

# wrangle\_act

December 7, 2018

## Data Wranling  
## Gather

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In [297]: #import the libraries
import tweepy
import pandas as pd
import numpy as np
import requests
from tweepy import OAuthHandler
import json
from timeit import default_timer as timer
import re
import matplotlib.pyplot as plt
import seaborn as sns

In [4]: #the given file
df1=pd.read_csv('twitter-archive-enhanced.csv')

In [5]: # Query Twitter API for each tweet in the Twitter archive and save JSON in a text file
consumer_key = ''
consumer_secret = ''
access_token = ''
access_secret = ''

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

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

In [6]: tweet_ids = df1.tweet_id.values
len(tweet_ids)

# Query Twitter's API for JSON data for each tweet ID in the Twitter archive
count = 0
fails_dict = {}
start = timer()
with open('tweet_json.txt', 'w') as outfile:
    for tweet_id in tweet_ids:
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count += 1
print(str(count) + ": " + str(tweet_id))
try:
    tweet = api.get_status(tweet_id, tweet_mode='extended')
    print("Success")
    json.dump(tweet._json, outfile)
    outfile.write('\n')
except tweepy.TweepError as e:
    print("Fail")
    fails_dict[tweet_id] = e
    pass
end = timer()
print(end - start)
print(fails_dict)

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2307: 666835007768551424  
Success  
2308: 666826780179869698  
Success  
2309: 666817836334096384  
Success  
2310: 666804364988780544  
Success  
2311: 666786068205871104  
Success  
2312: 666781792255496192  
Success  
2313: 666776908487630848  
Success  
2314: 666739327293083650  
Success  
2315: 666701168228331520  
Success  
2316: 666691418707132416  
Success  
2317: 666649482315059201  
Success  
2318: 666644823164719104  
Success  
2319: 666454714377183233  
Success  
2320: 666447344410484738  
Success  
2321: 666437273139982337

Success  
2322: 666435652385423360  
Success  
2323: 666430724426358785  
Success  
2324: 666428276349472768  
Success  
2325: 666421158376562688  
Success  
2326: 666418789513326592  
Success  
2327: 666411507551481857  
Success  
2328: 666407126856765440  
Success  
2329: 666396247373291520  
Success  
2330: 666373753744588802  
Success  
2331: 666362758909284353  
Success  
2332: 666353288456101888  
Success  
2333: 666345417576210432  
Success  
2334: 666337882303524864  
Success  
2335: 666293911632134144  
Success  
2336: 666287406224695296  
Success  
2337: 666273097616637952  
Success  
2338: 666268910803644416  
Success  
2339: 666104133288665088  
Success  
2340: 666102155909144576  
Success  
2341: 666099513787052032  
Success  
2342: 666094000022159362  
Success  
2343: 666082916733198337  
Success  
2344: 666073100786774016  
Success  
2345: 666071193221509120

```

Success
2346: 666063827256086533
Success
2347: 666058600524156928
Success
2348: 666057090499244032
Success
2349: 666055525042405380
Success
2350: 666051853826850816
Success
2351: 666050758794694657
Success
2352: 666049248165822465
Success
2353: 666044226329800704
Success
2354: 666033412701032449
Success
2355: 666029285002620928
Success
2356: 666020888022790149
Success
1913.912020577
{888202515573088257: TweepError([{'code': 144, 'message': 'No status found with that ID.'}],), 8

```

```

In [141]: #Reading JSON content as pandas dataframe
tweet_data = pd.read_json('tweet_json.txt', lines = True, encoding='utf-8')
tweet_data

```

```

Out[141]:
   contributors  coordinates  created_at  display_text_range \
0           NaN           NaN  2017-08-01 16:23:56          [0, 85]
1           NaN           NaN  2017-08-01 00:17:27          [0, 138]
2           NaN           NaN  2017-07-31 00:18:03          [0, 121]
3           NaN           NaN  2017-07-30 15:58:51          [0, 79]
4           NaN           NaN  2017-07-29 16:00:24          [0, 138]
5           NaN           NaN  2017-07-29 00:08:17          [0, 138]
6           NaN           NaN  2017-07-28 16:27:12          [0, 140]
7           NaN           NaN  2017-07-28 00:22:40          [0, 118]
8           NaN           NaN  2017-07-27 16:25:51          [0, 122]
9           NaN           NaN  2017-07-26 15:59:51          [0, 133]
10          NaN           NaN  2017-07-26 00:31:25          [0, 130]
11          NaN           NaN  2017-07-25 16:11:53          [0, 107]
12          NaN           NaN  2017-07-25 01:55:32          [0, 106]
13          NaN           NaN  2017-07-25 00:10:02          [0, 91]
14          NaN           NaN  2017-07-24 17:02:04          [0, 118]
15          NaN           NaN  2017-07-24 00:19:32          [0, 138]

```

16	NaN	NaN	2017-07-23 00:22:39	[0, 86]
17	NaN	NaN	2017-07-22 16:56:37	[0, 128]
18	NaN	NaN	2017-07-22 00:23:06	[0, 87]
19	NaN	NaN	2017-07-20 16:49:33	[0, 127]
20	NaN	NaN	2017-07-19 16:06:48	[0, 127]
21	NaN	NaN	2017-07-19 03:39:09	[0, 108]
22	NaN	NaN	2017-07-19 00:47:34	[0, 99]
23	NaN	NaN	2017-07-18 16:08:03	[0, 88]
24	NaN	NaN	2017-07-18 00:07:08	[0, 129]
25	NaN	NaN	2017-07-17 16:17:36	[0, 101]
26	NaN	NaN	2017-07-16 23:58:41	[0, 121]
27	NaN	NaN	2017-07-16 20:14:00	[0, 71]
28	NaN	NaN	2017-07-15 23:25:31	[0, 131]
29	NaN	NaN	2017-07-15 16:51:35	[27, 105]
...	...	...	...	...
2312	NaN	NaN	2015-11-17 00:24:19	[0, 140]
2313	NaN	NaN	2015-11-17 00:06:54	[0, 139]
2314	NaN	NaN	2015-11-16 23:23:41	[0, 137]
2315	NaN	NaN	2015-11-16 21:54:18	[0, 81]
2316	NaN	NaN	2015-11-16 21:10:36	[0, 140]
2317	NaN	NaN	2015-11-16 20:32:58	[0, 135]
2318	NaN	NaN	2015-11-16 20:01:42	[0, 112]
2319	NaN	NaN	2015-11-16 19:31:45	[0, 139]
2320	NaN	NaN	2015-11-16 16:37:02	[0, 138]
2321	NaN	NaN	2015-11-16 16:11:11	[0, 136]
2322	NaN	NaN	2015-11-16 15:14:19	[0, 46]
2323	NaN	NaN	2015-11-16 14:57:41	[0, 82]
2324	NaN	NaN	2015-11-16 04:02:55	[0, 134]
2325	NaN	NaN	2015-11-16 03:55:04	[0, 128]
2326	NaN	NaN	2015-11-16 03:44:34	[0, 140]
2327	NaN	NaN	2015-11-16 03:22:39	[0, 132]
2328	NaN	NaN	2015-11-16 02:38:37	[0, 125]
2329	NaN	NaN	2015-11-16 01:59:36	[0, 137]
2330	NaN	NaN	2015-11-16 01:52:02	[0, 137]
2331	NaN	NaN	2015-11-16 01:22:45	[0, 107]
2332	NaN	NaN	2015-11-16 01:01:59	[0, 135]
2333	NaN	NaN	2015-11-16 00:55:59	[0, 124]
2334	NaN	NaN	2015-11-16 00:49:46	[0, 140]
2335	NaN	NaN	2015-11-16 00:35:11	[0, 138]
2336	NaN	NaN	2015-11-16 00:30:50	[0, 140]
2337	NaN	NaN	2015-11-16 00:24:50	[0, 120]
2338	NaN	NaN	2015-11-16 00:04:52	[0, 137]
2339	NaN	NaN	2015-11-15 23:21:54	[0, 130]
2340	NaN	NaN	2015-11-15 23:05:30	[0, 139]
2341	NaN	NaN	2015-11-15 22:32:08	[0, 131]

```

0      {'hashtags': [], 'symbols': [], 'user_mentions...
                                entities \

```



```

2330 {'hashtags': [], 'symbols': [], 'user_mentions...
2331 {'hashtags': [], 'symbols': [], 'user_mentions...
2332 {'hashtags': [], 'symbols': [], 'user_mentions...
2333 {'hashtags': [], 'symbols': [], 'user_mentions...
2334 {'hashtags': [], 'symbols': [], 'user_mentions...
2335 {'hashtags': [], 'symbols': [], 'user_mentions...
2336 {'hashtags': [], 'symbols': [], 'user_mentions...
2337 {'hashtags': [], 'symbols': [], 'user_mentions...
2338 {'hashtags': [], 'symbols': [], 'user_mentions...
2339 {'hashtags': [], 'symbols': [], 'user_mentions...
2340 {'hashtags': [], 'symbols': [], 'user_mentions...
2341 {'hashtags': [], 'symbols': [], 'user_mentions...

```

	extended_entities	favorite_count \
0	{'media': [{'id': 892420639486877696, 'id_str'...	38173
1	{'media': [{'id': 892177413194625024, 'id_str'...	32740
2	{'media': [{'id': 891815175371796480, 'id_str'...	24650
3	{'media': [{'id': 891689552724799489, 'id_str'...	41509
4	{'media': [{'id': 891327551943041024, 'id_str'...	39682
5	{'media': [{'id': 891087942176911360, 'id_str'...	19927
6	{'media': [{'id': 890971906207338496, 'id_str'...	11648
7	{'media': [{'id': 890729118844600320, 'id_str'...	64397
8	{'media': [{'id': 890609177319665665, 'id_str'...	27370
9	{'media': [{'id': 890240245463175168, 'id_str'...	31418
10	{'media': [{'id': 890006600089468928, 'id_str'...	30204
11	{'media': [{'id': 889880888800096258, 'id_str'...	27369
12	{'media': [{'id': 889665366129029120, 'id_str'...	47375
13	{'media': [{'id': 889638825424826374, 'id_str'...	26741
14	{'media': [{'id': 889531127467266049, 'id_str'...	14880
15	{'media': [{'id': 889278779352338437, 'id_str'...	24861
16	{'media': [{'id': 888917229776945152, 'id_str'...	28660
17	{'media': [{'id': 888804981515575296, 'id_str'...	25176
18	{'media': [{'id': 888554915546542081, 'id_str'...	19529
19	{'media': [{'id': 888078426338406400, 'id_str'...	21430
20	{'media': [{'id': 887705281597243393, 'id_str'...	29717
21	{'media': [{'id': 887517108413886465, 'id_str'...	45579
22	{'media': [{'id': 887473949361045505, 'id_str'...	68014
23	{'media': [{'id': 887343120832229379, 'id_str'...	33173
24	{'media': [{'id': 887101385971384320, 'id_str'...	30108
25	{'media': [{'id': 886983218871902208, 'id_str'...	34616
26	{'media': [{'id': 886736868116754432, 'id_str'...	11872
27	{'media': [{'id': 886680331239161856, 'id_str'...	22097
28	{'media': [{'id': 886366138128449536, 'id_str'...	20872
29	NaN	115
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2314	{'media': [{'id': 666396240351993856, 'id_str'...	166

2315	{'media': [{ 'id': 666373746337402880, 'id_str'...	186
2316	{'media': [{ 'id': 666362717482020864, 'id_str'...	770
2317	{'media': [{ 'id': 666353280906170368, 'id_str'...	217
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2320	{'media': [{ 'id': 666293909010702337, 'id_str'...	494
2321	{'media': [{ 'id': 666287399580733440, 'id_str'...	146
2322	{'media': [{ 'id': 666273081518768128, 'id_str'...	174
2323	{'media': [{ 'id': 666268904428277760, 'id_str'...	102
2324	{'media': [{ 'id': 666104129232740352, 'id_str'...	14144
2325	{'media': [{ 'id': 666102150364286977, 'id_str'...	80
2326	{'media': [{ 'id': 666099505364733952, 'id_str'...	153
2327	{'media': [{ 'id': 666093996847063040, 'id_str'...	163
2328	{'media': [{ 'id': 666082912819875840, 'id_str'...	116
2329	{'media': [{ 'id': 666073098362486784, 'id_str'...	318
2330	{'media': [{ 'id': 666071190449033216, 'id_str'...	145
2331	{'media': [{ 'id': 666063820255862784, 'id_str'...	470
2332	{'media': [{ 'id': 666058597072306176, 'id_str'...	110
2333	{'media': [{ 'id': 666057085227016192, 'id_str'...	291
2334	{'media': [{ 'id': 666055517517848576, 'id_str'...	430
2335	{'media': [{ 'id': 666051848592334848, 'id_str'...	1208
2336	{'media': [{ 'id': 666050754986266625, 'id_str'...	132
2337	{'media': [{ 'id': 666049244999131136, 'id_str'...	108
2338	{'media': [{ 'id': 666044217047650304, 'id_str'...	296
2339	{'media': [{ 'id': 666033409081393153, 'id_str'...	124
2340	{'media': [{ 'id': 666029276303482880, 'id_str'...	128
2341	{'media': [{ 'id': 666020881337073664, 'id_str'...	2539

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



19	False	This is Gerald. He was just told he didn't get...	NaN
20	False	This is Jeffrey. He has a monopoly on the pool...	NaN
21	False	I've yet to rate a Venezuelan Hover Wiener. Th...	NaN
22	False	This is Canela. She attempted some fancy porch...	NaN
23	False	You may not have known you needed to see this ...	NaN
24	False	This... is a Jubilant Antarctic House Bear. We...	NaN
25	False	This is Maya. She's very shy. Rarely leaves he...	NaN
26	False	This is Mingus. He's a wonderful father to his...	NaN
27	False	This is Derek. He's late for a dog meeting. 13...	NaN
28	False	This is Roscoe. Another pupper fallen victim t...	NaN
29	False	@NonWhiteHat @MayhewMayhem omg hello tanner yo...	NaN
...	...	...	...
2312	False	This is quite the dog. Gets really excited whe...	NaN
2313	False	This is a southern Vesuvius bumblegruff. Can d...	NaN
2314	False	Oh goodness. A super rare northeast Qdoba kang...	NaN
2315	False	Those are sunglasses and a jean jacket. 11/10 ...	NaN
2316	False	Unique dog here. Very small. Lives in containe...	NaN
2317	False	Here we have a mixed Asiago from the Galápagos...	NaN
2318	False	Look at this jokester thinking seat belt laws ...	NaN
2319	False	This is an extremely rare horned Parthenon. No...	NaN
2320	False	This is a funny dog. Weird toes. Won't come do...	NaN
2321	False	This is an Albanian 3 1/2 legged Episcopalian...	NaN
2322	False	Can take selfies 11/10 <a href="https://t.co/ws2AMaWpW">https://t.co/ws2AMaWpW</a>	NaN
2323	False	Very concerned about fellow dog trapped in com...	NaN
2324	False	Not familiar with this breed. No tail (weird)...	NaN
2325	False	Oh my. Here you are seeing an Adobe Setter giv...	NaN
2326	False	Can stand on stump for what seems like a while...	NaN
2327	False	This appears to be a Mongolian Presbyterian mi...	NaN
2328	False	Here we have a well-established sunblockerspan...	NaN
2329	False	Let's hope this flight isn't Malaysian (lol). ...	NaN
2330	False	Here we have a northern speckled Rhododendron...	NaN
2331	False	This is the happiest dog you will ever see. Ve...	NaN
2332	False	Here is the Rand Paul of retrievers folks! He'...	NaN
2333	False	My oh my. This is a rare blond Canadian terrie...	NaN
2334	False	Here is a Siberian heavily armored polar bear ...	NaN
2335	False	This is an odd dog. Hard on the outside but lo...	NaN
2336	False	This is a truly beautiful English Wilson Staff...	NaN
2337	False	Here we have a 1949 1st generation vulpix. Enj...	NaN
2338	False	This is a purebred Piers Morgan. Loves to Netf...	NaN
2339	False	Here is a very happy pup. Big fan of well-main...	NaN
2340	False	This is a western brown Mitsubishi terrier. Up...	NaN
2341	False	Here we have a Japanese Irish Setter. Lost eye...	NaN

