

Project Title :

Detailed Analysis of Nirf Ranking(2016-2021) of Different Institute's Across India.

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Inspiration -

I was always curious about how institutes have performed over the year, which institutes got improved or which institutes got worsened, how many of them were able to retain their top position ? And the nirf ranking seemed to offer reliable and comprehensive data on institutes since 2016.

Description of Dataset :

Content

The dataset contains available Rankings and Different Scores of the Institutes over 2016 to 2021. The dataset contains folders for each year containing the scores of the institutes and ranking for that year. *The files outside the folder contains the Combined data of institute from 2016 to 2021 which can help in analyzing the performance of the institutes over the years.*

Parameters for Ranking :-

A) Teaching, Learning & Resources (TLR)

- 1.Faculty-Student Ratio with Emphasis on Permanent Faculty (FSR)
- 2.Combine Metric for Faculty with PhD and Experience (FQE)
- 3.Metric for Library and Laboratory Facilities (LL)
- 4.Metric for Sports and Extra-Curricular Facilities, Activities (SEC)

B) Research and Professional Practice (RP)

- 1.Combined Metric for Publications (PU)
- 2.Combined Metric for Citations (CI)
- 3.IPR and Patents: Granted, Filed, Licensed (IPR)
- 4.Percentage of Collaborative Publications and Patents (CP)
- 5.Footprints of Projects and Professional Practice (FPPP)

C) Graduation Outcome (GO)

- 1.Combined Performance in Public and University Examinations (PUE)
- 2.Combined Percentage for Placement, Higher Studies and Entrepreneurship (PHE)
- 3.Mean Salary for Employment (MS)

D) Outreach and Inclusivity (OI)



1. Outreach Footprint (Continuing Education, Service) (CES) 2. Percentage of Students from Other States/Countries (Region Diversity – RD) 3. Percentage of Women Students and Faculty (WS) 4. Percentage of Economically and Socially Disadvantaged Students (ESDS)

E) Peer Perception (PR)

Process for Peer Rating in Category (PR) Scrutinizing by these two parameters itself, things don't seem to be falling in a rigorous order. Interestingly, the parameter on perception at number (f) is somehow interspersed between those of Publication Details and IPR Summary. This is a significant departure from the established practice of rigorous data processing whereby the consistency of the framework has to be ensured by all means.

Note:-

Incidentally, Datasets for some of the parameters are missing altogether.

Analysis of Dataset

```
In [2]: import numpy as np
import pandas as pd
import matplotlib as plt
import seaborn as sns
import warnings
warnings.filterwarnings('ignore')
```

```
In [3]: pd.set_option('mode.chained_assignment',None)
pd.options.plotting.backend = "plotly"
base_dir = "C:/Users/Shubham's/Desktop/NirfRanking_2016-2021/"
df = pd.read_csv(f'{base_dir}/OverallRanking.csv')
df.head(2)
```

	Institute Id	Institute Name	City	State	Score_21	Rank_21	TLR_21	RPC_21	GO_21	OI_21
0	IR-O-U-0456	Indian Institute of Technology Madras	Chennai	Tamil Nadu	86.76	1.0	85.61	92.51	86.32	63.57
1	IR-O-U-0220	Indian Institute of Science	Bengaluru	Karnataka	82.67	2.0	79.13	91.48	78.23	58.39

2 rows × 39 columns

Dataset Summary :

```
In [4]: df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 149 entries, 0 to 148
Data columns (total 39 columns):
 #   Column           Non-Null Count  Dtype  
--- 
 0   Institute Id    149 non-null    object  
 1   Institute Name  149 non-null    object  
 2   City             149 non-null    object  
 3   State            149 non-null    object  
 4   Score_21         100 non-null    float64 
 5   Rank_21          100 non-null    float64 
 6   TLR_21           100 non-null    float64 
 7   RPC_21           100 non-null    float64 
 8   GO_21            100 non-null    float64 
 9   OI_21            100 non-null    float64 
 10  Perception_21   100 non-null    float64 
 11  Score_20         101 non-null    float64 
 12  Rank_20          101 non-null    float64 
 13  TLR_20           101 non-null    float64 
 14  RPC_20           101 non-null    float64 
 15  GO_20            101 non-null    float64 
 16  OI_20            101 non-null    float64 
 17  Perception_20   101 non-null    float64 
 18  Score_19         100 non-null    float64 
 19  Rank_19          100 non-null    float64 
 20  TLR_19           100 non-null    float64 
 21  RPC_19           100 non-null    float64 
 22  GO_19            100 non-null    float64 
 23  OI_19            100 non-null    float64 
 24  Perception_19   100 non-null    float64 
 25  Score_18         100 non-null    float64 
 26  Rank_18          100 non-null    float64 
 27  TLR_18           100 non-null    float64 
 28  RPC_18           100 non-null    float64 
 29  GO_18            100 non-null    float64 
 30  OI_18            100 non-null    float64 
 31  Perception_18   100 non-null    float64 
 32  Score_17         99 non-null    float64 
 33  Rank_17          99 non-null    float64 
 34  TLR_17           99 non-null    float64 
 35  RPC_17           99 non-null    float64 
 36  GO_17            99 non-null    float64 
 37  OI_17            99 non-null    float64 
 38  Perception_17   99 non-null    float64 
dtypes: float64(35), object(4)
memory usage: 45.5+ KB
```

Data Pre-processing:

Now, For Data Analysis and Visualization of a dataset. There are many some asymmetry present in the Dataset which further, give us problem during the time of Analysis. So, For Escape this we remove this redundancy and kind of Asymmetry by data-pre-processing.

Firstly, we replace null cell or missing data in dataset with NaN value.

```
In [5]: df = df.replace(r'^\s*$', np.NaN, regex=True)
print("After Replacing, There are ", len(df.isnull() == True), "NaN cells Values in the dataset")
```

After Replacing, There are 149 NaN cells Values in the dataset.

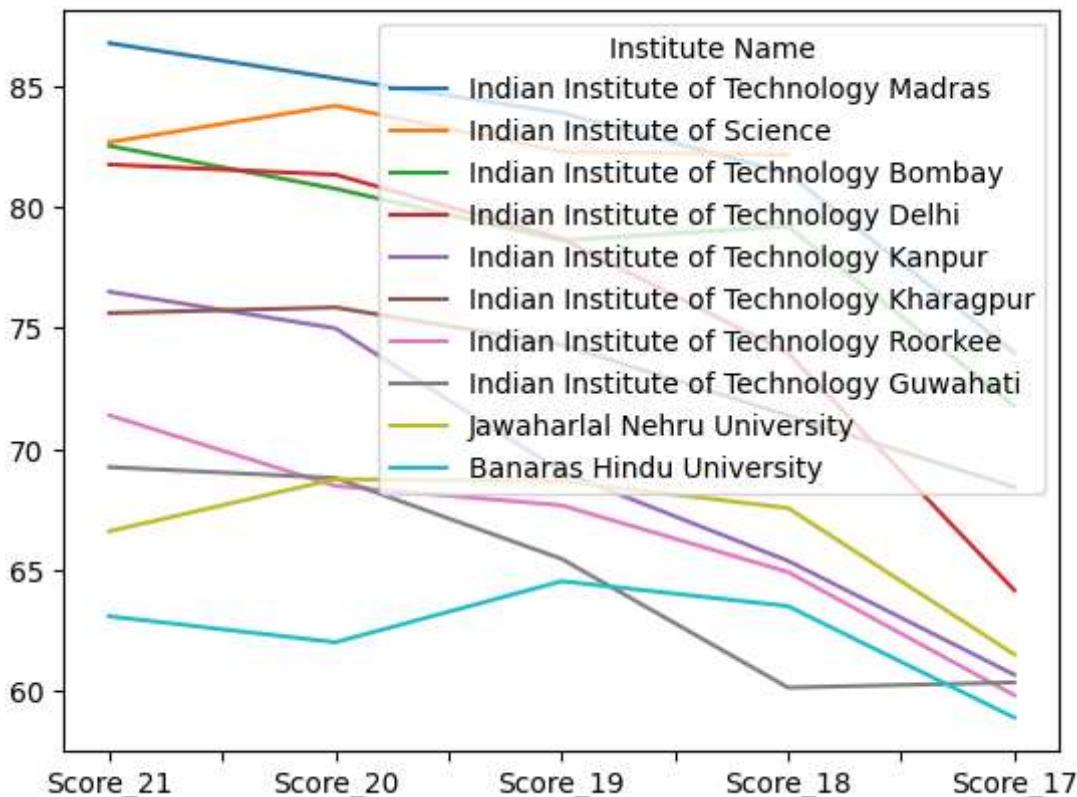
Data Analytics & Visualization on Dataset

Query1: what is the performance of Top 10 institute's during 2016-2021?

```
In [9]: base_dir = "D:/SEMESTER 5/DAV/NirfRanking_2016-2021/"
df = pd.read_csv(f'{base_dir}/OverallRanking.csv')
df_scores = df[['Institute Name', 'Score_21', 'Score_20', 'Score_19', 'Score_18'],
fig = df_scores.head(10).set_index('Institute Name').T.plot()
# fig.update_layout(width=1000, height=500)
fig.show()
```

AttributeError Traceback (most recent call last)
Input In [9], in <cell line: 6>()
4 fig = df_scores.head(10).set_index('Institute Name').T.plot()
5 # fig.update_layout(width=1000, height=500)
----> 6 fig.show()

AttributeError: 'AxesSubplot' object has no attribute 'show'



conclusion:

1. These top institutes are constantly working on their weak area and improve their rank continuously.

Query2: what is the performance of Bottom 10 institute's during 2016-2021?



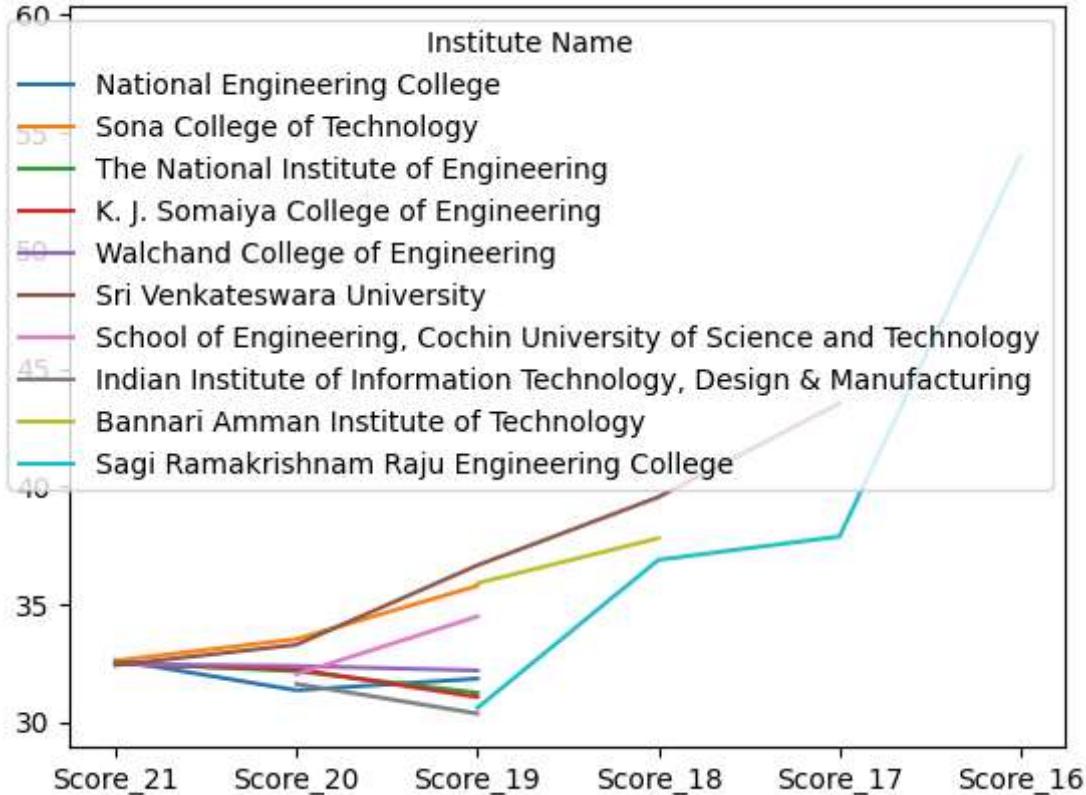
```
In [16]: df_scores.loc[:, 'Nan'] = df_scores.isnull().sum(axis=1)
df_scores = df_scores[df_scores['Nan'] < 4]
df_scores.reset_index(inplace=True, drop=True)
df_scores = df_scores.drop(columns='Nan', axis=1)
fig = df_scores.tail(10).set_index('Institute Name').T.plot()
```

```
fig.update_layout(width=1000, height=500)
fig.show()
```

AttributeError Traceback (most recent call last)

```
In [16], in <cell line: 6>()
    4 df_scores = df_scores.drop(columns='Nan', axis=1)
    5 fig = df_scores.tail(10).set_index('Institute Name').T.plot()
--> 6 fig.update_layout(width=1000, height=500)
    7 fig.show()
```

AttributeError: 'AxesSubplot' object has no attribute 'update_layout'



Conclusion :

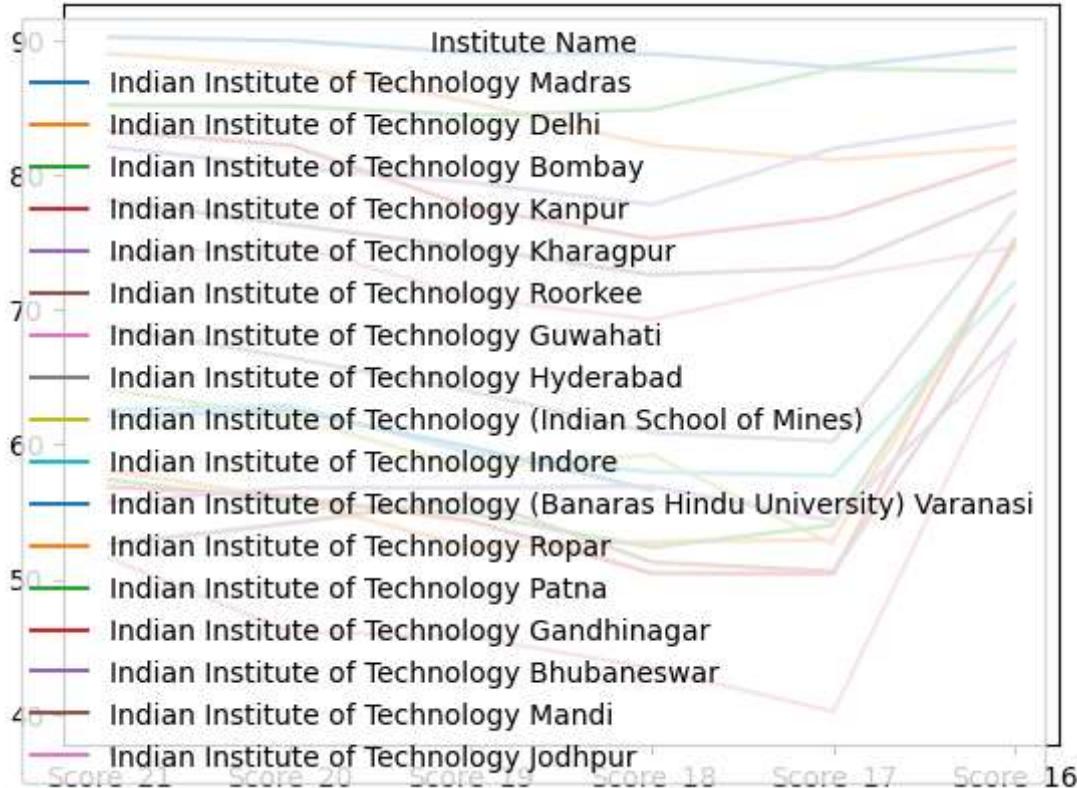
Most of the Collages are not participate after 2019 because of there bad previous Score.

Query3: what is the performance of IIT's from 2016-2021 ?

```
In [11]: df = pd.read_csv(f'{base_dir}/EngineeringRanking.csv')
df_scores = df[['Institute Name', 'Score_21', 'Score_20', 'Score_19', 'Score_18',
df_scores.loc[:, 'Nan'] = df_scores.isnull().sum(axis=1)
df_scores = df_scores[df_scores['Nan'] < 4]
df_scores.reset_index(inplace=True, drop=True)
df_scores = df_scores.drop(columns='Nan', axis=1)
sp_df = df_scores[df_scores['Institute Name'].str.contains('Indian Institute of Tech')]
fig = sp_df.set_index('Institute Name').T.plot()
# plt.suptitle("IIT's Performance (2016-2021)")
fig.show()
```

```
AttributeError                                     Traceback (most recent call last)
Input In [11], in <cell line: 10>()
    8 fig = sp_df.set_index('Institute Name').T.plot()
    9 # plt.suptitle("IIT's Performance (2016-2021)")
--> 10 fig.show()

AttributeError: 'AxesSubplot' object has no attribute 'show'
```



Conclusion :

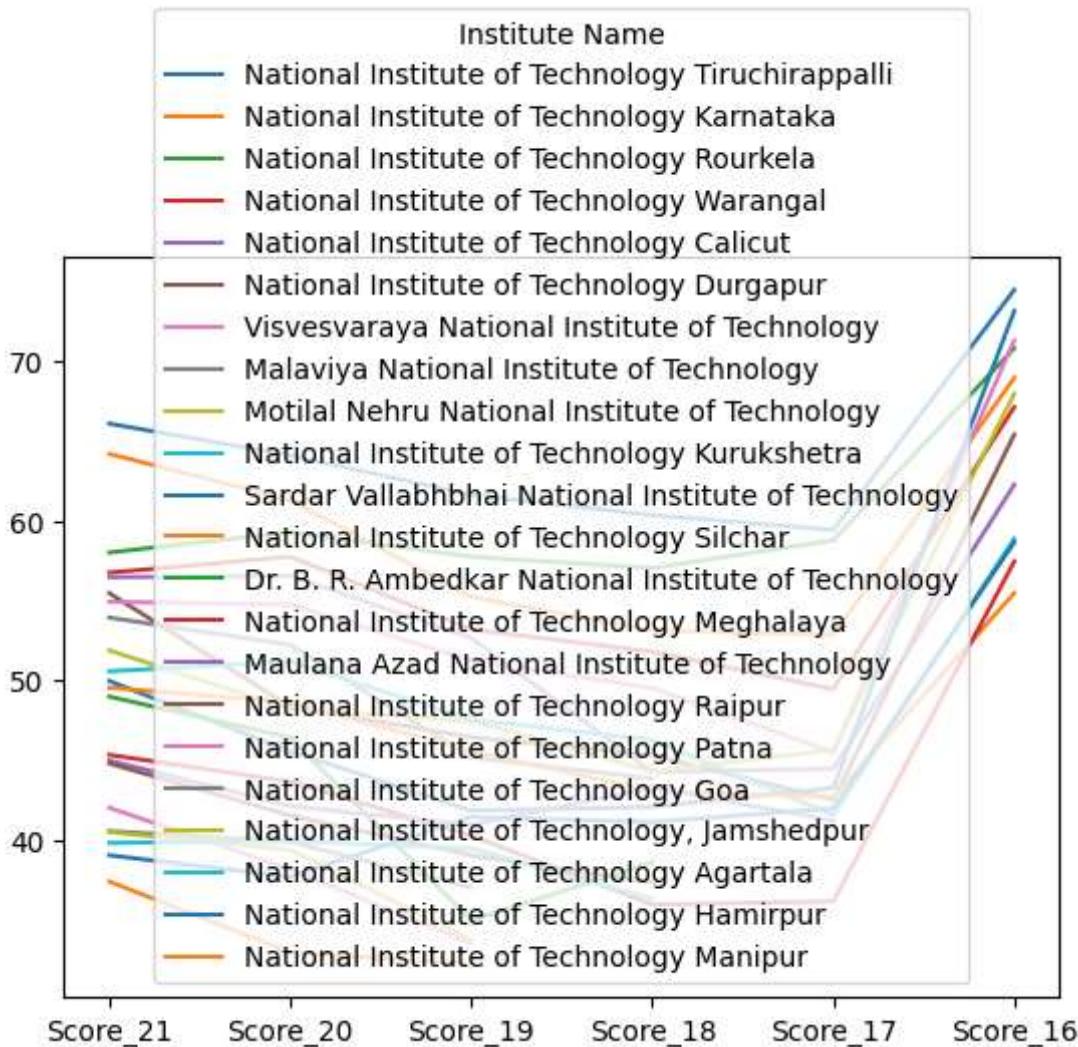
1. There is sudden fallen of performance is coming in 2017.
2. But some Top IIT's Maintain there performance in 2017 like :- IIT Bombay , IIT madras etc.
3. After 2017,There are most of the IIT's are come back and there performance Increase.

Query4: what is the performance of NIT's from 2016-2021 ?

```
In [12]: sp_df = df_scores[df_scores['Institute Name'].str.contains('National Institute of')]
fig = sp_df.set_index('Institute Name').T.plot()
# plt.suptitle("NIT's Performance (2016-2021)")
fig.show()
```

```
AttributeError                                     Traceback (most recent call last)
Input In [12], in <cell line: 4>()
    2 fig = sp_df.set_index('Institute Name').T.plot()
    3 # plt.suptitle("NIT's Performance (2016-2021)")
--> 4 fig.show()

AttributeError: 'AxesSubplot' object has no attribute 'show'
```



Conclusion :

1. There is sudden fallen of performance is coming in 2017.
2. After 2017, There are most of the IIT's are come back and there Nirf Score Increase.
3. some New NIT's are also added in between a year of 2018-2019

Query5: Changes in Educational Growth of Different States on basis of there Institue's NIRF Score Rank improves or vice versa ?

```
In [10]: df = pd.read_csv(f'{base_dir}/OverallRanking.csv')
df.loc[:, 'Nan'] = df.isnull().sum(axis=1)
df = df[df['Nan'] < 3]
df.reset_index(inplace=True, drop=True)
df = df.drop(columns='Nan', axis=1)
df_Score = pd.DataFrame()
df_Score['2017'] = df['Score_17'].groupby(df['State']).sum()
df_Score['2018'] = df['Score_18'].groupby(df['State']).sum()
df_Score['2019'] = df['Score_19'].groupby(df['State']).sum()
df_Score['2020'] = df['Score_20'].groupby(df['State']).sum()
df_Score['2021'] = df['Score_21'].groupby(df['State']).sum()
df_Score.head()
```

Out[10]:

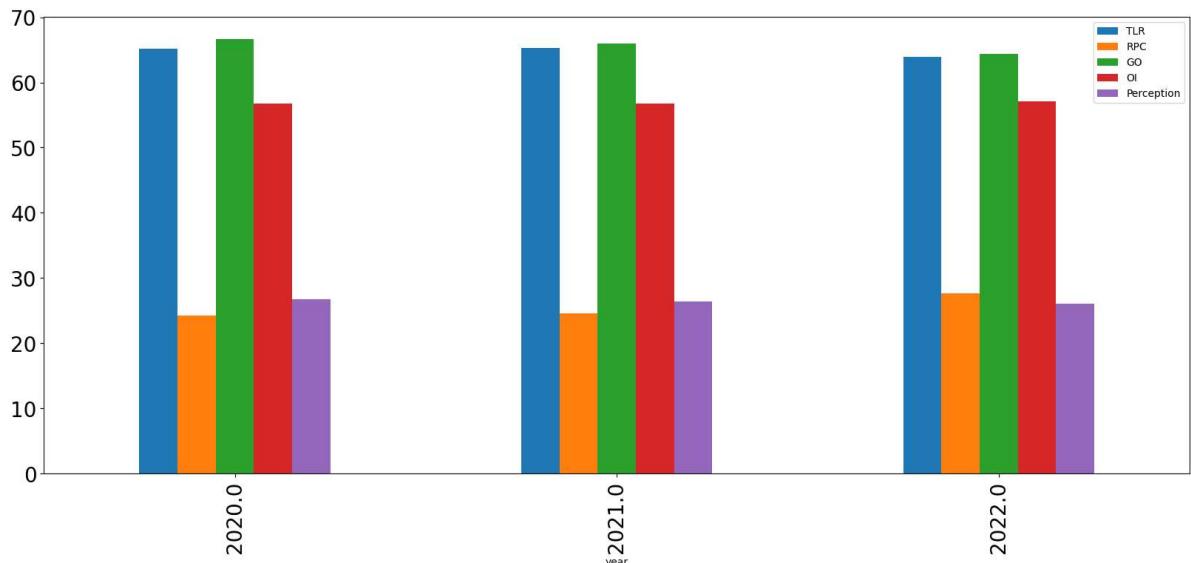
2017 2018 2019 2020 2021

State		2017	2018	2019	2020	2021
Andhra Pradesh	41.48	43.44	44.88	46.14	42.78	
Assam	148.57	153.60	159.51	161.12	160.35	
Bihar	39.87	44.25	46.28	48.09	47.67	
Chandigarh	43.13	50.94	51.25	50.24	50.31	
Delhi	277.67	306.72	314.76	319.93	310.39	

Query6: What is the Mean/Average values of TLR, RPC, GO, OI, Perception for each year?

```
In [13]: data = pd.read_csv(f'{base_dir}/Final_Dataset.csv')
data['year']=pd.DatetimeIndex(data['Accreditation valid up to']).year
data_all_year=data[['year','TLR','RPC','GO','OI','Perception']]
data_all_parameter=data_all_year.groupby('year').mean()
data_all_parameter.plot(figsize=(20,8), fontsize=20, linewidth=10, kind = 'bar')
```

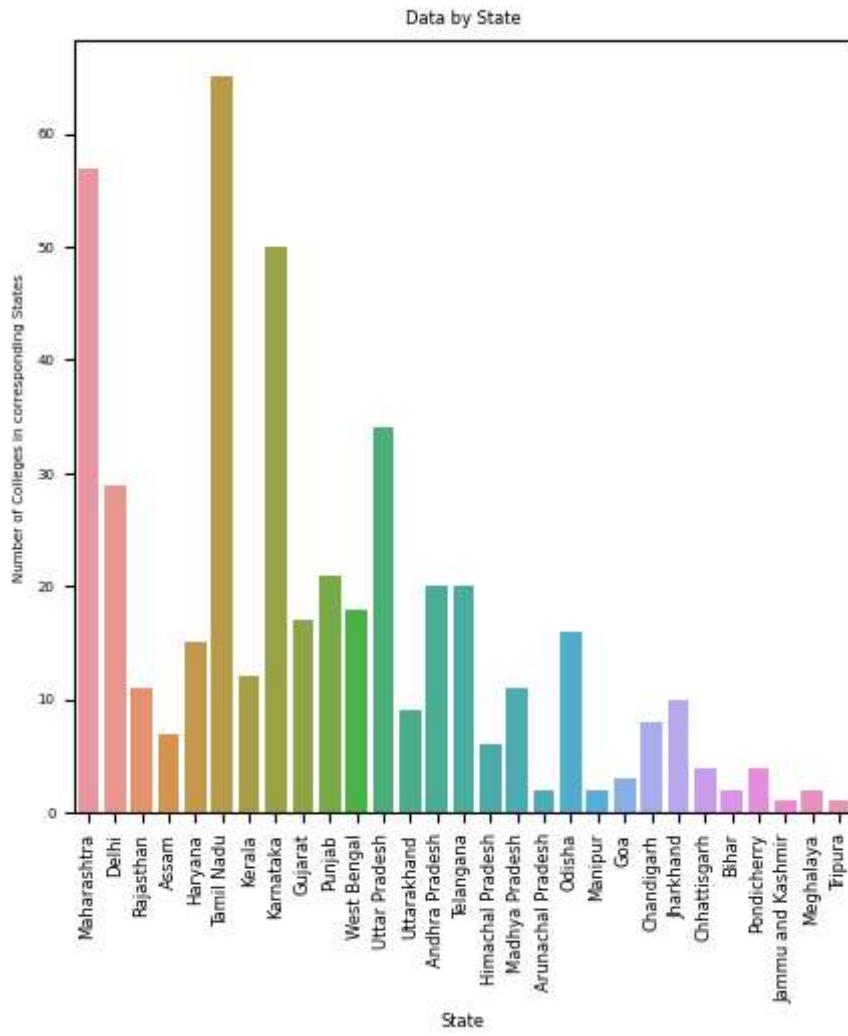
Out[13]: <AxesSubplot:xlabel='year'>



Conclusion : it basically gives an an broad idea about the indian Education System.

Query7: What is the distribution of Collages between the states Across India ?

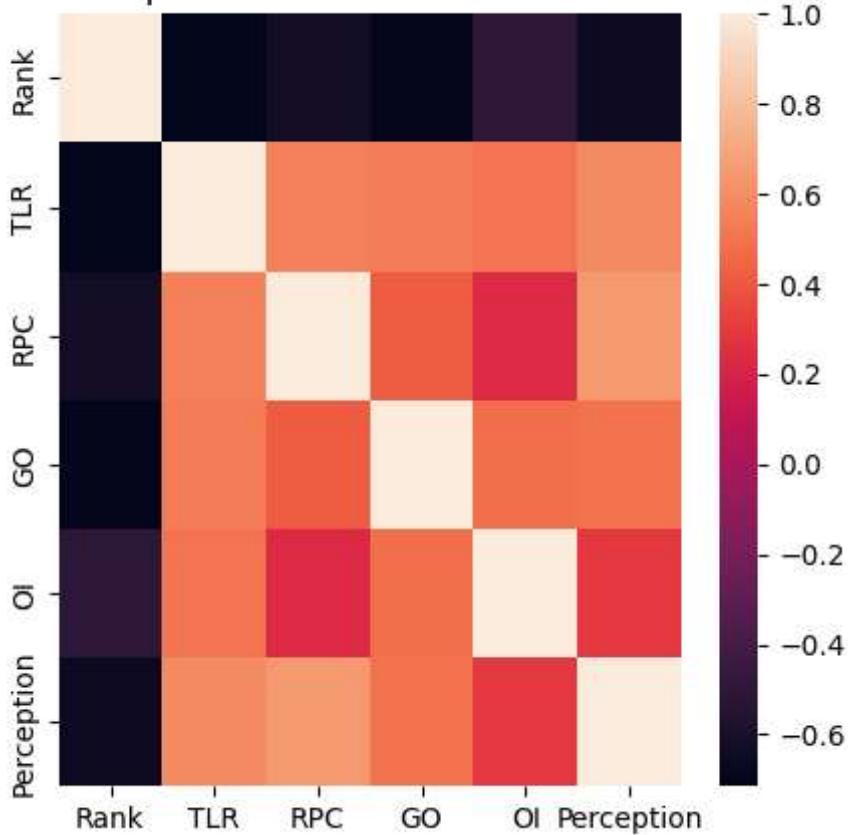
```
In [83]: plt.figure(figsize=(5,5))
ax=sns.countplot(data['State'])
plt.title(f'Data by State', fontsize=6)
plt.xticks(rotation='vertical', fontsize=6)
plt.yticks(fontsize=5)
plt.xlabel('State', fontsize=6)
plt.ylabel('Number of Colleges in corresponding States', fontsize=5)
plt.show()
```



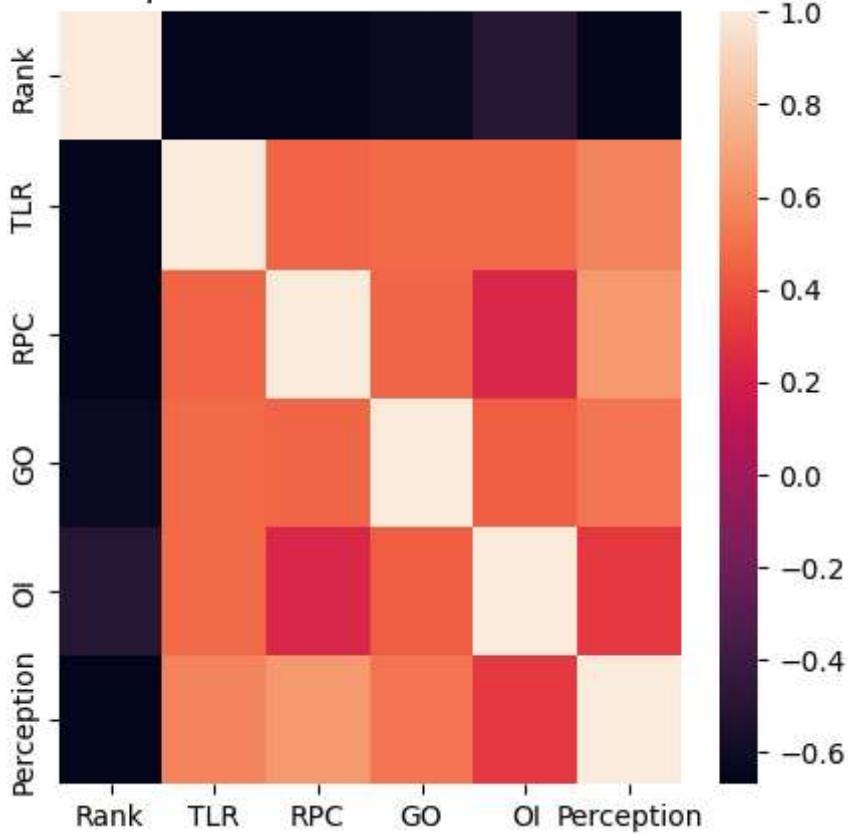
Query8: what is the various Co-relation between the various factors of the ranking ?

```
In [72]: plt.rcParams['figure.figsize'] = [5,5]
k=['Rank','TLR','RPC','GO','OI','Perception']
for i,j in data.groupby('year'):
    plt.title(f"Heatmap of Various Parameters for {i}")
    sns.heatmap(j[k].corr())
    plt.show()
```

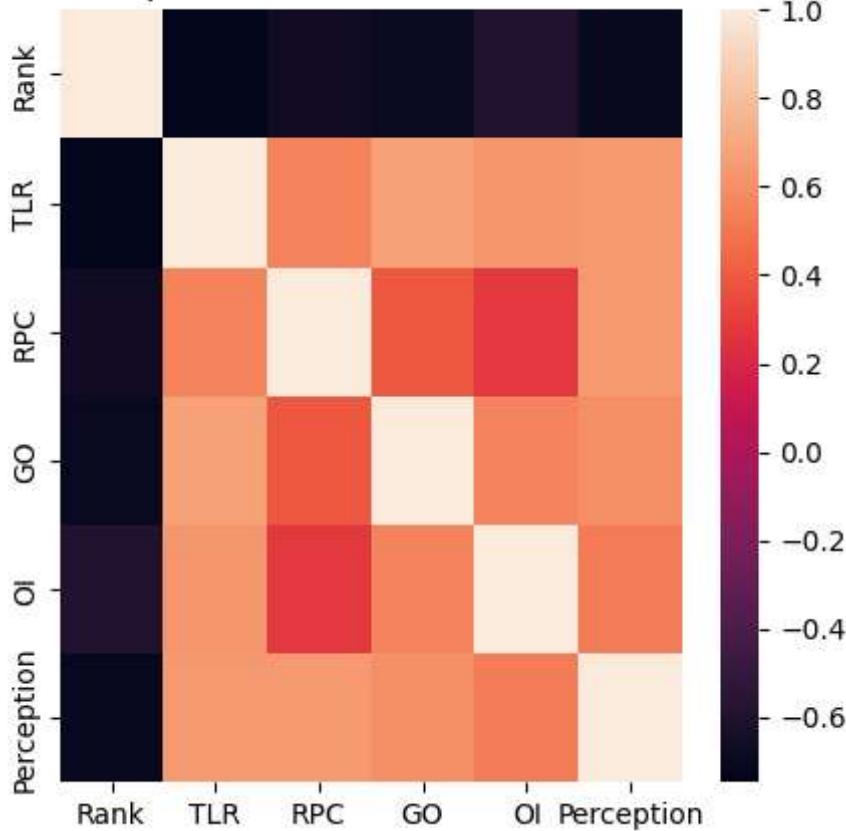
Heatmap of Various Parameters for 2020.0



Heatmap of Various Parameters for 2021.0



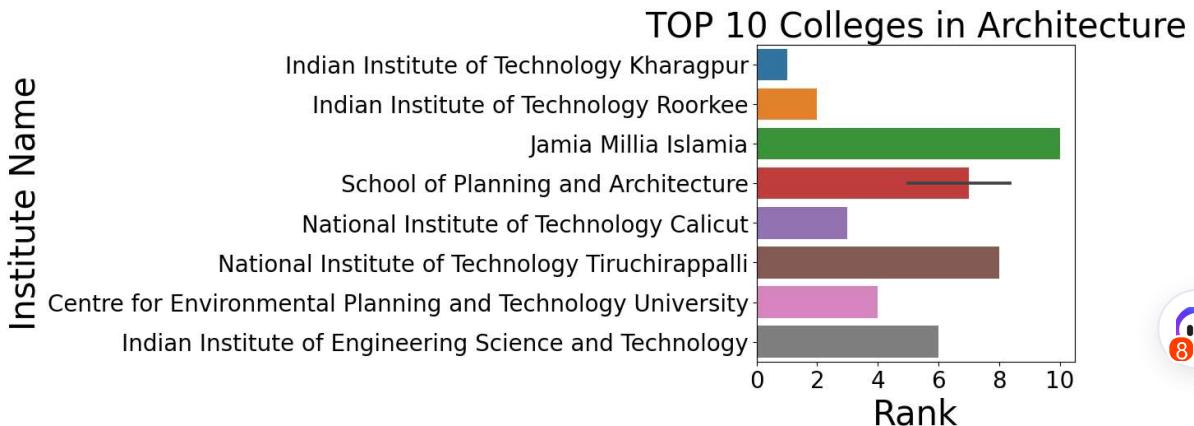
Heatmap of Various Parameters for 2022.0

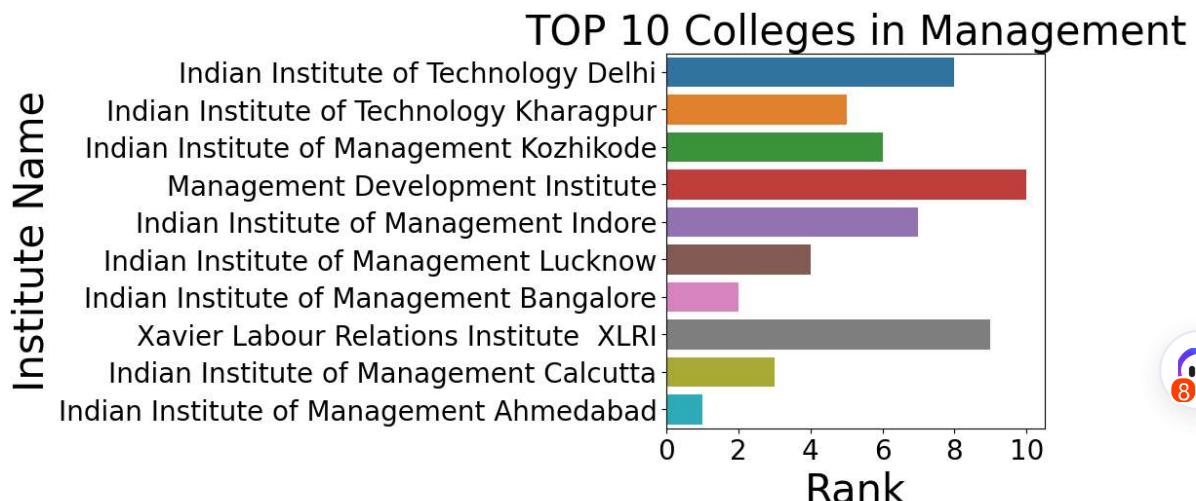
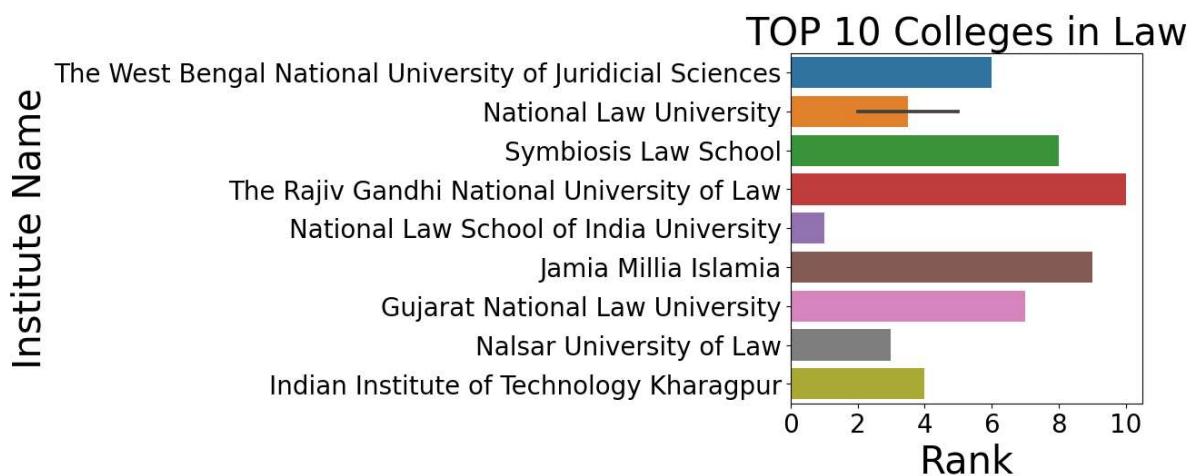
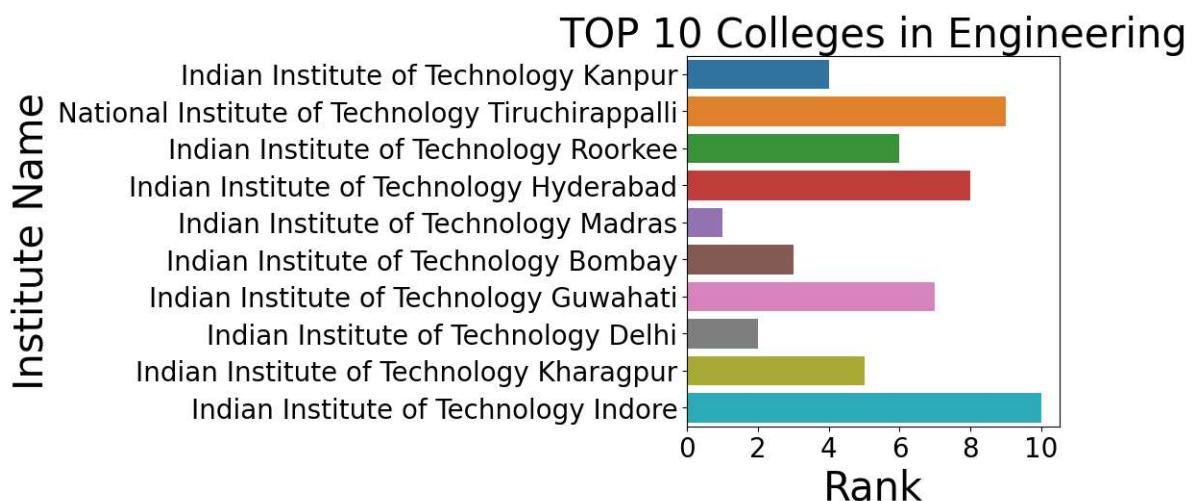
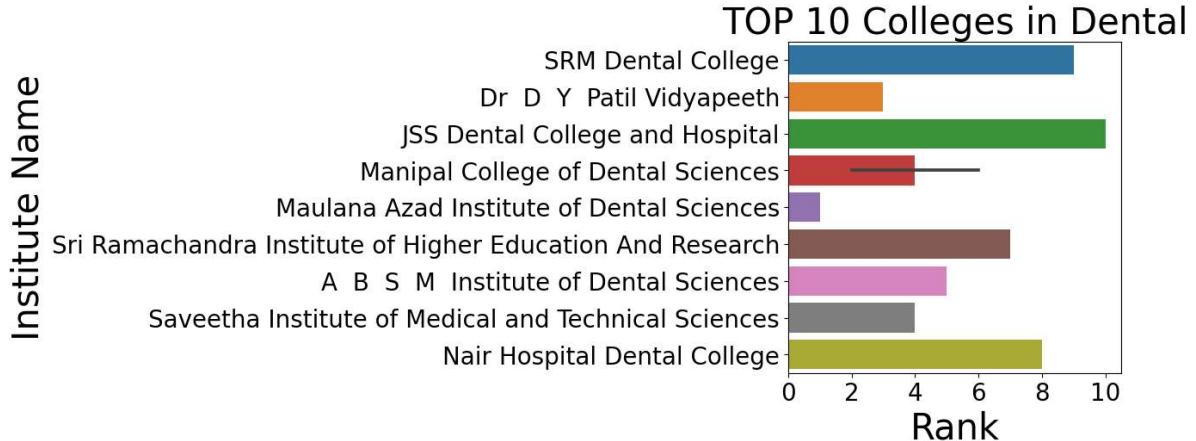


Conclusion: This Shows that how different factors are varying and how correlated with each other.

Query9: what is the Top Colleges in each domain of study on the basis of rank ?

```
In [76]: top10Colleges = data.query("Rank <= 10")
for i,j in top10Colleges.groupby('Domain'):
    sns.barplot(j['Rank'],j['Name'],label=f"{i}")
    plt.title(f"TOP 10 Colleges in {i}",fontsize=30)
    plt.ylabel('Institute Name',fontsize=30)
    plt.xlabel("Rank",fontsize=30)
    plt.xticks(fontsize = 20)
    plt.yticks(fontsize = 20)
    plt.show()
```







Query10: What is Top 10 Public and Private Universities Other than IIT's and NIT's ?

```
In [126]: df = pd.read_csv(f'{base_dir}/UniversityRanking.csv')
df.head()
```

```
Out[126]:
```

	Institute Id	Institute Name	City	State	Score_21	Rank_21	TLR_21	RPC_21	GO_21	O
0	IR-O-U-0220	Indian Institute of Science	Bengaluru	Karnataka	82.67	1.0	79.13	91.48	78.23	5
1	IR-O-U-0109	Jawaharlal Nehru University	New Delhi	Delhi	67.99	2.0	71.19	44.96	95.07	7
2	IR-O-U-0500	Banaras Hindu University	Varanasi	Uttar Pradesh	64.02	3.0	64.50	45.00	100.00	5
3	IR-O-U-0570	Calcutta University	Kolkata	West Bengal	62.06	4.0	66.20	43.92	91.72	6
4	IR-O-U-0436	Amrita Vishwa Vidyapeetham	Coimbatore	Tamil Nadu	61.23	5.0	64.23	54.33	71.35	6

5 rows × 46 columns

Conclusion: there are many University in India whose Score Very well and compete IIT's and Nit's.

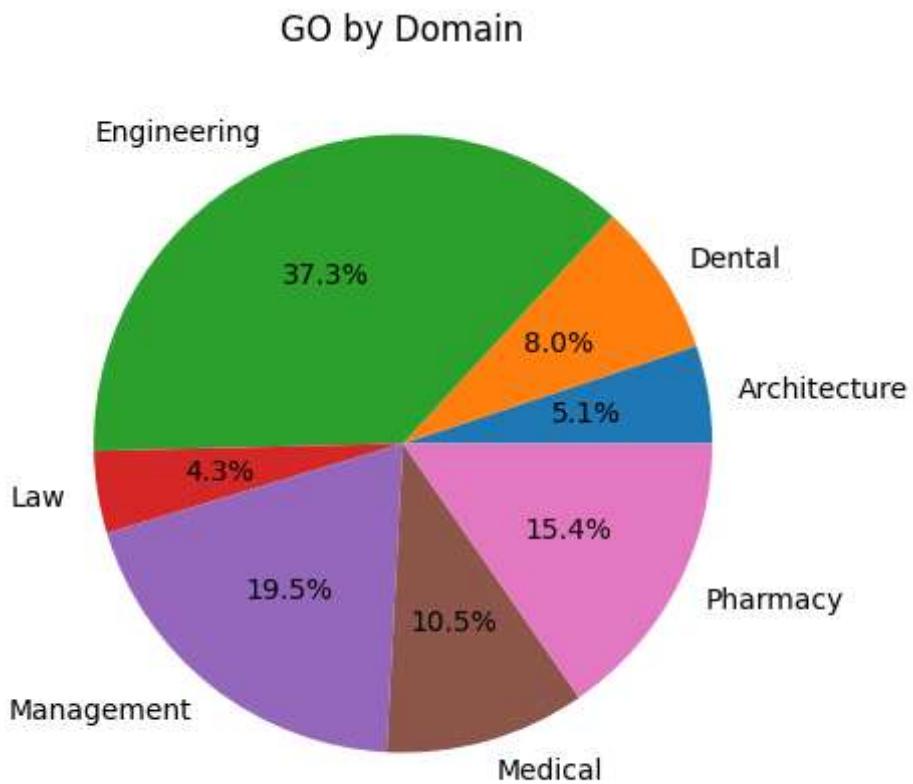
Query11: Graduation Outcomes on the basis of different Domain ?

```
In [38]: GO_Domain = data.groupby('Domain')['GO'].sum()
GO_Domain
```

```
Out[38]: Domain
Architecture    1559.63
Dental          2436.89
Engineering     11340.72
Law              1310.91
Management      5928.82
Medical          3192.65
Pharmacy         4674.33
Name: GO, dtype: float64
```

```
In [39]: GO_Domain.plot.pie(autopct = '%1.1f%%')
plt.title('GO by Domain')
plt.ylabel('')
```

```
Out[39]: Text(0, 0.5, '')
```



Conclusion :So there are maximum colleges in Engineering domain are having highest Share on GO and minimum is Law and Architecture.

Query12: Analysis of participation of colleges in ranking process

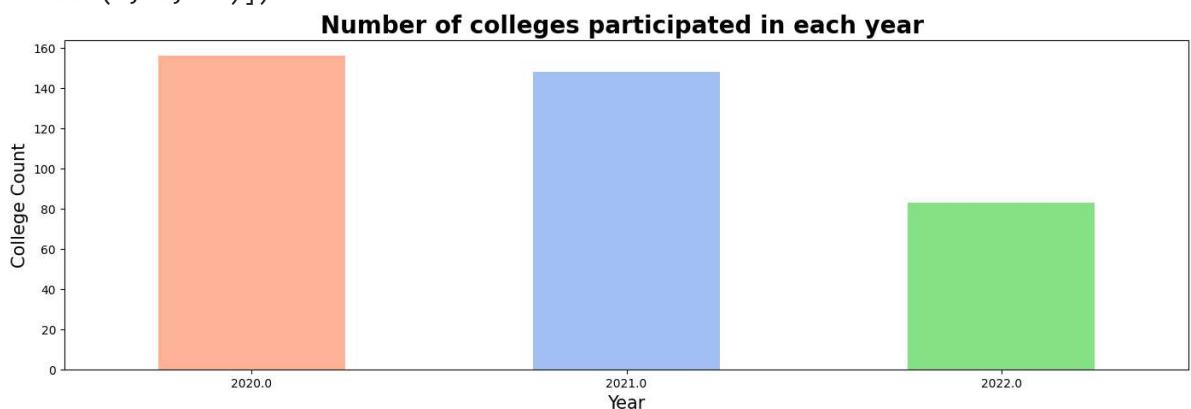
```
In [24]: # count of Colleges participated in each year
count_college= data.groupby('year')[['Institute_ID']].nunique()
print(count_college)

# Bar plot for the No. of Colleges participated in each Season
count_college.plot.bar(color=[ 'coral', 'cornflowerblue', 'limegreen'], figsize=(17, 10))
plt.title("Number of colleges participated in each year ", fontsize=20, fontweight="bold")
plt.ylabel("College Count", size = 15)
plt.xlabel("Year", size = 15)
```

```
plt.xticks(size = 10, rotation='horizontal')
plt.yticks(size = 10)
```

```
year
2020.0    156
2021.0    148
2022.0     83
Name: Institute_ID, dtype: int64
```

```
Out[24]: (array([  0.,  20.,  40.,  60.,  80., 100., 120., 140., 160., 180.]),
 [Text(0, 0, ''),
  Text(0, 0, '')])
```

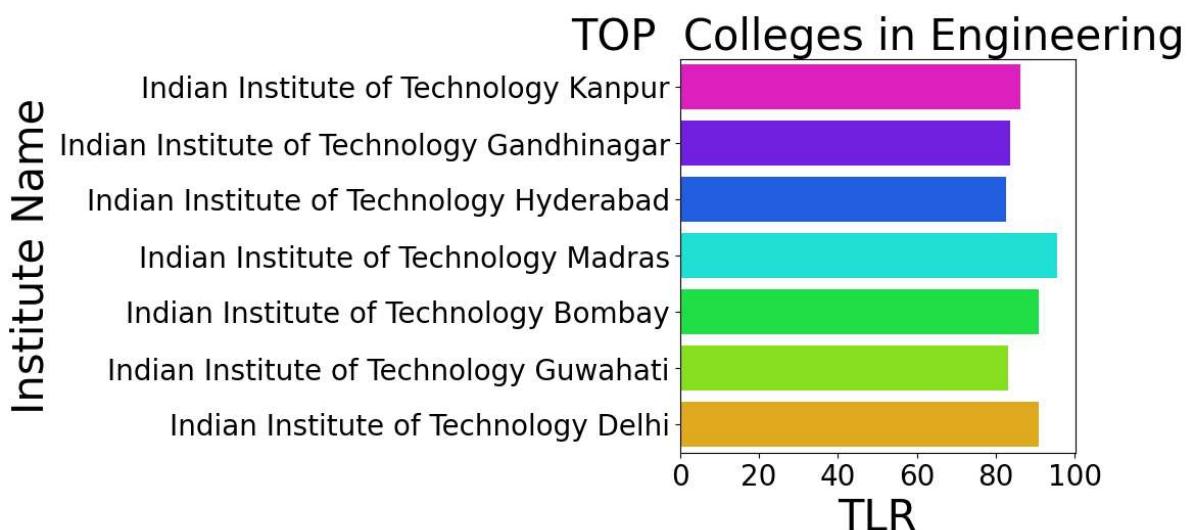
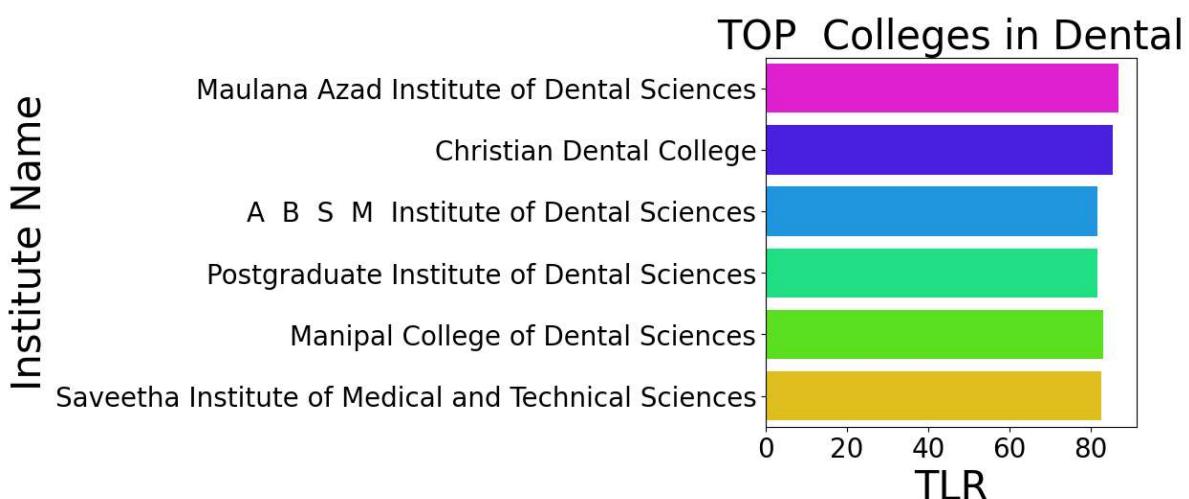
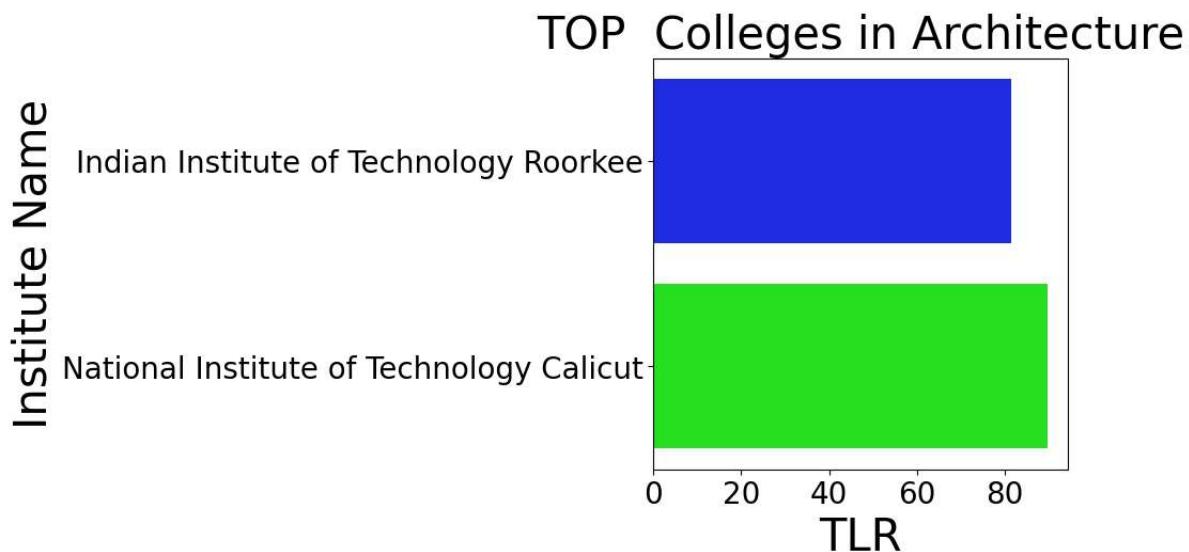


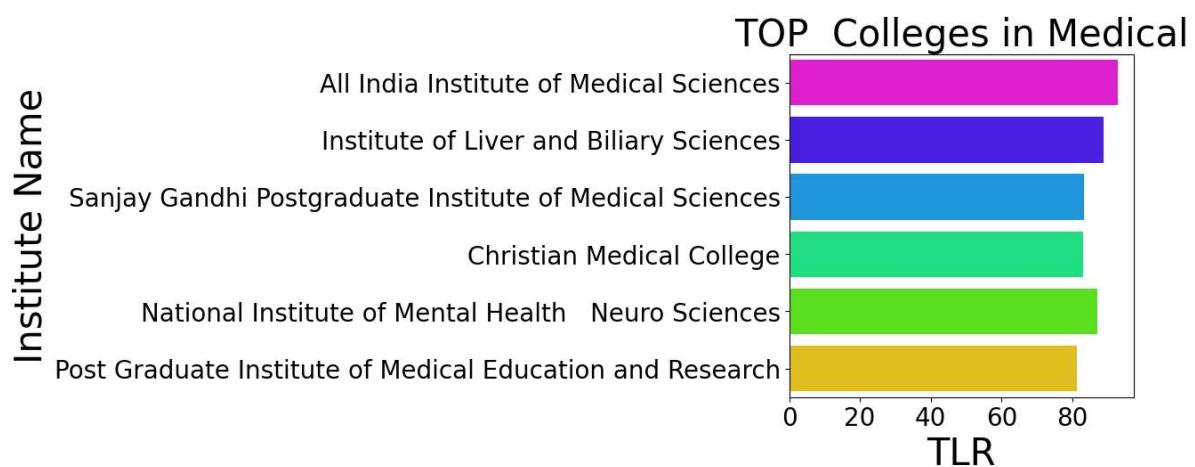
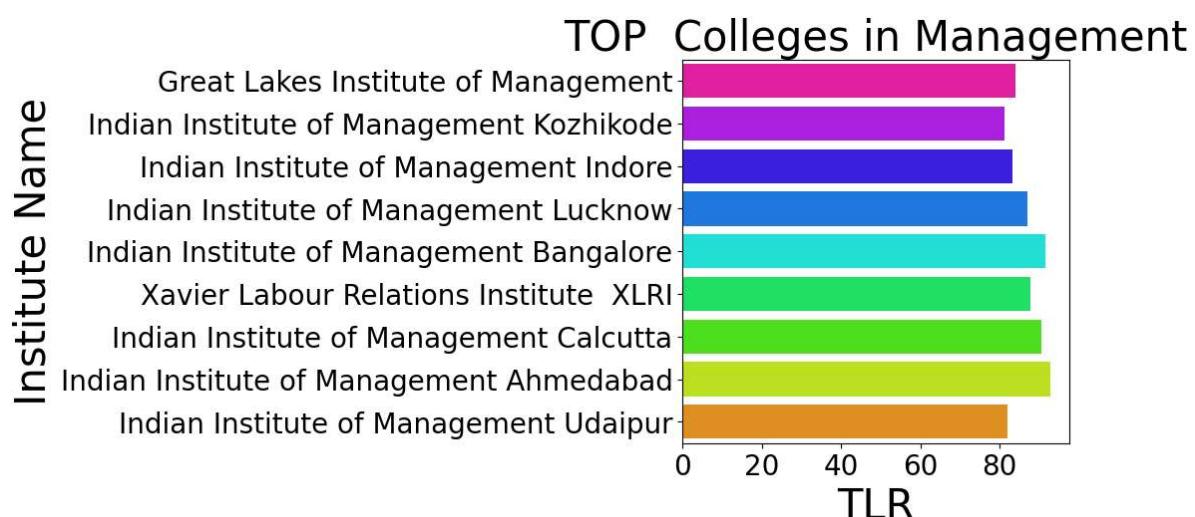
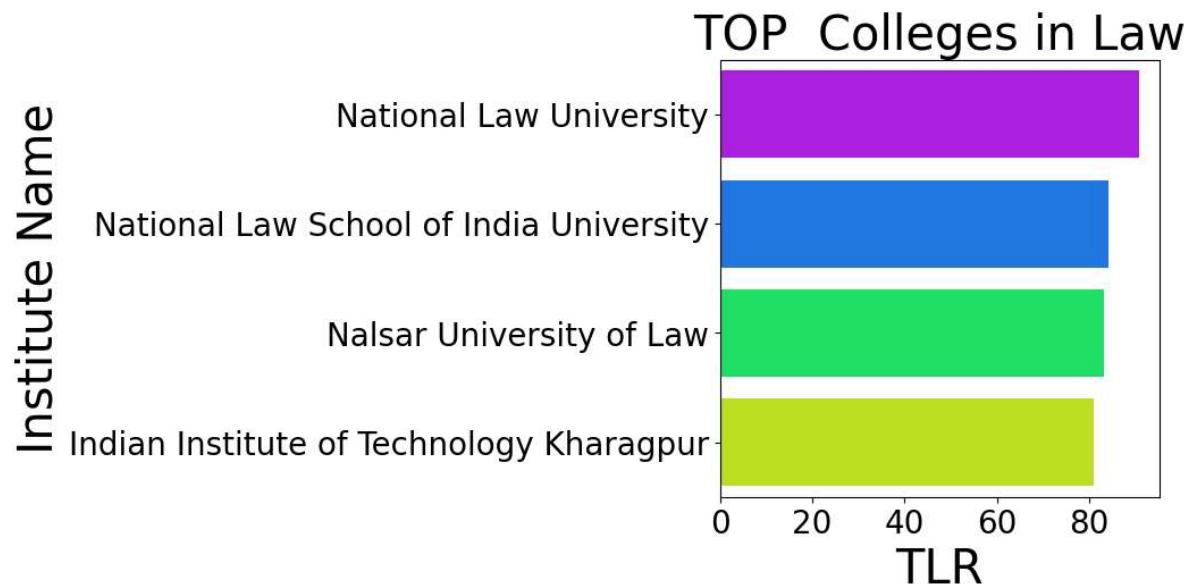
Conclusion : So the maximum colleges participated in year 2020.

Query13 : Top Colleges in each domain of study on the basis of Teacher and Learning Resource

```
In [130...]
# data=pd.read_csv("C:/Users/HP/Downloads/Final_Dataset.csv")
data = pd.read_csv(f'{base_dir}/Final_Dataset.csv')
top10data = data.query("TLR >= 80")
for i,j in top10data.groupby('Domain'):
    sns.barplot(j['TLR'],j['Name'],label=f"{i}",palette='hsv_r')
    plt.title(f"TOP Colleges in {i}",fontsize=30)
    plt.ylabel('Institute Name',fontsize=30)
    plt.xlabel("TLR",fontsize=30)
    plt.xticks(fontsize = 20)
    plt.yticks(fontsize = 20)
    plt.show()
```







Query14 : Colleges whose perception is zero

```
In [34]: zero_perc=data.loc[data['Perception']==0]
zero_perc[['Institute_ID','Name']]
```

Out[34]:

	Institute_ID	Name
7	IR-E-U-0332	The Rashtrasant Tukadoji Maharaj Nagpur University
35	IR-E-C-19650	Vardhaman College of Engineering
50	IR-E-C-18254	Yeshwantrao Chavan College of Engineering
68	IR-E-C-1345	P E S College of Engineering
117	IR-M-U-0379	Lovely Professional University
189	IR-P-U-0190	Shoolini University of Biotechnology and Management
229	IR-E-U-0604	Amity University Gwalior
237	IR-E-C-34167	Ramrao Adik Institute of Technology
241	IR-E-C-16537	St Josephs College of Engineering
261	IR-E-U-0163	The Northcap University
290	IR-M-U-0373	Chitkara University
304	IR-N-U-0461	M G R Educational and Research Institute
310	IR-E-C-1398	BNM Institute of Technology
319	IR-P-U-0491	Vels Institute of Science Technology and Advanced Research
325	IR-E-U-0190	Shoolini University of Biotechnology and Management
366	IR-E-U-0373	Chitkara University
386	IR-P-U-0085	Guru Ghasidas Vishwavidyalaya
389	IR-N-N-116	Pacific Dental College
406	IR-E-U-0535	Rajiv Gandhi Institute of Petroleum Technology
422	IR-E-C-26929	Sree Vidyanikethan Engineering College

Conclusion :These colleges has 0 extra curricular activities

Query15 : Comparing percentage of colleges in different zones

```
In [35]: north=['Himachal Pradesh', 'Punjab', 'Uttarakhand', 'Delhi', 'Uttar Pradesh', 'Haryana']
east=['Bihar', 'Orissa', 'Jharkhand', 'West Bengal']
west=['Rajasthan', 'Gujarat', 'Goa', 'Maharashtra']
south=['Andhra Pradesh', 'Karnataka', 'Kerala', 'Tamil Nadu']
central=['Madhya Pradesh', 'Chattisgarh']
northeast=['Assam', 'Sikkim', 'Nagaland', 'Meghalaya', 'Manipur', 'Mizoram', 'Tripura']
for i in data['State']:
    print(i,"in for")
    if i in north:
        print(i,data['State'])
        data['zone']='north'
    elif i in east:
        data['zone']='east'
    elif i in west:
        data['zone']='west'
```

```
    data['zone']='west'
elif i in south:
    data['zone']='south'
else:
    data['zone']='undetermined'
# elif data['State'] in central:
#     data['zone']='central'
# elif data['State'] in northeast:
#     data['zone']='northeast'
data[['zone','State']]
```



```
Maharashtra in for
Maharashtra in for
Maharashtra in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Rajasthan in for
Assam in for
Maharashtra in for
nan in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Kerala in for
Karnataka in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Karnataka in for
Haryana in for
Haryana 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456   Andhra Pradesh
457   Uttar Pradesh
458       Karnataka
459       Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Punjab in for
Punjab 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456   Andhra Pradesh
457   Uttar Pradesh
458       Karnataka
459       Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
West Bengal in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456   Andhra Pradesh
457   Uttar Pradesh
458       Karnataka
459       Goa
Name: State, Length: 460, dtype: object
West Bengal in for
West Bengal in for
Delhi in for
Delhi 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456   Andhra Pradesh
457   Uttar Pradesh
458       Karnataka
459       Goa
```



```
Name: State, Length: 460, dtype: object
```

```
Delhi in for
```

```
Delhi 0      Maharashtra  
1      Maharashtra  
2      Maharashtra  
3      Delhi  
4      Maharashtra  
    ...  
455      Uttar Pradesh  
456      Andhra Pradesh  
457      Uttar Pradesh  
458      Karnataka  
459      Goa
```

```
Name: State, Length: 460, dtype: object
```

```
Uttar Pradesh in for
```

```
Uttar Pradesh 0      Maharashtra
```

```
1      Maharashtra  
2      Maharashtra  
3      Delhi  
4      Maharashtra  
    ...
```

```
455      Uttar Pradesh  
456      Andhra Pradesh  
457      Uttar Pradesh  
458      Karnataka  
459      Goa
```

```
Name: State, Length: 460, dtype: object
```

```
Uttarakhand in for
```

```
Uttarakhand 0      Maharashtra
```

```
1      Maharashtra  
2      Maharashtra  
3      Delhi  
4      Maharashtra  
    ...
```

```
455      Uttar Pradesh  
456      Andhra Pradesh  
457      Uttar Pradesh  
458      Karnataka  
459      Goa
```

```
Name: State, Length: 460, dtype: object
```

```
Maharashtra in for
```

```
Punjab in for
```

```
Punjab 0      Maharashtra
```

```
1      Maharashtra  
2      Maharashtra  
3      Delhi  
4      Maharashtra  
    ...
```

```
455      Uttar Pradesh  
456      Andhra Pradesh  
457      Uttar Pradesh  
458      Karnataka  
459      Goa
```

```
Name: State, Length: 460, dtype: object
```

```
Maharashtra in for
```

```
Maharashtra in for
```

```
Andhra Pradesh in for
```

```
Telangana in for
```

```
Karnataka in for
```

```
Himachal Pradesh in for
```

```
Himachal Pradesh 0      Maharashtra
```



```
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Madhya Pradesh in for
Telangana in for
Karnataka in for
Andhra Pradesh in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
```



```
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Maharashtra in for
Tamil Nadu in for
Arunachal Pradesh in for
Tamil Nadu in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
West Bengal in for
Karnataka in for
Karnataka in for
West Bengal in for
Odisha in for
Maharashtra in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
```



```
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Manipur in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Odisha in for
Karnataka in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Kerala in for
Telangana in for
West Bengal in for
Odisha in for
Goa in for
Odisha in for
Maharashtra in for
Chandigarh in for
```



```
Rajasthan in for
Madhya Pradesh in for
Tamil Nadu in for
Karnataka in for
Madhya Pradesh in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
nan in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Tamil Nadu in for
Tamil Nadu in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Jharkhand in for
Maharashtra in for
Tamil Nadu in for
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Kerala in for
Kerala in for
Chhattisgarh in for
Karnataka in for
Gujarat in for
Chandigarh in for
Tamil Nadu in for
Punjab in for
Punjab 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Chandigarh in for
Haryana in for
Haryana 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Telangana in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Tamil Nadu in for
Andhra Pradesh in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
```



```
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Maharashtra in for
Maharashtra in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Bihar in for
Tamil Nadu in for
Telangana in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
      ...
```



```
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458          Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Punjab in for
Punjab 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458          Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Andhra Pradesh in for
Telangana in for
Karnataka in for
Tamil Nadu in for
Telangana in for
Delhi in for
Delhi 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458          Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Chandigarh in for
Goa in for
Delhi in for
Delhi 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458          Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Karnataka in for
Tamil Nadu in for
Maharashtra in for
Haryana in for
Haryana 0      Maharashtra
1          Maharashtra
```



```
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Tamil Nadu in for
Assam in for
Madhya Pradesh in for
Tamil Nadu in for
Andhra Pradesh in for
Tamil Nadu in for
Odisha in for
Tamil Nadu in for
Himachal Pradesh in for
Himachal Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Jharkhand in for
Tamil Nadu in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459         Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Andhra Pradesh in for
Karnataka in for
Karnataka in for
Andhra Pradesh in for
Gujarat in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455     Uttar Pradesh
```



```
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Bihar in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Jharkhand in for
Maharashtra in for
Andhra Pradesh in for
Pondicherry in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
```



```
459          Goa
Name: State, Length: 460, dtype: object
West Bengal in for
Jammu and Kashmir in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Maharashtra in for
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Tamil Nadu in for
Maharashtra in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Chhattisgarh in for
Pondicherry in for
Andhra Pradesh in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Madhya Pradesh in for
Telangana in for
Jharkhand in for
Maharashtra in for
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Himachal Pradesh in for
Himachal Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459          Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Odisha in for
Tamil Nadu in for
Telangana in for
Odisha in for
Tamil Nadu in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
```



```
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Meghalaya in for
Tamil Nadu in for
Tripura in for
Karnataka in for
Madhya Pradesh in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Jharkhand in for
Tamil Nadu in for
Maharashtra in for
Kerala in for
Odisha in for
Odisha in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Telangana in for
West Bengal in for
Tamil Nadu in for
Gujarat in for
Maharashtra in for
```



```
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Tamil Nadu in for
Tamil Nadu in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Assam in for
Pondicherry in for
Tamil Nadu in for
Madhya Pradesh in for
Karnataka in for
Maharashtra in for
Tamil Nadu in for
Karnataka in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Maharashtra in for
Maharashtra in for
Maharashtra in for
Rajasthan in for
Maharashtra in for
Tamil Nadu in for
Chandigarh in for
Karnataka in for
Punjab in for
Punjab 0       Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Tamil Nadu in for
Jharkhand in for
Kerala in for
Odisha in for
Gujarat in for
Gujarat in for
Karnataka in for
Delhi in for
Delhi 0       Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Uttarakhand in for
Uttarakhand 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Kerala in for
Uttarakhand in for
```



```
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Telangana in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
West Bengal in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Telangana in for
Odisha in for
Tamil Nadu in for
Tamil Nadu in for
Karnataka in for
Punjab in for
Punjab 0      Maharashtra
```



```
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Arunachal Pradesh in for
Madhya Pradesh in for
Tamil Nadu in for
Rajasthan in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Tamil Nadu in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
West Bengal in for
Karnataka in for
Kerala in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
```



```
Haryana in for
Haryana 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Gujarat in for
Maharashtra in for
Chandigarh in for
Jharkhand in for
Punjab in for
Punjab 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
nan in for
Karnataka in for
Tamil Nadu in for
Tamil Nadu in for
Odisha in for
Assam in for
West Bengal in for
Haryana in for
Haryana 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Tamil Nadu in for
Maharashtra in for
Andhra Pradesh in for
Karnataka in for
Kerala in for
Tamil Nadu in for
Karnataka in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
```



```
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Jharkhand in for
Maharashtra in for
Karnataka in for
Tamil Nadu in for
Tamil Nadu in for
Gujarat in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Telangana in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3          Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458        Karnataka
459        Goa
Name: State, Length: 460, dtype: object
Gujarat in for
West Bengal in for
Tamil Nadu in for
Chandigarh in for
```



```
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Telangana in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Himachal Pradesh in for
Himachal Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Madhya Pradesh in for
Karnataka in for
Maharashtra in for
Telangana in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
```



```
3          Delhi
4          Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Kerala in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Telangana in for
Karnataka in for
Karnataka in for
Maharashtra in for
Andhra Pradesh in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1          Maharashtra
2          Maharashtra
3          Delhi
4          Maharashtra
...
455     Uttar Pradesh
456     Andhra Pradesh
457     Uttar Pradesh
458     Karnataka
459     Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Delhi in for
Delhi 0      Maharashtra
1          Maharashtra
2          Maharashtra
```



```
3           Delhi
4           Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Kerala in for
Kerala in for
Maharashtra in for
Haryana in for
Haryana 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Punjab in for
Punjab 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Tamil Nadu in for
Gujarat in for
Karnataka in for
Odisha in for
Rajasthan in for
West Bengal in for
Odisha in for
Meghalaya in for
Tamil Nadu in for
Delhi in for
Delhi 0      Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
```



```
Name: State, Length: 460, dtype: object
Maharashtra in for
Andhra Pradesh in for
Himachal Pradesh in for
Himachal Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
West Bengal in for
West Bengal in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Maharashtra in for
Punjab in for
Punjab 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Telangana in for
Maharashtra in for
Haryana in for
Haryana 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
```



```
Maharashtra in for
Rajasthan in for
Karnataka in for
Tamil Nadu in for
Maharashtra in for
Assam in for
Rajasthan in for
Maharashtra in for
Delhi in for
Delhi 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Pondicherry in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Chhattisgarh in for
Chhattisgarh in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458    Karnataka
459    Goa
Name: State, Length: 460, dtype: object
Rajasthan in for
Tamil Nadu in for
Karnataka in for
Maharashtra in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
```



```
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Tamil Nadu in for
Tamil Nadu in for
Assam in for
West Bengal in for
Tamil Nadu in for
Odisha in for
Andhra Pradesh in for
Rajasthan in for
Jharkhand in for
Gujarat in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Telangana in for
Assam in for
Rajasthan in for
West Bengal in for
Andhra Pradesh in for
Tamil Nadu in for
Uttarakhand in for
Uttarakhand 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
      ...
455    Uttar Pradesh
456    Andhra Pradesh
457    Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Gujarat in for
Andhra Pradesh in for
Delhi in for
Delhi 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Karnataka in for
Madhya Pradesh in for
Tamil Nadu in for
Andhra Pradesh in for
Chandigarh in for
Punjab in for
Punjab 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Delhi in for
Delhi 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
```



```
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Odisha in for
Uttar Pradesh in for
Uttar Pradesh 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Andhra Pradesh in for
Tamil Nadu in for
Gujarat in for
Uttar Pradesh in for
Uttar Pradesh 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Maharashtra in for
Manipur in for
Karnataka in for
Punjab in for
Punjab 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
456           Andhra Pradesh
457           Uttar Pradesh
458           Karnataka
459           Goa
Name: State, Length: 460, dtype: object
Andhra Pradesh in for
Karnataka in for
Telangana in for
Karnataka in for
Punjab in for
Punjab 0           Maharashtra
1           Maharashtra
2           Maharashtra
3           Delhi
4           Maharashtra
...
455           Uttar Pradesh
```



```
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Jharkhand in for
Karnataka in for
West Bengal in for
Maharashtra in for
Andhra Pradesh in for
Rajasthan in for
Telangana in for
Karnataka in for
Tamil Nadu in for
Madhya Pradesh in for
Maharashtra in for
Tamil Nadu in for
Himachal Pradesh in for
Himachal Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Andhra Pradesh in for
Uttar Pradesh in for
Uttar Pradesh 0      Maharashtra
1      Maharashtra
2      Maharashtra
3      Delhi
4      Maharashtra
...
455      Uttar Pradesh
456      Andhra Pradesh
457      Uttar Pradesh
458      Karnataka
459      Goa
Name: State, Length: 460, dtype: object
Karnataka in for
Goa in for
```



Out[35]:

	zone	State
0	west	Maharashtra
1	west	Maharashtra
2	west	Maharashtra
3	west	Delhi
4	west	Maharashtra
...
455	west	Uttar Pradesh
456	west	Andhra Pradesh
457	west	Uttar Pradesh
458	west	Karnataka
459	west	Goa

460 rows × 2 columns

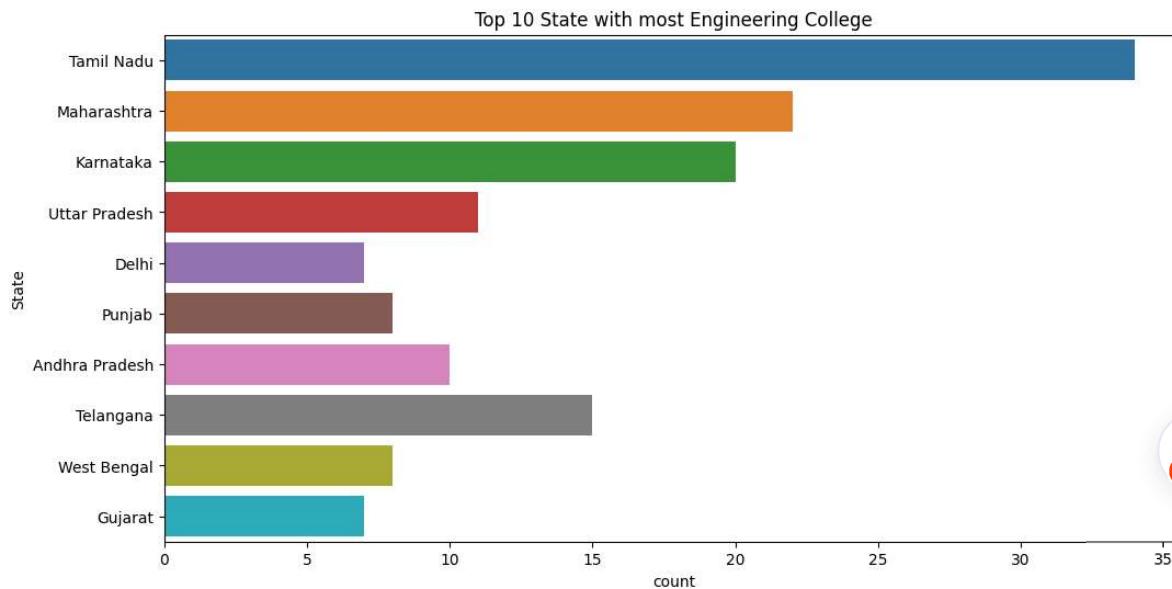
Query-16 Top states with most colleges in a domain

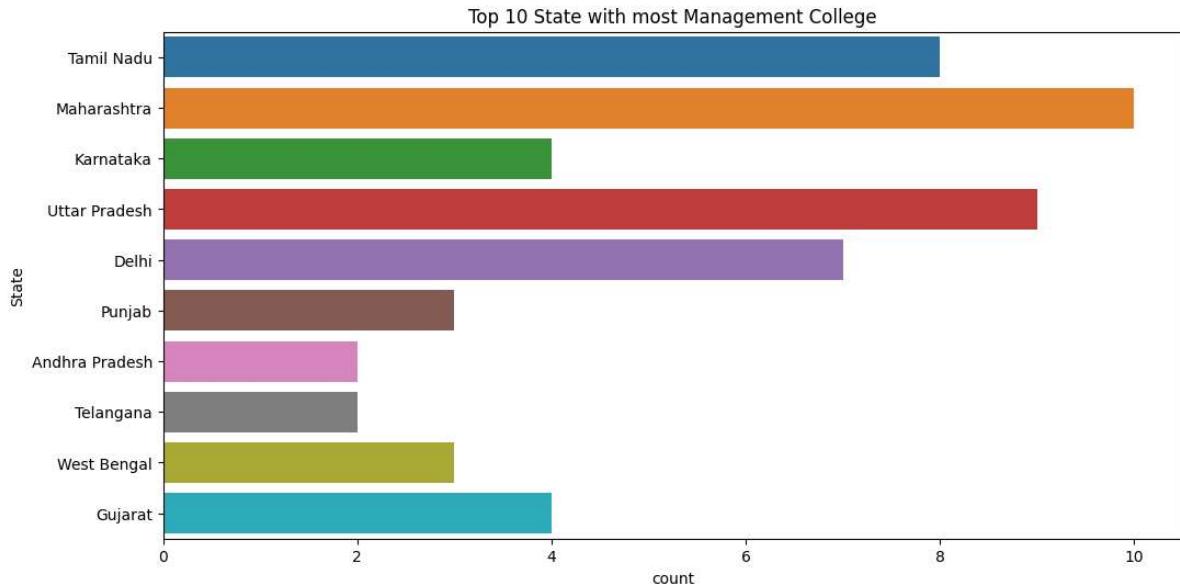
```
In [36]: data=pd.read_csv(f'{base_dir}/Final_Dataset.csv')
data['year']=pd.DatetimeIndex(data['Accreditation valid up to']).year
Eng_Clg = data[data['Domain']=='Engineering']
Mng_Clg = data[data['Domain']=='Management']
```

```
In [37]: plt.figure(figsize=(12,6))
sns.countplot(y='State',order = data['State'].value_counts().index[0:10],data=Eng_Clg)
plt.title('Top 10 State with most Engineering College')

plt.figure(figsize=(12,6))
sns.countplot(y='State',order = data['State'].value_counts().index[0:10],data=Mng_Clg)
plt.title('Top 10 State with most Management College')
```

Out[37]: Text(0.5, 1.0, 'Top 10 State with most Management College')





Conclusion:

Tamil Nadu is the state with highest no. of top ranked Engineering and Management colleges.and Top 10 states for both remains the same.

Query -17: Colleges appearing max times in ranking

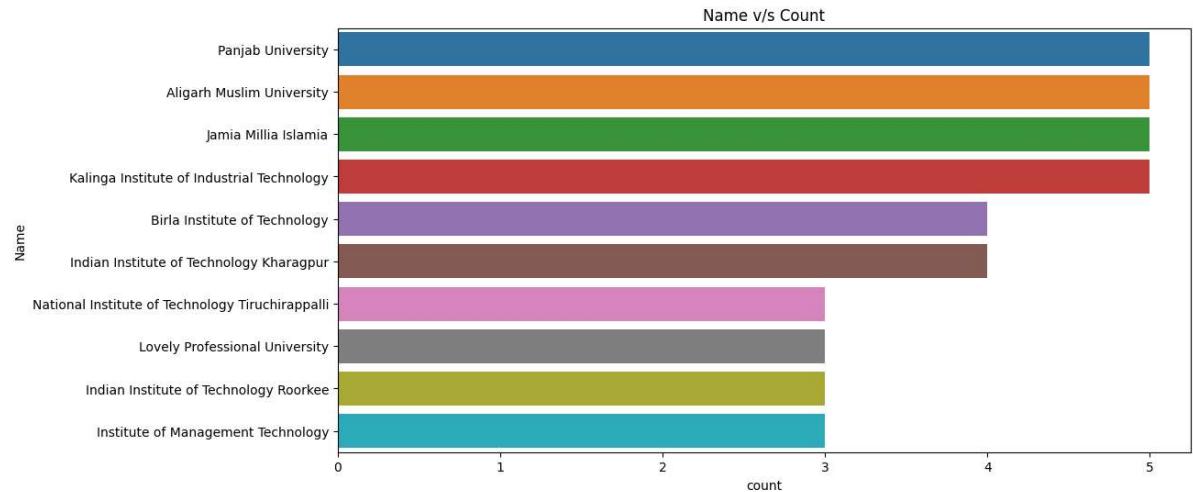
```
In [38]: data.Name.value_counts().head(10)
```

```
Out[38]: Panjab University      5
          Aligarh Muslim University 5
          Jamia Millia Islamia      5
          Kalinga Institute of Industrial Technology 5
          Birla Institute of Technology      4
          Indian Institute of Technology Kharagpur 4
          National Institute of Technology Tiruchirappalli 3
          Lovely Professional University      3
          Indian Institute of Technology Roorkee 3
          Institute of Management Technology      3
          Name: Name, dtype: int64
```

```
In [39]: plt.figure(figsize=(12,6))
sns.countplot(y='Name',order = data['Name'].value_counts().index[0:10],data=data)
plt.title('Name v/s Count')
```

```
Out[39]: Text(0.5, 1.0, 'Name v/s Count')
```





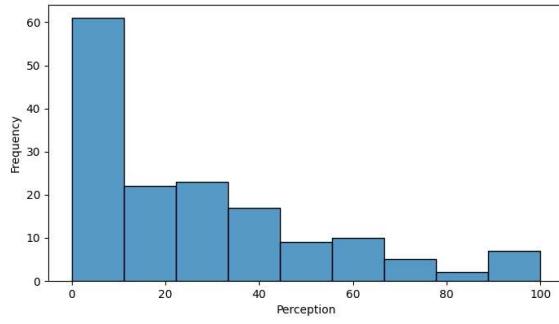
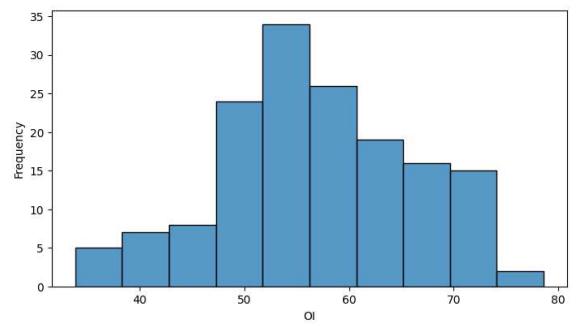
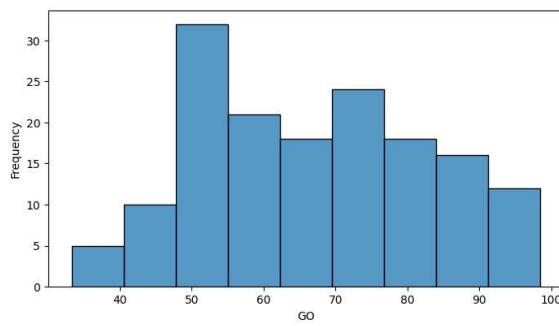
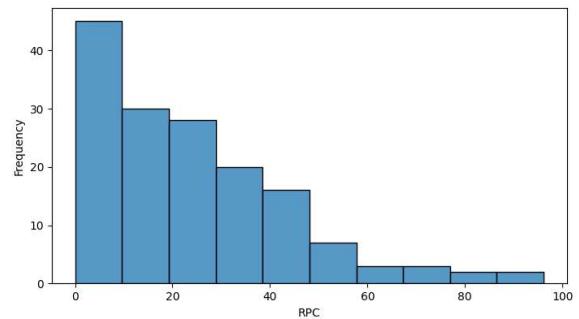
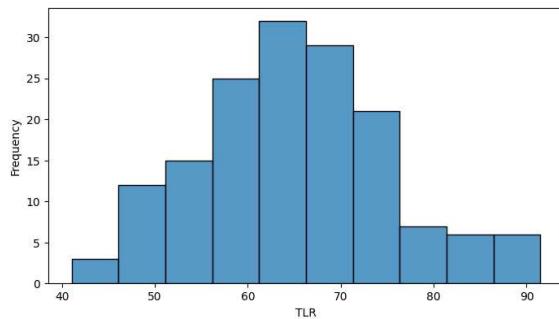
Conclusion:

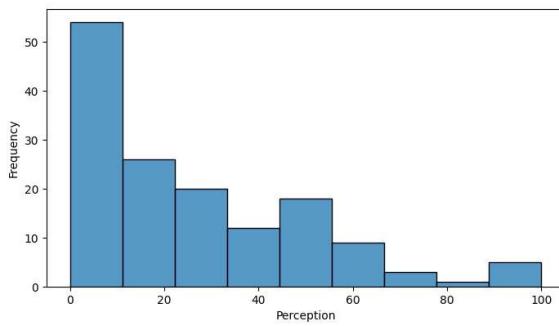
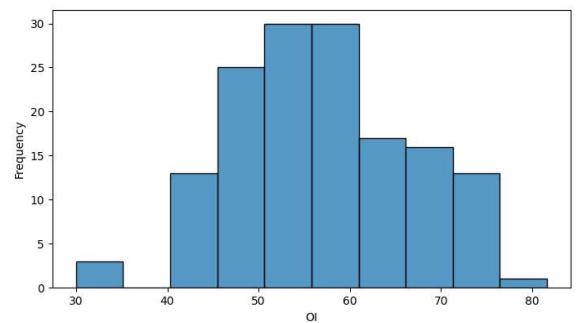
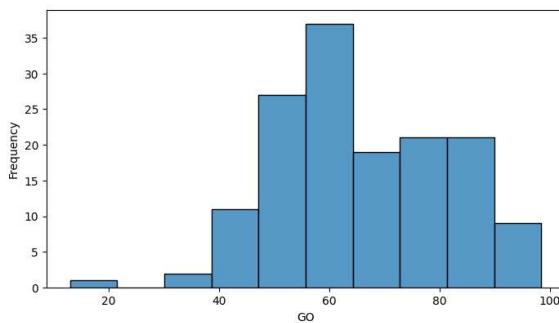
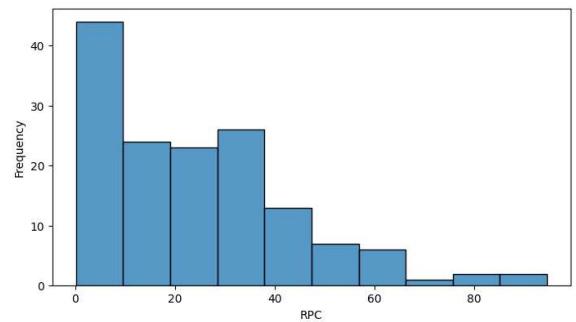
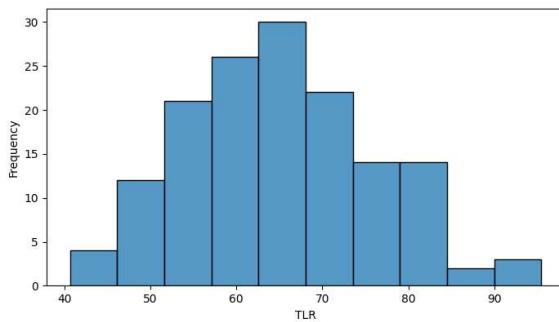
1. Panjab University, AMU, JMI, KIIT appeared most times i.e. 5 in ranking. This means they were among top ranked in different domains 5 times.

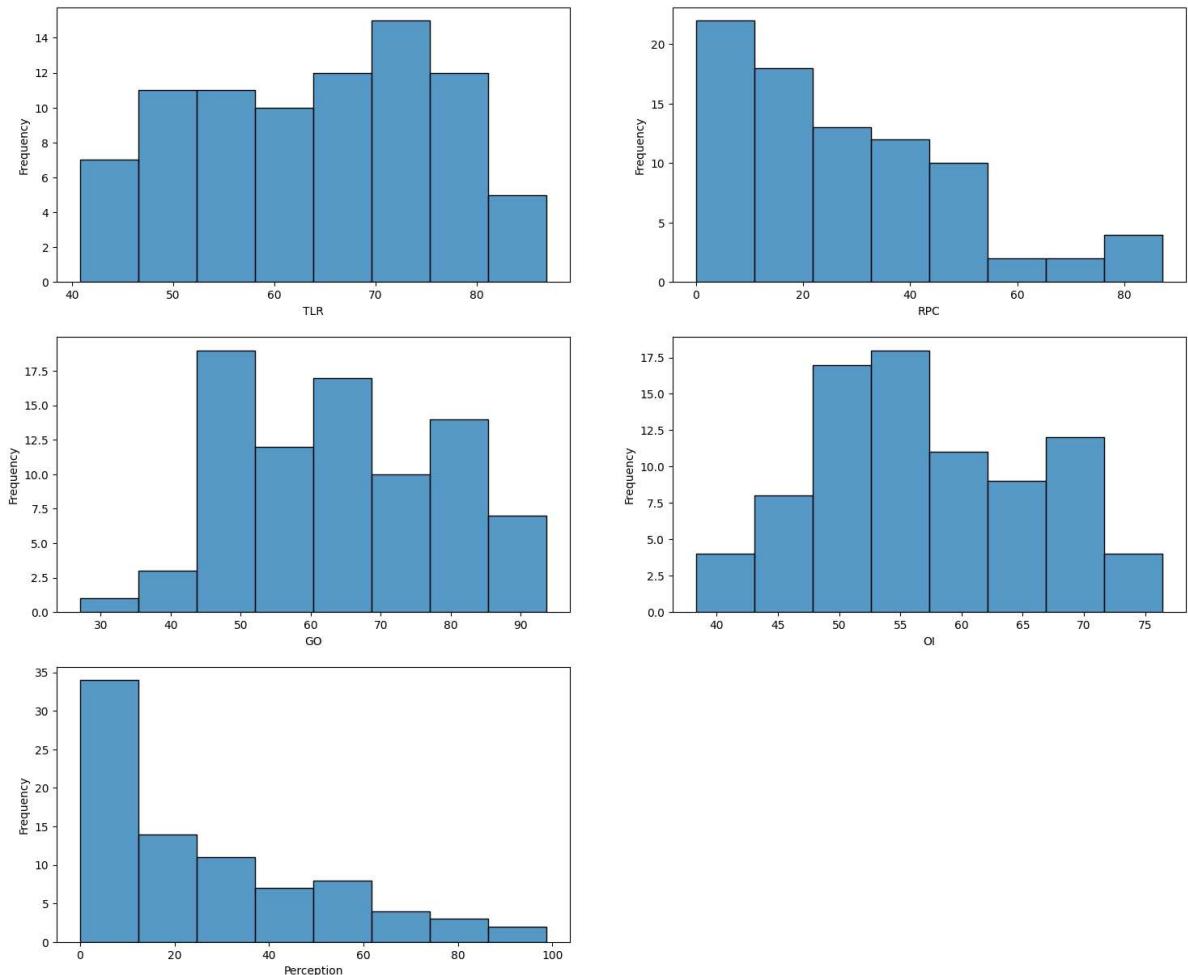
Query-18 : Distribution of various parameters over the years

```
In [40]: plt.rcParams['figure.figsize'] = [18,15]
for i,j in data.groupby('year'):
    cols=['Rank','TLR','RPC','GO','OI','Perception']
    stat_data = j[cols]
    cols =[ 'TLR','RPC','GO','OI','Perception']
    plt.figure()
    plt.suptitle(f"Histograms for the year {i}")
    for k in range(len(cols)):
        plt.subplot(3,2,k+1)
        sns.histplot(stat_data[cols[k]], bins='auto')
        plt.xlabel(f'{cols[k]}')
        plt.ylabel("Frequency")
plt.show()
```









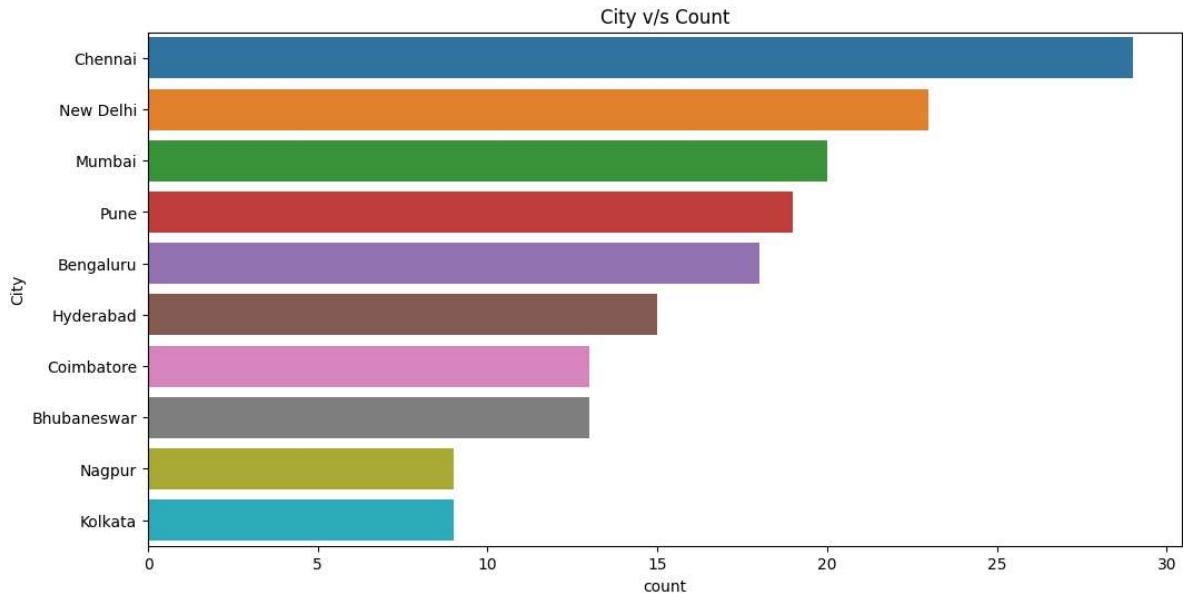
Conclusion : This Shows that how different factors are varying over the years.

Query-19 : Distribution of colleges across cities in India

```
In [54]: data['City'].value_counts()
plt.figure(figsize=(12,6))
sns.countplot(y='City',order = data['City'].value_counts().index[0:10],data=data)
plt.title('City v/s Count')
```

Out[54]: Text(0.5, 1.0, 'City v/s Count')





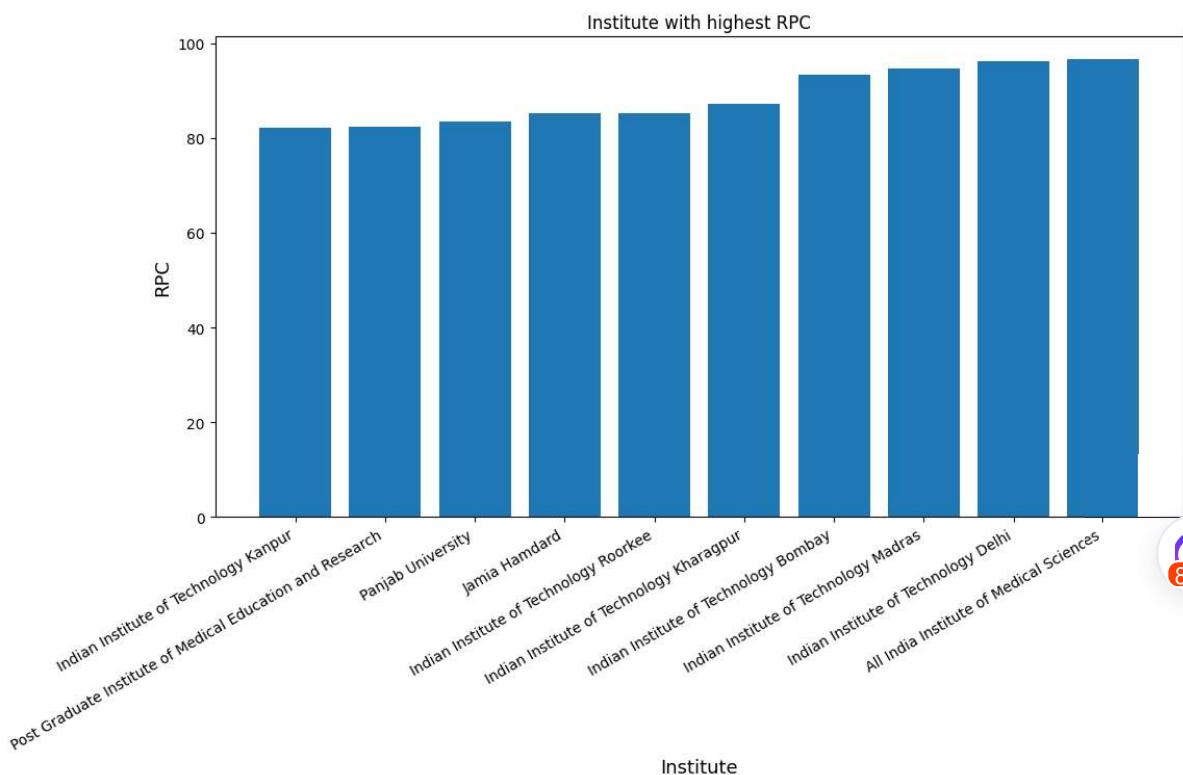
Conclusion :

1.Chennai is the city with most colleges. 2.There are more colleges in metropolitan cities compared to other cities.

Query-20 : Top Colleges on the basis of Research and Professional Practice (RP)

```
In [41]: states = data.sort_values(by='RPC').tail(10)
plt.rcParams['figure.figsize']=(12,6)
plt.title('Institute with highest RPC')
plt.xlabel('Institute', fontsize=13)
plt.ylabel('RPC', fontsize=13)
plt.xticks(rotation=30,ha='right')
plt.bar(states.Name,states.RPC)
```

Out[41]: <BarContainer object of 10 artists>



Conclusion :

IIT Kanpur is the best college on the basis of RPC.

Final Outcomes of our Analysis :

From the analysis, it is observed that NIRF ranking has attracted more participation of institution of higher education from across india in all categories and subject domains.The number of participants has increased every year.It may also be noted that highest number of institutions are located in southern region of India.Major number of institute are in Tamil Nadu.And among these institutes most are in chennai.

In []:

