

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.

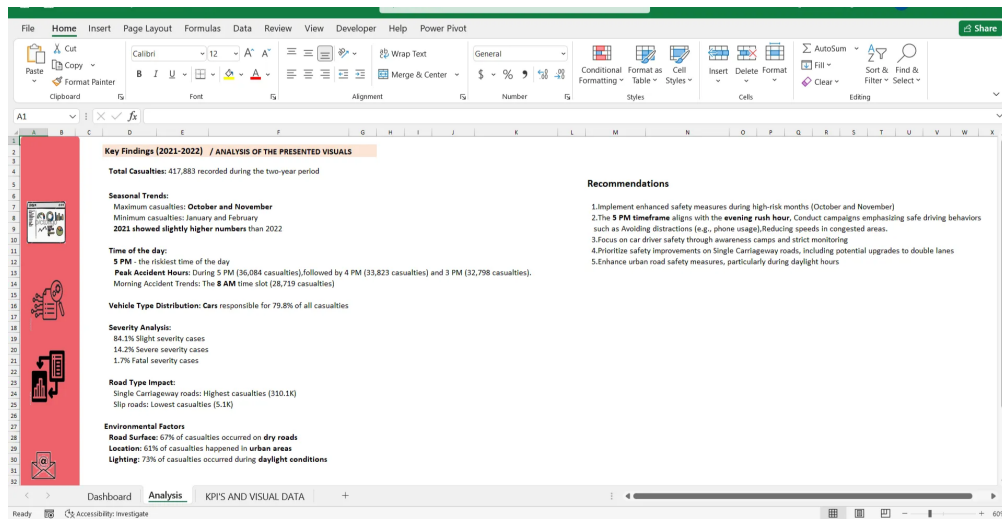
Below is a snippet of the Data Analysis Sheet

Row Labels	Sum of Number_of_Casualties	Percentage of Number_of_Casualties2
Fatal	7135	1.71%
Serious	59312	14.19%
Slight	351456	84.10%
Grand Total	417883	100.00%

Row Labels	Sum of Number_of_Casualties
Agricultural vehicle	1002
Bus or coach (17 or more seats)	11710
Car	325922
Goods over 3.5 tonnes	8770
Goods over 3.5 tonnes, less than 125cc	3424
Motorcycle 125cc or less	1088
Motorcycle 125cc or less, less than 125cc	9109
Motorcycle over 125cc	4467
Motorcycle over 125cc, less than 125cc	15151
Other vehicle	3329
Police vehicle	92
Ridden horse	3
Taxi/Private hire car	7983
Van / Goods 3.5 tonnes or less	21298
Grand Total	417883

Year	2021	2022
Jan	18173	15163
Feb	14448	14854
Mar	17815	16575
Apr	17395	15167
May	18852	16775
Jun	18728	17230
Jul	19882	17201
Aug	18797	16796
Sep	18456	17500
Oct	20109	18287
Nov	20975	18459
Dec	18576	18300
Grand Total	222166	199397

Row Labels	Sum of Number_of_Casualties
Other	1.9K
Other	4.7K
One way street	7.4K
Roundabout	28.8K
Dual carriageway	87.4K
Grand Total	417883

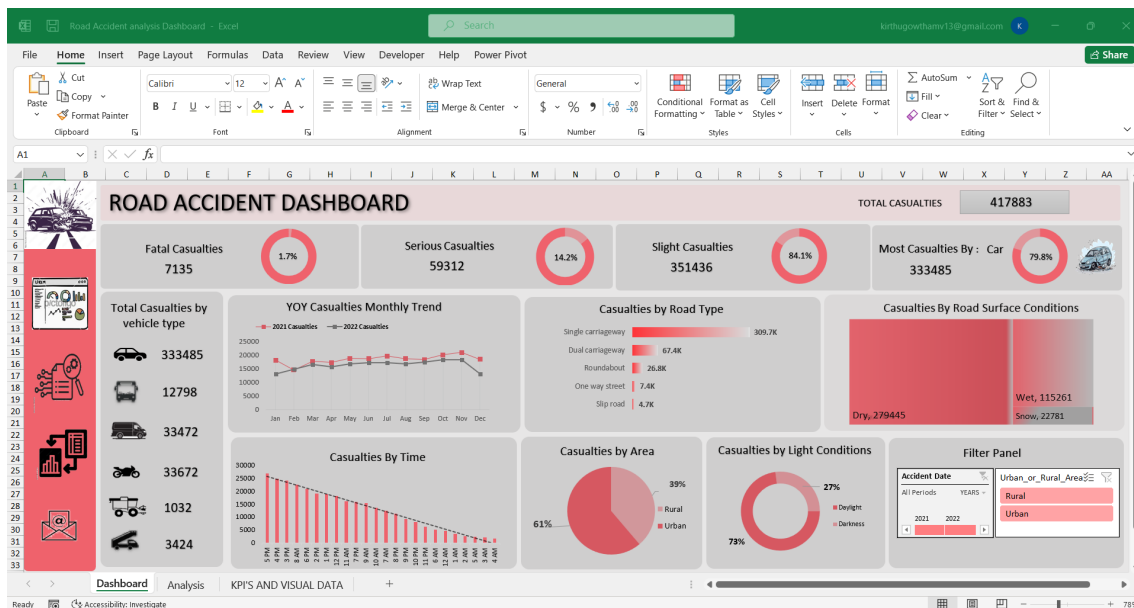


Data Visualization

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.