	...	quoted_status \
0	...	NaN
1	...	NaN
2	...	NaN
3	...	NaN

4	...	NaN
5	...	NaN
6	...	NaN
7	...	NaN
8	...	NaN
9	...	NaN
10	...	NaN
11	...	NaN
12	...	NaN
13	...	NaN
14	...	NaN
15	...	NaN
16	...	NaN
17	...	NaN
18	...	NaN
19	...	NaN
20	...	NaN
21	...	NaN
22	...	NaN
23	...	NaN
24	...	NaN
25	...	NaN
26	...	NaN
27	...	NaN
28	...	NaN
29	...	NaN
...	...	...
2312	...	NaN
2313	...	NaN
2314	...	NaN
2315	...	NaN
2316	...	NaN
2317	...	NaN
2318	...	NaN
2319	...	NaN
2320	...	NaN
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2322	...	NaN
2323	...	NaN
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2325	...	NaN
2326	...	NaN
2327	...	NaN
2328	...	NaN
2329	...	NaN
2330	...	NaN
2331	...	NaN
2332	...	NaN

2333	...	NaN
2334	...	NaN
2335	...	NaN
2336	...	NaN
2337	...	NaN
2338	...	NaN
2339	...	NaN
2340	...	NaN
2341	...	NaN

	quoted_status_id	quoted_status_id_str	quoted_status_permalink	\
0	NaN	NaN	NaN	
1	NaN	NaN	NaN	
2	NaN	NaN	NaN	
3	NaN	NaN	NaN	
4	NaN	NaN	NaN	
5	NaN	NaN	NaN	
6	NaN	NaN	NaN	
7	NaN	NaN	NaN	
8	NaN	NaN	NaN	
9	NaN	NaN	NaN	
10	NaN	NaN	NaN	
11	NaN	NaN	NaN	
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22	NaN	NaN	NaN	
23	NaN	NaN	NaN	
24	NaN	NaN	NaN	
25	NaN	NaN	NaN	
26	NaN	NaN	NaN	
27	NaN	NaN	NaN	
28	NaN	NaN	NaN	
29	NaN	NaN	NaN	
...	...	...	...	
2312	NaN	NaN	NaN	
2313	NaN	NaN	NaN	
2314	NaN	NaN	NaN	
2315	NaN	NaN	NaN	
2316	NaN	NaN	NaN	
2317	NaN	NaN	NaN	

2318	NaN	NaN	NaN
2319	NaN	NaN	NaN
2320	NaN	NaN	NaN
2321	NaN	NaN	NaN
2322	NaN	NaN	NaN
2323	NaN	NaN	NaN
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2325	NaN	NaN	NaN
2326	NaN	NaN	NaN
2327	NaN	NaN	NaN
2328	NaN	NaN	NaN
2329	NaN	NaN	NaN
2330	NaN	NaN	NaN
2331	NaN	NaN	NaN
2332	NaN	NaN	NaN
2333	NaN	NaN	NaN
2334	NaN	NaN	NaN
2335	NaN	NaN	NaN
2336	NaN	NaN	NaN
2337	NaN	NaN	NaN
2338	NaN	NaN	NaN
2339	NaN	NaN	NaN
2340	NaN	NaN	NaN
2341	NaN	NaN	NaN

	retweet_count	retweeted	retweeted_status \
0	8356	False	NaN
1	6173	False	NaN
2	4085	False	NaN
3	8500	False	NaN
4	9191	False	NaN
5	3060	False	NaN
6	2028	False	NaN
7	18538	False	NaN
8	4197	False	NaN
9	7260	False	NaN
10	7207	False	NaN
11	4890	False	NaN
12	9878	False	NaN
13	4470	False	NaN
14	2207	False	NaN
15	5280	False	NaN
16	4417	False	NaN
17	4223	False	NaN
18	3490	False	NaN
19	3439	False	NaN
20	5295	False	NaN
21	11470	False	NaN

22	17861	False	NaN
23	10231	False	NaN
24	5867	False	NaN
25	7638	False	NaN
26	3225	False	NaN
27	4390	False	NaN
28	3144	False	NaN
29	4	False	NaN
...	...	...	...
2312	323	False	NaN
2313	40	False	NaN
2314	84	False	NaN
2315	92	False	NaN
2316	564	False	NaN
2317	71	False	NaN
2318	133	False	NaN
2319	90	False	NaN
2320	352	False	NaN
2321	64	False	NaN
2322	76	False	NaN
2323	35	False	NaN
2324	6472	False	NaN
2325	12	False	NaN
2326	67	False	NaN
2327	72	False	NaN
2328	44	False	NaN
2329	162	False	NaN
2330	59	False	NaN
2331	215	False	NaN
2332	57	False	NaN
2333	140	False	NaN
2334	242	False	NaN
2335	841	False	NaN
2336	59	False	NaN
2337	41	False	NaN
2338	139	False	NaN
2339	43	False	NaN
2340	47	False	NaN
2341	507	False	NaN

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

[illegible]

2336	<a href="http://twitter.com/download/iphone" r...	False
2337	<a href="http://twitter.com/download/iphone" r...	False
2338	<a href="http://twitter.com/download/iphone" r...	False
2339	<a href="http://twitter.com/download/iphone" r...	False
2340	<a href="http://twitter.com/download/iphone" r...	False
2341	<a href="http://twitter.com/download/iphone" r...	False

		user
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1	{'id': 4196983835, 'id_str': '4196983835', 'na...	
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4	{'id': 4196983835, 'id_str': '4196983835', 'na...	
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7	{'id': 4196983835, 'id_str': '4196983835', 'na...	
8	{'id': 4196983835, 'id_str': '4196983835', 'na...	
9	{'id': 4196983835, 'id_str': '4196983835', 'na...	
10	{'id': 4196983835, 'id_str': '4196983835', 'na...	
11	{'id': 4196983835, 'id_str': '4196983835', 'na...	
12	{'id': 4196983835, 'id_str': '4196983835', 'na...	
13	{'id': 4196983835, 'id_str': '4196983835', 'na...	
14	{'id': 4196983835, 'id_str': '4196983835', 'na...	
15	{'id': 4196983835, 'id_str': '4196983835', 'na...	
16	{'id': 4196983835, 'id_str': '4196983835', 'na...	
17	{'id': 4196983835, 'id_str': '4196983835', 'na...	
18	{'id': 4196983835, 'id_str': '4196983835', 'na...	
19	{'id': 4196983835, 'id_str': '4196983835', 'na...	
20	{'id': 4196983835, 'id_str': '4196983835', 'na...	
21	{'id': 4196983835, 'id_str': '4196983835', 'na...	
22	{'id': 4196983835, 'id_str': '4196983835', 'na...	
23	{'id': 4196983835, 'id_str': '4196983835', 'na...	
24	{'id': 4196983835, 'id_str': '4196983835', 'na...	
25	{'id': 4196983835, 'id_str': '4196983835', 'na...	
26	{'id': 4196983835, 'id_str': '4196983835', 'na...	
27	{'id': 4196983835, 'id_str': '4196983835', 'na...	
28	{'id': 4196983835, 'id_str': '4196983835', 'na...	
29	{'id': 4196983835, 'id_str': '4196983835', 'na...	
...	...	...
2312	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2313	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2314	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2315	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2316	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2317	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2318	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2319	{'id': 4196983835, 'id_str': '4196983835', 'na...	
2320	{'id': 4196983835, 'id_str': '4196983835', 'na...	

```

2321 {'id': 4196983835, 'id_str': '4196983835', 'na...
2322 {'id': 4196983835, 'id_str': '4196983835', 'na...
2323 {'id': 4196983835, 'id_str': '4196983835', 'na...
2324 {'id': 4196983835, 'id_str': '4196983835', 'na...
2325 {'id': 4196983835, 'id_str': '4196983835', 'na...
2326 {'id': 4196983835, 'id_str': '4196983835', 'na...
2327 {'id': 4196983835, 'id_str': '4196983835', 'na...
2328 {'id': 4196983835, 'id_str': '4196983835', 'na...
2329 {'id': 4196983835, 'id_str': '4196983835', 'na...
2330 {'id': 4196983835, 'id_str': '4196983835', 'na...
2331 {'id': 4196983835, 'id_str': '4196983835', 'na...
2332 {'id': 4196983835, 'id_str': '4196983835', 'na...
2333 {'id': 4196983835, 'id_str': '4196983835', 'na...
2334 {'id': 4196983835, 'id_str': '4196983835', 'na...
2335 {'id': 4196983835, 'id_str': '4196983835', 'na...
2336 {'id': 4196983835, 'id_str': '4196983835', 'na...
2337 {'id': 4196983835, 'id_str': '4196983835', 'na...
2338 {'id': 4196983835, 'id_str': '4196983835', 'na...
2339 {'id': 4196983835, 'id_str': '4196983835', 'na...
2340 {'id': 4196983835, 'id_str': '4196983835', 'na...
2341 {'id': 4196983835, 'id_str': '4196983835', 'na...

```

```
[2342 rows x 32 columns]
```

```

In [8]: #download tweet image prediction
response= requests.get('https://d17h27t6h515a5.cloudfront.net/topher/2017/August/599fd2a
with open('image_prediction.tsv',mode='wb')as file:
    file.write(response.content)
images=pd.read_csv('image_prediction.tsv',delimiter='\t')

```

## 0.1 Assess

```

In [9]: #check what information provided in the given file
df1.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 [10]: #checking the image file info
         images.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 [11]: #checking the tweet_data file accessing from twitter-API
         tweet_data.info()

```

```

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2342 entries, 0 to 2341
Data columns (total 32 columns):
contributors      0 non-null float64
coordinates       0 non-null float64
created_at        2342 non-null datetime64[ns]
display_text_range 2342 non-null object
entities          2342 non-null object
extended_entities  2068 non-null object
favorite_count    2342 non-null int64
favorited         2342 non-null bool
full_text         2342 non-null object
geo              0 non-null float64

```

```

id                2342 non-null int64
id_str            2342 non-null int64
in_reply_to_screen_name  77 non-null object
in_reply_to_status_id    77 non-null float64
in_reply_to_status_id_str 77 non-null float64
in_reply_to_user_id      77 non-null float64
in_reply_to_user_id_str  77 non-null float64
is_quote_status        2342 non-null bool
lang                2342 non-null object
place              1 non-null object
possibly_sensitive     2206 non-null float64
possibly_sensitive_appealable 2206 non-null float64
quoted_status         24 non-null object
quoted_status_id       26 non-null float64
quoted_status_id_str   26 non-null float64
quoted_status_permalink 26 non-null object
retweet_count          2342 non-null int64
retweeted             2342 non-null bool
retweeted_status        168 non-null object
source               2342 non-null object
truncated             2342 non-null bool
user                 2342 non-null object
dtypes: bool(4), datetime64[ns](1), float64(11), int64(4), object(12)
memory usage: 539.8+ KB

```

```
In [12]: df1.sample(10)
```

```

Out[12]:
      tweet_id  in_reply_to_status_id  in_reply_to_user_id \
1755  678774928607469569                NaN                NaN
2266  667530908589760512                NaN                NaN
1540  689659372465688576                NaN                NaN
1486  693109034023534592                NaN                NaN
1851  675710890956750848                NaN                NaN
367   828770345708580865                NaN                NaN
239   846874817362120707                NaN                NaN
1506  691756958957883396                NaN                NaN
112   870804317367881728                NaN                NaN
1282  708738143638450176                NaN                NaN

      timestamp \
1755  2015-12-21 03:12:08 +0000
2266  2015-11-20 02:32:25 +0000
1540  2016-01-20 04:03:02 +0000
1486  2016-01-29 16:30:45 +0000
1851  2015-12-12 16:16:45 +0000
367   2017-02-07 01:00:22 +0000
239   2017-03-29 00:01:05 +0000

```

1506	2016-01-25 22:58:05 +0000
112	2017-06-03 00:48:22 +0000
1282	2016-03-12 19:35:15 +0000

	source \
1755	<a href="http://twitter.com/download/iphone" r...
2266	<a href="http://twitter.com" rel="nofollow">Tw...
1540	<a href="http://twitter.com/download/iphone" r...
1486	<a href="http://twitter.com/download/iphone" r...
1851	<a href="http://twitter.com/download/iphone" r...
367	<a href="http://twitter.com/download/iphone" r...
239	<a href="http://twitter.com/download/iphone" r...
1506	<a href="http://twitter.com/download/iphone" r...
112	<a href="http://twitter.com/download/iphone" r...
1282	<a href="http://twitter.com/download/iphone" r...

	text	retweeted_status_id \
1755	This is Tug. He's not required to wear the con...	NaN
2266	Meet Naphaniel. He doesn't necessarily enjoy h...	NaN
1540	This is Ricky. He's being escorted out of the ...	NaN
1486	"Thank you friend that was a swell petting" 11...	NaN
1851	This is Lenny. He was just told that he couldn...	NaN
367	This is Alfie. He's your Lyft for tonight. Kin...	NaN
239	This is Tuck. As you can see, he's rather h*ck...	NaN
1506	THE BRITISH ARE COMING\nTHE BRITISH ARE COMING...	NaN
112	Real funny guys. Sending in a pic without a do...	NaN
1282	This is Coco. She gets to stay on the Bachelor...	NaN

	retweeted_status_user_id	retweeted_status_timestamp \
1755	NaN	NaN
2266	NaN	NaN
1540	NaN	NaN
1486	NaN	NaN
1851	NaN	NaN
367	NaN	NaN
239	NaN	NaN
1506	NaN	NaN
112	NaN	NaN
1282	NaN	NaN

	expanded_urls	rating_numerator \
1755	https://twitter.com/dog_rates/status/678774928...	11
2266	https://twitter.com/dog_rates/status/667530908...	10
1540	https://twitter.com/dog_rates/status/689659372...	8
1486	https://twitter.com/dog_rates/status/693109034...	11
1851	https://twitter.com/dog_rates/status/675710890...	12
367	https://twitter.com/dog_rates/status/828770345...	13
239	https://twitter.com/dog_rates/status/846874817...	13

```

1506 https://twitter.com/dog_rates/status/691756958... 10
112 https://twitter.com/dog_rates/status/870804317... 11
1282 https://twitter.com/dog_rates/status/708738143... 11

```

	rating_denominator	name	doggo	floofer	pupper	puppo
1755	10	Tug	None	None	None	None
2266	10	Naphaniel	None	None	None	None
1540	10	Ricky	None	None	None	None
1486	10	None	None	None	None	None
1851	10	Lenny	None	None	None	None
367	10	Alfie	None	None	None	None
239	10	Tuck	None	None	None	None
1506	10	None	None	None	None	None
112	10	None	None	None	None	None
1282	10	Coco	None	None	None	None

```
In [13]: df1['rating_numerator'].value_counts()
```

```

Out[13]: 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 [ ]:

In [14]: df1.describe()

```

Out[14]:
      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 [15]: df1.isnull().sum()

```

Out[15]: tweet_id      0
         in_reply_to_status_id  2278

```

```

in_reply_to_user_id      2278
timestamp                0
source                  0
text                    0
retweeted_status_id      2175
retweeted_status_user_id 2175
retweeted_status_timestamp 2175
expanded_urls            59
rating_numerator         0
rating_denominator       0
name                    0
doggo                   0
floofer                 0
pupper                  0
puppo                   0
dtype: int64

