

wrangle_act

June 17, 2022

1 Project: Wrangling and Analyze of the Twitter 'WeRateDogs' Data.

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3 Introduction

This project is all about data wrangling, I will be wrangling the tweet archive of a twitter user @dog_rates also known as WeRateDogs which is a twitter account that rates people's dogs with a humorous comment about the dog. After wrangling, I will create interesting analyses and visualisations from my findings. The twitter archive enhanced csv file is already provide and the image prediction tsv file also which is good but also need an additional data which I got using the Tweepy library to query the twitter's API for additional data beyond the already provided data mentioned above.

3.1 Data Gathering

In the cell below, i gather **all** three pieces of data for this project and i load them into the notebook. starting with the first data;

1. I downloaded the WeRateDogs Twitter archive data (twitter_archive_enhanced.csv) Manually and imported into the jupyter then used the pandas Library to import the csv file using the read_csv function.

In [1]: *#i will start by importing all my pandas library i will be using;*

```
import pandas as pd
import tweepy
import requests
import json
import datetime as dt
```

```

from tweepy import OAuthHandler
from timeit import default_timer as timer
import numpy as np
import matplotlib.pyplot as plt
% matplotlib inline
import seaborn as sns
import re

```

In [2]: !pip3 install seaborn==0.11.2

```

Requirement already satisfied: seaborn==0.11.2 in /opt/conda/lib/python3.6/site-packages (0.11.2)
Requirement already satisfied: numpy>=1.15 in /opt/conda/lib/python3.6/site-packages (from seaborn==0.11.2)
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Requirement already satisfied: pandas>=0.23 in /opt/conda/lib/python3.6/site-packages (from seaborn==0.11.2)
Requirement already satisfied: kiwisolver>=1.0.1 in /opt/conda/lib/python3.6/site-packages (from matplotlib>=2.2)
Requirement already satisfied: pyparsing!=2.0.4,!=2.1.2,!=2.1.6,>=2.0.3 in /opt/conda/lib/python3.6/site-packages (from matplotlib>=2.2)
Requirement already satisfied: pillow>=6.2.0 in /opt/conda/lib/python3.6/site-packages (from matplotlib>=2.2)
Requirement already satisfied: python-dateutil>=2.1 in /opt/conda/lib/python3.6/site-packages (from pandas>=0.23)
Requirement already satisfied: cycler>=0.10 in /opt/conda/lib/python3.6/site-packages/cyclor-0.10.0
Requirement already satisfied: pytz>=2017.2 in /opt/conda/lib/python3.6/site-packages (from pandas>=0.23)
Requirement already satisfied: six>=1.5 in /opt/conda/lib/python3.6/site-packages (from python-dateutil>=2.1)

```

In [3]: !pip install --upgrade pandas==0.25.0

```

Requirement already up-to-date: pandas==0.25.0 in /opt/conda/lib/python3.6/site-packages (0.25.0)
Requirement already satisfied, skipping upgrade: numpy>=1.13.3 in /opt/conda/lib/python3.6/site-packages (from pandas==0.25.0)
Requirement already satisfied, skipping upgrade: pytz>=2017.2 in /opt/conda/lib/python3.6/site-packages (from pandas==0.25.0)
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Requirement already satisfied, skipping upgrade: six>=1.5 in /opt/conda/lib/python3.6/site-packages (from python-dateutil>=2.6.1)

```

In [2]: *# moving forward by importing the twitter archive enhanced csv file then read the file*
twitarc_df = pd.read_csv('twitter-archive-enhanced.csv')

2. I downloaded the tweet image prediction (image_predictions.tsv) manually and imported into the jupyter then used the Requests library and the pandas Library to import the tsv file using the read_csv function.

In [3]: *# the i will go ahead to you a programatic approach to download the tweet image prediction*
url = 'https://d17h27t6h515a5.cloudfront.net/topher/2017/August/599fd2ad_image-predictions'
response = requests.get(url)
with open('image-predictions.tsv', mode='wb') as file:
 file.write(response.content)

i need to import the image predictions tsv file into a pandas Dataframe using the pandas

```

ipred_df = pd.read_csv('image-predictions.tsv', sep='\t')

```

3. Use the Tweepy library to query additional data via the Twitter API (tweet_json.txt)

```
In [6]: # I imported the Tweepy Python library, in the library i will use the OAuthHandler to connect to the Twitter API
#
import tweepy
from tweepy import OAuthHandler

# went ahead to Query Twitter API for each tweet in the Twitter archive, then i hide the consumer_key, consumer_secret, access_token, and access_secret

consumer_key = 'hidden'
consumer_secret = 'hidden'
access_token = 'hidden'
access_secret = 'hidden'

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

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

In [7]: # now i am querying each tweet ID I get then write the JSON data to a tweet_json.txt file
# i will import the JSON library and also the timeit library.

import json
from timeit import default_timer as timer

# get the tweet ids in which i will use to gather additional data via Twitter's API about each tweet

tweet_ids = twitarc_df.tweet_id.values

# to get JSON data for each tweet ID in the Twitter archive i will query the Twitter's API
count = 0
rtwt_fav_count = []
no_exist = {}
start = timer()

# time to Save each tweet's and returned JSON as a new line in a .txt file

with open('tweet_json.txt', 'w') as outfile:

    # This loop will likely take 20-30 minutes to run because of Twitter's rate limit
    for tweet_id in tweet_ids:
        count += 1
        print(str(count) + ": " + str(tweet_id))
        try:
            tweet = api.get_status(tweet_id, tweet_mode='extended')
            print("Success")
            hashtag = tweet._json['entities']['hashtags']
            if hashtag:
```

```

        rtwt_fav_count.append({
            "tweet_id" : str(tweet_id),
            "retweet_count" : tweet._json['retweet_count'],
            "favorite_count" : tweet._json['favorite_count'],
            "hashtag" : hashtag[0]['text']
        })
    else:
        rtwt_fav_count.append({
            "tweet_id" : str(tweet_id),
            "retweet_count" : tweet._json['retweet_count'],
            "favorite_count" : tweet._json['favorite_count'],
            "hashtag" : 'None'
        })
    json.dump(tweet._json, outfile)
    outfile.write('\n')
except tweepy.TweepError as e:
    print("Fail")
    no_exist[tweet_id] = e
    pass
end = timer()

```

```

1: 892420643555336193
Success
2: 892177421306343426
Success
3: 891815181378084864
Success
4: 891689557279858688
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In [9]: # storing the rtwt_fav_count into csv file for future assessing data, since the loop tak
rtwt_fav_count = pd.DataFrame(rtwt_fav_count)
rtwt_fav_count.to_csv('rtwt_fav_count.csv',encoding='utf-8', index=False)

In [4]: #i loaded the new csv file into using pandas python package using the pandas function of

rtwt_df = pd.read_csv('rtwt_fav_count.csv')

```

3.2 Assessing Data

In this section, i detected and documented **(11) quality issues and (5) tidiness issue**. in which i used both Visual and Programmatic assessment to assess the data. For the Visual assessment ; all 3 data that was gathered was displayed in this Jupyter notebook below and i went ahead to access the data on an external application called Excel to asses all 3 data effectively and visually. for the Programmatic assessment procedure, i imported the pandas Library and used some of it's Functions to asses the data below.

```
In [5]: # time to Print all dataset to assess it visually.
```

```
In [6]: # i Read the twitter archive enhanced csv dataframe which is twitarc_df for visual proce
twitarc_df
```

```
Out[6]:
```

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...
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...

```

[illegible]

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/ws2AMaWpW	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
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2336	NaN	NaN
2337	NaN	NaN
2338	NaN	NaN
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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]

In [7]: *# i Read the tweet image prediction dataframe which is ipred_df for visual process of da*
ipred_df

```
Out[7]:
```

	tweet_id	jpg_url \
0	666020888022790149	https://pbs.twimg.com/media/CT4udnOWwAA0aMy.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_3WEAA10oZ.jpg
12	666073100786774016	https://pbs.twimg.com/media/CT5d9DZXAAALcwe.jpg
13	666082916733198337	https://pbs.twimg.com/media/CT5m4VGWEAAAtKc8.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/CT56LSZWwAA1Jj2.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/CT90wFIWEAMuRje.jpg
23	666345417576210432	https://pbs.twimg.com/media/CT9Vn7PWwAA_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/CT9vZEYWUAA1Z05.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/DE8yicJWOAAAyBJ.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_0-UQAACu20.jpg
2057	888804989199671297	https://pbs.twimg.com/media/DFWra-3VYAA2piG.jpg
2058	888917238123831296	https://pbs.twimg.com/media/DFYRgsOUQAARGh0.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/DF199B1WsAITKsg.jpg
2064	890006608113172480	https://pbs.twimg.com/media/DFnwSY4WAAAMliS.jpg
2065	890240255349198849	https://pbs.twimg.com/media/DFrEyVuW0AA03t9.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/DF1eOmZXUAAALUcq.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]

In [8]: # i Read the twitter new retweet favourite count dataframe which is rtwt_df for visual p
rtwt_df

Out[8]:

	favorite_count	hashtag	retweet_count	tweet_id
0	33837	None	7018	892420643555336193
1	29353	None	5303	892177421306343426
2	22073	None	3486	891815181378084864
3	36968	None	7231	891689557279858688
4	35344	BarkWeek	7770	891327558926688256
5	17826	BarkWeek	2603	891087950875897856
6	10374	None	1668	890971913173991426
7	56909	None	15770	890729181411237888
8	24546	BarkWeek	3627	890609185150312448
9	27983	None	6106	890240255349198849
10	27062	BarkWeek	6156	890006608113172480

11	24581	None	4172	889880896479866881
12	42084	None	8357	889665388333682689
13	23703	None	3720	889638837579907072
14	13356	BarkWeek	1884	889531135344209921
15	22138	BarkWeek	4449	889278841981685760
16	25659	None	3768	888917238123831296
17	22489	None	3542	888804989199671297
18	17330	None	2880	888554962724278272
19	19163	None	2900	888078434458587136
20	26650	None	4539	887705289381826560
21	40758	None	9858	887517139158093824
22	60234	None	15041	887473957103951883
23	29609	None	8815	887343217045368832
24	27002	None	4997	887101392804085760
25	30411	None	6325	886983233522544640
26	10504	None	2633	886736880519319552
27	19756	None	3740	886680336477933568
28	18564	None	2633	886366144734445568
29	105	None	4	886267009285017600
...
2297	372	None	262	666411507551481857
2298	93	None	30	666407126856765440
2299	147	None	69	666396247373291520
2300	163	None	73	666373753744588802
2301	650	None	471	666362758909284353
2302	179	None	58	666353288456101888
2303	246	None	125	666345417576210432
2304	168	None	79	666337882303524864
2305	427	None	291	666293911632134144
2306	123	None	57	666287406224695296
2307	152	None	68	666273097616637952
2308	100	None	38	666268910803644416
2309	12908	None	5493	666104133288665088
2310	66	None	11	666102155909144576
2311	134	None	53	666099513787052032
2312	143	None	63	666094000022159362
2313	93	None	37	666082916733198337
2314	274	None	132	666073100786774016
2315	127	None	51	666071193221509120
2316	400	None	180	666063827256086533
2317	99	None	47	666058600524156928
2318	248	None	112	666057090499244032
2319	367	None	196	666055525042405380
2320	1028	None	706	666051853826850816
2321	115	None	50	666050758794694657
2322	89	None	37	666049248165822465
2323	246	None	115	666044226329800704
2324	99	None	36	666033412701032449

2325	112	None	39	666029285002620928
2326	2293	None	423	666020888022790149

[2327 rows x 4 columns]

```
In [9]: #Programmatic assessment includes checking for the 3 csv files converted to DataFrames us
#ipred_df
#twitarc_df
#rtwt_df
```

```
In [10]: #i used the head() to display the first five rows to get a closer look of the twitter a
twitarc_df.head()
```

```
Out[10]:
```

	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

In [11]: *#i used the head() to display the first five rows to get a closer look of the tweet ima*

```
ipred_df.head()
```

Out[11]:

	tweet_id	jpg_url	\
0	666020888022790149	https://pbs.twimg.com/media/CT4udnOWwAAOaMy.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

In [12]: *#i used the head() to display the first five rows to get a closer look of the new retwe*

