COMPREHENSIVE ANALYSIS OF ROAD TRAFFIC ACCIDENT

DATA DESCRIPTION

Accident Index: Unique Identifier for each accident record
Accident Date: The date the accident occurred
Month: Month of the Accident
Year: Year of the accident
Day_of_week: The day of the week
Time: Time of the accident
Accident_Sever ity: Category of the accident
Latitude: Coordinates of the accident location
Local_Authority: The district where the accident happened
Urban_or_Rural _Area: The area where the accident occurred
Weather_condi tion: The weather at the time of the accident

Specific objectives 1, 2, 3,…

To Clean and Standardize the Accident Dataset

- Identify and correct missing, inconsistent, and duplicate values.
- Ensure proper formatting of dates, times, locations, and categorical variables.

To Analyze the Frequency and Severity of Accidents

- Determine the total number of accidents per year, month, and day of the week.
- Assess the distribution of accident severity levels (Fatal, Serious, Slight).

To Identify High-Risk Factors Contributing to Accidents

- Analyze how speed limits, road conditions, and weather impact accident severity.
- Evaluate the influence of time of day, light conditions, and urban vs. rural areas.

Specific objectives 4, 5, 6.

To Perform Descriptive Statistical Analysis

- Compute mean, median, and standard deviation of key accident-related variables.

To Develop an Interactive Excel Dashboard for Data Visualization

- Create charts, graphs, and heatmaps for accident trends and patterns.
- Implement filters and dynamic visualizations to explore accident data efficiently.

To Provide Data-Driven Recommendations for Road Safety Improvements

- Identify accident hotspots and propose traffic safety interventions.
- Suggest policy measures, infrastructure improvements, and public awareness strategies to reduce accidents.

DESCRIPTIVE STATISTICAL ANALYSIS

- Day of the week: Friday records the most frequent of the accidents. This could be because of the excitement of the weekend pleasures and rush hour from work to begin the weekend vibes.

- The percentage of fatal accidents in rural areas are 59% (2,349) compared to 41% (1,604) in urban areas. This may be due to blind spots, poor lighting, loss of control crashes. Recommendation would be education/public enlightenment, installation of average speed cameras, road narrowing signs, lighting on rural curves and village gateways.

- The mean, median, and standard deviation of key accident-related variables are given below for

Summary Table – Descriptive Statistical Analysis

Statistics	Casualties	Vehicles	Speed Limit
Mean	1.35688309	1.82906563	38.8660008
Median	1	2	30
Standard Deviation	0.81585669	0.71047505	14.0329189

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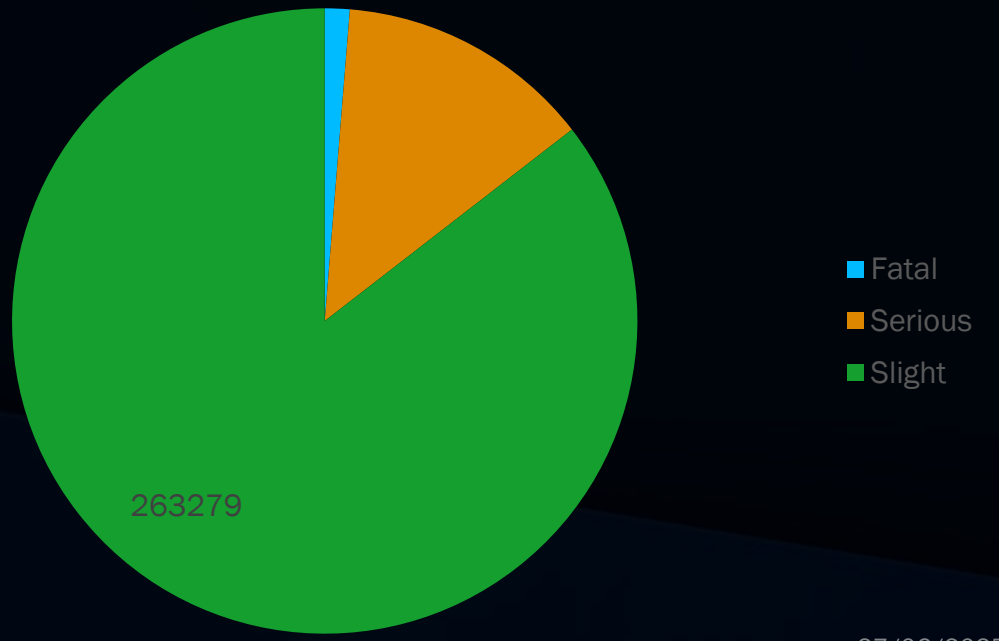
Distribution of Accident Severity Levels

	Freq	% Freq
Fatal	3953	1%
Serious	40740	13%
Slight	263279	85%

Accident Severity Levels



ANALYSIS

The speed limits, road conditions, and weather were analysed to see how they impact accident severity. This is to identify high-risk factors contributing to accidents. In the course of our analysis, we were able to identify accident hotspots and the followings are proposed traffic safety interventions.

CONCLUSIONS AND RECOMMENDATIONS

- **Speed limit:** It can be recorded that most of the accidents occurred at 30mph (65%). While it is notable that only 1% (that is 2,904) of the total accident (307,972) occurred when speed limit was below 30mph. It can be recommended that a policy measure to lower the speed limit to (say 25mph) at areas of concerns should be effected. This will remarkably reduce the occurrence of accidents.
- **Road condition:** **It can be noted that the severity of accident is most when the road condition is dry (208,967, that is, 68%) and followed by when it is wet/damp (81,479), that is 26%. We therefore recommend that drainage system should be in good condition and proactive maintenance work should be carried out constantly. Also, public awareness in the form of the engagement of weather forecast and social media be utilised. We recommend that sign warnings/posts should be implemented, as this will serve efficiently to forestall the occurrence of accidents.**
- **Weather:** **The weather cause of "FINE, NO HIGH WINDS" has 79% (that is, 244,495) of the occurred accidents. Since this is not a natural cause but assignable/human cause, we therefore recommend that that traffic safety (e.g. speed limit, signposts, traffic lights, cameras and official personnel) be instituted/deployed to these areas. This will help to checkmate human attitudes/activities on these roads.**

Our team

STATISTICAL SAGES

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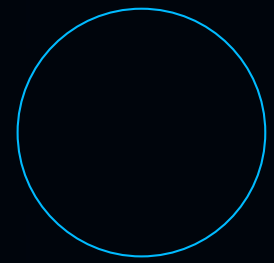

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Thank you!