```

```
In [16]: df1.sample(30)
```

```

Out[16]:
   tweet_id  in_reply_to_status_id  in_reply_to_user_id \
921  756288534030475264          NaN          NaN
1174  720059472081784833          NaN          NaN
857   763956972077010945    7.638652e+17    1.584641e+07
1650  683515932363329536          NaN          NaN
129   867421006826221569          NaN          NaN
1547  689280876073582592          NaN          NaN
1665  682750546109968385          NaN          NaN
1501  692142790915014657    6.920419e+17    4.196984e+09
1232  713175907180089344          NaN          NaN
1666  682697186228989953          NaN          NaN
1597  686050296934563840          NaN          NaN
2244  667886921285246976          NaN          NaN
1719  680161097740095489          NaN          NaN
725   782722598790725632          NaN          NaN
1368  702539513671897089          NaN          NaN
321   834209720923721728          NaN          NaN
1566  687841446767013888          NaN          NaN
1058  741793263812808706          NaN          NaN
343   832040443403784192          NaN          NaN
1916  674307341513269249          NaN          NaN
594   798705661114773508          NaN          NaN
304   836380477523124226          NaN          NaN
1848  675798442703122432          NaN          NaN
323   834089966724603904          NaN          NaN
1795  677314812125323265          NaN          NaN
1171  720415127506415616          NaN          NaN
660   791312159183634433          NaN          NaN
847   766078092750233600          NaN          NaN

```

100	872820683541237760	NaN	NaN
819	770655142660169732	NaN	NaN

	timestamp \
921	2016-07-22 00:43:32 +0000
1174	2016-04-13 01:22:10 +0000
857	2016-08-12 04:35:10 +0000
1650	2016-01-03 05:11:12 +0000
129	2017-05-24 16:44:18 +0000
1547	2016-01-19 02:59:01 +0000
1665	2016-01-01 02:29:49 +0000
1501	2016-01-27 00:31:15 +0000
1232	2016-03-25 01:29:21 +0000
1666	2015-12-31 22:57:47 +0000
1597	2016-01-10 05:01:51 +0000
2244	2015-11-21 02:07:05 +0000
1719	2015-12-24 23:00:17 +0000
725	2016-10-02 23:23:04 +0000
1368	2016-02-24 17:04:07 +0000
321	2017-02-22 01:14:30 +0000
1566	2016-01-15 03:39:15 +0000
1058	2016-06-12 00:44:30 +0000
343	2017-02-16 01:34:34 +0000
1916	2015-12-08 19:19:32 +0000
594	2016-11-16 01:54:03 +0000
304	2017-02-28 01:00:19 +0000
1848	2015-12-12 22:04:39 +0000
323	2017-02-21 17:18:39 +0000
1795	2015-12-17 02:30:09 +0000
1171	2016-04-14 00:55:25 +0000
660	2016-10-26 16:14:55 +0000
847	2016-08-18 01:03:45 +0000
100	2017-06-08 14:20:41 +0000
819	2016-08-30 16:11:18 +0000

	source \
921	<a href="http://twitter.com/download/iphone" r...
1174	<a href="http://twitter.com/download/iphone" r...
857	<a href="http://twitter.com/download/iphone" r...
1650	<a href="http://vine.co" rel="nofollow">Vine -...
129	<a href="http://twitter.com/download/iphone" r...
1547	<a href="http://twitter.com/download/iphone" r...
1665	<a href="http://twitter.com/download/iphone" r...
1501	<a href="http://twitter.com/download/iphone" r...
1232	<a href="http://twitter.com/download/iphone" r...
1666	<a href="http://twitter.com/download/iphone" r...
1597	<a href="http://twitter.com/download/iphone" r...
2244	<a href="http://twitter.com/download/iphone" r...

1719 <a href="http://twitter.com/download/iphone" r...  
 725 <a href="http://twitter.com/download/iphone" r...  
 1368 <a href="http://twitter.com/download/iphone" r...  
 321 <a href="http://twitter.com/download/iphone" r...  
 1566 <a href="http://vine.co" rel="nofollow">Vine -...  
 1058 <a href="http://twitter.com/download/iphone" r...  
 343 <a href="http://twitter.com/download/iphone" r...  
 1916 <a href="http://vine.co" rel="nofollow">Vine -...  
 594 <a href="http://twitter.com/download/iphone" r...  
 304 <a href="http://twitter.com/download/iphone" r...  
 1848 <a href="http://twitter.com/download/iphone" r...  
 323 <a href="http://twitter.com/download/iphone" r...  
 1795 <a href="http://twitter.com/download/iphone" r...  
 1171 <a href="http://twitter.com/download/iphone" r...  
 660 <a href="http://twitter.com/download/iphone" r...  
 847 <a href="http://twitter.com/download/iphone" r...  
 100 <a href="http://twitter.com/download/iphone" r...  
 819 <a href="http://twitter.com/download/iphone" r...

	text	retweeted_status_id \
921	Here's a heartwarming scene of a single father...	NaN
1174	This is Charleson. He lost his plunger. Looked...	NaN
857	@TheEllenShow I'm not sure if you know this bu...	NaN
1650	HEY PUP WHAT'S THE PART OF THE HUMAN BODY THAT...	NaN
129	This is Shikha. She just watched you drop a sk...	NaN
1547	This is Herald. He wants you to know he could ...	NaN
1665	Meet Taco. He's a speckled Garnier Fructis. Lo...	NaN
1501	These are some pictures of Teddy that further ...	NaN
1232	Say hello to Opie and Clarkus. Clarkus fell as...	NaN
1666	NAAAAAAA ZAPENYAAAAA MABADI-CHIBAWAAA 12/10 ht...	NaN
1597	This is Flávio. He's a Macedonian Poppycock. 9...	NaN
2244	This is Erik. He's fucken massive. But also ki...	NaN
1719	Meet Goliath. He's an example of irony. Head i...	NaN
725	This is Penny. She fought a bee and the bee wo...	NaN
1368	This is a Wild Tuscan Poofwiggle. Careful not ...	NaN
321	This is Wilson. He's aware that he has somethi...	NaN
1566	13/10 I can't stop watching this (vid by @k8ly...	NaN
1058	When your crush won't pay attention to you. Bo...	NaN
343	RT @dog_rates: This is Klein. These pics were ...	7.699404e+17
1916	This is life-changing. 12/10 https://t.co/SroT...	NaN
594	RT @dog_rates: Meet Baloo. He's expecting a fa...	7.406770e+17
304	This is Ava. She just blasted off. Streamline ...	NaN
1848	This is Bernie. He just touched a boob for the...	NaN
323	DOGGO ON THE LOOSE I REPEAT DOGGO ON THE LOOSE...	NaN
1795	Meet Tassy & Bee. Tassy is pretty chill, b...	NaN
1171	Garden's coming in nice this year. 10/10 https...	NaN
660	This is Mabel. She's super h*ckin smol. Portab...	NaN
847	RT @dog_rates: This is Colby. He's currently r...	7.258423e+17



100	Here are my favorite #dogsatpollingstations \n...	NaN
819	We only rate dogs. Pls stop sending in non-can...	NaN

	retweeted_status_user_id	retweeted_status_timestamp	\
921	NaN	NaN	
1174	NaN	NaN	
857	NaN	NaN	
1650	NaN	NaN	
129	NaN	NaN	
1547	NaN	NaN	
1665	NaN	NaN	
1501	NaN	NaN	
1232	NaN	NaN	
1666	NaN	NaN	
1597	NaN	NaN	
2244	NaN	NaN	
1719	NaN	NaN	
725	NaN	NaN	
1368	NaN	NaN	
321	NaN	NaN	
1566	NaN	NaN	
1058	NaN	NaN	
343	4.196984e+09	2016-08-28 16:51:16 +0000	
1916	NaN	NaN	
594	4.196984e+09	2016-06-08 22:48:46 +0000	
304	NaN	NaN	
1848	NaN	NaN	
323	NaN	NaN	
1795	NaN	NaN	
1171	NaN	NaN	
660	NaN	NaN	
847	4.196984e+09	2016-04-29 00:21:01 +0000	
100	NaN	NaN	
819	NaN	NaN	

	expanded_urls	rating_numerator	\
921	https://twitter.com/dog_rates/status/756288534...	12	
1174	https://twitter.com/dog_rates/status/720059472...	9	
857	NaN	12	
1650	https://vine.co/v/ibvnzrauFuV	11	
129	https://twitter.com/dog_rates/status/867421006...	12	
1547	https://twitter.com/dog_rates/status/689280876...	10	
1665	https://twitter.com/dog_rates/status/682750546...	9	
1501	https://twitter.com/dog_rates/status/692142790...	13	
1232	https://twitter.com/dog_rates/status/713175907...	10	
1666	https://twitter.com/dog_rates/status/682697186...	12	
1597	https://twitter.com/dog_rates/status/686050296...	11	
2244	https://twitter.com/dog_rates/status/667886921...	11	

1719	<a href="https://twitter.com/dog_rates/status/680161097...">https://twitter.com/dog_rates/status/680161097...</a>	12
725	<a href="https://twitter.com/dog_rates/status/782722598...">https://twitter.com/dog_rates/status/782722598...</a>	10
1368	<a href="https://twitter.com/dog_rates/status/702539513...">https://twitter.com/dog_rates/status/702539513...</a>	12
321	<a href="https://twitter.com/dog_rates/status/834209720...">https://twitter.com/dog_rates/status/834209720...</a>	12
1566	<a href="https://vine.co/v/iOWwUPH1hrw">https://vine.co/v/iOWwUPH1hrw</a>	13
1058	<a href="https://twitter.com/dog_rates/status/741793263...">https://twitter.com/dog_rates/status/741793263...</a>	10
343	<a href="https://twitter.com/dog_rates/status/769940425...">https://twitter.com/dog_rates/status/769940425...</a>	12
1916	<a href="https://vine.co/v/i7nWzrenw5h">https://vine.co/v/i7nWzrenw5h</a>	12
594	<a href="https://twitter.com/dog_rates/status/740676976...">https://twitter.com/dog_rates/status/740676976...</a>	11
304	<a href="https://twitter.com/dog_rates/status/836380477...">https://twitter.com/dog_rates/status/836380477...</a>	12
1848	<a href="https://twitter.com/dog_rates/status/675798442...">https://twitter.com/dog_rates/status/675798442...</a>	10
323	<a href="https://twitter.com/stevekopack/status/8340866...">https://twitter.com/stevekopack/status/8340866...</a>	10
1795	<a href="https://twitter.com/dog_rates/status/677314812...">https://twitter.com/dog_rates/status/677314812...</a>	10
1171	<a href="https://twitter.com/dog_rates/status/720415127...">https://twitter.com/dog_rates/status/720415127...</a>	10
660	<a href="https://twitter.com/dog_rates/status/791312159...">https://twitter.com/dog_rates/status/791312159...</a>	12
847	<a href="https://twitter.com/dog_rates/status/725842289...">https://twitter.com/dog_rates/status/725842289...</a>	12
100	<a href="https://twitter.com/dog_rates/status/872820683...">https://twitter.com/dog_rates/status/872820683...</a>	13
819	<a href="https://twitter.com/dog_rates/status/770655142...">https://twitter.com/dog_rates/status/770655142...</a>	11

	rating_denominator	name	doggo	floofer	pupper	puppo
921	10	None	None	None	None	None
1174	10	Charleson	None	None	None	None
857	10	None	doggo	None	None	None
1650	10	None	None	None	None	None
129	10	Shikha	None	None	None	puppo
1547	10	Herald	None	None	None	None
1665	10	Taco	None	None	None	None
1501	10	None	None	None	None	None
1232	10	Opie	None	None	None	None
1666	10	None	None	None	None	None
1597	10	Flávio	None	None	None	None
2244	10	Erik	None	None	None	None
1719	10	Goliath	None	None	None	None
725	10	Penny	None	None	None	None
1368	10	a	None	None	None	None
321	10	Wilson	None	None	None	None
1566	10	None	None	None	None	None
1058	10	None	None	None	None	None
343	10	Klein	None	None	None	None
1916	10	life	None	None	None	None
594	10	Baloo	None	None	pupper	None
304	10	Ava	None	None	pupper	None
1848	10	Bernie	None	None	None	None
323	10	None	doggo	None	None	None
1795	10	Tassy	None	None	None	None
1171	10	None	None	None	None	None
660	10	Mabel	None	None	None	None
847	10	Colby	None	None	None	None

100	10	None	None	None	None	None
819	10	very	None	None	None	None

In [17]: df1.sample(20)

```
Out[17]:
```

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	\
422	821813639212650496	NaN	NaN	
2204	668636665813057536	NaN	NaN	
898	758854675097526272	NaN	NaN	
2019	672125275208069120	NaN	NaN	
1526	690374419777196032	NaN	NaN	
555	803692223237865472	NaN	NaN	
946	752568224206688256	NaN	NaN	
2157	669583744538451968	NaN	NaN	
1856	675522403582218240	NaN	NaN	
2023	671896809300709376	NaN	NaN	
373	828376505180889089	NaN	NaN	
889	759793422261743616	NaN	NaN	
374	828372645993398273	NaN	NaN	
1054	742423170473463808	NaN	NaN	
2243	667902449697558528	NaN	NaN	
1244	711743778164514816	NaN	NaN	
1753	678800283649069056	NaN	NaN	
568	802185808107208704	NaN	NaN	
1502	692041934689402880	NaN	NaN	
1410	699036661657767936	NaN	NaN	

	timestamp	\
422	2017-01-18 20:16:54 +0000	
2204	2015-11-23 03:46:18 +0000	
898	2016-07-29 02:40:28 +0000	
2019	2015-12-02 18:48:47 +0000	
1526	2016-01-22 03:24:22 +0000	
555	2016-11-29 20:08:52 +0000	
946	2016-07-11 18:20:21 +0000	
2157	2015-11-25 18:29:39 +0000	
1856	2015-12-12 03:47:46 +0000	
2023	2015-12-02 03:40:57 +0000	
373	2017-02-05 22:55:23 +0000	
889	2016-07-31 16:50:42 +0000	
374	2017-02-05 22:40:03 +0000	
1054	2016-06-13 18:27:32 +0000	
2243	2015-11-21 03:08:47 +0000	
1244	2016-03-21 02:38:34 +0000	
1753	2015-12-21 04:52:53 +0000	
568	2016-11-25 16:22:55 +0000	
1502	2016-01-26 17:50:29 +0000	
1410	2016-02-15 01:05:02 +0000	

	source \		text	retweeted_status_id \
422	<a href="http://twitter.com/download/iphone" r...		RT @dog_rates: Meet Hercules. He can have what...	7.806013e+17
2204	<a href="http://twitter.com/download/iphone" r...		This is an Irish Rigatoni terrier named Berta...	NaN
898	<a href="http://twitter.com/download/iphone" r...		This is Lilli Bee & Honey Bear. Unfortunat...	NaN
2019	<a href="http://twitter.com/download/iphone" r...		This is just impressive I have nothing else to...	NaN
1526	<a href="http://twitter.com/download/iphone" r...		This is Phred. He's an Albanian Flepperkush. T...	NaN
555	<a href="http://twitter.com/download/iphone" r...		RT @dog_rates: I present to you... Dog Jesus. ...	6.914169e+17
946	<a href="http://vine.co" rel="nofollow">Vine -...		Here are three doggos completely misjudging an...	NaN
2157	<a href="http://twitter.com/download/iphone" r...		Special dog here. Pretty big. Neck kinda long ...	NaN
1856	<a href="http://twitter.com/download/iphone" r...		Meet Sammy. He's a Motorola Firefox. Hat under...	NaN
2023	<a href="http://twitter.com/download/iphone" r...		This is Lola. She fell asleep on a piece of pi...	NaN
373	<a href="http://twitter.com/download/iphone" r...		This is Beebop. Her name means "Good Dog" in r...	NaN
889	<a href="http://twitter.com/download/iphone" r...		Meet Maggie & Lila. Maggie is the doggo, L...	NaN
374	<a href="http://twitter.com/download/iphone" r...		This is Alexander Hamilpup. He was one of the ...	NaN
1054	<a href="http://twitter.com/download/iphone" r...		This is Bell. She likes holding hands. 12/10 w...	NaN
2243	<a href="http://twitter.com/download/iphone" r...		This is Cleopatra. She is a northern Paperb...	NaN
1244	<a href="http://twitter.com/download/iphone" r...		Meet Roosevelt. He's calculating the best case...	NaN
1753	<a href="http://twitter.com/download/iphone" r...		Here's a pupper with some mean tan lines. Snaz...	NaN
568	<a href="http://twitter.com/download/iphone" r...		RT @ChinoChinako: They're good products, Brent...	8.000650e+17
1502	<a href="http://vine.co" rel="nofollow">Vine -...		This is Teddy. His head is too heavy. 13/10 (v...	NaN
1410	<a href="http://twitter.com/download/iphone" r...		HAPPY V-DAY FROM YOUR FAV PUPPER SQUAD 13/10 f...	NaN
	retweeted_status_user_id	retweeted_status_timestamp \		
422	4.196984e+09	2016-09-27 02:53:48 +0000		
2204	NaN	NaN		