```
rtwt_df.head()
```

Out[12]:

	favorite_count	hashtag	retweet_count	tweet_id
0	33837	None	7018	892420643555336193
1	29353	None	5303	892177421306343426
2	22073	None	3486	891815181378084864
3	36968	None	7231	891689557279858688
4	35344	BarkWeek	7770	891327558926688256


```
In [13]: #i used info() to look for instances of missing or possibly errant data..
        twitarc_df.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
```

```
In [14]: #i also observed there are also non null in the data set, but the type of some data set
```

```
In [15]: #i used info() to look for instances of missing or possibly errant data.
```

```
        ipred_df.info()
```

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

memory usage: 152.1+ KB

```
In [16]: #i used info() to look for instances of missing or possibly errant data.
rtwt_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2327 entries, 0 to 2326
Data columns (total 4 columns):
favorite_count    2327 non-null int64
hashtag           2327 non-null object
retweet_count     2327 non-null int64
tweet_id          2327 non-null int64
dtypes: int64(3), object(1)
memory usage: 72.8+ KB
```

```
In [17]: rtwt_df.sample(5)
#i need to check for the data sample
```

```
Out[17]:
```

	favorite_count	hashtag	retweet_count	tweet_id
1114	4124	None	1090	727524757080539137
2030	641	None	176	671186162933985280
463	7829	None	1556	815639385530101762
788	9931	None	4680	771380798096281600
1093	5653	None	1794	730924654643314689

```
In [18]: ipred_df.sample(5)
#i need to check for the data sample
```

```
Out[18]:
```

	tweet_id	jpg_url \
1051	713919462244790272	https://pbs.twimg.com/media/CehZ9mLWsAAsn28.jpg
185	669359674819481600	https://pbs.twimg.com/media/CUoLEG3XAAE65IO.jpg
1521	788039637453406209	https://pbs.twimg.com/media/Cu-t20yWEAAFHXi.jpg
1546	792394556390137856	https://pbs.twimg.com/media/Cv8moW9W8AIH0xR.jpg
1066	715696743237730304	https://pbs.twimg.com/media/Ce6qZC2WAAAcSoI.jpg

	img_num	p1	p1_conf	p1_dog \
1051	1	Siberian_husky	0.463223	True
185	1	Labrador_retriever	0.367818	True
1521	1	beach_wagon	0.362925	False
1546	2	cocker_spaniel	0.746387	True
1066	1	Staffordshire_bullterrier	0.427836	True

	p2	p2_conf	p2_dog	p3 \
1051	Eskimo_dog	0.389959	True	malamute
185	German_short-haired_pointer	0.280642	True	Chesapeake_Bay_retriever
1521	minivan	0.304759	False	limousine
1546	Irish_setter	0.091615	True	miniature_poodle

1066	pug	0.221409	True	French_bulldog
------	-----	----------	------	----------------

	p3_conf	p3_dog
1051	0.097963	True
185	0.184246	True
1521	0.101702	False
1546	0.061078	True
1066	0.132135	True

```
In [19]: twitarc_df.sample(5)
#i need to check for the data sample
```

```
Out[19]:
```

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	\
1207	715733265223708672	NaN	NaN	
1137	728046963732717569	NaN	NaN	
1677	682059653698686977	NaN	NaN	
499	813127251579564032	NaN	NaN	
866	762035686371364864	NaN	NaN	

	timestamp	\
1207	2016-04-01 02:51:22 +0000	
1137	2016-05-05 02:21:37 +0000	
1677	2015-12-30 04:44:28 +0000	
499	2016-12-25 21:00:18 +0000	
866	2016-08-06 21:20:40 +0000	

	source	\
1207	<a href="http://twitter.com/download/iphone" r...	
1137	<a href="http://twitter.com/download/iphone" r...	
1677	<a href="http://twitter.com/download/iphone" r...	
499	<a href="http://twitter.com/download/iphone" r...	
866	<a href="http://twitter.com/download/iphone" r...	

	text	retweeted_status_id	\
1207	This is a taco. We only rate dogs. Please only...	NaN	
1137	This is Raymond. He controls fountains with hi...	NaN	
1677	This is Tess. Her main passions are shelves an...	NaN	
499	Here's an anonymous doggo that appears to be v...	NaN	
866	This left me speechless. 14/10 heckin heroic a...	NaN	

	retweeted_status_user_id	retweeted_status_timestamp	\
1207	NaN	NaN	
1137	NaN	NaN	
1677	NaN	NaN	
499	NaN	NaN	
866	NaN	NaN	

	expanded_urls	rating_numerator	\
--	---------------	------------------	---

1207	https://twitter.com/dog_rates/status/715733265...	10
1137	https://twitter.com/dog_rates/status/728046963...	11
1677	https://twitter.com/dog_rates/status/682059653...	11
499	https://twitter.com/dog_rates/status/813127251...	11
866	https://twitter.com/dog_rates/status/762035686...	14

	rating_denominator	name	doggo	floofer	pupper	puppo
1207	10	a	None	None	None	None
1137	10	Raymond	None	None	None	None
1677	10	Tess	None	None	None	None
499	10	None	doggo	None	None	None
866	10	None	None	None	None	None

In [20]: `twitarc_df.shape`

*#The output of my shape shows that there are 2356 entries(rows) described by 17 fields(columns)
#i need to check for duplicates*

Out[20]: (2356, 17)

In [21]: `ipred_df.shape`

*#The output of my shape shows that there are 2075 entries(rows) described by 12 fields(columns)
#i need to check for duplicates*

Out[21]: (2075, 12)

In [22]: `rtwt_df.shape`

*#The output of my shape shows that there are 2327 entries(rows) described by 4 fields(columns)
#i need to check for duplicates*

Out[22]: (2327, 4)

In [23]: *#i need to check for the duplicate in the data set*
`sum(ipred_df.duplicated())`

Out[23]: 0

In [24]: *#i need to check for the duplicate in the data set*
`sum(rtwt_df.duplicated())`

Out[24]: 0

In [25]: *#i need to check for the duplicate in the data set*
`sum(twitarc_df.duplicated())`

Out[25]: 0

```
In [26]: #i need to used the describe function to assess the data set.
```

```
twitarc_df.describe()
```

```
Out[26]:
```

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	\
count	2.356000e+03	7.800000e+01	7.800000e+01	
mean	7.427716e+17	7.455079e+17	2.014171e+16	
std	6.856705e+16	7.582492e+16	1.252797e+17	
min	6.660209e+17	6.658147e+17	1.185634e+07	
25%	6.783989e+17	6.757419e+17	3.086374e+08	
50%	7.196279e+17	7.038708e+17	4.196984e+09	
75%	7.993373e+17	8.257804e+17	4.196984e+09	
max	8.924206e+17	8.862664e+17	8.405479e+17	

	retweeted_status_id	retweeted_status_user_id	rating_numerator	\
count	1.810000e+02	1.810000e+02	2356.000000	
mean	7.720400e+17	1.241698e+16	13.126486	
std	6.236928e+16	9.599254e+16	45.876648	
min	6.661041e+17	7.832140e+05	0.000000	
25%	7.186315e+17	4.196984e+09	10.000000	
50%	7.804657e+17	4.196984e+09	11.000000	
75%	8.203146e+17	4.196984e+09	12.000000	
max	8.874740e+17	7.874618e+17	1776.000000	

	rating_denominator
count	2356.000000
mean	10.455433
std	6.745237
min	0.000000
25%	10.000000
50%	10.000000
75%	10.000000
max	170.000000

```
In [27]: twitarc_df['rating_numerator'].value_counts()
```

```
Out[27]:
```

12	558
11	464
10	461
13	351
9	158
8	102
7	55
14	54
5	37
6	32
3	19
4	17

1	9
2	9
420	2
0	2
15	2
75	2
80	1
20	1
24	1
26	1
44	1
50	1
60	1
165	1
84	1
88	1
144	1
182	1
143	1
666	1
960	1
1776	1
17	1
27	1
45	1
99	1
121	1
204	1

Name: rating_numerator, dtype: int64

```
In [28]: twitarc_df['rating_denominator'].value_counts()
```

```
Out[28]: 10      2333
         11       3
         50       3
         80       2
         20       2
          2       1
         16       1
         40       1
         70       1
         15       1
         90       1
        110       1
        120       1
        130       1
        150       1
        170       1
```

```
7          1
0          1
Name: rating_denominator, dtype: int64
```

```
In [29]: twitarc_df['name'].value_counts()
```

```
Out[29]: None          745
a                    55
Charlie             12
Cooper             11
Oliver            11
Lucy              11
Lola              10
Penny            10
Tucker           10
Bo               9
Winston          9
the              8
Sadie            8
an              7
Bailey           7
Buddy           7
Daisy           7
Toby            7
Oscar           6
Bella           6
Leo            6
Scout           6
Milo           6
Stanley        6
Dave           6
Jax            6
Rusty         6
Koda          6
Jack          6
Alfie         5
...
Ashleigh       1
Ivar           1
Autumn         1
Alexander      1
Tater         1
Snoopy        1
Carter        1
Eugene        1
Gabby         1
Olaf          1
Florence      1
```

```

Saydee          1
Poppy           1
Griswold        1
Dale            1
Schnitzel       1
Lulu            1
officially      1
Einstein        1
Gert            1
Traviss         1
Julius          1
Jerome          1
Sweets          1
Ralphé         1
Hector          1
Gunner          1
Taco            1
Rudy            1
Bobbay          1
Name: name, Length: 957, dtype: int64

```

```

In [30]: # to check the amount of observation are retweet which we will drop later.
         len(twitarc_df[twitarc_df.retweeted_status_id.isnull() == False])

```

```

Out[30]: 181

```

```

In [31]: #i will be Checking for the number of unique values in the data set.
         twitarc_df.nunique()

```

```

Out[31]: tweet_id                2356
         in_reply_to_status_id      77
         in_reply_to_user_id       31
         timestamp                2356
         source                    4
         text                     2356
         retweeted_status_id       181
         retweeted_status_user_id   25
         retweeted_status_timestamp 181
         expanded_urls             2218
         rating_numerator           40
         rating_denominator         18
         name                      957
         doggo                     2
         floofer                   2
         pupper                    2
         puppo                     2
         dtype: int64

```

```

In [32]: #Let's check how many values in twitarc_df.tweet_id don't exist in ipred_df.tweet_id
         len(twitarc_df[twitarc_df.tweet_id.isin(ipred_df.tweet_id)]), len(twitarc_df[~twitarc_df

```



```
Out [32]: (2075, 281)
```

```
In [33]: ipred_df.nunique()
```

```
Out [33]: tweet_id      2075  
          jpg_url       2009  
          img_num        4  
          p1            378  
          p1_conf       2006  
          p1_dog         2  
          p2            405  
          p2_conf       2004  
          p2_dog         2  
          p3            408  
          p3_conf       2006  
          p3_dog         2  
          dtype: int64
```

```
In [34]: ipred_df['jpg_url'].value_counts()
```

```
Out [34]: https://pbs.twimg.com/media/Crwx5yWgAAX5P_.jpg  
https://pbs.twimg.com/media/CUN4Or5UAAAa5K4.jpg  
https://pbs.twimg.com/media/CsV07ljW8AAckRD.jpg  
https://pbs.twimg.com/media/CdHwZd0VIAA4792.jpg  
https://pbs.twimg.com/media/C2oRb0uWEAAbVS1.jpg  
https://pbs.twimg.com/ext_tw_video_thumb/675354114423808004/pu/img/qL1R_nGLqa6lmk0x.jpg  
https://pbs.twimg.com/media/CkjMx99UoAM2B1a.jpg  
https://pbs.twimg.com/media/CV_cnjHWUAADc-c.jpg  
https://pbs.twimg.com/ext_tw_video_thumb/807106774843039744/pu/img/8XZg1xW35Xp2J6JW.jpg  
https://pbs.twimg.com/media/Ct72q9jWcAAhlnw.jpg  
https://pbs.twimg.com/media/CVM0lMiWwAA4Yxl.jpg  
https://pbs.twimg.com/media/CU1zsMSUAAAS0qW.jpg  
https://pbs.twimg.com/media/CsGnz64WYAEIDHJ.jpg  
https://pbs.twimg.com/media/C4bTH6nWMAAX_bJ.jpg  
https://pbs.twimg.com/media/CZhn-QAWwAASQan.jpg  
https://pbs.twimg.com/media/CvoBPWRWgAA4het.jpg  
https://pbs.twimg.com/media/C2kzTGxWEAE0pPL.jpg  
https://pbs.twimg.com/media/CiyHLocU4AI2pJu.jpg  
https://pbs.twimg.com/tweet_video_thumb/CeBym7oXEAEWbEg.jpg  
https://pbs.twimg.com/media/Cs_DYr1XEAA54Pu.jpg  
https://pbs.twimg.com/media/C12x-JTVIAAzdf1.jpg  
https://pbs.twimg.com/media/CcG07BYW0AErrC9.jpg  
https://pbs.twimg.com/media/CrXhIqBW8AA6Bse.jpg  
https://pbs.twimg.com/media/CzG425nWgAAAnP7P.jpg  
https://pbs.twimg.com/media/CwiuEJmW8AAZnit.jpg  
https://pbs.twimg.com/media/CuRDF-XWcAIZSer.jpg  
https://pbs.twimg.com/media/Ck2d7tJWUAETL3.jpg  
https://pbs.twimg.com/media/DA7iHL5U0AA10Qo.jpg  
https://pbs.twimg.com/ext_tw_video_thumb/817423809049493505/pu/img/50FW0yueFu9oTUiQ.jpg
```

<https://pbs.twimg.com/media/CYLDikFWEAAIy1y.jpg>

<https://pbs.twimg.com/media/CZc-u7IXEAQHV1N.jpg>
<https://pbs.twimg.com/media/CdnnZhhWAAEAoUc.jpg>
<https://pbs.twimg.com/media/CoeWSJcUIAAv3Bq.jpg>
<https://pbs.twimg.com/media/C-8QypZXcAAekaF.jpg>
<https://pbs.twimg.com/media/CYP62A6WkAAOnL4.jpg>
<https://pbs.twimg.com/media/CW9o1DsUsAAOXsf.jpg>
<https://pbs.twimg.com/media/Cu6I9vvWIAAZG0a.jpg>
<https://pbs.twimg.com/media/CU3cSG8W4AIAePH.jpg>
<https://pbs.twimg.com/media/Coak48zWAAAhBxV.jpg>
<https://pbs.twimg.com/media/CcgF5ovW8AACrEU.jpg>
<https://pbs.twimg.com/media/Cgs0szGW0AAruKp.jpg>
<https://pbs.twimg.com/media/CdjaSFCWAAAjZh3.jpg>
<https://pbs.twimg.com/media/CeQVF1eVIAAJaTv.jpg>
https://pbs.twimg.com/media/Cl_80k5WkAEbo9m.jpg
<https://pbs.twimg.com/media/CnSHLFeWgAAwV-I.jpg>
<https://pbs.twimg.com/media/Cf8qDFbWwAEf8M3.jpg>
<https://pbs.twimg.com/media/CsU4NKkW8AUI5eG.jpg>
<https://pbs.twimg.com/media/CU7d2vKUcAAFZyI.jpg>
https://pbs.twimg.com/media/CU_bRIEWcAAUVC7.jpg
<https://pbs.twimg.com/media/Cl-EXHSWkAE2IN2.jpg>
https://pbs.twimg.com/media/CVP9_beUEAAwURR.jpg
<https://pbs.twimg.com/media/CVQ3EDdWIAINyhM.jpg>
<https://pbs.twimg.com/media/C1L70VWVQAIQ6Tt.jpg>
<https://pbs.twimg.com/media/CXLREjOW8AE1fk6.jpg>
<https://pbs.twimg.com/media/CWJ6Sc-WwAA1pI6.jpg>
<https://pbs.twimg.com/media/CYpsFmIWAAAyH9C.jpg>
https://pbs.twimg.com/media/Cb_r8qTUsAASgdF.jpg
<https://pbs.twimg.com/media/CmTm-XQXEAAEyN6.jpg>
<https://pbs.twimg.com/media/CU0bvUJVEAAAnYPF.jpg>
<https://pbs.twimg.com/media/CVgxQc5XIAAYLOW.jpg>
Name: jpg_url, Length: 2009, dtype: int64

In [35]: `ipred_df[ipred_df['jpg_url'] == 'https://pbs.twimg.com/media/CZhn-QAWwAASQan.jpg']`

```
Out[35]:
```

	tweet_id	jpg_url	\
800	691416866452082688	https://pbs.twimg.com/media/CZhn-QAWwAASQan.jpg	
1624	803692223237865472	https://pbs.twimg.com/media/CZhn-QAWwAASQan.jpg	

	img_num	p1	p1_conf	p1_dog	p2	p2_conf	\
800	1	Lakeland_terrier	0.530104	True	Irish_terrier	0.197314	
1624	1	Lakeland_terrier	0.530104	True	Irish_terrier	0.197314	

	p2_dog	p3	p3_conf	p3_dog
800	True	Airedale	0.082515	True
1624	True	Airedale	0.082515	True

In [36]: `rtwt_df.nunique()`

```
Out[36]: favorite_count    1959
         hashtag           18
         retweet_count     1648
         tweet_id          2327
         dtype: int64
```

3.2.1 Quality issues

With both Visual and problematic ways i looked for the Unclean data in all the three DataFrames and i further grouped the assessment into quality and tidiness issues.

in my observation the twitter_archive_enhanced.csv(twitarc_df) contains 2356 entries and 17 columns , the image_predictions.tsv(ipred_df) contains 2075 entries and 12 columns and the favourite retweet data set (rtwt_df) contains 2327 entries and 4 columns in this project Dataset.

1. the retweeted lines in the twitarc_df dataframe is 181.
2. the twitter_archive_enhanced.csv(twitarc_df) dataset the column; in_reply_to_status_id, in_reply_to_user_id, retweeted_status_id, retweeted_status_user_id, retweeted_status_timestamp and expanded_urls have missing values and also need to be dropped the columns because i wouldnt be needed for the analysis.
3. timestamp column type should be datetime data type instead of object.
4. the tweet_id data type changed to object instead of int64 in the new copy file twitarc_df_copy .so i have to change the data type back to int64.
5. Names column should be cleaned, there is invalid records like a and an unacceptable which is start with lowercase.
6. Only original ratings (no retweets) in the twitter archive (tweet_id) that i need in this data set are the ones with images.
7. Only original ratings (no retweets) in the favourite retweet (tweet_id) that i need in this data set are the ones with images.
8. p1, p2, p3 columns should be standardized as all lowercase also the Underscore '_' was present instead of space in dog breeds (p1,p2,p3).
9. Drop useless columns in the image data set and then delete the columns that won't be used for the analysis.
10. Drop useless columns in the Favourite retweet data set and then delete the columns that won't be used for the analysis.
11. invalid rating_denominator (different than 10). However, rating_demoniator checked manually and found that they are true denominators, so there is no problematic extraction from text.also its safe to say there is Inconsistency in the rating, but the rating numerators are greater than the denominators which does not need to be cleaned (as stated above in the project requirement).

3.2.2 Tidiness issues

1. Each category in the dog Stages are on different column space listed as doggo, floofer, pupper, puppo per column and will be merged into the Dog Stages.
2. Add a gender feature in this data set.
3. Complete tag present instead of source name in source
4. to obey the rules of tidiness, create two new columns in the image prediction data set to replace p1,p2,p3,p1_conf, p2_conf, p3_conf.
5. Combine three different data frames into one master data set(Merge the twitter_archive_enhanced.csv(twitarc_df),image_predictions.tsv(ipred_df) and the additional data set (rtwt_df) together)

3.3 Cleaning Data

In this section, quality tidiness and issues assessed earlier will be cleaned. total of 16 data problems were defined, coded and tested one after the other.

```
In [37]: # Make copies of original pieces of data
```

```
twitarc_df_copy = twitarc_df.copy()
ipred_df_copy = ipred_df.copy()
rtwt_df_copy = rtwt_df.copy()
```

4 Dealing with Quality issues first.

5 issue #1:

1.the retweeted lines in the twitarc_df dataframe is 181.

6 Define:

i will need to drop the 181 retweeted lines in twitarc_df dataframe.

7 Code

```
In [38]: twitarc_df_copy = twitarc_df_copy[twitarc_df_copy['retweeted_status_user_id'].isnull()]
```

8 Test

```
In [39]: len(twitarc_df_copy[twitarc_df_copy['retweeted_status_user_id'].isnull() == False])
```

```
Out[39]: 0
```

```
In [40]: twitarc_df_copy.shape
```

```
Out[40]: (2175, 17)
```

9 issue #2:

2. in the twitter_archive_enhanced.csv(twitarc_df) dataset the column; in_reply_to_status_id, in_reply_to_user_id, retweeted_status_id, retweeted_status_user_id, retweeted_status_timestamp and expanded_urls have missing values and also need to be dropped the columns because i wouldnt be needed for the analysis.

Define: its time to Drop all columns since they are now empty and not needed for the analysis.

Code

```
In [41]: twitarc_df_copy = twitarc_df_copy.drop(['in_reply_to_status_id', 'in_reply_to_user_id',  
                                                'retweeted_status_user_id', 'retweeted_status_id'])
```

10 Test

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

```
<class 'pandas.core.frame.DataFrame'>  
Int64Index: 2175 entries, 0 to 2355  
Data columns (total 11 columns):  
tweet_id          2175 non-null int64  
timestamp         2175 non-null object  
source            2175 non-null object  
text              2175 non-null object  
rating_numerator  2175 non-null int64  
rating_denominator 2175 non-null int64  
name              2175 non-null object  
doggo             2175 non-null object  
floofer           2175 non-null object  
pupper            2175 non-null object  
puppo             2175 non-null object  
dtypes: int64(3), object(8)  
memory usage: 203.9+ KB
```

11 issue #3:

3. timestamp column type should be datetime data type instead of object.

12 Define:

i will change the timestamp data type from object which is spring to datetime type.

13 Code

```
In [43]: def datetime():
          datetime = pd.to_datetime
          return datetime

In [44]: # Convert timestamp to datetime type
          twitarc_df_copy.timestamp = datetime()(twitarc_df_copy.timestamp)
```

14 Test

```
In [45]: twitarc_df_copy.timestamp.head(2)

Out[45]: 0    2017-08-01 16:23:56
         1    2017-08-01 00:17:27
         Name: timestamp, dtype: datetime64[ns]

In [46]: twitarc_df_copy.info()

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 11 columns):
tweet_id          2175 non-null int64
timestamp         2175 non-null datetime64[ns]
source            2175 non-null object
text              2175 non-null object
rating_numerator  2175 non-null int64
rating_denominator 2175 non-null int64
name              2175 non-null object
doggo             2175 non-null object
floofer           2175 non-null object
pupper           2175 non-null object
puppo             2175 non-null object
dtypes: datetime64[ns](1), int64(3), object(7)
memory usage: 203.9+ KB
```

15 issue #4:

4. the tweet_id data type changed to object instead of int64 in the new copy file twitarc_df_copy .so i have to change the data type back to int64.

16 code

```
In [47]: # Convert tweet_id to int64 type

          twitarc_df_copy['tweet_id'] = twitarc_df_copy['tweet_id'].astype(int)
```

17 Test

```
In [48]: twitarc_df_copy.tweet_id.head(2)
```

```
Out[48]: 0      892420643555336193
         1      892177421306343426
         Name: tweet_id, dtype: int64
```

```
In [49]: # used your info() to confirm the correction of the type for just made

         twitarc_df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 11 columns):
tweet_id          2175 non-null int64
timestamp         2175 non-null datetime64[ns]
source            2175 non-null object
text              2175 non-null object
rating_numerator  2175 non-null int64
rating_denominator 2175 non-null int64
name              2175 non-null object
doggo             2175 non-null object
floofer           2175 non-null object
pupper           2175 non-null object
puppo             2175 non-null object
dtypes: datetime64[ns](1), int64(3), object(7)
memory usage: 203.9+ KB
```

18 issue #5:

- Names column should be cleaned, there is invalid records like a and an unacceptable which is start with lowercase.

19 Define:

writing codes to correct the invalid dog names in this dataset.

20 Code

