Relationship between Indian GDP, Politics and Starbucks (2011-2017)

By: Gyan Prakash Tripathi

A. Introduction

A.1 Problem Description and Discussion of Background

India is a diverse and rapidly growing nation. It is ruled by several parties on state level. During elections it becomes important to decide which party to vote for. It is often claimed that the country has seen various reforms and considerable growth during the reign of Prime Minister Modi. But, whatever is said is not the truth at least in some cases.

Finally, the country is going through a phase of elections during April 2019- May 2019. We tried to analyze the work of different state governments over past seven years in terms of GDP growth. We decided to put an effort to analyze the Nominal GDP Growth of different states, and group them into different categories. We will also tried to find out correlation between various ruling governments and nominal GDP growth.

The growth of GDP and government policies affect businesses considerably. Starbucks opened it's first outlet in 2013 in India. We will see how the GDP growth of place affects growth in business of company in India.

A.2 Questions To Be Answered

- *During the reign of which party, GDP growth has been more?*
- *Can various states be categorized on basis of GDP Growth? Which states have similar growth patterns?*
- *How does the GDP growth of place affect growth of Starbucks Outlets in the area?*

A.3 Description of the Data

In order to perform the analysis we collected our data from internet by web scrapping. The data used is described below.

1. Table of **Year-wise Nominal GDP of different states of India** is available on wikipedia[1] . This table is used to calculate the year-wise GDP growth. taken form Wikipedia.
2. **List of Starbucks outlets** functional in the country, taken from Wikipedia. This table is available on wikipedia[2]. We have dropped the last column, and added the location of stores, in terms of latitude and longitude. **Foursquare API** has been used to fetch the location data.

State/Region	City	No. of Outlets	First outlet
Delhi	New Delhi	17	24 January 2013
Delhi NCR	Gurgaon	7	10 July 2013[38][39]
Delhi NCR	Noida	3	15 February 2016[40]
Maharashtra	Mumbai	46	19 October 2012
	Pune	11	8 September 2013
Karnataka	Bangalore	19	22 November 2013
Tamil Nadu	Chennai	8	8 July 2014[41]
Telangana	Hyderabad	7	1 October 2014
West Bengal	Kolkata	4	21 March 2018
Chandigarh	Chandigarh	1	19 October 2018

3. We also required to obtain the stats of these seven years, providing the **distribution of years over which a particular alliance has ruled the given state**. This information was not readily available on internet, so we created our own CSV file.

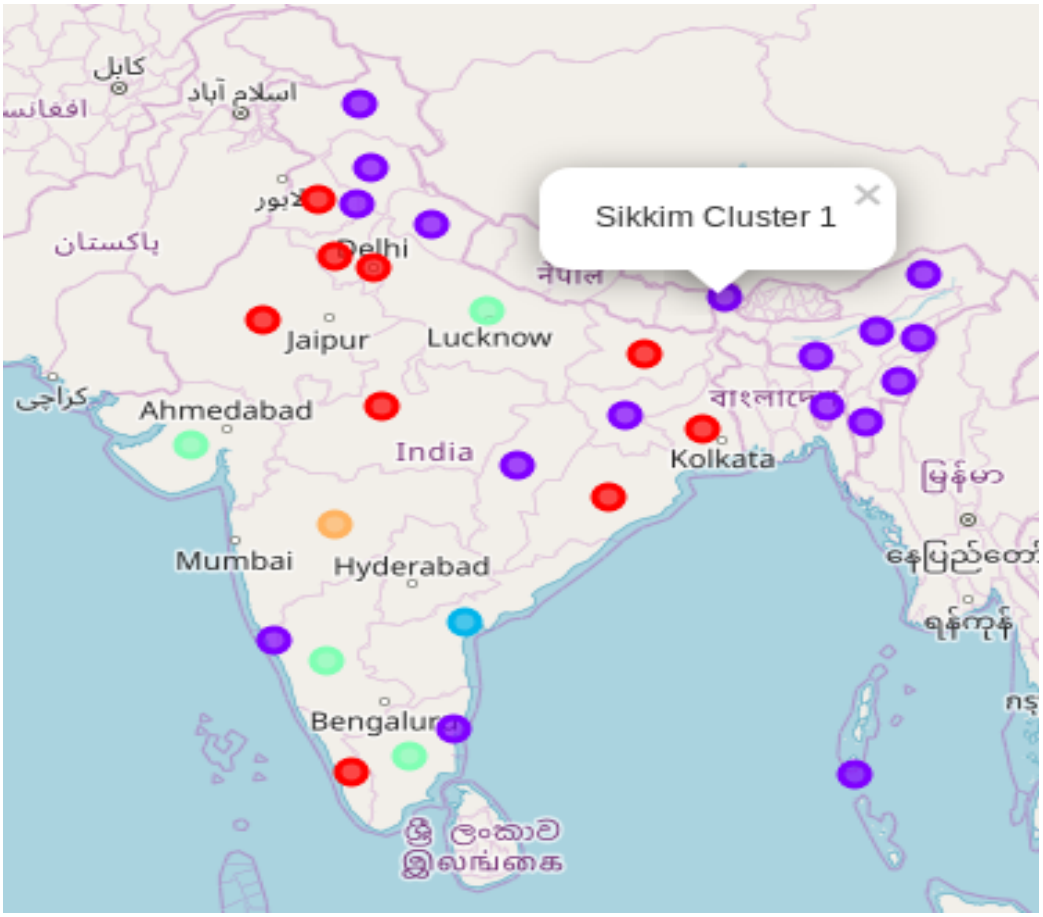
	state	nda	upa	others	most
1	Delhi	0	4	3	2
2	Andhra Pradesh	0	4	3	2
3	Arunachal Pradesh	1	5	1	2
4	Assam	1	6	0	2
5	Bihar	7	0	0	1
6	Chhattisgarh	7	0	0	1
7	Goa	7	0	0	1
8	Gujarat	7	0	0	1
9	Haryana	2	5	0	2
10	Himachal Pradesh	1	6	0	2
11	Jammu and Kashmir	0	5	2	2
12	Jharkhand	6	1	0	1
13	Karnataka	3	4	0	2
14	Kerala	0	6	1	2
15	Madhya Pradesh	7	0	0	1
16	Maharashtra	4	3	0	1
17	Manipur	0	7	0	2
18	Meghalaya	0	7	0	2
19	Mizoram	0	7	0	2

The second, third and forth columns tell the number of years(out of seven) for which the given alliance has ruled the state. Last column assigns numerical category to the state based upon the maximum number of ruling years. If NDA(alliance of BJP) has ruled the state for longer, the

category is assigned as 1, similarly 2 denotes that UPA(Indian National Congress and it's allies) has ruled for longer and 3 stands for some other party or alliance.

B. Methodology

We have data of nominal GDP of the states. But we need to find out the growth in GDP over the years. This will provide us better results. So we calculated the difference of two subsequent values to create the table of growth. then, **K-means clustering** is used to cluster the states into **five categories**. Then we used **Folium** library of Python to plot these clusters on the map of India.



A **choropleth map** of states was plotted based upon the longest ruling party in the state and then the results were compared. with the above map. We will show the comparison in result section. Finally, all the Starbucks outlets were plotted on the map along with the clusters.

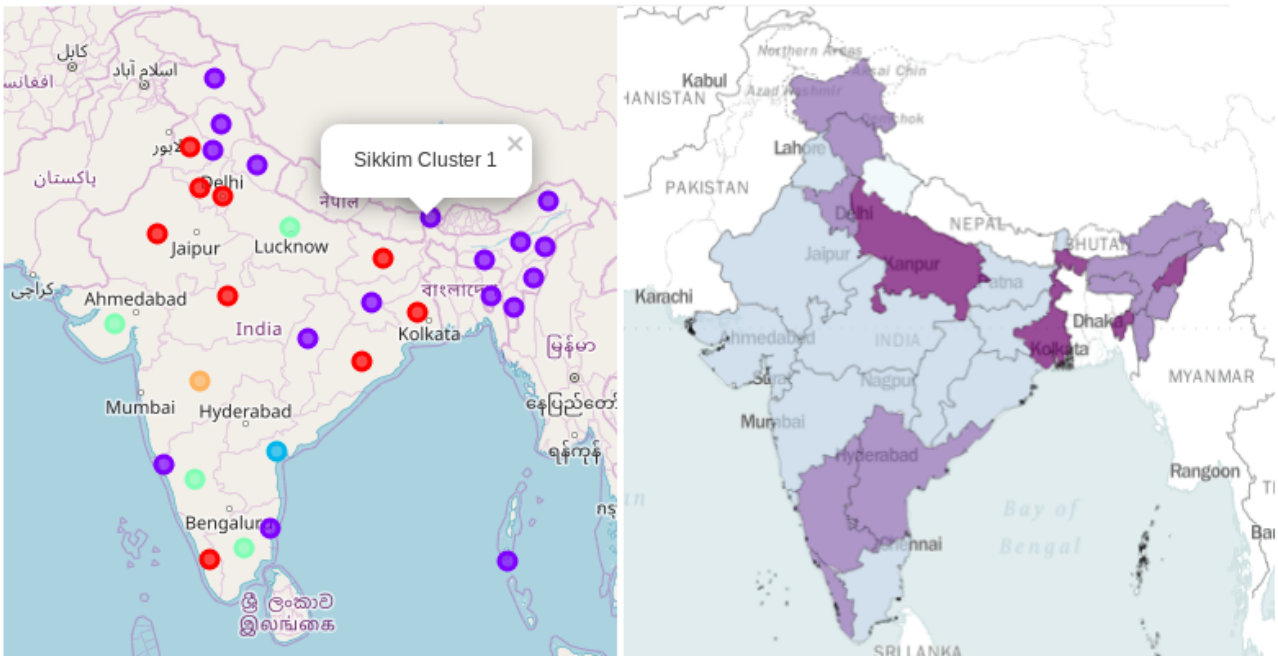
C. Results

The states are clustered into five categories. These clusters are as follows:

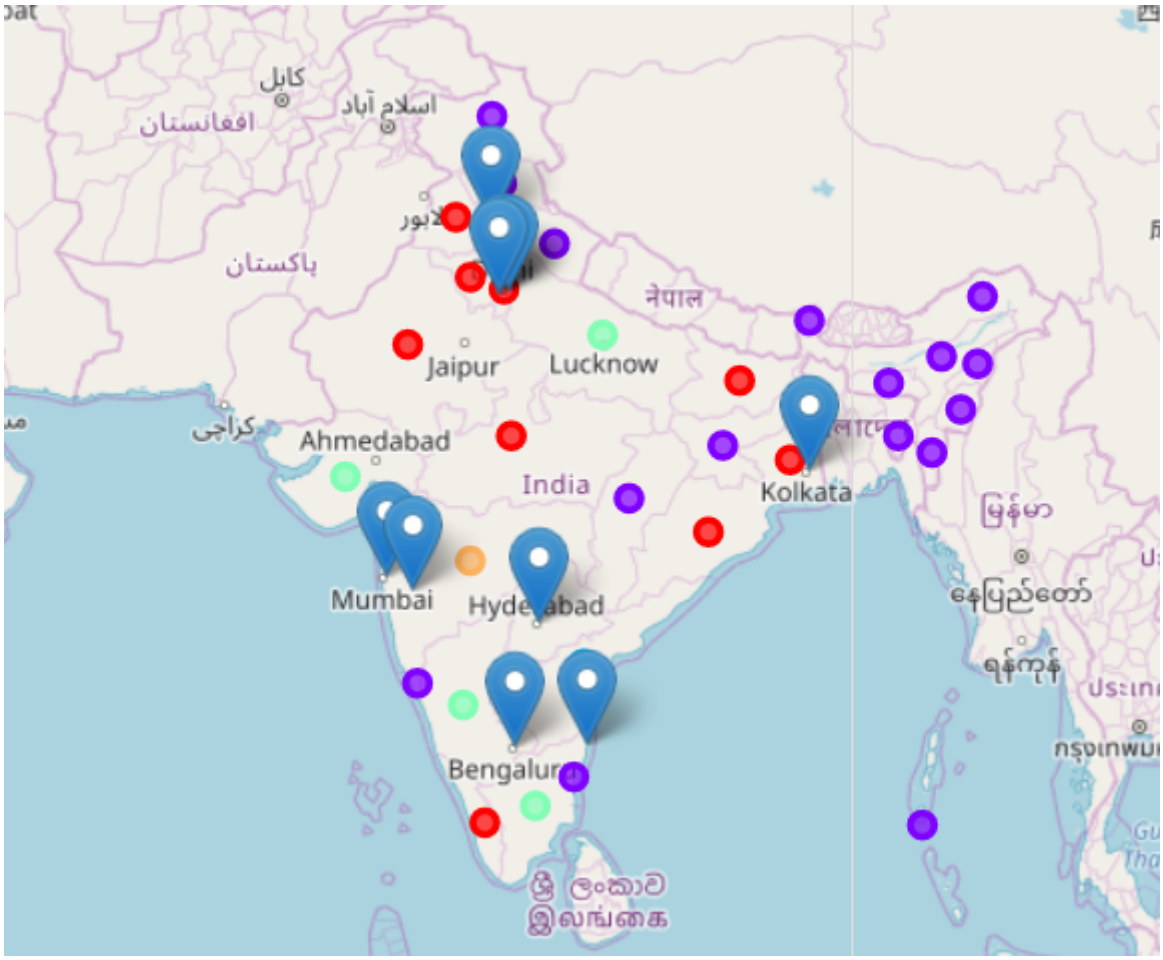
1. **Cluster 0 :** It is *red* in colour and is a cluster of slowly growing states.
2. **Cluster 1 :** It is *purple* in colour and is a cluster of very slowly growing states.
3. **Cluster 2 :** It is *blue* in colour and is a cluster of very rapidly growing states.
4. **Cluster 3 :** It is *cyan* in colour and is a cluster of moderately growing states.
5. **Cluster 4 :** It is *orange* in colour and is a cluster of rapidly growing states.

We plotted these clusters and compared with the choropleth map of ruling parties:

In the choropleth map, lightest regions are ruled by NDA for longer period. And the darkest ones are ruled by other parties. Remaining moderately coloured regions are mostly ruled by UPA. The comparison of two maps shows a relationship between the ruling governments and the GDP growth. **Most of the states showing high growth are ruled by NDA and allies**.



Finally we plotted the locations of starbucks functional in the country:



Above map shows that **all the outlets of Starbucks are centered in top three rapidly growing clusters.** This finding is not strange though. This strategy can also be used by other startups and brands. Moreover, based upon our clustered states we can predict where the next outlet of Starbucks is going to be functional.

D. Discussion

Our observation shows that most of the states ruled by NDA have higher GDP growth. Moreover Starbucks starts it's outlets only in the regions of higher GDP growth. This can be a lesson to be learnt for new startups. Moreover, during the election season, this project can help the public in deciding which party to vote for.

E. Conclusions

With above analysis we are able to draw following conclusions:

1. Most of the states with higher GDP growth are ruled by NDA during the period.
2. Maharastra is the only state lying in cluster 4 with largest GDP growth.
3. All the outlets of Starbucks are centered in top three categories of states with higher GDP.

F. References

[1] https://en.wikipedia.org/wiki/List_of_Indian_states_and_union_territories_by_GDP , last accessed on April 29th, 2019

[2] https://en.wikipedia.org/wiki/Tata_Starbucks , last accessed on April 29th, 2019.