

Power BI Project: Road Accident Analysis Dashboard

Live Dashboard

 [View the Road Accident Analysis Dashboard](#)

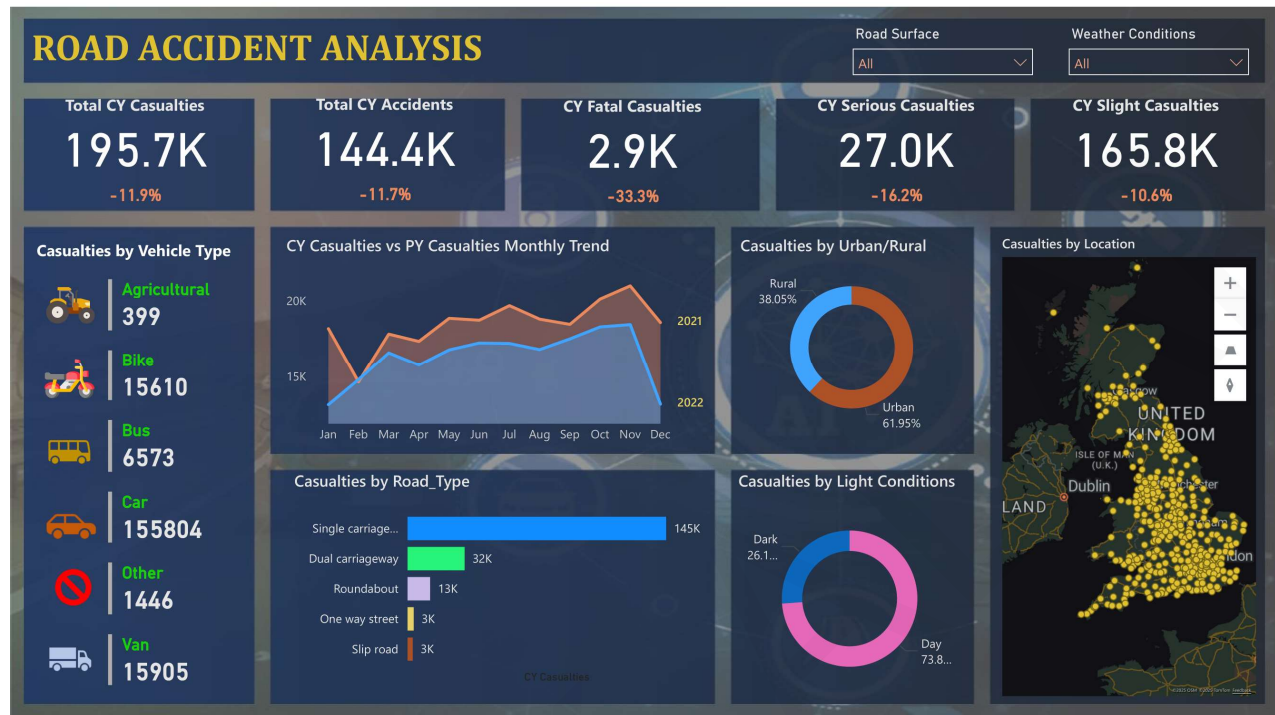
Overview

This interactive Power BI dashboard delivers a comprehensive analysis of road accident and casualty trends in the United Kingdom. The solution enables policymakers, transportation officials, traffic analysts, and safety advocates to uncover actionable insights on accident patterns, vehicle type involvement, road and weather conditions, and urban/rural breakdowns.

Key Features

- **Headline KPIs:** Tracks annual casualties, accidents, and case severity—highlighting year-over-year changes for rapid assessment.
- **Casualties by Vehicle Type:** Pinpoints the impact of cars, vans, bikes, and other vehicles on overall casualty totals.
- **Trend Visualizations:** Monthly timelines display current year (CY) vs. previous year (PY) casualty changes for seasonality and safety benchmarking.
- **Road & Environmental Analysis:** Breaks down accident statistics by road type, surface, and lighting conditions, unveiling core risk factors.
- **Urban vs Rural Insight:** Quantifies distribution of accidents and casualties by location setting, enabling targeted interventions.
- **Geospatial Mapping:** Regional casualty densities provide a nationwide perspective on road safety hot spots.

Dashboard Snapshot



Detailed view of core KPIs, vehicle and road factors, and monthly accident/casualty trends.

Sample Insights

- **Downward Trend:** Total casualties and accidents declined by nearly 12%, including a dramatic 33% reduction in fatalities.
- **Vehicle Context:** Cars account for over 155,000 casualties, vastly exceeding bikes, vans, and buses.
- **Road Risk:** Most accidents occur on single carriageways and in urban settings, pointing to the need for city-centric safety policies.
- **Lighting & Weather:** Over 73% of casualties happened during daylight, suggesting high-traffic times are critical.
- **Seasonality:** Spikes and drops in monthly data highlight where targeted public safety campaigns and enforcement may be most effective.

How to Use

1. Use interactive visuals to filter by road type, weather, season, and geography.
2. Review headline KPIs and trends for presentations or to inform safety planning.
3. Apply findings to propose and measure traffic safety interventions, infrastructure upgrades, and awareness campaigns.

About

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All data and images are provided for educational and portfolio purposes.

Technical Implementation

Data Source:

- Official UK road accident and casualty statistics (aggregated via open government or agency data portals).

Data Storage:

- Dataset downloaded as CSV/XLSX and imported into Power BI Desktop.

Update Frequency:

- Annual or quarterly (depending on national reporting cadence); refresh scheduled as new releases become available.

ETL Process:

- Power Query (M) used for importing, filtering, and cleaning data—removed duplicates, standardized vehicle and accident codes, parsed dates, aggregated by key segments.

Connection Mode:

- Import mode used for high-performance reporting and DAX functionality.

Data Transformation:

- Grouped/aggregated for severity, location, time, and vehicle type; calculated YOY metrics, created running totals for trends.

Data Modeling Challenges:

- Unified disparate code sets for weather, lighting, and location to harmonize analytics.
- Built a clean star schema for DAX calculations and filtering.

DAX Functions Used:

- CALCULATE, SUMX, PREVIOUSYEAR, FILTER, and DIVIDE for YOY comparisons, percentages, and dynamic KPIs.

KPIs:

- CY/PY Casualties, Accidents, Fatal/Serious/Slight breakdowns, Monthly/Segment trends.

Best Practices:

- Clear naming conventions, logical grouping, and colorblind-accessible visuals.
- Slicers and maps for fast exploratory analysis.

Performance Optimization:

- Aggregated data for visuals, reduced columns/rows, and reused calculated measures.

RLS:

- Not implemented; would be used in production (e.g., region-specific safety teams).

Data Validation:

- Benchmarked against official summaries and published statistics.

End Users:

- Transportation authorities, city planners, policy stakeholders, and safety researchers.

Collaboration & Sharing:

- Power BI Service publication and export for cross-team sharing and public advocacy.