```
In [50]: # i will replace invalid names such as a, an,the , all, mad, his, such, quite, not, one
         # (the names starting with lower case are not the real names) with None
         twitarc_df_copy.name = twitarc_df_copy.name.apply(lambda x : 'None' if x[0].islower() e
```

21 test

```
In [51]: # i need to confirm if the lowercase names are removed from the data set.  
         assert twitarc_df_copy.name.apply(lambda x : x[0].isupper()).all()
```

```
In [52]: twitarc_df_copy['name'].value_counts()
```

```
Out[52]: None          784  
         Charlie       11  
         Lucy          11  
         Oliver        10  
         Cooper        10  
         Penny          9  
         Tucker         9  
         Winston        8  
         Lola           8  
         Sadie          8  
         Daisy          7  
         Toby           7  
         Koda           6  
         Oscar          6  
         Jax            6  
         Bella          6  
         Bailey         6  
         Bo             6  
         Stanley        6  
         Milo           5  
         Rusty          5  
         Louis          5  
         Buddy          5  
         Chester        5  
         Dave           5  
         Bentley        5  
         Scout          5  
         Leo            5  
         Sammy          4  
         Scooter        4  
         ...  
         Cora           1  
         Christoper     1  
         Dobby          1  
         Baron          1  
         Bobb           1  
         Samsom         1  
         Keet           1  
         Hero           1  
         Adele          1  
         Kirk           1
```


Loomis	1
Lolo	1
Filup	1
Sid	1
Combo	1
Rueben	1
Dex	1
Iroh	1
Lacy	1
Ralphy	1
Covach	1
Meyer	1
Timofy	1
Cuddles	1
Dallas	1
Wiggles	1
Tedrick	1
Astrid	1
Stu	1
Bobbay	1

Name: name, Length: 931, dtype: int64

```
In [53]: twitarc_df_copy.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 11 columns):
tweet_id          2175 non-null int64
timestamp         2175 non-null datetime64[ns]
source            2175 non-null object
text              2175 non-null object
rating_numerator  2175 non-null int64
rating_denominator 2175 non-null int64
name              2175 non-null object
doggo             2175 non-null object
floofer          2175 non-null object
pupper           2175 non-null object
puppo            2175 non-null object
dtypes: datetime64[ns](1), int64(3), object(7)
memory usage: 203.9+ KB
```

22 Issue #6:

6. Only original ratings (no retweets) that i need in this data set are the ones with images.

23 Define:

need to keep all the twitarc_df_copy (tweet_id) which exist in ipred_df_copy(image file) then i can drop the other ones i will not be using.

24 code

```
In [54]: twitarc_df_copy = twitarc_df_copy[twitarc_df_copy.tweet_id.isin(ipred_df_copy.tweet_id)]
```

25 test

```
In [55]: twitarc_df_copy.head()
```

```
Out[55]:
```

	tweet_id	timestamp	source	text	rating_numerator	rating_denominator	name	doggo	floofer	pupper	puppo
0	892420643555336193	2017-08-01 16:23:56	<a href="http://twitter.com/download/iphone" r...	This is Phineas. He's a mystical boy. Only eve...	13	10	Phineas	None	None	None	None
1	892177421306343426	2017-08-01 00:17:27	<a href="http://twitter.com/download/iphone" r...	This is Tilly. She's just checking pup on you...	13	10	Tilly	None	None	None	None
2	891815181378084864	2017-07-31 00:18:03	<a href="http://twitter.com/download/iphone" r...	This is Archie. He is a rare Norwegian Pouncin...	12	10	Archie	None	None	None	None
3	891689557279858688	2017-07-30 15:58:51	<a href="http://twitter.com/download/iphone" r...	This is Darla. She commenced a snooze mid meal...	13	10	Darla	None	None	None	None
4	891327558926688256	2017-07-29 16:00:24	<a href="http://twitter.com/download/iphone" r...	This is Franklin. He would like you to stop ca...	12	10	Franklin	None	None	None	None

```
In [56]: twitarc_df_copy.shape
```

```
Out[56]: (1994, 11)
```

26 issue#7:

Only original ratings (no retweets) in the favourite retweet (tweet_id) that i need in this data set are the ones with images.

27 Define:

need to keep all the favourite retweet (tweet_id) which exist in ipred_df_copy(image file) then i can drop the other ones i will not be using.

28 code

```
In [57]: rtwt_df_copy = rtwt_df_copy[rtwt_df_copy.tweet_id.isin(ipred_df_copy.tweet_id)]
```

29 Test

```
In [58]: rtwt_df_copy.info()

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2057 entries, 0 to 2326
Data columns (total 4 columns):
favorite_count    2057 non-null int64
hashtag           2057 non-null object
retweet_count     2057 non-null int64
tweet_id          2057 non-null int64
dtypes: int64(3), object(1)
memory usage: 80.4+ KB
```

30 Issue #8:

7. in the ipred_df_copy data set p1, p2, p3 columns should be standardized as all lowercase also the Underscore '_' was present instead of space in dog breeds (p1,p2,p3).

31 Define:

i will remove and replace Remove '_' with space ' ' in this dog breeds for p1, p2, and p3 in the ipred_df_copy data set.

32 code

```
In [59]: ipred_df_copy = ipred_df_copy.replace('_', ' ', regex = True)

In [60]: ipred_df_copy['p1'] = ipred_df_copy['p1'].str.title()
         ipred_df_copy['p2'] = ipred_df_copy['p2'].str.title()
         ipred_df_copy['p3'] = ipred_df_copy['p3'].str.title()
```

33 test

In [61]: `ipred_df_copy.head(20)`

```
Out[61]:
```

	tweet_id	jpg_url \
0	666020888022790149	https://pbs.twimg.com/media/CT4udnOWwAAOaMy.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_3WEAA1OoZ.jpg
12	666073100786774016	https://pbs.twimg.com/media/CT5d9DZXAAALcwe.jpg
13	666082916733198337	https://pbs.twimg.com/media/CT5m4VGWEAAAtKc8.jpg
14	666094000022159362	https://pbs.twimg.com/media/CT5w9gUW4AAaBNN.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/CT56LSZWAAALJj2.jpg
18	666268910803644416	https://pbs.twimg.com/media/CT8QCd1WEAADXws.jpg
19	666273097616637952	https://pbs.twimg.com/media/CT8T1mtUwAA3aqm.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
5	1	Bernese Mountain Dog	0.651137	True	English Springer
6	1	Box Turtle	0.933012	False	Mud Turtle
7	1	Chow	0.692517	True	Tibetan Mastiff
8	1	Shopping Cart	0.962465	False	Shopping Basket
9	1	Miniature Poodle	0.201493	True	Komondor
10	1	Golden Retriever	0.775930	True	Tibetan Mastiff
11	1	Gordon Setter	0.503672	True	Yorkshire Terrier
12	1	Walker Hound	0.260857	True	English Foxhound
13	1	Pug	0.489814	True	Bull Mastiff
14	1	Bloodhound	0.195217	True	German Shepherd
15	1	Lhasa	0.582330	True	Shih-Tzu
16	1	English Setter	0.298617	True	Newfoundland
17	1	Hen	0.965932	False	Cock
18	1	Desktop Computer	0.086502	False	Desk
19	1	Italian Greyhound	0.176053	True	Toy Terrier

	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
5	0.263788	True	Greater Swiss Mountain Dog		0.016199	True
6	0.045885	False		Terrapin	0.017885	False
7	0.058279	True		Fur Coat	0.054449	False
8	0.014594	False		Golden Retriever	0.007959	True
9	0.192305	True	Soft-Coated Wheaten Terrier		0.082086	True
10	0.093718	True		Labrador Retriever	0.072427	True
11	0.174201	True		Pekinese	0.109454	True
12	0.175382	True		Ibizan Hound	0.097471	True
13	0.404722	True		French Bulldog	0.048960	True
14	0.078260	True		Malinois	0.075628	True
15	0.166192	True		Dandie Dinmont	0.089688	True
16	0.149842	True		Borzoi	0.133649	True
17	0.033919	False		Partridge	0.000052	False
18	0.085547	False		Bookcase	0.079480	False
19	0.111884	True		Basenji	0.111152	True

34 Issue #9:

- Drop useless columns in the image data set and then delete the columns that won't be used for the analysis.

35 Define:

i will need to take out the useless columns in the image data set and then delete the columns that i won't be used for the analysis.

36 code

```
In [62]: ipred_df_copy = ipred_df_copy.drop(['jpg_url', 'img_num'], axis= 1)
```

37 test

```
In [63]: ipred_df_copy.columns
```

```
Out[63]: Index(['tweet_id', 'p1', 'p1_conf', 'p1_dog', 'p2', 'p2_conf', 'p2_dog', 'p3',
               'p3_conf', 'p3_dog'],
              dtype='object')
```

```
In [64]: ipred_df_copy.head(2)
```

```

Out[64]:
      tweet_id      p1  p1_conf  p1_dog \
0  666020888022790149  Welsh Springer Spaniel  0.465074  True
1  666029285002620928      Redbone  0.506826  True

      p2  p2_conf  p2_dog      p3  p3_conf  p3_dog
0      Collie  0.156665  True  Shetland Sheepdog  0.061428  True
1  Miniature Pinscher  0.074192  True  Rhodesian Ridgeback  0.072010  True

```

38 issue#10:

- Drop useless columns in the Favourite retweet data set(`rtwt_df_copy`) and then delete the columns that won't be used for the analysis.

39 Define:

i will need to take out the useless columns in the Favourite retweet data set (`rtwt_df_copy`) and then delete the columns that i won't be used for the analysis.

40 code

```
In [65]: rtwt_df_copy = rtwt_df_copy.drop(['hashtag'], axis= 1)
```

41 Test

```
In [66]: rtwt_df_copy.columns
```

```
Out[66]: Index(['favorite_count', 'retweet_count', 'tweet_id'], dtype='object')
```

```
In [67]: rtwt_df_copy.info()
```

```

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2057 entries, 0 to 2326
Data columns (total 3 columns):
favorite_count    2057 non-null int64
retweet_count     2057 non-null int64
tweet_id         2057 non-null int64
dtypes: int64(3)
memory usage: 64.3 KB

```

42 Dealing with Tidiness issues .

43 Issues#1:

- Each category in the dog Stages are on different column space listed as doggo, floofer, pupper, puppo per column and will be merged into the Dog Stages.

44 Define:

in issue 1 i noticed that Each category in the dog Stages are on diffirent column space listed as doggo, floofer, pupper, puppo per column. so i converted the columns of dogs type : "doggo", "flooter", "pupper", "puppo" into one "stage" so as to drop the four type of dogs classification columns.

45 Code

```
In [68]: twitarc_df_copy['stage']=None
         twitarc_df_copy['stage'] = twitarc_df_copy.doggo + twitarc_df_copy.floofer + twitarc_df
```

```
In [69]: twitarc_df_copy['stage'].value_counts()
```

```
Out[69]: NoneNoneNoneNone      1688
         NoneNonepupperNone      203
         doggoNoneNoneNone       63
         NoneNoneNonepuppo       22
         doggoNonepupperNone       9
         NoneflooferNoneNone       7
         doggoflooferNoneNone       1
         doggoNoneNonepuppo        1
         Name: stage, dtype: int64
```

```
In [70]: twitarc_df_copy['stage'] = twitarc_df_copy['stage'].map(lambda x: x.replace("None", ""))
```

```
In [71]: twitarc_df_copy['stage'].value_counts
```

```
Out[71]: <bound method IndexOpsMixin.value_counts of 0
1
2
3
4
5
6
7
8
9      doggo
10
11
12     puppo
13
14     puppo
15
16
17
18
20
```

```

21
22
23
24
25
26
27
28
29     pupper
31
    ...