898	NaN	NaN
2019	NaN	NaN
1526	NaN	NaN
555	4.196984e+09	2016-01-25 00:26:41 +0000
946	NaN	NaN
2157	NaN	NaN
1856	NaN	NaN
2023	NaN	NaN
373	NaN	NaN
889	NaN	NaN
374	NaN	NaN
1054	NaN	NaN
2243	NaN	NaN
1244	NaN	NaN
1753	NaN	NaN
568	2.488557e+07	2016-11-19 19:55:41 +0000
1502	NaN	NaN
1410	NaN	NaN

	expanded_urls	rating_numerator \
422	https://twitter.com/dog_rates/status/780601303...	12
2204	https://twitter.com/dog_rates/status/668636665...	10
898	https://twitter.com/dog_rates/status/758854675...	11
2019	https://twitter.com/dog_rates/status/672125275...	11
1526	https://twitter.com/dog_rates/status/690374419...	11
555	https://twitter.com/dog_rates/status/691416866...	13
946	https://vine.co/v/5WObdhEUUVT	9
2157	https://twitter.com/dog_rates/status/669583744...	6
1856	https://twitter.com/dog_rates/status/675522403...	10
2023	https://twitter.com/dog_rates/status/671896809...	10
373	https://twitter.com/dog_rates/status/828376505...	13
889	https://twitter.com/dog_rates/status/759793422...	12
374	https://twitter.com/dog_rates/status/828372645...	12
1054	https://twitter.com/dog_rates/status/742423170...	12
2243	https://twitter.com/dog_rates/status/667902449...	9
1244	https://twitter.com/dog_rates/status/711743778...	11
1753	https://twitter.com/dog_rates/status/678800283...	12
568	https://twitter.com/ChinoChinako/status/800065...	13
1502	https://vine.co/v/iiiI3wmqXYmA	13
1410	https://twitter.com/dog_rates/status/699036661...	13

	rating_denominator	name	doggo	floofer	pupper	puppo
422	10	Hercules	None	None	None	None
2204	10	an	None	None	None	None
898	10	Lilli	None	None	None	None
2019	10	just	None	None	None	None
1526	10	Phred	None	None	None	None
555	10	None	None	None	None	None

946	10	None	None	None	None	None
2157	10	None	None	None	None	None
1856	10	Sammy	None	None	None	None
2023	10	Lola	None	None	None	None
373	10	Beebop	None	None	None	None
889	10	Maggie	doggo	None	pupper	None
374	10	Alexander	None	None	None	None
1054	10	Bell	None	None	None	None
2243	10	Cleopatra	None	None	None	None
1244	10	Roosevelt	None	None	None	None
1753	10	None	None	None	pupper	None
568	10	None	None	None	None	None
1502	10	Teddy	None	None	None	None
1410	10	None	None	None	pupper	None

```
In [18]: images['jpg_url'].duplicated().sum()
```

```
Out[18]: 66
```

```
In [19]: images.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 [20]: images.sample(20)
```

```
Out[20]:
```

	tweet_id	jpg_url \
1915	854365224396361728	<a href="https://pbs.twimg.com/media/C9tQokgUIAEETSx.jpg">https://pbs.twimg.com/media/C9tQokgUIAEETSx.jpg</a>
1837	837366284874571778	<a href="https://pbs.twimg.com/media/C57sMJwXMAASBSx.jpg">https://pbs.twimg.com/media/C57sMJwXMAASBSx.jpg</a>
923	702276748847800320	<a href="https://pbs.twimg.com/media/Cb78-nOWIAENNRc.jpg">https://pbs.twimg.com/media/Cb78-nOWIAENNRc.jpg</a>
270	670822709593571328	<a href="https://pbs.twimg.com/media/CU89schWIAIHQmA.jpg">https://pbs.twimg.com/media/CU89schWIAIHQmA.jpg</a>
16	666102155909144576	<a href="https://pbs.twimg.com/media/CT54YGiWUAEZnoK.jpg">https://pbs.twimg.com/media/CT54YGiWUAEZnoK.jpg</a>
5	666050758794694657	<a href="https://pbs.twimg.com/media/CT5Jof1WUAEuVxN.jpg">https://pbs.twimg.com/media/CT5Jof1WUAEuVxN.jpg</a>

1375	763103485927849985	<a href="https://pbs.twimg.com/media/CpcWknPXyAAeLP9.jpg">https://pbs.twimg.com/media/CpcWknPXyAAeLP9.jpg</a>
84	667502640335572993	<a href="https://pbs.twimg.com/media/CUNyHTMUyAAQVch.jpg">https://pbs.twimg.com/media/CUNyHTMUyAAQVch.jpg</a>
107	667873844930215936	<a href="https://pbs.twimg.com/media/CUTDtyGXIAARxus.jpg">https://pbs.twimg.com/media/CUTDtyGXIAARxus.jpg</a>
1161	734787690684657664	<a href="https://pbs.twimg.com/media/CjJ9gQ1WgAAQQtJ.jpg">https://pbs.twimg.com/media/CjJ9gQ1WgAAQQtJ.jpg</a>
304	671518598289059840	<a href="https://pbs.twimg.com/media/CVG2l9jUYAAwg-w.jpg">https://pbs.twimg.com/media/CVG2l9jUYAAwg-w.jpg</a>
1813	833479644947025920	<a href="https://pbs.twimg.com/media/C5EdT4jWEAARv2C.jpg">https://pbs.twimg.com/media/C5EdT4jWEAARv2C.jpg</a>
1883	847251039262605312	<a href="https://pbs.twimg.com/media/C8IKUjAUwAEP-En.jpg">https://pbs.twimg.com/media/C8IKUjAUwAEP-En.jpg</a>
1974	869772420881756160	<a href="https://pbs.twimg.com/media/DBINZcxXgAQ-R6P.jpg">https://pbs.twimg.com/media/DBINZcxXgAQ-R6P.jpg</a>
1772	827933404142436356	<a href="https://pbs.twimg.com/media/C31pCN4UcAAOLNH.jpg">https://pbs.twimg.com/media/C31pCN4UcAAOLNH.jpg</a>
1353	760190180481531904	<a href="https://pbs.twimg.com/media/Coy87yiWYAACTPf.jpg">https://pbs.twimg.com/media/Coy87yiWYAACTPf.jpg</a>
863	697259378236399616	<a href="https://pbs.twimg.com/media/CaOps3AXEAAp9m.jpg">https://pbs.twimg.com/media/CaOps3AXEAAp9m.jpg</a>
396	673656262056419329	<a href="https://pbs.twimg.com/media/CVl0y3pW4AQ9HtK.jpg">https://pbs.twimg.com/media/CVl0y3pW4AQ9HtK.jpg</a>
453	674754018082705410	<a href="https://pbs.twimg.com/media/CV01M3ZWIAAV7rv.jpg">https://pbs.twimg.com/media/CV01M3ZWIAAV7rv.jpg</a>
1843	838561493054533637	<a href="https://pbs.twimg.com/media/C6Mr0sEXQAEN0ds.jpg">https://pbs.twimg.com/media/C6Mr0sEXQAEN0ds.jpg</a>

	img_num	p1	p1_conf	p1_dog	\
1915	1	Pembroke	0.907080	True	
1837	1	American_Staffordshire_terrier	0.660085	True	
923	1	Boston_bull	0.697303	True	
270	1	web_site	0.993887	False	
16	1	English_setter	0.298617	True	
5	1	Bernese_mountain_dog	0.651137	True	
1375	2	seat_belt	0.685821	False	
84	1	Labrador_retriever	0.996709	True	
107	1	common_iguana	0.999647	False	
1161	4	golden_retriever	0.883991	True	
304	1	Lakeland_terrier	0.428275	True	
1813	3	golden_retriever	0.727039	True	
1883	1	Airedale	0.495380	True	
1974	1	Pembroke	0.980148	True	
1772	2	German_shepherd	0.806115	True	
1353	1	balloon	0.917525	False	
863	1	Great_Dane	0.999223	True	
396	1	bull_mastiff	0.700625	True	
453	1	seashore	0.352321	False	
1843	1	kelpie	0.216562	True	

	p2	p2_conf	p2_dog	\
1915	Cardigan	0.086272	True	
1837	Staffordshire_bullterrier	0.334947	True	
923	French_bulldog	0.239015	True	
270	Chihuahua	0.001252	True	
16	Newfoundland	0.149842	True	
5	English_springer	0.263788	True	
1375	ice_bear	0.081597	False	
84	golden_retriever	0.001688	True	
107	frilled_lizard	0.000181	False	
1161	chow	0.023542	True	

304	wire-haired_fox_terrier	0.111472	True
1813	cocker_spaniel	0.071140	True
1883	Irish_terrier	0.316456	True
1974	Cardigan	0.019271	True
1772	Tibetan_mastiff	0.104831	True
1353	confectionery	0.049329	False
863	boxer	0.000187	True
396	Rhodesian_ridgeback	0.094698	True
453	promontory	0.131753	False
1843	doormat	0.139994	False

		p3	p3_conf	p3_dog
1915	Chihuahua	0.001413	True	
1837	dalmatian	0.002697	True	
923	American_Staffordshire_terrier	0.019838	True	
270	menu	0.000599	False	
16	borzoi	0.133649	True	
5	Greater_Swiss_Mountain_dog	0.016199	True	
1375	chow	0.039085	True	
84	beagle	0.000712	True	
107	African_chameleon	0.000128	False	
1161	Labrador_retriever	0.016056	True	
304	toy_poodle	0.105016	True	
1813	Tibetan_mastiff	0.048694	True	
1883	Lakeland_terrier	0.158533	True	
1974	malamute	0.000136	True	
1772	kelpie	0.038148	True	
1353	maraca	0.017648	False	
863	whippet	0.000151	True	
396	Brabancon_griffon	0.057559	True	
453	wreck	0.095597	False	
1843	dalmatian	0.132820	True	

```
In [21]: images['img_num'].value_counts()
```

```
Out[21]: 1    1780
         2     198
         3      66
         4      31
         Name: img_num, dtype: int64
```

```
In [200]: df1.sample(30)
```

```
Out[200]:
```

	tweet_id	in_reply_to_status_id	in_reply_to_user_id \
1961	673359818736984064	NaN	NaN
1722	680115823365742593	NaN	NaN
1065	740711788199743490	NaN	NaN
474	816091915477250048	NaN	NaN
2336	666273097616637952	NaN	NaN



107	871762521631449091	NaN	NaN
125	868622495443632128	NaN	NaN
848	766069199026450432	NaN	NaN
840	767122157629476866	NaN	NaN
303	836397794269200385	NaN	NaN
1983	672964561327235073	NaN	NaN
2305	666837028449972224	NaN	NaN
676	789314372632018944	NaN	NaN
1748	679062614270468097	NaN	NaN
673	789628658055020548	NaN	NaN
139	865359393868664832	NaN	NaN
368	828708714936930305	NaN	NaN
310	835309094223372289	NaN	NaN
1499	692187005137076224	NaN	NaN
1035	744995568523612160	NaN	NaN
54	881666595344535552	NaN	NaN
905	758099635764359168	NaN	NaN
1977	672988786805112832	NaN	NaN
27	886736880519319552	NaN	NaN
2326	666411507551481857	NaN	NaN
2156	669597912108789760	NaN	NaN
2028	671866342182637568	NaN	NaN
1083	738537504001953792	NaN	NaN
274	840698636975636481	8.406983e+17	8.405479e+17
868	761750502866649088	NaN	NaN

	timestamp \
1961	2015-12-06 04:34:25 +0000
1722	2015-12-24 20:00:22 +0000
1065	2016-06-09 01:07:06 +0000
474	2017-01-03 01:20:49 +0000
2336	2015-11-16 15:14:19 +0000
107	2017-06-05 16:15:56 +0000
125	2017-05-28 00:18:35 +0000
848	2016-08-18 00:28:24 +0000
840	2016-08-20 22:12:29 +0000
303	2017-02-28 02:09:08 +0000
1983	2015-12-05 02:23:49 +0000
2305	2015-11-18 04:35:11 +0000
676	2016-10-21 03:56:25 +0000
1748	2015-12-21 22:15:18 +0000
673	2016-10-22 00:45:17 +0000
139	2017-05-19 00:12:11 +0000
368	2017-02-06 20:55:28 +0000
310	2017-02-25 02:03:02 +0000
1499	2016-01-27 03:26:56 +0000
1035	2016-06-20 20:49:19 +0000
54	2017-07-03 00:11:11 +0000

905 2016-07-27 00:40:12 +0000  
 1977 2015-12-05 04:00:04 +0000  
 27 2017-07-16 23:58:41 +0000  
 2326 2015-11-17 00:24:19 +0000  
 2156 2015-11-25 19:25:57 +0000  
 2028 2015-12-02 01:39:53 +0000  
 1083 2016-06-03 01:07:16 +0000  
 274 2017-03-11 22:59:09 +0000  
 868 2016-08-06 02:27:27 +0000

	source \
1961	<a href="http://twitter.com/download/iphone" r...
1722	<a href="http://twitter.com/download/iphone" r...
1065	<a href="http://twitter.com/download/iphone" r...
474	<a href="http://twitter.com/download/iphone" r...
2336	<a href="http://twitter.com/download/iphone" r...
107	<a href="http://twitter.com/download/iphone" r...
125	<a href="http://twitter.com/download/iphone" r...
848	<a href="http://twitter.com/download/iphone" r...
840	<a href="http://twitter.com/download/iphone" r...
303	<a href="http://twitter.com/download/iphone" r...
1983	<a href="http://twitter.com/download/iphone" r...
2305	<a href="http://twitter.com/download/iphone" r...
676	<a href="http://twitter.com/download/iphone" r...
1748	<a href="http://twitter.com/download/iphone" r...
673	<a href="http://twitter.com/download/iphone" r...
139	<a href="http://twitter.com/download/iphone" r...
368	<a href="http://twitter.com/download/iphone" r...
310	<a href="http://twitter.com/download/iphone" r...
1499	<a href="http://twitter.com/download/iphone" r...
1035	<a href="http://twitter.com/download/iphone" r...
54	<a href="http://twitter.com/download/iphone" r...
905	<a href="http://vine.co" rel="nofollow">Vine -...
1977	<a href="http://twitter.com/download/iphone" r...
27	<a href="http://twitter.com/download/iphone" r...
2326	<a href="http://twitter.com/download/iphone" r...
2156	<a href="http://twitter.com/download/iphone" r...
2028	<a href="http://twitter.com/download/iphone" r...
1083	<a href="http://twitter.com/download/iphone" r...
274	<a href="http://twitter.com/download/iphone" r...
868	<a href="http://twitter.com/download/iphone" r...

