

# GDP Assignment

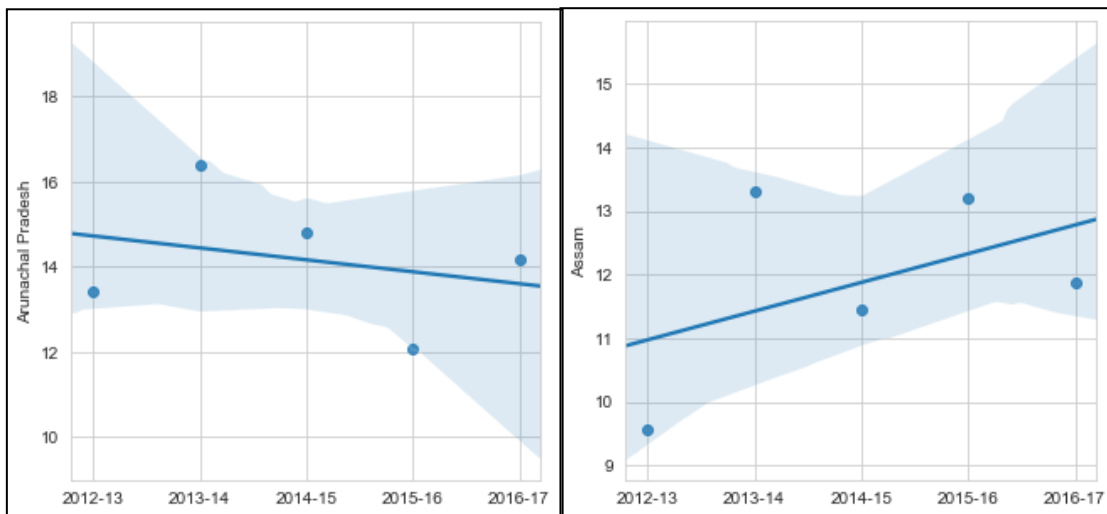
## Part-I: GDP Analysis of the Indian States

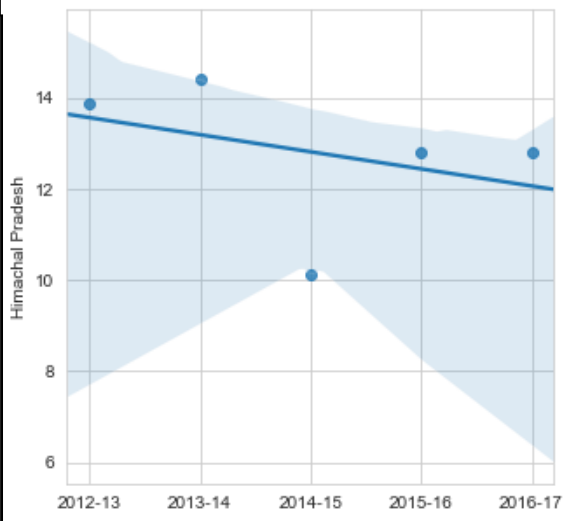
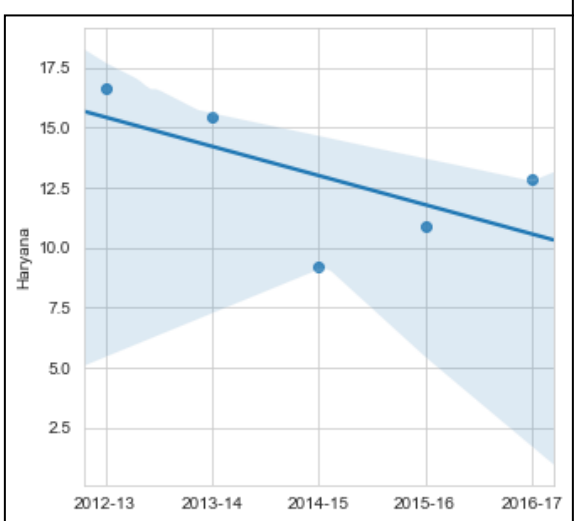
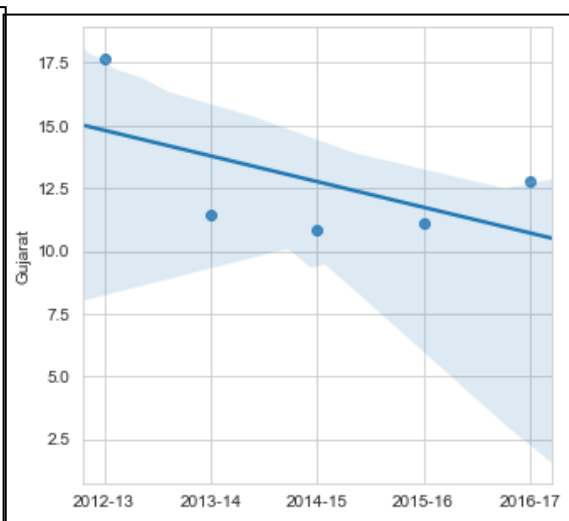
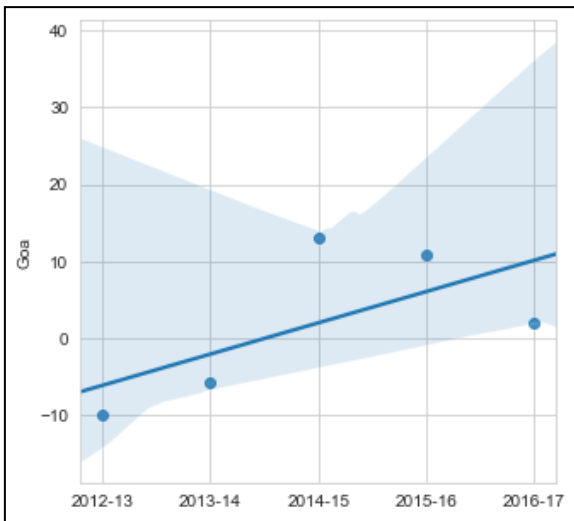
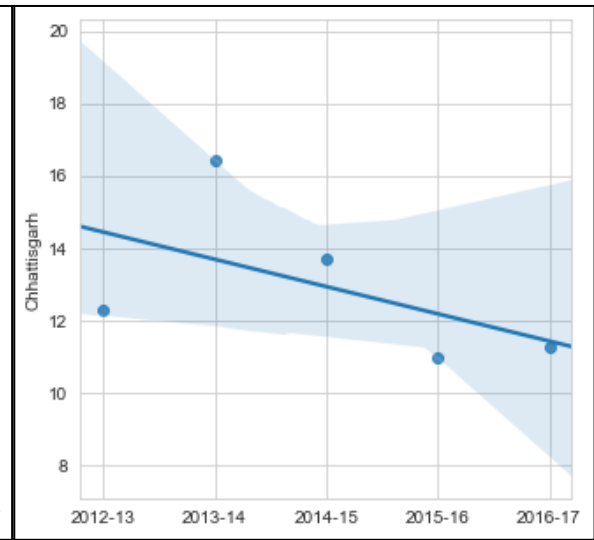
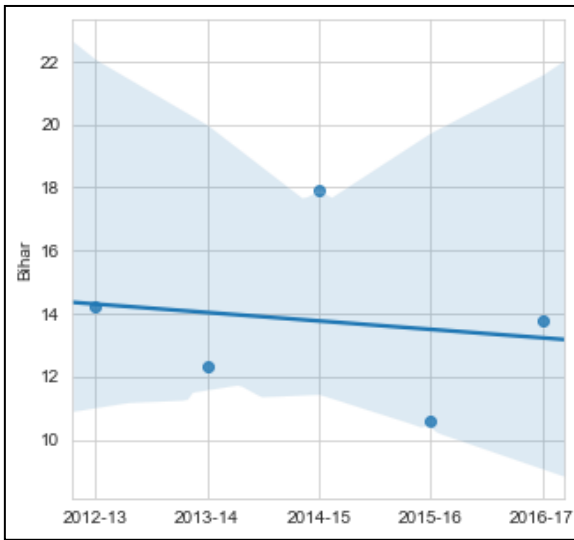
### Part I-A:

