

Road Accident Dashboard Project Report

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1. Project Introduction

1.1 Project Overview

The Road Accident Dashboard project was initiated to provide a comprehensive analysis of road accident data from the years 2021 and 2022. This project aimed to create an interactive dashboard that offers insights into the causes, trends, and implications of road accidents.

1.2 Objectives

The primary objectives of the project were to:

- Scrutinize and clean the raw dataset to ensure data accuracy and consistency.
- Conduct in-depth data analysis to identify patterns, trends, and areas of concern.
- Visualize key findings through a user-friendly dashboard for easy interpretation.
- Derive actionable insights that can inform road safety initiatives.

1.3 Data Description

The dataset encompasses 307,973 records, each containing a variety of attributes, including but not limited to Accident Date, Accident Severity, Vehicle Type, Road Type, and Weather Conditions.

2. Data Preprocessing

2.1 Data Cleaning

Data cleaning was a crucial phase in which we identified and addressed inconsistencies, errors, and duplicates. The dataset was thoroughly examined to ensure its reliability and accuracy. Any missing or incorrect data points were handled.

2.2 Data Processing

To make the dataset more amenable to analysis, we introduced new columns, sorted data, and applied filters to extract meaningful insights. This step involved reorganizing the data and creating subsets that would later be instrumental in our analysis.

2.3 Data Analysis

Our data analysis phase involved employing a variety of statistical methods to gain deeper insights into the road accident data. We examined relationships between variables, identified trends, and conducted in-depth exploratory data analysis (EDA).

3. Data Visualization

3.1 Charts and Graphs

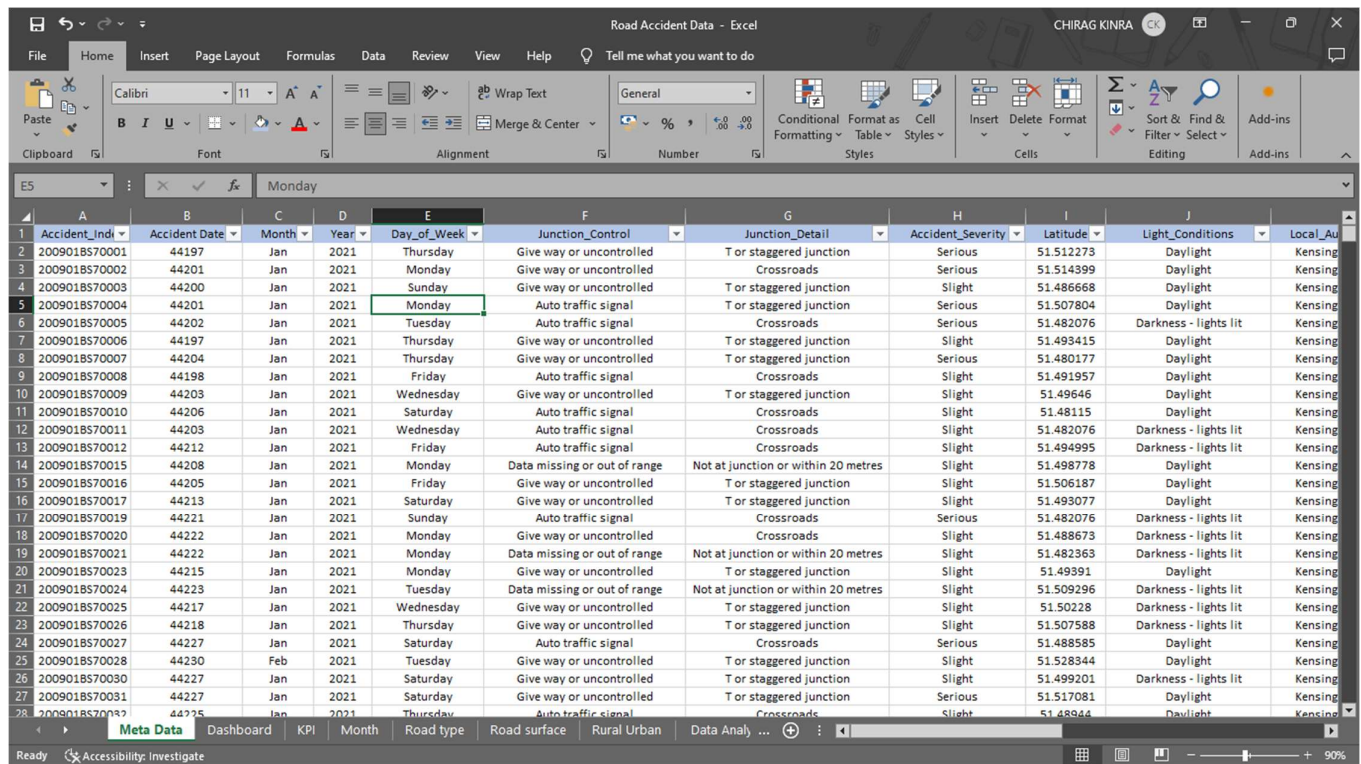
We harnessed the power of Microsoft Excel to create compelling visuals that effectively conveyed our findings. The visual elements included line charts, bar graphs, pie charts, and scatter plots, among others.

