

ROAD ACCIDENT ANALYSIS: KEY INSIGHTS

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Outline

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Data Overview

Key Findings

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Introduction

Road accidents pose a major challenge to public safety, with factors such as speed limits, weather conditions and road types influencing frequency and severity of accidents.

There is need to study previous data to obtain key insights that will address important road safety challenges and reduce accident frequency.

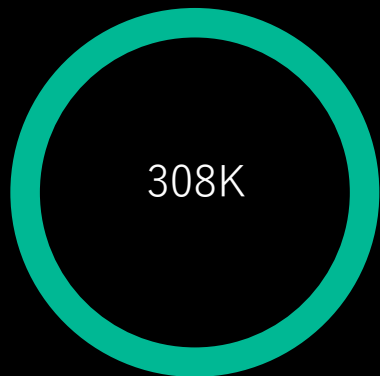
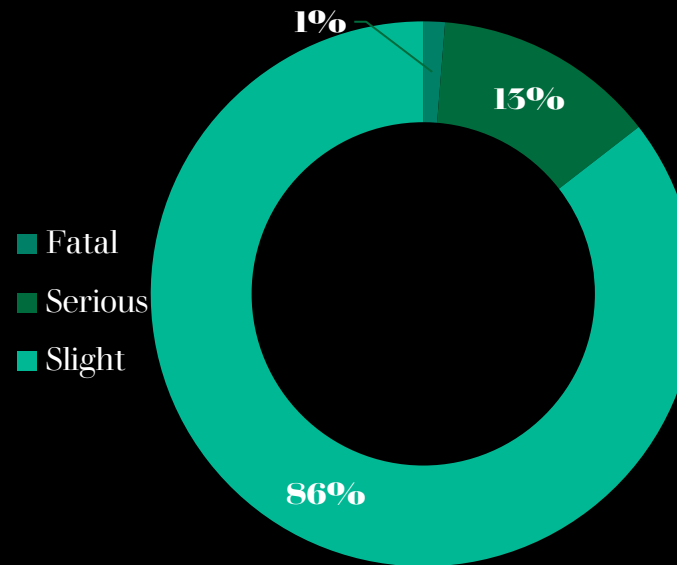
To achieve this, the data will be cleaned and statistical analysis will be carried out to generate trends and patterns using visualizations charts.

The major factors influencing accident frequency and severity will also be assessed to evaluate accident hotspots.

Data Overview

Descriptive Statistics	Daily Accident Count	Number of Casualties	Number of Vehicles
Sum	308K	418K	563K
Mean	422	572	772
Median	427	576	783
Mode	439	641	745
Standard Deviation	88	113	172
Sample Variance	7,808	12,672	29,429
Standard Error	3.27	4.17	6.35
Kurtosis	0.37	0.55	0.17
Skewness	-0.09	-0.09	-0.17
Range	569	770	1090
Minimum	123	157	207
Maximum	692	927	1297
Count	730	730	730

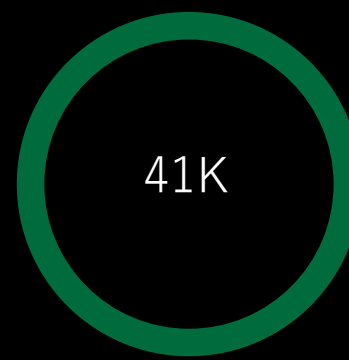
KPIs and Distribution of Accidents by Severity



Total Number of Accidents



Slight Accidents

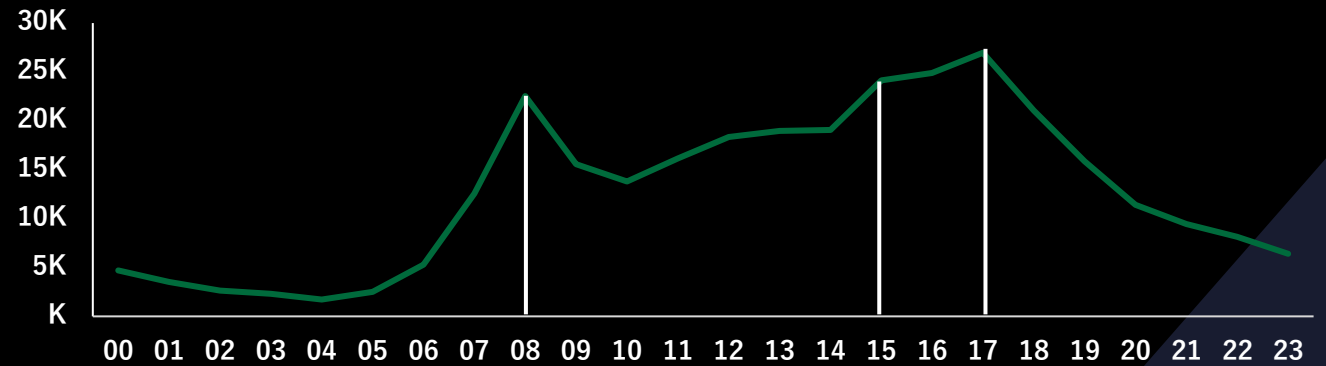
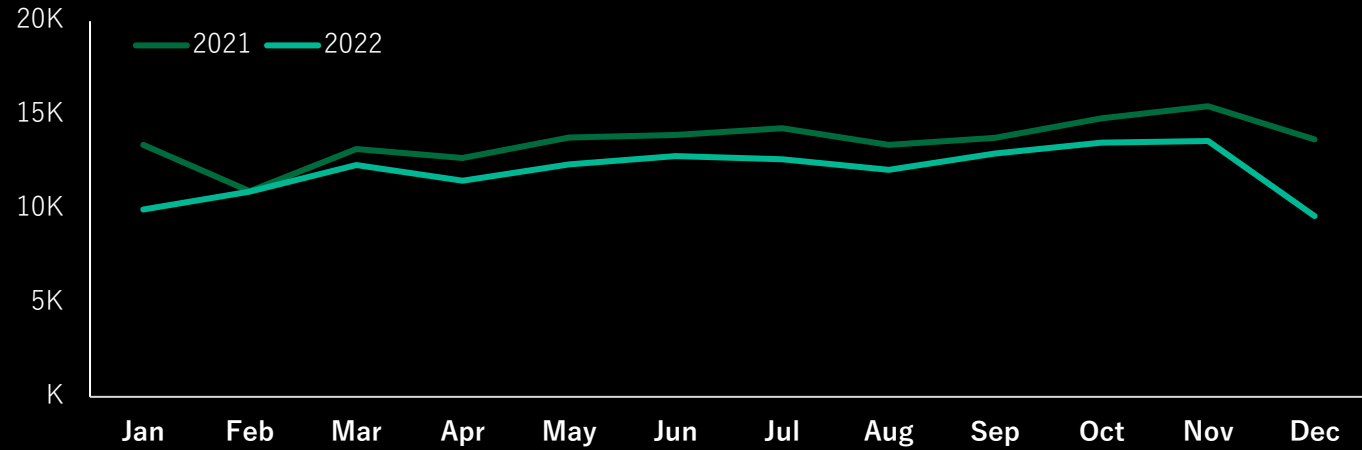


Serious Accidents

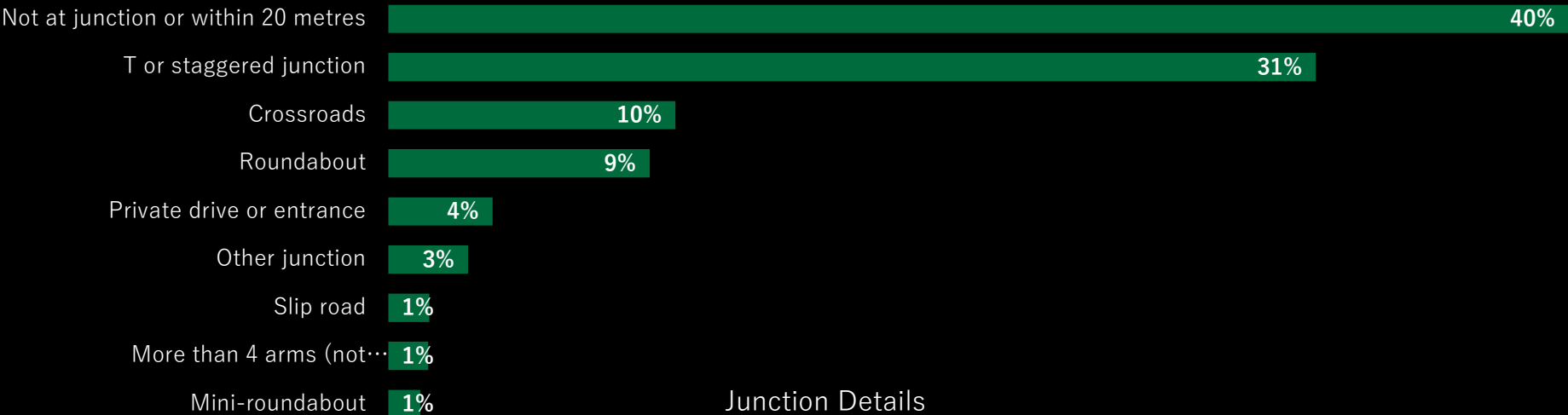
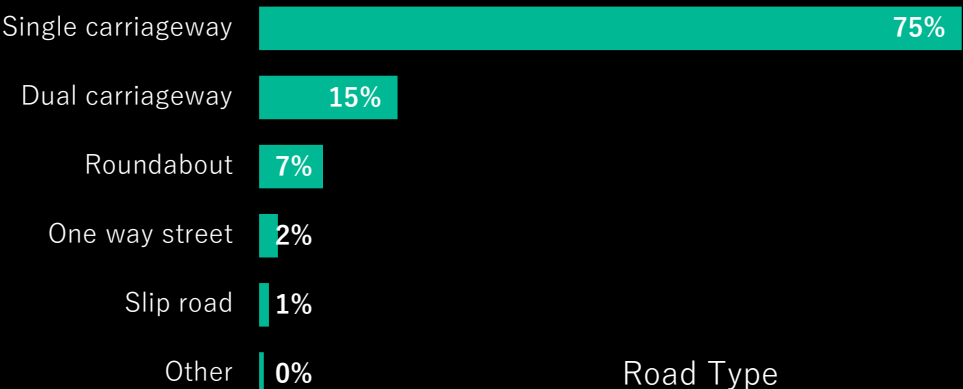
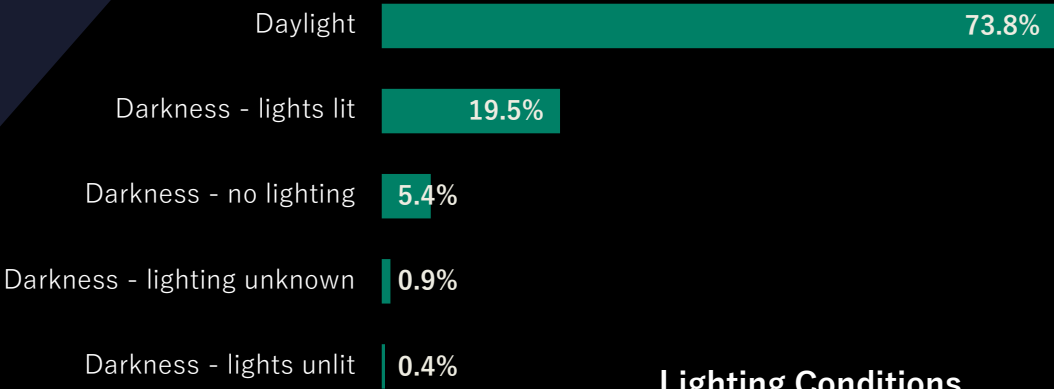


Fatal Accidents

Accident distribution over years, months, days and time

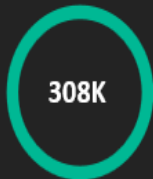


Key Accident Influencers



ACCIDENT ANALYSIS DASHBOARD

Total Number of Accidents



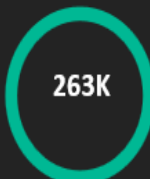
Total Number of Fatal



Total Number of Serious Accidents



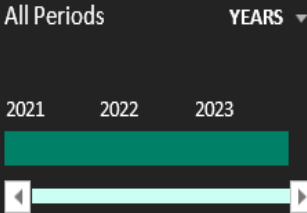
Total Number of Slight Accidents



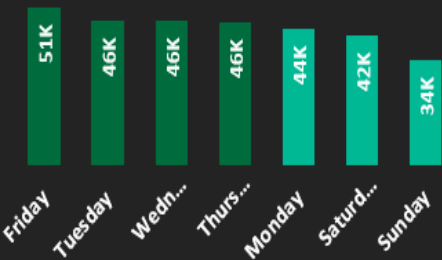
Total Number of Casualties



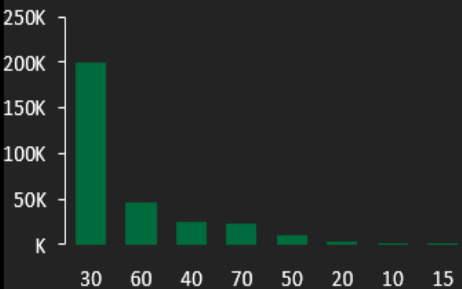
Accident Date



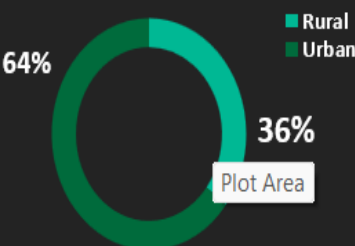
Weekly Accident Distribution



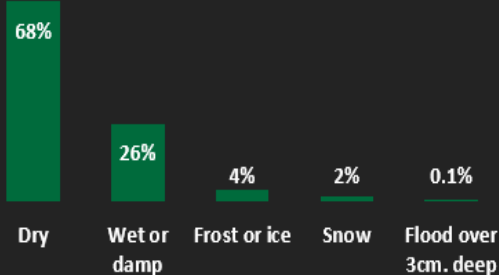
Accident Frequency by Speed Limits (km/h)



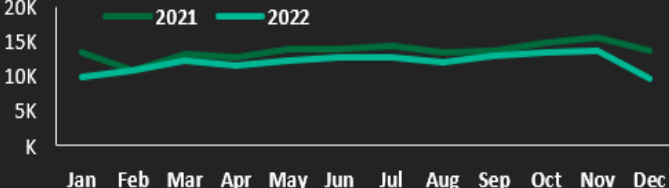
Urban vs Rural Accident Distribution



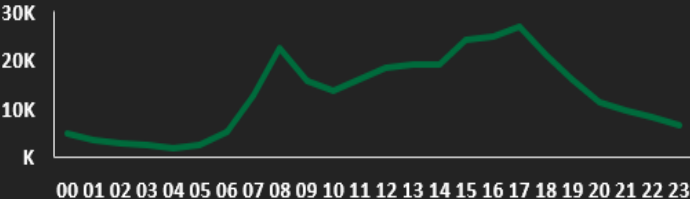
Road Surface Accident Distribution



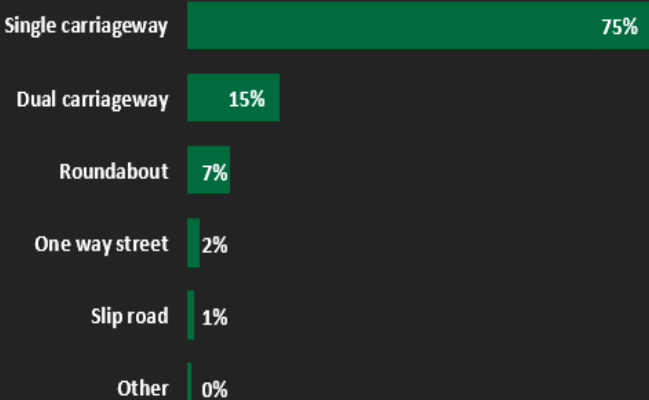
Yearly Accident Trend



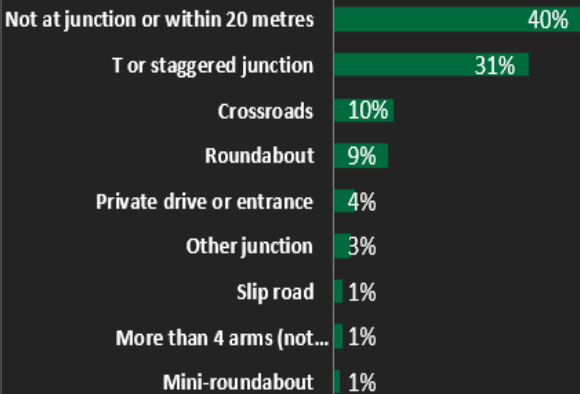
Hourly Accident Trend



Accident Frequency by Road Type



Accident Distribution by Junction Details



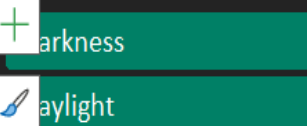
Accident_Severit...



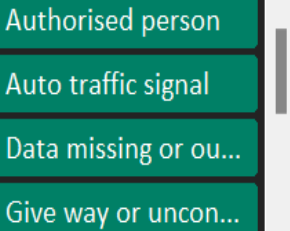
Urban_or_Rural...



Light Conditions



Junction_Control



KEY INSIGHTS



Annual Trend: There was 13% *reduction* in the number of recorded accidents in 2022 with November recording the highest, while February and December reported lower values.



Accidents occurred more on weekdays than weekends with Fridays reporting the highest numbers



The hourly trend line shows accident peak times at 8am and 3pm-5pm. This correlates with times people go to and arrive from work/school. Accident frequency can be linked to more vehicles being on the roads and people being more careless as they might be in a hurry. Sensitization should be done on the need to be extra careful and observant within these times. Authorized persons can also be placed at key areas like T or staggered junctions at the peak times to manage traffic flow better.



Road Type: 75% of accidents occur on single carriageways which is 5X that of double carriageway. There should be public awareness on the increased risk of driving on single carriageways. Auto traffic signals and more visible road signs should be used. Speed limits should also be enforced. Wider roads and clearer road markings might also help. The use of speed bumps might also help for this.



Junction Detail: 40% of accidents occur away from junctions. More road signs should be utilized. Speed bumps should also be positioned at reasonable intervals to slow down vehicles.

T or staggered junctions account for 31% of total accidents and over 50% of junction related accidents. Warning signs should be installed at these junctions. Better traffic light synchronization should be implemented.



74% of accidents occur during the day. This correlates with the hourly trend chart which shows daily accident peak times to be at 8am and between 3pm -5pm.



More accidents occurred at areas with 30kph speed limit. This could be as a result of non-adherence to the speed limit. Clear and visible Warning signs should be placed at appropriate locations. Sensitization should also be done on the dangers of exceeding specified speed limits.



Road and weather conditions had little influence on the frequency of accidents as 68% and 79% of accidents occurred on dry roads and fine weather days respectively. This could imply negligence on the part of drivers. It could also mean people drive on fair weathered days and stay home during storms, snow or extreme weather conditions.

However, the day with the highest number of accidents, wet/damp surface road condition accounted for 78% of accidents on that day. So, the influence of road conditions cannot be ruled out completely.



64% of accidents happen in urban areas which is almost double that of rural areas. However, the rural areas recorded more fatal accidents.

General recommendations



Road users should be sensitized on major influencing factors of accidents and the need to be more careful.



Traffic patrols should be increased during peak times and on peak days.



More visible traffic signs should be used at accident hotspots such as T junctions, away from junctions, single carriageways etc.



Enforce stricter speed limits at accident hot spots especially on single carriageways. Cameras and CCTVs should be placed at strategic positions to monitor speed limits

THANK YOU





QUESTIONS