2326
2327
2328
2329
2330
2331
2332
2333
2334
2335
2336
2337
2338
2339
2340
2341
2342
2343
2344
2345
2346
2347
2348
2349
2350
2351
2352
2353
2354
2355
Name: stage, Length: 1994, dtype: object>

```

```

In [72]: twitarc_df_copy['stage'] = twitarc_df_copy['stage'].replace('doggopupper', 'pupper')
         twitarc_df_copy['stage'] = twitarc_df_copy['stage'].replace('doggofloofer', 'floofer')
         twitarc_df_copy['stage'] = twitarc_df_copy['stage'].replace('doggopuppo', 'puppo')

```

```

In [73]: twitarc_df_copy = twitarc_df_copy.drop(['doggo', 'floofer', 'pupper', 'puppo'], 1)

```


46 Test

```
In [74]: twitarc_df_copy['stage'].value_counts()
```

```
Out[74]:
```

	1688
pupper	212
doggo	63
puppo	23
floofer	8

Name: stage, dtype: int64

```
In [75]: twitarc_df_copy.head()
```

```
Out[75]:
```

	tweet_id	timestamp	source	text	rating_numerator	rating_denominator	name	stage
0	892420643555336193	2017-08-01 16:23:56	<a href="http://twitter.com/download/iphone" r...	This is Phineas. He's a mystical boy. Only eve...	13	10	Phineas	
1	892177421306343426	2017-08-01 00:17:27	<a href="http://twitter.com/download/iphone" r...	This is Tilly. She's just checking pup on you...	13	10	Tilly	
2	891815181378084864	2017-07-31 00:18:03	<a href="http://twitter.com/download/iphone" r...	This is Archie. He is a rare Norwegian Pouncin...	12	10	Archie	
3	891689557279858688	2017-07-30 15:58:51	<a href="http://twitter.com/download/iphone" r...	This is Darla. She commenced a snooze mid meal...	13	10	Darla	
4	891327558926688256	2017-07-29 16:00:24	<a href="http://twitter.com/download/iphone" r...	This is Franklin. He would like you to stop ca...	12	10	Franklin	

47 issues#2:

Add a gender feature in this data set.

48 Define:

i will new to add a gender feature in this data set.

49 Code

```
In [76]: # i will loop into all the texts in this twitter enhanced data set to check if it has a
        # and append the result in a list

        male = ['He', 'he', 'him', 'his', "he's", 'himself']
        female = ['She', 'she', 'her', 'hers', 'herself', "she's"]

In [77]: gender = []

        for text in twitarc_df_copy['text']:
            # Male
            if any(map(lambda v:v in male, text.split())):
                gender.append('male')
            # Female
            elif any(map(lambda v:v in female, text.split())):
                gender.append('female')
            # If group or not specified
            else:
                gender.append('NaN')

In [78]: len(gender)

Out[78]: 1994

In [79]: # Save the result in a new column 'dog name'
        twitarc_df_copy['gender'] = gender
```

50 Test

```
In [80]: print("gender count\n", twitarc_df_copy.gender.value_counts())

gender count
NaN      1132
male      636
female    226
Name: gender, dtype: int64
```

51 Test

52 issues#3:

Complete tag present instead of source name in source

53 Define:

Replace with source name instead of tag using regex

54 Code

```
In [81]: # Unique values and counts of source before replace
        twitarc_df_copy.source.value_counts()

Out[81]: <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>
        <a href="http://twitter.com" rel="nofollow">Twitter Web Client</a>
        <a href="https://about.twitter.com/products/tweetdeck" rel="nofollow">TweetDeck</a>
        Name: source, dtype: int64

In [82]: # replace the tags with actual source using regex
        twitarc_df_copy.source = twitarc_df_copy.source.apply(lambda x : re.findall('[A-Z][a-zA-Z]*', x))
```

55 Test

```
In [83]: # # Unique values and counts of source after replace
        twitarc_df_copy.source.value_counts()

Out[83]: Twitter for iPhone      1955
        Twitter Web Client      28
        TweetDeck               11
        Name: source, dtype: int64
```

56 issues#4:

to obey the rules of tidiness, create two new columns in the image prediction data set to replace p1, p2, p3, p1_conf, p2_conf, p3_conf.

57 Define:

to obey the rules of tidiness, I created two new columns in the image prediction data set called breed and confidence which will check each dog breed prediction accordingly and orderely (p1_dog, p2_dog, p3_dog), and then copy the breed with the highest confidence level into the breed column then also have a copy of the associated confidence level stored in the confidence column. in situation where all 3 prediction are False (NOT a valid dog breed) will automatically set the dog breed as 'none' and the confidence to 0.

58 Code

```
In [84]: # setup the conditions for selection
        condtn = [(ipred_df_copy['p1_dog'] == True),
                  (ipred_df_copy['p2_dog'] == True),
                  (ipred_df_copy['p3_dog'] == True)]

        # set the choice order based on the selection conditions for predicted breed
        breed_chi = [ipred_df_copy['p1'],
```

```

        ipred_df_copy['p2'],
        ipred_df_copy['p3']]

# set the choice order for confidence level based on the selection conditions
confidence_chi = [ipred_df_copy['p1_conf'],
                  ipred_df_copy['p2_conf'],
                  ipred_df_copy['p3_conf']]

# select the predicted breed based on the first successful condition
ipred_df_copy['breed'] = np.select(condtn,breed_chi,
                                   default = 'none')

# select the predicted confidence level based on the first successful condition
ipred_df_copy['confidence'] = np.select(condtn,confidence_chi,
                                       default = 0)

In [85]: ipred_df_copy.drop(['p1', 'p1_conf', 'p1_dog', 'p2','p2_conf', 'p2_dog', 'p3', 'p3_conf'])

In [86]: ipred_df_copy.head(100)

```

```

Out[86]:

```

	tweet_id	breed	confidence
0	666020888022790149	Welsh Springer Spaniel	0.465074
1	666029285002620928	Redbone	0.506826
2	666033412701032449	German Shepherd	0.596461
3	666044226329800704	Rhodesian Ridgeback	0.408143
4	666049248165822465	Miniature Pinscher	0.560311
5	666050758794694657	Bernese Mountain Dog	0.651137
6	666051853826850816	none	0.000000
7	666055525042405380	Chow	0.692517
8	666057090499244032	Golden Retriever	0.007959
9	666058600524156928	Miniature Poodle	0.201493
10	666063827256086533	Golden Retriever	0.775930
11	666071193221509120	Gordon Setter	0.503672
12	666073100786774016	Walker Hound	0.260857
13	666082916733198337	Pug	0.489814
14	666094000022159362	Bloodhound	0.195217
15	666099513787052032	Lhasa	0.582330
16	666102155909144576	English Setter	0.298617
17	666104133288665088	none	0.000000
18	666268910803644416	none	0.000000
19	666273097616637952	Italian Greyhound	0.176053
20	666287406224695296	Maltese Dog	0.857531
21	666293911632134144	none	0.000000
22	666337882303524864	Newfoundland	0.278407
23	666345417576210432	Golden Retriever	0.858744
24	666353288456101888	Malamute	0.336874
25	666362758909284353	none	0.000000
26	666373753744588802	Soft-Coated Wheaten Terrier	0.326467

27	666396247373291520	Chihuahua	0.978108
28	666407126856765440	Black-And-Tan Coonhound	0.529139
29	666411507551481857	none	0.000000
..
70	667192066997374976	Rottweiler	0.283640
71	667200525029539841	Siberian Husky	0.694904
72	667211855547486208	Golden Retriever	0.462556
73	667369227918143488	none	0.000000
74	667393430834667520	Papillon	0.557009
75	667405339315146752	Saint Bernard	0.381377
76	667435689202614272	Rottweiler	0.999091
77	667437278097252352	none	0.000000
78	667443425659232256	none	0.000000
79	667453023279554560	Labrador Retriever	0.825670
80	667455448082227200	Tibetan Terrier	0.676376
81	667470559035432960	Toy Poodle	0.304175
82	667491009379606528	Borzoi	0.852088
83	667495797102141441	Chihuahua	0.143957
84	667502640335572993	Labrador Retriever	0.996709
85	667509364010450944	Beagle	0.636169
86	667517642048163840	Italian Greyhound	0.125176
87	667524857454854144	Chesapeake Bay Retriever	0.088122
88	667530908589760512	Golden Retriever	0.633037
89	667534815156183040	Pembroke	0.435254
90	667538891197542400	Yorkshire Terrier	0.618957
91	667544320556335104	Pomeranian	0.412893
92	667546741521195010	Toy Poodle	0.787424
93	667549055577362432	none	0.000000
94	667550882905632768	none	0.000000
95	667550904950915073	Vizsla	0.000081
96	667724302356258817	none	0.000000
97	667728196545200128	Kuvasz	0.360159
98	667766675769573376	none	0.000000
99	667773195014021121	West Highland White Terrier	0.360465

[100 rows x 3 columns]

59 issues#5:

5. Combine three different data frames into one master data set(Merge the twitter_archive_enhanced.csv(twitter_df),image_predictions.tsv(ipred_df) and the additional data set (rtwt_df) together).

60 Define:

5. i will combine and merge all three columns in all 3 data set into a single data frame.

61 Code

```
In [87]: new_df = pd.merge(twitarc_df_copy, ipred_df_copy, on = 'tweet_id', how = 'inner')
        nnew_df = pd.merge(new_df, rtwt_df_copy, on = 'tweet_id', how = 'inner')
```

62 Test

```
In [88]: nnew_df.columns
```

```
Out[88]: Index(['tweet_id', 'timestamp', 'source', 'text', 'rating_numerator',
               'rating_denominator', 'name', 'stage', 'gender', 'breed', 'confidence',
               'favorite_count', 'retweet_count'],
              dtype='object')
```

```
In [89]: nnew_df.head(20)
```

```
Out[89]:
```

	tweet_id	timestamp	source	\
0	892420643555336193	2017-08-01 16:23:56	Twitter for iPhone	
1	892177421306343426	2017-08-01 00:17:27	Twitter for iPhone	
2	891815181378084864	2017-07-31 00:18:03	Twitter for iPhone	
3	891689557279858688	2017-07-30 15:58:51	Twitter for iPhone	
4	891327558926688256	2017-07-29 16:00:24	Twitter for iPhone	
5	891087950875897856	2017-07-29 00:08:17	Twitter for iPhone	
6	890971913173991426	2017-07-28 16:27:12	Twitter for iPhone	
7	890729181411237888	2017-07-28 00:22:40	Twitter for iPhone	
8	890609185150312448	2017-07-27 16:25:51	Twitter for iPhone	
9	890240255349198849	2017-07-26 15:59:51	Twitter for iPhone	
10	890006608113172480	2017-07-26 00:31:25	Twitter for iPhone	
11	889880896479866881	2017-07-25 16:11:53	Twitter for iPhone	
12	889665388333682689	2017-07-25 01:55:32	Twitter for iPhone	
13	889638837579907072	2017-07-25 00:10:02	Twitter for iPhone	
14	889531135344209921	2017-07-24 17:02:04	Twitter for iPhone	
15	889278841981685760	2017-07-24 00:19:32	Twitter for iPhone	
16	888917238123831296	2017-07-23 00:22:39	Twitter for iPhone	
17	888804989199671297	2017-07-22 16:56:37	Twitter for iPhone	
18	888554962724278272	2017-07-22 00:23:06	Twitter for iPhone	
19	888078434458587136	2017-07-20 16:49:33	Twitter for iPhone	

	text	rating_numerator	\
0	This is Phineas. He's a mystical boy. Only eve...	13	
1	This is Tilly. She's just checking pup on you...	13	
2	This is Archie. He is a rare Norwegian Pouncin...	12	
3	This is Darla. She commenced a snooze mid meal...	13	
4	This is Franklin. He would like you to stop ca...	12	
5	Here we have a majestic great white breaching ...	13	
6	Meet Jax. He enjoys ice cream so much he gets ...	13	
7	When you watch your owner call another dog a g...	13	
8	This is Zoey. She doesn't want to be one of th...	13	

9	This is Cassie. She is a college pup. Studying...	14
10	This is Koda. He is a South Australian decksha...	13
11	This is Bruno. He is a service shark. Only get...	13
12	Here's a puppo that seems to be on the fence a...	13
13	This is Ted. He does his best. Sometimes that'...	12
14	This is Stuart. He's sporting his favorite fan...	13
15	This is Oliver. You're witnessing one of his m...	13
16	This is Jim. He found a fren. Taught him how t...	12
17	This is Zeke. He has a new stick. Very proud o...	13
18	This is Ralphus. He's powering up. Attempting ...	13
19	This is Gerald. He was just told he didn't get...	12

	rating_denominator	name	stage	gender	breed \
0	10	Phineas		NaN	none
1	10	Tilly		female	Chihuahua
2	10	Archie		male	Chihuahua
3	10	Darla		female	Labrador Retriever
4	10	Franklin		male	Basset
5	10	None		NaN	Chesapeake Bay Retriever
6	10	Jax		male	Appenzeller
7	10	None		NaN	Pomeranian
8	10	Zoey		female	Irish Terrier
9	10	Cassie	doggo	female	Pembroke
10	10	Koda		male	Samoyed
11	10	Bruno		male	French Bulldog
12	10	None	puppo	NaN	Pembroke
13	10	Ted		male	French Bulldog
14	10	Stuart	puppo	male	Golden Retriever
15	10	Oliver		male	Whippet
16	10	Jim		male	Golden Retriever
17	10	Zeke		male	Golden Retriever
18	10	Ralphus		NaN	Siberian Husky
19	10	Gerald		male	French Bulldog

	confidence	favorite_count	retweet_count
0	0.000000	33837	7018
1	0.323581	29353	5303
2	0.716012	22073	3486
3	0.168086	36968	7231
4	0.555712	35344	7770
5	0.425595	17826	2603
6	0.341703	10374	1668
7	0.566142	56909	15770
8	0.487574	24546	3627
9	0.511319	27983	6106
10	0.957979	27062	6156
11	0.377417	24581	4172
12	0.966327	42084	8357

13	0.991650	23703	3720
14	0.953442	13356	1884
15	0.626152	22138	4449
16	0.714719	25659	3768
17	0.469760	22489	3542
18	0.700377	17330	2880
19	0.995026	19163	2900

