



GDP Analysis

Statistics & EDA

Module 8 Session 1

Version 1.0

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DOCUMENTATION CONTROL

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1 INTRODUCTION

1.1 Document Purpose

This document is the GDP Analysis of the Indian States and its intention is to give the detailed analysis of the state wise GDP, recommendations to improve the GDP

1.2 Background

NITI Aayog (National Institution for Transforming India) is a policy think tank of the Government of India; it provides strategic inputs to the central and the state governments to achieve various development goals. In the past, NITI Aayog has played an important role in initiatives such as Digital India, Atal Innovation Mission and various agricultural reforms and have designed various policies in education, skill development, water management, healthcare, etc.

NITI Aayog was established to replace the Planning Commission of India, which used to follow a top-down model for policy making, i.e., it typically designed policies at the central level (such as the 5-year plans). On the other hand, NITI Aayog designs policies specific to the different states or segments of the economy.

Finance Minister, Arun Jaitley, made the following observation on the necessity of creating NITI Aayog, "The 65-year-old Planning Commission had become a redundant organisation. It was relevant in a command economy structure, but not any longer. India is a diversified country and its states are in various phases of economic development along with their own strengths and weaknesses. In this context, a 'one size fits all' approach to economic planning is obsolete...".

1.3 GDP

Gross domestic product (GDP) at current prices is the GDP at the market value of goods and services produced in a country during a year. In other words, GDP measures the 'monetary value of final goods and services produced by a country/state in a given period of time'.

GDP can be broadly divided into goods and services produced by three sectors: the primary sector (agriculture), the secondary sector (industry), and the tertiary sector (services).

It is also known as nominal GDP. More technically, (real) GDP takes into account the price change that may have occurred due to inflation. This means that the real GDP is nominal GDP adjusted for inflation. We will use the nominal GDP for this exercise. Also, we will consider the financial year 2015-16 as the base year, as most of the data required for this exercise is available for the aforementioned period.

1.4 GDP Per Capita

Total GDP divided by the population gives the per capita GDP, which roughly measures the average value of goods and services produced per person. The per capita income is closely related to the per capita GDP (though they are not the same). In general, the per capita income increases when the per capita GDP increases, and vice-versa. For instance, in the financial year 2015-16, the per capita income of India was ₹93,293, whereas the per capita GDP of India was \$1717, which roughly amounts to ₹1,11,605.

India ranks 11th in the world in terms of total GDP; however, it lies at the 139th position in terms of per capita GDP.

1.5 Dataset Used

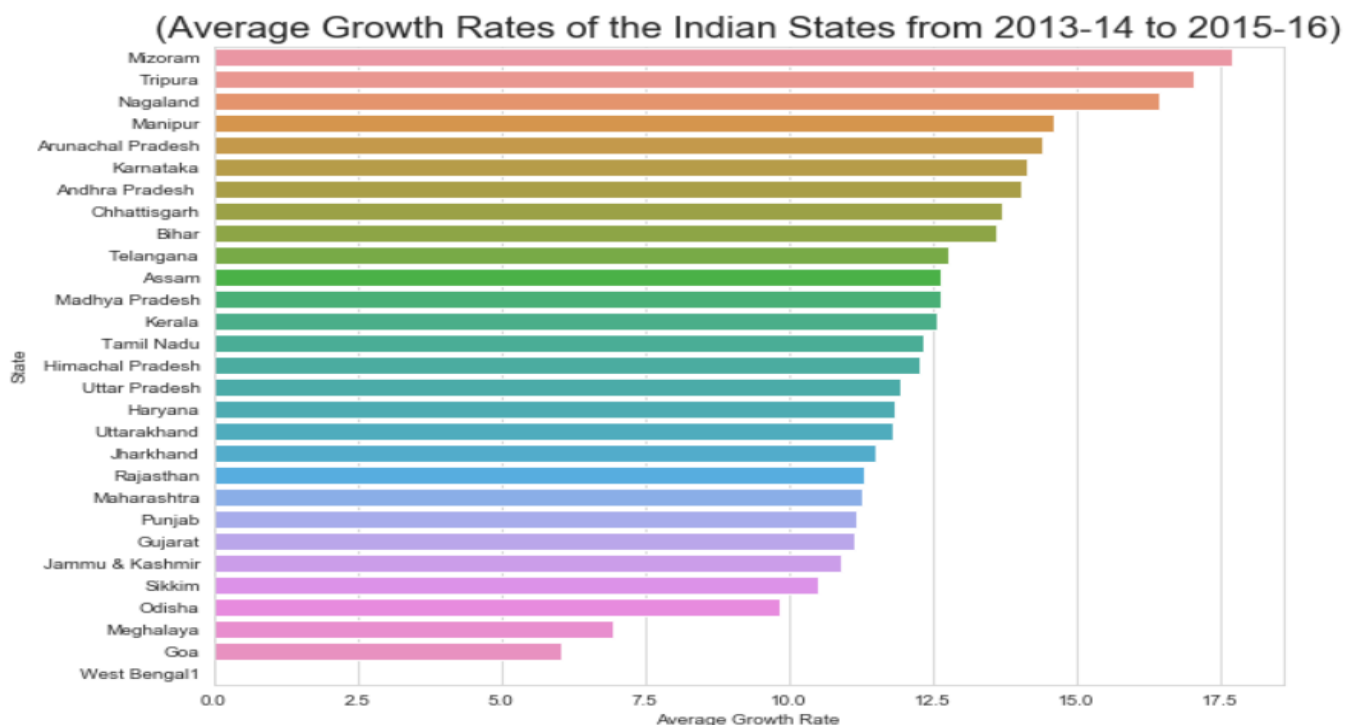
All the datasets have been downloaded from the Indian Govt Portal <https://data.gov.in/>

- i. State-wise Gross Domestic Product (GDP) at current price on yearly basis
- ii. GSDVA by Economic Activity at Current Prices
- iii. State-UT-Wise-Average-Annual-Drop-Out-Rate-2012-13-2014-15-Ministry-Human-Resource

2 GDP ANALYSIS

2.1 GDP Analysis of the Indian States

1) Average Growth Rates of the Indian States



Mizoram has been growing fast, contributing with highest average growth rate of 17.7% among 29 Indian states, which is 6.5% more than the total India GDP(11.2%) at current price, followed by Tripura(17.03%) and Nagaland (16.42%). Manipur(14.61%) and Arunachal Pradesh(14.41%) are the other states in the top 5.