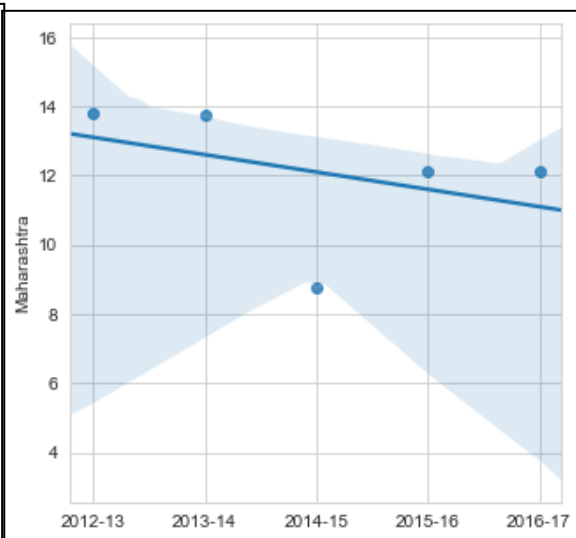
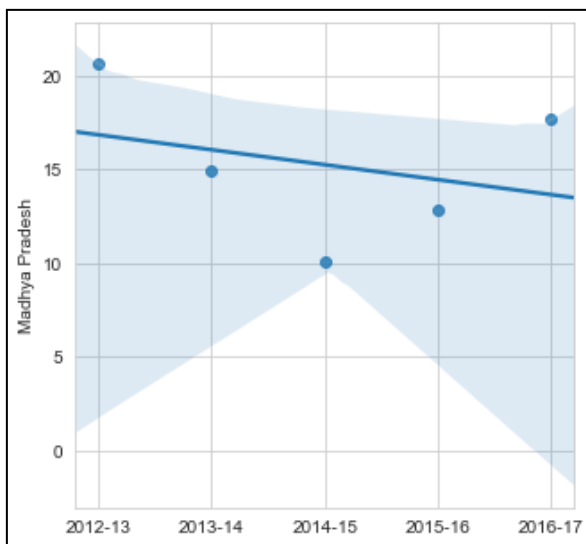
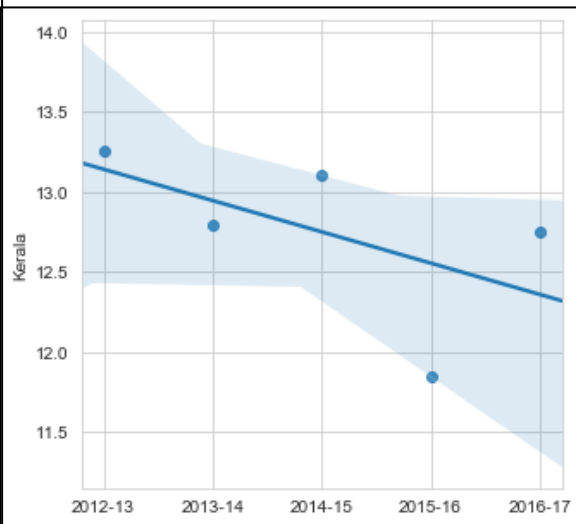
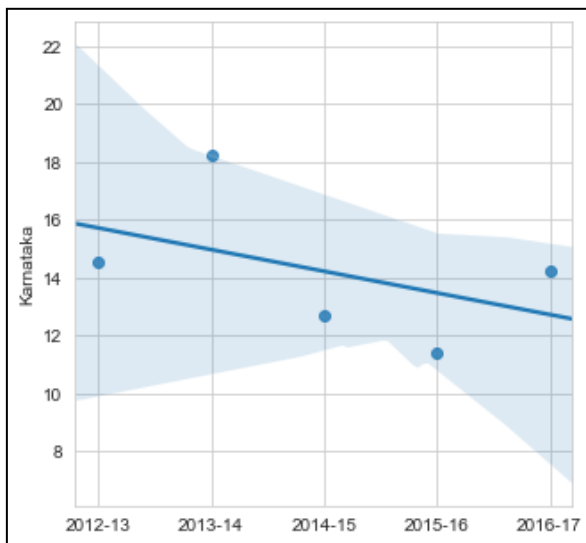
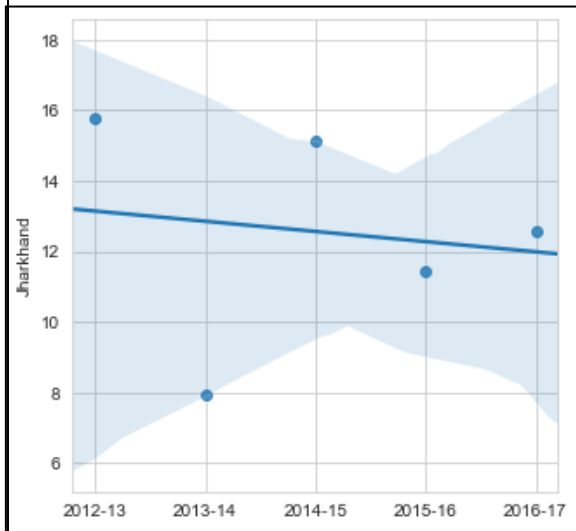
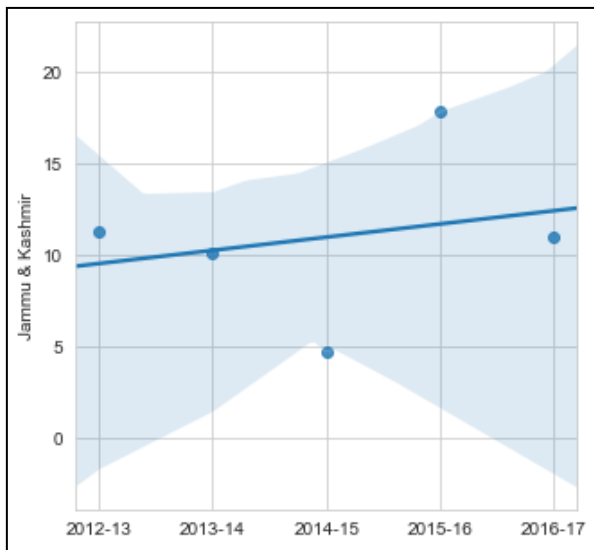
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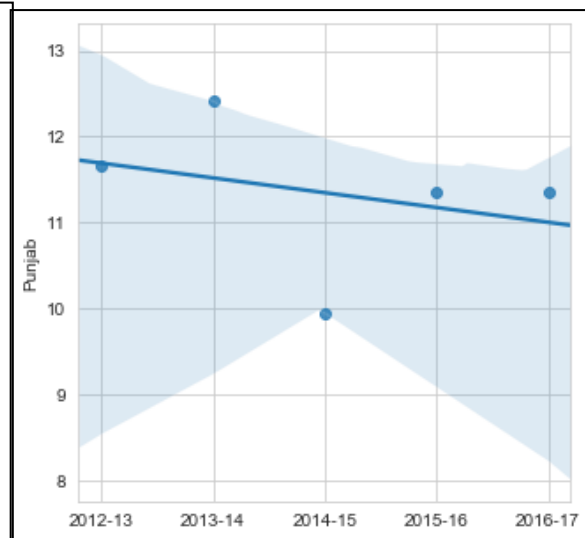
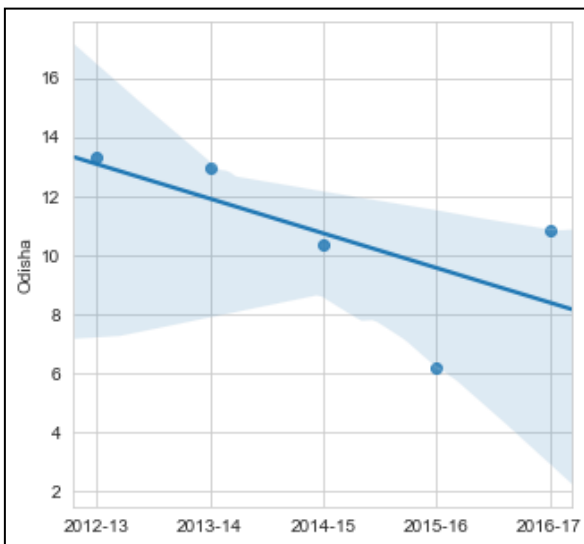
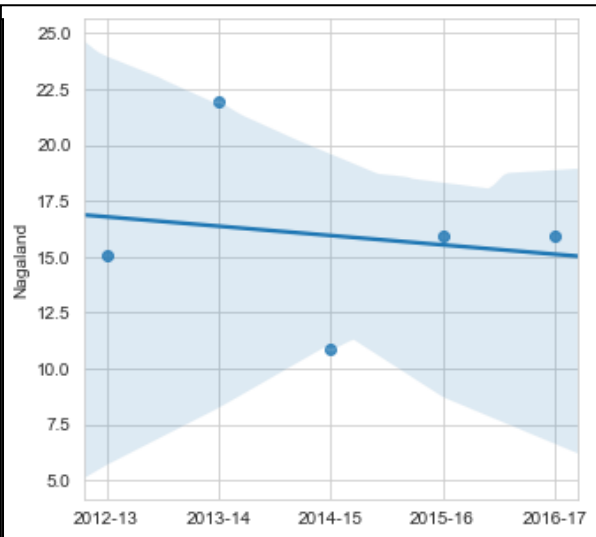
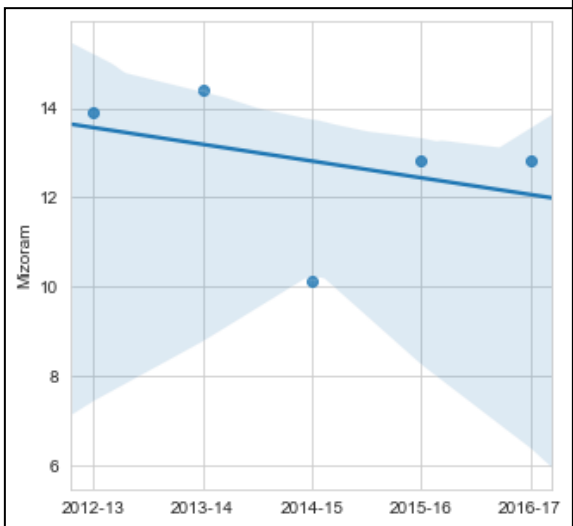
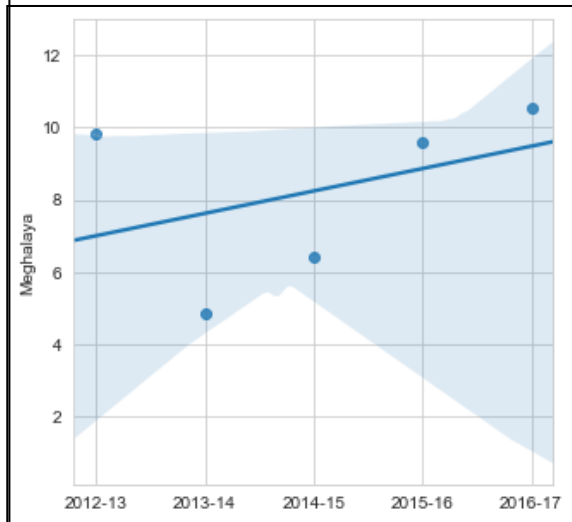
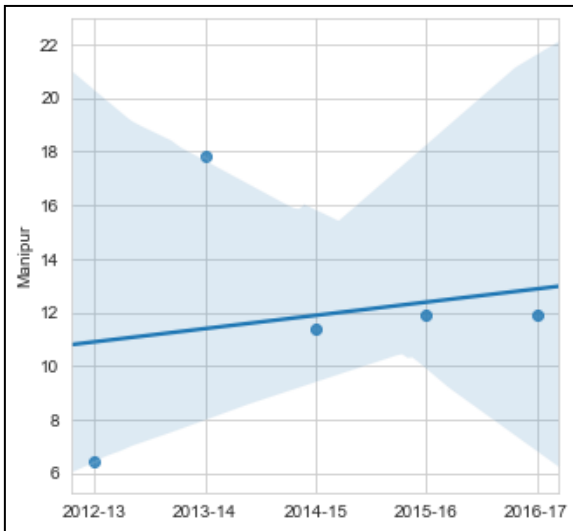
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'Karnataka', 'Kerala', 'Madhya Pradesh', 'Maharashtra', 'Manipur',  
'Meghalaya', 'Mizoram', 'Nagaland', 'Odisha', 'Punjab', 'Rajasthan',  
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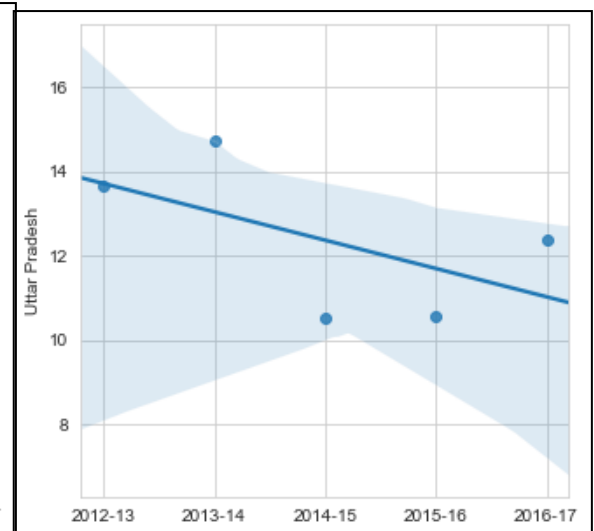
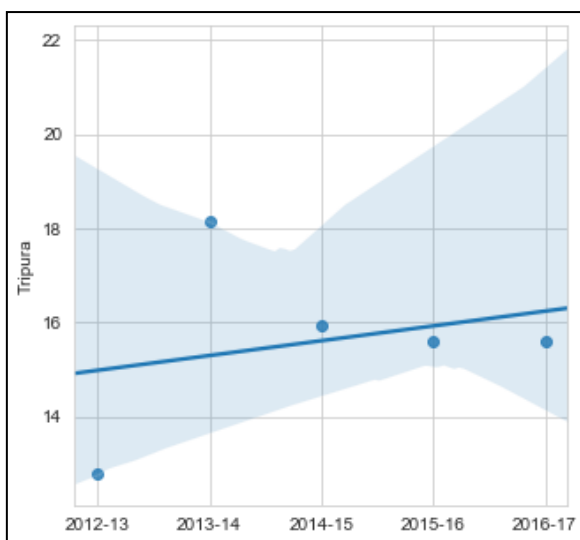
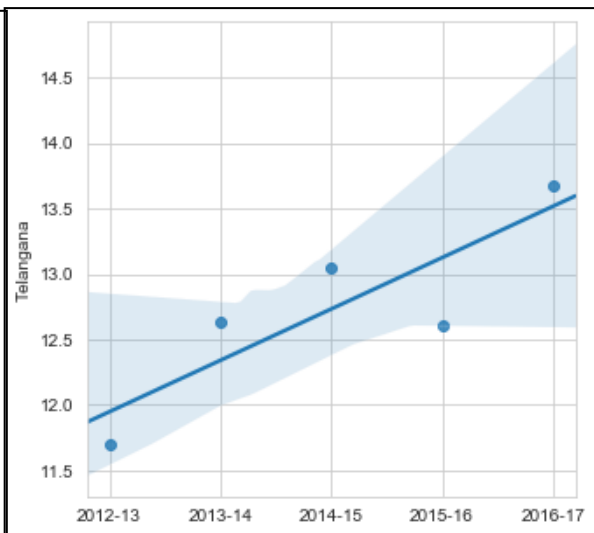
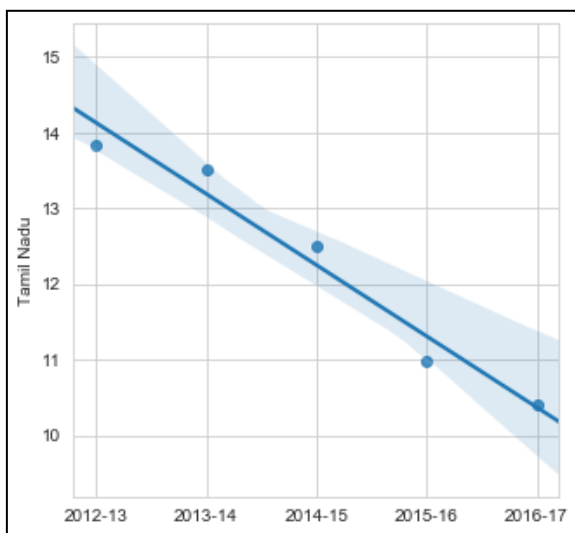
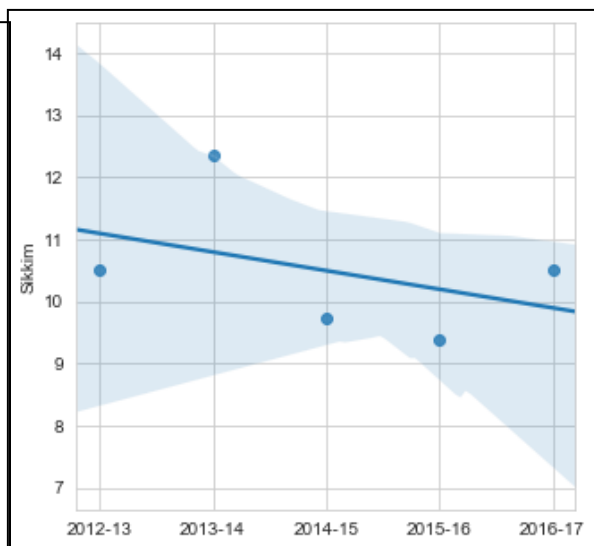
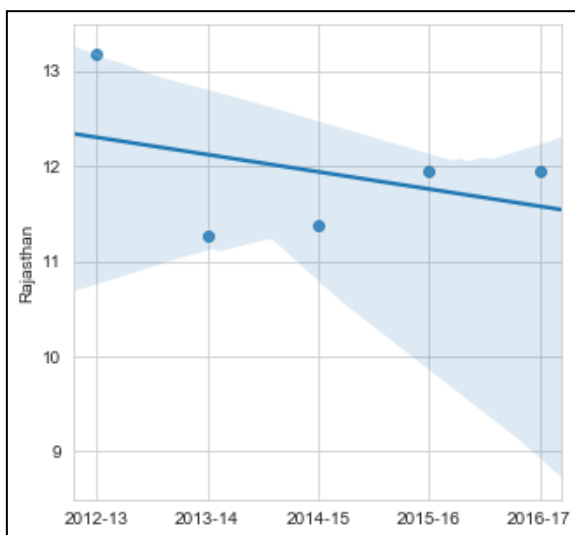
#### Growth Rate (% Growth over previous year) for all the states:

