```
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import plotly.express as px
import seaborn as sns
from sklearn.linear_model import LinearRegression
import matplotlib.dates as mdates
from sklearn.model_selection import train_test_split as tts

pd.options.display.float_format = '{:.2f}'.format

data = pd.read_csv('l_fin_comp.csv')

data.columns = data.columns.str.replace('(USD Millions)', 'USD
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data.columns = data.columns.str.replace('(USD Million)', 'USD
Million')
#data.columns[3:3] = data.columns[3:3].str.replace('(USD Million)',
'USD Million')
data.columns = data.columns.str.replace(' ', '_')

data
```

	Rank	Company	Industry	\
0	1	Transamerica Corporation	Conglomerate	
1	2	Ping An Insurance Group	Insurance	
2	3	ICBC	Banking	
3	4	China Construction Bank	Banking	
4	5	Agricultural Bank of China	Banking	
5	6	China Life Insurance	Insurance	
6	7	Allianz	Insurance	
7	8	Bank of China	Banking	
8	9	JP Morgan Chase	Banking	
9	10	AXA	Insurance	
10	11	Fannie Mae	Investment Services	
11	12	Life Insurance Corporation of India	Insurance	
12	13	Generali Group	Insurance	
13	14	Bank of America	Banking	
14	15	Citigroup	Banking	
15	16	People's Insurance Company	Insurance	
16	17	Credit Agricole	Banking	
17	18	BNP Paribas	Banking	
18	19	HSBC	Banking	
19	20	Wells Fargo	Banking	
20	21	State Farm	Insurance	
21	22	Nippon Life	Insurance	
22	23	Munich Re	Insurance	
23	24	Dai-ichi Life	Insurance	
24	25	Banco Santander	Banking	
25	26	MetLife	Insurance	

26	27	Bank of Communications	Banking
27	28	Freddie Mac	Investment Services
28	29	Legal and General Group	Insurance
29	30	Brookfield Assest Management	Investment Services
30	31	Aviva	Insurance
31	32	China Pacific Insurance	Insurance
32	33	China Merchants Bank	Banking
33	34	Zurich Insurance Group	Insurance
34	35	Manulife Financial	Insurance
35	36	Prudential Financial	Insurance
36	37	Mitsubishi UFJ Financial Group	Banking
37	38	Prudential	Insurance
38	39	StoneX Group Inc	Investment Services
39	40	Goldman Sachs	Investment Services
40	41	Industrial Bank	Banking
41	42	Shanghai Pudong Development	Banking
42	43	Morgan Stanley	Investment Services
43	44	State Bank of India	Banking
44	45	Tokio Marine Holdings	Insurance
45	46	AIA Group	Insurance
46	47	China Mensheng Banking	Banking
47	48	Power Corporation of Canada	Insurance
48	49	Talanx	Insurance
49	50	Lloyds Banking Group	Banking

	Revenue_in_USD_Million	Net_Income_in_USD_Millions	\
0	245510	42521	
1	191509	20738	
2	182794	45783	
3	172000	39282	
4	153884	31293	
5	144589	4648	
6	136173	7756	
7	134045	27952	
8	129503	29131	
9	128011	3605	
10	106437	11805	
11	102851	4954	
12	97128	1987	
13	93753	17894	
14	88839	11047	
15	84290	2903	
16	82958	3067	
17	81632	8052	
18	80429	5229	
19	80303	3301	
20	78898	3738	
21	76984	3127	
22	74074	1379	

23	73841	3431
24	73630	9639
25	67842	5407
26	67605	11409
27	66228	7326
28	63324	2061
29	62752	448
30	62579	3588
31	61185	3562
32	60433	14107
33	59001	3834
34	58840	4377
35	57033	448
36	56838	7329
37	55973	2118
38	54139	169
39	53498	9459
40	53313	9655
41	52628	8443
42	52047	10996
43	51919	3018
44	51516	1526
45	50359	5779
46	49076	4972
47	48183	1525
48	46788	766
49	14592	1882

	Total_Assest_in_USD_Millions	Headquarters
0	873	United States
1	1460	China
2	5110	China
3	4311	China
4	4169	China
5	776	China
6	1297	Germany
7	3739	China
8	3386	United States
9	984	France
10	3985	United States
11	630	India
12	667	Italy
13	2819	United States
14	2260	United States
15	192	China
16	2399	France
17	3045	France
18	2984	United Kingdom
19	1955	United States

```
20                              299   United States
21                              773           Japan
22                              364         Germany
23                              574           Japan
24                             1845           Spain
25                              795   United States
26                             1639           China
27                             2627   United States
28                              779  United Kingdom
29                              343          Canada
30                              655  United Kingdom
31                              271           China
32                             1281           China
33                              439     Switzerland
34                              691          Canada
35                              940   United States
36                             3250           Japan
37                              516  United Kingdom
38                               13   United States
39                             1163   United States
40                             1209           China
41                             1219           China
42                             1115   United States
43                              662           India
44                              232           Japan
45                              326           China
46                             1065           China
47                              493          Canada
48                              221         Germany
49                             1183  United Kingdom
```

```
industry_group = data.groupby(['Headquarters']).agg({'Company':
pd.Series.count})

mrg_df = data[['Headquarters','Industry']]

industry_group = pd.merge(industry_group, mrg_df, on='Headquarters')

pie = px.pie(industry_group, labels ='Industry', values='Company',
names='Industry', title='Industyr pie')
pie.update_layout(height=1500)
pie.show()
```


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pie.update_layout(height=1500)
pie.show()
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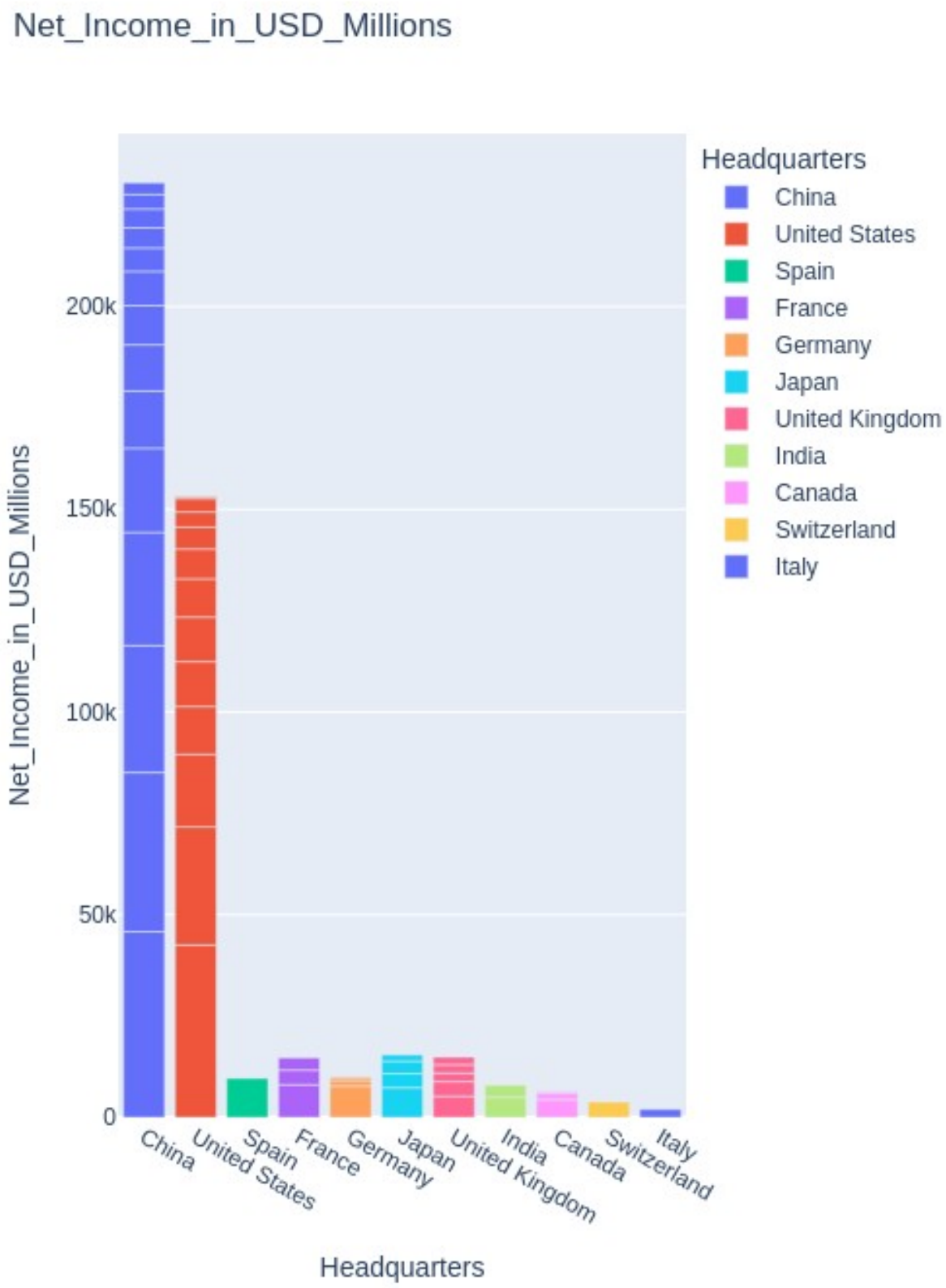
```


