterarchiveCd=twitterarchiveCd[twitterarchiveCd.in_reply_to_status_id.isna()]
```

```
[55]:  twitterarchiveCd.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2097 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                     2097 non-null int64
in_reply_to_status_id        0 non-null float64
in_reply_to_user_id          0 non-null float64
timestamp                    2097 non-null object
source                       2097 non-null object
text                         2097 non-null object
retweeted_status_id          0 non-null float64
retweeted_status_user_id     0 non-null float64
retweeted_status_timestamp   0 non-null object
expanded_urls                2094 non-null object
rating_numerator             2097 non-null int64
rating_denominator           2097 non-null int64
name                         2097 non-null object
doggo                        2097 non-null object
floofer                      2097 non-null object
pupper                       2097 non-null object
puppo                        2097 non-null object
dtypes: float64(4), int64(3), object(10)
memory usage: 294.9+ KB
```

[54]:
```
twitterarchiveCd=twitterarchiveCd[twitterarchiveCd.retweeted_status_id.isna()]
```

[122]:
```
list(twitterarchiveCd)
```

[122]:
```
['tweet_id',
 'in_reply_to_status_id',
 'in_reply_to_user_id',
 'timestamp',
 'source',
 'text',
 'retweeted_status_id',
 'retweeted_status_user_id',
 'retweeted_status_timestamp',
 'expanded_urls',
 'rating_numerator',
 'rating_denominator',
 'name',
 'doggo',
 'floofer',
 'pupper',
 'puppo']
```

[57]:
```
#dropping the unnecessary null columns
twitterarchiveCd.drop([␣
 →'in_reply_to_status_id','in_reply_to_user_id','retweeted_status_id','retweeted_status_user_
```

```
[62]:  #storing back to the original dataframe
       twitterarchiveC=twitterarchiveCd
```

iii) Changing the datatype of tweet_id column to string

```
[63]:  twitterarchiveC.tweet_id=twitterarchiveC.tweet_id.astype(str)
```

iv) Changing the datatype of timestamp column to datetime

```
[64]:  twitterarchiveC.timestamp=pd.to_datetime(twitterarchiveC.timestamp)
```

v) Removing the null entries in the expanded_urls

```
[65]:  twitterarchiveC=twitterarchiveC[~(twitterarchiveC.expanded_urls.isna())]
```

```
[66]:  twitterarchiveC.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2094 entries, 0 to 2355
Data columns (total 12 columns):
tweet_id              2094 non-null object
timestamp             2094 non-null datetime64[ns, UTC]
source                2094 non-null object
text                  2094 non-null object
expanded_urls         2094 non-null object
rating_numerator      2094 non-null int64
rating_denominator    2094 non-null int64
name                  2094 non-null object
doggo                 2094 non-null object
floofer               2094 non-null object
pupper                2094 non-null object
puppo                 2094 non-null object
dtypes: datetime64[ns, UTC](1), int64(2), object(9)
memory usage: 212.7+ KB
```

```
[217]:  #converging multiple columns in one
        a=pd.
          ↪melt(twitterarchiveC,id_vars=['tweet_id','timestamp','source','text','expanded_urls','ratin
          'floofer',
          'pupper',
          'puppo'],var_name = 'types', value_name = 'dog_type')
```

```
[68]:  a.shape
```

```
[68]:  (8376, 10)
```

```
[72]:  a[a.tweet_id=='686683045143953408']
```

```
[72]:                   tweet_id                  timestamp  \
       1355   686683045143953408 2016-01-11 22:56:10+00:00
```

```
      3449  686683045143953408  2016-01-11 22:56:10+00:00
      5543  686683045143953408  2016-01-11 22:56:10+00:00
      7637  686683045143953408  2016-01-11 22:56:10+00:00

                                                    source  \
      1355  <a href="http://twitter.com/download/iphone" r...
      3449  <a href="http://twitter.com/download/iphone" r...
      5543  <a href="http://twitter.com/download/iphone" r...
      7637  <a href="http://twitter.com/download/iphone" r...

                                                      text  \
      1355  This is Mona. She's a Yarborough Splishnsplash...
      3449  This is Mona. She's a Yarborough Splishnsplash...
      5543  This is Mona. She's a Yarborough Splishnsplash...
      7637  This is Mona. She's a Yarborough Splishnsplash...

                                         expanded_urls  rating_numerator  \
      1355  https://twitter.com/dog_rates/status/686683045...                11
      3449  https://twitter.com/dog_rates/status/686683045...                11
      5543  https://twitter.com/dog_rates/status/686683045...                11
      7637  https://twitter.com/dog_rates/status/686683045...                11

            rating_denominator  name    types  dog_type
      1355                  10  Mona    doggo      None
      3449                  10  Mona  floofer      None
      5543                  10  Mona   pupper    pupper
      7637                  10  Mona    puppo      None
```

We can see that for each tweet_id there entries for each dog_type

[218]:
```python
a.dog_type.value_counts()
```

[218]:
```
None      8030
pupper     229
doggo       83
puppo       24
floofer     10
Name: dog_type, dtype: int64
```

[219]:
```python
#Removing the 'NONE' values in the dog_type columns with duplicated tweet_id
q=a.sort_values('dog_type').drop_duplicates('tweet_id',keep='last')
```

[220]:
```python
q.dog_type.value_counts()
```

[220]:
```
None      1759
pupper     229
doggo       72
puppo       24
floofer     10
```

```
          Name: dog_type, dtype: int64
```

[221]:
```
#storing the dataframe back to the original twitterarchiveC
twitterarchiveC=q
```

[228]:
```
#sorting the index
twitterarchiveC.sort_index(inplace=True)
```

[244]:
```
twitterarchiveC
```

[244]:
```
                 tweet_id                  timestamp  \
1        892177421306343426  2017-08-01 00:17:27+00:00
2        891815181378084864  2017-07-31 00:18:03+00:00
3        891689557279858688  2017-07-30 15:58:51+00:00
4        891327558926688256  2017-07-29 16:00:24+00:00
5        891087950875897856  2017-07-29 00:08:17+00:00
6        890971913173991426  2017-07-28 16:27:12+00:00
7        890729181411237888  2017-07-28 00:22:40+00:00
8        890609185150312448  2017-07-27 16:25:51+00:00
9        890240255349198849  2017-07-26 15:59:51+00:00
10       890006608113172480  2017-07-26 00:31:25+00:00
11       889880896479866881  2017-07-25 16:11:53+00:00
13       889638837579907072  2017-07-25 00:10:02+00:00
15       889278841981685760  2017-07-24 00:19:32+00:00
16       888917238123831296  2017-07-23 00:22:39+00:00
17       888804989199671297  2017-07-22 16:56:37+00:00
18       888554962724278272  2017-07-22 00:23:06+00:00
19       888078434458587136  2017-07-20 16:49:33+00:00
20       887705289381826560  2017-07-19 16:06:48+00:00
21       887517139158093824  2017-07-19 03:39:09+00:00
22       887473957103951883  2017-07-19 00:47:34+00:00
23       887343217045368832  2017-07-18 16:08:03+00:00
24       887101392804085760  2017-07-18 00:07:08+00:00
25       886983233522544640  2017-07-17 16:17:36+00:00
26       886736880519319552  2017-07-16 23:58:41+00:00
27       886680336477933568  2017-07-16 20:14:00+00:00
29       886258384151887873  2017-07-15 16:17:19+00:00
30       885984800019947520  2017-07-14 22:10:11+00:00
31       885528943205470208  2017-07-13 15:58:47+00:00
32       885518971528720385  2017-07-13 15:19:09+00:00
33       885167619883638784  2017-07-12 16:03:00+00:00
...                     ...                        ...
5929     672594978741354496  2015-12-04 01:55:13+00:00
5936     672481316919734272  2015-12-03 18:23:34+00:00
5943     672254177670729728  2015-12-03 03:21:00+00:00
5949     672205392827572224  2015-12-03 00:07:09+00:00
5951     672160042234327040  2015-12-02 21:06:56+00:00
6294     889665388333682689  2017-07-25 01:55:32+00:00
6296     889531135344209921  2017-07-24 17:02:04+00:00
```

```
6346   878776093423087618 2017-06-25 00:45:22+00:00
6365   874012996292530176 2017-06-11 21:18:31+00:00
6393   867421006826221569 2017-05-24 16:44:18+00:00
6422   859607811541651456 2017-05-03 03:17:27+00:00
6436   858851453814013952 2017-04-22 18:31:02+00:00
6593   825535076884762624 2017-01-29 02:44:34+00:00
6595   825026590719483904 2017-01-27 17:04:02+00:00
6606   822872901745569793 2017-01-21 18:26:02+00:00
6623   819952236453363712 2017-01-13 17:00:21+00:00
6714   803773340896923648 2016-11-30 01:31:12+00:00
6722   802239329049477120 2016-11-25 19:55:35+00:00
6769   793195938047070209 2016-10-31 21:00:23+00:00
6785   790946055508652032 2016-10-25 16:00:09+00:00
6805   787717603741622272 2016-10-16 18:11:26+00:00
6824   784183165795655680 2016-10-07 00:06:50+00:00
6845   780931614150983680 2016-09-28 00:46:20+00:00
6998   756275833623502848 2016-07-21 23:53:04+00:00
7020   752519690950500352 2016-07-11 15:07:30+00:00
7033   751132876104687617 2016-07-07 19:16:47+00:00
7101   744995568523612160 2016-06-20 20:49:19+00:00
7113   743253157753532416 2016-06-16 01:25:36+00:00
7147   738537504001953792 2016-06-03 01:07:16+00:00
8375   666020888022790149 2015-11-15 22:32:08+00:00

                                                  source  \
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...
5    <a href="http://twitter.com/download/iphone" r...
6    <a href="http://twitter.com/download/iphone" r...
7    <a href="http://twitter.com/download/iphone" r...
8    <a href="http://twitter.com/download/iphone" r...
9    <a href="http://twitter.com/download/iphone" r...
10   <a href="http://twitter.com/download/iphone" r...
11   <a href="http://twitter.com/download/iphone" r...
13   <a href="http://twitter.com/download/iphone" r...
15   <a href="http://twitter.com/download/iphone" r...
16   <a href="http://twitter.com/download/iphone" r...
17   <a href="http://twitter.com/download/iphone" r...
18   <a href="http://twitter.com/download/iphone" r...
19   <a href="http://twitter.com/download/iphone" r...
20   <a href="http://twitter.com/download/iphone" r...
21   <a href="http://twitter.com/download/iphone" r...
22   <a href="http://twitter.com/download/iphone" r...
23   <a href="http://twitter.com/download/iphone" r...
24   <a href="http://twitter.com/download/iphone" r...
```

```
25    <a href="http://twitter.com/download/iphone" r...
26    <a href="http://twitter.com/download/iphone" r...
27    <a href="http://twitter.com/download/iphone" r...
29    <a href="http://twitter.com/download/iphone" r...
30    <a href="http://twitter.com/download/iphone" r...
31    <a href="http://twitter.com/download/iphone" r...
32    <a href="http://twitter.com/download/iphone" r...
33    <a href="http://twitter.com/download/iphone" r...
...                                                 ...
5929  <a href="http://twitter.com/download/iphone" r...
5936  <a href="http://twitter.com/download/iphone" r...
5943  <a href="http://twitter.com/download/iphone" r...
5949  <a href="http://twitter.com/download/iphone" r...
5951  <a href="http://twitter.com/download/iphone" r...
6294  <a href="http://twitter.com/download/iphone" r...
6296  <a href="http://twitter.com/download/iphone" r...
6346  <a href="http://twitter.com/download/iphone" r...
6365  <a href="http://twitter.com/download/iphone" r...
6393  <a href="http://twitter.com/download/iphone" r...
6422  <a href="http://twitter.com/download/iphone" r...
6436  <a href="http://twitter.com/download/iphone" r...
6593  <a href="http://twitter.com/download/iphone" r...
6595  <a href="http://twitter.com/download/iphone" r...
6606  <a href="http://twitter.com/download/iphone" r...
6623  <a href="http://twitter.com/download/iphone" r...
6714  <a href="http://twitter.com/download/iphone" r...
6722  <a href="http://twitter.com/download/iphone" r...
6769  <a href="http://twitter.com/download/iphone" r...
6785  <a href="http://twitter.com/download/iphone" r...
6805  <a href="http://twitter.com/download/iphone" r...
6824  <a href="http://vine.co" rel="nofollow">Vine -...
6845  <a href="http://twitter.com/download/iphone" r...
6998  <a href="http://twitter.com/download/iphone" r...
7020  <a href="http://twitter.com/download/iphone" r...
7033  <a href="http://twitter.com/download/iphone" r...
7101  <a href="http://twitter.com/download/iphone" r...
7113  <a href="http://twitter.com/download/iphone" r...
7147  <a href="http://twitter.com/download/iphone" r...
8375  <a href="http://twitter.com/download/iphone" r...

                                                 text  \
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...
5     Here we have a majestic great white breaching ...
6     Meet Jax. He enjoys ice cream so much he gets ...
```

```
7     When you watch your owner call another dog a g...
8     This is Zoey. She doesn't want to be one of th...
9     This is Cassie. She is a college pup. Studying...
10    This is Koda. He is a South Australian decksha...
11    This is Bruno. He is a service shark. Only get...
13    This is Ted. He does his best. Sometimes that'...
15    This is Oliver. You're witnessing one of his m...
16    This is Jim. He found a fren. Taught him how t...
17    This is Zeke. He has a new stick. Very proud o...
18    This is Ralphus. He's powering up. Attempting ...
19    This is Gerald. He was just told he didn't get...
20    This is Jeffrey. He has a monopoly on the pool...
21    I've yet to rate a Venezuelan Hover Wiener. Th...
22    This is Canela. She attempted some fancy porch...
23    You may not have known you needed to see this ...
24    This... is a Jubilant Antarctic House Bear. We...
25    This is Maya. She's very shy. Rarely leaves he...
26    This is Mingus. He's a wonderful father to his...
27    This is Derek. He's late for a dog meeting. 13...
29    This is Waffles. His doggles are pupside down...
30    Viewer discretion advised. This is Jimbo. He w...
31    This is Maisey. She fell asleep mid-excavation...
32    I have a new hero and his name is Howard. 14/1...
33    Here we have a corgi undercover as a malamute...
...                                                  ...
5929  Meet Scott. Just trying to catch his train to ...
5936  Say hello to Jazz. She should be on the cover ...
5943  This is Rolf. He's having the time of his life...
5949  This is Opal. He's a Royal John Coctostan. Rea...
5951  This is Bubba. He's a Titted Peebles Aorta. Ev...
6294  Here's a puppo that seems to be on the fence a...
6296  This is Stuart. He's sporting his favorite fan...
6346  This is Snoopy. He's a proud #PrideMonthPuppo...
6365  This is Sebastian. He can't see all the colors...
6393  This is Shikha. She just watched you drop a sk...
6422  Sorry for the lack of posts today. I came home...
6436  Here's a puppo participating in the #ScienceMa...
6593  Here's a very loving and accepting puppo. Appe...
6595  Say hello to Pablo. He's one gorgeous puppo. A...
6606  Here's a super supportive puppo participating ...
6623  This is Oliver. He has dreams of being a servi...
6714  This is Diogi. He fell in the pool as soon as ...
6722  This is Loki. He'll do your taxes for you. Can...
6769  Say hello to Lily. She's pupset that her costu...
6785  This is Betty. She's assisting with the dishes...
6805  This is Tonks. She is a service puppo. Can hea...
6824  This is Reginald. He's one magical puppo. Aero...
```

```
6845    I want to finally rate this iconic puppo who t...
6998    When ur older siblings get to play in the deep...
7020    Hopefully this puppo on a swing will help get ...
7033    This is Cooper. He's just so damn happy. 10/10...
7101    This is Abby. She got her face stuck in a glas...
7113    This is Kilo. He cannot reach the snackum. Nif...
7147    This is Bayley. She fell asleep trying to esca...
8375    Here we have a Japanese Irish Setter. Lost eye...


                                      expanded_urls  rating_numerator  \
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
5       https://twitter.com/dog_rates/status/891087950...               13
6       https://gofundme.com/ydvmve-surgery-for-jax,ht...               13
7       https://twitter.com/dog_rates/status/890729181...               13
8       https://twitter.com/dog_rates/status/890609185...               13
9       https://twitter.com/dog_rates/status/890240255...               14
10      https://twitter.com/dog_rates/status/890006608...               13
11      https://twitter.com/dog_rates/status/889880896...               13
13      https://twitter.com/dog_rates/status/889638837...               12
15      https://twitter.com/dog_rates/status/889278841...               13
16      https://twitter.com/dog_rates/status/888917238...               12
17      https://twitter.com/dog_rates/status/888804989...               13
18      https://twitter.com/dog_rates/status/888554962...               13
19      https://twitter.com/dog_rates/status/888078434...               12
20      https://twitter.com/dog_rates/status/887705289...               13
21      https://twitter.com/dog_rates/status/887517139...               14
22      https://twitter.com/dog_rates/status/887473957...               13
23      https://twitter.com/dog_rates/status/887343217...               13
24      https://twitter.com/dog_rates/status/887101392...               12
25      https://twitter.com/dog_rates/status/886983233...               13
26      https://www.gofundme.com/mingusneedsus,https:/...               13
27      https://twitter.com/dog_rates/status/886680336...               13
29      https://twitter.com/dog_rates/status/886258384...               13
30      https://twitter.com/dog_rates/status/885984800...               12
31      https://twitter.com/dog_rates/status/885528943...               13
32      https://twitter.com/4bonds2carbon/status/88551...               14
33      https://twitter.com/dog_rates/status/885167619...               13
...                                              ...              ...
5929    https://twitter.com/dog_rates/status/672594978...                9
5936    https://twitter.com/dog_rates/status/672481316...               12
5943    https://twitter.com/dog_rates/status/672254177...               11
5949    https://twitter.com/dog_rates/status/672205392...                9
5951    https://twitter.com/dog_rates/status/672160042...                8
6294    https://twitter.com/dog_rates/status/889665388...               13
```

```
6296  https://twitter.com/dog_rates/status/889531135...            13
6346  https://twitter.com/dog_rates/status/878776093...            13
6365  https://twitter.com/dog_rates/status/874012996...            13
6393  https://twitter.com/dog_rates/status/867421006...            12
6422  https://twitter.com/dog_rates/status/859607811...            13
6436  https://twitter.com/dog_rates/status/855851453...            13
6593  https://twitter.com/dog_rates/status/825535076...            14
6595  https://www.gofundme.com/my-puppys-double-cata...            12
6606  https://twitter.com/dog_rates/status/822872901...            13
6623  https://www.gofundme.com/servicedogoliver,http...            13
6714  https://twitter.com/dog_rates/status/803773340...            12
6722  https://twitter.com/dog_rates/status/802239329...            12
6769  https://twitter.com/dog_rates/status/793195938...            12
6785  https://twitter.com/dog_rates/status/790946055...            12
6805  https://twitter.com/dog_rates/status/787717603...            13
6824                     https://vine.co/v/5ghHLBMMdlV            12
6845  https://twitter.com/dog_rates/status/780931614...            13
6998  https://twitter.com/dog_rates/status/756275833...            10
7020  https://twitter.com/dog_rates/status/752519690...            11
7033  https://twitter.com/dog_rates/status/751132876...            10
7101  https://twitter.com/dog_rates/status/744995568...             9
7113  https://twitter.com/dog_rates/status/743253157...            10
7147  https://twitter.com/dog_rates/status/738537504...            11
8375  https://twitter.com/dog_rates/status/666020888...             8

      rating_denominator        name    types dog_type
1                     10       Tilly    doggo     None
2                     10      Archie    doggo     None
3                     10       Darla    doggo     None
4                     10    Franklin    doggo     None
5                     10        None    doggo     None
6                     10         Jax    doggo     None
7                     10        None    doggo     None
8                     10        Zoey    doggo     None
9                     10      Cassie    doggo    doggo
10                    10        Koda    doggo     None
11                    10       Bruno    doggo     None
13                    10         Ted    doggo     None
15                    10      Oliver    doggo     None
16                    10         Jim    doggo     None
17                    10        Zeke    doggo     None
18                    10      Ralphus   doggo     None
19                    10      Gerald    doggo     None
20                    10     Jeffrey    doggo     None
21                    10        None    doggo     None
22                    10      Canela    doggo     None
23                    10        None    doggo     None
```

```
24                  10       None     doggo       None
25                  10       Maya     doggo       None
26                  10     Mingus     doggo       None
27                  10      Derek     doggo       None
29                  10    Waffles     doggo       None
30                  10      Jimbo     doggo       None
31                  10     Maisey     doggo       None
32                  10       None     doggo       None
33                  10       None     doggo       None
...                ...        ...       ...        ...
5929                10      Scott    pupper     pupper
5936                10       Jazz    pupper     pupper
5943                10       Rolf    pupper     pupper
5949                10       Opal    pupper     pupper
5951                10      Bubba    pupper     pupper
6294                10       None     puppo      puppo
6296                10     Stuart     puppo      puppo
6346                10     Snoopy     puppo      puppo
6365                10  Sebastian     puppo      puppo
6393                10     Shikha     puppo      puppo
6422                10       None     puppo      puppo
6436                10       None     puppo      puppo
6593                10       None     puppo      puppo
6595                10      Pablo     puppo      puppo
6606                10       None     puppo      puppo
6623                10     Oliver     puppo      puppo
6714                10      Diogi     puppo      puppo
6722                10       Loki     puppo      puppo
6769                10       Lily     puppo      puppo
6785                10      Betty     puppo      puppo
6805                10      Tonks     puppo      puppo
6824                10   Reginald     puppo      puppo
6845                10       None     puppo      puppo
6998                10       None     puppo      puppo
7020                10       None     puppo      puppo
7033                10     Cooper     puppo      puppo
7101                10       Abby     puppo      puppo
7113                10       Kilo     puppo      puppo
7147                10     Bayley     puppo      puppo
8375                10       None     puppo       None

[2094 rows x 10 columns]
```

[245]: `image_predC`

[245]:
```
                tweet_id                                             jpg_url  \
0      666020888022790149    https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg
1      666029285002620928    https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg
```

2	666033412701032449	https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg
3	666044226329800704	https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg
4	666049248165822465	https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg
5	666050758794694657	https://pbs.twimg.com/media/CT5Jof1WUAEuVxN.jpg
6	666051853826850816	https://pbs.twimg.com/media/CT5KoJ1WoAAJash.jpg
7	666055525042405380	https://pbs.twimg.com/media/CT5N9tpXIAAifs1.jpg
8	666057090499244032	https://pbs.twimg.com/media/CT5PY90WoAAQGLo.jpg
9	666058600524156928	https://pbs.twimg.com/media/CT5Qw94XAAA_2dP.jpg
10	666063827256086533	https://pbs.twimg.com/media/CT5Vg_wXIAAXfnj.jpg
11	666071193221509120	https://pbs.twimg.com/media/CT5cN_3WEAAlOoZ.jpg
12	666073100786774016	https://pbs.twimg.com/media/CT5d9DZXAAALcwe.jpg
13	666082916733198337	https://pbs.twimg.com/media/CT5m4VGWEAAtKc8.jpg
14	666094000022159362	https://pbs.twimg.com/media/CT5w9gUW4AAsBNN.jpg
15	666099513787052032	https://pbs.twimg.com/media/CT51-JJUEAA6hV8.jpg
16	666102155909144576	https://pbs.twimg.com/media/CT54YGiWUAEZnoK.jpg
17	666104133288665088	https://pbs.twimg.com/media/CT56LSZWoAAlJj2.jpg
18	666268910803644416	https://pbs.twimg.com/media/CT8QCd1WEAADXws.jpg
19	666273097616637952	https://pbs.twimg.com/media/CT8T1mtUwAA3aqm.jpg
20	666287406224695296	https://pbs.twimg.com/media/CT8g3BpUEAAuFjg.jpg
21	666293911632134144	https://pbs.twimg.com/media/CT8mx7KW4AEQu8N.jpg
22	666337882303524864	https://pbs.twimg.com/media/CT9OwFIWEAMuRje.jpg
23	666345417576210432	https://pbs.twimg.com/media/CT9Vn7PWoAA_ZCM.jpg
24	666353288456101888	https://pbs.twimg.com/media/CT9cx0tUEAAhNN_.jpg
25	666362758909284353	https://pbs.twimg.com/media/CT9lXGsUcAAyUFt.jpg
26	666373753744588802	https://pbs.twimg.com/media/CT9vZEYWUAAlZ05.jpg
27	666396247373291520	https://pbs.twimg.com/media/CT-D2ZHWIAA3gK1.jpg
28	666407126856765440	https://pbs.twimg.com/media/CT-NvwmW4AAugGZ.jpg
29	666411507551481857	https://pbs.twimg.com/media/CT-RugiWIAELEaq.jpg
...	...	...
2045	886366144734445568	https://pbs.twimg.com/media/DE0BTnQUwAApKEH.jpg
2046	886680336477933568	https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg
2047	886736880519319552	https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg
2048	886983233522544640	https://pbs.twimg.com/media/DE8yicJW0AAAvBJ.jpg
2049	887101392804085760	https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg
2050	887343217045368832	https://pbs.twimg.com/ext_tw_video_thumb/88734...
2051	887473957103951883	https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg
2052	887517139158093824	https://pbs.twimg.com/ext_tw_video_thumb/88751...
2053	887705289381826560	https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg
2054	888078434458587136	https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg
2055	888202515573088257	https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg
2056	888554962724278272	https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg
2057	888804989199671297	https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg
2058	888917238123831296	https://pbs.twimg.com/media/DFYRgsOUQAARGhO.jpg
2059	889278841981685760	https://pbs.twimg.com/ext_tw_video_thumb/88927...
2060	889531135344209921	https://pbs.twimg.com/media/DFg_2PVW0AEHN3p.jpg
2061	889638837579907072	https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg
2062	889665388333682689	https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg

```
2063  889880896479866881       https://pbs.twimg.com/media/DFl99B1WsAITKsg.jpg
2064  890006608113172480       https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg
2065  890240255349198849       https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg
2066  890609185150312448       https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg
2067  890729181411237888       https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg
2068  890971913173991426       https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg
2069  891087950875897856       https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg
2070  891327558926688256       https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg
2071  891689557279858688       https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg
2072  891815181378084864       https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg
2073  892177421306343426       https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg
2074  892420643555336193       https://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg

      img_num                           p1    p1_conf  p1_dog  \
0           1        Welsh_springer_spaniel  0.465074    True
1           1                       redbone  0.506826    True
2           1               German_shepherd  0.596461    True
3           1             Rhodesian_ridgeback  0.408143    True
4           1             miniature_pinscher  0.560311    True
5           1           Bernese_mountain_dog  0.651137    True
6           1                    box_turtle  0.933012   False
7           1                          chow  0.692517    True
8           1                 shopping_cart  0.962465   False
9           1               miniature_poodle  0.201493    True
10          1              golden_retriever  0.775930    True
11          1                 Gordon_setter  0.503672    True
12          1                  Walker_hound  0.260857    True
13          1                           pug  0.489814    True
14          1                    bloodhound  0.195217    True
15          1                          Lhasa  0.582330    True
16          1                English_setter  0.298617    True
17          1                           hen  0.965932   False
18          1              desktop_computer  0.086502   False
19          1             Italian_greyhound  0.176053    True
20          1                   Maltese_dog  0.857531    True
21          1               three-toed_sloth  0.914671   False
22          1                            ox  0.416669   False
23          1              golden_retriever  0.858744    True
24          1                      malamute  0.336874    True
25          1                    guinea_pig  0.996496   False
26          1   soft-coated_wheaten_terrier  0.326467    True
27          1                     Chihuahua  0.978108    True
28          1        black-and-tan_coonhound  0.529139    True
29          1                          coho  0.404640   False
...       ...                           ...       ...     ...
2045        1                French_bulldog  0.999201    True
2046        1                   convertible  0.738995   False
```

2047	1	kuvasz	0.309706	True
2048	2	Chihuahua	0.793469	True
2049	1	Samoyed	0.733942	True
2050	1	Mexican_hairless	0.330741	True
2051	2	Pembroke	0.809197	True
2052	1	limousine	0.130432	False
2053	1	basset	0.821664	True
2054	1	French_bulldog	0.995026	True
2055	2	Pembroke	0.809197	True
2056	3	Siberian_husky	0.700377	True
2057	1	golden_retriever	0.469760	True
2058	1	golden_retriever	0.714719	True
2059	1	whippet	0.626152	True
2060	1	golden_retriever	0.953442	True
2061	1	French_bulldog	0.991650	True
2062	1	Pembroke	0.966327	True
2063	1	French_bulldog	0.377417	True
2064	1	Samoyed	0.957979	True
2065	1	Pembroke	0.511319	True
2066	1	Irish_terrier	0.487574	True
2067	2	Pomeranian	0.566142	True
2068	1	Appenzeller	0.341703	True
2069	1	Chesapeake_Bay_retriever	0.425595	True
2070	2	basset	0.555712	True
2071	1	paper_towel	0.170278	False
2072	1	Chihuahua	0.716012	True
2073	1	Chihuahua	0.323581	True
2074	1	orange	0.097049	False

	p2	p2_conf	p2_dog	p3 \
0	collie	0.156665	True	Shetland_sheepdog
1	miniature_pinscher	0.074192	True	Rhodesian_ridgeback
2	malinois	0.138584	True	bloodhound
3	redbone	0.360687	True	miniature_pinscher
4	Rottweiler	0.243682	True	Doberman
5	English_springer	0.263788	True	Greater_Swiss_Mountain_dog
6	mud_turtle	0.045885	False	terrapin
7	Tibetan_mastiff	0.058279	True	fur_coat
8	shopping_basket	0.014594	False	golden_retriever
9	komondor	0.192305	True	soft-coated_wheaten_terrier
10	Tibetan_mastiff	0.093718	True	Labrador_retriever
11	Yorkshire_terrier	0.174201	True	Pekinese
12	English_foxhound	0.175382	True	Ibizan_hound
13	bull_mastiff	0.404722	True	French_bulldog
14	German_shepherd	0.078260	True	malinois
15	Shih-Tzu	0.166192	True	Dandie_Dinmont
16	Newfoundland	0.149842	True	borzoi

17	cock	0.033919	False	partridge
18	desk	0.085547	False	bookcase
19	toy_terrier	0.111884	True	basenji
20	toy_poodle	0.063064	True	miniature_poodle
21	otter	0.015250	False	great_grey_owl
22	Newfoundland	0.278407	True	groenendael
23	Chesapeake_Bay_retriever	0.054787	True	Labrador_retriever
24	Siberian_husky	0.147655	True	Eskimo_dog
25	skunk	0.002402	False	hamster
26	Afghan_hound	0.259551	True	briard
27	toy_terrier	0.009397	True	papillon
28	bloodhound	0.244220	True	flat-coated_retriever
29	barracouta	0.271485	False	gar
...	...	...	...	...
2045	Chihuahua	0.000361	True	Boston_bull
2046	sports_car	0.139952	False	car_wheel
2047	Great_Pyrenees	0.186136	True	Dandie_Dinmont
2048	toy_terrier	0.143528	True	can_opener
2049	Eskimo_dog	0.035029	True	Staffordshire_bullterrier
2050	sea_lion	0.275645	False	Weimaraner
2051	Rhodesian_ridgeback	0.054950	True	beagle
2052	tow_truck	0.029175	False	shopping_cart
2053	redbone	0.087582	True	Weimaraner
2054	pug	0.000932	True	bull_mastiff
2055	Rhodesian_ridgeback	0.054950	True	beagle
2056	Eskimo_dog	0.166511	True	malamute
2057	Labrador_retriever	0.184172	True	English_setter
2058	Tibetan_mastiff	0.120184	True	Labrador_retriever
2059	borzoi	0.194742	True	Saluki
2060	Labrador_retriever	0.013834	True	redbone
2061	boxer	0.002129	True	Staffordshire_bullterrier
2062	Cardigan	0.027356	True	basenji
2063	Labrador_retriever	0.151317	True	muzzle
2064	Pomeranian	0.013884	True	chow
2065	Cardigan	0.451038	True	Chihuahua
2066	Irish_setter	0.193054	True	Chesapeake_Bay_retriever
2067	Eskimo_dog	0.178406	True	Pembroke
2068	Border_collie	0.199287	True	ice_lolly
2069	Irish_terrier	0.116317	True	Indian_elephant
2070	English_springer	0.225770	True	German_short-haired_pointer
2071	Labrador_retriever	0.168086	True	spatula
2072	malamute	0.078253	True	kelpie
2073	Pekinese	0.090647	True	papillon
2074	bagel	0.085851	False	banana

	p3_conf	p3_dog
0	0.061428	True

```
1      0.072010    True
2      0.116197    True
3      0.222752    True
4      0.154629    True
5      0.016199    True
6      0.017885    False
7      0.054449    False
8      0.007959    True
9      0.082086    True
10     0.072427    True
11     0.109454    True
12     0.097471    True
13     0.048960    True
14     0.075628    True
15     0.089688    True
16     0.133649    True
17     0.000052    False
18     0.079480    False
19     0.111152    True
20     0.025581    True
21     0.013207    False
22     0.102643    True
23     0.014241    True
24     0.093412    True
25     0.000461    False
26     0.206803    True
27     0.004577    True
28     0.173810    True
29     0.189945    False
...       ...        ...
2045   0.000076    True
2046   0.044173    False
2047   0.086346    True
2048   0.032253    False
2049   0.029705    True
2050   0.134203    True
2051   0.038915    True
2052   0.026321    False
2053   0.026236    True
2054   0.000903    True
2055   0.038915    True
2056   0.111411    True
2057   0.073482    True
2058   0.105506    True
2059   0.027351    True
2060   0.007958    True
2061   0.001498    True
```

```
2062  0.004633     True
2063  0.082981    False
2064  0.008167     True
2065  0.029248     True
2066  0.118184     True
2067  0.076507     True
2068  0.193548    False
2069  0.076902    False
2070  0.175219     True
2071  0.040836    False
2072  0.031379     True
2073  0.068957     True
2074  0.076110    False

[2075 rows x 12 columns]
```

vi) Changing the datatype of tweet_id column to string

[247]: `image_predC.tweet_id=image_predC.tweet_id.astype(str)`

[248]:
```
#summary of the dataset
image_predC.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2075 entries, 0 to 2074
Data columns (total 12 columns):
tweet_id    2075 non-null object
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(1), object(5)
memory usage: 152.1+ KB
```

vii) Changing the datatype of tweet_id column to string

[250]: `df_tweetsC.tweet_id=df_tweetsC.tweet_id.astype(str)`

viii) Merging the datasets of all three sources on one single dataframe-'df_master'

[254]: `df_master=pd.merge(twitterarchiveC,image_predC,on='tweet_id',how='inner')`

```
[256]: df_master=pd.merge(df_master,df_tweetsC,on='tweet_id',how='inner')

[257]: df_master.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1964 entries, 0 to 1963
Data columns (total 24 columns):
tweet_id             1964 non-null object
timestamp            1964 non-null datetime64[ns, UTC]
source               1964 non-null object
text                 1964 non-null object
expanded_urls        1964 non-null object
rating_numerator     1964 non-null int64
rating_denominator   1964 non-null int64
name                 1964 non-null object
types                1964 non-null object
dog_type             1964 non-null object
jpg_url              1964 non-null object
img_num              1964 non-null int64
p1                   1964 non-null object
p1_conf              1964 non-null float64
p1_dog               1964 non-null bool
p2                   1964 non-null object
p2_conf              1964 non-null float64
p2_dog               1964 non-null bool
p3                   1964 non-null object
p3_conf              1964 non-null float64
p3_dog               1964 non-null bool
retweet_count        1964 non-null int64
favorite_count       1964 non-null int64
hashtags             14 non-null object
dtypes: bool(3), datetime64[ns, UTC](1), float64(3), int64(5), object(12)
memory usage: 343.3+ KB
```

```
[260]: #dropping the 'types' column as it now becomes redundant with dog_types
       df_master.drop('types',axis=1,inplace=True)

[261]: df_master
```

```
[261]:             tweet_id                  timestamp  \
       0   892177421306343426  2017-08-01 00:17:27+00:00
       1   891815181378084864  2017-07-31 00:18:03+00:00
       2   891689557279858688  2017-07-30 15:58:51+00:00
       3   891327558926688256  2017-07-29 16:00:24+00:00
       4   891087950875897856  2017-07-29 00:08:17+00:00
       5   890971913173991426  2017-07-28 16:27:12+00:00
       6   890729181411237888  2017-07-28 00:22:40+00:00
       7   890609185150312448  2017-07-27 16:25:51+00:00
       8   890240255349198849  2017-07-26 15:59:51+00:00
```

```
9     890006608113172480 2017-07-26 00:31:25+00:00
10    889880896479866881 2017-07-25 16:11:53+00:00
11    889638837579907072 2017-07-25 00:10:02+00:00
12    889278841981685760 2017-07-24 00:19:32+00:00
13    888917238123831296 2017-07-23 00:22:39+00:00
14    888804989199671297 2017-07-22 16:56:37+00:00
15    888554962724278272 2017-07-22 00:23:06+00:00
16    888078434458587136 2017-07-20 16:49:33+00:00
17    887705289381826560 2017-07-19 16:06:48+00:00
18    887517139158093824 2017-07-19 03:39:09+00:00
19    887473957103951883 2017-07-19 00:47:34+00:00
20    887343217045368832 2017-07-18 16:08:03+00:00
21    887101392804085760 2017-07-18 00:07:08+00:00
22    886983233522544640 2017-07-17 16:17:36+00:00
23    886736880519319552 2017-07-16 23:58:41+00:00
24    886680336477933568 2017-07-16 20:14:00+00:00
25    886258384151887873 2017-07-15 16:17:19+00:00
26    885984800019947520 2017-07-14 22:10:11+00:00
27    885528943205470208 2017-07-13 15:58:47+00:00
28    885167619883638784 2017-07-12 16:03:00+00:00
29    884925521741709313 2017-07-12 00:01:00+00:00
...                  ...                       ...
1934  672614745925664768 2015-12-04 03:13:46+00:00
1935  672594978741354496 2015-12-04 01:55:13+00:00
1936  672481316919734272 2015-12-03 18:23:34+00:00
1937  672254177670729728 2015-12-03 03:21:00+00:00
1938  672205392827572224 2015-12-03 00:07:09+00:00
1939  672160042234327040 2015-12-02 21:06:56+00:00
1940  889665388333682689 2017-07-25 01:55:32+00:00
1941  889531135344209921 2017-07-24 17:02:04+00:00
1942  878776093423087618 2017-06-25 00:45:22+00:00
1943  874012996292530176 2017-06-11 21:18:31+00:00
1944  867421006826221569 2017-05-24 16:44:18+00:00
1945  859607811541651456 2017-05-03 03:17:27+00:00
1946  855851453814013952 2017-04-22 18:31:02+00:00
1947  825535076884762624 2017-01-29 02:44:34+00:00
1948  825026590719483904 2017-01-27 17:04:02+00:00
1949  822872901745569793 2017-01-21 18:26:02+00:00
1950  819952236453363712 2017-01-13 17:00:21+00:00
1951  803773340896923648 2016-11-30 01:31:12+00:00
1952  802239329049477120 2016-11-25 19:55:35+00:00
1953  793195938047070209 2016-10-31 21:00:23+00:00
1954  790946055508652032 2016-10-25 16:00:09+00:00
1955  787717603741622272 2016-10-16 18:11:26+00:00
1956  780931614150983680 2016-09-28 00:46:20+00:00
1957  756275833623502848 2016-07-21 23:53:04+00:00
1958  752519690950500352 2016-07-11 15:07:30+00:00
```

```
1959  751132876104687617 2016-07-07 19:16:47+00:00
1960  744995568523612160 2016-06-20 20:49:19+00:00
1961  743253157753532416 2016-06-16 01:25:36+00:00
1962  738537504001953792 2016-06-03 01:07:16+00:00
1963  666020888022790149 2015-11-15 22:32:08+00:00


                                                    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...
5      <a href="http://twitter.com/download/iphone" r...
6      <a href="http://twitter.com/download/iphone" r...
7      <a href="http://twitter.com/download/iphone" r...
8      <a href="http://twitter.com/download/iphone" r...
9      <a href="http://twitter.com/download/iphone" r...
10     <a href="http://twitter.com/download/iphone" r...
11     <a href="http://twitter.com/download/iphone" r...
12     <a href="http://twitter.com/download/iphone" r...
13     <a href="http://twitter.com/download/iphone" r...
14     <a href="http://twitter.com/download/iphone" r...
15     <a href="http://twitter.com/download/iphone" r...
16     <a href="http://twitter.com/download/iphone" r...
17     <a href="http://twitter.com/download/iphone" r...
18     <a href="http://twitter.com/download/iphone" r...
19     <a href="http://twitter.com/download/iphone" r...
20     <a href="http://twitter.com/download/iphone" r...
21     <a href="http://twitter.com/download/iphone" r...
22     <a href="http://twitter.com/download/iphone" r...
23     <a href="http://twitter.com/download/iphone" r...
24     <a href="http://twitter.com/download/iphone" r...
25     <a href="http://twitter.com/download/iphone" r...
26     <a href="http://twitter.com/download/iphone" r...
27     <a href="http://twitter.com/download/iphone" r...
28     <a href="http://twitter.com/download/iphone" r...
29     <a href="http://twitter.com/download/iphone" r...
...                                                  ...
1934   <a href="http://twitter.com/download/iphone" r...
1935   <a href="http://twitter.com/download/iphone" r...
1936   <a href="http://twitter.com/download/iphone" r...
1937   <a href="http://twitter.com/download/iphone" r...
1938   <a href="http://twitter.com/download/iphone" r...
1939   <a href="http://twitter.com/download/iphone" r...
1940   <a href="http://twitter.com/download/iphone" r...
1941   <a href="http://twitter.com/download/iphone" r...
1942   <a href="http://twitter.com/download/iphone" r...
```

```
1943  <a href="http://twitter.com/download/iphone" r...
1944  <a href="http://twitter.com/download/iphone" r...
1945  <a href="http://twitter.com/download/iphone" r...
1946  <a href="http://twitter.com/download/iphone" r...
1947  <a href="http://twitter.com/download/iphone" r...
1948  <a href="http://twitter.com/download/iphone" r...
1949  <a href="http://twitter.com/download/iphone" r...
1950  <a href="http://twitter.com/download/iphone" r...
1951  <a href="http://twitter.com/download/iphone" r...
1952  <a href="http://twitter.com/download/iphone" r...
1953  <a href="http://twitter.com/download/iphone" r...
1954  <a href="http://twitter.com/download/iphone" r...
1955  <a href="http://twitter.com/download/iphone" r...
1956  <a href="http://twitter.com/download/iphone" r...
1957  <a href="http://twitter.com/download/iphone" r...
1958  <a href="http://twitter.com/download/iphone" r...
1959  <a href="http://twitter.com/download/iphone" r...
1960  <a href="http://twitter.com/download/iphone" r...
1961  <a href="http://twitter.com/download/iphone" r...
1962  <a href="http://twitter.com/download/iphone" r...
1963  <a href="http://twitter.com/download/iphone" r...

                                            text  \
0     This is Tilly. She's just checking pup on you...
1     This is Archie. He is a rare Norwegian Pouncin...
2     This is Darla. She commenced a snooze mid meal...
3     This is Franklin. He would like you to stop ca...
4     Here we have a majestic great white breaching ...
5     Meet Jax. He enjoys ice cream so much he gets ...
6     When you watch your owner call another dog a g...
7     This is Zoey. She doesn't want to be one of th...
8     This is Cassie. She is a college pup. Studying...
9     This is Koda. He is a South Australian decksha...
10    This is Bruno. He is a service shark. Only get...
11    This is Ted. He does his best. Sometimes that'...
12    This is Oliver. You're witnessing one of his m...
13    This is Jim. He found a fren. Taught him how t...
14    This is Zeke. He has a new stick. Very proud o...
15    This is Ralphus. He's powering up. Attempting ...
16    This is Gerald. He was just told he didn't get...
17    This is Jeffrey. He has a monopoly on the pool...
18    I've yet to rate a Venezuelan Hover Wiener. Th...
19    This is Canela. She attempted some fancy porch...
20    You may not have known you needed to see this ...
21    This... is a Jubilant Antarctic House Bear. We...
22    This is Maya. She's very shy. Rarely leaves he...
23    This is Mingus. He's a wonderful father to his...
```

```
24     This is Derek. He's late for a dog meeting. 13...
25     This is Waffles. His doggles are pupside down...
26     Viewer discretion advised. This is Jimbo. He w...
27     This is Maisey. She fell asleep mid-excavation...
28     Here we have a corgi undercover as a malamute...
29     This is Earl. He found a hat. Nervous about wh...
...                                                  ...
1934   This is Norman. Doesn't bark much. Very docile...
1935   Meet Scott. Just trying to catch his train to ...
1936   Say hello to Jazz. She should be on the cover ...
1937   This is Rolf. He's having the time of his life...
1938   This is Opal. He's a Royal John Coctostan. Rea...
1939   This is Bubba. He's a Titted Peebles Aorta. Ev...
1940   Here's a puppo that seems to be on the fence a...
1941   This is Stuart. He's sporting his favorite fan...
1942   This is Snoopy. He's a proud #PrideMonthPuppo...
1943   This is Sebastian. He can't see all the colors...
1944   This is Shikha. She just watched you drop a sk...
1945   Sorry for the lack of posts today. I came home...
1946   Here's a puppo participating in the #ScienceMa...
1947   Here's a very loving and accepting puppo. Appe...
1948   Say hello to Pablo. He's one gorgeous puppo. A...
1949   Here's a super supportive puppo participating ...
1950   This is Oliver. He has dreams of being a servi...
1951   This is Diogi. He fell in the pool as soon as ...
1952   This is Loki. He'll do your taxes for you. Can...
1953   Say hello to Lily. She's pupset that her costu...
1954   This is Betty. She's assisting with the dishes...
1955   This is Tonks. She is a service puppo. Can hea...
1956   I want to finally rate this iconic puppo who t...
1957   When ur older siblings get to play in the deep...
1958   Hopefully this puppo on a swing will help get ...
1959   This is Cooper. He's just so damn happy. 10/10...
1960   This is Abby. She got her face stuck in a glas...
1961   This is Kilo. He cannot reach the snackum. Nif...
1962   This is Bayley. She fell asleep trying to esca...
1963   Here we have a Japanese Irish Setter. Lost eye...


                                expanded_urls  rating_numerator  \
0     https://twitter.com/dog_rates/status/892177421...                13
1     https://twitter.com/dog_rates/status/891815181...                12
2     https://twitter.com/dog_rates/status/891689557...                13
3     https://twitter.com/dog_rates/status/891327558...                12
4     https://twitter.com/dog_rates/status/891087950...                13
5     https://gofundme.com/ydvmve-surgery-for-jax,ht...                13
6     https://twitter.com/dog_rates/status/890729181...                13
7     https://twitter.com/dog_rates/status/890609185...                13
```

```
8      https://twitter.com/dog_rates/status/890240255...              14
9      https://twitter.com/dog_rates/status/890006608...              13
10     https://twitter.com/dog_rates/status/889880896...              13
11     https://twitter.com/dog_rates/status/889638837...              12
12     https://twitter.com/dog_rates/status/889278841...              13
13     https://twitter.com/dog_rates/status/888917238...              12
14     https://twitter.com/dog_rates/status/888804989...              13
15     https://twitter.com/dog_rates/status/888554962...              13
16     https://twitter.com/dog_rates/status/888078434...              12
17     https://twitter.com/dog_rates/status/887705289...              13
18     https://twitter.com/dog_rates/status/887517139...              14
19     https://twitter.com/dog_rates/status/887473957...              13
20     https://twitter.com/dog_rates/status/887343217...              13
21     https://twitter.com/dog_rates/status/887101392...              12
22     https://twitter.com/dog_rates/status/886983233...              13
23     https://www.gofundme.com/mingusneedsus,https:/...              13
24     https://twitter.com/dog_rates/status/886680336...              13
25     https://twitter.com/dog_rates/status/886258384...              13
26     https://twitter.com/dog_rates/status/885984800...              12
27     https://twitter.com/dog_rates/status/885528943...              13
28     https://twitter.com/dog_rates/status/885167619...              13
29     https://twitter.com/dog_rates/status/884925521...              12
...                                                       ...        ...
1934   https://twitter.com/dog_rates/status/672614745...               6
1935   https://twitter.com/dog_rates/status/672594978...               9
1936   https://twitter.com/dog_rates/status/672481316...              12
1937   https://twitter.com/dog_rates/status/672254177...              11
1938   https://twitter.com/dog_rates/status/672205392...               9
1939   https://twitter.com/dog_rates/status/672160042...               8
1940   https://twitter.com/dog_rates/status/889665388...              13
1941   https://twitter.com/dog_rates/status/889531135...              13
1942   https://twitter.com/dog_rates/status/878776093...              13
1943   https://twitter.com/dog_rates/status/874012996...              13
1944   https://twitter.com/dog_rates/status/867421006...              12
1945   https://twitter.com/dog_rates/status/859607811...              13
1946   https://twitter.com/dog_rates/status/855851453...              13
1947   https://twitter.com/dog_rates/status/825535076...              14
1948   https://www.gofundme.com/my-puppys-double-cata...              12
1949   https://twitter.com/dog_rates/status/822872901...              13
1950   https://www.gofundme.com/servicedogoliver,http...              13
1951   https://twitter.com/dog_rates/status/803773340...              12
1952   https://twitter.com/dog_rates/status/802239329...              12
1953   https://twitter.com/dog_rates/status/793195938...              12
1954   https://twitter.com/dog_rates/status/790946055...              12
1955   https://twitter.com/dog_rates/status/787717603...              13
1956   https://twitter.com/dog_rates/status/780931614...              13
1957   https://twitter.com/dog_rates/status/756275833...              10
```

```
1958  https://twitter.com/dog_rates/status/752519690...                11
1959  https://twitter.com/dog_rates/status/751132876...                10
1960  https://twitter.com/dog_rates/status/744995568...                 9
1961  https://twitter.com/dog_rates/status/743253157...                10
1962  https://twitter.com/dog_rates/status/738537504...                11
1963  https://twitter.com/dog_rates/status/666020888...                 8

      rating_denominator        name dog_type  \
0                     10       Tilly     None
1                     10      Archie     None
2                     10       Darla     None
3                     10    Franklin     None
4                     10        None     None
5                     10         Jax     None
6                     10        None     None
7                     10        Zoey     None
8                     10      Cassie    doggo
9                     10        Koda     None
10                    10       Bruno     None
11                    10         Ted     None
12                    10      Oliver     None
13                    10         Jim     None
14                    10        Zeke     None
15                    10     Ralphus     None
16                    10      Gerald     None
17                    10     Jeffrey     None
18                    10        None     None
19                    10      Canela     None
20                    10        None     None
21                    10        None     None
22                    10        Maya     None
23                    10      Mingus     None
24                    10       Derek     None
25                    10     Waffles     None
26                    10       Jimbo     None
27                    10      Maisey     None
28                    10        None     None
29                    10        Earl     None
...                  ...         ...      ...
1934                  10      Norman   pupper
1935                  10       Scott   pupper
1936                  10        Jazz   pupper
1937                  10        Rolf   pupper
1938                  10        Opal   pupper
1939                  10       Bubba   pupper
1940                  10        None    puppo
1941                  10      Stuart    puppo
```

```
1942                  10    Snoopy     puppo
1943                  10  Sebastian    puppo
1944                  10    Shikha     puppo
1945                  10      None     puppo
1946                  10      None     puppo
1947                  10      None     puppo
1948                  10     Pablo     puppo
1949                  10      None     puppo
1950                  10    Oliver     puppo
1951                  10     Diogi     puppo
1952                  10      Loki     puppo
1953                  10      Lily     puppo
1954                  10     Betty     puppo
1955                  10     Tonks     puppo
1956                  10      None     puppo
1957                  10      None     puppo
1958                  10      None     puppo
1959                  10    Cooper     puppo
1960                  10      Abby     puppo
1961                  10      Kilo     puppo
1962                  10    Bayley     puppo
1963                  10      None      None
```

```
                                             jpg_url  ...  p1_dog  \
0       https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg  ...    True
1       https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg  ...    True
2       https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg  ...   False
3       https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg  ...    True
4       https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg  ...    True
5       https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg  ...    True
6       https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg  ...    True
7       https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg  ...    True
8       https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg  ...    True
9       https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg  ...    True
10      https://pbs.twimg.com/media/DFl99B1WsAITKsg.jpg  ...    True
11      https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg  ...    True
12    https://pbs.twimg.com/ext_tw_video_thumb/88927...  ...    True
13      https://pbs.twimg.com/media/DFYRgsOUQAARGhO.jpg  ...    True
14      https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg  ...    True
15      https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg  ...    True
16      https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg  ...    True
17      https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg  ...    True
18    https://pbs.twimg.com/ext_tw_video_thumb/88751...  ...   False
19      https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg  ...    True
20    https://pbs.twimg.com/ext_tw_video_thumb/88734...  ...    True
21      https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg  ...    True
22      https://pbs.twimg.com/media/DE8yicJW0AAAvBJ.jpg  ...    True
```