3.2 Key Findings

Our data visualization process brought forth several critical insights, some of which are highlighted below:

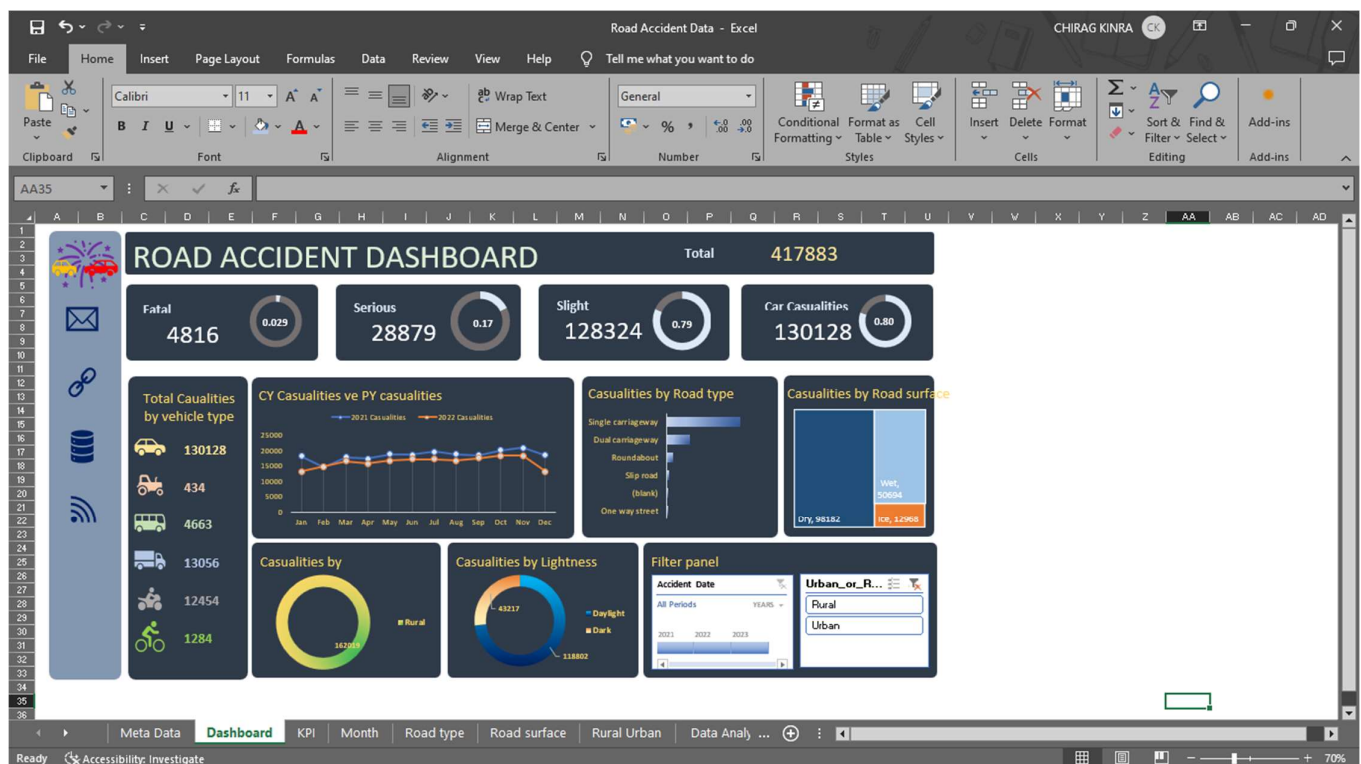
4. Important insights from data

4.1. Visual representation of data



Accident_ID	Accident Date	Month	Year	Day_of_Week	Junction_Control	Junction_Detail	Accident_Severity	Latitude	Light_Conditions	Local_Authority
2009018570001	44197	Jan	2021	Thursday	Give way or uncontrolled	T or staggered junction	Serious	51.512273	Daylight	Kensing
2009018570002	44201	Jan	2021	Monday	Give way or uncontrolled	Crossroads	Serious	51.514399	Daylight	Kensing
2009018570003	44200	Jan	2021	Sunday	Give way or uncontrolled	T or staggered junction	Slight	51.486668	Daylight	Kensing
2009018570004	44201	Jan	2021	Monday	Auto traffic signal	T or staggered junction	Serious	51.507804	Daylight	Kensing
2009018570005	44202	Jan	2021	Tuesday	Auto traffic signal	Crossroads	Serious	51.482076	Darkness - lights lit	Kensing
2009018570006	44197	Jan	2021	Thursday	Give way or uncontrolled	T or staggered junction	Slight	51.493415	Daylight	Kensing
2009018570007	44204	Jan	2021	Thursday	Give way or uncontrolled	T or staggered junction	Serious	51.480177	Daylight	Kensing
2009018570008	44198	Jan	2021	Friday	Auto traffic signal	Crossroads	Slight	51.491957	Daylight	Kensing
2009018570009	44203	Jan	2021	Wednesday	Give way or uncontrolled	T or staggered junction	Slight	51.49646	Daylight	Kensing
2009018570010	44206	Jan	2021	Saturday	Auto traffic signal	Crossroads	Slight	51.48115	Daylight	Kensing
2009018570011	44203	Jan	2021	Wednesday	Auto traffic signal	Crossroads	Slight	51.482076	Darkness - lights lit	Kensing
2009018570012	44212	Jan	2021	Friday	Auto traffic signal	Crossroads	Slight	51.494995	Darkness - lights lit	Kensing
2009018570015	44208	Jan	2021	Monday	Data missing or out of range	Not at junction or within 20 metres	Slight	51.498778	Daylight	Kensing
2009018570016	44205	Jan	2021	Friday	Give way or uncontrolled	T or staggered junction	Slight	51.506187	Daylight	Kensing
