THE_UR_Global_Peers_Research_Performance_Profile_0113update (3)

January 13, 2020

1 Install packages

```
In [3]: import tensorflow as tf

In [10]: from sklearn.cluster import KMeans

In [12]: import pandas as pd

In [13]: import numpy as np
```

2 Plot distribution of USA universities CitationCounts

```
In [1112]: cd "C:\Users\jchen148\THE Rankings\Report to Jane"

C:\Users\jchen148\THE Rankings\Report to Jane


In [1113]: citation = pd.read_csv('Updated_THE_Ranked_Universites_CitationCounts_2014_2018.csv

           citation.head()
```

Out[1113]:

	Country	CountryCode	Uid	UniversityName	metric	Citation2014	Citation2015	Citation2016	Citation2017
0	United States	USA	508076	Harvard University	CitationCount	837994.0	686576.0	529054.0	363995.0
1	United States	USA	508219	Stanford University	CitationCount	404346.0	363567.0	282005.0	194136.0
2	Canada	CAN	501048	University of Toronto	CitationCount	360177.0	344355.0	254462.0	172125.0
3	United States	USA	508094	Johns Hopkins University	CitationCount	324631.0	289131.0	218379.0	147459.0
4	United Kingdom	GBR	315091	University of Oxford	CitationCount	355751.0	313129.0	238271.0	149907.0

```
   Citation2018
0      172830.0
1       95069.0
2       86219.0
3       77682.0
4       75747.0
```

```
In [1114]: totalcitation=citation['Citation2014']+citation['Citation2015']+citation['Citation2
```

```
In [1115]: citation['Total']=totalcitation
```

```
In [1116]: citation.head()
```

```
           citation.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1002 entries, 0 to 1001
Data columns (total 11 columns):
Country           1002 non-null object
CountryCode       1002 non-null object
Uid               1002 non-null int64
UniversityName    1002 non-null object
metric            1002 non-null object
Citation2014      998 non-null float64
Citation2015      995 non-null float64
Citation2016      998 non-null float64
Citation2017      1000 non-null float64
Citation2018      1001 non-null float64
Total             993 non-null float64
dtypes: float64(6), int64(1), object(4)
memory usage: 86.2+ KB
```

```
In [1119]: changedtype=lambda x: int(x)
```

```
In [31]: #citation.fillna(0)
```

```
         for i in range(0,len(citation)):
             if citation.loc[i]['Citation2014'] is np.nan:
                 print("yes")
```

```
In [1117]: citation['Citation2014'].isnull()
```

```
           citation=citation.fillna(0)
```

3 change all citationcount to int64

```
In [1120]: citation['Citation2018']=citation['Citation2018'].apply(changedtype)
```

```
In [1121]: citation['Citation2017']=citation['Citation2017'].apply(changedtype)

In [1122]: citation['Citation2016']=citation['Citation2016'].apply(changedtype)

In [1123]: citation['Citation2015']=citation['Citation2015'].apply(changedtype)

In [1124]: citation['Citation2014']=citation['Citation2014'].apply(changedtype)

In [1125]: citation.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1002 entries, 0 to 1001
Data columns (total 11 columns):
Country           1002 non-null object
CountryCode       1002 non-null object
Uid               1002 non-null int64
UniversityName    1002 non-null object
metric            1002 non-null object
Citation2014      1002 non-null int64
Citation2015      1002 non-null int64
Citation2016      1002 non-null int64
Citation2017      1002 non-null int64
Citation2018      1002 non-null int64
Total             1002 non-null float64
dtypes: float64(1), int64(6), object(4)
memory usage: 86.2+ KB


In [1126]: citation.head()

Out[1126]:
```

	Country	CountryCode	Uid	UniversityName	metric	Citation2014	Citation2015	Citation2016	Citation2017	Citation2018	Total
0	United States	USA	508076	Harvard University	CitationCount	837994	686576	529054	363995	172830	2590449.0
1	United States	USA	508219	Stanford University	CitationCount	404346	363567	282005	194136	95069	1339123.0
2	Canada	CAN	501048	University of Toronto	CitationCount	360177	344355	254462	172125	86219	1217338.0
3	United States	USA	508094	Johns Hopkins University	CitationCount	324631	289131	218379	147459	77682	1057282.0
4	United Kingdom	GBR	315091	University of Oxford	CitationCount	355751	313129	238271	149907	75747	1132805.0

```
In [1127]: new=citation.sort_values(['CountryCode','Total'], ascending=False)
           new.head()
```

Out[1127]:

	Country	CountryCode	Uid	UniversityName
334	South Africa	ZAF	115007	University of Pretoria
307	South Africa	ZAF	115005	University of Johannesburg
369	South Africa	ZAF	115001	North West University
575	South Africa	ZAF	115010	University of the Western Cape
586	South Africa	ZAF	115003	Tshwane University of Technology

	metric	Citation2014	Citation2015	Citation2016	Citation2017
334	CitationCount	20169	20294	18564	12800
307	CitationCount	13732	17059	16450	12228
369	CitationCount	9833	8025	14378	13220
575	CitationCount	9538	8008	7081	5315
586	CitationCount	3215	2665	2844	3173

	Citation2018	Total
334	5918	77745.0
307	6622	66091.0
369	5225	50681.0
575	2365	32307.0
586	2271	14168.0

4 Filtered the universities in USA

```
In [1128]: USdata=new[new['CountryCode']=='USA']

In [1129]: USdata.head()
```

Out[1129]:

	Country	CountryCode	Uid	UniversityName
0	United States	USA	508076	Harvard University
1	United States	USA	508219	Stanford University
3	United States	USA	508094	Johns Hopkins University
6	United States	USA	508358	University of Washington
11	United States	USA	508111	Massachusetts Institute of Technology

	metric	Citation2014	Citation2015	Citation2016	Citation2017
0	CitationCount	837994	686576	529054	363995
1	CitationCount	404346	363567	282005	194136
3	CitationCount	324631	289131	218379	147459
6	CitationCount	314702	269985	218378	150820
11	CitationCount	285399	241655	186864	121031

	Citation2018	Total
0	172830	2590449.0
1	95069	1339123.0
3	77682	1057282.0

```
6          70792  1024677.0
11         57319   892268.0
```

5 Use seaborn

```
In [1130]: import numpy as np
           import pandas as pd
           import seaborn as sns
           import matplotlib.pyplot as plt
           from scipy import stats

In [1131]: sns.set(color_codes=True)

In [1132]: USpartial=USdata.loc[:][['UniversityName','Total']]

In [1133]: USpartial.head()

           USpartial2=USpartial.reset_index()

           USpartial2=USpartial2.iloc[:,1:]

           USpartial2.head()

Out[1133]:                          UniversityName      Total
           0                    Harvard University  2590449.0
           1                   Stanford University  1339123.0
           2              Johns Hopkins University  1057282.0
           3              University of Washington  1024677.0
           4  Massachusetts Institute of Technology   892268.0

In [1134]: target=USpartial2[USpartial2['UniversityName']=='University of Rochester']

           target.head()

Out[1134]:              UniversityName     Total
           28  University of Rochester  254555.0
```

6 Change datatype to int64

```
In [1135]: target.loc[:]['Total']=target['Total'].astype(int)

In [1136]: target.head()

Out[1136]:              UniversityName     Total
           28  University of Rochester  254555.0

In [1137]: USpartial2.head()

           USpartial2.set_index('UniversityName')

           USpartial2.loc[:]['Total']=USpartial2['Total'].astype(int)
```

```
In [1138]: USpartial2=USpartial2.set_index('UniversityName')

In [1139]: USpartial2.head()

Out[1139]:                                          Total
           UniversityName
           Harvard University                    2590449.0
           Stanford University                   1339123.0
           Johns Hopkins University              1057282.0
           University of Washington              1024677.0
           Massachusetts Institute of Technology  892268.0

In [1140]: target.head()

           target.set_index('UniversityName')

Out[1140]:                             Total
           UniversityName
           University of Rochester  254555.0

In [1141]: target=target.set_index('UniversityName')

In [1142]: target.head()

Out[1142]:                             Total
           UniversityName
           University of Rochester  254555.0

In [1143]: len(USpartial2)

Out[1143]: 153
```

7 THE has 163 USA Universities ranking in top 300.

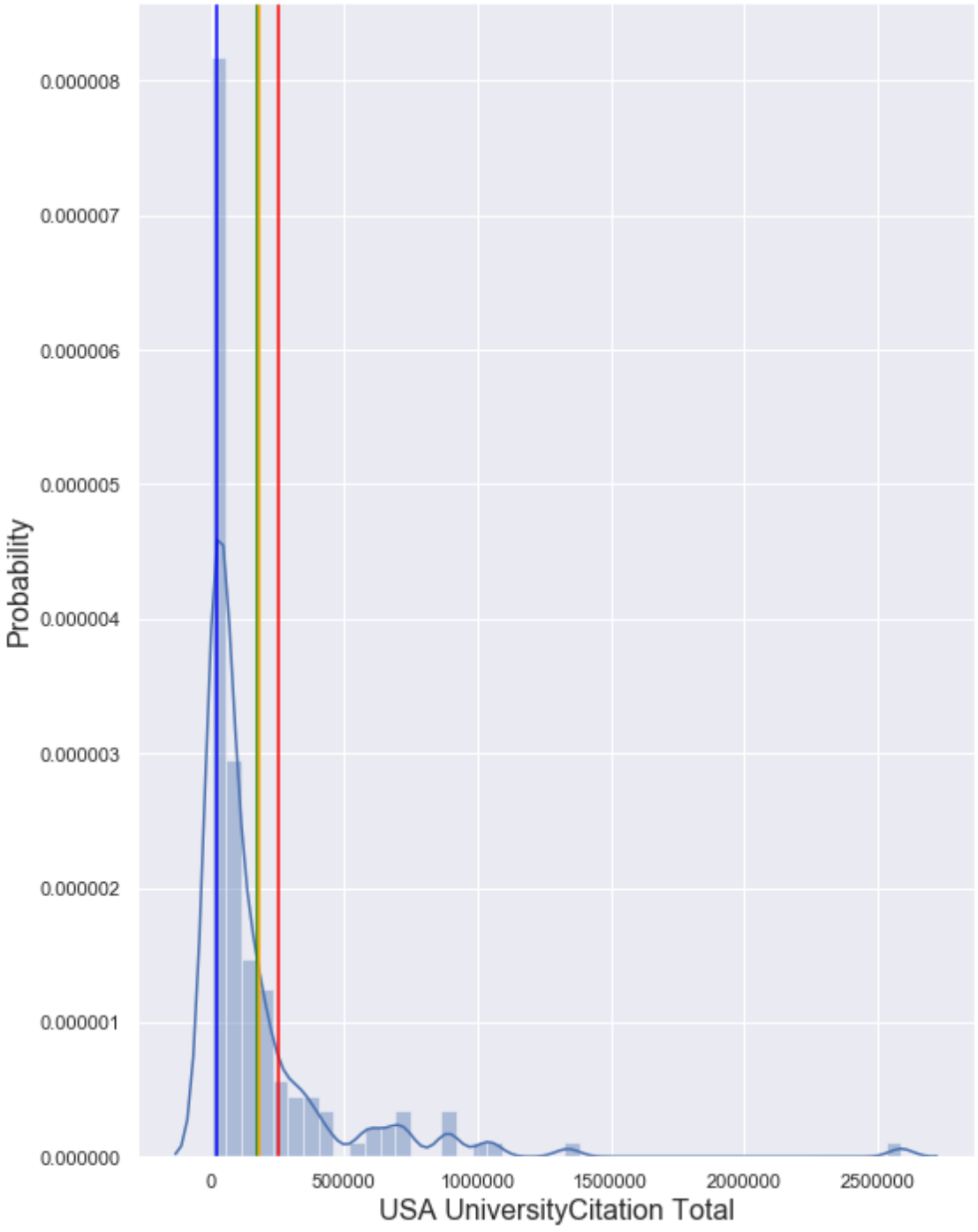
8 Below is the distribution plot of the total CitationCount

9 from 2014 to 2018.

10 And we can see where UofR lies.

```
In [1144]: import pandas as pd
           fig, ax = plt.subplots(figsize=(8,10))
           x = pd.Series(USpartial2['Total'], name="CitationCount Total")
           ax = sns.distplot(x)

           ax.set_xlabel("USA UniversityCitation Total",fontsize=16)
           ax.set_ylabel("Probability",fontsize=16)
           plt.axvline(254555, color='red') # this is where U of R
```

```
plt.axvline(np.mean(USpartial2['Total']), color='green') # this is the mean, 175882
plt.axvline(np.percentile(USpartial2['Total'], 25.0), color='blue') # Q1
plt.axvline(np.percentile(USpartial2['Total'], 75.0), color='orange') # Q3
#plt.legend()
plt.tight_layout()
```



We can see it is a highly right-skewed distribution,

and the mean, which is the green line, and Q3,

which is the orange line are very close.

UofR has the CitationCounts much above Q3.

```
In [147]: import matplotlib
          from matplotlib import mlab
          import matplotlib.pyplot as plt
          import numpy as np
          import matplotlib.dates as mdates
          import matplotlib.pyplot as plt

In [152]: np.percentile(USpartial2['Total'], np.array([25.0,75.0]))

Out[152]: array([ 24316., 180027.])

In [122]: target

Out[122]:                          Total
          UniversityName
          University of Rochester  254555

In [136]: np.round(np.mean(USpartial2['Total']), 2)

Out[136]: 175882.56
```

The following are data cleaning process,

and how to use Python Requests to retrieve

data from Scopus and SciVal REST APIs

```
In [ ]: school_list = open(r"C:\Users\jchen148\THE Rankings\Report to Jane\THE_School_List_OK.t

        school_name=school_list.read()

In [ ]: import pandas as pd
        t = school_name

        data=[]

        for i in t.split("\n"):
            if i[:1].isdigit():
                data.append(" ".join(i.split(" ")[:20]))
                print(" ".join(i.split(" ")[:20]))
```

```
        data_want = pd.DataFrame(data, columns=['Scool Name'])


        data_want.to_csv("all_university_name.csv", index=False)  # all the university name
```

In [ ]:
```
# cleaned all the ranks and leadning and trailing whitespace

t = school_name

uni_name = []

for i in t.split("\n"):
    if i[:1].isdigit():
        uni_name.append(" ".join(i.split(" ")[-5:]))
        print(" ".join(i.split(" ")[-5:]))
        uni_name.append(" ".join(i.split(" ")[-5:]))
```

In [ ]:
```
# remove trailing whitespace

import re
import string

cleaned=[]

for line in uni_name:
    line=str(line)
#    print(line.strip(' \t\n\r'))
#    print(line.rstrip(string.digits))
#    print(re.sub('^\d+[\W_]+', '', line))
    want_data = re.sub('^\d+[\W_]+', '', line)
    print(want_data.strip())
    cleaned.append(want_data.strip())
```

In [ ]:
```
# remove existing numbers

import string
import re

want_3=[]

for name in cleaned:
    print(name)
    print(re.sub('^\d+[\W_]+','',name))
    want_3.append(re.sub('^\d+[\W_]+','',name))
```

In [11]:
```
want_3.append('University of Rochester')
```

```
In [15]: DF={}

         DF=pd.DataFrame({'UniName':want_3})

In [17]: DF=DF.drop_duplicates()

In [19]: DF=DF.reset_index()

In [21]: DF=DF.iloc[:,1]

In [25]: DF=pd.DataFrame(DF)

In [26]: DF.to_csv("UniNameList_OK.csv", index=False)
```

18 Use APIs

```
In [ ]: for line in want_3:
            url= "https://api.elsevier.com/metrics/institution/search?query=name("+line+")"
        #    print(url)
```

19 Combine all the Uids to retrieve data from APIs

```
In [11]: import requests
         import json

In [14]: # add "Emory University" country code and university id

         UniversityName=[]
         Universityid=[]
         Country=[]
         CountryCode=[]

         url='https://api.elsevier.com/analytics/scival/institution/search?query=name(Emory%20U

         resp = requests.get(url, headers={'Accept':'application/json',
                                           'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
         parsed=json.dumps(resp.json(),
                           sort_keys=True,
                           indent=4, separators=(',', ': '))
         #    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
         #        json.dump(resp.json(), jsonfile)
         #    print(parsed)
         #    data.update(a_dict)
         result=json.loads(parsed)
         UniversityName.append(result['results'][0]['name'])
         Universityid.append(result['results'][0]['id'])
         Country.append(result['results'][0]['country'])
         CountryCode.append(result['results'][0]['countryCode'])
```

```
        ELmory=pd.DataFrame({'University Name':UniversityName, 'University id':Universityid,
                             'Country Code': CountryCode})
```

In [34]:
```
filename='THE_CountryCode_Result_1202_{}'

for i in range(1,14):
    print(filename.format(i))
```

```
THE_CountryCode_Result_1202_1
THE_CountryCode_Result_1202_2
THE_CountryCode_Result_1202_3
THE_CountryCode_Result_1202_4
THE_CountryCode_Result_1202_5
THE_CountryCode_Result_1202_6
THE_CountryCode_Result_1202_7
THE_CountryCode_Result_1202_8
THE_CountryCode_Result_1202_9
THE_CountryCode_Result_1202_10
THE_CountryCode_Result_1202_11
THE_CountryCode_Result_1202_12
THE_CountryCode_Result_1202_13
```

In [47]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane
```

In [48]:
```
filename='THE_CountryCode_Result_1202_{}.csv'

chucks=[]

for i in range(1,14):
#    print(filename.format(i))
    chucks.append(pd.read_csv(filename.format(i)))

data=pd.concat(chucks, ignore_index=True)

data.head()
```

Out[48]:

	Unnamed: 0	University Name	University id	Country	Country Code
0	0	University of Oxford			
1	1	Jet Propulsion Laboratory, California Institut...			
2	2	California Institute of Technology			
3	3	University of Cambridge			
4	4	Stanford University			

```
0         315091  United Kingdom          GBR
1         508092   United States          USA
2         508021   United States          USA
3         315068  United Kingdom          GBR
4         508219   United States          USA
```

```
In [49]: len(data)
```

```
Out[49]: 1272
```

```
In [50]: del data['Unnamed: 0']
```

```
In [26]: ELmory
```

```
Out[26]:     University Name  University id        Country Country Code
         0  Emory University         508059  United States          USA
```

```
In [51]: data=pd.concat([data, ELmory]).drop_duplicates()
```

```
In [52]: data.head()
```

```
Out[52]:                                    University Name  University id  \
         0                              University of Oxford         315091
         1  Jet Propulsion Laboratory, California Institut...         508092
         2                 California Institute of Technology         508021
         3                            University of Cambridge         315068
         4                                Stanford University         508219

                  Country Country Code
         0  United Kingdom          GBR
         1   United States          USA
         2   United States          USA
         3  United Kingdom          GBR
         4   United States          USA
```

```
In [31]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\Input Data"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\Input Data
```

```
In [32]: data.to_csv("THE_Universities_SciVal_Uids_1008.csv", index=False)
```

20 Use SciVal institution metrics API

```
In [42]: # https://api.elsevier.com/analytics/scival/institution/metrics
```

```
In [53]: data.tail()
```

```
Out[53]:                                  University Name  University id  \
         1268        Imam Abdulrahman Bin Faisal University         703099
         1269                    Istanbul Medipol University         705124
         1270  Ivane Javakhishvili Tbilisi State University         204001
         1271                        University of Rochester         508335
         0                                 Emory University         508059

                Country Country Code
         1268   Saudi Arabia          SAU
         1269         Turkey          TUR
         1270        Georgia          GEO
         1271  United States          USA
         0     United States          USA

In [54]: data.reset_index(inplace=True)

In [57]: data=data.iloc[:,1:]

In [58]: data.tail()

Out[58]:                                  University Name  University id  \
         1003        Imam Abdulrahman Bin Faisal University         703099
         1004                    Istanbul Medipol University         705124
         1005  Ivane Javakhishvili Tbilisi State University         204001
         1006                        University of Rochester         508335
         1007                                 Emory University         508059

                Country Country Code
         1003   Saudi Arabia          SAU
         1004         Turkey          TUR
         1005        Georgia          GEO
         1006  United States          USA
         1007  United States          USA

In [64]: for line in data['University id'][:2]:
             print(line)

315091
508092
```

21 ScholarlyOutput

```
In [59]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput
```

In [60]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(2)

inst_country=[]
inst_cc=[]
inst_id=[]
inst_link=[]
inst_name=[]
metricType=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]


for line in data['University id'][1000:]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Ci
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if result['results'] is not None:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                   inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                   inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                   inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                   inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                   inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
```

```
                        if 'metricType' in result['results'][0]['metrics'][0]:
                            metricType.append(result['results'][0]['metrics'][0]['metricType']
                        if 'valueByYear' in result['results'][0]['metrics'][0]:
                            if '2014' in result['results'][0]['metrics'][0]['valueByYear']:
                                value2014.append(result['results'][0]['metrics'][0]['valueByYe
                            if '2015' in result['results'][0]['metrics'][0]['valueByYear']:
                                value2015.append(result['results'][0]['metrics'][0]['valueByYe
                            if '2016' in result['results'][0]['metrics'][0]['valueByYear']:
                                value2016.append(result['results'][0]['metrics'][0]['valueByYe
                            if '2017' in result['results'][0]['metrics'][0]['valueByYear']:
                                value2017.append(result['results'][0]['metrics'][0]['valueByYe
                            if '2018' in result['results'][0]['metrics'][0]['valueByYear']:
                                value2018.append(result['results'][0]['metrics'][0]['valueByYe

        s1=pd.Series(inst_country, name='country')
        s2=pd.Series(inst_cc, name='countryCode')
        s3=pd.Series(inst_id, name='institution_id')
        s4=pd.Series(inst_link, name='link')
        s5=pd.Series(inst_name, name='institution_name')
        s6=pd.Series(metricType, name='metricType')
        s7=pd.Series(value2014, name='2014')
        s8=pd.Series(value2015, name='2015')
        s9=pd.Series(value2016, name='2016')
        s10=pd.Series(value2017, name='2017')
        s11=pd.Series(value2018, name='2018')


        DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
        DF.to_csv("THE_UNI_CitationCount_ALL_12.csv", index=False)
```

22 CitationCount, CitedPublications, FWCI, and PublicationinTopJournal Percentile

```
In [122]: # FWCI
```

```
In [61]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI
```

```
In [63]: import requests
         import json
         import pandas as pd
         import numpy as np
         from time import sleep
         sleep(2)

         inst_country=[]
```

```
inst_cc=[]
inst_id=[]
inst_link=[]
inst_name=[]
metricType=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]
percentage2014=[]
percentage2015=[]
percentage2016=[]
percentage2017=[]
percentage2018=[]


for line in data['University id'][1000:]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Fi
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if result['results'] is not None:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                   inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                   inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                   inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                   inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                   inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
                   if 'metricType' in result['results'][0]['metrics'][0]:
                       metricType.append(result['results'][0]['metrics'][0]['metricType']
                   if 'valueByYear' in result['results'][0]['metrics'][0]:
```

```
                    if '2014' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2014.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2015' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2015.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2016' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2016.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2017' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2017.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2018' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2018.append(result['results'][0]['metrics'][0]['valueByYe
                if 'percentageByYear' in result['results'][0]['metrics'][0]:
                    if '2014' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2014.append(result['results'][0]['metrics'][0]['perc
                    if '2015' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2015.append(result['results'][0]['metrics'][0]['perc
                    if '2016' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2016.append(result['results'][0]['metrics'][0]['perc
                    if '2017' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2017.append(result['results'][0]['metrics'][0]['perc
                    if '2018' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2018.append(result['results'][0]['metrics'][0]['perc
                else:
                    percentage2014.append('')
                    percentage2015.append('')
                    percentage2016.append('')
                    percentage2017.append('')
                    percentage2018.append('')


s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
s7=pd.Series(value2014, name='2014')
s8=pd.Series(value2015, name='2015')
s9=pd.Series(value2016, name='2016')
s10=pd.Series(value2017, name='2017')
s11=pd.Series(value2018, name='2018')
#s12=pd.Series(percentage2014, name='percent2014')
#s13=pd.Series(percentage2015, name='percent2015')
#s14=pd.Series(percentage2016, name='percent2016')
#s15=pd.Series(percentage2017, name='percent2017')
#s16=pd.Series(percentage2018, name='percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
```

```
DF.to_csv("THE_UNI_FWCI_12.csv", index=False)
```

In [134]:
```
# CitationCount
```

In [133]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(2)

inst_country=[]
inst_cc=[]
inst_id=[]
inst_link=[]
inst_name=[]
metricType=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]
percentage2014=[]
percentage2015=[]
percentage2016=[]
percentage2017=[]
percentage2018=[]


for line in data['University id'][1000:]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Fi
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if result['results'] is not None:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
```

```
                inst_cc.append(result['results'][0]['institution']['countryCode'])
#             if 'id' in result['results'][0]['institution']:
                inst_id.append(result['results'][0]['institution']['id'])
#             if 'link' in result['results'][0]['institution']:
                inst_link.append(result['results'][0]['institution']['link'])
#             if 'name' in result['results'][0]['institution']:
                inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#             if len(result['results'][0]['metrics'])>=1:
                if 'metricType' in result['results'][0]['metrics'][0]:
                    metricType.append(result['results'][0]['metrics'][0]['metricType
                if 'valueByYear' in result['results'][0]['metrics'][0]:
                    if '2014' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2014.append(result['results'][0]['metrics'][0]['valueBy
                    if '2015' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2015.append(result['results'][0]['metrics'][0]['valueBy
                    if '2016' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2016.append(result['results'][0]['metrics'][0]['valueBy
                    if '2017' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2017.append(result['results'][0]['metrics'][0]['valueBy
                    if '2018' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2018.append(result['results'][0]['metrics'][0]['valueBy
                if 'percentageByYear' in result['results'][0]['metrics'][0]:
                    if '2014' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2014.append(result['results'][0]['metrics'][0]['per
                    if '2015' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2015.append(result['results'][0]['metrics'][0]['per
                    if '2016' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2016.append(result['results'][0]['metrics'][0]['per
                    if '2017' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2017.append(result['results'][0]['metrics'][0]['per
                    if '2018' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2018.append(result['results'][0]['metrics'][0]['per
                else:
                    percentage2014.append('')
                    percentage2015.append('')
                    percentage2016.append('')
                    percentage2017.append('')
                    percentage2018.append('')


s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
s7=pd.Series(value2014, name='2014')
```

```
s8=pd.Series(value2015, name='2015')
s9=pd.Series(value2016, name='2016')
s10=pd.Series(value2017, name='2017')
s11=pd.Series(value2018, name='2018')
#s12=pd.Series(percentage2014, name='percent2014')
#s13=pd.Series(percentage2015, name='percent2015')
#s14=pd.Series(percentage2016, name='percent2016')
#s15=pd.Series(percentage2017, name='percent2017')
#s16=pd.Series(percentage2018, name='percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
DF.to_csv("THE_UNI_FWCI_11.csv", index=False)
```

In [146]:
```
# CitedPublications
```

In [64]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

In [65]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(2)

inst_country=[]
inst_cc=[]
inst_id=[]
inst_link=[]
inst_name=[]
metricType=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]
percentage2014=[]
percentage2015=[]
percentage2016=[]
percentage2017=[]
percentage2018=[]


for line in data['University id'][1000:]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Ci
 #   print(url.format(line))
```

```
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if 'results' in result:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
                if 'metricType' in result['results'][0]['metrics'][0]:
                    metricType.append(result['results'][0]['metrics'][0]['metricType']
                if 'valueByYear' in result['results'][0]['metrics'][0]:
                    if '2014' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2014.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2015' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2015.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2016' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2016.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2017' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2017.append(result['results'][0]['metrics'][0]['valueByYe
                    if '2018' in result['results'][0]['metrics'][0]['valueByYear']:
                        value2018.append(result['results'][0]['metrics'][0]['valueByYe
                if 'percentageByYear' in result['results'][0]['metrics'][0]:
                    if '2014' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2014.append(result['results'][0]['metrics'][0]['perc
                    if '2015' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2015.append(result['results'][0]['metrics'][0]['perc
                    if '2016' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2016.append(result['results'][0]['metrics'][0]['perc
                    if '2017' in result['results'][0]['metrics'][0]['percentageByYear
                        percentage2017.append(result['results'][0]['metrics'][0]['perc
                    if '2018' in result['results'][0]['metrics'][0]['percentageByYear
```

```
                                percentage2018.append(result['results'][0]['metrics'][0]['per
                            else:
                                percentage2014.append('')
                                percentage2015.append('')
                                percentage2016.append('')
                                percentage2017.append('')
                                percentage2018.append('')


            s1=pd.Series(inst_country, name='country')
            s2=pd.Series(inst_cc, name='countryCode')
            s3=pd.Series(inst_id, name='institution_id')
            s4=pd.Series(inst_link, name='link')
            s5=pd.Series(inst_name, name='institution_name')
            s6=pd.Series(metricType, name='metricType')
            s7=pd.Series(value2014, name='2014')
            s8=pd.Series(value2015, name='2015')
            s9=pd.Series(value2016, name='2016')
            s10=pd.Series(value2017, name='2017')
            s11=pd.Series(value2018, name='2018')
            s12=pd.Series(percentage2014, name='percent2014')
            s13=pd.Series(percentage2015, name='percent2015')
            s14=pd.Series(percentage2016, name='percent2016')
            s15=pd.Series(percentage2017, name='percent2017')
            s16=pd.Series(percentage2018, name='percent2018')


            DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11,s12,s13,s14,s15,s16], axis=1)
            DF.to_csv("THE_UNI_CitedPublications_12.csv", index=False)

In [160]: #PublicationsInTopJournalPercentiles

In [186]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(2)

          inst_country=[]
          inst_cc=[]
          inst_id=[]
          inst_link=[]
          inst_name=[]
          metricType=[]
          threshold=[]
          t1_value2014=[]
          t1_value2015=[]
```

```
t1_value2016=[]
t1_value2017=[]
t1_value2018=[]
t1_percentage2014=[]
t1_percentage2015=[]
t1_percentage2016=[]
t1_percentage2017=[]
t1_percentage2018=[]
t5_value2014=[]
t5_value2015=[]
t5_value2016=[]
t5_value2017=[]
t5_value2018=[]
t5_percentage2014=[]
t5_percentage2015=[]
t5_percentage2016=[]
t5_percentage2017=[]
t5_percentage2018=[]
t10_value2014=[]
t10_value2015=[]
t10_value2016=[]
t10_value2017=[]
t10_value2018=[]
t10_percentage2014=[]
t10_percentage2015=[]
t10_percentage2016=[]
t10_percentage2017=[]
t10_percentage2018=[]
t25_value2014=[]
t25_value2015=[]
t25_value2016=[]
t25_value2017=[]
t25_value2018=[]
t25_percentage2014=[]
t25_percentage2015=[]
t25_percentage2016=[]
t25_percentage2017=[]
t25_percentage2018=[]



for line in data['University id'][:2]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Pu
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                sort_keys=True,
```

```
                indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if 'results' in result:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
                if 'metricType' in result['results'][0]['metrics'][0]:
                    metricType.append(result['results'][0]['metrics'][0]['metricType
                if 'values' in result['results'][0]['metrics'][0]:
                    if 'threshold' in result['results'][0]['metrics'][0]['values']:
                        threshold.append(result['results'][0]['metrics'][0]['values'
                    if 'valueByYear' in result['results'][0]['metrics'][0]['values']
                        if '2014' in result['results'][0]['metrics'][0]['values']['va
                            t1_value2014.append(result['results'][0]['metrics'][0]['
                        if '2015' in result['results'][0]['metrics'][0]['values']['va
                            t1_value2015.append(result['results'][0]['metrics'][0]['
                        if '2016' in result['results'][0]['metrics'][0]['values']['va
                            t1_value2016.append(result['results'][0]['metrics'][0]['
                        if '2017' in result['results'][0]['metrics'][0]['values']['va
                            t1_value2017.append(result['results'][0]['metrics'][0]['
                        if '2018' in result['results'][0]['metrics'][0]['values']['va
                            t1_value2018.append(result['results'][0]['metrics'][0]['
                    if 'percentageByYear' in result['results'][0]['metrics'][0]['valu
                        if '2014' in result['results'][0]['metrics'][0]['values'][0]
                            t1_percentage2014.append(result['results'][0]['metrics']
                        if '2015' in result['results'][0]['metrics'][0]['values'][0]
                            t1_percentage2015.append(result['results'][0]['metrics']
                        if '2016' in result['results'][0]['metrics'][0]['values'][0]
                            t1_percentage2016.append(result['results'][0]['metrics']
                        if '2017' in result['results'][0]['metrics'][0]['values'][0]
                            t1_percentage2017.append(result['results'][0]['metrics']
                        if '2018' in result['results'][0]['metrics'][0]['values'][0]
                            t1_percentage2018.append(result['results'][0]['metrics']
```

```
#                     else:
#                         t1_value2014.append('')
#                         t1_value2015.append('')
#                         t1_value2016.append('')
#                         t1_value2017.append('')
#                         t1_value2018.append('')
#                         t1_percentage2014.append('')
#                         t1_percentage2015.append('')
#                         t1_percentage2016.append('')
#                         t1_percentage2017.append('')
#                         t1_percentage2018.append('')

s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
s7=pd.Series(threshold, name='threshold')
s8=pd.Series(t1_value2014, name='2014')
s9=pd.Series(t1_value2015, name='2015')
s10=pd.Series(t1_value2016, name='2016')
s11=pd.Series(t1_value2017, name='2017')
s12=pd.Series(t1_value2018, name='2018')
s13=pd.Series(t1_percentage2014, name='percent2014')
s14=pd.Series(t1_percentage2015, name='percent2015')
s15=pd.Series(t1_percentage2016, name='percent2016')
s16=pd.Series(t1_percentage2017, name='percent2017')
s17=pd.Series(t1_percentage2018, name='percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11,s12,s13,s14,s15,s16, s17], axis=1)
DF.to_csv("THE_UNI_PublicationsInTopJournalPercentiles_TEST_1.csv", index=False)
```

In [206]:
```
metricType=[]
threshold=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]
percent2014=[]
percent2015=[]
percent2016=[]
percent2017=[]
percent2018=[]
```

```
        for line in data['University id'][:2]:
            url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Pu
         #   print(url.format(line))
            resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
            parsed=json.dumps(resp.json(),
                        sort_keys=True,
                        indent=4, separators=(',', ': '))
        #    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
        #        json.dump(resp.json(), jsonfile)
        #    print(parsed)
        #    data.update(a_dict)
            result=json.loads(parsed)
        print(result['results'][0]['metrics'][0]['values'][3]['percentageByYear'])
```

```
{'2014': 67.55675, '2015': 73.333336, '2016': 67.42509, '2017': 66.53675, '2018': 64.18532}
```

```
In [214]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(2)

          inst_country=[]
          inst_cc=[]
          inst_id=[]
          inst_link=[]
          inst_name=[]
          metricType=[]
          threshold=[]
          t1_value2014=[]
          t1_value2015=[]
          t1_value2016=[]
          t1_value2017=[]
          t1_value2018=[]
          t1_percentage2014=[]
          t1_percentage2015=[]
          t1_percentage2016=[]
          t1_percentage2017=[]
          t1_percentage2018=[]
          t5_value2014=[]
          t5_value2015=[]
          t5_value2016=[]
          t5_value2017=[]
          t5_value2018=[]
          t5_percentage2014=[]
```

```
t5_percentage2015=[]
t5_percentage2016=[]
t5_percentage2017=[]
t5_percentage2018=[]
t10_value2014=[]
t10_value2015=[]
t10_value2016=[]
t10_value2017=[]
t10_value2018=[]
t10_percentage2014=[]
t10_percentage2015=[]
t10_percentage2016=[]
t10_percentage2017=[]
t10_percentage2018=[]
t25_value2014=[]
t25_value2015=[]
t25_value2016=[]
t25_value2017=[]
t25_value2018=[]
t25_percentage2014=[]
t25_percentage2015=[]
t25_percentage2016=[]
t25_percentage2017=[]
t25_percentage2018=[]
```

```
for line in data['University id'][50:75]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Pu
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if 'results' in result:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
```

```
                inst_id.append(result['results'][0]['institution']['id'])
#             if 'link' in result['results'][0]['institution']:
                inst_link.append(result['results'][0]['institution']['link'])
#             if 'name' in result['results'][0]['institution']:
                inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#             if len(result['results'][0]['metrics'])>=1:
                if 'metricType' in result['results'][0]['metrics'][0]:
                    metricType.append(result['results'][0]['metrics'][0]['metricType
                if 'values' in result['results'][0]['metrics'][0]:
#                     print(result['results'][0]['metrics'][0]['values'][1]['threshol
                    for i in range(0, len(result['results'][0]['metrics'][0]['values
                        threshold.append(result['results'][0]['metrics'][0]['values'
                        if 'valueByYear' in result['results'][0]['metrics'][0]['valu
#                         if i ==0:
                            if '2014' in result['results'][0]['metrics'][0]['values'
                                t1_value2014.append(result['results'][0]['metrics'][
                            if '2015' in result['results'][0]['metrics'][0]['values'
                                t1_value2015.append(result['results'][0]['metrics'][
                            if '2016' in result['results'][0]['metrics'][0]['values'
                                t1_value2016.append(result['results'][0]['metrics'][
                            if '2017' in result['results'][0]['metrics'][0]['values'
                                t1_value2017.append(result['results'][0]['metrics'][
                            if '2018' in result['results'][0]['metrics'][0]['values'
                                t1_value2018.append(result['results'][0]['metrics'][
#                         if i ==1:
                            if '2014' in result['results'][0]['metrics'][0]['values'
                                t5_value2014.append(result['results'][0]['metrics'][
                            if '2015' in result['results'][0]['metrics'][0]['values'
                                t5_value2015.append(result['results'][0]['metrics'][
                            if '2016' in result['results'][0]['metrics'][0]['values'
                                t5_value2016.append(result['results'][0]['metrics'][
                            if '2017' in result['results'][0]['metrics'][0]['values'
                                t5_value2017.append(result['results'][0]['metrics'][
                            if '2018' in result['results'][0]['metrics'][0]['values'
                                t5_value2018.append(result['results'][0]['metrics'][

#                         if i ==2:
                            if '2014' in result['results'][0]['metrics'][0]['values'
                                t10_value2014.append(result['results'][0]['metrics']
                            if '2015' in result['results'][0]['metrics'][0]['values'
                                t10_value2015.append(result['results'][0]['metrics']
                            if '2016' in result['results'][0]['metrics'][0]['values'
                                t10_value2016.append(result['results'][0]['metrics']
                            if '2017' in result['results'][0]['metrics'][0]['values'
                                t10_value2017.append(result['results'][0]['metrics']
                            if '2018' in result['results'][0]['metrics'][0]['values'
                                t10_value2018.append(result['results'][0]['metrics']
```

```
#                     if i ==3:
                        if '2014' in result['results'][0]['metrics'][0]['values']
                            t25_value2014.append(result['results'][0]['metrics']
                        if '2015' in result['results'][0]['metrics'][0]['values']
                            t25_value2015.append(result['results'][0]['metrics']
                        if '2016' in result['results'][0]['metrics'][0]['values']
                            t25_value2016.append(result['results'][0]['metrics']
                        if '2017' in result['results'][0]['metrics'][0]['values']
                            t25_value2017.append(result['results'][0]['metrics']
                        if '2018' in result['results'][0]['metrics'][0]['values']
                            t25_value2018.append(result['results'][0]['metrics']

                    if 'percentageByYear' in result['results'][0]['metrics'][0][
#                     if i ==0:
                        if '2014' in result['results'][0]['metrics'][0]['values']
                            t1_percentage2014.append(result['results'][0]['metric
                        if '2015' in result['results'][0]['metrics'][0]['values']
                            t1_percentage2015.append(result['results'][0]['metric
                        if '2016' in result['results'][0]['metrics'][0]['values']
                            t1_percentage2016.append(result['results'][0]['metric
                        if '2017' in result['results'][0]['metrics'][0]['values']
                            t1_percentage2017.append(result['results'][0]['metric
                        if '2018' in result['results'][0]['metrics'][0]['values']
                            t1_percentage2018.append(result['results'][0]['metric

#                     if i ==1:
                        if '2014' in result['results'][0]['metrics'][0]['values']
                            t5_percentage2014.append(result['results'][0]['metric
                        if '2015' in result['results'][0]['metrics'][0]['values']
                            t5_percentage2015.append(result['results'][0]['metric
                        if '2016' in result['results'][0]['metrics'][0]['values']
                            t5_percentage2016.append(result['results'][0]['metric
                        if '2017' in result['results'][0]['metrics'][0]['values']
                            t5_percentage2017.append(result['results'][0]['metric
                        if '2018' in result['results'][0]['metrics'][0]['values']
                            t5_percentage2018.append(result['results'][0]['metric

#                     if i ==2:
                        if '2014' in result['results'][0]['metrics'][0]['values']
                            t10_percentage2014.append(result['results'][0]['metr
                        if '2015' in result['results'][0]['metrics'][0]['values']
                            t10_percentage2015.append(result['results'][0]['metr
                        if '2016' in result['results'][0]['metrics'][0]['values']
                            t10_percentage2016.append(result['results'][0]['metr
                        if '2017' in result['results'][0]['metrics'][0]['values']
                            t10_percentage2017.append(result['results'][0]['metr
                        if '2018' in result['results'][0]['metrics'][0]['values']
```

```
                                t10_percentage2018.append(result['results'][0]['metr

#                           if i ==3:
                            if '2014' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2014.append(result['results'][0]['metr
                            if '2015' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2015.append(result['results'][0]['metr
                            if '2016' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2016.append(result['results'][0]['metr
                            if '2017' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2017.append(result['results'][0]['metr
                            if '2018' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2018.append(result['results'][0]['metr
#                       else:
#                           t1_value2014.append('')
#                           t1_value2015.append('')
#                           t1_value2016.append('')
#                           t1_value2017.append('')
#                           t1_value2018.append('')
#                           t1_percentage2014.append('')
#                           t1_percentage2015.append('')
#                           t1_percentage2016.append('')
#                           t1_percentage2017.append('')
#                           t1_percentage2018.append('')

#                       else:
#                           t1_value2014.append('')
#                           t1_value2015.append('')
#                           t1_value2016.append('')
#                           t1_value2017.append('')
#                           t1_value2018.append('')
#                           t1_percentage2014.append('')
#                           t1_percentage2015.append('')
#                           t1_percentage2016.append('')
#                           t1_percentage2017.append('')
#                           t1_percentage2018.append('')

#                       if 'threshold' in result['results'][0]['metrics'][0]['values']:
#                           threshold.append(result['results'][0]['metrics'][0]['values


s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
s7=pd.Series(threshold, name='threshold')
```

```
s8=pd.Series(t1_value2014, name='t1_2014')
s9=pd.Series(t1_value2015, name='t1_2015')
s10=pd.Series(t1_value2016, name='t1_2016')
s11=pd.Series(t1_value2017, name='t1_2017')
s12=pd.Series(t1_value2018, name='t1_2018')
s13=pd.Series(t1_percentage2014, name='t1_percent2014')
s14=pd.Series(t1_percentage2015, name='t1_percent2015')
s15=pd.Series(t1_percentage2016, name='t1_percent2016')
s16=pd.Series(t1_percentage2017, name='t1_percent2017')
s17=pd.Series(t1_percentage2018, name='t1_percent2018')
s18=pd.Series(t5_value2014, name='t5_2014')
s19=pd.Series(t5_value2015, name='t5_2015')
s20=pd.Series(t5_value2016, name='t5_2016')
s21=pd.Series(t5_value2017, name='t5_2017')
s22=pd.Series(t5_value2018, name='t5_2018')
s23=pd.Series(t5_percentage2014, name='t5_percent2014')
s24=pd.Series(t5_percentage2015, name='t5_percent2015')
s25=pd.Series(t5_percentage2016, name='t5_percent2016')
s26=pd.Series(t5_percentage2017, name='t5_percent2017')
s27=pd.Series(t5_percentage2018, name='t5_percent2018')
s28=pd.Series(t10_value2014, name='t10_2014')
s29=pd.Series(t10_value2015, name='t10_2015')
s30=pd.Series(t10_value2016, name='t10_2016')
s31=pd.Series(t10_value2017, name='t10_2017')
s32=pd.Series(t10_value2018, name='t10_2018')
s33=pd.Series(t10_percentage2014, name='t10_percent2014')
s34=pd.Series(t10_percentage2015, name='t10_percent2015')
s35=pd.Series(t10_percentage2016, name='t10_percent2016')
s36=pd.Series(t10_percentage2017, name='t10_percent2017')
s37=pd.Series(t10_percentage2018, name='t10_percent2018')
s38=pd.Series(t25_value2014, name='t25_2014')
s39=pd.Series(t25_value2015, name='t25_2015')
s40=pd.Series(t25_value2016, name='t25_2016')
s41=pd.Series(t25_value2017, name='t25_2017')
s42=pd.Series(t25_value2018, name='t25_2018')
s43=pd.Series(t25_percentage2014, name='t25_percent2014')
s44=pd.Series(t25_percentage2015, name='t25_percent2015')
s45=pd.Series(t25_percentage2016, name='t25_percent2016')
s46=pd.Series(t25_percentage2017, name='t25_percent2017')
s47=pd.Series(t25_percentage2018, name='t25_percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11,s12,s13,s14,s15,s16, s17,s18,s19,s20
              s28,s29,s30,s31,s32,s33,s34,s35,s36,s37,s38,s39,s40, s41,s42,s43,s44,s45


DF.to_csv("THE_UNI_PublicationsInTopJournalPercentiles_ALL_3.csv", index=False)  # O
```

```
          #print(threshold)
```

```
In [66]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalP
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalPercentile
```

```
In [67]: import requests
         import json
         import pandas as pd
         import numpy as np
         from time import sleep
         sleep(2)

         inst_country=[]
         inst_cc=[]
         inst_id=[]
         inst_link=[]
         inst_name=[]
         metricType=[]
         #threshold=[]
         t1_value2014=[]
         t1_value2015=[]
         t1_value2016=[]
         t1_value2017=[]
         t1_value2018=[]
         t1_percentage2014=[]
         t1_percentage2015=[]
         t1_percentage2016=[]
         t1_percentage2017=[]
         t1_percentage2018=[]
         t5_value2014=[]
         t5_value2015=[]
         t5_value2016=[]
         t5_value2017=[]
         t5_value2018=[]
         t5_percentage2014=[]
         t5_percentage2015=[]
         t5_percentage2016=[]
         t5_percentage2017=[]
         t5_percentage2018=[]
         t10_value2014=[]
         t10_value2015=[]
         t10_value2016=[]
         t10_value2017=[]
         t10_value2018=[]
```

```
t10_percentage2014=[]
t10_percentage2015=[]
t10_percentage2016=[]
t10_percentage2017=[]
t10_percentage2018=[]
t25_value2014=[]
t25_value2015=[]
t25_value2016=[]
t25_value2017=[]
t25_value2018=[]
t25_percentage2014=[]
t25_percentage2015=[]
t25_percentage2016=[]
t25_percentage2017=[]
t25_percentage2018=[]
```

```
for line in data['University id'][1000:]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Pul
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if 'results' in result:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
                if 'metricType' in result['results'][0]['metrics'][0]:
                    metricType.append(result['results'][0]['metrics'][0]['metricType']
```

```
                if 'values' in result['results'][0]['metrics'][0]:
#                     print(result['results'][0]['metrics'][0]['values'][1]['threshold
#                     for i in range(0, len(result['results'][0]['metrics'][0]['values
#                         threshold.append(result['results'][0]['metrics'][0]['values'
                    if 'valueByYear' in result['results'][0]['metrics'][0]['values'][0
#                         if i ==0:
                        if '2014' in result['results'][0]['metrics'][0]['values'][0][
                            t1_value2014.append(result['results'][0]['metrics'][0]['va
                        if '2015' in result['results'][0]['metrics'][0]['values'][0][
                            t1_value2015.append(result['results'][0]['metrics'][0]['va
                        if '2016' in result['results'][0]['metrics'][0]['values'][0][
                            t1_value2016.append(result['results'][0]['metrics'][0]['va
                        if '2017' in result['results'][0]['metrics'][0]['values'][0][
                            t1_value2017.append(result['results'][0]['metrics'][0]['va
                        if '2018' in result['results'][0]['metrics'][0]['values'][0][
                            t1_value2018.append(result['results'][0]['metrics'][0]['va
#                         if i ==1:
                    if 'valueByYear' in result['results'][0]['metrics'][0]['values'][1
                        if '2014' in result['results'][0]['metrics'][0]['values'][1][
                            t5_value2014.append(result['results'][0]['metrics'][0]['va
                        if '2015' in result['results'][0]['metrics'][0]['values'][1][
                            t5_value2015.append(result['results'][0]['metrics'][0]['va
                        if '2016' in result['results'][0]['metrics'][0]['values'][1][
                            t5_value2016.append(result['results'][0]['metrics'][0]['va
                        if '2017' in result['results'][0]['metrics'][0]['values'][1][
                            t5_value2017.append(result['results'][0]['metrics'][0]['va
                        if '2018' in result['results'][0]['metrics'][0]['values'][1][
                            t5_value2018.append(result['results'][0]['metrics'][0]['va

#                         if i ==2:
                    if 'valueByYear' in result['results'][0]['metrics'][0]['values'][2
                        if '2014' in result['results'][0]['metrics'][0]['values'][2][
                            t10_value2014.append(result['results'][0]['metrics'][0]['v
                        if '2015' in result['results'][0]['metrics'][0]['values'][2][
                            t10_value2015.append(result['results'][0]['metrics'][0]['v
                        if '2016' in result['results'][0]['metrics'][0]['values'][2][
                            t10_value2016.append(result['results'][0]['metrics'][0]['v
                        if '2017' in result['results'][0]['metrics'][0]['values'][2][
                            t10_value2017.append(result['results'][0]['metrics'][0]['v
                        if '2018' in result['results'][0]['metrics'][0]['values'][2][
                            t10_value2018.append(result['results'][0]['metrics'][0]['v

#                         if i ==3:
                    if 'valueByYear' in result['results'][0]['metrics'][0]['values'][3
                        if '2014' in result['results'][0]['metrics'][0]['values'][3][
                            t25_value2014.append(result['results'][0]['metrics'][0]['v
                        if '2015' in result['results'][0]['metrics'][0]['values'][3][
                            t25_value2015.append(result['results'][0]['metrics'][0]['v
```

```
                    if '2016' in result['results'][0]['metrics'][0]['values'][3][
                        t25_value2016.append(result['results'][0]['metrics'][0]['
                    if '2017' in result['results'][0]['metrics'][0]['values'][3][
                        t25_value2017.append(result['results'][0]['metrics'][0]['
                    if '2018' in result['results'][0]['metrics'][0]['values'][3][
                        t25_value2018.append(result['results'][0]['metrics'][0]['

                if 'percentageByYear' in result['results'][0]['metrics'][0]['value
#                     if i ==0:
                    if '2014' in result['results'][0]['metrics'][0]['values'][0][
                        t1_percentage2014.append(result['results'][0]['metrics'][
                    if '2015' in result['results'][0]['metrics'][0]['values'][0][
                        t1_percentage2015.append(result['results'][0]['metrics'][
                    if '2016' in result['results'][0]['metrics'][0]['values'][0][
                        t1_percentage2016.append(result['results'][0]['metrics'][
                    if '2017' in result['results'][0]['metrics'][0]['values'][0][
                        t1_percentage2017.append(result['results'][0]['metrics'][
                    if '2018' in result['results'][0]['metrics'][0]['values'][0][
                        t1_percentage2018.append(result['results'][0]['metrics'][

#                     if i ==1:
                if 'percentageByYear' in result['results'][0]['metrics'][0]['value
                    if '2014' in result['results'][0]['metrics'][0]['values'][1][
                        t5_percentage2014.append(result['results'][0]['metrics'][
                    if '2015' in result['results'][0]['metrics'][0]['values'][1][
                        t5_percentage2015.append(result['results'][0]['metrics'][
                    if '2016' in result['results'][0]['metrics'][0]['values'][1][
                        t5_percentage2016.append(result['results'][0]['metrics'][
                    if '2017' in result['results'][0]['metrics'][0]['values'][1][
                        t5_percentage2017.append(result['results'][0]['metrics'][
                    if '2018' in result['results'][0]['metrics'][0]['values'][1][
                        t5_percentage2018.append(result['results'][0]['metrics'][

#                     if i ==2:
                if 'percentageByYear' in result['results'][0]['metrics'][0]['value
                    if '2014' in result['results'][0]['metrics'][0]['values'][2][
                        t10_percentage2014.append(result['results'][0]['metrics']
                    if '2015' in result['results'][0]['metrics'][0]['values'][2][
                        t10_percentage2015.append(result['results'][0]['metrics']
                    if '2016' in result['results'][0]['metrics'][0]['values'][2][
                        t10_percentage2016.append(result['results'][0]['metrics']
                    if '2017' in result['results'][0]['metrics'][0]['values'][2][
                        t10_percentage2017.append(result['results'][0]['metrics']
                    if '2018' in result['results'][0]['metrics'][0]['values'][2][
                        t10_percentage2018.append(result['results'][0]['metrics']

#                     if i ==3:
                if 'percentageByYear' in result['results'][0]['metrics'][0]['value
```

```
                        if '2014' in result['results'][0]['metrics'][0]['values'][3][
                            t25_percentage2014.append(result['results'][0]['metrics']
                        if '2015' in result['results'][0]['metrics'][0]['values'][3][
                            t25_percentage2015.append(result['results'][0]['metrics']
                        if '2016' in result['results'][0]['metrics'][0]['values'][3][
                            t25_percentage2016.append(result['results'][0]['metrics']
                        if '2017' in result['results'][0]['metrics'][0]['values'][3][
                            t25_percentage2017.append(result['results'][0]['metrics']
                        if '2018' in result['results'][0]['metrics'][0]['values'][3][
                            t25_percentage2018.append(result['results'][0]['metrics']
#                   else:
#                       t1_value2014.append('')
#                       t1_value2015.append('')
#                       t1_value2016.append('')
#                       t1_value2017.append('')
#                       t1_value2018.append('')
#                       t1_percentage2014.append('')
#                       t1_percentage2015.append('')
#                       t1_percentage2016.append('')
#                       t1_percentage2017.append('')
#                       t1_percentage2018.append('')

#                   else:
#                       t1_value2014.append('')
#                       t1_value2015.append('')
#                       t1_value2016.append('')
#                       t1_value2017.append('')
#                       t1_value2018.append('')
#                       t1_percentage2014.append('')
#                       t1_percentage2015.append('')
#                       t1_percentage2016.append('')
#                       t1_percentage2017.append('')
#                       t1_percentage2018.append('')

#                   if 'threshold' in result['results'][0]['metrics'][0]['values']:
#                       threshold.append(result['results'][0]['metrics'][0]['values'


s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
#s7=pd.Series(threshold, name='threshold')
s8=pd.Series(t1_value2014, name='t1_2014')
s9=pd.Series(t1_value2015, name='t1_2015')
s10=pd.Series(t1_value2016, name='t1_2016')
```

```
s11=pd.Series(t1_value2017, name='t1_2017')
s12=pd.Series(t1_value2018, name='t1_2018')
s13=pd.Series(t1_percentage2014, name='t1_percent2014')
s14=pd.Series(t1_percentage2015, name='t1_percent2015')
s15=pd.Series(t1_percentage2016, name='t1_percent2016')
s16=pd.Series(t1_percentage2017, name='t1_percent2017')
s17=pd.Series(t1_percentage2018, name='t1_percent2018')
s18=pd.Series(t5_value2014, name='t5_2014')
s19=pd.Series(t5_value2015, name='t5_2015')
s20=pd.Series(t5_value2016, name='t5_2016')
s21=pd.Series(t5_value2017, name='t5_2017')
s22=pd.Series(t5_value2018, name='t5_2018')
s23=pd.Series(t5_percentage2014, name='t5_percent2014')
s24=pd.Series(t5_percentage2015, name='t5_percent2015')
s25=pd.Series(t5_percentage2016, name='t5_percent2016')
s26=pd.Series(t5_percentage2017, name='t5_percent2017')
s27=pd.Series(t5_percentage2018, name='t5_percent2018')
s28=pd.Series(t10_value2014, name='t10_2014')
s29=pd.Series(t10_value2015, name='t10_2015')
s30=pd.Series(t10_value2016, name='t10_2016')
s31=pd.Series(t10_value2017, name='t10_2017')
s32=pd.Series(t10_value2018, name='t10_2018')
s33=pd.Series(t10_percentage2014, name='t10_percent2014')
s34=pd.Series(t10_percentage2015, name='t10_percent2015')
s35=pd.Series(t10_percentage2016, name='t10_percent2016')
s36=pd.Series(t10_percentage2017, name='t10_percent2017')
s37=pd.Series(t10_percentage2018, name='t10_percent2018')
s38=pd.Series(t25_value2014, name='t25_2014')
s39=pd.Series(t25_value2015, name='t25_2015')
s40=pd.Series(t25_value2016, name='t25_2016')
s41=pd.Series(t25_value2017, name='t25_2017')
s42=pd.Series(t25_value2018, name='t25_2018')
s43=pd.Series(t25_percentage2014, name='t25_percent2014')
s44=pd.Series(t25_percentage2015, name='t25_percent2015')
s45=pd.Series(t25_percentage2016, name='t25_percent2016')
s46=pd.Series(t25_percentage2017, name='t25_percent2017')
s47=pd.Series(t25_percentage2018, name='t25_percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s8,s9,s10,s11,s12,s13,s14,s15,s16, s17,s18,s19,s20,s2
              s28,s29,s30,s31,s32,s33,s34,s35,s36,s37,s38,s39,s40, s41,s42,s43,s44,s45


DF.to_csv("THE_UNI_PubPercentile_All_18.csv", index=False)  # OK


#print(threshold)
```

23 Combine all the subfiles and subset the USA universities

24 CitationCount

```
In [68]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\CitationCount"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\CitationCount
```

```
In [69]: filename='THE_UNI_CitationCount_ALL_{}.csv'
```

```
In [72]: chucks=[]

         for i in range(1, 13):
             chucks.append(pd.read_csv(filename.format(i)))

         cc_data=pd.concat(chucks, ignore_index=True)

         cc_data.head()
```

Out[72]:

	country	countryCode	institution_id	\
0	United Kingdom	GBR	315091	
1	United States	USA	508092	
2	United States	USA	508021	
3	United Kingdom	GBR	315068	
4	United States	USA	508219	

	link	\
0	{'@href': 'https://api.elsevier.com/analytics/...	
1	{'@href': 'https://api.elsevier.com/analytics/...	
2	{'@href': 'https://api.elsevier.com/analytics/...	
3	{'@href': 'https://api.elsevier.com/analytics/...	
4	{'@href': 'https://api.elsevier.com/analytics/...	

	institution_name	metricType	2014	\
0	University of Oxford	CitationCount	362631.0	
1	Jet Propulsion Laboratory, California Institut...	CitationCount	40303.0	
2	California Institute of Technology	CitationCount	131650.0	
3	University of Cambridge	CitationCount	264596.0	
4	Stanford University	CitationCount	411975.0	

	2015	2016	2017	2018
0	320264.0	245401.0	157032.0	82250.0
1	31088.0	33761.0	19335.0	9915.0
2	99103.0	92609.0	60850.0	31739.0
3	241231.0	203383.0	133380.0	70147.0
4	371956.0	290615.0	203160.0	103230.0

```
In [73]: cc_data.tail()
```

Out[73]:

	country	countryCode	institution_id	link	institution_name	metricType	2014	2015	2016	2017	2018
1263	Saudi Arabia	SAU	703099	{'@href': 'https://api.elsevier.com/analytics/...	Imam Abdulrahman Bin Faisal University	CitationCount	2412.0	2418.0	2644.0	2404.0	3054.0
1264	Turkey	TUR	705124	{'@href': 'https://api.elsevier.com/analytics/...	Istanbul Medipol University	CitationCount	2063.0	2211.0	1480.0	1227.0	629.0
1265	Georgia	GEO	204001	{'@href': 'https://api.elsevier.com/analytics/...	Ivane Javakhishvili Tbilisi State University	CitationCount	8208.0	8605.0	6183.0	4373.0	4073.0
1266	United States	USA	508335	{'@href': 'https://api.elsevier.com/analytics/...	University of Rochester	CitationCount	84957.0	73383.0	47472.0	35627.0	20159.0
1267	United States	USA	508059	{'@href': 'https://api.elsevier.com/analytics/...	Emory University	CitationCount	156631.0	136820.0	108550.0	70004.0	36505.0

In [74]:
```
cc_data.to_csv('THE_ALLUNI_CC.csv', index=True)
```

25 FWCI

In [75]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI
```

In [76]:
```
filename='THE_UNI_FWCI_{}.csv'
```

In [77]:
```
chucks=[]

for i in range(1, 13):
    chucks.append(pd.read_csv(filename.format(i)))

fwci_data=pd.concat(chucks, ignore_index=True)

fwci_data.head()
```

Out[77]:

	country	countryCode	institution_id	link	institution_name	metricType	2014	2015	2016	2017	2018
0	United Kingdom	GBR	315091	{'@href': 'https://api.elsevier.com/analytics/...	University of Oxford	FieldWeightedCitationImpact	2.232452	2.178834	2.202485	1.966025	1.804821
1	United States	USA	508092	{'@href': 'https://api.elsevier.com/analytics/...	Jet Propulsion Laboratory, California Institut...	FieldWeightedCitationImpact	1.611136	1.462793	1.656759	1.470790	1.346227
2	United States	USA	508021	{'@href': 'https://api.elsevier.com/analytics/...	California Institute of Technology	FieldWeightedCitationImpact	1.890797	1.740487	1.921985	1.847315	1.605074
3	United Kingdom	GBR	315068	{'@href': 'https://api.elsevier.com/analytics/...	University of Cambridge	FieldWeightedCitationImpact	1.904510	1.990053	2.050378	1.946377	1.763683
4	United States	USA	508219	{'@href': 'https://api.elsevier.com/analytics/...	Stanford University	FieldWeightedCitationImpact	2.445251	2.476393	2.568147	2.269981	2.244260

In [78]: `fwci_data.tail()`

Out[78]:

	country	countryCode	institution_id	link
1263	Saudi Arabia	SAU	703099	{'@href': 'https://api.elsevier.com/analytics/...
1264	Turkey	TUR	705124	{'@href': 'https://api.elsevier.com/analytics/...
1265	Georgia	GEO	204001	{'@href': 'https://api.elsevier.com/analytics/...
1266	United States	USA	508335	
1267	United States	USA	508059	

```
1266  {'@href': 'https://api.elsevier.com/analytics/...
1267  {'@href': 'https://api.elsevier.com/analytics/...

                                  institution_name  \
1263       Imam Abdulrahman Bin Faisal University
1264                  Istanbul Medipol University
1265  Ivane Javakhishvili Tbilisi State University
1266                       University of Rochester
1267                               Emory University

                       metricType      2014      2015      2016      2017  \
1263  FieldWeightedCitationImpact  0.698082  0.649441  0.772378  0.787842
1264  FieldWeightedCitationImpact  0.661692  0.577872  0.552237  0.635915
1265  FieldWeightedCitationImpact  1.556471  1.550585  1.177011  1.246151
1266  FieldWeightedCitationImpact  1.827581  2.117681  1.646356  1.700714
1267  FieldWeightedCitationImpact  1.999690  2.186228  2.209265  1.948478

          2018
1263  0.880861
1264  0.666751
1265  1.725649
1266  1.717541
1267  1.967104
```

In [79]:
```
fwci_data.to_csv("THE_ALLUNI_FWCI.csv", index=False)
```

26 PercPublsCited

In [107]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCite
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

In [81]:
```
filename='THE_UNI_CitedPublications_{}.csv'
```

In [82]:
```
chucks=[]

for i in range(1, 13):
    chucks.append(pd.read_csv(filename.format(i)))

cp_data=pd.concat(chucks, ignore_index=True)

cp_data.head()
```

Out[82]:
```
          country countryCode  institution_id  \
0  United Kingdom         GBR          315091
1   United States         USA          508092
2   United States         USA          508021
```

```
3  United Kingdom         GBR          315068
4   United States         USA          508219

                                                  link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name         metricType  \
0                              University of Oxford  CitedPublications
1  Jet Propulsion Laboratory, California Institut...  CitedPublications
2                 California Institute of Technology  CitedPublications
3                            University of Cambridge  CitedPublications
4                                Stanford University  CitedPublications

      2014     2015     2016     2017     2018  percent2014  percent2015  \
0  10893.0  11679.0  11798.0  11474.0  10570.0    86.555420     85.53537
1   1514.0   1451.0   1722.0   1588.0   1406.0    79.142710     80.61111
2   3879.0   3770.0   3914.0   3779.0   3487.0    85.856575     86.72648
3   9116.0   9238.0   9558.0   9125.0   8418.0    88.060280     86.17537
4  11156.0  11846.0  11699.0  11642.0  10731.0    87.149445     86.74575

   percent2016  percent2017  percent2018
0    84.115210     78.56213     70.69761
1    78.954605     77.38792     63.90909
2    85.965300     82.74578     71.39640
3    84.330330     79.49991     71.42372
4    85.619150     81.79583     72.85627
```

In [83]:
```
cp_data.tail()
```

Out[83]:
```
            country countryCode  institution_id  \
1263   Saudi Arabia         SAU          703099
1264         Turkey         TUR          705124
1265        Georgia         GEO          204001
1266  United States         USA          508335
1267  United States         USA          508059

                                                  link  \
1263  {'@href': 'https://api.elsevier.com/analytics/...
1264  {'@href': 'https://api.elsevier.com/analytics/...
1265  {'@href': 'https://api.elsevier.com/analytics/...
1266  {'@href': 'https://api.elsevier.com/analytics/...
1267  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name         metricType    2014  \
```

```
1263        Imam Abdulrahman Bin Faisal University  CitedPublications   296.0
1264                    Istanbul Medipol University  CitedPublications   203.0
1265  Ivane Javakhishvili Tbilisi State University  CitedPublications   295.0
1266                         University of Rochester  CitedPublications  3011.0
1267                                 Emory University  CitedPublications  5206.0

        2015    2016    2017    2018  percent2014  percent2015  percent2016  \
1263   305.0   364.0   384.0   560.0     79.78437    75.495056    79.302826
1264   293.0   295.0   262.0   207.0     78.07692    72.524750    70.743410
1265   347.0   383.0   342.0   366.0     65.84821    68.441810    66.034485
1266  2939.0  2919.0  2795.0  2649.0     83.59245    83.022600    83.044090
1267  5230.0  5187.0  5126.0  4687.0     88.08799    87.810610    84.977066

      percent2017  percent2018
1263    66.435990    59.447987
1264    62.679430    47.260273
1265    65.391970    60.098522
1266    76.912490    68.948460
1267    80.992256    72.252200
```

In [84]:
```
cp_data.to_csv("THEUNI_CITEDPUBLS.csv",index=False)
```

27 PubTopJournalPercentile

In [85]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalP
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalPercentile
```

In [86]:
```
filename='THE_UNI_PubPercentile_All_{}.csv'
```

In [87]:
```
chucks=[]

for i in range(1, 19):
    chucks.append(pd.read_csv(filename.format(i)))

pp_data=pd.concat(chucks, ignore_index=True)

pp_data.head()
```

Out[87]:
```
           country countryCode  institution_id  \
0   United Kingdom         GBR          315091
1    United States         USA          508092
2   United Kingdom         GBR          315091
3    United States         USA          508092
4    United States         USA          508021

                                                 link  \
```

```
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name  \
0                              University of Oxford
1  Jet Propulsion Laboratory, California Institut...
2                              University of Oxford
3  Jet Propulsion Laboratory, California Institut...
4                 California Institute of Technology

                            metricType  t1_2014  t1_2015  t1_2016  t1_2017  \
0  PublicationsInTopJournalPercentiles    686.0    846.0    887.0    771.0
1  PublicationsInTopJournalPercentiles     74.0     82.0     83.0     71.0
2  PublicationsInTopJournalPercentiles    686.0    846.0    887.0    771.0
3  PublicationsInTopJournalPercentiles     74.0     82.0     83.0     71.0
4  PublicationsInTopJournalPercentiles    305.0    245.0    259.0    253.0

   ...  t25_2014  t25_2015  t25_2016  t25_2017  t25_2018  t25_percent2014  \
0  ...    8098.0    8796.0    9089.0    9372.0   10096.0         73.77915
1  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
2  ...    8098.0    8796.0    9089.0    9372.0   10096.0         73.77915
3  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
4  ...    2948.0    2945.0    3094.0    3108.0    3251.0         76.41265

   t25_percent2015  t25_percent2016  t25_percent2017  t25_percent2018
0        75.321110         73.55345        74.210150        74.923935
1        73.333336         67.42509        66.536750        64.185320
2        75.321110         73.55345        74.210150        74.923935
3        73.333336         67.42509        66.536750        64.185320
4        79.102875         77.93451        76.835594        74.752820

[5 rows x 46 columns]
```

In [88]:
```
pp_data.tail()
```

Out[88]:
```
             country countryCode  institution_id  \
1265   Saudi Arabia         SAU          703099
1266         Turkey         TUR          705124
1267        Georgia         GEO          204001
1268  United States         USA          508335
1269  United States         USA          508059

                                                   link  \
1265  {'@href': 'https://api.elsevier.com/analytics/...
1266  {'@href': 'https://api.elsevier.com/analytics/...
```

```
1267  {'@href': 'https://api.elsevier.com/analytics/...
1268  {'@href': 'https://api.elsevier.com/analytics/...
1269  {'@href': 'https://api.elsevier.com/analytics/...

                                institution_name  \
1265       Imam Abdulrahman Bin Faisal University
1266                   Istanbul Medipol University
1267  Ivane Javakhishvili Tbilisi State University
1268                       University of Rochester
1269                              Emory University

                              metricType  t1_2014  t1_2015  t1_2016  t1_2017  \
1265  PublicationsInTopJournalPercentiles      1.0      2.0      5.0      6.0
1266  PublicationsInTopJournalPercentiles      3.0      2.0      2.0      5.0
1267  PublicationsInTopJournalPercentiles      1.0      1.0      2.0      2.0
1268  PublicationsInTopJournalPercentiles    162.0    164.0    143.0    138.0
1269  PublicationsInTopJournalPercentiles    277.0    348.0    318.0    348.0

      ...  t25_2014  t25_2015  t25_2016  t25_2017  t25_2018  t25_percent2014  \
1265  ...      87.0     103.0     140.0     198.0     353.0        26.605505
1266  ...      67.0     106.0      77.0      99.0      90.0        27.800830
1267  ...     205.0     241.0     278.0     266.0     335.0        50.368546
1268  ...    2163.0    2125.0    2131.0    2130.0    2309.0        70.364340
1269  ...    3967.0    3923.0    3854.0    3975.0    4143.0        73.708660

      t25_percent2015  t25_percent2016  t25_percent2017  t25_percent2018
1265        29.428572        34.567900        38.521400        40.762123
1266        29.041096        20.810812        27.049181        25.210085
1267        53.200882        52.751423        55.416668        58.566433
1268        69.331154        67.436710        66.645805        66.522610
1269        72.246780        68.907560        67.407160        68.186310

[5 rows x 46 columns]
```

```
In [89]: pp_data.to_csv("THE_ALLUNI_PP.csv", index=False)
```

28 ScholarlyOutput

```
In [106]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data" # needs to u
```

```
[WinError 2] The system cannot find the file specified: 'C:\\Users\\jchen148\\THE Rankings\\Rep
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalPercentile
```

```
In [94]: data.tail()
```

```
Out[94]:                                University Name  University id  \
1003       Imam Abdulrahman Bin Faisal University         703099
```

```
1004                    Istanbul Medipol University         705124
1005  Ivane Javakhishvili Tbilisi State University         204001
1006                         University of Rochester         508335
1007                                 Emory University         508059

            Country Country Code
1003   Saudi Arabia          SAU
1004         Turkey          TUR
1005        Georgia          GEO
1006  United States          USA
1007  United States          USA
```

In [100]:
```
url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Schola

resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
result=json.loads(parsed)
result['results']
```

Out[100]:
```
[{'institution': {'country': 'United States',
   'countryCode': 'USA',
   'id': 508059,
   'link': {'@href': 'https://api.elsevier.com/analytics/scival/institution/508059?ap
    '@ref': 'self',
    '@type': 'application/json'},
   'name': 'Emory University',
   'uri': 'Institution/508059'},
  'metrics': [{'metricType': 'ScholarlyOutput',
    'valueByYear': {'2014': 5910,
     '2015': 5956,
     '2016': 6104,
     '2017': 6329,
     '2018': 6487}}]}]
```

In [108]:
```
country=[]
countryCode=[]
institution_id=[]
link=[]
institution_name=[]
metricType=[]
value2014=[]
```

```
value2015=[]
value2016=[]
value2017=[]
value2018=[]

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Schola

resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
result=json.loads(parsed)
result['results']
country.append(result['results'][0]['institution']['country'])
countryCode.append(result['results'][0]['institution']['countryCode'])
institution_id.append(result['results'][0]['institution']['id'])
link.append(result['results'][0]['institution']['link'])
institution_name.append(result['results'][0]['institution']['name'])
metricType.append(result['results'][0]['metrics'][0]['metricType'])
value2014.append(result['results'][0]['metrics'][0]['valueByYear']['2014'])
value2015.append(result['results'][0]['metrics'][0]['valueByYear']['2015'])
value2016.append(result['results'][0]['metrics'][0]['valueByYear']['2016'])
value2017.append(result['results'][0]['metrics'][0]['valueByYear']['2017'])
value2018.append(result['results'][0]['metrics'][0]['valueByYear']['2018'])

DF=pd.DataFrame({'country':country, 'countryCode': countryCode, 'institution_id': ins
                 'institution_name':institution_name, 'metricType':metricType,
                 '2014': value2014, '2015': value2015, '2016': value2016, '2017':valu

DF.to_csv("THE_UNI_SCHOLAROUTPUT_ALL_15.csv", index=False)
```

In [109]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutpu
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput
```

In [110]:
```
filename='THE_UNI_SCHOLAROUTPUT_ALL_{}.csv'
```

In [111]:
```
chucks=[]

for i in range(1, 16):
    chucks.append(pd.read_csv(filename.format(i)))

so_data=pd.concat(chucks, ignore_index=True)
```

```
In [111]: so_data.head()
```

Out[111]:

	country	countryCode	institution_id	link	institution_name	metricType	2014	2015	2016	2017	2018
0	United Kingdom	GBR	315091	{'@href': 'https://api.elsevier.com/analytics/...	University of Oxford	ScholarlyOutput	12585	13654	14026	14605	14951
1	United States	USA	508092	{'@href': 'https://api.elsevier.com/analytics/...	Jet Propulsion Laboratory, California Institut...	ScholarlyOutput	1913	1800	2181	2052	2200
2	United States	USA	508021	{'@href': 'https://api.elsevier.com/analytics/...	California Institute of Technology	ScholarlyOutput	4518	4347	4553	4567	4884
3	United Kingdom	GBR	315068	{'@href': 'https://api.elsevier.com/analytics/...	University of Cambridge	ScholarlyOutput	10352	10720	11334	11478	11786
4	United States	USA	508219	{'@href': 'https://api.elsevier.com/analytics/...	Stanford University	ScholarlyOutput	12801	13656	13664	14233	14729

```
In [112]: so_data.to_csv("THE_ALLUNI_SO.csv", index=False)
```

29 USA University Publication Output

30 Total

```
In [261]: so_data.head()
```

Out[261]:

	country	countryCode	institution_id	link
0	United Kingdom	GBR	315091	{'@href': 'https://api.elsevier.com/analytics/...
1	United States	USA	508092	
2	United States	USA	508021	
3	United Kingdom	GBR	315068	
4	United States	USA	508219	

```
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...
```

	institution_name	metricType	2014	2015	2016	2017	2018
0	University of Oxford	ScholarlyOutput	12585	13654	14026	14605	14951
1	Jet Propulsion Laboratory, California Institut...	ScholarlyOutput	1913	1800	2181	2052	2200
2	California Institute of Technology	ScholarlyOutput	4518	4347	4553	4567	4884
3	University of Cambridge	ScholarlyOutput	10352	10720	11334	11478	11786
4	Stanford University	ScholarlyOutput	12801	13656	13664	14233	14729

```
In [113]: so_data[so_data.countryCode=='USA'].head()
          so_data_USA=so_data[so_data.countryCode=='USA']

In [114]: import seaborn as sns
          import matplotlib.pyplot as plt
          %matplotlib inline

In [115]: so_data_USA=so_data_USA.iloc[:,-7:]

In [116]: so_data_USA.head()
```

Out[116]:

	institution_name	metricType	2014	2015	2016	2017	2018
1	Jet Propulsion Laboratory, California Institut...	ScholarlyOutput	1913	1800	2181	2052	2200
2	California Institute of Technology	ScholarlyOutput	4518	4347	4553	4567	4884
4	Stanford University	ScholarlyOutput	12801	13656	13664	14233	14729
5	Massachusetts Institute of Technology	ScholarlyOutput	9645	9957	10023	10191	10458
6	Princeton University	ScholarlyOutput	4335	4629	4544	4635	4891

```
In [117]: del so_data_USA['metricType']

In [118]: so_data_USA.head()
```

Out[118]:

	institution_name	2014	2015	2016
1	Jet Propulsion Laboratory, California Institut...	1913	1800	2181

```
2                 California Institute of Technology   4518   4347   4553
4                              Stanford University  12801  13656  13664
5            Massachusetts Institute of Technology   9645   9957  10023
6                              Princeton University   4335   4629   4544

    2017   2018
1   2052   2200
2   4567   4884
4  14233  14729
5  10191  10458
6   4635   4891
```

In [119]:
```
so_data_USA=so_data_USA.set_index('institution_name')
```

In [120]:
```
so_data_USA.agg('sum')
```

Out[120]:
```
2014    412305
2015    424108
2016    433662
2017    450239
2018    467010
dtype: int64
```

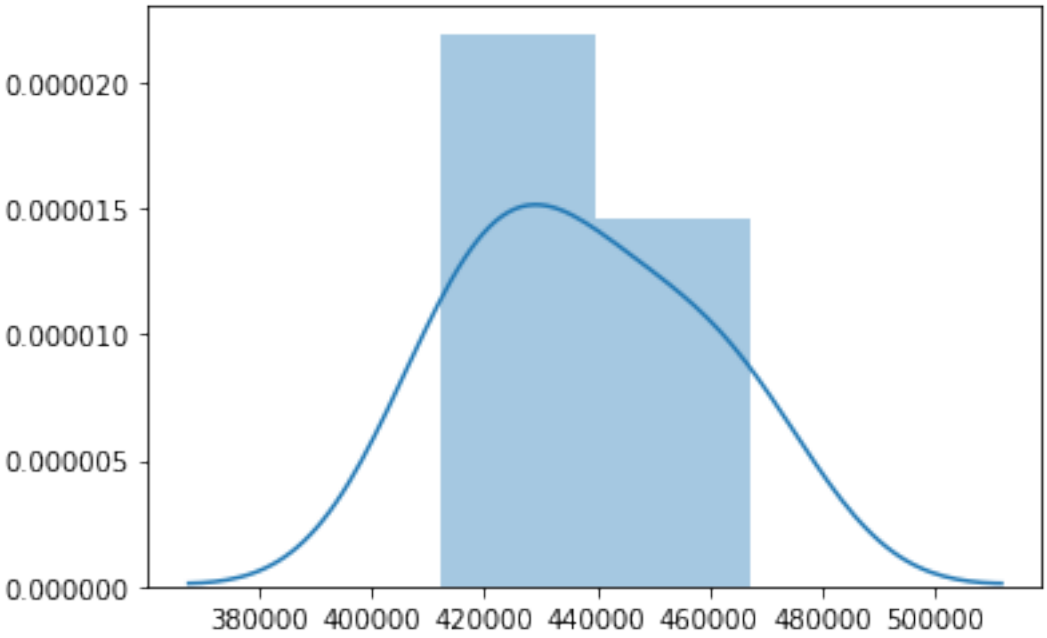
31 THE 163 USA Universities ranked before top 300,

32 The total ScholarlyOutput presents a Bell-shaped

33 Distribution.

In [121]:
```
sns.distplot(so_data_USA.agg('sum'))
```

Out[121]:
```
<matplotlib.axes._subplots.AxesSubplot at 0x171c8234a90>
```




```
In [122]: len(so_data_USA) # 164 USA universities

Out[122]: 164

In [124]: so_data_USA.agg('sum')

Out[124]: 2014    412305
          2015    424108
          2016    433662
          2017    450239
          2018    467010
          dtype: int64

In [125]: so_data_USA=so_data_USA.reset_index()

In [412]: so_data_USA.info()

<class 'pandas.core.frame.DataFrame'>
RangeIndex: 163 entries, 0 to 162
Data columns (total 7 columns):
institution_name    163 non-null object
2014                163 non-null int64
2015                163 non-null int64
2016                163 non-null int64
2017                163 non-null int64
2018                163 non-null int64
Total               0 non-null float64
```

```
dtypes: float64(1), int64(5), object(1)
memory usage: 9.0+ KB
```

```
In [391]: sep_sum=lambda x: x.agg('sum')
```

```
In [126]: so_data_USA['Total']=so_data_USA.sum(axis=1)
```

```
In [127]: so_data_USA['Total']=so_data_USA.Total.astype(int)
          so_data_USA.head()
```

Out[127]:

	institution_name	2014	2015	2016	2017	2018	Total
0	Jet Propulsion Laboratory, California Institut...	1913	1800	2181	2052	2200	10146
1	California Institute of Technology	4518	4347	4553	4567	4884	22869
2	Stanford University	12801	13656	13664	14233	14729	69083
3	Massachusetts Institute of Technology	9645	9957	10023	10191	10458	50274
4	Princeton University	4335	4629	4544	4635	4891	23034

```
In [128]: URpp=so_data_USA[so_data_USA.institution_name=='University of Rochester']
```

```
In [129]: URpp=URpp.reset_index()
```

```
In [130]: URpp['Total']=URpp.sum(axis=1)
```

```
In [131]: URpp
```

Out[131]:

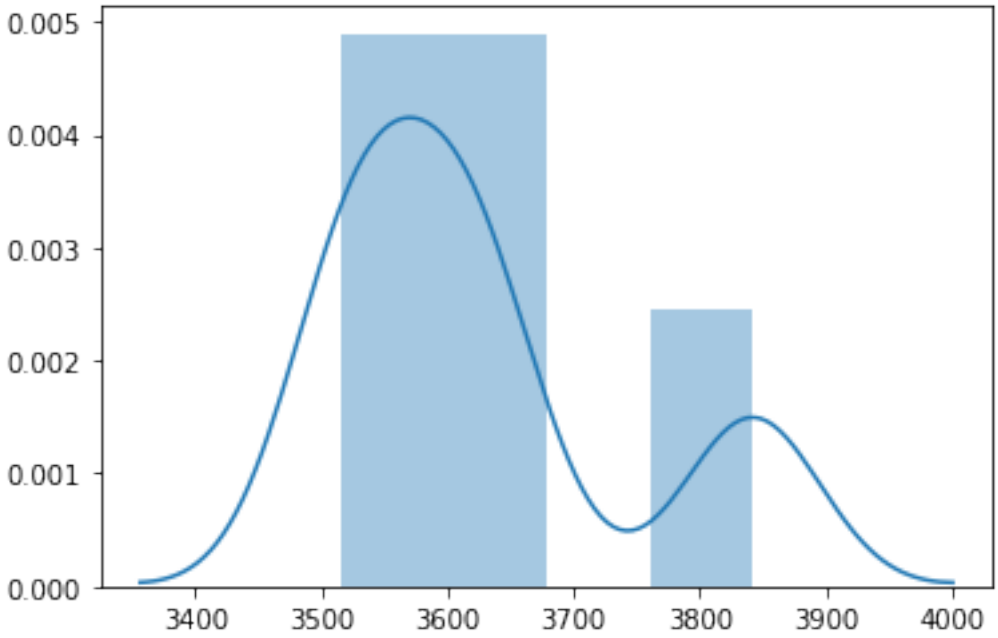
	index	institution_name	2014	2015	2016	2017	2018	Total
0	162	University of Rochester	3602	3540	3515	3633	3842	36426

34 UofR's ScholarlyOutput from 2014 to 2018.

35 It seems more like a Bi-modal distribution.

```
In [132]: # UR Publs Distribution
          inputdata=URpp[['2014','2015','2016','2017','2018']]
          sns.distplot(inputdata)

          # seems a bi-modal distribution but the overall trend is downward
```

```
Out[132]: <matplotlib.axes._subplots.AxesSubplot at 0x171c86b2518>
```



36 Top 1% and top 10% highly cited publications

```
In [135]: pp_data.tail()
```

```
Out[135]:            country countryCode  institution_id  \
          1265   Saudi Arabia         SAU          703099
          1266         Turkey         TUR          705124
          1267        Georgia         GEO          204001
          1268  United States         USA          508335
          1269  United States         USA          508059

                                                      link  \
          1265  {'@href': 'https://api.elsevier.com/analytics/...
          1266  {'@href': 'https://api.elsevier.com/analytics/...
          1267  {'@href': 'https://api.elsevier.com/analytics/...
          1268  {'@href': 'https://api.elsevier.com/analytics/...
          1269  {'@href': 'https://api.elsevier.com/analytics/...

                                      institution_name  \
          1265        Imam Abdulrahman Bin Faisal University
          1266                    Istanbul Medipol University
          1267  Ivane Javakhishvili Tbilisi State University
          1268                       University of Rochester
          1269                               Emory University
```

```
                                metricType  t1_2014  t1_2015  t1_2016  t1_2017  \
1265  PublicationsInTopJournalPercentiles      1.0      2.0      5.0      6.0
1266  PublicationsInTopJournalPercentiles      3.0      2.0      2.0      5.0
1267  PublicationsInTopJournalPercentiles      1.0      1.0      2.0      2.0
1268  PublicationsInTopJournalPercentiles    162.0    164.0    143.0    138.0
1269  PublicationsInTopJournalPercentiles    277.0    348.0    318.0    348.0

      ...  t25_2014  t25_2015  t25_2016  t25_2017  t25_2018  t25_percent2014  \
1265  ...      87.0     103.0     140.0     198.0     353.0        26.605505
1266  ...      67.0     106.0      77.0      99.0      90.0        27.800830
1267  ...     205.0     241.0     278.0     266.0     335.0        50.368546
1268  ...    2163.0    2125.0    2131.0    2130.0    2309.0        70.364340
1269  ...    3967.0    3923.0    3854.0    3975.0    4143.0        73.708660

      t25_percent2015  t25_percent2016  t25_percent2017  t25_percent2018
1265        29.428572        34.567900        38.521400        40.762123
1266        29.041096        20.810812        27.049181        25.210085
1267        53.200882        52.751423        55.416668        58.566433
1268        69.331154        67.436710        66.645805        66.522610
1269        72.246780        68.907560        67.407160        68.186310

[5 rows x 46 columns]
```

In [436]:
```
pp_data.head()
```

Out[436]:
```
           country countryCode  institution_id  \
0  United Kingdom         GBR          315091
1   United States         USA          508092
2  United Kingdom         GBR          315091
3   United States         USA          508092
4   United States         USA          508021

                                                link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name  \
0                              University of Oxford
1  Jet Propulsion Laboratory, California Institut...
2                              University of Oxford
3  Jet Propulsion Laboratory, California Institut...
4                 California Institute of Technology

                            metricType  t1_2014  t1_2015  t1_2016  t1_2017  \
0  PublicationsInTopJournalPercentiles    686.0    846.0    887.0    771.0
```

```
1  PublicationsInTopJournalPercentiles     74.0     82.0     83.0     71.0
2  PublicationsInTopJournalPercentiles    686.0    846.0    887.0    771.0
3  PublicationsInTopJournalPercentiles     74.0     82.0     83.0     71.0
4  PublicationsInTopJournalPercentiles    305.0    245.0    259.0    253.0

   ...  t25_2014  t25_2015  t25_2016  t25_2017  t25_2018  t25_percent2014  \
0  ...    8098.0    8796.0    9089.0    9372.0   10096.0         73.77915
1  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
2  ...    8098.0    8796.0    9089.0    9372.0   10096.0         73.77915
3  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
4  ...    2948.0    2945.0    3094.0    3108.0    3251.0         76.41265

   t25_percent2015  t25_percent2016  t25_percent2017  t25_percent2018
0        75.321110         73.55345        74.210150        74.923935
1        73.333336         67.42509        66.536750        64.185320
2        75.321110         73.55345        74.210150        74.923935
3        73.333336         67.42509        66.536750        64.185320
4        79.102875         77.93451        76.835594        74.752820

[5 rows x 46 columns]
```

In [136]:
```
USA_pp=pp_data[pp_data.countryCode=='USA']
```

In [137]:
```
len(USA_pp)
```

Out[137]:
```
166
```

In [138]:
```
# we want t1 and t10 values

USA_pp.head()
```

Out[138]:
```
         country countryCode  institution_id  \
1  United States         USA          508092
3  United States         USA          508092
4  United States         USA          508021
6  United States         USA          508219
7  United States         USA          508111

                                                link  \
1  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...
6  {'@href': 'https://api.elsevier.com/analytics/...
7  {'@href': 'https://api.elsevier.com/analytics/...

                                  institution_name  \
1  Jet Propulsion Laboratory, California Institut...
3  Jet Propulsion Laboratory, California Institut...
4                California Institute of Technology
```

```
6                                 Stanford University
7                Massachusetts Institute of Technology

                                metricType  t1_2014  t1_2015  t1_2016  t1_2017  \
1  PublicationsInTopJournalPercentiles      74.0     82.0     83.0     71.0
3  PublicationsInTopJournalPercentiles      74.0     82.0     83.0     71.0
4  PublicationsInTopJournalPercentiles     305.0    245.0    259.0    253.0
6  PublicationsInTopJournalPercentiles     954.0   1016.0   1073.0   1027.0
7  PublicationsInTopJournalPercentiles     820.0    818.0    918.0    822.0

   ...  t25_2014  t25_2015  t25_2016  t25_2017  t25_2018  t25_percent2014  \
1  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
3  ...    1012.0    1056.0    1215.0    1195.0    1233.0         67.55675
4  ...    2948.0    2945.0    3094.0    3108.0    3251.0         76.41265
6  ...    8211.0    8963.0    8819.0    9276.0    9716.0         75.16478
7  ...    5930.0    6190.0    6450.0    6475.0    6957.0         75.70535

   t25_percent2015  t25_percent2016  t25_percent2017  t25_percent2018
1        73.333336        67.425090        66.536750         64.18532
3        73.333336        67.425090        66.536750         64.18532
4        79.102875        77.934510        76.835594         74.75282
6        76.541420        74.535164        75.279980         74.75571
7        75.839260        76.813150        77.120056         78.15975

[5 rows x 46 columns]
```

```
In [442]: USA_pp.columns
```

```
Out[442]: Index(['country', 'countryCode', 'institution_id', 'link', 'institution_name',
                 'metricType', 't1_2014', 't1_2015', 't1_2016', 't1_2017', 't1_2018',
                 't1_percent2014', 't1_percent2015', 't1_percent2016', 't1_percent2017',
                 't1_percent2018', 't5_2014', 't5_2015', 't5_2016', 't5_2017', 't5_2018',
                 't5_percent2014', 't5_percent2015', 't5_percent2016', 't5_percent2017',
                 't5_percent2018', 't10_2014', 't10_2015', 't10_2016', 't10_2017',
                 't10_2018', 't10_percent2014', 't10_percent2015', 't10_percent2016',
                 't10_percent2017', 't10_percent2018', 't25_2014', 't25_2015',
                 't25_2016', 't25_2017', 't25_2018', 't25_percent2014',
                 't25_percent2015', 't25_percent2016', 't25_percent2017',
                 't25_percent2018'],
                dtype='object')
```

```
In [139]: USA_pp=USA_pp.loc[:][['institution_name','t1_2014','t1_2015','t1_2016','t1_2017','t1_
```

```
In [140]: USA_pp=USA_pp.drop_duplicates()
```

```
In [141]: USA_pp=USA_pp.reset_index()
```

```
In [142]: USA_pp=USA_pp.iloc[:,1:]
```

```
In [143]: USA_pp.head()
```

Out[143]:

	institution_name	t1_2014	t1_2015	t1_2016	t1_2017	t1_2018	t10_2014	t10_2015	t10_2016	t10_2017	t10_2018
0	Jet Propulsion Laboratory, California Institut...	74.0	82.0	83.0	71.0	123.0	455.0	483.0	694.0	687.0	679.0
1	California Institute of Technology	305.0	245.0	259.0	253.0	293.0	1709.0	1579.0	2051.0	1906.0	1967.0
2	Stanford University	954.0	1016.0	1073.0	1027.0	1025.0	5558.0	6068.0	5974.0	6233.0	6307.0
3	Massachusetts Institute of Technology	820.0	818.0	918.0	822.0	869.0	4401.0	4418.0	4689.0	4613.0	4781.0
4	Princeton University	271.0	269.0	227.0	241.0	253.0	1810.0	1740.0	1916.0	1871.0	1990.0

In [144]:
```
USA_pp.tail()
```

Out[144]:

	institution_name	t1_2014	t1_2015	t1_2016	t1_2017	t1_2018	t10_2014	t10_2015	t10_2016	t10_2017	t10_2018
149	University of Texas at El Paso	15.0	11.0	13.0	20.0	30.0	164.0	238.0	254.0	257.0	246.0
150	Susquehanna University	3.0	2.0	0.0	1.0	1.0	14.0	10.0	9.0	14.0	10.0
151	California State University Long Beach	14.0	4.0	14.0	13.0	12.0	91.0	93.0	110.0	113.0	119.0
152	University of Rochester	162.0	164.0	143.0	138.0	133.0	1404.0	1308.0	1310.0	1309.0	1318.0
153	Emory University	277.0	348.0	318.0	348.0	274.0	2411.0	2494.0	2348.0	2464.0	2390.0

In [145]:
```
USA_pp['2014_Total']=USA_pp.loc[:][['t1_2014','t10_2014']].sum(axis=1)
```

In [146]:
```
USA_pp.head()
```

Out[146]:

	institution_name	t1_2014	t1_2015	t1_2016	t1_2017	t1_2018	t10_2014	t10_2015	t10_2016	t10_2017	t10_2018	2014_Total
0	Jet Propulsion Laboratory, California Institut...	74.0	82.0	83.0	71.0	123.0	455.0	483.0	694.0	687.0	679.0	529.0
1	California Institute of Technology	305.0	245.0	259.0	253.0	293.0	1709.0	1579.0	2051.0	1906.0	1967.0	2014.0
2	Stanford University	954.0	1016.0	1073.0	1027.0	1025.0	5558.0	6068.0	5974.0	6233.0	6307.0	6512.0
3	Massachusetts Institute of Technology	820.0	818.0	918.0	822.0	869.0	4401.0	4418.0	4689.0	4613.0	4781.0	5221.0
4	Princeton University	271.0	269.0	227.0	241.0	253.0	1810.0	1740.0	1916.0	1871.0	1990.0	2081.0

```
0     679.0       529.0
1    1967.0      2014.0
2    6307.0      6512.0
3    4781.0      5221.0
4    1990.0      2081.0
```

```
In [147]: USA_pp['2015_Total']=USA_pp.loc[:][['t1_2015','t10_2015']].sum(axis=1)
          USA_pp['2016_Total']=USA_pp.loc[:][['t1_2016','t10_2016']].sum(axis=1)
          USA_pp['2017_Total']=USA_pp.loc[:][['t1_2017','t10_2017']].sum(axis=1)
          USA_pp['2018_Total']=USA_pp.loc[:][['t1_2018','t10_2018']].sum(axis=1)
```

```
In [148]: USA_pp.head()
```

```
Out[148]:                                    institution_name  t1_2014  t1_2015  \
          0  Jet Propulsion Laboratory, California Institut...     74.0     82.0
          1                California Institute of Technology    305.0    245.0
          2                             Stanford University    954.0   1016.0
          3          Massachusetts Institute of Technology    820.0    818.0
          4                           Princeton University    271.0    269.0

             t1_2016  t1_2017  t1_2018  t10_2014  t10_2015  t10_2016  t10_2017  \
          0     83.0     71.0    123.0     455.0     483.0     694.0     687.0
          1    259.0    253.0    293.0    1709.0    1579.0    2051.0    1906.0
          2   1073.0   1027.0   1025.0    5558.0    6068.0    5974.0    6233.0
          3    918.0    822.0    869.0    4401.0    4418.0    4689.0    4613.0
          4    227.0    241.0    253.0    1810.0    1740.0    1916.0    1871.0

             t10_2018  2014_Total  2015_Total  2016_Total  2017_Total  2018_Total
          0     679.0       529.0       565.0       777.0       758.0       802.0
          1    1967.0      2014.0      1824.0      2310.0      2159.0      2260.0
          2    6307.0      6512.0      7084.0      7047.0      7260.0      7332.0
          3    4781.0      5221.0      5236.0      5607.0      5435.0      5650.0
          4    1990.0      2081.0      2009.0      2143.0      2112.0      2243.0
```

```
In [149]: UR_percentile=USA_pp[USA_pp.institution_name=='University of Rochester']
```

```
In [150]: UR_percentile=UR_percentile.set_index('institution_name')
```

```
In [151]: UR_percentile
```

```
Out[151]:                         t1_2014  t1_2015  t1_2016  t1_2017  t1_2018  \
          institution_name
          University of Rochester    162.0    164.0    143.0    138.0    133.0

                                   t10_2014  t10_2015  t10_2016  t10_2017  t10_2018  \
          institution_name
          University of Rochester    1404.0    1308.0    1310.0    1309.0    1318.0

                                   2014_Total  2015_Total  2016_Total  2017_Total  \
```

```
                                2018_Total
institution_name
University of Rochester             1451.0
```

In [152]:
```
basedata=UR_percentile[['2014_Total','2015_Total','2016_Total','2017_Total','2018_Tot
```

In [153]:
```
basedata
```

Out[153]:
```
                                2014_Total  2015_Total  2016_Total  2017_Total  \
institution_name
University of Rochester             1566.0      1472.0      1453.0      1447.0

                                2018_Total
institution_name
University of Rochester             1451.0
```

In [154]:
```
smalldata=UR_percentile.iloc[:,:10]
```

In [155]:
```
smalldata1=smalldata.loc[:][['t1_2014','t1_2015','t1_2016','t1_2017','t1_2018']]
```

In [156]:
```
smalldata1
```

Out[156]:
```
                                t1_2014  t1_2015  t1_2016  t1_2017  t1_2018
institution_name
University of Rochester            162.0    164.0    143.0    138.0    133.0
```

In [157]:
```
smalldata2=smalldata.loc[:][['t10_2014','t10_2015','t10_2016','t10_2017','t10_2018']]
```

In [158]:
```
smalldata2
```

Out[158]:
```
                                t10_2014  t10_2015  t10_2016  t10_2017  t10_2018
institution_name
University of Rochester            1404.0    1308.0    1310.0    1309.0    1318.0
```

In [478]:
```
# UR's ScholarlyOutput

so_data_USA.head()
```

Out[478]:
```
                                      institution_name   2014   2015   2016  \
0  Jet Propulsion Laboratory, California Institut...   1913   1800   2181
1                 California Institute of Technology   4518   4347   4553
2                                Stanford University  12801  13656  13664
3             Massachusetts Institute of Technology   9645   9957  10023
4                                Princeton University   4335   4629   4544

    2017   2018  Total
0   2052   2200  10146
```

```
1   4567   4884  22869
2  14233  14729  69083
3  10191  10458  50274
4   4635   4891  23034
```

```
In [479]: UR_so=so_data_USA[so_data_USA.institution_name=='University of Rochester']
```

```
In [486]: UR_so
          del UR_so['Total']
```

```
In [513]: UR_so
```

```
Out[513]:                          2014  2015  2016  2017  2018
          institution_name
          University of Rochester  3602  3540  3515  3633  3842
```

```
In [514]: combinedata=pd.DataFrame({'2014':[int(162.0),int(1404.0),3602], '2015':[int(164.0),in
                                    '2016':[int(143.0), int(1310.0),3515],
                                    '2017':[int(138.0),int(1309.0),3633],
                                    '2018':[int(133.0), int(1318.0),3842]})
```

```
In [515]: combinedata
```

```
Out[515]:    2014  2015  2016  2017  2018
          0   162   164   143   138   133
          1  1404  1308  1310  1309  1318
          2  3602  3540  3515  3633  3842
```

```
In [516]: data_1=combinedata.iloc[2,:]
          data_2=combinedata.iloc[1,:]
          data_3=combinedata.iloc[0,:]
```

```
In [532]: data_1
```

```
Out[532]: 2014    3602
          2015    3540
          2016    3515
          2017    3633
          2018    3842
          Name: 2, dtype: int64
```

```
In [908]: A=pd.DataFrame(data=[data_1[:5]], columns=['2014','2015','2016','2017','2018'])
```

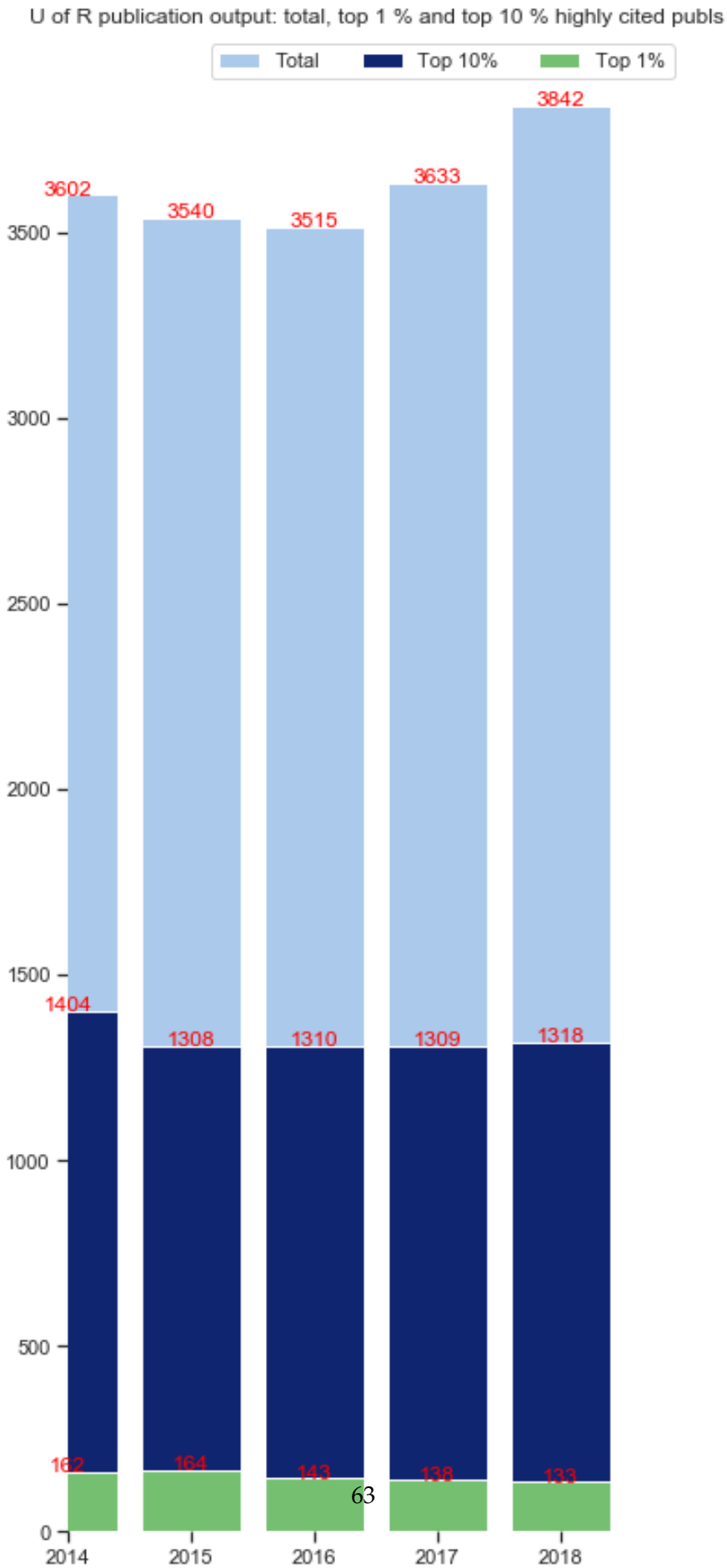
```
In [909]: A
```

```
Out[909]:    2014  2015  2016  2017  2018
          2  3602  3540  3515  3633  3842
```

```
In [911]: A.reset_index(inplace=True, drop=True)
```

```
In [912]: B=pd.DataFrame(data=[data_2[:5]], columns=['2014','2015','2016','2017','2018'])

In [914]: B.reset_index(inplace=True, drop=True)

In [915]: B

Out[915]:    2014  2015  2016  2017  2018
          0  1404  1308  1310  1309  1318

In [918]: C=pd.DataFrame(data=[data_3[:5]], columns=['2014','2015','2016','2017','2018'])

In [919]: C.reset_index(inplace=True, drop=True)

In [920]: C

Out[920]:    2014  2015  2016  2017  2018
          0   162   164   143   138   133

In [166]: def show_values_on_bars(axs, h_v="v", space=0.8):
              def _show_on_single_plot(ax):
                  if h_v == "v":
                      for p in ax.patches:
                          _x = p.get_x() + p.get_width() / 2
                          _y = p.get_y() + p.get_height()
                          value = int(p.get_height())
                          ax.text(_x, _y, value, ha="center", color='red')
                  elif h_v == "h":
                      for p in ax.patches:
                          _x = p.get_x() + p.get_width() + float(space)
                          _y = p.get_y() + p.get_height()
                          value = int(p.get_width())
                          ax.text(_x, _y, value, ha="left", color='black')

              if isinstance(axs, np.ndarray):
                  for idx, ax in np.ndenumerate(axs):
                      _show_on_single_plot(ax)
              else:
                  _show_on_single_plot(axs)

In [1024]: import seaborn as sns
           import matplotlib.pyplot as plt
           sns.set(style="whitegrid")
           sns.set_style("ticks", {"xtick.major.size": 10, "ytick.major.size": 8})

           # Initialize the matplotlib figure
           f, ax = plt.subplots(figsize=(6, 15))

           # Load the example car crash dataset
           #crashes = sns.load_dataset("car_crashes").sort_values("total", ascending=False)
```

```
# Plot the total crashes
sns.set_color_codes("pastel")
g=sns.barplot(data=A,
            label="Total", color="b")

# Plot the crashes where alcohol was involved
sns.set_color_codes("dark")
g=sns.barplot(data=B,
            label="Top 10%", color="b")

# Plot the crashes where alcohol was involved
sns.set_color_codes("muted")
g=sns.barplot(data=C,
            label="Top 1%", color="g")

show_values_on_bars(g, "v", 0.8)

# Add a legend and informative axis label
plt.yticks(np.arange(0, 4000, step=500))
plt.xticks(np.arange(5), ('2014', '2015', '2016', '2017', '2018'))
ax.legend(ncol=3, loc="upper right", frameon=True)
ax.set(xlim=(0,5), ylabel="",
       title="U of R publication output: total, top 1 % and top 10 % highly cited pu
sns.despine(left=True, bottom=True)
```


U of R publication output: total, top 1 % and top 10 % highly cited publs
Total
Top 10%
Top 1%
3842
3633
3602
3540
3515
3500
3000
2500
2000
1500
1404
1308
1310
1309
1318
1000
500
162
164
143
138
133
0
2014
2015
2016
2017
2018

37 From 2014-2018 ,our top 1% cited publs

38 and top10% cited pulbs slightly dropped.

39 However, since our 2018 total publs increased a lot,

40 it would definitely influence our overall research performance.

41 Trends in FWCI values of total U of R publication output

```
In [539]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI


In [540]: FWCI_all=pd.read_csv('THE_ALLUNI_FWCI.csv')

In [541]: FWCI_all.head()

Out[541]:           country countryCode  institution_id  \
          0  United Kingdom         GBR          315091
          1   United States         USA          508092
          2   United States         USA          508021
          3  United Kingdom         GBR          315068
          4   United States         USA          508219

                                                    link  \
          0  {'@href': 'https://api.elsevier.com/analytics/...
          1  {'@href': 'https://api.elsevier.com/analytics/...
          2  {'@href': 'https://api.elsevier.com/analytics/...
          3  {'@href': 'https://api.elsevier.com/analytics/...
          4  {'@href': 'https://api.elsevier.com/analytics/...

                                          institution_name  \
          0                              University of Oxford
          1  Jet Propulsion Laboratory, California Institut...
          2                 California Institute of Technology
          3                            University of Cambridge
          4                                Stanford University

                            metricType      2014      2015      2016      2017  \
          0  FieldWeightedCitationImpact  2.232452  2.178834  2.202485  1.966025
          1  FieldWeightedCitationImpact  1.611136  1.462793  1.656759  1.470790
          2  FieldWeightedCitationImpact  1.890797  1.740487  1.921985  1.847315
```

```
3  FieldWeightedCitationImpact  1.904510  1.990053  2.050378  1.946377
4  FieldWeightedCitationImpact  2.445251  2.476393  2.568147  2.269981

       2018
0  1.804821
1  1.346227
2  1.605074
3  1.763683
4  2.244260
```

```
In [1064]: UR_FWCI=FWCI_all[FWCI_all.institution_name=='University of Rochester']

In [1065]: UR_FWCI=UR_FWCI.iloc[:, -7:]

In [1066]: del UR_FWCI['metricType']

In [1067]: UR_FWCI
```

```
Out[1067]:              institution_name      2014      2015      2016      2017  \
           1259  University of Rochester  1.827581  2.117681  1.646356  1.700714

                 2018
           1259  1.717541
```

```
In [1043]: UR_FWCI.reset_index(inplace=True, drop=True)

In [1068]: UR_FWCI.set_index('institution_name', inplace=True, drop=True)

In [1083]: UR_FWCI.reset_index(inplace=True)

In [1084]: UR_FWCI
```

```
Out[1084]:           institution_name      2014      2015      2016      2017      2018
           0  University of Rochester  1.827581  2.117681  1.646356  1.700714  1.717541
```

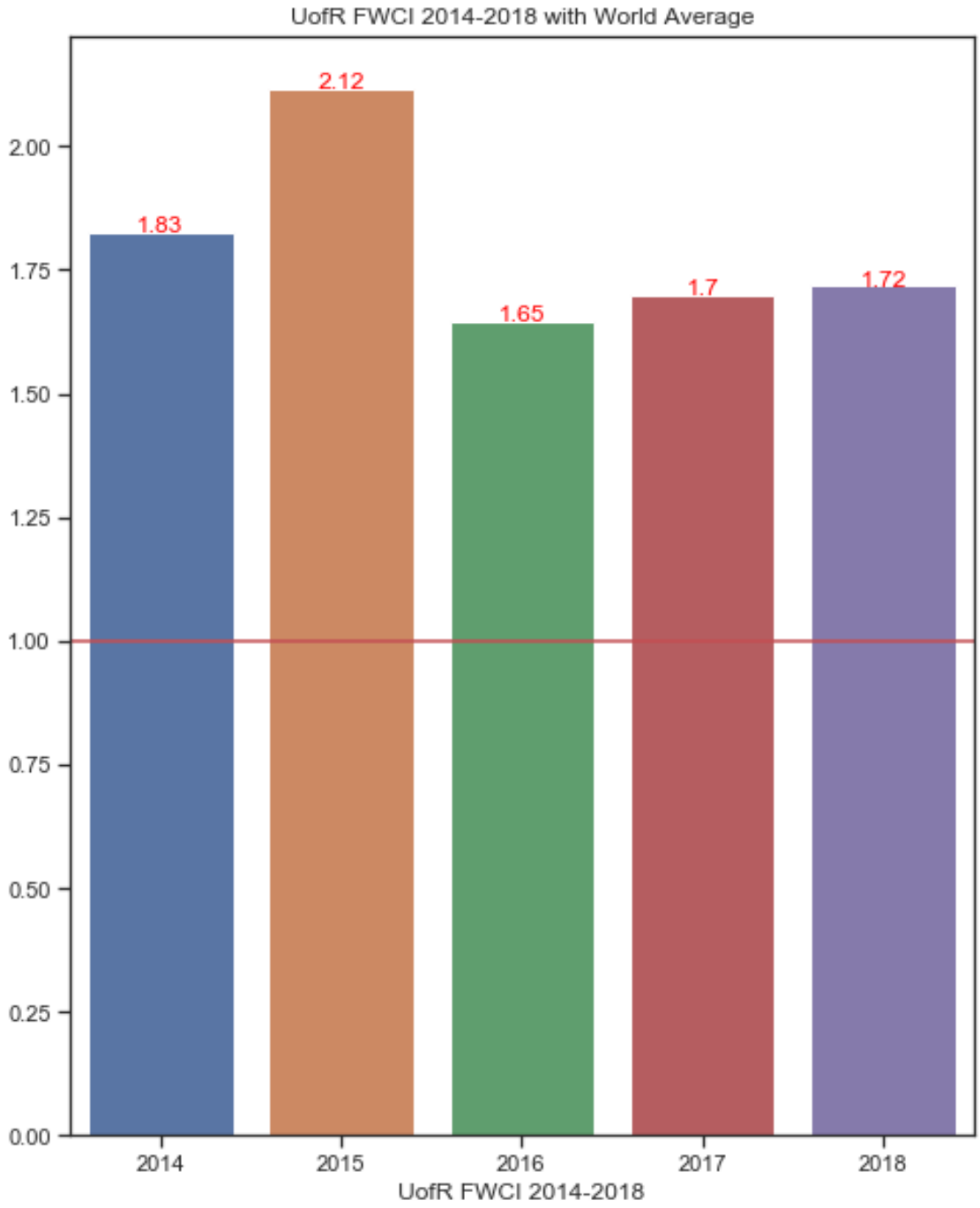
42 UofR FWCI

```
In [103]: def show_values_on_bars_1(axs, h_v="v", space=0.4):
              def _show_on_single_plot_1(ax):
                  if h_v == "v":
                      for p in ax.patches:
                          _x = p.get_x() + p.get_width() / 2
                          _y = p.get_y() + p.get_height()
                          value = round(p.get_height(),2)
                          ax.text(_x, _y, value, ha="center", color='red')
                  elif h_v == "h":
                      for p in ax.patches:
                          _x = p.get_x() + p.get_width() + float(space)
                          _y = p.get_y() + p.get_height()
```

```
                value = round(p.get_width(),2)
                ax.text(_x, _y, value, ha="left")

    if isinstance(axs, np.ndarray):
        for idx, ax in np.ndenumerate(axs):
            _show_on_single_plot_1(ax)
    else:
        _show_on_single_plot_1(axs)
```

43 UofR FWCI have always been above global average which is 1.00

```
In [1094]: import seaborn as sns
           import matplotlib.pyplot as plt
           sns.set(style="whitegrid")
           sns.set_style("ticks", {"xtick.major.size": 10, "ytick.major.size": 8})

           # Initialize the matplotlib figure
           f, ax = plt.subplots(figsize=(8, 10))
           g= sns.barplot(data=UR_FWCI)
           plt.axhline(1.00, ls='-', color='r')
           plt.title('UofR FWCI 2014-2018 with World Average')
           plt.xlabel("UofR FWCI 2014-2018")
           #plt.ylabel("Filed-weighted Cited Index")
           show_values_on_bars_1(g, 'v', 0.3)
```



44 Comparator analysis: top 10 % highly cited publications for USA universities

```
In [574]: USA_pp.head()
```

Out[574]:

	institution_name	t1_2014	t1_2015	t1_2016	t1_2017	t1_2018	t10_2014	t10_2015	t10_2016	t10_2017	t10_2018	2014_Total	2015_Total	2016_Total	2017_Total	2018_Total
0	Jet Propulsion Laboratory, California Institut...	74.0	82.0	83.0	71.0	123.0	455.0	483.0	694.0	687.0	679.0	529.0	565.0	777.0	758.0	802.0
1	California Institute of Technology	305.0	245.0	259.0	253.0	293.0	1709.0	1579.0	2051.0	1906.0	1967.0	2014.0	1824.0	2310.0	2159.0	2260.0
2	Stanford University	954.0	1016.0	1073.0	1027.0	1025.0	5558.0	6068.0	5974.0	6233.0	6307.0	6512.0	7084.0	7047.0	7260.0	7332.0
3	Massachusetts Institute of Technology	820.0	818.0	918.0	822.0	869.0	4401.0	4418.0	4689.0	4613.0	4781.0	5221.0	5236.0	5607.0	5435.0	5650.0
4	Princeton University	271.0	269.0	227.0	241.0	253.0	1810.0	1740.0	1916.0	1871.0	1990.0	2081.0	2009.0	2143.0	2112.0	2243.0

In [159]:
```
UR_peer=['Boston University','Carnegie Mellon University','Case Western Reserve Univ
         'Northwestern University','Vanderbilt University','Washington University','J
         'Stanford University','Tulane University','University of Chicago','Universit
```

In [3]:
```
import pandas as pd
```

In [6]:
```
UR_peer_df=pd.DataFrame({'UR_Peer':UR_peer})
```

In [8]:
```
UR_peer_df=UR_peer_df.iloc[:14,:]
```

In [9]:
```
UR_peer_df['UR_Peer']
```

Out[9]:
```
0                    Boston University
1           Carnegie Mellon University
2      Case Western Reserve University
3                      Duke University
4                     Emory University
5              Northwestern University
6                Vanderbilt University
7                Washington University
8             Johns Hopkins University
9                  New York University
10                 Stanford University
11                   Tulane University
12               University of Chicago
13          University of Pennsylvania
Name: UR_Peer, dtype: object
```

45 Get UofR's Global set's Publication in Top Journal Percentile

```
In [160]: chuck=[]
          for name in UR_peer_df['UR_Peer']:
              chuck.append(USA_pp[USA_pp.institution_name==name])

In [161]: DF=pd.concat(chuck, ignore_index=True)

In [162]: DF.head()
```

Out[162]:

	institution_name	t1_2014	t1_2015	t1_2016	t1_2017	\
0	Boston University	309.0	320.0	365.0	351.0	
1	Case Western Reserve University	174.0	172.0	206.0	198.0	
2	Duke University	541.0	508.0	563.0	543.0	
3	Emory University	277.0	348.0	318.0	348.0	
4	Northwestern University	511.0	526.0	621.0	527.0	

	t1_2018	t10_2014	t10_2015	t10_2016	t10_2017	t10_2018	2014_Total	\
0	369.0	2219.0	2296.0	2421.0	2580.0	2564.0	2528.0	
1	163.0	1516.0	1551.0	1572.0	1594.0	1513.0	1690.0	
2	478.0	3823.0	3910.0	3747.0	3828.0	3875.0	4364.0	
3	274.0	2411.0	2494.0	2348.0	2464.0	2390.0	2688.0	
4	603.0	3313.0	3412.0	3524.0	3682.0	3636.0	3824.0	

	2015_Total	2016_Total	2017_Total	2018_Total
0	2616.0	2786.0	2931.0	2933.0
1	1723.0	1778.0	1792.0	1676.0
2	4418.0	4310.0	4371.0	4353.0
3	2842.0	2666.0	2812.0	2664.0
4	3938.0	4145.0	4209.0	4239.0

```
In [178]: UR_percentile=USA_pp[USA_pp.institution_name=='University of Rochester']

In [179]: UR_percentile=UR_percentile.reset_index()

In [172]: Global_top10=DF.loc[:][['institution_name','t10_2014','t10_2015','t10_2016','t10_201

In [180]: UR_pcer_top10=UR_percentile.loc[:][['institution_name','t10_2014','t10_2015','t10_20

In [174]: Global_top10.head()
```

Out[174]:

	institution_name	t10_2014	t10_2015	t10_2016	t10_2017	\
0	Boston University	2219.0	2296.0	2421.0	2580.0	
1	Case Western Reserve University	1516.0	1551.0	1572.0	1594.0	
2	Duke University	3823.0	3910.0	3747.0	3828.0	
3	Emory University	2411.0	2494.0	2348.0	2464.0	
4	Northwestern University	3313.0	3412.0	3524.0	3682.0	

	t10_2018

```
0    2564.0
1    1513.0
2    3875.0
3    2390.0
4    3636.0
```

```
In [175]: Global_top10['Top10_Total']=Global_top10.sum(axis=1)
```

```
In [176]: Global_top10.head()
```

```
Out[176]:                  institution_name  t10_2014  t10_2015  t10_2016  t10_2017  \
0                Boston University    2219.0    2296.0    2421.0    2580.0
1  Case Western Reserve University    1516.0    1551.0    1572.0    1594.0
2                  Duke University    3823.0    3910.0    3747.0    3828.0
3                 Emory University    2411.0    2494.0    2348.0    2464.0
4          Northwestern University    3313.0    3412.0    3524.0    3682.0

   t10_2018  Top10_Total
0    2564.0      12080.0
1    1513.0       7746.0
2    3875.0      19183.0
3    2390.0      12107.0
4    3636.0      17567.0
```

```
In [169]: len(Global_top10)
```

```
Out[169]: 12
```

```
In [181]: UR_pcer_top10
```

```
Out[181]:           institution_name  t10_2014  t10_2015  t10_2016  t10_2017  t10_2018
0  University of Rochester    1404.0    1308.0    1310.0    1309.0    1318.0
```

```
In [182]: UR_pcer_top10['Top10_Total']=UR_pcer_top10.sum(axis=1)
```

```
In [183]: UR_pcer_top10
```

```
Out[183]:           institution_name  t10_2014  t10_2015  t10_2016  t10_2017  t10_2018  \
0  University of Rochester    1404.0    1308.0    1310.0    1309.0    1318.0

   Top10_Total
0       6649.0
```

```
In [184]: Gall=pd.concat([Global_top10, UR_pcer_top10])
```

```
In [185]: len(Gall)
```

```
Out[185]: 13
```

```
In [647]: import re
```

```
In [186]: abb=[]
          for i in Gall.institution_name:
              abb.append(i.split("\t")[0].strip(" "))
          abb # not work
```

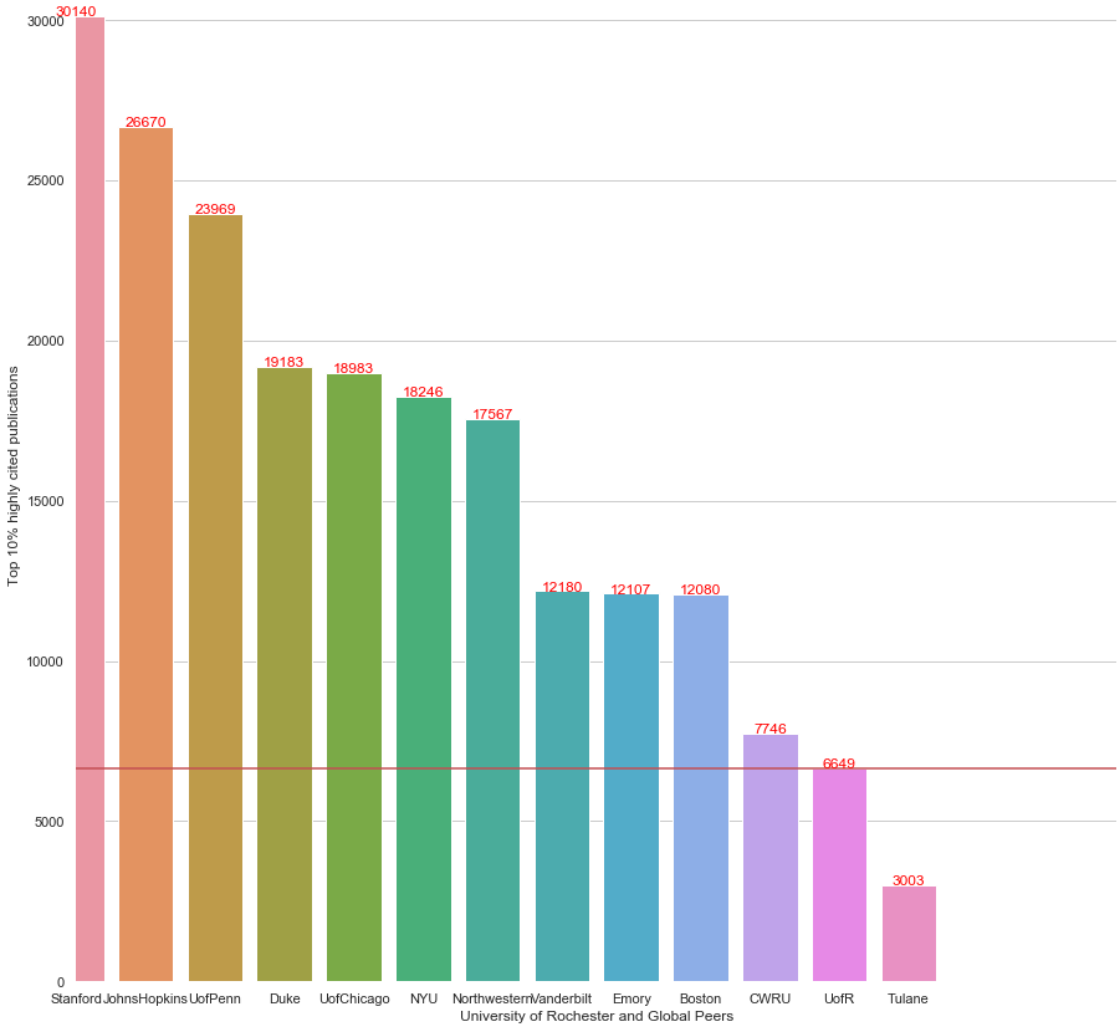
```
Out[186]: ['Boston University',
           'Case Western Reserve University',
           'Duke University',
           'Emory University',
           'Northwestern University',
           'Vanderbilt University',
           'Johns Hopkins University',
           'New York University',
           'Stanford University',
           'Tulane University',
           'University of Chicago',
           'University of Pennsylvania',
           'University of Rochester']
```

```
In [187]: Gall['UniAbbr']=['Boston','CWRU','Duke','Emory','Northwestern','Vanderbilt','JohnsHo
```

```
In [188]: Gall=Gall.sort_values(by='Top10_Total', ascending=False)
```

46 Comparator analysis: top 10% highly cited publications UR and GlobalPeers

```
In [192]: sns.set(style="whitegrid")

          # Initialize the matplotlib figure
          f, ax = plt.subplots(figsize=(15, 15))
          g=sns.barplot(x=Gall.UniAbbr, y=Gall.Top10_Total, data=Gall)
          plt.axhline(6649, ls='-', color='r') # can add a red base line for UofR value

          #ax.text(Gall.UniAbbr, Gall.Top10_Total,color='black', ha="center")

          # Add a legend and informative axis label
          #ax.legend(ncol=12, loc="upper right", frameon=True)
          ax.set(xlim=(0, 15),
                 xlabel="University of Rochester and Global Peers", ylabel="Top 10% highly cite
          sns.despine(left=True, bottom=True)

          show_values_on_bars(g,'v', 0.5)
```



47 Among our other 12 USA peers,

48 our top 10% highly-cited pulbs is relatively fewer

49 Comparator analysis: Field-weighted Citation Impact

```
In [193]: fwci_data.head()
```

```
Out[193]:           country countryCode  institution_id  \
          0  United Kingdom         GBR          315091
          1   United States         USA          508092
          2   United States         USA          508021
          3  United Kingdom         GBR          315068
```

```
4   United States         USA          508219

                                                  link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name  \
0                              University of Oxford
1  Jet Propulsion Laboratory, California Institut...
2                 California Institute of Technology
3                            University of Cambridge
4                                Stanford University

                     metricType      2014      2015      2016      2017  \
0  FieldWeightedCitationImpact  2.232452  2.178834  2.202485  1.966025
1  FieldWeightedCitationImpact  1.611136  1.462793  1.656759  1.470790
2  FieldWeightedCitationImpact  1.890797  1.740487  1.921985  1.847315
3  FieldWeightedCitationImpact  1.904510  1.990053  2.050378  1.946377
4  FieldWeightedCitationImpact  2.445251  2.476393  2.568147  2.269981

       2018
0  1.804821
1  1.346227
2  1.605074
3  1.763683
4  2.244260
```

In [194]:
```
fwci_data.tail()
```

Out[194]:
```
            country countryCode  institution_id  \
1263   Saudi Arabia         SAU          703099
1264         Turkey         TUR          705124
1265        Georgia         GEO          204001
1266  United States         USA          508335
1267  United States         USA          508059

                                                  link  \
1263  {'@href': 'https://api.elsevier.com/analytics/...
1264  {'@href': 'https://api.elsevier.com/analytics/...
1265  {'@href': 'https://api.elsevier.com/analytics/...
1266  {'@href': 'https://api.elsevier.com/analytics/...
1267  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name  \
1263        Imam Abdulrahman Bin Faisal University
```

```
1264                    Istanbul Medipol University
1265  Ivane Javakhishvili Tbilisi State University
1266                          University of Rochester
1267                                  Emory University

                         metricType      2014      2015      2016      2017  \
1263  FieldWeightedCitationImpact  0.698082  0.649441  0.772378  0.787842
1264  FieldWeightedCitationImpact  0.661692  0.577872  0.552237  0.635915
1265  FieldWeightedCitationImpact  1.556471  1.550585  1.177011  1.246151
1266  FieldWeightedCitationImpact  1.827581  2.117681  1.646356  1.700714
1267  FieldWeightedCitationImpact  1.999690  2.186228  2.209265  1.948478

          2018
1263  0.880861
1264  0.666751
1265  1.725649
1266  1.717541
1267  1.967104
```

In [195]:
```
US_fwci=fwci_data[fwci_data.countryCode=='USA']
```

In [196]:
```
US_fwci.head()
```

Out[196]:
```
          country countryCode  institution_id  \
1  United States         USA          508092
2  United States         USA          508021
4  United States         USA          508219
5  United States         USA          508111
6  United States         USA          508191

                                                  link  \
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...
5  {'@href': 'https://api.elsevier.com/analytics/...
6  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name  \
1  Jet Propulsion Laboratory, California Institut...
2                California Institute of Technology
4                             Stanford University
5            Massachusetts Institute of Technology
6                           Princeton University

                     metricType      2014      2015      2016      2017  \
1  FieldWeightedCitationImpact  1.611136  1.462793  1.656759  1.470790
2  FieldWeightedCitationImpact  1.890797  1.740487  1.921985  1.847315
4  FieldWeightedCitationImpact  2.445251  2.476393  2.568147  2.269981
```

```
5  FieldWeightedCitationImpact  2.271606  2.301666  2.355942  2.132760
6  FieldWeightedCitationImpact  2.111493  2.144071  2.101741  1.906495

       2018
1  1.346227
2  1.605074
4  2.244260
5  1.971292
6  1.919808
```

```
In [200]: UR_peer_df
```

Out[200]:

	UR_Peer
0	Boston University
1	Carnegie Mellon University
2	Case Western Reserve University
3	Duke University
4	Emory University
5	Northwestern University
6	Vanderbilt University
7	Washington University
8	Johns Hopkins University
9	New York University
10	Stanford University
11	Tulane University
12	University of Chicago
13	University of Pennsylvania

```
In [212]: UR=pd.DataFrame({'UR_Peer':['University of Rochester']})

In [214]: UR_peer_df=pd.concat([UR_peer_df, UR])

In [215]: UR_peer_df.reset_index(inplace=True)

In [198]: len(Gall.institution_name) # Global peers and UofR

Out[198]: 13

In [216]: chuck=[]

          for name in UR_peer_df.UR_Peer:
              if US_fwci[US_fwci.institution_name==name] is not None:
                  chuck.append(US_fwci[US_fwci.institution_name==name])

In [217]: UR_Peer_FWCI=pd.concat(chuck, ignore_index=True)

In [24]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\FNCI
```

```
In [218]: UR_Peer_FWCI.to_csv('UR_Global_Peer_FWCI_Comparison.csv', index=False)

In [29]: ALL_FWCI=pd.read_csv('THE_ALLUNI_FWCI.csv')

In [30]: ALL_FWCI=ALL_FWCI.drop_duplicates()

In [31]: ALL_FWCI.head()
```

Out[31]:

	country	countryCode	institution_id	link	institution_name	metricType	2014	2015	2016	2017	2018
0	United Kingdom	GBR	315091	{'@href': 'https://api.elsevier.com/analytics/...	University of Oxford	FieldWeightedCitationImpact	2.232452	2.178834	2.202485	1.966025	1.804821
1	United States	USA	508092	{'@href': 'https://api.elsevier.com/analytics/...	Jet Propulsion Laboratory, California Institut...	FieldWeightedCitationImpact	1.611136	1.462793	1.656759	1.470790	1.346227
2	United States	USA	508021	{'@href': 'https://api.elsevier.com/analytics/...	California Institute of Technology	FieldWeightedCitationImpact	1.890797	1.740487	1.921985	1.847315	1.605074
3	United Kingdom	GBR	315068	{'@href': 'https://api.elsevier.com/analytics/...	University of Cambridge	FieldWeightedCitationImpact	1.904510	1.990053	2.050378	1.946377	1.763683
4	United States	USA	508219	{'@href': 'https://api.elsevier.com/analytics/...	Stanford University	FieldWeightedCitationImpact	2.445251	2.476393	2.568147	2.269981	2.244260

```
In [219]: UR_Peer_FWCI=UR_Peer_FWCI.iloc[:, -7:]

In [222]: UR_Peer_FWCI=UR_Peer_FWCI.drop_duplicates()

In [223]: abb=[]
          for name in Gall.UniAbbr:
              abb.append(name)
          abb
```

```
Out[223]: ['Stanford',
           'JohnsHopkins',
           'UofPenn',
           'Duke',
           'UofChicago',
           'NYU',
           'Northwestern',
           'Vanderbilt',
           'Emory',
           'Boston',
           'CWRU',
           'UofR',
           'Tulane']

In [764]: UR_Peer_FWCI=UR_Peer_FWCI.drop_duplicates()

In [224]: UR_Peer_FWCI.reset_index(inplace=True, drop=True)

In [225]: UR_Peer_FWCI
```

Out[225]:

	institution_name	metricType	2014	2015	2016	2017	2018
0	Boston University	FieldWeightedCitationImpact	2.102325	2.017788	2.082099	1.699757	1.916557
1	Case Western Reserve University	FieldWeightedCitationImpact	1.785904	1.952037	1.955858	1.773011	1.861512
2	Duke University	FieldWeightedCitationImpact	2.060966	2.188656	1.971610	1.903780	1.848280
3	Emory University	FieldWeightedCitationImpact	1.999690	2.186228	2.209265	1.948478	1.967104
4	Northwestern University	FieldWeightedCitationImpact	1.814437	2.036129	2.104611	2.028618	1.968102
5	Vanderbilt University	FieldWeightedCitationImpact	1.935092	2.053712	1.799374	1.751226	1.698510
6	Johns Hopkins University	FieldWeightedCitationImpact	2.039671	2.063183	2.086808	1.941970	1.903996
7	New York University	FieldWeightedCitationImpact	2.036910	2.071903	1.961854	1.787898	1.819667
8	Stanford University	FieldWeightedCitationImpact	2.445251	2.476393	2.568147	2.269981	2.244260
9	Tulane University	FieldWeightedCitationImpact	1.272190	1.784176	1.650411	1.381838	1.569006
10	University of Chicago	FieldWeightedCitationImpact	1.899739	1.866923	2.041074	1.860755	1.800015
11	University of Pennsylvania	FieldWeightedCitationImpact	2.049064	2.078196	2.042546	1.896038	1.865539
12	University of Rochester	FieldWeightedCitationImpact	1.827581	2.117681	1.646356	1.700714	1.717541

```
In [230]: UR_Peer_FWCI['UniAbbr']=['Boston','CWRU','Duke','Emory','Northwestern','Vanderbilt',
                                   'UofC','UofPenn','UofR']

C:\ProgramData\Anaconda3\lib\site-packages\ipykernel_launcher.py:2: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html



In [231]: UR_Peer_FWCI.head()

Out[231]:                  institution_name                   metricType      2014  \
          0                Boston University  FieldWeightedCitationImpact  2.102325
          1  Case Western Reserve University  FieldWeightedCitationImpact  1.785904
          2                  Duke University  FieldWeightedCitationImpact  2.060966
          3                 Emory University  FieldWeightedCitationImpact  1.999690
          4          Northwestern University  FieldWeightedCitationImpact  1.814437

                2015      2016      2017      2018       UniAbbr
          0  2.017788  2.082099  1.699757  1.916557        Boston
          1  1.952037  1.955858  1.773011  1.861512          CWRU
          2  2.188656  1.971610  1.903780  1.848280          Duke
          3  2.186228  2.209265  1.948478  1.967104         Emory
          4  2.036129  2.104611  2.028618  1.968102  Northwestern

In [234]: UR_Peer_FWCI['AVERAGE_FWCI']=round(UR_Peer_FWCI[['2014','2015','2016','2017','2018']]

C:\ProgramData\Anaconda3\lib\site-packages\ipykernel_launcher.py:1: SettingWithCopyWarning:
A value is trying to be set on a copy of a slice from a DataFrame.
Try using .loc[row_indexer,col_indexer] = value instead

See the caveats in the documentation: http://pandas.pydata.org/pandas-docs/stable/indexing.html
  """Entry point for launching an IPython kernel.


In [235]: UR_Peer_FWCI=UR_Peer_FWCI.sort_values(by='AVERAGE_FWCI', ascending=False)

In [236]: UR_Peer_FWCI.head()

Out[236]:             institution_name                   metricType      2014      2015  \
          8       Stanford University  FieldWeightedCitationImpact  2.445251  2.476393
          3          Emory University  FieldWeightedCitationImpact  1.999690  2.186228
          6  Johns Hopkins University  FieldWeightedCitationImpact  2.039671  2.063183
          2           Duke University  FieldWeightedCitationImpact  2.060966  2.188656
          4   Northwestern University  FieldWeightedCitationImpact  1.814437  2.036129

                 2016      2017      2018       UniAbbr  AVERAGE_FWCI
```

```
8  2.568147  2.269981  2.244260      Stanford        2.4008
3  2.209265  1.948478  1.967104         Emory        2.0622
6  2.086808  1.941970  1.903996      JHopkins        2.0071
2  1.971610  1.903780  1.848280          Duke        1.9947
4  2.104611  2.028618  1.968102  Northwestern        1.9904
```

In [237]:
```
UR_Peer_FWCI[UR_Peer_FWCI.UniAbbr=='UofR']
```

Out[237]:
```
           institution_name                   metricType      2014      2015  \
12  University of Rochester  FieldWeightedCitationImpact  1.827581  2.117681

        2016      2017      2018 UniAbbr  AVERAGE_FWCI
12  1.646356  1.700714  1.717541    UofR         1.802
```

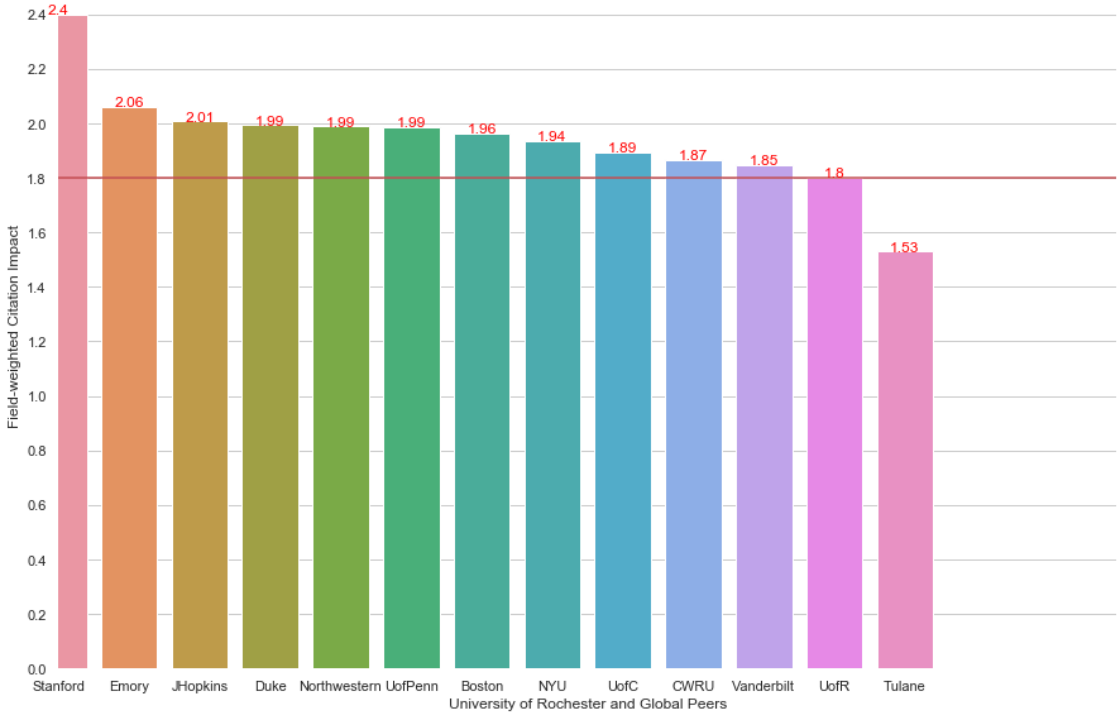
50 Comparatory analysis: Field-weighted Citation Impact

51 Our average FWCI 2014-2018 is 1.8,

52 but most of our USA peers have higher FWCI,

53 this may explain why our overall score did not reflect our good FWCI

In [238]:
```
sns.set(style="whitegrid")

# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(15, 10))
g=sns.barplot(x=UR_Peer_FWCI.UniAbbr, y=UR_Peer_FWCI.AVERAGE_FWCI, data=UR_Peer_FWCI)
plt.axhline(1.802, ls='-', color='r')

show_values_on_bars_1(g , 'v' , 0.5)

#ax.text(Gall.UniAbbr, Gall.Top10_Total,color='black', ha="center")

# Add a legend and informative axis label
#ax.legend(ncol=12, loc="upper right", frameon=True)
plt.yticks(np.arange(0, 2.5, step=0.2))
ax.set(xlim=(0, 15),
       xlabel="University of Rochester and Global Peers", ylabel="Field-weighted Cita
sns.despine(left=True, bottom=True)
```



54 Comparatory analysis:

55 top publication output and highly cited publications

```
In [19]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalP
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalPercentile
```

```
In [2]: import pandas as pd
        import numpy as np
```

```
In [20]: A_PP=pd.read_csv('THE_ALLUNI_PP.csv')
```

```
In [21]: USA_PP=A_PP[A_PP.countryCode=='USA']
```

```
In [22]: USA_PP=USA_PP.drop_duplicates()
```

```
In [32]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\research_perfo
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\research_performance_Profil
```

```
In [33]: UR_peer=pd.read_csv('UR_GloPeers_Research_Performance_Profile.csv')
```

```
In [34]: chuck=[]
         for name in UR_peer.institution_name:
             chuck.append(USA_PP[USA_PP.institution_name==name])

In [35]: UR_Peers_PP=pd.concat(chuck, ignore_index=True)

In [36]: UR_Peers_PP
```

Out[36]:

	country	countryCode	institution_id	\
0	United States	USA	508219	
1	United States	USA	508094	
2	United States	USA	508331	
3	United States	USA	508166	
4	United States	USA	508053	
5	United States	USA	508270	
6	United States	USA	508175	
7	United States	USA	508363	
8	United States	USA	508059	
9	United States	USA	508013	
10	United States	USA	508032	
11	United States	USA	508335	
12	United States	USA	508239	

	link	\
0	{'@href': 'https://api.elsevier.com/analytics/...	
1	{'@href': 'https://api.elsevier.com/analytics/...	
2	{'@href': 'https://api.elsevier.com/analytics/...	
3	{'@href': 'https://api.elsevier.com/analytics/...	
4	{'@href': 'https://api.elsevier.com/analytics/...	
5	{'@href': 'https://api.elsevier.com/analytics/...	
6	{'@href': 'https://api.elsevier.com/analytics/...	
7	{'@href': 'https://api.elsevier.com/analytics/...	
8	{'@href': 'https://api.elsevier.com/analytics/...	
9	{'@href': 'https://api.elsevier.com/analytics/...	
10	{'@href': 'https://api.elsevier.com/analytics/...	
11	{'@href': 'https://api.elsevier.com/analytics/...	
12	{'@href': 'https://api.elsevier.com/analytics/...	

	institution_name	metricType	\
0	Stanford University	PublicationsInTopJournalPercentiles	
1	Johns Hopkins University	PublicationsInTopJournalPercentiles	
2	University of Pennsylvania	PublicationsInTopJournalPercentiles	
3	New York University	PublicationsInTopJournalPercentiles	
4	Duke University	PublicationsInTopJournalPercentiles	
5	University of Chicago	PublicationsInTopJournalPercentiles	
6	Northwestern University	PublicationsInTopJournalPercentiles	
7	Vanderbilt University	PublicationsInTopJournalPercentiles	
8	Emory University	PublicationsInTopJournalPercentiles	

```
9                Boston University  PublicationsInTopJournalPercentiles
10  Case Western Reserve University  PublicationsInTopJournalPercentiles
11          University of Rochester  PublicationsInTopJournalPercentiles
12                Tulane University  PublicationsInTopJournalPercentiles

    t1_2014  t1_2015  t1_2016  t1_2017  ...  t25_2014  t25_2015  t25_2016  \
0     954.0   1016.0   1073.0   1027.0  ...    8211.0    8963.0    8819.0
1     615.0    610.0    754.0    796.0  ...    8211.0    8685.0    8866.0
2     693.0    719.0    777.0    701.0  ...    7190.0    7286.0    7455.0
3     475.0    492.0    509.0    495.0  ...    5484.0    5704.0    5969.0
4     541.0    508.0    563.0    543.0  ...    5910.0    5894.0    5863.0
5     582.0    535.0    569.0    515.0  ...    5553.0    5666.0    5705.0
6     511.0    526.0    621.0    527.0  ...    5070.0    5210.0    5301.0
7     295.0    339.0    320.0    316.0  ...    3876.0    3917.0    4054.0
8     277.0    348.0    318.0    348.0  ...    3967.0    3923.0    3854.0
9     309.0    320.0    365.0    351.0  ...    3576.0    3668.0    3775.0
10    174.0    172.0    206.0    198.0  ...    2619.0    2569.0    2643.0
11    162.0    164.0    143.0    138.0  ...    2163.0    2125.0    2131.0
12     62.0     78.0     78.0     70.0  ...     988.0    1049.0    1070.0

    t25_2017  t25_2018  t25_percent2014  t25_percent2015  t25_percent2016  \
0     9276.0    9716.0        75.164780        76.541420        74.535164
1     9088.0    9362.0        73.608246        73.921190        72.672130
2     7541.0    8363.0        73.150880        72.678310        71.641365
3     6262.0    6624.0        69.373820        68.582420        67.097570
4     5972.0    6376.0        75.885980        74.054530        73.077410
5     5613.0    5999.0        75.142080        74.425330        74.100530
6     5606.0    5733.0        74.177030        74.280014        73.594340
7     4218.0    4354.0        73.772360        73.310875        71.612785
8     3975.0    4143.0        73.708660        72.246780        68.907560
9     3967.0    4141.0        74.006620        74.311190        74.077705
10    2683.0    2670.0        70.214480        67.392440        65.631990
11    2130.0    2309.0        70.364340        69.331154        67.436710
12    1088.0    1125.0        64.786890        65.358260        66.171930

    t25_percent2017  t25_percent2018
0         75.279980        74.755710
1         71.921490        71.226420
2         70.635070        70.389700
3         67.449370        65.851470
4         71.908485        72.347670
5         73.190765        74.043450
6         73.840890        73.368310
7         72.486680        70.877420
8         67.407160        68.186310
9         73.503800        72.853620
10        65.137170        62.441532
11        66.645805        66.522610
```

```
          12        66.099640        66.137566

          [13 rows x 46 columns]
```

```
In [38]: UR_Peers_top1=UR_Peers_PP.loc[:][['institution_name','t1_2014','t1_2015','t1_2016','t
```

```
In [39]: UR_Peers_top10=UR_Peers_PP.loc[:][['institution_name','t10_2014','t10_2015','t10_2016
```

```
In [40]: UR_Peers_top1['top1_all']=UR_Peers_top1.sum(axis=1)
```

```
In [41]: UR_Peers_top10['top10_all']=UR_Peers_top10.sum(axis=1)
```

```
In [42]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput
```

```
In [43]: ALL_so=pd.read_csv('THE_ALLUNI_SO.csv')
```

```
In [45]: USA_so=ALL_so[ALL_so.countryCode=='USA']
```

```
In [49]: chuck=[]
         for name in UR_Peers_PP.institution_name:
             chuck.append(USA_so[USA_so.institution_name==name])
         UR_Peers_SO=pd.concat(chuck, ignore_index=True)
```

```
In [52]: UR_Peers_SO=UR_Peers_SO.drop_duplicates()
```

```
In [53]: UR_Peers_SO['Total_PUBLS']=UR_Peers_SO.sum(axis=1)
```

```
In [60]: O=UR_Peers_SO.loc[:][['institution_name','Total_PUBLS']]
```

```
In [61]: P=UR_Peers_top1.loc[:][['institution_name','top1_all']]
```

```
In [62]: Q=UR_Peers_top10.loc[:][['institution_name','top10_all']]
```

```
In [63]: part1=O.join(P.set_index('institution_name'), on='institution_name')
```

```
In [64]: part2=part1.join(Q.set_index('institution_name'), on='institution_name')
```

```
In [65]: part2
```

Out[65]:

	institution_name	Total_PUBLS	top1_all	top10_all
0	Stanford University	577302	5095.0	30140.0
1	Johns Hopkins University	574103	3467.0	26670.0
2	University of Pennsylvania	566904	3589.0	23969.0
3	New York University	558900	2469.0	18246.0
5	Duke University	553164	2633.0	19183.0
6	University of Chicago	552365	2750.0	18983.0
7	Northwestern University	548490	2788.0	17567.0
9	Vanderbilt University	539419	1605.0	12180.0
10	Emory University	538845	1565.0	12107.0
11	Boston University	536886	1714.0	12080.0
12	Case Western Reserve University	530266	913.0	7746.0
13	University of Rochester	526467	740.0	6649.0
14	Tulane University	517260	370.0	3003.0

```
In [66]: part2['remaining_90%']=part2.Total_PUBLS-part2.top1_all-part2.top10_all

In [67]: part2
```

Out[67]:

	institution_name	Total_PUBLS	top1_all	top10_all	remaining_90%
0	Stanford University	577302	5095.0	30140.0	542067.0
1	Johns Hopkins University	574103	3467.0	26670.0	543966.0
2	University of Pennsylvania	566904	3589.0	23969.0	539346.0
3	New York University	558900	2469.0	18246.0	538185.0
5	Duke University	553164	2633.0	19183.0	531348.0
6	University of Chicago	552365	2750.0	18983.0	530632.0
7	Northwestern University	548490	2788.0	17567.0	528135.0
9	Vanderbilt University	539419	1605.0	12180.0	525634.0
10	Emory University	538845	1565.0	12107.0	525173.0
11	Boston University	536886	1714.0	12080.0	523092.0
12	Case Western Reserve University	530266	913.0	7746.0	521607.0
13	University of Rochester	526467	740.0	6649.0	519078.0
14	Tulane University	517260	370.0	3003.0	513887.0

```
In [70]: part2['Abbr']=['Stanford','JohnsHopkins','UofPenn','NYU','Duke','UofChicago','Northwes

In [71]: part2
```

Out[71]:

	institution_name	Total_PUBLS	top1_all	top10_all
0	Stanford University	577302	5095.0	30140.0
1	Johns Hopkins University	574103	3467.0	26670.0
2	University of Pennsylvania	566904	3589.0	23969.0
3	New York University	558900	2469.0	18246.0
5	Duke University	553164	2633.0	19183.0
6	University of Chicago	552365	2750.0	18983.0
7	Northwestern University	548490	2788.0	17567.0
9	Vanderbilt University	539419	1605.0	12180.0
10	Emory University	538845	1565.0	12107.0
11	Boston University	536886	1714.0	12080.0

```
12  Case Western Reserve University       530266     913.0     7746.0
13           University of Rochester       526467     740.0     6649.0
14                 Tulane University       517260     370.0     3003.0

    remaining_90%          Abbr
0        542067.0      Stanford
1        543966.0  JohnsHopkins
2        539346.0       UofPenn
3        538185.0           NYU
5        531348.0          Duke
6        530632.0    UofChicago
7        528135.0  Northwestern
9        525634.0    Vanderbilt
10       525173.0         Emory
11       523092.0        Boston
12       521607.0          CWRU
13       519078.0          UofR
14       513887.0        Tulane
```

```
In [84]: A=part2[['Abbr','remaining_90%']]

In [95]: A.reset_index(inplace=True)

In [86]: B=part2[['Abbr','top10_all']]

In [99]: B
```

```
Out[99]:             Abbr  top10_all
         0       Stanford    30140.0
         1   JohnsHopkins    26670.0
         2        UofPenn    23969.0
         3            NYU    18246.0
         5           Duke    19183.0
         6     UofChicago    18983.0
         7   Northwestern    17567.0
         9     Vanderbilt    12180.0
         10         Emory    12107.0
         11        Boston    12080.0
         12          CWRU     7746.0
         13          UofR     6649.0
         14        Tulane     3003.0
```

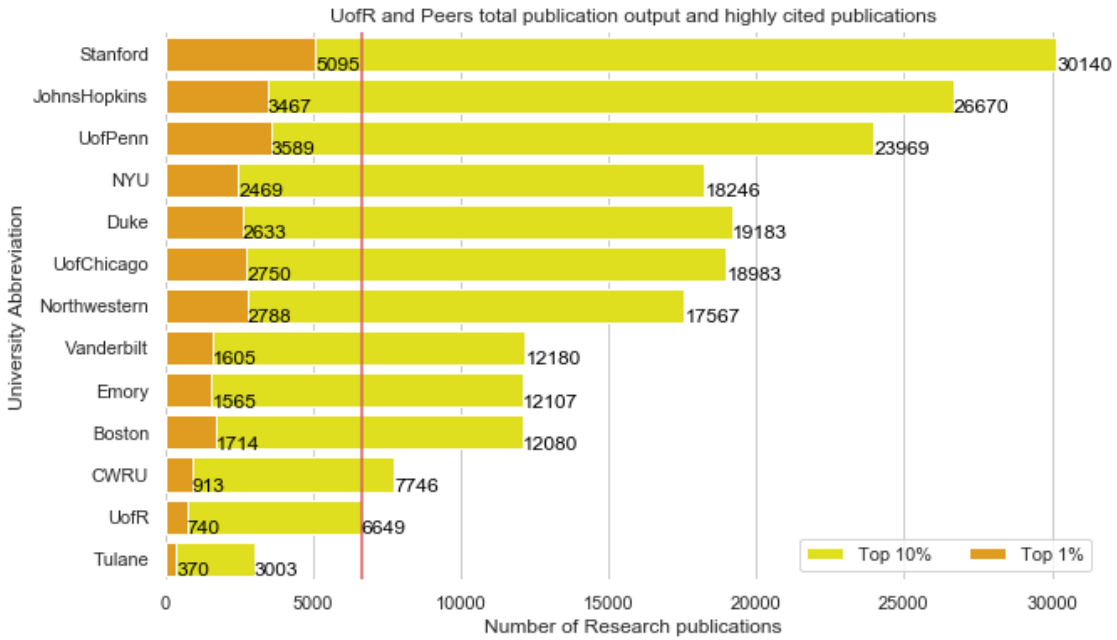
```
In [87]: C=part2[['Abbr','top1_all']]

In [101]: len(C.Abbr)

Out[101]: 13

In [98]: def show_values_on_bars(axs, h_v="v", space=0.8):
             def _show_on_single_plot(ax):
```

```
            if h_v == "v":
                for p in ax.patches:
                    _x = p.get_x() + p.get_width() / 2
                    _y = p.get_y() + p.get_height()
                    value = int(p.get_height())
                    ax.text(_x, _y, value, ha="center", color='red')
            elif h_v == "h":
                for p in ax.patches:
                    _x = p.get_x() + p.get_width() + float(space)
                    _y = p.get_y() + p.get_height()
                    value = int(p.get_width())
                    ax.text(_x, _y, value, ha="left", color='black')

        if isinstance(axs, np.ndarray):
            for idx, ax in np.ndenumerate(axs):
                _show_on_single_plot(ax)
        else:
            _show_on_single_plot(axs)
```

56 Compare to our USA peers, our top 1% and top 10% highly cited

57 publications is relatively low

In [174]:
```
# Plot the crashes where alcohol was involved
# Plot the crashes where alcohol was involved
sns.set(style="whitegrid")
f, ax = plt.subplots(figsize=(10, 6))
sns.set_color_codes()
g=sns.barplot(x='top10_all',y='Abbr',data=B,
            label="Top 10%", color="yellow")
sns.set_color_codes("muted")
g=sns.barplot(x='top1_all', y='Abbr', data=C,
            label="Top 1%", color="orange")

plt.axvline(6649, ls='-', color='r')

ax.legend(ncol=2, loc="lower right", frameon=True)
#plt.xticks(np.arange(0,3000, step=100))
ax.set(xlabel='Number of Research publications', ylabel="University Abbreviation",
       title="UofR and Peers total publication output and highly cited publications")
sns.despine(left=True, bottom=True)

show_values_on_bars(g, "h", 2)
```



58 Use all THE University ids to get Topic Cluster ids

```
In [175]: url='https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/{}?topicI
```

```
In [176]: import requests
          import json
          import pandas as pd
          import numpy as np
```

```
In [177]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCite
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

```
In [178]: ALL_Uids=pd.read_csv("THEUNI_CITEDPUBLS.csv")
```

```
In [182]: ALL_Uids=ALL_Uids.iloc[:,:3]
```

```
In [184]: USA_Uids=ALL_Uids[ALL_Uids.countryCode=='USA']
```

```
In [186]: USA_Uids.reset_index(inplace=True, drop=True)
```

```
In [189]: USA_Uids.head() # these are the USA university ids we'll use in API
          len(USA_Uids) # 165 universities
```

```
Out[189]: 165
```

```
In [191]: inst_ids=USA_Uids

In [ ]: # get topic ids

In [ ]: # THE

In [216]: url='https://api.elsevier.com/analytics/scival/subjectArea/classificationType/THE?'

In [197]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data


In [198]: import time
          from time import sleep

In [214]: time.sleep(1)

          subjectAreas_name=[]
          subjectAreas_id=[]
          subjectAreas_uri=[]
          classificationType=[]
          classificationName=[]


          resp = requests.get(url, headers={'Accept':'application/json',
                                            'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
          parsed=json.dumps(resp.json(),
                            sort_keys=True,
                            indent=4, separators=(',', ': '))
          #    print(parsed)
          result=json.loads(parsed)
          result["subjectAreas"][0]['children'][0]

Out[214]: {'classificationType': 'ASJC',
           'id': 1000,
           'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/1000?classi
            '@ref': 'self',
            '@type': 'application/json'},
           'name': 'Multidisciplinary',
           'uri': 'Class/ASJC/Code/1000'}

In [204]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\THE Code"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\THE Code


In [235]: subjectAreas_name=[]
          subjectAreas_id=[]
          subjectAreas_uri=[]
```

```
classificationType=[]
classificationName=[]

resp = requests.get(url, headers={'Accept':'application/json',
                                  'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
result=json.loads(parsed)
#if 'children' in result['subjectAreas'][0]:
#    if len(result['subjectAreas']) >=1:
#        if "name" in result["subjectAreas"][0]['children'][0]:
#    subjectAreas_name.append(result["subjectAreas"][0]['children'][0]["name"])
#subjectAreas_name
#result
result
```

Out[235]:
```
{'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/classificat
  '@ref': 'self',
  '@type': 'application/json'},
 'subjectAreas': [{'classificationName': 'Times Higher Education',
   'classificationType': 'THE',
   'id': 32,
   'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/32?classi
    '@ref': 'self',
    '@type': 'application/json'},
   'name': 'Life Sciences',
   'uri': 'Class/THE/Code/32'},
  {'classificationName': 'Times Higher Education',
   'classificationType': 'THE',
   'id': 33,
   'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/33?classi
    '@ref': 'self',
    '@type': 'application/json'},
   'name': 'Arts and Humanities',
   'uri': 'Class/THE/Code/33'},
  {'classificationName': 'Times Higher Education',
   'classificationType': 'THE',
   'id': 34,
   'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/34?classi
    '@ref': 'self',
    '@type': 'application/json'},
   'name': 'Clinical, pre-clinical and health',
   'uri': 'Class/THE/Code/34'},
  {'classificationName': 'Times Higher Education',
   'classificationType': 'THE',
   'id': 35,
```

```
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/35?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Business and Economics',
 'uri': 'Class/THE/Code/35'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 36,
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/36?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Engineering and Technology',
 'uri': 'Class/THE/Code/36'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 37,
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/37?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Physical Sciences',
 'uri': 'Class/THE/Code/37'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 38,
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/38?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Computer Science',
 'uri': 'Class/THE/Code/38'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 39,
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/39?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Psychology',
 'uri': 'Class/THE/Code/39'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 40,
 'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/40?classi
  '@ref': 'self',
  '@type': 'application/json'},
 'name': 'Social Sciences',
 'uri': 'Class/THE/Code/40'},
{'classificationName': 'Times Higher Education',
 'classificationType': 'THE',
 'id': 41,
```

```
              'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/41?classi
               '@ref': 'self',
               '@type': 'application/json'},
              'name': 'Education',
              'uri': 'Class/THE/Code/41'},
             {'classificationName': 'Times Higher Education',
              'classificationType': 'THE',
              'id': 42,
              'link': {'@href': 'https://api.elsevier.com/analytics/scival/subjectArea/42?classi
               '@ref': 'self',
               '@type': 'application/json'},
              'name': 'Law',
              'uri': 'Class/THE/Code/42'}]}
```

```
In [244]: subjectAreas_name=[]
          subjectAreas_id=[]
          subjectAreas_uri=[]
          classificationType=[]
          classificationName=[]

          resp = requests.get(url, headers={'Accept':'application/json',
                                            'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
          parsed=json.dumps(resp.json(),
                            sort_keys=True,
                            indent=4, separators=(',', ': '))
          #    print(parsed)
          result=json.loads(parsed)
          DF=pd.DataFrame.from_dict(result['subjectAreas'])
          DF.to_csv("THE_Classification_Code.csv", index=False)
```

```
In [192]: # ASJC
```

```
In [429]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code
```

```
In [ ]: https://api.elsevier.com/analytics/scival/subjectArea/classificationType/ASJC?
```

```
In [434]: url='https://api.elsevier.com/analytics/scival/subjectArea/classificationType/ASJC?'
```

```
In [439]: classificationType=[]
          classification_id=[]
          link=[]
          name=[]
          uri=[]

          resp = requests.get(url, headers={'Accept':'application/json',
                                            'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
```

```
            parsed=json.dumps(resp.json(),
                              sort_keys=True,
                              indent=4, separators=(',', ': '))
            #    print(parsed)
            result=json.loads(parsed)
            with open("ASJC.text", "a") as output:
                json.dump(result, output)
```

```
In [440]: with open("ASJC.json") as json_file:
              result=json.load(json_file)
          result['subjectAreas'][0]['children'][0]
```

```
Out[440]: {'link': {'@ref': 'self',
             '@href': 'https://api.elsevier.com/analytics/scival/subjectArea/1000?classificatio
             '@type': 'application/json'},
            'name': 'Multidisciplinary',
            'id': 1000,
            'uri': 'Class/ASJC/Code/1000',
            'classificationType': 'ASJC'}
```

```
In [261]: # ASJC code result from earlier data
```

```
In [265]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code
```

```
In [271]: with open("ASJC.json") as output:
              data=json.load(output)
```

```
In [442]: with open("ASJC.json") as json_file:
              result=json.load(json_file)
          len(result['subjectAreas'])
```

```
Out[442]: 27
```

```
In [277]: name=[]
          Acode=[]
          uri=[]
          classificationType=[]

          for i in range(0,len(data['subjectAreas'])):
              name.append(data['subjectAreas'][i]['children'][0]['name'])
              Acode.append(data['subjectAreas'][i]['children'][0]['id'])
              uri.append(data['subjectAreas'][i]['children'][0]['uri'])
              classificationType.append(data['subjectAreas'][i]['children'][0]['classificationT
          DF=pd.DataFrame({'name':name,
                           'ASJC_Code': Acode,
                           'uri':uri,
                           'classificationType':classificationType})
          DF.to_csv("NEW_ASJC.csv", index=False)
```

```
In [339]: url='https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?to

In [281]: for item in inst_ids.institution_id[:2]: # test
              print(item)

508092
508021


In [349]: pwd

Out[349]: 'C:\\Users\\jchen148\\THE Rankings\\Report to Jane\\OK Files\\OUtput Data\\ASJC Code

In [351]: with open("ASJC.json") as output:
              topic_id=json.load(output)

In [354]: ASJC_Code=pd.read_csv("NEW_ASJC.csv")

In [355]: ASJC_Code.head()

Out[355]:                                                 name  ASJC_Code  \
          0                                Multidisciplinary       1000
          1      General Agricultural and Biological Sciences       1100
          2                          General Arts and Humanities       1200
          3  General Biochemistry,Genetics and Molecular Bi...       1300
          4        General Business,Management and Accounting       1400

                              uri classificationType
          0  Class/ASJC/Code/1000                ASJC
          1  Class/ASJC/Code/1100                ASJC
          2  Class/ASJC/Code/1200                ASJC
          3  Class/ASJC/Code/1300                ASJC
          4  Class/ASJC/Code/1400                ASJC

In [368]: topic_id=ASJC_Code['ASJC_Code']
          topic_id[:2]

Out[368]: 0    1000
          1    1100
          Name: ASJC_Code, dtype: int64

In [285]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code


In [443]: # got all the ASJC code

In [453]: # https://github.com/dhimmel/scopus/blob/master/data/asjc-codes.tsv

          url='https://raw.githubusercontent.com/dhimmel/scopus/master/data/asjc-codes.tsv'
```

```
In [454]: ASJC=pd.read_csv(url, sep='\t')

In [505]: ASJC.head()
          ASJC.to_csv("ASJC_CODE_OK.csv", index=False)

In [456]: len(ASJC.asjc_code)

Out[456]: 334

In [457]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutpu

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput


In [458]: All_SO=pd.read_csv("THE_ALLUNI_SO.csv")

In [462]: UR_id=All_SO[All_SO.institution_name=='University of Rochester'].institution_id

In [463]: UR_id

Out[463]: 1259    508335
          Name: institution_id, dtype: int64

In [369]: for item in inst_ids.institution_id[20:22]:
              print(item)

508358
508166


In [374]: UR_ins_id='508335'

In [466]: UR_id

Out[466]: 1259    508335
          Name: institution_id, dtype: int64
```

59 ScholarlyOutput Metric

```
In [521]: url='https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?to

In [469]: for item in ASJC.asjc_code[:2]:
              print(url.format(item))

https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?topicId=1000&metr
https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?topicId=1100&metr


In [520]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code
```

```
In [491]: for item in ASJC.asjc_code[:2]:
              resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                          'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
              parsed=json.dumps(resp.json(),
                                sort_keys=True,
                                indent=4, separators=(',', ': '))
          #    print(parsed)
              result=json.loads(parsed)
          result['results'][0]['topic']['id']
```

```
Out[491]: 1100
```

```
In [522]: sourcename=[]
          lastUpdated=[]
          source=[]
          endyear=[]
          startyear=[]
          name=[]
          link=[]
          overallScholarlyOutput=[]
          prominencePercentile=[]
          scholarlyOutput=[]
          uri=[]
          Acode=[]

          for item in ASJC.asjc_code[:2]:
              resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                          'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
              parsed=json.dumps(resp.json(),
                                sort_keys=True,
                                indent=4, separators=(',', ': '))
          #    print(parsed)
              result=json.loads(parsed)
              if len(result['results']) >=1:
                  sourcename.append(result['dataSource']["sourceName"])
                  lastUpdated.append(result['dataSource']['lastUpdated'])
                  source.append(result['dataSource'])
                  endyear.append(result['dataSource']['metricEndYear'])
                  startyear.append(result['dataSource']['metricStartYear'])
                  link.append(result['link'])
                  name.append(result['results'][0]['topic']['name'])
                  overallScholarlyOutput.append(result['results'][0]['topic']['overallScholarly
                  prominencePercentile.append(result['results'][0]['topic']['prominencePercenti
                  scholarlyOutput.append(result['results'][0]['topic']['scholarlyOutput'])
                  uri.append(result['results'][0]['topic']['uri'])
```

```
            Acode.append(result['results'][0]['topic']['id'])

        s1=pd.Series(source, name="source")
        s2=pd.Series(endyear, name="MetricEndYear")
        s3=pd.Series(startyear, name="MetricStartYear")
        s4=pd.Series(name, name="Topic")
        s5=pd.Series(link, name="Link")
        s6=pd.Series(overallScholarlyOutput, name="overallScholarlyOutput")
        s7=pd.Series(prominencePercentile, name="prominencePercentile")
        s8=pd.Series(scholarlyOutput, name="scholarlyOutput")
        s9=pd.Series(uri, name="uri")
        s10=pd.Series(Acode, name="ASJC Code")
        s11=pd.Series(sourcename, name='sourcename')
        s12=pd.Series(lastUpdated, name="lastUpdated")

        DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10, s11, s12], axis=1)
        DF.to_csv("ASJC_UR_SO_1.csv", index=False)
        #result['results']
```

60 Combine all the subfiles

```
In [506]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code
```

```
In [509]: filename="ASJC_UR_0113_{}.csv"

          chuck=[]
          for i in range(1, 4):
              chuck.append(pd.read_csv(filename.format(i)))
          DF=pd.concat(chuck)
```

```
In [510]: DF.head()
```

```
Out[510]:                                              source  MetricEndYear  \
          0  {'lastUpdated': '2020-01-01', 'metricEndYear':...           2018
          1  {'lastUpdated': '2020-01-01', 'metricEndYear':...           2018
          2  {'lastUpdated': '2020-01-01', 'metricEndYear':...           2018
          0  {'lastUpdated': '2020-01-01', 'metricEndYear':...           2018
          1  {'lastUpdated': '2020-01-01', 'metricEndYear':...           2018

             MetricStartYear                                              Topic  \
          0             2014          Time; Time Perception; Temporal bisection
          1             2014  Coronavirus; Severe Acute Respiratory Syndrome...
          2             2014  Breast Neoplasms; Receptor, Epidermal Growth F...
          0             2014  Retinal Vein Occlusion; Macular Edema; Occlusi...
          1             2014  Transcranial Magnetic Stimulation; Depression;...
```

```
                                                  Link  overallScholarlyOutput  \
0  {'@href': 'https://api.elsevier.com/analytics/...                     868
1  {'@href': 'https://api.elsevier.com/analytics/...                     151
2  {'@href': 'https://api.elsevier.com/analytics/...                    1247
0  {'@href': 'https://api.elsevier.com/analytics/...                     936
1  {'@href': 'https://api.elsevier.com/analytics/...                    1065

   prominencePercentile  scholarlyOutput         uri  ASJC Code
0             94.983770                1  Topic/1100       1100
1             85.623480                1  Topic/1101       1101
2             99.154570                1  Topic/1107       1107
0             92.781470                3  Topic/1109       1109
1             98.628525                2  Topic/1111       1111
```

```
In [511]: DF.to_csv("UR_ASJC_ScholarlyOutput.csv", index=False)
```

61 CitationCount Metric

```
In [513]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJ
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJC Versus Citati
```

```
In [515]: url='https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?to
```

```
In [519]: sourcename=[]
          lastUpdated=[]
          metricType=[]
          metricvalue=[]
          source=[]
          endyear=[]
          startyear=[]
          name=[]
          link=[]
          prominencePercentile=[]
          scholarlyOutput=[]
          uri=[]
          Acode=[]


          for item in ASJC.asjc_code[100:]:
              resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                         'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
              parsed=json.dumps(resp.json(),
                           sort_keys=True,
                           indent=4, separators=(',', ': '))
          #    print(parsed)
```

```
            result=json.loads(parsed)
            if len(result['results']) >=1:
                sourcename.append(result['dataSource']["sourceName"])
                lastUpdated.append(result['dataSource']["lastUpdated"])
                source.append(result['dataSource'])
                endyear.append(result['dataSource']['metricEndYear'])
                startyear.append(result['dataSource']['metricStartYear'])
                link.append(result['link'])
                if len(result['results'][0]["metrics"]) >=1:
                    metricType.append(result['results'][0]["metrics"][0]["metricType"])
                    metricvalue.append(result['results'][0]["metrics"][0]["value"])
                name.append(result['results'][0]['topic']['name'])
                overallScholarlyOutput.append(result['results'][0]['topic']['overallScholarly
                prominencePercentile.append(result['results'][0]['topic']['prominencePercenti
                scholarlyOutput.append(result['results'][0]['topic']['scholarlyOutput'])
                uri.append(result['results'][0]['topic']['uri'])
                Acode.append(result['results'][0]['topic']['id'])

        s1=pd.Series(source, name="source")
        s2=pd.Series(endyear, name="MetricEndYear")
        s3=pd.Series(startyear, name="MetricStartYear")
        s4=pd.Series(name, name="Topic")
        s5=pd.Series(link, name="Link")
        s6=pd.Series(metricvalue, name="CitationCount")
        s7=pd.Series(prominencePercentile, name="prominencePercentile")
        s8=pd.Series(scholarlyOutput, name="scholarlyOutput")
        s9=pd.Series(uri, name="uri")
        s10=pd.Series(Acode, name="ASJC Code")

        DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10], axis=1)
        DF.to_csv("ASJC_UR_CC_3.csv", index=False)
        #result['results']
```

```
In [4]: pwd
```

```
Out[4]: 'C:\\Users\\jchen148.UR\\Downloads'
```

```
In [5]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJCV
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJCVersusCitatio
```

```
In [6]: import pandas as pd
        import numpy as np
```

```
In [10]: filename="ASJC_UR_CC_{}.csv"
         chuck=[]
         for i in range(1,3):
             chuck.append(pd.read_csv(filename.format(i)))
         DF=pd.concat(chuck)
```

```
In [11]: DF.head()
```

Out[11]:

	source	MetricEndYear	MetricStartYear	Topic	Link	CitationCount	prominencePercentile	scholarlyOutput	uri	ASJC Code
0	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Time; Time Perception; Temporal bisection	{'@href': 'https://api.elsevier.com/analytics/...	19	94.983770	1	Topic/1100	1100
0	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Coronavirus; Severe Acute Respiratory Syndrome...	{'@href': 'https://api.elsevier.com/analytics/...	23	85.623480	1	Topic/1101	1101
1	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Breast Neoplasms; Receptor, Epidermal Growth F...	{'@href': 'https://api.elsevier.com/analytics/...	4	99.154570	1	Topic/1107	1107
2	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Retinal Vein Occlusion; Macular Edema; Occlusi...	{'@href': 'https://api.elsevier.com/analytics/...	17	92.781470	3	Topic/1109	1109
3	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Transcranial Magnetic Stimulation; Depression;...	{'@href': 'https://api.elsevier.com/analytics/...	5	98.628525	2	Topic/1111	1111

```
In [12]: DF.to_csv("UR_ASJC_CitationCount.csv", index=False)
```

62 FieldWeightedCitationImpact

```
In [21]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\FWCI"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\FWCI


In [14]: url='https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?topi

In [20]: ASJC=pd.read_csv('Scopus_ASJC_CODE.csv')

In [23]: import pandas as pd
         import requests
         import json
         import numpy as np
```

In [26]:
```
sourcename=[]
lastUpdated=[]
metricType=[]
metricvalue=[]
source=[]
endyear=[]
startyear=[]
name=[]
link=[]
prominencePercentile=[]
scholarlyOutput=[]
uri=[]
Acode=[]


for item in ASJC.asjc_code[100:]:
    resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
    result=json.loads(parsed)
    if len(result['results']) >=1:
        sourcename.append(result['dataSource']["sourceName"])
        lastUpdated.append(result['dataSource']["lastUpdated"])
        source.append(result['dataSource'])
        endyear.append(result['dataSource']['metricEndYear'])
        startyear.append(result['dataSource']['metricStartYear'])
        link.append(result['link'])
        if len(result['results'][0]["metrics"]) >=1:
            metricType.append(result['results'][0]["metrics"][0]["metricType"])
            metricvalue.append(result['results'][0]["metrics"][0]["value"])
        name.append(result['results'][0]['topic']['name'])
#         overallScholarlyOutput.append(result['results'][0]['topic']['overallScholarl
        prominencePercentile.append(result['results'][0]['topic']['prominencePercenti
        scholarlyOutput.append(result['results'][0]['topic']['scholarlyOutput'])
        uri.append(result['results'][0]['topic']['uri'])
        Acode.append(result['results'][0]['topic']['id'])

s1=pd.Series(source, name="source")
s2=pd.Series(endyear, name="MetricEndYear")
s3=pd.Series(startyear, name="MetricStartYear")
s4=pd.Series(name, name="Topic")
s5=pd.Series(link, name="Link")
s6=pd.Series(metricvalue, name="FWCI")
s7=pd.Series(prominencePercentile, name="prominencePercentile")
s8=pd.Series(scholarlyOutput, name="scholarlyOutput")
```

```
s9=pd.Series(uri, name="uri")
s10=pd.Series(Acode, name="ASJC Code")

DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10], axis=1)
DF.to_csv("ASJC_UR_FWCI_2.csv", index=False)
#result['results']
```

In [27]:
```
# combine the subfiles
data1=pd.read_csv("ASJC_UR_FWCI_1.csv")
data2=pd.read_csv("ASJC_UR_FWCI_2.csv")
```

In [28]:
```
data=pd.concat([data1,data2])
```

In [29]:
```
data.head()
```

Out[29]:

	source	MetricEndYear	MetricStartYear	Topic	Link	FWCI	prominencePercentile	scholarlyOutput	uri	ASJC Code
0	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Time; Time Perception; Temporal bisection	{'@href': 'https://api.elsevier.com/analytics/...	2.724823	94.983770	1	Topic/1100	1100
1	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Coronavirus; Severe Acute Respiratory Syndrome...	{'@href': 'https://api.elsevier.com/analytics/...	2.451854	85.623480	1	Topic/1101	1101
2	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Breast Neoplasms; Receptor, Epidermal Growth F...	{'@href': 'https://api.elsevier.com/analytics/...	0.641735	99.154570	1	Topic/1107	1107
3	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Retinal Vein Occlusion; Macular Edema; Occlusi...	{'@href': 'https://api.elsevier.com/analytics/...	1.022686	92.781470	3	Topic/1109	1109
4	{'lastUpdated': '2020-01-01', 'metricEndYear':...	2018	2014	Transcranial Magnetic Stimulation; Depression;...	{'@href': 'https://api.elsevier.com/analytics/...	1.061104	98.628525	2	Topic/1111	1111

In [30]:
```
data.to_csv("UR_FWCI_Versus_ASJC.csv", index=False)
```

63 PublicationShare

In [31]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\TopC
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\TopCitedPublicatio
```

```
In [38]: url="https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508335?topi
```

```
In [42]: for item in ASJC.asjc_code[:4]:
             print(item)
```

```
1000
1100
1101
1102
```

```
In [46]: for item in ASJC.asjc_code[:6]:
             resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                        'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
             parsed=json.dumps(resp.json(),
                               sort_keys=True,
                               indent=4, separators=(',', ': '))
         #    print(parsed)
             result=json.loads(parsed)
         print(result)
```

```
{'dataSource': {'lastUpdated': '2020-01-01', 'metricEndYear': 2018, 'metricStartYear': 2014, 's
```

```
In [48]: sourcename=[]
         lastUpdated=[]
         link=[]
         metricStartYear=[]
         metricEndYear=[]
         metricType=[]
         metricvalue=[]
         topic=[]
         Acode=[]
         uri=[]
         prominencePercentile=[]
         scholarlyOutput=[]
         overallScholarlyOutput=[]

         for item in ASJC.asjc_code[100:]:
             resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                        'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
             parsed=json.dumps(resp.json(),
                               sort_keys=True,
                               indent=4, separators=(',', ': '))
         #    print(parsed)
             result=json.loads(parsed)
```

```
            if len(result['results']) >=1:
                sourcename.append(result['dataSource']["sourceName"])
                lastUpdated.append(result['dataSource']["lastUpdated"])
                source.append(result['dataSource'])
                endyear.append(result['dataSource']['metricEndYear'])
                startyear.append(result['dataSource']['metricStartYear'])
                link.append(result['link'])
                if len(result['results'][0]["metrics"]) >=1:
                    metricType.append(result['results'][0]["metrics"][0]["metricType"])
                    metricvalue.append(result['results'][0]["metrics"][0]["value"])
                for i in range(0, len(result['results'][0]['topic']['name'])):
                    name.append(result['results'][0]['topic']['name'])
        #         overallScholarlyOutput.append(result['results'][0]['topic']['overallScholarl
                prominencePercentile.append(result['results'][0]['topic']['prominencePercentil
                scholarlyOutput.append(result['results'][0]['topic']['scholarlyOutput'])
                overallScholarlyOutput.append(result['results'][0]['topic']['overallScholarly(
                uri.append(result['results'][0]['topic']['uri'])
                Acode.append(result['results'][0]['topic']['id'])

        s1=pd.Series(sourcename, name="source")
        s2=pd.Series(endyear, name="MetricEndYear")
        s3=pd.Series(startyear, name="MetricStartYear")
        s4=pd.Series(name, name="Topic")
        s5=pd.Series(link, name="Link")
        s6=pd.Series(metricvalue, name="PublicationShare")
        s7=pd.Series(prominencePercentile, name="prominencePercentile")
        s8=pd.Series(scholarlyOutput, name="scholarlyOutput")
        s9=pd.Series(overallScholarlyOutput, name="overallScholarlyOutput")
        s10=pd.Series(uri, name="uri")
        s11=pd.Series(Acode, name="ASJC Code")
        s12=pd.Series(lastUpdated, name="lastUpdated")

        DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10, s11, s12], axis=1)
        DF.to_csv("ASJC_UR_PublicationShare_3.csv", index=False)
```

```
In [47]: pwd
```

```
Out[47]: 'C:\\Users\\jchen148\\THE Rankings\\Report to Jane\\OK Files\\OUtput Data\\ASJC Code\\
```

```
In [49]: # combine all the subfiles

        data1=pd.read_csv("ASJC_UR_PublicationShare.csv")
        data2=pd.read_csv("ASJC_UR_PublicationShare_2.csv")
        data3=pd.read_csv("ASJC_UR_PublicationShare_3.csv")
```

```
In [50]: alldata=pd.concat([data1, data2, data3])
```

```
In [51]: alldata.head()
```

Out[51]:

	source	MetricEndYear	MetricStartYear	\
0	Scopus	2018.0	2014.0	
1	NaN	2018.0	2014.0	
2	NaN	2018.0	2014.0	
3	NaN	2018.0	2014.0	
4	NaN	2018.0	2014.0	

	Topic	\
0	Venous Thrombosis; Intracranial Thrombosis; Th...	
1	Osteogenesis Imperfecta; Bone and Bones; Mutation	
2	Glaucoma, Angle-Closure; Anterior Chamber; Gla...	
3	Placebos; Placebo Effect; Placebo analgesia	
4	Myxoma; Heart Neoplasms; Atrial myxomas	

	Link	PublicationShare	\
0	{'@href': 'https://api.elsevier.com/analytics/...	0.115207	
1	NaN	NaN	
2	NaN	NaN	
3	NaN	NaN	
4	NaN	NaN	

	prominencePercentile	scholarlyOutput	overallScholarlyOutput	uri	\
0	94.98377	1.0	868.0	Topic/1100	
1	NaN	NaN	NaN	NaN	
2	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	
4	NaN	NaN	NaN	NaN	

	ASJC Code	lastUpdated
0	1100.0	2020-01-01
1	NaN	NaN
2	NaN	NaN
3	NaN	NaN
4	NaN	NaN

In [54]:
```
alldata=alldata.dropna()
```

In [57]:
```
alldata.head()
Pulbshare=alldata['PublicationShare']
ASJC_pubshare=alldata['ASJC Code']
```

In [61]:
```
Pulbshare.head()
ASJC_pubshare=ASJC_pubshare.astype('int')
```

In [62]:
```
# create a dataframe

publs_share_df=pd.DataFrame({'ASJC_Code':ASJC_pubshare, 'Publs_Share':Pulbshare})
```

In [65]:
```
publs_share_df.head()
```

```
Out[65]:    ASJC_Code  Publs_Share
          0       1100     0.115207
          0       1101     0.662252
          1       1107     0.080192
          2       1109     0.320513
          3       1111     0.187793
```

```
In [68]: publs_share_df['publs_share_top10']=publs_share_df.Publs_Share*10
```

```
In [69]: publs_share_df.head()
```

```
Out[69]:    ASJC_Code  Publs_Share  publs_share_top10
          0       1100     0.115207           1.152074
          0       1101     0.662252           6.622516
          1       1107     0.080192           0.801925
          2       1109     0.320513           3.205128
          3       1111     0.187793           1.877934
```

```
In [56]: alldata.to_csv("UR_Publication_Share_Versus_ASJC.csv", index=False)
```

```
In [72]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code
```

```
In [73]: data=pd.read_csv("Scopus_ASJC_CODE.csv")
```

```
In [74]: data.head()
```

```
Out[74]:    asjc_code                                    asjc_description
          0       1000                                Multidisciplinary
          1       1100      General Agricultural and Biological Sciences
          2       1101  Agricultural and Biological Sciences (miscella...
          3       1102                          Agronomy and Crop Science
          4       1103                         Animal Science and Zoology
```

```
In [75]: match=pd.merge(data, publs_share_df, left_on='asjc_code', right_on='ASJC_Code', how='
```

```
In [76]: match.head()
```

```
Out[76]:    asjc_code                                    asjc_description  ASJC_Code  \
          0       1100      General Agricultural and Biological Sciences       1100
          1       1101  Agricultural and Biological Sciences (miscella...       1101
          2       1107                                         Forestry       1107
          3       1109                                   Insect Science       1109
          4       1111                                     Soil Science       1111

             Publs_Share  publs_share_top10
          0     0.115207           1.152074
          1     0.662252           6.622516
          2     0.080192           0.801925
          3     0.320513           3.205128
          4     0.187793           1.877934
```

```
In [77]: publs_share_df['asjc_description']=match.asjc_description

In [106]: publs_share_df.head()
          publs_share_df=publs_share_df.sort_values(by='publs_share_top10', ascending=False)

In [111]: publs_share_df.head()
          publs_share_df.reset_index(inplace=True, drop=True)

In [148]: len(publs_share_df)

Out[148]: 102

In [154]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\TopC

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\TopCitedPublicatio


In [155]: publs_share_df.to_csv("UofR_PublicationShare_Versus_ASJC_Code_Sorted.csv")

In [128]: publs_share_df.head(20)
          publs_share_df.publs_share_top10=round(publs_share_df.publs_share_top10, 2)
          #subset=publs_share_df[['publs_share_top10','asjc_description']]

In [146]: publs_share_df_2=publs_share_df.iloc[:20,:]

In [147]: publs_share_df_2

Out[147]:     ASJC_Code  Publs_Share  publs_share_top10  \
          0        2614     3.406326              34.06
          1        3203     2.127660              21.28
          2        2912     2.000000              20.00
          3        1314     1.824212              18.24
          4        3204     1.793722              17.94
          5        2748     1.628664              16.29
          6        2807     1.562500              15.62
          7        2310     1.342975              13.43
          8        2400     1.319648              13.20
          9        2737     1.261034              12.61
          10       2743     1.234568              12.35
          11       3102     1.225920              12.26
          12       3501     1.095890              10.96
          13       2303     0.852273               8.52
          14       1207     0.807382               8.07
          15       2611     0.765306               7.65
          16       1402     0.692041               6.92
          17       2738     0.671141               6.71
          18       2915     0.668449               6.68
          19       1101     0.662252               6.62

                                                asjc_description
```

```
0                                          Accounting
1                          Water Science and Technology
2             Industrial and Manufacturing Engineering
3                                   Molecular Medicine
4                  General Immunology and Microbiology
5                           Space and Planetary Science
6   Renewable Energy, Sustainability and the Envir...
7                                         Biotechnology
8                                         Endocrinology
9                                    Atmospheric Science
10                                          Oceanography
11                                               Ecology
12                                               Anatomy
13                                                Ageing
14                                            Archaeology
15  Business, Management and Accounting (miscellan...
16  Business, Management and Accounting (miscellan...
17                               Earth-Surface Processes
18                                      Media Technology
19        General Agricultural and Biological Sciences
```

64 UofR PublicationShare versus ASJC Code

In [158]:
```
import seaborn as sns
import matplotlib.pyplot as plt
sns.set(style="whitegrid")
sns.set_style("ticks", {"xtick.major.size": 1, "ytick.major.size": 1})

# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(6, 15))

# Plot the total crashes
sns.set_color_codes()
g=sns.barplot(x='publs_share_top10', y='asjc_description', data=publs_share_df_2, co
plt.axvline(10, ls='--', color='r')

plt.annotate('World average', xy=(10,0.2), arrowprops=dict(facecolor='red', shrink=0

# Add a legend and informative axis label
#ax.legend(ncol=2, loc="lower right", frameon=True)
ax.set(xlim=(0, 10), ylabel="ASJC Code", xlabel='Publication Share')
plt.xticks(np.arange(0, 35, step=2))
sns.despine(left=True, bottom=True)
plt.title("UofR Top 20 Share of Top 10% highly cited publication by ASJC Code")
show_values_on_bars_1(g, "h", 2)
plt.show()
```

65 Field-weighted citation impact by ASJC

```
In [159]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\FWC
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\FWCI
```

```
In [160]: data=pd.read_csv("UR_FWCI_Versus_ASJC.csv")
```

```
In [162]: data=data[['ASJC Code','FWCI']]
```

```
In [163]: data.head()
```

```
Out[163]:    ASJC Code      FWCI
          0       1100  2.724823
          1       1101  2.451854
          2       1107  0.641735
          3       1109  1.022686
          4       1111  1.061104
```

```
In [164]: ASJC.head()
```

```
Out[164]:    asjc_code                                    asjc_description
          0       1000                                     Multidisciplinary
          1       1100       General Agricultural and Biological Sciences
          2       1101  Agricultural and Biological Sciences (miscella...
          3       1102                           Agronomy and Crop Science
          4       1103                          Animal Science and Zoology
```

```
In [165]: match=pd.merge(data, ASJC, left_on='ASJC Code', right_on='asjc_code', how='inner')
```

```
In [166]: match.head()
```

```
Out[166]:    ASJC Code      FWCI  asjc_code  \
          0       1100  2.724823       1100
          1       1101  2.451854       1101
          2       1107  0.641735       1107
          3       1109  1.022686       1109
          4       1111  1.061104       1111

                                       asjc_description
          0       General Agricultural and Biological Sciences
          1  Agricultural and Biological Sciences (miscella...
          2                                        Forestry
          3                                  Insect Science
          4                                    Soil Science
```

```
In [167]: data['asjc_description']=match.asjc_description
```

```
In [168]: data.head()
```

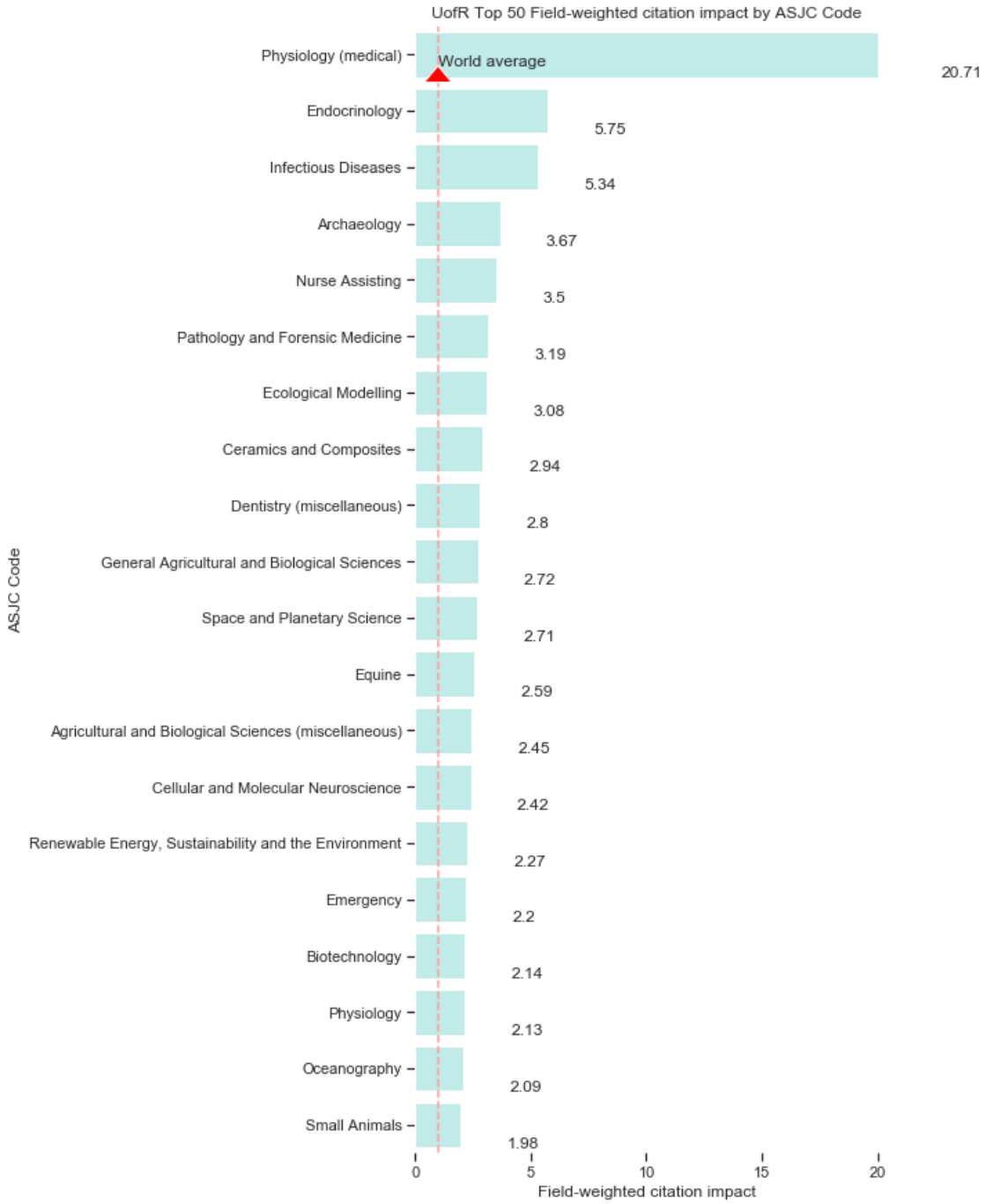
```
Out[168]:    ASJC Code      FWCI                                    asjc_description
          0       1100  2.724823       General Agricultural and Biological Sciences
          1       1101  2.451854  Agricultural and Biological Sciences (miscella...
          2       1107  0.641735                                          Forestry
          3       1109  1.022686                                    Insect Science
          4       1111  1.061104                                      Soil Science
```

```
In [170]: data=data.sort_values(by='FWCI', ascending=False)

In [171]: data.reset_index(inplace=True, drop=True)

In [172]: data.head()
```

Out[172]:

	ASJC Code	FWCI	asjc_description
0	2737	20.713076	Physiology (medical)
1	1310	5.753347	Endocrinology
2	2725	5.341298	Infectious Diseases
3	1204	3.674453	Archaeology
4	2915	3.504987	Nurse Assisting

```
In [175]: data.FWCI=round(data.FWCI,2)

In [184]: plotdata=data.head(50)

In [194]: import seaborn as sns
          import matplotlib.pyplot as plt
          sns.set(style="whitegrid")
          sns.set_style("ticks", {"xtick.major.size": 5, "ytick.major.size": 1})

          # Initialize the matplotlib figure
          f, ax = plt.subplots(figsize=(6, 15))

          # Plot the total crashes
          sns.set_color_codes("pastel")
          g=sns.barplot(x='FWCI', y='asjc_description', data=plotdata, color="c")
          plt.axvline(1.0, ls='--', color='r')

          plt.annotate('World average', xy=(1.0,0.2), arrowprops=dict(facecolor='red', shrink=(

          # Add a legend and informative axis label
          #ax.legend(ncol=2, loc="lower right", frameon=True)
          ax.set(xlim=(0, 10), ylabel="ASJC Code", xlabel='Field-weighted citation impact')
          plt.xticks(np.arange(0, 25, step=5))
          sns.despine(left=True, bottom=True)
          plt.title("UofR Top 50 Field-weighted citation impact by ASJC Code")
          show_values_on_bars_1(g, "h", 2)
          plt.show()
```



66 UofR publication output by ASJC

```
In [195]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJ
```

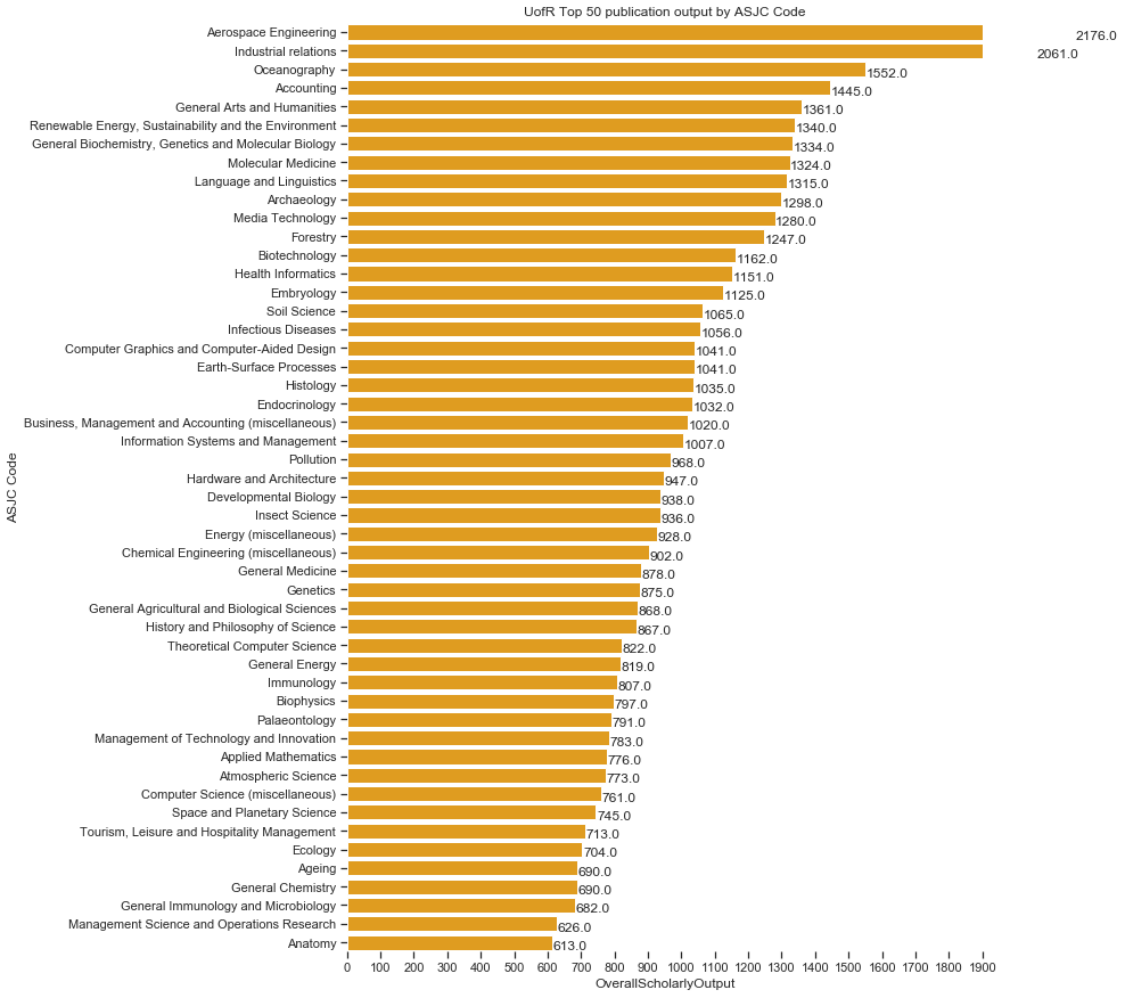
```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJC Versus Schola
```

```
In [221]: data=pd.read_csv("UR_ASJC_ScholarlyOutput.csv")

In [222]: data=data[['ASJC Code','OverallScholarlyOutput']]

In [223]: data.head()

Out[223]:    ASJC Code  OverallScholarlyOutput
          0       1100                     868
          1       1101                     151
          2       1107                    1247
          3       1109                     936
          4       1111                    1065

In [224]: match=pd.merge(data, ASJC, left_on='ASJC Code', right_on='asjc_code', how='inner')

In [225]: data['asjc_description']=match.asjc_description

In [226]: data.head()

Out[226]:    ASJC Code  OverallScholarlyOutput  \
          0       1100                     868
          1       1101                     151
          2       1107                    1247
          3       1109                     936
          4       1111                    1065

                                       asjc_description
          0       General Agricultural and Biological Sciences
          1  Agricultural and Biological Sciences (miscella...
          2                                          Forestry
          3                                    Insect Science
          4                                      Soil Science

In [227]: data=data.sort_values(by='OverallScholarlyOutput', ascending=False)

In [229]: data.reset_index(inplace=True, drop=True)

In [218]: data=data

In [230]: data.tail()

Out[230]:     ASJC Code  OverallScholarlyOutput  \
          63       2503                     386
          64       1707                     343
          65       2312                     323
          66       2602                     298
          67       1101                     151

                                        asjc_description
          63                          Ceramics and Composites
```

```
64            Computer Vision and Pattern Recognition
65                        Water Science and Technology
66                           Algebra and Number Theory
67  Agricultural and Biological Sciences (miscella...
```

In [232]:
```
data2=data.iloc[:50,:]
```

In [237]:
```
import seaborn as sns
import matplotlib.pyplot as plt
sns.set(style="whitegrid")
sns.set_style("ticks", {"xtick.major.size": 3, "ytick.major.size": 3})

# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(10, 15))

# Plot the total crashes
sns.set_color_codes("pastel")
g=sns.barplot(x='OverallScholarlyOutput', y='asjc_description', data=data2, color="o
#plt.axvline(1.0, ls='--', color='r')

#plt.annotate('World average', xy=(1.0,0.2), arrowprops=dict(facecolor='red', shrink

# Add a legend and informative axis label
#ax.legend(ncol=2, loc="lower right", frameon=True)
ax.set(xlim=(0, 200), ylabel="ASJC Code", xlabel='OverallScholarlyOutput')
plt.xticks(np.arange(0, 2000 , step=100))
sns.despine(left=True, bottom=True)
plt.title("UofR Top 50 publication output by ASJC Code")
show_values_on_bars_1(g, "h", 2)
plt.show()
```



67 UofR CitationCount Versus ASJC

```
In [238]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJ
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code\ASJCVersusCitatio
```

```
In [239]: data=pd.read_csv("UR_ASJC_CitationCount.csv")
```

```
In [241]: data=data[['ASJC Code','CitationCount']]
```

```
In [242]: data.head()
```

```
Out[242]:    ASJC Code  CitationCount
          0       1100             19
          1       1101             23
```

```
2       1107             4
3       1109            17
4       1111             5
```

```
In [243]: match=pd.merge(data, ASJC, left_on='ASJC Code', right_on='asjc_code', how='inner')
```

```
In [244]: match.head()
```

```
Out[244]:    ASJC Code  CitationCount  asjc_code  \
0       1100             19       1100
1       1101             23       1101
2       1107              4       1107
3       1109             17       1109
4       1111              5       1111

                                    asjc_description
0       General Agricultural and Biological Sciences
1  Agricultural and Biological Sciences (miscella...
2                                          Forestry
3                                    Insect Science
4                                      Soil Science
```

```
In [245]: data['asjc_description']=match.asjc_description
```

```
In [246]: data.head()
```

```
Out[246]:    ASJC Code  CitationCount                                    asjc_description
0       1100             19       General Agricultural and Biological Sciences
1       1101             23  Agricultural and Biological Sciences (miscella...
2       1107              4                                          Forestry
3       1109             17                                    Insect Science
4       1111              5                                      Soil Science
```

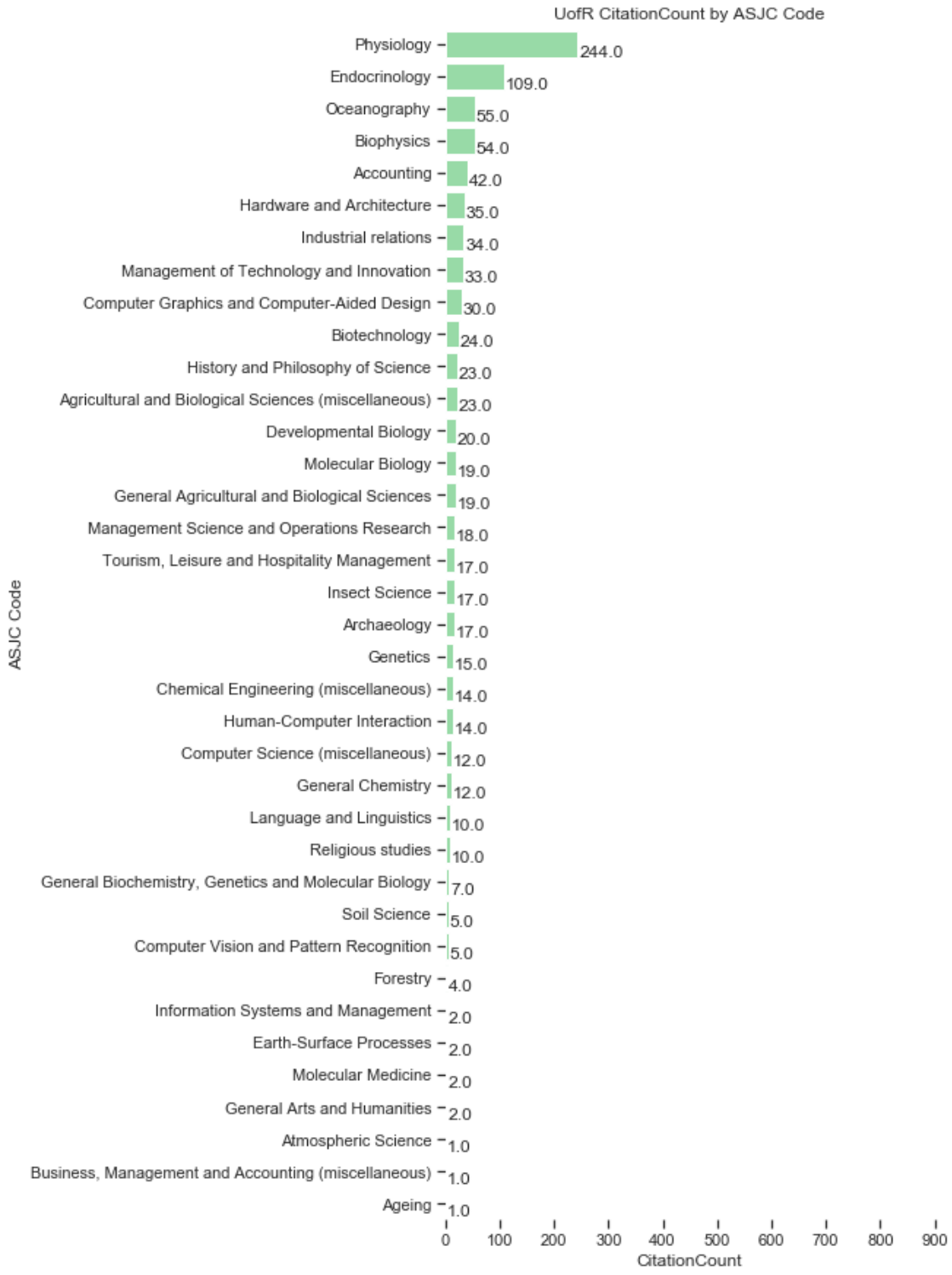
```
In [247]: data=data.sort_values(by='CitationCount', ascending=False)
```

```
In [248]: data.reset_index(inplace=True, drop=True)
```

```
In [253]: data.tail()
```

```
Out[253]:     ASJC Code  CitationCount  \
32       1313              2
33       1200              2
34       1902              1
35       1401              1
36       1302              1

                                     asjc_description
32                                  Molecular Medicine
33                          General Arts and Humanities
34                                 Atmospheric Science
35  Business, Management and Accounting (miscellan...
36                                              Ageing
```

```
In [250]: len(data)

Out[250]: 37

In [259]: import seaborn as sns
          import matplotlib.pyplot as plt
          sns.set(style="whitegrid")
          sns.set_style("ticks", {"xtick.major.size": 3, "ytick.major.size": 3})

          # Initialize the matplotlib figure
          f, ax = plt.subplots(figsize=(6, 15))

          # Plot the total crashes
          sns.set_color_codes("pastel")
          g=sns.barplot(x='CitationCount', y='asjc_description', data=data, color="g")
          #plt.axvline(1.0, ls='--', color='r')

          #plt.annotate('World average', xy=(1.0,0.2), arrowprops=dict(facecolor='red', shrink

          # Add a legend and informative axis label
          #ax.legend(ncol=2, loc="lower right", frameon=True)
          ax.set(xlim=(0, 5), ylabel="ASJC Code", xlabel='CitationCount')
          plt.xticks(np.arange(0, 1000 , step=100))
          sns.despine(left=True, bottom=True)
          plt.title("UofR CitationCount by ASJC Code")
          show_values_on_bars_1(g, "h", 2)
          plt.show()
```



In [428]:
```
source=[]
endyear=[]
```

```
startyear=[]
name=[]

for tid in topic_id[:2]:
    resp = requests.get(url.format(tid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
    result=json.loads(parsed)
#result
    source.append(result['dataSource'])
    endyear.append(result['dataSource']['metricEndYear'])
    startyear.append(result['dataSource']['metricStartYear'])
    name.append(result['dataSource']['sourceName'])

Data_title=pd.DataFrame({'dataSource': source,
                         'metricEndYear':endyear,
                         'metricStartYear':startyear,
                         'sourceName':name})

Data_title.to_csv("ASJC_Data_Title.csv", index=False)
```

In [396]:
```
td=[]
metricType=[]
metricvalue=[]
link=[]
name=[]
ACode=[]
uri=[]
prominencePercentile=[]
scholarlyOutput=[]
overallScholarlyOutput=[]


for tid in topic_id[20:]:
    resp = requests.get(url.format(tid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
    result=json.loads(parsed)
    with open("THE_UNI_ASJC_after20.json", "w") as json_file:
         json.dump(resp.json(), json_file)
#result
    td.append(tid)
```

```
    if result['results'] is None:
        metricType.append('')
        metricvalue.append('')
        link.append('')
        name.append('')
        ACode.append('')
        uri.append('')
        prominencePercentile.append('')
        scholarlyOutput.append('')
        overallScholarlyOutput.append('')
    else:
        if len(result['results']) >=1:
            if "metrics" in result['results'][0]:
                metricType.append(result['results'][0]["metrics"][0]["metricType"])
                metricvalue.append(result['results'][0]["metrics"][0]["value"])
            if "topic" in result['results'][0]:
                link.append(result['results'][0]["topic"]["link"])
                name.append(result['results'][0]["topic"]["name"])
                Acode.append(result['results'][0]["topic"]["id"])
                uri.append(result['results'][0]["topic"]["uri"])
                prominencePercentile.append(result['results'][0]["topic"]["prominenc
                scholarlyOutput.append(result['results'][0]["topic"]["scholarlyOutpu
                overallScholarlyOutput.append(result['results'][0]["topic"]["overall

s1=pd.Series(td, name='Topic_ID')
s2=pd.Series(metricType, name='metricType')
s3=pd.Series(metricvalue, name='metricvalue')
s4=pd.Series(link, name='link')
s5=pd.Series(name, name='name')
s6=pd.Series(Acode, name='ACode')
s7=pd.Series(uri, name='uri')
s8=pd.Series(prominencePercentile, name='prominencePercentile')
s9=pd.Series(scholarlyOutput, name='scholarlyOutput')
s10=pd.Series(overallScholarlyOutput, name='overallScholarlyOutput')

ASJC_20=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10], axis=1)

ASJC_20.to_csv("ASJC_after20.csv", index=False)

#DF=pd.DataFrame({'Topic_ID':td,
#                 'metricType':metricType,
#                 'metricvalue':metricvalue,
#                 'link':link,
#                 'name':name,
#                 'ACode':ACode,
#                 'uri':uri,
#                 'prominencePercentile':prominencePercentile,
#                 'scholarlyOutput':scholarlyOutput,
```

```
#                 'overallScholarlyOutput':overallScholarlyOutput
#                })

#DF.to_csv("ASJC_TID20.csv", index=False)

#with open("THE_UNI_ASJC_after20.json", "w") as json_file:
#    json.dump(resp.json(), json_file)
```

In [398]:
```
UR_ASJC_1=pd.read_csv("ASJC_20.csv")
```

In [399]:
```
UR_ASJC_1.head()
```

Out[399]:

	Topic_ID	metricType	metricvalue	\
0	1000	ScholarlyOutput	1.0	
1	1100	ScholarlyOutput	1.0	
2	1200	ScholarlyOutput	2.0	
3	1300	ScholarlyOutput	3.0	
4	1400	ScholarlyOutput	1.0	

	link	\
0	{'@href': 'https://api.elsevier.com/analytics/...	
1	{'@href': 'https://api.elsevier.com/analytics/...	
2	{'@href': 'https://api.elsevier.com/analytics/...	
3	{'@href': 'https://api.elsevier.com/analytics/...	
4	{'@href': 'https://api.elsevier.com/analytics/...	

	name	ACode	uri	\
0	Time; Time Perception; Temporal bisection	1100.0	Topic/1100	
1	Intubation; Laryngoscopes; Video laryngoscopy	1200.0	Topic/1200	
2	Speech enhancement; Speech; Binary mask	1300.0	Topic/1300	
3	Acromegaly; Patients; Acromegalic patients	1600.0	Topic/1600	
4	Glaucoma, Angle-Closure; Anterior Chamber; Gla...	2100.0	Topic/2100	

	prominencePercentile	scholarlyOutput	overallScholarlyOutput
0	94.983770	1.0	868.0
1	94.222880	1.0	1361.0
2	95.479546	2.0	1334.0
3	93.386840	3.0	690.0
4	89.228570	1.0	819.0

In [400]:
```
UR_ASJC_2=pd.read_csv("ASJC_after20.csv")
```

In [401]:
```
UR_ASJC_2.head()
```

Out[401]:

	Topic_ID	metricType	metricvalue	\
0	3000.0	ScholarlyOutput	1.0	
1	3100.0	ScholarlyOutput	2.0	
2	3200.0	ScholarlyOutput	2.0	
3	3300.0	NaN	NaN	

```
4    3400.0              NaN          NaN

                                                  link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3                                                  NaN
4                                                  NaN

                                                  name  ACode         uri  \
0  Staphylococcus aureus; Enterotoxins; Staphyloc...   1100  Topic/3100
1   Activities of Daily Living; Health; Healthy life   1200  Topic/3300
2                       Stars; Distance; RRab stars   1300  Topic/3500
3                                                  NaN   1600         NaN
4                                                  NaN   2100         NaN

   prominencePercentile  scholarlyOutput  overallScholarlyOutput
0             90.867250              1.0                   582.0
1             94.985855              2.0                   725.0
2             95.439890              2.0                   520.0
3                   NaN              NaN                     NaN
4                   NaN              NaN                     NaN
```

```
In [403]: del UR_ASJC_1['Topic_ID']

In [405]: del UR_ASJC_1['ACode']

In [406]: del UR_ASJC_2['Topic_ID']

In [407]: del UR_ASJC_2['ACode']

In [409]: UR_ASJC_1=UR_ASJC_1.dropna()

In [410]: UR_ASJC_2=UR_ASJC_2.dropna()

In [412]: UR_ASJC=pd.concat([UR_ASJC_1, UR_ASJC_2])

In [413]: UR_ASJC.head()

Out[413]:         metricType  metricvalue  \
0  ScholarlyOutput          1.0
1  ScholarlyOutput          1.0
2  ScholarlyOutput          2.0
3  ScholarlyOutput          3.0
4  ScholarlyOutput          1.0

                                                  link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
```

```
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                                 name         uri  \
0          Time; Time Perception; Temporal bisection  Topic/1100
1      Intubation; Laryngoscopes; Video laryngoscopy  Topic/1200
2            Speech enhancement; Speech; Binary mask  Topic/1300
3         Acromegaly; Patients; Acromegalic patients  Topic/1600
4  Glaucoma, Angle-Closure; Anterior Chamber; Gla...  Topic/2100

   prominencePercentile  scholarlyOutput  overallScholarlyOutput
0             94.983770              1.0                   868.0
1             94.222880              1.0                  1361.0
2             95.479546              2.0                  1334.0
3             93.386840              3.0                   690.0
4             89.228570              1.0                   819.0
```

In [419]:
```
chuck=[]
for line in UR_ASJC.uri:
    chuck.append(str(line).split('/')[1])
UR_ASJC['ASJC_Code']=chuck
```

In [420]:
```
UR_ASJC.head()
```

Out[420]:
```
        metricType  metricvalue  \
0  ScholarlyOutput          1.0
1  ScholarlyOutput          1.0
2  ScholarlyOutput          2.0
3  ScholarlyOutput          3.0
4  ScholarlyOutput          1.0

                                                link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                                 name         uri  \
0          Time; Time Perception; Temporal bisection  Topic/1100
1      Intubation; Laryngoscopes; Video laryngoscopy  Topic/1200
2            Speech enhancement; Speech; Binary mask  Topic/1300
3         Acromegaly; Patients; Acromegalic patients  Topic/1600
4  Glaucoma, Angle-Closure; Anterior Chamber; Gla...  Topic/2100

   prominencePercentile  scholarlyOutput  overallScholarlyOutput ASJC_Code
0             94.983770              1.0                   868.0      1100
```

```
1              94.222880              1.0                  1361.0      1200
2              95.479546              2.0                  1334.0      1300
3              93.386840              3.0                   690.0      1600
4              89.228570              1.0                   819.0      2100
```

```
In [421]: UR_ASJC=UR_ASJC.loc[:][['ASJC_Code','metricType','name','link','uri','prominencePerc
```

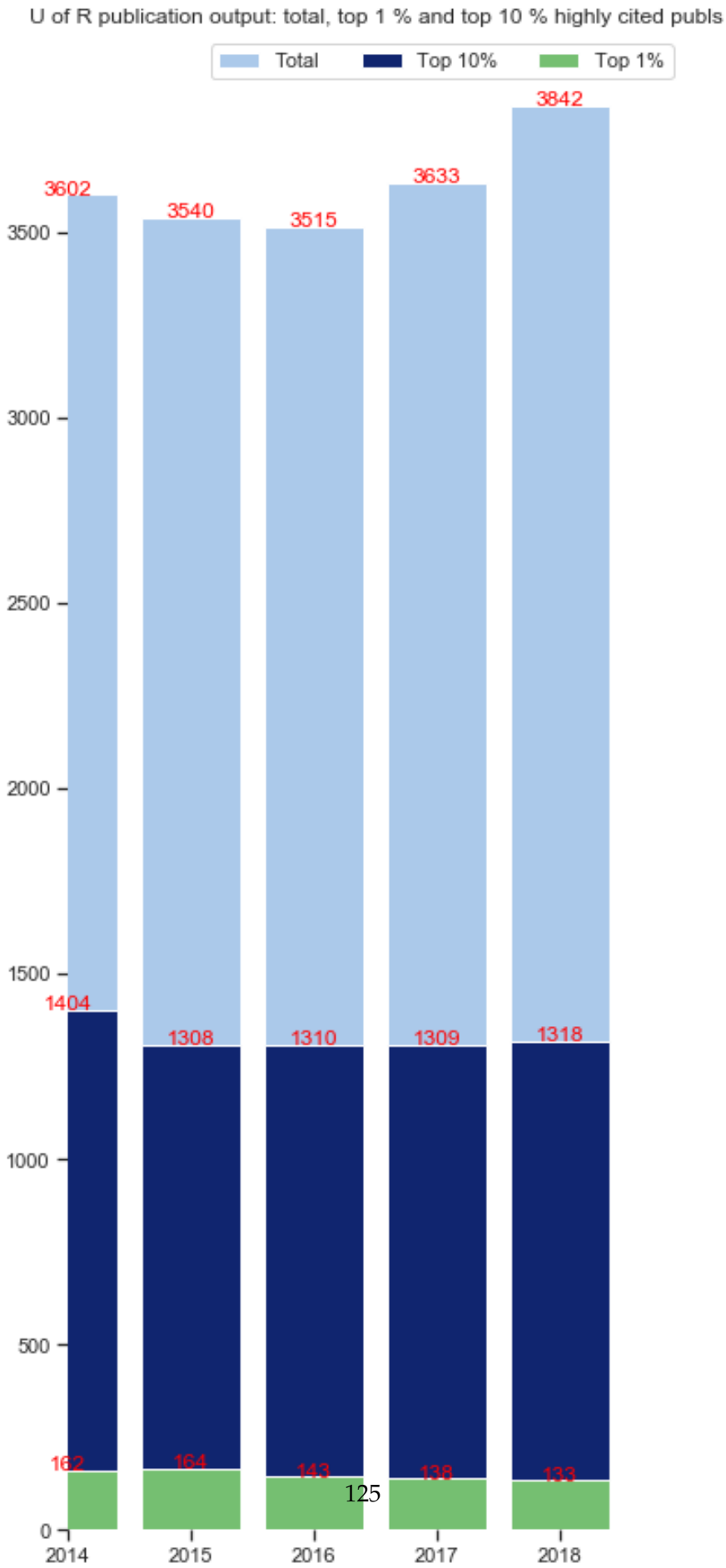
```
In [422]: UR_ASJC
```

```
Out[422]:   ASJC_Code       metricType  \
0       1100  ScholarlyOutput
1       1200  ScholarlyOutput
2       1300  ScholarlyOutput
3       1600  ScholarlyOutput
4       2100  ScholarlyOutput
5       2400  ScholarlyOutput
6       2700  ScholarlyOutput
0       3100  ScholarlyOutput
1       3300  ScholarlyOutput
2       3500  ScholarlyOutput

                                                 name  \
0          Time; Time Perception; Temporal bisection
1      Intubation; Laryngoscopes; Video laryngoscopy
2            Speech enhancement; Speech; Binary mask
3         Acromegaly; Patients; Acromegalic patients
4  Glaucoma, Angle-Closure; Anterior Chamber; Gla...
5  Pharmaceutical Preparations; Electrocardiograp...
6  Maximum likelihood estimation; Maximum likelih...
0  Staphylococcus aureus; Enterotoxins; Staphyloc...
1   Activities of Daily Living; Health; Healthy life
2                       Stars; Distance; RRab stars

                                                 link         uri  \
0  {'@href': 'https://api.elsevier.com/analytics/...  Topic/1100
1  {'@href': 'https://api.elsevier.com/analytics/...  Topic/1200
2  {'@href': 'https://api.elsevier.com/analytics/...  Topic/1300
3  {'@href': 'https://api.elsevier.com/analytics/...  Topic/1600
4  {'@href': 'https://api.elsevier.com/analytics/...  Topic/2100
5  {'@href': 'https://api.elsevier.com/analytics/...  Topic/2400
6  {'@href': 'https://api.elsevier.com/analytics/...  Topic/2700
0  {'@href': 'https://api.elsevier.com/analytics/...  Topic/3100
1  {'@href': 'https://api.elsevier.com/analytics/...  Topic/3300
2  {'@href': 'https://api.elsevier.com/analytics/...  Topic/3500

   prominencePercentile  scholarlyOutput  overallScholarlyOutput
0             94.983770              1.0                   868.0
1             94.222880              1.0                  1361.0
```

```
2              95.479546              2.0                1334.0
3              93.386840              3.0                 690.0
4              89.228570              1.0                 819.0
5              93.968210              9.0                 682.0
6              89.025040              1.0                 878.0
0              90.867250              1.0                 582.0
1              94.985855              2.0                 725.0
2              95.439890              2.0                 520.0
```

In [423]:
```
UR_ASJC.to_csv("UR_ASJC_0110.csv", index=False)
```

In [1024]:
```
import seaborn as sns
import matplotlib.pyplot as plt
sns.set(style="whitegrid")
sns.set_style("ticks", {"xtick.major.size": 10, "ytick.major.size": 8})

# Initialize the matplotlib figure
f, ax = plt.subplots(figsize=(6, 15))

# Load the example car crash dataset
#crashes = sns.load_dataset("car_crashes").sort_values("total", ascending=False)

# Plot the total crashes
sns.set_color_codes("pastel")
g=sns.barplot(data=A,
            label="Total", color="b")

# Plot the crashes where alcohol was involved
sns.set_color_codes("dark")
g=sns.barplot(data=B,
            label="Top 10%", color="b")

# Plot the crashes where alcohol was involved
sns.set_color_codes("muted")
g=sns.barplot(data=C,
            label="Top 1%", color="g")

show_values_on_bars(g, "v", 0.8)

# Add a legend and informative axis label
plt.yticks(np.arange(0, 4000, step=500))
plt.xticks(np.arange(5), ('2014', '2015', '2016', '2017', '2018'))
ax.legend(ncol=3, loc="upper right", frameon=True)
ax.set(xlim=(0,5), ylabel="",
       title="U of R publication output: total, top 1 % and top 10 % highly cited pu
sns.despine(left=True, bottom=True)
```


U of R publication output: total, top 1 % and top 10 % highly cited publs
Total
Top 10%
Top 1%
3602
3540
3515
3633
3842
1404
1308
1310
1309
1318
162
164
143
138
133
0
500
1000
1500
2000
2500
3000
3500
2014
2015
2016
2017
2018

```
In [329]: for item in inst_ids.institution_id[20:22]:
          #    for tid in topic_id[20:100]:
              resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                          'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
              parsed=json.dumps(resp.json(),
                           sort_keys=True,
                           indent=4, separators=(',', ': '))
          #    print(parsed)
              result=json.loads(parsed)
          result

Out[329]: {'dataSource': {'lastUpdated': '2020-01-01',
            'metricEndYear': 2018,
            'metricStartYear': 2014,
            'sourceName': 'Scopus'},
           'link': {'@href': 'https://api.elsevier.com/analytics/scival/topic/metrics/institut
            '@ref': 'self',
            '@type': 'application/json'},
           'results': [{'metrics': [{'metricType': 'ScholarlyOutput', 'value': 8}],
             'topic': {'id': 0,
              'link': {'@href': 'https://api.elsevier.com/analytics/scival/topic/0',
               '@ref': 'self',
               '@type': 'application/json'},
              'name': 'Solar cells; Fullerenes; Organic photovoltaics',
              'overallScholarlyOutput': 9500,
              'prominencePercentile': 99.98956,
              'scholarlyOutput': 8,
              'uri': 'Topic/0'}}]}

In [303]: with open("THE_UNI_Versus_ASJC.json") as output:
              data=json.load(output)

In [330]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code"

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ASJC Code


In [341]: url

Out[341]: 'https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/{}?topicId={}&

In [347]:

Out[347]: []

In [346]: for item in inst_ids.institution_id[:5]:
              for tid in topic_id:
```

In [336]:
```
inst_id=[]
topic_id=[]
metrics=[]
metrics_value=[]
link=[]
name=[]
Acode=[]
uri=[]
prominencePercentile=[]
scholarlyOutput=[]
overallScholarlyOutput=[]

for item in inst_ids.institution_id[:5]:
    for tid in topic_id[:5]:
        resp = requests.get(url.format(item, tid), headers={'Accept':'application/js
                            'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
        parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
        data=json.loads(parsed)
data
```

Out[336]:
```
{'link': {'@ref': 'self',
  '@href': 'https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508
  '@type': 'application/json'},
 'dataSource': {'sourceName': 'Scopus',
  'lastUpdated': '2020-01-01',
  'metricStartYear': 2014,
  'metricEndYear': 2018},
 'results': [{'metrics': [{'metricType': 'ScholarlyOutput', 'value': 2}],
   'topic': {'link': {'@ref': 'self',
     '@href': 'https://api.elsevier.com/analytics/scival/topic/1100',
     '@type': 'application/json'},
    'name': 'Time; Time Perception; Temporal bisection',
    'id': 1100,
    'uri': 'Topic/1100',
    'prominencePercentile': 94.98377,
    'scholarlyOutput': 2,
    'overallScholarlyOutput': 868}}]}
```

In [332]:
```
inst_id=[]
topic_id=[]
metrics=[]
metrics_value=[]
link=[]
name=[]
Acode=[]
```

```
uri=[]
prominencePercentile=[]
scholarlyOutput=[]
overallScholarlyOutput=[]

for item in inst_ids.institution_id[:5]:
    for tid in topic_id[:5]:
        resp = requests.get(url.format(item, tid), headers={'Accept':'application/jso
                            'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
        parsed=json.dumps(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '))
#    print(parsed)
        data=json.loads(parsed)
        inst_id.append(item)
        topic_id.append(tid)
        link.append(data['link'])
        if len(data['results']) >=1:
            if 'metrics' in data['results'][0]:
                if len(data['results'][0]['metrics']) >=1:
                    metrics.append(data['results'][0]['metrics'][0]['metricType'])
                    metrics_value.append(data['results'][0]['metrics'][0]['value'])
            if 'topic' in data['results'][0]:
                if len(data['results'][0]['topic']) >=1:
                    name.append(data['results'][0]['topic']['name'])
                    Acode.append(data['results'][0]['topic']['id'])
                    uri.append(data['results'][0]['topic']['uri'])
                    prominencePercentile.append(data['results'][0]['topic']['prominer
                    scholarlyOutput.append(data['results'][0]['topic']['scholarlyOutp
                    overallScholarlyOutput.append(data['results'][0]['topic']['schola

s1=pd.Series(inst_id, name="inst_id")
s2=pd.Series(topic_id, name="topic_id")
s3=pd.Series(metrics, name="metrics")
s4=pd.Series(metrics_value, name="metrics_value")
s5=pd.Series(link, name="link")
s6=pd.Series(name, name="name")
s7=pd.Series(Acode, name="Acode")
s8=pd.Series(uri, name="uri")
s9=pd.Series(prominencePercentile, name="prominencePercentile")
s10=pd.Series(scholarlyOutput, name="scholarlyOutput")
s11=pd.Series(overallScholarlyOutput, name="overallScholarlyOutput")

DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
DF.to_csv("TEST.csv", index=False)
#with open("THE_UNI_Versus_ASJC_Test.json", 'w') as json_file:
#    json.dump(resp.json(), json_file)
```

```
In [325]: inst_id=[]
          topic_id=[]
          metrics=[]
          metrics_value=[]
          link=[]
          name=[]
          Acode=[]
          uri=[]
          prominencePercentile=[]
          scholarlyOutput=[]
          overallScholarlyOutput=[]

          data
```


```
Out[325]: {'link': {'@ref': 'self',
            '@href': 'https://api.elsevier.com/analytics/scival/topic/metrics/institutionId/508
            '@type': 'application/json'},
           'dataSource': {'sourceName': 'Scopus',
            'lastUpdated': '2020-01-01',
            'metricStartYear': 2014,
            'metricEndYear': 2018},
           'results': [{'metrics': [{'metricType': 'ScholarlyOutput', 'value': 2}],
             'topic': {'link': {'@ref': 'self',
               '@href': 'https://api.elsevier.com/analytics/scival/topic/1100',
               '@type': 'application/json'},
              'name': 'Time; Time Perception; Temporal bisection',
              'id': 1100,
              'uri': 'Topic/1100',
              'prominencePercentile': 94.98377,
              'scholarlyOutput': 2,
              'overallScholarlyOutput': 868}}]}
```


```
In [ ]:

In [ ]:

In [ ]:

In [ ]:

In [ ]:
```

68 Comparatory analysis: research performance profile

```
In [239]: UR_Peer_FWCI.institution_name
```

```
Out[239]: 8                Stanford University
          3                   Emory University
```

```
6            Johns Hopkins University
2                     Duke University
4             Northwestern University
11         University of Pennsylvania
0                   Boston University
7                 New York University
10              University of Chicago
1     Case Western Reserve University
5               Vanderbilt University
12            University of Rochester
9                   Tulane University
Name: institution_name, dtype: object
```

```
In [240]: so_data_USA.head()
```

Out[240]:

	institution_name	2014	2015	2016	2017	2018	Total
0	Jet Propulsion Laboratory, California Institut...	1913	1800	2181	2052	2200	10146
1	California Institute of Technology	4518	4347	4553	4567	4884	22869
2	Stanford University	12801	13656	13664	14233	14729	69083
3	Massachusetts Institute of Technology	9645	9957	10023	10191	10458	50274
4	Princeton University	4335	4629	4544	4635	4891	23034

```
In [800]: chuck=[]

          for name in UR_Peer_FWCI.institution_name:
              chuck.append(so_data_USA[so_data_USA.institution_name==name])
```

```
In [241]: Ttl_publs_output=pd.concat(chuck, ignore_index=True)
```

```
In [243]: Ttl_publs_output.head()
```

Out[243]:

	country	countryCode	institution_id	link
0	United States	USA	508013	{'@href': 'https://api.elsevier.com/analytics/...
1	United States	USA	508032	{'@href': 'https://api.elsevier.com/analytics/...
2	United States	USA	508053	{'@href': 'https://api.elsevier.com/analytics/...
3	United States	USA	508059	
4	United States	USA	508175	

```
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                    institution_name                    metricType      2014  \
0                Boston University  FieldWeightedCitationImpact  2.102325
1  Case Western Reserve University  FieldWeightedCitationImpact  1.785904
2                  Duke University  FieldWeightedCitationImpact  2.060966
3                 Emory University  FieldWeightedCitationImpact  1.999690
4          Northwestern University  FieldWeightedCitationImpact  1.814437

       2015      2016      2017      2018
0  2.017788  2.082099  1.699757  1.916557
1  1.952037  1.955858  1.773011  1.861512
2  2.188656  1.971610  1.903780  1.848280
3  2.186228  2.209265  1.948478  1.967104
4  2.036129  2.104611  2.028618  1.968102
```

In [244]:
```
Ttl_publs_output['Total']=Ttl_publs_output.sum(axis=1)
```

In [245]:
```
A=Ttl_publs_output[['institution_name','Total']]
```

In [246]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCite
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

In [247]:
```
ALL_PP=pd.read_csv("THEUNI_CITEDPUBLS.csv")
```

In [248]:
```
ALL_PP.head()
```

Out[248]:
```
          country countryCode  institution_id  \
0  United Kingdom         GBR          315091
1   United States         USA          508092
2   United States         USA          508021
3  United Kingdom         GBR          315068
4   United States         USA          508219

                                                link  \
0  {'@href': 'https://api.elsevier.com/analytics/...
1  {'@href': 'https://api.elsevier.com/analytics/...
2  {'@href': 'https://api.elsevier.com/analytics/...
3  {'@href': 'https://api.elsevier.com/analytics/...
4  {'@href': 'https://api.elsevier.com/analytics/...

                                    institution_name         metricType  \
0                              University of Oxford  CitedPublications
1  Jet Propulsion Laboratory, California Institut...  CitedPublications
2                California Institute of Technology  CitedPublications
3                           University of Cambridge  CitedPublications
```

```
4                              Stanford University  CitedPublications

      2014     2015     2016     2017     2018  percent2014  percent2015  \
0  10893.0  11679.0  11798.0  11474.0  10570.0    86.555420     85.53537
1   1514.0   1451.0   1722.0   1588.0   1406.0    79.142710     80.61111
2   3879.0   3770.0   3914.0   3779.0   3487.0    85.856575     86.72648
3   9116.0   9238.0   9558.0   9125.0   8418.0    88.060280     86.17537
4  11156.0  11846.0  11699.0  11642.0  10731.0    87.149445     86.74575

   percent2016  percent2017  percent2018
0    84.115210     78.56213     70.69761
1    78.954605     77.38792     63.90909
2    85.965300     82.74578     71.39640
3    84.330330     79.49991     71.42372
4    85.619150     81.79583     72.85627
```

In [249]:
```
ALL_PP.tail()
```

Out[249]:
```
            country countryCode  institution_id  \
1263   Saudi Arabia         SAU          703099
1264         Turkey         TUR          705124
1265        Georgia         GEO          204001
1266  United States         USA          508335
1267  United States         USA          508059

                                                   link  \
1263  {'@href': 'https://api.elsevier.com/analytics/...
1264  {'@href': 'https://api.elsevier.com/analytics/...
1265  {'@href': 'https://api.elsevier.com/analytics/...
1266  {'@href': 'https://api.elsevier.com/analytics/...
1267  {'@href': 'https://api.elsevier.com/analytics/...

                                 institution_name         metricType    2014  \
1263        Imam Abdulrahman Bin Faisal University  CitedPublications   296.0
1264                    Istanbul Medipol University  CitedPublications   203.0
1265  Ivane Javakhishvili Tbilisi State University  CitedPublications   295.0
1266                         University of Rochester  CitedPublications  3011.0
1267                                 Emory University  CitedPublications  5206.0

        2015    2016    2017    2018  percent2014  percent2015  percent2016  \
1263   305.0   364.0   384.0   560.0     79.78437    75.495056    79.302826
1264   293.0   295.0   262.0   207.0     78.07692    72.524750    70.743410
1265   347.0   383.0   342.0   366.0     65.84821    68.441810    66.034485
1266  2939.0  2919.0  2795.0  2649.0     83.59245    83.022600    83.044090
1267  5230.0  5187.0  5126.0  4687.0     88.08799    87.810610    84.977066

      percent2017  percent2018
1263    66.435990    59.447987
```

```
1264    62.679430    47.260273
1265    65.391970    60.098522
1266    76.912490    68.948460
1267    80.992256    72.252200
```

```
In [250]: US_PP=ALL_PP[ALL_PP.countryCode=='USA']
```

```
In [251]: chuck=[]

          for name in UR_Peer_FWCI.institution_name:
              chuck.append(US_PP[US_PP.institution_name==name])
```

```
In [252]: UR_Peer_PP=pd.concat(chuck, ignore_index=True)
```

```
In [253]: UR_Peer_PP=UR_Peer_PP[['institution_name','percent2014','percent2015','percent2016',
```

```
In [254]: UR_Peer_PP=UR_Peer_PP.drop_duplicates()
```

```
In [255]: UR_Peer_PP.shape[0]
```

```
Out[255]: 13
```

```
In [256]: UR_Peer_PP.loc[:]['UniAbbr']=abb
```

```
In [257]: UR_Peer_PP.loc[:]['Mean_%PubCited']=UR_Peer_PP.iloc[:,1:5].mean(axis=1)
```

```
In [258]: UR_Peer_PP
```

Out[258]:

	institution_name	percent2014	percent2015	percent2016	\
0	Stanford University	87.149445	86.745750	85.619150	
1	Emory University	88.087990	87.810610	84.977066	
2	Johns Hopkins University	89.002870	87.677800	86.510290	
3	Duke University	88.075410	86.854250	85.007920	
4	Northwestern University	86.777405	86.313380	85.312300	
6	University of Pennsylvania	87.413540	85.737160	83.930275	
7	Boston University	86.645850	87.164610	84.995610	
8	New York University	85.079050	83.887920	81.683710	
10	University of Chicago	84.766730	82.955670	83.135560	
11	Case Western Reserve University	84.712010	83.535610	83.017590	
12	Vanderbilt University	88.025280	87.215770	85.106384	
13	University of Rochester	83.592450	83.022600	83.044090	
15	Tulane University	82.566730	83.222595	83.673470	

	percent2017	percent2018
0	81.795830	72.856270
1	80.992256	72.252200
2	82.894350	73.282555
3	81.594154	71.465890
4	82.407074	71.779500
6	80.257805	69.561550

```
7     80.863884    71.050520
8     77.177086    66.417710
10    78.535040    71.705900
11    77.285620    67.933495
12    78.452440    68.441520
13    76.912490    68.948460
15    77.565506    65.554360
```

```
In [259]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PercPublsCited
```

```
In [261]: UR_Peer_PP['Mean_%PubCited']=UR_Peer_PP.mean(axis=1)

In [262]: UR_Peer_PP=UR_Peer_PP.sort_values(by='Mean_%PubCited', ascending=False)

In [263]: UR_Peer_PP.reset_index(inplace=True, drop=True)

In [264]: C=UR_Peer_PP[['institution_name','Mean_%PubCited']]

In [265]: UR_Peer_PP.to_csv("UofR_Global_Peers_Cited_Publs.csv", index=False)

In [836]: # Top 1 % cited

In [266]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournall
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\PubTopJournalPercentile
```

```
In [267]: Top1All=pd.read_csv("THE_ALLUNI_PP.csv")

In [268]: Top1All.columns

Out[268]: Index(['country', 'countryCode', 'institution_id', 'link', 'institution_name',
                 'metricType', 't1_2014', 't1_2015', 't1_2016', 't1_2017', 't1_2018',
                 't1_percent2014', 't1_percent2015', 't1_percent2016', 't1_percent2017',
                 't1_percent2018', 't5_2014', 't5_2015', 't5_2016', 't5_2017', 't5_2018',
                 't5_percent2014', 't5_percent2015', 't5_percent2016', 't5_percent2017',
                 't5_percent2018', 't10_2014', 't10_2015', 't10_2016', 't10_2017',
                 't10_2018', 't10_percent2014', 't10_percent2015', 't10_percent2016',
                 't10_percent2017', 't10_percent2018', 't25_2014', 't25_2015',
                 't25_2016', 't25_2017', 't25_2018', 't25_percent2014',
                 't25_percent2015', 't25_percent2016', 't25_percent2017',
                 't25_percent2018'],
                dtype='object')

In [269]: Top1All.tail()
```

Out[269]:

	country	countryCode	institution_id	link	institution_name	metricType	t1_2014	t1_2015	t1_2016	t1_2017	...	t25_2014	t25_2015	t25_2016	t25_2017	t25_2018	t25_percent2014	t25_percent2015	t25_percent2016	t25_percent2017	t25_percent2018
1265	Saudi Arabia	SAU	703099	{'@href': 'https://api.elsevier.com/analytics/...	Imam Abdulrahman Bin Faisal University	PublicationsInTopJournalPercentiles	1.0	2.0	5.0	6.0	...	87.0	103.0	140.0	198.0	353.0	26.605505	29.428572	34.567900	38.521400	40.762123
1266	Turkey	TUR	705124	{'@href': 'https://api.elsevier.com/analytics/...	Istanbul Medipol University	PublicationsInTopJournalPercentiles	3.0	2.0	2.0	5.0	...	67.0	106.0	77.0	99.0	90.0	27.800830	29.041096	20.810812	27.049181	25.210085
1267	Georgia	GEO	204001	{'@href': 'https://api.elsevier.com/analytics/...	Ivane Javakhishvili Tbilisi State University	PublicationsInTopJournalPercentiles	1.0	1.0	2.0	2.0	...	205.0	241.0	278.0	266.0	335.0	50.368546	53.200882	52.751423	55.416668	58.566433
1268	United States	USA	508335	{'@href': 'https://api.elsevier.com/analytics/...	University of Rochester	PublicationsInTopJournalPercentiles	162.0	164.0	143.0	138.0	...	2163.0	2125.0	2131.0	2130.0	2309.0	70.364340	69.331154	67.436710	66.645805	66.522610
1269	United States	USA	508059	{'@href': 'https://api.elsevier.com/analytics/...	Emory University	PublicationsInTopJournalPercentiles	277.0	348.0	318.0	348.0	...	3967.0	3923.0	3854.0	3975.0	4143.0	73.708660	72.246780	68.907560	67.407160	68.186310

[5 rows x 46 columns]

In [270]:
```
Top1=Top1All[['institution_name','t1_percent2014','t1_percent2015','t1_percent2016',
```

In [271]:
```
Top1=Top1.drop_duplicates()
```

In [272]:
```
Top1['Total_Top1']=Top1[['institution_name','t1_percent2014','t1_percent2015','t1_pe
```

```
In [273]: Top1.head()
```

Out[273]:

	institution_name	t1_percent2014	t1_percent2015	t1_percent2016	t1_percent2017	t1_percent2018	Total_Top1
0	University of Oxford	6.250000	7.244391	7.178117	6.104996	6.456400	6.646781
1	Jet Propulsion Laboratory, California Institut...	4.939920	5.694445	4.605993	3.953229	6.402915	5.119300
4	California Institute of Technology	7.905651	6.580714	6.523930	6.254635	6.737181	6.800422
5	University of Cambridge	7.298050	7.159152	7.903886	7.334815	6.474752	7.234131
6	Stanford University	8.733065	8.676345	9.068627	8.334686	7.886435	8.539832

```
In [274]: chuck=[]

          for name in UR_Peer_FWCI.institution_name:
              chuck.append(Top1[Top1.institution_name==name])

In [275]: UR_PEER_Top1=pd.concat(chuck, ignore_index=True)

In [276]: UR_PEER_Top1=UR_PEER_Top1.sort_values(by='Total_Top1', ascending=False)

In [277]: UR_PEER_Top1.reset_index(inplace=True, drop=True)

In [278]: D=UR_PEER_Top1[['institution_name','Total_Top1']] # top1%

In [279]: # top 10%

          Top10=Top1All[['institution_name','t10_percent2014','t10_percent2015','t10_percent20

In [280]: Top10=Top10.drop_duplicates()

In [281]: Top10['Total_Top10']=Top10[['institution_name','t10_percent2014','t10_percent2015','

In [282]: Top10.head()
```

Out[282]:

	institution_name	t10_percent2014	t10_percent2015	t10_percent2016	t10_percent2017	t10_percent2018	\
0	University of Oxford	48.004738	49.169380	47.268753	47.715576	46.048240	
1	Jet Propulsion Laboratory, California Institut...	30.373833	33.541668	38.512764	38.251670	35.346176	
4	California Institute of Technology	44.297565	42.412033	51.662468	47.119900	45.228786	
5	University of Cambridge	48.022285					
6	Stanford University	50.878800					

```
5        49.646930        50.010223        49.757526        47.258140
6        51.818962        50.490196        50.584324        48.526580

   Total_Top10
0    47.641337
1    35.205222
4    46.144150
5    48.939021
6    50.459772
```

In [283]:
```
Top10.tail()
```

Out[283]:
```
                                institution_name  t10_percent2014  \
1258       Imam Abdulrahman Bin Faisal University         8.562691
1259                   Istanbul Medipol University         9.128631
1260  Ivane Javakhishvili Tbilisi State University        33.906630
1261                        University of Rochester        45.673390
1269                               Emory University        44.797474

      t10_percent2015  t10_percent2016  t10_percent2017  t10_percent2018  \
1258         9.142857        16.543210        14.007781        17.205542
1259         8.767123         8.108108        12.841530        12.885155
1260        27.814570        35.294117        46.041668        47.727272
1261        42.675365        41.455696        40.957447        37.971764
1269        45.930020        41.981050        41.783960        39.335090

      Total_Top10
1258    13.092416
1259    10.346109
1260    38.156851
1261    41.746732
1269    42.765519
```

In [284]:
```
chuck=[]

for name in UR_Peer_FWCI.institution_name:
    chuck.append(Top10[Top10.institution_name==name])
```

In [285]:
```
UR_PEER_Top10=pd.concat(chuck, ignore_index=True)
```

In [286]:
```
UR_PEER_Top10=UR_PEER_Top10.sort_values(by='Total_Top10', ascending=False)
```

In [287]:
```
UR_PEER_Top10.reset_index(inplace=True, drop=True)
```

In [288]:
```
E=UR_PEER_Top10[['institution_name','Total_Top10']]
```

In [301]:
```
cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutpu
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\ScholarlyOutput
```

```
In [303]: # filter publication data for UR global peeer

In [305]: so_data_USA.head()

Out[305]:                                    institution_name   2014   2015   2016  \
          0  Jet Propulsion Laboratory, California Institut...   1913   1800   2181
          1                 California Institute of Technology   4518   4347   4553
          2                              Stanford University  12801  13656  13664
          3             Massachusetts Institute of Technology   9645   9957  10023
          4                                Princeton University   4335   4629   4544

              2017   2018  Total
          0   2052   2200  10146
          1   4567   4884  22869
          2  14233  14729  69083
          3  10191  10458  50274
          4   4635   4891  23034

In [306]: chuck=[]

          for name in UR_Peer_FWCI.institution_name:
              chuck.append(so_data_USA[so_data_USA.institution_name==name])

In [307]: A=pd.concat(chuck, ignore_index=True)

In [308]: A=A.drop_duplicates()

In [310]: A=A.sort_values(by='Total', ascending=False)

In [311]: A.head()

Out[311]:              institution_name   2014   2015   2016   2017   2018  Total
          0         Stanford University  12801  13656  13664  14233  14729  69083
          2    Johns Hopkins University  12185  12936  13173  13668  14047  66009
          6  University of Pennsylvania  10988  11239  11531  11792  13023  58573
          8         New York University   9108   9707  10073  10599  11247  50734
          3             Duke University   8646   8885   8838   9171   9571  45111

In [319]: A=A.iloc[:,[0,-1]]

In [320]: A.reset_index(inplace=True, drop=True)

In [321]: A.head()

Out[321]:              institution_name  Total
          0         Stanford University  69083
          1    Johns Hopkins University  66009
          2  University of Pennsylvania  58573
          3         New York University  50734
          4             Duke University  45111
```

```
In [313]: len(A)

Out[313]: 13

In [312]: C.head()

Out[312]:            institution_name  Mean_%PubCited
          0  Johns Hopkins University       83.873573
          1       Stanford University       82.833289
          2          Emory University       82.824024
          3           Duke University       82.599525
          4   Northwestern University       82.517932

In [314]: len(C)

Out[314]: 13

In [315]: D.head()

Out[315]:              institution_name  Total_Top1
          0         Stanford University    8.539832
          1     Northwestern University    7.651071
          2       University of Chicago    7.156997
          3  University of Pennsylvania    6.827791
          4           Boston University    6.607170

In [317]: len(E)

Out[317]: 13

In [322]: part1=A.join(C.set_index('institution_name'), on='institution_name')

In [323]: part2=part1.join(D.set_index('institution_name'), on='institution_name')

In [324]: part3=part2.join(E.set_index('institution_name'), on='institution_name')

In [325]: part3

Out[325]:                    institution_name  Total  Mean_%PubCited  Total_Top1  \
          0               Stanford University  69083       82.833289    8.539832
          1          Johns Hopkins University  66009       83.873573    5.689941
          2        University of Pennsylvania  58573       81.380066    6.827791
          3               New York University  50734       78.849095    5.585733
          4                   Duke University  45111       82.599525    6.461731
          5             University of Chicago  44095       80.219780    7.156997
          6           Northwestern University  40315       82.517932    7.651071
          7             Vanderbilt University  31056       81.448279    5.699216
          8                  Emory University  30786       82.824024    5.530431
          9                Boston University  28873       82.144095    6.607170
          10  Case Western Reserve University  22234       79.296865    4.582277
```

```
11          University of Rochester  18132       79.104018    4.659141
12                Tulane University   9021       78.516532    4.564512

    Total_Top10
0     50.459772
1     43.892943
2     45.489412
3     41.123320
4     46.996039
5     49.374273
6     48.214202
7     43.224036
8     42.765519
9     46.571934
10    38.889898
11    41.746732
12    37.115668
```

In [326]:
```
B=UR_Peer_FWCI[['institution_name','AVERAGE_FWCI']]
```

In [327]:
```
B.head()
```

Out[327]:
```
            institution_name  AVERAGE_FWCI
8       Stanford University        2.4008
3          Emory University        2.0622
6  Johns Hopkins University        2.0071
2           Duke University        1.9947
4   Northwestern University        1.9904
```

In [328]:
```
part4=part3.join(B.set_index('institution_name'), on='institution_name')
```

In [329]:
```
part4.sort_values(by='Total', ascending=False)
```

Out[329]:
```
                    institution_name  Total  Mean_%PubCited  Total_Top1  \
0                Stanford University  69083       82.833289    8.539832
1           Johns Hopkins University  66009       83.873573    5.689941
2         University of Pennsylvania  58573       81.380066    6.827791
3                New York University  50734       78.849095    5.585733
4                    Duke University  45111       82.599525    6.461731
5              University of Chicago  44095       80.219780    7.156997
6            Northwestern University  40315       82.517932    7.651071
7              Vanderbilt University  31056       81.448279    5.699216
8                   Emory University  30786       82.824024    5.530431
9                  Boston University  28873       82.144095    6.607170
10  Case Western Reserve University  22234       79.296865    4.582277
11          University of Rochester  18132       79.104018    4.659141
12                Tulane University   9021       78.516532    4.564512

    Total_Top10  AVERAGE_FWCI
```

```
0     50.459772        2.4008
1     43.892943        2.0071
2     45.489412        1.9863
3     41.123320        1.9356
4     46.996039        1.9947
5     49.374273        1.8937
6     48.214202        1.9904
7     43.224036        1.8476
8     42.765519        2.0622
9     46.571934        1.9637
10    38.889898        1.8657
11    41.746732        1.8020
12    37.115668        1.5315
```

```
In [330]: cd "C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\research_perfo

C:\Users\jchen148\THE Rankings\Report to Jane\OK Files\OUtput Data\research_performance_Profile
```

```
In [331]: part4.to_csv('UR_GloPeers_Research_Performance_Profile.csv', index=False)
```

69 THE USA 163 Universities Distribution Plot

70 From the distribution plot below,

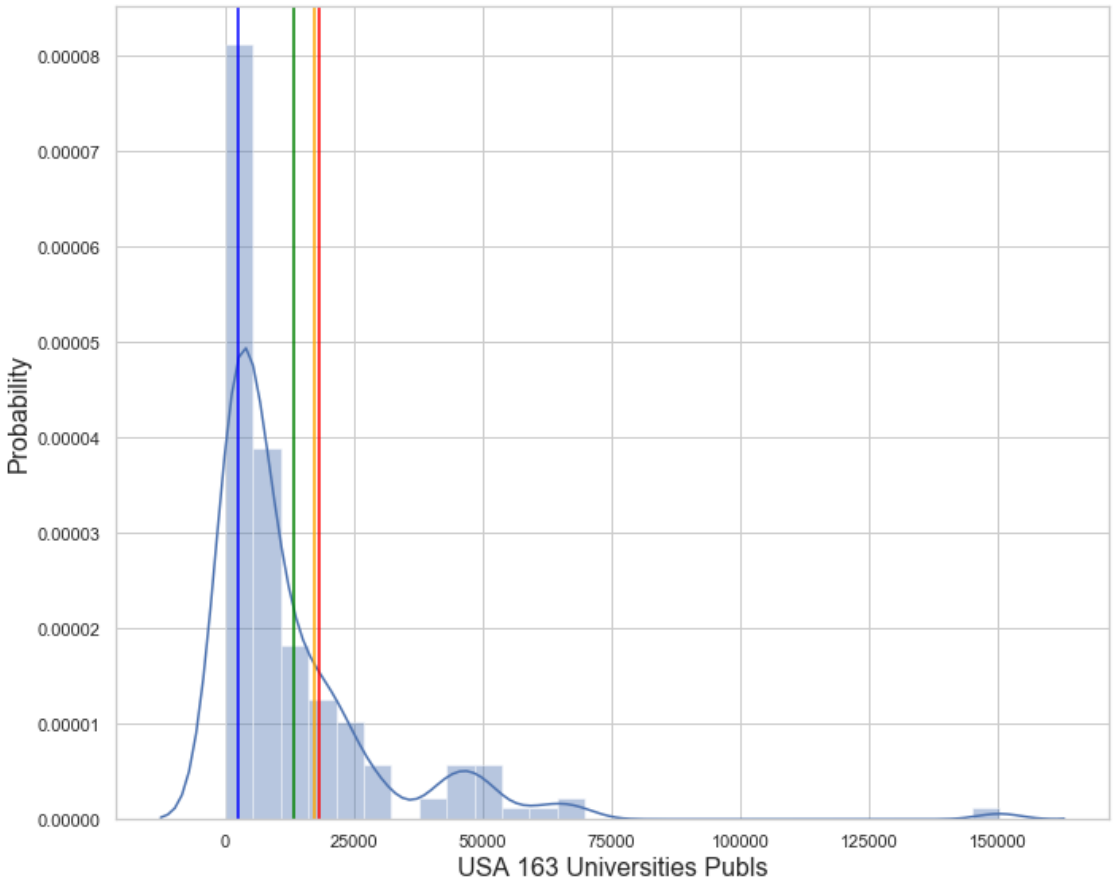
71 we can see we are above 75% of the other USA Universities

72 in publications from 2014 to 2018.

73 However, we can see Q3 is very close to the mean,

74 which is the green line. This is a right-skewed distribution.

```
In [1110]: import pandas as pd
           fig, ax = plt.subplots(figsize=(10,8))
           x = pd.Series(so_data_USA['Total'], name="USA Universities Publs") # 163 universiti
           ax = sns.distplot(x)

           ax.set_xlabel("USA 163 Universities Publs",fontsize=16)
           ax.set_ylabel("Probability",fontsize=16)
           plt.axvline(18132, color='red') # this is where U of R
           plt.axvline(np.mean(so_data_USA['Total']), color='green') # this is the mean, 17588
           plt.axvline(np.percentile(so_data_USA['Total'], 25.0), color='blue') # Q1
           plt.axvline(np.percentile(so_data_USA['Total'], 75.0), color='orange') # Q3
           #plt.legend()
           plt.tight_layout()
```




```
In [354]: so_data_USA=so_data_USA.reset_index()

In [355]: URpp=so_data_USA[so_data_USA.institution_name=='University of Rochester']
          URpp

Out[355]:             institution_name  2014  2015  2016  2017  2018
          162  University of Rochester  3602  3540  3515  3633  3842

In [356]: URpp=URpp.set_index('institution_name')

In [368]: URpp.agg('sum')

Out[368]: 2014    3602
          2015    3540
          2016    3515
          2017    3633
          2018    3842
          dtype: int64

In [340]: inputdata=pd.DataFrame(data.iloc[:,:6], columns=['2014','2015','2016','2017','2018']
```

```
In [341]: inputdata.head()
```

Out[341]:

institution_name	2014	2015	2016	2017	2018
University of Rochester	3602	3540	3515	3633	3842

```
In [342]: inputdata.reset_index(drop=True, inplace=True)

In [214]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(2)

          inst_country=[]
          inst_cc=[]
          inst_id=[]
          inst_link=[]
          inst_name=[]
          metricType=[]
          threshold=[]
          t1_value2014=[]
          t1_value2015=[]
          t1_value2016=[]
          t1_value2017=[]
          t1_value2018=[]
          t1_percentage2014=[]
          t1_percentage2015=[]
          t1_percentage2016=[]
          t1_percentage2017=[]
          t1_percentage2018=[]
          t5_value2014=[]
          t5_value2015=[]
          t5_value2016=[]
          t5_value2017=[]
          t5_value2018=[]
          t5_percentage2014=[]
          t5_percentage2015=[]
          t5_percentage2016=[]
          t5_percentage2017=[]
          t5_percentage2018=[]
          t10_value2014=[]
          t10_value2015=[]
          t10_value2016=[]
          t10_value2017=[]
          t10_value2018=[]
          t10_percentage2014=[]
```

```
t10_percentage2015=[]
t10_percentage2016=[]
t10_percentage2017=[]
t10_percentage2018=[]
t25_value2014=[]
t25_value2015=[]
t25_value2016=[]
t25_value2017=[]
t25_value2018=[]
t25_percentage2014=[]
t25_percentage2015=[]
t25_percentage2016=[]
t25_percentage2017=[]
t25_percentage2018=[]



for line in data['University id'][50:75]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Pu
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                               'X-ELS-APIKey': "d3794058e2b24417b5dfd0ef8990e2dc"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
    if 'results' in result:
        if len(result['results'])>=1:
            if 'institution' in result['results'][0]:
#                if 'country' in result['results'][0]['institution']:
                   inst_country.append(result['results'][0]['institution']['country'])
#            if 'countryCode' in result['results'][0]['institution']:
                   inst_cc.append(result['results'][0]['institution']['countryCode'])
#            if 'id' in result['results'][0]['institution']:
                   inst_id.append(result['results'][0]['institution']['id'])
#            if 'link' in result['results'][0]['institution']:
                   inst_link.append(result['results'][0]['institution']['link'])
#            if 'name' in result['results'][0]['institution']:
                   inst_name.append(result['results'][0]['institution']['name'])
            if 'metrics' in result['results'][0]:
#            if len(result['results'][0]['metrics'])>=1:
                   if 'metricType' in result['results'][0]['metrics'][0]:
                       metricType.append(result['results'][0]['metrics'][0]['metricType
                   if 'values' in result['results'][0]['metrics'][0]:
```

```
#                     print(result['results'][0]['metrics'][0]['values'][1]['threshol
                    for i in range(0, len(result['results'][0]['metrics'][0]['values
                        threshold.append(result['results'][0]['metrics'][0]['values']
                        if 'valueByYear' in result['results'][0]['metrics'][0]['value
#                           if i ==0:
                            if '2014' in result['results'][0]['metrics'][0]['values']
                                t1_value2014.append(result['results'][0]['metrics'][0
                            if '2015' in result['results'][0]['metrics'][0]['values']
                                t1_value2015.append(result['results'][0]['metrics'][0
                            if '2016' in result['results'][0]['metrics'][0]['values']
                                t1_value2016.append(result['results'][0]['metrics'][0
                            if '2017' in result['results'][0]['metrics'][0]['values']
                                t1_value2017.append(result['results'][0]['metrics'][0
                            if '2018' in result['results'][0]['metrics'][0]['values']
                                t1_value2018.append(result['results'][0]['metrics'][0
#                           if i ==1:
                            if '2014' in result['results'][0]['metrics'][0]['values']
                                t5_value2014.append(result['results'][0]['metrics'][0
                            if '2015' in result['results'][0]['metrics'][0]['values']
                                t5_value2015.append(result['results'][0]['metrics'][0
                            if '2016' in result['results'][0]['metrics'][0]['values']
                                t5_value2016.append(result['results'][0]['metrics'][0
                            if '2017' in result['results'][0]['metrics'][0]['values']
                                t5_value2017.append(result['results'][0]['metrics'][0
                            if '2018' in result['results'][0]['metrics'][0]['values']
                                t5_value2018.append(result['results'][0]['metrics'][0

#                           if i ==2:
                            if '2014' in result['results'][0]['metrics'][0]['values']
                                t10_value2014.append(result['results'][0]['metrics']
                            if '2015' in result['results'][0]['metrics'][0]['values']
                                t10_value2015.append(result['results'][0]['metrics']
                            if '2016' in result['results'][0]['metrics'][0]['values']
                                t10_value2016.append(result['results'][0]['metrics']
                            if '2017' in result['results'][0]['metrics'][0]['values']
                                t10_value2017.append(result['results'][0]['metrics']
                            if '2018' in result['results'][0]['metrics'][0]['values']
                                t10_value2018.append(result['results'][0]['metrics']

#                           if i ==3:
                            if '2014' in result['results'][0]['metrics'][0]['values']
                                t25_value2014.append(result['results'][0]['metrics']
                            if '2015' in result['results'][0]['metrics'][0]['values']
                                t25_value2015.append(result['results'][0]['metrics']
                            if '2016' in result['results'][0]['metrics'][0]['values']
                                t25_value2016.append(result['results'][0]['metrics']
                            if '2017' in result['results'][0]['metrics'][0]['values']
                                t25_value2017.append(result['results'][0]['metrics']
```

```
                    if '2018' in result['results'][0]['metrics'][0]['values']
                        t25_value2018.append(result['results'][0]['metrics']

                if 'percentageByYear' in result['results'][0]['metrics'][0][
#                   if i ==0:
                    if '2014' in result['results'][0]['metrics'][0]['values']
                        t1_percentage2014.append(result['results'][0]['metric
                    if '2015' in result['results'][0]['metrics'][0]['values']
                        t1_percentage2015.append(result['results'][0]['metric
                    if '2016' in result['results'][0]['metrics'][0]['values']
                        t1_percentage2016.append(result['results'][0]['metric
                    if '2017' in result['results'][0]['metrics'][0]['values']
                        t1_percentage2017.append(result['results'][0]['metric
                    if '2018' in result['results'][0]['metrics'][0]['values']
                        t1_percentage2018.append(result['results'][0]['metric

#                   if i ==1:
                    if '2014' in result['results'][0]['metrics'][0]['values']
                        t5_percentage2014.append(result['results'][0]['metric
                    if '2015' in result['results'][0]['metrics'][0]['values']
                        t5_percentage2015.append(result['results'][0]['metric
                    if '2016' in result['results'][0]['metrics'][0]['values']
                        t5_percentage2016.append(result['results'][0]['metric
                    if '2017' in result['results'][0]['metrics'][0]['values']
                        t5_percentage2017.append(result['results'][0]['metric
                    if '2018' in result['results'][0]['metrics'][0]['values']
                        t5_percentage2018.append(result['results'][0]['metric

#                   if i ==2:
                    if '2014' in result['results'][0]['metrics'][0]['values']
                        t10_percentage2014.append(result['results'][0]['metri
                    if '2015' in result['results'][0]['metrics'][0]['values']
                        t10_percentage2015.append(result['results'][0]['metri
                    if '2016' in result['results'][0]['metrics'][0]['values']
                        t10_percentage2016.append(result['results'][0]['metri
                    if '2017' in result['results'][0]['metrics'][0]['values']
                        t10_percentage2017.append(result['results'][0]['metri
                    if '2018' in result['results'][0]['metrics'][0]['values']
                        t10_percentage2018.append(result['results'][0]['metri

#                   if i ==3:
                    if '2014' in result['results'][0]['metrics'][0]['values']
                        t25_percentage2014.append(result['results'][0]['metri
                    if '2015' in result['results'][0]['metrics'][0]['values']
                        t25_percentage2015.append(result['results'][0]['metri
                    if '2016' in result['results'][0]['metrics'][0]['values']
                        t25_percentage2016.append(result['results'][0]['metri
                    if '2017' in result['results'][0]['metrics'][0]['values']
```

```
                                t25_percentage2017.append(result['results'][0]['metr
                            if '2018' in result['results'][0]['metrics'][0]['values']
                                t25_percentage2018.append(result['results'][0]['metr
#                       else:
#                           t1_value2014.append('')
#                           t1_value2015.append('')
#                           t1_value2016.append('')
#                           t1_value2017.append('')
#                           t1_value2018.append('')
#                           t1_percentage2014.append('')
#                           t1_percentage2015.append('')
#                           t1_percentage2016.append('')
#                           t1_percentage2017.append('')
#                           t1_percentage2018.append('')

#                       else:
#                           t1_value2014.append('')
#                           t1_value2015.append('')
#                           t1_value2016.append('')
#                           t1_value2017.append('')
#                           t1_value2018.append('')
#                           t1_percentage2014.append('')
#                           t1_percentage2015.append('')
#                           t1_percentage2016.append('')
#                           t1_percentage2017.append('')
#                           t1_percentage2018.append('')

#                       if 'threshold' in result['results'][0]['metrics'][0]['values']:
#                           threshold.append(result['results'][0]['metrics'][0]['values


s1=pd.Series(inst_country, name='country')
s2=pd.Series(inst_cc, name='countryCode')
s3=pd.Series(inst_id, name='institution_id')
s4=pd.Series(inst_link, name='link')
s5=pd.Series(inst_name, name='institution_name')
s6=pd.Series(metricType, name='metricType')
s7=pd.Series(threshold, name='threshold')
s8=pd.Series(t1_value2014, name='t1_2014')
s9=pd.Series(t1_value2015, name='t1_2015')
s10=pd.Series(t1_value2016, name='t1_2016')
s11=pd.Series(t1_value2017, name='t1_2017')
s12=pd.Series(t1_value2018, name='t1_2018')
s13=pd.Series(t1_percentage2014, name='t1_percent2014')
s14=pd.Series(t1_percentage2015, name='t1_percent2015')
s15=pd.Series(t1_percentage2016, name='t1_percent2016')
s16=pd.Series(t1_percentage2017, name='t1_percent2017')
s17=pd.Series(t1_percentage2018, name='t1_percent2018')
```

```
s18=pd.Series(t5_value2014, name='t5_2014')
s19=pd.Series(t5_value2015, name='t5_2015')
s20=pd.Series(t5_value2016, name='t5_2016')
s21=pd.Series(t5_value2017, name='t5_2017')
s22=pd.Series(t5_value2018, name='t5_2018')
s23=pd.Series(t5_percentage2014, name='t5_percent2014')
s24=pd.Series(t5_percentage2015, name='t5_percent2015')
s25=pd.Series(t5_percentage2016, name='t5_percent2016')
s26=pd.Series(t5_percentage2017, name='t5_percent2017')
s27=pd.Series(t5_percentage2018, name='t5_percent2018')
s28=pd.Series(t10_value2014, name='t10_2014')
s29=pd.Series(t10_value2015, name='t10_2015')
s30=pd.Series(t10_value2016, name='t10_2016')
s31=pd.Series(t10_value2017, name='t10_2017')
s32=pd.Series(t10_value2018, name='t10_2018')
s33=pd.Series(t10_percentage2014, name='t10_percent2014')
s34=pd.Series(t10_percentage2015, name='t10_percent2015')
s35=pd.Series(t10_percentage2016, name='t10_percent2016')
s36=pd.Series(t10_percentage2017, name='t10_percent2017')
s37=pd.Series(t10_percentage2018, name='t10_percent2018')
s38=pd.Series(t25_value2014, name='t25_2014')
s39=pd.Series(t25_value2015, name='t25_2015')
s40=pd.Series(t25_value2016, name='t25_2016')
s41=pd.Series(t25_value2017, name='t25_2017')
s42=pd.Series(t25_value2018, name='t25_2018')
s43=pd.Series(t25_percentage2014, name='t25_percent2014')
s44=pd.Series(t25_percentage2015, name='t25_percent2015')
s45=pd.Series(t25_percentage2016, name='t25_percent2016')
s46=pd.Series(t25_percentage2017, name='t25_percent2017')
s47=pd.Series(t25_percentage2018, name='t25_percent2018')


DF=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11,s12,s13,s14,s15,s16, s17,s18,s19,s2
              s28,s29,s30,s31,s32,s33,s34,s35,s36,s37,s38,s39,s40, s41,s42,s43,s44,s45


DF.to_csv("THE_UNI_PublicationsInTopJournalPercentiles_ALL_3.csv", index=False)  # O


#print(threshold)
```

In [103]:
```
for line in data['University id'][:2]:
    url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=S
 #   print(url.format(line))
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
```

```
                    sort_keys=True,
                    indent=4, separators=(',', ': '))
#    with open("THE_UNI_ID_METRIC_ALL.json", 'w') as jsonfile:
#        json.dump(resp.json(), jsonfile)
#    print(parsed)
#    data.update(a_dict)
    result=json.loads(parsed)
print(result['results'])
```

```
[{'institution': {'country': 'United States', 'countryCode': 'USA', 'id': 508092, 'link': {'@h
```

```
In [66]: with open("THE_UNI_ID_METRIC_TEST.json") as outputfile:
             out=json.load(outputfile)
```

```
In [67]: out
```

```
Out[67]: {'link': {'@ref': 'self',
           '@href': 'https://api.elsevier.com/analytics/scival/institution/metrics?journalImpa
           '@type': 'application/json'},
          'dataSource': {'sourceName': 'Scopus', 'lastUpdated': '2020-01-01'},
          'results': [{'metrics': [{'metricType': 'ScholarlyOutput',
              'valueByYear': {'2014': 1913,
               '2015': 1800,
               '2016': 2181,
               '2017': 2052,
               '2018': 2200}}],
            'institution': {'link': {'@ref': 'self',
              '@href': 'https://api.elsevier.com/analytics/scival/institution/508092?apiKey=7a
              '@type': 'application/json'},
             'name': 'Jet Propulsion Laboratory, California Institute of Technology',
             'id': 508092,
             'uri': 'Institution/508092',
             'country': 'United States',
             'countryCode': 'USA'}}]}
```

```
In [86]: import requests
         import json
         import pandas as pd
         import numpy as np
         from time import sleep
         sleep(2)

         university_name=[]
         university_id=[]
         country=[]
         countryCode=[]
         df=pd.DataFrame()
```

```
        for line in want_3[:4]:
        #     query = "name(school)"
            url= """https://api.elsevier.com/metrics/institution/search?query=name({})&start=0
            resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
            parsed=json.dumps(resp.json(),
                        sort_keys=True,
                        indent=4, separators=(',', ': '))
        #     print(parsed)
        #     data.update(a_dict)
            result=json.loads(parsed)
        #     data=parsed[1]
        #     print(result)
            data=result['results']
            print(data)
        #     if (data[0]['country'] is not None):
```

```
[{'country': 'United Kingdom', 'countryCode': 'GBR', 'id': 315091, 'link': {'@href': 'https://a
[{'country': 'United States', 'countryCode': 'USA', 'id': 508092, 'link': {'@href': 'https://ap
[{'country': 'United Kingdom', 'countryCode': 'GBR', 'id': 315068, 'link': {'@href': 'https://a
[{'country': 'United States', 'countryCode': 'USA', 'id': 508219, 'link': {'@href': 'https://ap
```

```
In [3]: cd "C:\Users\jchen148\THE Rankings\Report to Jane"
```

```
C:\Users\jchen148\THE Rankings\Report to Jane
```

```
In [97]: import requests
         import json
         import pandas as pd
         import numpy as np
         from time import sleep
         sleep(0.1)

         university_name=[]
         university_id=[]
         country=[]
         countryCode=[]
         df=pd.DataFrame()

         for line in want_3[:10]:
         #     query = "name(school)"
             url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0&
             resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
             parsed=json.dumps(resp.json(),
                         sort_keys=True,
                         indent=4, separators=(',', ': '))
```

```
        result=json.loads(parsed)
        data=result['results']
        for i in data:
            if i is not None:
    #    if data[0] is not None:
                countries=i['country']
                unames=i['name']
                uids=i['id']
                codes=i['countryCode']
                if (countries is not None):
                    country.append(countries)
                else:
                    country.append("")
                if (unames is not None):
                    university_name.append(unames)
                else:
                    university_name.append("")
                if (uids is not None):
                    university_id.append(uids)
                else:
                    university_id.append("")
                if (codes is not None):
                    countryCode.append(codes)
                else:
                    countryCode.append("")
                df=pd.DataFrame({'University Name':university_name, 'University id':univer
                df.to_csv("THE_CountryCode_Result_1202.csv")
```

In [98]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(0.1)

university_name=[]
university_id=[]
country=[]
countryCode=[]
df=pd.DataFrame()

for line in want_3[10:20]:
#    query = "name(school)"
    url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0&
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
```

```
            parsed=json.dumps(resp.json(),
                              sort_keys=True,
                              indent=4, separators=(',', ': '))
            result=json.loads(parsed)
            data=result['results']
            for i in data:
                if i is not None:
        #    if data[0] is not None:
                        countries=i['country']
                        unames=i['name']
                        uids=i['id']
                        codes=i['countryCode']
                        if (countries is not None):
                            country.append(countries)
                        else:
                            country.append("")
                        if (unames is not None):
                            university_name.append(unames)
                        else:
                            university_name.append("")
                        if (uids is not None):
                            university_id.append(uids)
                        else:
                            university_id.append("")
                        if (codes is not None):
                            countryCode.append(codes)
                        else:
                            countryCode.append("")
                        df=pd.DataFrame({'University Name':university_name, 'University id':univer
                        df.to_csv("THE_CountryCode_Result_1202_2.csv")
```

In [100]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(0.1)

university_name=[]
university_id=[]
country=[]
countryCode=[]
df=pd.DataFrame()

for line in want_3[20:30]:
#    query = "name(school)"
    url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0
```

```
            resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
            parsed=json.dumps(resp.json(),
                        sort_keys=True,
                        indent=4, separators=(',', ': '))
            result=json.loads(parsed)
            data=result['results']
            for i in data:
                if i is not None:
        #     if data[0] is not None:
                        countries=i['country']
                        unames=i['name']
                        uids=i['id']
                        codes=i['countryCode']
                        if (countries is not None):
                            country.append(countries)
                        else:
                            country.append("")
                        if (unames is not None):
                            university_name.append(unames)
                        else:
                            university_name.append("")
                        if (uids is not None):
                            university_id.append(uids)
                        else:
                            university_id.append("")
                        if (codes is not None):
                            countryCode.append(codes)
                        else:
                            countryCode.append("")
                        df=pd.DataFrame({'University Name':university_name, 'University id':univ
                        df.to_csv("THE_CountryCode_Result_1202_3.csv")
```

In [ ]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(0.1)

university_name=[]
university_id=[]
country=[]
countryCode=[]
df=pd.DataFrame()

for line in want_3[20:30]:
```

```
#    query = "name(school)"
    url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0&c
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
    result=json.loads(parsed)
    data=result['results']
    for i in data:
        if i is not None:
#    if data[0] is not None:
            countries=i['country']
            unames=i['name']
            uids=i['id']
            codes=i['countryCode']
            if (countries is not None):
                country.append(countries)
            else:
                country.append("")
            if (unames is not None):
                university_name.append(unames)
            else:
                university_name.append("")
            if (uids is not None):
                university_id.append(uids)
            else:
                university_id.append("")
            if (codes is not None):
                countryCode.append(codes)
            else:
                countryCode.append("")
            df=pd.DataFrame({'University Name':university_name, 'University id':univers
            df.to_csv("THE_CountryCode_Result_1202_3.csv")
```

In [169]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(3)

university_name=[]
university_id=[]
country=[]
countryCode=[]
df=pd.DataFrame()
```

```
for line in want_3[75:]:
    line=re.sub('[^A-Za-z0-9]+',' ', line)
#     query = "name(school)"
    url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
#     try:
    parsed=json.dumps(resp.json(),
                      sort_keys=True,
                      indent=4, separators=(',', ': '))
    result=json.loads(parsed)
    data=result['results']
#     except ValueError:
#           pass
#            result=json.loads(parsed)
#            data=result['results']
    for i in data:
        if i is None:
            pass
        else:
#                     try:
#     if data[0] is not None:
            countries=i['country']
            unames=i['name']
            uids=i['id']
            codes=i['countryCode']
            if (countries is not None):
                country.append(countries)
            else:
                country.append("")
            if (unames is not None):
                university_name.append(unames)
            else:
                university_name.append("")
            if (uids is not None):
                university_id.append(uids)
            else:
                university_id.append("")
            if (codes is not None):
                countryCode.append(codes)
            else:
                countryCode.append("")
#                     except (RuntimeError, TypeError, NameError,JSONDecodeError):
#                           pass
            df=pd.DataFrame({'University Name':university_name, 'University id':univ
            df.to_csv("THE_CountryCode_Result_1202_12.csv")
#     except ValueError:
#         continue
```

```
In [153]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(3)

          university_name=[]
          university_id=[]
          country=[]
          countryCode=[]
          df=pd.DataFrame()

          for line in want_3[47:50]:
          #    query = "name(school)"
              url= "https://api.elsevier.com/metrics/institution/search?query=name({})&start=0
              resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                      'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
              try:
                  parsed=json.dumps(resp.json(),
                                    sort_keys=True,
                                    indent=4, separators=(',', ': '))
                  result=json.loads(parsed)
                  data=result['results']
                  for i in data:
                      if i is None:
                          pass
                      else:
                          try:
          #    if data[0] is not None:
                              countries=i['country']
                              unames=i['name']
                              uids=i['id']
                              codes=i['countryCode']
                              if (countries is not None):
                                  country.append(countries)
                              else:
                                  country.append("")
                              if (unames is not None):
                                  university_name.append(unames)
                              else:
                                  university_name.append("")
                              if (uids is not None):
                                  university_id.append(uids)
                              else:
                                  university_id.append("")
                              if (codes is not None):
                                  countryCode.append(codes)
```

```
                            else:
                                countryCode.append("")
                        except (RuntimeError, TypeError, NameError,JSONDecodeError):
                                pass
                                df=pd.DataFrame({'University Name':university_name, 'Universi
                                df.to_csv("THE_CountryCode_Result_1202_8.csv")
                except ValueError:
                    continue
```

```
In [126]: for line in want_3[38:40]:
              print(re.sub('[^A-Za-z0-9]+',' ', line))
```

```
North Carolina at Chapel Hill
Wageningen University Research
```

```
In [ ]: for line in want_3[38:40]:
            line=re.sub('[^A-Za-z0-9]+',' ', line)
        #    query = "name(school)"
            url= """https://api.elsevier.com/metrics/institution/search?query=name("{}")&start=
        #    resp = requests.get(url.format(line), headers={'Accept':'application/json',
        #                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
```

```
In [137]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(3)

          university_name=[]
          university_id=[]
          country=[]
          countryCode=[]
          df=pd.DataFrame()

          for line in want_3[40:50]:
          #    line=re.sub('[^A-Za-z0-9]+',' ', line)
          #    query = "name(school)"
              url= """https://api.elsevier.com/metrics/institution/search?query=name("{}")&sta
              resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                          'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
              parsed=json.dumps(resp.json(),
                           sort_keys=True,
                           indent=4, separators=(',', ': '))
              result=json.loads(parsed)
              data=result['results']
              for i in data:
```

```
            if i is not None:
#     if data[0] is not None:
                countries=i['country']
                unames=i['name']
                uids=i['id']
                codes=i['countryCode']
                if (countries is not None):
                    country.append(countries)
                else:
                    country.append("")
                if (unames is not None):
                    university_name.append(unames)
                else:
                    university_name.append("")
                if (uids is not None):
                    university_id.append(uids)
                else:
                    university_id.append("")
                if (codes is not None):
                    countryCode.append(codes)
                else:
                    countryCode.append("")
                df=pd.DataFrame({'University Name':university_name, 'University id':univ
                df.to_csv("THE_CountryCode_Result_1202_6.csv")
```

```
In [117]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(3)

          university_name=[]
          university_id=[]
          country=[]
          countryCode=[]
          df=pd.DataFrame()

          #for line in want_3[40:50]:
          #    line=re.sub('[^A-Za-z0-9]+',' ', line)
          #    query = "name(school)"
          #name="University of Rochester"
          url= """https://api.elsevier.com/metrics/institution/search?query=name(University%20
          resp = requests.get(url, headers={'Accept':'application/json',
                                            'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
          parsed=json.dumps(resp.json(),
```

```
                    sort_keys=True,
                    indent=4, separators=(',', ': '))
        result=json.loads(parsed)
        data=result['results']
        #print(data)
        for i in data:
            if i is not None:
        #    if data[0] is not None:
                countries=i['country']
                unames=i['name']
                uids=i['id']
                codes=i['countryCode']
                if (countries is not None):
                    country.append(countries)
                else:
                    country.append("")
                if (unames is not None):
                    university_name.append(unames)
                else:
                    university_name.append("")
                if (uids is not None):
                    university_id.append(uids)
                else:
                    university_id.append("")
                if (codes is not None):
                    countryCode.append(codes)
                else:
                    countryCode.append("")
                df=pd.DataFrame({'University Name':university_name, 'University id':universi
                df.to_csv("THE_CountryCode_Result_1202_13.csv")
```

In [110]:
```
        import requests
        import json
        import pandas as pd
        import numpy as np
        from time import sleep
        sleep(3)

        university_name=[]
        university_id=[]
        country=[]
        countryCode=[]
        df=pd.DataFrame()

        #for line in want_3[40:50]:
        #    line=re.sub('[^A-Za-z0-9]+',' ', line)
        #    query = "name(school)"
        name="University of Rochester"
```

```
        url= """https://api.elsevier.com/metrics/institution/search?query=name("{}")&start=0&
        resp = requests.get(url.format(name), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
        parsed=json.dumps(resp.json(),
                          sort_keys=True,
                          indent=4, separators=(',', ': '))
        result=json.loads(parsed)
        data=result['results']
        for i in data:
            if i is not None:
        #    if data[0] is not None:
                countries=i['country']
                unames=i['name']
                uids=i['id']
                codes=i['countryCode']
                if (countries is not None):
                    country.append(countries)
                else:
                    country.append("")
                if (unames is not None):
                    university_name.append(unames)
                else:
                    university_name.append("")
                if (uids is not None):
                    university_id.append(uids)
                else:
                    university_id.append("")
                if (codes is not None):
                    countryCode.append(codes)
                else:
                    countryCode.append("")
                df=pd.DataFrame({'University Name':university_name, 'University id':universit
                df.to_csv("THE_CountryCode_Result_1202_13.csv")
```

75 concatenate all files

```
In [22]: link =r"C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_{}.c

        for i in range(0, 12):
            i+=1
            print(link.format(i))
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_1.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_2.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_3.csv
```

```
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_4.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_5.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_6.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_7.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_8.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_9.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_10.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_11.csv
C:\Users\jchen148\THE Rankings\Report to Jane\THE_CountryCode_Result_1202_12.csv
```

```
In [5]: import pandas as pd
```

```
In [4]: chucks=[]

        filename='THE_CountryCode_Result_1202_{}.csv'
        for i in range(0, 13):
            i+=1
            print(filename.format(i))
        #    chucks.append(filename.format(i))
```

```
THE_CountryCode_Result_1202_1.csv
THE_CountryCode_Result_1202_2.csv
THE_CountryCode_Result_1202_3.csv
THE_CountryCode_Result_1202_4.csv
THE_CountryCode_Result_1202_5.csv
THE_CountryCode_Result_1202_6.csv
THE_CountryCode_Result_1202_7.csv
THE_CountryCode_Result_1202_8.csv
THE_CountryCode_Result_1202_9.csv
THE_CountryCode_Result_1202_10.csv
THE_CountryCode_Result_1202_11.csv
THE_CountryCode_Result_1202_12.csv
THE_CountryCode_Result_1202_13.csv
```

```
In [5]: import pandas as pd

        filename='THE_CountryCode_Result_1202_{}.csv'

        chucks=[]
        for i in range(0, 13):
            i+=1
            chucks.append(pd.read_csv(filename.format(i)))

        namedata=pd.concat(chucks, ignore_index=True)

        namedata.head()
```

```
Out[5]:    Unnamed: 0                                    University Name  \
        0           0                                  University of Oxford
        1           1  Jet Propulsion Laboratory, California Institut...
        2           2                  California Institute of Technology
        3           3                               University of Cambridge
        4           4                                   Stanford University

           University id         Country Country Code
        0         315091  United Kingdom          GBR
        1         508092   United States          USA
        2         508021   United States          USA
        3         315068  United Kingdom          GBR
        4         508219   United States          USA
```

```
In [6]: namedata.reset_index()

        namedata2=namedata[:]

        namedata2.head()

        namedata2=namedata.iloc[:,1:] # delete the first column

        namedata2.head()
```

```
Out[6]:                                    University Name  University id  \
        0                                University of Oxford         315091
        1  Jet Propulsion Laboratory, California Institut...         508092
        2                  California Institute of Technology         508021
        3                               University of Cambridge         315068
        4                                   Stanford University         508219

                Country Country Code
        0  United Kingdom          GBR
        1   United States          USA
        2   United States          USA
        3  United Kingdom          GBR
        4   United States          USA
```

```
In [137]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(3)

          university_name=[]
          university_id=[]
          country=[]
```

```
countryCode=[]
df=pd.DataFrame()

for line in want_3[40:50]:
#    line=re.sub('[^A-Za-z0-9]+',' ', line)
#    query = "name(school)"
    url= """https://api.elsevier.com/metrics/institution/search?query=name("{}")&sta
    resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
    result=json.loads(parsed)
    data=result['results']
    for i in data:
        if i is not None:
#    if data[0] is not None:
            countries=i['country']
            unames=i['name']
            uids=i['id']
            codes=i['countryCode']
            if (countries is not None):
                country.append(countries)
            else:
                country.append("")
            if (unames is not None):
                university_name.append(unames)
            else:
                university_name.append("")
            if (uids is not None):
                university_id.append(uids)
            else:
                university_id.append("")
            if (codes is not None):
                countryCode.append(codes)
            else:
                countryCode.append("")
            df=pd.DataFrame({'University Name':university_name, 'University id':unive
            df.to_csv("THE_CountryCode_Result_1202_6.csv")
```

```
In [7]: Uidlist=namedata2['University id']
        Uidlist.head()
```

```
Out[7]: 0    315091
        1    508092
        2    508021
```

```
3    315068
4    508219
Name: University id, dtype: int64
```

```
In [8]: import requests
        import requests_oauthlib
        import pandas as pd
        import numpy as np
```

```
In [ ]: import time
        time.sleep(2)


        url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citatio


        resp = requests.get(url.format(line), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
        parsed=json.dumps(resp.json(),
                          sort_keys=True,
                          indent=4, separators=(',', ': '))
        result=json.loads(parsed)
```

```
In [9]: len(Uidlist)
```

```
Out[9]: 1272
```

```
In [125]: import requests
          import requests_oauthlib
          import json
          import pandas as pd
          import numpy as np

          import time
          time.sleep(2)

          country=[]
          countryCode=[]
          Uid=[]
          uname=[]
          uri=[]
          metric=[]
          CitationCount2014=[]
          CitationCount2015=[]
          CitationCount2016=[]
          CitationCount2017=[]
          CitationCount2018=[]

          url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati
```

```
for uid in Uidlist[1270:]:
#    print(url.format(uid))
    resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
    result=json.loads(parsed)
#    print(result)
    if 'results' not in result:
        pass
    else:
        if list(result['results']) is None:
            pass
        else:
#         if list(result['results'])[0] is None:
#             pass
#         else:
#         data=result['results']
            if len(list(result['results']))<1:
               pass
            else:
                if 'institution' not in list(result['results'])[0]:
                    pass
                else:
                    if 'country' in result['results'][0]['institution']:
                        country.append(result['results'][0]['institution']['country']
                    else:
                        country.append("")
                    if 'countryCode' in result['results'][0]['institution']:
                        countryCode.append(result['results'][0]['institution']['coun
                    else:
                        countryCode.append("")
                    if 'id' in result['results'][0]['institution']:
                        Uid.append(result['results'][0]['institution']['id'])
                    else:
                        Uid.append("")
                    if 'name' in result['results'][0]['institution']:
                        uname.append(result['results'][0]['institution']['name'])
                    else:
                        uname.append("")
                    if 'uri' in result['results'][0]:
                        uri.append(result['results'][0]['institution']['uri'])
                    else:
                        uri.append("")
                if 'metrics' not in result['results'][0]:
                    pass
```

```
                else:
                    if 'metricType' not in result['results'][0]['metrics'][0]:
                        pass
                    else:
                        metric.append(result['results'][0]['metrics'][0]['metricType
                        if 'valueByYear' in result['results'][0]['metrics'][0]:
                            if '2014' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2014.append(result['results'][0]['metri
                            else:
                                CitationCount2014.append("")
                            if '2015' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2015.append(result['results'][0]['metri
                            else:
                                CitationCount2015.append("")
                            if '2016' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2016.append(result['results'][0]['metri
                            else:
                                CitationCount2016.append("")
                            if '2017' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2017.append(result['results'][0]['metri
                            else:
                                CitationCount2017.append("")
                            if '2018' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2018.append(result['results'][0]['metri
                            else:
                                CitationCount2018.append("")
                        else:
                            CitationCount2014.append("")
                            CitationCount2015.append("")
                            CitationCount2016.append("")
                            CitationCount2017.append("")
                            CitationCount2018.append("")
#             else:
#                 metric.append("")

s1=pd.Series(country, name='Country')
s2=pd.Series(countryCode, name='CountryCode')
s3=pd.Series(Uid, name='Uid')
s4=pd.Series(uname, name='UniversityName')
s5=pd.Series(uri, name='uri')
s6=pd.Series(metric, name='metric')
s7=pd.Series(CitationCount2014, name='Citation2014')
s8=pd.Series(CitationCount2015, name='Citation2015')
s9=pd.Series(CitationCount2016, name='Citation2016')
s10=pd.Series(CitationCount2017, name='Citation2017')
s11=pd.Series(CitationCount2018, name='Citation2018')

Times_df=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
```

```
Times_df.to_csv("Times_11.csv",index=False)
#    df=pd.DataFrame(pd.DataFrame(result['results'][0]['metrics']))
#    df.to_csv("1213_THE.csv", index=False)
```

76 Save data dictionary

In [38]:
```
import requests
import requests_oauthlib
import json
import pandas as pd
import numpy as np

import time
time.sleep(2)

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

for uid in Uidlist[:5]:
#    print(url.format(uid))
    resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
#    parsed=json.dumps(resp.json(),
#                      sort_keys=True,
#                      indent=4, separators=(',', ': '))
#    print(parsed)
    #result=json.loads(parsed)
with open("Uni_Metric_Data_Dictionary_Test4.json", 'w') as jsonfile:
    json.dump(resp.json(),
                  sort_keys=True,
                  indent=4, separators=(',', ': '), fp=jsonfile)
```

In [49]:
```
import requests
import requests_oauthlib
import json
import pandas as pd
import numpy as np

import time
time.sleep(2)

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

for uid in Uidlist[:2]:
#    print(url.format(uid))
    resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
```

```
                    sort_keys=True,
                    indent=4, separators=(',', ': '))
#    print(parsed)
#    parsed = json.loads(resp.text)
#    print(parsed)
    result=json.loads(parsed)
    print(result)
#    with open("Uni_Metric_Data_Dictionary_2.txt", 'a') as text_file:
#         print(parsed, file=text_file)
#        json.dump(resp.json(),
#                  sort_keys=True,
#                  indent=4, separators=(',', ': '), fp=jsonfile)
```

```
{'dataSource': {'lastUpdated': '2019-12-11', 'sourceName': 'Scopus'}, 'link': {'@href': 'https
{'dataSource': {'lastUpdated': '2019-12-11', 'sourceName': 'Scopus'}, 'link': {'@href': 'https
```

In [24]:
```
import requests
import requests_oauthlib
import json
import pandas as pd
import numpy as np

import time
time.sleep(2)

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

for uid in Uidlist[25:]:
#    print(url.format(uid))
    resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "dcfb521197bf15867d12c3c86c46c69b"})
    parsed=json.dumps(resp.json(),
                    sort_keys=True,
                    indent=4, separators=(',', ': '))
#    print(parsed)
    #result=json.loads(parsed)
with open("Uni_Metric_Data_Dic_2.json", 'w') as jsonfile:
    json.dump(parsed, jsonfile)
```

In [125]:
```
import requests
import requests_oauthlib
import json
import pandas as pd
import numpy as np

import time
time.sleep(2)
```

```
country=[]
countryCode=[]
Uid=[]
uname=[]
uri=[]
metric=[]
CitationCount2014=[]
CitationCount2015=[]
CitationCount2016=[]
CitationCount2017=[]
CitationCount2018=[]

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

for uid in Uidlist[1270:]:
#    print(url.format(uid))
    resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
    result=json.loads(parsed)
#    print(result)
    if 'results' not in result:
        pass
    else:
        if list(result['results']) is None:
            pass
        else:
#         if list(result['results'])[0] is None:
#             pass
#         else:
#         data=result['results']
            if len(list(result['results']))<1:
               pass
            else:
                if 'institution' not in list(result['results'])[0]:
                    pass
                else:
                    if 'country' in result['results'][0]['institution']:
                        country.append(result['results'][0]['institution']['country']
                    else:
                        country.append("")
                    if 'countryCode' in result['results'][0]['institution']:
                        countryCode.append(result['results'][0]['institution']['count
                    else:
                        countryCode.append("")
```

```
                    if 'id' in result['results'][0]['institution']:
                        Uid.append(result['results'][0]['institution']['id'])
                    else:
                        Uid.append("")
                    if 'name' in result['results'][0]['institution']:
                        uname.append(result['results'][0]['institution']['name'])
                    else:
                        uname.append("")
                    if 'uri' in result['results'][0]:
                        uri.append(result['results'][0]['institution']['uri'])
                    else:
                        uri.append("")
                if 'metrics' not in result['results'][0]:
                    pass
                else:
                    if 'metricType' not in result['results'][0]['metrics'][0]:
                        pass
                    else:
                        metric.append(result['results'][0]['metrics'][0]['metricType
                        if 'valueByYear' in result['results'][0]['metrics'][0]:
                            if '2014' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2014.append(result['results'][0]['metri
                            else:
                                CitationCount2014.append("")
                            if '2015' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2015.append(result['results'][0]['metri
                            else:
                                CitationCount2015.append("")
                            if '2016' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2016.append(result['results'][0]['metri
                            else:
                                CitationCount2016.append("")
                            if '2017' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2017.append(result['results'][0]['metri
                            else:
                                CitationCount2017.append("")
                            if '2018' in result['results'][0]['metrics'][0]['valueBy
                                CitationCount2018.append(result['results'][0]['metri
                            else:
                                CitationCount2018.append("")
                        else:
                            CitationCount2014.append("")
                            CitationCount2015.append("")
                            CitationCount2016.append("")
                            CitationCount2017.append("")
                            CitationCount2018.append("")
#             else:
#                 metric.append("")
```

```
s1=pd.Series(country, name='Country')
s2=pd.Series(countryCode, name='CountryCode')
s3=pd.Series(Uid, name='Uid')
s4=pd.Series(uname, name='UniversityName')
s5=pd.Series(uri, name='uri')
s6=pd.Series(metric, name='metric')
s7=pd.Series(CitationCount2014, name='Citation2014')
s8=pd.Series(CitationCount2015, name='Citation2015')
s9=pd.Series(CitationCount2016, name='Citation2016')
s10=pd.Series(CitationCount2017, name='Citation2017')
s11=pd.Series(CitationCount2018, name='Citation2018')

Times_df=pd.concat([s1,s2,s3,s4,s5,s6,s7,s8,s9,s10,s11], axis=1)
Times_df.to_csv("Times_11.csv",index=False)
#    df=pd.DataFrame(pd.DataFrame(result['results'][0]['metrics']))
#    df.to_csv("1213_THE.csv", index=False)
```

77 Combine all subfiles

```
In [126]: filename='Times_{}.csv'

          for i in range(1,12):
              print(filename.format(i))
```

```
Times_1.csv
Times_2.csv
Times_3.csv
Times_4.csv
Times_5.csv
Times_6.csv
Times_7.csv
Times_8.csv
Times_9.csv
Times_10.csv
Times_11.csv
```

```
In [127]: chuck=[]
          for i in range(1,12):
              chuck.append(pd.read_csv(filename.format(i)))

          total=pd.concat(chuck, ignore_index=True)

          total.head()
```

```
Out[127]:           Country CountryCode     Uid  \
          0  United Kingdom         GBR  315091
```

```
1   United States         USA  508092
2   United States         USA  508021
3  United Kingdom         GBR  315068
4   United States         USA  508219

                                      UniversityName  uri         metric  \
0                                University of Oxford  NaN  CitationCount
1  Jet Propulsion Laboratory, California Institut...  NaN  CitationCount
2                  California Institute of Technology  NaN  CitationCount
3                             University of Cambridge  NaN  CitationCount
4                                 Stanford University  NaN  CitationCount

   Citation2014  Citation2015  Citation2016  Citation2017  Citation2018
0      355751.0      313129.0      238271.0      149907.0       75747.0
1       39797.0       30488.0       32933.0       18670.0        9264.0
2      129593.0       97259.0       90365.0       58679.0       29486.0
3      260407.0      236169.0      197754.0      127682.0       64830.0
4      404346.0      363567.0      282005.0      194136.0       95069.0
```

In [128]:
```
del total['uri']
```

In [129]:
```
total.head()

total.to_csv("THE_Ranked_University_CitationCount_2014_2018.csv", index=False)
```

In [130]:
```
total.head()
```

Out[130]:
```
          Country CountryCode     Uid  \
0  United Kingdom         GBR  315091
1   United States         USA  508092
2   United States         USA  508021
3  United Kingdom         GBR  315068
4   United States         USA  508219

                                      UniversityName         metric  \
0                                University of Oxford  CitationCount
1  Jet Propulsion Laboratory, California Institut...  CitationCount
2                  California Institute of Technology  CitationCount
3                             University of Cambridge  CitationCount
4                                 Stanford University  CitationCount

   Citation2014  Citation2015  Citation2016  Citation2017  Citation2018
0      355751.0      313129.0      238271.0      149907.0       75747.0
1       39797.0       30488.0       32933.0       18670.0        9264.0
2      129593.0       97259.0       90365.0       58679.0       29486.0
3      260407.0      236169.0      197754.0      127682.0       64830.0
4      404346.0      363567.0      282005.0      194136.0       95069.0
```

In [132]:
```
ranked=total.sort_values(by='Citation2018', ascending=False)
```

```
          ranked.to_csv("THE_Ranked_Universites_CitationCounts_2014_2018.csv", index=False)
```

```
In [135]: ranked=ranked.drop_duplicates()
          ranked.to_csv("Updated_THE_Ranked_Universites_CitationCounts_2014_2018.csv", index=Fa
```

```
In [97]: url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citatio

         for uid in Uidlist[:1]:
         #    print(url.format(uid))
             resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                 'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
             parsed=json.dumps(resp.json(),
                         sort_keys=True,
                         indent=4, separators=(',', ': '))
             result=json.loads(parsed)
             print(result['results'][0])
```

```
{'institution': {'country': 'United Kingdom', 'countryCode': 'GBR', 'id': 315091, 'link': {'@hr
```

```
In [167]: url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

          for uid in df_id['uid']:
          #    query = "name(school)"
          #    url= "https://api.elsevier.com/metrics/institution/search?name({})&start=0&coun

              resp = requests.get(url.format(uid), headers={'Accept':'application/json',
                                  'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
              parsed=json.dumps(resp.json(),
                          sort_keys=True,
                          indent=4, separators=(',', ': '))
          #    print(parsed)
              result=json.loads(parsed)
          #    result=parsed[2]
              data=result['results']
          #    print(data[0])
              for i in data:
          #        print(i['metrics'][2]) # ScholarlyOutput
          #        print(i['metrics'][0]) # CitationCount
          #        print(i['metrics'][1]) # CitedPublications
          #        print(i['metrics'][3]['impactType'])# impactType
                  print(i['metrics'][3]) # CiteScore and PublicationsInTopJournalPercentiles
          #        print(i['metrics'][3]['values'])
          #        print(i['metrics'][3]['values'][0]['percentageByYear'])
          #        print(i['metrics'][3]['values'][0]['valueByYear'])
```

```
{'impactType': 'CiteScore', 'metricType': 'PublicationsInTopJournalPercentiles', 'values': [{'
{'impactType': 'CiteScore', 'metricType': 'PublicationsInTopJournalPercentiles', 'values': [{'
```

```
In [11]: import json

In [22]: url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

         #for uid in df_id['uid']:
         for item in Uidlist[100:]:
         #    query = "name(school)"
         #    url= "https://api.elsevier.com/metrics/institution/search?name({})&start=0&count

             resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                    'X-ELS-APIKey': "ba88a424c653ea37282b6a4cdf423a1d"})
             parsed=json.dumps(resp.json(),
                         sort_keys=True,
                         indent=4, separators=(',', ': '))
         #    print(parsed)
         #    result=json.loads(parsed)
         with open("Data_Dic_1218_6.txt", "a") as text_file:
             print(parsed, file=text_file)
         #    result=parsed[2]

In [180]: import requests
          import json
          import pandas as pd
          import numpy as np
          from time import sleep
          sleep(2)

          country=[]
          countryCode=[]
          universityid=[]
          uniname=[]
          metricType=[]
          percentage2014=[]
          percentage2015=[]
          percentage2016=[]
          percentage2017=[]
          percentage2018=[]
          value2014=[]
          value2015=[]
          value2016=[]
          value2017=[]
          value2018=[]
          ScholarlyOutput2014=[]
          ScholarlyOutput2015=[]
          ScholarlyOutput2016=[]
          ScholarlyOutput2017=[]
          ScholarlyOutput2018=[]
          CitationCount2014=[]
```

```
CitationCount2015=[]
CitationCount2016=[]
CitationCount2017=[]
CitationCount2018=[]
CitedPublicationsValue2014=[]
CitedPublicationsValue2015=[]
CitedPublicationsValue2016=[]
CitedPublicationsValue2017=[]
CitedPublicationsValue2018=[]
CitedPublicationspercentage2014=[]
CitedPublicationspercentage2015=[]
CitedPublicationspercentage2016=[]
CitedPublicationspercentage2017=[]
CitedPublicationspercentage2018=[]
impactType=[]
CiteScorepercentage2014=[]
CiteScorepercentage2015=[]
CiteScorepercentage2016=[]
CiteScorepercentage2017=[]
CiteScorepercentage2018=[]
CiteScorevalue2014=[]
CiteScorevalue2015=[]
CiteScorevalue2016=[]
CiteScorevalue2017=[]
CiteScorevalue2018=[]
PublicationsInTopJournalPercentilespercentage2014=[]
PublicationsInTopJournalPercentilespercentage2015=[]
PublicationsInTopJournalPercentilespercentage2016=[]
PublicationsInTopJournalPercentilespercentage2017=[]
PublicationsInTopJournalPercentilespercentage2018=[]
PublicationsInTopJournalPercentilesvalue2014=[]
PublicationsInTopJournalPercentilesvalue2015=[]
PublicationsInTopJournalPercentilesvalue2016=[]
PublicationsInTopJournalPercentilesvalue2017=[]
PublicationsInTopJournalPercentilesvalue2018=[]

PublicationsInTopJournalPercentByYear2014=[]
PublicationsInTopJournalPercentByYear2015=[]
PublicationsInTopJournalPercentByYear2016=[]
PublicationsInTopJournalPercentByYear2017=[]
PublicationsInTopJournalPercentByYear2018=[]

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

#for uid in df_id['uid']:
for item in inputdata:
#    query = "name(school)"
#    url= "https://api.elsevier.com/metrics/institution/search?name({})&start=0&coun
```

```
    resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
#    print(parsed)
    result=json.loads(parsed)
#    result=parsed[2]
    data=result['results']
#    print(data[0])
    for i in data:
        if i is None:
            pass
        else:
            if i['institution'] is None:
                pass
            else:
                if i['institution']['country'] is not None:
                    country.append(i['institution']['country'])
                else:
                    country.append("")
                if i['institution']['countryCode'] is not None:
                    countryCode.append(i['institution']['countryCode'])
                else:
                    countryCode.append("")
                if i['institution']['id'] is not None:
                    universityid.append(i['institution']['id'])
                else:
                    universityid.append("")
                if i['institution']['name'] is not None:
                    uniname.append(i['institution']['name'])
                else:
                    uniname.append("")
            if i['metrics'] is None:
                pass
            else:
                if i['metrics'][0] is None:
                    pass
                else:
                    if i['metrics'][0]['metricType'] is not None:
                        metricType.append(i['metrics'][0]['metricType'])
                    else:
                        metricType.append("")
                    if i['metrics'][0]['valueByYear'] is None:
                        pass
                    else:
                        if i['metrics'][0]['valueByYear']['2014'] is not None:
```

```
                CitationCount2014.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2014.append("")
            if i['metrics'][0]['valueByYear']['2015'] is not None:
                CitationCount2015.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2015.append("")
            if i['metrics'][0]['valueByYear']['2016'] is not None:
                CitationCount2016.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2016.append("")
            if i['metrics'][0]['valueByYear']['2017'] is not None:
                CitationCount2017.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2017.append("")
            if i['metrics'][0]['valueByYear']['2018'] is not None:
                CitationCount2018.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2018.append("")
    if i['metrics'][1] is None:
        pass
    else:
        if i['metrics'][1]['metricType'] is not None:
            metricType.append(i['metrics'][1]['metricType'])
        else:
            metricType.append("")
        if i['metrics'][1]['percentageByYear'] is None:
            pass
        else:
            if i['metrics'][1]['percentageByYear']['2014'] is not None:
                CitedPublicationspercentage2014.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2014.append("")
            if i['metrics'][1]['percentageByYear']['2015'] is not None:
                CitedPublicationspercentage2015.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2015.append("")
            if i['metrics'][1]['percentageByYear']['2016'] is not None:
                CitedPublicationspercentage2016.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2016.append("")
            if i['metrics'][1]['percentageByYear']['2017'] is not None:
                CitedPublicationspercentage2017.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2017.append("")
            if i['metrics'][1]['percentageByYear']['2018'] is not None:
                CitedPublicationspercentage2018.append(i['metrics'][1]['
            else:
```

```
                        CitedPublicationspercentage2018.append("")
                    if i['metrics'][1]['valueByYear'] is None:
                        pass
                    else:
                        if i['metrics'][1]['valueByYear']['2014'] is not None:
                            CitedPublicationsValue2014.append(i['metrics'][1]['valueB
                        else:
                            CitedPublicationsValue2014.append("")
                        if i['metrics'][1]['valueByYear']['2015'] is not None:
                            CitedPublicationsValue2015.append(i['metrics'][1]['valueB
                        else:
                            CitedPublicationsValue2015.append("")
                        if i['metrics'][1]['valueByYear']['2016'] is not None:
                            CitedPublicationsValue2016.append(i['metrics'][1]['valueB
                        else:
                            CitedPublicationsValue2016.append("")
                        if i['metrics'][1]['valueByYear']['2017'] is not None:
                            CitedPublicationsValue2017.append(i['metrics'][1]['valueB
                        else:
                            CitedPublicationsValue2017.append("")
                        if i['metrics'][1]['valueByYear']['2018'] is not None:
                            CitedPublicationsValue2018.append(i['metrics'][1]['valueB
                        else:
                            CitedPublicationsValue2018.append("")
                if i['metrics'][2] is None:
                    pass
                else:
                    if i['metrics'][2]['metricType'] is not None:
                        metricType.append(i['metrics'][2]['metricType'])
#                         ScholarlyOutput2014.append(i['metrics'][2]['valueByYear']['
                    else:
                        metricType.append("")
                    if i['metrics'][2]['valueByYear'] is None:
                        pass
                    else:
                        if i['metrics'][2]['valueByYear']['2014'] is not None:
                            ScholarlyOutput2014.append(i['metrics'][2]['valueByYear']
                        else:
                            ScholarlyOutput2014.append("")
                        if i['metrics'][2]['valueByYear']['2015'] is not None:
                            ScholarlyOutput2015.append(i['metrics'][2]['valueByYear']
                        else:
                            ScholarlyOutput2015.append("")
                        if i['metrics'][2]['valueByYear']['2016'] is not None:
                            ScholarlyOutput2016.append(i['metrics'][2]['valueByYear']
                        else:
                            ScholarlyOutput2016.append("")
                        if i['metrics'][2]['valueByYear']['2017'] is not None:
```

```
                ScholarlyOutput2017.append(i['metrics'][2]['valueByYear']
            else:
                ScholarlyOutput2017.append("")
            if i['metrics'][2]['valueByYear']['2018'] is not None:
                ScholarlyOutput2018.append(i['metrics'][2]['valueByYear']
            else:
                ScholarlyOutput2018.append("")
    if i['metrics'][3] is None:
        pass
    else:
        if i['metrics'][3]['impactType'] is not None:
            impactType.append(i['metrics'][3]['impactType'])
        else:
            impactType.append("")
        if i['metrics'][3]['metricType'] is not None:
            metricType.append(i['metrics'][3]['metricType'])
        else:
            metricType.append("")
        if i['metrics'][3]['values'] is None:
            pass
        else:
            if i['metrics'][3]['values'][0]['percentageByYear'] is None:
                pass
            else:
                if i['metrics'][3]['values'][0]['percentageByYear']['2014
                    CiteScorepercentage2014.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2014.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2015
                    CiteScorepercentage2015.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2015.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2016
                    CiteScorepercentage2016.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2016.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2017
                    CiteScorepercentage2017.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2017.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2018
                    CiteScorepercentage2018.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2018.append("")
            if i['metrics'][3]['values'][0]['percentageByYear'] is None:
                pass
            else:
                if i['metrics'][3]['values'][0]['valueByYear']['2014'] is
```

```
                CiteScorevalue2014.append(i['metrics'][3]['values'][
            else:
                CiteScorevalue2014.append("")
            if i['metrics'][3]['values'][0]['valueByYear']['2015'] is
                CiteScorevalue2015.append(i['metrics'][3]['values'][
            else:
                CiteScorevalue2015.append("")
            if i['metrics'][3]['values'][0]['valueByYear']['2016'] is
                CiteScorevalue2016.append(i['metrics'][3]['values'][
            else:
                CiteScorevalue2016.append("")
            if i['metrics'][3]['values'][0]['valueByYear']['2017'] is
                CiteScorevalue2017.append(i['metrics'][3]['values'][
            else:
                CiteScorevalue2017.append("")
            if i['metrics'][3]['values'][0]['valueByYear']['2018'] is
                CiteScorevalue2018.append(i['metrics'][3]['values'][
            else:
                CiteScorevalue2018.append("")

testfile= pd.DataFrame({'country': country, 'countryCode': countryCode, 'universityi
                        'uniname':uniname, 'CitationCount2014':CitationCount2014,
                        'CitationCount2015':CitationCount2015, 'CitationCount2016':Ci
                        'CitationCount2017':CitationCount2017, 'CitationCount2018':Ci
                         'CitedPublicationspercentage2014':CitedPublicationspercentag
                         'CitedPublicationspercentage2015':CitedPublicationspercentag
                         'CitedPublicationspercentage2016':CitedPublicationspercentag
                         'CitedPublicationspercentage2017':CitedPublicationspercentag
                         'CitedPublicationspercentage2018':CitedPublicationspercentag
                         'CitedPublicationsValue2014':CitedPublicationsValue2014,
                         'CitedPublicationsValue2015':CitedPublicationsValue2015,
                         'CitedPublicationsValue2016':CitedPublicationsValue2016,
                         'CitedPublicationsValue2017':CitedPublicationsValue2017,
                         'CitedPublicationsValue2018':CitedPublicationsValue2018,
                         'ScholarlyOutput2014':ScholarlyOutput2014, 'ScholarlyOutput2
                         'ScholarlyOutput2016': ScholarlyOutput2016, 'ScholarlyOutput
                         'ScholarlyOutput2018':ScholarlyOutput2018,
                         'CiteScorepercentage2014':CiteScorepercentage2014,
                         'CiteScorepercentage2015':CiteScorepercentage2015,
                         'CiteScorepercentage2016':CiteScorepercentage2016,
                         'CiteScorepercentage2017':CiteScorepercentage2017,
                         'CiteScorepercentage2018':CiteScorepercentage2018,
                         'CiteScorevalue2014':CiteScorevalue2014,
                         'CiteScorevalue2015':CiteScorevalue2015,
                         'CiteScorevalue2016':CiteScorevalue2016,
                         'CiteScorevalue2017':CiteScorevalue2017,
                         'CiteScorevalue2018':CiteScorevalue2018})
```

```
testfile.to_csv("testfile_01.csv", index=False)

#    data_dict = data[0]['institution']
#    data_dict_2 = data[0]['institution']
#    df_file_2=pd.DataFrame(data_dict_2)
#    df_file_2.to_csv("File_3.csv", index=False)
#    data_df=pd.DataFrame(data=data_dict.value())
#    data_df.to_csv("File.csv", index=False)
#    print(data[0]['institution']['name'])
#    print(data[0]) # get 'MetricsType'
#    inst=data[0]['institution']
#    metrics=data[0]['metrics']
#    df_test = pd.DataFrame({'institution':inst, 'metrics':metrics})
#    df_test.to_csv("Test_Inst.csv", index=False)
#    df=pd.DataFrame(data[0]['metrics'][0])
#    df.to_csv("Test_MetricsType.csv", index=False)
#    metrics=result[1]['metrics']

#    print(data)
#    print(data)
#    df=pd.DataFrame(parsed)
#    df.to_csv("Test_DataFrame.csv", index=False)
```

In [141]:
```
import requests
import json
import pandas as pd
import numpy as np
from time import sleep
sleep(2)

country=[]
countryCode=[]
universityid=[]
uniname=[]
metricType=[]
percentage2014=[]
percentage2015=[]
percentage2016=[]
percentage2017=[]
percentage2018=[]
value2014=[]
value2015=[]
value2016=[]
value2017=[]
value2018=[]
ScholarlyOutput2014=[]
ScholarlyOutput2015=[]
ScholarlyOutput2016=[]
```

```
ScholarlyOutput2017=[]
ScholarlyOutput2018=[]
CitationCount2014=[]
CitationCount2015=[]
CitationCount2016=[]
CitationCount2017=[]
CitationCount2018=[]
CitedPublicationsValue2014=[]
CitedPublicationsValue2015=[]
CitedPublicationsValue2016=[]
CitedPublicationsValue2017=[]
CitedPublicationsValue2018=[]
CitedPublicationspercentage2014=[]
CitedPublicationspercentage2015=[]
CitedPublicationspercentage2016=[]
CitedPublicationspercentage2017=[]
CitedPublicationspercentage2018=[]
impactType=[]
CiteScorepercentage2014=[]
CiteScorepercentage2015=[]
CiteScorepercentage2016=[]
CiteScorepercentage2017=[]
CiteScorepercentage2018=[]
CiteScorevalue2014=[]
CiteScorevalue2015=[]
CiteScorevalue2016=[]
CiteScorevalue2017=[]
CiteScorevalue2018=[]
PublicationsInTopJournalPercentilespercentage2014=[]
PublicationsInTopJournalPercentilespercentage2015=[]
PublicationsInTopJournalPercentilespercentage2016=[]
PublicationsInTopJournalPercentilespercentage2017=[]
PublicationsInTopJournalPercentilespercentage2018=[]
PublicationsInTopJournalPercentilesvalue2014=[]
PublicationsInTopJournalPercentilesvalue2015=[]
PublicationsInTopJournalPercentilesvalue2016=[]
PublicationsInTopJournalPercentilesvalue2017=[]
PublicationsInTopJournalPercentilesvalue2018=[]

PublicationsInTopJournalPercentByYear2014=[]
PublicationsInTopJournalPercentByYear2015=[]
PublicationsInTopJournalPercentByYear2016=[]
PublicationsInTopJournalPercentByYear2017=[]
PublicationsInTopJournalPercentByYear2018=[]

url='https://api.elsevier.com/analytics/scival/institution/metrics?metricTypes=Citati

#for uid in df_id['uid']:
```

```
for item in Uidlist[100:]:
#     query = "name(school)"
#     url= "https://api.elsevier.com/metrics/institution/search?name({})&start=0&coun

    resp = requests.get(url.format(item), headers={'Accept':'application/json',
                                'X-ELS-APIKey': "a464321ef5063d696ada17f8c159a44c"})
    parsed=json.dumps(resp.json(),
                 sort_keys=True,
                 indent=4, separators=(',', ': '))
#     print(parsed)
    result=json.loads(parsed)
#     result=parsed[2]
    data=result['results']
#     print(data[0])
    for i in data:
        if i is None:
            pass
        else:
            if i['institution'] is None:
                pass
            else:
                if i['institution']['country'] is not None:
                    country.append(i['institution']['country'])
                else:
                    country.append("")
                if i['institution']['countryCode'] is not None:
                    countryCode.append(i['institution']['countryCode'])
                else:
                    countryCode.append("")
                if i['institution']['id'] is not None:
                    universityid.append(i['institution']['id'])
                else:
                    universityid.append("")
                if i['institution']['name'] is not None:
                    uniname.append(i['institution']['name'])
                else:
                    uniname.append("")
            if i['metrics'] is None:
                pass
            else:
                if i['metrics'][0] is None:
                    pass
                else:
                    if i['metrics'][0]['metricType'] is not None:
                        metricType.append(i['metrics'][0]['metricType'])
                    else:
                        metricType.append("")
                    if i['metrics'][0]['valueByYear'] is None:
```

```
            pass
        else:
            if i['metrics'][0]['valueByYear']['2014'] is not None:
                CitationCount2014.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2014.append("")
            if i['metrics'][0]['valueByYear']['2015'] is not None:
                CitationCount2015.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2015.append("")
            if i['metrics'][0]['valueByYear']['2016'] is not None:
                CitationCount2016.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2016.append("")
            if i['metrics'][0]['valueByYear']['2017'] is not None:
                CitationCount2017.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2017.append("")
            if i['metrics'][0]['valueByYear']['2018'] is not None:
                CitationCount2018.append(i['metrics'][0]['valueByYear'][
            else:
                CitationCount2018.append("")
    if i['metrics'][1] is None:
        pass
    else:
        if i['metrics'][1]['metricType'] is not None:
            metricType.append(i['metrics'][1]['metricType'])
        else:
            metricType.append("")
        if i['metrics'][1]['percentageByYear'] is None:
            pass
        else:
            if i['metrics'][1]['percentageByYear']['2014'] is not None:
                CitedPublicationspercentage2014.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2014.append("")
            if i['metrics'][1]['percentageByYear']['2015'] is not None:
                CitedPublicationspercentage2015.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2015.append("")
            if i['metrics'][1]['percentageByYear']['2016'] is not None:
                CitedPublicationspercentage2016.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2016.append("")
            if i['metrics'][1]['percentageByYear']['2017'] is not None:
                CitedPublicationspercentage2017.append(i['metrics'][1]['
            else:
                CitedPublicationspercentage2017.append("")
```

```
                    if i['metrics'][1]['percentageByYear']['2018'] is not None:
                        CitedPublicationspercentage2018.append(i['metrics'][1]['
                    else:
                        CitedPublicationspercentage2018.append("")
                if i['metrics'][1]['valueByYear'] is None:
                    pass
                else:
                    if i['metrics'][1]['valueByYear']['2014'] is not None:
                        CitedPublicationsValue2014.append(i['metrics'][1]['valueB
                    else:
                        CitedPublicationsValue2014.append("")
                    if i['metrics'][1]['valueByYear']['2015'] is not None:
                        CitedPublicationsValue2015.append(i['metrics'][1]['valueB
                    else:
                        CitedPublicationsValue2015.append("")
                    if i['metrics'][1]['valueByYear']['2016'] is not None:
                        CitedPublicationsValue2016.append(i['metrics'][1]['valueB
                    else:
                        CitedPublicationsValue2016.append("")
                    if i['metrics'][1]['valueByYear']['2017'] is not None:
                        CitedPublicationsValue2017.append(i['metrics'][1]['valueB
                    else:
                        CitedPublicationsValue2017.append("")
                    if i['metrics'][1]['valueByYear']['2018'] is not None:
                        CitedPublicationsValue2018.append(i['metrics'][1]['valueB
                    else:
                        CitedPublicationsValue2018.append("")
            if i['metrics'][2] is None:
                pass
            else:
                if i['metrics'][2]['metricType'] is not None:
                    metricType.append(i['metrics'][2]['metricType'])
#                       ScholarlyOutput2014.append(i['metrics'][2]['valueByYear']['
                else:
                    metricType.append("")
                if i['metrics'][2]['valueByYear'] is None:
                    pass
                else:
                    if i['metrics'][2]['valueByYear']['2014'] is not None:
                        ScholarlyOutput2014.append(i['metrics'][2]['valueByYear']
                    else:
                        ScholarlyOutput2014.append("")
                    if i['metrics'][2]['valueByYear']['2015'] is not None:
                        ScholarlyOutput2015.append(i['metrics'][2]['valueByYear']
                    else:
                        ScholarlyOutput2015.append("")
                    if i['metrics'][2]['valueByYear']['2016'] is not None:
                        ScholarlyOutput2016.append(i['metrics'][2]['valueByYear']
```

```
            else:
                ScholarlyOutput2016.append("")
            if i['metrics'][2]['valueByYear']['2017'] is not None:
                ScholarlyOutput2017.append(i['metrics'][2]['valueByYear']
            else:
                ScholarlyOutput2017.append("")
            if i['metrics'][2]['valueByYear']['2018'] is not None:
                ScholarlyOutput2018.append(i['metrics'][2]['valueByYear']
            else:
                ScholarlyOutput2018.append("")
    if i['metrics'][3] is None:
        pass
    else:
        if i['metrics'][3]['impactType'] is not None:
            impactType.append(i['metrics'][3]['impactType'])
        else:
            impactType.append("")
        if i['metrics'][3]['metricType'] is not None:
            metricType.append(i['metrics'][3]['metricType'])
        else:
            metricType.append("")
        if i['metrics'][3]['values'] is None:
            pass
        else:
            if i['metrics'][3]['values'][0]['percentageByYear'] is None:
                pass
            else:
                if i['metrics'][3]['values'][0]['percentageByYear']['2014
                    CiteScorepercentage2014.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2014.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2015
                    CiteScorepercentage2015.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2015.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2016
                    CiteScorepercentage2016.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2016.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2017
                    CiteScorepercentage2017.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2017.append("")
                if i['metrics'][3]['values'][0]['percentageByYear']['2018
                    CiteScorepercentage2018.append(i['metrics'][3]['value
                else:
                    CiteScorepercentage2018.append("")
            if i['metrics'][3]['values'][0]['percentageByYear'] is None:
```

```
                pass
            else:
                if i['metrics'][3]['values'][0]['valueByYear']['2014'] is
                    CiteScorevalue2014.append(i['metrics'][3]['values'][
                else:
                    CiteScorevalue2014.append("")
                if i['metrics'][3]['values'][0]['valueByYear']['2015'] is
                    CiteScorevalue2015.append(i['metrics'][3]['values'][
                else:
                    CiteScorevalue2015.append("")
                if i['metrics'][3]['values'][0]['valueByYear']['2016'] is
                    CiteScorevalue2016.append(i['metrics'][3]['values'][
                else:
                    CiteScorevalue2016.append("")
                if i['metrics'][3]['values'][0]['valueByYear']['2017'] is
                    CiteScorevalue2017.append(i['metrics'][3]['values'][
                else:
                    CiteScorevalue2017.append("")
                if i['metrics'][3]['values'][0]['valueByYear']['2018'] is
                    CiteScorevalue2018.append(i['metrics'][3]['values'][
                else:
                    CiteScorevalue2018.append("")

testfile= pd.DataFrame({'country': country, 'countryCode': countryCode, 'universityi
                        'uniname':uniname, 'CitationCount2014':CitationCount2014,
                        'CitationCount2015':CitationCount2015, 'CitationCount2016':Ci
                        'CitationCount2017':CitationCount2017, 'CitationCount2018':Ci
                         'CitedPublicationspercentage2014':CitedPublicationspercentag
                         'CitedPublicationspercentage2015':CitedPublicationspercentag
                         'CitedPublicationspercentage2016':CitedPublicationspercentag
                         'CitedPublicationspercentage2017':CitedPublicationspercentag
                         'CitedPublicationspercentage2018':CitedPublicationspercentag
                         'CitedPublicationsValue2014':CitedPublicationsValue2014,
                         'CitedPublicationsValue2015':CitedPublicationsValue2015,
                         'CitedPublicationsValue2016':CitedPublicationsValue2016,
                         'CitedPublicationsValue2017':CitedPublicationsValue2017,
                         'CitedPublicationsValue2018':CitedPublicationsValue2018,
                         'ScholarlyOutput2014':ScholarlyOutput2014, 'ScholarlyOutput2
                         'ScholarlyOutput2016': ScholarlyOutput2016, 'ScholarlyOutput
                         'ScholarlyOutput2018':ScholarlyOutput2018,
                         'CiteScorepercentage2014':CiteScorepercentage2014,
                         'CiteScorepercentage2015':CiteScorepercentage2015,
                         'CiteScorepercentage2016':CiteScorepercentage2016,
                         'CiteScorepercentage2017':CiteScorepercentage2017,
                         'CiteScorepercentage2018':CiteScorepercentage2018,
                         'CiteScorevalue2014':CiteScorevalue2014,
                         'CiteScorevalue2015':CiteScorevalue2015,
                         'CiteScorevalue2016':CiteScorevalue2016,
```

```
                                'CiteScorevalue2017':CiteScorevalue2017,
                                'CiteScorevalue2018':CiteScorevalue2018})

        testfile.to_csv("1213_THE_4.csv", index=False)

        #    data_dict = data[0]['institution']
        #    data_dict_2 = data[0]['institution']
        #    df_file_2=pd.DataFrame(data_dict_2)
        #    df_file_2.to_csv("File_3.csv", index=False)
        #    data_df=pd.DataFrame(data=data_dict.value())
        #    data_df.to_csv("File.csv", index=False)
        #    print(data[0]['institution']['name'])
        #    print(data[0]) # get 'MetricsType'
        #    inst=data[0]['institution']
        #    metrics=data[0]['metrics']
        #    df_test = pd.DataFrame({'institution':inst, 'metrics':metrics})
        #    df_test.to_csv("Test_Inst.csv", index=False)
        #    df=pd.DataFrame(data[0]['metrics'][0])
        #    df.to_csv("Test_MetricsType.csv", index=False)
        #    metrics=result[1]['metrics']

        #    print(data)
        #    print(data)
        #    df=pd.DataFrame(parsed)
        #    df.to_csv("Test_DataFrame.csv", index=False)

In [185]: chuck=[]


        filename='1213_THE_{}.csv'

        for i in range(1,5):
            chuck.append(pd.read_csv(filename.format(i)))

        total_df2=pd.concat(chuck, ignore_index=True)

        total_df2.head()

        total_df2.to_csv("Updated_Uni_Metrics.csv", index=False)

In [170]: chuck=[]


        filename='1213_THE_{}.csv'

        for i in range(1,5):
            chuck.append(pd.read_csv(filename.format(i)))
```

```
total_df=pd.concat(chuck, axis=1)

total_df.head()


changedtype=lambda x: int(x[:])
```

```
In [ ]: total_df.universityid.fillna(0)
```

```
In [182]: total_df.head()
```

Out[182]:

	country	countryCode	universityid	uniname	CitationCount2014	CitationCount2015	CitationCount2016	CitationCount2017	CitationCount2018	CitedPublicationspercentage2014	...	CiteScorepercentage2014	CiteScorepercentage2015	CiteScorepercentage2016	CiteScorepercentage2017	CiteScorepercentage2018	CiteScorevalue2014	CiteScorevalue2015
0	United Kingdom	GBR	315091.0	University of Oxford	355751.0	313129.0	238271.0	149907.0	75747.0	86.504585	...	3.975581	2.919932	3.363425	3.181687	3.027766	267.0	190.0
1	United States	USA	508092.0	Jet Propulsion Laboratory, California Institut...	39797.0	30488.0	32933.0	18670.0	9264.0	78.933620	...	5.387561	4.998725	5.137615	4.487027			
2	United States	USA	508021.0	California Institute of Technology	129593.0	97259.0	90365.0	58679.0	29486.0	85.711120	...	7.383966	7.643185	6.673326	6.509327			
3	United Kingdom	GBR	315068.0	University of Cambridge	260407.0	236169.0	197754.0	127682.0	64830.0	87.955536	...	3.898226	3.769248	4.672479	4.187925			
4	United States	USA	508219.0	Stanford University	404346.0	363567.0	282005.0	194136.0	95069.0	87.081640	...	6.278291	5.832855	5.982447	5.228088			

```
1                5.246510              408.0              392.0
2                6.352154              350.0              383.0
3                4.584467              167.0              164.0
4                5.670861              319.0              305.0

   CiteScorevalue2016  CiteScorevalue2017  CiteScorevalue2018
0               231.0               221.0               217.0
1               420.0               377.0               481.0
2               334.0               342.0               342.0
3               209.0               197.0               219.0
4               334.0               306.0               347.0

[5 rows x 136 columns]
```

```
In [183]: total_df.to_csv("Updated_THE_Uni_Metrics.csv", index=False)
```

```
In [26]: from sklearn.cluster import KMeans
```

```
In [11]: import requests
         url = "https://api.elsevier.com/metrics/institution/scopus_id/60027165?apiKey=dcfb521
         #url = "https://api.elsevier.com/content/abstract/scopus_id/60027165?apiKey=2bbd32fdf
         response = requests.get(url)
         print(response.headers)
```

```
{'allow': 'GET', 'Content-Encoding': 'gzip', 'Content-Type': 'text/html;charset=utf-8', 'Date'
```

```
In [36]: ## read in all the spreadsheets

         import pandas as pd

         First_5 = pd.read_csv(r"C:\Users\jchen148\THE Rankings\THE_Uni_First5.csv", delimiter=
         print(type(First_5))

         Start_6 = pd.read_csv(r"C:\Users\jchen148\THE Rankings\THE_Uni_6.csv", delimiter=",")

         Start_11 = pd.read_csv(r"C:\Users\jchen148\THE Rankings\THE_Uni_11.csv", delimiter=",

         Start_311 = pd.read_csv(r"C:\Users\jchen148\THE Rankings\THE_Uni_311.csv", delimiter="



         combined_df =pd.concat([First_5,Start_6,Start_11,Start_311])
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
In [25]: cd "C:\Users\jchen148\THE Rankings\Json files"
```

```
C:\Users\jchen148\THE Rankings\Json files
```

```
In [27]: import json

         with open("Test_THE_Country", 'w') as fd:
             fd.write(json.dumps(data_loaded, sort_keys=True, indent=4, separators=(',', ': '))
```

```
In [29]: with open("Test_THE_Country", 'r') as fd:
             University_data=json.load(fd)
```

```
In [13]: # University SciVal institution id
         print(u_id)
```

```
['203212', '203166', '706710', '203440', '209064', '207019', '331008', '207104', '217090', '21
```

```
In [14]: # countryCode

         print(country)
```

```
['BWA', 'IND', 'KEN', 'ARE', 'ARE', 'CHN', 'SDN', 'IND', 'CHN', 'IND', 'ARE', 'TWN']
```