```
23      https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg    ...    True
24      https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg    ...    False
25      https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg    ...    True
26      https://pbs.twimg.com/media/DEumeWWV0AA-Z61.jpg    ...    True
27      https://pbs.twimg.com/media/DEoH3yvXgAAzQtS.jpg    ...    True
28      https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg    ...    True
29      https://pbs.twimg.com/media/DEfjEaNXkAAtPlj.jpg    ...    True
...                                                        ...    ...       ...
1934    https://pbs.twimg.com/media/CVWbitUW4AAzclx.jpg    ...    False
1935    https://pbs.twimg.com/media/CVWJkJXWsAInlZl.jpg    ...    True
1936    https://pbs.twimg.com/media/CVUiMUeW4AEQgkU.jpg    ...    True
1937    https://pbs.twimg.com/media/CVRTmz1WcAA4uMF.jpg    ...    True
1938    https://pbs.twimg.com/media/CVQnPMrVAAAzShR.jpg    ...    False
1939    https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg    ...    True
1940    https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg    ...    True
1941    https://pbs.twimg.com/media/DFg_2PVW0AEHN3p.jpg    ...    True
1942    https://pbs.twimg.com/media/DDIKMXzW0AEibje.jpg    ...    True
1943    https://pbs.twimg.com/media/DCEeLxjXsAAvNSM.jpg    ...    True
1944    https://pbs.twimg.com/media/DAmyy8FXYAIH8Ty.jpg    ...    True
1945    https://pbs.twimg.com/media/C-3wvtxXcAUTuBE.jpg    ...    True
1946    https://pbs.twimg.com/media/C-CYWrvWAAU8AXH.jpg    ...    True
1947    https://pbs.twimg.com/media/C3TjvitXAAAI-QH.jpg    ...    True
1948    https://pbs.twimg.com/media/C3MVTeHWcAAGNfx.jpg    ...    True
1949    https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg    ...    True
1950    https://pbs.twimg.com/media/C2EONHNWQAUWxkP.jpg    ...    True
1951    https://pbs.twimg.com/media/CyeTku-XcAALkBd.jpg    ...    True
1952    https://pbs.twimg.com/media/CyIgaTEVEAA-9zS.jpg    ...    True
1953    https://pbs.twimg.com/media/CwH_foYWgAEvTyI.jpg    ...    True
1954    https://pbs.twimg.com/media/CvoBPWRWgAA4het.jpg    ...    False
1955    https://pbs.twimg.com/media/Cu6I9vvWIAAZG0a.jpg    ...    True
1956    https://pbs.twimg.com/media/CtZtJxAXEAAyPGd.jpg    ...    False
1957    https://pbs.twimg.com/media/Cn7U2xlW8AI9Pqp.jpg    ...    True
1958    https://pbs.twimg.com/media/CnF8qVDWYAAh0g1.jpg    ...    False
1959    https://pbs.twimg.com/media/CmyPXNOW8AEtaJ-.jpg    ...    True
1960    https://pbs.twimg.com/media/ClbBg4WWEAMjwJu.jpg    ...    True
1961    https://pbs.twimg.com/media/ClCQzFUUYAA5vAu.jpg    ...    True
1962    https://pbs.twimg.com/media/Cj_P7rSUgAAYQbz.jpg    ...    True
1963    https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg    ...    True


                      p2    p2_conf   p2_dog  \
0                  Pekinese   0.090647     True
1                  malamute   0.078253     True
2        Labrador_retriever   0.168086     True
3          English_springer   0.225770     True
4             Irish_terrier   0.116317     True
5             Border_collie   0.199287     True
6                Eskimo_dog   0.178406     True
```

7	Irish_setter	0.193054	True
8	Cardigan	0.451038	True
9	Pomeranian	0.013884	True
10	Labrador_retriever	0.151317	True
11	boxer	0.002129	True
12	borzoi	0.194742	True
13	Tibetan_mastiff	0.120184	True
14	Labrador_retriever	0.184172	True
15	Eskimo_dog	0.166511	True
16	pug	0.000932	True
17	redbone	0.087582	True
18	tow_truck	0.029175	False
19	Rhodesian_ridgeback	0.054950	True
20	sea_lion	0.275645	False
21	Eskimo_dog	0.035029	True
22	toy_terrier	0.143528	True
23	Great_Pyrenees	0.186136	True
24	sports_car	0.139952	False
25	shower_cap	0.025286	False
26	Shih-Tzu	0.006630	True
27	Labrador_retriever	0.265835	True
28	Siberian_husky	0.071712	True
29	American_Staffordshire_terrier	0.198451	True
...	...	...	...
1934	goldfish	0.258865	False
1935	Old_English_sheepdog	0.082337	True
1936	collie	0.106227	True
1937	French_bulldog	0.016850	True
1938	crate	0.035376	False
1939	French_bulldog	0.222114	True
1940	Cardigan	0.027356	True
1941	Labrador_retriever	0.013834	True
1942	whippet	0.150487	True
1943	Pembroke	0.116622	True
1944	Siberian_husky	0.381330	True
1945	Irish_setter	0.024099	True
1946	Labrador_retriever	0.115138	True
1947	Tibetan_mastiff	0.147940	True
1948	Siberian_husky	0.467678	True
1949	Labrador_retriever	0.160329	True
1950	Staffordshire_bullterrier	0.036221	True
1951	redbone	0.059707	True
1952	Siberian_husky	0.335774	True
1953	golden_retriever	0.074100	True
1954	golden_retriever	0.245773	True
1955	malinois	0.004920	True
1956	necklace	0.065462	False

```
1957                  Irish_terrier  0.086981       True
1958              Labrador_retriever  0.000010       True
1959       Chesapeake_Bay_retriever  0.038254       True
1960                       Shih-Tzu  0.146336       True
1961                  Siberian_husky  0.368137       True
1962                         gibbon  0.028942      False
1963                         collie  0.156665       True


                                     p3   p3_conf  p3_dog retweet_count   \
0                             papillon  0.068957    True           5682
1                               kelpie  0.031379    True           3768
2                              spatula  0.040836   False           7845
3         German_short-haired_pointer  0.175219    True           8451
4                      Indian_elephant  0.076902   False           2832
5                             ice_lolly  0.193548   False           1844
6                             Pembroke  0.076507    True          17140
7          Chesapeake_Bay_retriever  0.118184    True           3902
8                            Chihuahua  0.029248    True           6664
9                                 chow  0.008167    True           6654
10                              muzzle  0.082981   False           4533
11        Staffordshire_bullterrier  0.001498    True           4073
12                              Saluki  0.027351    True           4849
13              Labrador_retriever  0.105506    True           4084
14                      English_setter  0.073482    True           3853
15                             malamute  0.111411    True           3165
16                         bull_mastiff  0.000903    True           3153
17                           Weimaraner  0.026236    True           4897
18                        shopping_cart  0.026321   False          10709
19                               beagle  0.038915    True          16349
20                           Weimaraner  0.134203    True           9525
21        Staffordshire_bullterrier  0.029705    True           5422
22                            can_opener  0.032253   False           6968
23                        Dandie_Dinmont  0.086346    True           2926
24                             car_wheel  0.044173   False           4072
25                          Siamese_cat  0.002849   False           5744
26            Bernese_mountain_dog  0.006239    True           6109
27                               kuvasz  0.134697    True           5814
28                           Eskimo_dog  0.055770    True           3974
29        Staffordshire_bullterrier  0.127725    True          16447
...                                ...       ...     ...             ...
1934                      sea_cucumber  0.002015   False            555
1935                      Afghan_hound  0.027037    True            587
1936                  Shetland_sheepdog  0.094465    True            123
1937                 Norwegian_elkhound  0.001618    True            707
1938                                  pug  0.003267    True           1099
1939               Labrador_retriever  0.065456    True            341
1940                               basenji  0.004633    True           9088
```

1941	redbone	0.007958	True	2050
1942	Ibizan_hound	0.039725	True	3728
1943	kelpie	0.049182	True	9387
1944	malamute	0.001670	True	2316
1945	Labrador_retriever	0.019285	True	1486
1946	groenendael	0.096100	True	17299
1947	black-and-tan_coonhound	0.024525	True	17676
1948	malamute	0.004976	True	1271
1949	Irish_terrier	0.069126	True	43658
1950	Italian_greyhound	0.020412	True	1189
1951	Irish_terrier	0.034195	True	2801
1952	malamute	0.134589	True	2679
1953	Chihuahua	0.042339	True	5741
1954	chow	0.039012	True	4778
1955	kelpie	0.000853	True	2834
1956	chain	0.036469	False	7421
1957	bloodhound	0.086276	True	1536
1958	Eskimo_dog	0.000001	True	3441
1959	golden_retriever	0.007610	True	1295
1960	Tibetan_terrier	0.134269	True	616
1961	Eskimo_dog	0.177822	True	1221
1962	Pembroke	0.026498	True	1532
1963	Shetland_sheepdog	0.061428	True	459

	favorite_count	hashtags
0	31117	NaN
1	23428	NaN
2	39349	NaN
3	37602	NaN
4	18936	NaN
5	11010	NaN
6	60773	NaN
7	26057	NaN
8	29785	NaN
9	28676	NaN
10	26085	NaN
11	25261	NaN
12	23552	NaN
13	27176	NaN
14	23887	NaN
15	18446	NaN
16	20349	NaN
17	28268	NaN
18	43342	NaN
19	64212	NaN
20	31454	NaN
21	28621	NaN

```
22              32625              NaN
23              11202              NaN
24              20999              NaN
25              26147              NaN
26              30456              NaN
27              33599              NaN
28              20456              NaN
29              71970              NaN
...               ...              ...
1934             1180              NaN
1935             1286              NaN
1936              692              NaN
1937             1381              NaN
1938             2174              NaN
1939              843              NaN
1940            44903              NaN
1941            14158              NaN
1942            18135   PrideMonthPuppo
1943            32187              NaN
1944            15230              NaN
1945            17857              NaN
1946            44297       ScienceMarch
1947            57190              NaN
1948             6345              NaN
1949           132591        WomensMarch
1950             5387              NaN
1951            10215              NaN
1952             9227              NaN
1953            15546              NaN
1954            16920              NaN
1955            10425              NaN
1956            21895              NaN
1957             6425              NaN
1958             7375              NaN
1959             5065              NaN
1960             2953              NaN
1961             4208              NaN
1962             5047              NaN
1963             2406              NaN

[1964 rows x 23 columns]
```

[280]: `df_master.info()`

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1964 entries, 0 to 1963
Data columns (total 23 columns):
tweet_id              1964 non-null object
```

```
timestamp              1964 non-null datetime64[ns, UTC]
source                 1964 non-null object
text                   1964 non-null object
expanded_urls          1964 non-null object
rating_numerator       1964 non-null int64
rating_denominator     1964 non-null int64
name                   1964 non-null object
dog_type               1964 non-null object
jpg_url                1964 non-null object
img_num                1964 non-null int64
p1                     1964 non-null object
p1_conf                1964 non-null float64
p1_dog                 1964 non-null bool
p2                     1964 non-null object
p2_conf                1964 non-null float64
p2_dog                 1964 non-null bool
p3                     1964 non-null object
p3_conf                1964 non-null float64
p3_dog                 1964 non-null bool
retweet_count          1964 non-null int64
favorite_count         1964 non-null int64
hashtags               14 non-null object
dtypes: bool(3), datetime64[ns, UTC](1), float64(3), int64(5), object(11)
memory usage: 408.0+ KB
```

Keeping only the first prediction of the dog breed with its confirmation percentage

```
[293]: a=df_master
```

```
[295]: breed=[]
       confirmation=[]
       def contracting(row):
           if row['p1_dog']:
               breed.append(row['p1'])
               confirmation.append(row['p1_conf'])
           elif row['p2_dog']:
               breed.append(row['p2'])
               confirmation.append(row['p2_conf'])
           elif row['p3_dog']:
               breed.append(row['p3'])
               confirmation.append(row['p3_conf'])
           else:
               breed.append('Unknown')
               confirmation.append(0)

       a.apply(contracting,axis=1)
```

```
[295]: 0       None
       1       None
```

```
2       None
3       None
4       None
5       None
6       None
7       None
8       None
9       None
10      None
11      None
12      None
13      None
14      None
15      None
16      None
17      None
18      None
19      None
20      None
21      None
22      None
23      None
24      None
25      None
26      None
27      None
28      None
29      None
        ...
1934    None
1935    None
1936    None
1937    None
1938    None
1939    None
1940    None
1941    None
1942    None
1943    None
1944    None
1945    None
1946    None
1947    None
1948    None
1949    None
1950    None
1951    None
```

```
1952    None
1953    None
1954    None
1955    None
1956    None
1957    None
1958    None
1959    None
1960    None
1961    None
1962    None
1963    None
Length: 1964, dtype: object
```

[298]:
```python
#storing the series-breed and confirmation back to the dataframe
a['breed']=breed
a['confirmation']=confirmation
```

[300]:
```python
list(a)
```

[300]:
```
['tweet_id',
 'timestamp',
 'source',
 'text',
 'expanded_urls',
 'rating_numerator',
 'rating_denominator',
 'name',
 'dog_type',
 'jpg_url',
 'img_num',
 'p1',
 'p1_conf',
 'p1_dog',
 'p2',
 'p2_conf',
 'p2_dog',
 'p3',
 'p3_conf',
 'p3_dog',
 'retweet_count',
 'favorite_count',
 'hashtags',
 'breed',
 'confirmation']
```

[303]:
```python
#dropping the unnecessary columns
a.drop([ 'p1',
 'p1_conf',
```

```
 'p1_dog',
 'p2',
 'p2_conf',
 'p2_dog',
 'p3',
 'p3_conf',
 'p3_dog'],axis=1,inplace=True)
```

[305]: a

[305]:
```
                tweet_id                    timestamp  \
0      892177421306343426  2017-08-01 00:17:27+00:00
1      891815181378084864  2017-07-31 00:18:03+00:00
2      891689557279858688  2017-07-30 15:58:51+00:00
3      891327558926688256  2017-07-29 16:00:24+00:00
4      891087950875897856  2017-07-29 00:08:17+00:00
5      890971913173991426  2017-07-28 16:27:12+00:00
6      890729181411237888  2017-07-28 00:22:40+00:00
7      890609185150312448  2017-07-27 16:25:51+00:00
8      890240255349198849  2017-07-26 15:59:51+00:00
9      890006608113172480  2017-07-26 00:31:25+00:00
10     889880896479866881  2017-07-25 16:11:53+00:00
11     889638837579907072  2017-07-25 00:10:02+00:00
12     889278841981685760  2017-07-24 00:19:32+00:00
13     888917238123831296  2017-07-23 00:22:39+00:00
14     888804989199671297  2017-07-22 16:56:37+00:00
15     888554962724278272  2017-07-22 00:23:06+00:00
16     888078434458587136  2017-07-20 16:49:33+00:00
17     887705289381826560  2017-07-19 16:06:48+00:00
18     887517139158093824  2017-07-19 03:39:09+00:00
19     887473957103951883  2017-07-19 00:47:34+00:00
20     887343217045368832  2017-07-18 16:08:03+00:00
21     887101392804085760  2017-07-18 00:07:08+00:00
22     886983233522544640  2017-07-17 16:17:36+00:00
23     886736880519319552  2017-07-16 23:58:41+00:00
24     886680336477933568  2017-07-16 20:14:00+00:00
25     886258384151887873  2017-07-15 16:17:19+00:00
26     885984800019947520  2017-07-14 22:10:11+00:00
27     885528943205470208  2017-07-13 15:58:47+00:00
28     885167619883638784  2017-07-12 16:03:00+00:00
29     884925521741709313  2017-07-12 00:01:00+00:00
...                   ...                        ...
1934   672614745925664768  2015-12-04 03:13:46+00:00
1935   672594978741354496  2015-12-04 01:55:13+00:00
1936   672481316919734272  2015-12-03 18:23:34+00:00
1937   672254177670729728  2015-12-03 03:21:00+00:00
1938   672205392827572224  2015-12-03 00:07:09+00:00
1939   672160042234327040  2015-12-02 21:06:56+00:00
```

```
1940   889665388333682689 2017-07-25 01:55:32+00:00
1941   889531135344209921 2017-07-24 17:02:04+00:00
1942   878776093423087618 2017-06-25 00:45:22+00:00
1943   874012996292530176 2017-06-11 21:18:31+00:00
1944   867421006826221569 2017-05-24 16:44:18+00:00
1945   859607811541651456 2017-05-03 03:17:27+00:00
1946   858851453814013952 2017-04-22 18:31:02+00:00
1947   825535076884762624 2017-01-29 02:44:34+00:00
1948   825026590719483904 2017-01-27 17:04:02+00:00
1949   822872901745569793 2017-01-21 18:26:02+00:00
1950   819952236453363712 2017-01-13 17:00:21+00:00
1951   803773340896923648 2016-11-30 01:31:12+00:00
1952   802239329049477120 2016-11-25 19:55:35+00:00
1953   793195938047070209 2016-10-31 21:00:23+00:00
1954   790946055508652032 2016-10-25 16:00:09+00:00
1955   787717603741622272 2016-10-16 18:11:26+00:00
1956   780931614150983680 2016-09-28 00:46:20+00:00
1957   756275833623502848 2016-07-21 23:53:04+00:00
1958   752519690950500352 2016-07-11 15:07:30+00:00
1959   751132876104687617 2016-07-07 19:16:47+00:00
1960   744995568523612160 2016-06-20 20:49:19+00:00
1961   743253157753532416 2016-06-16 01:25:36+00:00
1962   738537504001953792 2016-06-03 01:07:16+00:00
1963   666020888022790149 2015-11-15 22:32:08+00:00


                                                 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...
5      <a href="http://twitter.com/download/iphone" r...
6      <a href="http://twitter.com/download/iphone" r...
7      <a href="http://twitter.com/download/iphone" r...
8      <a href="http://twitter.com/download/iphone" r...
9      <a href="http://twitter.com/download/iphone" r...
10     <a href="http://twitter.com/download/iphone" r...
11     <a href="http://twitter.com/download/iphone" r...
12     <a href="http://twitter.com/download/iphone" r...
13     <a href="http://twitter.com/download/iphone" r...
14     <a href="http://twitter.com/download/iphone" r...
15     <a href="http://twitter.com/download/iphone" r...
16     <a href="http://twitter.com/download/iphone" r...
17     <a href="http://twitter.com/download/iphone" r...
18     <a href="http://twitter.com/download/iphone" r...
19     <a href="http://twitter.com/download/iphone" r...
20     <a href="http://twitter.com/download/iphone" r...
```

```
21     <a href="http://twitter.com/download/iphone" r...
22     <a href="http://twitter.com/download/iphone" r...
23     <a href="http://twitter.com/download/iphone" r...
24     <a href="http://twitter.com/download/iphone" r...
25     <a href="http://twitter.com/download/iphone" r...
26     <a href="http://twitter.com/download/iphone" r...
27     <a href="http://twitter.com/download/iphone" r...
28     <a href="http://twitter.com/download/iphone" r...
29     <a href="http://twitter.com/download/iphone" r...
...                                                  ...
1934   <a href="http://twitter.com/download/iphone" r...
1935   <a href="http://twitter.com/download/iphone" r...
1936   <a href="http://twitter.com/download/iphone" r...
1937   <a href="http://twitter.com/download/iphone" r...
1938   <a href="http://twitter.com/download/iphone" r...
1939   <a href="http://twitter.com/download/iphone" r...
1940   <a href="http://twitter.com/download/iphone" r...
1941   <a href="http://twitter.com/download/iphone" r...
1942   <a href="http://twitter.com/download/iphone" r...
1943   <a href="http://twitter.com/download/iphone" r...
1944   <a href="http://twitter.com/download/iphone" r...
1945   <a href="http://twitter.com/download/iphone" r...
1946   <a href="http://twitter.com/download/iphone" r...
1947   <a href="http://twitter.com/download/iphone" r...
1948   <a href="http://twitter.com/download/iphone" r...
1949   <a href="http://twitter.com/download/iphone" r...
1950   <a href="http://twitter.com/download/iphone" r...
1951   <a href="http://twitter.com/download/iphone" r...
1952   <a href="http://twitter.com/download/iphone" r...
1953   <a href="http://twitter.com/download/iphone" r...
1954   <a href="http://twitter.com/download/iphone" r...
1955   <a href="http://twitter.com/download/iphone" r...
1956   <a href="http://twitter.com/download/iphone" r...
1957   <a href="http://twitter.com/download/iphone" r...
1958   <a href="http://twitter.com/download/iphone" r...
1959   <a href="http://twitter.com/download/iphone" r...
1960   <a href="http://twitter.com/download/iphone" r...
1961   <a href="http://twitter.com/download/iphone" r...
1962   <a href="http://twitter.com/download/iphone" r...
1963   <a href="http://twitter.com/download/iphone" r...

                                                    text  \
0      This is Tilly. She's just checking pup on you...
1      This is Archie. He is a rare Norwegian Pouncin...
2      This is Darla. She commenced a snooze mid meal...
3      This is Franklin. He would like you to stop ca...
4      Here we have a majestic great white breaching ...
```

```
5     Meet Jax. He enjoys ice cream so much he gets ...
6     When you watch your owner call another dog a g...
7     This is Zoey. She doesn't want to be one of th...
8     This is Cassie. She is a college pup. Studying...
9     This is Koda. He is a South Australian decksha...
10    This is Bruno. He is a service shark. Only get...
11    This is Ted. He does his best. Sometimes that'...
12    This is Oliver. You're witnessing one of his m...
13    This is Jim. He found a fren. Taught him how t...
14    This is Zeke. He has a new stick. Very proud o...
15    This is Ralphus. He's powering up. Attempting ...
16    This is Gerald. He was just told he didn't get...
17    This is Jeffrey. He has a monopoly on the pool...
18    I've yet to rate a Venezuelan Hover Wiener. Th...
19    This is Canela. She attempted some fancy porch...
20    You may not have known you needed to see this ...
21    This... is a Jubilant Antarctic House Bear. We...
22    This is Maya. She's very shy. Rarely leaves he...
23    This is Mingus. He's a wonderful father to his...
24    This is Derek. He's late for a dog meeting. 13...
25    This is Waffles. His doggles are pupside down...
26    Viewer discretion advised. This is Jimbo. He w...
27    This is Maisey. She fell asleep mid-excavation...
28    Here we have a corgi undercover as a malamute...
29    This is Earl. He found a hat. Nervous about wh...
...                                                  ...
1934  This is Norman. Doesn't bark much. Very docile...
1935  Meet Scott. Just trying to catch his train to ...
1936  Say hello to Jazz. She should be on the cover ...
1937  This is Rolf. He's having the time of his life...
1938  This is Opal. He's a Royal John Coctostan. Rea...
1939  This is Bubba. He's a Titted Peebles Aorta. Ev...
1940  Here's a puppo that seems to be on the fence a...
1941  This is Stuart. He's sporting his favorite fan...
1942  This is Snoopy. He's a proud #PrideMonthPuppo...
1943  This is Sebastian. He can't see all the colors...
1944  This is Shikha. She just watched you drop a sk...
1945  Sorry for the lack of posts today. I came home...
1946  Here's a puppo participating in the #ScienceMa...
1947  Here's a very loving and accepting puppo. Appe...
1948  Say hello to Pablo. He's one gorgeous puppo. A...
1949  Here's a super supportive puppo participating ...
1950  This is Oliver. He has dreams of being a servi...
1951  This is Diogi. He fell in the pool as soon as ...
1952  This is Loki. He'll do your taxes for you. Can...
1953  Say hello to Lily. She's pupset that her costu...
1954  This is Betty. She's assisting with the dishes...
```

```
1955  This is Tonks. She is a service puppo. Can hea...
1956  I want to finally rate this iconic puppo who t...
1957  When ur older siblings get to play in the deep...
1958  Hopefully this puppo on a swing will help get ...
1959  This is Cooper. He's just so damn happy. 10/10...
1960  This is Abby. She got her face stuck in a glas...
1961  This is Kilo. He cannot reach the snackum. Nif...
1962  This is Bayley. She fell asleep trying to esca...
1963  Here we have a Japanese Irish Setter. Lost eye...


                                    expanded_urls  rating_numerator  \
0     https://twitter.com/dog_rates/status/892177421...                13
1     https://twitter.com/dog_rates/status/891815181...                12
2     https://twitter.com/dog_rates/status/891689557...                13
3     https://twitter.com/dog_rates/status/891327558...                12
4     https://twitter.com/dog_rates/status/891087950...                13
5     https://gofundme.com/ydvmve-surgery-for-jax,ht...                13
6     https://twitter.com/dog_rates/status/890729181...                13
7     https://twitter.com/dog_rates/status/890609185...                13
8     https://twitter.com/dog_rates/status/890240255...                14
9     https://twitter.com/dog_rates/status/890006608...                13
10    https://twitter.com/dog_rates/status/889880896...                13
11    https://twitter.com/dog_rates/status/889638837...                12
12    https://twitter.com/dog_rates/status/889278841...                13
13    https://twitter.com/dog_rates/status/888917238...                12
14    https://twitter.com/dog_rates/status/888804989...                13
15    https://twitter.com/dog_rates/status/888554962...                13
16    https://twitter.com/dog_rates/status/888078434...                12
17    https://twitter.com/dog_rates/status/887705289...                13
18    https://twitter.com/dog_rates/status/887517139...                14
19    https://twitter.com/dog_rates/status/887473957...                13
20    https://twitter.com/dog_rates/status/887343217...                13
21    https://twitter.com/dog_rates/status/887101392...                12
22    https://twitter.com/dog_rates/status/886983233...                13
23    https://www.gofundme.com/mingusneedsus,https:/...                13
24    https://twitter.com/dog_rates/status/886680336...                13
25    https://twitter.com/dog_rates/status/886258384...                13
26    https://twitter.com/dog_rates/status/885984800...                12
27    https://twitter.com/dog_rates/status/885528943...                13
28    https://twitter.com/dog_rates/status/885167619...                13
29    https://twitter.com/dog_rates/status/884925521...                12
...                                             ...               ...
1934  https://twitter.com/dog_rates/status/672614745...                 6
1935  https://twitter.com/dog_rates/status/672594978...                 9
1936  https://twitter.com/dog_rates/status/672481316...                12
1937  https://twitter.com/dog_rates/status/672254177...                11
1938  https://twitter.com/dog_rates/status/672205392...                 9
```

```
1939  https://twitter.com/dog_rates/status/672160042...                8
1940  https://twitter.com/dog_rates/status/889665388...               13
1941  https://twitter.com/dog_rates/status/889531135...               13
1942  https://twitter.com/dog_rates/status/878776093...               13
1943  https://twitter.com/dog_rates/status/874012996...               13
1944  https://twitter.com/dog_rates/status/867421006...               12
1945  https://twitter.com/dog_rates/status/859607811...               13
1946  https://twitter.com/dog_rates/status/855851453...               13
1947  https://twitter.com/dog_rates/status/825535076...               14
1948  https://www.gofundme.com/my-puppys-double-cata...               12
1949  https://twitter.com/dog_rates/status/822872901...               13
1950  https://www.gofundme.com/servicedogoliver,http...               13
1951  https://twitter.com/dog_rates/status/803773340...               12
1952  https://twitter.com/dog_rates/status/802239329...               12
1953  https://twitter.com/dog_rates/status/793195938...               12
1954  https://twitter.com/dog_rates/status/790946055...               12
1955  https://twitter.com/dog_rates/status/787717603...               13
1956  https://twitter.com/dog_rates/status/780931614...               13
1957  https://twitter.com/dog_rates/status/756275833...               10
1958  https://twitter.com/dog_rates/status/752519690...               11
1959  https://twitter.com/dog_rates/status/751132876...               10
1960  https://twitter.com/dog_rates/status/744995568...                9
1961  https://twitter.com/dog_rates/status/743253157...               10
1962  https://twitter.com/dog_rates/status/738537504...               11
1963  https://twitter.com/dog_rates/status/666020888...                8

      rating_denominator         name  dog_type  \
0                     10        Tilly      None
1                     10       Archie      None
2                     10        Darla      None
3                     10     Franklin      None
4                     10         None      None
5                     10          Jax      None
6                     10         None      None
7                     10         Zoey      None
8                     10       Cassie     doggo
9                     10         Koda      None
10                    10        Bruno      None
11                    10          Ted      None
12                    10       Oliver      None
13                    10          Jim      None
14                    10         Zeke      None
15                    10      Ralphus      None
16                    10       Gerald      None
17                    10      Jeffrey      None
18                    10         None      None
19                    10       Canela      None
```

```
20               10       None     None
21               10       None     None
22               10       Maya     None
23               10     Mingus     None
24               10      Derek     None
25               10    Waffles     None
26               10      Jimbo     None
27               10     Maisey     None
28               10       None     None
29               10       Earl     None
...             ...        ...      ...
1934             10     Norman   pupper
1935             10      Scott   pupper
1936             10       Jazz   pupper
1937             10       Rolf   pupper
1938             10       Opal   pupper
1939             10      Bubba   pupper
1940             10       None    puppo
1941             10     Stuart    puppo
1942             10     Snoopy    puppo
1943             10  Sebastian    puppo
1944             10      Shikha    puppo
1945             10       None    puppo
1946             10       None    puppo
1947             10       None    puppo
1948             10      Pablo    puppo
1949             10       None    puppo
1950             10     Oliver    puppo
1951             10      Diogi    puppo
1952             10       Loki    puppo
1953             10       Lily    puppo
1954             10      Betty    puppo
1955             10      Tonks    puppo
1956             10       None    puppo
1957             10       None    puppo
1958             10       None    puppo
1959             10     Cooper    puppo
1960             10       Abby    puppo
1961             10       Kilo    puppo
1962             10     Bayley    puppo
1963             10       None     None


                                          jpg_url  img_num  \
0       https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg        1
1       https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg        1
2       https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg        1
3       https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg        2
```

