In this project we are going to analyse project 5

In [1]:
```
import pandas as pd
import numpy as np
import requests
import json
import os
import matplotlib.pyplot as plt
%matplotlib inline
```

1. First we manually download the given data known as twitter-archive-enhanced

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

In [3]:
```
twitterArchive.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                    2356 non-null int64
in_reply_to_status_id       78 non-null float64
in_reply_to_user_id         78 non-null float64
timestamp                   2356 non-null object
source                      2356 non-null object
text                        2356 non-null object
retweeted_status_id         181 non-null float64
retweeted_status_user_id    181 non-null float64
retweeted_status_timestamp  181 non-null object
expanded_urls               2297 non-null object
rating_numerator            2356 non-null int64
rating_denominator          2356 non-null int64
name                        2356 non-null object
doggo                       2356 non-null object
floofer                     2356 non-null object
pupper                      2356 non-null object
puppo                       2356 non-null object
dtypes: float64(4), int64(3), object(10)
memory usage: 313.0+ KB
```

1. With the help of request library we are going to download the file.

In [4]:
```
url='https://d17h27t6h515a5.cloudfront.net/topher/2017/August/599fd2ad_image-predictions/image-predictions.tsv'
```

In [5]:
```
response=requests.get(url)
with open('image_predictions.tsv', mode='wb') as file:
    file.write(response.content)
```

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

In [7]:
```
ImagePre.head()
```

Out[7]:

	tweet_id	jpg_url	img_num	
0	666020888022790149	https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg	1	Welsh_springe
1	666029285002620928	https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg	1	
2	666033412701032449	https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg	1	German_
3	666044226329800704	https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg	1	Rhodesian_r
4	666049248165822465	https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg	1	miniature_

1. As i coudnt get verified from twitter for verifying my developers account i chose to use the txt file already given to us

In [8]:
```
jsontweet=[]
with open('tweet-json1.txt', mode='r') as file:
    first=file.readline()
    while first:
        data=json.loads(first)
        Dict= {
            'tweet_id': str(data['id']),
            'retweet_count': int(data['retweet_count']),
            'favorite_count': int(data['favorite_count']),
            'user_followers': int(data['user']['followers_count'])
        }
        jsontweet.append(Dict)
        first=file.readline()
```

In [9]:
```
tweetdata=pd.DataFrame(jsontweet,columns= ['tweet_id',
                                           'retweet_count',
                                           'favorite_count',
                                           'user_followers'
                                          ])
```

In [10]:
```
tweetdata.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2354 entries, 0 to 2353
Data columns (total 4 columns):
tweet_id          2354 non-null object
retweet_count     2354 non-null int64
favorite_count    2354 non-null int64
user_followers    2354 non-null int64
dtypes: int64(3), object(1)
memory usage: 73.7+ KB
```

In [11]:
```
tweetdata.to_csv('tweetdata.csv',index=False)
```

Ending of Gathering Data

Here we gathered 3 files:-

- twitter-archive-enhanced.csv - which was already provided to us
- image_predictions.tsv -Which was hosted by udacity
- tweetdata.csv - which i made from the json file provided

Before we move ahead lets load all three data in our data frames

In [12]:
```
twitterArchive=pd.read_csv('twitter-archive-enhanced.csv')
ImagePre=pd.read_csv('image_predictions.tsv', sep='\t')
dftweet=pd.read_csv('tweetdata.csv')
```

Assessing the data

In this step we will first start with visual assessment and prgramatic assesment of Data

