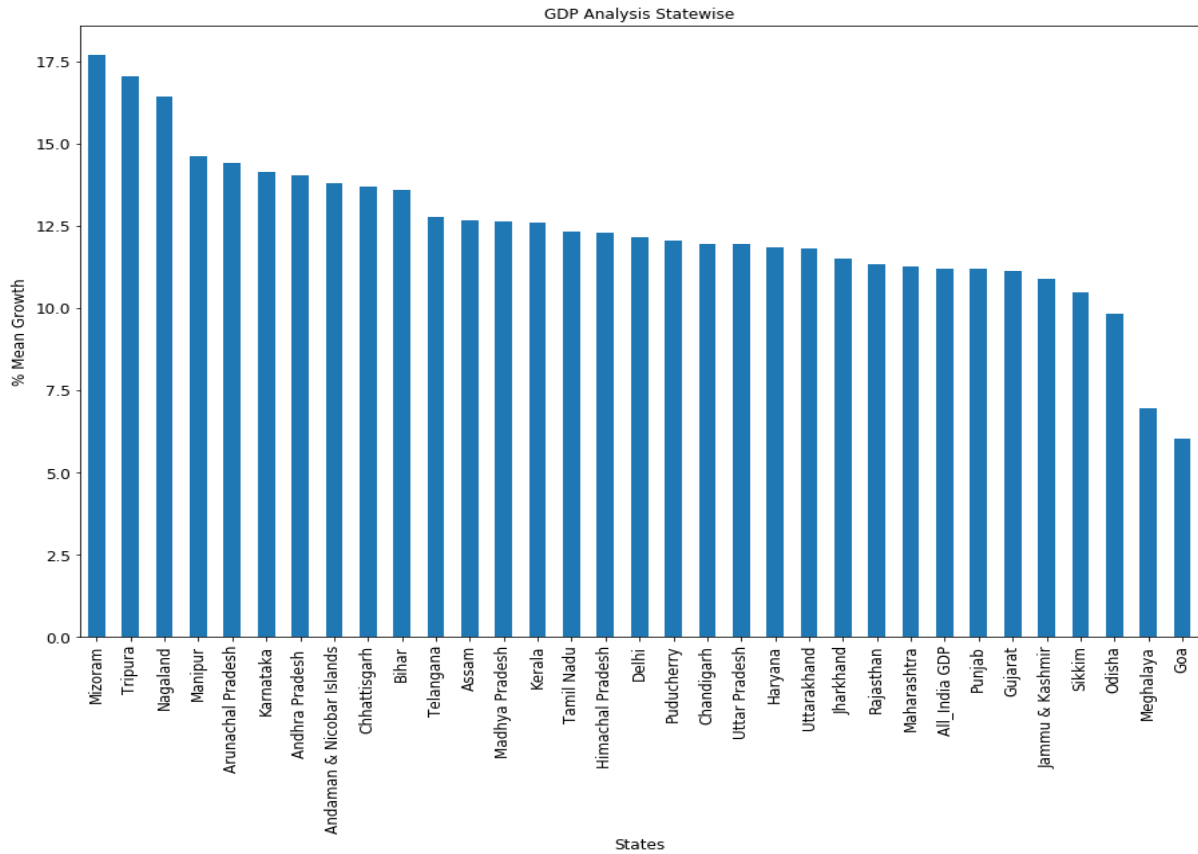


Part I-A:

Analysis 1

The average growth rates of the various states over the duration 2013-14, 2014-15 and 2015-16 are as shown in the following image:



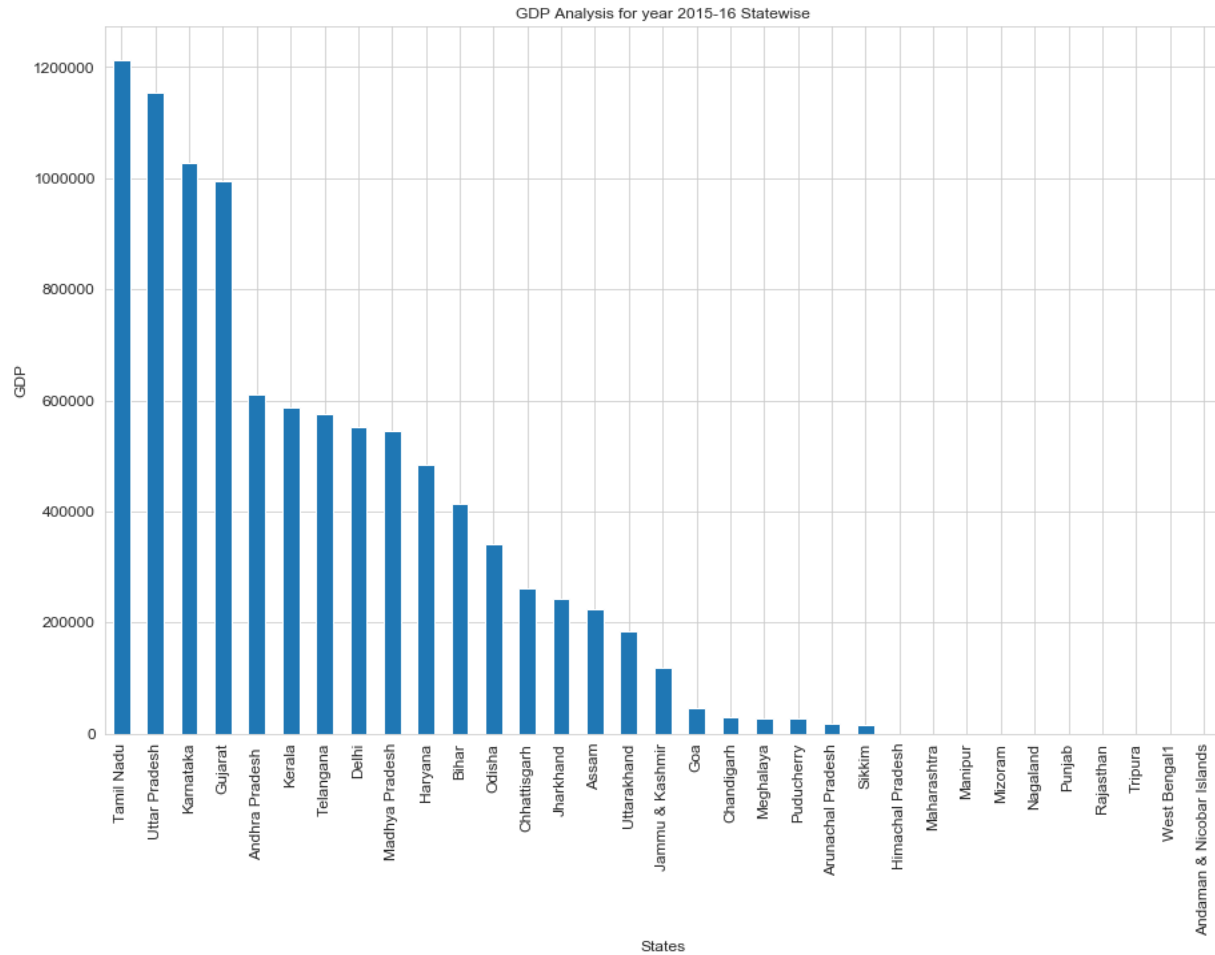
As depicted in the **Bar-plot** above, we can infer the following analysis:

- The north-eastern states (Mizoram, Tripura, and Nagaland) have been growing consistently fast than other Indian states with over 15% average growth rate.
- Goa and Meghalaya have been struggling the most with less than 7.5% average growth rate.

The average growth rate of my home state, Chhattisgarh, has been 13.7% which is more than the national average growth rate in this duration.

Analysis 2

When we plot the total GDP of the states for the year 2015-16, the **Bar-plot** is shown as follows based on the available data:



(Here we don't have the corresponding data for the states, Himachal Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Punjab, Rajasthan, Tripura, West Bengal, Andaman & Nicobar)

As depicted in the **Bar-plot** above, we can infer the following analysis:

- The top-5 states based on the total GDP are
 1. Tamil Nadu
 2. Uttar Pradesh
 3. Karnataka
 4. Gujarat
 5. Andhra Pradesh
- The bottom-5 states based on total GDP are:
 1. Sikkim
 2. Arunachal Pradesh
 3. Puducherry
 4. Meghalaya
 5. Chandigarh

