Road Accident Analysis Dashboard Report

Goal

Analyze accident data to identify high-risk locations, contributing factors, and trends — and provide safety improvement recommendations.

Filters Used Across Dashboard

Filter Name	Purpose
Weather_Conditions	Analyze accident trends across different weather conditions (e.g., rain, fog, snow).
Road_Surface_Conditions	Examine how surface types like wet or icy roads affect accident severity.
Urban_or_Rural_Area	Segment accidents by geographical area for targeted infrastructure improvements.

KPI Cards (Top Highlights)

Metric	Purpose	Insight Example
Average Speed Limit	Understand typical accident speed zones	Most accidents happen in 30-40 mph zones
Total Casualties	Impact measurement	Over X casualties recorded across the dataset
Total Vehicles Involved	Crash scale assessment	Y total vehicles involved — hints at multi-vehicle collision patterns
Max Casualties in a	Identify extreme	Maximum of Z casualties occurred on

Day	events	specific date/time
Max Speeding in Accidents	Identify risk zones with high speed	Highest recorded speed in accident: ___ mph, in urban zones

📊 Detailed Visualizations Report

🗺️ Accident Hotspots Map

- Purpose: To geographically identify accident clusters.
- Visualization: Map using Latitude & Longitude with bubble size showing accident volume.
- Insight: Accidents are heavily clustered in urban regions like London, Birmingham, and Manchester, suggesting high traffic volume and congestion-related risks.

🌧️ Accidents by Weather Conditions

- Purpose: Evaluate how weather contributes to accidents.
- Visualization: Bar Chart (weather vs accident count)
- Insight: Majority of accidents occurred during 'Fine' weather — indicating driver behavior is more critical than just weather. However, accidents in rain and fog show higher severity.

⏱️ Time Trend of Accidents

- Purpose: Track monthly/yearly trends in accident frequency.
- Visualization: Line Chart or Area Chart (Time vs Accident Count)
- Insight: Consistent monthly peaks seen in summer months — correlating with increased travel. Holiday seasons also show spikes.

💡 Accidents by Light Conditions

- Purpose: Identify if poor lighting affects accident severity.
- Visualization: Donut or Bar Chart
- Insight: Accidents during daylight are most frequent, but night-time with no street lights has a higher fatality rate — suggesting lighting infrastructure issues.

⚠️ Severity of Road Accidents

- Purpose: Understand proportion of fatal vs slight vs serious injuries.
- Visualization: Donut Chart or 100% Stacked Bar
- Insight: Majority of accidents are 'Slight', but serious and fatal injuries are not negligible — needing focused awareness on speeding and maneuvering behavior.

🚗 Accidents by Vehicle Type

- Purpose: See which vehicles are most frequently involved in casualties.
- Visualization: Bar Chart + optional icon image tooltips
- Insight: Cars and motorcycles are most involved. Motorcycles have a disproportionately high number of serious/fatal injuries.

🧠 Segmentation Insights Using Filters

When filters for Weather, Road Surface, and Urban/Rural are applied:

• Urban areas show more volume, but rural areas show higher severity.

• Wet and icy roads increase accident severity, especially on rural highways.

• Fog and low light combine to create high-risk zones, especially during early morning hours.

☑ Recommended Actions (Based on Data)

Area	Recommendation
Urban Hotspots	Implement traffic calming, more speed cameras, better traffic flow mgmt
Rural Highways	Add reflective road signs, improve lighting, campaign on speeding
Poor Weather	Target awareness on braking distances, fog light use, and tire health
Vehicle Type Focus	Promote helmet use, biker zones, and driving school reforms for bikes