

Road Accident Analysis Report

Abstract

This report presents a comprehensive analysis of road accident data to identify key trends, contributing factors, and safety improvement opportunities. The study utilizes Power BI and MySQL for data visualization and query-based insights, focusing on accident frequency, casualty severity, and environmental factors.

Objective

The primary objective of this analysis is to evaluate the distribution of road accidents and casualties based on vehicle type, road type, day of the week, light conditions, and area type. The aim is to assist authorities and policymakers in understanding accident patterns and making data-driven decisions to enhance road safety.

Dataset Description

The dataset includes records of road accidents containing attributes such as vehicle type, light conditions, road surface, severity, area type, weather conditions, and the number of casualties. Data was collected from multiple regional road safety authorities and formatted into structured CSV and Excel files for analysis.

Methodology

Data preprocessing was conducted using Microsoft Excel, followed by modeling and visualization in Power BI. SQL queries were used to derive aggregate metrics such as total accidents, casualties per vehicle type, and accident trends by year. Analytical comparisons between Current Year (CY) and Previous Year (PY) were performed to identify improvement or deterioration in accident rates.

Analysis and Findings

The analysis revealed a decline of approximately 11% in total accidents and casualties compared to the previous year. Cars and bikes accounted for the majority of accidents, with urban areas showing a higher proportion of incidents (around 62%). Most accidents occurred under daylight and dry conditions, primarily on single carriageways. Fridays recorded the highest number of accidents, while Sundays had the lowest.

Conclusion

This study concludes that consistent monitoring of road accident trends and targeted interventions for high-risk vehicle categories and areas can significantly reduce casualties. Enhanced awareness programs, road design improvements, and stricter enforcement of safety regulations are recommended for achieving better outcomes in road safety performance.