Introduction

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

WeRateDogs downloaded their Twitter archive and sent it to Udacity via email exclusively for you to use in this project. This archive contains basic tweet data (tweet ID, timestamp, text, etc.) for all 5000+ of their tweets as they stood on August 1, 2017. More on this soon.

Table of Contents

Gather

First Source

In [2]:

```
twitter_archive = pd.read_csv('twitter-archive-enhanced.csv')
```

In [3]:

```
twitter_archive.head()
```

Out[3]:

	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.
1	892177421306343426	NaN	NaN	2017-08-01 00:17:27 +0000	href="http://twitter.
2	891815181378084864	NaN	NaN	2017-07-31 00:18:03 +0000	href="http://twitter.
3	891689557279858688	NaN	NaN	2017-07-30 15:58:51 +0000	href="http://twitter.
4	891327558926688256	NaN	NaN	2017-07-29 16:00:24 +0000	href="http://twitter.

In [4]:

```
twitter_archive.info()
```

```
<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
```

Second source(url)

In [5]:

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

df_image = pd.read_csv('image_predictions.tsv', sep='\t')
```

In [6]:

```
df_image.head()
```

Out[6]:

	tweet_id	jpg_url	img_num	
0	666020888022790149	https://pbs.twimg.com/media/CT4udn0WwAA0aMy.jpg	1	Welsh_spr
1	666029285002620928	https://pbs.twimg.com/media/CT42GRgUYAA5iDo.jpg	1	
2	666033412701032449	https://pbs.twimg.com/media/CT4521TWwAEvMyu.jpg	1	Germ
3	666044226329800704	https://pbs.twimg.com/media/CT5Dr8HUEAA-lEu.jpg	1	Rhodesi
4	666049248165822465	https://pbs.twimg.com/media/CT5IQmsXIAAKY4A.jpg	1	minia

In [7]:

```
df_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
```

Third Source(API)

In [8]:

```
import tweepy

consumer_key = 'CIhlMvNExGkmRqgUAAu9owbdz'
consumer_secret = 'POc1v62TqNLMn2kggZzwIkj4HzLRJOCldpZNwafNr6DndO56Tn'
access_token = '831110322480152578-eLWzG97jNVj2Uf6XXHi3fNrNkq7hl4y'
access_secret = 'pCq1RENOEtAioLRTwCKPR6Yh1mI94Cza7waRXbrmfrnTr'

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

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

In [9]:

```
##from timeit import default_timer as timer

#tweet_ids = twitter_archive.tweet_id.values
#len(tweet_ids)
# Query Twitter's API for JSON data for each tweet ID in the Twitter archive
#count = 0
#fails_dict = {}
#start = timer()
# 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)
```

In [10]:

```
with open('tweet_json.txt') as json_text:
    tweet_json = pd.DataFrame(columns = ['tweet_id','favorites','retweets'])

    for info in json_text:
        tweets = json.loads(info)
        data = {'tweet_id': tweets['id'],'favorites': tweets['favorite_count'],
                                        'retweets': tweets['retweet_count']}
        ser = pd.Series(data)
        tweet_json = tweet_json.append(data,ignore_index=True)
tweet_json.head()
```

Out[10]:

	tweet_id	favorites	retweets
0	892420643555336193	36192	7703
1	892177421306343426	31209	5698
2	891815181378084864	23499	3778
3	891689557279858688	39473	7862
4	891327558926688256	37684	8480

In [11]:

```
tweet_json.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1752 entries, 0 to 1751
Data columns (total 3 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   tweet_id   1752 non-null   object
 1   favorites  1752 non-null   object
 2   retweets   1752 non-null   object
dtypes: object(3)
memory usage: 41.2+ KB
```

Assess

> Let's Assess the twitter_archive, df_image, tweet_json dataframes and find out quality and tidyness issues

In [80]:

```
twitter_archive.info()
```

```
<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
```

In [12]:

```
twitter_archive.query('rating_denominator <10')
```

Out[12]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
313	835246439529840640	8.352460e+17	26259576.0	2017-02-24 21:54:03 +0000	href="http://twi
516	810984652412424192	NaN	NaN	2016-12-19 23:06:23 +0000	href="http://twi
2335	666287406224695296	NaN	NaN	2015-11-16 16:11:11 +0000	href="http://twi

In [82]:

```
twitter_archive.describe()
```

Out[82]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	retweeted_status_id	retweeted_
count	2.356000e+03	7.800000e+01	7.800000e+01	1.810000e+02	
mean	7.427716e+17	7.455079e+17	2.014171e+16	7.720400e+17	
std	6.856705e+16	7.582492e+16	1.252797e+17	6.236928e+16	
min	6.660209e+17	6.658147e+17	1.185634e+07	6.661041e+17	
25%	6.783989e+17	6.757419e+17	3.086374e+08	7.186315e+17	
50%	7.196279e+17	7.038708e+17	4.196984e+09	7.804657e+17	
75%	7.993373e+17	8.257804e+17	4.196984e+09	8.203146e+17	
max	8.924206e+17	8.862664e+17	8.405479e+17	8.874740e+17	

In [84]:

```
twitter_archive.doggo.value_counts()
```

Out[84]:

```
None     2259
doggo      97
Name: doggo, dtype: int64
```

In [85]:

```
twitter_archive.floofer.value_counts()
```

Out[85]:

```
None       2346
floofer      10
Name: floofer, dtype: int64
```

In [86]:

```
twitter_archive.pupper.value_counts()
```

Out[86]:

```
None      2099
pupper     257
Name: pupper, dtype: int64
```

In [87]:

```
twitter_archive.puppo.value_counts()
```

Out[87]:

```
None     2326
puppo      30
Name: puppo, dtype: int64
```

In [91]:

```
twitter_archive.name.value_counts()
```

Out[91]:

```
None       745
a           55
Charlie     12
Oliver      11
Cooper      11
          ...
Dot          1
Blue         1
Lorelei      1
Claude       1
space        1
Name: name, Length: 957, dtype: int64
```

Let's find out out some unusal names which I have noticed by visual assessment

In [92]:

```
lc = []
for row in twitter_archive['name']:
    if row[0].islower() and row not in lc:
        lc.append(row)
print(lc)
```

```
['such', 'a', 'quite', 'not', 'one', 'incredibly', 'mad', 'an', 'ver
y', 'just', 'my', 'his', 'actually', 'getting', 'this', 'unacceptabl
e', 'all', 'old', 'infuriating', 'the', 'by', 'officially', 'life',
'light', 'space']
```

As IQR is 10, find out numerator which are below 10

In [93]:

```
twitter_archive.query('rating_denominator <10')
```

Out[93]:

	tweet_id	in_reply_to_status_id	in_reply_to_user_id	timestamp	
313	835246439529840640	8.352460e+17	26259576.0	2017-02-24 21:54:03 +0000	href="http://twi
516	810984652412424192	NaN	NaN	2016-12-19 23:06:23 +0000	href="http://twi
2335	666287406224695296	NaN	NaN	2015-11-16 16:11:11 +0000	href="http://twi

In [88]:

```
df_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
```

In [89]:

```
df_image.describe()
```

Out[89]:

	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 [90]:

```
tweet_json.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1752 entries, 0 to 1751
Data columns (total 3 columns):
 #   Column     Non-Null Count  Dtype 
---  ------     --------------  ----- 
 0   tweet_id   1752 non-null   object
 1   favorites  1752 non-null   object
 2   retweets   1752 non-null   object
dtypes: object(3)
memory usage: 41.2+ KB
```

In [95]:

```
tweet_json.describe()
```

Out[95]:

	tweet_id	favorites	retweets
count	1752	1752	1752
unique	1752	1480	1366
top	748324050481647620	0	521
freq	1	161	5

Tidiness

1. Merge all the three dataframes into one data frame
2. doggo,floofer,pupper and puppo should be melted.

Quality

1. Removein_reply_to_status_id,in_reply_to_user_id,retweeted_status_id,retweeted_status_user_id,r
2. favorites & retweets should be int64
3. As per WeRateDogs the denominators are mostly 10 or above.
4. source column is illegible
5. tweet_id should be object
6. Columns which have **None** replace with **NaN**.
7. Time_stamp dtpye is object
8. Incorrect dogs name like: "a", "an", "such","the", "very", etc...

Tidiness issues

Issue 1

In [99]:

```
#Define
#Merge all the three dataframes into one data frame
```

In [100]:

```
#code
from functools import reduce
```

In [15]:

```
dfs = [twitter_archive,tweet_json,df_image]
```

In [16]:

```
df = reduce(lambda left,right: pd.merge(left,right,on='tweet_id'), dfs)
```

In [101]:

```
#Test
df.sample(5)
```

Out[101]:

	tweet_id	timestamp	source	text	numerator	denominator	nam
254	832998151111966721	2017-02-18 17:00:10+00:00	Twitter for iPhone	This is Rhino. He arrived at a shelter with an...	13	10	Rhin
1412	668466899341221888	2015-11-22 16:31:42+00:00	Twitter for iPhone	Here is a mother dog caring for her pups. Snaz...	4	10	Nal
1312	670417414769758208	2015-11-28 01:42:22+00:00	Twitter for iPhone	Sharp dog here. Introverted. Loves purple. Not...	6	10	Non
537	788412144018661376	2016-10-18 16:11:17+00:00	Twitter for iPhone	This is Dexter. He breaks hearts for a living....	11	10	Dexte
847	684567543613382656	2016-01-06 02:49:55+00:00	Twitter for iPhone	This is Bobby. He doesn't give a damn about pe...	4	10	Bobb

Issue 2

In [102]:

```
#Define
#doggo,floofer,pupper and puppo should be melted.
```

In [18]:

```
#Code
df['type_dog'] = df['text'].str.extract('(doggo|floofer|pupper|puppo)')
```

In [19]:

```
df[['type_dog','doggo', 'floofer', 'pupper', 'puppo']].head(15)
```

Out[19]:

	type_dog	doggo	floofer	pupper	puppo
0	NaN	None	None	None	None
1	NaN	None	None	None	None
2	NaN	None	None	None	None
3	NaN	None	None	None	None
4	NaN	None	None	None	None
5	NaN	None	None	None	None
6	NaN	None	None	None	None
7	NaN	None	None	None	None
8	NaN	None	None	None	None
9	doggo	doggo	None	None	None
10	NaN	None	None	None	None
11	NaN	None	None	None	None
12	puppo	None	None	None	puppo
13	NaN	None	None	None	None
14	puppo	None	None	None	puppo

In [20]:

```
df = df.drop(['doggo', 'floofer', 'pupper', 'puppo'], axis=1)
```

In [21]:

```
#Test
df.head(1)
```

Out[21]:

	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.

1 rows × 27 columns

Quality issues

Issue 1

In [22]:

```
#define
#Removein_reply_to_status_id,in_reply_to_user_id,retweeted_status_id,retweeted_status_user_id,retweeted_status_timestamp,source,expand_url,img_num.
df.drop(['in_reply_to_status_id',
                     'in_reply_to_user_id',
                     'retweeted_status_id',
                     'retweeted_status_user_id',
                     'retweeted_status_timestamp','expanded_urls','img_num'],axis=1,inplace=True)
```

In [23]:

```
#Test
df.sample(2)
```

Out[23]:

	tweet_id	timestamp	source	text	rating
57	879862464715927552	2017-06-28 00:42:13 +0000	<a href="http://twitter.com/download/iphone" r...	This is Romeo. He would like to do an entrance...	
648	770787852854652928	2016-08-31 00:58:39 +0000	<a href="http://twitter.com/download/iphone" r...	This is Winston. His tongue has gone rogue. Do...	

Issue 2

In [ ]:

```
#define
#favorites & retweets should be int64
```

In [24]:

```
#code
def change(column):
    df[column] = df[column].astype(int)
```

In [25]:

```
change('favorites')
change('retweets')
```

In [26]:

```
#test
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1544 entries, 0 to 1543
Data columns (total 20 columns):
 #   Column               Non-Null Count  Dtype  
---  ------               --------------  -----  
 0   tweet_id             1544 non-null   object 
 1   timestamp            1544 non-null   object 
 2   source               1544 non-null   object 
 3   text                 1544 non-null   object 
 4   rating_numerator     1544 non-null   int64  
 5   rating_denominator   1544 non-null   int64  
 6   name                 1544 non-null   object 
 7   favorites            1544 non-null   int64  
 8   retweets             1544 non-null   int64  
 9   jpg_url              1544 non-null   object 
 10  p1                   1544 non-null   object 
 11  p1_conf              1544 non-null   float64
 12  p1_dog               1544 non-null   bool   
 13  p2                   1544 non-null   object 
 14  p2_conf              1544 non-null   float64
 15  p2_dog               1544 non-null   bool   
 16  p3                   1544 non-null   object 
 17  p3_conf              1544 non-null   float64
 18  p3_dog               1544 non-null   bool   
 19  type_dog             233 non-null    object 
dtypes: bool(3), float64(3), int64(4), object(10)
memory usage: 221.6+ KB
```

Issue 3

In [27]:

```
#define
#As per IQR is 10, remove below 10.
df.query('rating_denominator <10')
```

Out[27]:

	tweet_id	timestamp	source	text	r
405	810984652412424192	2016-12-19 23:06:23 +0000	<a href="http://twitter.com/download/iphone" r...	Meet Sam. She smiles 24/7 & secretly aspir...	
1524	666287406224695296	2015-11-16 16:11:11 +0000	<a href="http://twitter.com/download/iphone" r...	This is an Albanian 3 1/2 legged Episcopalian...	

In [28]:

```
#code
df.drop([405],inplace=True)
df.drop([1524],inplace=True)
```

In [29]:

```
#test
df.query('rating_denominator <10')
```

Out[29]:

tweet_id	timestamp	source	text	rating_numerator	rating_denominator	name	favorites	r

Issue 4

In [30]:

```
#define
#source column is illegible

#code
import re
df['source'] = df['source'].apply(lambda x: re.findall(r'>(.*)<', x)[0])
```

In [31]:

```
#Test
df['source'].value_counts()
```

Out[31]:

```
Twitter for iPhone    1503
Twitter Web Client      29
TweetDeck               10
Name: source, dtype: int64
```

Issue 5

In [32]:

```
#define
#tweet_id should be object

#code
df['tweet_id'] = df['tweet_id'].astype(str)
```

In [33]:

```
#test
df.tweet_id.dtypes
```

Out[33]:

```
dtype('O')
```

Issue 6

In [97]:

```
#define
#Columns which have None replace with NaN.

#code
df['type_dog'] = df['type_dog'].replace('None',np.NaN)
```

In [98]:

```
#test
df['type_dog'].value_counts()
```

Out[98]:

```
pupper     144
doggo       61
puppo       25
floofer      3
Name: type_dog, dtype: int64
```

Issue 7

In [36]:

```
#define
#Time_stamp dtpye is object

#code
df['timestamp'] = pd.to_datetime(df['timestamp'])
```

In [37]:

```
#test
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 1542 entries, 0 to 1543
Data columns (total 20 columns):
 #   Column               Non-Null Count  Dtype
---  ------               --------------  -----
 0   tweet_id             1542 non-null   object
 1   timestamp            1542 non-null   datetime64[ns, UTC]
 2   source               1542 non-null   object
 3   text                 1542 non-null   object
 4   rating_numerator     1542 non-null   int64
 5   rating_denominator   1542 non-null   int64
 6   name                 1542 non-null   object
 7   favorites            1542 non-null   int64
 8   retweets             1542 non-null   int64
 9   jpg_url              1542 non-null   object
 10  p1                   1542 non-null   object
 11  p1_conf              1542 non-null   float64
 12  p1_dog               1542 non-null   bool
 13  p2                   1542 non-null   object
 14  p2_conf              1542 non-null   float64
 15  p2_dog               1542 non-null   bool
 16  p3                   1542 non-null   object
 17  p3_conf              1542 non-null   float64
 18  p3_dog               1542 non-null   bool
 19  type_dog             233 non-null    object
dtypes: bool(3), datetime64[ns, UTC](1), float64(3), int64(4), objec
t(9)
memory usage: 221.4+ KB
```

Issue 8

In [38]:

```
#define
#Incorrect dogs name like: "a", "an", "such","the", "very", etc...

#code
df.name.replace(['such', 'an', 'the', 'just', 'by', 'a', 'mad', 'old', 'space',
             'quite', 'actually', 'infuriating', 'all', 'officially', 'my', 'una
cceptable', 'incredibly',
              'not', '0','O','life', 'one', 'his', 'very'],np.NaN, inplace =True
)
```

In [39]:

```
#test
df.name.value_counts()
```

Out[39]:

```
None        429
Penny         9
Charlie       8
Tucker        8
Bo            8
           ...
Trooper       1
Kyle          1
Zeek          1
Crystal       1
Grizzie       1
Name: name, Length: 725, dtype: int64
```

In [40]:

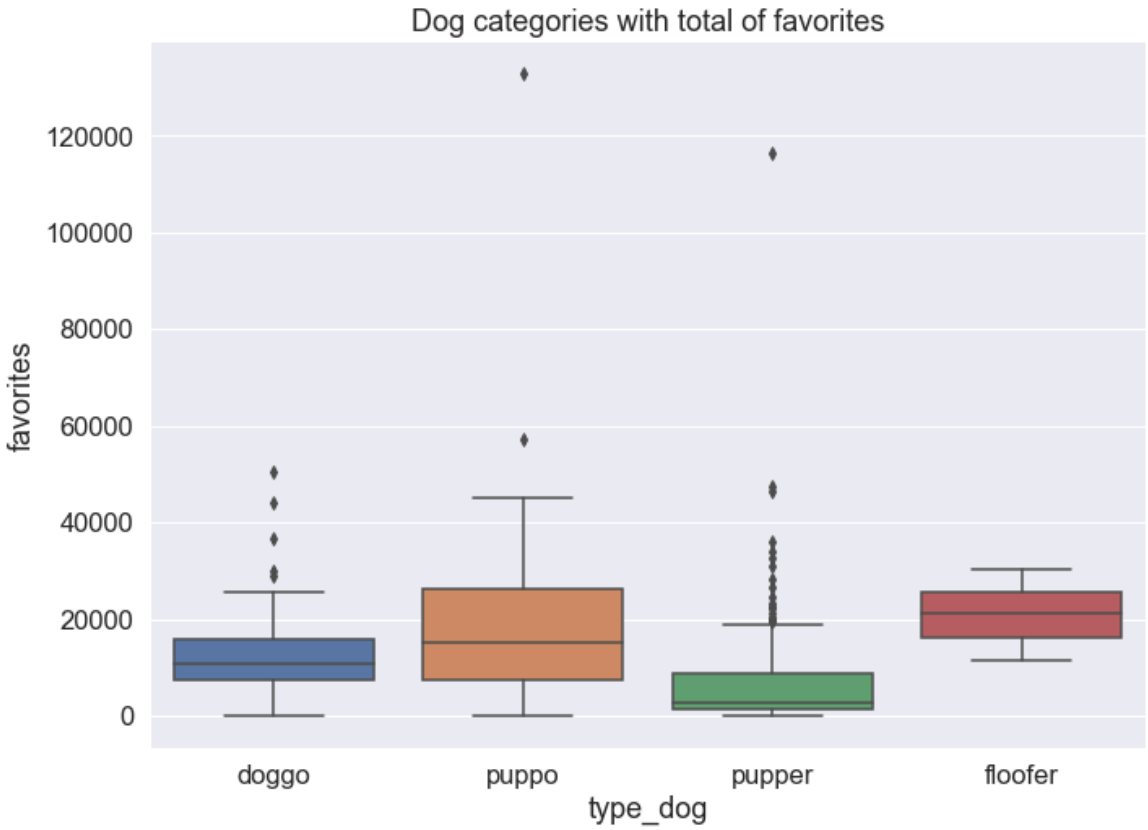
```
df = df.rename(columns={'rating_numerator':'numerator','rating_denominator':'den
ominator'})
```

Data Visualisation

Dogs with high likes

In [77]:

```
plt.figure(figsize=(11,8))
sns.boxplot(x="type_dog", y="favorites", data=df).set_title('Dog categories with total of favorites');
```



According to box plot it is precived that puppo has highest recored rate of likes followed by doggo,floofer, & pupper

Distribution of Rating Numerators

In [46]:

```
gdf = df.query('numerator <= 14')
```

In [54]:

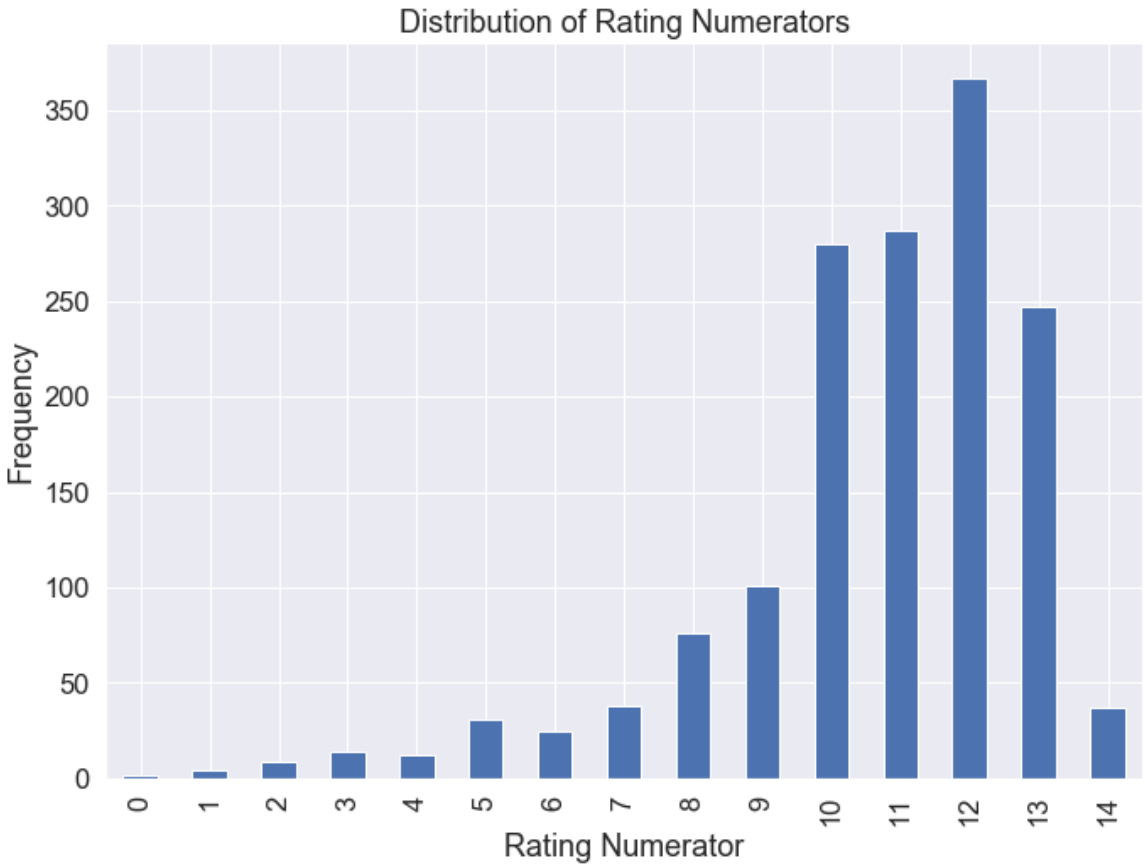
```
a = gdf.groupby(['numerator']).count()['tweet_id']
```

In [58]:

```
b = np.array(a)
```

In [76]:

```
a.plot(kind='bar',figsize=(11,8))
plt.xlabel('Rating Numerator')
plt.ylabel('Frequency')
plt.title('Distribution of Rating Numerators');
```



Form perceiving the bar graph, it illustrates that ratings are 14 and below, and ratings above 20 are usually given to images that contain more than one or less than 5 dogs. So, 14 is considered as the maximum rating.

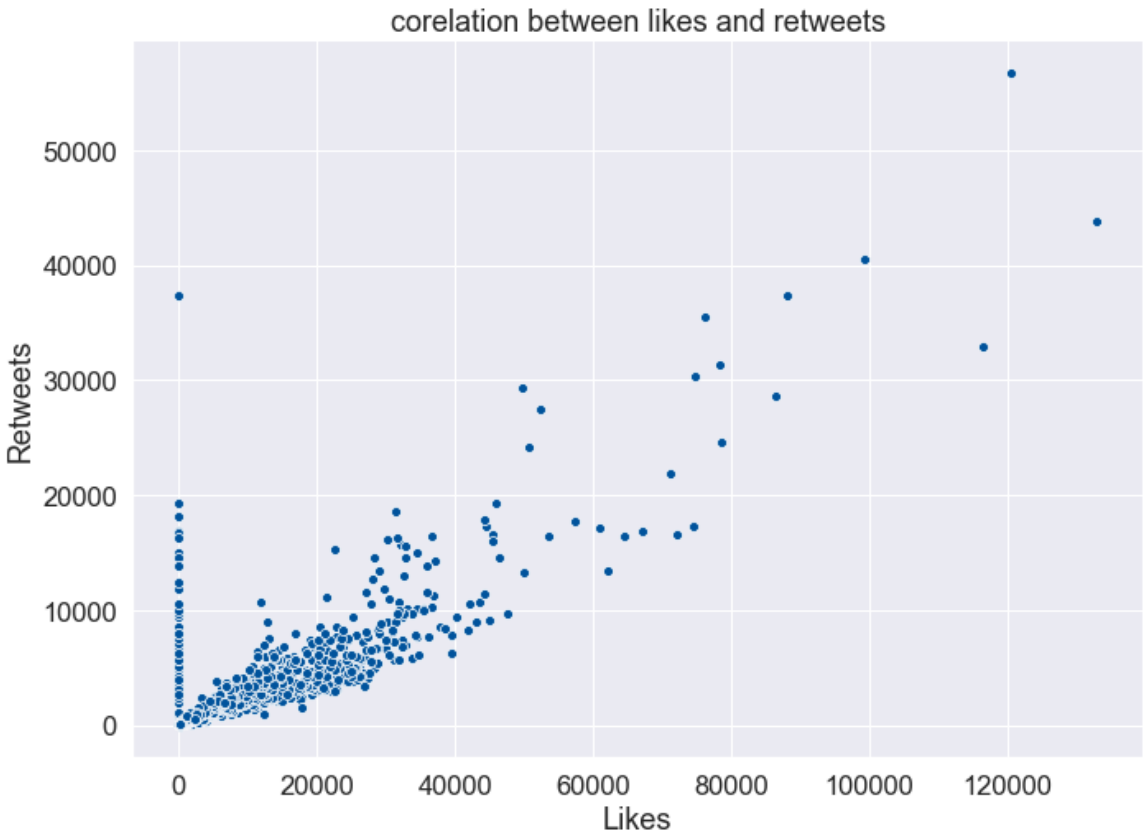
Corelation between likes an retweets

In [74]:

```
plt.figure(figsize=(11,8))
sns.set(font_scale=1.5)
ax = sns.scatterplot(x='favorites',y='retweets',data=df,color='#00539CFF')
ax.set(xlabel='Likes', ylabel='Retweets')
ax.set_title('corelation between likes and retweets')
```

Out[74]:

```
Text(0.5, 1.0, 'corelation between likes and retweets')
```



From perceiving the scatter plot, it illustrates the strong relationship between retweets and likes 'favorites'. The increase in retweets directs to an increase in likes.