Road Accident Analysis - Exploratory Data Analysis (EDA) Report

Project By : Mahi Patel

College : G.H.Patel College Of Engineering And Technology

Project Title:

Road Accident Analysis Using EDA

Problem Statement:

Traffic accidents are a major cause of fatalities and injuries worldwide. Analyzing accident data can help identify key factors influencing accidents and suggest preventive measures.

Solution:

Perform Exploratory Data Analysis (EDA) on accident data to extract meaningful insights regarding accident severity, high-risk age groups, and contributing factors.

Project Description:

This project involves analyzing a road accident dataset using Python-based data science libraries. The analysis focuses on:

Understanding accident severity distribution.

Identifying high-risk age groups.

Investigating casualty types and their frequencies.

Visualizing accident trends using histograms, count plots, and heatmaps.

Key Skills Applied:

- Data Cleaning and Preprocessing
- Data Visualization using Matplotlib and Seaborn
- Statistical Analysis
- Feature Correlation Analysis
- Project Outcomes and Insights:
- Identified the most affected age groups in road accidents.
- Analyzed gender distribution among casualties.
- Visualized accident severity levels.
- Explored correlations between different casualty attributes.

Challenges Faced and Solutions:

- **Handling missing or incorrect data:** Implemented imputation techniques and removed irrelevant data.
- **Categorical data representation:** Used encoding techniques to convert categorical data into a usable format.
- **Visualization interpretation:** Selected appropriate plots to effectively convey insights.

Recommendations:

Based on the findings, the following measures can be taken to reduce accident risks:

- **Improved Road Safety Measures:** Enforcing stricter traffic laws, better road signage, and increased use of speed cameras.

- **Public Awareness Campaigns:** Educating drivers and pedestrians about road safety, especially in high-risk age groups.

- **Enhanced Vehicle Safety Features:** Encouraging the adoption of advanced safety features in vehicles.

- **Optimized Traffic Management:** Implementing better traffic control strategies, especially in accident-prone areas.

- **Infrastructure Improvements:** Enhancing road conditions, pedestrian crossings, and street lighting.

- **Time-Based Safety Interventions:** Deploying additional traffic safety measures during peak accident times.

This project serves as a foundational analysis that can further be extended to predictive modeling or geospatial analysis for deeper insights into accident hotspots.