Road Accident Analysis

Project Description

This Excel-based dashboard analyzes and visualizes road accident data from 2021-2022, helping stakeholders make data-driven decisions for improved road safety.

Tech Stack Used

Microsoft Excel

Skills showcased in this Project

- Data Cleaning & Analysis
- Data Filtering & Functions
- Pivot Tables & Charts
- Dashboard Creation

Requirements and KPIs

Dashboard requirements for 2021-2022:

- Total Casualties & Accidents (YoY)
- Casualties by Severity (YoY)
- Casualties by Vehicle Type
- Monthly Casualty Comparison
- Casualties by Road Type
- Casualties by Area & Time
- Casualties by Location

Data Sourcing

The dataset -

> road accident dataset

About the Data:

The dataset is in Excel (.xlsx) format with 307,974 rows and 21 columns. It contains accident details with fields like accident_index (unique for every data entry recorded), accident date, location details, accident_severity, number_of_casualties, road_type, vehicle_type and the rest.

Data Cleaning and Transformation

Initial data quality assessment included:

1. Checking for NULL values
2. Removing duplicates
3. Ensuring data consistency
4. Adding Year and Month columns

Primary KPIs:

1. Total casualties post-accident
2. Total casualties by accident severity and their percentage, and vehicle type maximum casualties.

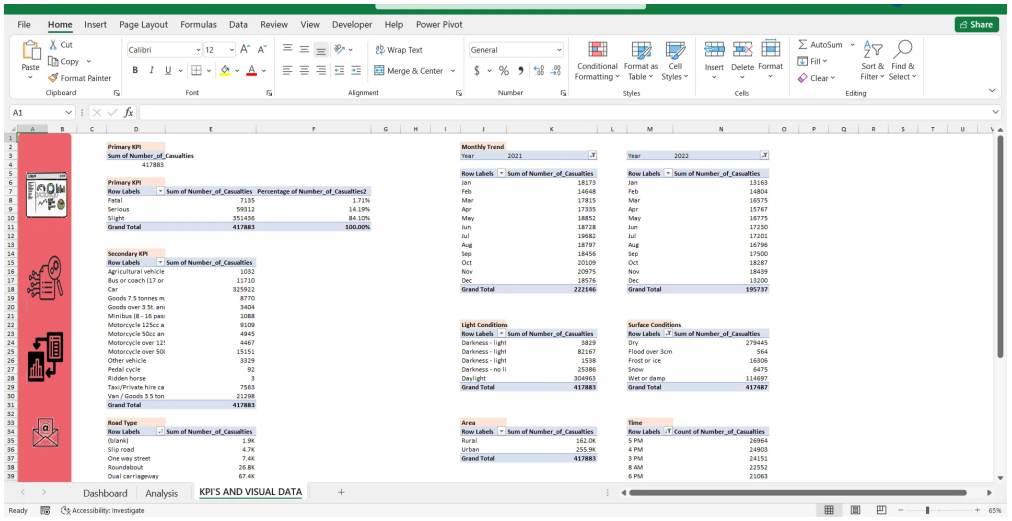
Secondary KPIs:

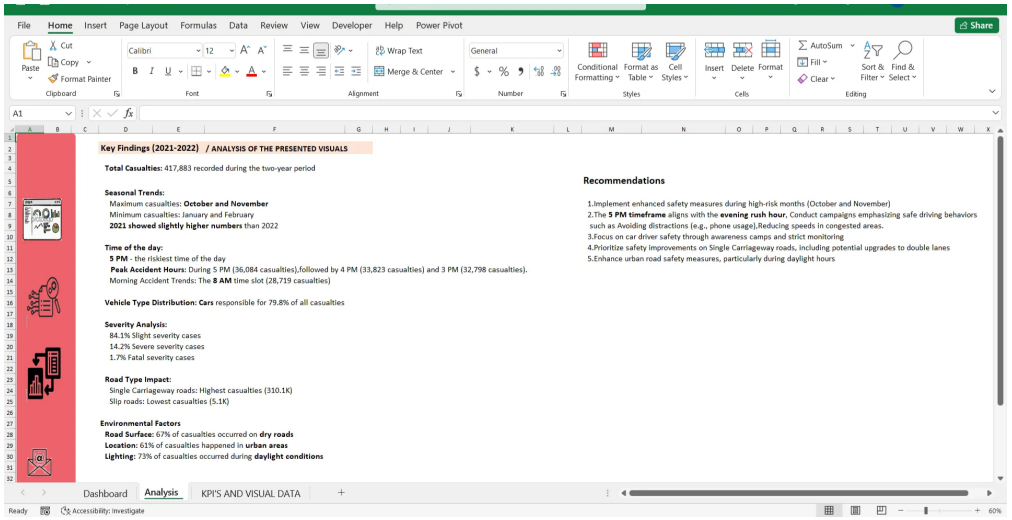
1. Total casualties categorized by vehicle type
2. Monthly trend comparing casualties for the current and previous years
3. Maximum casualties by road type
4. Distribution of total casualties by road surface
5. Correlation between casualties based on Area/Location and Day/Night.

Data Analysis

Created pivot tables analyzing casualties by type, vehicle, road, location, and monthly trends.

Below is a snippet of the Data Analysis Sheet



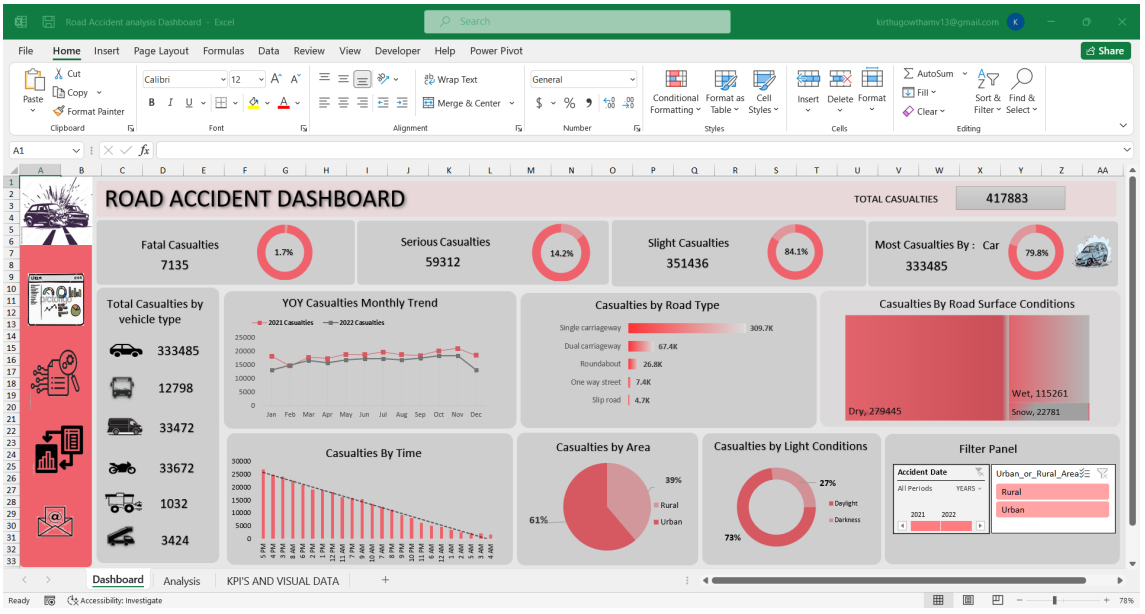


Data Visualization

Built interactive dashboard with pivot charts, slicers, and navigation features.

Below is a snippet of the final dashboard in Excel. **Road Accident Dashboard-**

Road Accident Dashboard excel file



Key Findings :

- Total casualties showed significant patterns across 2021-2022, with vehicle type and accident severity being crucial factors in understanding accident impacts
- Car accidents contributed to the highest number of casualties, followed by other vehicle types, highlighting the need for enhanced car safety measures
- Urban areas recorded more accidents than rural areas, but rural accidents often resulted in more severe outcomes

- Road surface conditions and lighting played vital roles in accident occurrence, with adverse conditions increasing risk
- Monthly trends revealed seasonal patterns in accident rates, helping identify high-risk periods

Recommendations Based on Analysis:

- Implement targeted safety measures during identified high-risk periods
- Focus on improving road infrastructure, especially in areas with higher accident rates
- Enhance safety awareness programs for different vehicle types based on casualty patterns
- Strengthen road safety measures during adverse weather and lighting conditions

This comprehensive analysis provides stakeholders with actionable insights for improving road safety and reducing accident rates through data-driven decision-making.