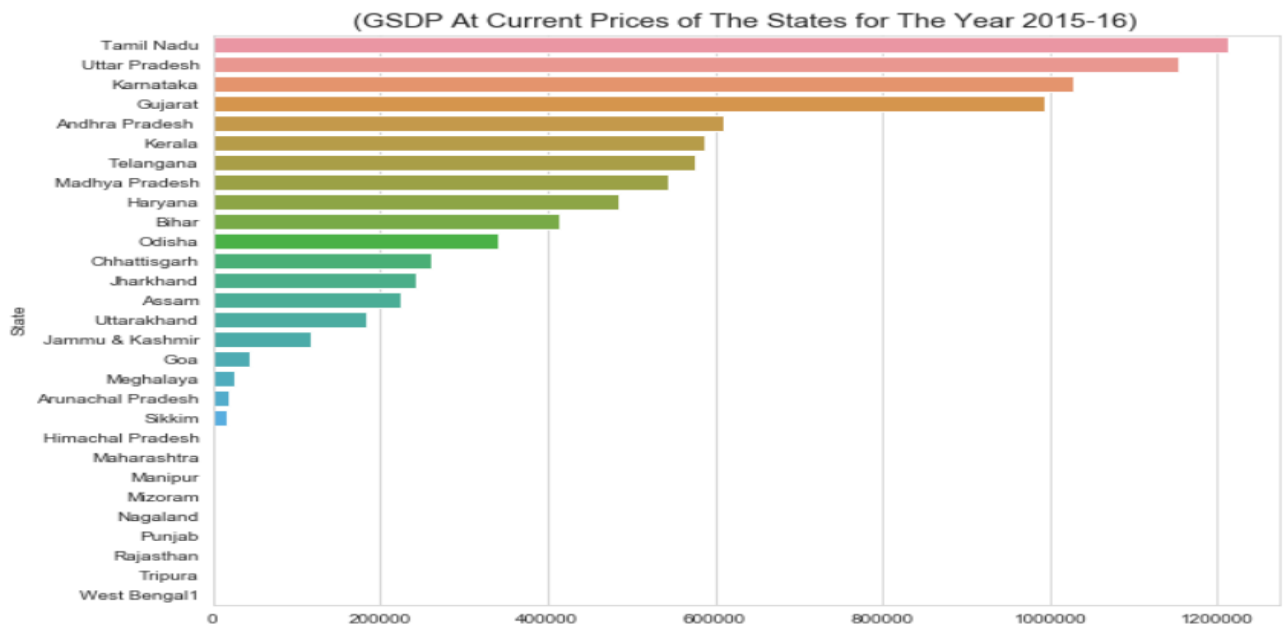
Three South Indian States Karnataka(14.12%), Andhra Pradesh(14.03%) and Telangana(12.76%) made it to the top 10 at 6th, 7th and 10th place respectively, contribute 40.76% to the Indian GDP.

India's most populated state Uttar Pradesh is at number 16, with 11.94% GSDP. Rajasthan, the largest state is at number 20, contributes 11.32%, while the India's poorest state Bihar(13.6%) has done well with the 9th spot.

Goa has been the struggling state with lowest GSDP of 6.03%, Meghalaya(6.95%) and Odisha(9.42%) are the other two struggling states with GSDP less than 10%.

Madhya Pradesh(my home state)has been doing relatively well with growth rate of 12.63% GSDP, 1.6% more than total Indian growth rate and placed at number 12.

2) GSDP At Current Prices of all the Indian states for the year 2015-16

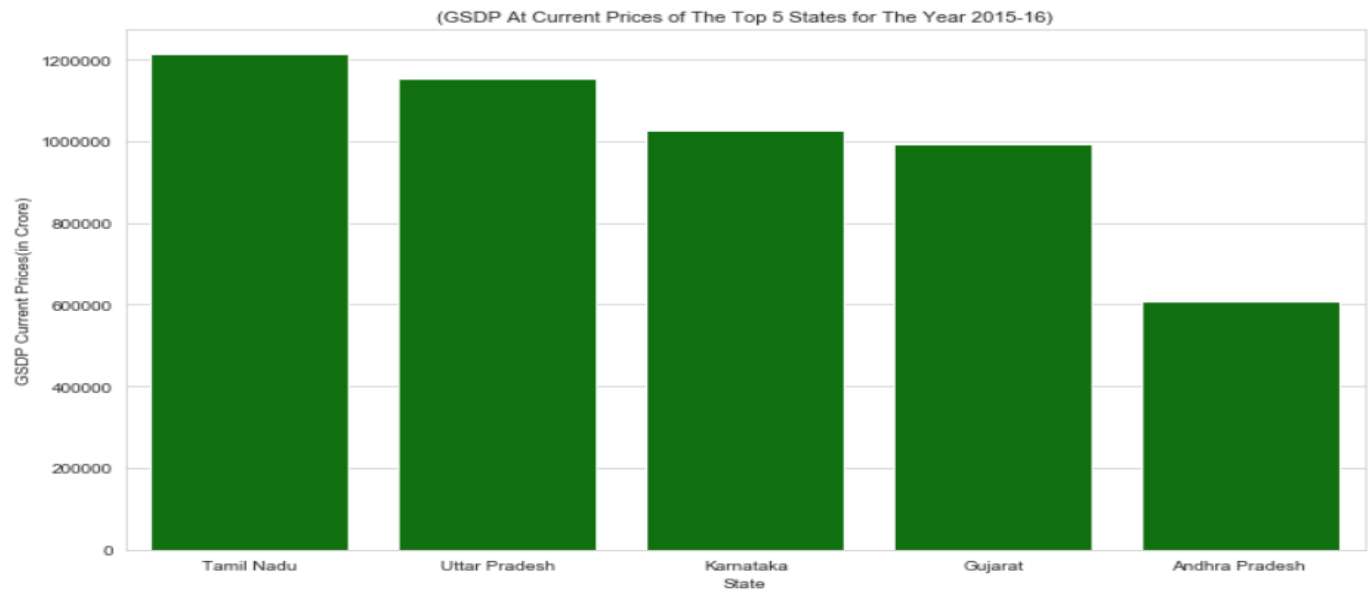


Tamil Nadu is the state with highest GSDP of 1212668 crores among 20 States(data was not available for 9 states), followed by Uttar Pradesh(1153795) and Karnataka(1027068). Gujarat and Andhra Pradesh are the other two states in the top 5.

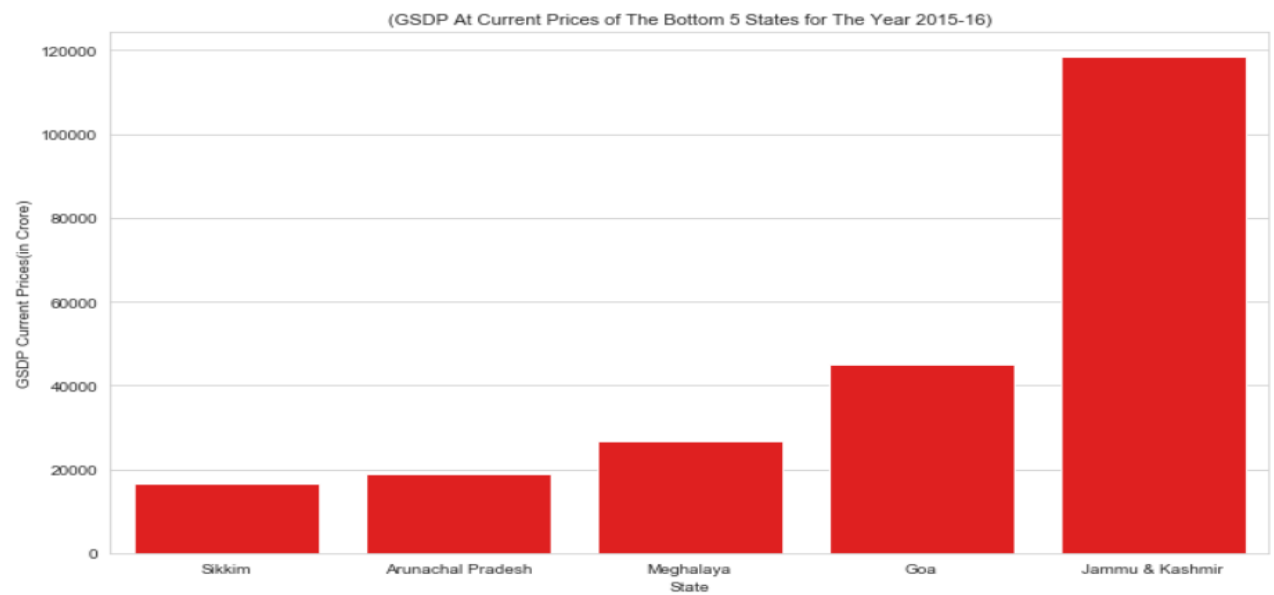
Three South Indian states Andhra Pradesh, Telangana and Kerala are among the top 10.

Sikkim has the lowest GSDP of only 16637, Arunachal Pradesh, Meghalaya and Goa are the other states that have not done well and lying in the bottom 5 segment.

