

Crime against children

Suraj Kesharwani 204161016

This project is submitted for the course CS595 - Data Visualization. I would like to extend my sincere thanks to our course instructor Ashish Anand Sir and the TA's Vajja Sai Kiran and Akshay Parekh for their valuable and constructive suggestions during preparation of this work.

Motivation :

Nowadays crimes are increasing at a high rate which is a great challenge for the police department of a city. A huge amount of data on different types of crimes taking place in different geographic locations is collected and stored annually. It is highly essential to analyze data so that potential solutions for solving and mitigating the crime incidents and predicting similar incident patterns for the future becomes possible.

Objective :

In the report we want to ask basic questions such as:

- 1 Count of crimes against children in each state of India?
- 2 Which state is failing to maintain the law and order properly with respect to these types of crimes?
- 3 What are the different crimes committed towards childrens?
4. Does year wise there is an increase in crime in states and has it decreased or increased?

Introduction :

The Republic of India is the second most populous country in the world. It has 28 States and 8 Union Territories. The minimum age of being an adult in India is 18 yr. India has its 36.7 population under 18. In this report we are going to perform Exploratory Data Analysis on crimes performed against children in

India. There are 1248 and out of those 14 are specifically for the protection and rights of children. Let us See how the law authority is working on safeguarding these.

Terminology Used from IPC sections of Indian Constitution

Murder : unlawful killing of another human without justification or valid excuse

Foeticides : destruction or abortion of a fetus.

Infanticide : intentional killing of infants

Abetment to Suicide : Instigating a person to commit an offence; or. Engaging in a conspiracy to commit it

Exposure or Abandonment : Crime by parents or others to expose or to leave them with the intention of abandonment

Kidnapping & Abduction : taking someone unwillingly and keeping them illegally imprisoned without their valid consent or taking away a child or person by deception or force from their home and family.

Procuration of minor girls : taking power on behalf of another to act in his/her place. done for inducement to force or seduce illicit intercourse.

Rape : type of sexual assault usually involving sexual intercourse carried out against a person without that person's consent.

Dataset Description :

The dataset has been taken from kaggle. It contains 2 files. First file contains the 13 types of crimes against children from 2001 to 2012 and the second file contains data for the year 2013. The first and second file contains 9015 and 823 rows respectively.

The final shape of the dataset is (9838, 16)

The above is the dimension of the final data. Now let's have a glimpse of all the states in the data. Let us see the different columns about the data.

```
## [1] "state"          "district"        "year"
## [4] "murder"         "rape"            "kidnapping"
## [7] "foeticide"      "abetment_of_suicide" "abandonment"
## [10] "procuration_of_girls" "buying_girls"    "selling_girls"
## [13] "child_marriage" "other_crimes"    "total"
## [16] "infanticid"
```

and here are the few rows of our data.

```
##          state district year murder rape kidnapping foeticide
## 1 ANDHRA PRADESH ADILABAD 2001      0   0           0          0
## 2 ANDHRA PRADESH ANANTAPUR 2001     19  12          29          0
## 3 ANDHRA PRADESH CHITTOOR 2001      0   0           0          0
##   abetment_of_suicide abandonment procuration_of_girls buying_girls
## 1                   0           0                   0          0
## 2                   6           0                   0          0
## 3                   0           0                   0          0
##   selling_girls child_marriage other_crimes total infanticid
## 1             0             0             0   0          0
## 2             0             0             0  66          0
## 3             0             0             0   0          0
```

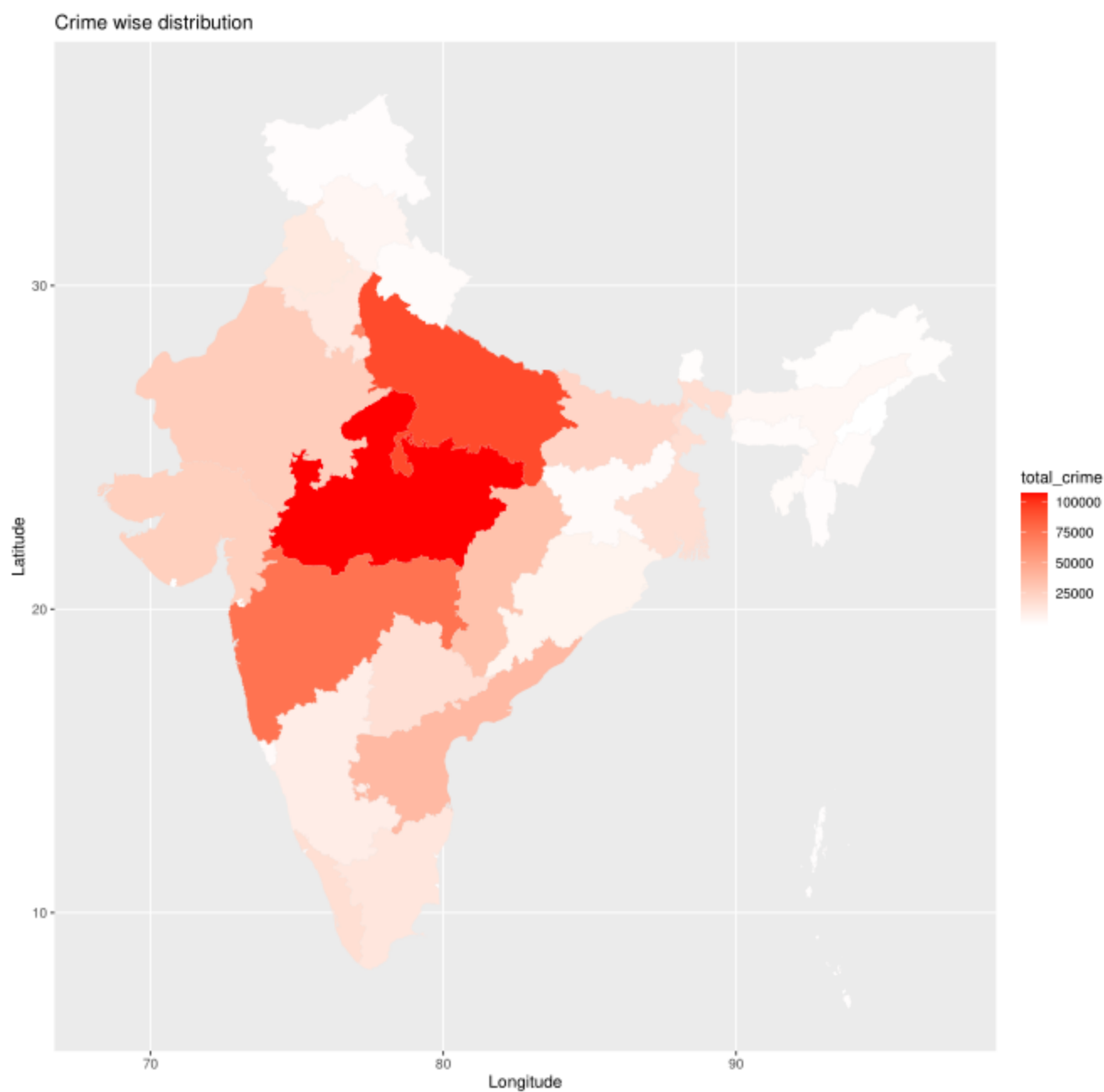
Analysis :

Let's Try to analyze some columns which will be using extensively in our report.

## [1]	"ANDHRA PRADESH"	"ARUNACHAL PRADESH"	"ASSAM"
## [4]	"BIHAR"	"CHHATTISGARH"	"GOA"
## [7]	"GUJARAT"	"HARYANA"	"HIMACHAL PRADESH"
## [10]	"JAMMU & KASHMIR"	"JHARKHAND"	"KARNATAKA"
## [13]	"KERALA"	"MADHYA PRADESH"	"MAHARASHTRA"
## [16]	"MANIPUR"	"MEGHALAYA"	"MIZORAM"
## [19]	"NAGALAND"	"ODISHA"	"PUNJAB"
## [22]	"RAJASTHAN"	"SIKKIM"	"TAMIL NADU"
## [25]	"TRIPURA"	"UTTAR PRADESH"	"UTTARAKHAND"
## [28]	"WEST BENGAL"	"A & N ISLANDS"	"CHANDIGARH"
## [31]	"D & N HAVELI"	"DAMAN & DIU"	"DELHI"
## [34]	"LAKSHADWEEP"	"PUDUCHERRY"	"Andhra Pradesh"
## [37]	"Arunachal Pradesh"	"Assam"	"Bihar"
## [40]	"Chhattisgarh"	"Goa"	"Gujarat"
## [43]	"Haryana"	"Himachal Pradesh"	"Jammu & Kashmir"
## [46]	"Jharkhand"	"Karnataka"	"Kerala"
## [49]	"Madhya Pradesh"	"Maharashtra"	"Manipur"
## [52]	"Meghalaya"	"Mizoram"	"Nagaland"
## [55]	"Odisha"	"Punjab"	"Rajasthan"
## [58]	"Sikkim"	"Tamil Nadu"	"Tripura"
## [61]	"Uttar Pradesh"	"Uttarakhand"	"West Bengal"
## [64]	"A&N Islands"	"Chandigarh"	"D&N Haveli"
## [67]	"Daman & Diu"	"Delhi UT"	"Lakshadweep"
## [70]	"Puducherry"		

As we can see there is a little mismatch in the number of states and Union Territory because of the spelling typed in two different ways. So we will resolve it.

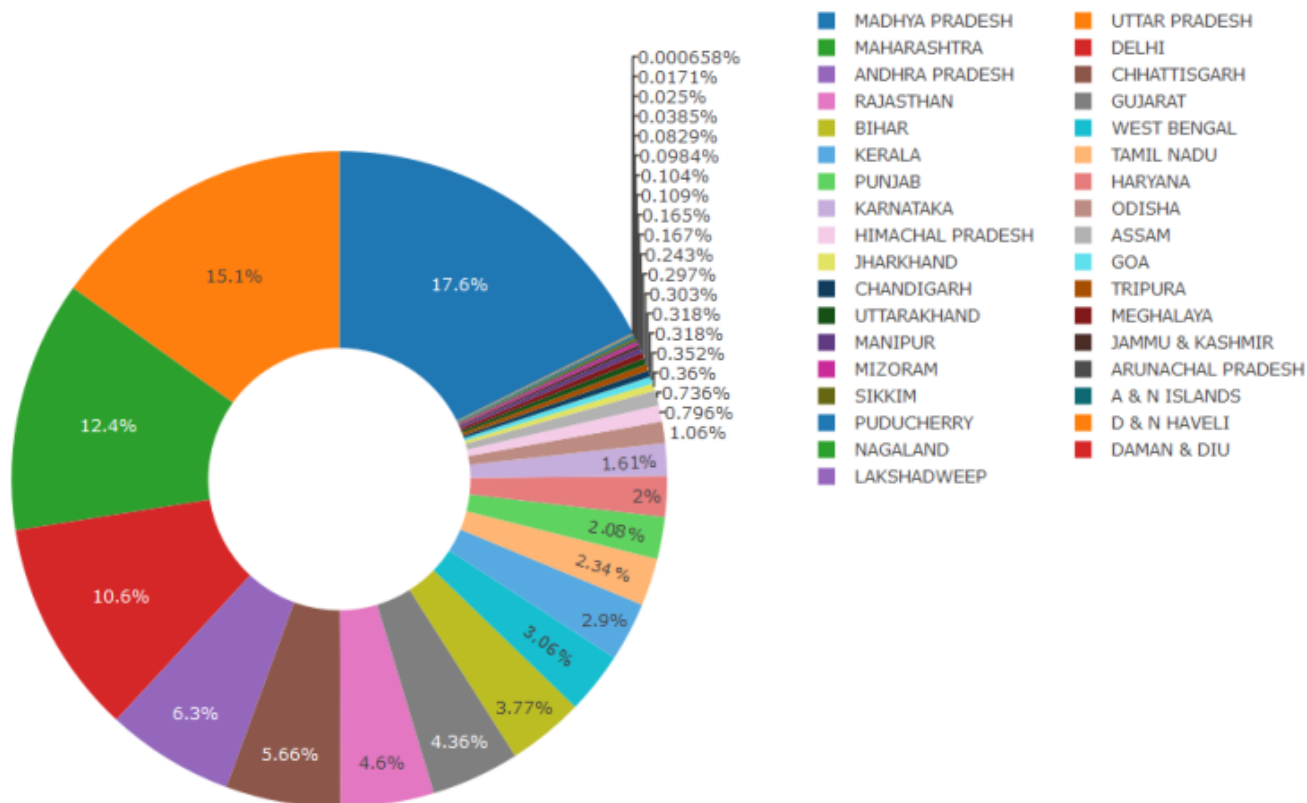
Let us first see the overlook in the map and the current crime intensities.



