**Project proposal (Group 1)**

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**Project topic:** The aim of our project is to uncover patterns in Road accidents in UK. We’ll examine relationships between Accidents severity, vehicle, time, road and type of road and different factors contributing to cause of accidents over a period of 2021 and analyze and visualize them using various interactive data visualization techniques.

**Project description:**

**Background:** We are interested in analyzing historical data for accidents happened in UK in year 2021. We have the accidents dataset that has multiple factors, and we have dataset with 100000 and total 23 columns and we are trying to find those factors relation to accidents in UK.

**Aims: -**

#### **1)Accidents by Month / Day of Week**

* **Bar chart**: Number of accidents by month
* Helps spot seasonal or weekly patterns

2) **Where are the hotspots**

\* Scatter plot/heatmap using Latitude & Longitude

\* Identify accident-prone zone

3) **What conditions lead to more severe accidents?**

\* Stacked **bar chart**: Severity by weather/light/road surface

\* Discover what conditions contribute to severe accidents

4) **Urban vs Rural Comparison**

\* Grouped bar chart: Total accidents or severity split by Urban vs Rural

5**) Casualty and vehicle trends**

\*Track number of casualties

\* Number\_of\_vehicles involved in accidents.

**6) Accidents by Police Force / District**

\* Bar chart

**Methodology:** Python (e.g. Pandas, Matplotlib, hvplot SciPy and numpy), JavaScript, Json, SqLite

Filtering using Pandas in Jupiter Notebook. Interactive visualizations using dropdown/checkbox etc.

**Outcomes:**

#### 1) **Understand Accident Causes**

* Analyze contributing factors like:
  + Weather
  + Lighting conditions
  + Road surface
  + Vehicle type

#### 2). **Seasonal & Temporal Trends**

* Spot patterns (e.g., more crashes in winter or during rush hour).
* Plan roadworks or campaigns accordingly.

**What is end use of outcome:**

1. **Police & Traffic Enforcement**

* Target enforcement in problem areas.
* Adjust patrol schedules or install speed cameras where needed.

#### **2) Local Councils & Urban Planners**

* Redesign dangerous intersections.
* Plan safer pedestrian crossings and bike lanes.

#### **3). Insurance Companies**

* Assess accident risk in certain areas or demographics.
* Adjust premiums based on data-driven risk.

**References:**

<https://www.kaggle.com/datasets/xavierberge/road-accident-dataset>?

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