4	https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg	1
5	https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg	1
6	https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg	2
7	https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg	1
8	https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg	1
9	https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg	1
10	https://pbs.twimg.com/media/DFl99B1WsAITKsg.jpg	1
11	https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg	1
12	https://pbs.twimg.com/ext_tw_video_thumb/88927...	1
13	https://pbs.twimg.com/media/DFYRgsOUQAARGhO.jpg	1
14	https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg	1
15	https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg	3
16	https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg	1
17	https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg	1
18	https://pbs.twimg.com/ext_tw_video_thumb/88751...	1
19	https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg	2
20	https://pbs.twimg.com/ext_tw_video_thumb/88734...	1
21	https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg	1
22	https://pbs.twimg.com/media/DE8yicJW0AAAvBJ.jpg	2
23	https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg	1
24	https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg	1
25	https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg	1
26	https://pbs.twimg.com/media/DEumeWWV0AA-Z61.jpg	1
27	https://pbs.twimg.com/media/DEoH3yvXgAAzQtS.jpg	1
28	https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg	4
29	https://pbs.twimg.com/media/DEfjEaNXkAAtPlj.jpg	1
...	...	...
1934	https://pbs.twimg.com/media/CVWbitUW4AAzclx.jpg	1
1935	https://pbs.twimg.com/media/CVWJkJXWsAInlZl.jpg	1
1936	https://pbs.twimg.com/media/CVUiMUeW4AEQgkU.jpg	1
1937	https://pbs.twimg.com/media/CVRTmz1WcAA4uMF.jpg	1
1938	https://pbs.twimg.com/media/CVQnPMrVAAAzShR.jpg	1
1939	https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg	1
1940	https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg	1
1941	https://pbs.twimg.com/media/DFg_2PVW0AEHN3p.jpg	1
1942	https://pbs.twimg.com/media/DDIKMXzW0AEibje.jpg	2
1943	https://pbs.twimg.com/media/DCEeLxjXsAAvNSM.jpg	2
1944	https://pbs.twimg.com/media/DAmyy8FXYAIH8Ty.jpg	1
1945	https://pbs.twimg.com/media/C-3wvtxXcAUTuBE.jpg	1
1946	https://pbs.twimg.com/media/C-CYWrvWAAU8AXH.jpg	1
1947	https://pbs.twimg.com/media/C3TjvitXAAAI-QH.jpg	1
1948	https://pbs.twimg.com/media/C3MVTeHWcAAGNfx.jpg	2
1949	https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg	1
1950	https://pbs.twimg.com/media/C2EONHNWQAUWxkP.jpg	1
1951	https://pbs.twimg.com/media/CyeTku-XcAALkBd.jpg	2
1952	https://pbs.twimg.com/media/CyIgaTEVEAA-9zS.jpg	2
1953	https://pbs.twimg.com/media/CwH_foYWgAEvTyI.jpg	2

```
1954    https://pbs.twimg.com/media/CvoBPWRWgAA4het.jpg          1
1955    https://pbs.twimg.com/media/Cu6I9vvWIAAZG0a.jpg          3
1956    https://pbs.twimg.com/media/CtZtJxAXEAAyPGd.jpg          1
1957    https://pbs.twimg.com/media/Cn7U2xlW8AI9Pqp.jpg          1
1958    https://pbs.twimg.com/media/CnF8qVDWYAAh0g1.jpg          3
1959    https://pbs.twimg.com/media/CmyPXNOW8AEtaJ-.jpg          1
1960    https://pbs.twimg.com/media/ClbBg4WWEAMjwJu.jpg          1
1961    https://pbs.twimg.com/media/ClCQzFUUYAA5vAu.jpg          1
1962    https://pbs.twimg.com/media/Cj_P7rSUgAAYQbz.jpg          1
1963    https://pbs.twimg.com/media/CT4udn0WwAAOaMy.jpg          1


      retweet_count   favorite_count      hashtags  \
0             5682            31117            NaN
1             3768            23428            NaN
2             7845            39349            NaN
3             8451            37602            NaN
4             2832            18936            NaN
5             1844            11010            NaN
6            17140            60773            NaN
7             3902            26057            NaN
8             6664            29785            NaN
9             6654            28676            NaN
10            4533            26085            NaN
11            4073            25261            NaN
12            4849            23552            NaN
13            4084            27176            NaN
14            3853            23887            NaN
15            3165            18446            NaN
16            3153            20349            NaN
17            4897            28268            NaN
18           10709            43342            NaN
19           16349            64212            NaN
20            9525            31454            NaN
21            5422            28621            NaN
22            6968            32625            NaN
23            2926            11202            NaN
24            4072            20999            NaN
25            5744            26147            NaN
26            6109            30456            NaN
27            5814            33599            NaN
28            3974            20456            NaN
29           16447            71970            NaN
...            ...              ...            ...
1934           555             1180            NaN
1935           587             1286            NaN
1936           123              692            NaN
1937           707             1381            NaN
```

1938	1099	2174	NaN
1939	341	843	NaN
1940	9088	44903	NaN
1941	2050	14158	NaN
1942	3728	18135	PrideMonthPuppo
1943	9387	32187	NaN
1944	2316	15230	NaN
1945	1486	17857	NaN
1946	17299	44297	ScienceMarch
1947	17676	57190	NaN
1948	1271	6345	NaN
1949	43658	132591	WomensMarch
1950	1189	5387	NaN
1951	2801	10215	NaN
1952	2679	9227	NaN
1953	5741	15546	NaN
1954	4778	16920	NaN
1955	2834	10425	NaN
1956	7421	21895	NaN
1957	1536	6425	NaN
1958	3441	7375	NaN
1959	1295	5065	NaN
1960	616	2953	NaN
1961	1221	4208	NaN
1962	1532	5047	NaN
1963	459	2406	NaN

	breed	confirmation
0	Chihuahua	0.323581
1	Chihuahua	0.716012
2	Labrador_retriever	0.168086
3	basset	0.555712
4	Chesapeake_Bay_retriever	0.425595
5	Appenzeller	0.341703
6	Pomeranian	0.566142
7	Irish_terrier	0.487574
8	Pembroke	0.511319
9	Samoyed	0.957979
10	French_bulldog	0.377417
11	French_bulldog	0.991650
12	whippet	0.626152
13	golden_retriever	0.714719
14	golden_retriever	0.469760
15	Siberian_husky	0.700377
16	French_bulldog	0.995026
17	basset	0.821664
18	Unknown	0.000000

```
19                          Pembroke   0.809197
20                  Mexican_hairless   0.330741
21                           Samoyed   0.733942
22                         Chihuahua   0.793469
23                            kuvasz   0.309706
24                           Unknown   0.000000
25                               pug   0.943575
26                  Blenheim_spaniel   0.972494
27                               pug   0.369275
28                          malamute   0.812482
29                 Italian_greyhound   0.259916
...                              ...        ...
1934                         Unknown   0.000000
1935                  Great_Pyrenees   0.755945
1936                   Border_collie   0.599454
1937                             pug   0.979487
1938                             pug   0.003267
1939                             pug   0.561027
1940                        Pembroke   0.966327
1941                golden_retriever   0.953442
1942               Italian_greyhound   0.734684
1943                        Cardigan   0.806674
1944                       Eskimo_dog   0.616457
1945                golden_retriever   0.895529
1946             flat-coated_retriever   0.321676
1947                      Rottweiler   0.681495
1948                       Eskimo_dog   0.524454
1949                  Lakeland_terrier   0.196015
1950   American_Staffordshire_terrier   0.925505
1951              miniature_pinscher   0.817066
1952                       Eskimo_dog   0.482498
1953               Labrador_retriever   0.654762
1954                golden_retriever   0.245773
1955                 German_shepherd   0.992339
1956                         Unknown   0.000000
1957                         Airedale   0.602957
1958               Labrador_retriever   0.000010
1959               Labrador_retriever   0.929390
1960             Old_English_sheepdog   0.427481
1961                        malamute   0.442612
1962                             chow   0.808737
1963            Welsh_springer_spaniel   0.465074

[1964 rows x 16 columns]
```

[309]: #renaming the columns
a.rename(columns={'expanded_urls':'tweet_url','text':'tweet_text'},inplace=True)

viii) Cleaning the 'source' column

```
[311]: df_master=a
```

```
[356]: j[0].split('">')[1].split('<')[0]
```

```
[356]: 'Twitter for iPhone'
```

```
[373]: #creating new column as cleaned_source for cleaned source after removing␣
       ↪special characters and unwanted text.
       a['cleaned_source']=a.source.apply(lambda x : x.split('">')[1].split('<')[0])
```

```
[376]: a.cleaned_source.value_counts()
```

```
[376]: Twitter for iPhone     1926
       Twitter Web Client       28
       TweetDeck                10
       Name: cleaned_source, dtype: int64
```

```
[377]: a.source.value_counts()
```

```
[377]: <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for
       iPhone</a>       1926
       <a href="http://twitter.com" rel="nofollow">Twitter Web Client</a>
       28
       <a href="https://about.twitter.com/products/tweetdeck"
       rel="nofollow">TweetDeck</a>        10
       Name: source, dtype: int64
```

```
[378]: df_master=a
```

```
[18]: #replacing the None in the dog_type column with Nan values
      df_master.dog_type.replace('None',np.nan,inplace=True)
```

```
[19]: #querying the dataframe for None values remaining in the dog_column
      df_master.loc[df_master.dog_type=='None']
```

```
[19]: Empty DataFrame
      Columns: [tweet_id, timestamp, source, tweet_text, tweet_url, rating_numerator,
      rating_denominator, name, dog_type, jpg_url, img_num, retweet_count,
      favorite_count, hashtags, breed, confirmation, cleaned_source]
      Index: []
```

```
[133]: df_master
```

```
[133]:            tweet_id                    timestamp  \
       0    892177421306343426  2017-08-01 00:17:27+00:00
       1    891815181378084864  2017-07-31 00:18:03+00:00
       2    891689557279858688  2017-07-30 15:58:51+00:00
       3    891327558926688256  2017-07-29 16:00:24+00:00
       4    891087950875897856  2017-07-29 00:08:17+00:00
       5    890971913173991426  2017-07-28 16:27:12+00:00
       6    890729181411237888  2017-07-28 00:22:40+00:00
       7    890609185150312448  2017-07-27 16:25:51+00:00
```

```
8      890240255349198849   2017-07-26 15:59:51+00:00
9      890006608113172480   2017-07-26 00:31:25+00:00
10     889880896479866881   2017-07-25 16:11:53+00:00
11     889638837579907072   2017-07-25 00:10:02+00:00
12     889278841981685760   2017-07-24 00:19:32+00:00
13     888917238123831296   2017-07-23 00:22:39+00:00
14     888804989199671297   2017-07-22 16:56:37+00:00
15     888554962724278272   2017-07-22 00:23:06+00:00
16     888078434458587136   2017-07-20 16:49:33+00:00
17     887705289381826560   2017-07-19 16:06:48+00:00
18     887517139158093824   2017-07-19 03:39:09+00:00
19     887473957103951883   2017-07-19 00:47:34+00:00
20     887343217045368832   2017-07-18 16:08:03+00:00
21     887101392804085760   2017-07-18 00:07:08+00:00
22     886983233522544640   2017-07-17 16:17:36+00:00
23     886736880519319552   2017-07-16 23:58:41+00:00
24     886680336477933568   2017-07-16 20:14:00+00:00
25     886258384151887873   2017-07-15 16:17:19+00:00
26     885984800019947520   2017-07-14 22:10:11+00:00
27     885528943205470208   2017-07-13 15:58:47+00:00
28     885167619883638784   2017-07-12 16:03:00+00:00
29     884925521741709313   2017-07-12 00:01:00+00:00
...            ...                    ...
1934   672614745925664768   2015-12-04 03:13:46+00:00
1935   672594978741354496   2015-12-04 01:55:13+00:00
1936   672481316919734272   2015-12-03 18:23:34+00:00
1937   672254177670729728   2015-12-03 03:21:00+00:00
1938   672205392827572224   2015-12-03 00:07:09+00:00
1939   672160042234327040   2015-12-02 21:06:56+00:00
1940   889665388333682689   2017-07-25 01:55:32+00:00
1941   889531135344209921   2017-07-24 17:02:04+00:00
1942   878776093423087618   2017-06-25 00:45:22+00:00
1943   874012996292530176   2017-06-11 21:18:31+00:00
1944   867421006826221569   2017-05-24 16:44:18+00:00
1945   859607811541651456   2017-05-03 03:17:27+00:00
1946   858851453814013952   2017-04-22 18:31:02+00:00
1947   825535076884762624   2017-01-29 02:44:34+00:00
1948   825026590719483904   2017-01-27 17:04:02+00:00
1949   822872901745569793   2017-01-21 18:26:02+00:00
1950   819952236453363712   2017-01-13 17:00:21+00:00
1951   803773340896923648   2016-11-30 01:31:12+00:00
1952   802239329049477120   2016-11-25 19:55:35+00:00
1953   793195938047070209   2016-10-31 21:00:23+00:00
1954   790946055508652032   2016-10-25 16:00:09+00:00
1955   787717603741622272   2016-10-16 18:11:26+00:00
1956   780931614150983680   2016-09-28 00:46:20+00:00
1957   756275833623502848   2016-07-21 23:53:04+00:00
```

```
1958   752519690950500352   2016-07-11 15:07:30+00:00
1959   751132876104687617   2016-07-07 19:16:47+00:00
1960   744995568523612160   2016-06-20 20:49:19+00:00
1961   743253157753532416   2016-06-16 01:25:36+00:00
1962   738537504001953792   2016-06-03 01:07:16+00:00
1963   666020888022790149   2015-11-15 22:32:08+00:00


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29      <a href="http://twitter.com/download/iphone" r...
...                                                   ...
1934    <a href="http://twitter.com/download/iphone" r...
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1941    <a href="http://twitter.com/download/iphone" r...
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1942  <a href="http://twitter.com/download/iphone" r...
1943  <a href="http://twitter.com/download/iphone" r...
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1962  <a href="http://twitter.com/download/iphone" r...
1963  <a href="http://twitter.com/download/iphone" r...


                                       tweet_text  \
0     This is Tilly. She's just checking pup on you...
1     This is Archie. He is a rare Norwegian Pouncin...
2     This is Darla. She commenced a snooze mid meal...
3     This is Franklin. He would like you to stop ca...
4     Here we have a majestic great white breaching ...
5     Meet Jax. He enjoys ice cream so much he gets ...
6     When you watch your owner call another dog a g...
7     This is Zoey. She doesn't want to be one of th...
8     This is Cassie. She is a college pup. Studying...
9     This is Koda. He is a South Australian decksha...
10    This is Bruno. He is a service shark. Only get...
11    This is Ted. He does his best. Sometimes that'...
12    This is Oliver. You're witnessing one of his m...
13    This is Jim. He found a fren. Taught him how t...
14    This is Zeke. He has a new stick. Very proud o...
15    This is Ralphus. He's powering up. Attempting ...
16    This is Gerald. He was just told he didn't get...
17    This is Jeffrey. He has a monopoly on the pool...
18    I've yet to rate a Venezuelan Hover Wiener. Th...
19    This is Canela. She attempted some fancy porch...
20    You may not have known you needed to see this ...
21    This... is a Jubilant Antarctic House Bear. We...
22    This is Maya. She's very shy. Rarely leaves he...
```

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23     This is Mingus. He's a wonderful father to his...
24     This is Derek. He's late for a dog meeting. 13...
25     This is Waffles. His doggles are pupside down...
26     Viewer discretion advised. This is Jimbo. He w...
27     This is Maisey. She fell asleep mid-excavation...
28     Here we have a corgi undercover as a malamute...
29     This is Earl. He found a hat. Nervous about wh...
...                                                    ...
1934   This is Norman. Doesn't bark much. Very docile...
1935   Meet Scott. Just trying to catch his train to ...
1936   Say hello to Jazz. She should be on the cover ...
1937   This is Rolf. He's having the time of his life...
1938   This is Opal. He's a Royal John Coctostan. Rea...
1939   This is Bubba. He's a Titted Peebles Aorta. Ev...
1940   Here's a puppo that seems to be on the fence a...
1941   This is Stuart. He's sporting his favorite fan...
1942   This is Snoopy. He's a proud #PrideMonthPuppo...
1943   This is Sebastian. He can't see all the colors...
1944   This is Shikha. She just watched you drop a sk...
1945   Sorry for the lack of posts today. I came home...
1946   Here's a puppo participating in the #ScienceMa...
1947   Here's a very loving and accepting puppo. Appe...
1948   Say hello to Pablo. He's one gorgeous puppo. A...
1949   Here's a super supportive puppo participating ...
1950   This is Oliver. He has dreams of being a servi...
1951   This is Diogi. He fell in the pool as soon as ...
1952   This is Loki. He'll do your taxes for you. Can...
1953   Say hello to Lily. She's pupset that her costu...
1954   This is Betty. She's assisting with the dishes...
1955   This is Tonks. She is a service puppo. Can hea...
1956   I want to finally rate this iconic puppo who t...
1957   When ur older siblings get to play in the deep...
1958   Hopefully this puppo on a swing will help get ...
1959   This is Cooper. He's just so damn happy. 10/10...
1960   This is Abby. She got her face stuck in a glas...
1961   This is Kilo. He cannot reach the snackum. Nif...
1962   This is Bayley. She fell asleep trying to esca...
1963   Here we have a Japanese Irish Setter. Lost eye...

                                       tweet_url  rating_numerator  \
0      https://twitter.com/dog_rates/status/892177421...               13
1      https://twitter.com/dog_rates/status/891815181...               12
2      https://twitter.com/dog_rates/status/891689557...               13
3      https://twitter.com/dog_rates/status/891327558...               12
4      https://twitter.com/dog_rates/status/891087950...               13
5      https://gofundme.com/ydvmve-surgery-for-jax,ht...               13
6      https://twitter.com/dog_rates/status/890729181...               13
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7     https://twitter.com/dog_rates/status/890609185...              13
8     https://twitter.com/dog_rates/status/890240255...              14
9     https://twitter.com/dog_rates/status/890006608...              13
10    https://twitter.com/dog_rates/status/889880896...              13
11    https://twitter.com/dog_rates/status/889638837...              12
12    https://twitter.com/dog_rates/status/889278841...              13
13    https://twitter.com/dog_rates/status/888917238...              12
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21    https://twitter.com/dog_rates/status/887101392...              12
22    https://twitter.com/dog_rates/status/886983233...              13
23    https://www.gofundme.com/mingusneedsus,https:/...              13
24    https://twitter.com/dog_rates/status/886680336...              13
25    https://twitter.com/dog_rates/status/886258384...              13
26    https://twitter.com/dog_rates/status/885984800...              12
27    https://twitter.com/dog_rates/status/885528943...              13
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29    https://twitter.com/dog_rates/status/884925521...              12
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1943  https://twitter.com/dog_rates/status/874012996...              13
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1946  https://twitter.com/dog_rates/status/855851453...              13
1947  https://twitter.com/dog_rates/status/825535076...              14
1948  https://www.gofundme.com/my-puppys-double-cata...              12
1949  https://twitter.com/dog_rates/status/822872901...              13
1950  https://www.gofundme.com/servicedogoliver,http...              13
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1961  https://twitter.com/dog_rates/status/743253157...                10
1962  https://twitter.com/dog_rates/status/738537504...                11
1963  https://twitter.com/dog_rates/status/666020888...                 8

      rating_denominator        name dog_type  \
0                     10       Tilly      NaN
1                     10      Archie      NaN
2                     10       Darla      NaN
3                     10    Franklin      NaN
4                     10        None      NaN
5                     10         Jax      NaN
6                     10        None      NaN
7                     10        Zoey      NaN
8                     10      Cassie    doggo
9                     10        Koda      NaN
10                    10       Bruno      NaN
11                    10         Ted      NaN
12                    10      Oliver      NaN
13                    10         Jim      NaN
14                    10        Zeke      NaN
15                    10      Ralphus      NaN
16                    10      Gerald      NaN
17                    10     Jeffrey      NaN
18                    10        None      NaN
19                    10      Canela      NaN
20                    10        None      NaN
21                    10        None      NaN
22                    10        Maya      NaN
23                    10      Mingus      NaN
24                    10       Derek      NaN
25                    10     Waffles      NaN
26                    10       Jimbo      NaN
27                    10      Maisey      NaN
28                    10        None      NaN
29                    10        Earl      NaN
...                  ...         ...      ...
1934                  10      Norman   pupper
1935                  10       Scott   pupper
1936                  10        Jazz   pupper
1937                  10        Rolf   pupper
1938                  10        Opal   pupper
1939                  10       Bubba   pupper
1940                  10        None    puppo
```

```
1941                   10     Stuart     puppo
1942                   10     Snoopy     puppo
1943                   10  Sebastian     puppo
1944                   10     Shikha     puppo
1945                   10       None     puppo
1946                   10       None     puppo
1947                   10       None     puppo
1948                   10      Pablo     puppo
1949                   10       None     puppo
1950                   10     Oliver     puppo
1951                   10      Diogi     puppo
1952                   10       Loki     puppo
1953                   10       Lily     puppo
1954                   10      Betty     puppo
1955                   10      Tonks     puppo
1956                   10       None     puppo
1957                   10       None     puppo
1958                   10       None     puppo
1959                   10     Cooper     puppo
1960                   10       Abby     puppo
1961                   10       Kilo     puppo
1962                   10     Bayley     puppo
1963                   10       None       NaN

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3       https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg        2
4       https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg        1
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9       https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg        1
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14      https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg        1
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16      https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg        1
17      https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg        1
18   https://pbs.twimg.com/ext_tw_video_thumb/88751...        1
19      https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg        2
20   https://pbs.twimg.com/ext_tw_video_thumb/88734...        1
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25        https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg          1
26        https://pbs.twimg.com/media/DEumeWWV0AA-Z61.jpg          1
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28        https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg          4
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...                                                       ...    ...
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1952      https://pbs.twimg.com/media/CyIgaTEVEAA-9zS.jpg          2
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1957      https://pbs.twimg.com/media/Cn7U2xlW8AI9Pqp.jpg          1
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1              3768           23428             NaN
2              7845           39349             NaN
3              8451           37602             NaN
4              2832           18936             NaN
5              1844           11010             NaN
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77

6	17140	60773	NaN
7	3902	26057	NaN
8	6664	29785	NaN
9	6654	28676	NaN
10	4533	26085	NaN
11	4073	25261	NaN
12	4849	23552	NaN
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14	3853	23887	NaN
15	3165	18446	NaN
16	3153	20349	NaN
17	4897	28268	NaN
18	10709	43342	NaN
19	16349	64212	NaN
20	9525	31454	NaN
21	5422	28621	NaN
22	6968	32625	NaN
23	2926	11202	NaN
24	4072	20999	NaN
25	5744	26147	NaN
26	6109	30456	NaN
27	5814	33599	NaN
28	3974	20456	NaN
29	16447	71970	NaN
...	...	...	...
1934	555	1180	NaN
1935	587	1286	NaN
1936	123	692	NaN
1937	707	1381	NaN
1938	1099	2174	NaN
1939	341	843	NaN
1940	9088	44903	NaN
1941	2050	14158	NaN
1942	3728	18135	PrideMonthPuppo
1943	9387	32187	NaN
1944	2316	15230	NaN
1945	1486	17857	NaN
1946	17299	44297	ScienceMarch
1947	17676	57190	NaN
1948	1271	6345	NaN
1949	43658	132591	WomensMarch
1950	1189	5387	NaN
1951	2801	10215	NaN
1952	2679	9227	NaN
1953	5741	15546	NaN
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1955	2834	10425	NaN

1956	7421	21895	NaN
1957	1536	6425	NaN
1958	3441	7375	NaN
1959	1295	5065	NaN
1960	616	2953	NaN
1961	1221	4208	NaN
1962	1532	5047	NaN
1963	459	2406	NaN

	breed	confirmation	cleaned_source
0	Chihuahua	0.323581	Twitter for iPhone
1	Chihuahua	0.716012	Twitter for iPhone
2	Labrador_retriever	0.168086	Twitter for iPhone
3	basset	0.555712	Twitter for iPhone
4	Chesapeake_Bay_retriever	0.425595	Twitter for iPhone
5	Appenzeller	0.341703	Twitter for iPhone
6	Pomeranian	0.566142	Twitter for iPhone
7	Irish_terrier	0.487574	Twitter for iPhone
8	Pembroke	0.511319	Twitter for iPhone
9	Samoyed	0.957979	Twitter for iPhone
10	French_bulldog	0.377417	Twitter for iPhone
11	French_bulldog	0.991650	Twitter for iPhone
12	whippet	0.626152	Twitter for iPhone
13	golden_retriever	0.714719	Twitter for iPhone
14	golden_retriever	0.469760	Twitter for iPhone
15	Siberian_husky	0.700377	Twitter for iPhone
16	French_bulldog	0.995026	Twitter for iPhone
17	basset	0.821664	Twitter for iPhone
18	Unknown	0.000000	Twitter for iPhone
19	Pembroke	0.809197	Twitter for iPhone
20	Mexican_hairless	0.330741	Twitter for iPhone
21	Samoyed	0.733942	Twitter for iPhone
22	Chihuahua	0.793469	Twitter for iPhone
23	kuvasz	0.309706	Twitter for iPhone
24	Unknown	0.000000	Twitter for iPhone
25	pug	0.943575	Twitter for iPhone
26	Blenheim_spaniel	0.972494	Twitter for iPhone
27	pug	0.369275	Twitter for iPhone
28	malamute	0.812482	Twitter for iPhone
29	Italian_greyhound	0.259916	Twitter for iPhone
...	...	...	...
1934	Unknown	0.000000	Twitter for iPhone
1935	Great_Pyrenees	0.755945	Twitter for iPhone
1936	Border_collie	0.599454	Twitter for iPhone
1937	pug	0.979487	Twitter for iPhone
1938	pug	0.003267	Twitter for iPhone
1939	pug	0.561027	Twitter for iPhone

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1940                           Pembroke    0.966327  Twitter for iPhone
1941                   golden_retriever    0.953442  Twitter for iPhone
1942                   Italian_greyhound    0.734684  Twitter for iPhone
1943                           Cardigan    0.806674  Twitter for iPhone
1944                          Eskimo_dog    0.616457  Twitter for iPhone
1945                   golden_retriever    0.895529  Twitter for iPhone
1946               flat-coated_retriever    0.321676  Twitter for iPhone
1947                          Rottweiler    0.681495  Twitter for iPhone
1948                          Eskimo_dog    0.524454  Twitter for iPhone
1949                    Lakeland_terrier    0.196015  Twitter for iPhone
1950      American_Staffordshire_terrier    0.925505  Twitter for iPhone
1951                   miniature_pinscher    0.817066  Twitter for iPhone
1952                          Eskimo_dog    0.482498  Twitter for iPhone
1953                  Labrador_retriever    0.654762  Twitter for iPhone
1954                   golden_retriever    0.245773  Twitter for iPhone
1955                    German_shepherd    0.992339  Twitter for iPhone
1956                            Unknown    0.000000  Twitter for iPhone
1957                            Airedale    0.602957  Twitter for iPhone
1958                  Labrador_retriever    0.000010  Twitter for iPhone
1959                  Labrador_retriever    0.929390  Twitter for iPhone
1960                  Old_English_sheepdog    0.427481  Twitter for iPhone
1961                            malamute    0.442612  Twitter for iPhone
1962                                chow    0.808737  Twitter for iPhone
1963               Welsh_springer_spaniel    0.465074  Twitter for iPhone