(Reason : I have chosen this graph as it is a good indicator of spatial type of charts and provide a collective view of all the states at once geographically on Indian Map)

As we can see the high intensity in the middle and northern India. Let's drill down to percent wise distribution.

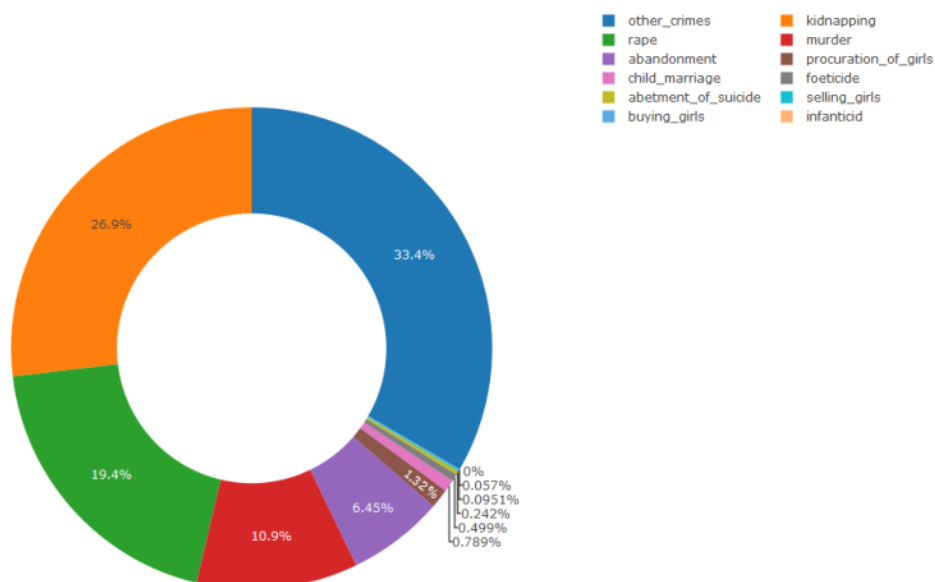
Distribution on State Basis



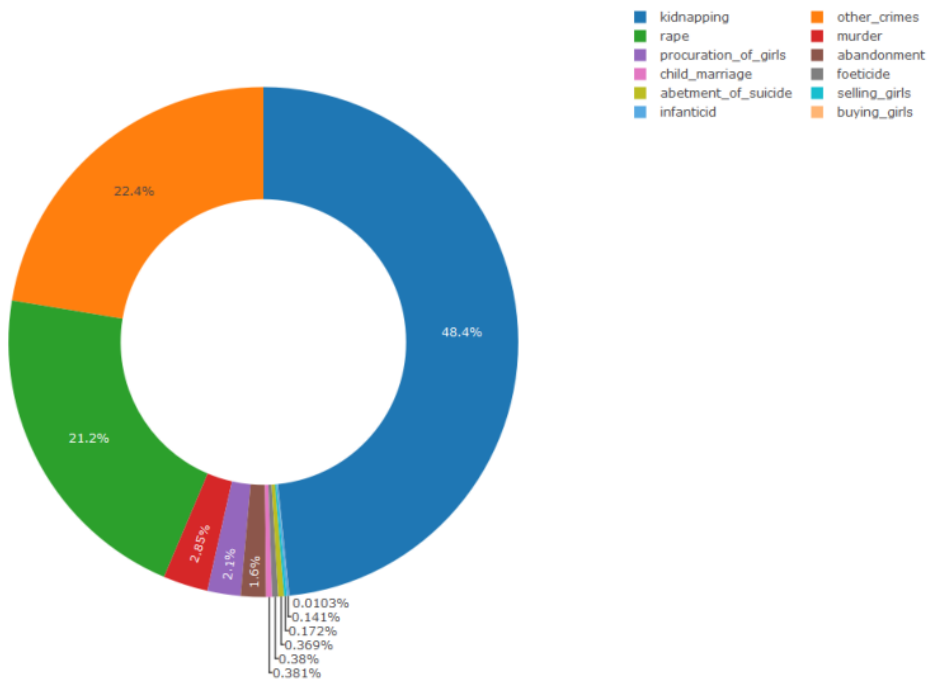
(Reason : I have chosen this graph as we can see the share of the crimes committed in each state)

We can see crime wise percent as well in overall India

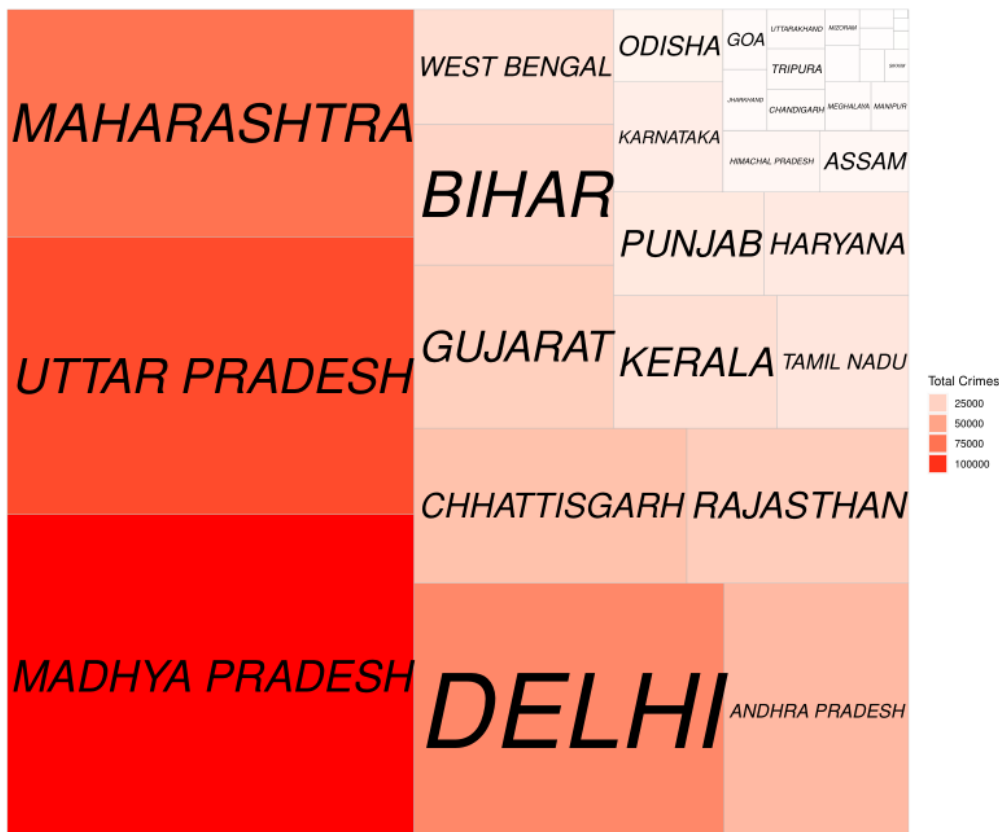
Distribution of crime in 2001



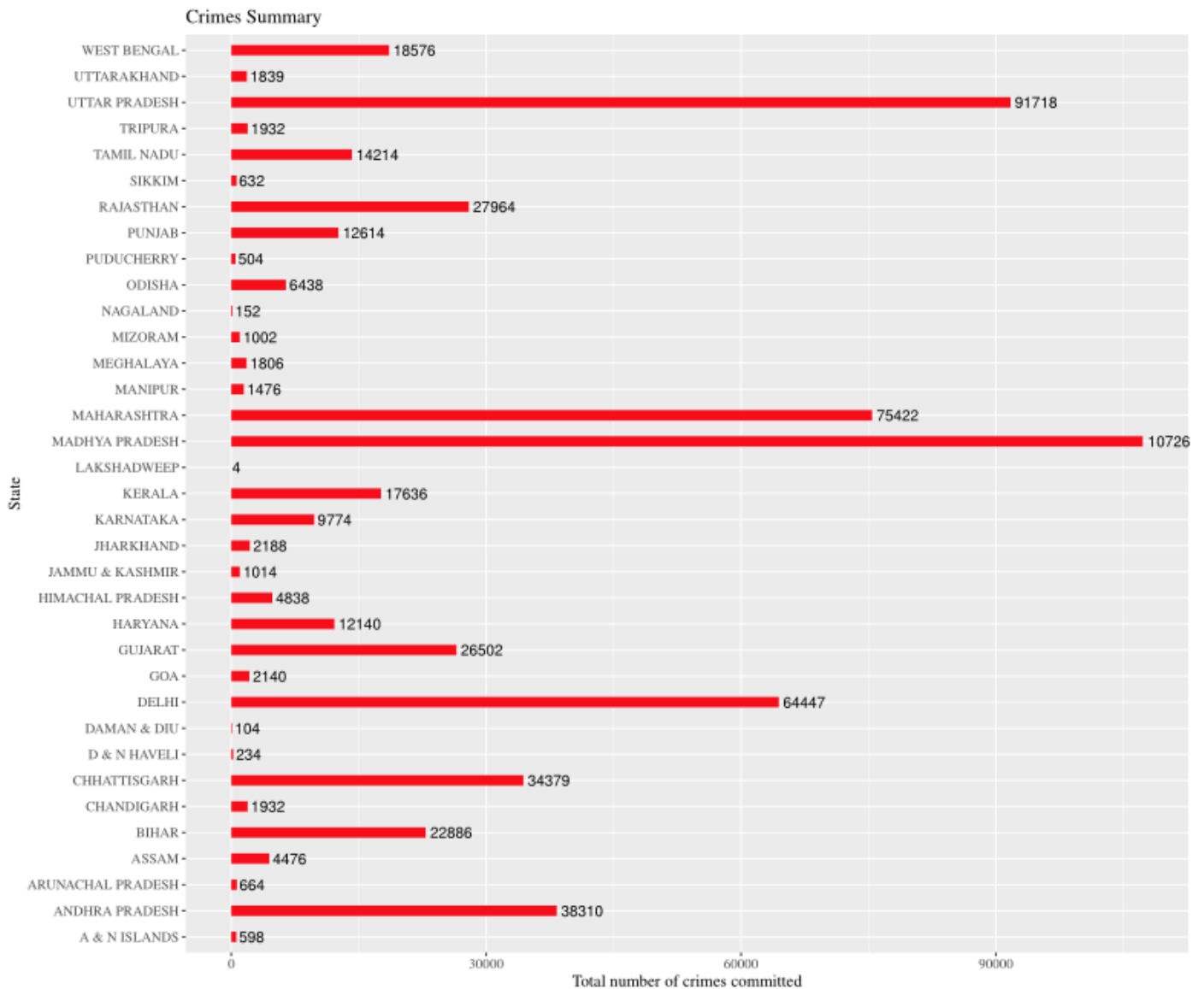
Distribution of crime in 2013



we can try to find the top 5 states/ut in terms of committed crime.



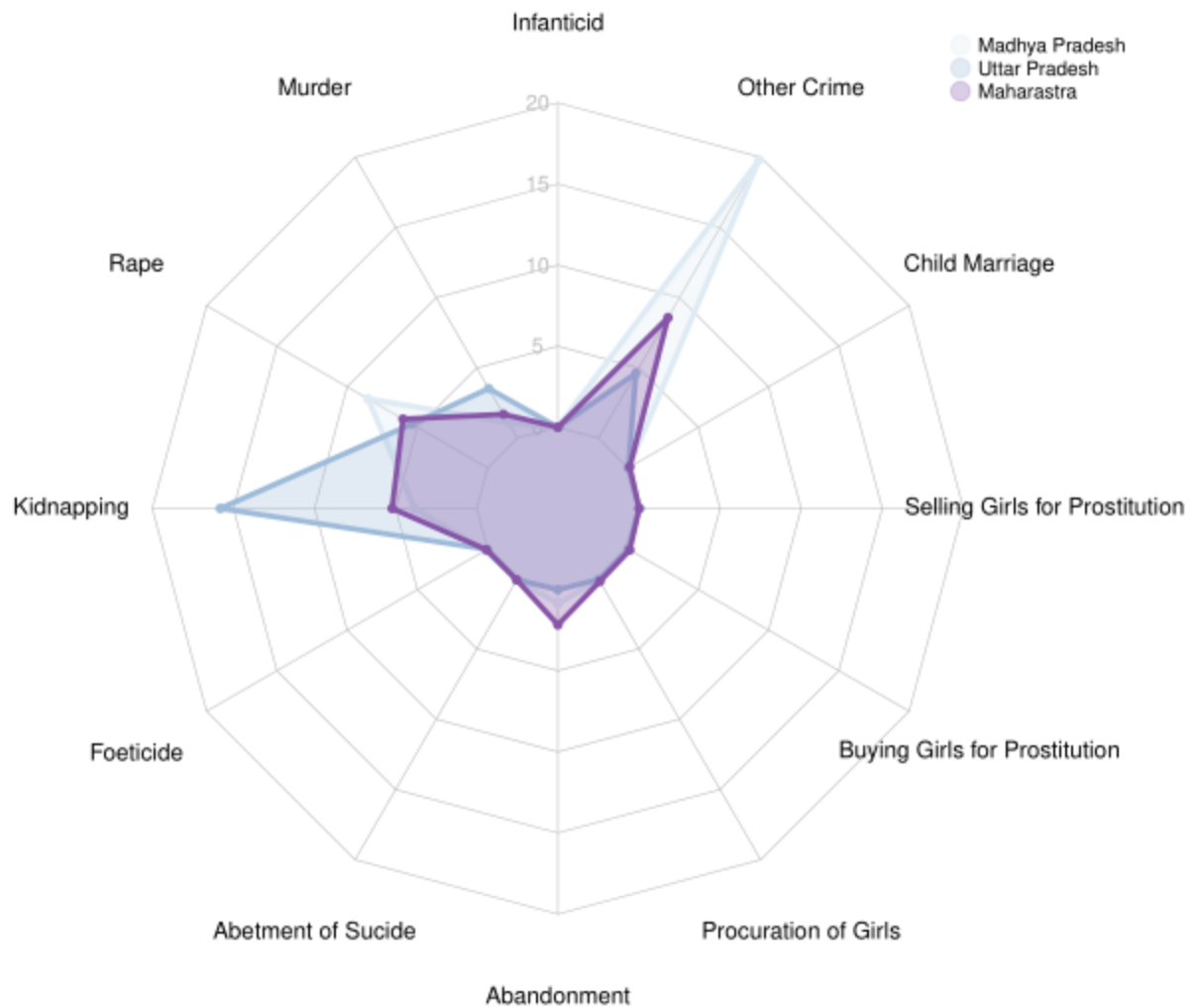
(Reason : We can see the area wise distribution and can directly interpret the crime from size and color and finally let us confirm our observation from the actual figures)



(Reason : we can observe the exact value of the individual state in this graph)

As we can observe, “Madhya Pradesh”, “Uttar Pradesh”, “Maharashtra”, “Delhi” & “Andhra Pradesh” are the top 5 states in the total number of crimes.

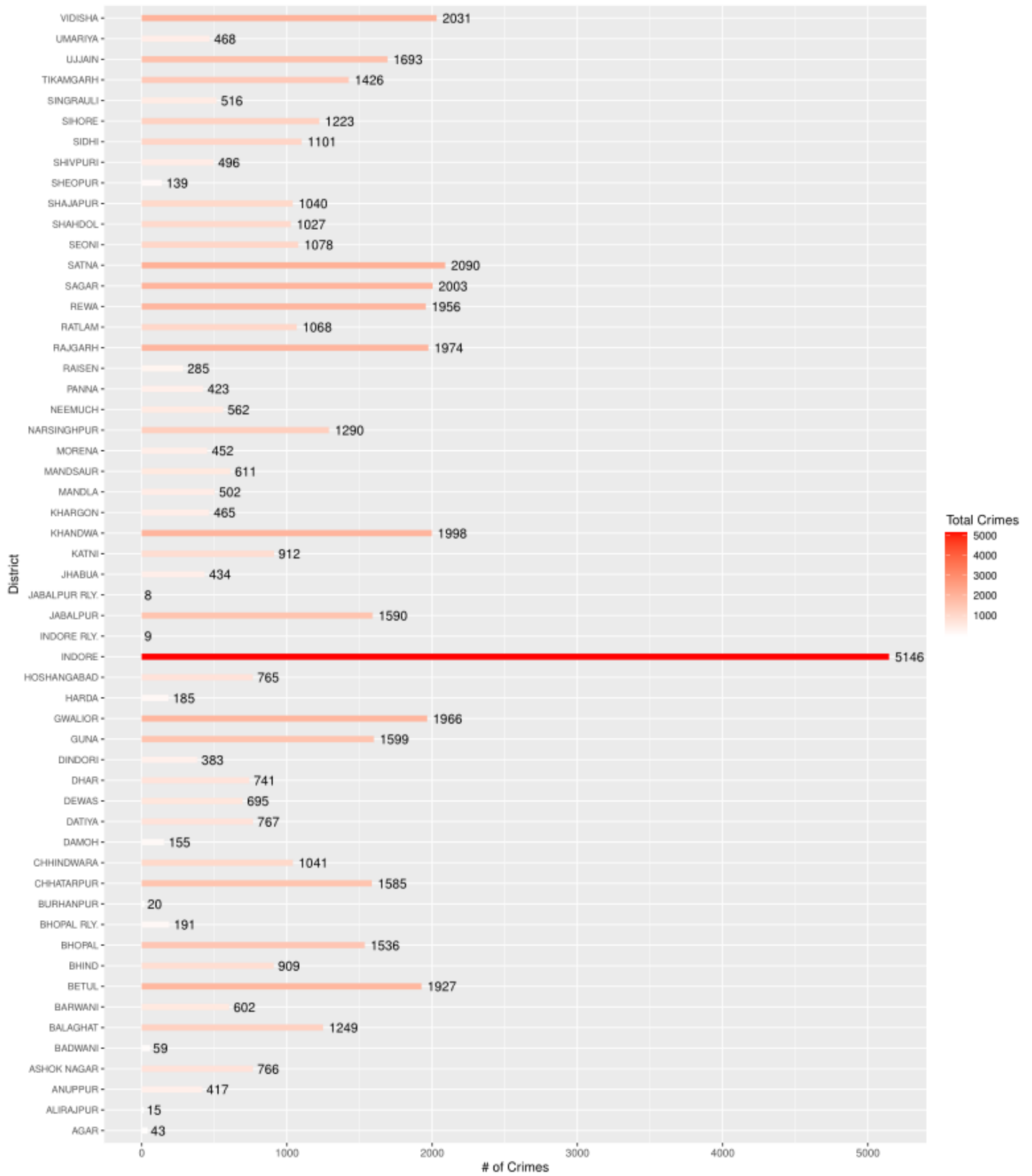
Let us have a look at the top 3 states in which of the crimes are highest in number.



(Reason : The radar chart will help us to visualize which of the crimes is most in each of the states.)

We can drill down to each of the top 5 states in the number of crimes and check which district can be the cause of this out of law situation.

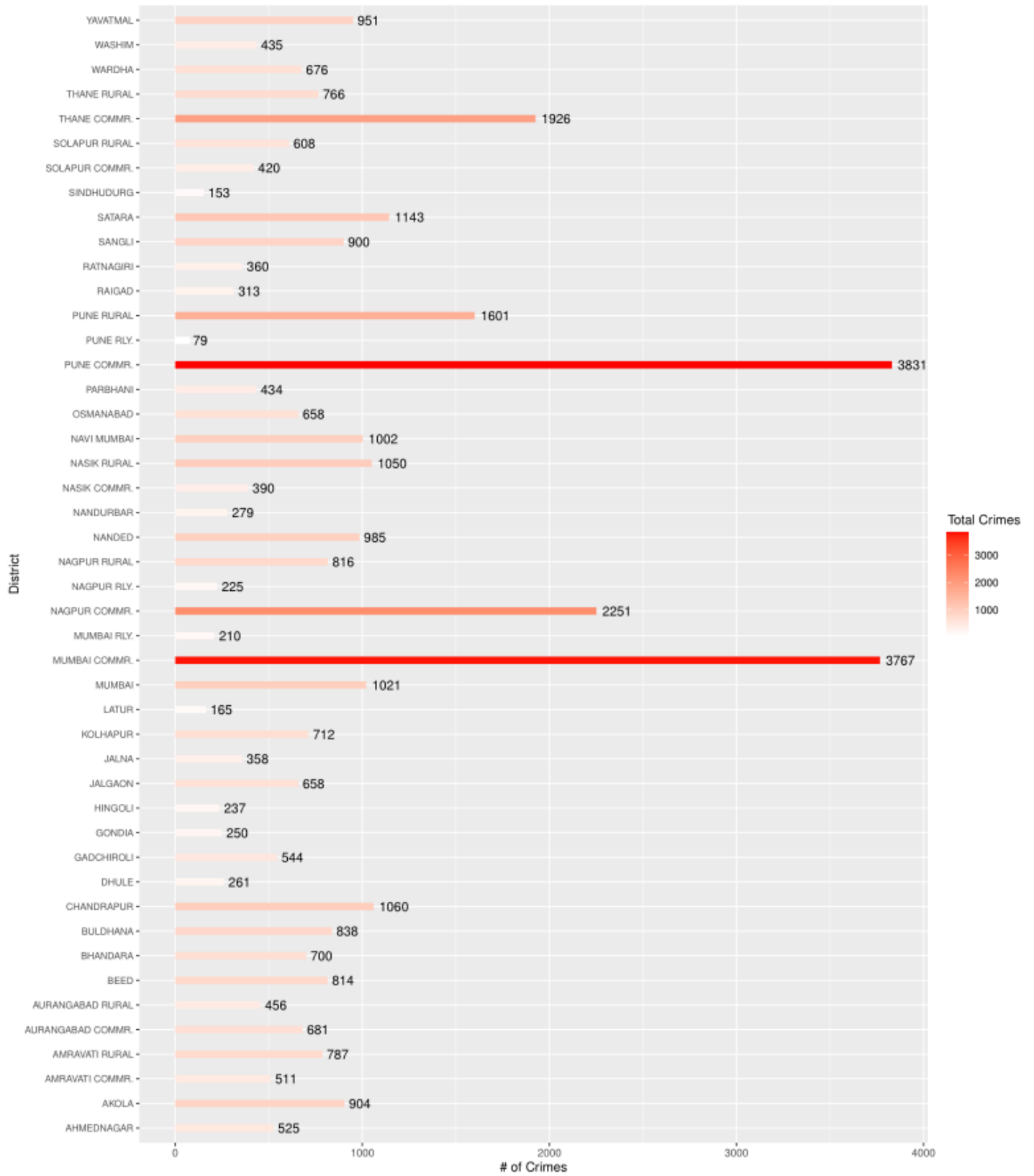
MADHYA PRADESH



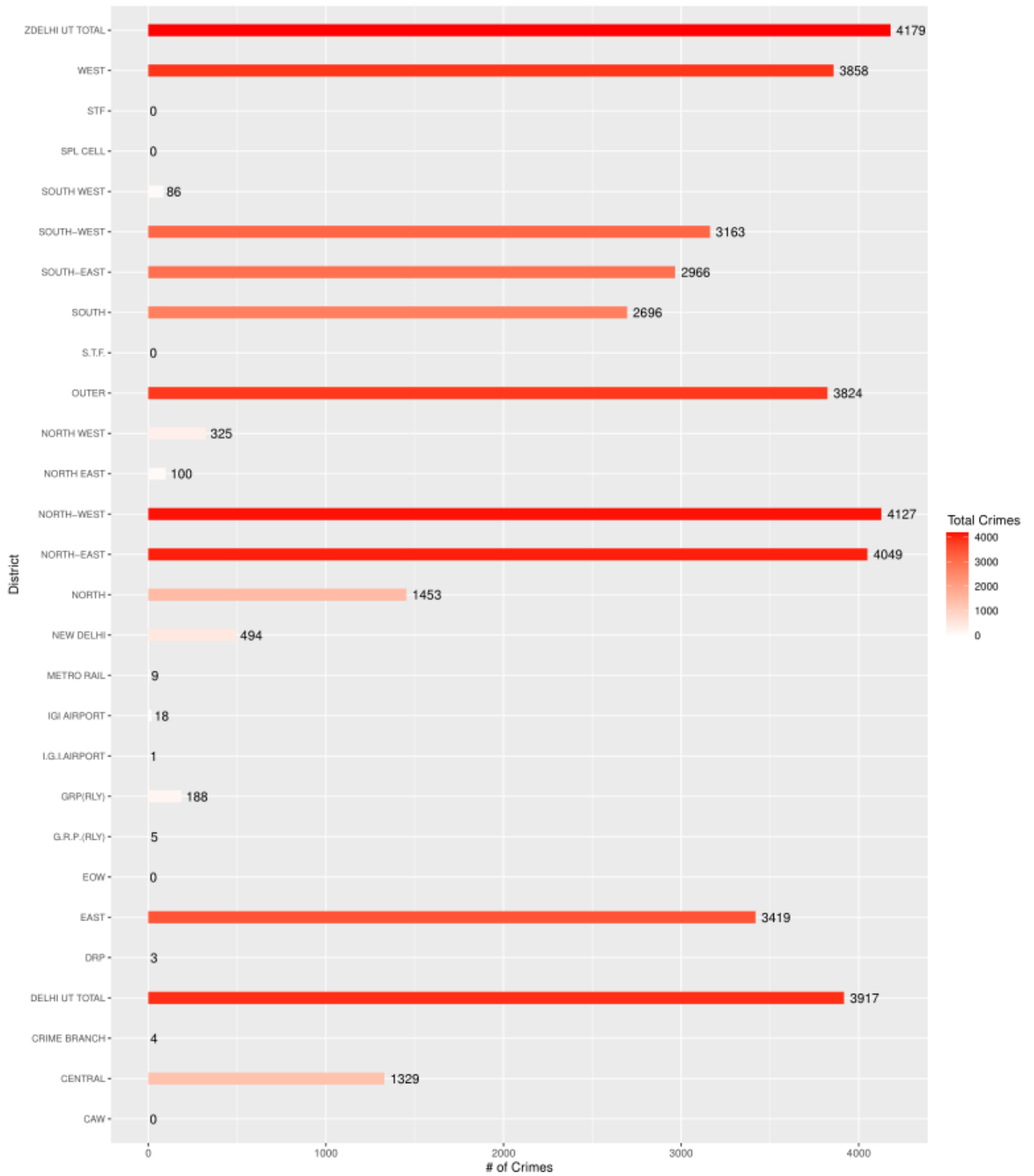
UTTAR PRADESH

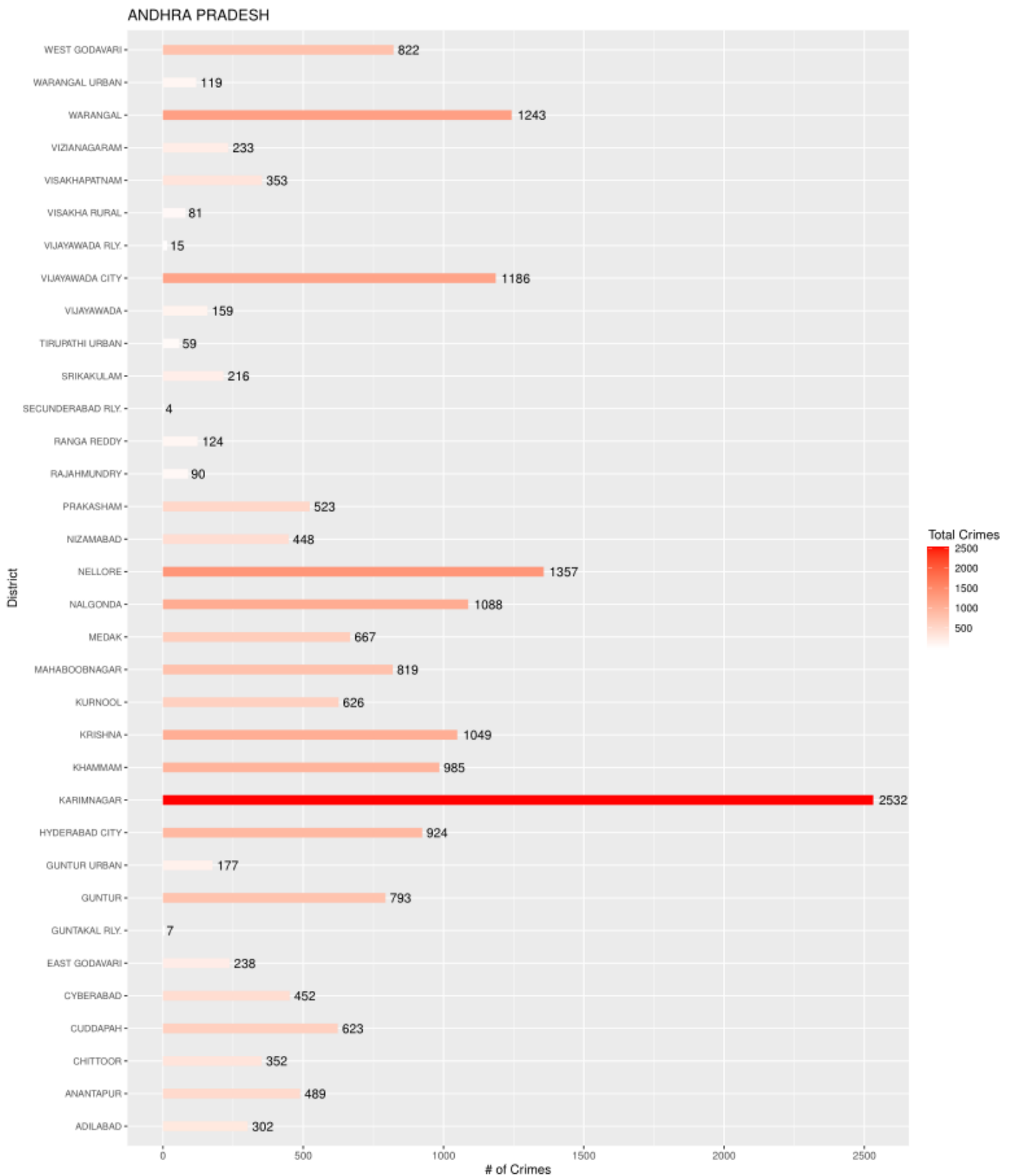


MAHARASHTRA



DELHI



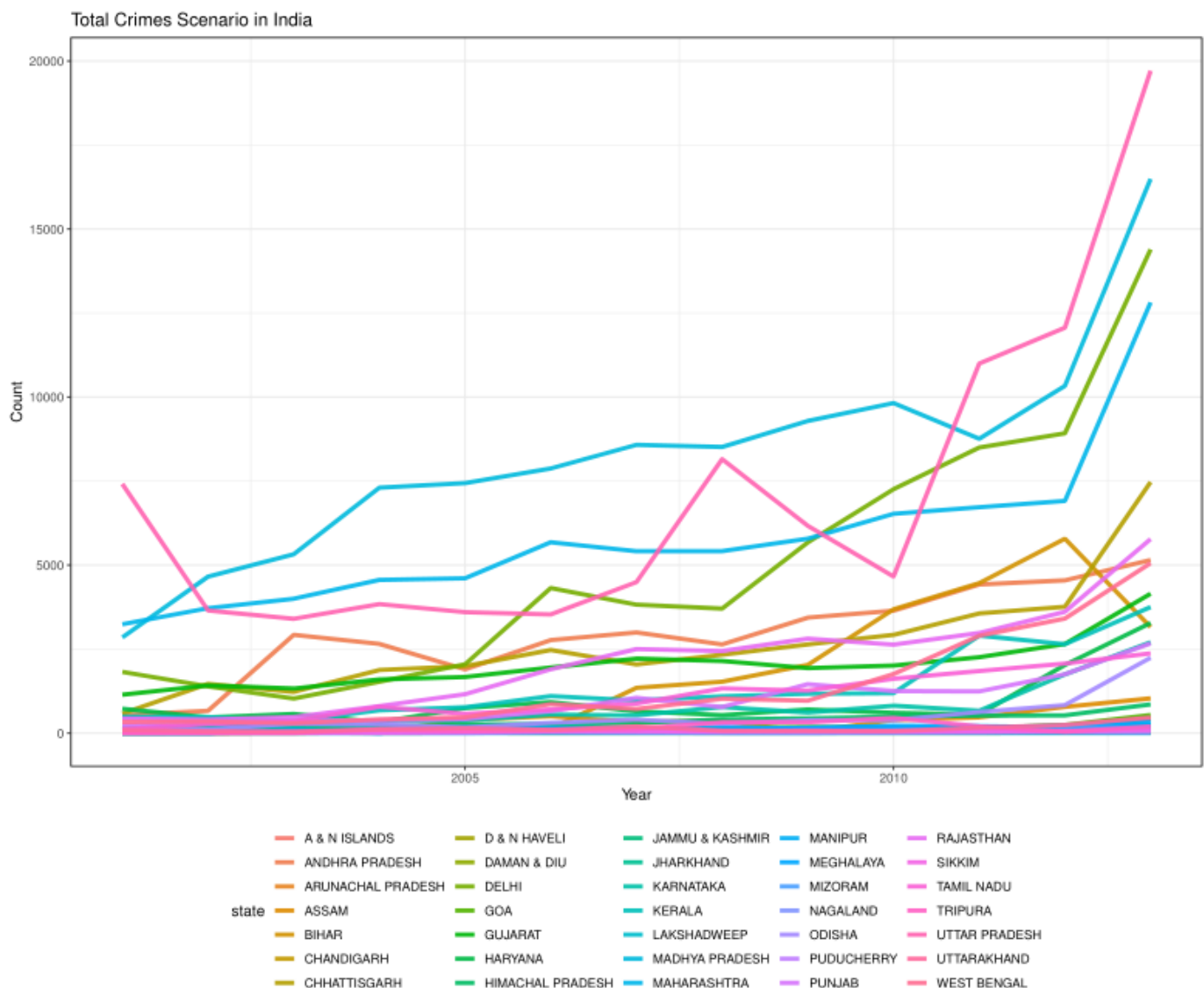


We can observe Indore in Madhya Pradesh, Sitapur, Meerut, Lucknow, Kanpur Nagar, Gaziabad, Bareilly, Agra in Uttar Pradesh, Pune, Mumbai in Maharashtra, Karim Nagar in Andhra Pradesh are having the most relative crimes in the respective state, and almost all district in Delhi.

So the public services body which deals with the child protection and rights issue should focus more on these districts. Certain operation can also be launched where we can try to find the root cause of these crimes more on these areas.

Reason : The color and the number can easily signify the crime rate and can easily show the district which are having most number of crimes

Now we will try to look at comparisons between different states and analyze how the situation is from 2001 - 2013.

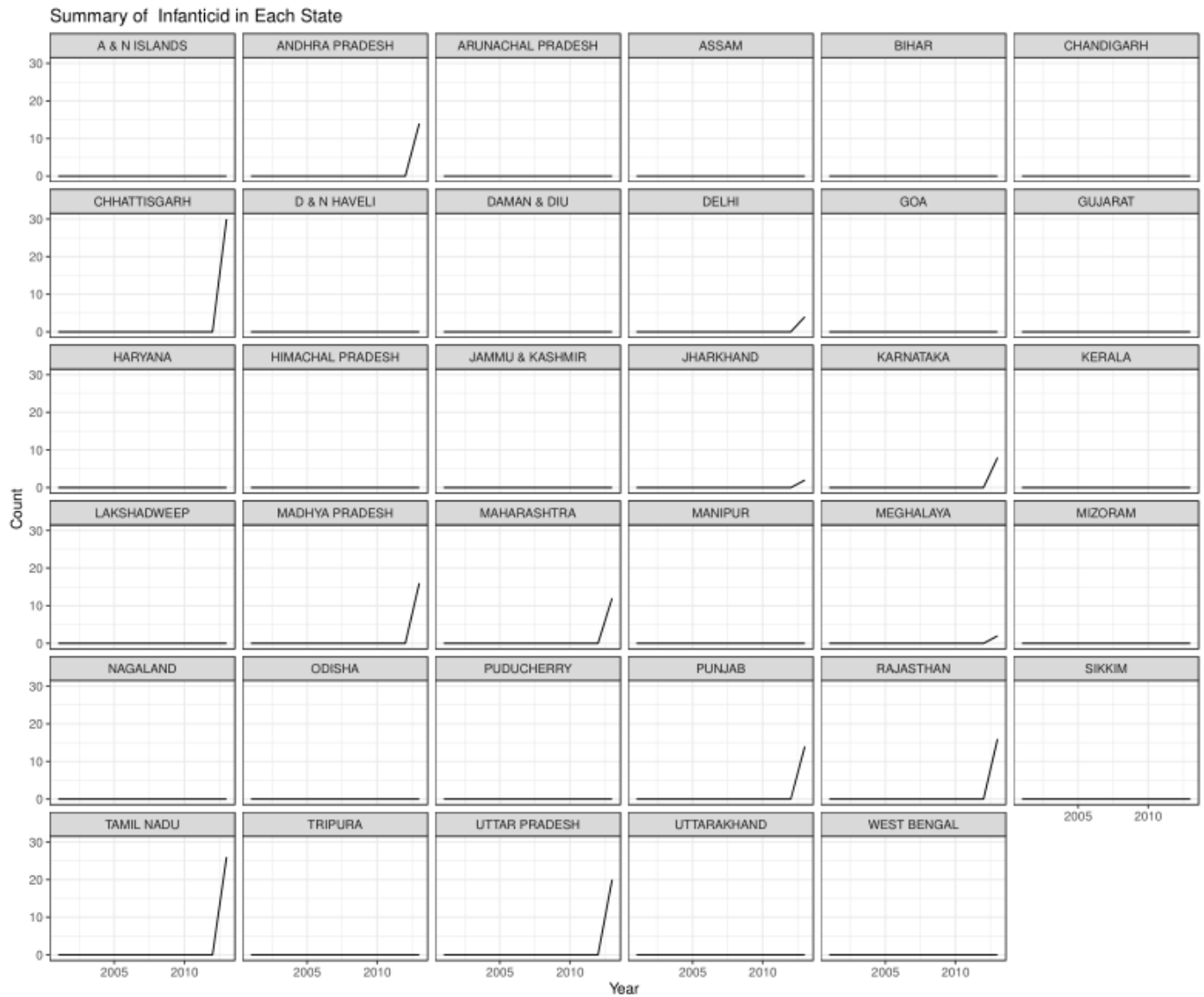


(Reason : Since this is not very satisfying to look at we need some crime wise details in each state.)

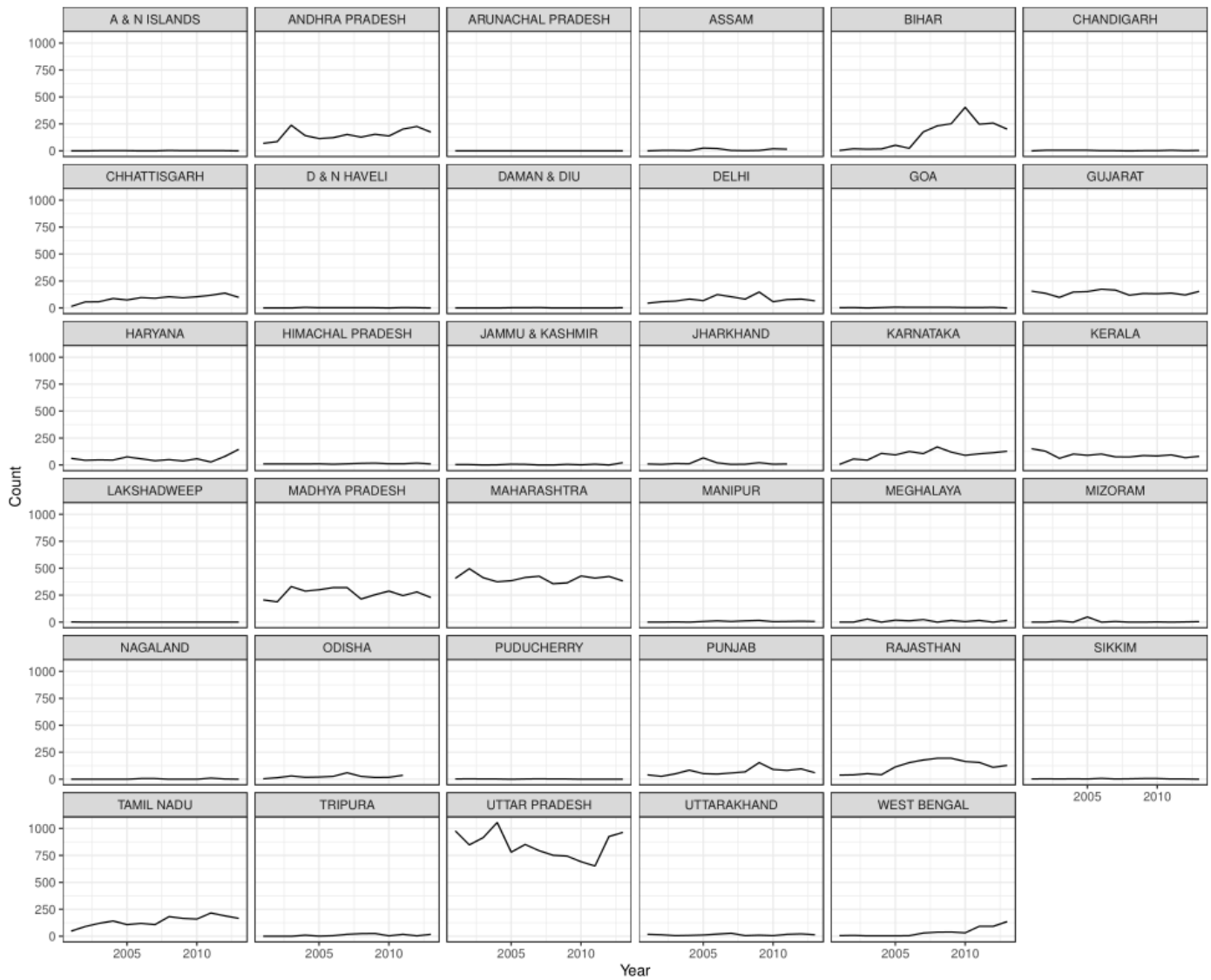
As we can notice, even though the Madhya Pradesh was the highest committed crime state but the situation

is deteriorated in Uttar Pradesh, Madhya Pradesh, Delhi, Maharashtra, Chhattisgarh in time.

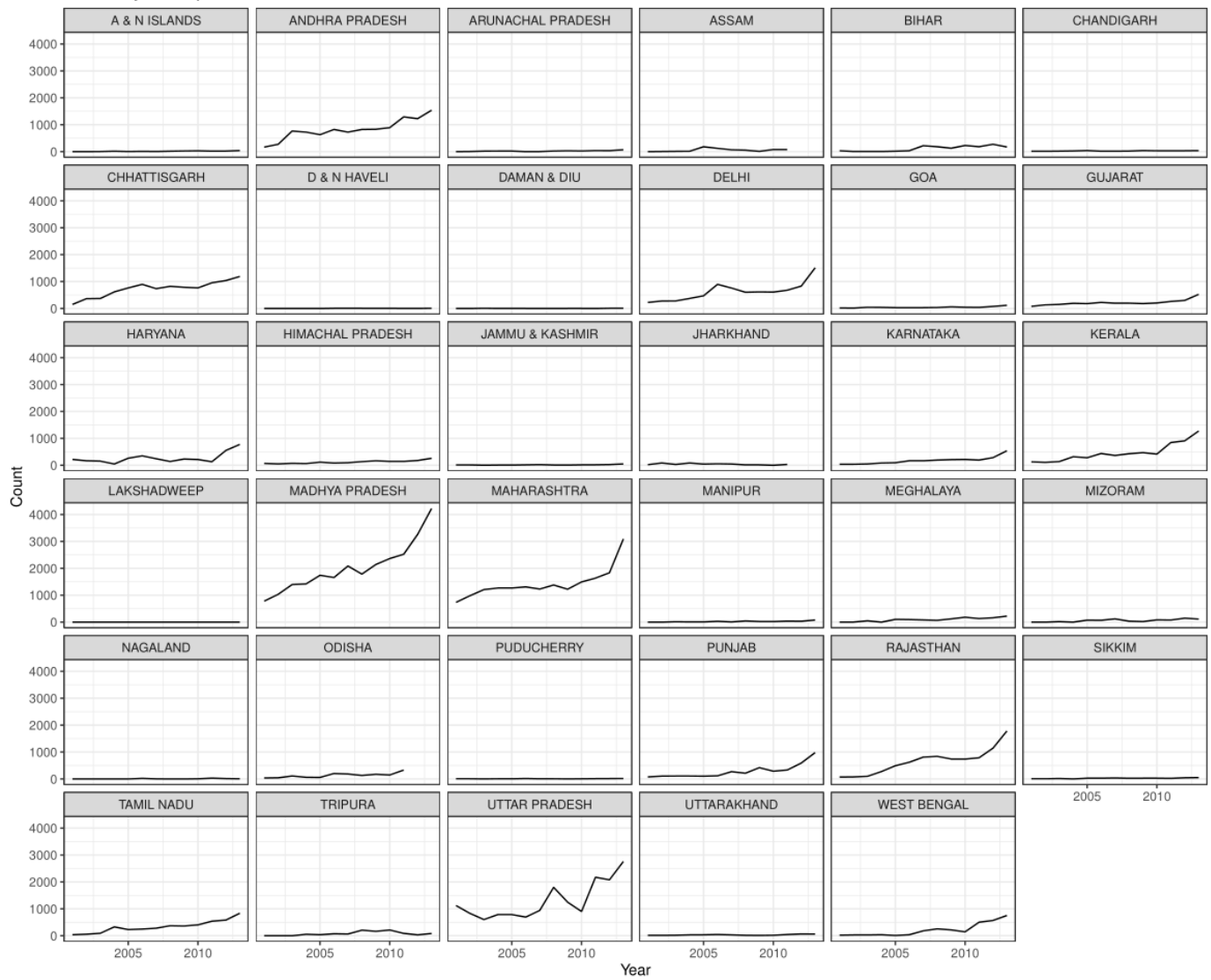
Let us look at which state is not able to control which type of crime in the time



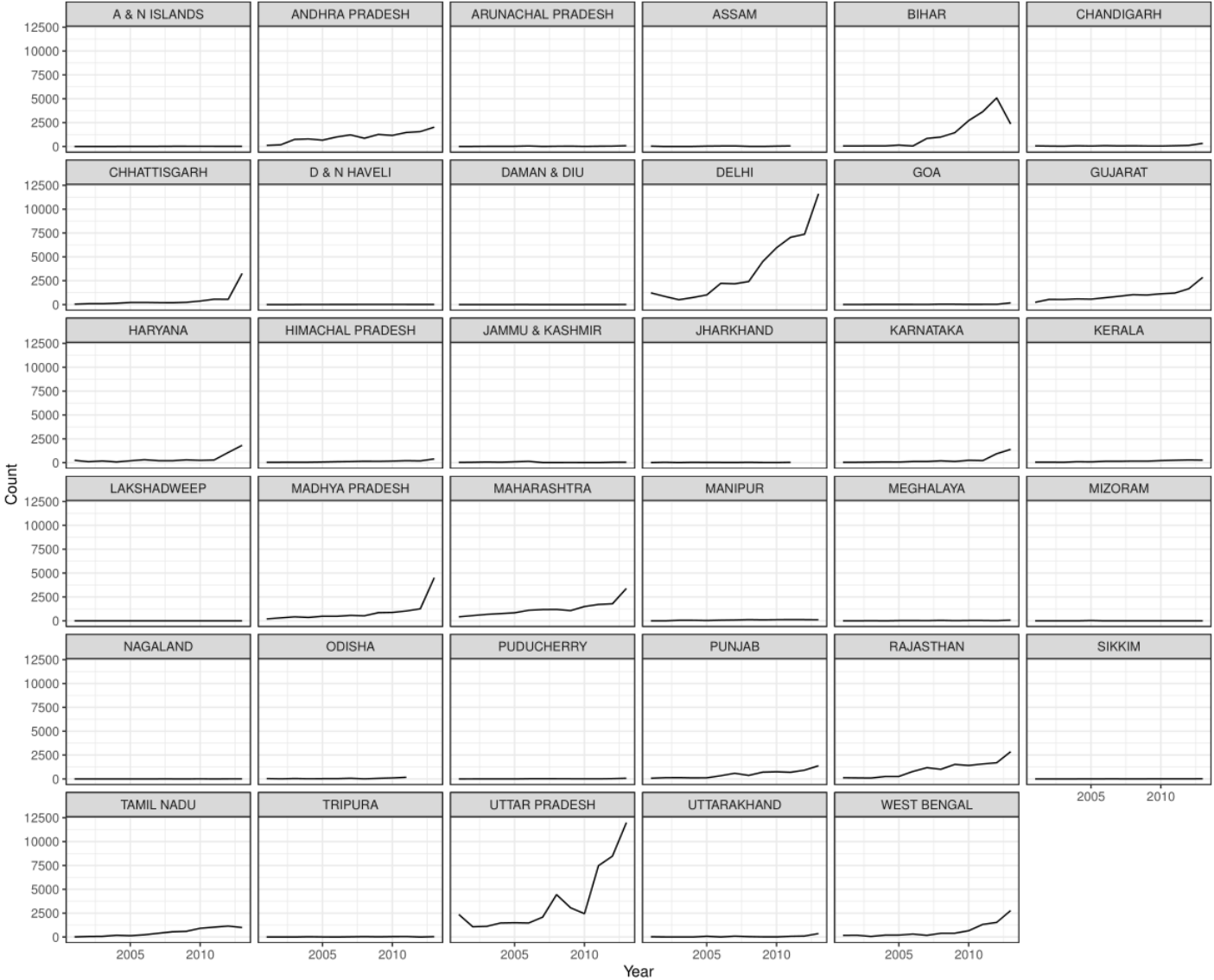
Summary of Murder in Each State



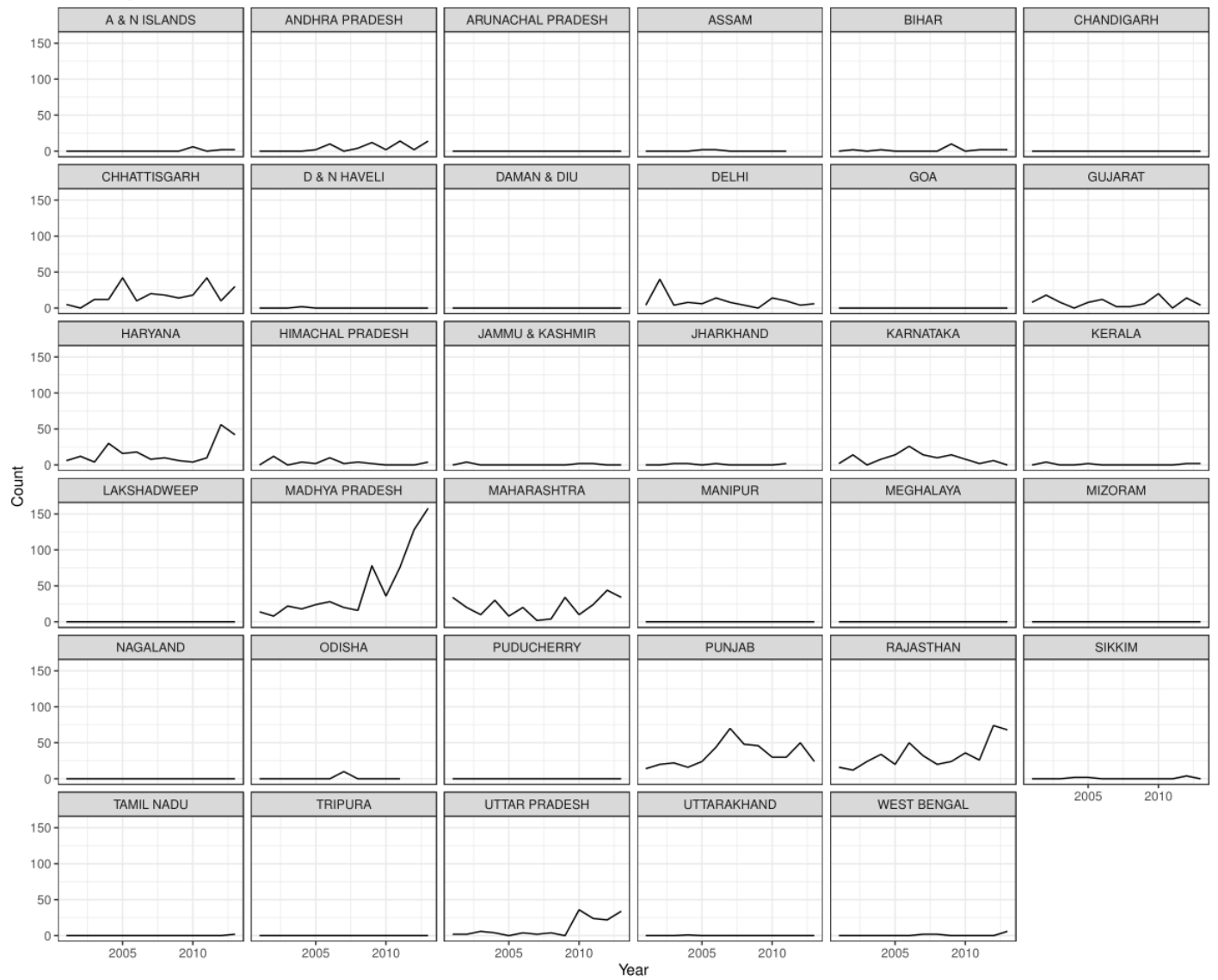
Summary of Rape in Each State



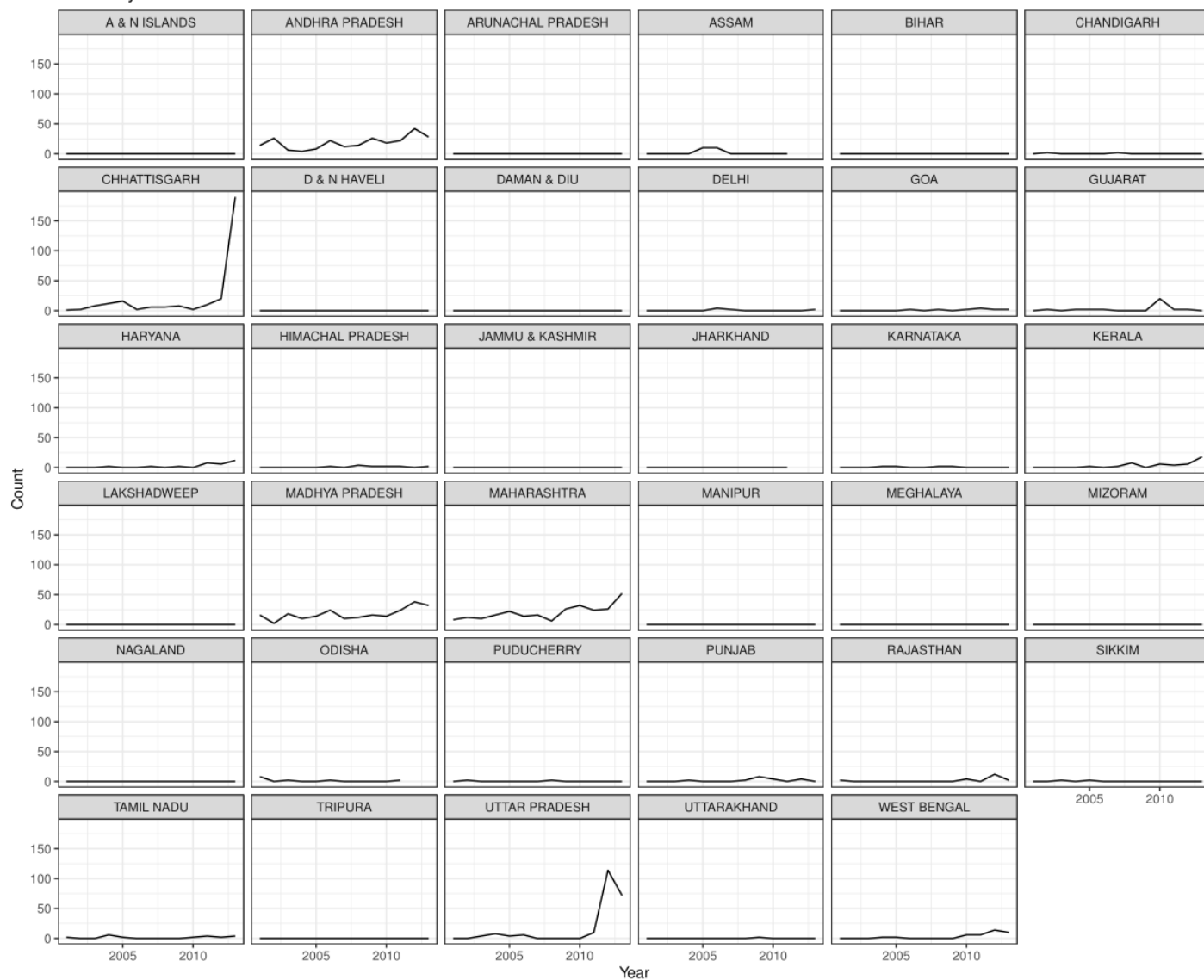
Summary of Kidnapping in Each State



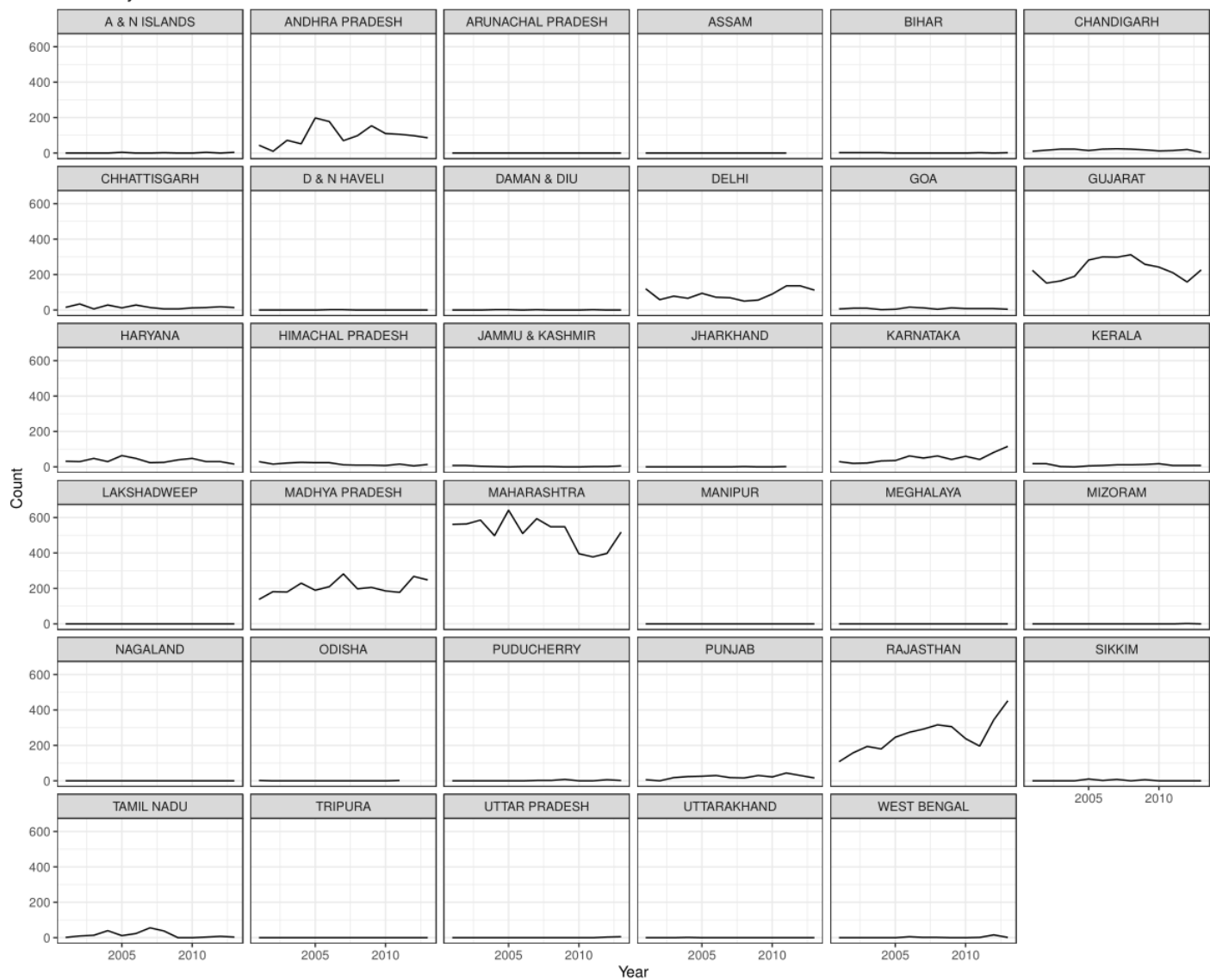
Summary of Foeticide in Each State



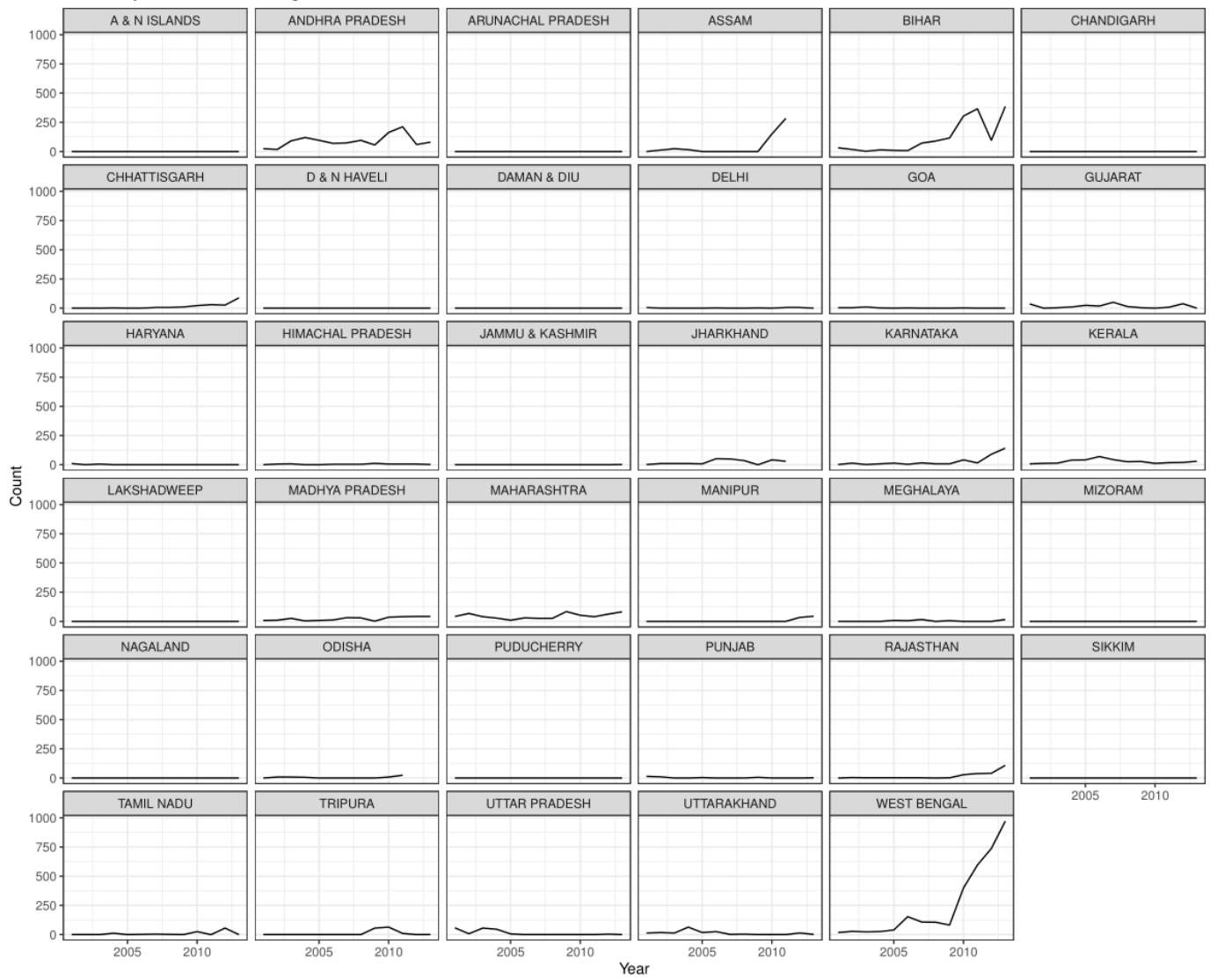
Summary of Abetment of suicide in Each State



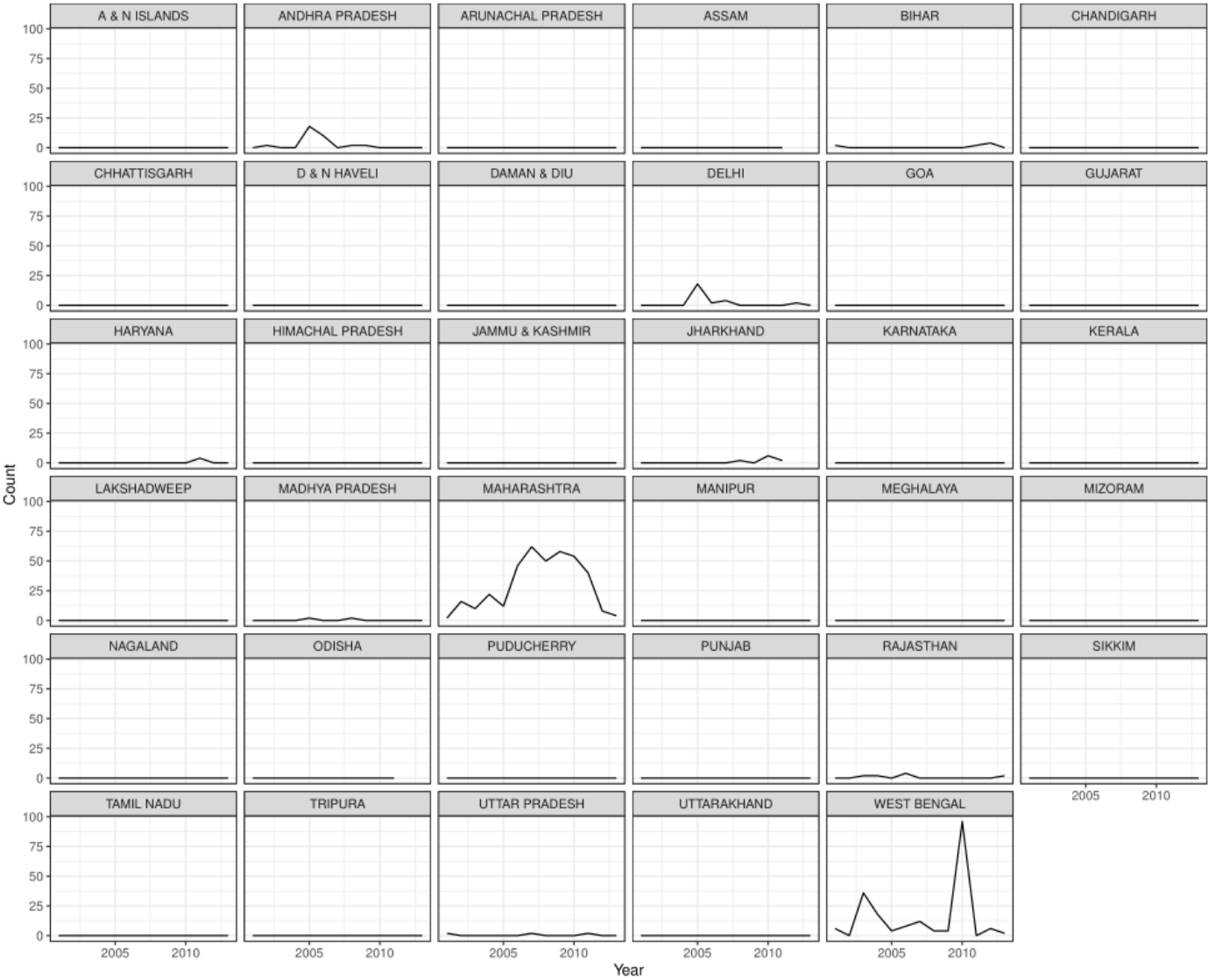
Summary of Abandonment in Each State



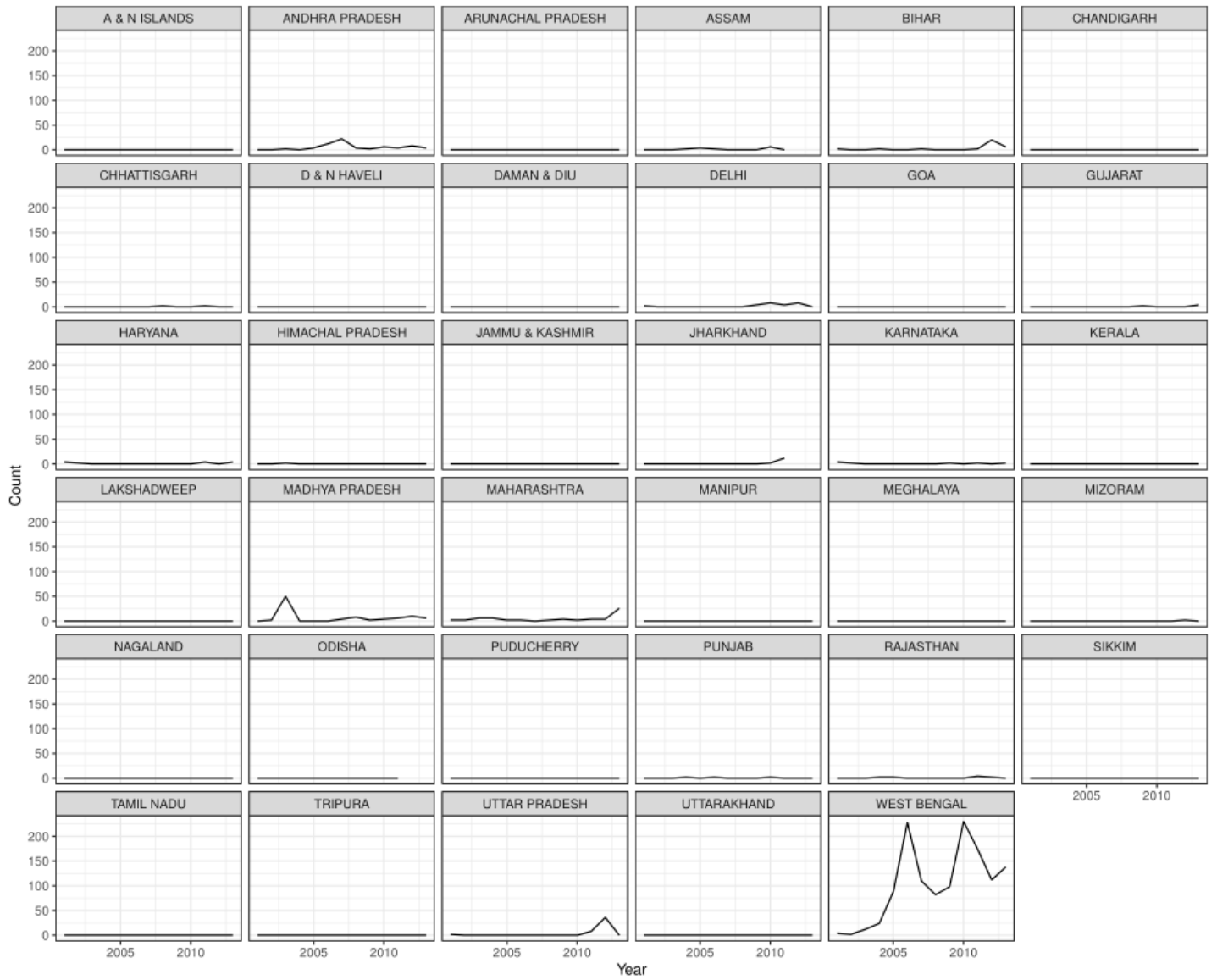
Summary of Procurement of girls in Each State



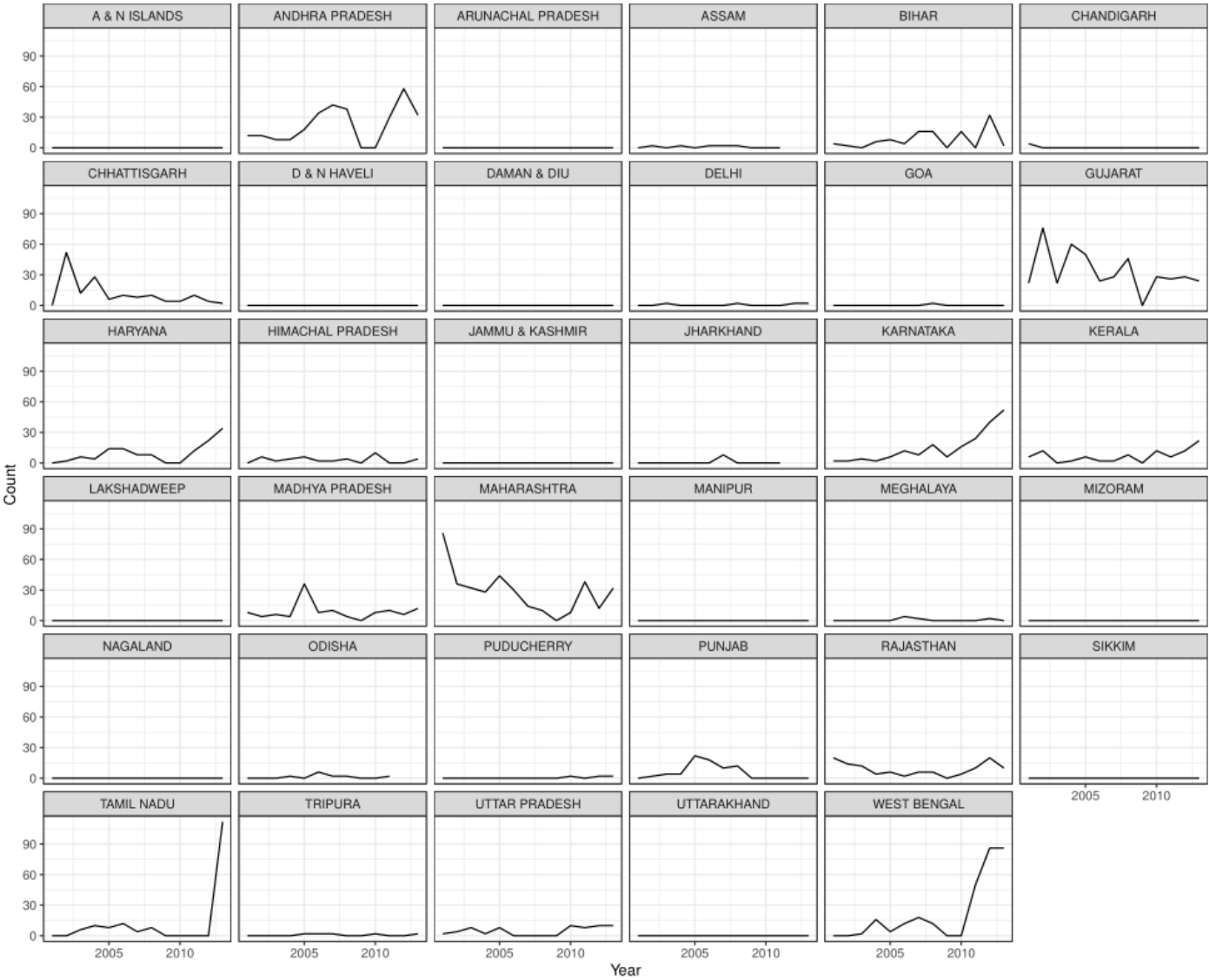
Summary of Buying Girls in Each State



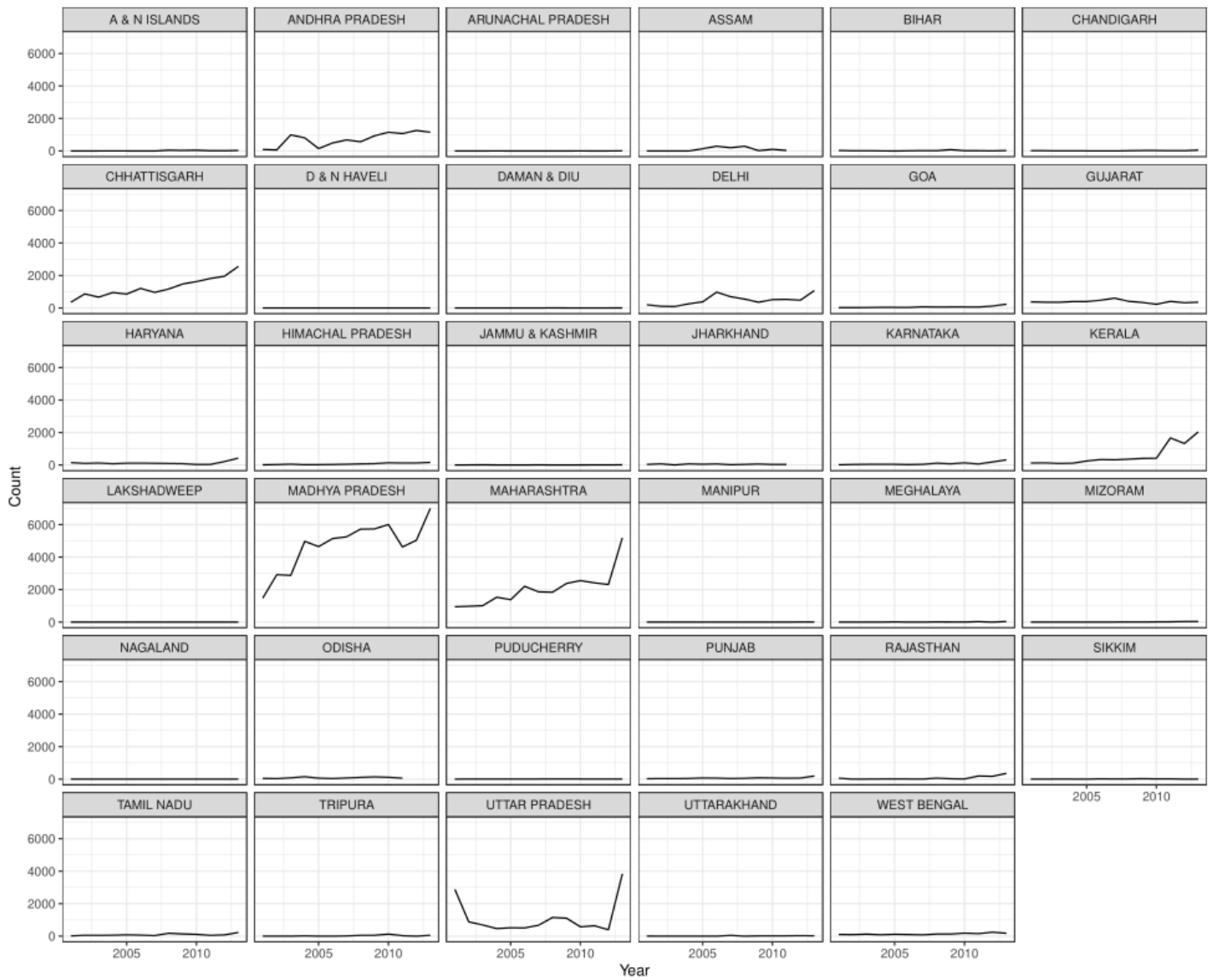
Summary of Selling Girls in Each State



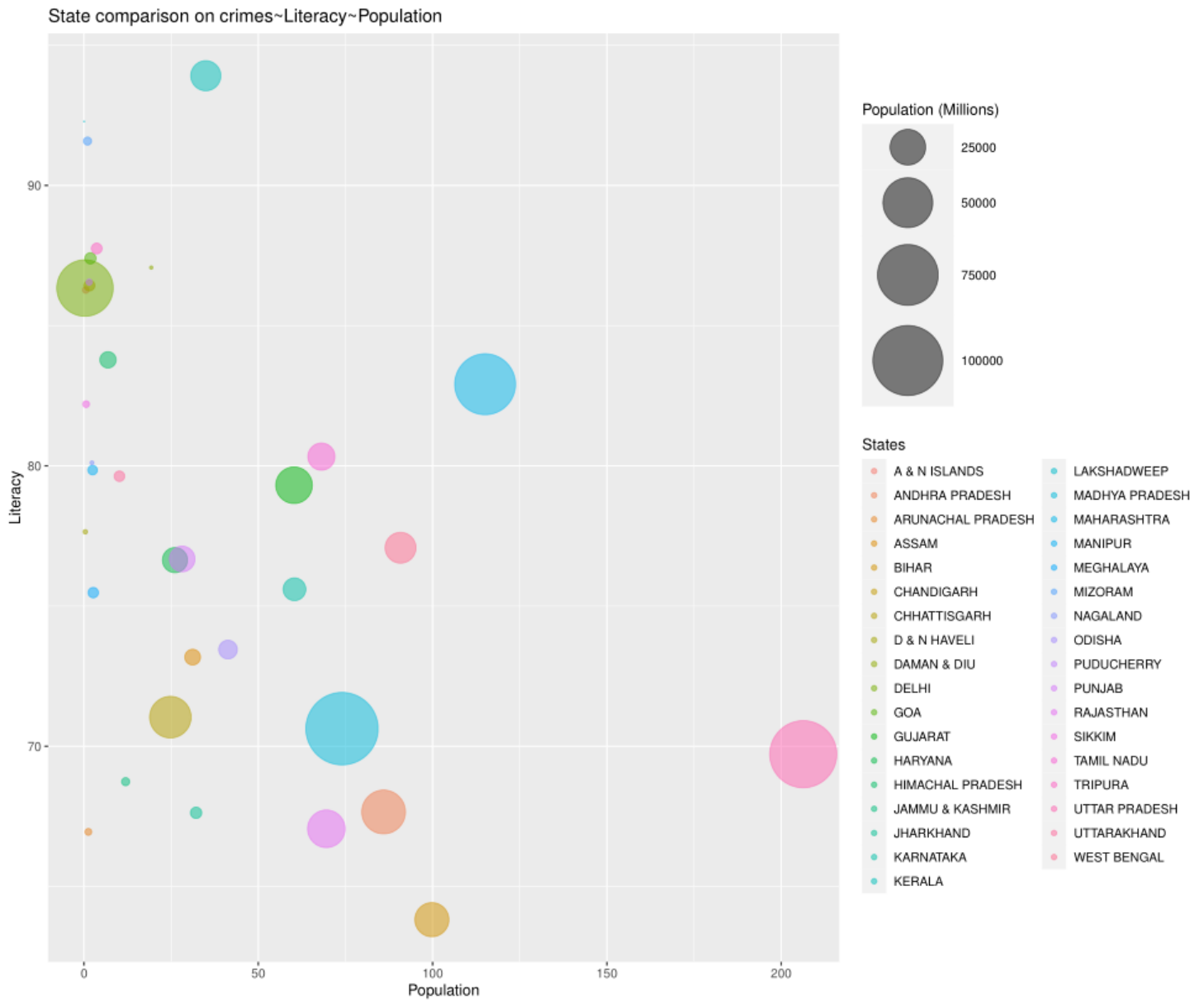
Summary of Child Marriage in Each State



Summary of Other crimes in Each State



(Reason: I choose this graph as we can analyze all the states at same time for a particular crime)



(Reason : This graph is used to show if there is a correlation between any states literacy and the population on crimes)

Thank You

References:

Data Source:

<https://www.kaggle.com/rajanand/crime-in-india>

https://en.wikipedia.org/wiki/List_of_Indian_states_and_union_territories_by_literacy_rate

<https://edm.niti.gov.in/?dataKey=energyBalance>

Link Used:

<https://www.nipccd.nic.in/file/reports/handbk18.pdf>

https://ncrb.gov.in/sites/default/files/crime_in_india_table_additional_table_chapter_reports/Chapter%206_2010.pdf

https://en.wikipedia.org/wiki/Law_of_India

<https://en.wikipedia.org/wiki/India>