```
columns = data.columns.values

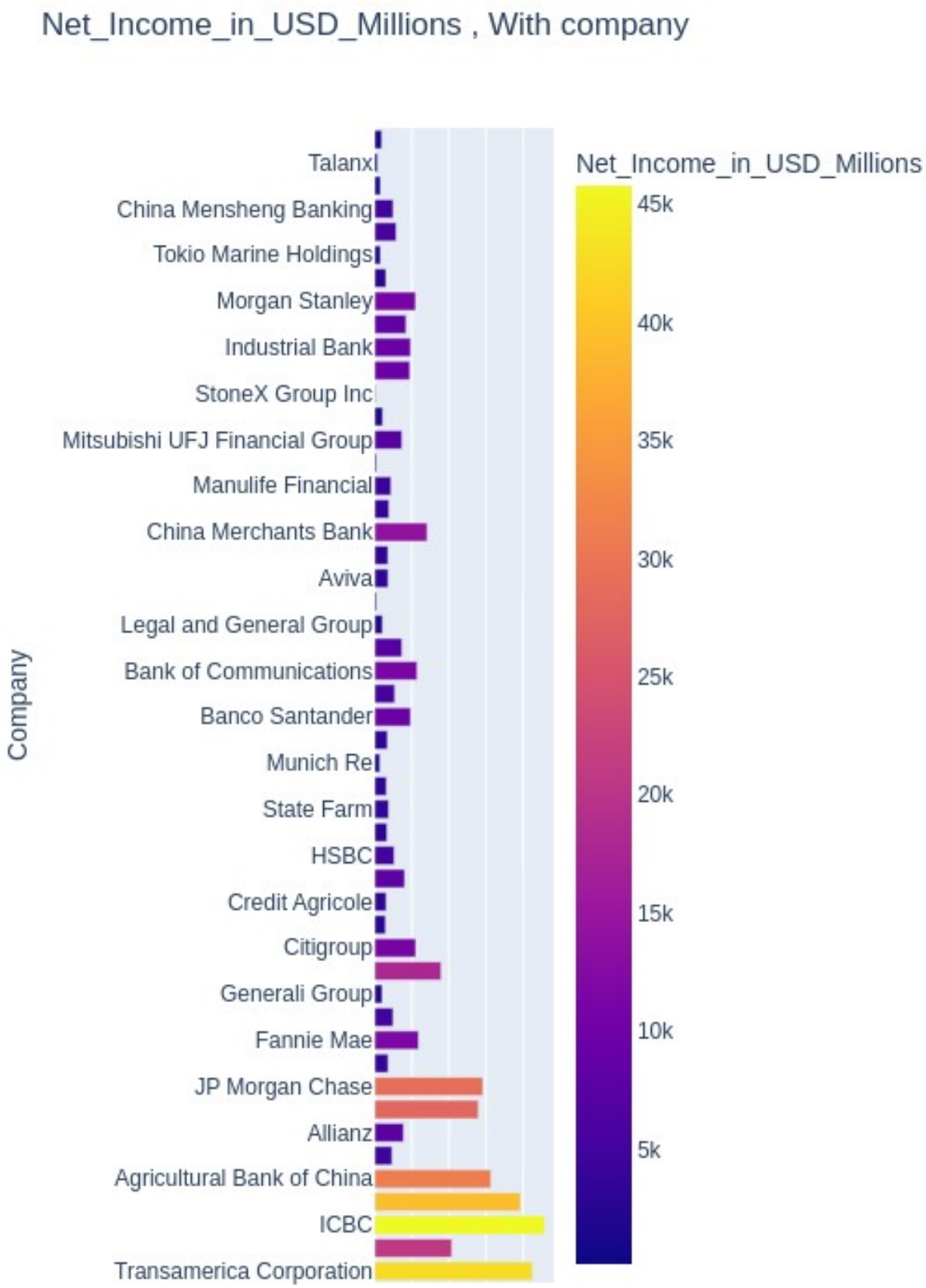
rev_inc_head = data[['Revenue_in_USD_Million',
'Net_Income_in_USD_Millions', 'Headquarters',]]
```

```
rv_inc_hd_sort =
rev_inc_head.sort_values('Net_Income_in_USD_Millions',
ascending=False)

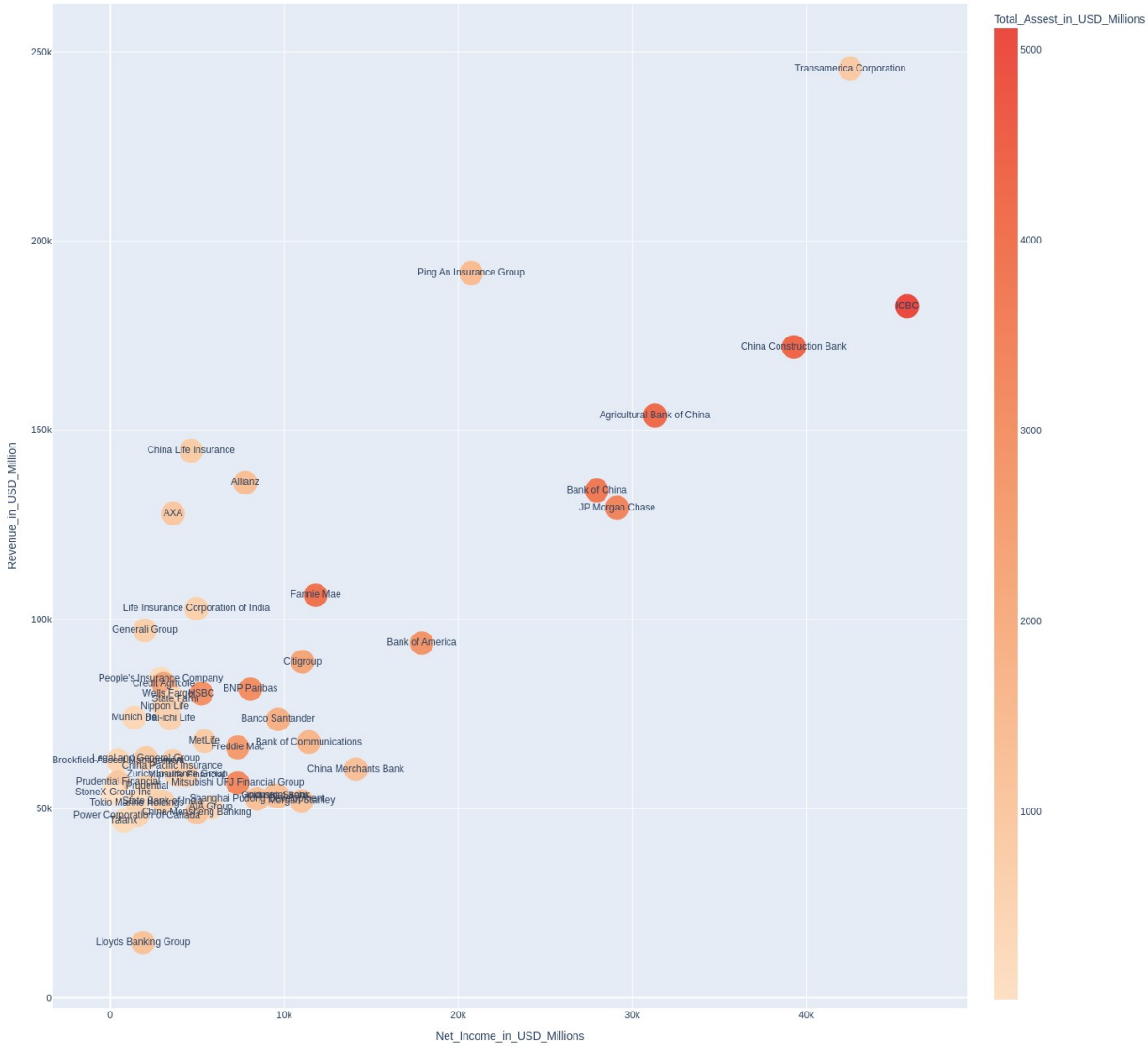
fig = px.bar(rv_inc_hd_sort, x=rv_inc_hd_sort.Headquarters,
y=rv_inc_hd_sort['Net_Income_in_USD_Millions'], color='Headquarters',
color_continuous_scale='GnBu', title='Net_Income_in_USD_Millions')
fig.update_layout(height=700, width=1500)
fig.show()
```


Net_Income_in_USD_Millions
Headquarters
China
United States
Spain
France
Germany
Japan
United Kingdom
India
Canada
Switzerland
Italy
200k
150k
100k
50k
0
Net_Income_in_USD_Millions
China
United States
Spain
France
Germany
Japan
United Kingdom
India
Canada
Switzerland
Italy
Headquarters

```
fig_2 = px.bar(data, x='Net_Income_in_USD_Millions', y='Company',
title='Net_Income_in_USD_Millions      , With company',
color='Net_Income_in_USD_Millions')
fig_2.update_layout(height=800)
fig_2.show()
```

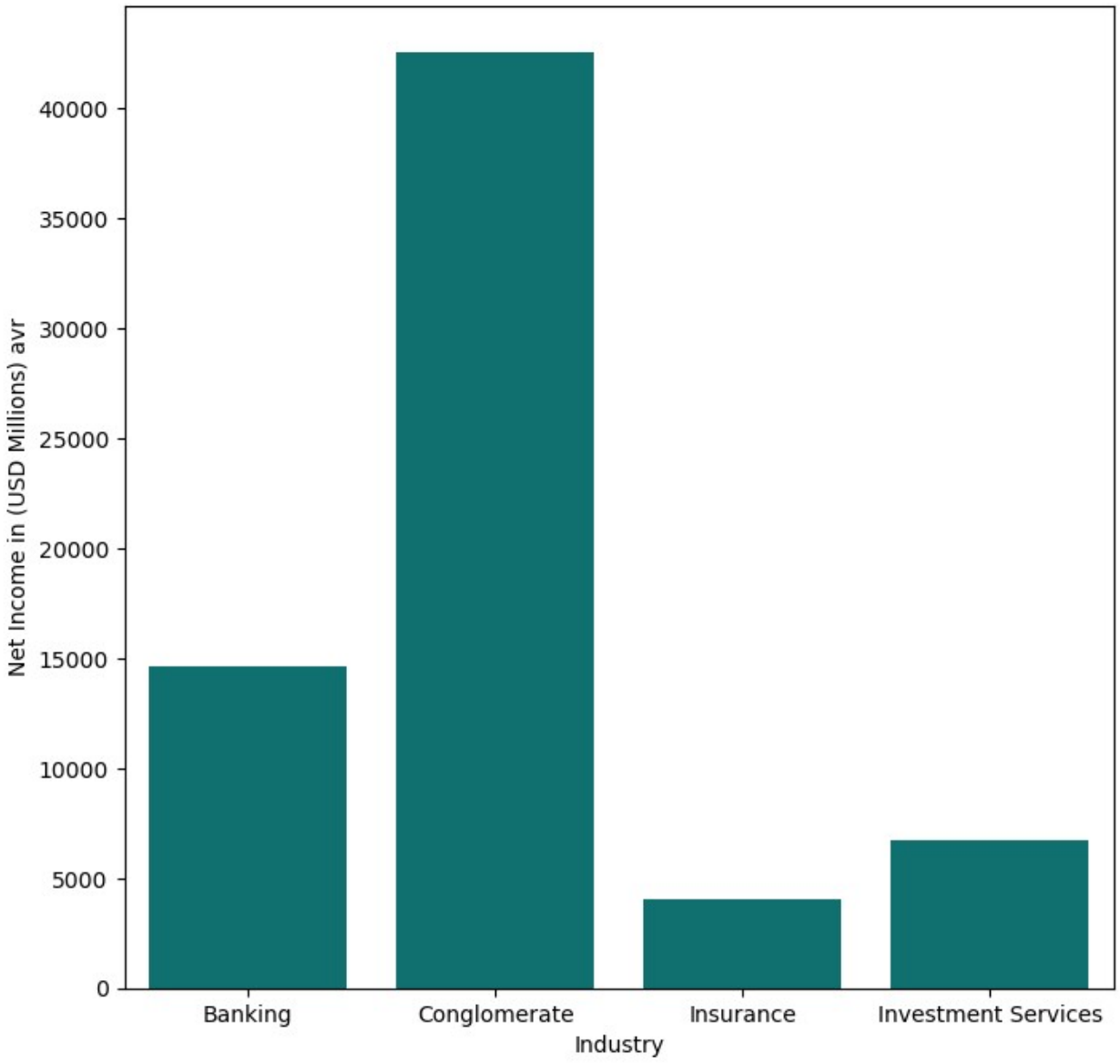

Net_Income_in_USD_Millions , With company
Company
Talanx
China Mensheng Banking
Tokio Marine Holdings
Morgan Stanley
Industrial Bank
StoneX Group Inc
Mitsubishi UFJ Financial Group
Manulife Financial
China Merchants Bank
Aviva
Legal and General Group
Bank of Communications
Banco Santander
Munich Re
State Farm
HSBC
Credit Agricole
Citigroup
Generali Group
Fannie Mae
JP Morgan Chase
Allianz
Agricultural Bank of China
ICBC
Transamerica Corporation
Net_Income_in_USD_Millions
45k
40k
35k
30k
25k
20k
15k
10k
5k

```
fig3 = px.scatter(data,
                  x='Net_Income_in_USD_Millions',
                  y='Revenue_in_USD_Million',
                  color='Total_Assest_in_USD_Millions',
                  hover_name = 'Company',
                  size = 'Net_Income_in_USD_Millions',
                  color_continuous_scale = 'peach',
                 text='Company')
fig3.update_traces(marker=dict(size=30))
fig3.update_layout(height=1400, width=1500)
fig3.show()
```



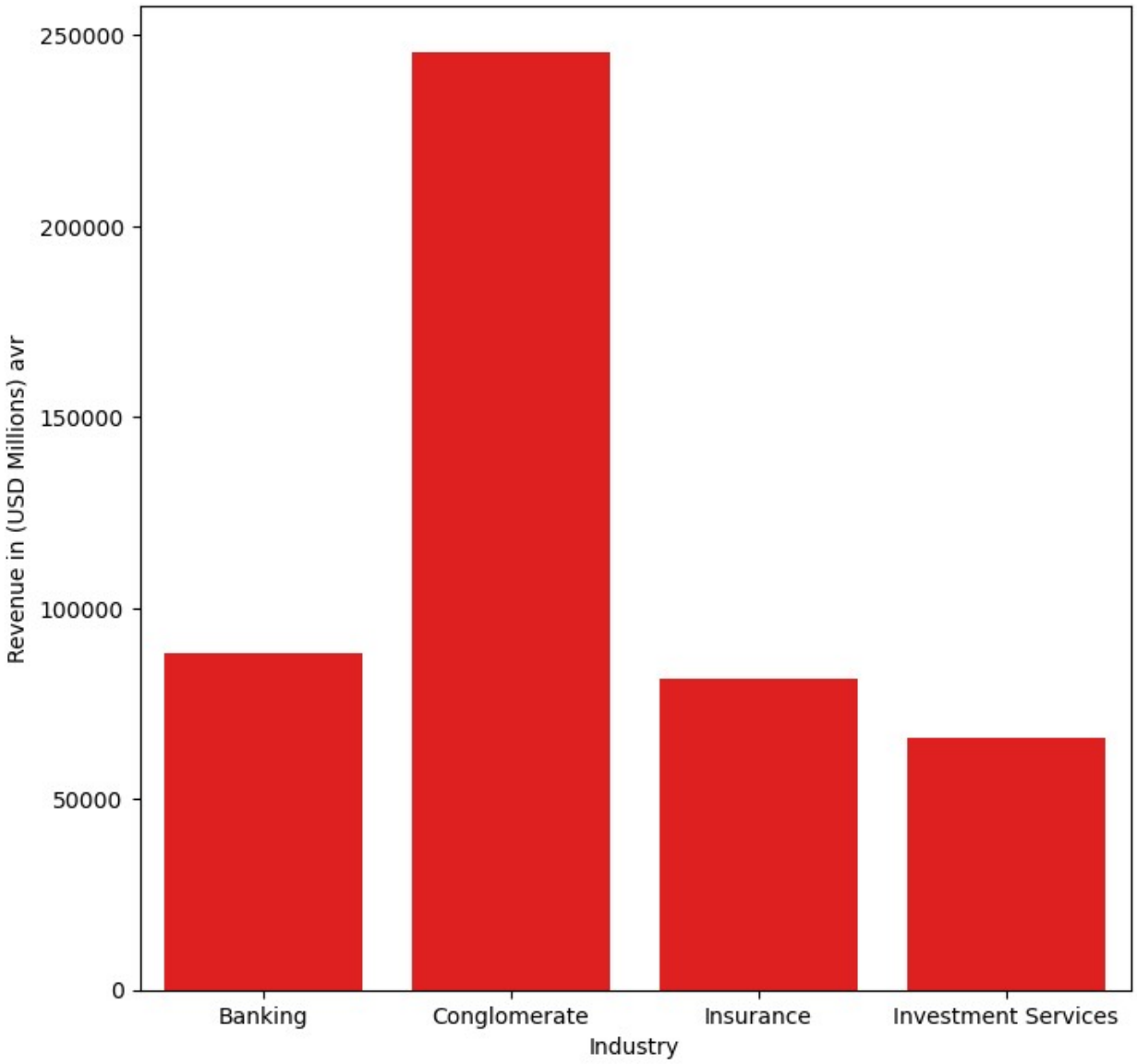
```
industry_net = data.groupby('Industry',
as_index=False).agg({'Net_Income_in_USD_Millions': pd.Series.mean})