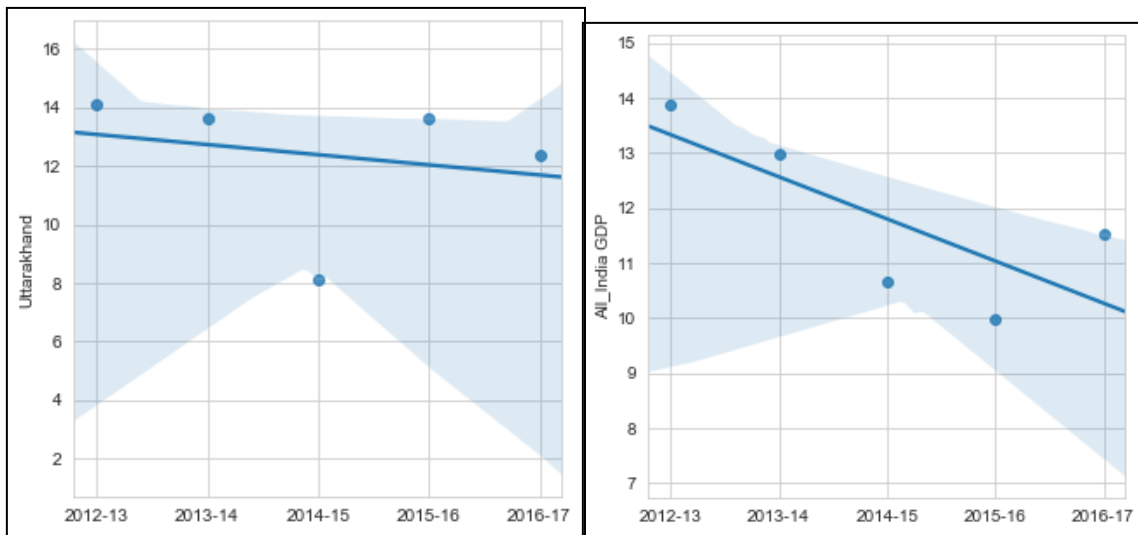




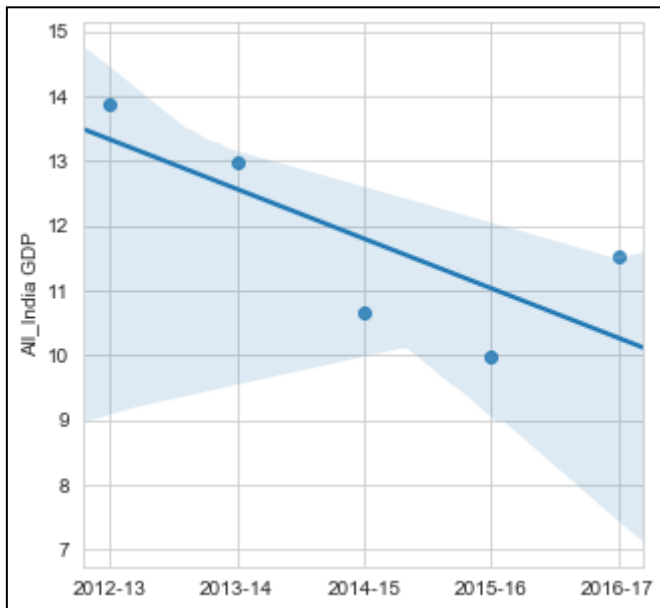




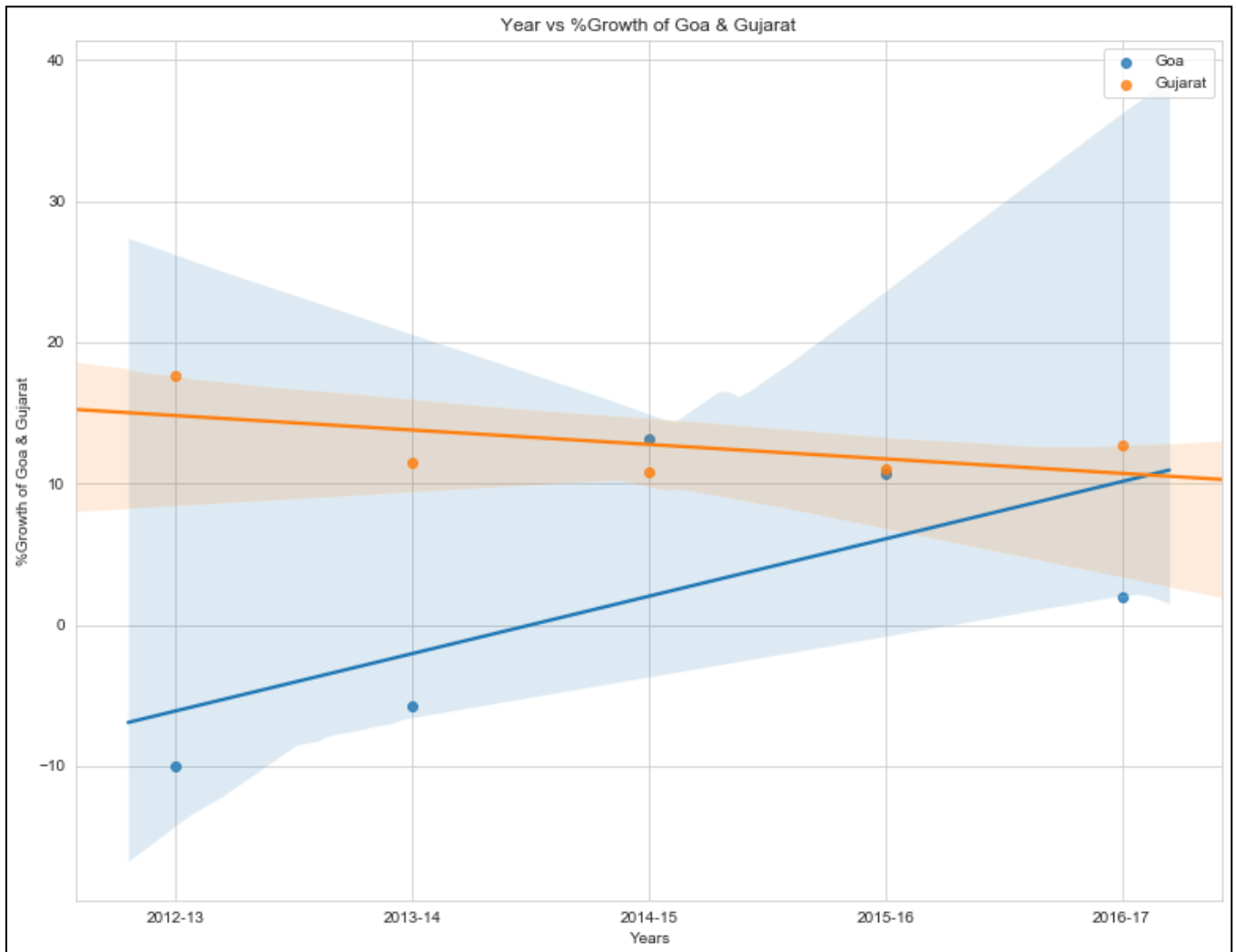




## Growth Rate(%Growth) for all India:



## Growth Rate comparison of Goa and Gujarat:



The steeper the line, growth rate is more.

1. Here, the blue line(Goa) represents the increase in growth rate.
2. The orange line(Gujarat) represents decrease in growth rate.
3. It is concluded that Goa has a greater increase in growth rate.

## Rank top 3 fastest and 3 slowest-growing states:

### Growth rate mean

Andhra Pradesh	13.036000
Arunachal Pradesh	14.162500
Assam	11.877500
Bihar	13.765000
Chhattisgarh	12.934000
Goa	2.020000
Gujarat	12.767500
Haryana	12.998000
Himachal Pradesh	12.816667
Jammu & Kashmir	11.002500
Jharkhand	12.567500
Karnataka	14.230000
Kerala	12.752500
Madhya Pradesh	15.266000
Maharashtra	12.103333
Manipur	11.890000
Meghalaya	8.244000
Mizoram	12.816667
Nagaland	15.953333
Odisha	10.740000
Punjab	11.346667
Rajasthan	11.940000
Sikkim	10.492500
Tamil Nadu	12.250000
Telangana	12.732000
Tripura	15.613333
Uttar Pradesh	12.367500
Uttarakhand	12.382500
All_India GDP	11.798000

### Growth rate Variance

Andhra Pradesh	7.976480
Arunachal Pradesh	2.563969
Assam	2.332069
Bihar	7.431525
Chhattisgarh	4.971480
Goa	101.267150
Gujarat	8.130319
Haryana	9.543070
Himachal Pradesh	2.721817
Jammu & Kashmir	22.090569



Jharkhand	9.936069
Karnataka	6.606500
Kerala	0.300319
Madhya Pradesh	17.064430
Maharashtra	4.142017
Manipur	16.281800
Meghalaya	6.075580
Mizoram	2.721817
Nagaland	15.804317
Odisha	8.123900
Punjab	0.801817
Rajasthan	0.577850
Sikkim	1.315719
Tamil Nadu	2.298350
Telangana	0.517820
Tripura	3.626467
Uttar Pradesh	3.467919
Uttarakhand	6.093919
All_India GDP	2.572370

For identifying the fastest growing states and slowest growing states, growth rate variance has been calculated.

Top 3 fastest growing states:

1. Goa
2. Jammu & Kashmir
3. Madhya Pradesh

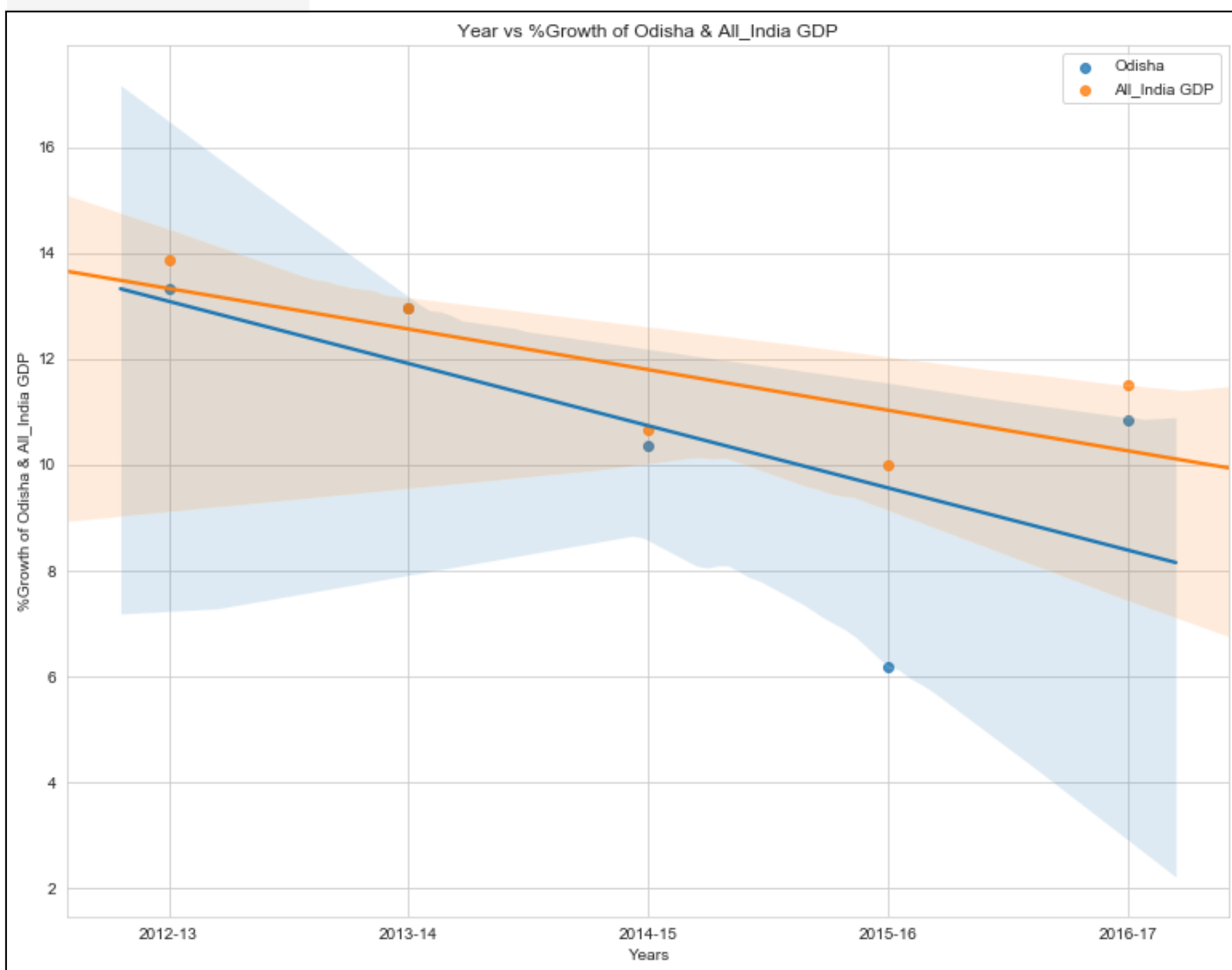
Top 3 slowest growing states:

1. Kerala
2. Telangana
3. Rajasthan

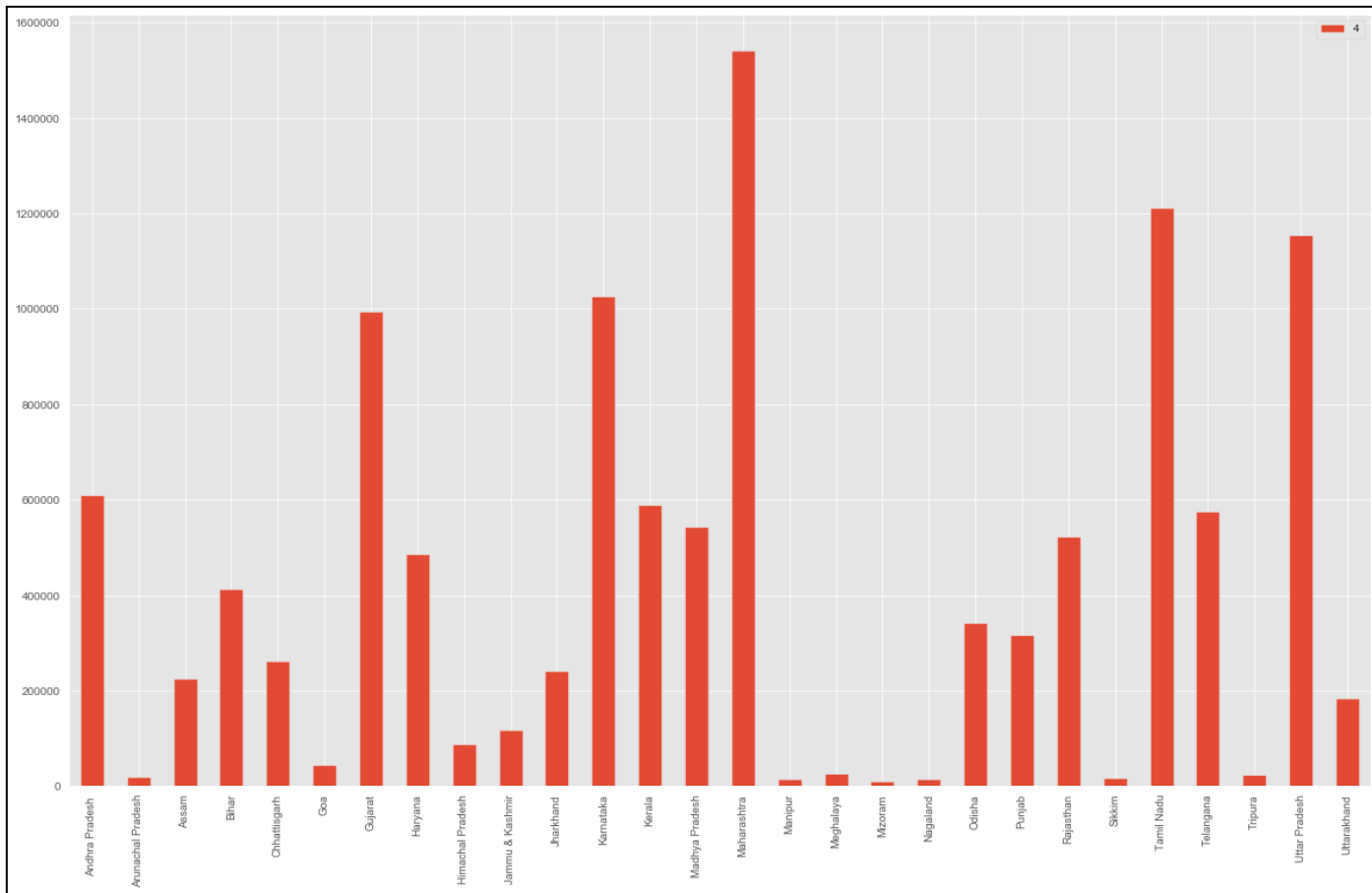
# Comparison of growth rate of Odisha and National growth rate

Nation's Growth Rate: 11.79% Odisha's Growth Rate: 10.74%

	Odisha	All_India GDP
6	13.34	13.86
7	12.95	12.97
8	10.37	10.65
9	6.19	9.99
10	10.85	11.52



## The total GDP of the states for the year 2015-16:



## Top 5 and the bottom 5 states based on total GDP:

### Top 5 states:

1. Maharashtra
2. Tamil Nadu
3. Uttar Pradesh
4. Karnataka
5. Gujarat

### Bottom 5 states:

6. Mizoram
7. Nagaland
8. Manipur
9. Sikkim
10. Arunachal Pradesh

### **The states which are performing poorly are such as :**

11. Mizoram
12. Nagaland
13. Manipur
14. Sikkim
15. Arunachal Pradesh
16. Tripura
17. Goa
18. Meghalaya

### **Insights based on this graph :**

1. The North Eastern states are performing poorly compared to other states.
2. Goa being a very small state is also performing poorly.
3. The Northern states such as Himachal Pradesh, Jammu & Kashmir, Uttarakhand are also not performing very well.

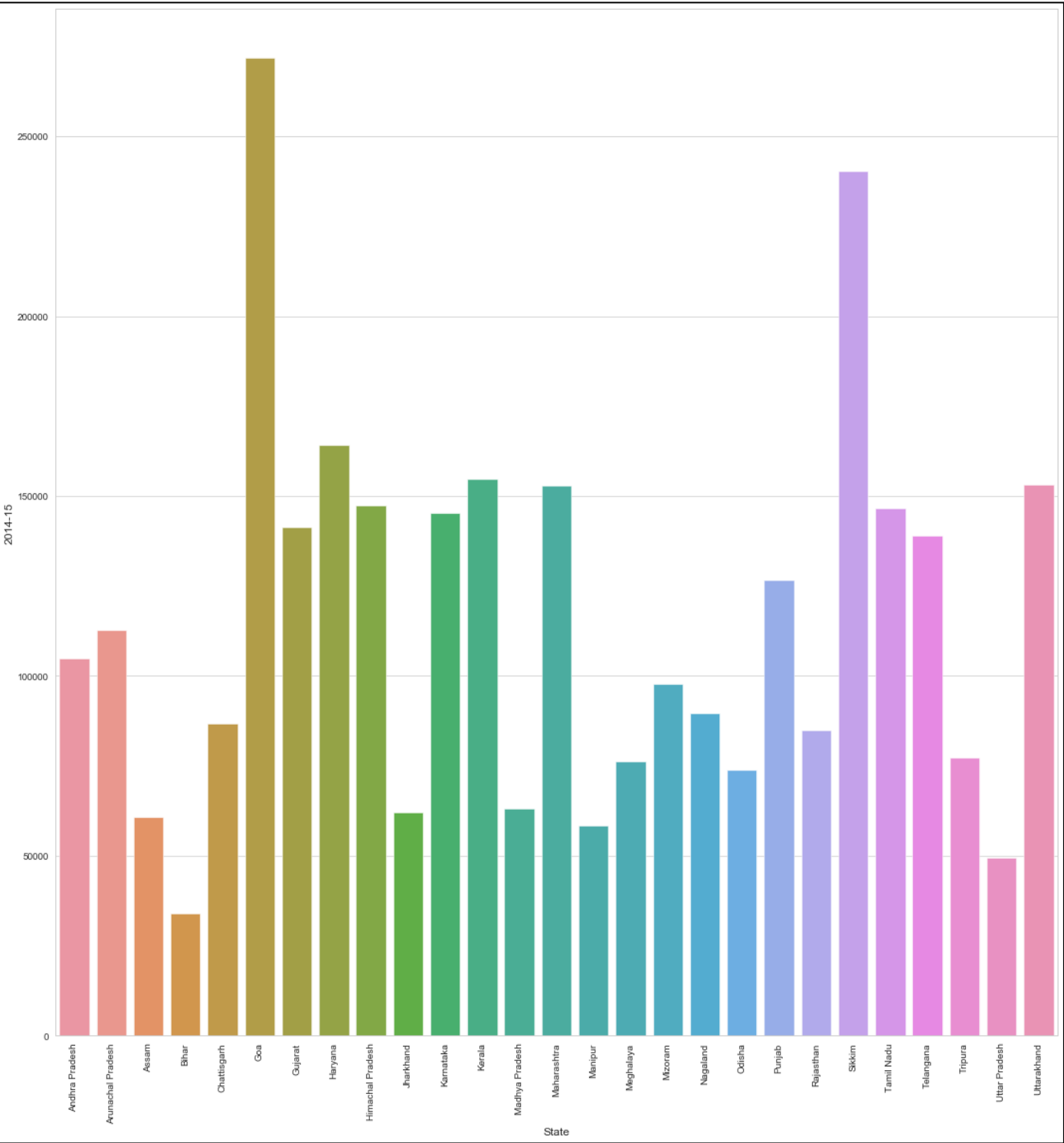
The above states should focus heavily on the tourism sector to boost up the GDP.

## Part I-B:

### Per Capita GSDP (For all states):

	State	Item	2014-15
32	Andhra Pradesh	Per Capita GSDP (Rs.)	104977.0
65	Arunachal Pradesh	Per Capita GSDP (Rs.)	112718.0
98	Assam	Per Capita GSDP (Rs.)	60621.0
131	Bihar	Per Capita GSDP (Rs.)	33954.0
164	Chhattisgarh	Per Capita GSDP (Rs.)	86860.0
197	Goa	Per Capita GSDP (Rs.)	271793.0
230	Gujarat	Per Capita GSDP (Rs.)	141263.0
263	Haryana	Per Capita GSDP (Rs.)	164077.0
296	Himachal Pradesh	Per Capita GSDP (Rs.)	147330.0
329	Jharkhand	Per Capita GSDP (Rs.)	62091.0
362	Karnataka	Per Capita GSDP (Rs.)	145141.0
395	Kerala	Per Capita GSDP (Rs.)	154778.0
428	Madhya Pradesh	Per Capita GSDP (Rs.)	62989.0
461	Maharashtra	Per Capita GSDP (Rs.)	152853.0
494	Manipur	Per Capita GSDP (Rs.)	58442.0
527	Meghalaya	Per Capita GSDP (Rs.)	76228.0
560	Mizoram	Per Capita GSDP (Rs.)	97687.0
593	Nagaland	Per Capita GSDP (Rs.)	89607.0
626	Odisha	Per Capita GSDP (Rs.)	73979.0
659	Punjab	Per Capita GSDP (Rs.)	126606.0
692	Rajasthan	Per Capita GSDP (Rs.)	84837.0
725	Sikkim	Per Capita GSDP (Rs.)	240274.0
758	Tamil Nadu	Per Capita GSDP (Rs.)	146503.0
791	Telangana	Per Capita GSDP (Rs.)	139035.0
824	Tripura	Per Capita GSDP (Rs.)	77358.0
857	Uttar Pradesh	Per Capita GSDP (Rs.)	49450.0
890	Uttarakhand	Per Capita GSDP (Rs.)	153076.0

Plot the GDP per capita for all the states:



## Per Capita GSDP sorted in an ascending order:

	State	Item	2014-15
131	Bihar	Per Capita GSDP (Rs.)	33954.0
857	Uttar Pradesh	Per Capita GSDP (Rs.)	49450.0
494	Manipur	Per Capita GSDP (Rs.)	58442.0
98	Assam	Per Capita GSDP (Rs.)	60621.0
329	Jharkhand	Per Capita GSDP (Rs.)	62091.0
428	Madhya Pradesh	Per Capita GSDP (Rs.)	62989.0
626	Odisha	Per Capita GSDP (Rs.)	73979.0
527	Meghalaya	Per Capita GSDP (Rs.)	76228.0
824	Tripura	Per Capita GSDP (Rs.)	77358.0
692	Rajasthan	Per Capita GSDP (Rs.)	84837.0
164	Chattisgarh	Per Capita GSDP (Rs.)	86860.0
593	Nagaland	Per Capita GSDP (Rs.)	89607.0
560	Mizoram	Per Capita GSDP (Rs.)	97687.0
32	Andhra Pradesh	Per Capita GSDP (Rs.)	104977.0
65	Arunachal Pradesh	Per Capita GSDP (Rs.)	112718.0
659	Punjab	Per Capita GSDP (Rs.)	126606.0
791	Telangana	Per Capita GSDP (Rs.)	139035.0
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296	Himachal Pradesh	Per Capita GSDP (Rs.)	147330.0
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395	Kerala	Per Capita GSDP (Rs.)	154778.0
263	Haryana	Per Capita GSDP (Rs.)	164077.0
725	Sikkim	Per Capita GSDP (Rs.)	240274.0
197	Goa	Per Capita GSDP (Rs.)	271793.0

## Top 5 states based on per capita GDP:

	State	Item	2014-15
890	Uttarakhand	Per Capita GSDP (Rs.)	153076.0
395	Kerala	Per Capita GSDP (Rs.)	154778.0
263	Haryana	Per Capita GSDP (Rs.)	164077.0
725	Sikkim	Per Capita GSDP (Rs.)	240274.0
197	Goa	Per Capita GSDP (Rs.)	271793.0

Top 5 states based on per capita GDP:

1. Goa
2. Sikkim
3. Haryana
4. Kerala
5. Uttarakhand

## Bottom 5 states based on per capita GDP:

	State	Item	2014-15
131	Bihar	Per Capita GSDP (Rs.)	33954.0
857	Uttar Pradesh	Per Capita GSDP (Rs.)	49450.0
494	Manipur	Per Capita GSDP (Rs.)	58442.0
98	Assam	Per Capita GSDP (Rs.)	60621.0
329	Jharkhand	Per Capita GSDP (Rs.)	62091.0

Bottom 5 states based on per capita GDP:

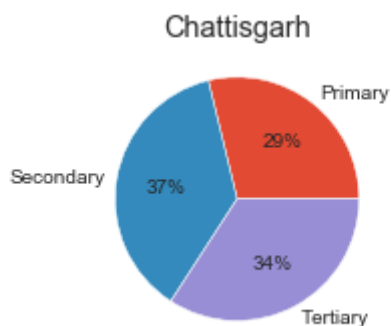
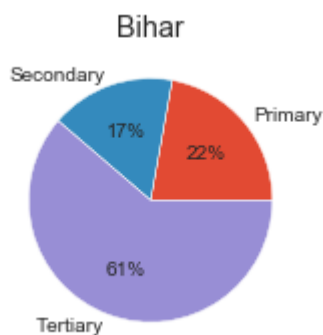
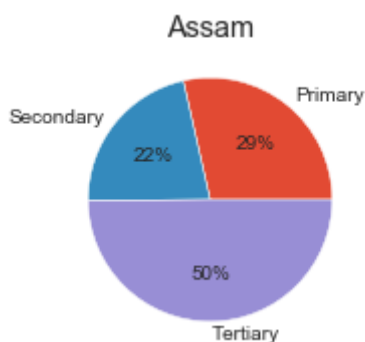
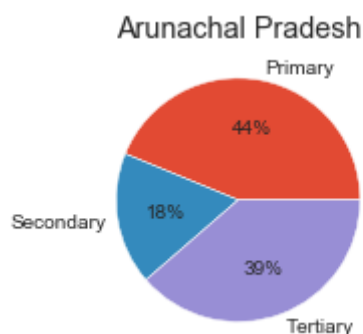
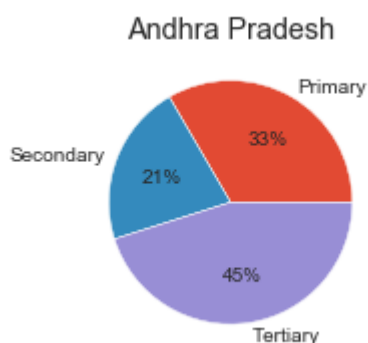
1. Bihar
2. Uttar Pradesh
3. Manipur
4. Assam
5. Jharkhand



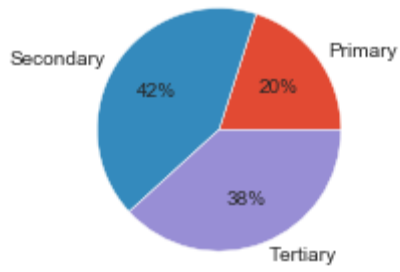
## Ratio of the highest per capita GDP(Goa) to the lowest per capita GDP(Bihar):

The ratio of the highest per capita GDP(Goa) to the lowest per capita GDP(Bihar):  
8.004741709371503

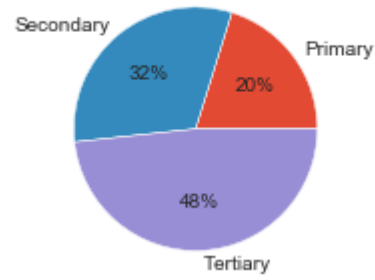
## Percentage contribution of the primary, secondary and tertiary sectors as a percentage of the total GDP for all the states:



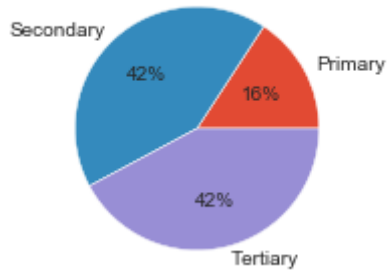
Gujarat



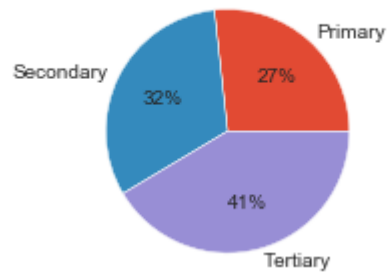
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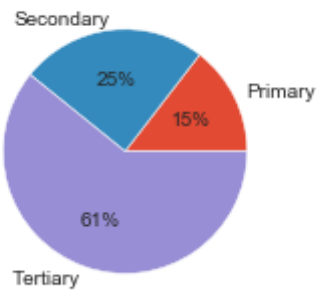
Himachal Pradesh



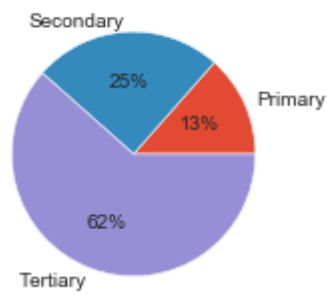
Jharkhand



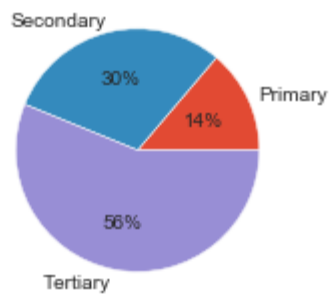
Karnataka



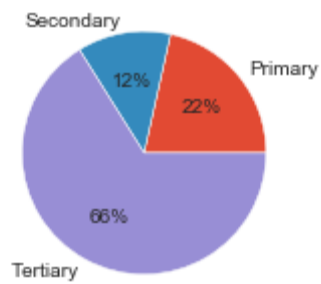
Kerala



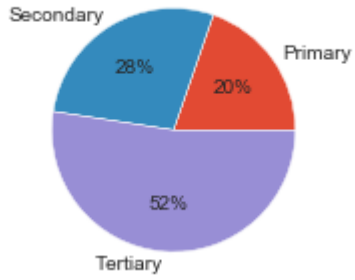
Maharashtra



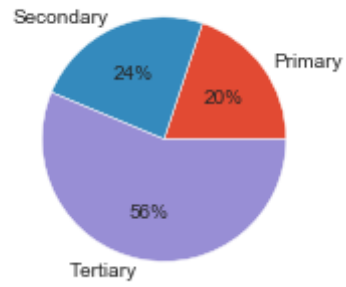
Manipur



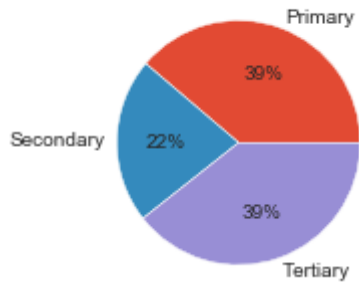
Meghalaya



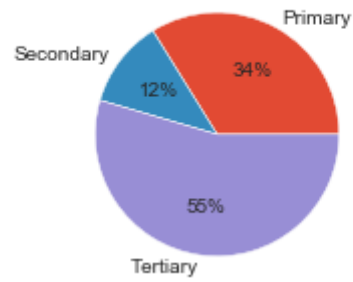
Mizoram



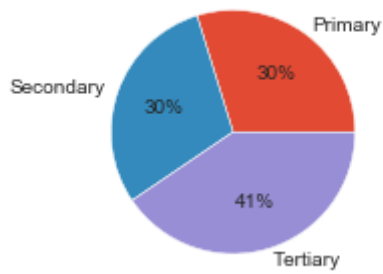
Madhya Pradesh



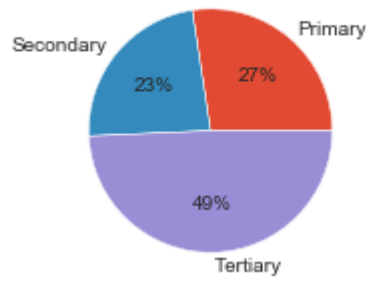
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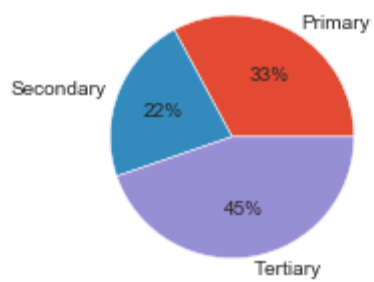
Odisha



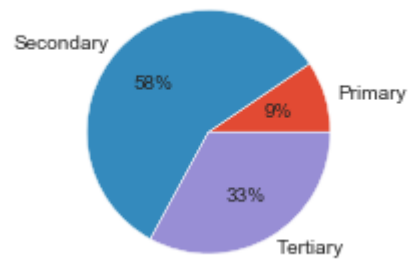
Punjab

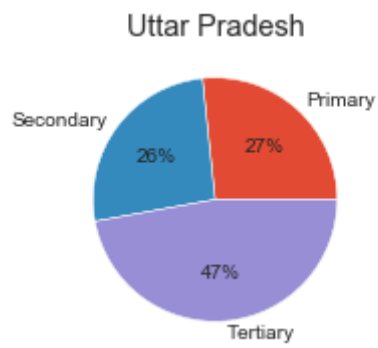
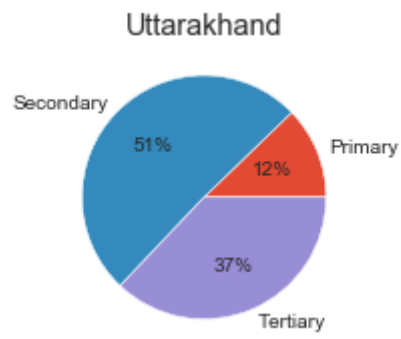
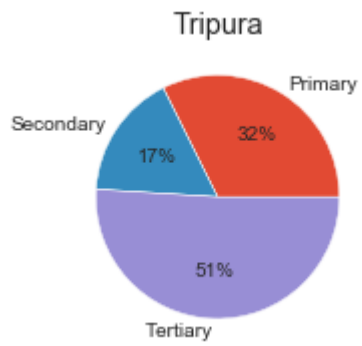
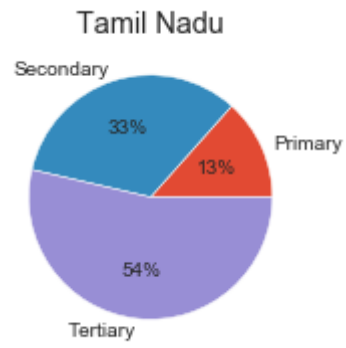
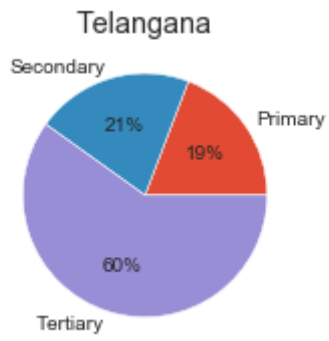


Rajasthan



Sikkim





# Categorise the states into four groups based on the GDP per capita

## C1

	State	Item	2014-15
395	Kerala	Per Capita GSDP (Rs.)	154778.0
263	Haryana	Per Capita GSDP (Rs.)	164077.0
725	Sikkim	Per Capita GSDP (Rs.)	240274.0
197	Goa	Per Capita GSDP (Rs.)	271793.0

## C2

	State	Item	2014-15
65	Arunachal Pradesh	Per Capita GSDP (Rs.)	112718.0
659	Punjab	Per Capita GSDP (Rs.)	126606.0
791	Telangana	Per Capita GSDP (Rs.)	139035.0
230	Gujarat	Per Capita GSDP (Rs.)	141263.0
362	Karnataka	Per Capita GSDP (Rs.)	145141.0
758	Tamil Nadu	Per Capita GSDP (Rs.)	146503.0
296	Himachal Pradesh	Per Capita GSDP (Rs.)	147330.0
461	Maharashtra	Per Capita GSDP (Rs.)	152853.0
890	Uttarakhand	Per Capita GSDP (Rs.)	153076.0

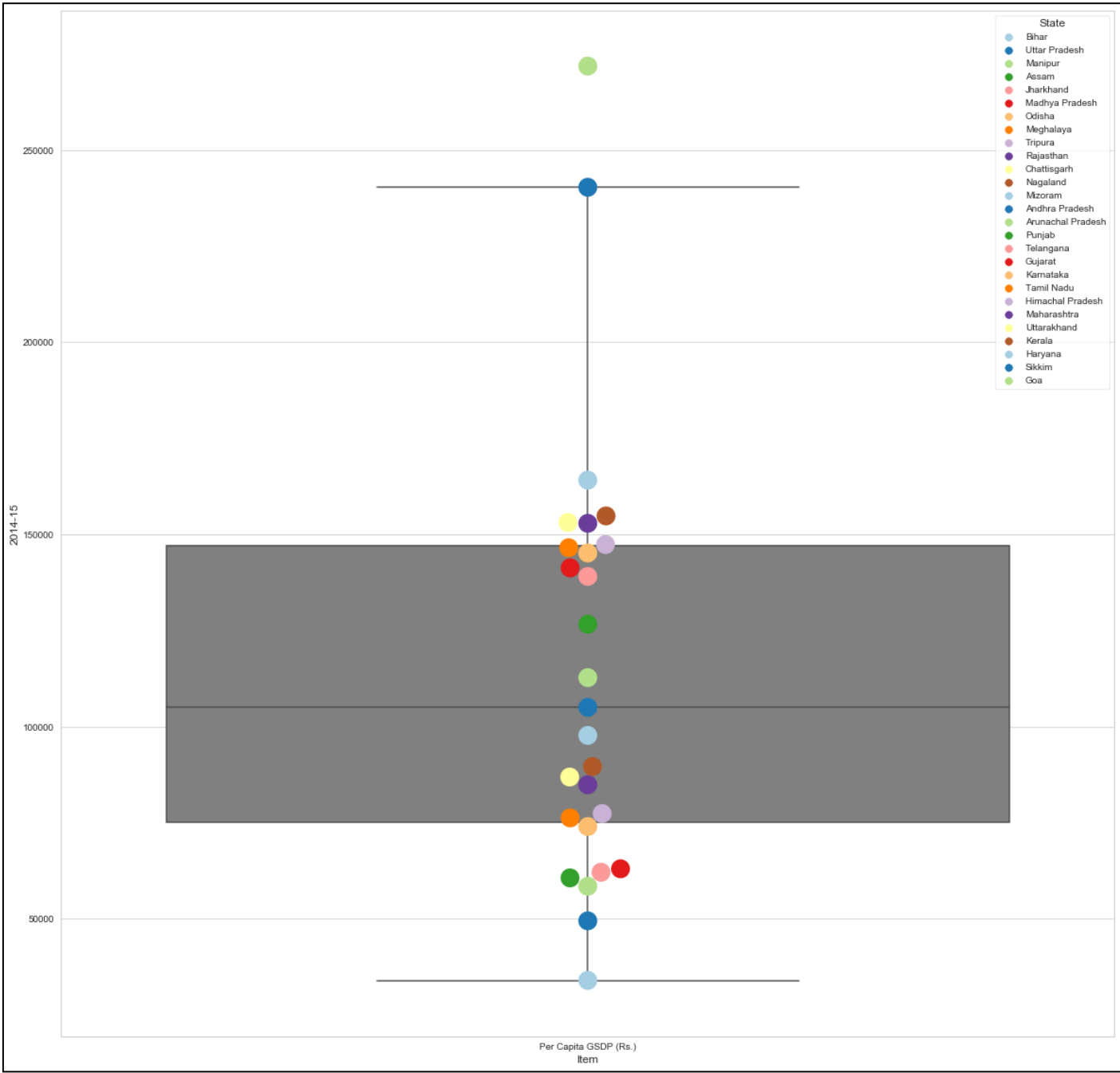
## C3

	State	Item	2014-15
428	Madhya Pradesh	Per Capita GSDP (Rs.)	62989.0
626	Odisha	Per Capita GSDP (Rs.)	73979.0
527	Meghalaya	Per Capita GSDP (Rs.)	76228.0
824	Tripura	Per Capita GSDP (Rs.)	77358.0
692	Rajasthan	Per Capita GSDP (Rs.)	84837.0
164	Chattisgarh	Per Capita GSDP (Rs.)	86860.0
593	Nagaland	Per Capita GSDP (Rs.)	89607.0
560	Mizoram	Per Capita GSDP (Rs.)	97687.0
32	Andhra Pradesh	Per Capita GSDP (Rs.)	104977.0

## C4

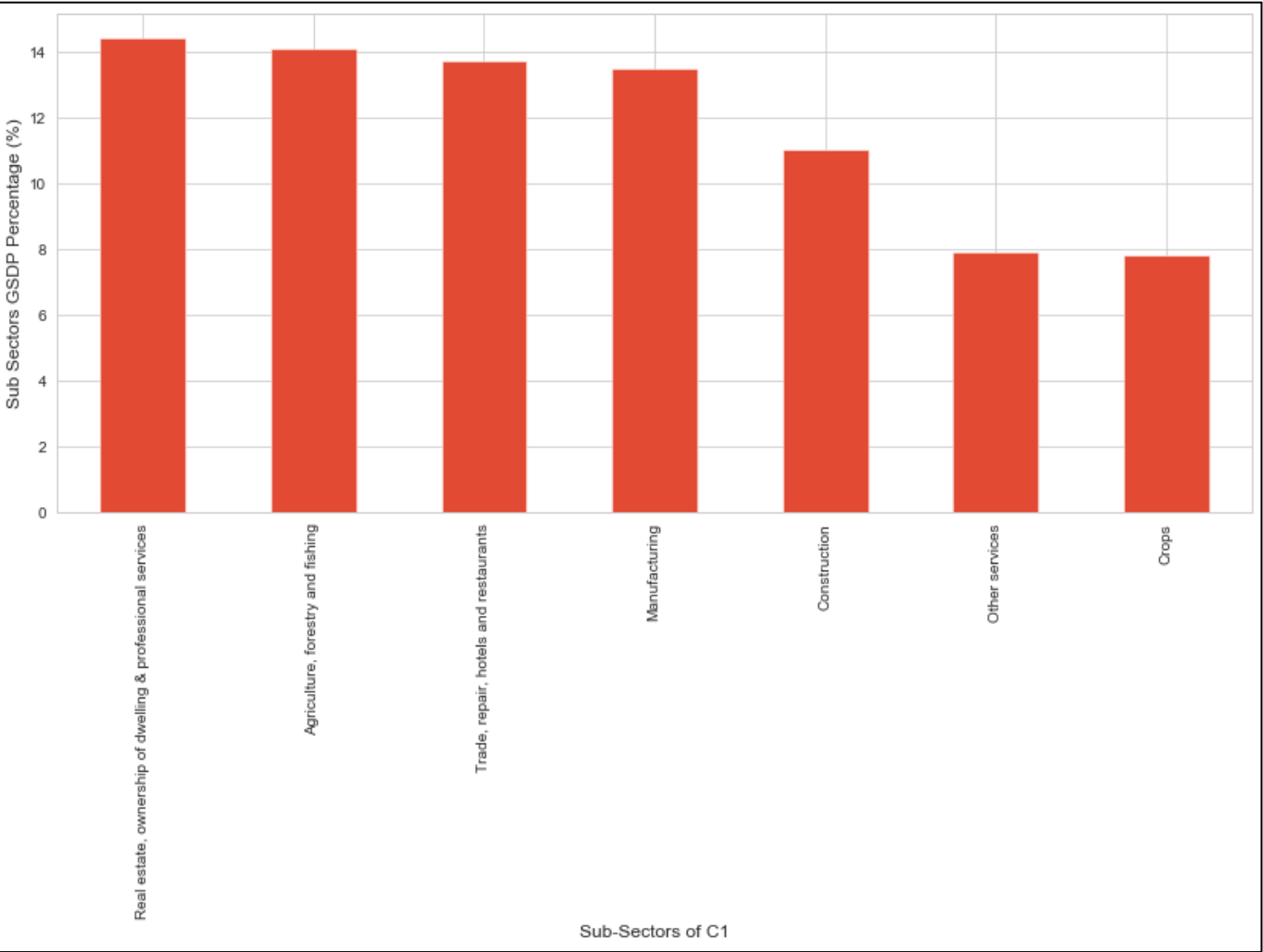
	State	Item	2014-15
131	Bihar	Per Capita GSDP (Rs.)	33954.0
857	Uttar Pradesh	Per Capita GSDP (Rs.)	49450.0
494	Manipur	Per Capita GSDP (Rs.)	58442.0
98	Assam	Per Capita GSDP (Rs.)	60621.0
329	Jharkhand	Per Capita GSDP (Rs.)	62091.0

# BOXPLOT OF C1, C2, C3, C4:



# C1\_Sub\_Sectors

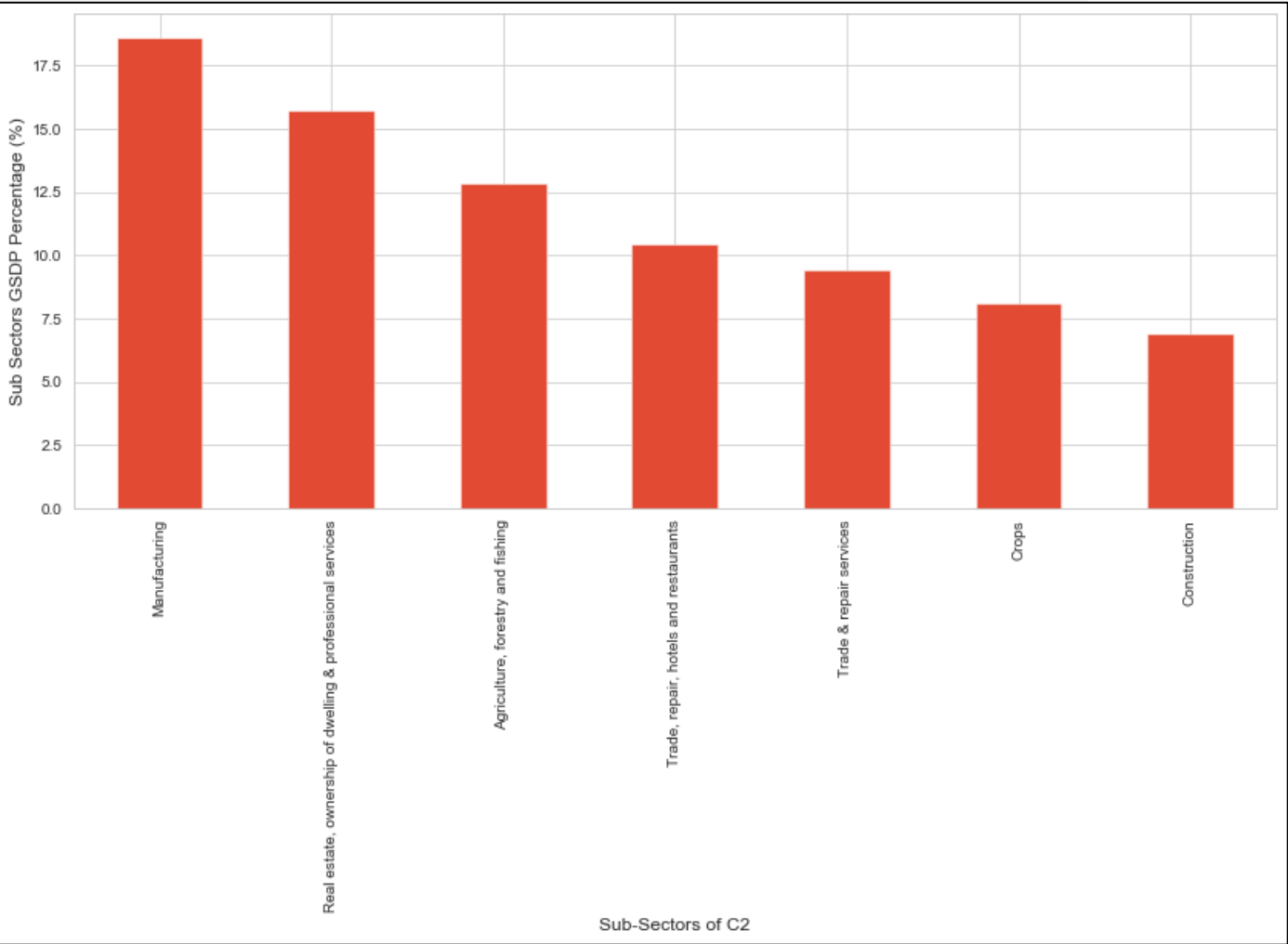
C1_Sub_Sectors_that_contributes_80%_approximately_to_GSDP_in_T		GSDP_Contribution_perce
otal		nt
0	Real estate, ownership of dwelling & professio...	14.461049
1	Agriculture, forestry and fishing	14.119213
2	Trade, repair, hotels and restaurants	13.730076
3	Manufacturing	13.498187
4	Construction	11.051090
5	Other services	7.907258
6	Crops	7.811695
7	ABOVE C1 SUB-SECTORS EXACT CONTRIBUTION =	82.580000





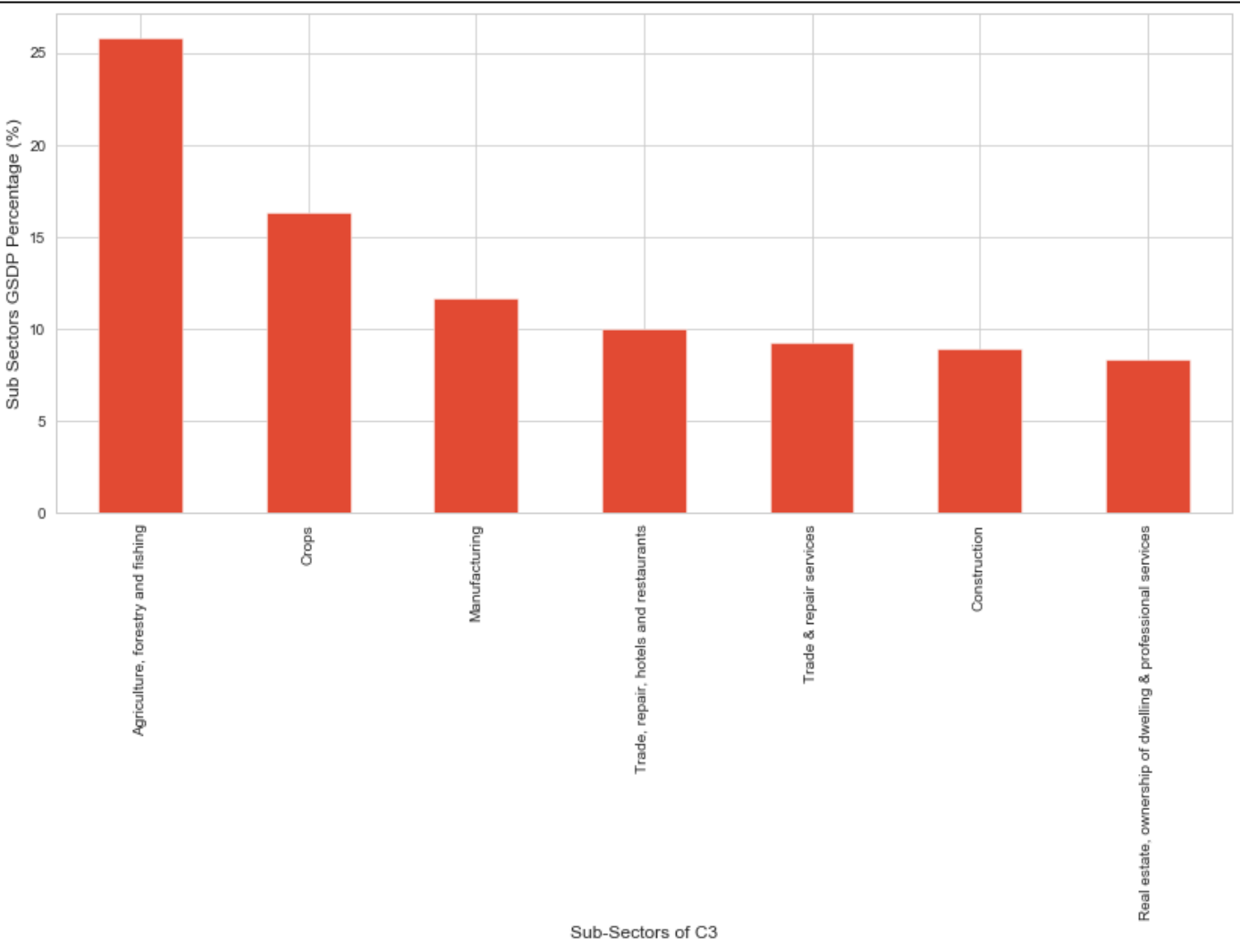
# C2\_Sub\_Sectors

C2_Sub_Sectors_that_contributes_80%_approximately_to_GSDP_in_T		GSDP_Contribution_perce
	otal	nt
0	Manufacturing	18.622130
1	Real estate, ownership of dwelling & professio...	15.710184
2	Agriculture, forestry and fishing	12.825977
3	Trade, repair, hotels and restaurants	10.443537
4	Trade & repair services	9.422608
5	Crops	8.109086
6	Construction	6.932967
7	ABOVE C2 SUB-SECTORS EXACT CONTRIBUTION =	82.070000



