GDP Assignment: Presentation

Part1A: *GSDP (Gross State Domestic Product) data analysis for the states and union territories.*

i. Analysis for average GSDP growth rate for all the states for 2013-14, 2014-15 and 2015-16

From the plot we have done based on the average GSDP growth rate for all the states:

The top 5 states with best average growth rate are -

- Mizoram
- Tripura
- Nagaland,
- Manipur
- Arunachal Pradesh

(All 5 North Eastern states)

The bottom 5 lagging states with least average growth rate are:

- J & K
- Sikkim
- Odisha
- Meghalaya
- Goa

Curiosity findings:

- All_India GDP growth rate (11.2 %) has also been included for reference.
- My home state Andhra Pradesh's GSDP has been growing at 14.03% i.e. higher than the Nation's GDP growth rate of 11.2%.

Check the consistency in the growth rate percentage across 3 years:

- GSDP growth rate of Andhra Pradesh & Meghalaya have been increasing consistently over three years, while the other states have inconsistent growth patterns.
- GSDP growth rate values for 2015-16 year are missing for A & N Islands, Himachal Pradesh, Maharashtra, Manipur, Mizoram, Nagaland, Punjab, Rajasthan & Tripura

ii. GDP of the states for the year 2015-16

Identify top-5 and bottom-5 based on total GDP:

From the plot, the top 5 states with highest GSDP for the year 2015-16 are -

- Tamil Nadu
- Uttar Pradesh
- Karnataka
- Gujarat
- Andhra Pradesh

The bottom 5 states with lowest GSDP states for the year 2015-16 are:

- Chandigarh
- Meghalaya
- Puducherry
- Arunachal Pradesh
- Sikkim

Part1B: Per Capita *GSDP data analysis for 27 states*

i. Identify top-5 and bottom-5 states based on Per Capita GSDP

From the plot in jupyter notebook, the top 5 states with highest Per Capita GSDP for the year 2014-15 are:

- Goa
- Sikkim
- Haryana
- Kerala
- Uttarakhand

From the above plot, the bottom 5 states with lowest Per Capita GSDP for the year 2014-15 are:

- Jharkhand
- Assam
- Manipur
- Uttar Pradesh
- Bihar

Goa state has the highest Per Capita GSDP during the year 2014-15: **271793.0**
Bihar state has the highest Per Capita GSDP during the year 2014-15: **33954.0**
Ratio of the Highest (Goa) to the Lowest (Bihar) Per Capita GSDP during the year 2014-15 is: 8.005

ii. Contribution of Primary, Secondary & Tertiary sectors to the total GSDP has been plotted in the jupyter python notebook attached.

iii. Categorise the states into four categories based on GDP per capita

C1: 4 Quantile: (0.85 -1]
C2: 9 Quantile: (0. 5 -0.85]
C3: 8 Quantile: (0.2 -0.5]
C4: 6 Quantile: (0 – 0.2]

The count of all 27 states along with the Category they fall into based on Per Capita GSDP, C1 being the category of the highest GSDP Per Capita to C4 being the lowest.

iv. Plot the contribution to sub-sectors to GSDP under each category of state

We have plotted the top 80% contributing sub-sectors for all the four Categories. Here are the key take away points:

The top-four sub-sectors remain the same, although not is same order, for all 4 Categories.

- Real estate, ownership of dwelling & professio...
- Agriculture, forestry and fishing
- Trade, repair, hotels and restaurants
- Manufacturing

Category C1: Top-7 sub-sectors contribute > 80%

- Real estate, ownership of dwelling & professio...
- Agriculture, forestry and fishing
- Trade, repair, hotels and restaurants
- Manufacturing
- Construction
- Financial services
- Other services
- Transport, storage, communication & services r...

The top-4 sub-sectors have almost same % contribution (ranging between (13%-14%) towards GSDP. This indicates even distribution across multiple sub-sectors and no dependency on single sub-sector for GSDP.

Category C2: Top-8 sub-sectors contribute > 80%

- Manufacturing
- Real estate, ownership of dwelling & professio...
- Agriculture, forestry and fishing
- Trade, repair, hotels and restaurants
- Construction
- Financial services
- Other services
- Transport, storage, communication & services r...

The top-4 sub-sectors have varying % of contribution (ranging between (10%-18%) towards GSDP. This indicates sub-sectors 2,3 & 4 are lagging and need to catch up with top sub-sector in contribution for effective growth of GSDP per capita.

Category C3: Top-8 sub-sectors contribute > 80%

- Agriculture, forestry and fishing
- Manufacturing
- Trade, repair, hotels and restaurants
- Real estate, ownership of dwelling & professio...
- Construction
- Transport, storage, communication & services r...
- Other services
- Mining and quarrying

The top sub-sector Agriculture, forestry and fishing contributes 23% towards GSDP. This indicates sub-sectors 2, 3 & 4,mainly 2nd sub-sector manufacturing, are lagging and need to catch up with top sub-sector in contribution for effective growth of GSDP per capita.

Category C4: Top-7 sub-sectors contribute > 80%

- Agriculture, forestry and fishing
- Trade, repair, hotels and restaurants
- Manufacturing
- Real estate, ownership of dwelling & professio...
- Construction
- Transport, storage, communication & services r...
- Other services

The top sub-sector Agriculture, forestry and fishing contributes 24% towards GSDP. This indicates sub-sectors 2,3 & 4 sub-sectors are lagging and need to catch up with top sub-sector in contribution for effective growth of GSDP per capita.

PART 2: CORRELATION BETWEEN PER CAPITA GSDP & SCHOOL DROP OUT RATES

1. From the Per Capita vs Primary Drop out % plot we see above, it is evident that for the states in C1 & C2 (which have higher Per Capita than C3 & C4) category, the drop out percentage is low at Primary class compared to the states in C3 & C4 categories. Therefore, with increase in Per Capita GSDP, the drop out percentage can be said to be coming down.

2. From the Per Capita vs Upper Primary Drop out % plot we see above, it is evident that for the states in C2 category, the drop out percentage is low at Upper Primary class compared to the states in C3 & C4 categories.

3. From the Per Capita vs Secondary Drop out % plot we see above, the C2 category states have lower drop out percentage than C1 states Bur C3 & C4, as expected have higher drop out percentages.

4. From the Per Capita vs Senior Secondary Drop out % plot we see above, ironically the C1 category states have higher drop out percentage than C2, C3 & C4 states. This can be attributed the fact that most of the students drop out at early stages in C3 & C4 or in some cases C2 states also. But when it comes to C1 states, they continue up until Senior Secondary before dropping out.

From the Heat-map generated using the correlation matrix, we have the following observations:

- The Per Capita GSDP has negative correlation with Primary, Upper Primary & Secondary drop out percentage i.e. less number of students are dropping out at these 3 levels as the Per Capita GSDP increases. So for states with Low Per Capita GSDP, higher chances of students dropping out at Primary level.

- The Per Capita GSDP correlation with Primary drop out percentage is -0.46 i.e. with every 1% increase in Per Capita GSDP, the Primary dropout rate can decrease by 0.46 %. For Upper Primary drop out, the number stands at decrease by 0.54% and Secondary drop outs decrease by 0.54 %.

- The Per Capita GSDP has positive correlation with Senior Secondary drop out percentage i.e. more number of students are dropping out at this levels as the Per Capita GSDP increases. Around 0.33% increase in drop out % at Senior Secondary for every 1% increase in the Per Capita GSDP.

- The way this should be looked at is - "For states with higher Per Capita GSDP, there is a higher chance of students continuing education up until Senior Secondary, but at the same time they are dropping out at that level"