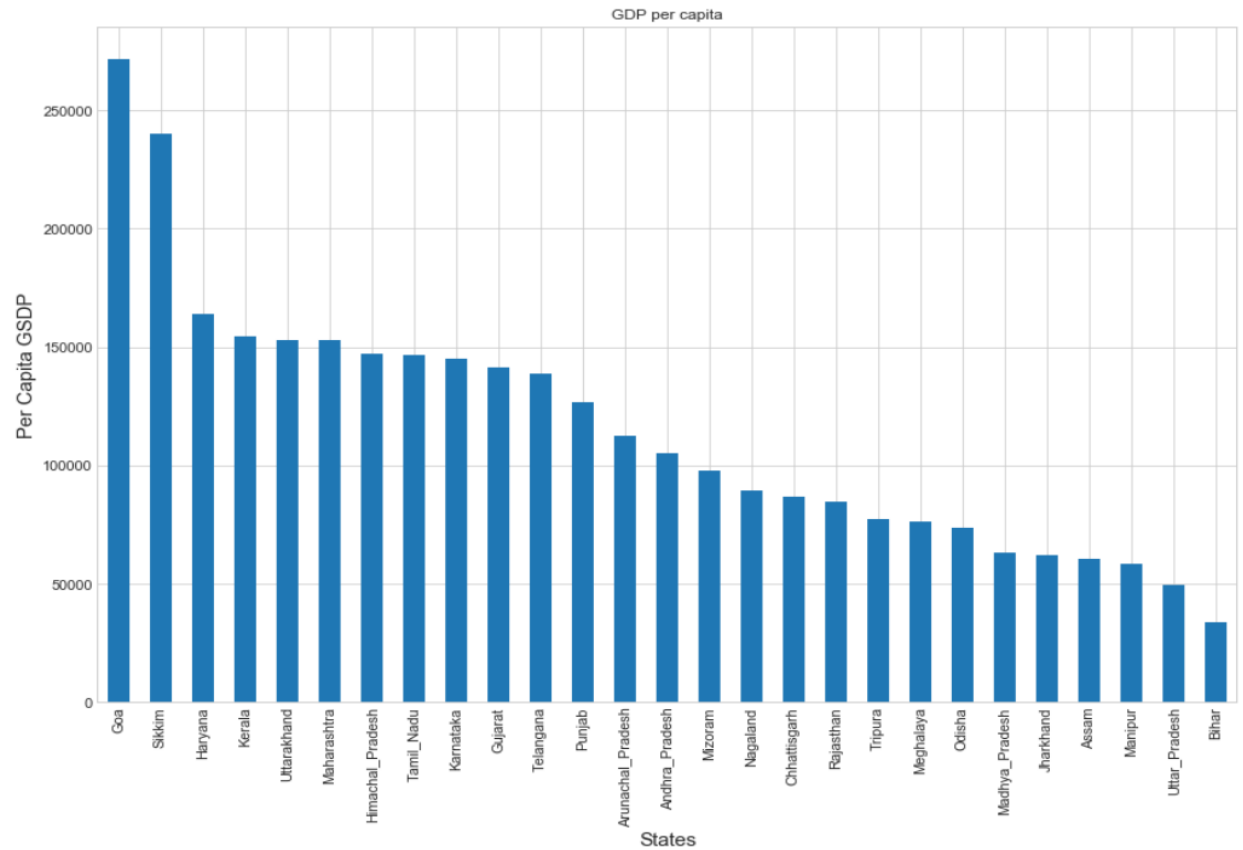
Part 1-B:

Analysis 1

The GDP per capita for all the Indian states is as follows:

State	Per Capita GSDP (Rs.)
Goa	271793.0
Sikkim	240274.0
Haryana	164077.0
Kerala	154778.0
Uttarakhand	153076.0
Maharashtra	152853.0
Himachal_Pradesh	147330.0
Tamil_Nadu	146503.0
Karnataka	145141.0
Gujarat	141263.0
Telangana	139035.0
Punjab	126606.0
Arunachal_Pradesh	112718.0
Andhra_Pradesh	104977.0
Mizoram	97687.0
Nagaland	89607.0
Chhattisgarh	86860.0
Rajasthan	84837.0
Tripura	77358.0
Meghalaya	76228.0
Odisha	73979.0
Madhya_Pradesh	62989.0
Jharkhand	62091.0
Assam	60621.0
Manipur	58442.0
Uttar_Pradesh	49450.0
Bihar	33954.0