```
In [90]: nnew_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1986 entries, 0 to 1985
Data columns (total 13 columns):
tweet_id          1986 non-null int64
timestamp         1986 non-null datetime64[ns]
source            1986 non-null object
text              1986 non-null object
rating_numerator  1986 non-null int64
rating_denominator 1986 non-null int64
name              1986 non-null object
stage             1986 non-null object
gender            1986 non-null object
breed             1986 non-null object
confidence        1986 non-null float64
favorite_count    1986 non-null int64
retweet_count     1986 non-null int64
dtypes: datetime64[ns](1), float64(1), int64(5), object(6)
memory usage: 217.2+ KB
```

Test

62.1 Storing Data

```
In [91]: nnew_df.to_csv('twitter_archive_master.csv', encoding='utf-8', index = False)
```

```
In [92]: df = pd.read_csv('twitter_archive_master.csv')
```

62.2 Analyzing and Visualizing Data

```
In [93]: nnew_df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1986 entries, 0 to 1985
Data columns (total 13 columns):
tweet_id          1986 non-null int64
timestamp         1986 non-null datetime64[ns]
source            1986 non-null object
text              1986 non-null object
```



```

rating_numerator      1986 non-null int64
rating_denominator     1986 non-null int64
name                   1986 non-null object
stage                  1986 non-null object
gender                 1986 non-null object
breed                  1986 non-null object
confidence              1986 non-null float64
favorite_count          1986 non-null int64
retweet_count           1986 non-null int64
dtypes: datetime64[ns](1), float64(1), int64(5), object(6)
memory usage: 217.2+ KB

```

63 Insights and Visualization:

1. What is the most retweeted tweet to date? picking from the Top 5.
2. What is the most favoured tweet to date? picking from the Top 5.
3. Most used Twitter Source?
4. Which stage of dogs got the highest retweet counts and favorite counts?
5. Is there a correlation between Favorite and Retweet ?
6. How did the retweet count and favourite count improve over time?
7. The most popular Dog Breeds?
8. what is the gender distribution like?

64 question:

1. What is the most favoured tweet to date? picking from the Top 5.

```
In [94]: df.sort_values(by = 'favorite_count', ascending = False).head(5)
```

```

Out[94]:
   tweet_id      timestamp      source \
768  744234799360020481  2016-06-18 18:26:18  Twitter for iPhone
305  822872901745569793  2017-01-21 18:26:02  Twitter for iPhone
396  807106840509214720  2016-12-09 06:17:20  Twitter for iPhone
107  866450705531457537  2017-05-22 00:28:40  Twitter for iPhone
803  739238157791694849  2016-06-04 23:31:25  Twitter for iPhone

   text      rating_numerator \
768  Here's a doggo realizing you can stand in a po...      13
305  Here's a super supportive puppo participating ...      13
396  This is Stephan. He just wants to help. 13/10 ...      13
107  This is Jamesy. He gives a kiss to every other...      13

```

803 Here's a doggo blowing bubbles. It's downright... 13

	rating_denominator	name	stage	gender	breed \
768	10	None	doggo	NaN	Labrador Retriever
305	10	None	puppo	NaN	Lakeland Terrier
396	10	Stephan	NaN	male	Chihuahua
107	10	Jamesy	pupper	male	French Bulldog
803	10	None	doggo	NaN	Eskimo Dog

	confidence	favorite_count	retweet_count
768	0.825333	145004	70821
305	0.196015	124204	39968
396	0.505370	111783	51740
107	0.905334	108981	30244
803	0.503372	107341	52955

65 Question:

2. What is the most retweeted tweet to date? picking from the Top 5?

In [95]: df.sort_values(by = 'retweet_count', ascending = False).head(5)

Out[95]:

	tweet_id	timestamp	source \
768	744234799360020481	2016-06-18 18:26:18	Twitter for iPhone
803	739238157791694849	2016-06-04 23:31:25	Twitter for iPhone
396	807106840509214720	2016-12-09 06:17:20	Twitter for iPhone
305	822872901745569793	2017-01-21 18:26:02	Twitter for iPhone
58	879415818425184262	2017-06-26 19:07:24	Twitter for iPhone

	text	rating_numerator \
768	Here's a doggo realizing you can stand in a po...	13
803	Here's a doggo blowing bubbles. It's downright...	13
396	This is Stephan. He just wants to help. 13/10 ...	13
305	Here's a super supportive puppo participating ...	13
58	This is Duddles. He did an attempt. 13/10 some...	13

	rating_denominator	name	stage	gender	breed \
768	10	None	doggo	NaN	Labrador Retriever
803	10	None	doggo	NaN	Eskimo Dog
396	10	Stephan	NaN	male	Chihuahua
305	10	None	puppo	NaN	Lakeland Terrier
58	10	Duddles	NaN	male	English Springer

	confidence	favorite_count	retweet_count
768	0.825333	145004	70821
803	0.503372	107341	52955
396	0.505370	111783	51740

305	0.196015	124204	39968
58	0.383404	92945	37478

In [96]: *#The most popular tweet is also the same as the most retweeted tweet; it has been retwe*

66 question:

3. Most used Twitter Source

```
In [97]: source = nnew_df['source'].value_counts()
source
```

```
Out[97]: Twitter for iPhone    1948
Twitter Web Client           28
TweetDeck                    10
Name: source, dtype: int64
```

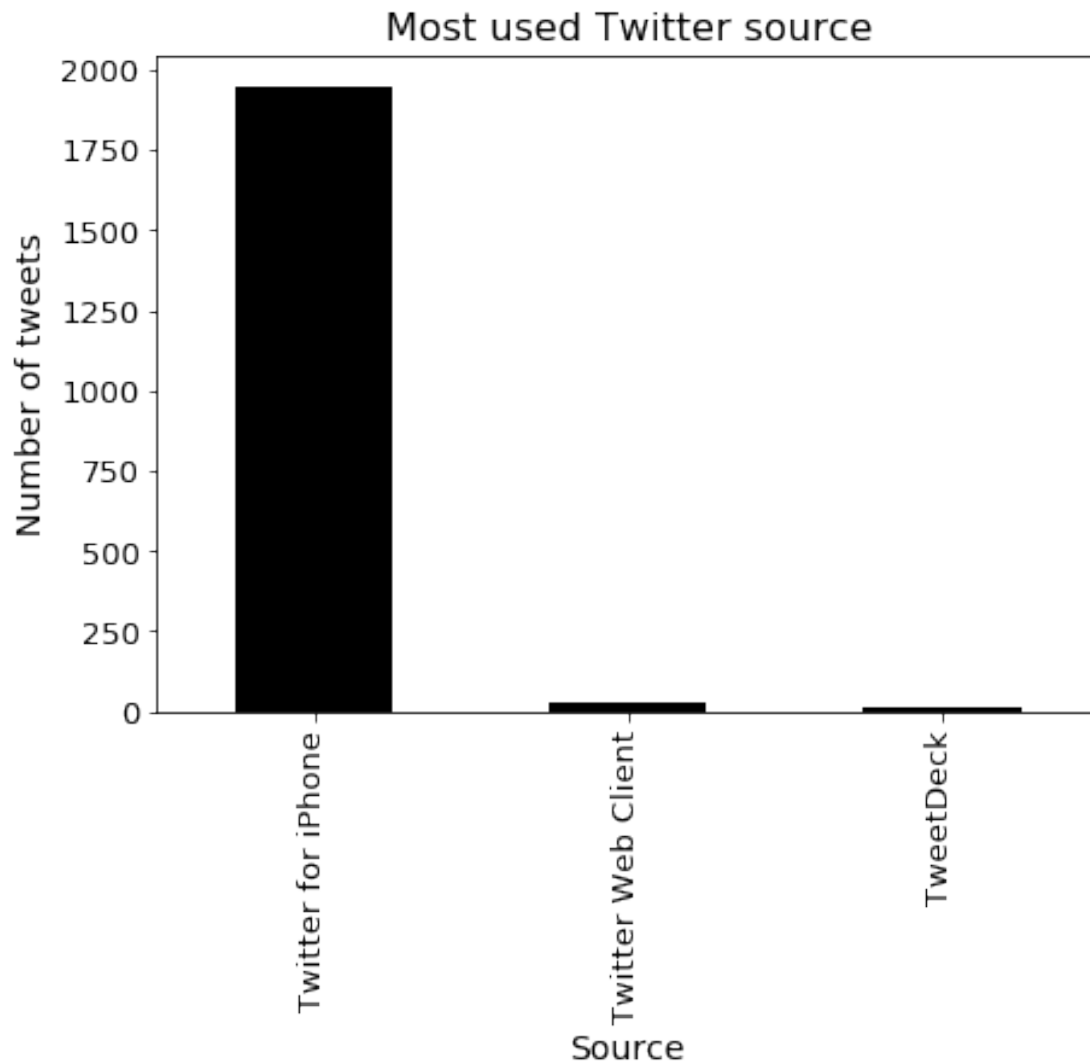
```
In [98]: g_bar = source.plot.bar(color = 'black', fontsize = 13)

#figure size(width, height)
g_bar.figure.set_size_inches(7, 5);

#Add labels
plt.title('Most used Twitter source', color = 'black', fontsize = '16')
plt.xlabel('Source', color = 'black', fontsize = '14')
plt.ylabel('Number of tweets', color = 'black', fontsize = '14');

print('the iphone is the most used source')
```

the iphone is the most used source



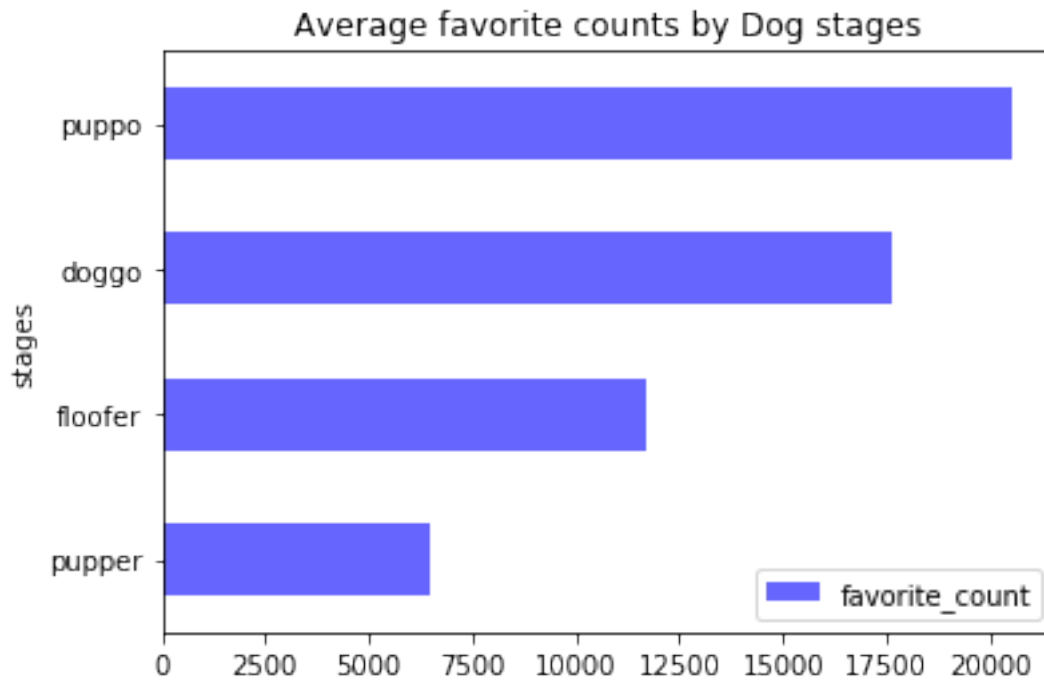
67 Question:

4. Which stage of dogs got the highest retweet counts and favorite counts?