	text	retweeted_status_id \
1961	This is Steve. He was just relaxing in hot tub...	NaN
1722	This is Ozzy. He woke up 2 minutes before he h...	NaN
1065	Here we are witnessing the touchdown of a pupn...	NaN
474	This is Comet. He's a Wild Estonian Poofer. Su...	NaN
2336	Can take selfies 11/10 https://t.co/ws2AMaWpPW	NaN

107	This is Rover. As part of pupper protocol he h...	NaN
125	Here's a h*ckin peaceful boy. Unbothered by th...	NaN
848	This is Juno. She can see your future. 12/10 h...	NaN
840	This is Rupert. You betrayed him with bath tim...	NaN
303	RT @dog_rates: This is Buddy. He ran into a gl...	8.178278e+17
1983	This is Terry. He's a Toasty Western Sriracha...	NaN
2305	My goodness. Very rare dog here. Large. Tail d...	NaN
676	HE WAS JUST A LIL SLEEPY FROM BEING SUCH A GOO...	NaN
1748	This is Chompsky. He lives up to his name. 11/...	NaN
673	This is Eli. He can fly. 13/10 magical af http...	NaN
139	This is Sammy. Her tongue ejects without warni...	NaN
368	This is Fiona. She's an exotic dog. Seems rath...	NaN
310	RT @dog_rates: So this just changed my life. 1...	7.530398e+17
1499	This is a rare Arctic Wubberfloof. Unamused by...	NaN
1035	This is Abby. She got her face stuck in a glas...	NaN
54	This is Gary. He couldn't miss this puppertuni...	NaN
905	In case you haven't seen the most dramatic sne...	NaN
1977	This is Schnozz. He's had a blurred tail since...	NaN
27	This is Mingus. He's a wonderful father to his...	NaN
2326	This is quite the dog. Gets really excited whe...	NaN
2156	This is Skye. He is a Bretwaldian Altostratus...	NaN
2028	Meet Dylan. He can use a fork but clearly can'...	NaN
1083	This is Bayley. She fell asleep trying to esca...	NaN
274	@0_kelvin_0 &gt;10/10 is reserved for puppos s...	NaN
868	RT @dog_rates: "Tristan do not speak to me wit...	6.853251e+17

	retweeted_status_user_id	retweeted_status_timestamp	\
1961	NaN	NaN	
1722	NaN	NaN	
1065	NaN	NaN	
474	NaN	NaN	
2336	NaN	NaN	
107	NaN	NaN	
125	NaN	NaN	
848	NaN	NaN	
840	NaN	NaN	
303	4.196984e+09	2017-01-07 20:18:46 +0000	
1983	NaN	NaN	
2305	NaN	NaN	
676	NaN	NaN	
1748	NaN	NaN	
673	NaN	NaN	
139	NaN	NaN	
368	NaN	NaN	
310	4.196984e+09	2016-07-13 01:34:21 +0000	
1499	NaN	NaN	
1035	NaN	NaN	
54	NaN	NaN	

905	NaN	NaN
1977	NaN	NaN
27	NaN	NaN
2326	NaN	NaN
2156	NaN	NaN
2028	NaN	NaN
1083	NaN	NaN
274	NaN	NaN
868	4.196984e+09	2016-01-08 05:00:14 +0000

	expanded_urls	rating_numerator	\
1961	https://twitter.com/dog_rates/status/673359818...	8	
1722	https://twitter.com/dog_rates/status/680115823...	9	
1065	https://twitter.com/dog_rates/status/740711788...	9	
474	https://twitter.com/dog_rates/status/816091915...	12	
2336	https://twitter.com/dog_rates/status/666273097...	11	
107	https://twitter.com/dog_rates/status/871762521...	12	
125	https://twitter.com/dog_rates/status/868622495...	13	
848	https://twitter.com/dog_rates/status/766069199...	12	
840	https://twitter.com/dog_rates/status/767122157...	13	
303	https://twitter.com/dog_rates/status/817827839...	13	
1983	https://twitter.com/dog_rates/status/672964561...	10	
2305	https://twitter.com/dog_rates/status/666837028...	3	
676	https://twitter.com/sebscat/status/78881832853...	13	
1748	https://twitter.com/dog_rates/status/679062614...	11	
673	https://twitter.com/dog_rates/status/789628658...	13	
139	https://twitter.com/dog_rates/status/865359393...	13	
368	https://twitter.com/dog_rates/status/828708714...	10	
310	https://vine.co/v/5W2Dg3XPX7a,https://vine.co/...	13	
1499	https://twitter.com/dog_rates/status/692187005...	12	
1035	https://twitter.com/dog_rates/status/744995568...	9	
54	https://twitter.com/dog_rates/status/881666595...	13	
905	https://vine.co/v/hQJbaj1VpIz	13	
1977	https://twitter.com/dog_rates/status/672988786...	10	
27	https://www.gofundme.com/mingusneedsus,https://...	13	
2326	https://twitter.com/dog_rates/status/666411507...	2	
2156	https://twitter.com/dog_rates/status/669597912...	10	
2028	https://twitter.com/dog_rates/status/671866342...	10	
1083	https://twitter.com/dog_rates/status/738537504...	11	
274	NaN	10	
868	https://twitter.com/dog_rates/status/685325112...	10	

	rating_denominator	name	doggo	floofer	pupper	puppo
1961	10	Steve	None	None	None	None
1722	10	Ozzy	None	None	None	None
1065	10	None	None	None	None	None
474	10	Comet	None	None	None	None
2336	10	None	None	None	None	None

107	10	Rover	None	None	pupper	None
125	10	None	None	None	None	None
848	10	Juno	None	None	None	None
840	10	Rupert	None	None	None	None
303	10	Buddy	None	None	None	None
1983	10	Terry	None	None	None	None
2305	10	None	None	None	None	None
676	10	None	None	None	None	None
1748	10	Chompsky	None	None	None	None
673	10	Eli	None	None	None	None
139	10	Sammy	None	None	None	None
368	10	Fiona	None	None	None	None
310	10	None	None	None	None	None
1499	10	a	None	None	None	None
1035	10	Abby	None	None	None	puppo
54	10	Gary	None	None	None	None
905	10	None	None	None	None	None
1977	10	Schnozz	None	None	pupper	None
27	10	Mingus	None	None	None	None
2326	10	quite	None	None	None	None
2156	10	Skye	None	None	None	None
2028	10	Dylan	None	None	None	None
1083	10	Bayley	None	None	None	puppo
274	10	None	None	None	None	None
868	10	None	None	None	None	None

```
In [22]: images.duplicated().sum()
```

```
Out[22]: 0
```

```
In [23]: tweet_data['source'].duplicated().sum()
```

```
Out[23]: 2338
```

```
In [24]: tweet_data['source'].value_counts()
```

```
Out[24]: <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>
<a href="http://vine.co" rel="nofollow">Vine - Make a Scene</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 [25]: df1['source'].value_counts()
```

```
Out[25]: <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for iPhone</a>
<a href="http://vine.co" rel="nofollow">Vine - Make a Scene</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
```

## 0.2 QUALITY

In df1, name', 'doggo', 'floofer', 'pupper', and 'puppo' columns have string values of "None" instead of NaN

df1, name column has invalid and repeated name('a','the')

df1, timestamp column is string format

df1, Tweet\_data some columns are not using for future analysis

In Images data, the tweet\_id is integer

Image data, jpg\_url has duplicate images

In df1 dataframe some data doesn't have images in images dataframe

## 0.3 tidiness

Dog stage in different columns.

Image dataset consists of some columns not used for the analysis

For evaluation for rating, values are in different column

## 0.4 Clean

```
In [326]: df1_clean=df1.copy()
          images_clean=images.copy()
          tweet_data_clean=tweet_data.copy()
```

### 0.4.1 issue

df1, Tweet\_data some columns are not used for future analysis

### 0.4.2 Define

Remove the columns that are not useful for the analysis and use necessary columns for analysis process

### 0.4.3 Code

```
In [327]: df1_clean = df1_clean[['tweet_id', 'rating_numerator', 'rating_denominator',
                                'name', 'doggo', 'floofer', 'pupper', 'puppo', 'time']]

In [328]: tweet_data_clean=tweet_data_clean[['created_at', 'favorite_count', 'retweet_count', 'id',
                                              'text']]

In [329]: #Rename tweet_data_clean data id with tweet_id

          tweet_data_clean = tweet_data_clean.rename(columns= {'id': 'tweet_id'})

In [330]: df1_clean=df1_clean[df1.tweet_id.notnull()]
          df1_clean=df1_clean[df1.retweeted_status_id.isnull()]

In [348]: df1_clean.duplicated().sum()

Out[348]: 0
```

```
In [325]: df1_clean.sample(30)
```

```
Out[325]:
```

	tweet_id	name	timestamp	rating	dog_stage	\
496	795076730285391872	Bailey	2016-11-06 01:33:58	1.1	NaN	
1721	672466075045466113	Franq	2015-12-03 17:23:00	1.2	NaN	
814	748307329658011649	NaN	2016-06-30 00:09:04	0.7	NaN	
1279	690400367696297985	Eriq	2016-01-22 05:07:29	1.0	NaN	
1093	706901761596989440	Elliot	2016-03-07 17:58:08	0.3	NaN	
844	744709971296780288	Harvey	2016-06-20 01:54:27	1.0	NaN	
663	769940425801170949	Klein	2016-08-28 16:51:16	1.2	NaN	
726	758854675097526272	Lilli	2016-07-29 02:40:28	1.1	NaN	
793	750041628174217216	Beau	2016-07-04 19:00:33	1.3	NaN	
1930	668528771708952576	Gördön	2015-11-22 20:37:34	1.2	NaN	
620	776113305656188928	Sampson	2016-09-14 17:40:06	1.1	pupper	
1359	685198997565345792	Alfie	2016-01-07 20:39:06	1.1	NaN	
354	819004803107983360	Bo	2017-01-11 02:15:36	1.4	doggo	
1990	667437278097252352	NaN	2015-11-19 20:20:22	1.0	NaN	
1597	675113801096802304	Zuzu	2015-12-11 00:44:07	1.0	pupper	
989	717790033953034240	NaN	2016-04-06 19:04:14	1.0	pupper	
698	762035686371364864	NaN	2016-08-06 21:20:40	1.4	NaN	
1579	675517828909424640	NaN	2015-12-12 03:29:35	1.2	NaN	
1723	672267570918129665	NaN	2015-12-03 04:14:13	1.0	NaN	
752	755110668769038337	Watson	2016-07-18 18:43:07	1.3	NaN	
1631	674410619106390016	Lenny	2015-12-09 02:09:56	1.0	NaN	
278	830583320585068544	Lilly	2017-02-12 01:04:29	1.3	NaN	
1820	670668383499735048	Phineas	2015-11-28 18:19:37	1.0	NaN	
619	776201521193218049	0	2016-09-14 23:30:38	1.0	NaN	
364	817423860136083457	Ken	2017-01-06 17:33:29	1.3	NaN	
209	842535590457499648	Winnie	2017-03-17 00:38:32	1.3	NaN	
325	822872901745569793	NaN	2017-01-21 18:26:02	1.3	puppo	
997	716285507865542656	Stephanus	2016-04-02 15:25:47	1.2	NaN	
1082	707610948723478529	Harper	2016-03-09 16:56:11	1.2	NaN	
1251	692828166163931137	NaN	2016-01-28 21:54:41	1.2	pupper	

	jpg_url	img_num	\
496	<a href="https://pbs.twimg.com/media/CwiuEJmW8AAZnit.jpg">https://pbs.twimg.com/media/CwiuEJmW8AAZnit.jpg</a>	2	
1721	<a href="https://pbs.twimg.com/media/CVUUU_EWoAAxABV.jpg">https://pbs.twimg.com/media/CVUUU_EWoAAxABV.jpg</a>	1	
814	<a href="https://pbs.twimg.com/media/CmKFi-FXEAAeI37.jpg">https://pbs.twimg.com/media/CmKFi-FXEAAeI37.jpg</a>	2	
1279	<a href="https://pbs.twimg.com/media/CZTLeBuWIAAFkeR.jpg">https://pbs.twimg.com/media/CZTLeBuWIAAFkeR.jpg</a>	1	
1093	<a href="https://pbs.twimg.com/media/Cc9rZlBWwAA56Ra.jpg">https://pbs.twimg.com/media/Cc9rZlBWwAA56Ra.jpg</a>	1	
844	<a href="https://pbs.twimg.com/media/C1W9w7mWEAEFN1k.jpg">https://pbs.twimg.com/media/C1W9w7mWEAEFN1k.jpg</a>	1	
663	<a href="https://pbs.twimg.com/media/Cq9guJ5WgAADfpF.jpg">https://pbs.twimg.com/media/Cq9guJ5WgAADfpF.jpg</a>	1	
726	<a href="https://pbs.twimg.com/media/Cof-SuqVYAAs4kZ.jpg">https://pbs.twimg.com/media/Cof-SuqVYAAs4kZ.jpg</a>	4	
793	<a href="https://pbs.twimg.com/media/Cmfss0tXYAAKa_Z.jpg">https://pbs.twimg.com/media/Cmfss0tXYAAKa_Z.jpg</a>	1	
1930	<a href="https://pbs.twimg.com/media/CUcXXpxWUAAUJ_-.jpg">https://pbs.twimg.com/media/CUcXXpxWUAAUJ_-.jpg</a>	1	
620	<a href="https://pbs.twimg.com/media/CsV07ljW8AAckRD.jpg">https://pbs.twimg.com/media/CsV07ljW8AAckRD.jpg</a>	1	
1359	<a href="https://pbs.twimg.com/media/CYJQxvJW8AAkks.jpg">https://pbs.twimg.com/media/CYJQxvJW8AAkks.jpg</a>	1	
354	<a href="https://pbs.twimg.com/media/C12whDoVEAALRxa.jpg">https://pbs.twimg.com/media/C12whDoVEAALRxa.jpg</a>	1	