The corresponding **Bar-plot** is as follows:



As depicted in the **Bar-plot** above, we can infer the following analysis:

- The top-5 and the bottom-5 states based on GDP per capita are as follows:

	State	Per Capita GSDP
Top	Goa	271793
	Sikkim	240274
	Haryana	164077
	Kerala	154778
	Uttarakhand	153076
Bottom	Bihar	33954
	Uttar Pradesh	49450
	Manipur	58442
	Assam	60621
	Jharkhand	62091

- Goa has the highest per capita GDP and Bihar has the lowest per capita GDP. The ratio of the highest per capita GDP to the lowest per capita GDP is as follows:

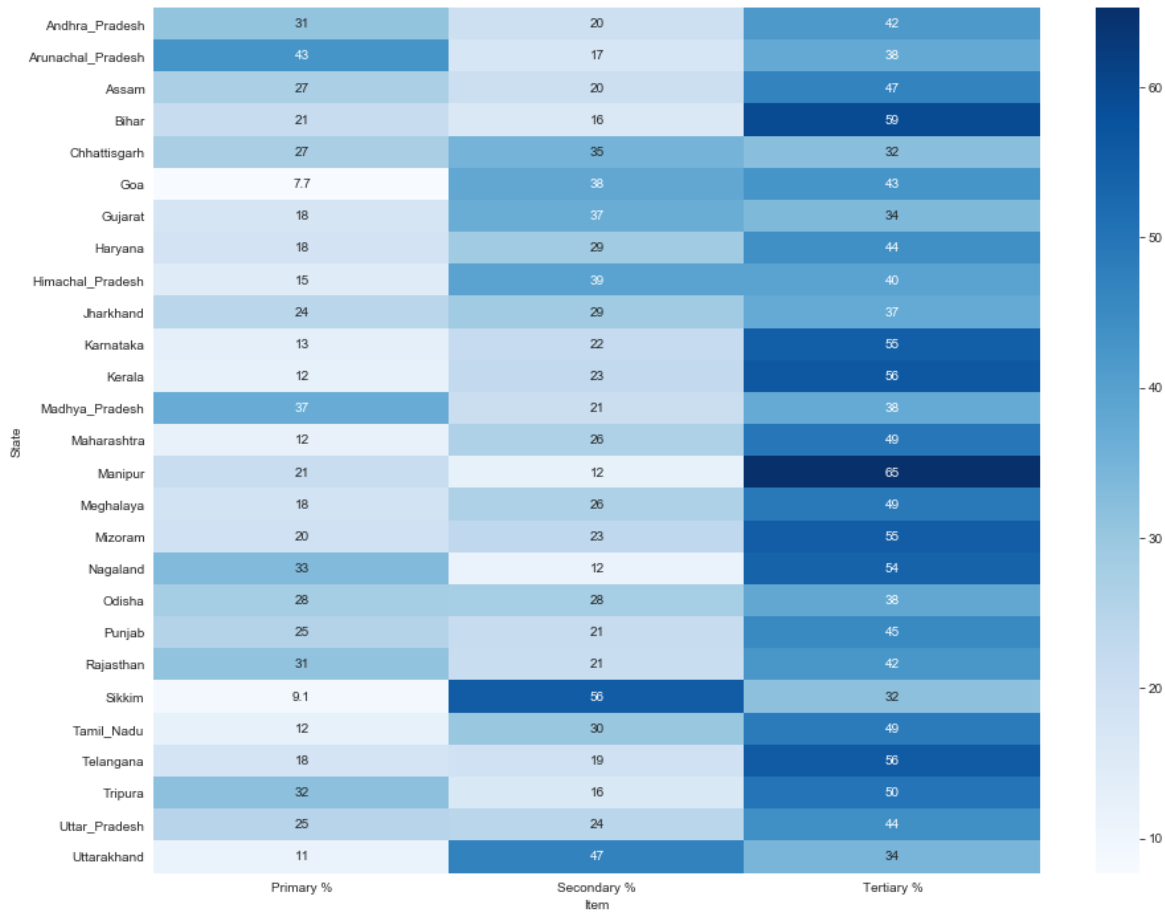
$$\text{Highest per capita GDP / Lowest per capita GDP} = 271793.0/33954.0 \approx 8/1$$