2009018570017	44213	Jan	2021	Saturday	Give way or uncontrolled	T or staggered junction	Slight	51.493077	Daylight	Kensing
2009018570019	44221	Jan	2021	Sunday	Auto traffic signal	Crossroads	Serious	51.482076	Darkness - lights lit	Kensing
2009018570020	44222	Jan	2021	Monday	Give way or uncontrolled	Crossroads	Slight	51.488673	Darkness - lights lit	Kensing
2009018570021	44222	Jan	2021	Monday	Data missing or out of range	Not at junction or within 20 metres	Slight	51.482363	Darkness - lights lit	Kensing
2009018570023	44215	Jan	2021	Monday	Give way or uncontrolled	T or staggered junction	Slight	51.49391	Daylight	Kensing
2009018570024	44223	Jan	2021	Tuesday	Data missing or out of range	Not at junction or within 20 metres	Slight	51.509296	Darkness - lights lit	Kensing
2009018570025	44217	Jan	2021	Wednesday	Give way or uncontrolled	T or staggered junction	Slight	51.50228	Darkness - lights lit	Kensing
2009018570026	44218	Jan	2021	Thursday	Give way or uncontrolled	T or staggered junction	Slight	51.507588	Darkness - lights lit	Kensing
2009018570027	44227	Jan	2021	Saturday	Auto traffic signal	Crossroads	Serious	51.488585	Daylight	Kensing
2009018570028	44230	Feb	2021	Tuesday	Give way or uncontrolled	T or staggered junction	Slight	51.528344	Daylight	Kensing
2009018570030	44227	Jan	2021	Saturday	Give way or uncontrolled	T or staggered junction	Slight	51.499201	Darkness - lights lit	Kensing
2009018570031	44227	Jan	2021	Saturday	Give way or uncontrolled	T or staggered junction	Serious	51.517081	Daylight	Kensing
2009018570037	44225	Jan	2021	Thursday	Auto traffic signal	Crossroads	Slight	51.48944	Daylight	Kensing

4.2. Display of dashboard



4.3. Data analytics Summary pivot tables

Microsoft Excel interface showing a data analysis spreadsheet titled "Road Accident Data - Excel". The ribbon includes File, Home, Insert, Page Layout, Formulas, Data, Review, View, Help, and a search bar "Tell me what you want to do".

The spreadsheet displays data for Road Accident Data, organized into three main sections: Fatal, Serious, and Slight, each with a Grand Total. The data is categorized by Road Type (e.g., One way street, (blank), Slip road, Roundabout, Dual carriageway, Single carriageway) and Road Surface (e.g., Dry, (blank), Ice, Wet). The data is presented in a table format with columns for Year (2021, 2022) and various categories.

Row Labels	Sum of Number_of_Casualties	Year	2021	Year	2022
Fatal	4816				
Serious	28879				
Slight	128324				
Grand Total	162019				
Row Labels	Sum of Number_of_Casualties				
Agricultural vehicle	434				
Cars	130128				
Buses	4663				
Vans	13056				
MotorCycles	12454				
Others	1284				
Grand Total	162019				
Row Labels	Sum of Number_of_Casualties				
One way street	604				
(blank)	668				
Slip road	3006				
Roundabout	9634				
Dual carriageway	35005				
Single carriageway	113102				
Grand Total	162019				
Row Labels	Sum of Number_of_Casualties				
Dry	98182				
(blank)	175				
Ice	12968				
Wet	50694				
Grand Total	162019				
Row Labels	Sum of Number_of_Casualties				
Rural	162019				
Grand Total	162019				
Row Labels	Sum of Number_of_Casualties				
Daylight	118802				
Dark	43217				
Grand Total	162019				

The bottom status bar shows the active sheet is "Data Analysis Sheet" and the current selection is "Ready".

5. Key Insights

5.1 Total Casualties

The total number of casualties resulting from road accidents over the two-year period was found to be 417,883. This figure serves as a stark reminder of the importance of road safety initiatives.

5.2 Casualties by Vehicle Type

An analysis of vehicle types involved in accidents revealed that a staggering 79.8% of casualties were attributed to car accidents. In contrast, other vehicle types such as bicycles and motorcycles accounted for a smaller percentage.

5.3 Monthly Casualty Trends

Our analysis uncovered fluctuations in the number of casualties month by month. November 2021 and November 2022 saw the highest casualties, while February 2021 and January 2022 reported the lowest.

5.4 Casualties by Road Type

The analysis pointed to single carriageway road types as the location of maximum casualties. In contrast, slip roads experienced the fewest casualties.

5.5 Casualties by Road Surface

The data indicated that dry road surfaces were associated with the highest distribution of total casualties.

5.6 Relationship Between Casualties and Area/Location, Day/Night

A detailed examination of the data illustrated the relationship between the number of casualties, the area (urban or rural), and the time of day (day or night).

6. Conclusions

6.1 Summary of Insights

The project unearthed a multitude of insights, but the key takeaways revolve around the need for comprehensive road safety measures, especially concerning car accidents, and an imperative to consider environmental conditions (road type and surface) when implementing safety strategies.

6.2 Implications

The implications of our findings extend to traffic authorities, policymakers, and the general public. The data suggests the need for stricter regulations, targeted awareness campaigns, and road maintenance initiatives to improve overall road safety.

7. Recommendations

7.1 Road Safety Measures

Based on our analysis, we recommend the implementation of enhanced road safety measures, including more stringent traffic regulations and penalties.

7.2 Data Collection and Analysis

To facilitate data-driven decision-making, we propose improved data collection methods and continuous analysis to identify emerging trends and areas of concern.

7.3 Public Awareness

Engaging in public awareness campaigns is essential. This includes educating the public about the importance of road safety and responsible driving.

8. Future Work

8.1 Further Analysis

Opportunities for future analysis include delving deeper into the causal factors of accidents, examining driver behavior, and conducting geographical analysis.

8.2 Data Integration and Advanced Analytics

The integration of real-time data and advanced analytics can provide more accurate and timely insights for road safety initiatives.

8.3 Continuous Monitoring

Implementing continuous monitoring and reporting of road accident data will enable authorities to adapt and respond to changing conditions effectively.

This comprehensive project report encapsulates the entire journey of the Road Accident Dashboard project, from data preprocessing to key insights and recommendations. It provides a clear roadmap for understanding road safety issues and taking proactive measures to enhance road safety.