plt.figure(figsize=(8, 8))
sns.barplot(industry_net, y='Net_Income_in_USD_Millions',
x='Industry', color='teal')
plt.ylabel('Net Income in (USD Millions) avr')
#plt.savefig('Largest_ fin _serv')
plt.show()
```




```
industry_rev = data.groupby('Industry').agg({'Revenue_in_USD_Million':
pd.Series.mean})
```

```
plt.figure(figsize=(8, 8))
sns.barplot(industry_rev, y='Revenue_in_USD_Million', x='Industry',
color='red')
plt.ylabel('Revenue in (USD Millions) avr')
plt.savefig('Ind_rev')
plt.show()
```




```
data
```

	Rank	Company	Industry	\
0	1	Transamerica Corporation	Conglomerate	
1	2	Ping An Insurance Group	Insurance	
2	3	ICBC	Banking	
3	4	China Construction Bank	Banking	

4	5	Agricultural Bank of China	Banking	
5	6	China Life Insurance	Insurance	
6	7	Allianz	Insurance	
7	8	Bank of China	Banking	
8	9	JP Morgan Chase	Banking	
9	10	AXA	Insurance	
10	11	Fannie Mae	Investment Services	
11	12	Life Insurance Corporation of India	Insurance	
12	13	Generali Group	Insurance	
13	14	Bank of America	Banking	
14	15	Citigroup	Banking	
15	16	People's Insurance Company	Insurance	
16	17	Credit Agricole	Banking	
17	18	BNP Paribas	Banking	
18	19	HSBC	Banking	
19	20	Wells Fargo	Banking	
20	21	State Farm	Insurance	
21	22	Nippon Life	Insurance	
22	23	Munich Re	Insurance	
23	24	Dai-ichi Life	Insurance	
24	25	Banco Santander	Banking	
25	26	MetLife	Insurance	
26	27	Bank of Communications	Banking	
27	28	Freddie Mac	Investment Services	
28	29	Legal and General Group	Insurance	
29	30	Brookfield Assest Management	Investment Services	
30	31	Aviva	Insurance	
31	32	China Pacific Insurance	Insurance	
32	33	China Merchants Bank	Banking	
33	34	Zurich Insurance Group	Insurance	
34	35	Manulife Financial	Insurance	
35	36	Prudential Financial	Insurance	
36	37	Mitsubishi UFJ Financial Group	Banking	
37	38	Prudential	Insurance	
38	39	StoneX Group Inc	Investment Services	
39	40	Goldman Sachs	Investment Services	
40	41	Industrial Bank	Banking	
41	42	Shanghai Pudong Development	Banking	
42	43	Morgan Stanley	Investment Services	
43	44	State Bank of India	Banking	
44	45	Tokio Marine Holdings	Insurance	
45	46	AIA Group	Insurance	
46	47	China Mensheng Banking	Banking	
47	48	Power Corporation of Canada	Insurance	
48	49	Talanx	Insurance	
49	50	Lloyds Banking Group	Banking	

	Revenue_in_USD_Million	Net_Income_in_USD_Millions	\
0	245510	42521	

1	191509	20738
2	182794	45783
3	172000	39282
4	153884	31293
5	144589	4648
6	136173	7756
7	134045	27952
8	129503	29131
9	128011	3605
10	106437	11805
11	102851	4954
12	97128	1987
13	93753	17894
14	88839	11047
15	84290	2903
16	82958	3067
17	81632	8052
18	80429	5229
19	80303	3301
20	78898	3738
21	76984	3127
22	74074	1379
23	73841	3431
24	73630	9639
25	67842	5407
26	67605	11409
27	66228	7326
28	63324	2061
29	62752	448
30	62579	3588
31	61185	3562
32	60433	14107
33	59001	3834
34	58840	4377
35	57033	448
36	56838	7329
37	55973	2118
38	54139	169
39	53498	9459
40	53313	9655
41	52628	8443
42	52047	10996
43	51919	3018
44	51516	1526
45	50359	5779
46	49076	4972
47	48183	1525
48	46788	766
49	14592	1882

	Total_Assest_in_USD_Millions	Headquarters
0	873	United States
1	1460	China
2	5110	China
3	4311	China
4	4169	China
5	776	China
6	1297	Germany
7	3739	China
8	3386	United States
9	984	France
10	3985	United States
11	630	India
12	667	Italy
13	2819	United States
14	2260	United States
15	192	China
16	2399	France
17	3045	France
18	2984	United Kingdom
19	1955	United States
20	299	United States
21	773	Japan
22	364	Germany
23	574	Japan
24	1845	Spain
25	795	United States
26	1639	China
27	2627	United States
28	779	United Kingdom
29	343	Canada
30	655	United Kingdom
31	271	China
32	1281	China
33	439	Switzerland
34	691	Canada
35	940	United States
36	3250	Japan
37	516	United Kingdom
38	13	United States
39	1163	United States
40	1209	China
41	1219	China
42	1115	United States
43	662	India
44	232	Japan
45	326	China
46	1065	China
47	493	Canada

```
48                             221         Germany
49                            1183  United Kingdom
```

```
data.Revenue_in_USD_Million.describe()
```

```
count       50.00
mean     85435.12
std      44689.15
min      14592.00
25%      56189.25
50%      70736.00
75%      96284.25
max     245510.00
Name: Revenue_in_USD_Million, dtype: float64
```

```
data.Net_Income_in_USD_Millions.describe()
```

```
count      50.00
mean     9369.32
std     11101.19
min       169.00
25%      3030.25
50%      4963.00
75%     10660.75
max     45783.00
Name: Net_Income_in_USD_Millions, dtype: float64
```

```
data.Total_Assest_in_USD_Millions.describe()
```

```
count     50.00
mean    1480.46
std     1282.84
min       13.00
25%      588.00
50%     1024.50
75%     2183.75
max     5110.00
Name: Total_Assest_in_USD_Millions, dtype: float64
```