# Documentation for Road accidents causes

Introduction:

Overview of the project and its objectives.

>This project focuses on analyzing historical accident data to identify key factors influencing road safety in a metropolitan area. The data includes detailed information on accidents such as location, time, weather, road conditions, vehicle types, and injury severity. By leveraging decision tree analysis through Weka, this project aims to uncover patterns and trends that contribute to increased accident rates

Objectives

1. Identification of contributors of accidents
2. Assessing Impact of weather and road conditions
3. Locating accident hotspots
4. Investigating vehicle involvement trends
5. Proposition of targeted interventions

Data Preprocessing:

Description of the dataset

The dataset used in this analysis comprises historical accident data from a metropolitan area. It includes detailed information.

Steps taken to clean and preprocess the data.

Model Training and Evaluation:

Description of the decision tree model used.

Training process.

Evaluation metrics and results.

Analysis and Insights:

Key factors influencing accidents.

1. Weather conditions
2. Road conditions
3. Time of day
4. Vehicle kind
5. Behaviour of driver
6. Lighting conditions
7. Pedestrian activity

Impact of weather and road conditions.

Identification of accident hotspots.

Methodology for Identifying Hotspots

1. Data Segmentation by Location:

Segment the accident data based on geographic coordinates or predefined areas such as intersections, highways, and urban regions.

Aggregate accident counts for each location.

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1. Severity Analysis:

Assess the severity of accidents (minor, serious, fatal) in each location to understand the impact and prioritize interventions.

1. Visualization:

Use heatmaps or clustering techniques to visualize accident densities and highlight hotspots on a map.

Aggregate accident counts for each location.

Trends in vehicle involvement

Conclusions and Recommendations:

Summary of findings.

High-Frequency Accident Locations

Intersections: Intersections are common hotspots due to the convergence of traffic from multiple directions, leading to increased chances of collisions.

Example: Intersection of Main St and 1st Ave has the highest number of reported accidents.

Highways: Highways, particularly at entry and exit ramps, are significant hotspots due to high speeds and merging traffic.

High-Severity Accident Locations

Rural Highways: Rural highways, where vehicles often travel at higher speeds and encounter unexpected conditions, have a higher incidence of severe accidents.

Example: Rural Highway 22 has several severe and fatal accidents reported.

Poorly Lit Areas: Areas with insufficient street lighting see more severe accidents, especially at night.

Recommendations for targeted interventions.

1. Speed reduction measures
2. Improved lighting
3. Constructing safety zones
4. Setting aside pedestrian safety in urban areas
5. Enhanced traffic control at intersections

Screenshots.

