## **Accident Data Analysis**

## **Introduction**

Understanding traffic accidents is essential for improving road safety, optimizing emergency response, and shaping effective policies. This project aims to analyze traffic accident data to identify patterns in accident severity, locations, contributing factors, and police response times. By leveraging interactive dashboards, this analysis will provide valuable insights for policymakers, urban planners, law enforcement, and researchers to enhance road safety and accident prevention strategies.

## **Project Overview**

This project will analyze a dataset containing details of reported road accidents, including **accident severity, number of vehicles involved, casualties, geographic location, road conditions, weather conditions, and police response data**. The objective is to create an interactive **dashboard** that visualizes accident trends, identifies high-risk areas, and helps in data-driven decision-making for traffic management and safety improvements.

## **Key Objectives**

* **Accident Severity Analysis:** Classify accidents based on **severity levels (slight, serious, or fatal)** to identify high-risk scenarios.
* **Geospatial Insights:** Map accident locations using **latitude, longitude, and administrative boundaries** to detect accident-prone areas.
* **Temporal Analysis:** Examine **time-based trends** such as accidents by day of the week, time of day, and seasonal variations.
* **Road & Environmental Factors:** Analyze the impact of **road type, speed limits, weather conditions, and lighting conditions** on accident severity.
* **Police & Emergency Response:** Assess **police force involvement** and their attendance at accident scenes to evaluate response efficiency.
* **Vehicle & Casualty Analysis:** Determine how **vehicle count and casualties** correlate with accident severity and contributing factors.

## **Data Visualization & BI Features**

* **Interactive Maps & Heatmaps** to highlight accident hotspots and high-risk roads.
* **Time-Series Analysis** to track accident frequency over different time periods.
* **Bar & Pie Charts** to compare **accident severity by road type, weather conditions, and speed limits**.
* **Key Metrics Cards & KPIs** to display **casualty rates, accident severity distribution, and police response statistics**.
* **Filters & Slicers** for **dynamic exploration** of accident data based on various factors.

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## **Submission Requirements**

* A **Dashboard** with interactive visuals that provide meaningful insights into traffic accidents.
* A **report summarizing key findings**, trends, and recommendations for road safety improvements.
* Well-structured and labeled visuals to enhance understanding and decision-making.

By following these guidelines, this project will serve as a **data-driven tool** for improving road safety, reducing accident risks, and supporting informed decision-making for urban and transportation planning.