

# Crime Data Analysis in Tamil Nadu (2020–2022)

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**Location:** Tambaram, Tamil Nadu

**Assignment:** Data Analyst Role Task – Albaatros Solutions

## Project Summary

This Power BI project presents a 3-year crime analysis (2020–2022) in Tamil Nadu using publicly available datasets.

Data was sourced from [OpenCity.in](#), cleaned, modeled, and visualized across four interactive dashboard pages.

The focus was on identifying crime trends, classifying crimes, analyzing district-level patterns, and delivering insights using slicers, statistical visuals, and performance KPIs.

## Tools Used

This project was developed using the following tools:

### ❖ Microsoft Excel

- Used for initial data preprocessing.
- Cleaned and standardized datasets (replaced text entries, changed data types).
- Performed unpivoting and reshaping of columns to prepare for modeling.
- Exported refined tables for Power BI integration.

### ❖ Power BI

- Used for advanced data modeling, relationships, and DAX measures.
- Created interactive dashboards using:
  - Slicers (Year, District)
  - Cards and KPIs
  - Matrix and Pie Charts
  - Tree Maps and Column Charts
- Utilized **Power Query** for transformations and **DAX** for calculated metrics.
- Implemented a custom **Date Table** using CALENDARAUTO().

# Data Preparation & Modelling

## Source Datasets

1. **Table 1 – District and City-wise Total Crimes Registered (2020–2022):**
  - a. Columns: \_id, Districts, 2020, 2021, 2022, Share in % (2022), Projected population (lakhs), Rate of Cognizable Crime (IPC+SLL)
2. **Table 2 – District and City-wise Death Due to Crimes and Negligence:**
  - a. Columns: \_id, Districts, Murder - Incidence, Murder - Victims, Murder - Rate, Culpable Homicide - I, Culpable Homicide - V, Culpable Homicide - R, Causing Death by Negligence - I, Causing Death by Negligence - V, Causing Death by Negligence - R

## Steps Performed

### **Table 1 (Total Crimes):**

- Renamed \_id to ID and promoted headers.
- Replaced 'N/C' (No Crime) values with 0.
- Changed 2020, 2021, 2022 column data types to whole number.
- Unpivoted 2020–2022 columns to create Year and Registered\_Crimes columns.
- Created a Date column using Year.

### **Table 2 (Crime Types & Death):**

- Renamed \_id to ID and promoted headers.
- Replaced '-' values with 0.
- Converted rate columns to decimal numbers.

### **Date Table:**

- Generated using CALENDARAUTO() in Power BI and marked as a Date Table.

# DATA VISUALIZATION

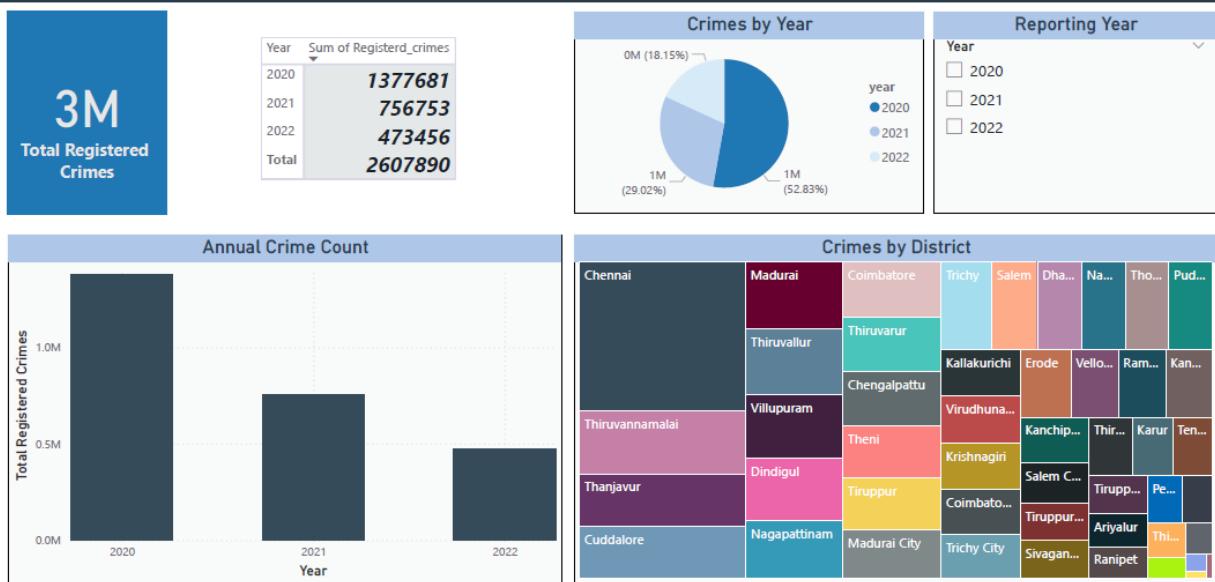
## Page 1 – Yearly Crime Trends

This page analyzes the change in total registered crimes year by year.

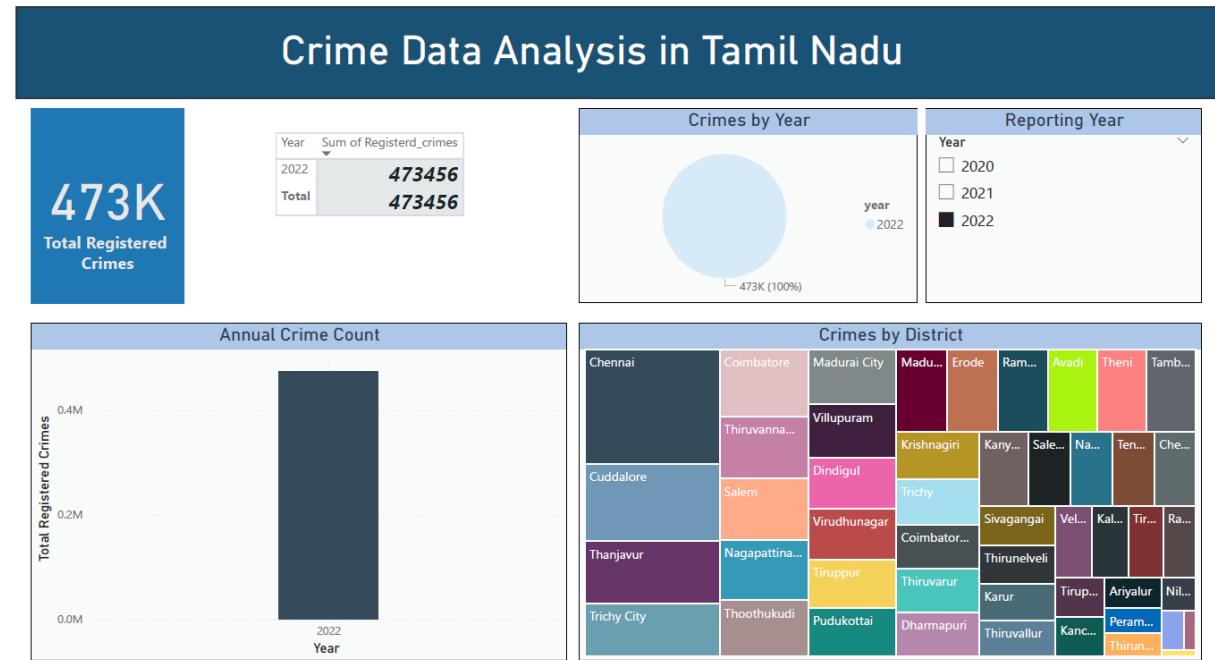
### Visuals Included:

- Year slicer
- Card showing Total Registered Crimes
- Matrix Table: Sum of registered crimes per year
- Pie Chart: Proportional share by year
- Stacked Column Chart: Crime trend across years
- Tree Map: Total crimes by district
-  *Insight:*  
2020 had the highest recorded crimes; Chennai consistently ranked among the top in volume.

## Crime Data Analysis in Tamil Nadu



By using slicer



## Page 2 – District-Level Crime Overview

This page explores crime patterns across districts using a slicer.

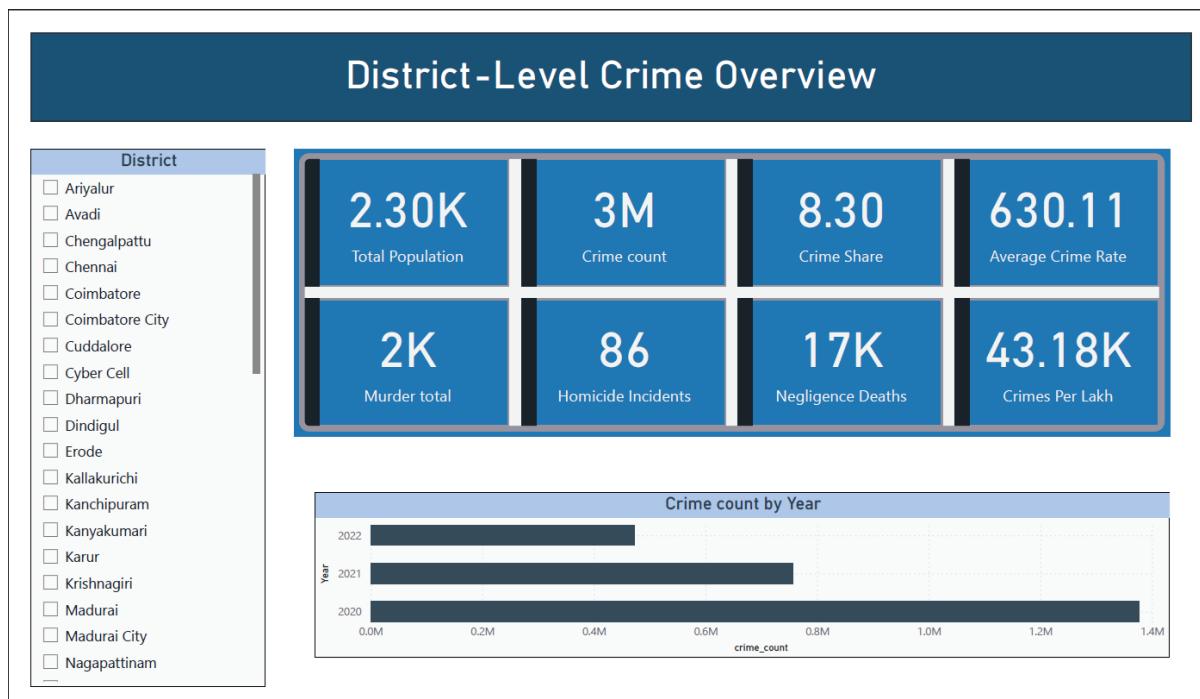
**Visuals Included:**

- KPI Cards:
  - Total Population

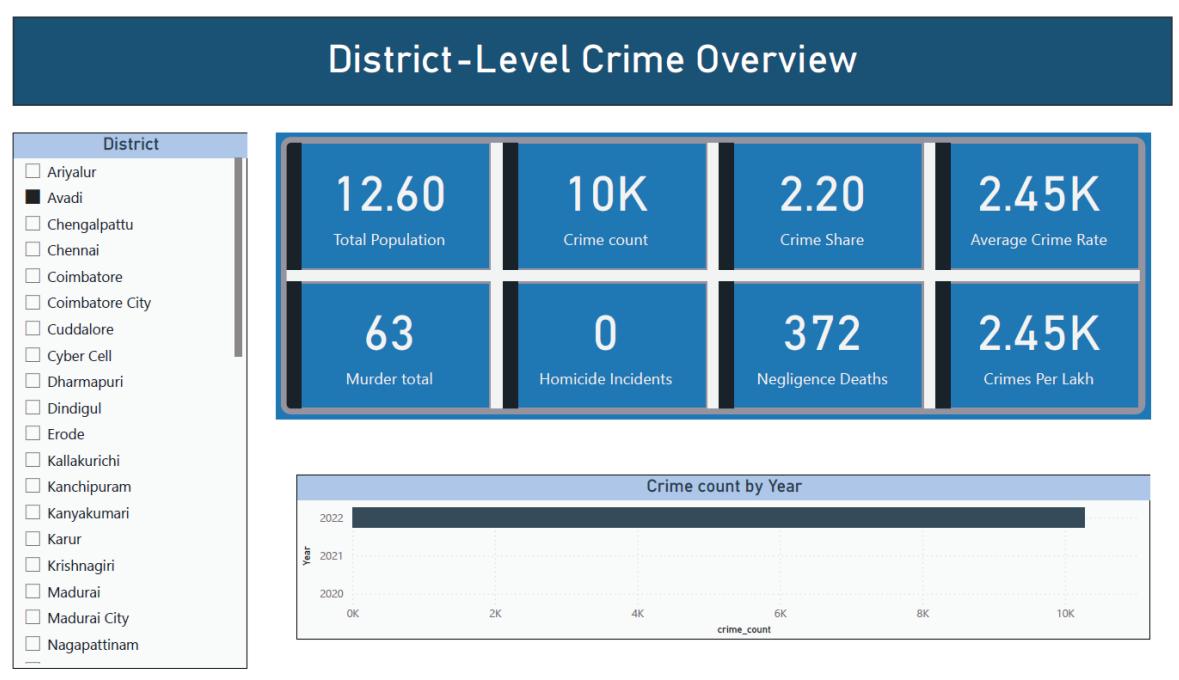
- Total Crime Count
- Crime Share
- Average Crime Rate
- Murder, Homicide, and Negligence incidents
- Crimes per Lakh
- Clustered Bar Chart: Year-wise crime count per district



Chennai and Madurai show a higher concentration of total crimes and elevated rates.



By using slicer



## Page 3 – Crime Category Breakdown

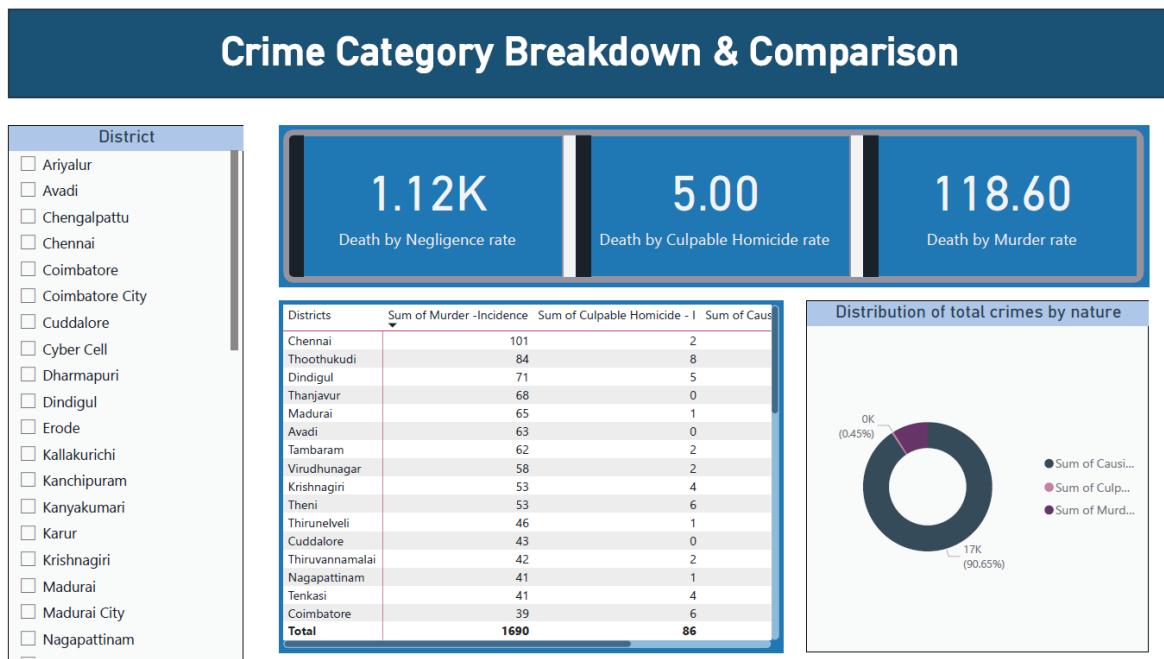
This section categorizes crimes based on their nature: Murder, Culpable Homicide, and Death by Negligence.

### Visuals Included:

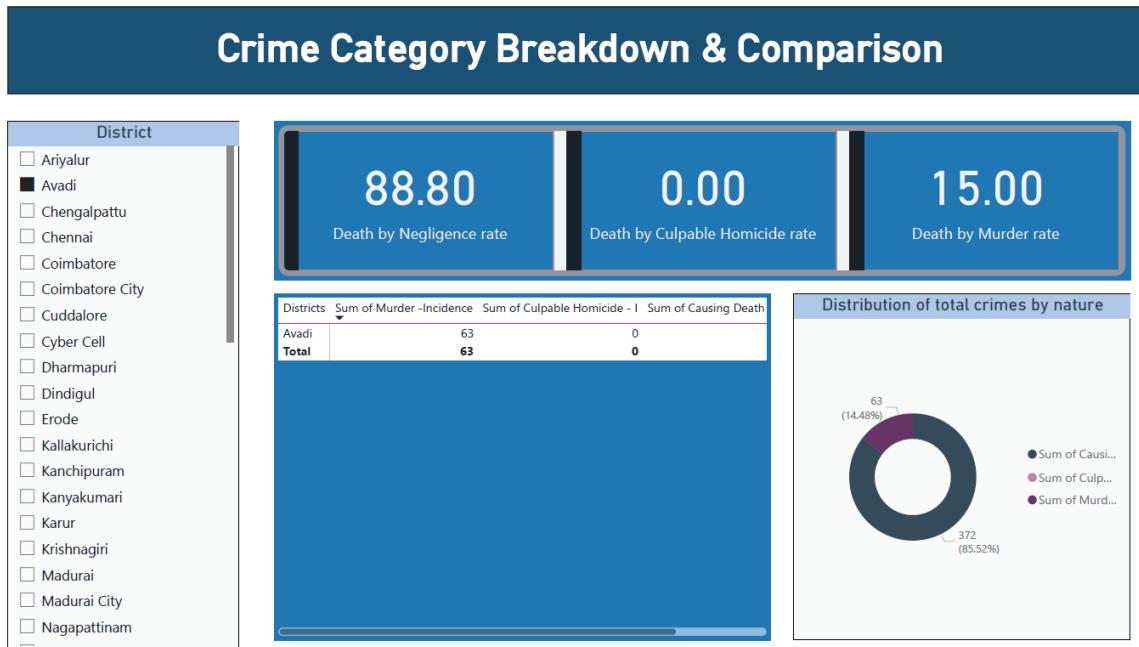
- KPI Cards for each crime type
- Matrix Table: District-wise category comparison
- Donut Chart: Crime distribution by category



Negligence-related deaths were the most frequent across many districts



## By using slicer



## Page 4 – Crime Category – Key Insights

This page presents advanced-level summaries and comparative district rankings.

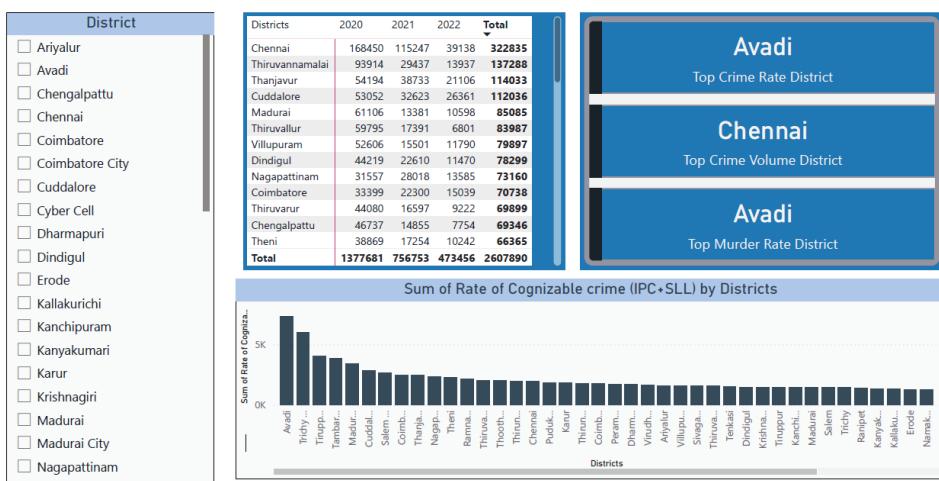
### Visuals Included:

- KPI Cards:
  - Top Crime Rate District
  - Top Crime Volume District
  - Top Murder Rate District
- Matrix: Year-wise crime count by district
- Clustered Column Chart: Cognizable Crime Rate by District
- Interactive Slicers: Year, District

### Insight:

Avadi shows the highest crime and murder rate. Chennai holds the highest volume of crimes.

## Crime Category - Key Insights



By using slicer



## Task Objective Responses

### Analyze trends over time

Trends from 2020 to 2022 show a gradual decrease in overall crime volume. Year 2020 recorded the most incidents.

### Classify crimes based on their nature

Crimes were grouped into:

- Murder
- Culpable Homicide

- Death by Negligence

Each category was visualized with total values and compared by district.

## Generate innovative statistical charts

Charts used:

- Tree Maps
  - Donut Charts
  - Matrix Tables
  - KPI Cards
  - Clustered & Stacked Column Charts
- All enabled dynamic filtering and comparison.

## Identify variables that correlate with crime trends

- Population vs. Crime Rate: Larger populations often correlate with higher absolute crime volume but not always with crime rate.
- Crime Share vs. Cognizable Rate: Districts with high crime share often show higher rates, confirming a strong correlation.

## Provide critical insights and control suggestions

- **Insight:** Chennai had high crime volume; Avadi led in crime rate.
- **Control Suggestion:** Focused law enforcement and resource allocation in Avadi, Chennai, and Thiruvannamalai.
- **Prevention:** Districts with high negligence deaths (like Madurai and Coimbatore) should improve public safety infrastructure.

## Identify variables that correlate with crime trends

- **Population vs. Crime Rate:** Districts with high population don't always have high crime rates (e.g., Madurai vs. Theni).
- **Registered Crimes vs. Cognizable Crime Rate:** A positive correlation was identified using visual comparisons.