**REPORT ON DATA ANALYSIS OF ROAD SAFETY**

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**ABSTRACT:**

"This research delves into analyzing data to uncover patterns and relationships between vehicle warning attributes and the speed of vehicles. The study reveals that the most common warning type, accounting for 57% of cases with 12,328 instances, is related to headway monitoring. Following closely at 30% with 6,431 instances is lane departure warning, which often occurs on highways and central areas, including the Southern Grand Trunk Road and Anna Salai. The study begins its examination of traffic patterns in the Vandalur Zoological Park Area."

**INTRODUCTION:**

1 .We analyzed a dataset of road safety alerts generated by AI-based ADAS devices during on-road events, aiming to prevent vehicle collisions.

2.Our main challenge was identifying patterns and high-traffic alert areas that require focused safety efforts. To achieve this, we had to clean and transform the data using Microsoft Excel.

3.We employed Tableau software for data visualization, using different types of plots like bubble plots, scatter plots, and heatmaps to gain insights into data distribution and variations.

4.To analyze geographic aspects, we utilized Kepler.gl to gain insights into alert areas using their respective latitude and longitude coordinates.

**DATA SOURCE:**

In the dataset, we have

i) FCW-Forward Collision Warning

ii) PCW- Pedestrian Collision Warning

iii) LDW- Lane Departure Warning

iv) HMW- Headway Monitoring Warning

With this data, we can analyze and derive insights related to traffic alerts and the areas where these warnings are triggered. This information can be used to study traffic patterns, identify high-risk areas, and potentially improve road safety.

**ANALYSIS:**

**Our dataset contains a total of 21,325 records or events that you've analyzed for insights. This means you have information on 21,325 instances related to collision warnings and their associated locations.**

|  |  |
| --- | --- |
| **Maximum Speed** | **65** |
| **Minimum Speed** | **0** |
| **Average Speed** | **36.34966216** |
| **Count** | **21325** |

**FORWARD COLLISION:**

-There are 5,339 instances of one type of vehicle with a count of 204.

- There are 805 instances of another vehicle type with a count of 158.

- There is a third type of vehicle with 2,846 instances, totaling 509 counts.

- This third type of vehicle has a maximum speed of 63 km/hr and an average speed of 38 km/hr.

- Out of the total vehicle count, 270 instances belong to this third type.

|  |  |
| --- | --- |
| **Maximum Speed** | **63** |
| **Minimum Speed** | **0** |
| **Average Speed** | **36.34966216** |
| **Count** | **590** |

|  |
| --- |
| **PEAK ROUTE: VCH 805 / TIME (7. AM) ROUTE - VANDALOOR TO GUINDY) COUNT - 48** |

**HEADWAY MONITORING:**

In headway monitoring, the vehicle type 805 had a count of 6875, with the majority of them traveling at a maximum speed of 64 km/hr. Next to that, vehicle type 5339 had a count of 5842, and vehicle type 2846 had a count of 5886. On average, these vehicles traveled at 35 km/hr, and they accounted for 57% of the total count.

|  |  |
| --- | --- |
| **Maximum Speed** | **64** |
| **Minimum Speed** | **0** |
| **Average Speed** | **35.3166** |
| **Count** | **12324** |

|  |
| --- |
| **PEAK ROUTE: Crescent college Vandalur diverges into the count southern trunk and another one to Annasalai -CEG-Chennai.** |

**LANE MONITORING:**

In the lane monitoring data, vehicle type 806 was counted 247 times, vehicle type 805 was counted 2052 times, and there was a total count of 6431 vehicles. The maximum speed recorded was 65 km/hr, and the average speed was 50.9 km/hr. Vehicle type 806 makes up about 30% of the total count.

|  |  |
| --- | --- |
| **Maximum Speed** | **65** |
| **Minimum Speed** | **0** |
| **Average Speed** | **50.92349557** |
| **Count** | **6431** |

**PEDESTRIAN WARNING:**

In the pedestrian warning system, vehicle type 5339 was detected 707 times, vehicle type 805 was detected 438 times, and vehicle type 2846 was detected 378 times. The maximum speed recorded among these vehicles was 61 km/hr, and the average speed was 18 km/hr. Vehicle type 5339 accounted for approximately 9% of the total alerts.