

Road Accident Analysis

This project aims to analyze road accident data to identify trends, risk factors, and potential areas for improvement in road safety. The analysis provides insights into the severity of accidents, vehicle types involved, road conditions, and temporal trends to support data-driven decision-making for policy implementation and accident prevention.

Key Findings

1. Total Casualties and Severity Breakdown

- The total number of casualties recorded is **417,883**.
- **Fatal Casualties:** 7,135 (1.7% of total)
- **Serious Casualties:** 59,312 (14.2% of total)
- **Slight Casualties:** 351,436 (84.1% of total)
- **Casualties by Cars:** 333,485 (79.8% of total)

2. Casualties by Vehicle Type

- **Cars:** 333,485 casualties (highest)
- **Motorcycles:** 33,672 casualties
- **Trucks & Vans:** 33,472 casualties
- **Buses:** 12,798 casualties
- **Bicycles:** 1,032 casualties
- **Others:** 3,424 casualties

3. Monthly Trend Analysis

- The accident trend shows a relatively stable pattern with slight variations throughout the year.
- Peaks observed in mid-year months, with a slight decline toward December.

4. Casualties by Road Type

- **Single Carriageway:** 309.7K casualties (highest risk)
- **Dual Carriageway:** 67.4K casualties
- **Roundabout:** 26.8K casualties

- **One-way Street & Slip Road:** 12.1K casualties combined

5. Casualties by Road Surface Condition

- **Dry Roads:** 279,445 casualties (most common condition)
- **Wet Roads:** 115,261 casualties
- **Snow/Ice:** Minor proportion

6. Casualties by Location & Light Conditions

- **Urban Areas:** 255.9K casualties (higher risk than rural areas)
- **Rural Areas:** 162.0K casualties
- **Daylight Accidents:** 305.0K casualties
- **Dark Conditions:** 112.9K casualties

Insights & Recommendations

1. **Targeted Safety Measures:** Given that cars contribute nearly 80% of accidents, policy interventions should focus on car drivers' safety measures, including awareness campaigns and improved vehicle safety features.
2. **Infrastructure Improvements:** Single carriageways account for the highest number of casualties, indicating a need for better road design, lane discipline enforcement, and enhanced traffic regulations.
3. **Weather-Responsive Policies:** Since wet roads contribute significantly to accidents, improved road drainage and driver education on wet-weather driving are necessary.
4. **Time-Sensitive Safety Measures:** Night-time accidents, though fewer than daylight accidents, still pose significant risks, calling for enhanced street lighting and nighttime traffic law enforcement.
5. **Urban Traffic Control:** With urban areas experiencing more accidents, implementing better traffic control systems and pedestrian-friendly infrastructure can help reduce casualties.

Conclusion

This analysis provides critical insights into accident trends, allowing authorities and policymakers to devise effective road safety measures. Further deep-dive analysis into specific accident causes, driver behavior, and real-time monitoring solutions can enhance road safety and reduce fatalities.