BIVA Project Report

Parth Gupta - A117 | Shrutee Salpe - A098

BTech CE A

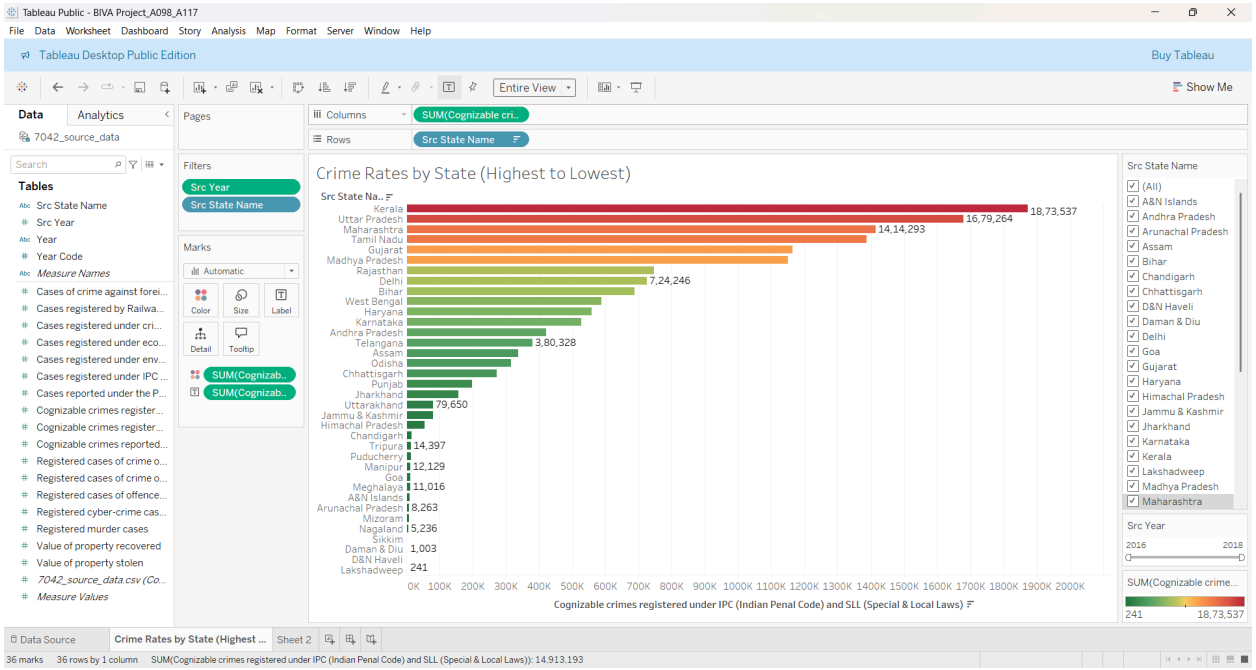
QUESTIONS:

1. **Which states have the highest and lowest crime rates?**
2. **How does crime against specific groups (women, SCs, STs, juveniles) vary across states?**
3. **Which states report the highest and lowest number of crimes across different categories, and how does the severity of crimes vary across regions?**
4. **What is the correlation between property stolen and property recovered?**
5. **Which states report the most cybercrimes and economic offenses?**

Visualisations:

Visualisation 1

Title: Crime Rates by State (Highest to Lowest)



Description: This bar chart visualizes the total cognizable crimes registered under the IPC (Indian Penal Code) and SLL (Special & Local Laws) for different states in India. Kerala reported the highest number of crimes, followed by Uttar Pradesh and Maharashtra. The color gradient

represents the crime count, with darker shades indicating higher crime rates. The data provides insights into regional crime trends and variations across states.

