Road Accident Analysis Dashboard

Overview:

Tool Used: Power BI Desktop
Prepared For: Centre for Infrastructure, Sustainable Transportation and Urban Planning, Indian Institute of Science (IISc), Bengaluru.
Objective:
To explore, visualise, and derive actionable insights from road accident data to understand trends, identify risk factors, and support road safety initiatives through a user-centric dashboard.

Dashboard Summary:

The dashboard consists of multiple visual elements that give an overview of road accident trends across:

- Casualty severity levels
- Light conditions
- Vehicle types involved
- Day of week
- Urban vs Rural zones
- Month & Year trends
- Weather and road conditions (filterable)

Key Metrics and KPIs:

- **Total Casualties:** 417.9K
- **Total Accidents:** 308.0K
- **Serious Accidents:** 40.7K
- **Fatal Accidents:** 4.0K
- **Slight Accidents:** 263.3K

Visuals and Insights:

1. Accidents by Light Conditions

- **Daylight:** 73.8%
- **Darkness:** 26.2%
  Insight: Most accidents occur during daylight hours, likely due to the higher traffic volume.

2. Accidents by Vehicle Type

- Car & Taxi: 245,337
- Heavy Vehicles: 34,236
- Two-Wheelers: 25,132
- Agricultural Vehicles: 749
- Others: 2,519

Insight: Cars and taxis are responsible for the majority of accidents.

3. Casualties by Month and Year

- Displayed monthly across 2021 and 2022
- Clear seasonal and temporal trends help guide safety campaigns.

4. Urban vs Rural Accidents

- Urban: 255.9K (61.2%)
- Rural: 162.0K (38.8%)

Insight: Urban areas have higher accident volumes, but rural incidents may be more severe.

5. Accidents by Day of the Week

- Friday: 51K
- Tuesday: 46K
- Wednesday: 46K
- Thursday: 46K
- Monday: 44K
- Saturday: 42K
- Sunday: 34K

Insight: Friday has the highest accident frequency; Sunday the lowest.

6. Casualties by Location

- Geographic breakdown highlighting accident-prone zones.

7. Weather and Road Conditions

- Dashboard includes filters for weather and road condition.
- Useful for isolating high-risk environmental conditions.

Key Takeaways:

- Daylight and urban roads show the highest accident volumes.
- Fridays and weekdays are riskier than weekends.
- Cars and taxis are the most commonly involved vehicles.
- Casualty patterns vary significantly by time, location, and environmental factors.

Dashboard Features:

- **Interactive Filters:** Year, Month, Severity, Weather, Road Condition
- **Dynamic Visuals:** Cards, bar/line/stacked charts, maps
- **KPI Cards:** Summarise total and severe incidents
- **Tooltips and Labels:** On-hover detail display
- **Slicers:** Enable interactive filtering and drilldown

Recommendations:

1. Increase traffic enforcement during Fridays and weekday evenings.
2. Launch targeted awareness campaigns for car and two-wheeler drivers.
3. Improve lighting and signage in rural or dark-prone areas.
4. Monitor seasonal accident spikes and plan safety interventions.
5. Deploy geo-targeted measures such as speed zones and emergency services.

Supporting Files:

- `Road Accidents Analysis.pdf` – PDF version of final dashboard

- `.pbix` or `.pbit` – Power BI template/dashboard file
- Original or cleaned dataset – Excel or CSV used as data source

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Tools Used: Microsoft Power BI, Power Query, Excel, DAX