```
In [99]: # i only need the stages roll
         stage_df = df[df["stage"].isnull()==False]

In [100]: #visualization 'Average favorite counts by Dog stages'
         stage_df = stage_df.query('stage=="pupper" or stage=="doggo" or stage=="puppo" or stage=="dogu"')
         stages_of_favorite_counts = pd.DataFrame(stage_df.groupby('stage').favorite_count.mean())
         stages_of_favorite_counts['stages'] = stages_of_favorite_counts.index
         stages_of_favorite_counts.plot(x="stages",y='favorite_count',kind='barh',title="Average favorite counts by Dog stages")

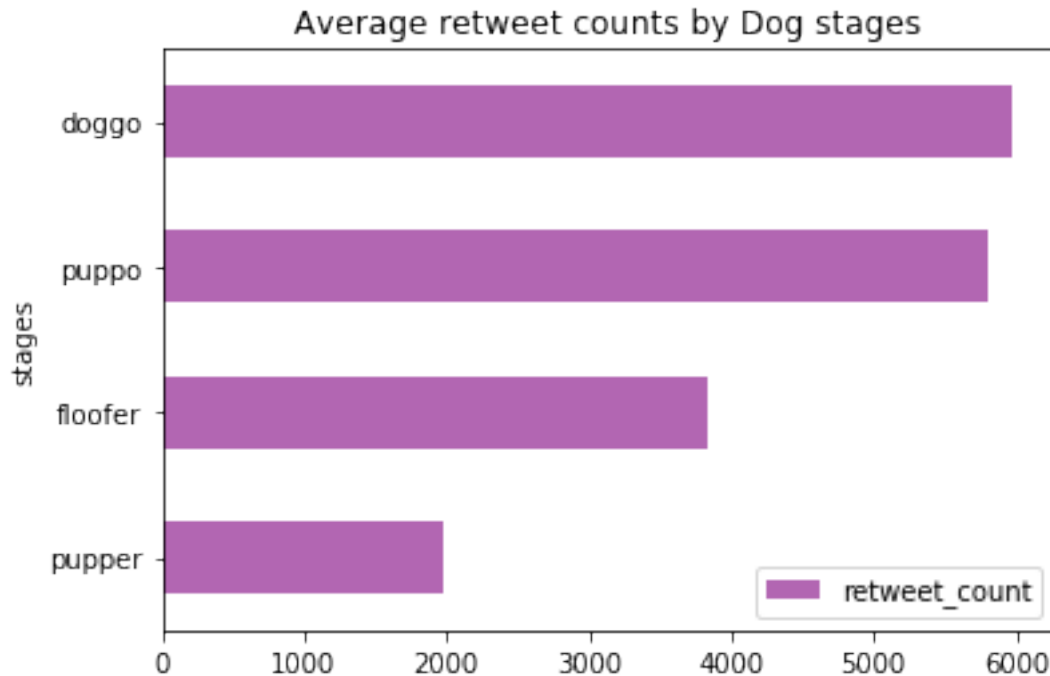
Out[100]: <matplotlib.axes._subplots.AxesSubplot at 0x7fef3c747198>
```



```
In [101]: #visualization 'Average retweet counts by Dog stages'
```

```
stages_of_retweet_counts = pd.DataFrame(stage_df.groupby('stage').retweet_count.mean())
stages_of_retweet_counts['stages'] = stages_of_retweet_counts.index
stages_of_retweet_counts.plot(x="stages",y='retweet_count',kind='barh',title="Average
```

```
Out[101]: <matplotlib.axes._subplots.AxesSubplot at 0x7fef3e8e45c0>
```



In [102]: *#The stage of Puppo got the highest favorite counts and the Doggo got the highest retweet counts*

68 Question:

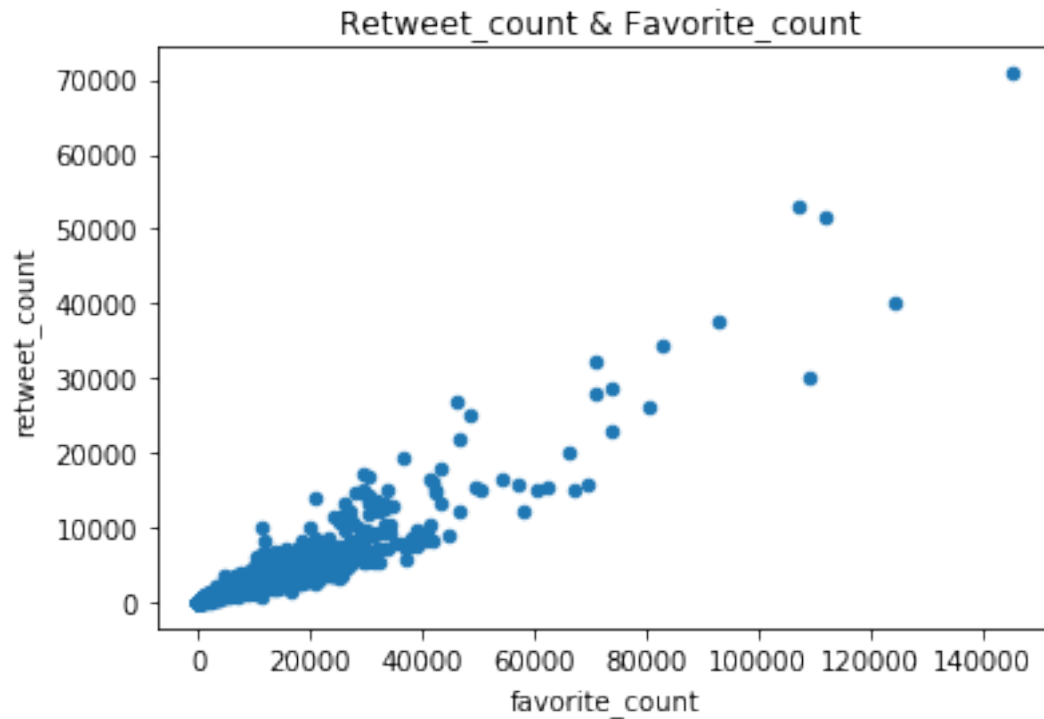
5. Is there a correlation between Favorite and Retweet ?

In [103]: *# To get the Correlation between Favorite and Retweet*

```
print("This scatter plot shows there is a positive correlation between favorite and Retweet")
```

```
df.plot(x='favorite_count', y='retweet_count', kind='scatter', title = 'Retweet_count vs Favorite_count')
```

This scatter plot shows there is a positive correlation between favorite and Retweet.



```
In [104]: df['favorite_count'].corr(nnew_df['retweet_count'])
```

```
Out[104]: 0.92841536325857732
```

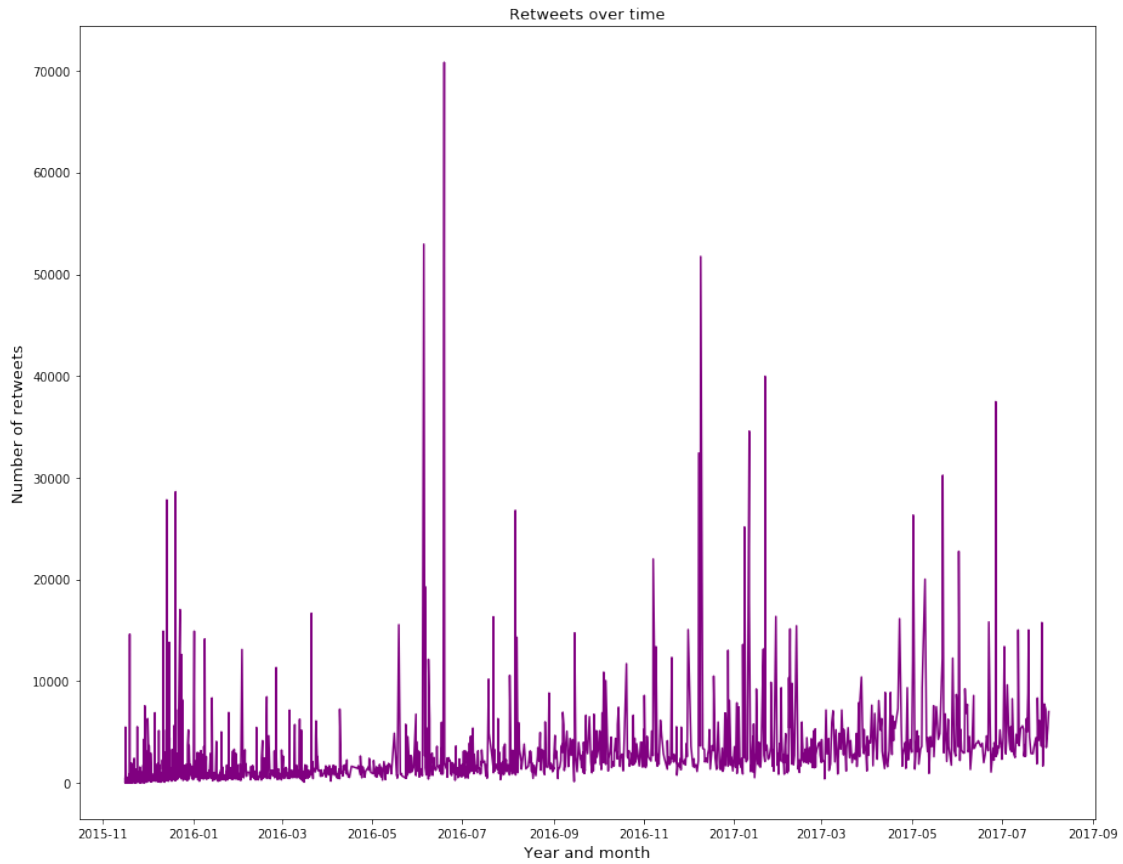
```
In [105]: #As expected after looking at the scatter plot, the correlation is 0.93 which is coeff
```

69 Question:

6. How did the retweet count and favourite count improve over time?

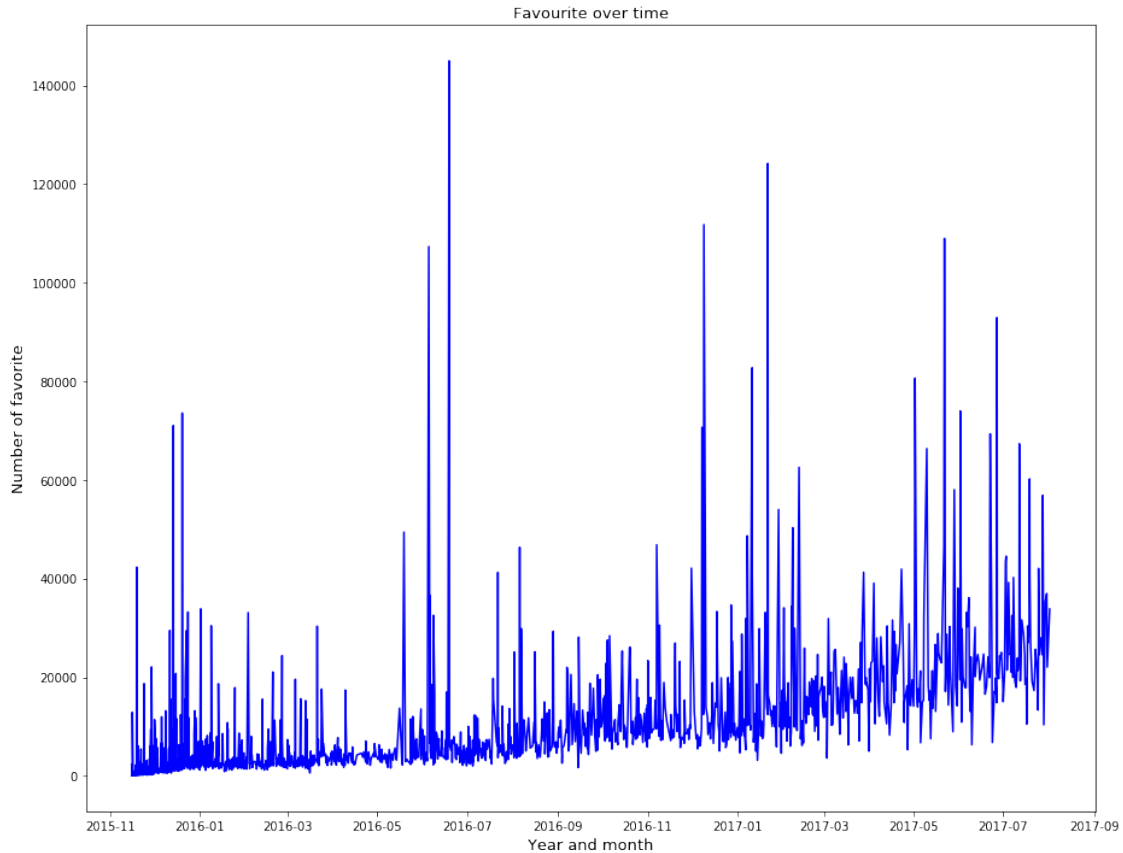
```
In [106]: sns.set_context()
plt.subplots(figsize=(15, 12))
plt.plot(nnew_df.timestamp,nnew_df.retweet_count,color = 'purple')
plt.xlabel('Year and month', color = 'black', fontsize = '13')
plt.ylabel('Number of retweets', color = 'black', fontsize = '13');
plt.title('Retweets over time', color = 'black', fontsize = '13')
```