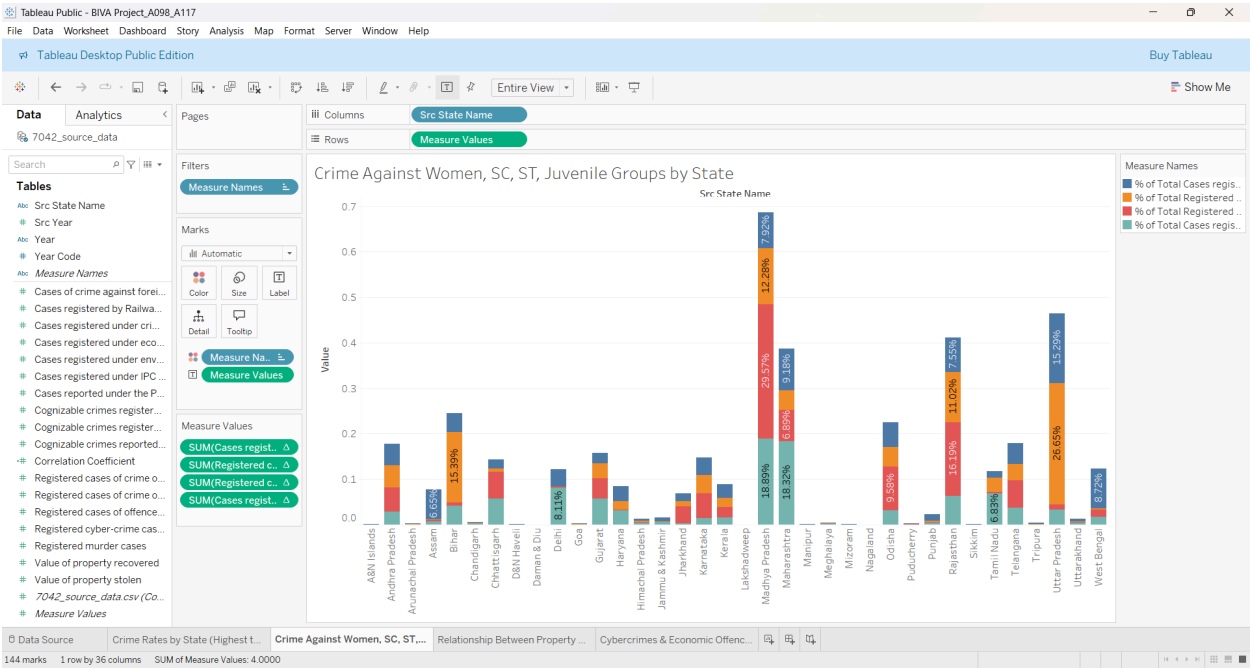
For eg:
Q. **Which states have the highest and lowest crime rates?**

Ans: From the bar chart:

- State with the highest crime rate: **Kerala (18,73,537 cases)**
- State with the lowest crime rate: **Lakshadweep (241 cases)**

Visualisation 2

Title: Crime Against Women, SC, ST, and Juvenile Groups by State



Description: This stacked bar chart compares the percentage distribution of crimes against women, Scheduled Castes (SC), Scheduled Tribes (ST), and juveniles across different Indian states. The color-coded segments represent different crime categories, highlighting states with higher reported incidents. Notably, states such as Maharashtra, Uttar Pradesh, and Lakshadweep exhibit significant variations in crime rates among these vulnerable groups.

For eg:
Q. **How does crime against specific groups (women, SCs, STs, juveniles) vary across states?**

Ans: The bar chart shows how crimes against different vulnerable groups vary across states:

1. **Madhya Pradesh** has a notably high percentage of total cases registered against women (29.57%) and STs (18.39%).

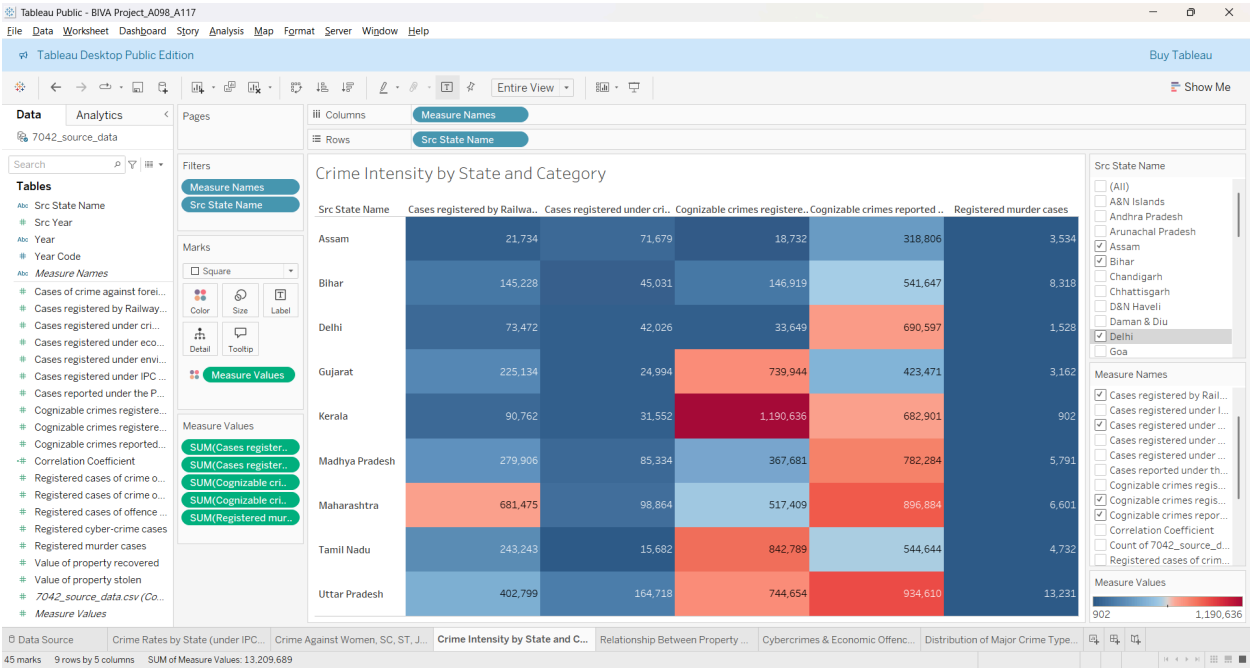
2. **Uttar Pradesh** records a significant percentage of crimes against SCs (26.65%).

