🟦 Road Accident Analysis — Insight Report

This report provides a comprehensive analysis of UK road accident data from 2021 and 2022, offering data-backed insights for various stakeholders.

📂 Dataset Overview

- **Source:** Kaggle – UK Road Accident Dataset
- **Records analyzed:** 307,973
- **Years:** 2021 & 2022
- **Region:** United Kingdom
- **Validation:** Excel pivots, SQL queries, Power BI & Tableau dashboards

This dataset enabled analysis across severity, vehicles, road types, surface conditions, area, time, and locations.

👥 Stakeholders for this Analysis

- Ministry of Transport
- Road Transport Department
- Traffic Police & Enforcement Authorities
- Urban Traffic Management Agencies
- Emergency Services Department
- Road Safety Organizations
- Public & Media

Overall Casualties & Severity Distribution

Slight	351,436	84%
Serious	59,312	14%
Fatal	7,135	2%

Most accidents fall under slight and serious categories because they occur in dense urban traffic where vehicles move at moderate speeds but frequently violate lanes, signals, and junction rules. The high share of non-fatal cases indicates that accidents are more related to congestion and driving behavior rather than high-speed highway crashes.

> **Insight:** Road accidents are primarily a traffic discipline problem, not a speed problem.

> **Stakeholder Action:** Traffic police should focus more on junction control, signal violations, and lane discipline.

Monthly Trend (Peak in Oct–Nov)

Oct	20,109	18,287
Nov	20,975	18,439
Dec	18,576	13,200

The spike during October and November aligns with festive travel, increased road usage, and driver fatigue from long-distance travel. This pattern repeats in both years, showing accidents are seasonally predictable.

> **Insight:** Accidents increase during predictable high-traffic months.

> **Stakeholder Action:** Special festive traffic management and temporary diversions should be planned.

Vehicle Type Contribution

Cars	33,485
Vans	33,472
Bikes	33,764
Bus	12,798
Agricultural	102

Cars, vans, and bikes dominate accident statistics because they are the most common daily commuter vehicles. Bike riders are more vulnerable and often neglect helmet and lane rules, while car and van drivers contribute through overspeeding and impatience in traffic.

> **Insight:** Private vehicle users are the major contributors to accidents.

> **Stakeholder Action:** Awareness and enforcement programs must target car and bike drivers specifically.

Road Type — Single Carriageway Risk

Single carriageway	309.7K
Dual carriageway	67.4K
Roundabout	26.8K
One way street	7.4K
Slip road	4.7K

Single carriageways show extremely high casualties because there is no divider, frequent overtaking conflicts, and mixed traffic movement on narrow roads.

> **Insight:** This is a road infrastructure issue, not just driver behavior.

> **Stakeholder Action:** Road departments should prioritize divider installation and better lane markings.

Road Surface Condition

Dry	279,445
Wet	115,261
Snow/Ice	22,781

Drivers feel confident and less cautious on dry roads, which leads to overspeeding and careless driving. In contrast, wet and snowy roads make drivers more alert.

> **Insight:** Comfortable road conditions lead to careless behavior.

> **Stakeholder Action:** Speed monitoring must be enforced even in normal weather.

Weather Condition Impact

Fine	158,000+
Rain	26,300
Snow/Fog	13,200

Clear weather encourages more road movement and reduces driver caution, while bad weather forces careful driving.

> **Insight:** Good weather contributes more to accidents than bad weather.

> **Stakeholder Action:** Road safety campaigns should focus on normal-weather driving discipline.

Urban vs Rural Distribution

Urban	255,864
Rural	162,019

Urban areas have higher accidents due to congestion, pedestrians, signals, and frequent junctions.

> **Insight:** Congestion creates more risk than speed.

> **Stakeholder Action:** Smart traffic systems and CCTV monitoring in cities.

Light Condition (Day vs Night)

Daylight	304,963
Dark	112,920

More vehicles operate during the day, creating impatience and traffic pressure despite good visibility.

> **Insight:** Traffic volume is a bigger factor than visibility.

> **Stakeholder Action:** Daytime enforcement should be increased.

Location Hotspots

Birmingham	8,611
Leeds	5,821
Manchester	4,366

These cities show persistent high casualties due to dense population and complex road networks.

> **Insight:** Certain cities require permanent monitoring, not temporary measures.

> **Stakeholder Action:** Continuous CCTV and patrol focus in hotspot cities.

🧠 Final Combined Insight

Rain/Fog is dangerous	Fine weather is more dangerous
Wet roads cause accidents	Dry roads cause more accidents
Night driving risky	Daytime traffic more risky
Highways cause accidents	Single carriageways cause most accidents

🏁 Conclusion

From 307,973 UK accident records, it is clear that accidents are mainly driven by:

- Driver overconfidence in comfortable conditions
- Urban congestion
- Poor single carriageway road design
- Traffic discipline issues

This report provides **clear, data-backed guidance** for stakeholders to take focused actions rather than generic awareness programs.