

# wrangle\_act

October 16, 2020

Wrangle and Analyze Data Twitter API

Analyzing And Visualizing The Tweet Archive Of Twitter User @Dog\_Rates

```
[1]: import os                #this module routines for NT or Posix depending on what
      ↪system we're on.
import tweepy
import matplotlib.pyplot as plt
import urllib.parse         #this module Parse (absolute and relative) URLs.
import requests             #this module Requests is an HTTP library, written in
      ↪Python, for human beings. Basic GET usage:
import pandas as pd #this module
import numpy as np
import json                 #this module:json exposes an API familiar to users of the
      ↪standard library module
import time                 #This module provides various functions to manipulate
      ↪time values.
import nbconvert
import pypeteer
import pandocfilters
import pip
print ("library-Imported")
```

library-Imported

```
[2]: from tweepy.streaming import StreamListener
from tweepy import OAuthHandler
from tweepy import API
from tweepy import Stream
from tweepy import Cursor
from tweepy.streaming import StreamListener
from timeit import default_timer as timer
from requests.auth import AuthBase
from pandas.core.tools.datetimes import to_datetime
from pandas.core.tools.timedeltas import to_timedelta
from nbconvert import LatexExporter
from nbconvert import PDFExporter
from nbconvert import webpdf
from nbconvert import nbconvertapp
```

```
from nbconvert import templates
print ("functions-Imported")
```

functions-Imported

```
[3]: import os
os.getcwd()
```

```
[3]: 'C:\\Users\\abdel\\FWD-Udacity-Wrangle-and-Analyze-Data-Twitter-API'
```

```
[4]: ls
```

Volume in drive C has no label.  
Volume Serial Number is 4EC7-F09B

Directory of C:\Users\abdel\FWD-Udacity-Wrangle-and-Analyze-Data-Twitter-API

10/16/2020	03:35 PM	<DIR>	.
10/16/2020	03:35 PM	<DIR>	..
10/12/2020	01:54 PM		66 .gitattributes
10/16/2020	03:02 PM	<DIR>	.ipynb_checkpoints
10/16/2020	02:58 PM	<DIR>	.vscode
10/13/2020	01:16 AM		38,329 egypt fwd initiative.jpg
10/14/2020	12:56 PM		195,293 FWD.jpg
10/16/2020	03:35 PM		335,079 image_predictions.tsv
10/12/2020	01:45 PM		335,079 image-predictions-3.tsv
10/16/2020	03:45 AM		923,437 main_df.csv
10/14/2020	02:06 PM		10,540,363 tweet_json.txt
10/12/2020	01:45 PM		10,609,234 tweet-json
10/12/2020	01:43 PM		10,609,234 tweet-json.txt
10/12/2020	01:46 PM		614,603 tweet-json.zip
10/12/2020	01:42 PM		1,764 twitter-api.py
10/12/2020	02:44 PM		915,692 twitter-archive-enhanced.csv
10/16/2020	03:21 PM		863,974 wrangle_act.html
10/16/2020	03:26 PM		355,700 wrangle_act.ipynb
10/16/2020	02:41 PM		227,479 wrangle_act.pdf
		15 File(s)	36,565,326 bytes
		4 Dir(s)	566,286,606,336 bytes free

## 1 1- Gathering Data for this Project

### 1.0.1 I- Read twitter-archive-enhanced as pandas dataframe and quick check to view structure

```
[5]: archive = pd.read_csv("twitter-archive-enhanced.csv")
archive.set_index('tweet_id')
archive.head(3)
```

```

[5]:      tweet_id  in_reply_to_status_id  in_reply_to_user_id  \
0  892420643555336193                NaN                NaN
1  892177421306343426                NaN                NaN
2  891815181378084864                NaN                NaN

      timestamp  \
0  2017-08-01 16:23:56 +0000
1  2017-08-01 00:17:27 +0000
2  2017-07-31 00:18:03 +0000

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

      text  retweeted_status_id  \
0  This is Phineas. He's a mystical boy. Only eve...      NaN
1  This is Tilly. She's just checking pup on you...      NaN
2  This is Archie. He is a rare Norwegian Pouncin...      NaN

      retweeted_status_user_id  retweeted_status_timestamp  \
0                NaN                NaN
1                NaN                NaN
2                NaN                NaN

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

      rating_denominator  name  doggo  floofer  pupper  puppo
0                10  Phineas  None    None    None    None
1                10   Tilly  None    None    None    None
2                10   Archie  None    None    None    None

```

### 1.0.2 II- Download tweet image predictions TSV using the Requests library and write it to image\_predictions.tsv

```

[6]: url = 'https://d17h27t6h515a5.cloudfront.net/topher/2017/August/
      ↪599fd2ad_image-predictions/image-predictions.tsv'
response = requests.get(url)
with open('image_predictions.tsv', mode='wb') as file:
    file.write(response.content)

# Import the tweet image predictions TSV file into a DataFrame
image = pd.read_csv('image_predictions.tsv', sep='\t')
image.set_index('tweet_id')

```

```
image.head(3)
```

```
[6]:          tweet_id          jpg_url \
0  666020888022790149  https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg
1  666029285002620928  https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg
2  666033412701032449  https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg

      img_num      p1      p1_conf      p1_dog      p2 \
0          1  Welsh_springer_spaniel  0.465074      True      collie
1          1          redbone  0.506826      True  miniature_pinscher
2          1      German_shepherd  0.596461      True      malinois

      p2_conf      p2_dog      p3      p3_conf      p3_dog
0  0.156665      True  Shetland_sheepdog  0.061428      True
1  0.074192      True  Rhodesian_ridgeback  0.072010      True
2  0.138584      True          bloodhound  0.116197      True
```

### 1.0.3 III- Query Twitter API for each tweet in the Twitter archive and save JSON in a text file

```
[7]: # These are hidden to comply with Twitter's API terms and conditions
consumer_key = '9tZBWXQREttD0gqMgz9fuE6uF' #'HIDDEN'
consumer_secret = 'ojAm9UkskWOq81tYwtmUrJNoBmA5WoWprCXkiNscNPg1mm90Uj'
↳ #'HIDDEN' #'
access_token = '1623114967-nLvKVh3lxdjlqkGZg2Muaz7x2mh6d9l0iRRtBcA' #'HIDDEN'
access_secret = 'gufW4bMqqtKgQ4yHmdPUvLaEhWpfrH9OP6YvfFwxLFUJV' #'HIDDEN'

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

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

print ("ACCESS Twitter's API")
```

ACCESS Twitter's API

```
[8]: tweet_ids = archive.tweet_id.values
len(tweet_ids)
```

[8]: 2356

```
[40]: # Query Twitter's API for JSON data for each tweet ID in the Twitter archive
count = 0
fails_dict = {}
start = timer()
# Save each tweet's returned JSON as a new line in a .txt file
with open('tweet_json.txt', 'w') as outfile:
```

```

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

```

```

1: 892420643555336193
Success
2: 892177421306343426
Success
3: 891815181378084864
Success
4: 891689557279858688
Success
5: 891327558926688256
Success
6: 891087950875897856
Success
7: 890971913173991426
Success
8: 890729181411237888
Success
9: 890609185150312448
Success
10: 890240255349198849
Success
11: 890006608113172480
Success
12: 889880896479866881
Success
13: 889665388333682689
Success
14: 889638837579907072
Success
15: 889531135344209921
Success

```

16: 889278841981685760  
Success  
17: 888917238123831296  
Success  
18: 888804989199671297  
Success  
19: 888554962724278272  
Success  
20: 888202515573088257  
Fail  
21: 888078434458587136  
Success  
22: 887705289381826560  
Success  
23: 887517139158093824  
Success  
24: 887473957103951883  
Success  
25: 887343217045368832  
Success  
26: 887101392804085760  
Success  
27: 886983233522544640  
Success  
28: 886736880519319552  
Success  
29: 886680336477933568  
Success  
30: 886366144734445568  
Success  
31: 886267009285017600  
Success  
32: 886258384151887873  
Success  
33: 886054160059072513  
Success  
34: 885984800019947520  
Success  
35: 885528943205470208  
Success  
36: 885518971528720385  
Success  
37: 885311592912609280  
Success  
38: 885167619883638784  
Success  
39: 884925521741709313  
Success

40: 884876753390489601  
Success  
41: 884562892145688576  
Success  
42: 884441805382717440  
Success  
43: 884247878851493888  
Success  
44: 884162670584377345  
Success  
45: 883838122936631299  
Success  
46: 883482846933004288  
Success  
47: 883360690899218434  
Success  
48: 883117836046086144  
Success  
49: 882992080364220416  
Success  
50: 882762694511734784  
Success  
51: 882627270321602560  
Success  
52: 882268110199369728  
Success  
53: 882045870035918850  
Success  
54: 881906580714921986  
Success  
55: 881666595344535552  
Success  
56: 881633300179243008  
Success  
57: 881536004380872706  
Success  
58: 881268444196462592  
Success  
59: 880935762899988482  
Success  
60: 880872448815771648  
Success  
61: 880465832366813184  
Success  
62: 880221127280381952  
Success  
63: 880095782870896641  
Success

64: 879862464715927552  
Success  
65: 879674319642796034  
Success  
66: 879492040517615616  
Success  
67: 879415818425184262  
Success  
68: 879376492567855104  
Success  
69: 879130579576475649  
Success  
70: 879050749262655488  
Success  
71: 879008229531029506  
Success  
72: 878776093423087618  
Success  
73: 878604707211726852  
Success  
74: 878404777348136964  
Success  
75: 878316110768087041  
Success  
76: 878281511006478336  
Success  
77: 878057613040115712  
Success  
78: 877736472329191424  
Success  
79: 877611172832227328  
Success  
80: 877556246731214848  
Success  
81: 877316821321428993  
Success  
82: 877201837425926144  
Success  
83: 876838120628539392  
Success  
84: 876537666061221889  
Success  
85: 876484053909872640  
Success  
86: 876120275196170240  
Success  
87: 875747767867523072  
Success