[1964 rows x 17 columns]
```

ix) Cleaning the timestamp column

```
[134]: df_master.timestamp=df_master.timestamp.str.strip('+00:00')
```

```
[135]: df_master
```

```
[135]:               tweet_id            timestamp  \
       0    892177421306343426  2017-08-01 00:17:27
       1    891815181378084864  2017-07-31 00:18:03
       2    891689557279858688  2017-07-30 15:58:51
       3    891327558926688256  2017-07-29 16:00:24
       4    891087950875897856  2017-07-29 00:08:17
       5    890971913173991426  2017-07-28 16:27:12
       6    890729181411237888   2017-07-28 00:22:4
       7    890609185150312448  2017-07-27 16:25:51
       8    890240255349198849  2017-07-26 15:59:51
       9    890006608113172480  2017-07-26 00:31:25
       10   889880896479866881  2017-07-25 16:11:53
       11   889638837579907072  2017-07-25 00:10:02
       12   889278841981685760  2017-07-24 00:19:32
       13   888917238123831296  2017-07-23 00:22:39
```

```
14      888804989199671297    2017-07-22 16:56:37
15      888554962724278272    2017-07-22 00:23:06
16      888078434458587136    2017-07-20 16:49:33
17      887705289381826560    2017-07-19 16:06:48
18      887517139158093824    2017-07-19 03:39:09
19      887473957103951883    2017-07-19 00:47:34
20      887343217045368832    2017-07-18 16:08:03
21      887101392804085760    2017-07-18 00:07:08
22      886983233522544640    2017-07-17 16:17:36
23      886736880519319552    2017-07-16 23:58:41
24      886680336477933568       2017-07-16 20:14
25      886258384151887873    2017-07-15 16:17:19
26      885984800019947520    2017-07-14 22:10:11
27      885528943205470208    2017-07-13 15:58:47
28      885167619883638784       2017-07-12 16:03
29      884925521741709313       2017-07-12 00:01
...                    ...                    ...
1934    672614745925664768    2015-12-04 03:13:46
1935    672594978741354496    2015-12-04 01:55:13
1936    672481316919734272    2015-12-03 18:23:34
1937    672254177670729728       2015-12-03 03:21
1938    672205392827572224    2015-12-03 00:07:09
1939    672160042234327040    2015-12-02 21:06:56
1940    889665388333682689    2017-07-25 01:55:32
1941    889531135344209921    2017-07-24 17:02:04
1942    878776093423087618    2017-06-25 00:45:22
1943    874012996292530176    2017-06-11 21:18:31
1944    867421006826221569    2017-05-24 16:44:18
1945    859607811541651456    2017-05-03 03:17:27
1946    855851453814013952    2017-04-22 18:31:02
1947    825535076884762624    2017-01-29 02:44:34
1948    825026590719483904    2017-01-27 17:04:02
1949    822872901745569793    2017-01-21 18:26:02
1950    819952236453363712    2017-01-13 17:00:21
1951    803773340896923648    2016-11-30 01:31:12
1952    802239329049477120    2016-11-25 19:55:35
1953    793195938047070209    2016-10-31 21:00:23
1954    790946055508652032    2016-10-25 16:00:09
1955    787717603741622272    2016-10-16 18:11:26
1956    780931614150983680     2016-09-28 00:46:2
1957    756275833623502848    2016-07-21 23:53:04
1958    752519690950500352     2016-07-11 15:07:3
1959    751132876104687617    2016-07-07 19:16:47
1960    744995568523612160    2016-06-20 20:49:19
1961    743253157753532416    2016-06-16 01:25:36
1962    738537504001953792    2016-06-03 01:07:16
1963    666020888022790149    2015-11-15 22:32:08
```

```
                                                      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...
5     <a href="http://twitter.com/download/iphone" r...
6     <a href="http://twitter.com/download/iphone" r...
7     <a href="http://twitter.com/download/iphone" r...
8     <a href="http://twitter.com/download/iphone" r...
9     <a href="http://twitter.com/download/iphone" r...
10    <a href="http://twitter.com/download/iphone" r...
11    <a href="http://twitter.com/download/iphone" r...
12    <a href="http://twitter.com/download/iphone" r...
13    <a href="http://twitter.com/download/iphone" r...
14    <a href="http://twitter.com/download/iphone" r...
15    <a href="http://twitter.com/download/iphone" r...
16    <a href="http://twitter.com/download/iphone" r...
17    <a href="http://twitter.com/download/iphone" r...
18    <a href="http://twitter.com/download/iphone" r...
19    <a href="http://twitter.com/download/iphone" r...
20    <a href="http://twitter.com/download/iphone" r...
21    <a href="http://twitter.com/download/iphone" r...
22    <a href="http://twitter.com/download/iphone" r...
23    <a href="http://twitter.com/download/iphone" r...
24    <a href="http://twitter.com/download/iphone" r...
25    <a href="http://twitter.com/download/iphone" r...
26    <a href="http://twitter.com/download/iphone" r...
27    <a href="http://twitter.com/download/iphone" r...
28    <a href="http://twitter.com/download/iphone" r...
29    <a href="http://twitter.com/download/iphone" r...
...                                                 ...
1934  <a href="http://twitter.com/download/iphone" r...
1935  <a href="http://twitter.com/download/iphone" r...
1936  <a href="http://twitter.com/download/iphone" r...
1937  <a href="http://twitter.com/download/iphone" r...
1938  <a href="http://twitter.com/download/iphone" r...
1939  <a href="http://twitter.com/download/iphone" r...
1940  <a href="http://twitter.com/download/iphone" r...
1941  <a href="http://twitter.com/download/iphone" r...
1942  <a href="http://twitter.com/download/iphone" r...
1943  <a href="http://twitter.com/download/iphone" r...
1944  <a href="http://twitter.com/download/iphone" r...
1945  <a href="http://twitter.com/download/iphone" r...
1946  <a href="http://twitter.com/download/iphone" r...
1947  <a href="http://twitter.com/download/iphone" r...
```

```
1948   <a href="http://twitter.com/download/iphone" r...
1949   <a href="http://twitter.com/download/iphone" r...
1950   <a href="http://twitter.com/download/iphone" r...
1951   <a href="http://twitter.com/download/iphone" r...
1952   <a href="http://twitter.com/download/iphone" r...
1953   <a href="http://twitter.com/download/iphone" r...
1954   <a href="http://twitter.com/download/iphone" r...
1955   <a href="http://twitter.com/download/iphone" r...
1956   <a href="http://twitter.com/download/iphone" r...
1957   <a href="http://twitter.com/download/iphone" r...
1958   <a href="http://twitter.com/download/iphone" r...
1959   <a href="http://twitter.com/download/iphone" r...
1960   <a href="http://twitter.com/download/iphone" r...
1961   <a href="http://twitter.com/download/iphone" r...
1962   <a href="http://twitter.com/download/iphone" r...
1963   <a href="http://twitter.com/download/iphone" r...


                                       tweet_text  \
0      This is Tilly. She's just checking pup on you...
1      This is Archie. He is a rare Norwegian Pouncin...
2      This is Darla. She commenced a snooze mid meal...
3      This is Franklin. He would like you to stop ca...
4      Here we have a majestic great white breaching ...
5      Meet Jax. He enjoys ice cream so much he gets ...
6      When you watch your owner call another dog a g...
7      This is Zoey. She doesn't want to be one of th...
8      This is Cassie. She is a college pup. Studying...
9      This is Koda. He is a South Australian decksha...
10     This is Bruno. He is a service shark. Only get...
11     This is Ted. He does his best. Sometimes that'...
12     This is Oliver. You're witnessing one of his m...
13     This is Jim. He found a fren. Taught him how t...
14     This is Zeke. He has a new stick. Very proud o...
15     This is Ralphus. He's powering up. Attempting ...
16     This is Gerald. He was just told he didn't get...
17     This is Jeffrey. He has a monopoly on the pool...
18     I've yet to rate a Venezuelan Hover Wiener. Th...
19     This is Canela. She attempted some fancy porch...
20     You may not have known you needed to see this ...
21     This... is a Jubilant Antarctic House Bear. We...
22     This is Maya. She's very shy. Rarely leaves he...
23     This is Mingus. He's a wonderful father to his...
24     This is Derek. He's late for a dog meeting. 13...
25     This is Waffles. His doggles are pupside down...
26     Viewer discretion advised. This is Jimbo. He w...
27     This is Maisey. She fell asleep mid-excavation...
28     Here we have a corgi undercover as a malamute...
```

```
29    This is Earl. He found a hat. Nervous about wh...
...                                                  ...
1934  This is Norman. Doesn't bark much. Very docile...
1935  Meet Scott. Just trying to catch his train to ...
1936  Say hello to Jazz. She should be on the cover ...
1937  This is Rolf. He's having the time of his life...
1938  This is Opal. He's a Royal John Coctostan. Rea...
1939  This is Bubba. He's a Titted Peebles Aorta. Ev...
1940  Here's a puppo that seems to be on the fence a...
1941  This is Stuart. He's sporting his favorite fan...
1942  This is Snoopy. He's a proud #PrideMonthPuppo...
1943  This is Sebastian. He can't see all the colors...
1944  This is Shikha. She just watched you drop a sk...
1945  Sorry for the lack of posts today. I came home...
1946  Here's a puppo participating in the #ScienceMa...
1947  Here's a very loving and accepting puppo. Appe...
1948  Say hello to Pablo. He's one gorgeous puppo. A...
1949  Here's a super supportive puppo participating ...
1950  This is Oliver. He has dreams of being a servi...
1951  This is Diogi. He fell in the pool as soon as ...
1952  This is Loki. He'll do your taxes for you. Can...
1953  Say hello to Lily. She's pupset that her costu...
1954  This is Betty. She's assisting with the dishes...
1955  This is Tonks. She is a service puppo. Can hea...
1956  I want to finally rate this iconic puppo who t...
1957  When ur older siblings get to play in the deep...
1958  Hopefully this puppo on a swing will help get ...
1959  This is Cooper. He's just so damn happy. 10/10...
1960  This is Abby. She got her face stuck in a glas...
1961  This is Kilo. He cannot reach the snackum. Nif...
1962  This is Bayley. She fell asleep trying to esca...
1963  Here we have a Japanese Irish Setter. Lost eye...

                                    tweet_url  rating_numerator  \
0      https://twitter.com/dog_rates/status/892177421...                13
1      https://twitter.com/dog_rates/status/891815181...                12
2      https://twitter.com/dog_rates/status/891689557...                13
3      https://twitter.com/dog_rates/status/891327558...                12
4      https://twitter.com/dog_rates/status/891087950...                13
5      https://gofundme.com/ydvmve-surgery-for-jax,ht...                13
6      https://twitter.com/dog_rates/status/890729181...                13
7      https://twitter.com/dog_rates/status/890609185...                13
8      https://twitter.com/dog_rates/status/890240255...                14
9      https://twitter.com/dog_rates/status/890006608...                13
10     https://twitter.com/dog_rates/status/889880896...                13
11     https://twitter.com/dog_rates/status/889638837...                12
12     https://twitter.com/dog_rates/status/889278841...                13
```

```
13      https://twitter.com/dog_rates/status/888917238...          12
14      https://twitter.com/dog_rates/status/888804989...          13
15      https://twitter.com/dog_rates/status/888554962...          13
16      https://twitter.com/dog_rates/status/888078434...          12
17      https://twitter.com/dog_rates/status/887705289...          13
18      https://twitter.com/dog_rates/status/887517139...          14
19      https://twitter.com/dog_rates/status/887473957...          13
20      https://twitter.com/dog_rates/status/887343217...          13
21      https://twitter.com/dog_rates/status/887101392...          12
22      https://twitter.com/dog_rates/status/886983233...          13
23      https://www.gofundme.com/mingusneedsus,https:/...          13
24      https://twitter.com/dog_rates/status/886680336...          13
25      https://twitter.com/dog_rates/status/886258384...          13
26      https://twitter.com/dog_rates/status/885984800...          12
27      https://twitter.com/dog_rates/status/885528943...          13
28      https://twitter.com/dog_rates/status/885167619...          13
29      https://twitter.com/dog_rates/status/884925521...          12
...                                                   ...         ...
1934    https://twitter.com/dog_rates/status/672614745...           6
1935    https://twitter.com/dog_rates/status/672594978...           9
1936    https://twitter.com/dog_rates/status/672481316...          12
1937    https://twitter.com/dog_rates/status/672254177...          11
1938    https://twitter.com/dog_rates/status/672205392...           9
1939    https://twitter.com/dog_rates/status/672160042...           8
1940    https://twitter.com/dog_rates/status/889665388...          13
1941    https://twitter.com/dog_rates/status/889531135...          13
1942    https://twitter.com/dog_rates/status/878776093...          13
1943    https://twitter.com/dog_rates/status/874012996...          13
1944    https://twitter.com/dog_rates/status/867421006...          12
1945    https://twitter.com/dog_rates/status/859607811...          13
1946    https://twitter.com/dog_rates/status/855851453...          13
1947    https://twitter.com/dog_rates/status/825535076...          14
1948    https://www.gofundme.com/my-puppys-double-cata...          12
1949    https://twitter.com/dog_rates/status/822872901...          13
1950    https://www.gofundme.com/servicedogoliver,http...          13
1951    https://twitter.com/dog_rates/status/803773340...          12
1952    https://twitter.com/dog_rates/status/802239329...          12
1953    https://twitter.com/dog_rates/status/793195938...          12
1954    https://twitter.com/dog_rates/status/790946055...          12
1955    https://twitter.com/dog_rates/status/787717603...          13
1956    https://twitter.com/dog_rates/status/780931614...          13
1957    https://twitter.com/dog_rates/status/756275833...          10
1958    https://twitter.com/dog_rates/status/752519690...          11
1959    https://twitter.com/dog_rates/status/751132876...          10
1960    https://twitter.com/dog_rates/status/744995568...           9
1961    https://twitter.com/dog_rates/status/743253157...          10
1962    https://twitter.com/dog_rates/status/738537504...          11
```

```
1963   https://twitter.com/dog_rates/status/666020888...                    8

      rating_denominator         name dog_type  \
0                      10        Tilly      NaN
1                      10       Archie      NaN
2                      10        Darla      NaN
3                      10     Franklin      NaN
4                      10         None      NaN
5                      10          Jax      NaN
6                      10         None      NaN
7                      10         Zoey      NaN
8                      10       Cassie    doggo
9                      10         Koda      NaN
10                     10        Bruno      NaN
11                     10          Ted      NaN
12                     10       Oliver      NaN
13                     10          Jim      NaN
14                     10         Zeke      NaN
15                     10      Ralphus      NaN
16                     10       Gerald      NaN
17                     10      Jeffrey      NaN
18                     10         None      NaN
19                     10       Canela      NaN
20                     10         None      NaN
21                     10         None      NaN
22                     10         Maya      NaN
23                     10       Mingus      NaN
24                     10        Derek      NaN
25                     10      Waffles      NaN
26                     10        Jimbo      NaN
27                     10       Maisey      NaN
28                     10         None      NaN
29                     10         Earl      NaN
...                   ...          ...      ...
1934                   10       Norman   pupper
1935                   10        Scott   pupper
1936                   10         Jazz   pupper
1937                   10         Rolf   pupper
1938                   10         Opal   pupper
1939                   10        Bubba   pupper
1940                   10         None    puppo
1941                   10       Stuart    puppo
1942                   10       Snoopy    puppo
1943                   10    Sebastian    puppo
1944                   10       Shikha    puppo
1945                   10         None    puppo
1946                   10         None    puppo
```

```
1947              10     None    puppo
1948              10    Pablo    puppo
1949              10     None    puppo
1950              10   Oliver    puppo
1951              10    Diogi    puppo
1952              10     Loki    puppo
1953              10     Lily    puppo
1954              10    Betty    puppo
1955              10    Tonks    puppo
1956              10     None    puppo
1957              10     None    puppo
1958              10     None    puppo
1959              10   Cooper    puppo
1960              10     Abby    puppo
1961              10     Kilo    puppo
1962              10   Bayley    puppo
1963              10     None      NaN

                                         jpg_url   img_num  \
0      https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg        1
1      https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg        1
2      https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg        1
3      https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg        2
4      https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg        1
5      https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg        1
6      https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg        2
7      https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg        1
8      https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg        1
9      https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg        1
10     https://pbs.twimg.com/media/DFl99B1WsAITKsg.jpg        1
11     https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg        1
12     https://pbs.twimg.com/ext_tw_video_thumb/88927...        1
13     https://pbs.twimg.com/media/DFYRgsOUQAARGhO.jpg        1
14     https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg        1
15     https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg        3
16     https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg        1
17     https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg        1
18     https://pbs.twimg.com/ext_tw_video_thumb/88751...        1
19     https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg        2
20     https://pbs.twimg.com/ext_tw_video_thumb/88734...        1
21     https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg        1
22     https://pbs.twimg.com/media/DE8yicJW0AAAvBJ.jpg        2
23     https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg        1
24     https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg        1
25     https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg        1
26     https://pbs.twimg.com/media/DEumeWWV0AA-Z61.jpg        1
27     https://pbs.twimg.com/media/DEoH3yvXgAAzQtS.jpg        1
```

```
28        https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg              4
29        https://pbs.twimg.com/media/DEfjEaNXkAAtPlj.jpg              1
...                                                          ...      ...
1934      https://pbs.twimg.com/media/CVWbitUW4AAzclx.jpg              1
1935      https://pbs.twimg.com/media/CVWJkJXWsAInlZl.jpg              1
1936      https://pbs.twimg.com/media/CVUiMUeW4AEQgkU.jpg              1
1937      https://pbs.twimg.com/media/CVRTmz1WcAA4uMF.jpg              1
1938      https://pbs.twimg.com/media/CVQnPMrVAAAzShR.jpg              1
1939      https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg              1
1940      https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg              1
1941      https://pbs.twimg.com/media/DFg_2PVW0AEHN3p.jpg              1
1942      https://pbs.twimg.com/media/DDIKMXzW0AEibje.jpg              2
1943      https://pbs.twimg.com/media/DCEeLxjXsAAvNSM.jpg              2
1944      https://pbs.twimg.com/media/DAmyy8FXYAIH8Ty.jpg              1
1945      https://pbs.twimg.com/media/C-3wvtxXcAUTuBE.jpg              1
1946      https://pbs.twimg.com/media/C-CYWrvWAAU8AXH.jpg              1
1947      https://pbs.twimg.com/media/C3TjvitXAAAI-QH.jpg              1
1948      https://pbs.twimg.com/media/C3MVTeHWcAAGNfx.jpg              2
1949      https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg              1
1950      https://pbs.twimg.com/media/C2EONHNWQAUWxkP.jpg              1
1951      https://pbs.twimg.com/media/CyeTku-XcAALkBd.jpg              2
1952      https://pbs.twimg.com/media/CyIgaTEVEAA-9zS.jpg              2
1953      https://pbs.twimg.com/media/CwH_foYWgAEvTyI.jpg              2
1954      https://pbs.twimg.com/media/CvoBPWRWgAA4het.jpg              1
1955      https://pbs.twimg.com/media/Cu6I9vvWIAAZG0a.jpg              3
1956      https://pbs.twimg.com/media/CtZtJxAXEAAyPGd.jpg              1
1957      https://pbs.twimg.com/media/Cn7U2xlW8AI9Pqp.jpg              1
1958      https://pbs.twimg.com/media/CnF8qVDWYAAh0g1.jpg              3
1959      https://pbs.twimg.com/media/CmyPXNOW8AEtaJ-.jpg              1
1960      https://pbs.twimg.com/media/ClbBg4WWEAMjwJu.jpg              1
1961      https://pbs.twimg.com/media/ClCQzFUUYAA5vAu.jpg              1
1962      https://pbs.twimg.com/media/Cj_P7rSUgAAYQbz.jpg              1
1963      https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg              1

      retweet_count   favorite_count        hashtags  \
0              5682            31117             NaN
1              3768            23428             NaN
2              7845            39349             NaN
3              8451            37602             NaN
4              2832            18936             NaN
5              1844            11010             NaN
6             17140            60773             NaN
7              3902            26057             NaN
8              6664            29785             NaN
9              6654            28676             NaN
10             4533            26085             NaN
11             4073            25261             NaN
```

12	4849	23552	NaN
13	4084	27176	NaN
14	3853	23887	NaN
15	3165	18446	NaN
16	3153	20349	NaN
17	4897	28268	NaN
18	10709	43342	NaN
19	16349	64212	NaN
20	9525	31454	NaN
21	5422	28621	NaN
22	6968	32625	NaN
23	2926	11202	NaN
24	4072	20999	NaN
25	5744	26147	NaN
26	6109	30456	NaN
27	5814	33599	NaN
28	3974	20456	NaN
29	16447	71970	NaN
...	...	...	...
1934	555	1180	NaN
1935	587	1286	NaN
1936	123	692	NaN
1937	707	1381	NaN
1938	1099	2174	NaN
1939	341	843	NaN
1940	9088	44903	NaN
1941	2050	14158	NaN
1942	3728	18135	PrideMonthPuppo
1943	9387	32187	NaN
1944	2316	15230	NaN
1945	1486	17857	NaN
1946	17299	44297	ScienceMarch
1947	17676	57190	NaN
1948	1271	6345	NaN
1949	43658	132591	WomensMarch
1950	1189	5387	NaN
1951	2801	10215	NaN
1952	2679	9227	NaN
1953	5741	15546	NaN
1954	4778	16920	NaN
1955	2834	10425	NaN
1956	7421	21895	NaN
1957	1536	6425	NaN
1958	3441	7375	NaN
1959	1295	5065	NaN
1960	616	2953	NaN
1961	1221	4208	NaN

1962	1532	5047	NaN
1963	459	2406	NaN

	breed	confirmation	cleaned_source
0	Chihuahua	0.323581	Twitter for iPhone
1	Chihuahua	0.716012	Twitter for iPhone
2	Labrador_retriever	0.168086	Twitter for iPhone
3	basset	0.555712	Twitter for iPhone
4	Chesapeake_Bay_retriever	0.425595	Twitter for iPhone
5	Appenzeller	0.341703	Twitter for iPhone
6	Pomeranian	0.566142	Twitter for iPhone
7	Irish_terrier	0.487574	Twitter for iPhone
8	Pembroke	0.511319	Twitter for iPhone
9	Samoyed	0.957979	Twitter for iPhone
10	French_bulldog	0.377417	Twitter for iPhone
11	French_bulldog	0.991650	Twitter for iPhone
12	whippet	0.626152	Twitter for iPhone
13	golden_retriever	0.714719	Twitter for iPhone
14	golden_retriever	0.469760	Twitter for iPhone
15	Siberian_husky	0.700377	Twitter for iPhone
16	French_bulldog	0.995026	Twitter for iPhone
17	basset	0.821664	Twitter for iPhone
18	Unknown	0.000000	Twitter for iPhone
19	Pembroke	0.809197	Twitter for iPhone
20	Mexican_hairless	0.330741	Twitter for iPhone
21	Samoyed	0.733942	Twitter for iPhone
22	Chihuahua	0.793469	Twitter for iPhone
23	kuvasz	0.309706	Twitter for iPhone
24	Unknown	0.000000	Twitter for iPhone
25	pug	0.943575	Twitter for iPhone
26	Blenheim_spaniel	0.972494	Twitter for iPhone
27	pug	0.369275	Twitter for iPhone
28	malamute	0.812482	Twitter for iPhone
29	Italian_greyhound	0.259916	Twitter for iPhone
...	...	...	...
1934	Unknown	0.000000	Twitter for iPhone
1935	Great_Pyrenees	0.755945	Twitter for iPhone
1936	Border_collie	0.599454	Twitter for iPhone
1937	pug	0.979487	Twitter for iPhone
1938	pug	0.003267	Twitter for iPhone
1939	pug	0.561027	Twitter for iPhone
1940	Pembroke	0.966327	Twitter for iPhone
1941	golden_retriever	0.953442	Twitter for iPhone
1942	Italian_greyhound	0.734684	Twitter for iPhone
1943	Cardigan	0.806674	Twitter for iPhone
1944	Eskimo_dog	0.616457	Twitter for iPhone
1945	golden_retriever	0.895529	Twitter for iPhone

```
1946            flat-coated_retriever       0.321676  Twitter for iPhone
1947                       Rottweiler       0.681495  Twitter for iPhone
1948                       Eskimo_dog       0.524454  Twitter for iPhone
1949                 Lakeland_terrier       0.196015  Twitter for iPhone
1950  American_Staffordshire_terrier       0.925505  Twitter for iPhone
1951                miniature_pinscher     0.817066  Twitter for iPhone
1952                       Eskimo_dog       0.482498  Twitter for iPhone
1953                Labrador_retriever       0.654762  Twitter for iPhone
1954                  golden_retriever       0.245773  Twitter for iPhone
1955                   German_shepherd       0.992339  Twitter for iPhone
1956                           Unknown       0.000000  Twitter for iPhone
1957                           Airedale       0.602957  Twitter for iPhone
1958                Labrador_retriever       0.000010  Twitter for iPhone
1959                Labrador_retriever       0.929390  Twitter for iPhone
1960              Old_English_sheepdog       0.427481  Twitter for iPhone
1961                           malamute       0.442612  Twitter for iPhone
1962                               chow       0.808737  Twitter for iPhone
1963            Welsh_springer_spaniel       0.465074  Twitter for iPhone

[1964 rows x 17 columns]
```

```python
# Dropping the source and hashtags columns as hashtags columns has very few
# information and source column is no longer needed.
df_master.drop(['source','hashtags'],axis=1,inplace=True)
```

```python
list(df_master)
```

```
['tweet_id',
 'timestamp',
 'tweet_text',
 'tweet_url',
 'rating_numerator',
 'rating_denominator',
 'name',
 'dog_type',
 'jpg_url',
 'img_num',
 'retweet_count',
 'favorite_count',
 'breed',
 'confirmation',
 'cleaned_source']
```

```python
#rearranging the columns in the dataset
df_master=df_master[['tweet_id',
'timestamp','cleaned_source','tweet_text','tweet_url','retweet_count','favorite_count','nam
'rating_denominator','confirmation','jpg_url','img_num']]
```

```
[147]: df_master

[147]:              tweet_id            timestamp     cleaned_source  \
       0     892177421306343426  2017-08-01 00:17:27  Twitter for iPhone
       1     891815181378084864  2017-07-31 00:18:03  Twitter for iPhone
       2     891689557279858688  2017-07-30 15:58:51  Twitter for iPhone
       3     891327558926688256  2017-07-29 16:00:24  Twitter for iPhone
       4     891087950875897856  2017-07-29 00:08:17  Twitter for iPhone
       5     890971913173991426  2017-07-28 16:27:12  Twitter for iPhone
       6     890729181411237888   2017-07-28 00:22:4  Twitter for iPhone
       7     890609185150312448  2017-07-27 16:25:51  Twitter for iPhone
       8     890240255349198849  2017-07-26 15:59:51  Twitter for iPhone
       9     890006608113172480  2017-07-26 00:31:25  Twitter for iPhone
       10    889880896479866881  2017-07-25 16:11:53  Twitter for iPhone
       11    889638837579907072  2017-07-25 00:10:02  Twitter for iPhone
       12    889278841981685760  2017-07-24 00:19:32  Twitter for iPhone
       13    888917238123831296  2017-07-23 00:22:39  Twitter for iPhone
       14    888804989199671297  2017-07-22 16:56:37  Twitter for iPhone
       15    888554962724278272  2017-07-22 00:23:06  Twitter for iPhone
       16    888078434458587136  2017-07-20 16:49:33  Twitter for iPhone
       17    887705289381826560  2017-07-19 16:06:48  Twitter for iPhone
       18    887517139158093824  2017-07-19 03:39:09  Twitter for iPhone
       19    887473957103951883  2017-07-19 00:47:34  Twitter for iPhone
       20    887343217045368832  2017-07-18 16:08:03  Twitter for iPhone
       21    887101392804085760  2017-07-18 00:07:08  Twitter for iPhone
       22    886983233522544640  2017-07-17 16:17:36  Twitter for iPhone
       23    886736880519319552  2017-07-16 23:58:41  Twitter for iPhone
       24    886680336477933568   2017-07-16 20:14    Twitter for iPhone
       25    886258384151887873  2017-07-15 16:17:19  Twitter for iPhone
       26    885984800019947520  2017-07-14 22:10:11  Twitter for iPhone
       27    885528943205470208  2017-07-13 15:58:47  Twitter for iPhone
       28    885167619883638784   2017-07-12 16:03    Twitter for iPhone
       29    884925521741709313   2017-07-12 00:01    Twitter for iPhone
       ...               ...          ...                ...
       1934  672614745925664768  2015-12-04 03:13:46  Twitter for iPhone
       1935  672594978741354496  2015-12-04 01:55:13  Twitter for iPhone
       1936  672481316919734272  2015-12-03 18:23:34  Twitter for iPhone
       1937  672254177670729728   2015-12-03 03:21    Twitter for iPhone
       1938  672205392827572224  2015-12-03 00:07:09  Twitter for iPhone
       1939  672160042234327040  2015-12-02 21:06:56  Twitter for iPhone
       1940  889665388333682689  2017-07-25 01:55:32  Twitter for iPhone
       1941  889531135344209921  2017-07-24 17:02:04  Twitter for iPhone
       1942  878776093423087618  2017-06-25 00:45:22  Twitter for iPhone
       1943  874012996292530176  2017-06-11 21:18:31  Twitter for iPhone
       1944  867421006826221569  2017-05-24 16:44:18  Twitter for iPhone
       1945  859607811541651456  2017-05-03 03:17:27  Twitter for iPhone
       1946  855851453814013952  2017-04-22 18:31:02  Twitter for iPhone
```

```
1947   825535076884762624   2017-01-29 02:44:34   Twitter for iPhone
1948   825026590719483904   2017-01-27 17:04:02   Twitter for iPhone
1949   822872901745569793   2017-01-21 18:26:02   Twitter for iPhone
1950   819952236453363712   2017-01-13 17:00:21   Twitter for iPhone
1951   803773340896923648   2016-11-30 01:31:12   Twitter for iPhone
1952   802239329049477120   2016-11-25 19:55:35   Twitter for iPhone
1953   793195938047070209   2016-10-31 21:00:23   Twitter for iPhone
1954   790946055508652032   2016-10-25 16:00:09   Twitter for iPhone
1955   787717603741622272   2016-10-16 18:11:26   Twitter for iPhone
1956   780931614150983680    2016-09-28 00:46:2    Twitter for iPhone
1957   756275833623502848   2016-07-21 23:53:04   Twitter for iPhone
1958   752519690950500352    2016-07-11 15:07:3    Twitter for iPhone
1959   751132876104687617   2016-07-07 19:16:47   Twitter for iPhone
1960   744995568523612160   2016-06-20 20:49:19   Twitter for iPhone
1961   743253157753532416   2016-06-16 01:25:36   Twitter for iPhone
1962   738537504001953792   2016-06-03 01:07:16   Twitter for iPhone
1963   666020888022790149   2015-11-15 22:32:08   Twitter for iPhone


                                            tweet_text  \
0       This is Tilly. She's just checking pup on you...
1       This is Archie. He is a rare Norwegian Pouncin...
2       This is Darla. She commenced a snooze mid meal...
3       This is Franklin. He would like you to stop ca...
4       Here we have a majestic great white breaching ...
5       Meet Jax. He enjoys ice cream so much he gets ...
6       When you watch your owner call another dog a g...
7       This is Zoey. She doesn't want to be one of th...
8       This is Cassie. She is a college pup. Studying...
9       This is Koda. He is a South Australian decksha...
10      This is Bruno. He is a service shark. Only get...
11      This is Ted. He does his best. Sometimes that'...
12      This is Oliver. You're witnessing one of his m...
13      This is Jim. He found a fren. Taught him how t...
14      This is Zeke. He has a new stick. Very proud o...
15      This is Ralphus. He's powering up. Attempting ...
16      This is Gerald. He was just told he didn't get...
17      This is Jeffrey. He has a monopoly on the pool...
18      I've yet to rate a Venezuelan Hover Wiener. Th...
19      This is Canela. She attempted some fancy porch...
20      You may not have known you needed to see this ...
21      This... is a Jubilant Antarctic House Bear. We...
22      This is Maya. She's very shy. Rarely leaves he...
23      This is Mingus. He's a wonderful father to his...
24      This is Derek. He's late for a dog meeting. 13...
25      This is Waffles. His doggles are pupside down...
26      Viewer discretion advised. This is Jimbo. He w...
27      This is Maisey. She fell asleep mid-excavation...
```

```
28     Here we have a corgi undercover as a malamute...
29     This is Earl. He found a hat. Nervous about wh...
...                                                     ...
1934   This is Norman. Doesn't bark much. Very docile...
1935   Meet Scott. Just trying to catch his train to ...
1936   Say hello to Jazz. She should be on the cover ...
1937   This is Rolf. He's having the time of his life...
1938   This is Opal. He's a Royal John Coctostan. Rea...
1939   This is Bubba. He's a Titted Peebles Aorta. Ev...
1940   Here's a puppo that seems to be on the fence a...
1941   This is Stuart. He's sporting his favorite fan...
1942   This is Snoopy. He's a proud #PrideMonthPuppo...
1943   This is Sebastian. He can't see all the colors...
1944   This is Shikha. She just watched you drop a sk...
1945   Sorry for the lack of posts today. I came home...
1946   Here's a puppo participating in the #ScienceMa...
1947   Here's a very loving and accepting puppo. Appe...
1948   Say hello to Pablo. He's one gorgeous puppo. A...
1949   Here's a super supportive puppo participating ...
1950   This is Oliver. He has dreams of being a servi...
1951   This is Diogi. He fell in the pool as soon as ...
1952   This is Loki. He'll do your taxes for you. Can...
1953   Say hello to Lily. She's pupset that her costu...
1954   This is Betty. She's assisting with the dishes...
1955   This is Tonks. She is a service puppo. Can hea...
1956   I want to finally rate this iconic puppo who t...
1957   When ur older siblings get to play in the deep...
1958   Hopefully this puppo on a swing will help get ...
1959   This is Cooper. He's just so damn happy. 10/10...
1960   This is Abby. She got her face stuck in a glas...
1961   This is Kilo. He cannot reach the snackum. Nif...
1962   This is Bayley. She fell asleep trying to esca...
1963   Here we have a Japanese Irish Setter. Lost eye...

                                    tweet_url  retweet_count  \
0      https://twitter.com/dog_rates/status/892177421...           5682
1      https://twitter.com/dog_rates/status/891815181...           3768
2      https://twitter.com/dog_rates/status/891689557...           7845
3      https://twitter.com/dog_rates/status/891327558...           8451
4      https://twitter.com/dog_rates/status/891087950...           2832
5      https://gofundme.com/ydvmve-surgery-for-jax,ht...           1844
6      https://twitter.com/dog_rates/status/890729181...          17140
7      https://twitter.com/dog_rates/status/890609185...           3902
8      https://twitter.com/dog_rates/status/890240255...           6664
9      https://twitter.com/dog_rates/status/890006608...           6654
10     https://twitter.com/dog_rates/status/889880896...           4533
11     https://twitter.com/dog_rates/status/889638837...           4073
```

```
12     https://twitter.com/dog_rates/status/889278841...          4849
13     https://twitter.com/dog_rates/status/888917238...          4084
14     https://twitter.com/dog_rates/status/888804989...          3853
15     https://twitter.com/dog_rates/status/888554962...          3165
16     https://twitter.com/dog_rates/status/888078434...          3153
17     https://twitter.com/dog_rates/status/887705289...          4897
18     https://twitter.com/dog_rates/status/887517139...         10709
19     https://twitter.com/dog_rates/status/887473957...         16349
20     https://twitter.com/dog_rates/status/887343217...          9525
21     https://twitter.com/dog_rates/status/887101392...          5422
22     https://twitter.com/dog_rates/status/886983233...          6968
23     https://www.gofundme.com/mingusneedsus,https:/...          2926
24     https://twitter.com/dog_rates/status/886680336...          4072
25     https://twitter.com/dog_rates/status/886258384...          5744
26     https://twitter.com/dog_rates/status/885984800...          6109
27     https://twitter.com/dog_rates/status/885528943...          5814
28     https://twitter.com/dog_rates/status/885167619...          3974
29     https://twitter.com/dog_rates/status/884925521...         16447
...                                                 ...           ...
1934   https://twitter.com/dog_rates/status/672614745...           555
1935   https://twitter.com/dog_rates/status/672594978...           587
1936   https://twitter.com/dog_rates/status/672481316...           123
1937   https://twitter.com/dog_rates/status/672254177...           707
1938   https://twitter.com/dog_rates/status/672205392...          1099
1939   https://twitter.com/dog_rates/status/672160042...           341
1940   https://twitter.com/dog_rates/status/889665388...          9088
1941   https://twitter.com/dog_rates/status/889531135...          2050
1942   https://twitter.com/dog_rates/status/878776093...          3728
1943   https://twitter.com/dog_rates/status/874012996...          9387
1944   https://twitter.com/dog_rates/status/867421006...          2316
1945   https://twitter.com/dog_rates/status/859607811...          1486
1946   https://twitter.com/dog_rates/status/855851453...         17299
1947   https://twitter.com/dog_rates/status/825535076...         17676
1948   https://www.gofundme.com/my-puppys-double-cata...          1271
1949   https://twitter.com/dog_rates/status/822872901...         43658
1950   https://www.gofundme.com/servicedogoliver,http...          1189
1951   https://twitter.com/dog_rates/status/803773340...          2801
1952   https://twitter.com/dog_rates/status/802239329...          2679
1953   https://twitter.com/dog_rates/status/793195938...          5741
1954   https://twitter.com/dog_rates/status/790946055...          4778
1955   https://twitter.com/dog_rates/status/787717603...          2834
1956   https://twitter.com/dog_rates/status/780931614...          7421
1957   https://twitter.com/dog_rates/status/756275833...          1536
1958   https://twitter.com/dog_rates/status/752519690...          3441
1959   https://twitter.com/dog_rates/status/751132876...          1295
1960   https://twitter.com/dog_rates/status/744995568...           616
1961   https://twitter.com/dog_rates/status/743253157...          1221
```

```
1962   https://twitter.com/dog_rates/status/738537504...              1532
1963   https://twitter.com/dog_rates/status/666020888...               459


       favorite_count        name dog_type                        breed  \
0               31117       Tilly      NaN                     Chihuahua
1               23428      Archie      NaN                     Chihuahua
2               39349       Darla      NaN             Labrador_retriever
3               37602    Franklin      NaN                         basset
4               18936        None      NaN      Chesapeake_Bay_retriever
5               11010         Jax      NaN                     Appenzeller
6               60773        None      NaN                     Pomeranian
7               26057        Zoey      NaN                  Irish_terrier
8               29785      Cassie    doggo                       Pembroke
9               28676        Koda      NaN                       Samoyed
10              26085       Bruno      NaN                 French_bulldog
11              25261         Ted      NaN                 French_bulldog
12              23552      Oliver      NaN                        whippet
13              27176         Jim      NaN               golden_retriever
14              23887        Zeke      NaN               golden_retriever
15              18446     Ralphus      NaN                 Siberian_husky
16              20349      Gerald      NaN                 French_bulldog
17              28268     Jeffrey      NaN                         basset
18              43342        None      NaN                        Unknown
19              64212      Canela      NaN                       Pembroke
20              31454        None      NaN                Mexican_hairless
21              28621        None      NaN                       Samoyed
22              32625        Maya      NaN                     Chihuahua
23              11202      Mingus      NaN                         kuvasz
24              20999       Derek      NaN                        Unknown
25              26147     Waffles      NaN                            pug
26              30456       Jimbo      NaN                Blenheim_spaniel
27              33599      Maisey      NaN                            pug
28              20456        None      NaN                        malamute
29              71970        Earl      NaN               Italian_greyhound
...               ...         ...      ...                            ...
1934             1180      Norman   pupper                        Unknown
1935             1286       Scott   pupper                 Great_Pyrenees
1936              692        Jazz   pupper                 Border_collie
1937             1381        Rolf   pupper                            pug
1938             2174        Opal   pupper                            pug
1939              843       Bubba   pupper                            pug
1940            44903        None    puppo                       Pembroke
1941            14158      Stuart    puppo               golden_retriever
1942            18135      Snoopy    puppo              Italian_greyhound
1943            32187   Sebastian    puppo                       Cardigan
1944            15230       Shikha    puppo                     Eskimo_dog
1945            17857        None    puppo               golden_retriever
```

```
1946     44297    None    puppo           flat-coated_retriever
1947     57190    None    puppo                      Rottweiler
1948      6345   Pablo    puppo                      Eskimo_dog
1949    132591    None    puppo                 Lakeland_terrier
1950      5387  Oliver    puppo  American_Staffordshire_terrier
1951     10215   Diogi    puppo              miniature_pinscher
1952      9227    Loki    puppo                      Eskimo_dog
1953     15546    Lily    puppo              Labrador_retriever
1954     16920   Betty    puppo                golden_retriever
1955     10425   Tonks    puppo                 German_shepherd
1956     21895    None    puppo                         Unknown
1957      6425    None    puppo                        Airedale
1958      7375    None    puppo              Labrador_retriever
1959      5065  Cooper    puppo              Labrador_retriever
1960      2953    Abby    puppo             Old_English_sheepdog
1961      4208    Kilo    puppo                        malamute
1962      5047  Bayley    puppo                            chow
1963      2406    None     NaN            Welsh_springer_spaniel

    rating_numerator  rating_denominator  confirmation  \
0                 13                  10      0.323581
1                 12                  10      0.716012
2                 13                  10      0.168086
3                 12                  10      0.555712
4                 13                  10      0.425595
5                 13                  10      0.341703
6                 13                  10      0.566142
7                 13                  10      0.487574
8                 14                  10      0.511319
9                 13                  10      0.957979
10                13                  10      0.377417
11                12                  10      0.991650
12                13                  10      0.626152
13                12                  10      0.714719
14                13                  10      0.469760
15                13                  10      0.700377
16                12                  10      0.995026
17                13                  10      0.821664
18                14                  10      0.000000
19                13                  10      0.809197
20                13                  10      0.330741
21                12                  10      0.733942
22                13                  10      0.793469
23                13                  10      0.309706
24                13                  10      0.000000
25                13                  10      0.943575
26                12                  10      0.972494
```

27	13	10	0.369275
28	13	10	0.812482
29	12	10	0.259916
...	...	...	...
1934	6	10	0.000000
1935	9	10	0.755945
1936	12	10	0.599454
1937	11	10	0.979487
1938	9	10	0.003267
1939	8	10	0.561027
1940	13	10	0.966327
1941	13	10	0.953442
1942	13	10	0.734684
1943	13	10	0.806674
1944	12	10	0.616457
1945	13	10	0.895529
1946	13	10	0.321676
1947	14	10	0.681495
1948	12	10	0.524454
1949	13	10	0.196015
1950	13	10	0.925505
1951	12	10	0.817066
1952	12	10	0.482498
1953	12	10	0.654762
1954	12	10	0.245773
1955	13	10	0.992339
1956	13	10	0.000000
1957	10	10	0.602957
1958	11	10	0.000010
1959	10	10	0.929390
1960	9	10	0.427481
1961	10	10	0.442612
1962	11	10	0.808737
1963	8	10	0.465074

	jpg_url	img_num
0	https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg	1
1	https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg	1
2	https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg	1
3	https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg	2
4	https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg	1
5	https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg	1
6	https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg	2
7	https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg	1
8	https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg	1
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11	https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg	1
12	https://pbs.twimg.com/ext_tw_video_thumb/88927...	1
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14	https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg	1
15	https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg	3
16	https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg	1
17	https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg	1
18	https://pbs.twimg.com/ext_tw_video_thumb/88751...	1
19	https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg	2
20	https://pbs.twimg.com/ext_tw_video_thumb/88734...	1
21	https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg	1
22	https://pbs.twimg.com/media/DE8yicJWOAAAvBJ.jpg	2
23	https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg	1
24	https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg	1
25	https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg	1
26	https://pbs.twimg.com/media/DEumeWWVOAA-Z61.jpg	1
27	https://pbs.twimg.com/media/DEoH3yvXgAAzQtS.jpg	1
28	https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg	4
29	https://pbs.twimg.com/media/DEfjEaNXkAAtPlj.jpg	1
...	...	...
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1936	https://pbs.twimg.com/media/CVUiMUeW4AEQgkU.jpg	1
1937	https://pbs.twimg.com/media/CVRTmz1WcAA4uMF.jpg	1
1938	https://pbs.twimg.com/media/CVQnPMrVAAAzShR.jpg	1
1939	https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg	1
1940	https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg	1
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1942	https://pbs.twimg.com/media/DDIKMXzWOAEibje.jpg	2
1943	https://pbs.twimg.com/media/DCEeLxjXsAAvNSM.jpg	2
1944	https://pbs.twimg.com/media/DAmyy8FXYAIH8Ty.jpg	1
1945	https://pbs.twimg.com/media/C-3wvtxXcAUTuBE.jpg	1
1946	https://pbs.twimg.com/media/C-CYWrvWAAU8AXH.jpg	1
1947	https://pbs.twimg.com/media/C3TjvitXAAAI-QH.jpg	1
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1953	https://pbs.twimg.com/media/CwH_foYWgAEvTyI.jpg	2
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1963     https://pbs.twimg.com/media/CT4udn0WwAAOaMy.jpg              1

[1964 rows x 15 columns]
```

[150]:
```python
#renaming few columns
df_master.rename(columns={'cleaned_source':'source',
                          'confirmation':'confidence'},inplace=True)
```

[151]:
```python
#Assessing the df_master dataframe
df_master
```

[151]:
```
                tweet_id            timestamp               source  \
0      892177421306343426  2017-08-01 00:17:27  Twitter for iPhone
1      891815181378084864  2017-07-31 00:18:03  Twitter for iPhone
2      891689557279858688  2017-07-30 15:58:51  Twitter for iPhone
3      891327558926688256  2017-07-29 16:00:24  Twitter for iPhone
4      891087950875897856  2017-07-29 00:08:17  Twitter for iPhone
5      890971913173991426  2017-07-28 16:27:12  Twitter for iPhone
6      890729181411237888   2017-07-28 00:22:4  Twitter for iPhone
7      890609185150312448  2017-07-27 16:25:51  Twitter for iPhone
8      890240255349198849  2017-07-26 15:59:51  Twitter for iPhone
9      890006608113172480  2017-07-26 00:31:25  Twitter for iPhone
10     889880896479866881  2017-07-25 16:11:53  Twitter for iPhone
11     889638837579907072  2017-07-25 00:10:02  Twitter for iPhone
12     889278841981685760  2017-07-24 00:19:32  Twitter for iPhone
13     888917238123831296  2017-07-23 00:22:39  Twitter for iPhone
14     888804989199671297  2017-07-22 16:56:37  Twitter for iPhone
15     888554962724278272  2017-07-22 00:23:06  Twitter for iPhone
16     888078434458587136  2017-07-20 16:49:33  Twitter for iPhone
17     887705289381826560  2017-07-19 16:06:48  Twitter for iPhone
18     887517139158093824  2017-07-19 03:39:09  Twitter for iPhone
19     887473957103951883  2017-07-19 00:47:34  Twitter for iPhone
20     887343217045368832  2017-07-18 16:08:03  Twitter for iPhone
21     887101392804085760  2017-07-18 00:07:08  Twitter for iPhone
22     886983233522544640  2017-07-17 16:17:36  Twitter for iPhone
23     886736880519319552  2017-07-16 23:58:41  Twitter for iPhone
24     886680336477933568     2017-07-16 20:14  Twitter for iPhone
25     886258384151887873  2017-07-15 16:17:19  Twitter for iPhone
26     885984800019947520  2017-07-14 22:10:11  Twitter for iPhone
27     885528943205470208  2017-07-13 15:58:47  Twitter for iPhone
28     885167619883638784     2017-07-12 16:03  Twitter for iPhone
29     884925521741709313     2017-07-12 00:01  Twitter for iPhone
...                   ...                  ...                 ...
1934   672614745925664768  2015-12-04 03:13:46  Twitter for iPhone
1935   672594978741354496  2015-12-04 01:55:13  Twitter for iPhone
1936   672481316919734272  2015-12-03 18:23:34  Twitter for iPhone
```

```
1937  672254177670729728     2015-12-03 03:21  Twitter for iPhone
1938  672205392827572224  2015-12-03 00:07:09  Twitter for iPhone
1939  672160042234327040  2015-12-02 21:06:56  Twitter for iPhone
1940  889665388333682689  2017-07-25 01:55:32  Twitter for iPhone
1941  889531135344209921  2017-07-24 17:02:04  Twitter for iPhone
1942  878776093423087618  2017-06-25 00:45:22  Twitter for iPhone
1943  874012996292530176  2017-06-11 21:18:31  Twitter for iPhone
1944  867421006826221569  2017-05-24 16:44:18  Twitter for iPhone
1945  859607811541651456  2017-05-03 03:17:27  Twitter for iPhone
1946  855851453814013952  2017-04-22 18:31:02  Twitter for iPhone
1947  825535076884762624  2017-01-29 02:44:34  Twitter for iPhone
1948  825026590719483904  2017-01-27 17:04:02  Twitter for iPhone
1949  822872901745569793  2017-01-21 18:26:02  Twitter for iPhone
1950  819952236453363712  2017-01-13 17:00:21  Twitter for iPhone
1951  803773340896923648  2016-11-30 01:31:12  Twitter for iPhone
1952  802239329049477120  2016-11-25 19:55:35  Twitter for iPhone
1953  793195938047070209  2016-10-31 21:00:23  Twitter for iPhone
1954  790946055508652032  2016-10-25 16:00:09  Twitter for iPhone
1955  787717603741622272  2016-10-16 18:11:26  Twitter for iPhone
1956  780931614150983680   2016-09-28 00:46:2  Twitter for iPhone
1957  756275833623502848  2016-07-21 23:53:04  Twitter for iPhone
1958  752519690950500352   2016-07-11 15:07:3  Twitter for iPhone
1959  751132876104687617  2016-07-07 19:16:47  Twitter for iPhone
1960  744995568523612160  2016-06-20 20:49:19  Twitter for iPhone
1961  743253157753532416  2016-06-16 01:25:36  Twitter for iPhone
1962  738537504001953792  2016-06-03 01:07:16  Twitter for iPhone
1963  666020888022790149  2015-11-15 22:32:08  Twitter for iPhone

                                          tweet_text  \
0     This is Tilly. She's just checking pup on you...
1     This is Archie. He is a rare Norwegian Pouncin...
2     This is Darla. She commenced a snooze mid meal...
3     This is Franklin. He would like you to stop ca...
4     Here we have a majestic great white breaching ...
5     Meet Jax. He enjoys ice cream so much he gets ...
6     When you watch your owner call another dog a g...
7     This is Zoey. She doesn't want to be one of th...
8     This is Cassie. She is a college pup. Studying...
9     This is Koda. He is a South Australian decksha...
10    This is Bruno. He is a service shark. Only get...
11    This is Ted. He does his best. Sometimes that'...
12    This is Oliver. You're witnessing one of his m...
13    This is Jim. He found a fren. Taught him how t...
14    This is Zeke. He has a new stick. Very proud o...
15    This is Ralphus. He's powering up. Attempting ...
16    This is Gerald. He was just told he didn't get...
17    This is Jeffrey. He has a monopoly on the pool...
```

```
18    I've yet to rate a Venezuelan Hover Wiener. Th...
19    This is Canela. She attempted some fancy porch...
20    You may not have known you needed to see this ...
21    This... is a Jubilant Antarctic House Bear. We...
22    This is Maya. She's very shy. Rarely leaves he...
23    This is Mingus. He's a wonderful father to his...
24    This is Derek. He's late for a dog meeting. 13...
25    This is Waffles. His doggles are pupside down...
26    Viewer discretion advised. This is Jimbo. He w...
27    This is Maisey. She fell asleep mid-excavation...
28    Here we have a corgi undercover as a malamute...
29    This is Earl. He found a hat. Nervous about wh...
...                                                    ...
1934  This is Norman. Doesn't bark much. Very docile...
1935  Meet Scott. Just trying to catch his train to ...
1936  Say hello to Jazz. She should be on the cover ...
1937  This is Rolf. He's having the time of his life...
1938  This is Opal. He's a Royal John Coctostan. Rea...
1939  This is Bubba. He's a Titted Peebles Aorta. Ev...
1940  Here's a puppo that seems to be on the fence a...
1941  This is Stuart. He's sporting his favorite fan...
1942  This is Snoopy. He's a proud #PrideMonthPuppo...
1943  This is Sebastian. He can't see all the colors...
1944  This is Shikha. She just watched you drop a sk...
1945  Sorry for the lack of posts today. I came home...
1946  Here's a puppo participating in the #ScienceMa...
1947  Here's a very loving and accepting puppo. Appe...
1948  Say hello to Pablo. He's one gorgeous puppo. A...
1949  Here's a super supportive puppo participating ...
1950  This is Oliver. He has dreams of being a servi...
1951  This is Diogi. He fell in the pool as soon as ...
1952  This is Loki. He'll do your taxes for you. Can...
1953  Say hello to Lily. She's pupset that her costu...
1954  This is Betty. She's assisting with the dishes...
1955  This is Tonks. She is a service puppo. Can hea...
1956  I want to finally rate this iconic puppo who t...
1957  When ur older siblings get to play in the deep...
1958  Hopefully this puppo on a swing will help get ...
1959  This is Cooper. He's just so damn happy. 10/10...
1960  This is Abby. She got her face stuck in a glas...
1961  This is Kilo. He cannot reach the snackum. Nif...
1962  This is Bayley. She fell asleep trying to esca...
1963  Here we have a Japanese Irish Setter. Lost eye...

                                       tweet_url  retweet_count  \
0      https://twitter.com/dog_rates/status/892177421...           5682
1      https://twitter.com/dog_rates/status/891815181...           3768
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2      https://twitter.com/dog_rates/status/891689557...            7845
3      https://twitter.com/dog_rates/status/891327558...            8451
4      https://twitter.com/dog_rates/status/891087950...            2832
5      https://gofundme.com/ydvmve-surgery-for-jax,ht...           1844
6      https://twitter.com/dog_rates/status/890729181...           17140
7      https://twitter.com/dog_rates/status/890609185...            3902
8      https://twitter.com/dog_rates/status/890240255...            6664
9      https://twitter.com/dog_rates/status/890006608...            6654
10     https://twitter.com/dog_rates/status/889880896...            4533
11     https://twitter.com/dog_rates/status/889638837...            4073
12     https://twitter.com/dog_rates/status/889278841...            4849
13     https://twitter.com/dog_rates/status/888917238...            4084
14     https://twitter.com/dog_rates/status/888804989...            3853
15     https://twitter.com/dog_rates/status/888554962...            3165
16     https://twitter.com/dog_rates/status/888078434...            3153
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21     https://twitter.com/dog_rates/status/887101392...            5422
22     https://twitter.com/dog_rates/status/886983233...            6968
23     https://www.gofundme.com/mingusneedsus,https:/...           2926
24     https://twitter.com/dog_rates/status/886680336...            4072
25     https://twitter.com/dog_rates/status/886258384...            5744
26     https://twitter.com/dog_rates/status/885984800...            6109
27     https://twitter.com/dog_rates/status/885528943...            5814
28     https://twitter.com/dog_rates/status/885167619...            3974
29     https://twitter.com/dog_rates/status/884925521...           16447
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1936   https://twitter.com/dog_rates/status/672481316...             123
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1945   https://twitter.com/dog_rates/status/859607811...            1486
1946   https://twitter.com/dog_rates/status/855851453...           17299
1947   https://twitter.com/dog_rates/status/825535076...           17676
1948   https://www.gofundme.com/my-puppys-double-cata...           1271
1949   https://twitter.com/dog_rates/status/822872901...           43658
1950   https://www.gofundme.com/servicedogoliver,http...           1189
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1961  https://twitter.com/dog_rates/status/743253157...              1221
1962  https://twitter.com/dog_rates/status/738537504...              1532
1963  https://twitter.com/dog_rates/status/666020888...               459

      favorite_count       name dog_type                        breed  \
0              31117      Tilly      NaN                    Chihuahua
1              23428     Archie      NaN                    Chihuahua
2              39349      Darla      NaN            Labrador_retriever
3              37602   Franklin      NaN                        basset
4              18936       None      NaN      Chesapeake_Bay_retriever
5              11010        Jax      NaN                    Appenzeller
6              60773       None      NaN                    Pomeranian
7              26057       Zoey      NaN                  Irish_terrier
8              29785     Cassie    doggo                      Pembroke
9              28676       Koda      NaN                       Samoyed
10             26085      Bruno      NaN                 French_bulldog
11             25261        Ted      NaN                 French_bulldog
12             23552     Oliver      NaN                        whippet
13             27176        Jim      NaN               golden_retriever
14             23887       Zeke      NaN               golden_retriever
15             18446    Ralphus      NaN                   Siberian_husky
16             20349     Gerald      NaN                 French_bulldog
17             28268    Jeffrey      NaN                        basset
18             43342       None      NaN                        Unknown
19             64212     Canela      NaN                      Pembroke
20             31454       None      NaN                Mexican_hairless
21             28621       None      NaN                       Samoyed
22             32625       Maya      NaN                    Chihuahua
23             11202     Mingus      NaN                        kuvasz
24             20999      Derek      NaN                        Unknown
25             26147    Waffles      NaN                           pug
26             30456      Jimbo      NaN              Blenheim_spaniel
27             33599     Maisey      NaN                           pug
28             20456       None      NaN                       malamute
29             71970       Earl      NaN               Italian_greyhound
...              ...        ...      ...                            ...
1934            1180     Norman   pupper                        Unknown
1935            1286      Scott   pupper                 Great_Pyrenees
```

1936	692	Jazz	pupper	Border_collie
1937	1381	Rolf	pupper	pug
1938	2174	Opal	pupper	pug
1939	843	Bubba	pupper	pug
1940	44903	None	puppo	Pembroke
1941	14158	Stuart	puppo	golden_retriever
1942	18135	Snoopy	puppo	Italian_greyhound
1943	32187	Sebastian	puppo	Cardigan
1944	15230	Shikha	puppo	Eskimo_dog
1945	17857	None	puppo	golden_retriever
1946	44297	None	puppo	flat-coated_retriever
1947	57190	None	puppo	Rottweiler
1948	6345	Pablo	puppo	Eskimo_dog
1949	132591	None	puppo	Lakeland_terrier
1950	5387	Oliver	puppo	American_Staffordshire_terrier
1951	10215	Diogi	puppo	miniature_pinscher
1952	9227	Loki	puppo	Eskimo_dog
1953	15546	Lily	puppo	Labrador_retriever
1954	16920	Betty	puppo	golden_retriever
1955	10425	Tonks	puppo	German_shepherd
1956	21895	None	puppo	Unknown
1957	6425	None	puppo	Airedale
1958	7375	None	puppo	Labrador_retriever
1959	5065	Cooper	puppo	Labrador_retriever
1960	2953	Abby	puppo	Old_English_sheepdog
1961	4208	Kilo	puppo	malamute
1962	5047	Bayley	puppo	chow
1963	2406	None	NaN	Welsh_springer_spaniel

	rating_numerator	rating_denominator	confidence \
0	13	10	0.323581
1	12	10	0.716012
2	13	10	0.168086
3	12	10	0.555712
4	13	10	0.425595
5	13	10	0.341703
6	13	10	0.566142
7	13	10	0.487574
8	14	10	0.511319
9	13	10	0.957979
10	13	10	0.377417
11	12	10	0.991650
12	13	10	0.626152
13	12	10	0.714719
14	13	10	0.469760
15	13	10	0.700377
16	12	10	0.995026

```
17                      13               10      0.821664
18                      14               10      0.000000
19                      13               10      0.809197
20                      13               10      0.330741
21                      12               10      0.733942
22                      13               10      0.793469
23                      13               10      0.309706
24                      13               10      0.000000
25                      13               10      0.943575
26                      12               10      0.972494
27                      13               10      0.369275
28                      13               10      0.812482
29                      12               10      0.259916
...                     ...              ...         ...
1934                     6               10      0.000000
1935                     9               10      0.755945
1936                    12               10      0.599454
1937                    11               10      0.979487
1938                     9               10      0.003267
1939                     8               10      0.561027
1940                    13               10      0.966327
1941                    13               10      0.953442
1942                    13               10      0.734684
1943                    13               10      0.806674
1944                    12               10      0.616457
1945                    13               10      0.895529
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1947                    14               10      0.681495
1948                    12               10      0.524454
1949                    13               10      0.196015
1950                    13               10      0.925505
1951                    12               10      0.817066
1952                    12               10      0.482498
1953                    12               10      0.654762
1954                    12               10      0.245773
1955                    13               10      0.992339
1956                    13               10      0.000000
1957                    10               10      0.602957
1958                    11               10      0.000010
1959                    10               10      0.929390
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1961                    10               10      0.442612
1962                    11               10      0.808737
1963                     8               10      0.465074

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2        https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg        1
3        https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg        2
4        https://pbs.twimg.com/media/DF3HwyEWsAABqE6.jpg        1
5        https://pbs.twimg.com/media/DF1eOmZXUAALUcq.jpg        1
6        https://pbs.twimg.com/media/DFyBahAVwAAhUTd.jpg        2
7        https://pbs.twimg.com/media/DFwUU__XcAEpyXI.jpg        1
8        https://pbs.twimg.com/media/DFrEyVuW0AAO3t9.jpg        1
9        https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg        1
10       https://pbs.twimg.com/media/DFl99B1WsAITKsg.jpg        1
11       https://pbs.twimg.com/media/DFihzFfXsAYGDPR.jpg        1
12     https://pbs.twimg.com/ext_tw_video_thumb/88927...        1
13       https://pbs.twimg.com/media/DFYRgsOUQAARGhO.jpg        1
14       https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg        1
15       https://pbs.twimg.com/media/DFTH_O-UQAACu20.jpg        3
16       https://pbs.twimg.com/media/DFMWn56WsAAkA7B.jpg        1
17       https://pbs.twimg.com/media/DFHDQBbXgAEqY7t.jpg        1
18     https://pbs.twimg.com/ext_tw_video_thumb/88751...        1
19       https://pbs.twimg.com/media/DFDw2tyUQAAAFke.jpg        2
20     https://pbs.twimg.com/ext_tw_video_thumb/88734...        1
21       https://pbs.twimg.com/media/DE-eAq6UwAA-jaE.jpg        1
22       https://pbs.twimg.com/media/DE8yicJW0AAAvBJ.jpg        2
23       https://pbs.twimg.com/media/DE5Se8FXcAAJFx4.jpg        1
24       https://pbs.twimg.com/media/DE4fEDzWAAAyHMM.jpg        1
25       https://pbs.twimg.com/media/DEyfTG4UMAE4aE9.jpg        1
26       https://pbs.twimg.com/media/DEumeWWV0AA-Z61.jpg        1
27       https://pbs.twimg.com/media/DEoH3yvXgAAzQtS.jpg        1
28       https://pbs.twimg.com/media/DEi_N9qXYAAgEEw.jpg        4
29       https://pbs.twimg.com/media/DEfjEaNXkAAtPlj.jpg        1
...                            ...                              ...
1934     https://pbs.twimg.com/media/CVWbitUW4AAzclx.jpg        1
1935     https://pbs.twimg.com/media/CVWJkJXWsAInlZl.jpg        1
1936     https://pbs.twimg.com/media/CVUiMUeW4AEQgkU.jpg        1
1937     https://pbs.twimg.com/media/CVRTmz1WcAA4uMF.jpg        1
1938     https://pbs.twimg.com/media/CVQnPMrVAAAzShR.jpg        1
1939     https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg        1
1940     https://pbs.twimg.com/media/DFi579UWsAAatzw.jpg        1
1941     https://pbs.twimg.com/media/DFg_2PVW0AEHN3p.jpg        1
1942     https://pbs.twimg.com/media/DDIKMXzW0AEibje.jpg        2
1943     https://pbs.twimg.com/media/DCEeLxjXsAAvNSM.jpg        2
1944     https://pbs.twimg.com/media/DAmyy8FXYAIH8Ty.jpg        1
1945     https://pbs.twimg.com/media/C-3wvtxXcAUTuBE.jpg        1
1946     https://pbs.twimg.com/media/C-CYWrvWAAU8AXH.jpg        1
1947     https://pbs.twimg.com/media/C3TjvitXAAAI-QH.jpg        1
1948     https://pbs.twimg.com/media/C3MVTeHWcAAGNfx.jpg        2
1949     https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg        1
1950     https://pbs.twimg.com/media/C2EONHNWQAUWxkP.jpg        1
```

```
1951    https://pbs.twimg.com/media/CyeTku-XcAALkBd.jpg          2
1952    https://pbs.twimg.com/media/CyIgaTEVEAA-9zS.jpg          2
1953    https://pbs.twimg.com/media/CwH_foYWgAEvTyI.jpg          2
1954    https://pbs.twimg.com/media/CvoBPWRWgAA4het.jpg          1
1955    https://pbs.twimg.com/media/Cu6I9vvWIAAZGOa.jpg          3
1956    https://pbs.twimg.com/media/CtZtJxAXEAAyPGd.jpg          1
1957    https://pbs.twimg.com/media/Cn7U2xlW8AI9Pqp.jpg          1
1958    https://pbs.twimg.com/media/CnF8qVDWYAAhOg1.jpg          3
1959    https://pbs.twimg.com/media/CmyPXNOW8AEtaJ-.jpg          1
1960    https://pbs.twimg.com/media/ClbBg4WWEAMjwJu.jpg          1
1961    https://pbs.twimg.com/media/ClCQzFUUYAA5vAu.jpg          1
1962    https://pbs.twimg.com/media/Cj_P7rSUgAAYQbz.jpg          1
1963    https://pbs.twimg.com/media/CT4udnOWwAAOaMy.jpg          1

[1964 rows x 15 columns]
```

2   3) Storing

[335]:
```python
#storing the cleaned dataframe to the .csv file
df_master.to_csv('df_master1.csv')
```

3   4) Analyzing

Plotting the Dog_type- Count bar graph

[60]:
```python
plt.figure(figsize=(10,8))
plt.bar(df_master.dog_type.value_counts().index,df_master.dog_type.
 →value_counts())
plt.tick_params(labelsize=12)
plt.xlabel('Dog_type',fontsize=15)
plt.ylabel('Count',fontsize=15)
for i,j in enumerate(df_master.dog_type.value_counts()):
    plt.text(i,j,str(j),horizontalalignment='center',fontsize=12)
```
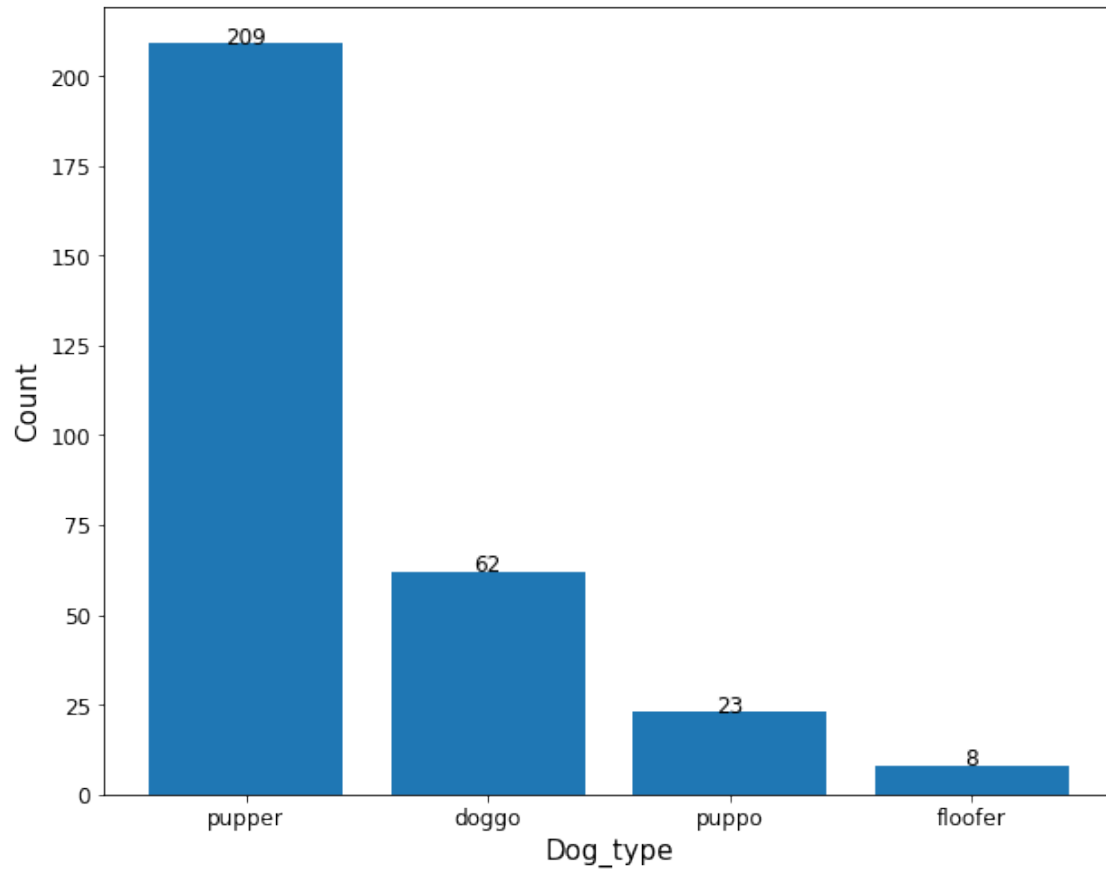
Plotting the Source- Count bar graph

```python
[58]: plt.figure(figsize=(10,8))
      plt.bar(df_master.cleaned_source.value_counts().index,df_master.cleaned_source.
        ↪value_counts())
      plt.tick_params(labelsize=12)
      plt.xlabel('Source',fontsize=15)
      plt.ylabel('Count',fontsize=15)
      for i,j in enumerate(df_master.cleaned_source.value_counts()):
          plt.text(i,j,str(j),horizontalalignment='center',fontsize=12)
```
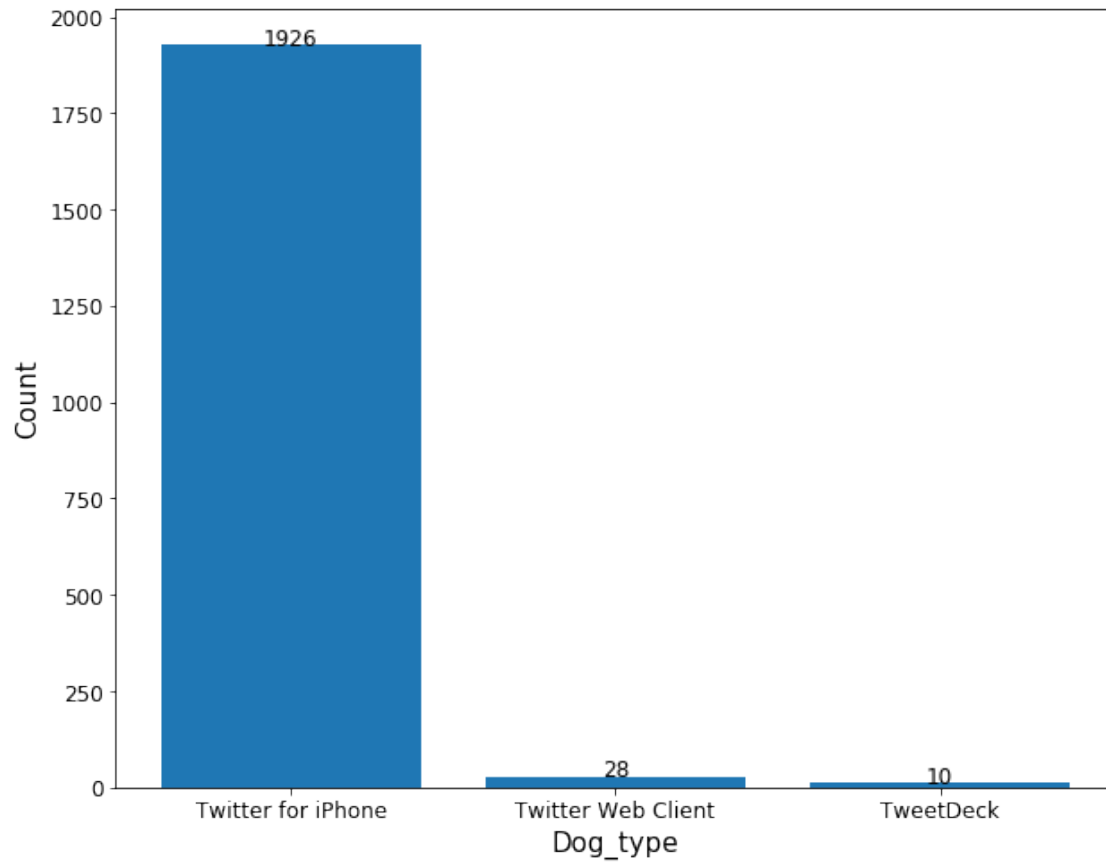
Plotting the rating-count graph

```
[95]: fig, ax = plt.subplots(figsize = (10, 8) )
      ax.hist(df_master['rating_numerator'], bins = range(1,20))
      ax.set_ylabel('Count', fontsize = 15)
      ax.set_xlabel('Rating Numerator', fontsize = 15)
      ax.tick_params(labelsize=12)
```
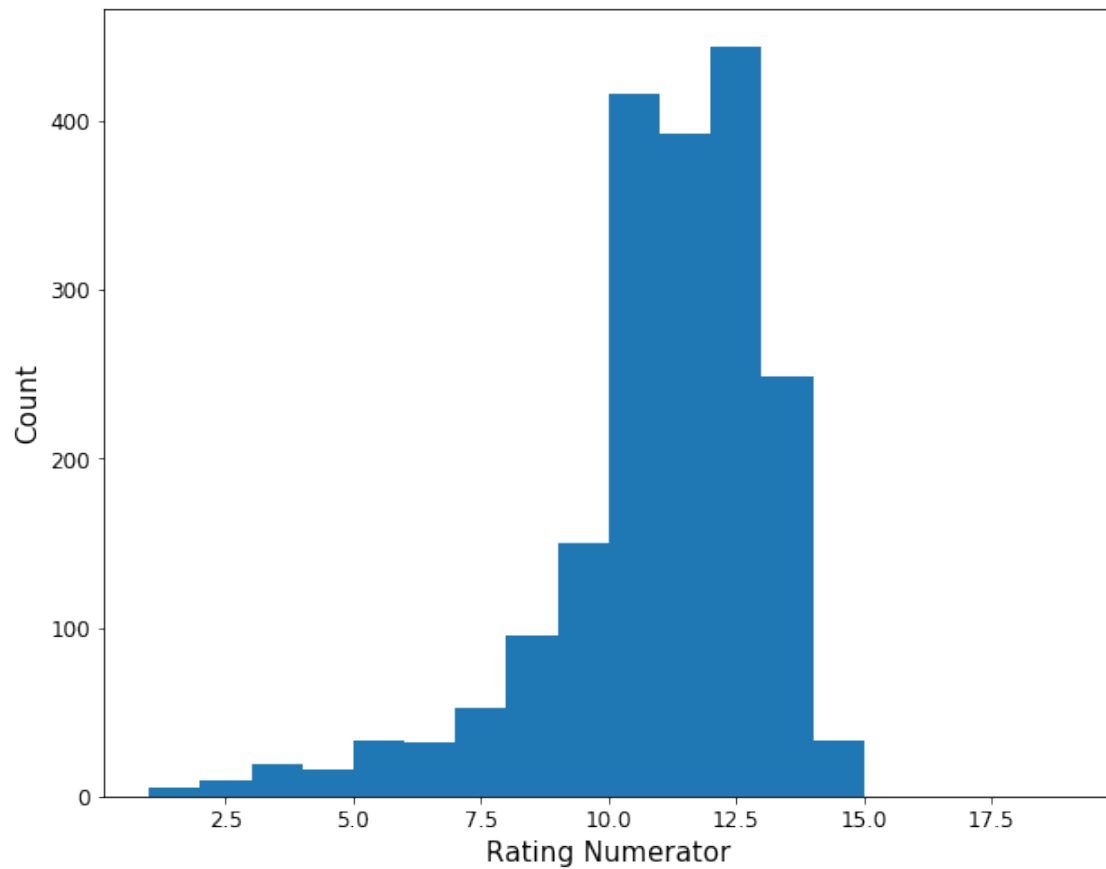
Finding the top tweeted dog

```
[7]:   # finding the top dogs with count>10
       pop_dog=df_master.breed.value_counts()
       pop_dog=pop_dog[pop_dog>10]
```

```
[8]:   pop_dog
```

```
[8]:   Unknown                       305
       golden_retriever              156
       Labrador_retriever            104
       Pembroke                       94
       Chihuahua                      90
       pug                            62
       toy_poodle                     49
       chow                           48
       Pomeranian                     41
       Samoyed                        41
       malamute                       33
       Chesapeake_Bay_retriever       31
       cocker_spaniel                 30
```

```
French_bulldog                    30
miniature_pinscher                24
Eskimo_dog                        22
Cardigan                          21
German_shepherd                   21
beagle                            20
Shih-Tzu                          20
Siberian_husky                    20
Staffordshire_bullterrier         19
Maltese_dog                       19
Shetland_sheepdog                 18
Rottweiler                        18
Italian_greyhound                 17
Lakeland_terrier                  17
basset                            17
kuvasz                            17
West_Highland_white_terrier       16
Great_Pyrenees                    15
American_Staffordshire_terrier    15
Pekinese                          14
soft-coated_wheaten_terrier       14
Old_English_sheepdog              14
kelpie                            13
vizsla                            13
schipperke                        13
Boston_bull                       12
Border_collie                     12
dalmatian                         12
Airedale                          12
malinois                          11
standard_poodle                   11
Great_Dane                        11
Bernese_mountain_dog              11
Norwegian_elkhound                11
collie                            11
whippet                           11
boxer                             11
Name: breed, dtype: int64
```

[9]:
```python
popular_dog_breeds=pop_dog[1:] #using slicing to remove the "Unknowns" breeds
```

[128]:
```python
fig,ax=plt.subplots(figsize=(12,18))
ax.barh(popular_dog_breeds.index,popular_dog_breeds,color='brown')
ax.set_xlabel('Count',fontsize=15)
ax.set_ylabel('Dog Breed',fontsize=15)
ax.tick_params(labelsize=15)
for i,j in enumerate(popular_dog_breeds):
    ax.text(j,i,str(j))
```
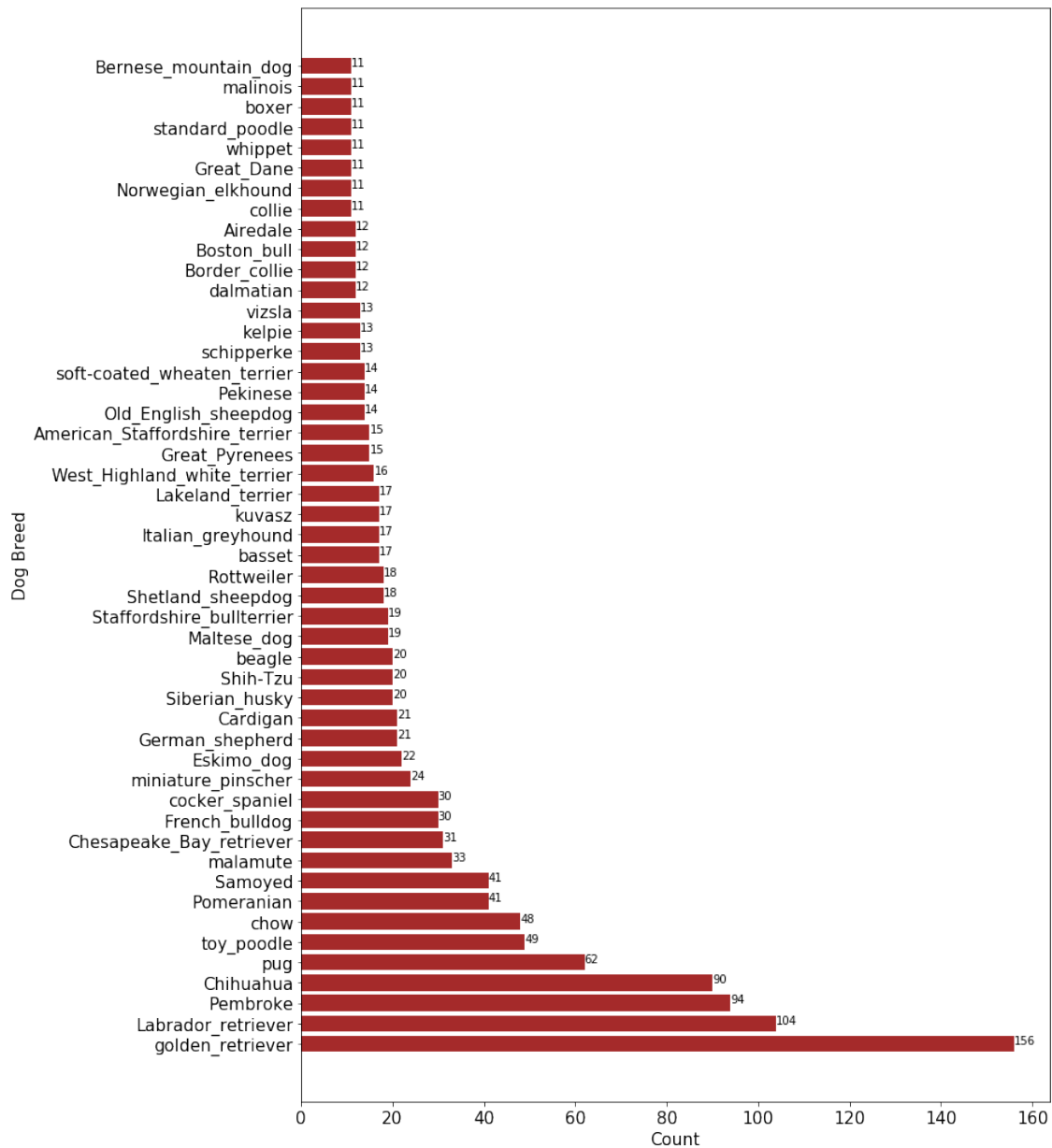
As we can see golden_retriever is the top tweeted dog followed by Labrador_retriever and Pembroke

Finding the toprated dog breed

```
[158]: df_master.describe()
```

[158]:

	retweet_count	favorite_count	rating_numerator	rating_denominator \
count	1964.000000	1964.000000	1964.000000	1964.000000
mean	2464.577393	8293.784623	12.223014	10.479124
std	4401.859858	12190.786050	41.708155	6.865424

```
min          11.000000        70.000000         0.000000         2.000000
25%         549.500000      1782.250000        10.000000        10.000000
50%        1191.500000      3752.500000        11.000000        10.000000
75%        2814.750000     10349.000000        12.000000        10.000000
max       77553.000000    155607.000000      1776.000000       170.000000


           confidence       img_num
count     1964.000000   1964.000000
mean         0.465133      1.202138
std          0.339506      0.559615
min          0.000000      1.000000
25%          0.140339      1.000000
50%          0.459560      1.000000
75%          0.776453      1.000000
max          0.999956      4.000000
```

making new dataframe for rating_numerator<14 as we can see from the above description, 1776 is the outlier