Analysis 2

The percentage weightage of primary, secondary and tertiary sectors as a percentage of total GSDP for all the Indian states are as follows:

State	Primary %	Secondary %	Tertiary %
Andhra_Pradesh	30.968080	19.923102	41.850453
Arunachal_Pradesh	42.774946	17.152064	37.696846
Assam	26.889201	20.359070	46.982347
Bihar	21.448437	16.005825	59.317437
Chhattisgarh	27.239629	35.061805	32.295173
Goa	7.681649	38.085628	42.778382
Gujarat	17.750506	36.896684	33.764756
Haryana	18.379705	28.714286	43.950252
Himachal_Pradesh	14.835527	39.467373	39.603084
Jharkhand	24.174023	28.748340	37.462331
Karnataka	13.090107	22.222466	54.774663
Kerala	12.337288	22.946744	56.413780
Madhya_Pradesh	37.042942	20.840810	37.589312
Maharashtra	12.141131	26.474323	49.455948
Manipur	21.235110	12.202845	65.252434
Meghalaya	18.479544	26.136520	49.190903
Mizoram	19.516529	23.363984	55.160550
Nagaland	33.462038	11.532434	53.923268
Odisha	27.981738	27.920823	38.066351
Punjab	25.260312	21.480109	45.427474
Rajasthan	31.221746	21.282116	42.495993
Sikkim	9.124399	55.574637	31.763595
Tamil_Nadu	12.200454	30.059475	48.824418
Telangana	17.867280	19.413996	55.697682
Tripura	31.760140	16.327880	50.046450
Uttar_Pradesh	24.918511	24.486707	44.058108
Uttarakhand	11.395924	47.182463	34.496805

The corresponding **Heat-map** is as follows:



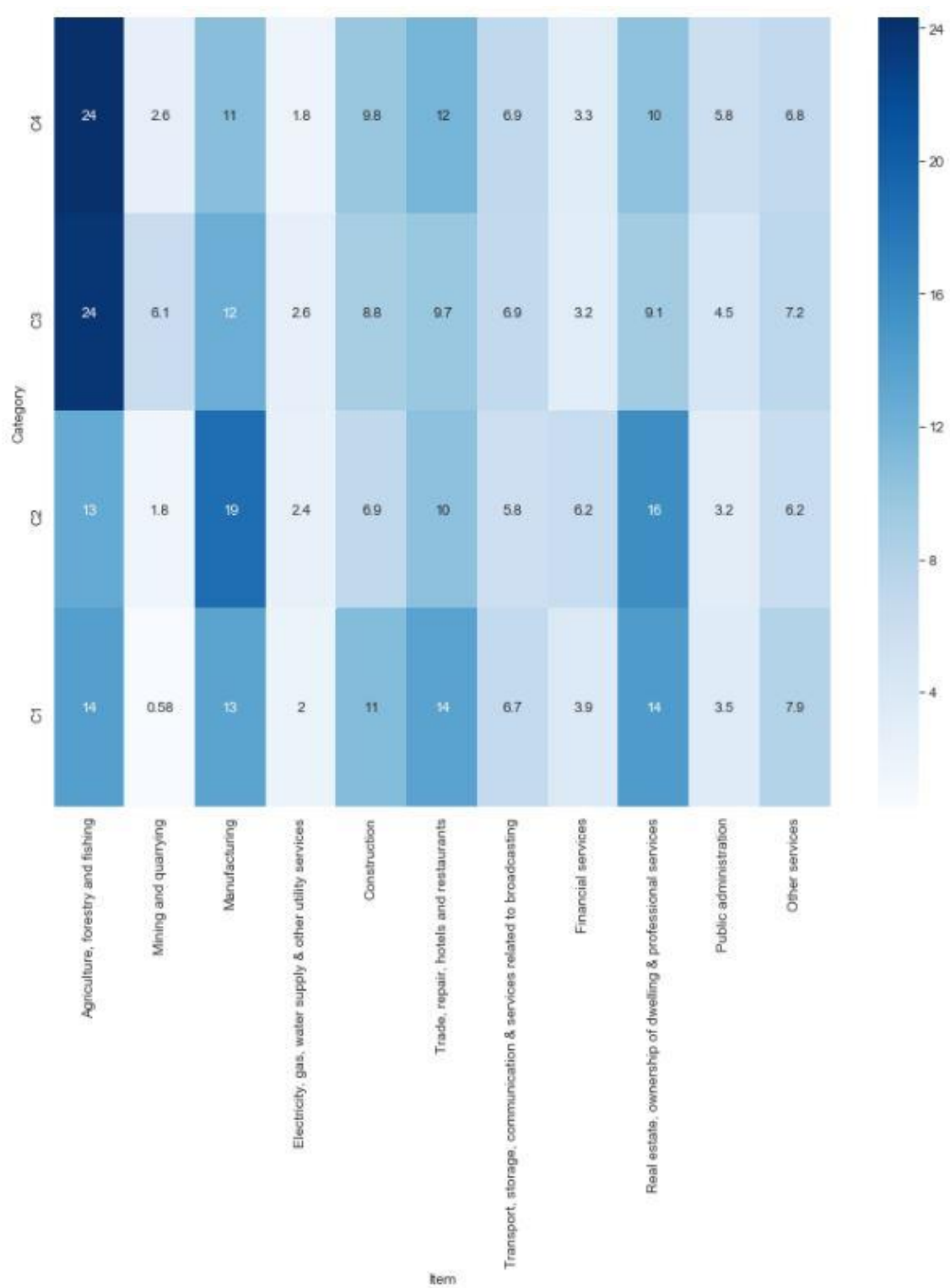
Analysis 3

If we categorize the states into four categories based on GDP per capita (C1, C2, C3, C4 - C1 would have the highest per capita GDP, C4 the lowest). The quantile values are (0.20, 0.5, 0.85, 1), i.e. the states lying between the 85th and the 100th percentile are in C1, those between 50th and 85th percentile are in C2 and so on.

The categorization is shown as follows:

Item	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas, water supply & other utility services	Construction	Trade, repair, hotels and restaurants	Transport, storage, communication & services related to broadcasting	Financial services	Real estate, ownership of dwelling & professional services	Public administration	Other services
Category											
C4	24.323490	2.613661	10.712459	1.847900	9.764521	11.783216	6.941761	3.294504	10.365410	5.781998	6.799089
C3	23.727451	6.088662	12.383423	2.587440	8.826341	9.690206	6.872918	3.240065	9.116395	4.454309	7.201032
C2	12.825977	1.769047	18.622130	2.357408	6.932967	10.443537	5.755616	6.189947	15.710184	3.166513	6.182617
C1	14.119213	0.577805	13.498187	1.963097	11.051090	13.730076	6.689409	3.861928	14.461049	3.503648	7.907258

The contribution of the sub-sectors as a percentage of the GSDP of each category as depicted by a **Heat-map** is as follows:



As depicted in the **Heat-map** above, we can infer the following analysis:

- For category C1,

C2	Agriculture, forestry and fishing	14%
	Real estate, ownership of dwelling & professional services	14%
	Trade, repair, hotels and restaurants	14.00%
	Manufacturing	13.00%
	Construction	11.00%
	Other services	7.90%
	Transport, storage, communication & services related to broadcasting	6.70%
	Total	81%

- For category C2,

C2	Manufacturing	19%
	Real estate, ownership of dwelling & professional services	16%
	Agriculture, forestry and fishing	13.00%
	Trade, repair, hotels and restaurants	10.00%
	Construction	6.90%
	Financial Services	6.20%
	Other services	6.20%
	Total	77%

- For category C3,

C3	Agriculture, forestry and fishing	24%
	Manufacturing	12%
	Trade, repair, hotels and restaurants	9.70%
	Real estate, ownership of dwelling & professional services	9.10%
	Construction	9.80%
	Transport, storage, communication & services related to broadcasting	6.90%
	Other services	7.20%
	Total	79%

- For category C4,

C4	Agriculture, forestry and fishing	24%
	Trade, repair, hotels and restaurants	12%
	Manufacturing	11%
	Real estate, ownership of dwelling & professional services	10%
	Construction	9.80%
	Transport, storage, communication & services related to broadcasting	6.90%
	Other services	6.80%
	Total	81%

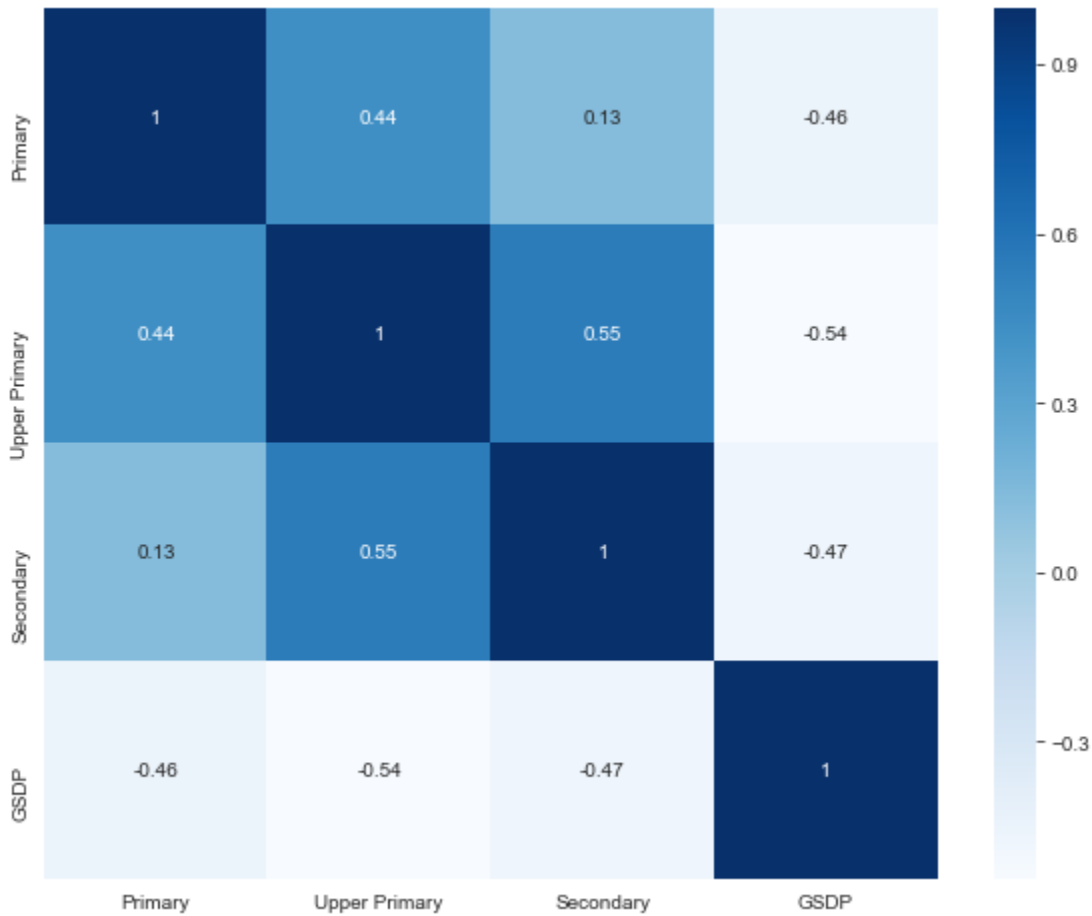
- The GDP distribution of the top states (C1) is less dependent on the 'Agriculture, forestry and fishing' unlike category C3 and category C4.
- 'Manufacturing' seems to be correlated with high GDP.
- C1, C2, and C4 need to focus on 'Mining and quarrying', C1, C3, and C4 need to focus on 'Financial services', and all categories need to focus on 'Electricity, gas, water supply & other utility services' to increase the GDP per capita.

Recommendations:

Category	Focus Area 1	Focus Area 2
C1	Agriculture, forestry and fishing	Electricity, gas, water supply & other utility services'
C2	Agriculture, forestry and fishing	Electricity, gas, water supply & other utility services'
C3	Real estate, ownership of dwelling & professional services	Transport, storage, communication & services related to broadcasting
C4	Real estate, ownership of dwelling & professional services	Transport, storage, communication & services related to broadcasting

Part-II: GDP and Education Drop-out Rates

When we plot correlation of GDP per capita with dropout rates in education for the year 2014-2015 for the states with the Heat-map, the following is displayed:



As depicted in the Heat-map above, we can infer the following analysis:

- There is correlation of GDP per capita with dropout rates in education (primary, upper primary and secondary).
- Dropout rates in the education (primary, upper primary, and secondary) impacts the per capita GDP, as when there is availability of educated, skilled labour, the GDP tends to increase.