1990	<a href="https://pbs.twimg.com/media/CUM2qWaWoAUZO6L.jpg">https://pbs.twimg.com/media/CUM2qWaWoAUZO6L.jpg</a>	1
1597	<a href="https://pbs.twimg.com/media/CV58a4nXAAAPywo.jpg">https://pbs.twimg.com/media/CV58a4nXAAAPywo.jpg</a>	1
989	<a href="https://pbs.twimg.com/media/CfYa0eMWQAAGfyP.jpg">https://pbs.twimg.com/media/CfYa0eMWQAAGfyP.jpg</a>	1
698	<a href="https://pbs.twimg.com/ext_tw_video_thumb/76203...">https://pbs.twimg.com/ext_tw_video_thumb/76203...</a>	1
1579	<a href="https://pbs.twimg.com/media/CV_r3v4VAAALvvg.jpg">https://pbs.twimg.com/media/CV_r3v4VAAALvvg.jpg</a>	1
1723	<a href="https://pbs.twimg.com/media/CVRfyZxWUAAFIQR.jpg">https://pbs.twimg.com/media/CVRfyZxWUAAFIQR.jpg</a>	1
752	<a href="https://pbs.twimg.com/ext_tw_video_thumb/75511...">https://pbs.twimg.com/ext_tw_video_thumb/75511...</a>	1
1631	<a href="https://pbs.twimg.com/media/CVv84VDUEAEm3dW.jpg">https://pbs.twimg.com/media/CVv84VDUEAEm3dW.jpg</a>	1
278	<a href="https://pbs.twimg.com/media/C4bTH6nWMAAX_bJ.jpg">https://pbs.twimg.com/media/C4bTH6nWMAAX_bJ.jpg</a>	1
1820	<a href="https://pbs.twimg.com/media/CU6xVkbWsAAeHeU.jpg">https://pbs.twimg.com/media/CU6xVkbWsAAeHeU.jpg</a>	1
619	<a href="https://pbs.twimg.com/media/CsWfKadWEAAtmlS.jpg">https://pbs.twimg.com/media/CsWfKadWEAAtmlS.jpg</a>	1
364	<a href="https://pbs.twimg.com/ext_tw_video_thumb/81742...">https://pbs.twimg.com/ext_tw_video_thumb/81742...</a>	1
209	<a href="https://pbs.twimg.com/media/C7FJpgVW4AIDzi6.jpg">https://pbs.twimg.com/media/C7FJpgVW4AIDzi6.jpg</a>	1
325	<a href="https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg">https://pbs.twimg.com/media/C2tugXLXgAArJO4.jpg</a>	1
997	<a href="https://pbs.twimg.com/media/CfDB3aJXEAAEZnv.jpg">https://pbs.twimg.com/media/CfDB3aJXEAAEZnv.jpg</a>	1
1082	<a href="https://pbs.twimg.com/media/CdHwZd0VIAA4792.jpg">https://pbs.twimg.com/media/CdHwZd0VIAA4792.jpg</a>	1
1251	<a href="https://pbs.twimg.com/media/CZ1riVOWwAATfGf.jpg">https://pbs.twimg.com/media/CZ1riVOWwAATfGf.jpg</a>	1

	p1	p1_conf	p1_dog		p2	p2_conf	\
496	gas_pump	0.676439	False		harvester	0.049995	
1721	cocker_spaniel	0.150424	True		toy_poodle	0.088605	
814	paddle	0.589066	False		shovel	0.038062	
1279	Pembroke	0.426459	True		papillon	0.317368	
1093	wild_boar	0.859499	False		hog	0.128981	
844	Shetland_sheepdog	0.234431	True		Samoyed	0.114876	
663	miniature_pinscher	0.796313	True		Chihuahua	0.155413	
726	barrow	0.974047	False	Old_English_sheepdog		0.023791	
793	Labrador_retriever	0.252031	True	Maltese_dog		0.188090	
1930	Labrador_retriever	0.195835	True	kuvasz		0.121607	
620	mousetrap	0.777468	False	black_widow		0.093940	
1359	dishwasher	0.888829	False	stove		0.013412	
354	standard_poodle	0.351308	True	toy_poodle		0.271929	
1990	porcupine	0.989154	False	bath_towel		0.006300	
1597	bow	0.168020	False	quill		0.108807	
989	car_mirror	0.819106	False	minibus		0.107383	
698	home_theater	0.063152	False	cash_machine		0.046692	
1579	Scottish_deerhound	0.240591	True	groenendael		0.156916	
1723	Irish_terrier	0.716932	True	miniature_pinscher		0.051234	
752	Labrador_retriever	0.708974	True	golden_retriever		0.114314	
1631	brown_bear	0.698207	False	sea_lion		0.046475	
278	Labrador_retriever	0.908703	True	seat_belt		0.057091	
1820	banana	0.107317	False	orange		0.099662	
619	Rottweiler	0.502228	True	black-and-tan_coonhound		0.154594	
364	ice_bear	0.336200	False	Samoyed		0.201358	
209	Pembroke	0.685084	True	Cardigan		0.314608	
325	Lakeland_terrier	0.196015	True	Labrador_retriever		0.160329	
997	Yorkshire_terrier	0.430420	True	silky_terrier		0.196769	
1082	golden_retriever	0.383223	True	cocker_spaniel		0.165930	



1251		Samoyed	0.985857	True		Arctic_fox	0.007852
------	--	---------	----------	------	--	------------	----------

	p2_dog		p3	p3_conf	p3_dog
496	False		swing	0.044660	False
1721	True	Welsh_springer_spaniel		0.072014	True
814	False	mountain_tent		0.029203	False
1279	True	Shetland_sheepdog		0.077616	True
1093	False	warthog		0.011318	False
844	True	collie		0.086614	True
663	True	Staffordshire_bullterrier		0.030943	True
726	True	komondor		0.001246	True
793	True	golden_retriever		0.133017	True
1930	True	English_setter		0.081464	True
620	False	paddlewheel		0.017492	False
1359	False	Old_English_sheepdog		0.009671	True
354	True	Tibetan_terrier		0.094759	True
1990	False	badger		0.000966	False
1597	False	joystick		0.043312	False
989	False	cab		0.034846	False
698	False	theater_curtain		0.046277	False
1579	True	flat-coated_retriever		0.090899	True
1723	True	Airedale		0.044381	True
752	True	Great_Pyrenees		0.065813	True
1631	False	beagle		0.019427	True
278	False	pug		0.011933	True
1820	False	bagel		0.089033	False
619	True	bloodhound		0.135176	True
364	True	Eskimo_dog		0.186789	True
209	True	basenji		0.000160	True
325	True	Irish_terrier		0.069126	True
997	True	cairn		0.072676	True
1082	True	Chesapeake_Bay_retriever		0.118199	True
1251	False	white_wolf		0.003278	False

#### 0.4.4 Test

In [262]: df1\_clean.info()

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 9 columns):
tweet_id          2356 non-null int64
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
timestamp            2356 non-null object
dtypes: int64(3), object(6)
memory usage: 165.7+ KB
```

```
In [263]: tweet_data_clean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2342 entries, 0 to 2341
Data columns (total 5 columns):
created_at          2342 non-null datetime64[ns]
favorite_count      2342 non-null int64
retweet_count       2342 non-null int64
tweet_id            2342 non-null int64
full_text           2342 non-null object
dtypes: datetime64[ns](1), int64(3), object(1)
memory usage: 109.8+ KB
```

#### 0.4.5 issue

In df1, 'name', 'doggo', 'floofer', 'pupper', and 'puppo' columns have string values of "None" instead of NaN

#### 0.4.6 Define

Replace NaN with None

#### 0.4.7 code

```
In [331]: columns = ['name', 'doggo', 'floofer', 'pupper', 'puppo']
          for col in columns:
              df1_clean[col] = df1_clean[col].apply(lambda x: np.NaN if x == 'None' else x)
```

#### 0.4.8 Test

```
In [234]: print(df1['doggo'])
```

```
0      None
1      None
2      None
3      None
4      None
5      None
6      None
7      None
8      None
9      doggo
```

10	None
11	None
12	None
13	None
14	None
15	None
16	None
17	None
18	None
19	None
20	None
21	None
22	None
23	None
24	None
25	None
26	None
27	None
28	None
29	None
...	
2326	None
2327	None
2328	None
2329	None
2330	None
2331	None
2332	None
2333	None
2334	None
2335	None
2336	None
2337	None
2338	None
2339	None
2340	None
2341	None
2342	None
2343	None
2344	None
2345	None
2346	None
2347	None
2348	None
2349	None
2350	None
2351	None
2352	None

```
2353      None
2354      None
2355      None
Name: doggo, Length: 2356, dtype: object
```

#### 0.4.9 issue

df1.timestamp column value is string object format

#### 0.4.10 Define

convert to DateTime

#### 0.4.11 Code

```
In [332]: df1_clean.timestamp = pd.to_datetime(df1_clean.timestamp)
```

#### 0.4.12 Test

```
In [188]: df1_clean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 9 columns):
tweet_id          2356 non-null int64
rating_numerator  2356 non-null int64
rating_denominator 2356 non-null int64
name              1611 non-null object
doggo             97 non-null object
floofer           10 non-null object
pupper            257 non-null object
puppo             30 non-null object
timestamp         2356 non-null datetime64[ns]
dtypes: datetime64[ns](1), int64(3), object(5)
memory usage: 165.7+ KB
```

#### 0.4.13 Issue

df1, name column has invalid and repeated name('a','the')

#### 0.4.14 Define

Invalid name replace with "None"

#### 0.4.15 Code

```
In [333]: name1 = {"a": "None", 'the': "None", "an": "None"}
          df1_clean['name'].replace(name1, inplace=True)
          df1_clean['name'] = df1_clean['name'].str.title()
```

```
In [190]: df1_clean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 9 columns):
tweet_id          2356 non-null int64
rating_numerator  2356 non-null int64
rating_denominator 2356 non-null int64
name              1611 non-null object
doggo             97 non-null object
floofer           10 non-null object
pupper           257 non-null object
puppo             30 non-null object
timestamp         2356 non-null datetime64[ns]
dtypes: datetime64[ns](1), int64(3), object(5)
memory usage: 165.7+ KB
```

#### 0.4.16 Test