1. Twitter Archived Enhanced Data

In [13]:
```
twitterArchive.head(10)
```

Out[13]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
0	892420643555336193	NaN	NaN	2017-08-01 16:23:56 +0000	href="http://twitter.co
1	892177421306343426	NaN	NaN	2017-08-01 00:17:27 +0000	href="http://twitter.co
2	891815181378084864	NaN	NaN	2017-07-31 00:18:03 +0000	href="http://twitter.co
3	891689557279858688	NaN	NaN	2017-07-30 15:58:51 +0000	href="http://twitter.co
4	891327558926688256	NaN	NaN	2017-07-29 16:00:24 +0000	href="http://twitter.co
5	891087950875897856	NaN	NaN	2017-07-29 00:08:17 +0000	href="http://twitter.co
6	890971913173991426	NaN	NaN	2017-07-28 16:27:12 +0000	href="http://twitter.co
7	890729181411237888	NaN	NaN	2017-07-28 00:22:40 +0000	href="http://twitter.co
8	890609185150312448	NaN	NaN	2017-07-27 16:25:51 +0000	href="http://twitter.co
9	890240255349198849	NaN	NaN	2017-07-26 15:59:51 +0000	href="http://twitter.co

In [14]:
```
twitterArchive.tail(10)
```

Out[14]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
2346	666058600524156928	NaN	NaN	2015-11-16 01:01:59 +0000	href="http://twitte
2347	666057090499244032	NaN	NaN	2015-11-16 00:55:59 +0000	href="http://twitte
2348	666055525042405380	NaN	NaN	2015-11-16 00:49:46 +0000	href="http://twitte
2349	666051853826850816	NaN	NaN	2015-11-16 00:35:11 +0000	href="http://twitte
2350	666050758794694657	NaN	NaN	2015-11-16 00:30:50 +0000	href="http://twitte
2351	666049248165822465	NaN	NaN	2015-11-16 00:24:50 +0000	href="http://twitte
2352	666044226329800704	NaN	NaN	2015-11-16 00:04:52 +0000	href="http://twitte
2353	666033412701032449	NaN	NaN	2015-11-15 23:21:54 +0000	href="http://twitte
2354	666029285002620928	NaN	NaN	2015-11-15 23:05:30 +0000	href="http://twitte

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
2355	666020888022790149	NaN	NaN	2015-11-15 22:32:08 +0000	href="http://twitte

In [15]:
```
twitterArchive.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2356 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                    2356 non-null int64
in_reply_to_status_id       78 non-null float64
in_reply_to_user_id         78 non-null float64
timestamp                   2356 non-null object
source                      2356 non-null object
text                        2356 non-null object
retweeted_status_id         181 non-null float64
retweeted_status_user_id    181 non-null float64
retweeted_status_timestamp  181 non-null object
expanded_urls               2297 non-null object
rating_numerator            2356 non-null int64
rating_denominator          2356 non-null int64
name                        2356 non-null object
doggo                       2356 non-null object
floofer                     2356 non-null object
pupper                      2356 non-null object
puppo                       2356 non-null object
dtypes: float64(4), int64(3), object(10)
memory usage: 313.0+ KB
```

In [16]:
```
twitterArchive.name
```

Out[16]:
```
0        Phineas
1          Tilly
2         Archie
3          Darla
4       Franklin
          ...
2351        None
2352           a
2353           a
2354           a
2355        None
Name: name, Length: 2356, dtype: object
```

In [17]:
```
dfa=twitterArchive.name.value_counts()
```

In [18]:
```
dfa.sample(60)
```

Out[18]:

Tove	1
Jeph	2
Oscar	6
Sunny	5
Rosie	3
Devón	1
Rocky	2
Juno	2
Gilbert	1
Huck	1
Klevin	3
Percy	2
Axel	2
Rueben	1
Blipson	1
Gidget	2
Ralphie	1
Julius	1
Mike	1
Jarvis	1
Kenneth	2
Darrel	1
Ambrose	1
Cilantro	1
Malikai	1
Gizmo	3
Orion	1
Hank	4
Marvin	1
Kellogg	1
Sarge	2
Milky	1
Sailor	1
Rey	1
Kawhi	1
Reese	3
Harvey	1
Antony	1
Crumpet	1
Jo	1
Maisey	1
Donny	1
Toby	7
Karl	1
Lilli	1
Hubertson	1
Cassie	4
Bauer	1
Brat	1
Karll	1
Sephie	1
Hamrick	1
Phil	5
Oreo	1
Linus	1
Rumpole	1
Izzy	1

```
Jessiga      1
Smiley       1
Doc          2
Name: name, dtype: int64
```

Notes

- In some columns we need to change None to Nan.
- Some numerator and Denominator values are wrong.
- None is considered to be name of the dog 745, also a is repeated 55 times.
- During Random Sampling i also found various names of the owner to be by,my,link,very(5),actually,all,the(8),in.
- Incorrect Data types for Date .

Tidiness

```
- We must change the tweetid to int so that we can merge all three.
```

2. Image Prediction

In [19]:
```
ImagePre.head()
```

Out[19]:

	tweet_id	jpg_url	img_num	
0	666020888022790149	https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg	1	Welsh_springe
1	666029285002620928	https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg	1	
2	666033412701032449	https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg	1	German_
3	666044226329800704	https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg	1	Rhodesian_r
4	666049248165822465	https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg	1	miniature_

In [20]:
```
ImagePre.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 [21]:
```
ImagePre.describe()
```

Out[21]:

	tweet_id	img_num	p1_conf	p2_conf	p3_conf
count	2.075000e+03	2075.000000	2075.000000	2.075000e+03	2.075000e+03
mean	7.384514e+17	1.203855	0.594548	1.345886e-01	6.032417e-02
std	6.785203e+16	0.561875	0.271174	1.006657e-01	5.090593e-02
min	6.660209e+17	1.000000	0.044333	1.011300e-08	1.740170e-10
25%	6.764835e+17	1.000000	0.364412	5.388625e-02	1.622240e-02
50%	7.119988e+17	1.000000	0.588230	1.181810e-01	4.944380e-02
75%	7.932034e+17	1.000000	0.843855	1.955655e-01	9.180755e-02
max	8.924206e+17	4.000000	1.000000	4.880140e-01	2.734190e-01

In [22]:
```
ImagePre.jpg_url.nunique()
```

Out[22]: 2009

Quality Issues:

1. The data type for predictions should be catagorical data type
2. confidence columns should be merged
3. There are 66 same urls
4. Delete columns that wont be needed.

3. Tweets

In [23]:
```
dftweet.head()
```

Out[23]:

	tweet_id	retweet_count	favorite_count	user_followers
0	892420643555336193	8853	39467	3200889
1	892177421306343426	6514	33819	3200889
2	891815181378084864	4328	25461	3200889
3	891689557279858688	8964	42908	3200889
4	891327558926688256	9774	41048	3200889

In [24]:
```
dftweet.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2354 entries, 0 to 2353
Data columns (total 4 columns):
tweet_id          2354 non-null int64
retweet_count     2354 non-null int64
favorite_count    2354 non-null int64
user_followers    2354 non-null int64
dtypes: int64(4)
memory usage: 73.7 KB
```

In [ ]:
```

```

Cleaning data

In [25]:
```
dftweetclean=dftweet.copy()
ImagePreclean=ImagePre.copy()
twitterArchiveclean=twitterArchive.copy()
```

Define

Drop all rows containing retweets

Code

In [26]:
```
twitterArchiveclean = twitterArchiveclean[pd.isnull(twitterArchiveclean['retweeted_status_user_id'])]
```

Test

In [27]:
```
twitterArchiveclean.info()
twitterArchiveclean
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 17 columns):
tweet_id                      2175 non-null int64
in_reply_to_status_id         78 non-null float64
in_reply_to_user_id           78 non-null float64
timestamp                     2175 non-null object
source                        2175 non-null object
text                          2175 non-null object
retweeted_status_id           0 non-null float64
retweeted_status_user_id      0 non-null float64
retweeted_status_timestamp    0 non-null object
expanded_urls                 2117 non-null object
rating_numerator              2175 non-null int64
rating_denominator            2175 non-null int64
name                          2175 non-null object
doggo                         2175 non-null object
floofer                       2175 non-null object
pupper                        2175 non-null object
puppo                         2175 non-null object
dtypes: float64(4), int64(3), object(10)
memory usage: 305.9+ KB
```

Out[27]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
0	892420643555336193	NaN	NaN	2017-08-01 16:23:56 +0000	href="http://twitte
1	892177421306343426	NaN	NaN	2017-08-01 00:17:27 +0000	href="http://twitte
2	891815181378084864	NaN	NaN	2017-07-31 00:18:03 +0000	href="http://twitte
3	891689557279858688	NaN	NaN	2017-07-30 15:58:51 +0000	href="http://twitte
4	891327558926688256	NaN	NaN	2017-07-29 16:00:24 +0000	href="http://twitte
...	...	...	...	...	
2351	666049248165822465	NaN	NaN	2015-11-16 00:24:50 +0000	href="http://twitte
2352	666044226329800704	NaN	NaN	2015-11-16 00:04:52 +0000	href="http://twitte
2353	666033412701032449	NaN	NaN	2015-11-15 23:21:54 +0000	href="http://twitte
2354	666029285002620928	NaN	NaN	2015-11-15 23:05:30 +0000	href="http://twitte
2355	666020888022790149	NaN	NaN	2015-11-15 22:32:08 +0000	href="http://twitte

2175 rows × 17 columns

Define

Dropping all columns related to retweet

Code

In [28]:
```
twitterArchiveclean=twitterArchiveclean.drop(['retweeted_status_id',
                                              'retweeted_status_user_id',
                                              'retweeted_status_timestamp'], axis = 1)
```

Test

In [29]:
```
twitterArchiveclean.columns
```

Out[29]:
```
Index(['tweet_id', 'in_reply_to_status_id', 'in_reply_to_user_id', 'timestam
p',
       'source', 'text', 'expanded_urls', 'rating_numerator',
       'rating_denominator', 'name', 'doggo', 'floofer', 'pupper', 'puppo'],
      dtype='object')
```

Define

Fix the incorrect Data type

Code

In [30]:
```
twitterArchiveclean['timestamp']=pd.to_datetime(twitterArchiveclean['timestam
p'])
```

Test

In [31]:
```
twitterArchiveclean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 0 to 2355
Data columns (total 14 columns):
tweet_id                 2175 non-null int64
in_reply_to_status_id    78 non-null float64
in_reply_to_user_id      78 non-null float64
timestamp                2175 non-null datetime64[ns, UTC]
source                   2175 non-null object
text                     2175 non-null object
expanded_urls            2117 non-null object
rating_numerator         2175 non-null int64
rating_denominator       2175 non-null int64
name                     2175 non-null object
doggo                    2175 non-null object
floofer                  2175 non-null object
pupper                   2175 non-null object
puppo                    2175 non-null object
dtypes: datetime64[ns, UTC](1), float64(2), int64(3), object(8)
memory usage: 254.9+ KB
```

Define

Erroneous Datatypes for dogs

Code

In [32]:
```
dogss = ['doggo', 'floofer', 'pupper', 'puppo']
retain = [x for x in twitterArchiveclean.columns.tolist() if x not in dogss]

twitterArchiveclean = pd.melt(twitterArchiveclean, id_vars = retain, value_var
s = dogss,
                        var_name = 'dogs', value_name = 'dogs_stage')
twitterArchiveclean= twitterArchiveclean.drop('dogs', 1)
twitterArchiveclean = twitterArchiveclean.sort_values('dogs_stage').drop_dupli
cates(subset='tweet_id',

keep='last')
```

Test

In [33]:
```
twitterArchiveclean.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2175 entries, 2095 to 7298
Data columns (total 11 columns):
tweet_id                 2175 non-null int64
in_reply_to_status_id    78 non-null float64
in_reply_to_user_id      78 non-null float64
timestamp                2175 non-null datetime64[ns, UTC]
source                   2175 non-null object
text                     2175 non-null object
expanded_urls            2117 non-null object
rating_numerator         2175 non-null int64
rating_denominator       2175 non-null int64
name                     2175 non-null object
dogs_stage               2175 non-null object
dtypes: datetime64[ns, UTC](1), float64(2), int64(3), object(5)
memory usage: 203.9+ KB
```

Define

Correct the numerator and denominator

Code

In [34]:
```
twitterArchiveclean.rating_denominator.value_counts().sort_index()
```

Out[34]:
```
0         1
2         1
7         1
10     2153
11        2
15        1
16        1
20        2
40        1
50        3
70        1
80        2
90        1
110       1
120       1
130       1
150       1
170       1
Name: rating_denominator, dtype: int64
```

In [35]:
```
twitterArchiveclean=twitterArchiveclean.query('rating_denominator==10')
```

In [36]:
```
twitterArchiveclean.rating_numerator.value_counts().sort_index()
```

Out[36]:
```
0         2
1         7
2         9
3        19
4        15
5        36
6        32
7        53
8        98
9       155
10      442
11      425
12      500
13      307
14       43
15        1
17        1
26        1
27        1
75        1
182       1
420       2
666       1
1776      1
Name: rating_numerator, dtype: int64
```

In [37]:
```
twitterArchiveclean=twitterArchiveclean.query('rating_numerator<15')
```

Test

In [38]:
```
twitterArchiveclean.rating_numerator.value_counts().sort_index()
```

Out[38]:
```
0       2
1       7
2       9
3      19
4      15
5      36
6      32
7      53
8      98
9     155
10    442
11    425
12    500
13    307
14     43
Name: rating_numerator, dtype: int64
```

Define

Duplicated image url's must be dropped

Code

In [39]:
```
ImagePreclean.drop_duplicates(subset=['jpg_url'],inplace=True, keep='last')
```

Test

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

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2009 entries, 0 to 2074
Data columns (total 12 columns):
tweet_id    2009 non-null int64
jpg_url     2009 non-null object
img_num     2009 non-null int64
p1          2009 non-null object
p1_conf     2009 non-null float64
p1_dog      2009 non-null bool
p2          2009 non-null object
p2_conf     2009 non-null float64
p2_dog      2009 non-null bool
p3          2009 non-null object
p3_conf     2009 non-null float64
p3_dog      2009 non-null bool
dtypes: bool(3), float64(3), int64(2), object(4)
memory usage: 162.8+ KB
```

Define

Combining p1,p2,p3

Code

In [41]:
```
con=[]
pred=[]

def getp(ImagePrep):
    if ImagePrep.p1_dog == True:
        pred.append(ImagePrep.p1)
        con.append(ImagePrep.p1_conf)
    elif ImagePrep.p2_dog == True:
        pred.append(ImagePrep.p2)
        con.append(ImagePrep.p2_conf)
    elif ImagePrep.p3_dog == True:
        pred.append(ImagePrep.p3)
        con.append(ImagePrep.p3_conf)
    else:
        pred.append('NaN')
        con.append(0)
ImagePreclean.apply(getp, axis=1)
```

Out[41]:
```
0       None
1       None
2       None
3       None
4       None
        ...
2070    None
2071    None
2072    None
2073    None
2074    None
Length: 2009, dtype: object
```

In [42]:
```
ImagePreclean['prediction']=pred
ImagePreclean['confidence']=con
```

In [43]:
```
ImagePreclean.drop(['p1', 'p1_conf', 'p1_dog', 'p2', 'p2_conf', 'p2_dog', 'p3'
, 'p3_conf', 'p3_dog'],axis=1,inplace=True)
```

In [44]:
```
ImagePreclean.drop(['img_num'],axis=1,inplace=True)
```

Test

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

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2009 entries, 0 to 2074
Data columns (total 4 columns):
tweet_id      2009 non-null int64
jpg_url       2009 non-null object
prediction    2009 non-null object
confidence    2009 non-null float64
dtypes: float64(1), int64(1), object(2)
memory usage: 78.5+ KB
```

In [46]:
```
ImagePreclean.nunique()
```

Out[46]:
```
tweet_id      2009
jpg_url       2009
prediction     114
confidence    1689
dtype: int64
```

Define

Merging Data together

Code

In [47]:
```
data=pd.merge(twitterArchiveclean, ImagePreclean, how='left', on=['tweet_id'])
```

In [48]:
```
data
```

Out[48]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
0	667443425659232256	NaN	NaN	2015-11-19 20:44:47+00:00	href="http://t
1	667453023279554560	NaN	NaN	2015-11-19 21:22:56+00:00	
2	667455448082227200	NaN	NaN	2015-11-19 21:32:34+00:00	
3	667470559035432960	NaN	NaN	2015-11-19 22:32:36+00:00	
4	667491009379606528	NaN	NaN	2015-11-19 23:53:52+00:00	
...	...	...	...	...	
2138	738537504001953792	NaN	NaN	2016-06-03 01:07:16+00:00	href="http://t
2139	790946055508652032	NaN	NaN	2016-10-25 16:00:09+00:00	href="http://t
2140	743253157753532416	NaN	NaN	2016-06-16 01:25:36+00:00	href="http://t
2141	756275833623502848	NaN	NaN	2016-07-21 23:53:04+00:00	href="http://t
2142	752519690950500352	NaN	NaN	2016-07-11 15:07:30+00:00	href="http://t

2143 rows × 14 columns

In [49]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 2143 entries, 0 to 2142
Data columns (total 14 columns):
tweet_id                 2143 non-null int64
in_reply_to_status_id    68 non-null float64
in_reply_to_user_id      68 non-null float64
timestamp                2143 non-null datetime64[ns, UTC]
source                   2143 non-null object
text                     2143 non-null object
expanded_urls            2094 non-null object
rating_numerator         2143 non-null int64
rating_denominator       2143 non-null int64
name                     2143 non-null object
dogs_stage               2143 non-null object
jpg_url                  1905 non-null object
prediction               1905 non-null object
confidence               1905 non-null float64
dtypes: datetime64[ns, UTC](1), float64(3), int64(3), object(7)
memory usage: 251.1+ KB
```

Define

Dropping duplicate data from URL as a subset

Code

In [50]:
```
data.dropna(subset=['jpg_url'],inplace=True)
```

Test

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

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1905 entries, 0 to 2142
Data columns (total 14 columns):
tweet_id                 1905 non-null int64
in_reply_to_status_id    22 non-null float64
in_reply_to_user_id      22 non-null float64
timestamp                1905 non-null datetime64[ns, UTC]
source                   1905 non-null object
text                     1905 non-null object
expanded_urls            1905 non-null object
rating_numerator         1905 non-null int64
rating_denominator       1905 non-null int64
name                     1905 non-null object
dogs_stage               1905 non-null object
jpg_url                  1905 non-null object
prediction               1905 non-null object
confidence               1905 non-null float64
dtypes: datetime64[ns, UTC](1), float64(3), int64(3), object(7)
memory usage: 223.2+ KB
```

Define

Merging datasets

Code

In [52]:
```
data=pd.merge(data, dftweet,how='left', on=['tweet_id'])
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1905 entries, 0 to 1904
Data columns (total 17 columns):
tweet_id                1905 non-null int64
in_reply_to_status_id    22 non-null float64
in_reply_to_user_id      22 non-null float64
timestamp                1905 non-null datetime64[ns, UTC]
source                   1905 non-null object
text                     1905 non-null object
expanded_urls            1905 non-null object
rating_numerator         1905 non-null int64
rating_denominator       1905 non-null int64
name                     1905 non-null object
dogs_stage               1905 non-null object
jpg_url                  1905 non-null object
prediction               1905 non-null object
confidence               1905 non-null float64
retweet_count            1905 non-null int64
favorite_count           1905 non-null int64
user_followers           1905 non-null int64
dtypes: datetime64[ns, UTC](1), float64(3), int64(6), object(7)
memory usage: 267.9+ KB
```

In [53]:
```
data.drop(labels=['in_reply_to_status_id','in_reply_to_user_id','expanded_urls','user_followers'], inplace=True, axis=1)
```

Test

In [54]:
```
data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1905 entries, 0 to 1904
Data columns (total 13 columns):
tweet_id              1905 non-null int64
timestamp             1905 non-null datetime64[ns, UTC]
source                1905 non-null object
text                  1905 non-null object
rating_numerator      1905 non-null int64
rating_denominator    1905 non-null int64
name                  1905 non-null object
dogs_stage            1905 non-null object
jpg_url               1905 non-null object
prediction            1905 non-null object
confidence            1905 non-null float64
retweet_count         1905 non-null int64
favorite_count        1905 non-null int64
dtypes: datetime64[ns, UTC](1), float64(1), int64(5), object(6)
memory usage: 208.4+ KB
```

Define

Changing the data type of the dog_stage into catagory and removing Nan

Code

In [55]:
```
data.dogs_stage=data.dogs_stage.astype('category')
```

In [56]:
```
data=data.query('prediction!="NaN"')
```

Testing

In [57]:
```
data.to_csv('cleaneddogs.csv',index=False, encoding='utf-8')
```

In [58]:
```
data
```

Out[58]:

	tweet_id	timestamp	source	text	rat
1	667453023279554560	2015-11-19 21:22:56+00:00	<a href="http://twitter.com" rel="nofollow">Tw...	Meet Cupcake. I would do unspeakable things fo...	
2	667455448082227200	2015-11-19 21:32:34+00:00	<a href="http://twitter.com" rel="nofollow">Tw...	This is Reese and Twips. Reese protects Twips....	
3	667470559035432960	2015-11-19 22:32:36+00:00	<a href="http://twitter.com" rel="nofollow">Tw...	This is a northern Wahoo named Kohl. He runs t...	
4	667491009379606528	2015-11-19 23:53:52+00:00	<a href="http://twitter.com" rel="nofollow">Tw...	Two dogs in this one. Both are rare Jujitsu Py...	
5	667495797102141441	2015-11-20 00:12:54+00:00	<a href="http://twitter.com" rel="nofollow">Tw...	This is Philippe from Soviet Russia. Commandin...	
...	...	...	...	...	
1900	889665388333682689	2017-07-25 01:55:32+00:00	<a href="http://twitter.com/download/iphone" r...	Here's a puppo that seems to be on the fence a...	
1901	738537504001953792	2016-06-03 01:07:16+00:00	<a href="http://twitter.com/download/iphone" r...	This is Bayley. She fell asleep trying to esca...	
1902	743253157753532416	2016-06-16 01:25:36+00:00	<a href="http://twitter.com/download/iphone" r...	This is Kilo. He cannot reach the snackum. Nif...	
1903	756275833623502848	2016-07-21 23:53:04+00:00	<a href="http://twitter.com/download/iphone" r...	When ur older siblings get to play in the deep...	
1904	752519690950500352	2016-07-11 15:07:30+00:00	<a href="http://twitter.com/download/iphone" r...	Hopefully this puppo on a swing will help get ...	

1606 rows × 13 columns

Dropping None rows from life_stage

In [59]:
```
data = data[data.dogs_stage != 'None']
```

Insights

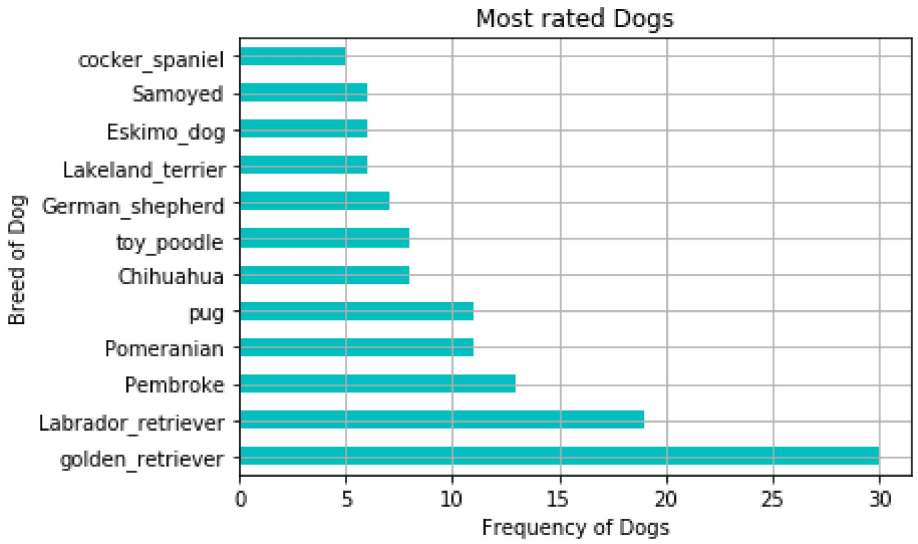
In [60]:
```
data.prediction.value_counts()
```

Out[60]:
```
golden_retriever           30
Labrador_retriever         19
Pembroke                   13
Pomeranian                 11
pug                        11
                           ..
black-and-tan_coonhound     1
Leonberg                    1
bull_mastiff                1
beagle                      1
Norwich_terrier             1
Name: prediction, Length: 76, dtype: int64
```

In [61]:
```
famous=data.prediction.value_counts().sort_values(ascending=False)
```

In [62]:
```
famous=famous.head(12)
```

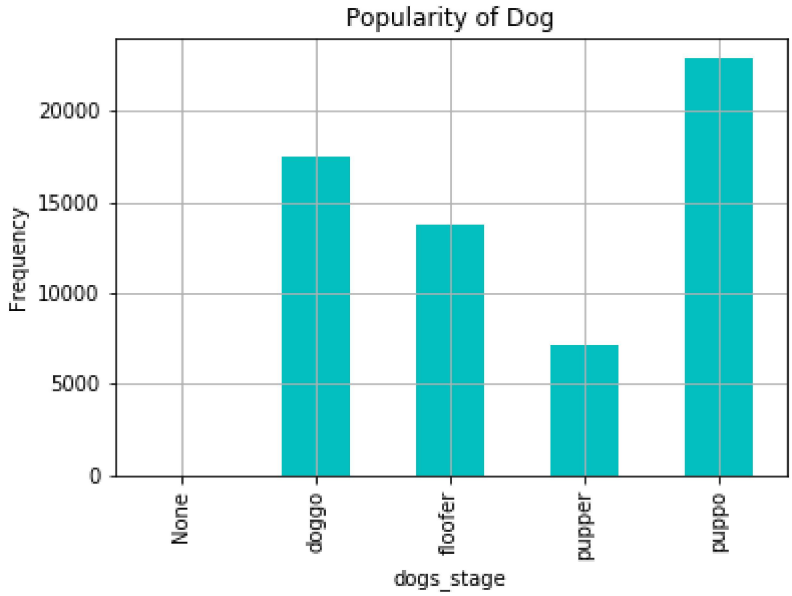
In [63]:
```
famous.plot(kind='barh', color='c');
plt.xlabel('Frequency of Dogs');
plt.ylabel('Breed of Dog');
plt.title('Most rated Dogs');
plt.grid()
```



Insight 2: Most famous dog stage

In [64]:
```
hm=data.groupby('dogs_stage').mean().favorite_count
```

In [65]:
```
plt.title('Popularity of Dog')
plt.xlabel('Dogs Stage')
plt.ylabel('Frequency')
hm.plot(kind='bar',color='c');
plt.grid()
```



Insight 3: Relationship between Retweet and Favorite.

In [66]:
```
plt.scatter(data['favorite_count'], data['retweet_count']);
plt.xlabel('Favorite');
plt.ylabel('Retweet');
plt.title('Retweets V/S favorite');
plt.grid()
```