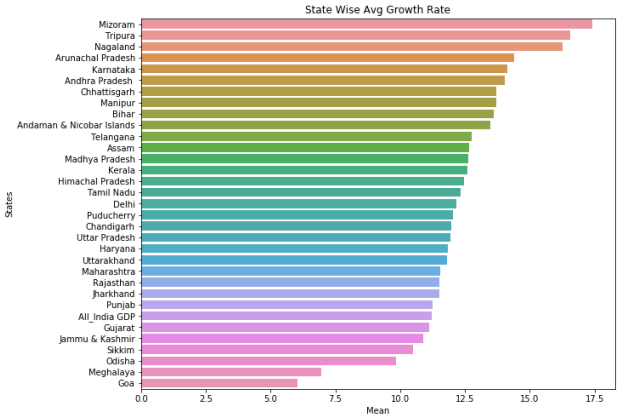
Assignment: GDP Analysis on Indian States

Drafted below approach considered to complete the assignment and keyed in the observations out of the analysis.

Part I – A:

- All state files, GSDP & Education drop out files downloaded from Link: https://data.gov.in/ and saved in local drive with csv extensions
- As part of Part I assignment, GSDP file is read into Python
- Data for the year '2016-17' has been filtered out as suggested in the portal
- West Bengal state has been filtered out as there are no values for that state
- A new Data Frame (GSDP_df) has been created with only Growth Rate% data
- All NaN values imputed with mean
- Transposed Rows and columns and aligned data for a better structure
- New calculated column added to find average of 3 years growth rate
- The data frame has been plotted as shown below

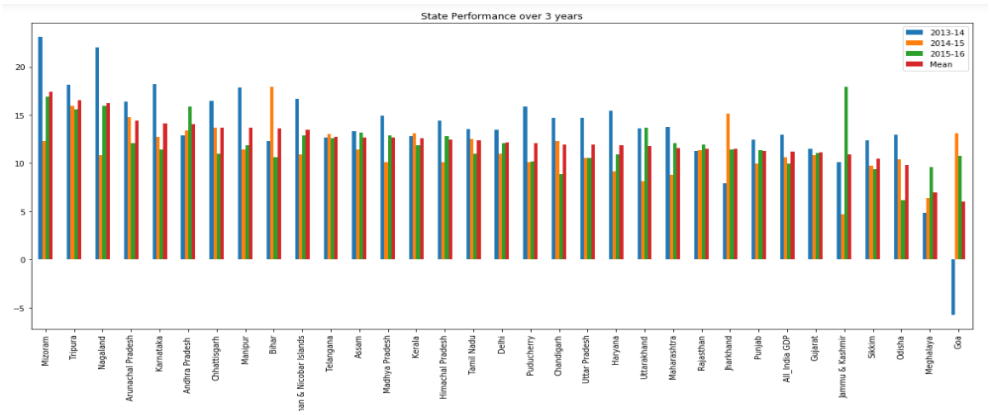


Key Observations:

- Mizoram, Tripura & Nagaland having the highest Avg Growth Rate. While, Odisha, Meghalaya & Goa having least Avg Growth Rate

States Performance over 2013-14, 2014-15, 2015-16:

- Using the same data frame plotted performance of all states over 3 years



Key Observations:

- Meghalaya & Andhra Pradesh shown consistent improvement over 3 years
- Arunachal Pradesh, Tripura, Karnataka, Chhattisgarh, Sikkim and India Overall are doing inconsistently over 3 years
- States like Telangana, Rajasthan, Gujarat are consistent on their Growth rate and neither showed improvement not declined.

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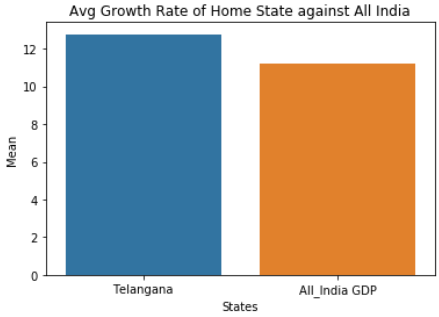
Curiosity Exercise - Comparing Home State against India GDP:

- Created a separate data frame to filter out India GDP & Home State GDP and compression showed in below graph

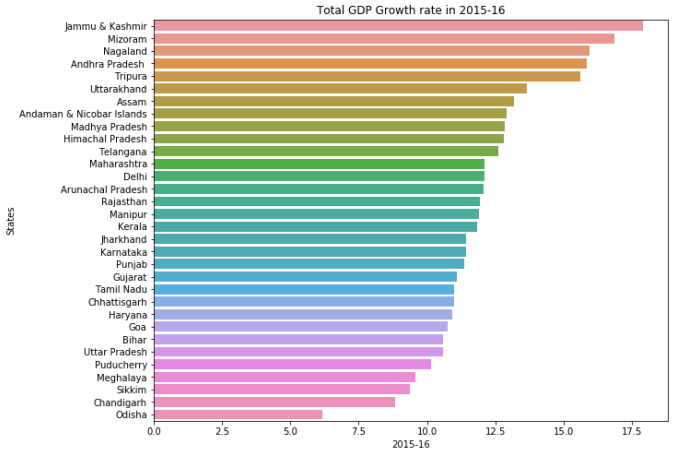


Key Observations:

- Above Graph clearly depicts Telangana Avg growth rate is better when compared with All India GDP growth rate

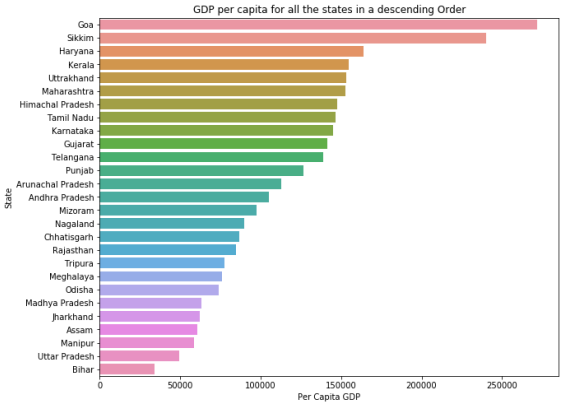
Top5 & Bottom 5 states basis Total GDP rates in 2015-16:

- A new Data frame created to plot different states with Growth rate in 2015-16



GDP Analysis of India States Part - I B:

- As part of Assignment Part B, read all Sites files into Python
- All files merged and assigned to one main data frame (main_df)
- Filtered the data set with only relevant data
- Created a new data frame to compare state wise GDP per Capita as shown below



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Key Observations:

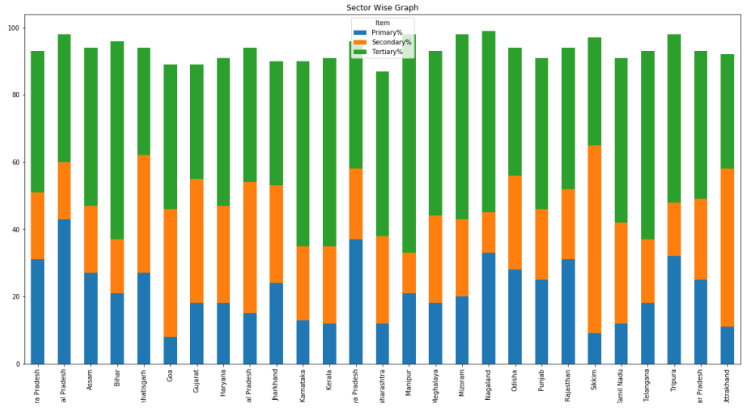
- Above graph clearly shows: Top 5 states on GDP per Capita: Goa, Sikkim, Haryana, Kerala & Uttrakhand
- Bottom 5 states on GDP per Capita: Jharkhan, Assam, Manipur, Utter Pradesh & Bihar

Ratio:

- Ratio of Highest GDP to the lowest GDP is at 8:1

Sector wise contribution to total GDP per State:

- Created a new data frame to filter only main sectors
- Added new columns for percentage contribution by each of the sectors
- Stack plotted the same as shown below



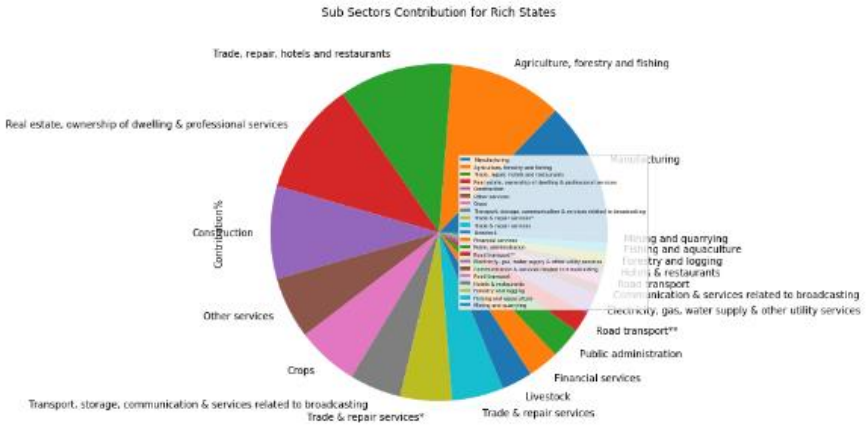
Key Observations:

- Overall Tertiary sector contributing mostly to the total GDP followed by Secondary sector

Categorisation of States:

- All States categorised into 4 categories (Rich, Upper middle, Lower middle & poor) basis their percentile contribution to per capita GDP in the year 2014-15
- 100 - 85 percentile states considered to be Rich. 85 - 50 percentile states considered to be Upper middle. 50 - 20 percentile states considered to be Lower middle and below 20 percentile states considered to be Poor

Rich States Sub Sector Contribution:



Key Observations:

- Sub Sectors which are contributing to 80% of GDP in Rich States 1) Manufacturing 2) Agriculture, forestry and fishing 3) Trade, repair, hotels and restaurants 4) Real estate, ownership of dwelling & professio... 5) Construction 6) Other services 7) Crops 8) Transport, storage, communication & services r... 9) Trade & repair services

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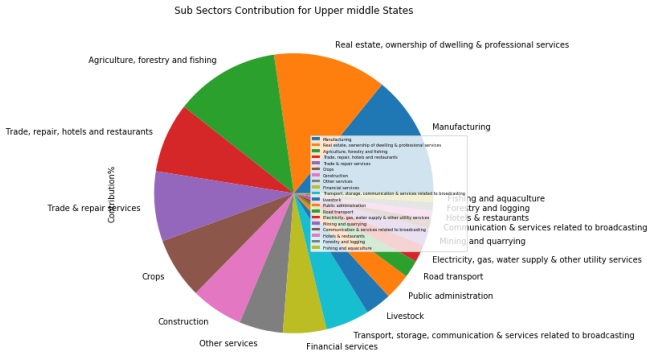
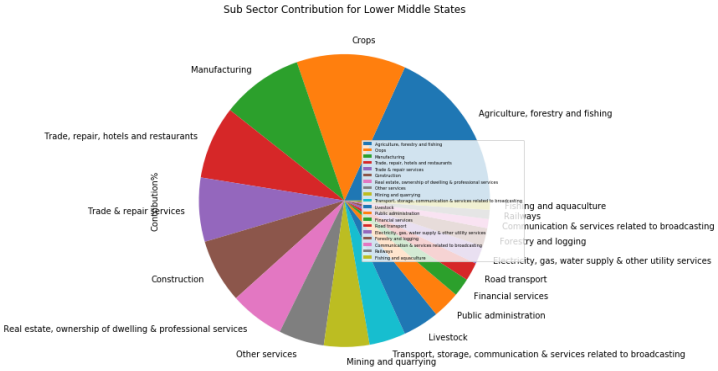
Upper Middle states sub sector contributions:



Key Observations:

- Sub Sectors which are contributing to 80% of GDP in "Upper Middle" States 1) Manufacturing 2) Real estate, ownership of dwelling & professio... 3) Agriculture, forestry and fishing 4) Trade, repair, hotels and restaurants 5) Trade & repair services 6) Crops 7) Construction 8) Other services 9) Financial services

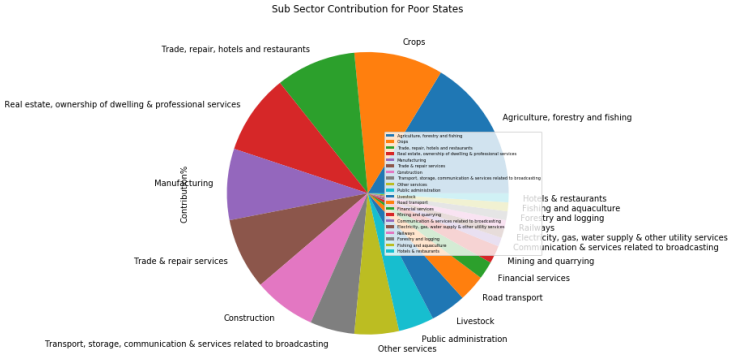
Lower Middle States Sub Sector contribution:



Key Observations:

- Sub Sectors which are contributing to 80% of GDP in Lower Middle States 1) Agriculture, forestry and fishing 2) Crops 3) Manufacturing 4) Trade, repair, hotels and restaurants 5) Trade & repair services 6) Construction 7) Real estate, ownership of dwelling & professio... 8) Other services 9) Mining and quarrying 10) Transport, storage, communication & services r...

Poor states sub sector contribution



Key Observations:

- Sub sectors which are contributing to 80% of GDP in Poor States 1) Agriculture, forestry and fishing 2) Crops 3) Trade, repair, hotels and restaurants 4) Real estate, ownership of dwelling & professio... 5) Manufacturing 6) Trade & repair services 7) Construction 8) Transport, storage, communication & services r... 9) Other services 10) Public administration

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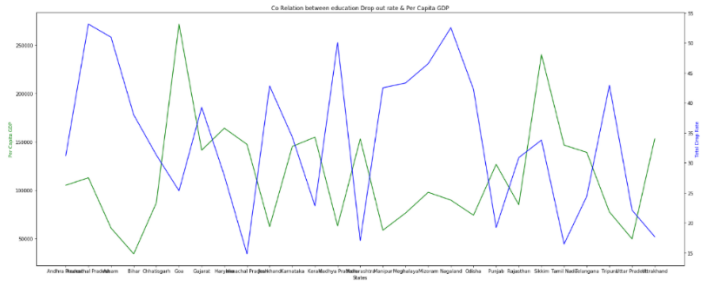
GDP Analysis of Indian States Part II:

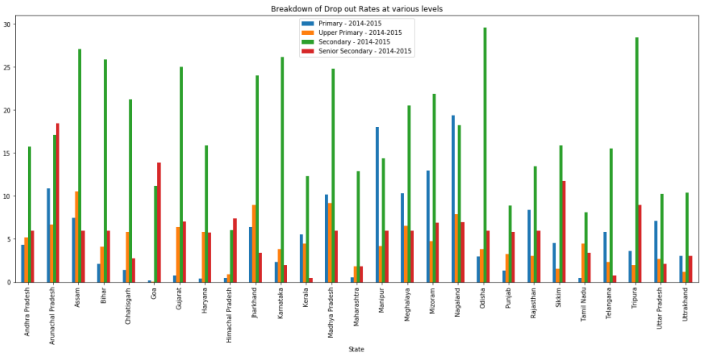
- As part of assignment Part II, education drop out files are read into Python
- All UT & West Bengal & Jammu & Kashmir dropped from the data set
- All necessary imputations and slicing and dicing tasks performed
- Merged Education drop out file and Per capita GDP file
- Plotted below graph to get insights on correlation between education dropouts and Per capita GDP



Key Observations:

- In the above graph, blue line indicates Total Dropout rate in all the states & Green line indicates Per Capita GDP. Observation: Per Capita GDP is inversely proportional to Drop out rate. Wherever there is high dropout rate, Per capita GDP is low and vice versa

Dropout breakdown one level of education shown below



Key Observations:

- Clearly a huge dropout rate at Secondary level of schooling when compared to other levels

Key Insights & Recommendations:

- For the rich states, majority of GDP is coming from Manufacturing, Agriculture, Trade & Real estate and scope to improve their Railway Sector and Air Sector , since their literacy rate is high(Dropout is at 25% on an avg). This can add to their GDP growth
- For Upper Class states, majority of GDP coming from Manufacturing, Agriculture & Real estate. Since they are also having high literacy rate (apprx 27.5% dropout) they can improve on Trade and Financial sectors which is currently at 8% and 5% respectively.
- For Lower class states, majority of their GDP is coming from Agriculture & Crops. These states having highest dropout rate(Appx 42% avg). These states can improve GDP by contributing more on Constructions & Mining sectors
- Poor states also getting majority of GDP from Agriculture & Crops. Since their literacy rate is better compared to lower class states, they can improve on Railways, hotels & Air Transport.
- Majority of GDP is coming from Manufacturing, Agriculture, Trading, Real estate across India
- Lowest contributors are Storage, Water Transport, Air Transport, Hotels, Railways, etc.,