3. **Maharashtra** also shows high crime rates for multiple categories.

4. **Lakshadweep** and some northeastern states have relatively lower reported crime percentages.

Visualisation 3

Title: Crime Intensity by State and Category in India



Description: This heatmap visualizes the intensity of various crime categories across different states in India. The color intensity represents the volume of crimes, with darker shades indicating lower crime rates and lighter or red shades highlighting higher crime rates. The selected crime categories include cases registered by the Railway Protection Force, cognizable crimes, and registered murder cases. This visualization helps in identifying states with higher crime prevalence across different categories, enabling better analysis and insights into regional crime trends.

For eg:

Q. **Which states report the highest and lowest number of crimes across different categories, and how does the severity of crimes vary across regions?**

Ans: From the heatmap, we can observe the following trends:

States with the Highest Crime Numbers:

1. **Uttar Pradesh:** Reports the highest number of *cognizable crimes reported* (934,610) and *registered murder cases* (13,231).

2. **Maharashtra:** Has high *cases registered by Railways* (681,475) and *cognizable crimes reported* (896,884).

3. **Kerala:** Records the highest *cognizable crimes registered* (1,190,636), indicating a high crime reporting rate.

4. **Tamil Nadu:** Has significant *cognizable crimes reported* (842,789).

States with the Lowest Crime Numbers:

1. **Delhi:** Reports relatively lower crime numbers compared to larger states, but it has urban crime challenges.

2. **Gujarat:** Lower in terms of *cases registered under crime categories*.

3. **Kerala:** Despite high crime reporting, registered murder cases (902) are low.

Crime Severity Variation Across Regions:

- **Northern States (Uttar Pradesh, Bihar, Madhya Pradesh)** tend to have high *registered murder cases* and overall *cognizable crimes reported*.

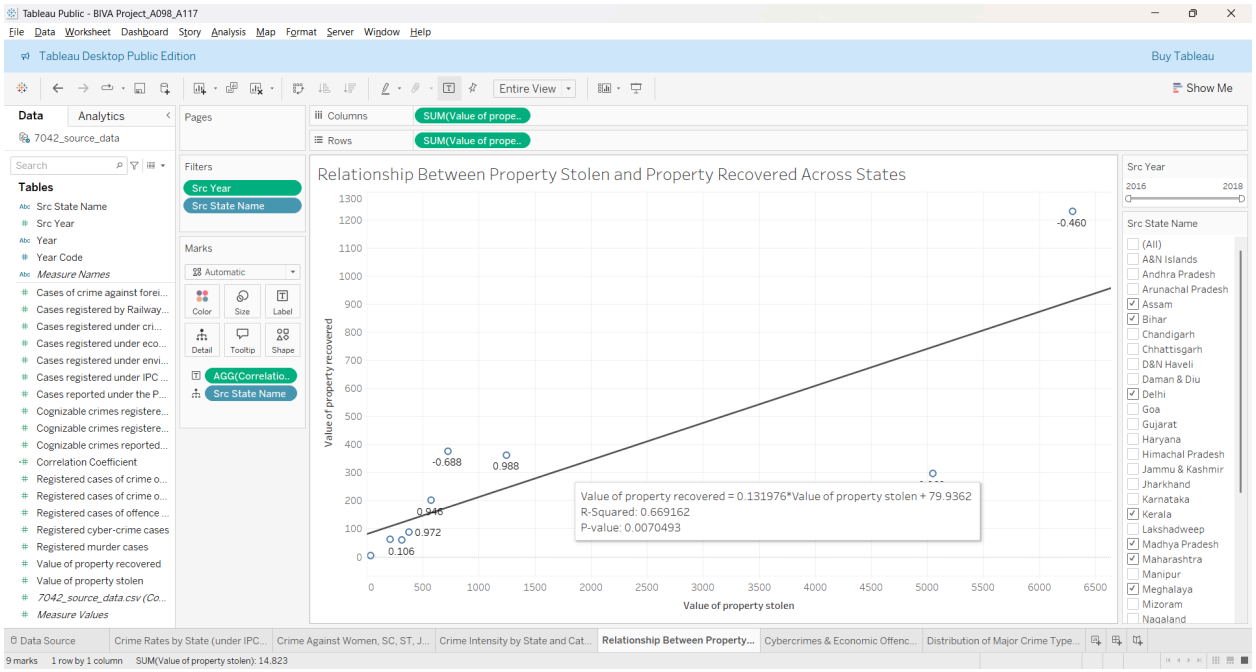
- **Southern States (Kerala, Tamil Nadu, Maharashtra)** have high crime reporting but relatively fewer severe crimes like murder.

- **Western States (Gujarat, Maharashtra)** have a mix of economic offenses and cybercrimes rather than violent crimes.

- **Northeastern States** (not very visible in this selection) generally report fewer crimes due to lower population density.

Visualisation 4

Title: Relationship Between Property Stolen and Property Recovered Across States



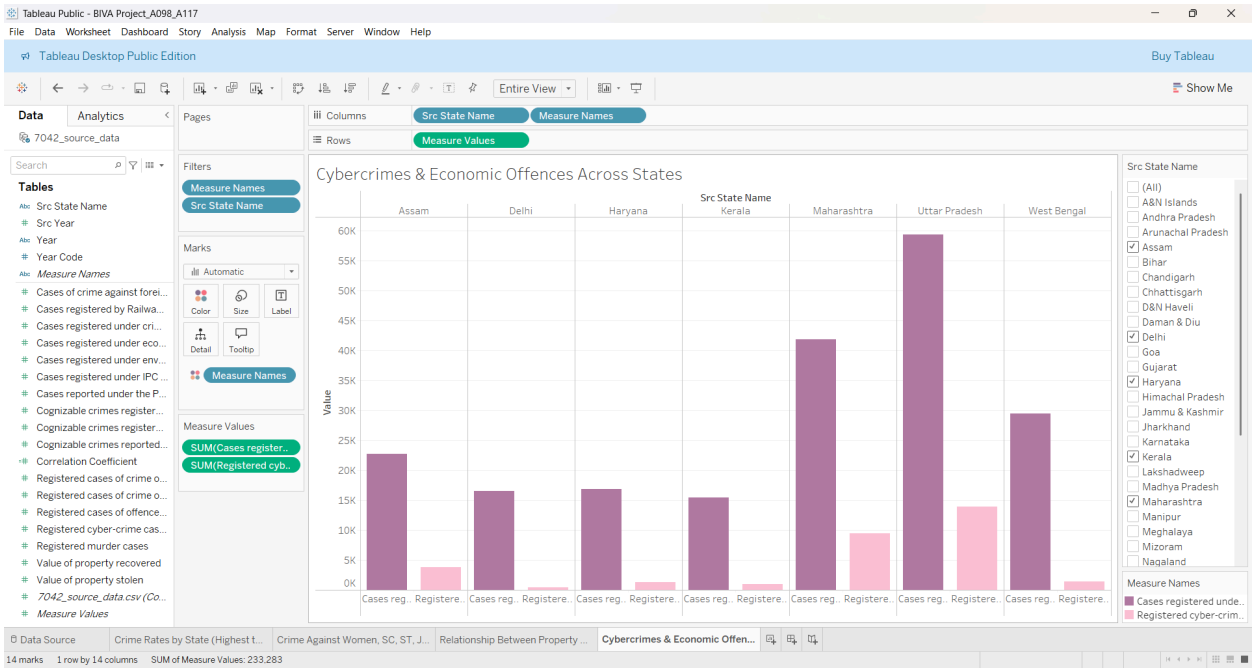
Description: This scatter plot visualizes the correlation between the total value of stolen property and the value of recovered property across different states. The trend line indicates a moderate correlation, with some states deviating significantly from the expected recovery rate. The correlation coefficient values suggest variations in the efficiency of property recovery across different regions.

For eg:
Q. **What is the correlation between property stolen and property recovered?**

Ans: The correlation coefficient is displayed as **0.669**, which indicates a moderate positive relationship between the two variables. This means that as the value of stolen property increases, the value of recovered property tends to increase as well, but not in a perfect one-to-one ratio.

Visualisation 5

Title: Cybercrimes & Economic Offenses Across States



Description: This bar chart compares the number of registered cybercrimes and economic offenses across various states. Uttar Pradesh and Maharashtra report the highest number of cases, indicating a significant concentration of such crimes in these regions. The variation across states highlights differences in crime rates and reporting mechanisms.

For eg:
Q. **Which states report the least cybercrimes and economic offenses?**

Ans: Least Cybercrime Cases:

1. **Delhi** - **449 cases**.
2. Kerala - 943 cases.
3. Haryana - 1,323 cases.

Delhi has the lowest cybercrime cases, possibly due to better law enforcement or underreporting.

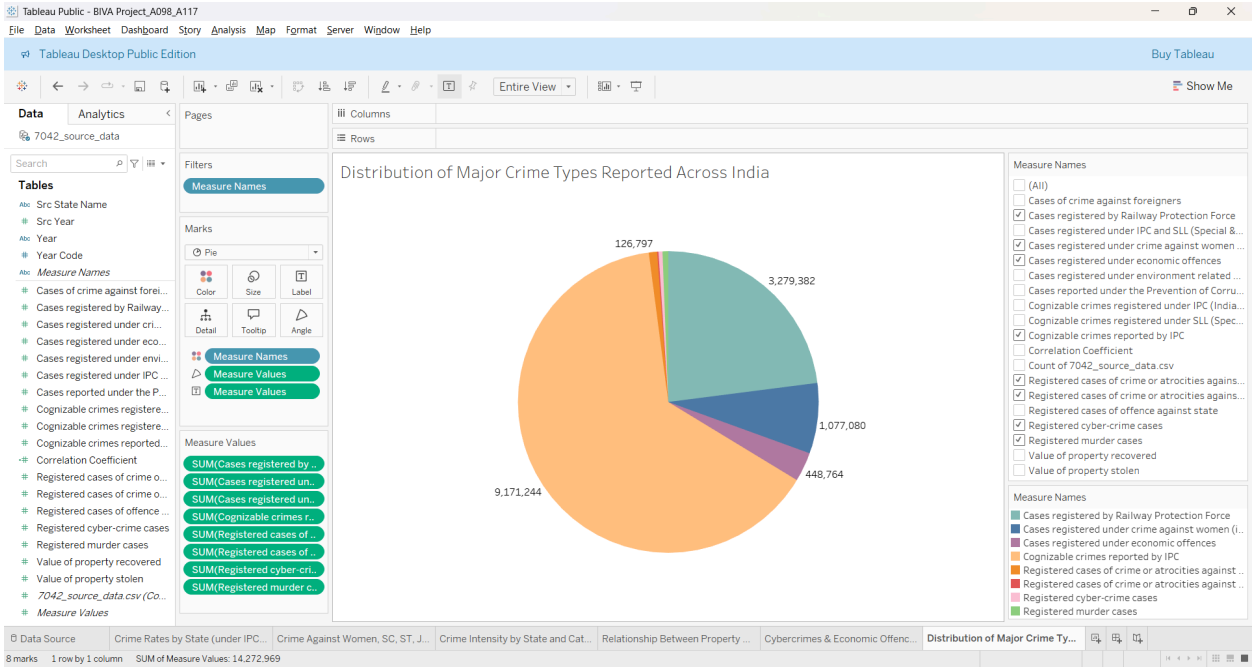
Least Economic Offense Cases:

1. **Kerala** - **15,417 cases**.
2. Haryana - 16,790 cases.
3. Delhi - 16,545 cases.

Kerala and Haryana report the lowest economic offenses, suggesting better financial crime control.

Visualisation 6

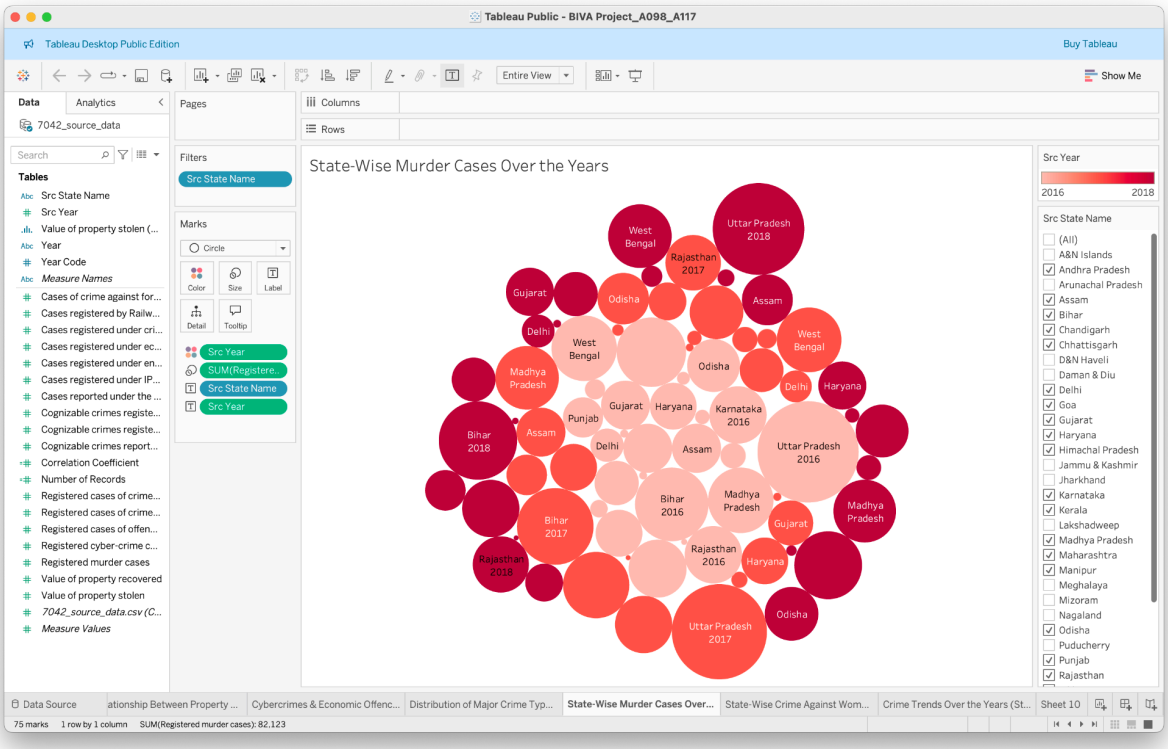
Title: Distribution of Major Crime Types Reported Across India



Description: This pie chart represents the distribution of different major crime types reported across India. Each segment corresponds to a specific crime category, with its size indicating the relative number of cases. The categories include economic offenses, cyber crimes, murder cases, and other cognizable crimes. This visualization helps in understanding which types of crimes are more prevalent, providing a broad overview of the crime landscape in India.

Visualisation 7

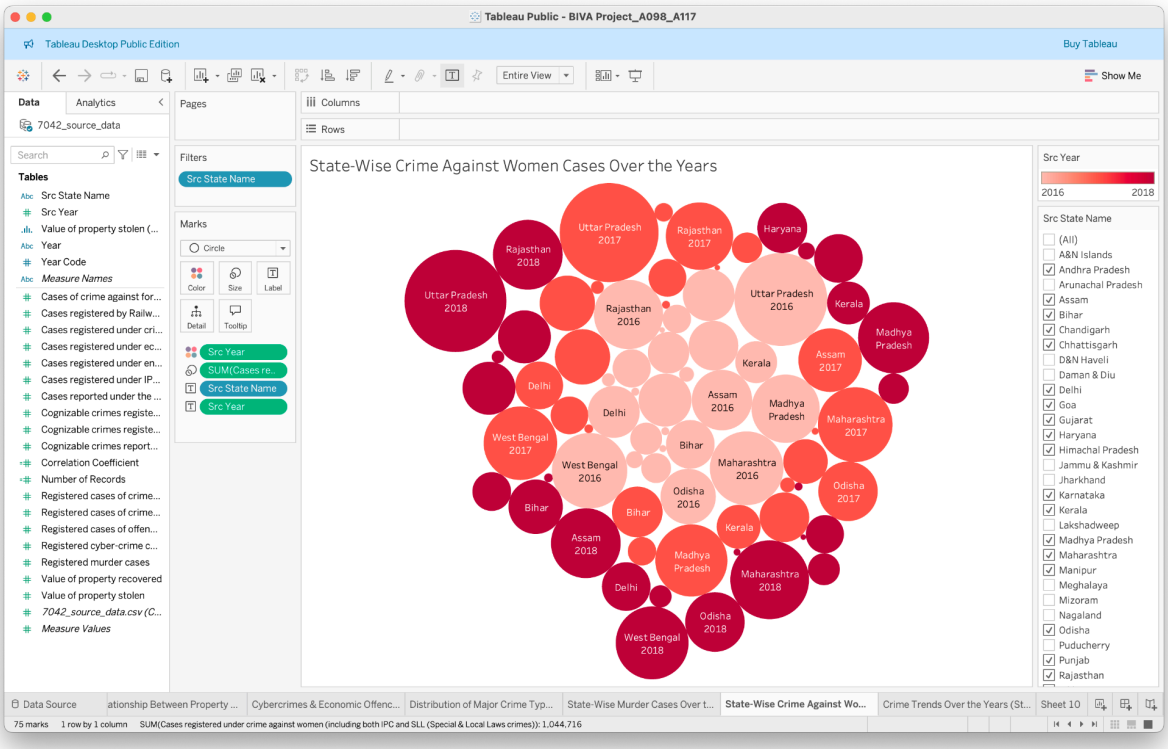
Title: State-Wise Murder Cases Over the Years



Description: This bubble chart visualizes the number of registered murder cases across different Indian states from 2016 to 2018. The size of each bubble represents the total number of cases, while the color intensity indicates the severity, with darker shades representing higher crime rates.

Visualisation 8

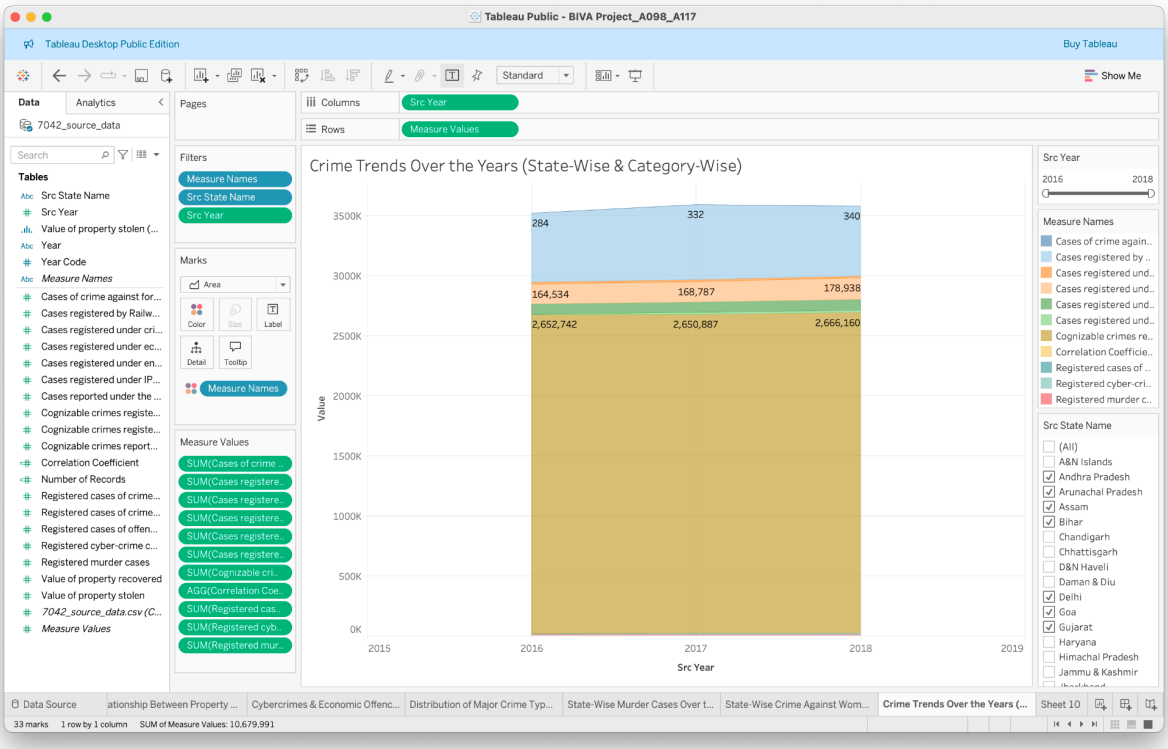
Title: State-Wise Crime Against Women Cases Over the Years



Description: This bubble chart displays the number of registered crime cases against women in various Indian states from 2016 to 2018. The bubble size represents the total number of cases, while the color intensity indicates the severity, with darker shades signifying higher reported incidents.

Visualisation 9

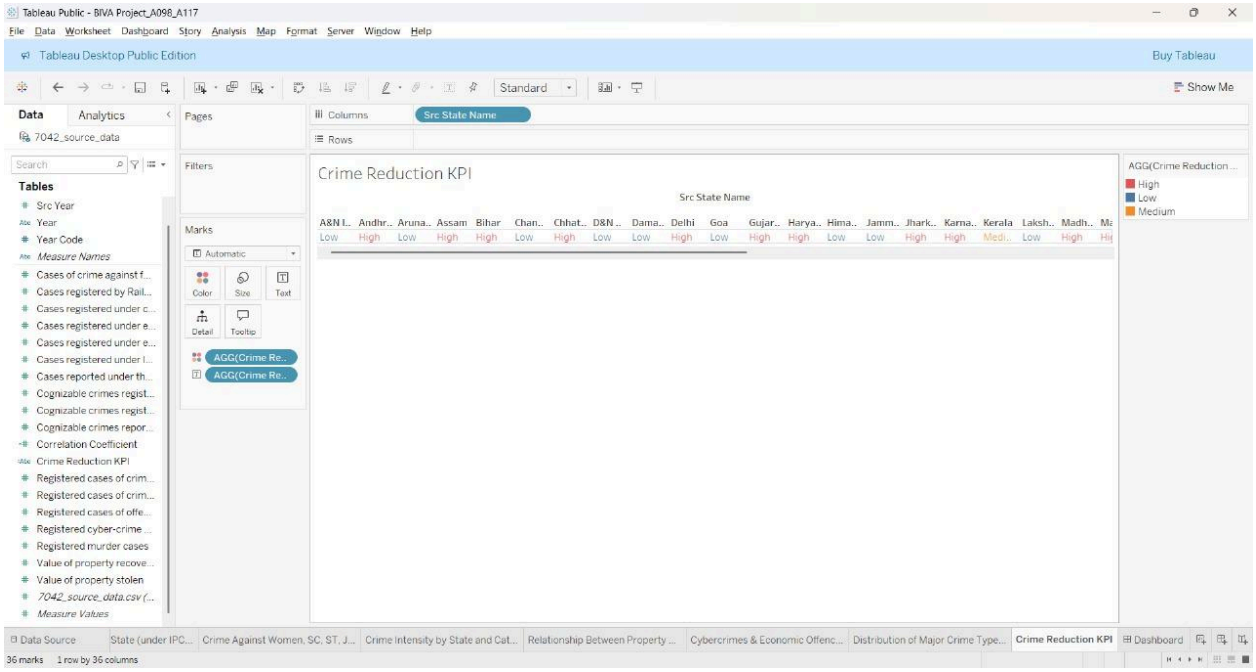
Title: Crime Trends Over the Years (State-Wise & Category-Wise)



Description: This stacked area chart visualizes crime trends from 2016 to 2018, categorized by different types of registered cases across various Indian states. The different colored sections represent distinct crime categories, with their cumulative values stacked to show the total crime volume over time.

Visualisation 10

Title: Key Performance Indicator (KPI)



Description: This visualization categorizes Indian states based on their crime reduction performance using a Key Performance Indicator (KPI) metric. Each state is classified into Low, Medium, or High crime reduction levels based on the number of registered cases. The color-coded classification helps in identifying states with effective crime control measures versus those requiring urgent policy interventions.

Dashboard

India Crime Analytics Dashboard

Our Tableau dashboard provides a detailed analysis of crime trends across India, categorized by state, crime type, and demographic impact. The visualizations offer insights into crime rates, crime against women and vulnerable groups, cybercrimes, and economic offenses.

Key Features:

- **Crime Rates by State: A comparative bar chart displaying the highest and lowest crime rates under IPC & SLL laws, highlighting states with the most reported cases.**
- **Crime Against Women & Vulnerable Groups: A breakdown of crime cases involving women, SC, ST, and juvenile groups, with percentage distributions across states.**
- **Crime Intensity Analysis: A heatmap showcasing crime intensity variations across states and different categories of criminal activities.**
- **Cybercrimes & Economic Offenses: A bar chart comparing cybercrime and economic offenses registered across various states.**
- **Crime Trends Over the Years: A time-series analysis highlighting how crime rates have evolved from 2016 to 2018, offering insights into potential policy impact and law enforcement effectiveness.**
- **Relationship Between Crime Types: Data correlations exploring how different types of crimes relate to each other across states.**

With an interactive and data-driven approach, this dashboard helps policymakers, researchers, and law enforcement agencies identify crime hotspots, monitor trends, and strategize crime prevention efforts effectively.

Conclusion:

The analysis highlights key crime trends across Indian states:

- Highest Crime Rates: Kerala, Uttar Pradesh, and Maharashtra report the most crimes, with Uttar Pradesh leading in murders.
- Lowest Crime Rates: Lakshadweep records the least crimes, while some states may have underreporting issues.
- Regional Crime Patterns: Northern states have high violent crime rates, while economic offenses and cybercrimes are more common in the west.
- Crime Against Women & Vulnerable Groups: Madhya Pradesh and Uttar Pradesh report the highest cases.
- Property Recovery: A moderate correlation (0.669) suggests law enforcement improvements are needed.

- Crime Reduction KPI: Some states show effective control, while others need urgent intervention.

Overall, targeted policies and improved law enforcement can enhance crime prevention and justice delivery.