Crime Trends and Patterns in India (2001–2023)

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1. Introduction

Crime analysis is essential for identifying public safety risks and long-term behavioural patterns. This Power BI project presents a 23-year analytical study of crime across India, uncovering insights at national, state, and district levels. The dashboard provides a comprehensive view of how crime has evolved between 2001 and 2023.

2. Project Objectives

- Analyse crime trends from 2001 to 2023
- Compare crimes across states and districts
- Identify high-crime states, districts, and categories
- Understand year-on-year crime patterns
- Provide interactive insights with Power BI Q&A
- Deliver user-friendly visual dashboards for decision-making

3. Tools & Technologies Used

Component	Details
Tool	Microsoft Power BI Desktop
Techniques	DAX Measures, Data Modelling, Data Cleaning
Visuals	Map, Bar Chart, Line Chart, Tree map, Donut Chart, KPIs
Features	Navigation Buttons, Q&A, Custom Tooltips

4. Dataset Description

The dataset includes crime records for:

- Indian states and union territories
- District-level crime counts
- Major crime categories such as total IPC crimes, rapes, custodial rapes, and murders
- Year-wise data for 2001–2023

Key data fields:

- Year
- State
- District

- Crime Type
- Crime Count

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5. Data Cleaning & Preparation

Key steps performed:

- Removed duplicates and missing data
- Standardized state and district names
- Built relationships between dimension and fact tables
- Created DAX measures including:
    - Total Crimes
    - Yearly Crime Growth
    - Percentage Contribution
    - Average Crimes Per Year

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6. Dashboard Pages & Features

6.1 Home Page

A neatly designed landing page with navigation buttons linking to:

- Crime Trends & Insights
- Crime Analysis by Geography & Type
- Q&A Page
- Tooltip Page

6.2 Crime Trends & Insights Page

This section gives an overall picture of crime patterns in India.

Key visuals include:

- Bubble Map showing state-wise total crimes (with tooltip)
- Bar Chart showing total crimes by year
- Line Chart comparing rape vs custodial rape trends
- KPI Cards highlighting:
    - Most crime-heavy year (2023)
    - Total crimes
    - Total rapes
    - Total murders

- Average crimes per year

A narrative insight section auto-updates based on filters.

6.3 Crime Analysis by Geography & Type

This section gives detailed insights into state and district contributions.

Key visuals include:

- Donut Chart showing top 3 states in total crime
- Donut Chart showing top 5 high-crime districts
- Tree map displaying yearly crime distribution
- State selection panel for drill-down analysis

6.4 Q&A Page

This page uses Power BI's natural language query feature.
Users can ask questions such as:

- "Top states by total rapes"
- "Most crimes by year"
- "Total crimes by district"
- "How many states show crime data?"

6.5 Tooltip Page

A custom tooltip linked to the bubble map that shows:

- Crime totals for the past 7 years
- Percentage contribution
- Year-to-year comparison

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7. Key Insights

- 2023 recorded the highest crime total in the 23-year period.
- 2003 recorded the lowest crime count, significantly lower than 2023.
- Madhya Pradesh, Maharashtra, and Tamil Nadu are the top crime-contributing states.
- Tikamgarh, Thrissur Rural, Tirupur, Thane Rural, and Sultanpur are the highest-crime districts.
- Crime levels show a steady rise after 2010.
- Custodial rape remains low but shows periodic fluctuations.

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8. Challenges Faced

- Matching district-level data due to naming inconsistencies
- Ensuring correct mapping of geographical regions
- Maintaining performance with large datasets
- Designing consistent, visually clear pages
- Creating meaningful and reliable DAX measures

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9. Conclusion

This Power BI project delivers a complete analysis of crime trends in India from 2001 to 2023. It identifies long-term patterns, high-crime regions, and category-level insights, providing a strong foundation for research, policy planning, and public awareness. The interactive nature of the dashboard, along with drill-down features, Q&A, and tooltips, makes it accessible to all types of users.

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10. Future Enhancements

- Adding predictive crime forecasting using machine learning
- Including demographic and socio-economic factors
- Introducing severity scoring of crimes
- Creating more drill-down pages for district-level forecasting
- Publishing the report to Power BI Service for real-time access