88: 875144289856114688  
Success  
89: 875097192612077568  
Success  
90: 875021211251597312  
Success  
91: 874680097055178752  
Success  
92: 874434818259525634  
Success  
93: 874296783580663808  
Success  
94: 874057562936811520  
Success  
95: 874012996292530176  
Success  
96: 873697596434513921  
Fail  
97: 873580283840344065  
Success  
98: 873337748698140672  
Success  
99: 873213775632977920  
Success  
100: 872967104147763200  
Success  
101: 872820683541237760  
Success  
102: 872668790621863937  
Fail  
103: 872620804844003328  
Success  
104: 872486979161796608  
Success  
105: 872261713294495745  
Fail  
106: 872122724285648897  
Success  
107: 871879754684805121  
Success  
108: 871762521631449091  
Success  
109: 871515927908634625  
Success  
110: 871166179821445120  
Success  
111: 871102520638267392  
Success

112: 871032628920680449  
Success  
113: 870804317367881728  
Success  
114: 870726314365509632  
Success  
115: 870656317836468226  
Success  
116: 870374049280663552  
Success  
117: 870308999962521604  
Success  
118: 870063196459192321  
Success  
119: 869988702071779329  
Fail  
120: 869772420881756160  
Success  
121: 869702957897576449  
Success  
122: 869596645499047938  
Success  
123: 869227993411051520  
Success  
124: 868880397819494401  
Success  
125: 868639477480148993  
Success  
126: 868622495443632128  
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127: 868552278524837888  
Success  
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133: 866816280283807744  
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Success  
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Success

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153: 862722525377298433  
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156: 861769973181624320  
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Success  
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250: 845306882940190720  
Success  
251: 845098359547420673  
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252: 844979544864018432  
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253: 844973813909606400  
Success  
254: 844704788403113984  
Fail  
255: 844580511645339650  
Success

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257: 843981021012017153  
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258: 843856843873095681  
Success  
259: 843604394117681152  
Success  
260: 843235543001513987  
Success  
261: 842892208864923648  
Fail  
262: 842846295480000512  
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263: 842765311967449089  
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Success  
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271: 841314665196081154  
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272: 841077006473256960  
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273: 840761248237133825  
Success  
274: 840728873075638272  
Success  
275: 840698636975636481  
Success  
276: 840696689258311684  
Success  
277: 840632337062862849  
Success  
278: 840370681858686976  
Success  
279: 840268004936019968  
Success



280: 839990271299457024  
Success  
281: 839549326359670784  
Success  
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Success  
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Success  
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Success  
285: 838921590096166913  
Success  
286: 838916489579200512  
Success  
287: 838831947270979586  
Success  
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Success  
289: 838476387338051585  
Success  
290: 838201503651401729  
Success  
291: 838150277551247360  
Success  
292: 838085839343206401  
Success  
293: 838083903487373313  
Success  
294: 837820167694528512  
Success  
295: 837482249356513284  
Success  
296: 837471256429613056  
Success  
297: 837366284874571778  
Fail  
298: 837110210464448512  
Success  
299: 837012587749474308  
Fail  
300: 836989968035819520  
Success  
301: 836753516572119041  
Success  
302: 836677758902222849  
Success  
303: 836648853927522308  
Success

304: 836397794269200385  
Success  
305: 836380477523124226  
Success  
306: 836260088725786625  
Success  
307: 836001077879255040  
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316: 835152434251116546  
Success  
317: 834931633769889797  
Success  
318: 834786237630337024  
Success  
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Success  
2177: 669203728096960512  
Success  
2178: 669037058363662336  
Success  
2179: 669015743032369152  
Success  
2180: 669006782128353280  
Success  
2181: 669000397445533696  
Success  
2182: 668994913074286592  
Success  
2183: 668992363537309700  
Success  
2184: 668989615043424256  
Success  
2185: 668988183816871936  
Success  
2186: 668986018524233728  
Success  
2187: 668981893510119424  
Success  
2188: 668979806671884288  
Success  
2189: 668975677807423489  
Success  
2190: 668967877119254528  
Success  
2191: 668960084974809088  
Success  
2192: 668955713004314625  
Success  
2193: 668932921458302977  
Success  
2194: 668902994700836864  
Success  
2195: 668892474547511297  
Success  
2196: 668872652652679168  
Success  
2197: 668852170888998912  
Success  
2198: 668826086256599040  
Success  
2199: 668815180734689280  
Success



2200: 668779399630725120  
Success  
2201: 668655139528511488  
Success  
2202: 668645506898350081  
Success  
2203: 668643542311546881  
Success  
2204: 668641109086707712  
Success  
2205: 668636665813057536  
Success  
2206: 668633411083464705  
Success  
2207: 668631377374486528  
Success  
2208: 668627278264475648  
Success  
2209: 668625577880875008  
Success  
2210: 668623201287675904  
Success  
2211: 668620235289837568  
Success  
2212: 668614819948453888  
Success  
2213: 668587383441514497  
Success  
2214: 668567822092664832  
Success  
2215: 668544745690562560  
Success  
2216: 668542336805281792  
Success  
2217: 668537837512433665  
Success  
2218: 668528771708952576  
Success  
2219: 668507509523615744  
Success  
2220: 668496999348633600  
Success  
2221: 668484198282485761  
Success  
2222: 668480044826800133  
Success  
2223: 668466899341221888  
Success

2224: 668297328638447616  
Success  
2225: 668291999406125056  
Success  
2226: 668286279830867968  
Success  
2227: 668274247790391296  
Success  
2228: 668268907921326080  
Success  
2229: 668256321989451776  
Success  
2230: 668248472370458624  
Success  
2231: 668237644992782336  
Success  
2232: 668226093875376128  
Success  
2233: 668221241640230912  
Success  
2234: 668204964695683073  
Success  
2235: 668190681446379520  
Success  
2236: 668171859951755264  
Success  
2237: 668154635664932864  
Success  
2238: 668142349051129856  
Success  
2239: 668113020489474048  
Success  
2240: 667937095915278337  
Success  
2241: 667924896115245057  
Success  
2242: 667915453470232577  
Success  
2243: 667911425562669056  
Success  
2244: 667902449697558528  
Success  
2245: 667886921285246976  
Success  
2246: 667885044254572545  
Success  
2247: 667878741721415682  
Success

2248: 667873844930215936  
Success  
2249: 667866724293877760  
Success  
2250: 667861340749471744  
Success  
2251: 667832474953625600  
Success  
2252: 667806454573760512  
Success  
2253: 667801013445750784  
Success  
2254: 667793409583771648  
Success  
2255: 667782464991965184  
Success  
2256: 667773195014021121  
Success  
2257: 667766675769573376  
Success  
2258: 667728196545200128  
Success  
2259: 667724302356258817  
Success  
2260: 667550904950915073  
Success  
2261: 667550882905632768  
Success  
2262: 667549055577362432  
Success  
2263: 667546741521195010  
Success  
2264: 667544320556335104  
Success  
2265: 667538891197542400  
Success  
2266: 667534815156183040  
Success  
2267: 667530908589760512  
Success  
2268: 667524857454854144  
Success  
2269: 667517642048163840  
Success  
2270: 667509364010450944  
Success  
2271: 667502640335572993  
Success

2272: 667495797102141441  
Success  
2273: 667491009379606528  
Success  
2274: 667470559035432960  
Success  
2275: 667455448082227200  
Success  
2276: 667453023279554560  
Success  
2277: 667443425659232256  
Success  
2278: 667437278097252352  
Success  
2279: 667435689202614272  
Success  
2280: 667405339315146752  
Success  
2281: 667393430834667520  
Success  
2282: 667369227918143488  
Success  
2283: 667211855547486208  
Success  
2284: 667200525029539841  
Success  
2285: 667192066997374976  
Success  
2286: 667188689915760640  
Success  
2287: 667182792070062081  
Success  
2288: 667177989038297088  
Success  
2289: 667176164155375616  
Success  
2290: 667174963120574464  
Success  
2291: 667171260800061440  
Success  
2292: 667165590075940865  
Success  
2293: 667160273090932737  
Success  
2294: 667152164079423490  
Success  
2295: 667138269671505920  
Success