```
In [267]: df1_clean['name'].unique().tolist()
```

```
Out[267]: ['Phineas',
           'Tilly',
           'Archie',
           'Darla',
           'Franklin',
           nan,
           'Jax',
           'Zoey',
           'Cassie',
           'Koda',
           'Bruno',
           'Ted',
           'Stuart',
           'Oliver',
           'Jim',
           'Zeke',
           'Ralphus',
           'Canela',
           'Gerald',
           'Jeffrey',
           'Such',
```

'Maya',  
'Mingus',  
'Derek',  
'Roscoe',  
'Waffles',  
'Jimbo',  
'Maisey',  
'Lilly',  
'Earl',  
'Lola',  
'Kevin',  
'Yogi',  
'Noah',  
'Bella',  
'Grizzwald',  
'Rusty',  
'Gus',  
'Stanley',  
'Alfy',  
'Koko',  
'Rey',  
'Gary',  
'None',  
'Elliot',  
'Louis',  
'Jesse',  
'Romeo',  
'Bailey',  
'Duddles',  
'Jack',  
'Emmy',  
'Steven',  
'Beau',  
'Snoopy',  
'Shadow',  
'Terrance',  
'Aja',  
'Penny',  
'Dante',  
'Nelly',  
'Ginger',  
'Benedict',  
'Venti',  
'Goose',  
'Nugget',  
'Cash',  
'Coco',  
'Jed',

'Sebastian',  
'Walter',  
'Sierra',  
'Monkey',  
'Harry',  
'Kody',  
'Lassie',  
'Rover',  
'Napolean',  
'Dawn',  
'Boomer',  
'Cody',  
'Rumble',  
'Clifford',  
'Quite',  
'Dewey',  
'Scout',  
'Gizmo',  
'Cooper',  
'Harold',  
'Shikha',  
'Jamesy',  
'Lili',  
'Sammy',  
'Meatball',  
'Paisley',  
'Albus',  
'Neptune',  
'Quinn',  
'Belle',  
'Zooey',  
'Dave',  
'Jersey',  
'Hobbes',  
'Burt',  
'Lorenzo',  
'Carl',  
'Jordy',  
'Milky',  
'Trooper',  
'Winston',  
'Sophie',  
'Wyatt',  
'Rosie',  
'Thor',  
'Oscar',  
'Luna',  
'Callie',

'Cermet',  
'George',  
'Marlee',  
'Arya',  
'Einstein',  
'Alice',  
'Rumpole',  
'Benny',  
'Aspen',  
'Jarod',  
'Wiggles',  
'General',  
'Sailor',  
'Astrid',  
'Iggy',  
'Snoop',  
'Kyle',  
'Leo',  
'Riley',  
'Gidget',  
'Noosh',  
'Odin',  
'Jerry',  
'Charlie',  
'Georgie',  
'Rontu',  
'Cannon',  
'Furzey',  
'Daisy',  
'Tuck',  
'Barney',  
'Vixen',  
'Jarvis',  
'Mimosa',  
'Pickles',  
'Bungalo',  
'Brady',  
'Margo',  
'Sadie',  
'Hank',  
'Tycho',  
'Stephan',  
'Indie',  
'Winnie',  
'Bentley',  
'Ken',  
'Max',  
'Maddie',



'Pipsy',  
'Monty',  
'Sojourner',  
'Odie',  
'Arlo',  
'Sunny',  
'Vincent',  
'Lucy',  
'Clark',  
'Mookie',  
'Meera',  
'Buddy',  
'Ava',  
'Rory',  
'Eli',  
'Ash',  
'Tucker',  
'Tobi',  
'Chester',  
'Wilson',  
'Sunshine',  
'Lipton',  
'Gabby',  
'Bronte',  
'Poppy',  
'Rhino',  
'Willow',  
'Not',  
'Orion',  
'Eevee',  
'Smiley',  
'Logan',  
'Moreton',  
'Klein',  
'Miguel',  
'Emanuel',  
'Kuyu',  
'Dutch',  
'Pete',  
'Scooter',  
'Reggie',  
'Kyro',  
'Samson',  
'Loki',  
'Mia',  
'Malcolm',  
'Dexter',  
'Alfie',

'Fiona',  
'One',  
'Mutt',  
'Bear',  
'Doobert',  
'Beebop',  
'Alexander',  
'Sailer',  
'Brutus',  
'Kona',  
'Boots',  
'Ralphie',  
'Phil',  
'Cupid',  
'Pawnd',  
'Pilot',  
'Ike',  
'Mo',  
'Toby',  
'Sweet',  
'Pablo',  
'Nala',  
'Balto',  
'Crawford',  
'Gabe',  
'Mattie',  
'Jimison',  
'Hercules',  
'Duchess',  
'Harlso',  
'Sampson',  
'Sundance',  
'Luca',  
'Flash',  
'Finn',  
'Peaches',  
'Howie',  
'Jazzy',  
'Anna',  
'Bo',  
'Seamus',  
'Wafer',  
'Chelsea',  
'Tom',  
'Moose',  
'Florence',  
'Autumn',  
'Dido',

'Eugene',  
'Herschel',  
'Strudel',  
'Tebow',  
'Chloe',  
'Betty',  
'Timber',  
'Binky',  
'Dudley',  
'Comet',  
'Larry',  
'Levi',  
'Akumi',  
'Titan',  
'Olivia',  
'Alf',  
'Oshie',  
'Bruce',  
'Chubbs',  
'Sky',  
'Atlas',  
'Eleanor',  
'Layla',  
'Rocky',  
'Baron',  
'Tyr',  
'Bauer',  
'Swagger',  
'Brandi',  
'Mary',  
'Moe',  
'Halo',  
'Augie',  
'Craig',  
'Sam',  
'Hunter',  
'Pavlov',  
'Maximus',  
'Wallace',  
'Ito',  
'Milo',  
'Ollie',  
'Cali',  
'Lennon',  
'Incredibly',  
'Major',  
'Duke',  
'Reginald',

'Sansa',  
'Shooter',  
'Django',  
'Diogi',  
'Sonny',  
'Philbert',  
'Marley',  
'Severus',  
'Ronnie',  
'Anakin',  
'Bones',  
'Mauve',  
'Chef',  
'Doc',  
'Sobe',  
'Longfellow',  
'Mister',  
'Iroh',  
'Baloo',  
'Stubert',  
'Paull',  
'Timison',  
'Davey',  
'Pancake',  
'Tyrone',  
'Snicku',  
'Ruby',  
'Brody',  
'Rizzy',  
'Mack',  
'Butter',  
'Nimbus',  
'Laika',  
'Dobby',  
'Juno',  
'Maude',  
'Lily',  
'Newt',  
'Benji',  
'Nida',  
'Robin',  
'Monster',  
'Bebe',  
'Remus',  
'Mabel',  
'Misty',  
'Happy',  
'Mosby',

'Maggie',  
'Leela',  
'Ralph',  
'Brownie',  
'Meyer',  
'Stella',  
'Mad',  
'Frank',  
'Tonks',  
'Lincoln',  
'Oakley',  
'Dale',  
'Rizzo',  
'Arnie',  
'Pinot',  
'Dallas',  
'Hero',  
'Frankie',  
'Stormy',  
'Mairi',  
'Loomis',  
'Godi',  
'Kenny',  
'Deacon',  
'Timmy',  
'Harper',  
'Chipson',  
'Combo',  
'Dash',  
'Bell',  
'Hurley',  
'Jay',  
'Mya',  
'Strider',  
'Wesley',  
'Solomon',  
'Huck',  
'Very',  
'O',  
'Blue',  
'Finley',  
'Sprinkles',  
'Heinrich',  
'Shakespeare',  
'Fizz',  
'Chip',  
'Grey',  
'Roosevelt',

'Gromit',  
'Willem',  
'Dakota',  
'Dixie',  
'Al',  
'Jackson',  
'Just',  
'Carbon',  
'Dondon',  
'Kirby',  
'Lou',  
'Nollie',  
'Chevy',  
'Tito',  
'Louie',  
'Rupert',  
'Rufus',  
'Brudge',  
'Shadoe',  
'Colby',  
'Angel',  
'Brat',  
'Tove',  
'My',  
'Aubie',  
'Kota',  
'Eve',  
'Glenn',  
'Shelby',  
'Sephie',  
'Bonaparte',  
'Albert',  
'Wishes',  
'Rose',  
'Theo',  
'Rocco',  
'Fido',  
'Emma',  
'Spencer',  
'Lilli',  
'Boston',  
'Brandonald',  
'Corey',  
'Leonard',  
'Chompsky',  
'Beckham',  
'Devón',  
'Gert',

'Watson',  
'Rubio',  
'Keith',  
'Dex',  
'Carly',  
'Ace',  
'Tayzie',  
'Grizzie',  
'Fred',  
'Gilbert',  
'Zoe',  
'Stewie',  
'Calvin',  
'Lilah',  
'Spanky',  
'Jameson',  
'Piper',  
'Atticus',  
'Blu',  
'Dietrich',  
'Divine',  
'Tripp',  
'His',  
'Cora',  
'Huxley',  
'Keurig',  
'Bookstore',  
'Linus',  
'Abby',  
'Shaggy',  
'Shiloh',  
'Gustav',  
'Arlen',  
'Percy',  
'Lenox',  
'Sugar',  
'Harvey',  
'Blanket',  
'Actually',  
'Geno',  
'Stark',  
'Beya',  
'Kilo',  
'Kayla',  
'Maxaroni',  
'Doug',  
'Edmund',  
'Aqua',

'Theodore',  
'Chase',  
'Getting',  
'Rorie',  
'Simba',  
'Charles',  
'Bayley',  
'Axel',  
'Storkson',  
'Remy',  
'Chadrick',  
'Kellogg',  
'Buckley',  
'Livvie',  
'Terry',  
'Hermione',  
'Ralpher',  
'Aldrick',  
'This',  
'Unacceptable',  
'Rooney',  
'Crystal',  
'Ziva',  
'Stefan',  
'Pupcasso',  
'Puff',  
'Flurpson',  
'Coleman',  
'Enchilada',  
'Raymond',  
'All',  
'Rueben',  
'Cilantro',  
'Karll',  
'Sprout',  
'Blitz',  
'Bloop',  
'Lillie',  
'Ashleigh',  
'Kreggory',  
'Sarge',  
'Luther',  
'Ivar',  
'Jangle',  
'Schnitzel',  
'Panda',  
'Berkeley',  
'Ralphé',



'Charleson',  
'Clyde',  
'Harnold',  
'Sid',  
'Pippa',  
'Otis',  
'Carper',  
'Bowie',  
'Alexanderson',  
'Suki',  
'Barclay',  
'Skittle',  
'Ebby',  
'Flávio',  
'Smokey',  
'Link',  
'Jennifur',  
'Ozzy',  
'Bluebert',  
'Stephanus',  
'Bubbles',  
'Old',  
'Zeus',  
'Bertson',  
'Nico',  
'Michelangelo',  
'Siba',  
'Calbert',  
'Curtis',  
'Travis',  
'Thumas',  
'Kanu',  
'Lance',  
'Opie',  
'Kane',  
'Olive',  
'Chuckles',  
'Staniel',  
'Sora',  
'Beemo',  
'Gunner',  
'Infuriating',  
'Lacy',  
'Tater',  
'Olaf',  
'Cecil',  
'Vince',  
'Karma',

'Billy',  
'Walker',  
'Rodney',  
'Klevin',  
'Malikai',  
'Bobble',  
'River',  
'Jebbersson',  
'Remington',  
'Farfle',  
'Jiminus',  
'Clarkus',  
'Finnegus',  
'Cupcake',  
'Kathmandu',  
'Ellie',  
'Katie',  
'Kara',  
'Adele',  
'Zara',  
'Ambrose',  
'Jimothy',  
'Bode',  
'Terrenth',  
'Reese',  
'Chesterson',  
'Lucia',  
'Bisquick',  
'Ralphson',  
'Socks',  
'Rambo',  
'Rudy',  
'Fiji',  
'Rilo',  
'Bilbo',  
'Coopson',  
'Yoda',  
'Millie',  
'Chet',  
'Crouton',  
'Daniel',  
'Kaia',  
'Murphy',  
'Dotsy',  
'Eazy',  
'Coops',  
'Fillup',  
'Miley',

'Charl',  
'Reagan',  
'Yukon',  
'Cece',  
'Cuddles',  
'Claude',  
'Jessiga',  
'Carter',  
'Ole',  
'Pherb',  
'Blipson',  
'Reptar',  
'Trevith',  
'Berb',  
'Bob',  
'Colin',  
'Brian',  
'Olivier',  
'Grady',  
'Kobe',  
'Freddery',  
'Bodie',  
'Dunkin',  
'Wally',  
'Tupawc',  
'Amber',  
'Edgar',  
'Teddy',  
'Kingsley',  
'Brockly',  
'Richie',  
'Molly',  
'Vinscent',  
'Cedrick',  
'Hazel',  
'Lolo',  
'Eriq',  
'Phred',  
'Oddie',  
'Maxwell',  
'Geoff',  
'Covach',  
'Durg',  
'Fynn',  
'Ricky',  
'Herald',  
'Lucky',  
'Ferg',

'Trip',  
'Clarence',  
'Hamrick',  
'Brad',  
'Pubert',  
'Frönq',  
'Derby',  
'Lizzie',  
'Ember',  
'Blakely',  
'Opal',  
'Marq',  
'Kramer',  
'Barry',  
'Gordon',  
'Baxter',  
'Mona',  
'Horace',  
'Crimson',  
'Birf',  
'Hammond',  
'Lorelei',  
'Marty',  
'Brooks',  
'Petrick',  
'Hubertson',  
'Gerbald',  
'Oreo',  
'Bruiser',  
'Perry',  
'Bobby',  
'Jeph',  
'Obi',  
'Tino',  
'Kulet',  
'Sweets',  
'Lupe',  
'Tiger',  
'Jiminy',  
'Griffin',  
'Banjo',  
'Brandy',  
'Lulu',  
'Darrel',  
'Taco',  
'Joey',  
'Patrick',  
'Kreg',

'Todo',  
'Tess',  
'Ulysses',  
'Toffee',  
'Apollo',  
'Asher',  
'Glacier',  
'Chuck',  
'Champ',  
'Ozzie',  
'Griswold',  
'Cheesy',  
'Moofasa',  
'Hector',  
'Goliath',  
'Kawhi',  
'By',  
'Emmie',  
'Penelope',  
'Willie',  
'Rinna',  
'Mike',  
'William',  
'Dwight',  
'Evy',  
'Officially',  
'Rascal',  
'Linda',  
'Tug',  
'Tango',  
'Grizz',  
'Jerome',  
'Crumpet',  
'Jessifer',  
'Izzy',  
'Ralph',  
'Sandy',  
'Humphrey',  
'Tassy',  
'Juckson',  
'Chuq',  
'Tyrus',  
'Karl',  
'Godzilla',  
'Vinnie',  
'Kenneth',  
'Herm',  
'Bert',

'Striker',  
'Donny',  
'Pepper',  
'Bernie',  
'Buddah',  
'Lenny',  
'Arnold',  
'Zuzu',  
'Mollie',  
'Laela',  
'Tedders',  
'Superpup',  
'Rufio',  
'Jeb',  
'Rodman',  
'Jonah',  
'Chesney',  
'Life',  
'Henry',  
'Bobbay',  
'Mitch',  
'Kaiya',  
'Acro',  
'Aiden',  
'Obie',  
'Dot',  
'Shnuggles',  
'Kendall',  
'Jeffri',  
'Steve',  
'Mac',  
'Fletcher',  
'Kenzie',  
'Pumpkin',  
'Schnozz',  
'Gustaf',  
'Cheryl',  
'Ed',  
'Leonidas',  
'Norman',  
'Caryl',  
'Scott',  
'Taz',  
'Darby',  
'Jackie',  
'Light',  
'Jazz',  
'Franq',

'Pippin',  
'Rolf',  
'Snickers',  
'Ridley',  
'Cal',  
'Bradley',  
'Bubba',  
'Tuco',  
'Patch',  
'Mojo',  
'Batdog',  
'Dylan',  
'Space',  
'Mark',  
'Jd',  
'Alejandro',  
'Scruffers',  
'Pip',  
'Julius',  
'Tanner',  
'Sparky',  
'Anthony',  
'Holly',  
'Jett',  
'Amy',  
'Sage',  
'Andy',  
'Mason',  
'Trigger',  
'Antony',  
'Creg',  
'Traviss',  
'Gin',  
'Jeffrie',  
'Danny',  
'Ester',  
'Pluto',  
'Bloo',  
'Edd',  
'Willy',  
'Herb',  
'Damon',  
'Peanut',  
'Nigel',  
'Butters',  
'Sandra',  
'Fabio',  
'Randall',

'Liam',  
'Tommy',  
'Ben',  
'Raphael',  
'Julio',  
'Andru',  
'Kloey',  
'Shawwn',  
'Skye',  
'Kollin',  
'Ronduh',  
'Billl',  
'Saydee',  
'Dug',  
'Tessa',  
'Sully',  
'Kirk',  
'Ralf',  
'Clarq',  
'Jaspers',  
'Samsom',  
'Harrison',  
'Chaz',  
'Jeremy',  
'Jaycob',  
'Lambeau',  
'Ruffles',  
'Amélie',  
'Bobb',  
'Banditt',  
'Kevon',  
'Winifred',  
'Hanz',  
'Churlie',  
'Zeek',  
'Timofy',  
'Maks',  
'Jomathan',  
'Kallie',  
'Marvin',  
'Spark',  
'Gòrdón',  
'Jo',  
'Dayz',  
'Jareld',  
'Torque',  
'Ron',  
'Skittles',



```
'Cleopatrícia',  
'Erik',  
'Stu',  
'Tedrick',  
'Filup',  
'Kial',  
'Naphaniel',  
'Dook',  
'Hall',  
'Philippe',  
'Biden',  
'Fwed',  
'Genevieve',  
'Joshwa',  
'Bradlay',  
'Clybe',  
'Keet',  
'Carll',  
'Jockson',  
'Josep',  
'Lugan',  
'Christoper']
```

```
In [192]: df1_clean.info()
```

```
<class 'pandas.core.frame.DataFrame'>  
RangeIndex: 2356 entries, 0 to 2355  
Data columns (total 9 columns):  
tweet_id      2356 non-null int64  
rating_numerator  2356 non-null int64  
rating_denominator  2356 non-null int64  
name          1611 non-null object  
doggo         97 non-null object  
floofer       10 non-null object  
pupper       257 non-null object  
puppo        30 non-null object  
timestamp     2356 non-null datetime64[ns]  
dtypes: datetime64[ns](1), int64(3), object(5)  
memory usage: 165.7+ KB
```

```
In [268]: images_clean.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
```

#### 0.4.17 Issue

In df1 dataframe some data doesnt have images in images dataframe

#### 0.4.18 Define

Keep the datas that are common entries in all data frame

#### 0.4.19 Code

```
In [334]: data = set(images_clean.tweet_id)

          tweet_data_clean = tweet_data_clean[tweet_data_clean['tweet_id'].isin(data)]

          data = set(tweet_data_clean.tweet_id)

          df1_clean = df1_clean[df1_clean['tweet_id'].isin(data)]
          images_clean = images_clean[images_clean['tweet_id'].isin(data)]

In [ ]: images
```

#### 0.4.20 Test

```
In [335]: df1_clean.shape

Out[335]: (1993, 9)

In [336]: images_clean.shape

Out[336]: (2068, 12)

In [337]: tweet_data_clean.shape

Out[337]: (2068, 5)
```

#### 0.4.21 Tidiness

#### 0.4.22 Issue

For evaluation for rating ,values are in different column

#### 0.4.23 Define

Create a column called 'rating' and drop the existing columnnd 'rating\_numerator','rating\_denominator'

#### 0.4.24 Code

```
In [338]: df1_clean['rating']=df1_clean.rating_numerator/df1_clean.rating_denominator
          df1_clean=df1_clean.drop(['rating_numerator','rating_denominator'],axis=1)
```

```
In [339]: df1_clean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1993 entries, 0 to 2355
Data columns (total 8 columns):
tweet_id      1993 non-null int64
name          1447 non-null object
doggo         74 non-null object
floofer       8 non-null object
pupper        212 non-null object
puppo         23 non-null object
timestamp     1993 non-null datetime64[ns]
rating        1993 non-null float64
dtypes: datetime64[ns](1), float64(1), int64(1), object(5)
memory usage: 140.1+ KB
```

#### 0.4.25 Issue

Dog stage in different columns.

#### 0.4.26 Define

doggo', 'floofer', 'pupper', and 'puppo' different columns in to one column called dog\_stage

#### 0.4.27 Code

```
In [340]: df1_clean['dog_stage'] = df1_clean[['doggo', 'floofer', 'pupper', 'puppo']].astype(str)
```

```
In [341]: df1_clean['dog_stage'] = df1_clean['dog_stage'].apply(lambda x: x.replace('nan', ''))
          df1_clean['dog_stage'] = df1_clean['dog_stage'].apply(lambda x: np.NaN if x == '' else x)
```

```
In [247]: df1_clean.sample(20)
```

```
Out[247]:
```

	tweet_id	name	doggo	floofer	pupper	puppo	\
405	823939628516474880	Cash	NaN	NaN	NaN	NaN	
393	825876512159186944	Mo	NaN	NaN	NaN	NaN	
2033	671744970634719232	NaN	NaN	NaN	NaN	NaN	
2165	669367896104181761	Chip	NaN	NaN	NaN	NaN	
2100	670704688707301377	Danny	NaN	NaN	NaN	NaN	
2309	666804364988780544	Jockson	NaN	NaN	NaN	NaN	
1311	707021089608753152	Tucker	NaN	NaN	NaN	NaN	
469	816829038950027264	Betty	NaN	NaN	NaN	puppo	
84	876484053909872640	Benedict	NaN	NaN	NaN	NaN	
338	832369877331693569	Charlie	NaN	NaN	NaN	NaN	
2338	666104133288665088	NaN	NaN	NaN	NaN	NaN	
593	798925684722855936	Shadow	NaN	NaN	NaN	NaN	
2307	666826780179869698	NaN	NaN	NaN	NaN	NaN	
2161	669564461267722241	None	NaN	NaN	NaN	NaN	
1753	678800283649069056	NaN	NaN	NaN	pupper	NaN	
1382	700864154249383937	None	NaN	NaN	pupper	NaN	
1763	678446151570427904	NaN	NaN	NaN	NaN	NaN	
1988	672834301050937345	Ed	NaN	NaN	NaN	NaN	
1843	675853064436391936	NaN	NaN	NaN	NaN	NaN	
1968	673320132811366400	Frankie	NaN	NaN	NaN	NaN	

	timestamp	rating	dog_stage
405	2017-01-24 17:04:50	1.2	NaN
393	2017-01-30 01:21:19	1.1	NaN
2033	2015-12-01 17:37:36	0.6	NaN
2165	2015-11-25 04:11:57	1.0	NaN
2100	2015-11-28 20:43:53	0.6	NaN
2309	2015-11-18 02:25:23	0.8	NaN
1311	2016-03-08 01:52:18	1.2	NaN
469	2017-01-05 02:09:53	1.2	puppo
84	2017-06-18 16:57:37	1.3	NaN
338	2017-02-16 23:23:38	1.1	NaN
2338	2015-11-16 04:02:55	0.1	NaN
593	2016-11-16 16:28:21	1.1	NaN
2307	2015-11-18 03:54:28	1.2	NaN
2161	2015-11-25 17:13:02	1.0	NaN
1753	2015-12-21 04:52:53	1.2	pupper
1382	2016-02-20 02:06:50	1.2	pupper
1763	2015-12-20 05:25:42	1.0	NaN
1988	2015-12-04 17:46:12	1.0	NaN
1843	2015-12-13 01:41:41	1.1	NaN
1968	2015-12-06 01:56:44	1.1	NaN

```
In [342]: df1_clean.drop(['doggo', 'floofer', 'pupper', 'puppo'],axis=1, inplace=True)
```

```
In [350]: df1_clean.sample(20)
```

```
Out[350]:
```

	tweet_id	name	timestamp	rating	dog_stage
--	----------	------	-----------	--------	-----------

920	756303284449767430	NaN	2016-07-22 01:42:09	1.1	NaN
1072	739979191639244800	Nollie	2016-06-07 00:36:02	1.2	NaN
2163	669375718304980992	Billl	2015-11-25 04:43:02	0.6	NaN
793	773547596996571136	Chelsea	2016-09-07 15:44:53	1.1	pupper
1269	709519240576036864	Vince	2016-03-14 23:19:03	0.9	NaN
1723	680100725817409536	NaN	2015-12-24 19:00:23	1.1	pupper
553	804026241225523202	Bo	2016-11-30 18:16:08	1.3	NaN
689	787717603741622272	Tonks	2016-10-16 18:11:26	1.3	puppo
645	793165685325201412	Benji	2016-10-31 19:00:10	1.2	NaN
1410	699036661657767936	NaN	2016-02-15 01:05:02	1.3	pupper
2280	667393430834667520	Fwed	2015-11-19 17:26:08	0.8	NaN
1476	693629975228977152	NaN	2016-01-31 03:00:47	1.2	pupper
1780	677700003327029250	Ralph	2015-12-18 04:00:46	1.0	NaN
1648	683773439333797890	Buddy	2016-01-03 22:14:26	0.9	NaN
2210	668620235289837568	Kallie	2015-11-23 02:41:01	1.0	NaN
2200	668655139528511488	Winifred	2015-11-23 04:59:42	1.1	NaN
989	748932637671223296	Divine	2016-07-01 17:33:49	1.3	doggo
175	857989990357356544	Rosie	2017-04-28 16:08:49	1.2	NaN
2095	670764103623966721	Vincent	2015-11-29 00:39:59	1.0	NaN
2299	667065535570550784	NaN	2015-11-18 19:43:11	0.8	NaN

In [277]: df1\_clean.info()

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2068 entries, 0 to 2355
Data columns (total 5 columns):
tweet_id      2068 non-null int64
name          1493 non-null object
timestamp     2068 non-null datetime64[ns]
rating        2068 non-null float64
dog_stage     321 non-null object
dtypes: datetime64[ns](1), float64(1), int64(1), object(2)
memory usage: 96.9+ KB
```

In [276]: tweet\_data\_clean1.info()

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2342 entries, 0 to 2341
Data columns (total 26 columns):
timestamp     2068 non-null datetime64[ns]
source        2068 non-null object
text          2068 non-null object
rating_numerator  2068 non-null float64
rating_denominator  2068 non-null float64
name          1493 non-null object
dog_stage     321 non-null object
favorite_count 2342 non-null int64
retweet_count 2342 non-null int64
```

```

tweet_id          1962 non-null object
doggo             76 non-null object
floofer          8 non-null object
pupper           211 non-null object
puppo            24 non-null object
rating           1962 non-null float64
jpg_url          1275 non-null object
img_num          1275 non-null float64
p1               1275 non-null object
p1_conf          1275 non-null float64
p1_dog           1275 non-null object
p2               1275 non-null object
p2_conf          1275 non-null float64
p2_dog           1275 non-null object
p3               1275 non-null object
p3_conf          1275 non-null float64
p3_dog           1275 non-null object
dtypes: datetime64[ns](1), float64(7), int64(2), object(16)
memory usage: 494.0+ KB

```

```
In [278]: images_clean.isnull().sum()
```

```

Out[278]: tweet_id    0
          jpg_url     0
          img_num     0
          p1          0
          p1_conf     0
          p1_dog      0
          p2          0
          p2_conf     0
          p2_dog      0
          p3          0
          p3_conf     0
          p3_dog      0
          dtype: int64

```

```
In [343]: tweet_analysis=tweet_data_clean.merge(df1_clean,how='left')
```

```
In [289]: tweet_analysis.info()
```

```

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2068 entries, 0 to 2067
Data columns (total 20 columns):
created_at          2068 non-null datetime64[ns]
favorite_count      2068 non-null int64
retweet_count       2068 non-null int64
tweet_id            2068 non-null int64
full_text           2068 non-null object

```

```

name                1493 non-null object
timestamp           2068 non-null datetime64[ns]
rating              2068 non-null float64
dog_stage           321 non-null object
jpg_url             2068 non-null object
img_num             2068 non-null int64
p1                  2068 non-null object
p1_conf             2068 non-null float64
p1_dog              2068 non-null bool
p2                  2068 non-null object
p2_conf             2068 non-null float64
p2_dog              2068 non-null bool
p3                  2068 non-null object
p3_conf             2068 non-null float64
p3_dog              2068 non-null bool
dtypes: bool(3), datetime64[ns](2), float64(4), int64(4), object(7)
memory usage: 296.9+ KB

```

```

In [344]: #create a Dataframe includes necessary column for explanating the variables
          tweet_analysis=tweet_analysis[['tweet_id','created_at','favorite_count','retweet_count']]

```

```

In [345]: tweet_analysis.info()

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2068 entries, 0 to 2067
Data columns (total 8 columns):
tweet_id          2068 non-null int64
created_at        2068 non-null datetime64[ns]
favorite_count    2068 non-null int64
retweet_count     2068 non-null int64
timestamp         1993 non-null datetime64[ns]
name              1447 non-null object
rating            1993 non-null float64
dog_stage         306 non-null object
dtypes: datetime64[ns](2), float64(1), int64(3), object(2)
memory usage: 145.4+ KB

```

```

In [346]: tweet_analysis.to_csv('twitter_archive_master.csv', index=False )
          images_clean.to_csv('images_clean',index=False)

```

## 0.5 Analysis

```

In [372]: tweet_analysis.info()

<class 'pandas.core.frame.DataFrame'>
Int64Index: 2068 entries, 0 to 2067
Data columns (total 8 columns):

```

```

tweet_id      2068 non-null int64
created_at    2068 non-null datetime64[ns]
favorite_count 2068 non-null int64
retweet_count 2068 non-null int64
timestamp     1993 non-null datetime64[ns]
name          1447 non-null object
rating        1993 non-null float64
dog_stage     306 non-null object
dtypes: datetime64[ns](2), float64(1), int64(3), object(2)
memory usage: 225.4+ KB

```

```
In [322]: tweet_analysis.describe()
```

```

Out[322]:

```

	tweet_id	favorite_count	retweet_count	rating
count	2.068000e+03	2068.000000	2068.000000	2068.000000
mean	7.381174e+17	8445.584139	2816.662476	1.169576
std	6.767761e+16	12711.271546	4895.642564	3.993692
min	6.660209e+17	0.000000	12.000000	0.000000
25%	6.764377e+17	1606.500000	600.000000	1.000000
50%	7.117137e+17	3717.500000	1325.500000	1.100000
75%	7.931393e+17	10577.750000	3252.500000	1.200000
max	8.924206e+17	164774.000000	83954.000000	177.600000

Finding the Rating by dog\_stage

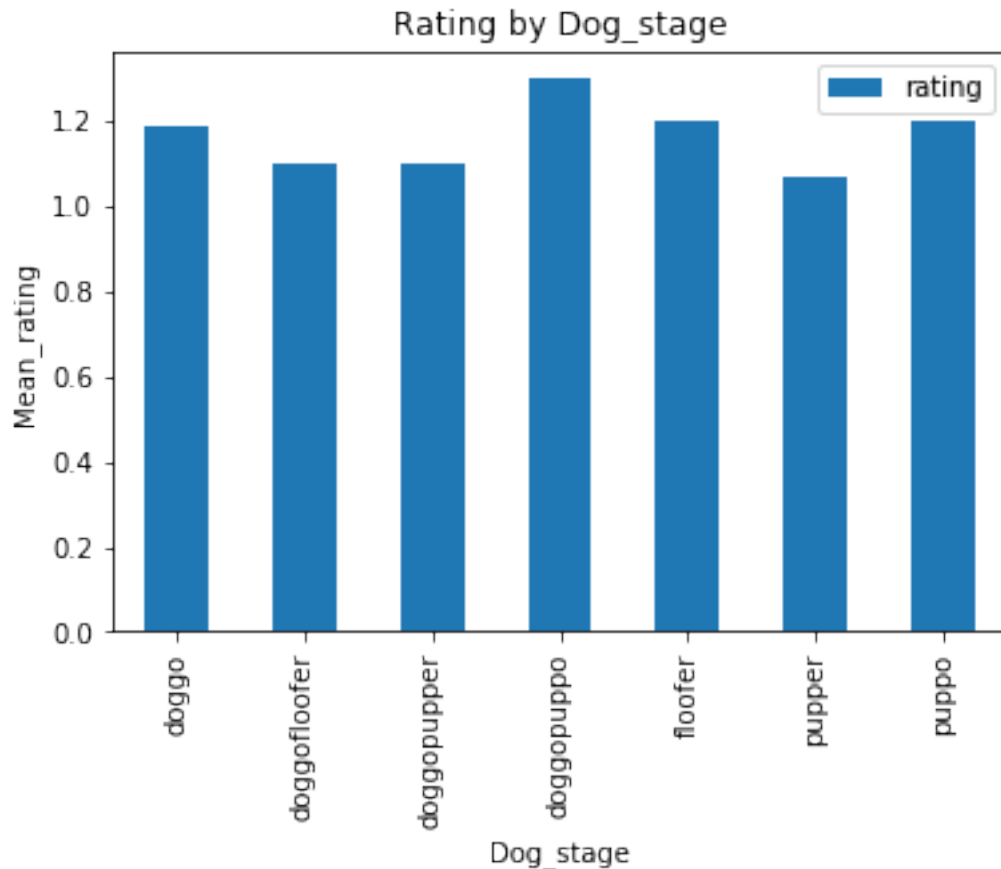
```

In [406]: a = tweet_analysis.groupby("dog_stage").agg({"rating": "mean"}).plot(kind='bar')
plt.xlabel("Dog_stage")
plt.ylabel("Mean_rating")
plt.title("Rating by Dog_stage")

```

```
Out[406]: Text(0.5,1,'Rating by Dog_stage')
```

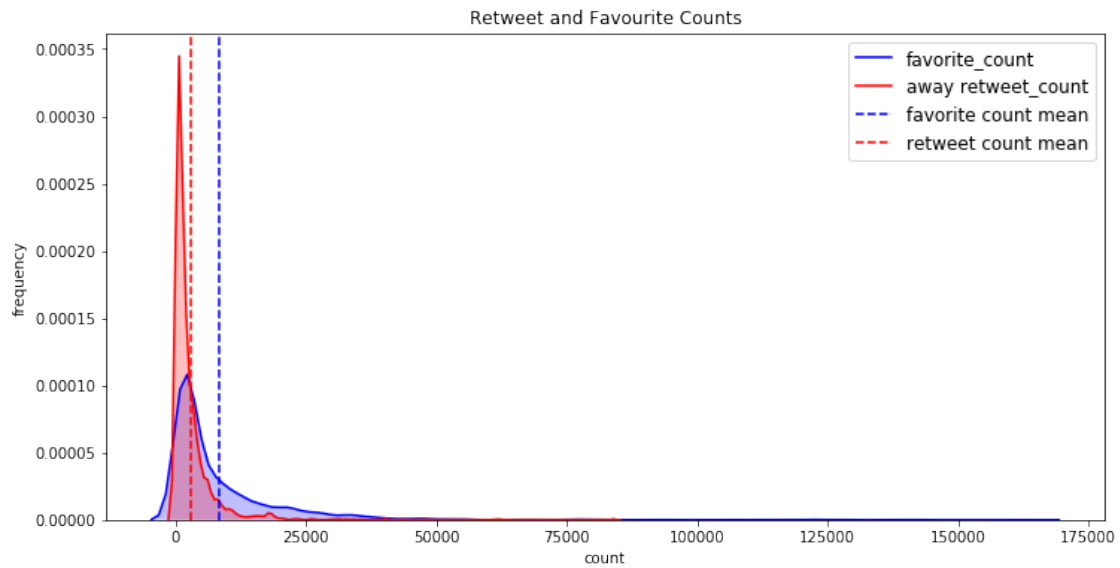




among doggo,floofer,pupper,puppo ,floofer having highest frequency rating

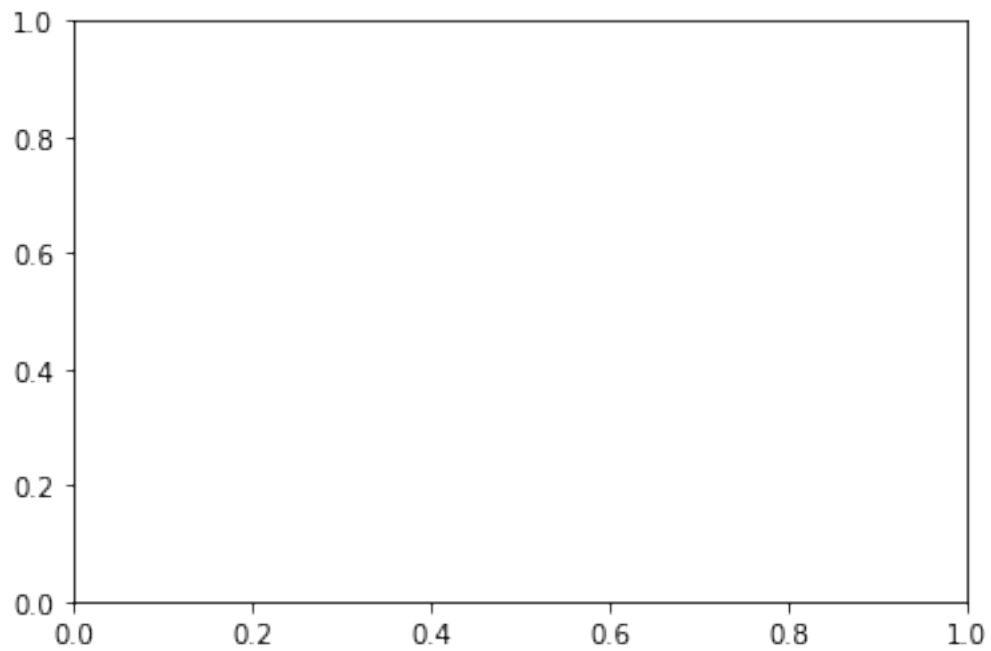
```
In [391]: plt.figure(figsize=(12,6))
sns.kdeplot(tweet_analysis["favorite_count"],shade=True,
            color="b",label="favorite_count")
sns.kdeplot(tweet_analysis["retweet_count"],shade=True,
            color="r",label="away retweet_count")
plt.axvline(tweet_analysis["favorite_count"].mean(),linestyle = "dashed",
            color="b",label="favorite count mean")
plt.axvline(tweet_analysis["retweet_count"].mean(),linestyle = "dashed",
            color="r",label="retweet count mean")
plt.legend(loc="best",prop = {"size" : 12})
plt.title('Retweet and Favourite Counts')
plt.xlabel("count")
plt.ylabel("frequency")
plt.show()
plt.legend();
print('favorite')
print('mean:', tweet_analysis.favorite_count.mean())
print('')
```

```
print('Retweet')
print('mean:', tweet_analysis.retweet_count.mean())
```



```
favorite
mean: 8445.58413926
```

```
Retweet
mean: 2816.66247582
```



This representing the frequency of favorite\_count and retweet\_count from mean of both values showing that favorited have high frequency than retweeted.