3) Total GSDP of the top 5 Indian states for the year 2015-16

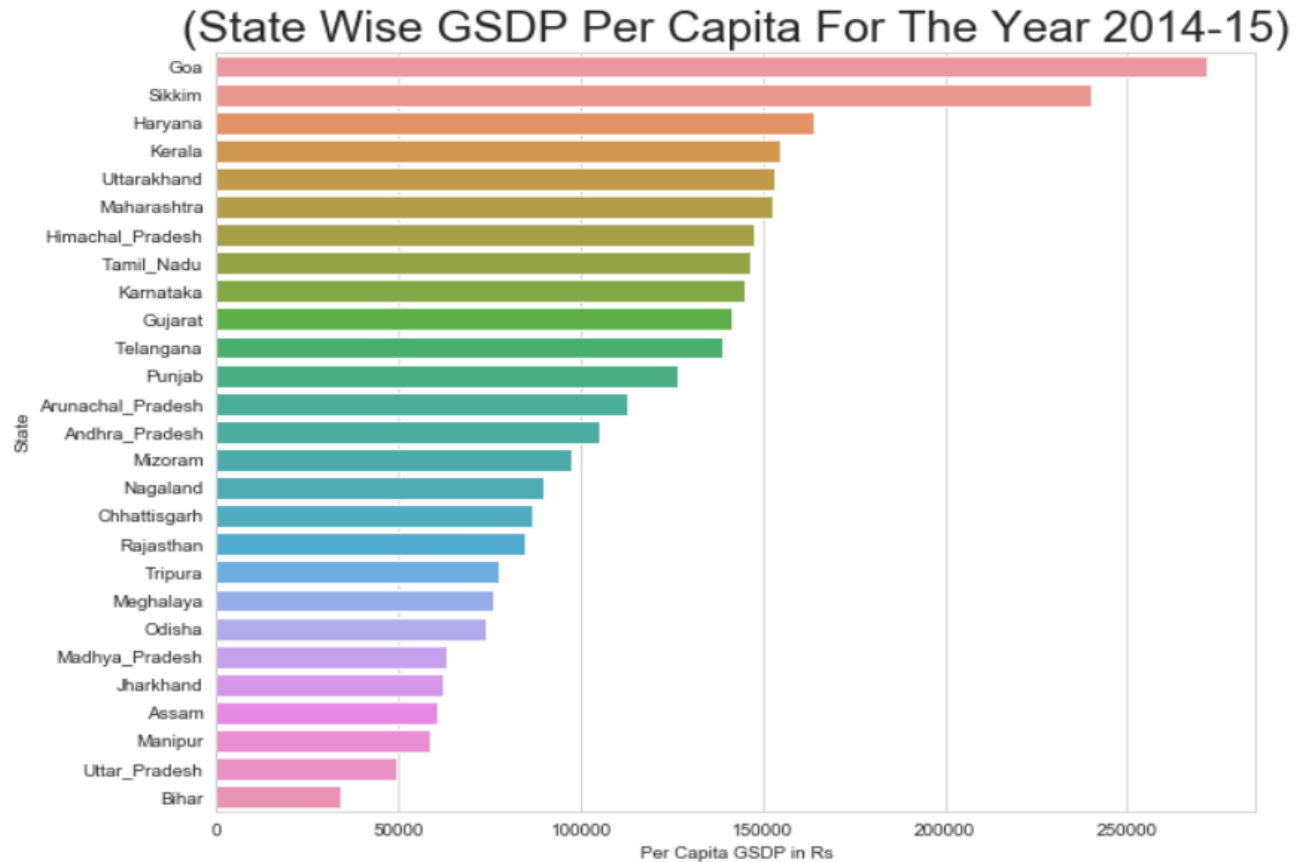


4) Total GSDP of the top 5 Indian states for the year 2015-16



2.2 State Wise GSDP Capita

1) State Wise GSDP Capita for the Year 2014-15



Goa is the state with the highest GSDP per capita of INR 271793, among all the Indian States, followed by Sikkim(240274) and Haryana(164077). Kerala(154778) and Uttarakhand(153076) are at number 4 and 5 respectively.

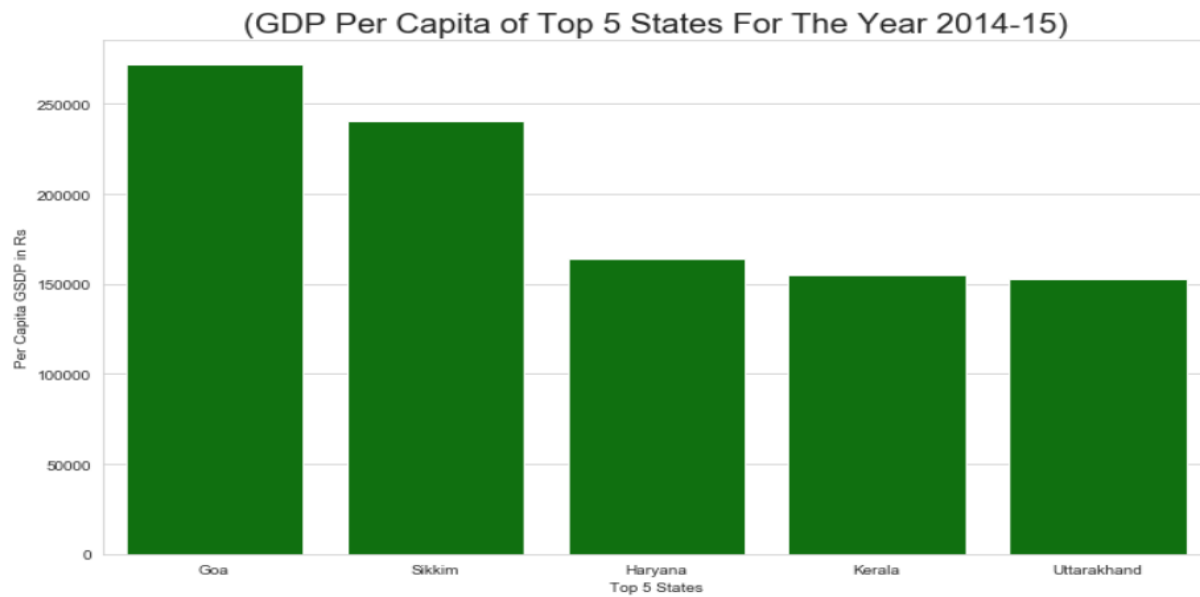
Maharashtra(with Mumbai as the commercial capital of India) ranked 6th with Per Capita GSDP of 152853.

The other two South Indian States, Tamil Nadu(146503) and Karnataka(145141) were able to make it to the top 10.

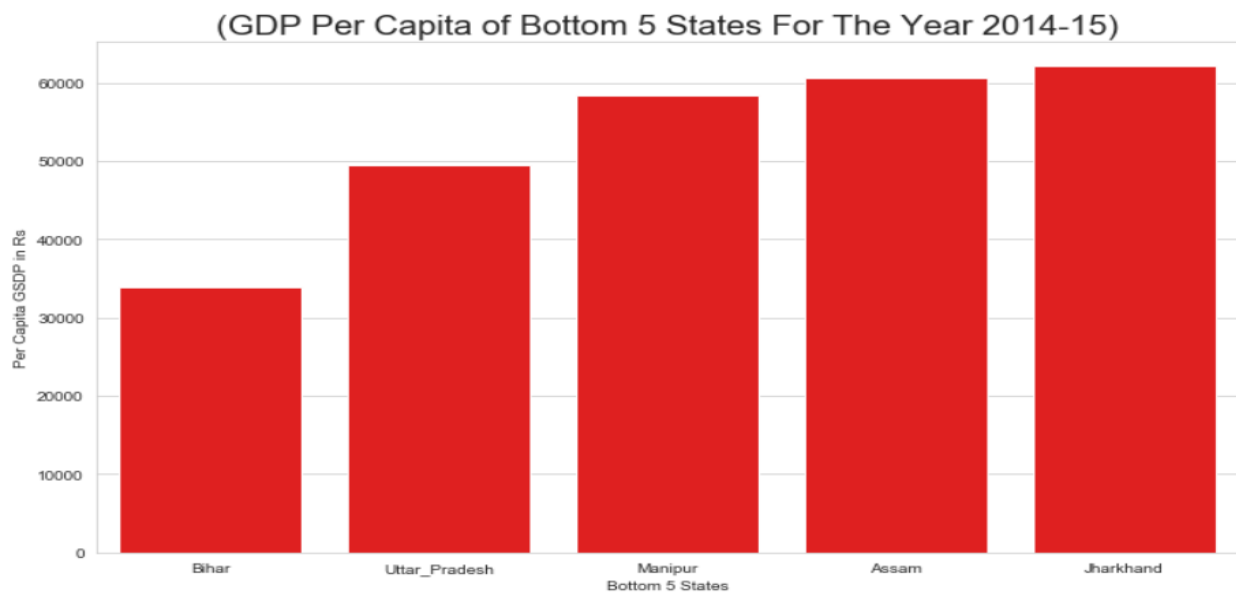
India's largest state Rajasthan is at number 18 with GSDP per capita of 84837. The central state Madhya Pradesh(62989) is at number 22.

The poorest state Bihar is at the bottom of the table with only 33954 GSDP. While, India's most populated State Uttar Pradesh is placed at 26.

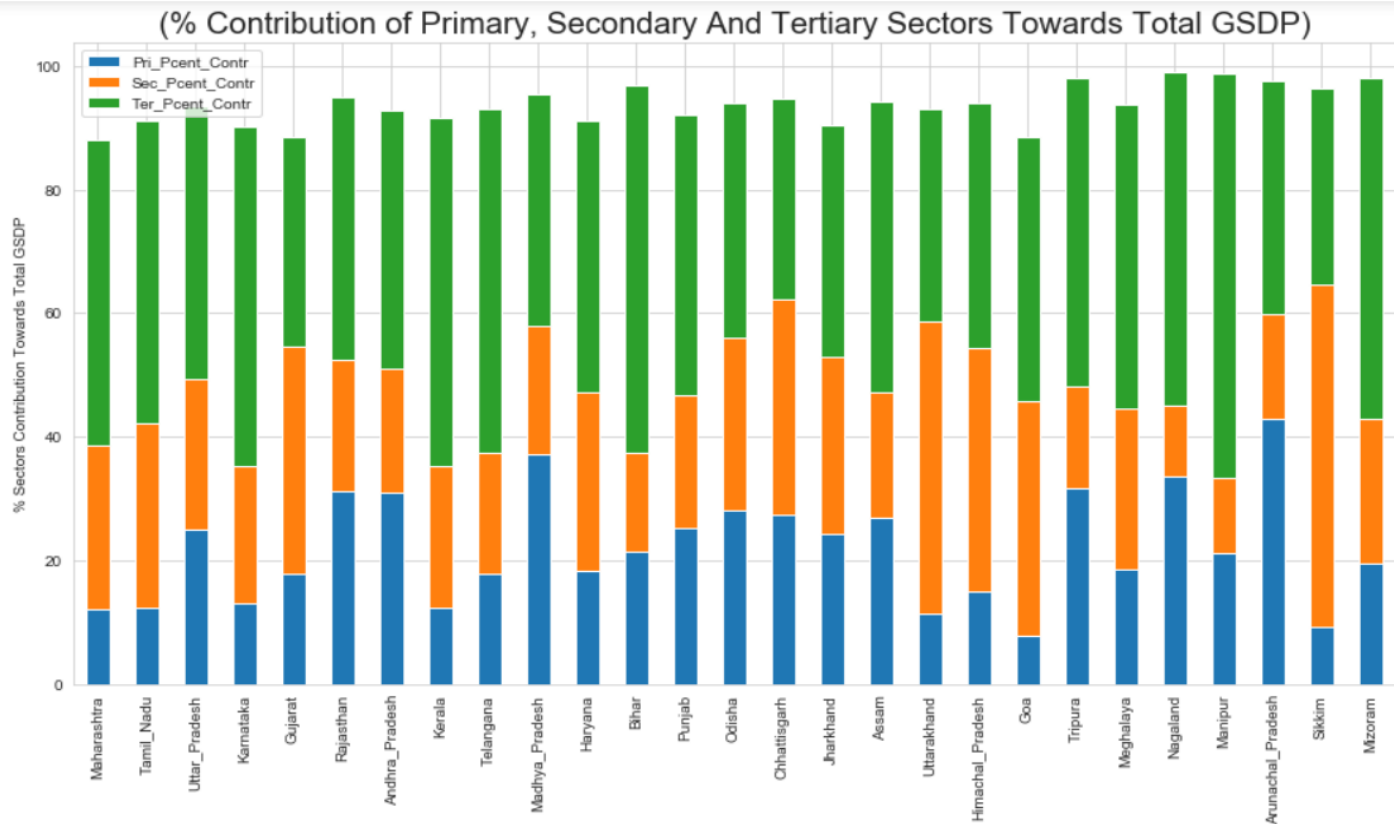
2) GSDP Per Capita of the Top 5 States for the Year 2014-15



3) GSDP Per Capita of the Bottom 5 States for the Year 2014-15



4) Percentage contribution of the primary, secondary and tertiary sectors as a percentage of the total GDP for all the state



Maharashtra has the highest GSDP of 179212165 Crores Rs, among all the Indian states, as of 2014-15. The Primary (12.14%), Secondary(26.47%) and Tertiary(49.45%) sectors contributing 88% towards total GSDP. The Tertiary sector, also known as Service sector, contributes almost half of the total GSDP with 49.45%. This suggests that segments such as Trade, Transport, Banking, Insurance, Hotel, Real State, Business etc are performing really well. However, being a farmer and agricultural rich state, it is lacking well behind in the primary sector with only 12.14% contribution. Secondary sector is doing relatively well with 26.47% contribution.

Tamil Nadu is at number 2 with total GSDP of 109256373 Crores Rs. The Primary (12.20%), Secondary(30.05%) and Tertiary(48.82%) sectors contributing 91% towards total GSDP. Tertiary sector contributes the most towards total GSDP, primary sector is struggling with contribution of only 12%, while secondary sectors is performing relatively better.

India's most populous state, Uttar Pradesh is at number 3 with the total GSDP of 104337115 Crores Rs. The Primary(24.91%), Secondary(24.48%) and Tertiary(44.05%) sectors contributing 93% towards total GSDP. Service Sector is doing good, while Agricultural and Industrial/Manufacturing sectors are performing equally with ~24% share each.

India's largest state Rajasthan is at number 6, despite having lack of agricultural land and natural resources performing very well in terms of primary sector, which contributes 31.22% towards the state's total GSDP of 61219447 Crores Rs. Tertiary sector is at top here as well, with 42.49% contribution. Secondary sector is contribution 21%.

Madhya Pradesh, the central part of India is ranked 10th with the total GSDP of 48198169. Primary, Secondary and Tertiary are contributing 37.04%, 28.84%, and 37.58% respectively. Primary sector is performing equally well with Tertiary sector, while secondary sector is relatively struggling.

Bihar, the poorest state is at number 12, with total GSDP of 37391988 Crores Rs. Service sector is performing really well with 59.31% contribution, while primary and secondary sectors contribute 21.44% and 16.00% respectively.

Punjab, the agricultural state of India, is at number 13 with total GSDP of 36801089 Crores Rs, seems struggling with Primary sector, which contributes 25% towards total GSDP. Secondary and Tertiary contribute 21.48% and 45.42% respectively.

Jharkhand, the mineral and natural resources rich state is placed at 17th with total GSDP of 21710718 Crores. Primary Sector contributes 24.17% only.

Arunachal Pradesh is at top, among all the states in Primary Sector with 42.77% contribution. It is struggling in Secondary sector which contributes only 17.15% towards its total GSDP.

Sikkim is the state with highest contribution in secondary sector with 55.57%, but, struggling a lot with Primary sector, which contributes only 9% to its GSDP.

Manipur has the highest Tertiary contribution with 65.25% towards its total GSDP of 1804276 Crores Rs.

Recommendations

States such as Maharashtra, Tamil Nadu, Karnataka, Uttarakhand etc, which are doing well in Secondary and Tertiary sectors should put more efforts and investments in improving the Primary sector, which is all about producing raw materials out of nature. They should provide more facilities to Farmers and labours, like easy and cheap loans, better irrigation, better electricity and improving the way of channelizing the raw materials such as Crops, Milk, grains, fruits, vegetables etc.

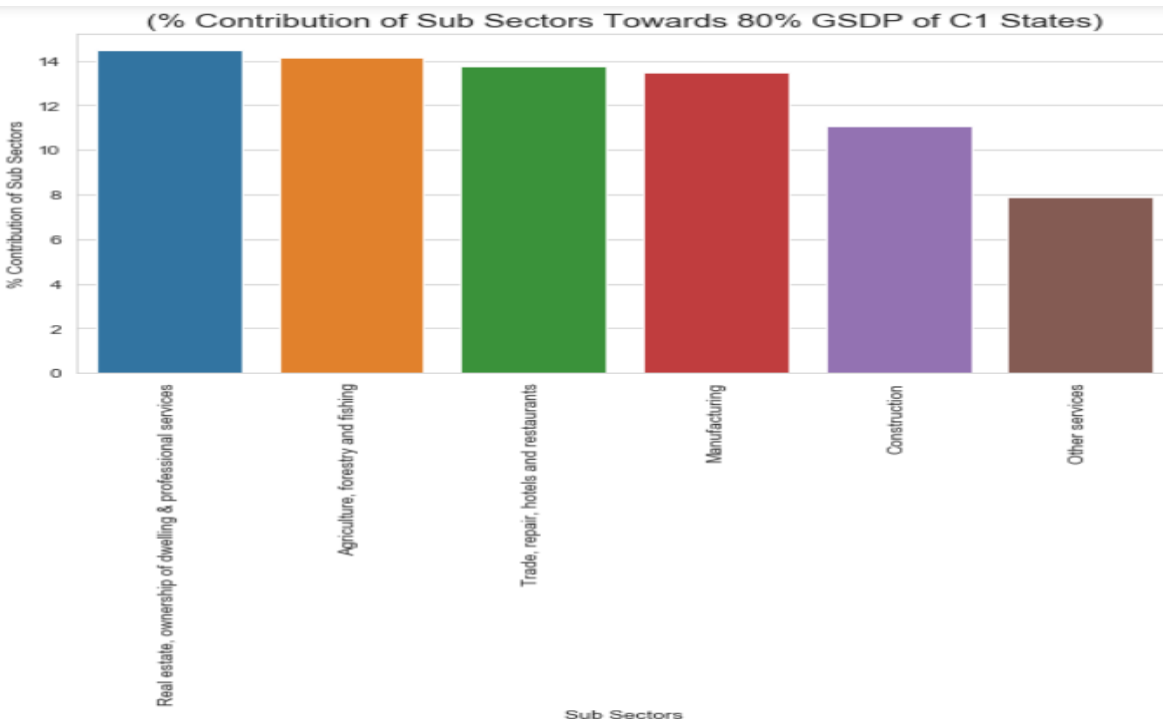
Looking into the performance of Madhya Pradesh, the Primary Sector contributes 38.04%, but Secondary contributes 20%. This suggest that there is abundance of natural resources available, but a lack of Manufacturing and Processing of raw materials. Government should promote more industrialisation, build manufacturing hubs, factories, plants etc.

Same is the case with Nagaland with 33.42% and 11.53% Primary and Secondary contributions. Arunachal Pradesh comes under the same category with 42.7% and 17.1% Primary and Secondary contributions.

Goa and Kerala, which are touring spots and performing quite good in the Tertiary sector. Government should promote tourism, it should provide easy communication and transport facilities. Should improve the Air and rail connectivity, flexible and easy Visas for foreign tourists.

Mizoram, the lowest GSDP state, performs well in the Tertiary Sector. Therefore, Government should provide more Business and Trade opportunities, should promote foreign investment in Real State. Should put more efforts in improving connectivity to the other parts of the country.

5) Percentage contribution of the Sub Sectors Towards 80% GSDP of C1 States



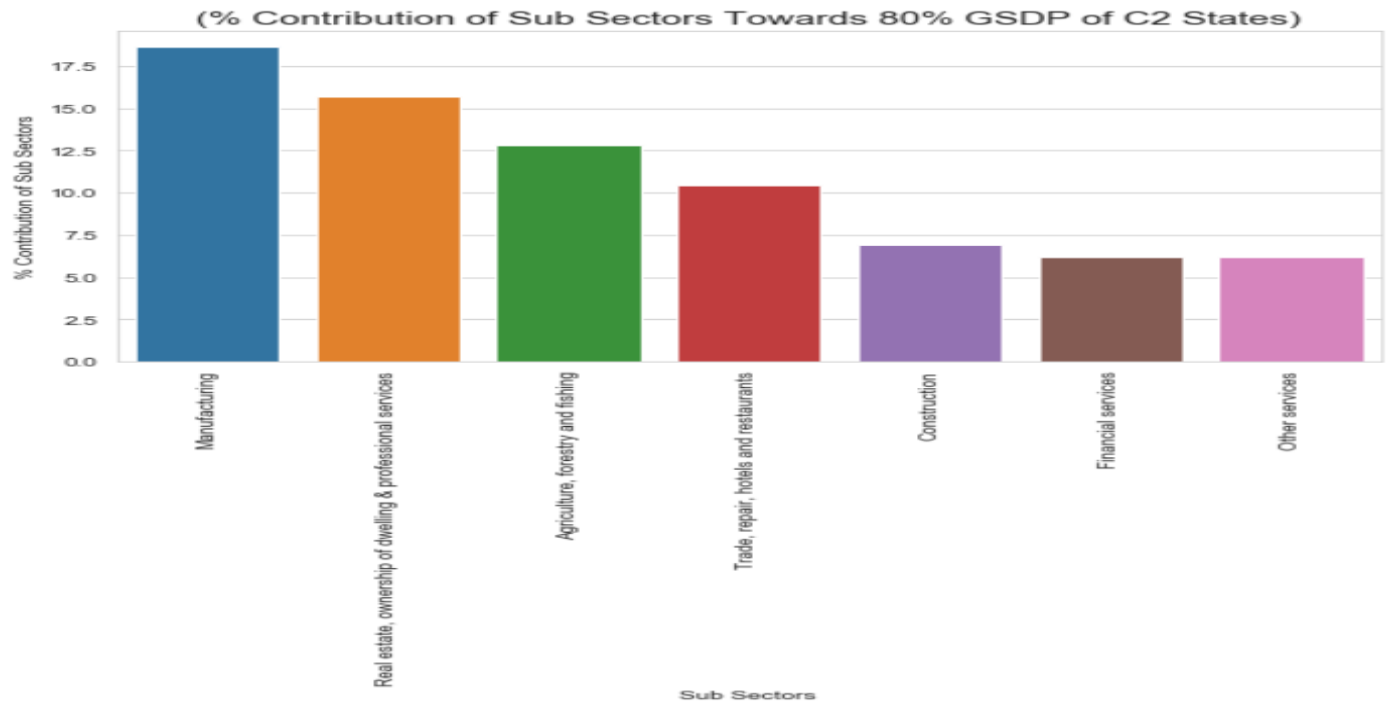
The following states belong to C1 category. They are having Per Capita GDP lies between 153246 and 271793.

- Goa
- Sikkim
- Kerala
- Haryana

These top 6 sub sectors contribute approximately 80% of the GDP:

1. Real estate, ownership of dwelling & professional services (14.46%)
2. Agriculture, forestry and fishing (14.11%)
3. Trade, repair, hotels and restaurants (13.73%)
4. Manufacturing (13.49%)
5. Construction (11%)
6. Other Services (7.9%)

6) Percentage contribution of the Sub Sectors Towards 80% GSDP of C2 States



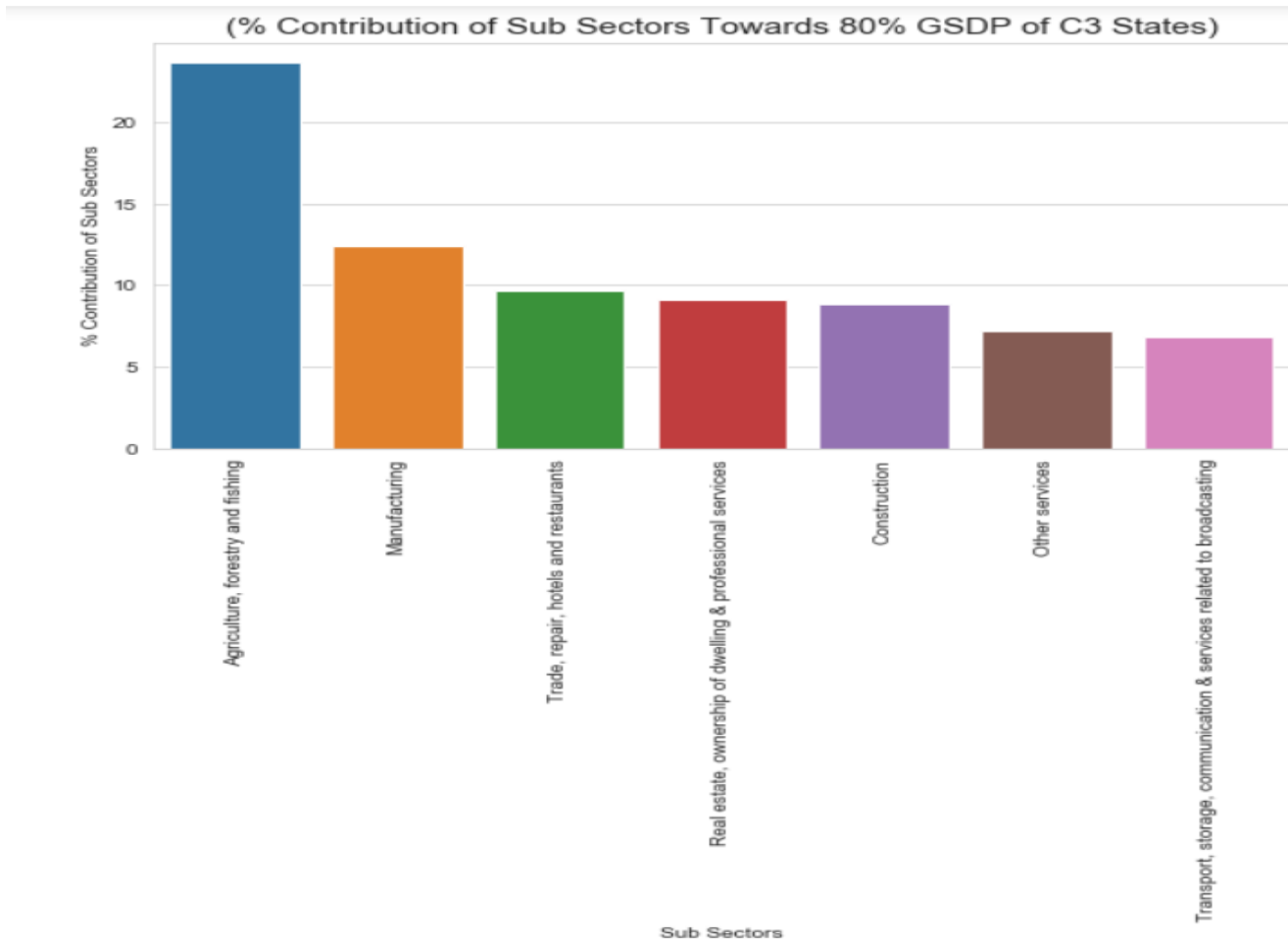
The following states belong to C2 category. They are having Per Capita GDP lies between 104977 and 153246.

- Maharashtra
- Punjab
- Uttarakhand
- Karnataka
- Himachal Pradesh
- Gujarat
- Tamil Nadu
- Telangana
- Arunachal Pradesh

These top 7 sub sectors contribute approximately 80% of the GDP:

1. Manufacturing (18.62%)
2. Real estate, ownership of dwelling & professional services (15.71%)
3. Agriculture, forestry and fishing (12.82%)
4. Trade, repair, hotels and restaurants (10.44%)
5. Construction (6.93%)
6. Financial (6.18%)
7. Other Services (6.18%)

7) Percentage contribution of the Sub Sectors Towards 80% GSDP of C3 States



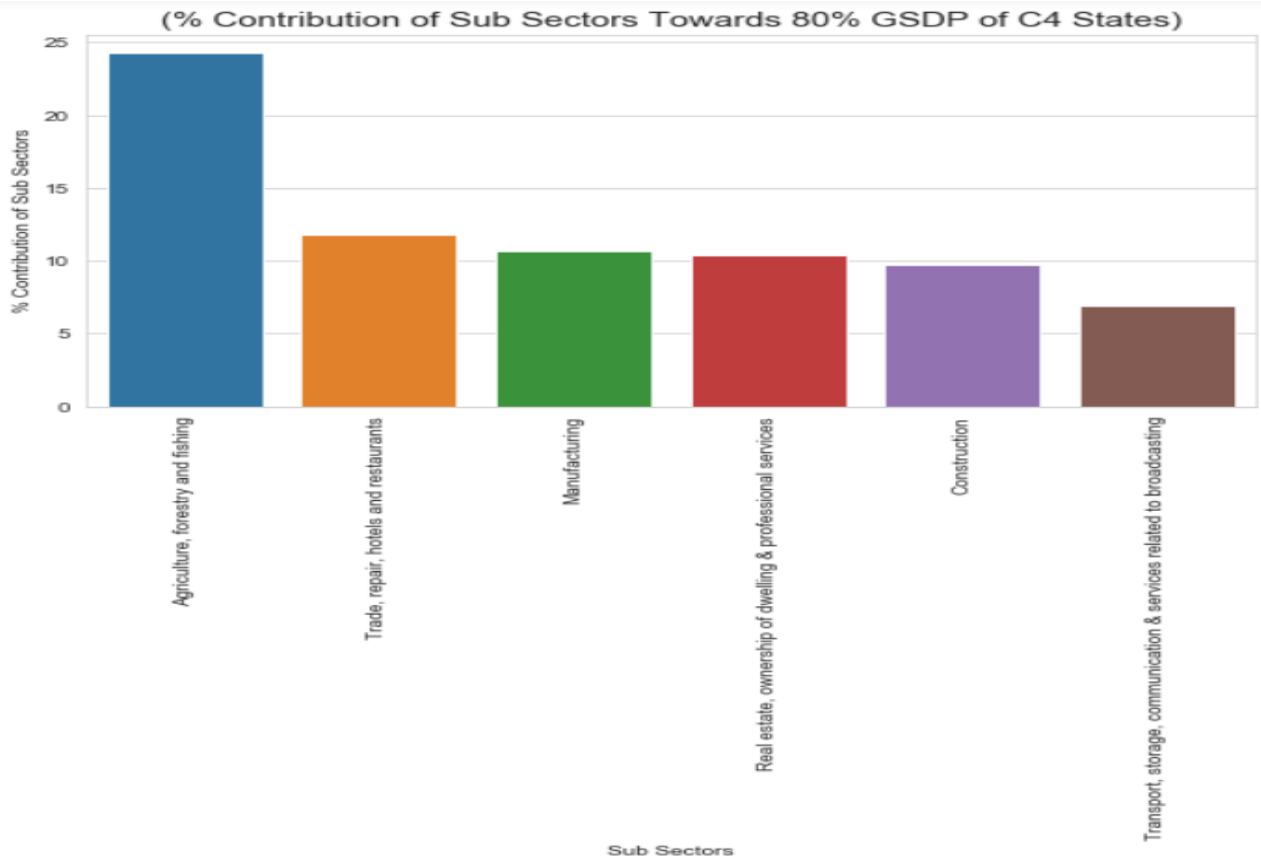
The following states belong to C3 category. They are having Per Capita GDP lies between 65187 and 104977.

- Rajasthan
- Tripura
- Odisha
- Nagaland
- Andhra Pradesh
- Meghalaya
- Chhattisgarh

These top 7 sub sectors contribute approximately 80% of the GDP:

1. Agriculture, forestry and fishing (23.72%)
2. Manufacturing (12.38%)
3. Trade, repair, hotels and restaurants (9.69%)
4. Real estate, ownership of dwelling & professional services (9.11%)
5. Construction (8.82%)
6. Other Services (7.20%)
7. Transport, storage, communication & services related to broadcasting (6.82%)

8) Percentage contribution of the Sub Sectors Towards 80% GSDP of C4 States



The following states belong to C4 category. They are having Per Capita GDP less than 65187.

- Manipur
- Madhya Pradesh
- Jharkhand
- Bihar
- Assam
- Uttar Pradesh

These top 6 sub sectors contribute approximately 80% of the GDP:

1. Agriculture, forestry and fishing (24.32%)
2. Trade, repair, hotels and restaurants (11.78%)
3. Manufacturing (10.71%)
4. Real estate, ownership of dwelling & professional services (10.36%)
5. Construction (9.76%)
6. Transport, storage, communication & services related to broadcasting (6.9%)

Analysis

- C1 States perform well in the sub sectors like Real State, Agriculture, Trade, Manufacturing and Construction than the rest of the states.
- Sub Sectors - Real estate, ownership of dwelling & professional services, Manufacturing and Construction seem to be correlated with high GDP

Focus required

C1 States should focus on:

- Financial services
- Construction
- Other Services

C2 states should put effort on:

- Financial services
- Construction
- Other Services

C3 states should try to improve:

- Transport, Storage, Communication and Services Related to broadcasting.
- Construction
- Other Services

C4 States should focus on:

- Transport, Storage, Communication and Services Related to broadcasting.
- Real estate, ownership of dwelling & professional services
- Construction

Recommendations

C1 States

These states are doing well in sub sectors like Real State, Agriculture, Trade and hospitality. Therefore, Government should invest more in these sub sectors. They can spend on improving infrastructure, promote tourism. Provide better agricultural facilities and easy loan with low ROI to the Farmers and Labours.

Government can invest in setting up new manufacturing/plants, hubs like Milk Products processing units, Bakeries etc

C2 States

These states are performing quite well in Real state and Manufacturing sub sectors. So, Government can think of investing more money in these. Setting up new industrial regions like SEZ, IT park, Business Park etc can be proven beneficial in the longer term.

Since Agriculture is among the top 3 sub sectors, Government should try to invest in it as well. Promotion of Organic farming should be taken into consideration. Modern farming equipment's and techniques should be made easily available to the farmers and labours.

Beside these, Government should try to promote construction, better means of transport, Banking, Insurance etc, as these sub sub/sectors are not doing relatively well.

C3 States

Sub Sector Agriculture, Forestry and Fishing, is booming in these states and hence, Government should invest more in it. Promotion of Organic farming should be taken into consideration. Modern farming equipment and techniques should be made easily available to the farmers and labours. Good Storage facilities for raw materials and good returns should be provided to the Farmers.

Setting up new Food Processing Units and plants, is recommended.

C4 State

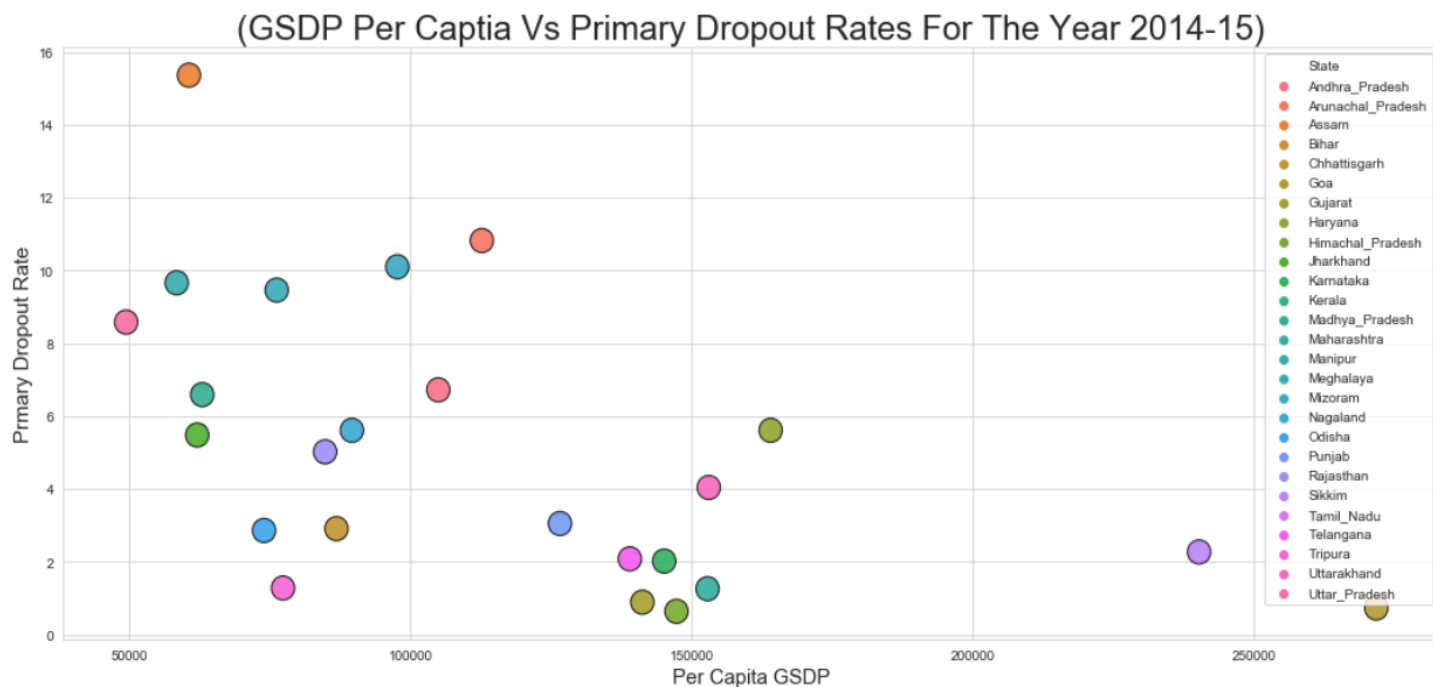
Again Agriculture, Forestry and Fishing doing quite well with more than 24% shares. Therefore, Government should invest more in it. Promotion of Organic farming should be taken into consideration. Modern farming equipment and techniques should be made easily available to the farmers and labours. Good Storage facilities for raw materials and good returns should be provided to the Farmers.

Improvement in means of transport, communication, better education facilities and infrastructure is recommended.

3 GDP AND EDUCATION DROPOUT RATES

3.1 GSDP Per Capita and Dropout Rates

1) GSDP Per Capita and Primary Dropout Rates

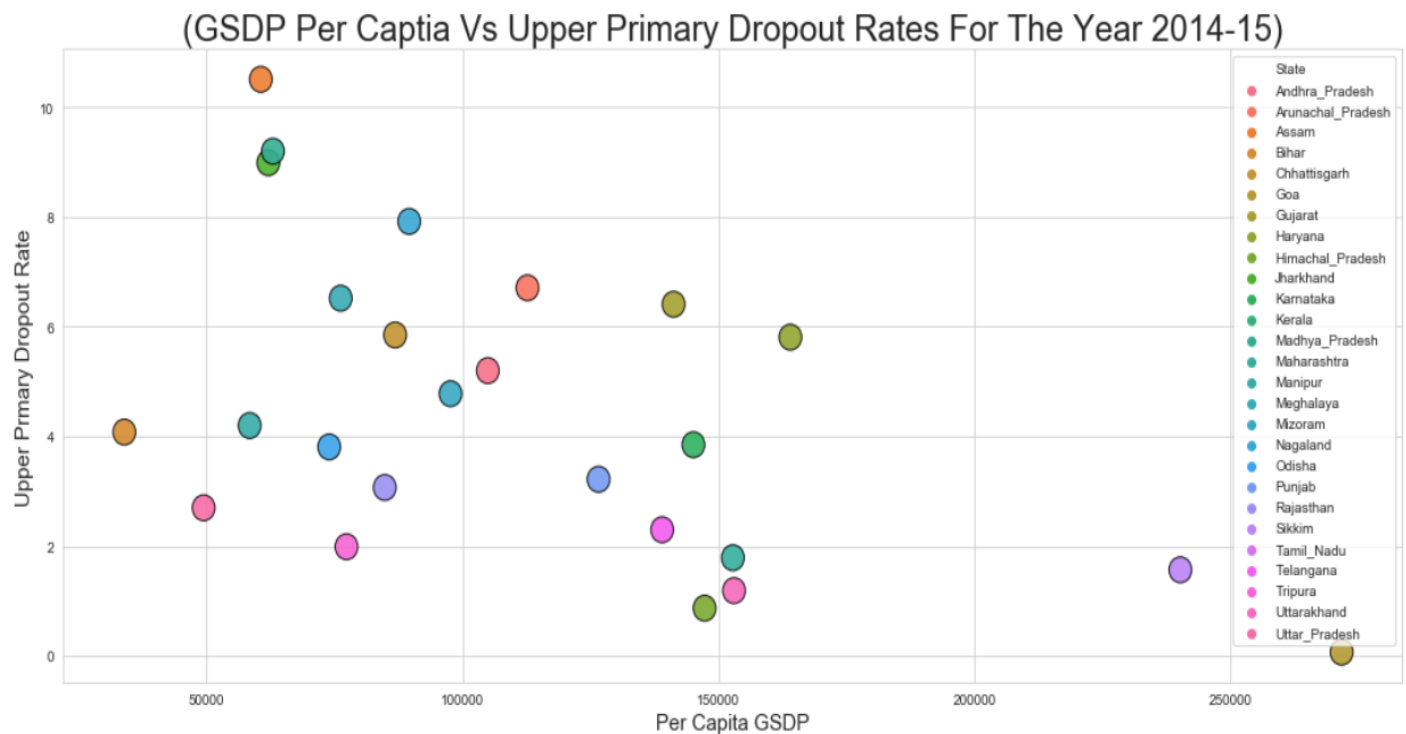


It can be clearly seen from the trend/regression line that there is a negative correlation between GSDP Per Capita and Primary Dropout rate. Goa has the highest GSDP, but the dropout rate is only 0.73%.

Assam is among the bottom 5 states and has the highest Primary Dropout Rate of 15.36%.

Uttar Pradesh is not lagging behind with the second lowest GSDP and Primary Dropout Rate of 8.58%.

2) GSDP Per Capita and Upper Primary Dropout Rates

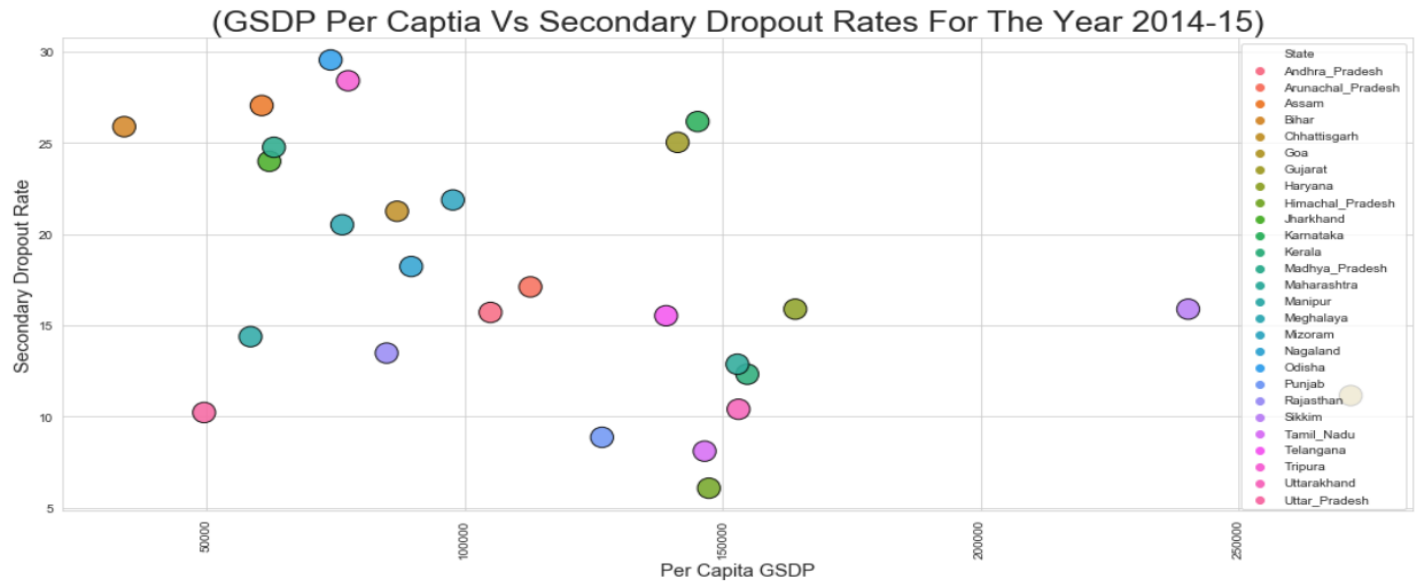


Again, it can be clearly seen from the trend/regression line that there is a negative correlation between GSDP Per Capita and Upper Primary Dropout rate. Goa has the highest GSDP, but the lowest dropout rate is only 0.07%.

Assam is among the bottom 5 states and has the highest Upper Primary Dropout Rate of 10.51%.

Bihar has the lowest GSDP and Dropout rate of 4.81%.

3) GSDP Per Capita and Secondary Dropout Rates



Again, It can be clearly seen from the trend/regression line that there is a negative correlation between GSDP per Capita and Secondary Dropout rate. Bihar has the lowest GSDP, but the is only 25.9%.

Assam is among the bottom 5 states and has the highest Upper Primary Dropout Rate of 27.1%
Odisha is at number 19 among GSDPs, and hast the highest Secondary Dropout Rate of 29.6%.

Goa has the highest GSDP and relatively very low Dropout Rate of 11.2%.

Hypothesis

Looking into the trend, it seems that the lack of Educated, Skilled and Technical resources, leads to the lower GDP of the states. Students are dropping out, without even completing a graduation is a worrying point for any economy.