```
Out[106]: Text(0.5,1,'Retweets over time')
```



In [107]: *#How did the favourite count improve over time?*

```
In [108]: #plot
sns.set_context()
plt.subplots(figsize=(15, 12))
plt.plot(nnew_df.timestamp,nnew_df.favorite_count,color = 'blue')
plt.title('Favourite over time', color = 'black', fontsize = '13')
plt.xlabel('Year and month', color = 'black', fontsize = '13')
plt.ylabel('Number of favorite', color = 'black', fontsize = '13');
```

In [109]: *#from the graph above the favourite counts and the retweet counts have high corrolatio*

70 Question:

7. The most popular Dog Breeds?

In [110]: `df.breed.value_counts()`

```
Out[110]: none          308
Golden Retriever      158
Labrador Retriever    105
Pembroke              95
Chihuahua             91
Pug                   62
Toy Poodle            50
Chow                  48
Pomeranian            42
Samoyed               41
Malamute              33
Chesapeake Bay Retriever 31
```

French Bulldog	30
Cocker Spaniel	30
Miniature Pinscher	25
Eskimo Dog	22
Cardigan	21
German Shepherd	21
Beagle	20
Shih-Tzu	20
Siberian Husky	20
Staffordshire Bullterrier	20
Shetland Sheepdog	19
Rottweiler	19
Maltese Dog	19
Lakeland Terrier	18
Kuvasz	18
Basset	17
Italian Greyhound	17
West Highland White Terrier	16
...	
Welsh Springer Spaniel	4
Irish Setter	4
Tibetan Terrier	4
Rhodesian Ridgeback	4
Tibetan Mastiff	4
Saluki	4
Cairn	3
Brabancon Griffon	3
Greater Swiss Mountain Dog	3
Briard	3
Komondor	3
Leonberg	3
Afghan Hound	3
Irish Water Spaniel	3
Curly-Coated Retriever	3
Toy Terrier	3
Sussex Spaniel	2
Australian Terrier	2
Groenendael	2
Black-And-Tan Coonhound	2
Wire-Haired Fox Terrier	2
Appenzeller	2
Clumber	1
Japanese Spaniel	1
Standard Schnauzer	1
Irish Wolfhound	1
Bouvier Des Flandres	1
Entlebucher	1
Silky Terrier	1

```

Scotch Terrier          1
Name: breed, Length: 114, dtype: int64

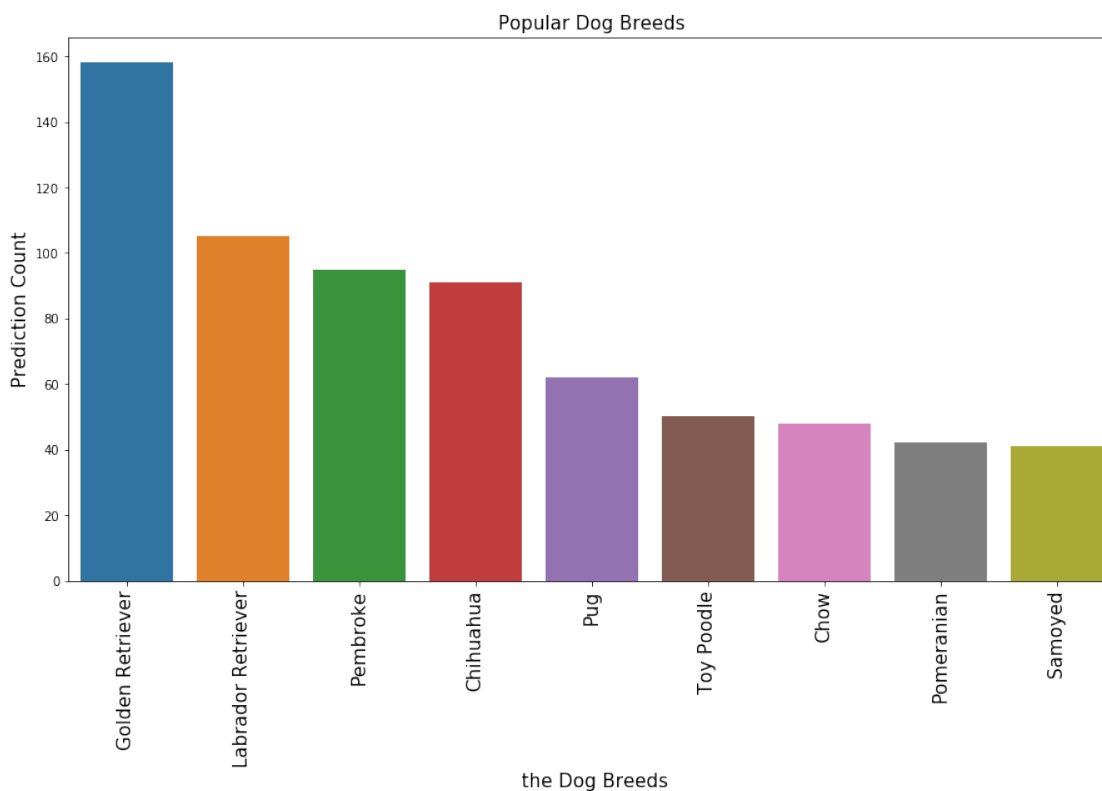
```

In [111]: *#none will be ignored cos it doesnt count so will start the array from 1:*

```

In [112]: plt.figure(figsize = (15,8))
          ax = sns.barplot(x = df['breed'].value_counts()[1:10].index,
                          y = df['breed'].value_counts()[1:10],
                          data = nnew_df);
          ax.set_xticklabels(ax.get_xticklabels(),rotation = 90, fontsize = 15);
          plt.xlabel(" the Dog Breeds",fontsize = 15);
          plt.ylabel("Prediction Count",fontsize = 15);
          plt.title("Popular Dog Breeds",fontsize = 15);

```



In [113]: *#The graph above,the golden retriever is a highest dog breed in this data set, followe*

71 question 8:

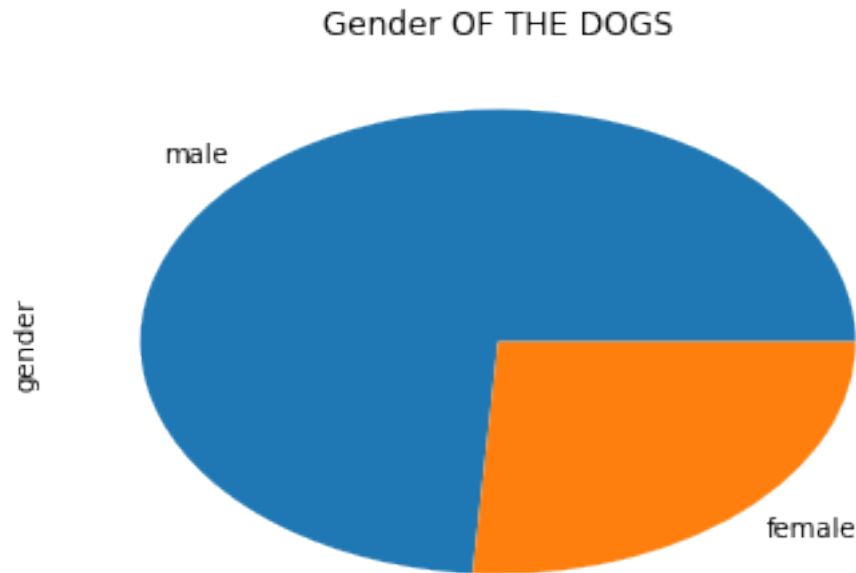
what is the gender distribution like?

```

In [114]: df[df['gender'].notnull()]['gender'].value_counts().plot(kind = 'pie')
          plt.title('Gender OF THE DOGS')

```

```
Out[114]: Text(0.5,1,'Gender OF THE DOGS')
```



```
In [115]: #There are more male dogs identified than female dogs from my graph.
```

72 Conclusion :

Data Wrangling Process carried out and the below analyses are based on the wrangled data,

1. The most popular tweet is also the same as the most retweeted tweet; it has been retweeted over 70,892 times and favourited over 145,088 times, which has breed name Labrador Retriever and stage doggo.
2. the iphone is the most used source in this data set.
3. The stage of Puppo got the highest favorite counts and the Doggo stage got the highest retweet counts.
4. The scatter plot shows there is a positive correlation(0.93) between favorite and Retweet.
5. from the graph above the favourite counts and the retweet counts have high correlation and are at a similar level. from 2015-11 to 2016-05 the favourite counts and retweet counts was lower compared to 2016-07 down to 2017, then the number of the favourite counts and retweet counts becomes higher and higher. As time goes on, more people are liking tweet than retweeting the tweet.
6. The graph above, the golden retriever is a highest dog breed in this data set, followed by the Labrador and then the Pembroke, Chihuahua, Pug, Toy Poodle and Chow, every other breeds gradually decreases in count.
7. There are more male dogs identified than female dogs from my graph.

73 Limitations:

Based on my previous biology Knowledge,the gender column is likely not representative of the dog population at large. this might be due to more male dogs having their sex announced by either by the @dog_rates twitter account or their owner or maybe both cases.it is possible that some of the dogs were misgendered either by the @dog_rates twitter account or my function.that is it's possible that @dog_rates is misgendering some females by using male pronouns as gender-neutral,which is a possibility.i cant draw a concrete conclusion since only a small portion of the rated dogs where not gendered.

In []: