

# ROAD ACCIDENT SAFETY & PERFORMANCE ANALYSIS REPORT (2021-2022)

## ABSTRACT

**Total Casualties: 417883**

sagar sharma

Date: November 22, 2025

## Executive Summary

This report presents a comprehensive analysis of road accident data over two years (2021-2022), covering a total of **417,883 casualties**. The primary goal was to compare year-over-year performance and identify high-risk areas to improve road safety.

- **Total CY Casualties (2022):** 195.7K ( $\downarrow 11.9\%$  vs 2021)
- **Total CY Accidents (2022):** 144.4K ( $\downarrow 11.7\%$  vs 2021)
- **Fatal Casualties:** 2.9K ( $\downarrow 33.3\%$ )
- **Serious Casualties:** 27.0K ( $\downarrow 16.2\%$ )
- **Slight Casualties:** 165.8K ( $\downarrow 10.6\%$ )

## Key Findings:

1. **Safety Trend:** The trend is positive. In 2022, total casualties dropped by **11.9%** to **195.7K**, and fatal casualties saw a significant reduction of **33.3%**.
2. **Primary Risk Factors:** Cars are responsible for nearly **80%** of all casualties. Infrastructure-wise, **Single Carriageway** roads are the deadliest, accounting for the majority of accidents.
3. **Environmental Reality:** Data debunks the "night driving" myth. A staggering **73.8%** of accidents occur during **Daylight**, and **61.9%** happen in **Urban** areas, pointing to traffic congestion as the main cause.

## 2. Introduction: A Full-Stack Data Analysis

To ensure data integrity and demonstrate versatility, this project was executed using a **Full-Stack Data Analysis** approach. The same raw dataset was processed across three different platforms:

1. **Microsoft Excel:** Used for a high-level summary of the entire dataset (2021-2022 combined).
2. **SQL:** Used for granular data cleaning, date standardization, and validating Year-over-Year (YoY) growth logic.
3. **Power BI:** Used to build an interactive dashboard focused on Current Year (2022) performance trends and deep-dive filtering.

The consistency of numbers across all three tools confirms the accuracy of this analysis.



### 3. Performance Overview (KPIs)

#### Overall Impact (2021-2022 Combined - Excel Analysis)

- Total Casualties:** 417,883
- Total Fatal Casualties:** 7,135
- Total Serious Casualties:** 59,312

#### Current Year Trends (2022 vs 2021 - Power BI Analysis)

The focus on 2022 shows a clear improvement in safety standards:

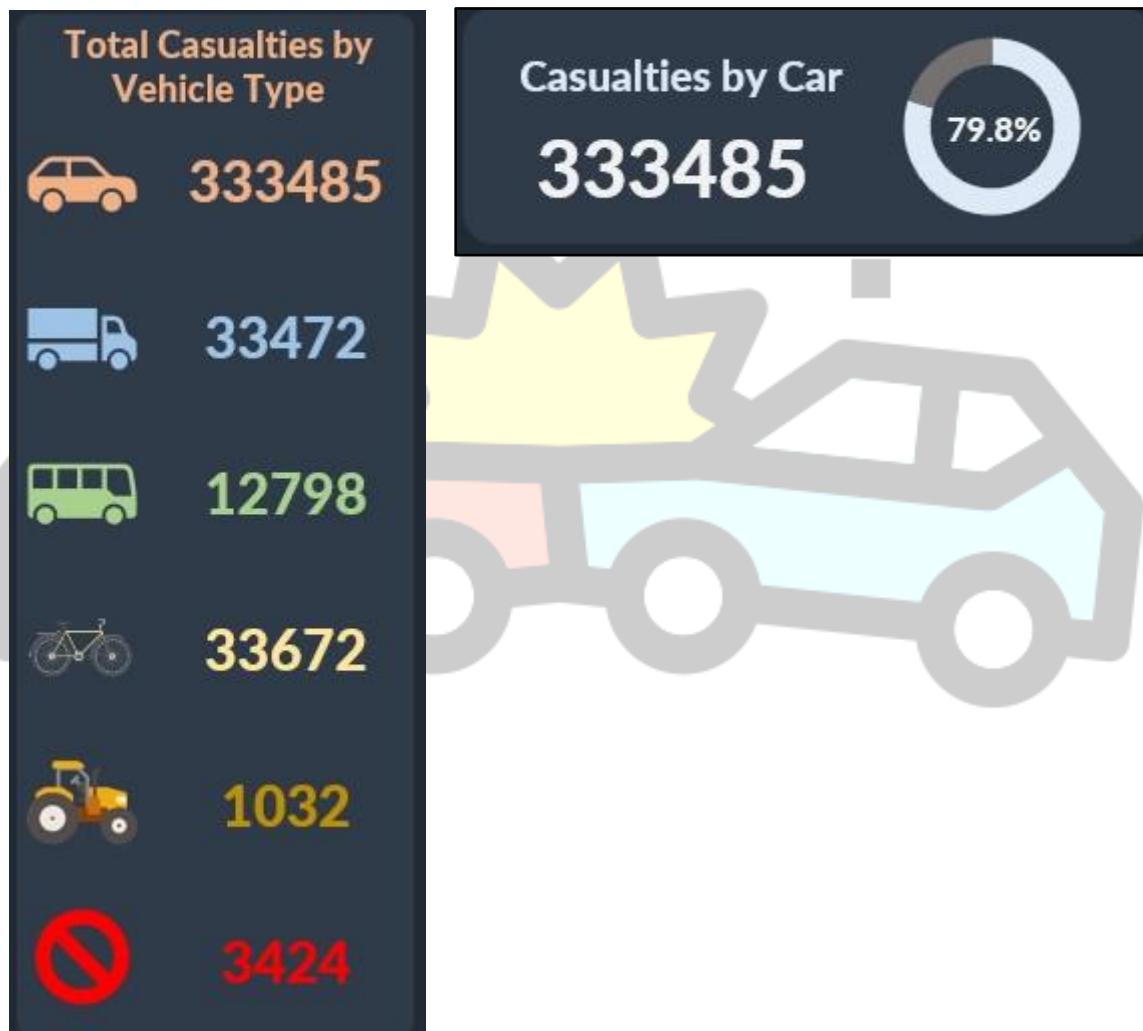
- CY Casualties:** 195.7K (⬇️ Down 11.9%)
- CY Fatalities:** 2.9K (⬇️ Down 33.3%)
- CY Accidents:** 144.4K (⬇️ Down 11.7%)



## 4. Deep Dive Analysis

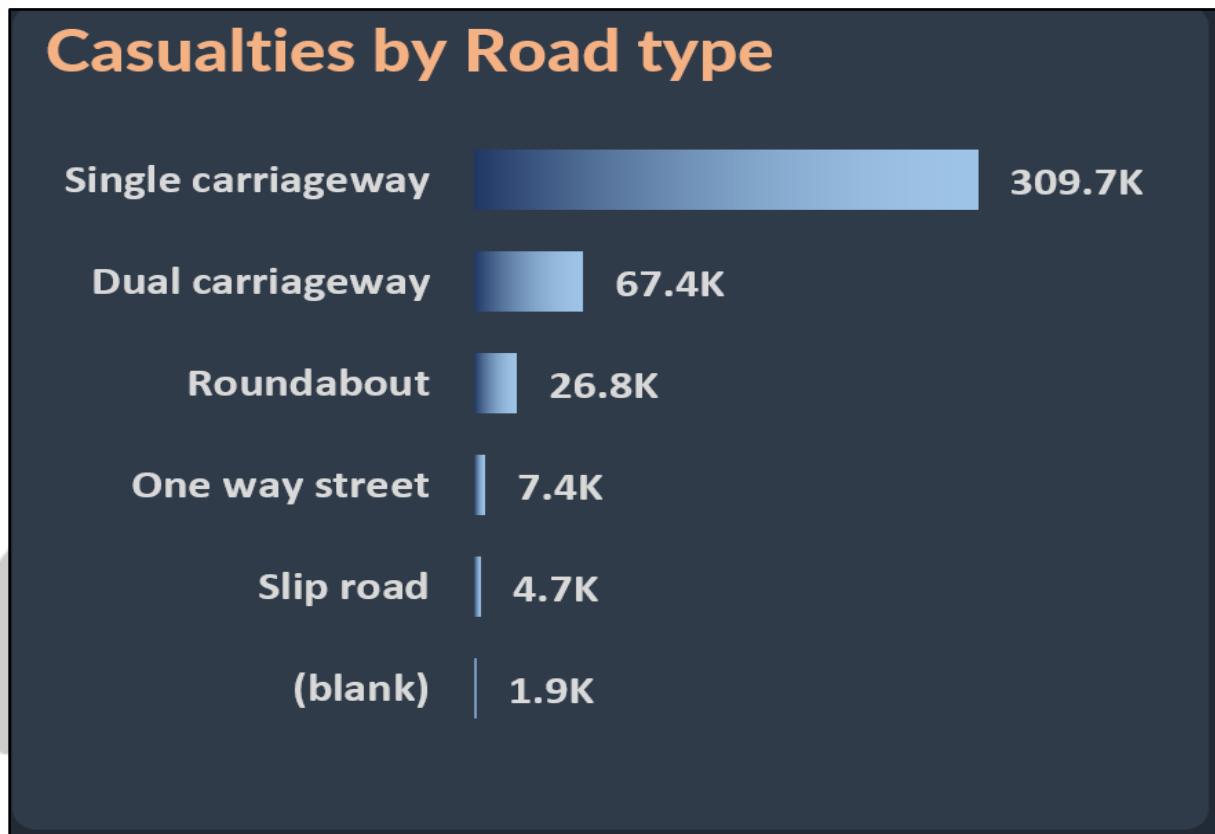
### Finding 1: The "Car" Dominance

- **Observation:** Across both years, **Cars** are the single biggest contributor to road casualties, accounting for **79.8%** of the total.
- **Current Year:** In 2022 alone, cars were involved in incidents causing **155,804** casualties.
- **Insight:** Safety policies must disproportionately target car drivers over other vehicle types like bikes or vans.



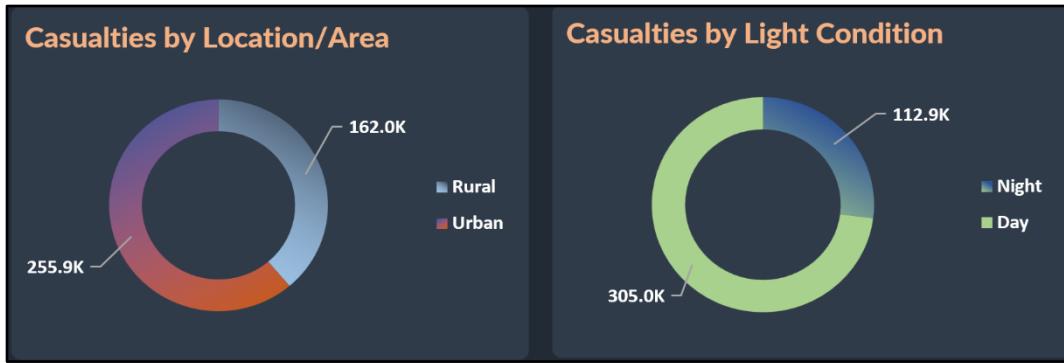
## Finding 2: Infrastructure Risks

- **High Risk: Single Carriageway** roads are the most dangerous, contributing to **309.7K casualties** over two years.
- **Safer Roads:** Dual Carriageways and Roundabouts have significantly lower accident rates.
- **Insight:** Speed control and better signage on Single Carriageways could drastically reduce numbers.



## Finding 3: Conditions & Location

- **Light Conditions:** Visibility is not the primary issue. **Daylight** accidents account for **73.8%** of the total, while only **26.2%** occur in the Dark.
- **Urban vs. Rural:** **Urban** areas (cities) see more accidents (**62%**) due to traffic density, but Rural accidents often carry higher severity speeds.



## 5. Actionable Recommendations

- Focus on Single Carriageways:** Allocate infrastructure budget to widen or add safety barriers to **Single Carriageway** roads, which are responsible for 3 out of 4 accidents.
- Urban Daylight Enforcement:** Shift traffic police deployment to **Urban areas during Daylight hours** rather than focusing excessively on night patrols, as that is when the majority of accidents occur.
- Car Driver Awareness:** Launch a specific safety campaign for car drivers emphasizing "Daytime Alertness" and city driving safety, as they make up nearly 80% of the risk pool.

## 6. Conclusion

This multi-tool analysis confirms a positive shift in road safety, with 2022 seeing a **double-digit percentage drop** in casualties compared to 2021. By leveraging insights from Excel (Historical Total) and Power BI (Current Trend), we have identified that the core problem lies with **Car drivers on Single Carriageways during the day**. Addressing these specific areas will yield the highest return on safety investments.

**\*\*End of the Report\*\***