# **Project Report on Crime Against Women: A Data Visualization Analysis Using Tableau**

### **1. Introduction**

Crimes against women are pervasive and have significant social, economic, and psychological consequences. Governments and organizations worldwide are collecting crime data to identify trends and patterns, in hopes of mitigating these crimes and protecting women. However, the challenge lies in efficiently analyzing and interpreting large datasets.

The objective of this project is to use **Tableau**, a powerful data visualization tool, to explore, analyze, and visualize data related to crimes against women. This report details the process, findings, and insights gained from this analysis.

### **2. Objectives of the Project**

* To analyze crime data related to women using Tableau.
* To visualize patterns and trends over time, across geographies, and based on crime types.
* To identify hotspots of crimes against women.
* To provide insights into which factors (age, location, etc.) may influence the frequency of crimes.
* To support policy decisions by highlighting trends through intuitive visualizations.

### **3. Data Source**

The data used in this project was sourced from government crime reports and open datasets, including:

* **National Crime Records Bureau (NCRB)** of India for crime data from 2010 to 2020.
* **United Nations Office on Drugs and Crime (UNODC)** for global crime data.
* **State police departments** and **regional crime bureaus** for country-specific data.

The datasets include information on the types of crimes, the number of incidents reported, victim demographics, geographical regions, and time periods.

### **4. Technology Used**

**Tableau** is a data visualization software that allows users to connect to data sources, create interactive dashboards, and generate insights. Tableau was chosen for this project because of its ability to:

* Handle large datasets efficiently.
* Create powerful, interactive visualizations.
* Generate insights through intuitive, drag-and-drop interfaces.
* Share findings with stakeholders via interactive dashboards.

### **5. Methodology**

#### **Step 1: Data Collection and Preprocessing**

* Data related to crimes against women was collected from the aforementioned sources.
* Preprocessing steps involved cleaning the data (removal of null values, duplicates, etc.

#### **Step 2: Importing Data into Tableau**

* The cleaned data was imported into Tableau for analysis.
* The dimensions and measures were defined:
  + **Dimensions**: Crime type, state/region, victim age group, time period, etc.
  + **Measures**: Number of cases, percentage change over time, population ratios, etc.

#### **Step 3: Visualizations Created**

* **Heat Maps**: Used to show crime intensity across different states and regions, highlighting hotspots.
* **Bar Graphs**: Compared the number of incidents across different age groups of victims and across various crime categories.
* **Bubble graph:** is a data visualization technique used to display three dimensions of data on a 2D plot. In a bubble graph, each point (or "bubble") represents an entity, and the size of the bubble is used to depict an additional variable.
* **Geographical Maps**: Visualized crime distribution geographically, identifying which regions are most affected.

#### **Step 4: Dashboard Creation**

An interactive **Tableau Dashboard** was created, allowing users to filter data by:

* Crime type (e.g., rape, domestic violence, dowry death, human trafficking).
* Time period (year, month).
* Geographical location (countries, states, districts).

### **6. Analysis and Findings**

#### **6.1 Crime Trends Over Time**

* Crimes such as **rape**, **dowry deaths**, and **domestic violence** showed a significant increase in certain years.
* **2018** and **2019** saw the highest number of reported cases in several countries, possibly due to heightened awareness (through movements like #MeToo).

#### **6.2 Regional Distribution**

* Certain regions were identified as **crime hotspots**:
  + Globally, regions in **South Asia** and parts of **Africa** reported higher instances of gender-based violence and human trafficking.

#### **6.3 Age Group Analysis**

* Women in the age group of **18-30 years** were found to be most vulnerable to crimes like sexual harassment, trafficking, and rape.
* A significant number of **teenage girls** were victims of trafficking, highlighting the need for targeted interventions.

#### **6.4 Crime Type Insights**

* **Domestic violence** accounted for the majority of crimes in almost all regions.
* **Human trafficking** cases showed a disturbing upward trend in some regions, especially targeting younger women and girls.
* **Dowry deaths** were prevalent in certain parts of South Asia, particularly in rural areas.

### **7. Key Insights from the Tableau Visualizations**

* **Crime Hotspots**: Certain states consistently reported high levels of crimes against women, indicating the need for focused intervention.
* **Policy Impacts**: Analysis of time trends indicated that the introduction of new laws (e.g., stricter penalties for sexual harassment in 2013 in India) led to fluctuations in reported crime rates.
* **Age-Specific Vulnerabilities**: Younger women and teenage girls were particularly vulnerable, indicating the need for age-specific protective measures.
* **Regional Differences**: Urban areas saw more cases of sexual harassment, while rural regions had higher instances of domestic violence and dowry deaths.

### **8. Conclusion**

The use of Tableau for analyzing crime data provided valuable insights into patterns and trends of crimes against women. Visualizing the data revealed regional disparities, time-based trends, and factors such as age that influence the frequency of crimes. These insights are crucial for policymakers, law enforcement agencies, and social organizations aiming to mitigate these crimes and better protect women.

### **9. Future Scope**

* **Predictive Analysis**: Using machine learning algorithms with Tableau for predictive analysis of crime trends.
* **Expanded Data Sources**: Integrating more data sources such as social media data or data from non-governmental organizations (NGOs) working on women's safety.
* **Public Dashboards**: Creating public-facing dashboards that can help individuals and organizations raise awareness about crime hotspots and trends.

### **10. References**

1. National Crime Records Bureau (NCRB) Reports.
2. United Nations Office on Drugs and Crime (UNODC) Data.
3. State Police Department crime reports and datasets.