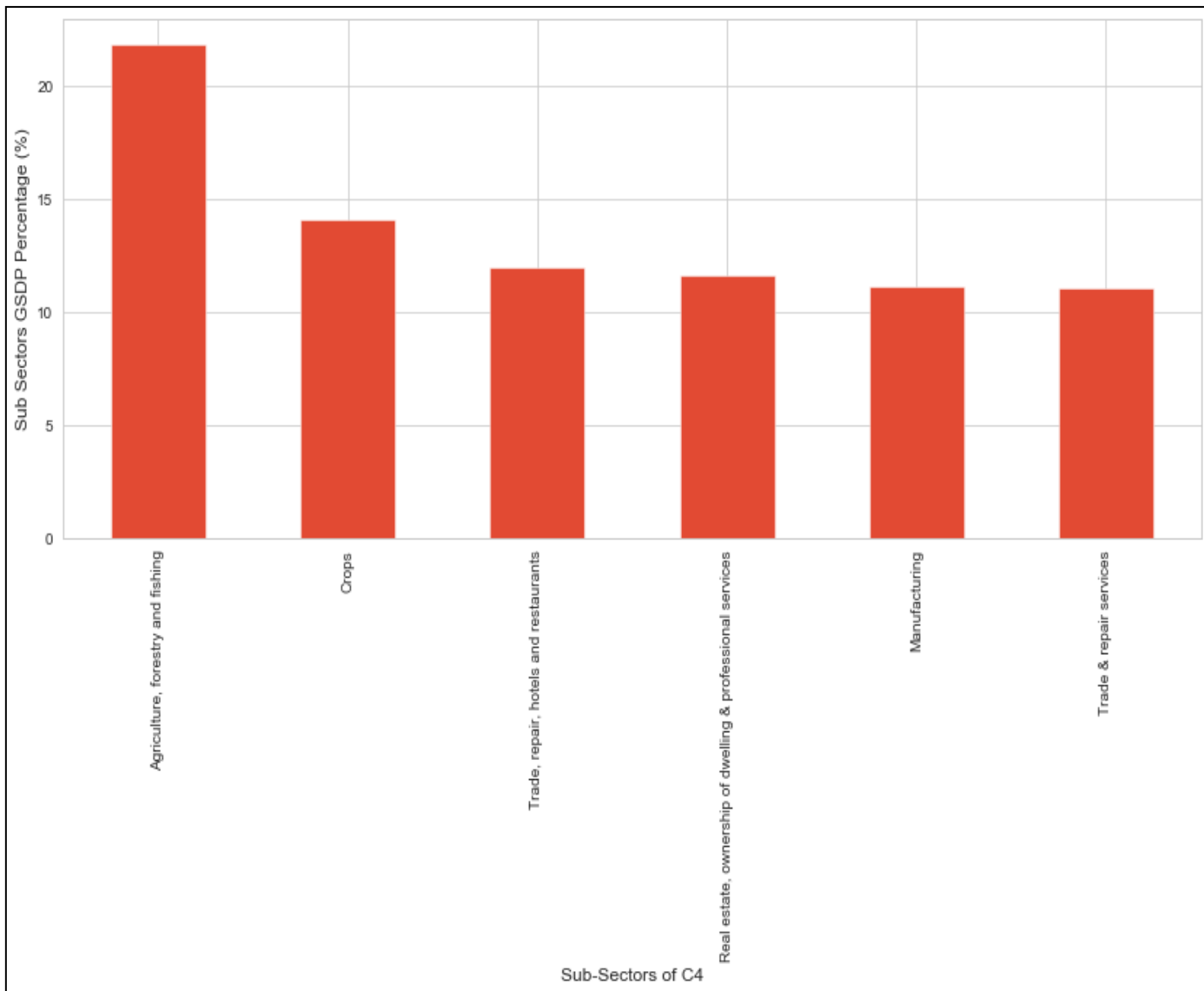
# C3\_Sub\_Sectors

C3_Sub_Sectors_that_contributes_80%_approximately_to_GSDP_in_T		GSDP_Contribution_perce
otal		nt
0	Agriculture, forestry and fishing	25.849557
1	Crops	16.312163
2	Manufacturing	11.676084
3	Trade, repair, hotels and restaurants	9.993973
4	Trade & repair services	9.288358
5	Construction	8.892230
6	Real estate, ownership of dwelling & professio...	8.349779
7	ABOVE C3 SUB-SECTORS EXACT CONTRIBUTION =	90.360000



## C4\_Sub\_Sectors

	C4_Sub_Sectors_that_contributes_80%_approximately_to_GSDP_in_T otal	GSDP_Contribution_perce nt
0	Agriculture, forestry and fishing	21.885190
1	Crops	14.112128
2	Trade, repair, hotels and restaurants	11.957100
3	Real estate, ownership of dwelling & professio...	11.627645
4	Manufacturing	11.141726
5	Trade & repair services	11.092776
6	ABOVE C4 SUB-SECTORS EXACT CONTRIBUTION =	81.820000



**How does the GDP distribution of the top states (C1) differ from the others?**

**AVG of C1 GSDP: 25482669 , Per-capita AVG of C1 : 207730**

**AVG of C2 GSDP: 65153384 , Per-capita AVG of C2 : 140503**

**AVG of C3 GSDP: 25129395 , Per-capita AVG of C3 : 83836**

**AVG of C4 GSDP: 37010779 , Per-capita AVG of C4 : 52912**

**Above implies that:**

**AVG of C2 states GSDP > AVG of C4 states GSDP > AVG of C1 GSDP  $\approx$  AVG of C3 GSDP**

# Which sub-sectors seem to be correlated with high GDP?

2014-15

Item	
Gross State Domestic Product	1.099530e+09
TOTAL GSVa at basic prices	1.008023e+09
Tertiary	5.064437e+08
Secondary	2.851220e+08
Primary	2.164573e+08
Agriculture, forestry and fishing	1.885628e+08
Manufacturing	1.699807e+08
Real estate, ownership of dwelling & professional services	1.472633e+08
Taxes on Products	1.217224e+08
Trade, repair, hotels and restaurants	1.199639e+08
Crops	1.185200e+08
Trade & repair services	1.020128e+08
Construction	9.040188e+07
Other services	7.298801e+07
Transport, storage, communication & services related to broadcasting	6.899165e+07
Financial services	5.368386e+07
Livestock	4.702085e+07
Public administration	4.355291e+07
Road transport	3.065837e+07
Subsidies on products	3.021574e+07

The sub-sectors that are correlated to high GDP are:

1. Agriculture, forestry and fishing
2. Manufacturing
3. Real estate, ownership of dwelling & professional services
3. Taxes on Products
4. Trade, repair, hotels and restaurants

# **Which sub-sectors do the various categories need to focus on?**

## **Sub-sectors that are contributing lowest to the GSDP needs to be concentrated.**

The sub-sectors of the various categories that need to be focused on are such as:

1. C1 Sub-Sectors: 'Railways', 'Services incidental to transport', 'Air transport', 'Water transport', 'Storage'
2. C2 Sub-sectors: 'Services incidental to transport', 'Air transport', 'Storage', 'Water transport', 'Road transport\*'
3. C3 Sub-Sectors: 'Services incidental to transport', 'Water transport', 'Storage', 'Services incidental to transport\*', 'Air transport'
4. C4 Sub Sectors: 'Hotels & restaurants', 'Services incidental to transport', 'Storage', 'Air transport', 'Water transport'

## **Recommendations & Insights:**

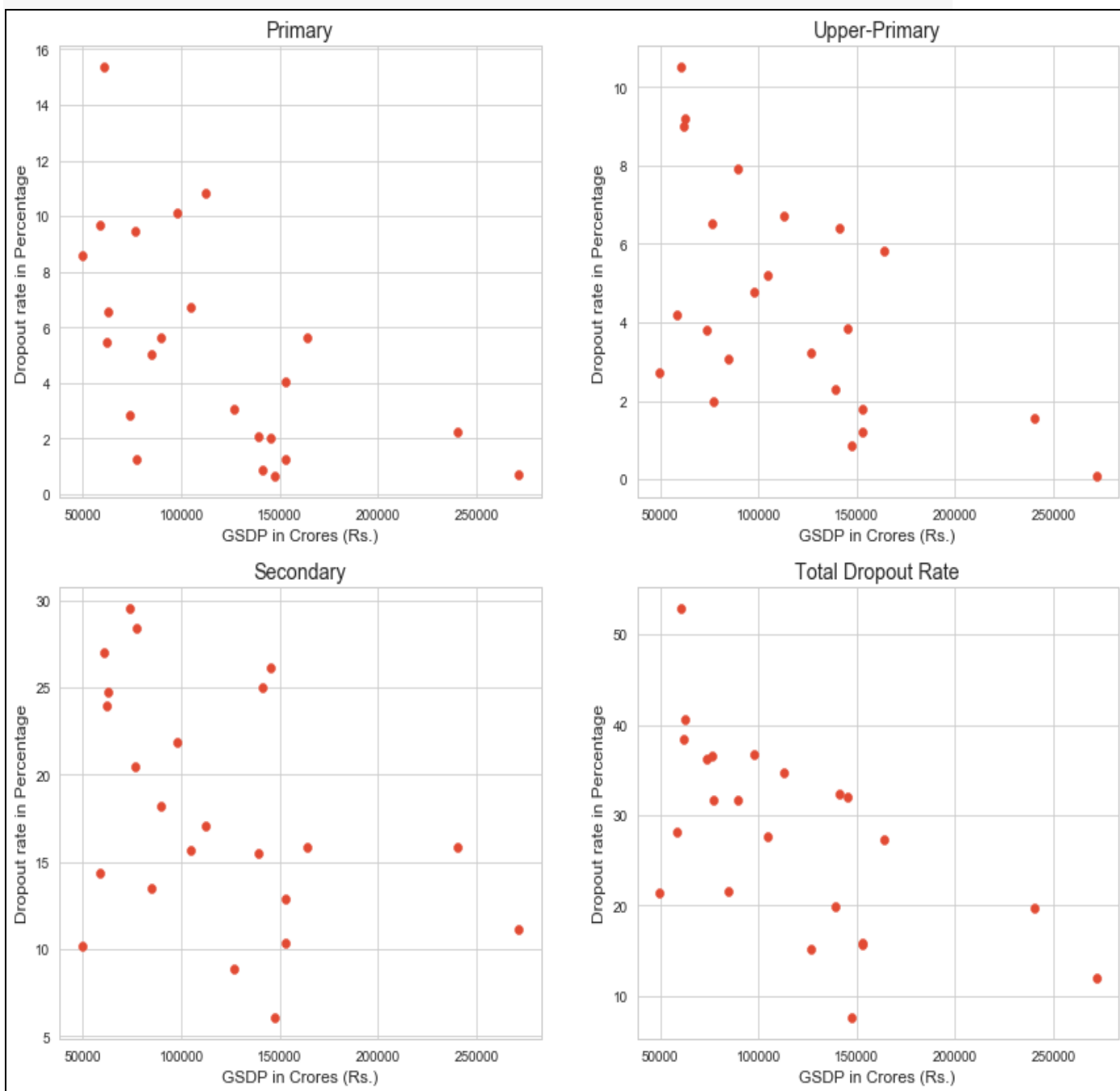
1. Focus on Primary Sector to improve (because of low contribution)
2. Focus on Tertiary Sector to boost the growth more (due to High Contribution)
3. The state governments should check the subsectors suffering losses and why. From above we can clearly see the transportation related subsectors are not performing well.
4. All the states have different contributions of the Primary, Secondary and Tertiary Sectors. So, the states should focus more on the sector performing well and also try to improve the sector (By implementing new ideas and keeping in check the reason for the losses) performing badly to boost up economy.

## PART-II : GDP and Education Drop-out Rates

### Dropout Rates of various states

	State	Primary - 2014-2015	Upper Primary - 2014-2015	Secondary - 2014-2015
0	A & N Islands	0.51	1.69	9.87
1	Andhra Pradesh	6.72	5.20	15.71
2	Arunachal Pradesh	10.82	6.71	17.11
3	Assam	15.36	10.51	27.06
6	Chhattisgarh	2.91	5.85	21.26
7	Dadra & Nagar Haveli	1.47	4.02	16.77
8	Daman & Diu	1.11	3.11	32.27
10	Goa	0.73	0.07	11.15
11	Gujarat	0.89	6.41	25.04
12	Haryana	5.61	5.81	15.89
13	Himachal Pradesh	0.64	0.87	6.07
14	Jammu and Kashmir	6.79	5.44	17.28
15	Jharkhand	5.48	8.99	24.00
16	Karnataka	2.02	3.85	26.18
19	Madhya Pradesh	6.59	9.20	24.77
20	Maharashtra	1.26	1.79	12.87
21	Manipur	9.66	4.20	14.38
22	Meghalaya	9.46	6.52	20.52
23	Mizoram	10.10	4.78	21.88
24	Nagaland	5.61	7.92	18.23
25	Odisha	2.86	3.81	29.56
26	Puducherry	0.37	0.56	12.19
27	Punjab	3.05	3.22	8.86
28	Rajasthan	5.02	3.07	13.48
29	Sikkim	2.27	1.57	15.89
31	Telangana	2.08	2.30	15.53
32	Tripura	1.28	1.99	28.42
33	Uttar Pradesh	8.58	2.70	10.22

	State	Primary - 2014-2015	Upper Primary - 2014-2015	Secondary - 2014-2015
34	Uttarakhand	4.04	1.19	10.40
35	West Bengal	1.47	4.30	17.80
36	All India	4.13	4.03	17.06



**The Scatter plot shows that there is an increase in GSDP with decrease in Dropout rate.**



## **Hypothesis(From the above graph and df\_drpcap dataframe results):**

1. The Secondary has greater dropout rate than the Primary and Upper Primary.
2. The North Eastern states, Odisha, Jharkhand, Madhya Pradesh have a higher dropout rate and lower GSDP value compared to other states.
3. The following states also fall under C3 and C4 category of the states which shows low GDP per capita.

