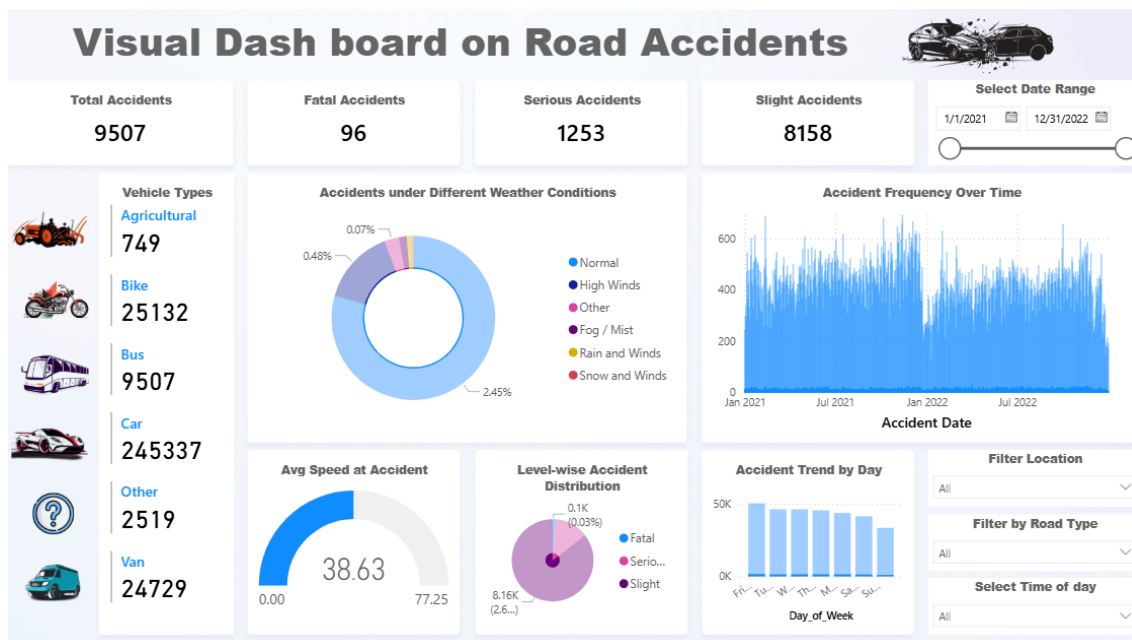


# Project Overview

This project focuses on building an interactive dashboard that visualizes road accident data to identify critical patterns and improve understanding of accident trends. Using Power BI, I designed a data-driven solution that can help traffic authorities, urban planners, and researchers make better decisions based on real insights.

## Why This Project?

Road accidents are a serious concern in India and globally. Behind every number is a life, and understanding how, where, and why accidents happen can save lives. With this goal, I chose to work on real-world accident data, clean it, analyze it, and build a clear visual story that anyone—from policymakers to the general public—can understand.



# Data Cleaning Process

Before I could dive into analysis, I spent time cleaning and organizing the dataset:

- I removed **blank or error-filled rows** that could distort the visuals.
- Deleted **duplicate records** to ensure accuracy.
- Fixed textual inconsistencies—for example, correcting "fetal" to **"fatal"** in the severity column.
- Verified that each accident was classified correctly based on the **Accident\_Severity** field.

## Key Metrics (KPIs)

To summarize the dataset and give users a quick snapshot, I added the following KPIs to the dashboard:

- Total Accidents
- Fatal Accidents
- Serious Accidents
- Slight Accidents

These KPIs help users quickly grasp the overall accident situation across different categories.

## Dashboard Visuals and Insights

The dashboard includes multiple visualizations to uncover hidden patterns:

### 1. Vehicle Types in Accidents

Grouped vehicles into categories like Cars, Bikes, Buses, Vans, Agricultural vehicles, and Others to show which types were most often involved in accidents.

### 2. Accidents by Weather Conditions

Grouped different conditions such as Normal, Fog/Mist, Rain + Wind, High Wind, Snow, and Other to analyze how weather affects road safety.

### 3. Average Speed at Accident Locations

Helps highlight if speed limits in specific areas might be contributing to accident severity.

### 4. Severity-Wise Distribution

A clear breakdown of accidents labeled as Fatal, Serious, or Slight.

## 5. Accident Frequency Over Time

Displays how accident counts have changed over months or years, helping spot seasonal trends.

## 6. Accidents by Days of the Week

Analyzes which days are most prone to accidents—e.g., weekends often showed higher frequency.

## Filters for Exploration

To make the dashboard interactive and user-friendly, I added the following filters:

- Date Range
- Location
- Road Type
- Time of Day

These filters let users explore specific aspects of the data based on their interest or research goals.

## Key Takeaways

From the dashboard, several insights became clear:

- **Cars and bikes** are the most involved in accidents.
- **Normal weather** surprisingly had the highest accident rate—probably due to higher traffic volume.
- Accidents tend to increase during **weekends** and evenings.
- Speed limits often correlate with the **severity** of accidents in specific zones.

## **Challenges Faced**

One of the main challenges was cleaning unstructured and inconsistent data. Some entries were incomplete, and textual errors were common. I resolved these through conditional filters, manual verification, and field replacements within Power BI.

## **Conclusion**

This project gave me a deeper understanding of how to use data visualization to tell powerful stories. It also showed how simple dashboards can uncover important patterns that might otherwise go unnoticed. The final outcome is a clean, insightful, and interactive dashboard that can aid in decision-making for safer roads.