2296: 667119796878725120  
Success  
2297: 667090893657276420  
Success  
2298: 667073648344346624  
Success  
2299: 667070482143944705  
Success  
2300: 667065535570550784  
Success  
2301: 667062181243039745  
Success  
2302: 667044094246576128  
Success  
2303: 667012601033924608  
Success  
2304: 666996132027977728  
Success  
2305: 666983947667116034  
Success  
2306: 666837028449972224  
Success  
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  
 2077.2207754  
 {888202515573088257: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 873697596434513921: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 872668790621863937: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 872261713294495745: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 869988702071779329: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 866816280283807744: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 861769973181624320: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 856602993587888130: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 851953902622658560: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 845459076796616705: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 844704788403113984: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 842892208864923648: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 837366284874571778: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 837012587749474308: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 829374341691346946: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 827228250799742977: TweepError([{'code': 144, 'message': 'No status found with that ID.'}]), 812747805718642688: TweepError([{'code': 144, 'message': 'No status found with

```
that ID.'}]), 802247111496568832: TweepError([{'code': 144, 'message': 'No
status found with that ID.'}]), 779123168116150273: TweepError([{'code': 144,
'message': 'No status found with that ID.'}]), 775096608509886464:
TweepError([{'code': 144, 'message': 'No status found with that ID.'}]),
771004394259247104: TweepError([{'code': 179, 'message': 'Sorry, you are not
authorized to see this status.'}]), 770743923962707968: TweepError([{'code':
144, 'message': 'No status found with that ID.'}]), 759566828574212096:
TweepError([{'code': 144, 'message': 'No status found with that ID.'}]),
754011816964026368: TweepError([{'code': 144, 'message': 'No status found with
that ID.'}]), 680055455951884288: TweepError([{'code': 144, 'message': 'No
status found with that ID.'}])}]}
```

```
[9]: ## read json file to a list array and strip new line charactor
lines = [line.rstrip('\n') for line in open('tweet_json.txt')]
# read one tweet into a temp file to examine its content
# load the tweet into a json format for easier extraction of information
temp = json.loads(lines[0])
```

```
[10]: temp
```

```
[10]: {'created_at': 'Tue Aug 01 16:23:56 +0000 2017',
'id': 892420643555336193,
'id_str': '892420643555336193',
'full_text': "This is Phineas. He's a mystical boy. Only ever appears in the
hole of a donut. 13/10 https://t.co/MgUWQ76dJU",
'truncated': False,
'display_text_range': [0, 85],
'entities': {'hashtags': [],
'symbols': [],
'user_mentions': [],
'urls': [],
'media': [{'id': 892420639486877696,
'id_str': '892420639486877696',
'indices': [86, 109],
'media_url': 'http://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg',
'media_url_https': 'https://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg',
'url': 'https://t.co/MgUWQ76dJU',
'display_url': 'pic.twitter.com/MgUWQ76dJU',
'expanded_url':
'https://twitter.com/dog_rates/status/892420643555336193/photo/1',
'type': 'photo',
'sizes': {'thumb': {'w': 150, 'h': 150, 'resize': 'crop'},
'medium': {'w': 540, 'h': 528, 'resize': 'fit'},
'small': {'w': 540, 'h': 528, 'resize': 'fit'},
'large': {'w': 540, 'h': 528, 'resize': 'fit'}}}],
'extended_entities': {'media': [{'id': 892420639486877696,
'id_str': '892420639486877696',
```



```

    'indices': [86, 109],
    'media_url': 'http://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg',
    'media_url_https': 'https://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg',
    'url': 'https://t.co/MgUWQ76dJU',
    'display_url': 'pic.twitter.com/MgUWQ76dJU',
    'expanded_url':
'https://twitter.com/dog_rates/status/892420643555336193/photo/1',
    'type': 'photo',
    'sizes': {'thumb': {'w': 150, 'h': 150, 'resize': 'crop'},
    'medium': {'w': 540, 'h': 528, 'resize': 'fit'},
    'small': {'w': 540, 'h': 528, 'resize': 'fit'},
    'large': {'w': 540, 'h': 528, 'resize': 'fit'}}}],
    'source': '<a href="http://twitter.com/download/iphone" rel="nofollow">Twitter
for iPhone</a>',
    'in_reply_to_status_id': None,
    'in_reply_to_status_id_str': None,
    'in_reply_to_user_id': None,
    'in_reply_to_user_id_str': None,
    'in_reply_to_screen_name': None,
    'user': {'id': 4196983835,
    'id_str': '4196983835',
    'name': 'WeRateDogs@',
    'screen_name': 'dog_rates',
    'location': 'Adoptable Dogs ',
    'description': 'Your Only Source For Professional Dog Ratings Instagram and
Facebook WeRateDogs partnerships@weratedogs.com ',
    'url': 'https://t.co/4W7xbIw5dg',
    'entities': {'url': {'urls': [{'url': 'https://t.co/4W7xbIw5dg',
    'expanded_url': 'https://campsite.bio/weratedogs',
    'display_url': 'campsite.bio/weratedogs',
    'indices': [0, 23]}]}},
    'description': {'urls': []}},
    'protected': False,
    'followers_count': 8869667,
    'friends_count': 18,
    'listed_count': 5915,
    'created_at': 'Sun Nov 15 21:41:29 +0000 2015',
    'favourites_count': 145994,
    'utc_offset': None,
    'time_zone': None,
    'geo_enabled': True,
    'verified': True,
    'statuses_count': 12955,
    'lang': None,
    'contributors_enabled': False,
    'is_translator': False,
    'is_translation_enabled': False,

```

```

'profile_background_color': '000000',
'profile_background_image_url':
'http://abs.twimg.com/images/themes/theme1/bg.png',
'profile_background_image_url_https':
'https://abs.twimg.com/images/themes/theme1/bg.png',
'profile_background_tile': False,
'profile_image_url':
'http://pbs.twimg.com/profile_images/1311690208509747200/KngeU109_normal.jpg',
'profile_image_url_https':
'https://pbs.twimg.com/profile_images/1311690208509747200/KngeU109_normal.jpg',
'profile_banner_url':
'https://pbs.twimg.com/profile_banners/4196983835/1591077312',
'profile_link_color': 'F5ABB5',
'profile_sidebar_border_color': '000000',
'profile_sidebar_fill_color': '000000',
'profile_text_color': '000000',
'profile_use_background_image': False,
'has_extended_profile': False,
'default_profile': False,
'default_profile_image': False,
'following': True,
'follow_request_sent': False,
'notifications': False,
'translator_type': 'none'},
'geo': None,
'coordinates': None,
'place': None,
'contributors': None,
'is_quote_status': False,
'retweet_count': 7510,
'favorite_count': 35521,
'favorited': False,
'retweeted': False,
'possibly_sensitive': False,
'possibly_sensitive_appealable': False,
'lang': 'en'}

```

```

[11]: # List of dictionaries to read tweet's JSON data line by line and later convert
      ↪ to a DataFrame

```

```

df_list = []
with open('tweet_json.txt', 'r') as json_file:
    for line in json_file:
        tweet_df = json.loads(line)

        # Append to list of dictionaries
        df_list.append({'tweet_id': tweet_df['id'],
                        'retweet_count': tweet_df['retweet_count'],

```

```

        'favorite_count': tweet_df['favorite_count'],
        'display_text_range': tweet_df['display_text_range'],
        'place': tweet_df['place'],
        'created_at': tweet_df['created_at']

    })

# Create a DataFrame with tweet ID, retweet count, favorite count and
↳ display_text_range
tweet_df = pd.DataFrame(df_list, columns =
↳ ['created_at', 'tweet_id', 'place', 'retweet_count', 'favorite_count',
↳ 'display_text_range'])

```

```
[12]: tweet_df.head(2)
```

```

[12]:
      created_at      tweet_id place  retweet_count \
0  Tue Aug 01 16:23:56 +0000 2017 892420643555336193  None          7510
1  Tue Aug 01 00:17:27 +0000 2017 892177421306343426  None          5574

      favorite_count display_text_range
0              35521          [0, 85]
1              30744          [0, 138]

```

```

[13]: tweet_df.rename(columns={'created_at': 'timestamp'}, inplace=True)
tweet_df.set_index('tweet_id')
tweet_df.head(2)

```

```

[13]:
      timestamp      tweet_id place  retweet_count \
0  Tue Aug 01 16:23:56 +0000 2017 892420643555336193  None          7510
1  Tue Aug 01 00:17:27 +0000 2017 892177421306343426  None          5574

      favorite_count display_text_range
0              35521          [0, 85]
1              30744          [0, 138]

```

## 2 2-Assessing Data for this Project

```
[14]: image.info()
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2075 entries, 0 to 2074
Data columns (total 12 columns):
#   Column      Non-Null Count  Dtype
---  -
0   tweet_id    2075 non-null   int64
1   jpg_url     2075 non-null   object
2   img_num     2075 non-null   int64

```

```

3   p1          2075 non-null   object
4   p1_conf     2075 non-null   float64
5   p1_dog      2075 non-null   bool
6   p2          2075 non-null   object
7   p2_conf     2075 non-null   float64
8   p2_dog      2075 non-null   bool
9   p3          2075 non-null   object
10  p3_conf     2075 non-null   float64
11  p3_dog      2075 non-null   bool
dtypes: bool(3), float64(3), int64(2), object(4)
memory usage: 152.1+ KB

```

## 2.0.1 Quality Issues

```
[15]: tweet_df.info()    #1-place column almost empty
```

```

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2331 entries, 0 to 2330
Data columns (total 6 columns):
#   Column                Non-Null Count  Dtype
---  -
0   timestamp             2331 non-null   object
1   tweet_id              2331 non-null   int64
2   place                 1 non-null      object
3   retweet_count         2331 non-null   int64
4   favorite_count        2331 non-null   int64
5   display_text_range    2331 non-null   object
dtypes: int64(3), object(3)
memory usage: 109.4+ KB

```

```
[16]: tweet_df.tweet_id .duplicated    # 2-there is no duplicate in tweeter data frame
```

```

[16]: <bound method Series.duplicated of 0      892420643555336193
1      892177421306343426
2      891815181378084864
3      891689557279858688
4      891327558926688256

...
2326   666049248165822465
2327   666044226329800704
2328   666033412701032449
2329   666029285002620928
2330   666020888022790149
Name: tweet_id, Length: 2331, dtype: int64>

```

```
[17]: tweet_df.dtypes
```

```
[17]: timestamp          object
      tweet_id           int64
      place             object
      retweet_count      int64
      favorite_count     int64
      display_text_range object
      dtype: object
```

```
[18]: archive.info() #3-many column have null value
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 17 columns):
#   Column                                Non-Null Count  Dtype
---  -
0   tweet_id                             2356 non-null   int64
1   in_reply_to_status_id                78 non-null     float64
2   in_reply_to_user_id                 78 non-null     float64
3   timestamp                             2356 non-null   object
4   source                               2356 non-null   object
5   text                                 2356 non-null   object
6   retweeted_status_id                 181 non-null     float64
7   retweeted_status_user_id            181 non-null     float64
8   retweeted_status_timestamp          181 non-null     object
9   expanded_urls                       2297 non-null   object
10  rating_numerator                     2356 non-null   int64
11  rating_denominator                   2356 non-null   int64
12  name                                 2356 non-null   object
13  doggo                               2356 non-null   object
14  floofer                              2356 non-null   object
15  pupper                              2356 non-null   object
16  puppo                               2356 non-null   object
dtypes: float64(4), int64(3), object(10)
memory usage: 313.0+ KB
```

```
[19]: name_count=archive.name.value_counts() #4-there name with just a letter
      print(name_count.unique())
```

```
<bound method Series.unique of None          745
a              55
Charlie        12
Lucy           11
Cooper         11
...
Tedrick        1
Shikha         1
Lolo            1
Marty          1
```

```
Shooter      1
Name: name, Length: 957, dtype: int64>
```

```
[20]: archive.columns
```

```
[20]: Index(['tweet_id', 'in_reply_to_status_id', 'in_reply_to_user_id', 'timestamp',
        'source', 'text', 'retweeted_status_id', 'retweeted_status_user_id',
        'retweeted_status_timestamp', 'expanded_urls', 'rating_numerator',
        'rating_denominator', 'name', 'doggo', 'floofer', 'pupper', 'puppo'],
        dtype='object')
```

```
[21]: archive.dtypes
```

```
[21]: tweet_id                int64
in_reply_to_status_id      float64
in_reply_to_user_id        float64
timestamp                  object
source                     object
text                       object
retweeted_status_id        float64
retweeted_status_user_id    float64
retweeted_status_timestamp  object
expanded_urls              object
rating_numerator            int64
rating_denominator          int64
name                       object
doggo                      object
floofer                    object
pupper                     object
puppo                      object
dtype: object
```

```
[22]: archive.rating_denominator .value_counts() #5-there is number not in the rating
↳range(0-10)
```

```
[22]: 10      2333
      11       3
      50       3
      80       2
      20       2
       2        1
      16        1
      40        1
      70        1
      15        1
      90        1
     110        1
     120        1
```

```

130      1
150      1
170      1
7        1
0        1
Name: rating_denominator, dtype: int64

```

### 3 3-Cleaning Data for this Project:

```

[23]: #copy of the dataframe:
tweet_df_clean=tweet_df.copy()
archive_df_clean=archive.copy()
image_df_clean=image.copy()

```

```

[24]: tweet_df_clean.head(1)

```

```

[24]:
          timestamp          tweet_id place  retweet_count \
0  Tue Aug 01 16:23:56 +0000 2017 892420643555336193  None          7510

      favorite_count display_text_range
0              35521             [0, 85]

```

```

[25]: image_df_clean.head(1)

```

```

[25]:
          tweet_id          jpg_url \
0  666020888022790149  https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg

      img_num          p1  p1_conf  p1_dog          p2  p2_conf \
0           1  Welsh_springer_spaniel  0.465074      True  collie  0.156665

      p2_dog          p3  p3_conf  p3_dog
0      True  Shetland_sheepdog  0.061428      True

```

```

[26]: archive_df_clean.head(1)

```

```

[26]:
          tweet_id  in_reply_to_status_id  in_reply_to_user_id \
0  892420643555336193              NaN              NaN

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

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

          text  retweeted_status_id \
0  This is Phineas. He's a mystical boy. Only eve...      NaN

```

```

retweeted_status_user_id retweeted_status_timestamp \
0          NaN          NaN

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

rating_denominator name doggo floofer pupper puppo
0          10 Phineas None None None None

```

### 3.1 Drop Rows with Missing Values

```
[27]: # Dropping column with missing value
tweet_df_clean.drop(['place'], axis=1, inplace=True)
```

```
[28]: #view missing value count for tweet_df
tweet_df_clean.isnull().sum()
```

```
[28]: timestamp          0
tweet_id                0
retweet_count          0
favorite_count         0
display_text_range     0
dtype: int64
```

```
[29]: # explore data with name a
archive_df_clean_v2=archive_df_clean.loc[archive_df_clean['name'] == 'a']
archive_df_clean_v2
```

```
[29]:
tweet_id  in_reply_to_status_id  in_reply_to_user_id \
56      881536004380872706          NaN          NaN
649     792913359805018113          NaN          NaN
801     772581559778025472          NaN          NaN
1002    747885874273214464          NaN          NaN
1004    747816857231626240          NaN          NaN
1017    746872823977771008          NaN          NaN
1049    743222593470234624          NaN          NaN
1193    717537687239008257          NaN          NaN
1207    715733265223708672          NaN          NaN
1340    704859558691414016          NaN          NaN
1351    704054845121142784          NaN          NaN
1361    703079050210877440          NaN          NaN
1368    702539513671897089          NaN          NaN
1382    700864154249383937          NaN          NaN
1499    692187005137076224          NaN          NaN
1737    679530280114372609          NaN          NaN
1785    677644091929329666          NaN          NaN
1853    675706639471788032          NaN          NaN

```



1854	675534494439489536	NaN	NaN
1877	675109292475830276	NaN	NaN
1878	675047298674663426	NaN	NaN
1923	674082852460433408	NaN	NaN
1941	673715861853720576	NaN	NaN
1955	673636718965334016	NaN	NaN
1994	672604026190569472	NaN	NaN
2034	671743150407421952	NaN	NaN
2066	671147085991960577	NaN	NaN
2116	670427002554466305	NaN	NaN
2125	670361874861563904	NaN	NaN
2128	670303360680108032	NaN	NaN
2146	669923323644657664	NaN	NaN
2153	669661792646373376	NaN	NaN
2161	669564461267722241	NaN	NaN
2191	668955713004314625	NaN	NaN
2198	668815180734689280	NaN	NaN
2211	668614819948453888	NaN	NaN
2218	668507509523615744	NaN	NaN
2222	668466899341221888	NaN	NaN
2235	668171859951755264	NaN	NaN
2249	667861340749471744	NaN	NaN
2255	667773195014021121	NaN	NaN
2264	667538891197542400	NaN	NaN
2273	667470559035432960	NaN	NaN
2287	667177989038297088	NaN	NaN
2304	666983947667116034	NaN	NaN
2311	666781792255496192	NaN	NaN
2314	666701168228331520	NaN	NaN
2327	666407126856765440	NaN	NaN
2334	666293911632134144	NaN	NaN
2347	666057090499244032	NaN	NaN
2348	666055525042405380	NaN	NaN
2350	666050758794694657	NaN	NaN
2352	666044226329800704	NaN	NaN
2353	666033412701032449	NaN	NaN
2354	666029285002620928	NaN	NaN

	timestamp \
56	2017-07-02 15:32:16 +0000
649	2016-10-31 02:17:31 +0000
801	2016-09-04 23:46:12 +0000
1002	2016-06-28 20:14:22 +0000
1004	2016-06-28 15:40:07 +0000
1017	2016-06-26 01:08:52 +0000
1049	2016-06-15 23:24:09 +0000
1193	2016-04-06 02:21:30 +0000

1207	2016-04-01	02:51:22	+0000
1340	2016-03-02	02:43:09	+0000
1351	2016-02-28	21:25:30	+0000
1361	2016-02-26	04:48:02	+0000
1368	2016-02-24	17:04:07	+0000
1382	2016-02-20	02:06:50	+0000
1499	2016-01-27	03:26:56	+0000
1737	2015-12-23	05:13:38	+0000
1785	2015-12-18	00:18:36	+0000
1853	2015-12-12	15:59:51	+0000
1854	2015-12-12	04:35:48	+0000
1877	2015-12-11	00:26:12	+0000
1878	2015-12-10	20:19:52	+0000
1923	2015-12-08	04:27:30	+0000
1941	2015-12-07	04:09:13	+0000
1955	2015-12-06	22:54:44	+0000
1994	2015-12-04	02:31:10	+0000
2034	2015-12-01	17:30:22	+0000
2066	2015-11-30	02:01:49	+0000
2116	2015-11-28	02:20:27	+0000
2125	2015-11-27	22:01:40	+0000
2128	2015-11-27	18:09:09	+0000
2146	2015-11-26	16:59:01	+0000
2153	2015-11-25	23:39:47	+0000
2161	2015-11-25	17:13:02	+0000
2191	2015-11-24	00:54:05	+0000
2198	2015-11-23	15:35:39	+0000
2211	2015-11-23	02:19:29	+0000
2218	2015-11-22	19:13:05	+0000
2222	2015-11-22	16:31:42	+0000
2235	2015-11-21	20:59:20	+0000
2249	2015-11-21	00:25:26	+0000
2255	2015-11-20	18:35:10	+0000
2264	2015-11-20	03:04:08	+0000
2273	2015-11-19	22:32:36	+0000
2287	2015-11-19	03:10:02	+0000
2304	2015-11-18	14:18:59	+0000
2311	2015-11-18	00:55:42	+0000
2314	2015-11-17	19:35:19	+0000
2327	2015-11-17	00:06:54	+0000
2334	2015-11-16	16:37:02	+0000
2347	2015-11-16	00:55:59	+0000
2348	2015-11-16	00:49:46	+0000
2350	2015-11-16	00:30:50	+0000
2352	2015-11-16	00:04:52	+0000
2353	2015-11-15	23:21:54	+0000
2354	2015-11-15	23:05:30	+0000

```

source \
56    <a href="http://twitter.com/download/iphone" r...
649   <a href="http://twitter.com/download/iphone" r...
801   <a href="http://twitter.com/download/iphone" r...
1002  <a href="http://twitter.com/download/iphone" r...
1004  <a href="http://twitter.com/download/iphone" r...
1017  <a href="http://twitter.com/download/iphone" r...
1049  <a href="http://twitter.com/download/iphone" r...
1193  <a href="http://twitter.com/download/iphone" r...
1207  <a href="http://twitter.com/download/iphone" r...
1340  <a href="http://twitter.com/download/iphone" r...
1351  <a href="http://twitter.com/download/iphone" r...
1361  <a href="http://twitter.com/download/iphone" r...
1368  <a href="http://twitter.com/download/iphone" r...
1382  <a href="http://twitter.com/download/iphone" r...
1499  <a href="http://twitter.com/download/iphone" r...
1737  <a href="http://twitter.com/download/iphone" r...
1785  <a href="http://twitter.com/download/iphone" r...
1853  <a href="http://twitter.com/download/iphone" r...
1854  <a href="http://twitter.com/download/iphone" r...
1877  <a href="http://twitter.com/download/iphone" r...
1878  <a href="http://twitter.com/download/iphone" r...
1923  <a href="http://twitter.com/download/iphone" r...
1941  <a href="http://twitter.com/download/iphone" r...
1955  <a href="http://twitter.com/download/iphone" r...
1994  <a href="http://twitter.com/download/iphone" r...
2034  <a href="http://twitter.com/download/iphone" r...
2066  <a href="http://twitter.com/download/iphone" r...
2116  <a href="http://twitter.com/download/iphone" r...
2125  <a href="http://twitter.com/download/iphone" r...
2128  <a href="http://twitter.com/download/iphone" r...
2146  <a href="http://twitter.com/download/iphone" r...
2153  <a href="http://twitter.com/download/iphone" r...
2161  <a href="http://twitter.com/download/iphone" r...
2191  <a href="http://twitter.com/download/iphone" r...
2198  <a href="http://twitter.com/download/iphone" r...
2211  <a href="http://twitter.com/download/iphone" r...
2218  <a href="http://twitter.com/download/iphone" r...
2222  <a href="http://twitter.com/download/iphone" r...
2235  <a href="http://twitter.com/download/iphone" r...
2249  <a href="http://twitter.com/download/iphone" r...
2255  <a href="http://twitter.com" rel="nofollow">Tw...
2264  <a href="http://twitter.com" rel="nofollow">Tw...
2273  <a href="http://twitter.com" rel="nofollow">Tw...
2287  <a href="http://twitter.com/download/iphone" r...
2304  <a href="http://twitter.com/download/iphone" r...

```

2311 <a href="http://twitter.com/download/iphone" r...  
 2314 <a href="http://twitter.com/download/iphone" r...  
 2327 <a href="http://twitter.com/download/iphone" r...  
 2334 <a href="http://twitter.com/download/iphone" r...  
 2347 <a href="http://twitter.com/download/iphone" r...  
 2348 <a href="http://twitter.com/download/iphone" r...  
 2350 <a href="http://twitter.com/download/iphone" r...  
 2352 <a href="http://twitter.com/download/iphone" r...  
 2353 <a href="http://twitter.com/download/iphone" r...  
 2354 <a href="http://twitter.com/download/iphone" r...

	text	retweeted_status_id \
56	Here is a pupper approaching maximum borkdrive...	NaN
649	Here is a perfect example of someone who has t...	NaN
801	Guys this is getting so out of hand. We only r...	NaN
1002	This is a mighty rare blue-tailed hammer sherk...	NaN
1004	Viewer discretion is advised. This is a terrib...	NaN
1017	This is a carrot. We only rate dogs. Please on...	NaN
1049	This is a very rare Great Alaskan Bush Pupper...	NaN
1193	People please. This is a Deadly Mediterranean ...	NaN
1207	This is a taco. We only rate dogs. Please only...	NaN
1340	Here is a heartbreaking scene of an incredible...	NaN
1351	Here is a whole flock of puppies. 60/50 I'll ...	NaN
1361	This is a Butternut Cumberfloof. It's not wind...	NaN
1368	This is a Wild Tuscan Poofwiggle. Careful not ...	NaN
1382	"Pupper is a present to world. Here is a bow f...	NaN
1499	This is a rare Arctic Wubberfloof. Unamused by...	NaN
1737	Guys this really needs to stop. We've been ove...	NaN
1785	This is a dog swinging. I really enjoyed it so...	NaN
1853	This is a Sizzlin Menorah spaniel from Brookly...	NaN
1854	Seriously guys?! Only send in dogs. I only rat...	NaN
1877	C'mon guys. We've been over this. We only rate...	NaN
1878	This is a fluffy albino Bacardi Columbia mix. ...	NaN
1923	This is a Sagitariot Baklava mix. Loves her ne...	NaN
1941	This is a heavily opinionated dog. Loves walls...	NaN
1955	This is a Lofted Aphrodisiac Terrier named Kip...	NaN
1994	This is a baby Rand Paul. Curls for days. 11/1...	NaN
2034	This is a Tuscaloosa Alcatraz named Jacob (Yac...	NaN
2066	This is a Helvetica Listerine named Rufus. Thi...	NaN
2116	This is a Deciduous Trimester mix named Spork...	NaN
2125	This is a Rich Mahogany Seltzer named Cherokee...	NaN
2128	This is a Speckled Cauliflower Yosemite named ...	NaN
2146	This is a spotted Lipitor Rumpelstiltskin name...	NaN
2153	This is a brave dog. Excellent free climber. T...	NaN
2161	This is a Coriander Baton Rouge named Alfredo...	NaN
2191	This is a Slovakian Helter Skelter Feta named ...	NaN
2198	This is a wild Toblerone from Papua New Guinea...	NaN

2211	Here is a horned dog. Much grace. Can jump ove...	NaN
2218	This is a Birmingham Quagmire named Chuk. Love...	NaN
2222	Here is a mother dog caring for her pups. Snaz...	NaN
2235	This is a Trans Siberian Kellogg named Alfonso...	NaN
2249	This is a Shotokon Macadamia mix named Cheryl...	NaN
2255	This is a rare Hungarian Pinot named Jessiga. ...	NaN
2264	This is a southwest Coriander named Klint. Hat...	NaN
2273	This is a northern Wahoo named Kohl. He runs t...	NaN
2287	This is a Dasani Kingfisher from Maine. His na...	NaN
2304	This is a curly Ticonderoga named Pepe. No fee...	NaN
2311	This is a purebred Bacardi named Octaviath. Ca...	NaN
2314	This is a golden Buckminsterfullerene named Jo...	NaN
2327	This is a southern Vesuvius bumblegruff. Can d...	NaN
2334	This is a funny dog. Weird toes. Won't come do...	NaN
2347	My oh my. This is a rare blond Canadian terrie...	NaN
2348	Here is a Siberian heavily armored polar bear ...	NaN
2350	This is a truly beautiful English Wilson Staff...	NaN
2352	This is a purebred Piers Morgan. Loves to Netf...	NaN
2353	Here is a very happy pup. Big fan of well-main...	NaN
2354	This is a western brown Mitsubishi terrier. Up...	NaN

	retweeted_status_user_id	retweeted_status_timestamp \
56	NaN	NaN
649	NaN	NaN
801	NaN	NaN
1002	NaN	NaN
1004	NaN	NaN
1017	NaN	NaN
1049	NaN	NaN
1193	NaN	NaN
1207	NaN	NaN
1340	NaN	NaN
1351	NaN	NaN
1361	NaN	NaN
1368	NaN	NaN
1382	NaN	NaN
1499	NaN	NaN
1737	NaN	NaN
1785	NaN	NaN
1853	NaN	NaN
1854	NaN	NaN
1877	NaN	NaN
1878	NaN	NaN
1923	NaN	NaN
1941	NaN	NaN
1955	NaN	NaN
1994	NaN	NaN

2034	NaN	NaN
2066	NaN	NaN
2116	NaN	NaN
2125	NaN	NaN
2128	NaN	NaN
2146	NaN	NaN
2153	NaN	NaN
2161	NaN	NaN
2191	NaN	NaN
2198	NaN	NaN
2211	NaN	NaN
2218	NaN	NaN
2222	NaN	NaN
2235	NaN	NaN
2249	NaN	NaN
2255	NaN	NaN
2264	NaN	NaN
2273	NaN	NaN
2287	NaN	NaN
2304	NaN	NaN
2311	NaN	NaN
2314	NaN	NaN
2327	NaN	NaN
2334	NaN	NaN
2347	NaN	NaN
2348	NaN	NaN
2350	NaN	NaN
2352	NaN	NaN
2353	NaN	NaN
2354	NaN	NaN

	expanded_urls	rating_numerator	\
56	<a href="https://twitter.com/dog_rates/status/881536004...">https://twitter.com/dog_rates/status/881536004...</a>	14	
649	<a href="https://twitter.com/dog_rates/status/792913359...">https://twitter.com/dog_rates/status/792913359...</a>	13	
801	<a href="https://twitter.com/dog_rates/status/772581559...">https://twitter.com/dog_rates/status/772581559...</a>	10	
1002	<a href="https://twitter.com/dog_rates/status/747885874...">https://twitter.com/dog_rates/status/747885874...</a>	8	
1004	<a href="https://twitter.com/dog_rates/status/747816857...">https://twitter.com/dog_rates/status/747816857...</a>	4	
1017	<a href="https://twitter.com/dog_rates/status/746872823...">https://twitter.com/dog_rates/status/746872823...</a>	11	
1049	<a href="https://twitter.com/dog_rates/status/743222593...">https://twitter.com/dog_rates/status/743222593...</a>	12	
1193	<a href="https://twitter.com/dog_rates/status/717537687...">https://twitter.com/dog_rates/status/717537687...</a>	11	
1207	<a href="https://twitter.com/dog_rates/status/715733265...">https://twitter.com/dog_rates/status/715733265...</a>	10	
1340	<a href="https://twitter.com/dog_rates/status/704859558...">https://twitter.com/dog_rates/status/704859558...</a>	10	
1351	<a href="https://twitter.com/dog_rates/status/704054845...">https://twitter.com/dog_rates/status/704054845...</a>	60	
1361	<a href="https://twitter.com/dog_rates/status/703079050...">https://twitter.com/dog_rates/status/703079050...</a>	11	
1368	<a href="https://twitter.com/dog_rates/status/702539513...">https://twitter.com/dog_rates/status/702539513...</a>	12	
1382	<a href="https://twitter.com/dog_rates/status/700864154...">https://twitter.com/dog_rates/status/700864154...</a>	12	
1499	<a href="https://twitter.com/dog_rates/status/692187005...">https://twitter.com/dog_rates/status/692187005...</a>	12	

1737	https://twitter.com/dog_rates/status/679530280...	7
1785	https://twitter.com/dog_rates/status/677644091...	11
1853	https://twitter.com/dog_rates/status/675706639...	10
1854	https://twitter.com/dog_rates/status/675534494...	11
1877	https://twitter.com/dog_rates/status/675109292...	9
1878	https://twitter.com/dog_rates/status/675047298...	11
1923	https://twitter.com/dog_rates/status/674082852...	11
1941	https://twitter.com/dog_rates/status/673715861...	4
1955	https://twitter.com/dog_rates/status/673636718...	10
1994	https://twitter.com/dog_rates/status/672604026...	11
2034	https://twitter.com/dog_rates/status/671743150...	11
2066	https://twitter.com/dog_rates/status/671147085...	9
2116	https://twitter.com/dog_rates/status/670427002...	9
2125	https://twitter.com/dog_rates/status/670361874...	9
2128	https://twitter.com/dog_rates/status/670303360...	9
2146	https://twitter.com/dog_rates/status/669923323...	10
2153	https://twitter.com/dog_rates/status/669661792...	5
2161	https://twitter.com/dog_rates/status/669564461...	10
2191	https://twitter.com/dog_rates/status/668955713...	10
2198	https://twitter.com/dog_rates/status/668815180...	7
2211	https://twitter.com/dog_rates/status/668614819...	7
2218	https://twitter.com/dog_rates/status/668507509...	10
2222	https://twitter.com/dog_rates/status/668466899...	4
2235	https://twitter.com/dog_rates/status/668171859...	7
2249	https://twitter.com/dog_rates/status/667861340...	9
2255	https://twitter.com/dog_rates/status/667773195...	8
2264	https://twitter.com/dog_rates/status/667538891...	9
2273	https://twitter.com/dog_rates/status/667470559...	11
2287	https://twitter.com/dog_rates/status/667177989...	8
2304	https://twitter.com/dog_rates/status/666983947...	11
2311	https://twitter.com/dog_rates/status/666781792...	10
2314	https://twitter.com/dog_rates/status/666701168...	8
2327	https://twitter.com/dog_rates/status/666407126...	7
2334	https://twitter.com/dog_rates/status/666293911...	3
2347	https://twitter.com/dog_rates/status/666057090...	9
2348	https://twitter.com/dog_rates/status/666055525...	10
2350	https://twitter.com/dog_rates/status/666050758...	10
2352	https://twitter.com/dog_rates/status/666044226...	6
2353	https://twitter.com/dog_rates/status/666033412...	9
2354	https://twitter.com/dog_rates/status/666029285...	7

	rating_denominator	name	doggo	floofer	pupper	puppo
56	10	a	None	None	pupper	None
649	10	a	None	None	None	None
801	10	a	None	None	None	None
1002	10	a	None	None	None	None
1004	10	a	None	None	None	None

1017	10	a	None	None	None	None
1049	10	a	None	None	pupper	None
1193	10	a	None	None	None	None
1207	10	a	None	None	None	None
1340	10	a	None	None	pupper	None
1351	50	a	None	None	None	None
1361	10	a	None	None	None	None
1368	10	a	None	None	None	None
1382	10	a	None	None	pupper	None
1499	10	a	None	None	None	None
1737	10	a	None	None	None	None
1785	10	a	None	None	None	None
1853	10	a	None	None	None	None
1854	10	a	None	None	None	None
1877	10	a	None	None	None	None
1878	10	a	None	None	None	None
1923	10	a	None	None	None	None
1941	10	a	None	None	None	None
1955	10	a	None	None	None	None
1994	10	a	None	None	None	None
2034	10	a	None	None	None	None
2066	10	a	None	None	None	None
2116	10	a	None	None	None	None
2125	10	a	None	None	None	None
2128	10	a	None	None	None	None
2146	10	a	None	None	None	None
2153	10	a	None	None	None	None
2161	10	a	None	None	None	None
2191	10	a	None	None	None	None
2198	10	a	None	None	None	None
2211	10	a	None	None	None	None
2218	10	a	None	None	None	None
2222	10	a	None	None	None	None
2235	10	a	None	None	None	None
2249	10	a	None	None	None	None
2255	10	a	None	None	None	None
2264	10	a	None	None	None	None
2273	10	a	None	None	None	None
2287	10	a	None	None	None	None
2304	10	a	None	None	None	None
2311	10	a	None	None	None	None
2314	10	a	None	None	None	None
2327	10	a	None	None	None	None
2334	10	a	None	None	None	None
2347	10	a	None	None	None	None
2348	10	a	None	None	None	None
2350	10	a	None	None	None	None



2352	10	a	None	None	None	None
2353	10	a	None	None	None	None
2354	10	a	None	None	None	None

```
[30]: #replace a with name "apple" so we not lost much more data
archive_df_clean.loc[archive_df_clean['name'] == 'a', 'name'] = 'APPLE'
archive_df_clean.head()
```

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

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

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

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

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

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

```
3 https://twitter.com/dog_rates/status/891689557... 13
4 https://twitter.com/dog_rates/status/891327558... 12
```

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

```
[31]: name_count=archive_df_clean.name.value_counts() #6-after replace "a"with "apple"
      print(name_count.unique)
```

```
<bound method Series.unique of None          745
APPLE          55
Charlie        12
Lucy           11
Cooper         11
...
Ginger         1
Rudy           1
Sparky         1
Buddah         1
Shooter        1
Name: name, Length: 957, dtype: int64>
```

```
[32]: # view missing value count for archive
      archive_df_clean.isnull().sum()
```

```
[32]: 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
```

```
[33]: archive_df_clean.drop(['retweeted_status_id'], axis=1, inplace=True)    #7-drop
      ↪ empty column
      archive_df_clean.drop(['retweeted_status_user_id' ], axis=1, inplace=True)
      archive_df_clean.drop(['retweeted_status_timestamp'], axis=1, inplace=True)
      archive_df_clean.drop(['in_reply_to_status_id'], axis=1, inplace=True)
      archive_df_clean.drop(['in_reply_to_user_id'], axis=1, inplace=True)
```

```
[34]: # view missing value count for archive
      archive_df_clean.isnull().sum()
```

```
[34]: tweet_id          0
      timestamp        0
      source           0
      text             0
      expanded_urls    59
      rating_numerator  0
      rating_denominator 0
      name             0
      doggo            0
      floofer          0
      pupper           0
      puppo            0
      dtype: int64
```

```
[35]: archive.describe()
```

```
[35]:
```

	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

```

```
[36]: archive_df_clean.describe() # 8 -data for
      ↪rating_numerator          rating_denominator didnt change after cleaning
```

```
[36]:
```

	tweet_id	rating_numerator	rating_denominator
count	2.356000e+03	2356.000000	2356.000000
mean	7.427716e+17	13.126486	10.455433
std	6.856705e+16	45.876648	6.745237
min	6.660209e+17	0.000000	0.000000
25%	6.783989e+17	10.000000	10.000000
50%	7.196279e+17	11.000000	10.000000
75%	7.993373e+17	12.000000	10.000000
max	8.924206e+17	1776.000000	170.000000

```
[37]: #explore expanded_urls value
archive_df_clean.expanded_urls.unique()
```

```
[37]: array(['https://twitter.com/dog_rates/status/892420643555336193/photo/1',
          'https://twitter.com/dog_rates/status/892177421306343426/photo/1',
          'https://twitter.com/dog_rates/status/891815181378084864/photo/1',
          ...,
          'https://twitter.com/dog_rates/status/666033412701032449/photo/1',
          'https://twitter.com/dog_rates/status/666029285002620928/photo/1',
          'https://twitter.com/dog_rates/status/666020888022790149/photo/1'],
          dtype=object)
```

```
[38]: # view missing value count for image
image_df_clean.isnull().sum()
```

```
[38]: 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
```

```
[39]: image_df_clean.value_counts
```

```
[39]: <bound method DataFrame.value_counts of          tweet_id
jpg_url \
0      666020888022790149  https://pbs.twimg.com/media/CT4udn0WwAAOaMy.jpg
1      666029285002620928  https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg
2      666033412701032449  https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg
3      666044226329800704  https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg
4      666049248165822465  https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg
...
2070   891327558926688256  https://pbs.twimg.com/media/DF6hr6BUMAAzZgT.jpg
2071   891689557279858688  https://pbs.twimg.com/media/DF_q7IAWsAEuuN8.jpg
2072   891815181378084864  https://pbs.twimg.com/media/DGBdLU1WsAANxJ9.jpg
2073   892177421306343426  https://pbs.twimg.com/media/DGGmoV4XsAAUL6n.jpg
2074   892420643555336193  https://pbs.twimg.com/media/DGKD1-bXoAAIAUK.jpg

      img_num      p1      p1_conf      p1_dog      p2 \
0          1  Welsh_springer_spaniel  0.465074      True      collie
1          1          redbone  0.506826      True  miniature_pinscher
2          1      German_shepherd  0.596461      True      malinois
3          1  Rhodesian_ridgeback  0.408143      True      redbone
4          1  miniature_pinscher  0.560311      True      Rottweiler
...
2070      2          basset  0.555712      True  English_springer
2071      1      paper_towel  0.170278     False  Labrador_retriever
2072      1      Chihuahua  0.716012      True      malamute
2073      1      Chihuahua  0.323581      True      Pekinese
2074      1          orange  0.097049     False          bagel

      p2_conf      p2_dog      p3      p3_conf      p3_dog
0      0.156665      True      Shetland_sheepdog  0.061428      True
1      0.074192      True      Rhodesian_ridgeback  0.072010      True
2      0.138584      True          bloodhound  0.116197      True
3      0.360687      True      miniature_pinscher  0.222752      True
4      0.243682      True          Doberman  0.154629      True
...
2070  0.225770      True  German_short-haired_pointer  0.175219      True
2071  0.168086      True          spatula  0.040836     False
2072  0.078253      True          kelpie  0.031379      True
2073  0.090647      True      papillon  0.068957      True
2074  0.085851     False          banana  0.076110     False
```

```
[2075 rows x 12 columns]>
```

### 3.1.1 tidiness issues

```
[40]: archive_df_clean.shape
```

```
[40]: (2356, 12)
```

```
[41]: archive_df_clean.columns
```

```
[41]: Index(['tweet_id', 'timestamp', 'source', 'text', 'expanded_urls',  
        'rating_numerator', 'rating_denominator', 'name', 'doggo', 'floofer',  
        'pupper', 'puppo'],  
        dtype='object')
```

```
[42]: tweet_df_clean.shape
```

```
[42]: (2331, 5)
```

```
[43]: tweet_df_clean.columns
```

```
[43]: Index(['timestamp', 'tweet_id', 'retweet_count', 'favorite_count',  
        'display_text_range'],  
        dtype='object')
```

```
[44]: archive_df_clean.drop(['timestamp'], axis=1, inplace=True)  
archive_df_clean.head()
```

```
[44]:
```

	tweet_id	source	\
0	892420643555336193	<a href="http://twitter.com/download/iphone" r...	
1	892177421306343426	<a href="http://twitter.com/download/iphone" r...	
2	891815181378084864	<a href="http://twitter.com/download/iphone" r...	
3	891689557279858688	<a href="http://twitter.com/download/iphone" r...	
4	891327558926688256	<a href="http://twitter.com/download/iphone" r...	

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

	expanded_urls	rating_numerator	\
0	https://twitter.com/dog_rates/status/892420643...	13	
1	https://twitter.com/dog_rates/status/892177421...	13	
2	https://twitter.com/dog_rates/status/891815181...	12	
3	https://twitter.com/dog_rates/status/891689557...	13	
4	https://twitter.com/dog_rates/status/891327558...	12	

	rating_denominator	name	doggo	floofer	pupper	puppo
--	--------------------	------	-------	---------	--------	-------

0	10	Phineas	None	None	None	None
1	10	Tilly	None	None	None	None
2	10	Archie	None	None	None	None
3	10	Darla	None	None	None	None
4	10	Franklin	None	None	None	None

```
[45]: # marge tweet_df_clean and archive_df_clean
tweet_df_merge = pd.merge(archive_df_clean, tweet_df_clean ,on='tweet_id')
tweet_df_merge.set_index('tweet_id')
tweet_df_merge.head(1)
```

```
[45]:          tweet_id          source \
0  892420643555336193  <a href="http://twitter.com/download/iphone" r...

          text \
0  This is Phineas. He's a mystical boy. Only eve...

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

          rating_denominator  name doggo floofer pupper puppo \
0          10 Phineas  None  None  None  None

          timestamp  retweet_count  favorite_count \
0  Tue Aug 01 16:23:56 +0000 2017          7510          35521

          display_text_range
0          [0, 85]
```

```
[46]: tweet_df_merge.shape
```

```
[46]: (2331, 15)
```

```
[47]: tweet_df_merge.describe()
```

```
[47]:          tweet_id  rating_numerator  rating_denominator  retweet_count \
count  2.331000e+03          2331.000000          2331.000000          2331.000000
mean    7.419079e+17          13.134706          10.459888          2642.187044
std     6.823170e+16          46.121847          6.781159          4468.239152
min     6.660209e+17          0.000000          0.000000           1.000000
25%     6.782670e+17          10.000000          10.000000           536.000000
50%     7.182469e+17          11.000000          10.000000          1236.000000
75%     7.986692e+17          12.000000          10.000000          3067.000000
max     8.924206e+17          1776.000000          170.000000          75918.000000

          favorite_count
count          2331.000000
```

```

mean      7423.742600
std       11527.811718
min        0.000000
25%       1291.000000
50%       3223.000000
75%       9081.500000
max      153240.000000

```

```
[48]: tweet_df_merge.tweet_id .duplicated
```

```

[48]: <bound method Series.duplicated of 0      892420643555336193
1      892177421306343426
2      891815181378084864
3      891689557279858688
4      891327558926688256
...
2326   666049248165822465
2327   666044226329800704
2328   666033412701032449
2329   666029285002620928
2330   666020888022790149
Name: tweet_id, Length: 2331, dtype: int64>

```

```
[49]: tweet_df_merge.doggo.value_counts()
```

```

[49]: None      2237
doggo      94
Name: doggo, dtype: int64

```

```
[50]: tweet_df_merge.floofer.value_counts()
```

```

[50]: None      2321
floofer      10
Name: floofer, dtype: int64

```

```
[51]: tweet_df_merge.pupper.value_counts()
```

```

[51]: None      2076
pupper      255
Name: pupper, dtype: int64

```

```
[52]: tweet_df_merge.puppo.value_counts()
```

```

[52]: None      2301
puppo      30
Name: puppo, dtype: int64

```



```
[53]: cols = ['doggo', 'floofer', 'pupper', 'puppo']
tweet_df_merge['stages_of_dog'] = tweet_df_merge[cols].apply(lambda row: '_'.
    ↪join(row.values.astype(str)), axis=1)
tweet_df_merge.drop(['doggo'], axis=1, inplace=True)
tweet_df_merge.drop(['floofer'], axis=1, inplace=True)
tweet_df_merge.drop(['pupper'], axis=1, inplace=True)
tweet_df_merge.drop(['puppo'], axis=1, inplace=True)

tweet_df_merge.head(2)
```

```
[53]:
```

	tweet_id	source \
0	892420643555336193	<a href="http://twitter.com/download/iphone" r...
1	892177421306343426	<a href="http://twitter.com/download/iphone" r...

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

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

	rating_denominator	name	timestamp	retweet_count \
0	10	Phineas	Tue Aug 01 16:23:56 +0000 2017	7510
1	10	Tilly	Tue Aug 01 00:17:27 +0000 2017	5574

	favorite_count	display_text_range	stages_of_dog
0	35521	[0, 85]	None_None_None_None
1	30744	[0, 138]	None_None_None_None

```
[54]: tweet_df_merge.stages_of_dog.value_counts()
```

```
[54]: None_None_None_None      1956
None_None_pupper_None       243
doggo_None_None_None        80
None_None_None_puppo        29
doggo_None_pupper_None      12
None_floofer_None_None       9
doggo_floofer_None_None       1
doggo_None_None_puppo        1
Name: stages_of_dog, dtype: int64
```

```
[55]: #replace None_None_None_None with stages_of_dog ""
tweet_df_mergev2=tweet_df_merge.copy()
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==_
    ↪'None_None_None_None', 'stages_of_dog'] = ''
```

```

tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'doggo_None_None_None', 'stages_of_dog'] = 'doggo'
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'None_None_pupper_None', 'stages_of_dog'] = 'pupper'
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'doggo_None_pupper_None', 'stages_of_dog'] = 'pupper' #choose the oldest
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'None_None_None_puppo', 'stages_of_dog'] = 'puppo'
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'doggo_None_None_puppo', 'stages_of_dog'] = 'puppo'
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'None_floofer_None_None', 'stages_of_dog'] = 'floofer'
tweet_df_mergev2.loc[tweet_df_mergev2['stages_of_dog'] ==
↳ 'doggo_floofer_None_None', 'stages_of_dog'] = 'floofer'

tweet_df_mergev2.stages_of_dog.value_counts()

```

```

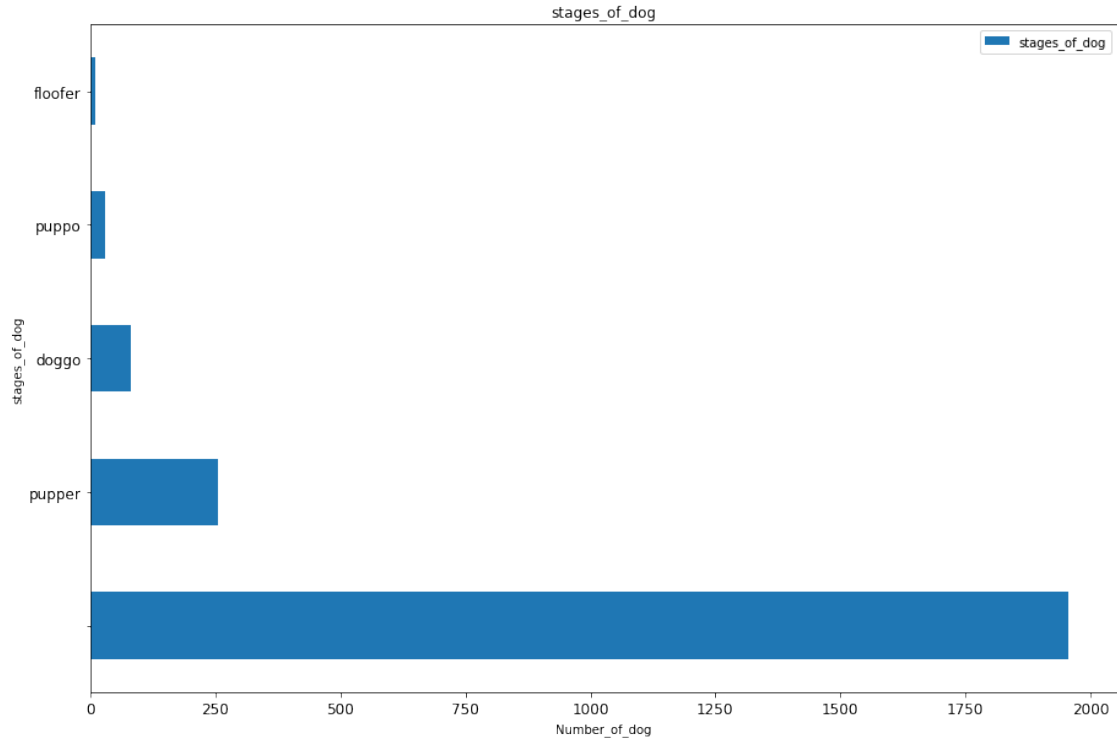
[55]:      1956
pupper    255
doggo      80
puppo      30
floofer    10
Name: stages_of_dog, dtype: int64

```

```

[57]: # plot stages_of_dog
stages=tweet_df_mergev2['stages_of_dog'].value_counts().plot(kind='barh',
↳ figsize=(15,10), legend=True, fontsize=12)
stages.set_ylabel("stages_of_dog")
stages.set_xlabel("Number_of_dog")
plt.IndexLocator
plt.title(("stages_of_dog"))
plt.show()

```



```
[58]: tweet_df_mergev2.head(2)
```

```
[58]:
```

	tweet_id	source \	text \	expanded_urls	rating_numerator \	rating_denominator	name	timestamp	retweet_count \	favorite_count	display_text_range	stages_of_dog
0	892420643555336193	<a href="http://twitter.com/download/iphone" r...	This is Phineas. He's a mystical boy. Only eve...	https://twitter.com/dog_rates/status/892420643...	13	10	Phineas	Tue Aug 01 16:23:56 +0000 2017	7510	35521	[0, 85]	
1	892177421306343426	<a href="http://twitter.com/download/iphone" r...	This is Tilly. She's just checking pup on you...	https://twitter.com/dog_rates/status/892177421...	13	10	Tilly	Tue Aug 01 00:17:27 +0000 2017	5574	30744	[0, 138]	

```
[59]: tweet_df_mergev2.timestamp.value_counts
```

```
[59]: <bound method IndexOpsMixin.value_counts of 0          Tue Aug 01 16:23:56 +0000
2017
1      Tue Aug 01 00:17:27 +0000 2017
2      Mon Jul 31 00:18:03 +0000 2017
3      Sun Jul 30 15:58:51 +0000 2017
4      Sat Jul 29 16:00:24 +0000 2017
...
2326   Mon Nov 16 00:24:50 +0000 2015
2327   Mon Nov 16 00:04:52 +0000 2015
2328   Sun Nov 15 23:21:54 +0000 2015
2329   Sun Nov 15 23:05:30 +0000 2015
2330   Sun Nov 15 22:32:08 +0000 2015
Name: timestamp, Length: 2331, dtype: object>
```

```
[60]: # merge tweet_df_merge and image_df_clean
tweet_df_main = pd.merge(tweet_df_mergev2, image_df_clean ,on='tweet_id')
tweet_df_main.set_index('tweet_id')
tweet_df_main.columns
```

```
[60]: Index(['tweet_id', 'source', 'text', 'expanded_urls', 'rating_numerator',
'rating_denominator', 'name', 'timestamp', 'retweet_count',
'favorite_count', 'display_text_range', 'stages_of_dog', 'jpg_url',
'img_num', 'p1', 'p1_conf', 'p1_dog', 'p2', 'p2_conf', 'p2_dog', 'p3',
'p3_conf', 'p3_dog'],
dtype='object')
```

```
[61]: tweet_df_main.shape # deling with one database
```

```
[61]: (2059, 23)
```

```
[62]: tweet_df_main.source.value_counts()
```

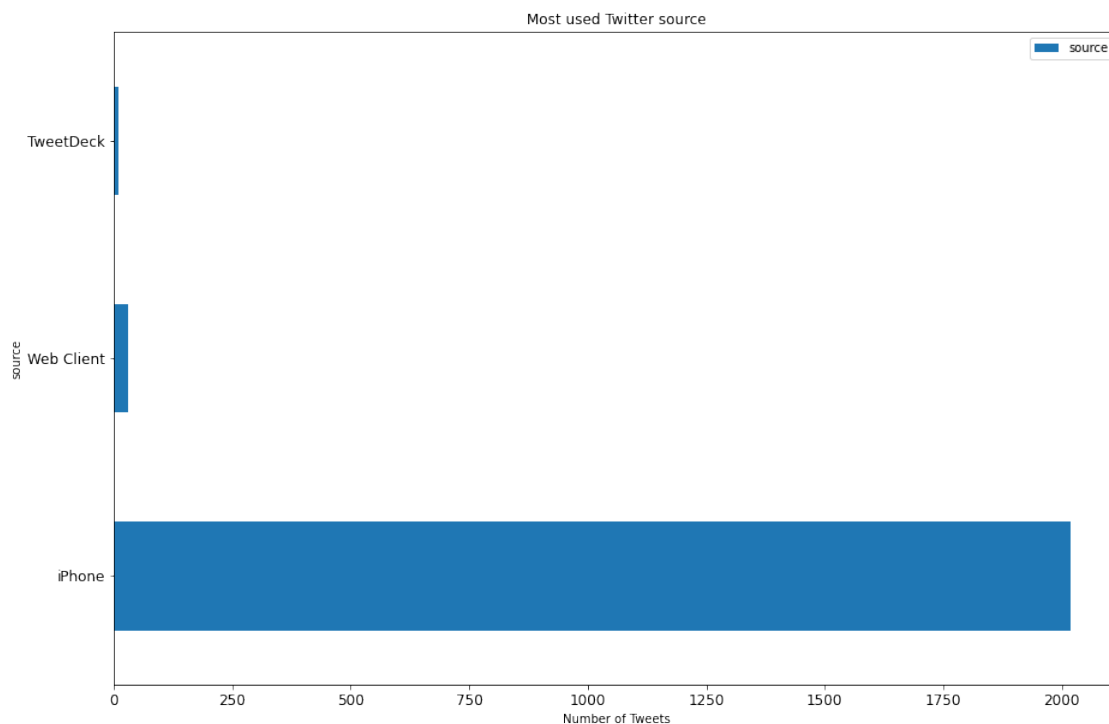
```
[62]: <a href="http://twitter.com/download/iphone" rel="nofollow">Twitter for
iPhone</a>          2019
<a href="http://twitter.com" rel="nofollow">Twitter Web Client</a>
30
<a href="https://about.twitter.com/products/tweetdeck"
rel="nofollow">TweetDeck</a>          10
Name: source, dtype: int64
```

```
[63]: #replace None_None_None_None with stages_of_dog ""
tweet_df_mainv2=tweet_df_main.copy()
tweet_df_mainv2.loc[tweet_df_mainv2['source'] == '<a href="http://twitter.com/
↳download/iphone" rel="nofollow">Twitter for iPhone</a>', 'source'] = 'iPhone'
tweet_df_mainv2.loc[tweet_df_mainv2['source'] == '<a href="http://twitter.com"
↳rel="nofollow">Twitter Web Client</a>', 'source'] = 'Web Client'
```

```
tweet_df_mainv2.loc[tweet_df_mainv2['source'] == '<a href="https://about.
↳twitter.com/products/tweetdeck" rel="nofollow">TweetDeck</a>', 'source'] =
↳'TweetDeck'
tweet_df_mainv2.source.value_counts()
```

```
[63]: iPhone          2019
      Web Client       30
      TweetDeck        10
      Name: source, dtype: int64
```

```
[64]: # plot Most used Twitter source
      Twitter_source=tweet_df_mainv2['source'].value_counts().plot(kind='barh',
↳figsize=(15,10), legend=True, fontsize=12)
      Twitter_source.set_ylabel("source")
      Twitter_source.set_xlabel("Number of Tweets")
      plt.title(("Most used Twitter source"))
      plt.show()
```



```
[65]: # save new datasets
      tweet_df_mainv2.to_csv('main_df.csv', index=False)
      main_df=pd.read_csv('main_df.csv')
      main_df.columns
```

```
[65]: Index(['tweet_id', 'source', 'text', 'expanded_urls', 'rating_numerator',
          'rating_denominator', 'name', 'timestamp', 'retweet_count',
          'favorite_count', 'display_text_range', 'stages_of_dog', 'jpg_url',
          'img_num', 'p1', 'p1_conf', 'p1_dog', 'p2', 'p2_conf', 'p2_dog', 'p3',
          'p3_conf', 'p3_dog'],
          dtype='object')
```

## 3.2 Resource

**Tweepy Documentation** <http://docs.tweepy.org/en/latest/index.html>

**Select & Replace Values in Column based on Condition**  
<https://datatofish.com/select-rows-pandas-dataframe/>  
<https://pythonexamples.org/pandas-dataframe-replace-values-in-column-based-on-condition/>  
<https://www.codegrepper.com/code-examples/python/pandas+replace+values+in+column+based+on+condition>  
<https://thispointer.com/python-pandas-select-rows-in-dataframe-by-conditions-on-multiple-columns/>

**concatenate multiple column** <https://stackoverflow.com/questions/39291499/how-to-concatenate-multiple-column-values-into-a-single-column-in-panda-datafram>

**Convert Text file to JSON in Python** <https://www.geeksforgeeks.org/convert-text-file-to-json-in-python/>  
<https://www.marsja.se/how-to-read-and-write-json-files-using-python-and-pandas/>  
<https://amitshankar.github.io/analyzing-twitter-feed-part-1-wrangling-code.htm>  
[https://github.com/vprusso/youtube\\_tutorials/tree/master/twitter\\_python](https://github.com/vprusso/youtube_tutorials/tree/master/twitter_python)  
<https://github.com/gouravaich/wrangle-analyze-weratedogs-twitter>

**How to Convert Jupyter Notebooks into PDFs** <https://towardsdatascience.com/how-to-convert-jupyter-notebooks-into-pdf-5accaef3758>  
<https://nbconvert.readthedocs.io/en/latest/>  
<https://pandoc.org/getting-started.html>  
<https://github.com/pyppeteer/pyppeteer>  
<https://www.latex-project.org/>

**Past project** <https://github.com/abdelrazekrizk/IBM-Data-Science-by-IBM-on-Coursera-Capstone/blob/master/Capstone%20Project/Business%20Consulting%20Making%20Decisions.ipynb>

## 4 Fun\_Out\_Project

### 4.1 My\_Signature

```
[66]: api=tweepy.API(auth) # 30 Days of Python - Day 21 - Twitter API with Tweepy - Python TUTORIAL
```

```
[67]: me=api.me()
```

```
[68]: # get to know my followers
print(me.screen_name)
for friend in me.friends():
```

```
print(friend.screen_name)
```

```
RizkAbdelrazek  
HL7  
MS_ITProCA  
TwitterDev  
dog_rates  
VisualStudio  
windowsdev  
amyklobuchar  
crpietschmann  
MSVirtAcademy  
stevenborg  
FirelyTeam  
IntelHealth  
IBMWatsonHealth  
Health_IT  
Build5Nines  
AzureSQL  
SenRonJohnson  
AzureDataStudio  
eltaeboficial  
chadwickboseman
```

```
[69]: print("followers_count :",me.followers_count)  
      print("Signature")  
  
      print (me.screen_name)
```

```
followers_count : 52  
Signature  
RizkAbdelrazek
```