[10]: `df_master.rating_numerator.value_counts()`

```
[10]: 12      444
      10      416
      11      392
      13      249
      9       150
      8        95
      7        52
      5        33
      14       33
      6        32
      3        19
      4        16
      2         9
      1         5
      1776      1
      24        1
      26        1
      420       1
      27        1
      44        1
      45        1
      50        1
      60        1
      75        1
      80        1
      84        1
      88        1
```

```
99        1
121       1
144       1
165       1
204       1
0         1
Name: rating_numerator, dtype: int64
```

As we can see most of the data lies in ratings <15, creating the dataframe in accordance to it

[11]: `newdf=df_master.loc[df_master.rating_numerator<15]`

[12]: `newdf.rating_numerator.value_counts()`

```
[12]: 12    444
      10    416
      11    392
      13    249
      9     150
      8      95
      7      52
      14     33
      5      33
      6      32
      3      19
      4      16
      2       9
      1       5
      0       1
Name: rating_numerator, dtype: int64
```

[13]:
```
#grouping the dataframe with breeds
newdf1=newdf.groupby('breed')['rating_numerator'].describe()
```

[14]: `newdf1`

[14]:

breed	count	mean	std	min	25%	50% \
Afghan_hound	3.0	9.666667	5.773503	3.0	8.00	13.0
Airedale	12.0	9.833333	2.249579	6.0	9.25	10.5
American_Staffordshire_terrier	15.0	10.133333	3.090693	0.0	10.00	11.0
Appenzeller	2.0	11.000000	2.828427	9.0	10.00	11.0
Australian_terrier	2.0	11.500000	2.121320	10.0	10.75	11.5
Bedlington_terrier	6.0	10.333333	3.141125	6.0	8.25	10.5
Bernese_mountain_dog	11.0	11.272727	1.103713	10.0	10.00	12.0
Blenheim_spaniel	10.0	11.100000	1.100505	9.0	10.25	11.5
Border_collie	12.0	10.583333	2.503028	4.0	9.75	11.5
Border_terrier	7.0	12.142857	0.690066	11.0	12.00	12.0
Boston_bull	12.0	9.416667	2.108784	5.0	8.75	10.0

Bouvier_des_Flandres	1.0	13.000000	NaN	13.0	13.00	13.0
Brabancon_griffon	3.0	10.000000	0.000000	10.0	10.00	10.0
Brittany_spaniel	8.0	10.375000	1.685018	7.0	9.75	11.0
Cardigan	21.0	11.142857	1.590148	7.0	10.00	11.0
Chesapeake_Bay_retriever	31.0	10.838710	1.439833	8.0	10.00	10.0
Chihuahua	90.0	10.500000	2.089299	3.0	10.00	11.0
Dandie_Dinmont	7.0	9.571429	3.258688	3.0	9.00	11.0
Doberman	9.0	11.333333	1.000000	10.0	11.00	11.0
English_setter	8.0	9.875000	1.726888	8.0	8.75	9.5
English_springer	10.0	10.500000	2.223611	5.0	10.00	10.5
EntleBucher	1.0	11.000000	NaN	11.0	11.00	11.0
Eskimo_dog	22.0	11.409091	1.402688	9.0	10.00	12.0
French_bulldog	30.0	11.166667	1.821014	8.0	10.00	11.5
German_shepherd	21.0	11.000000	1.449138	8.0	10.00	11.0
German_short-haired_pointer	8.0	10.500000	0.755929	10.0	10.00	10.0
Gordon_setter	4.0	11.750000	2.217356	9.0	10.50	12.0
Great_Dane	11.0	10.000000	2.683282	4.0	9.00	11.0
Great_Pyrenees	14.0	11.428571	1.222500	9.0	11.00	11.5
Greater_Swiss_Mountain_dog	3.0	11.333333	2.081666	9.0	10.50	12.0
...	...	...	...	...	...	...
cocker_spaniel	30.0	11.333333	1.184187	9.0	10.25	11.5
collie	11.0	10.909091	1.221028	9.0	10.00	11.0
curly-coated_retriever	3.0	10.333333	2.309401	9.0	9.00	9.0
dalmatian	12.0	9.333333	2.188122	5.0	8.00	9.5
flat-coated_retriever	8.0	10.875000	2.531939	5.0	10.75	12.0
giant_schnauzer	3.0	11.000000	1.732051	10.0	10.00	10.0
golden_retriever	154.0	11.538961	1.324150	5.0	11.00	12.0
groenendael	2.0	10.000000	0.000000	10.0	10.00	10.0
keeshond	4.0	10.250000	1.500000	9.0	9.00	10.0
kelpie	13.0	11.307692	1.109400	10.0	11.00	11.0
komondor	3.0	11.000000	1.000000	10.0	10.50	11.0
kuvasz	16.0	10.625000	2.276694	4.0	10.00	11.5
malamute	33.0	10.878788	1.218544	8.0	10.00	11.0
malinois	11.0	10.818182	1.990888	6.0	10.00	11.0
miniature_pinscher	24.0	10.041667	2.612331	2.0	9.75	11.0
miniature_poodle	8.0	9.875000	1.552648	8.0	8.75	10.0
miniature_schnauzer	5.0	9.600000	2.792848	5.0	9.00	11.0
papillon	7.0	10.000000	1.632993	8.0	8.50	11.0
pug	62.0	10.241935	1.816910	3.0	9.25	10.0
redbone	6.0	9.666667	2.250926	7.0	7.75	10.0
schipperke	13.0	10.923077	1.382120	8.0	10.00	11.0
silky_terrier	1.0	12.000000	NaN	12.0	12.00	12.0
soft-coated_wheaten_terrier	12.0	8.166667	3.128559	3.0	5.50	9.5
standard_poodle	11.0	10.727273	1.678744	9.0	9.50	10.0
standard_schnauzer	1.0	12.000000	NaN	12.0	12.00	12.0
toy_poodle	49.0	10.979592	1.249830	7.0	10.00	11.0
toy_terrier	3.0	10.333333	1.527525	9.0	9.50	10.0

```
vizsla                          13.0  10.846154  1.281025  8.0  11.00  11.0
whippet                         11.0  10.181818  1.834022  8.0   8.50  10.0
wire-haired_fox_terrier          2.0  11.500000  0.707107  11.0  11.25  11.5
```

	75%	max
breed		
Afghan_hound	13.00	13.0
Airedale	11.25	12.0
American_Staffordshire_terrier	11.50	13.0
Appenzeller	12.00	13.0
Australian_terrier	12.25	13.0
Bedlington_terrier	12.75	14.0
Bernese_mountain_dog	12.00	13.0
Blenheim_spaniel	12.00	12.0
Border_collie	12.00	13.0
Border_terrier	12.50	13.0
Boston_bull	11.00	12.0
Bouvier_des_Flandres	13.00	13.0
Brabancon_griffon	10.00	10.0
Brittany_spaniel	11.25	12.0
Cardigan	12.00	13.0
Chesapeake_Bay_retriever	12.00	13.0
Chihuahua	12.00	14.0
Dandie_Dinmont	11.00	13.0
Doberman	12.00	13.0
English_setter	11.00	13.0
English_springer	12.00	13.0
EntleBucher	11.00	11.0
Eskimo_dog	12.00	14.0
French_bulldog	12.00	14.0
German_shepherd	12.00	13.0
German_short-haired_pointer	11.00	12.0
Gordon_setter	13.25	14.0
Great_Dane	12.00	13.0
Great_Pyrenees	12.00	13.0
Greater_Swiss_Mountain_dog	12.50	13.0
...	...	...
cocker_spaniel	12.00	13.0
collie	12.00	13.0
curly-coated_retriever	11.00	13.0
dalmatian	10.25	13.0
flat-coated_retriever	12.00	13.0
giant_schnauzer	11.50	13.0
golden_retriever	12.00	14.0
groenendael	10.00	10.0
keeshond	11.25	12.0
kelpie	12.00	13.0

```
komondor                        11.50   12.0
kuvasz                          12.00   13.0
malamute                        12.00   13.0
malinois                        12.00   13.0
miniature_pinscher              12.00   12.0
miniature_poodle                10.50   12.0
miniature_schnauzer             11.00   12.0
papillon                        11.00   12.0
pug                             11.00   13.0
redbone                         11.50   12.0
schipperke                      12.00   13.0
silky_terrier                   12.00   12.0
soft-coated_wheaten_terrier     10.25   12.0
standard_poodle                 11.50   14.0
standard_schnauzer              12.00   12.0
toy_poodle                      12.00   13.0
toy_terrier                     11.00   12.0
vizsla                          11.00   13.0
whippet                         12.00   13.0
wire-haired_fox_terrier         11.75   12.0

[113 rows x 8 columns]
```

From this description we can check that there are some breed who are rated by 1 or 2 people, this might be misleading data. now we have to take those breeds who's rate counts are more then 10.

[15]: `newdf1=newdf1[newdf1['count']>9]`

[16]: `newdf1`

[16]:
```
                                count       mean       std    min    25%   50%  \
breed
Airedale                         12.0   9.833333  2.249579    6.0   9.25  10.5
American_Staffordshire_terrier   15.0  10.133333  3.090693    0.0  10.00  11.0
Bernese_mountain_dog             11.0  11.272727  1.103713   10.0  10.00  12.0
Blenheim_spaniel                 10.0  11.100000  1.100505    9.0  10.25  11.5
Border_collie                    12.0  10.583333  2.503028    4.0   9.75  11.5
Boston_bull                      12.0   9.416667  2.108784    5.0   8.75  10.0
Cardigan                         21.0  11.142857  1.590148    7.0  10.00  11.0
Chesapeake_Bay_retriever         31.0  10.838710  1.439833    8.0  10.00  10.0
Chihuahua                        90.0  10.500000  2.089299    3.0  10.00  11.0
English_springer                 10.0  10.500000  2.223611    5.0  10.00  10.5
Eskimo_dog                       22.0  11.409091  1.402688    9.0  10.00  12.0
French_bulldog                   30.0  11.166667  1.821014    8.0  10.00  11.5
German_shepherd                  21.0  11.000000  1.449138    8.0  10.00  11.0
Great_Dane                       11.0  10.000000  2.683282    4.0   9.00  11.0
Great_Pyrenees                   14.0  11.428571  1.222500    9.0  11.00  11.5
```

breed	count	mean	std	min	25%	50%
Italian_greyhound	17.0	10.000000	1.870829	6.0	8.00	11.0
Labrador_retriever	101.0	11.168317	1.334686	7.0	10.00	11.0
Lakeland_terrier	17.0	10.235294	1.751050	7.0	9.00	10.0
Maltese_dog	19.0	9.315789	2.887764	1.0	9.50	10.0
Norwegian_elkhound	11.0	10.909091	1.445998	8.0	10.50	11.0
Old_English_sheepdog	14.0	10.857143	1.511858	8.0	10.00	11.0
Pekinese	14.0	11.000000	1.921538	7.0	10.00	12.0
Pembroke	94.0	11.425532	1.719523	4.0	11.00	12.0
Pomeranian	40.0	10.975000	1.404891	6.0	10.00	11.0
Rottweiler	18.0	11.000000	1.748949	7.0	10.00	11.5
Samoyed	41.0	11.731707	1.342095	7.0	11.00	12.0
Shetland_sheepdog	18.0	10.388889	1.719743	7.0	9.25	10.5
Shih-Tzu	20.0	10.350000	1.308877	8.0	9.75	10.5
Siberian_husky	19.0	11.315789	1.157230	9.0	10.50	11.0
Staffordshire_bullterrier	19.0	10.631579	1.342077	8.0	10.00	11.0
Unknown	302.0	9.003311	3.229328	1.0	7.00	10.0
West_Highland_white_terrier	15.0	10.066667	1.486447	8.0	9.50	10.0
Yorkshire_terrier	10.0	10.200000	1.686548	8.0	9.00	9.5
basset	17.0	10.705882	2.201270	5.0	10.00	11.0
beagle	20.0	10.150000	1.531253	6.0	9.75	10.0
boxer	11.0	10.545455	1.572491	8.0	10.00	10.0
chow	47.0	11.404255	1.361897	7.0	11.00	12.0
cocker_spaniel	30.0	11.333333	1.184187	9.0	10.25	11.5
collie	11.0	10.909091	1.221028	9.0	10.00	11.0
dalmatian	12.0	9.333333	2.188122	5.0	8.00	9.5
golden_retriever	154.0	11.538961	1.324150	5.0	11.00	12.0
kelpie	13.0	11.307692	1.109400	10.0	11.00	11.0
kuvasz	16.0	10.625000	2.276694	4.0	10.00	11.5
malamute	33.0	10.878788	1.218544	8.0	10.00	11.0
malinois	11.0	10.818182	1.990888	6.0	10.00	11.0
miniature_pinscher	24.0	10.041667	2.612331	2.0	9.75	11.0
pug	62.0	10.241935	1.816910	3.0	9.25	10.0
schipperke	13.0	10.923077	1.382120	8.0	10.00	11.0
soft-coated_wheaten_terrier	12.0	8.166667	3.128559	3.0	5.50	9.5
standard_poodle	11.0	10.727273	1.678744	9.0	9.50	10.0
toy_poodle	49.0	10.979592	1.249830	7.0	10.00	11.0
vizsla	13.0	10.846154	1.281025	8.0	11.00	11.0
whippet	11.0	10.181818	1.834022	8.0	8.50	10.0

breed	75%	max
Airedale	11.25	12.0
American_Staffordshire_terrier	11.50	13.0
Bernese_mountain_dog	12.00	13.0
Blenheim_spaniel	12.00	12.0
Border_collie	12.00	13.0
Boston_bull	11.00	12.0

```
Cardigan                         12.00  13.0
Chesapeake_Bay_retriever         12.00  13.0
Chihuahua                        12.00  14.0
English_springer                 12.00  13.0
Eskimo_dog                       12.00  14.0
French_bulldog                   12.00  14.0
German_shepherd                  12.00  13.0
Great_Dane                       12.00  13.0
Great_Pyrenees                   12.00  13.0
Italian_greyhound                11.00  13.0
Labrador_retriever               12.00  14.0
Lakeland_terrier                 11.00  13.0
Maltese_dog                      10.50  12.0
Norwegian_elkhound               12.00  13.0
Old_English_sheepdog             12.00  13.0
Pekinese                         12.00  13.0
Pembroke                         12.00  14.0
Pomeranian                       12.00  14.0
Rottweiler                       12.00  14.0
Samoyed                          13.00  14.0
Shetland_sheepdog                11.75  13.0
Shih-Tzu                         11.00  13.0
Siberian_husky                   12.00  13.0
Staffordshire_bullterrier        11.50  13.0
Unknown                          11.00  14.0
West_Highland_white_terrier      10.50  13.0
Yorkshire_terrier                11.75  13.0
basset                           12.00  13.0
beagle                           11.00  13.0
boxer                            11.50  13.0
chow                             12.00  13.0
cocker_spaniel                   12.00  13.0
collie                           12.00  13.0
dalmatian                        10.25  13.0
golden_retriever                 12.00  14.0
kelpie                           12.00  13.0
kuvasz                           12.00  13.0
malamute                         12.00  13.0
malinois                         12.00  13.0
miniature_pinscher               12.00  12.0
pug                              11.00  13.0
schipperke                       12.00  13.0
soft-coated_wheaten_terrier      10.25  12.0
standard_poodle                  11.50  14.0
toy_poodle                       12.00  13.0
vizsla                           11.00  13.0
whippet                          12.00  13.0
```

```
[204]: newdf1.sort_values('mean',ascending=False)[:10]
```

```
[204]:                        count       mean        std    min     25%    50%    75%  \
       breed
       Samoyed              41.0   11.731707   1.342095   7.0   11.00   12.0   13.0
       golden_retriever    154.0   11.538961   1.324150   5.0   11.00   12.0   12.0
       Great_Pyrenees       14.0   11.428571   1.222500   9.0   11.00   11.5   12.0
       Pembroke             94.0   11.425532   1.719523   4.0   11.00   12.0   12.0
       Eskimo_dog           22.0   11.409091   1.402688   9.0   10.00   12.0   12.0
       chow                 47.0   11.404255   1.361897   7.0   11.00   12.0   12.0
       cocker_spaniel       30.0   11.333333   1.184187   9.0   10.25   11.5   12.0
       Siberian_husky       19.0   11.315789   1.157230   9.0   10.50   11.0   12.0
       kelpie               13.0   11.307692   1.109400  10.0   11.00   11.0   12.0
       Bernese_mountain_dog 11.0   11.272727   1.103713  10.0   10.00   12.0   12.0


                             max
       breed
       Samoyed              14.0
       golden_retriever     14.0
       Great_Pyrenees       13.0
       Pembroke             14.0
       Eskimo_dog           14.0
       chow                 13.0
       cocker_spaniel       13.0
       Siberian_husky       13.0
       kelpie               13.0
       Bernese_mountain_dog 13.0
```

```
[17]: newdf1=newdf1.sort_values('mean',ascending=False)[:10]
```

```
[20]: fig,ax=plt.subplots(figsize=(10,5))
      ax.bar(newdf1.index,newdf1['mean'],color='grey')
      ax.tick_params(axis='x',labelsize=12,labelrotation=90)
      ax.set_xlabel('Dog Breed',fontsize=15)
      ax.set_ylabel('Ratings',fontsize=15)
      for i,j in enumerate(round(newdf1['mean'])):
          ax.text(i,j,str(j),horizontalalignment='center',fontsize=10)
```
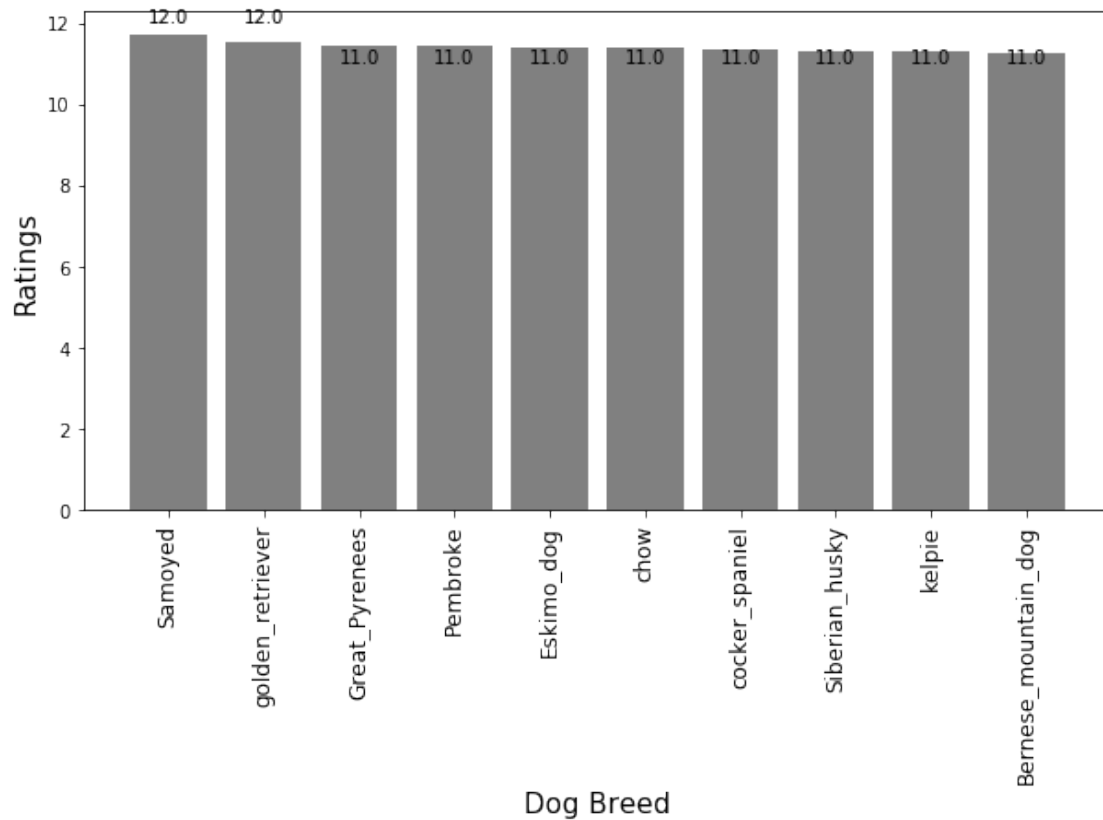
Observation: Here we can see that the top rated breed is Samoyed followed by golden_retriever and Great_Pyrenees.

Finding the Most liked breed

```
[276]: dummydf=df_master.groupby('breed').describe()
       newdf2=dummydf['favorite_count']
```

```
[277]: newdf2=newdf2[newdf2['count']>9].sort_values('mean',ascending=False)[:30]
```

```
[278]: newdf2
```

```
[278]:                        count          mean            std     min  \
       breed
       French_bulldog          30.0   18704.100000   23913.577171   304.0
       whippet                 11.0   13463.090909   21550.810882   543.0
       English_springer        10.0   12940.700000   30574.708426   423.0
       standard_poodle         11.0   12747.636364   25573.509522   252.0
       cocker_spaniel          30.0   12583.566667   16392.653207   266.0
       Samoyed                 41.0   12550.682927   13425.636068   732.0
       Eskimo_dog              22.0   11835.136364   24086.926103   496.0
       Cardigan                21.0   11685.476190   10357.236285   481.0
       Lakeland_terrier        17.0   11543.470588   31502.546256   244.0
```
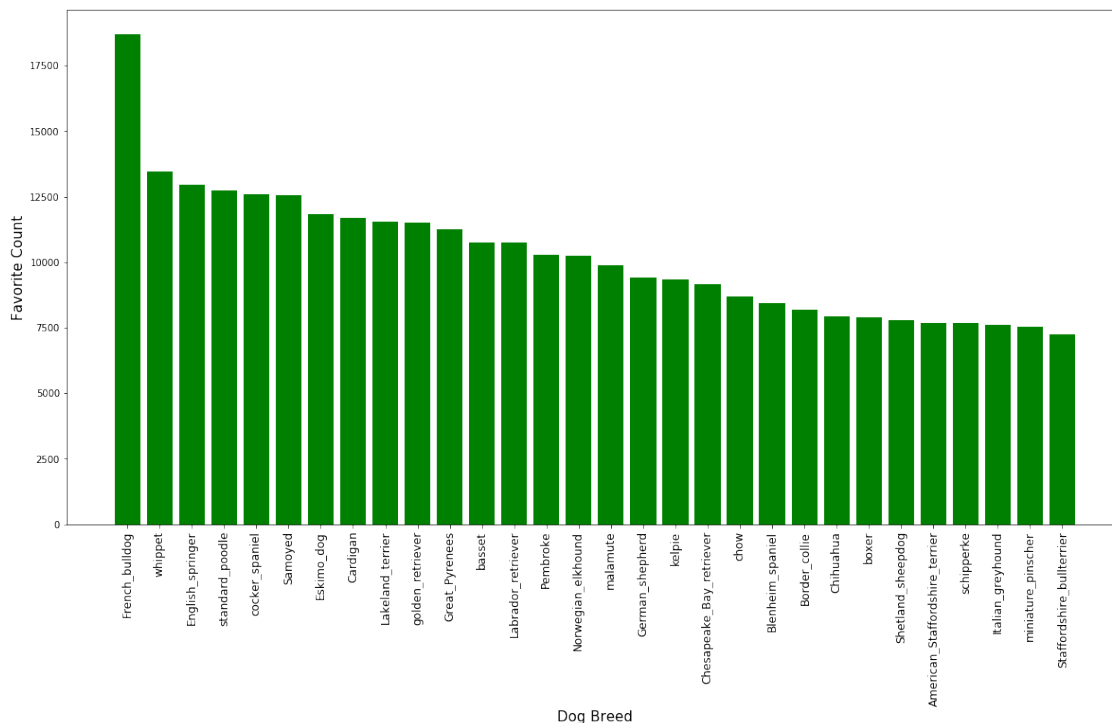
breed				
golden_retriever	156.0	11522.852564	11943.372853	175.0
Great_Pyrenees	15.0	11272.733333	10217.395932	1286.0
basset	17.0	10759.647059	11332.452934	440.0
Labrador_retriever	104.0	10744.413462	17759.157030	283.0
Pembroke	94.0	10278.234043	11204.688705	156.0
Norwegian_elkhound	11.0	10257.000000	6864.055682	821.0
malamute	33.0	9874.575758	15601.666584	198.0
German_shepherd	21.0	9427.285714	8294.231581	112.0
kelpie	13.0	9356.692308	6283.535183	385.0
Chesapeake_Bay_retriever	31.0	9174.000000	14180.713974	157.0
chow	48.0	8681.312500	10825.216979	406.0
Blenheim_spaniel	10.0	8449.900000	11567.603943	300.0
Border_collie	12.0	8175.000000	10269.371637	692.0
Chihuahua	90.0	7945.500000	15080.136491	116.0
boxer	11.0	7890.636364	15477.946035	199.0
Shetland_sheepdog	18.0	7797.277778	9208.033148	417.0
American_Staffordshire_terrier	15.0	7696.266667	6783.990560	435.0
schipperke	13.0	7693.307692	6361.408720	1126.0
Italian_greyhound	17.0	7600.705882	17118.958952	161.0
miniature_pinscher	24.0	7539.333333	8942.983524	96.0
Staffordshire_bullterrier	19.0	7265.894737	6916.006377	392.0

	25%	50%	75%	max
breed				
French_bulldog	3173.25	9591.0	25008.00	116074.0
whippet	2245.50	5760.0	13727.50	74591.0
English_springer	748.50	1796.0	5352.00	98917.0
standard_poodle	2062.50	3517.0	7998.50	87815.0
cocker_spaniel	2918.75	8534.5	14617.25	75943.0
Samoyed	2573.00	6744.0	19056.00	49790.0
Eskimo_dog	1680.50	2976.0	13964.00	114982.0
Cardigan	4077.00	7818.0	16889.00	34466.0
Lakeland_terrier	1460.00	2810.0	5191.00	132591.0
golden_retriever	3255.75	7867.5	15269.75	78360.0
Great_Pyrenees	4393.50	5816.0	17618.00	36556.0
basset	1252.00	7241.0	20311.00	37602.0
Labrador_retriever	2053.00	5245.0	14725.00	155607.0
Pembroke	2830.25	5932.5	13653.00	64212.0
Norwegian_elkhound	5225.00	8640.0	14936.50	22273.0
malamute	2721.00	5670.0	10056.00	86102.0
German_shepherd	5742.00	6931.0	13125.00	33764.0
kelpie	3933.00	8700.0	12192.00	21433.0
Chesapeake_Bay_retriever	1865.00	3658.0	9746.50	74168.0
chow	3483.50	6374.0	8909.50	70930.0
Blenheim_spaniel	868.75	3286.0	8891.25	30456.0
Border_collie	2457.75	3732.5	8887.25	32176.0
Chihuahua	1106.25	2666.5	8926.50	120184.0

```
boxer                           1817.50   2251.0    4197.50   53324.0
Shetland_sheepdog               2107.25   3843.5    9253.75   35409.0
American_Staffordshire_terrier  2817.50   5387.0   11096.50   22383.0
schipperke                      2434.00   4219.0   11923.00   19286.0
Italian_greyhound                733.00   2659.0    4716.00   71970.0
miniature_pinscher              1598.50   3428.0    9313.75   31557.0
Staffordshire_bullterrier       2399.50   3868.0   10611.50   22672.0
```

[299]:
```python
fig,ax=plt.subplots(figsize=(20,10))
ax.bar(newdf2.index,newdf2['mean'],color='Green')
ax.tick_params(axis='x',labelsize=12,labelrotation=90)
ax.set_xlabel('Dog Breed',fontsize=15)
ax.set_ylabel('Favorite Count',fontsize=15)
```

[299]: Text(0, 0.5, 'Favorite Count')

Observation: Here we can see that the top liked breed is French_bulldog followed by whipped and English_springer.

[ ]: