Ubicaciones filtrando por csv.

May 21, 2020

[1]:
```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import seaborn as sns
import matplotlib.cm as cm
from bokeh.plotting import figure, output_file, show
from bokeh.io import export_png
from bokeh.io.export import get_screenshot_as_png
import geopandas
import matplotlib as mpl
```

[2]:
```
tweets = pd.read_csv('../TP1-Organizacion-de-Datos/csv/train.csv')
```

[3]:
```
tweets.sample(n = 5)
```

[3]:

	id	keyword	location	text	target
4322	6137	hijack	Innerhalb der LÌ_cke	#GamerGate 'Our entire attempt to hijack your …	0
3036	4357	earthquake	Desde Republica Argentina	#Sismo ML 2.4 NEAR THE COAST OF WESTERN TURKE…	1
6355	9085	structural%20failure	Reality	'Jet fuel cant melt steel'\n'The structural fa…	1
5246	7502	oil%20spill	Amarillo	'California: Spring Oil Spill Estimate Grows '…	1
6319	9031	stretcher	NaN	Lately I've been under pressure make me wanna …	0

[4]:
```
ciudades = pd.read_csv('../TP1-Organizacion-de-Datos/csv/worldcities.csv')
```

[5]:
```
ciudades.sample(n = 5)
```

[5]:

	city	city_ascii	lat	lng	country	iso2	iso3
12559	Paw Paw	Paw Paw	42.2146	-85.8918	United States	US	USA
13154	Orange City	Orange City	43.0021	-96.0567	United States	US	USA
396	Vila Velha	Vila Velha	3.2167	-51.2167	Brazil	BR	BRA

```
5204       Iqaluit      Iqaluit  63.7505 -68.5002         Canada   CA  CAN
10772    Pineville    Pineville  31.3414 -92.4096  United States   US  USA

      admin_name capital  population          id
12559   Michigan     NaN      8400.0  1840011208
13154       Iowa     NaN      6997.0  1840009044
396        Amapá     NaN   1209091.0  1076575691
5204     Nunavut   admin      6124.0  1124379539
10772  Louisiana     NaN     14429.0  1840014963
```

[6]:
```
tweets['location'].isnull().sum()
```

[6]:
```
2533
```

[7]:
```
tweets['location'].isnull().mean()
```

[7]:
```
0.33272034677525286
```

[8]:
```
location_list = tweets['location'].tolist()
```

[9]:
```
ciudades_ocurr = tweets['location'].value_counts()
```

[10]:
```
ciudades_ocurr
```

[10]:
```
USA                             104
New York                         71
United States                    50
London                           45
Canada                           29
                                ...
West Richland, WA                 1
North Memphis/Global Citizen      1
Tucson, Az                        1
Missouri, USA                     1
Fukuoka, Japan                    1
Name: location, Length: 3341, dtype: int64
```

[11]:
```
ciudades_list = ciudades['city_ascii']
ciudades_list = pd.DataFrame(ciudades_list)
```

[12]:
```
ciudades_list['ocurrencia'] = 0
```

[13]:
```
ciudades_list
```

[13]:
```
        city_ascii  ocurrencia
0            Tokyo           0
1         New York           0
```

```
2      Mexico City           0
3           Mumbai           0
4        Sao Paulo           0
…              …         …
15488  Timmiarmiut           0
15489  Cheremoshna           0
15490    Ambarchik           0
15491      Nordvik           0
15492      Ennadai           0

[15493 rows x 2 columns]
```

[14]:
```
ciudades_list.shape
```

[14]:
```
(15493, 2)
```

[15]:
```
ciudades_list['city_ascii'].count()
```

[15]:
```
15493
```

[16]:
```
ciudades_list['veracidad'] = 0
ciudades_list['cant_verdaderos'] = 0
```

[17]:
```
ciudades_list['veracidad'] = ciudades_list['veracidad'].astype(float)
```

[18]:
```
ciudades_list.dtypes
```

[18]:
```
city_ascii          object
ocurrencia           int64
veracidad          float64
cant_verdaderos      int64
dtype: object
```

[19]:
```
tienenLaCiudad = pd.DataFrame(columns=('tweetDeLaCiudad', 'V/F'))
tienenLaCiudad['V/F'] = tweets['target']
```

Comparo cada ciudad del mundo con los tweets y busco si el nombre de la ciudad esta incluido en el campo “Location” de cada Tweet

[20]:
```
#CUIDADO AL EJECUTAR ESTO xD
for x in range(ciudades_list['city_ascii'].count()):
    ciudad = ciudades_list.loc[x, 'city_ascii']
    if (len(ciudad) > 4):
        tienenLaCiudad['tweetDeLaCiudad'] = tweets.loc[:, 'location'].str.
↪contains(ciudad, regex = False)
    else:
```

```
        tienenLaCiudad['tweetDeLaCiudad'] = (tweets.loc[:, 'location'] ==␣
↪ciudad)

    cant_tweets = tienenLaCiudad[tienenLaCiudad['tweetDeLaCiudad'] ==␣
↪True]['tweetDeLaCiudad'].count()
    verdaderos = tienenLaCiudad[(tienenLaCiudad['V/F'] == 1) &␣
↪(tienenLaCiudad['tweetDeLaCiudad'] == True)]['V/F'].count()

    ciudades_list.loc[x, 'cant_verdaderos'] = verdaderos
    ciudades_list.loc[x, 'ocurrencia'] = cant_tweets
    if (cant_tweets != 0):
        ciudades_list.loc[x, 'veracidad'] = float(verdaderos)/float(cant_tweets)
```

[21]:
```
ciudades_list
```

[21]:

	city_ascii	ocurrencia	veracidad	cant_verdaderos
0	Tokyo	8	0.500000	4
1	New York	131	0.320611	42
2	Mexico City	1	0.000000	0
3	Mumbai	31	0.838710	26
4	Sao Paulo	2	0.500000	1
…	…	…	…	…
15488	Timmiarmiut	0	0.000000	0
15489	Cheremoshna	0	0.000000	0
15490	Ambarchik	0	0.000000	0
15491	Nordvik	0	0.000000	0
15492	Ennadai	0	0.000000	0

[15493 rows x 4 columns]

[22]:
```
Ciudades_Mas_10_Tweets = (ciudades_list.loc[:,'ocurrencia'] > 10)
```

[23]:
```
Top_populares = ciudades_list.loc[Ciudades_Mas_10_Tweets]
```

[24]:
```
Top_populares = Top_populares.sort_values('ocurrencia', ascending = False)
```

[25]:
```
Top_populares = Top_populares.drop_duplicates(['city_ascii'])
```

[26]:
```
Top_populares
```

[26]:

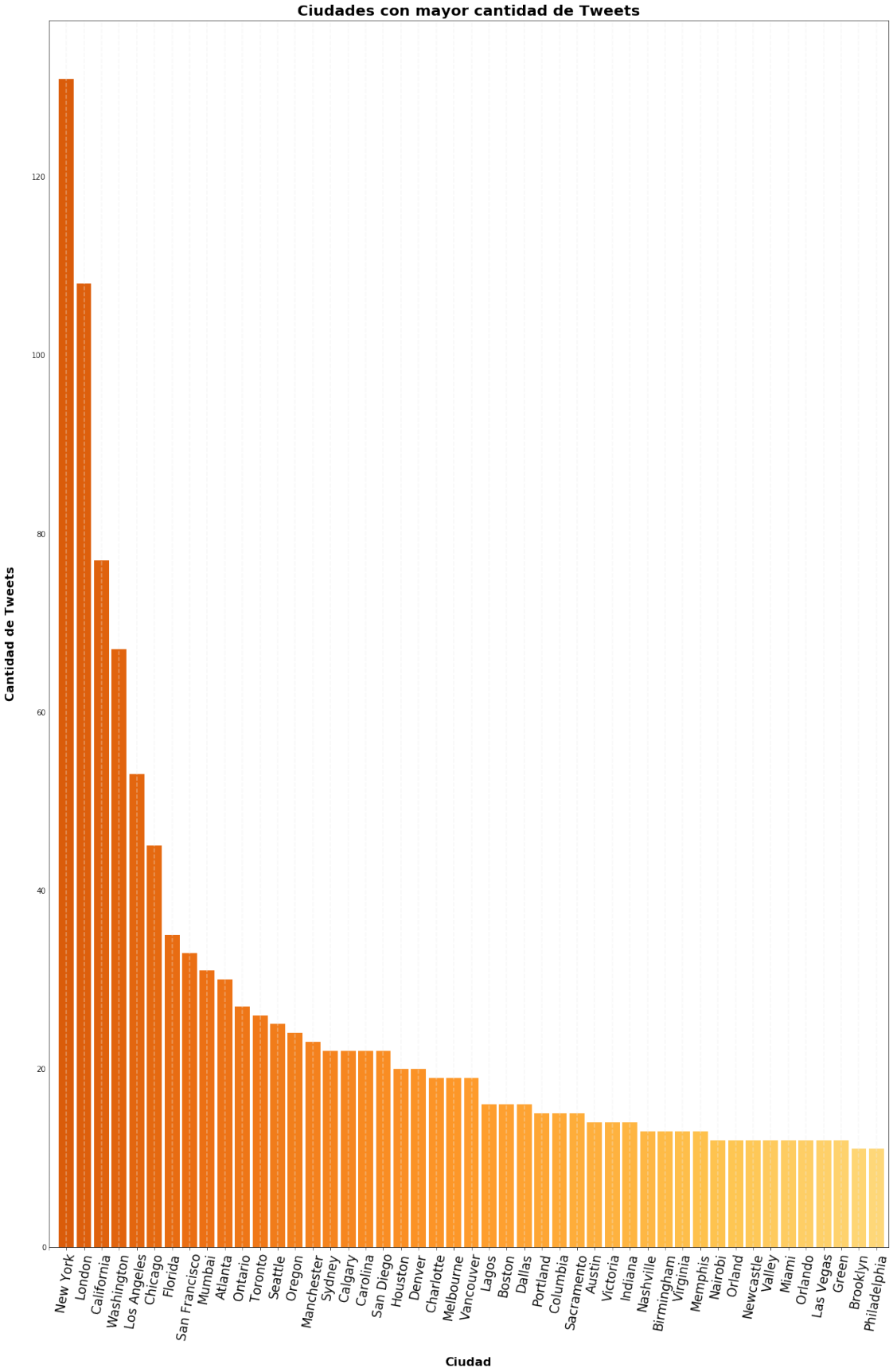
	city_ascii	ocurrencia	veracidad	cant_verdaderos
1	New York	131	0.320611	42
1388	London	108	0.342593	37
13458	California	77	0.519481	40
10449	Washington	67	0.626866	42
2638	Los Angeles	53	0.358491	19
24	Chicago	45	0.444444	20

4296	Florida	35	0.371429	13
7676	San Francisco	33	0.545455	18
3	Mumbai	31	0.838710	26
14904	Atlanta	30	0.366667	11
9287	Ontario	27	0.370370	10
52	Toronto	26	0.538462	14
87	Seattle	25	0.360000	9
9870	Oregon	24	0.500000	12
10139	Manchester	23	0.304348	7
8381	Sydney	22	0.681818	15
432	Calgary	22	0.772727	17
2653	Carolina	22	0.454545	10
105	San Diego	22	0.454545	10
47	Houston	20	0.450000	9
135	Denver	20	0.650000	13
69	Melbourne	19	0.631579	12
11197	Charlotte	19	0.526316	10
176	Vancouver	19	0.263158	5
10278	Dallas	16	0.437500	7
21	Lagos	16	0.687500	11
14540	Boston	16	0.375000	6
11368	Portland	15	0.600000	9
2710	Columbia	15	0.533333	8
230	Sacramento	15	0.733333	11
272	Austin	14	0.428571	6
9300	Victoria	14	0.642857	9
4414	Indiana	14	0.285714	4
12359	Memphis	13	0.615385	8
13910	Nashville	13	0.769231	10
806	Birmingham	13	0.692308	9
11226	Virginia	13	0.615385	8
12071	Orland	12	0.166667	2
14378	Newcastle	12	0.250000	3
9838	Valley	12	0.583333	7
40	Miami	12	0.333333	4
236	Orlando	12	0.166667	2
203	Las Vegas	12	0.416667	5
9190	Green	12	0.333333	4
116	Nairobi	12	0.750000	9
11751	Brooklyn	11	0.272727	3
44	Philadelphia	11	0.545455	6

[27]:
```
saltos = np.linspace(0.3, 0.7, 48)
colores = (cm.get_cmap('YlOrBr'))(saltos)
Top_populares = Top_populares.sort_values('ocurrencia')
Top_populares_plot = Top_populares.plot(kind='bar', y ='ocurrencia', x =␣
↪'city_ascii', figsize=(20, 30), color=colores, width=0.85, legend=False)
```

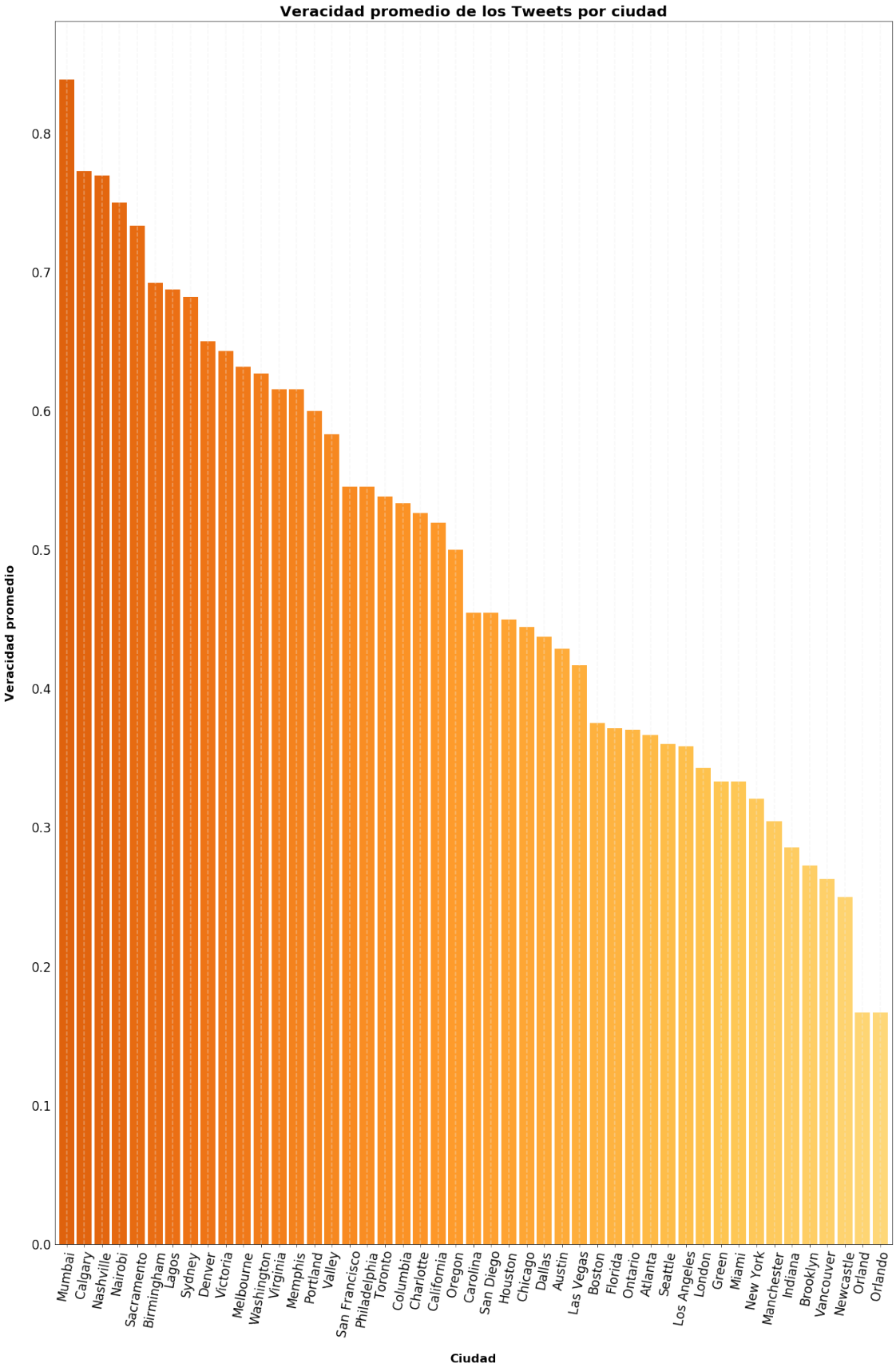
```
plt.xticks(np.arange(0, 48, 1.0), fontsize = 17, rotation = 80)
plt.tick_params(axis='y', length=0)

#Top_populares_plot.spines['right'].set_visible(False)
#Top_populares_plot.spines['top'].set_visible(False)
#Top_populares_plot.spines['left'].set_visible(False)
#Top_populares_plot.spines['bottom'].set_visible(False)

lineas = Top_populares_plot.get_xticks()
for i in lineas:
      Top_populares_plot.axvline(x=i, linestyle='--', alpha=0.4,␣
 ↪color='#eeeeee')

plt.gca().invert_xaxis()

Top_populares_plot.set_xlabel("Ciudad", labelpad=20, weight='bold', size=16)
Top_populares_plot.set_ylabel("Cantidad de Tweets", labelpad=20, weight='bold',␣
 ↪size=16)
Top_populares_plot.set_title("Ciudades con mayor cantidad de Tweets",␣
 ↪weight='bold', size=20)
```

[27]: Text(0.5, 1.0, 'Ciudades con mayor cantidad de Tweets')


Ciudades con mayor cantidad de Tweets
Cantidad de Tweets
0
20
40
60
80
100
120
New York
London
California
Washington
Los Angeles
Chicago
Florida
San Francisco
Mumbai
Atlanta
Ontario
Toronto
Seattle
Oregon
Manchester
Sydney
Calgary
Carolina
San Diego
Houston
Denver
Charlotte
Melbourne
Vancouver
Lagos
Boston
Dallas
Portland
Columbia
Sacramento
Austin
Victoria
Indiana
Nashville
Birmingham
Virginia
Memphis
Nairobi
Orland
Newcastle
Valley
Miami
Orlando
Las Vegas
Green
Brooklyn
Philadelphia
Ciudad

[28]:
```
saltos = np.linspace(0.3, 0.7, 50)
colores = (cm.get_cmap('YlOrBr'))(saltos)
Top_populares = Top_populares.sort_values('veracidad')
Top_populares_plot = Top_populares.plot(kind='bar', y ='veracidad', x =␣
↪'city_ascii', figsize=(20, 30), color=colores, width=0.85, legend = False)

plt.xticks(np.arange(0, 47, 1), rotation = 80, fontsize = 17)
plt.yticks(fontsize = 17)
plt.tick_params(axis='y', length=0)

#Top_populares_plot.spines['right'].set_visible(False)
#Top_populares_plot.spines['top'].set_visible(False)
#Top_populares_plot.spines['left'].set_visible(False)
#Top_populares_plot.spines['bottom'].set_visible(False)

lineas = Top_populares_plot.get_xticks()
for i in lineas:
      Top_populares_plot.axvline(x=i, linestyle='--', alpha=0.4,␣
↪color='#eeeeee')

plt.gca().invert_xaxis()

Top_populares_plot.set_xlabel("Ciudad", labelpad=20, weight='bold', size=16)
Top_populares_plot.set_ylabel("Veracidad promedio", labelpad=20, weight='bold',␣
↪size=16)
Top_populares_plot.set_title("Veracidad promedio de los Tweets por ciudad",␣
↪weight='bold', size=20)
```

[28]:
```
Text(0.5, 1.0, 'Veracidad promedio de los Tweets por ciudad')
```


Veracidad promedio de los Tweets por ciudad
Veracidad promedio
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
Mumbai
Calgary
Nashville
Nairobi
Sacramento
Birmingham
Lagos
Sydney
Denver
Victoria
Melbourne
Washington
Virginia
Memphis
Portland
Valley
San Francisco
Philadelphia
Toronto
Columbia
Charlotte
California
Oregon
Carolina
San Diego
Houston
Chicago
Dallas
Austin
Las Vegas
Boston
Florida
Ontario
Atlanta
Seattle
Los Angeles
London
Green
Miami
New York
Manchester
Indiana
Brooklyn
Vancouver
Newcastle
Orland
Orlando
Ciudad

[29]:
```
ciudades_list['Pais'] = ciudades['country']
```

[30]:
```
ciudades_list
```

[30]:

	city_ascii	ocurrencia	veracidad	cant_verdaderos	Pais
0	Tokyo	8	0.500000	4	Japan
1	New York	131	0.320611	42	United States
2	Mexico City	1	0.000000	0	Mexico
3	Mumbai	31	0.838710	26	India
4	Sao Paulo	2	0.500000	1	Brazil
…	…	…	…	…	…
15488	Timmiarmiut	0	0.000000	0	Greenland
15489	Cheremoshna	0	0.000000	0	Ukraine
15490	Ambarchik	0	0.000000	0	Russia
15491	Nordvik	0	0.000000	0	Russia
15492	Ennadai	0	0.000000	0	Canada

[15493 rows x 5 columns]

[31]:
```
ciudades_list = ciudades_list.drop_duplicates('city_ascii', keep = 'first')
```

[32]:
```
ciudades_list.shape
```

[32]:
```
(13482, 5)
```

[33]:
```
Tweets_Paises = pd.DataFrame({'Cantidad_Tweets': 0, 'Pais':␣
↪ciudades['country'], 'Veracidad': 0, 'Cantidad_Tweets_Verdaderos': 0})
```

[34]:
```
Tweets_Paises['Veracidad'] = Tweets_Paises['Veracidad'].astype(float)
```

[35]:
```
Tweets_Paises['Pais'].describe()
```

[35]:
```
count             15493
unique              223
top       United States
freq               7328
Name: Pais, dtype: object
```

[36]:
```
Tweets_Paises = Tweets_Paises.drop_duplicates(['Pais'])
Tweets_Paises = Tweets_Paises.reset_index(drop = True)
```

[37]:
```
Tweets_Paises.dtypes
```

[37]:
```
Cantidad_Tweets                int64
Pais                          object
Veracidad                    float64
Cantidad_Tweets_Verdaderos     int64
dtype: object
```

[38]:
```
ciudades_list.dtypes
```

[38]:
```
city_ascii          object
ocurrencia           int64
veracidad          float64
cant_verdaderos      int64
Pais                object
dtype: object
```

[39]:
```
ciudades_list
```

[39]:

	city_ascii	ocurrencia	veracidad	cant_verdaderos	Pais
0	Tokyo	8	0.500000	4	Japan
1	New York	131	0.320611	42	United States
2	Mexico City	1	0.000000	0	Mexico
3	Mumbai	31	0.838710	26	India
4	Sao Paulo	2	0.500000	1	Brazil
…	…	…	…	…	…
15488	Timmiarmiut	0	0.000000	0	Greenland
15489	Cheremoshna	0	0.000000	0	Ukraine
15490	Ambarchik	0	0.000000	0	Russia
15491	Nordvik	0	0.000000	0	Russia
15492	Ennadai	0	0.000000	0	Canada

[13482 rows x 5 columns]

[40]:
```
#CUIDADO AL EJECUTAR ESTO xD
for w in range(Tweets_Paises['Pais'].count()):

    pais = Tweets_Paises.loc[w, 'Pais']

    la_ciudad_es_del_pais = (ciudades_list.loc[:, 'Pais'] == pais)

    ciudades_del_pais = ciudades_list.loc[la_ciudad_es_del_pais]

    total_tweets_pais = ciudades_del_pais['ocurrencia'].sum()

    total_tweets_verdaderos_pais = ciudades_del_pais['cant_verdaderos'].sum()

    Tweets_Paises.loc[w, 'Cantidad_Tweets'] = total_tweets_pais
```

```
    Tweets_Paises.loc[w, 'Cantidad_Tweets_Verdaderos'] =␣
↪total_tweets_verdaderos_pais

    if (total_tweets_pais != 0):

        Tweets_Paises.loc[w, 'Veracidad'] = float(total_tweets_verdaderos_pais)/
↪float(total_tweets_pais)
```

[41]:
```
Tweets_Paises
```

[41]:
```
     Cantidad_Tweets                                  Pais  Veracidad  \
0                 13                                 Japan   0.538462
1               1906                         United States   0.440189
2                  8                                Mexico   0.500000
3                 75                                 India   0.693333
4                 16                                Brazil   0.312500
..               ...                                   ...        ...
218                0                 Turks And Caicos Islands   0.000000
219                0                           Cayman Islands   0.000000
220                0                             Cook Islands   0.000000
221                0        Falkland Islands (Islas Malvinas)   0.000000
222                0  South Georgia And South Sandwich Islands   0.000000

     Cantidad_Tweets_Verdaderos
0                             7
1                           839
2                             4
3                            52
4                             5
..                          ...
218                           0
219                           0
220                           0
221                           0
222                           0

[223 rows x 4 columns]
```

[42]:
```
Tweets_Paises['Cantidad_Tweets'].sum()
```

[42]:
```
2935
```

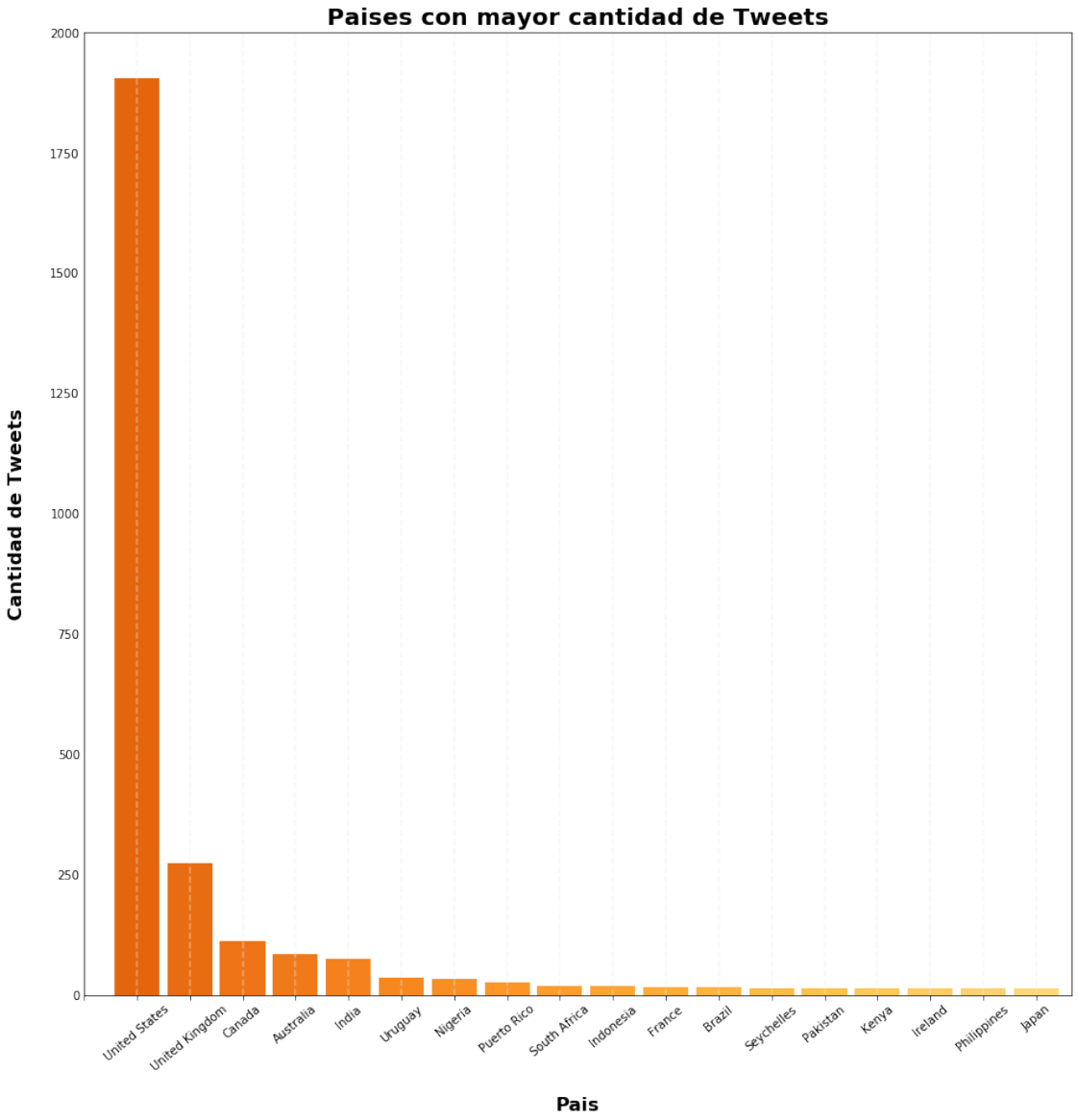
[43]:
```
paises_mas_10_tweets = (Tweets_Paises.loc[:,'Cantidad_Tweets'] > 10)
```

[44]:
```
paises_mas_10_tweets = Tweets_Paises.loc[paises_mas_10_tweets]
```

[45]:
```
paises_mas_10_tweets = paises_mas_10_tweets.sort_values('Cantidad_Tweets')
```

[46]:
```
saltos = np.linspace(0.3, 0.7, 20)
colores = (cm.get_cmap('YlOrBr'))(saltos)

paises_mas_10_tweets_plot = paises_mas_10_tweets.plot(kind='bar', y␣
↪='Cantidad_Tweets', x = 'Pais', figsize=(15, 15), color=colores, width=0.85,␣
↪legend = False)

plt.xticks(np.arange(0, 19, 1.0))
plt.tick_params(axis='y', length=0)

#paises_mas_10_tweets_plot.spines['right'].set_visible(False)
#paises_mas_10_tweets_plot.spines['top'].set_visible(False)
#paises_mas_10_tweets_plot.spines['left'].set_visible(False)
#paises_mas_10_tweets_plot.spines['bottom'].set_visible(False)

lineas = paises_mas_10_tweets_plot.get_xticks()
for i in lineas:
      paises_mas_10_tweets_plot.axvline(x=i, linestyle='--', alpha=0.4,␣
↪color='#eeeeee')

plt.xticks(fontsize = 10, rotation = 40)
plt.yticks(fontsize = 10)

plt.gca().invert_xaxis()

paises_mas_10_tweets_plot.set_xlabel("Pais", labelpad=20, weight='bold',␣
↪size=16)
paises_mas_10_tweets_plot.set_ylabel("Cantidad de Tweets", labelpad=20,␣
↪weight='bold', size=16)
paises_mas_10_tweets_plot.set_title("Paises con mayor cantidad de Tweets",␣
↪weight='bold', size=20)
```

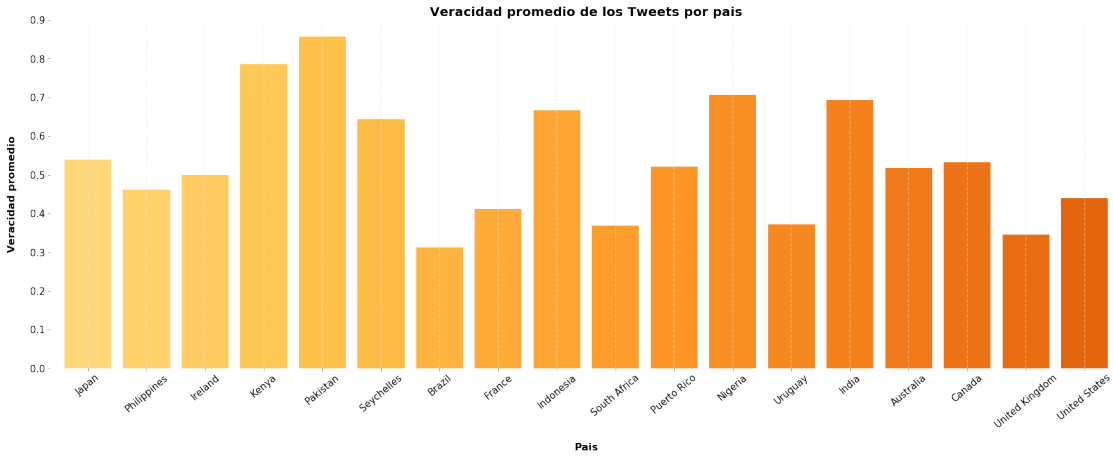
[46]:
```
Text(0.5, 1.0, 'Paises con mayor cantidad de Tweets')
```



[47]:
```
saltos = np.linspace(0.3, 0.7, 20)
colores = (cm.get_cmap('YlOrBr'))(saltos)

paises_mas_10_tweets_plot = paises_mas_10_tweets.plot(kind='bar', y␣
↪='Veracidad', x = 'Pais', figsize=(30,10), color=colores, width=0.80, legend␣
↪= False)

paises_mas_10_tweets_plot.spines['right'].set_visible(False)
paises_mas_10_tweets_plot.spines['top'].set_visible(False)
paises_mas_10_tweets_plot.spines['left'].set_visible(False)
paises_mas_10_tweets_plot.spines['bottom'].set_visible(False)
```

```
lineas = paises_mas_10_tweets_plot.get_xticks()
for i in lineas:
      paises_mas_10_tweets_plot.axvline(x=i, linestyle='--', alpha=0.4,␣
 ↪color='#eeeeee')

plt.xticks(fontsize = 15, rotation = 40)
plt.yticks(fontsize = 15)

paises_mas_10_tweets_plot.set_xlabel("Pais", labelpad=20, weight='bold',␣
 ↪size=16)
paises_mas_10_tweets_plot.set_ylabel("Veracidad promedio", labelpad=20,␣
 ↪weight='bold', size=16)
paises_mas_10_tweets_plot.set_title("Veracidad promedio de los Tweets por␣
 ↪pais", weight='bold', size=20)
```

[47]: Text(0.5, 1.0, 'Veracidad promedio de los Tweets por pais')



Veracidad de los tweets cuando la locacion es “valida”

[48]:
```
Tweets_Location_Valida = Tweets_Paises['Cantidad_Tweets'].sum()
Tweets_Location_Valida
```

[48]: 2935

[49]:
```
Tweets_Location_Valida_Verdaderos  =␣
 ↪Tweets_Paises['Cantidad_Tweets_Verdaderos'].sum()
Tweets_Location_Valida_Verdaderos
```

[49]: 1334

[50]:
```
float(Tweets_Paises['Cantidad_Tweets_Verdaderos'].sum())/
 ↪float(Tweets_Paises['Cantidad_Tweets'].sum())
```

[50]:
```
0.4545144804088586
```

---

[51]:
```
Tweets_Location_Invalida_Verdaderos = (tweets['target'].sum() -␣
 ↪Tweets_Paises['Cantidad_Tweets_Verdaderos'].sum())
Tweets_Location_Invalida_Verdaderos
```

[51]:
```
1937
```

[52]:
```
Tweets_Location_Invalida = (tweets['id'].count() -␣
 ↪Tweets_Paises['Cantidad_Tweets'].sum())
Tweets_Location_Invalida
```

[52]:
```
4678
```

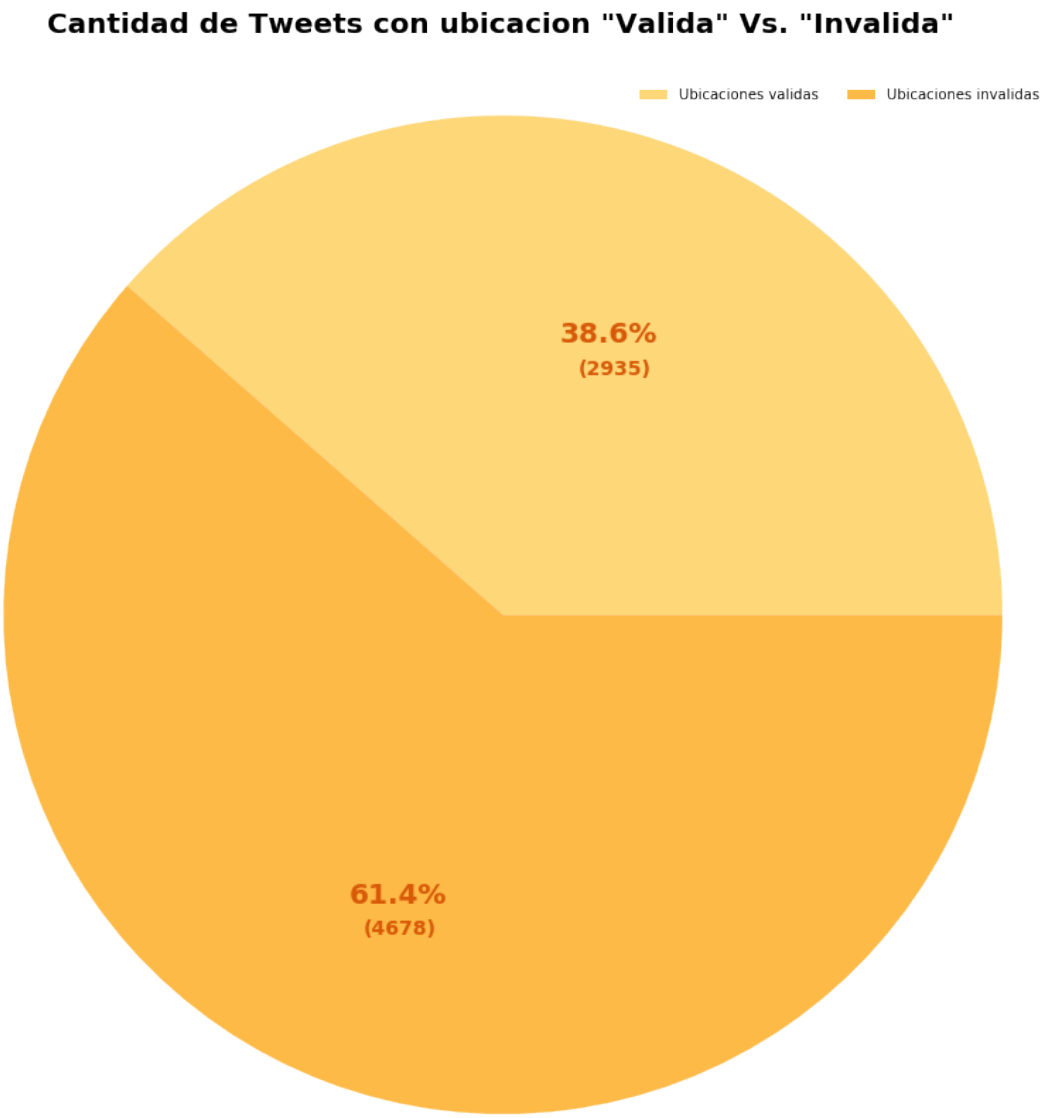
[53]:
```
float(Tweets_Location_Invalida_Verdaderos)/float(Tweets_Location_Invalida)
```

[53]:
```
0.41406584010260794
```

[54]:
```
cantidad_segun_validez = (Tweets_Location_Valida, Tweets_Location_Invalida)
```

[55]:
```
cmap = cm.get_cmap('YlOrBr')
saltos = np.linspace(0.3, 0.7, 20)
colores = cmap(saltos)

plt.figure(figsize=(14,14))
pie_chart = plt.subplot()


a,b, autotexts = pie_chart.pie(cantidad_segun_validez, colors= [colores[0],␣
 ↪colores[5]], autopct='%1.1f%%')

for autotext in autotexts:
    autotext.set_color(color=colores[19])
    autotext.set_fontsize(20)
    autotext.set_fontweight('bold')


pie_chart.text(0.15, 0.48, '(' + str(cantidad_segun_validez[0])+')',␣
 ↪color=colores[19], fontweight='bold', fontsize=14)
pie_chart.text(-0.28, -0.64, '(' +str(cantidad_segun_validez[1])+')',␣
 ↪color=colores[19], fontweight='bold', fontsize=14)
```

```
pie_chart.legend(["Ubicaciones validas", "Ubicaciones invalidas"],␣
 ↪frameon=False, loc='best', ncol=2)
plt.title('Cantidad de Tweets con ubicacion "Valida" Vs. "Invalida"',␣
 ↪weight='bold', size=20, pad=30)
plt.axis('equal')
plt.show()
```



Cuando la location es invalida hay una ligera diferencia entre la veracidad de los Tweets

[56]:
```
ciudades_list = ciudades_list.reset_index(drop = True)
```

[57]:
```
ciudades = ciudades.drop_duplicates('city_ascii', keep = 'first')
```

[58]:
```
ciudades = ciudades.reset_index(drop = True) # A ciudades_list ya le habia␣
↪hecho el drop_duplicates antes.
```

[59]:
```
ciudades_list['cant_habitantes'] = ciudades['population']
```

[60]:
```
ciudades_list
```

[60]:

	city_ascii	ocurrencia	veracidad	cant_verdaderos	Pais	\
0	Tokyo	8	0.500000	4	Japan	
1	New York	131	0.320611	42	United States	
2	Mexico City	1	0.000000	0	Mexico	
3	Mumbai	31	0.838710	26	India	
4	Sao Paulo	2	0.500000	1	Brazil	
…	…	…	…	…	…	
13477	Timmiarmiut	0	0.000000	0	Greenland	
13478	Cheremoshna	0	0.000000	0	Ukraine	
13479	Ambarchik	0	0.000000	0	Russia	
13480	Nordvik	0	0.000000	0	Russia	
13481	Ennadai	0	0.000000	0	Canada	

	cant_habitantes
0	35676000.0
1	19354922.0
2	19028000.0
3	18978000.0
4	18845000.0
…	…
13477	10.0
13478	0.0
13479	0.0
13480	0.0
13481	0.0

[13482 rows x 6 columns]

[61]:
```
Ciudades_Mas_De_5_Tweets = (ciudades_list.loc[:,'ocurrencia'] > 5)
```

[62]:
```
cmap = cm.get_cmap('YlOrBr')
paleta = cmap(np.linspace(0.3, 0.9,100))

colores_rgb = []
for i in paleta:
    #convierto rgba en rgb
    aux = list(i)
    del aux[3]
    aux = (int(x * 255) for x in aux)
    aux =tuple(aux)
```

```
    colores_rgb.append((aux))
```

[63]:
```
type(colores_rgb)
```

[63]:
```
list
```

[64]:
```
# prepare some data
x = ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['veracidad']
y = ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['ocurrencia']
radii = np.sqrt(ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['cant_habitantes'])/
 ↪7e4
colors = [
    "#%02x%02x%02x" % i for i in colores_rgb
]

# output to static HTML file (with CDN resources)
output_file("Veracidad_Vs_Cantidad de Tweets.html", title="color_scatter.py␣
 ↪example", mode="cdn")

TOOLS = "crosshair,pan,wheel_zoom,box_zoom,reset,box_select,lasso_select, save"

# create a new plot with the tools above, and explicit ranges
p = figure(tools=TOOLS, x_range=(0, 1), y_range=(0, 150), width=1000,␣
 ↪height=1000)

# add a circle renderer with vectorized colors and sizes
p.circle(x, y, radius=radii, fill_color=colors, fill_alpha=0.6, line_color=None)

p.title.text = "Veracidad Vs. Cantidad de Tweets (Por ciudad)"
p.legend.location = "top"
p.xaxis.axis_label = 'Veracidad promedio'
p.yaxis.axis_label = 'Cantidad de Tweets'

# show the results
show(p)
```

```
/home/riedel/anaconda3/lib/python3.7/site-packages/bokeh/models/plots.py:767:
UserWarning:
You are attempting to set `plot.legend.location` on a plot that has zero legends
added, this will have no effect.

Before legend properties can be set, you must add a Legend explicitly, or call a
glyph method with a legend parameter set.

  warnings.warn(_LEGEND_EMPTY_WARNING % attr)
```

[65]:
```
# prepare some data
x = ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['veracidad']
y = ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['cant_habitantes']/1e5
radii = np.sqrt(ciudades_list.loc[Ciudades_Mas_De_5_Tweets]['ocurrencia'])/1e2
# output to static HTML file (with CDN resources)
output_file("Veracidad_Vs_Cantidad de Habitantes.html", title="color_scatter.py␣
 ↪example", mode="cdn")

TOOLS = "crosshair,pan,wheel_zoom,box_zoom,reset,box_select,lasso_select, save"

# create a new plot with the tools above, and explicit ranges
q = figure(tools=TOOLS, x_range=(0, 1), y_range=(0, 150), width=800,␣
 ↪height=1000)

# add a circle renderer with vectorized colors and sizes
q.circle(x, y, radius=radii, fill_color=colors, fill_alpha=0.6, line_color=None)

q.title.text = "Veracidad Vs. Cantidad de Habitantes (Por ciudad)"
q.legend.location = "top"
q.xaxis.axis_label = 'Veracidad promedio'
q.yaxis.axis_label = 'Cantidad de Habitantes (x1e5)'

# show the results
show(q)
```

```
/home/riedel/anaconda3/lib/python3.7/site-packages/bokeh/models/plots.py:767:
UserWarning:
You are attempting to set `plot.legend.location` on a plot that has zero legends
added, this will have no effect.

Before legend properties can be set, you must add a Legend explicitly, or call a
glyph method with a legend parameter set.

  warnings.warn(_LEGEND_EMPTY_WARNING % attr)
```

[66]:
```
world = geopandas.read_file(geopandas.datasets.get_path('naturalearth_lowres'))
```

[67]:
```
world.head()
```

[67]:

	pop_est	continent	name	iso_a3	gdp_md_est	geometry
0	920938	Oceania	Fiji	FJI	8374.0	
1	53950935	Africa	Tanzania	TZA	150600.0	
2	603253	Africa	W. Sahara	ESH	906.5	
3	35623680	North America	Canada	CAN	1674000.0	
4	326625791	North America	United States of America	USA	18560000.0	

```
0  MULTIPOLYGON (((180.00000 -16.06713, 180.00000…
1  POLYGON ((33.90371 -0.95000, 34.07262 -1.05982…
2  POLYGON ((-8.66559 27.65643, -8.66512 27.58948…
3  MULTIPOLYGON (((-122.84000 49.00000, -122.9742…
4  MULTIPOLYGON (((-122.84000 49.00000, -120.0000…
```

[68]:
```
world.count()
```

[68]:
```
pop_est       177
continent     177
name          177
iso_a3        177
gdp_md_est    177
geometry      177
dtype: int64
```

[69]:
```
iso3 = pd.DataFrame({'iso3': ciudades['iso3']})
iso3 = iso3.drop_duplicates('iso3', keep = 'first')
iso3 = iso3.reset_index(drop = True)
Tweets_Paises['iso3']=iso3['iso3']
```

[70]:
```
#CUIDADO AL EJECUTAR ESTO
for w in range(world['name'].count()):

    code_pais = world.loc[w, 'iso_a3']

    el_code_es_del_pais = Tweets_Paises.loc[:, 'iso3'] == code_pais

    codigo_del_pais = Tweets_Paises.loc[el_code_es_del_pais]

    world.loc[w, 'veracidad'] = np.nan

    if codigo_del_pais['Cantidad_Tweets'].sum() > 5:

        world.loc[w, 'veracidad'] = codigo_del_pais['Veracidad'].sum()
```

[71]:
```
world
```

[71]:
```
       pop_est      continent                      name iso_a3  gdp_md_est  \
0       920938        Oceania                      Fiji    FJI      8374.0
1     53950935         Africa                  Tanzania    TZA    150600.0
2       603253         Africa                W. Sahara    ESH       906.5
3     35623680  North America                    Canada    CAN   1674000.0
4    326625791  North America  United States of America    USA  18560000.0
..         …            …                         …    …         …
172    7111024         Europe                    Serbia    SRB    101800.0
173     642550         Europe                Montenegro    MNE     10610.0
```

```
174    1895250         Europe                    Kosovo    -99     18490.0
175    1218208  North America       Trinidad and Tobago    TTO     43570.0
176   13026129         Africa                   S. Sudan    SSD     20880.0

                                                geometry  veracidad
0    MULTIPOLYGON (((180.00000 -16.06713, 180.00000…        NaN
1    POLYGON ((33.90371 -0.95000, 34.07262 -1.05982…        NaN
2    POLYGON ((-8.66559 27.65643, -8.66512 27.58948…        NaN
3    MULTIPOLYGON (((-122.84000 49.00000, -122.9742…   0.531532
4    MULTIPOLYGON (((-122.84000 49.00000, -120.0000…   0.440189
..                                                 …        …
172  POLYGON ((18.82982 45.90887, 18.82984 45.90888…        NaN
173  POLYGON ((20.07070 42.58863, 19.80161 42.50009…        NaN
174  POLYGON ((20.59025 41.85541, 20.52295 42.21787…        NaN
175  POLYGON ((-61.68000 10.76000, -61.10500 10.890…        NaN
176  POLYGON ((30.83385 3.50917, 29.95350 4.17370, …        NaN

[177 rows x 7 columns]
```

[72]:
```
#CUIDADO AL EJECUTAR ESTO
for z in range(world['name'].count()):

    code_pais = world.loc[z, 'iso_a3']

    el_code_es_del_pais = Tweets_Paises.loc[:, 'iso3'] == code_pais

    codigo_del_pais = Tweets_Paises.loc[el_code_es_del_pais]

    world.loc[z, 'veracidad'] = np.nan

    if codigo_del_pais['Cantidad_Tweets'].sum() > 5:

        world.loc[z, 'Cantidad_Tweets'] = np.
↪log2(codigo_del_pais['Cantidad_Tweets'].sum())
```

[73]:
```
#CUIDADO AL EJECUTAR ESTO
for w in range(world['name'].count()):

    code_pais = world.loc[w, 'iso_a3']

    el_code_es_del_pais = Tweets_Paises.loc[:, 'iso3'] == code_pais

    codigo_del_pais = Tweets_Paises.loc[el_code_es_del_pais]

    world.loc[w, 'veracidad'] = np.nan

    if codigo_del_pais['Cantidad_Tweets'].sum() > 1:
```

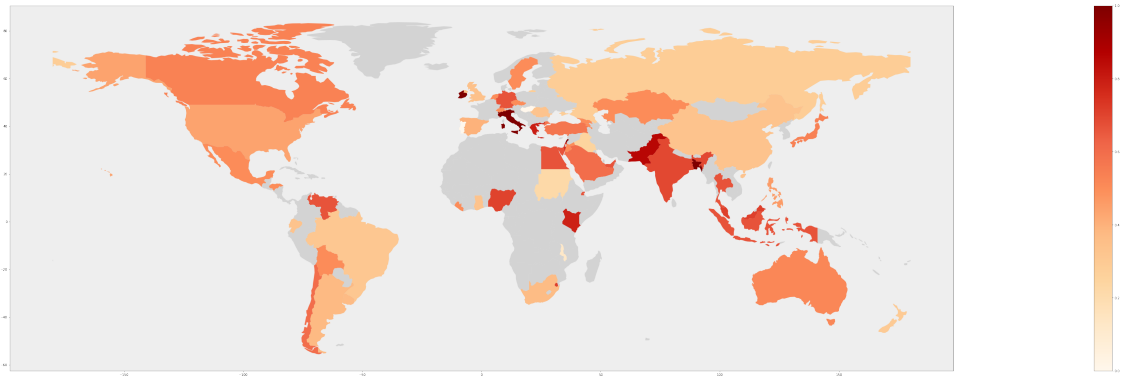
```
        world.loc[w, 'veracidad'] = codigo_del_pais['Veracidad'].sum()
```

[74]:
```
world
```

[74]:
```
       pop_est      continent                      name iso_a3  gdp_md_est  \
0       920938        Oceania                      Fiji    FJI      8374.0
1     53950935         Africa                  Tanzania    TZA    150600.0
2       603253         Africa                 W. Sahara    ESH       906.5
3     35623680  North America                    Canada    CAN   1674000.0
4    326625791  North America  United States of America    USA  18560000.0
..         …            …                         …    …         …
172    7111024         Europe                    Serbia    SRB    101800.0
173     642550         Europe                Montenegro    MNE     10610.0
174    1895250         Europe                    Kosovo    -99     18490.0
175    1218208  North America      Trinidad and Tobago    TTO     43570.0
176   13026129         Africa                   S. Sudan    SSD     20880.0

                                              geometry  veracidad  \
0    MULTIPOLYGON (((180.00000 -16.06713, 180.00000…        NaN
1    POLYGON ((33.90371 -0.95000, 34.07262 -1.05982…        NaN
2    POLYGON ((-8.66559 27.65643, -8.66512 27.58948…        NaN
3    MULTIPOLYGON (((-122.84000 49.00000, -122.9742…   0.531532
4    MULTIPOLYGON (((-122.84000 49.00000, -120.0000…   0.440189
..                                                 …        …
172  POLYGON ((18.82982 45.90887, 18.82984 45.90888…        NaN
173  POLYGON ((20.07070 42.58863, 19.80161 42.50009…        NaN
174  POLYGON ((20.59025 41.85541, 20.52295 42.21787…        NaN
175  POLYGON ((-61.68000 10.76000, -61.10500 10.890…        NaN
176  POLYGON ((30.83385 3.50917, 29.95350 4.17370, …        NaN

     Cantidad_Tweets
0                NaN
1                NaN
2                NaN
3           6.794416
4          10.896332
..               …
172              NaN
173              NaN
174              NaN
175              NaN
176              NaN

[177 rows x 8 columns]
```

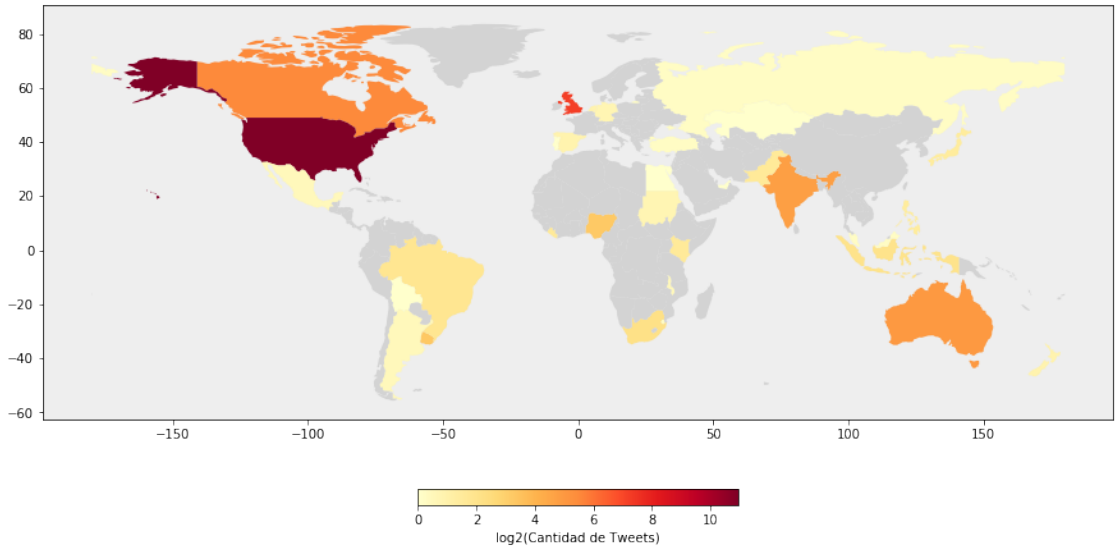
[75]:
```
fig, ax = plt.subplots(figsize = (150, 20))
saltos = np.linspace(0.2, 1, 100)
cmap(saltos)
world = world[world.name!="Antarctica"]

ax.patch.set_facecolor('#eeeeee')
world.plot(column='veracidad', ax = ax, legend = True, cmap='OrRd',␣
 ↪missing_kwds={'color': 'lightgrey'})
```

[75]: <matplotlib.axes._subplots.AxesSubplot at 0x7f1404579f10>



[76]:
```
fig, ax = plt.subplots(figsize = (15, 20))
world = world[world.name!="Antarctica"]
ax.patch.set_facecolor('#eeeeee')
topes = mpl.colors.Normalize(vmin=0, vmax=np.log2(2000))
plt.colorbar(cm.ScalarMappable(norm=topes, cmap=cm.get_cmap("YlOrRd")),␣
 ↪label='log2(Cantidad de Tweets)', \
             orientation='horizontal', shrink=0.3, pad=0.05)
world.plot(column='Cantidad_Tweets', ax = ax, cmap='YlOrRd',␣
 ↪missing_kwds={'color': 'lightgrey'})
```

[76]: <matplotlib.axes._subplots.AxesSubplot at 0x7f14041fd310>


80
60
40
20
0
−20
−40
−60
−150
−100
−50
0
50
100
150
0
2
4
6
8
10
log2(Cantidad de Tweets)

[ ]: