

TABLEAU DASHBOARD

CASE STUDY:

BANGALORE

TRAFFIC ANALYSIS



P R E S E N T E D B Y :

AAN MARIA JAMES
2348401

ANGELINE A
2348409

BLESSY LOUIS
2348416

KARINA SEBASTIAN
2348433





INTRODUCTION

Urban mobility is becoming a major challenge for rapidly expanding cities worldwide, including Bengaluru, India's Silicon Valley. The city's growth has led to severe traffic congestion, increased accidents, environmental degradation, and infrastructure strain. Addressing these issues requires smart city initiatives that leverage data and technology for safer, more efficient, and sustainable urban environments.

This project focuses on traffic management, road safety, sustainability, and infrastructure improvement in Bengaluru. Through advanced visualizations in Tableau, the study illustrates how these factors are interconnected, providing actionable insights for city officials, policymakers, and transport planners.

PROBLEM STATEMENT

Excessive traffic congestion, road incidents, and environmental degradation have long plagued Bengaluru because of its transportation system. The traffic burden increases day by day with the growth of population and the numbers of vehicles on the road. Traffic congestion at rush hours is excessively prolonging the travel time and therefore eating into the overall productive time of workers in this city. While this happens, the concern for road safety also increases because high volumes of traffic on the roads will lead to a higher rate of accidents. In addition, degradation of the environment resulting from vehicle emissions continues to mount as the air gets more and more polluted and climate change worsens.

These issues are further aggravated by constant infrastructure projects, such as roadwork and construction processes, which further fragment the flow of traffic as well as road capacity. The lack of insight from real-time data regarding traffic, safety, and infrastructure impacts hampers authorities in effective planning and successful implementation.



OBJECTIVE

The objective of this project is to provide an overall data-driven analysis with respect to traffic flow, road safety, sustainability, and infrastructure in Bengaluru. The project aims to provide some key insights on the emerging traffic trends, incidents of safety, and their environmental impacts caused by the transport ecosystem of a city through dynamic visualizations using Tableau. These kinds of insights will help the city planners, authorities, and policymakers in making informed decisions for improving the flow of traffic, reduction in accidents, promotion of sustainable transport solutions, thereby minimizing disruptions that are caused by projects of infrastructure systems.



THE DATASET

Date	Location	Nearest Road	Lat	Long	Altitude	Wind Speed	Wind Dir	Humidity	Pressure	Cloud Cover	Rain	
01-01-2022	Indiranagar	CMH Road	30.025	77.61500000000001	1.5	100	100	0	101.48	100.00000000000002	00.00000000000000	No
01-01-2022	Indiranagar	CMH Road	30.025	77.61500000000001	1.5	100	100	1	111.65	91.9448989	91.40703846	59.98368911
01-01-2022	Whitefield	Marathahalli Bridge	7.209	74.47438821	1.019068846	28.34795086	36.30652494	0	64.798	44.66134371	61.37554084	95.4860261
01-01-2022	Koramangala	Sony World Junction	6.0874	43.81761039	1.5	100	100	1	171.748	32.77312315	75.54700159	68.56745159
01-01-2022	Koramangala	Sarjapur Road	5.7292	41.11676289	1.5	100	100	3	164.584	35.092601	64.63476238	93.15517129
01-01-2022	M.G. Road	Trinity Circle	4.7818	44.24196255	1.5	100	100	3	145.696	39.92787129	61.01676907	55.39457105
01-01-2022	M.G. Road	Anil Kumble Circle	3.6574	29.98342956	1.5	100	100	3	123.148	72.47912969	81.57368968	90.37209776
01-01-2022	Jayanagar	Jayanagar 4th Block	2.5379	38.45517944	1.5	79.03681288	100	2	100.758	46.31534352	88.12075836	68.18148012
01-01-2022	Jayanagar	South End Circle	2.5022	35.03997304	1.5	78.97959595	100	1	100.044	44.28169322	99.42601816	62.10776358
01-01-2022	Hebbal	Hebbal Flyover	3.1760	56.90455626	1.5	97.67246207	100	1	113.52	12.83423991	83.63571773	83.87821809
01-01-2022	Hebbal	Ballari Road	3.8446	26.14487626	1.5	100	100	3	126.892	48.86403681	81.18602913	62.09261455
01-01-2022	Yeshwanthpur	Yeshwanthpur Circle	1.5043	47.96984673	1.35483457	55.74084425	76.62531645	0	80.086	21.31400999	95.94216754	80.32145298
02-01-2022	Indiranagar	100 Feet Road	22.050	52.87084604	1.1130159879	78.4298281	100	3	94.1	35.74010621	70.00809471	62.19948217
02-01-2022	Indiranagar	CMH Road	37.877	26.42842444	1.5	100	100	1	123.754	73.8121009	98.15714308	95.74321951
02-01-2022	Koramangala	Sarjapur Road	29.106	43.56398794	1.5	90.40985493	100	3	108.212	53.05050587	99.602154	57.00420076
02-01-2022	M.G. Road	Trinity Circle	5.3217	37.57207491	1.5	100	100	5	156.434	33.65966068	75.02331811	54.69909699
02-01-2022	M.G. Road	Anil Kumble Circle	37.584	45.88950597	1.5	100	100	2	125.168	15.97437253	62.06726885	76.56773158
02-01-2022	Jayanagar	Jayanagar 4th Block	10.676	53.52433335	1.171388568	47.13579429	78.033500743	2	83.351	38.62670611	66.9317728	57.82125213
02-01-2022	Jayanagar	South End Circle	37.509	51.51350986	1.5	100	100	1	125.018	63.04922773	60.57573955	55.80363203
02-01-2022	Hebbal	Hebbal Flyover	6.758	34.75612359	1.069280748	21.20369965	32.77504734	1	63.516	13.17128068	74.98450459	81.29299579
02-01-2022	Hebbal	Ballari Road	30.209	31.14686403	1.5	100	100	2	110.418	48.19317525	97.65859235	69.30513189
02-01-2022	Yeshwanthpur	Yeshwanthpur Circle	20.375	40.06993065	1.337950124	58.38210538	100	0	90.75	18.27153793	87.36943661	81.44714234
02-01-2022	Yeshwanthpur	Tumkur Road	15.636	32.79423896	1.310365184	48.93607081	82.48757326	1	81.271	62.56097475	90.18171496	55.15619344
03-01-2022	Indiranagar	100 Feet Road	23.457	38.86905317	1.380034787	87.20214294	100	2	96.914	33.00651818	86.90073824	87.61873647
03-01-2022	Indiranagar	CMH Road	38.925	33.52942618	1.5	100	100	1	127.85	53.37526443	64.04490304	54.20534031
03-01-2022	Whitefield	Marathahalli Bridge	9.154	40.22618269	1.378899431	40.23335461	48.30378185	0	68.308	15.84505017	91.08587564	77.92021249
03-01-2022	Whitefield	ITPL Main Road	24.968	36.72769056	1.298417952	84.89404197	100	1	99.936	70.80193897	68.94383354	98.16112697
03-01-2022	Koramangala	Sony World Junction	5.1459	27.32652437	1.5	100	100	0	152.918	39.66742327	98.01645936	94.51318919
03-01-2022	Koramangala	Sarjapur Road	28.481	36.50390786	1.5	100	100	2	106.961	66.96565138	87.3892469	56.13084697

ABOUT THE DATASET

The dataset, sourced from Kaggle:

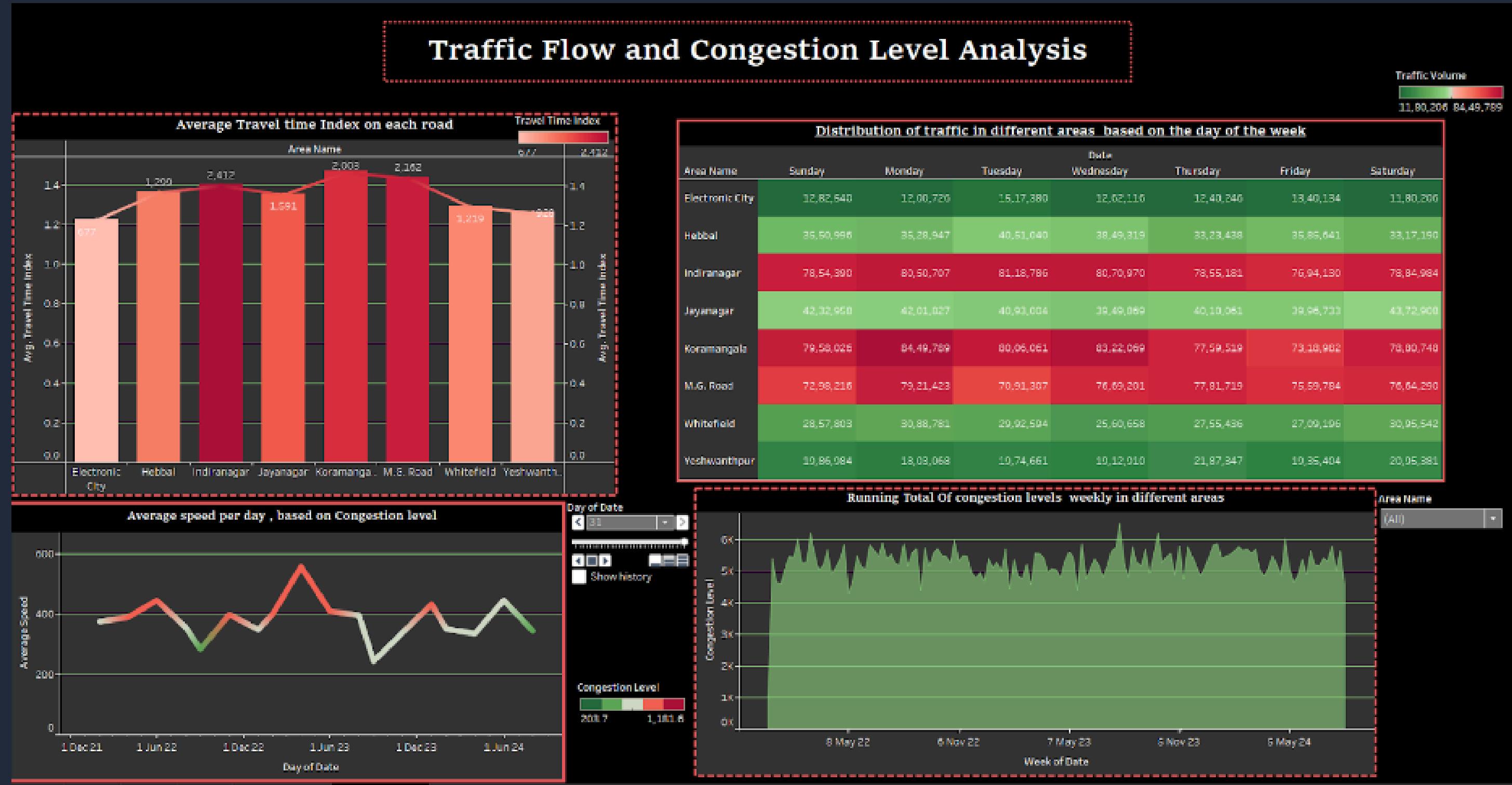
<https://www.kaggle.com/datasets/preethamgouda/banglore-city-traffic-dataset> , offers a multifaceted view of urban traffic dynamics and related factors within Bengaluru. This detailed dataset is structured to capture a wide range of variables influencing traffic conditions, safety, environmental impact, and infrastructure utilization. Here's a list of features:

- Date
- Area Name
- Road/Intersection Name
- Traffic Volume
- Average Speed
- Travel Time Index
- Congestion Level
- Road Capacity Utilization
- Incident Reports
- Environmental Impact
- Public Transport Usage
- Traffic Signal Compliance
- Parking Usage
- Pedestrian and Cyclist Count
- Weather Conditions
- Roadwork and Construction Activity

DASHBOARDS



TRAFFIC FLOW AND CONGESTION LEVEL ANALYSIS



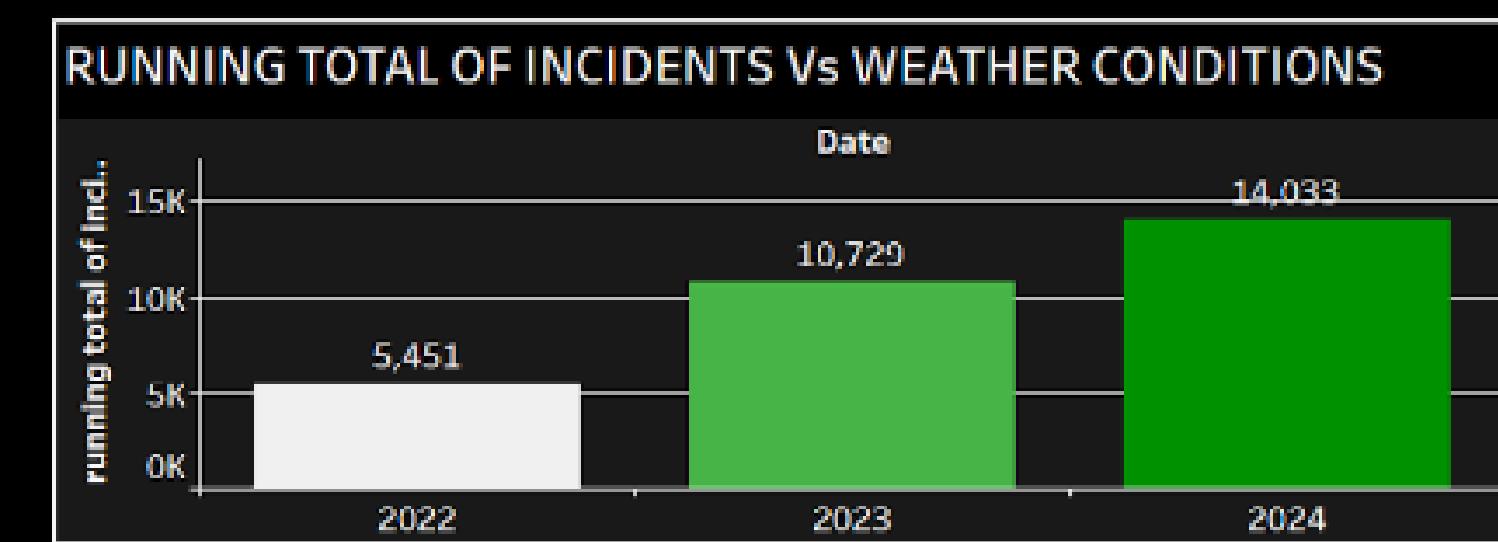
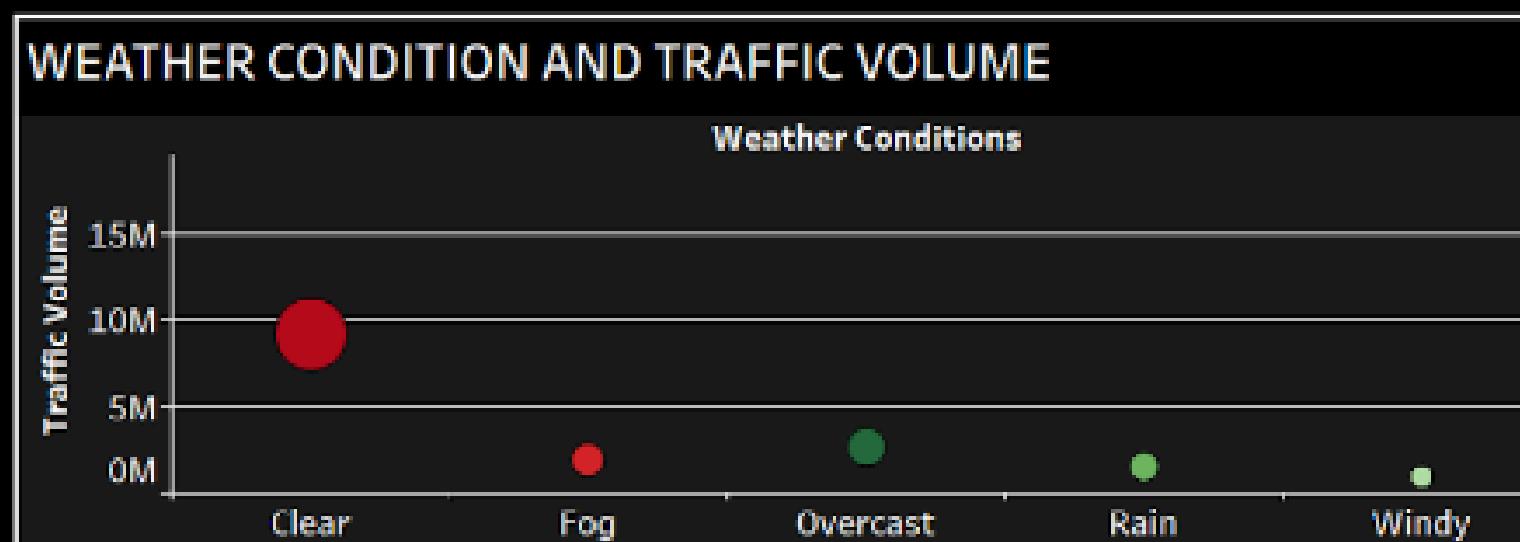
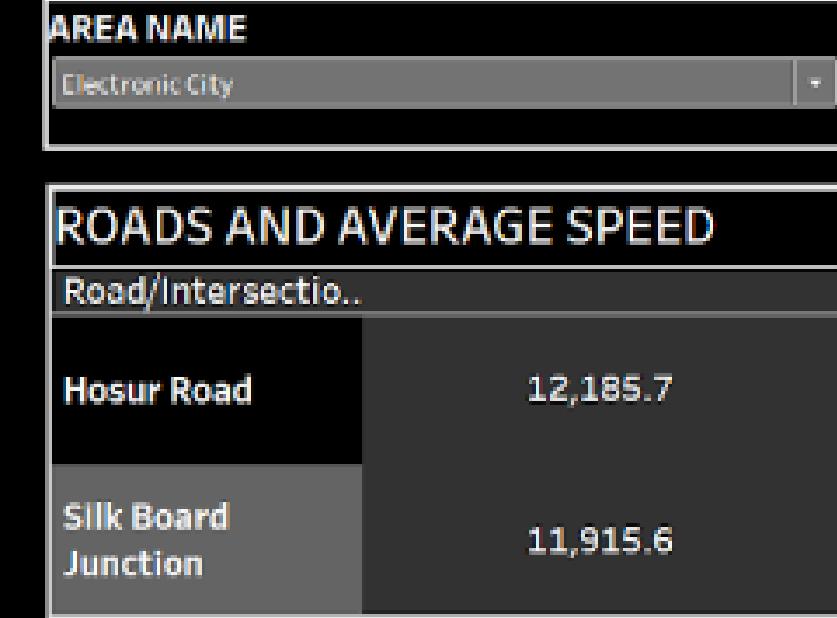
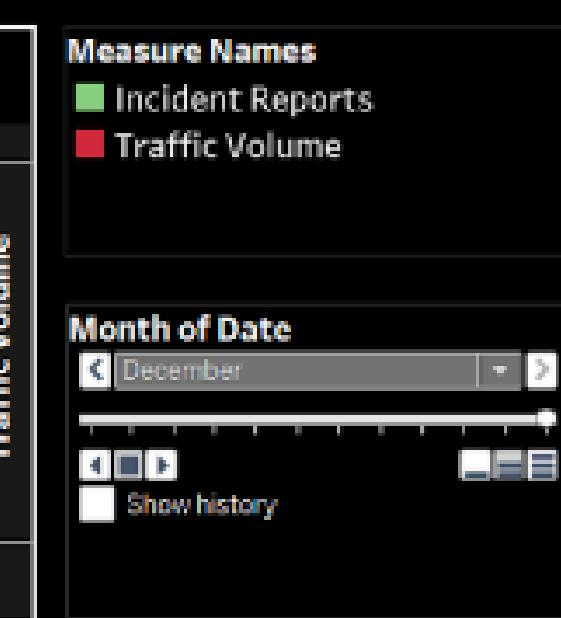
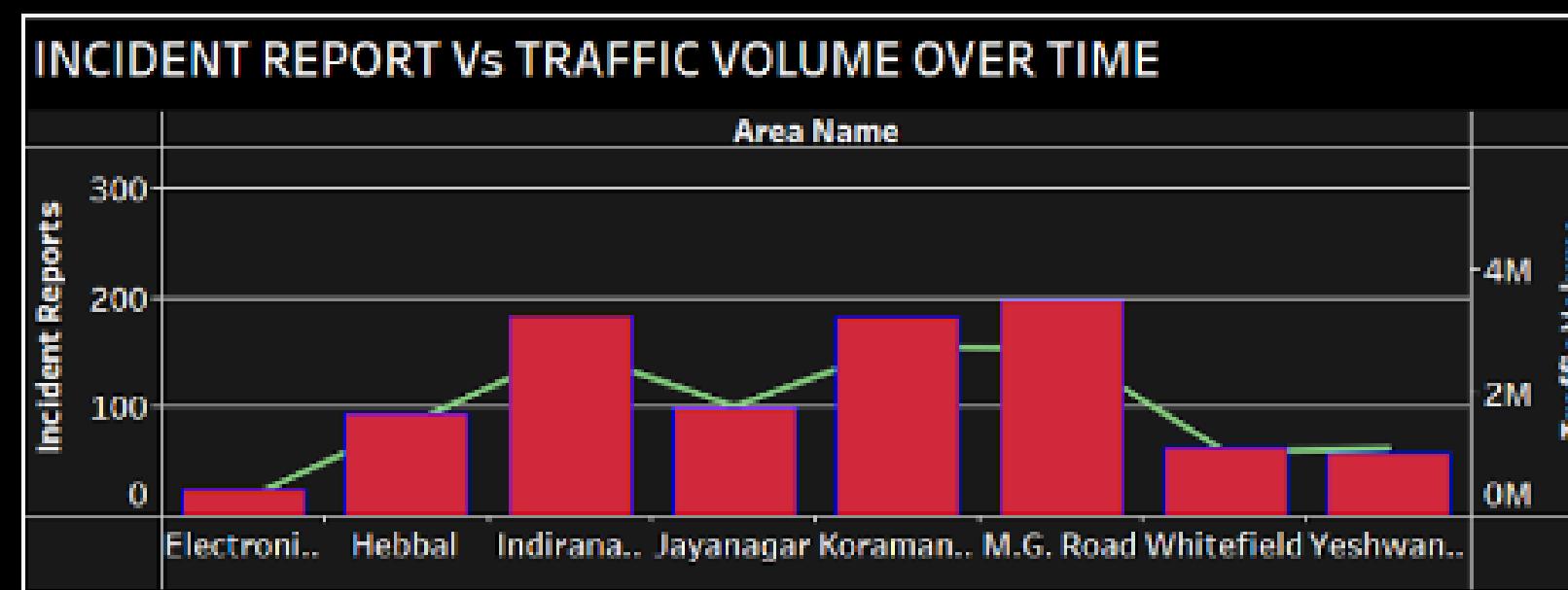
ABOUT THE DASHBOARD: TRAFFIC FLOW AND CONGESTION LEVEL ANALYSIS

This "Traffic Flow and Congestion Level Analysis" dashboard represents an overall view of the urban traffic pattern, highlighting the key parameters of travel time, congestion, and speed variations regarding different areas and time intervals. These are combined into bar charts, heatmaps, and line graphs to offer daily and weekly insights into the condition of the traffic. It is an interactive dashboard that dynamically shows visualizations through animation and filters. These enable the view of traffic trends across a wide range of regions and time. This will be a very useful tool to make informed decisions by urban planners and traffic managers in the process of planning road efficiency and congestion management.



ROAD SAFETY AND INCIDENT ANALYSIS

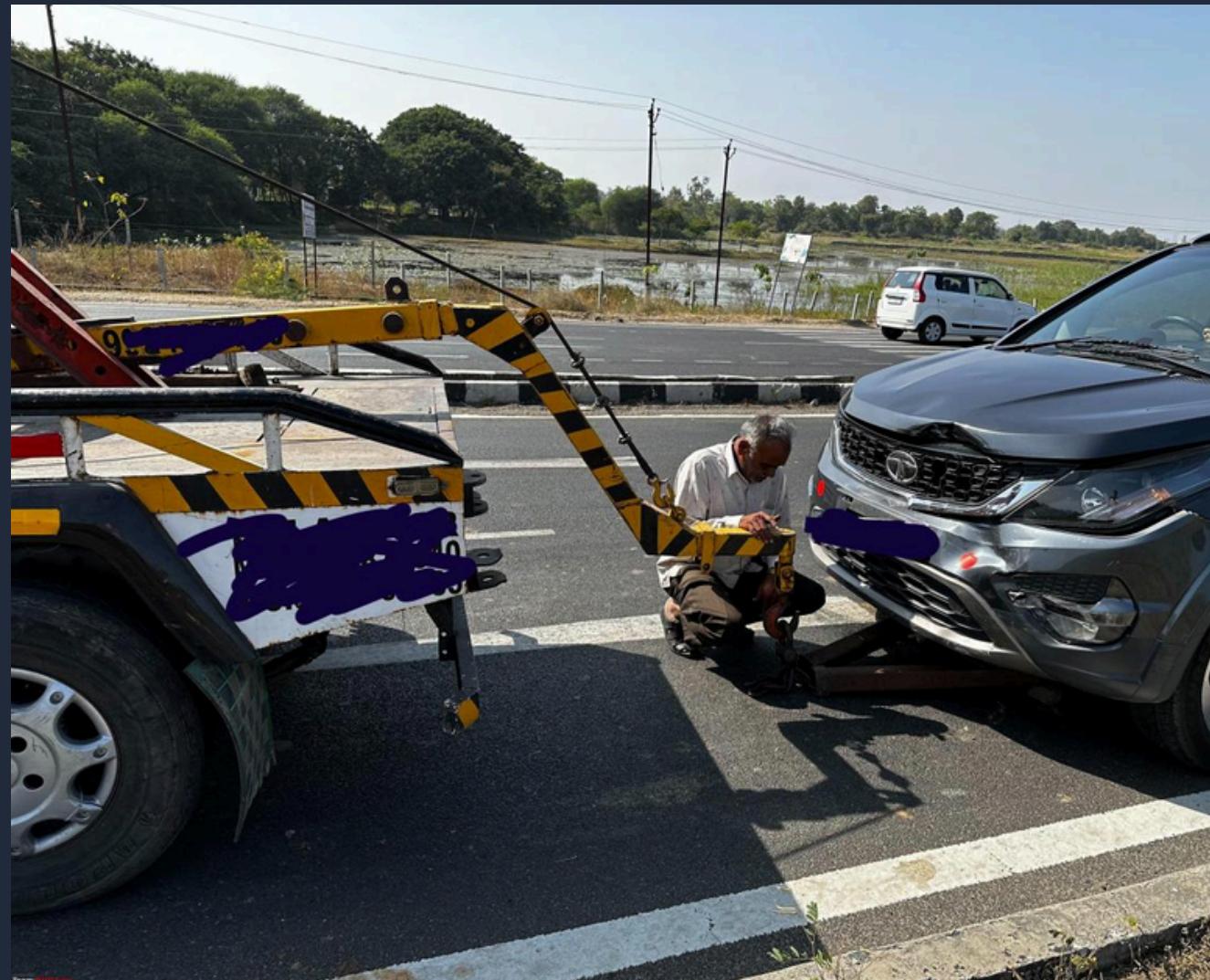
ROAD SAFETY AND INCIDENT ANALYSIS



ABOUT THE DASHBOARD: ROAD SAFETY AND INCIDENT ANALYSIS

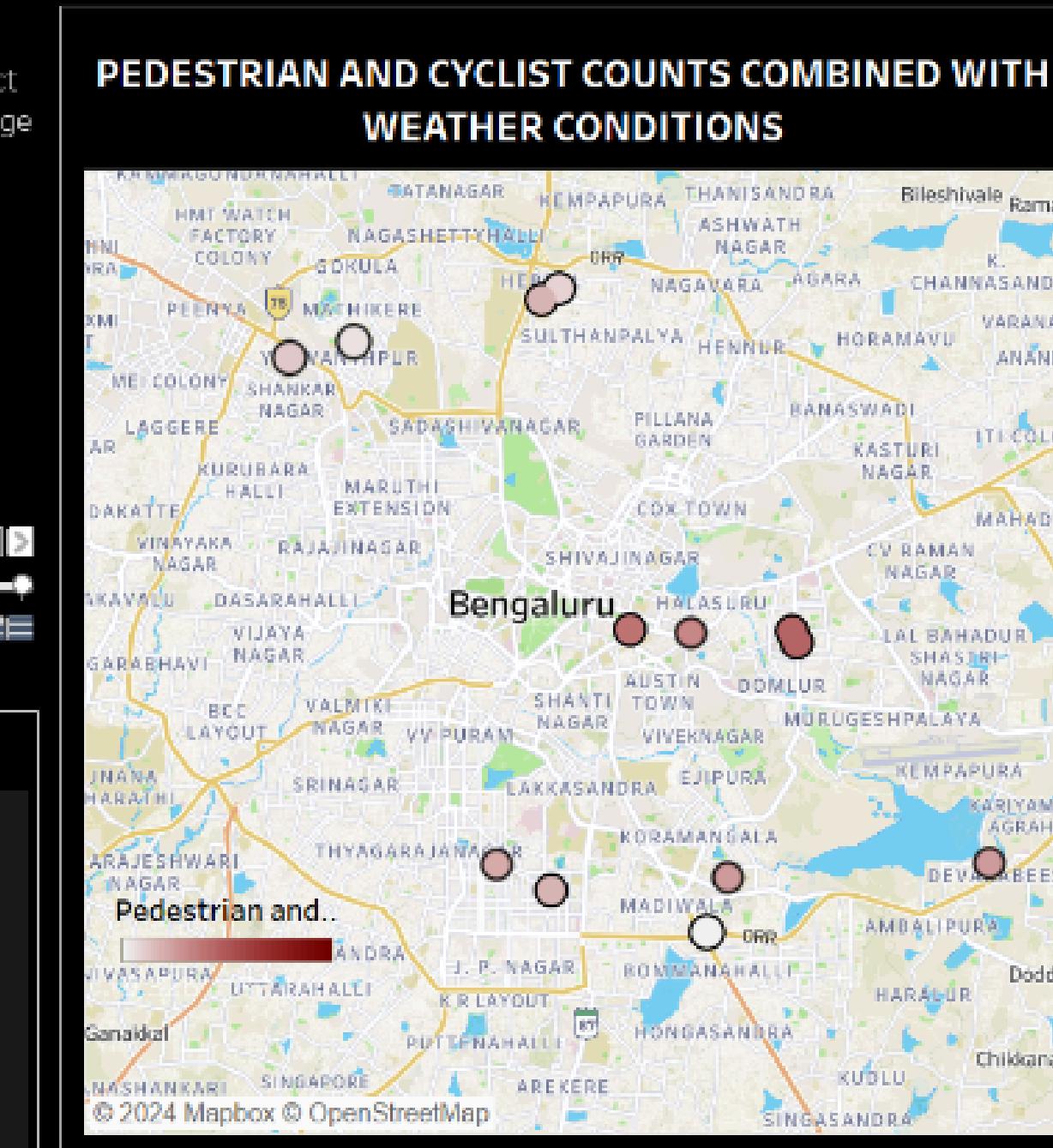
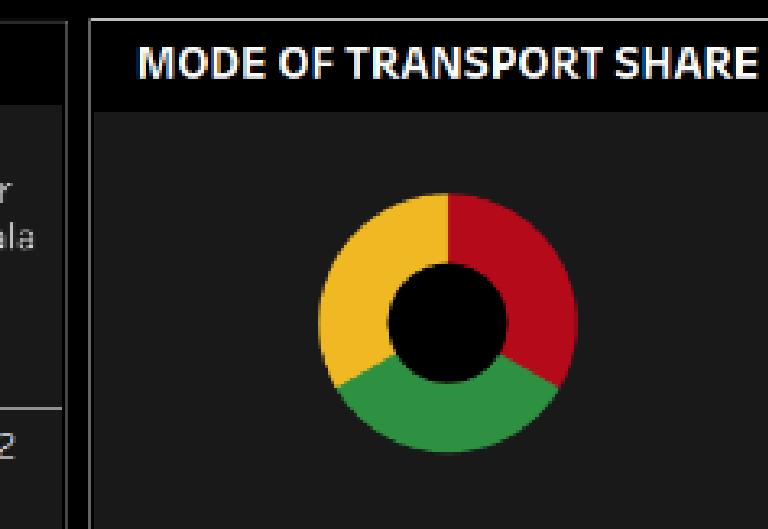
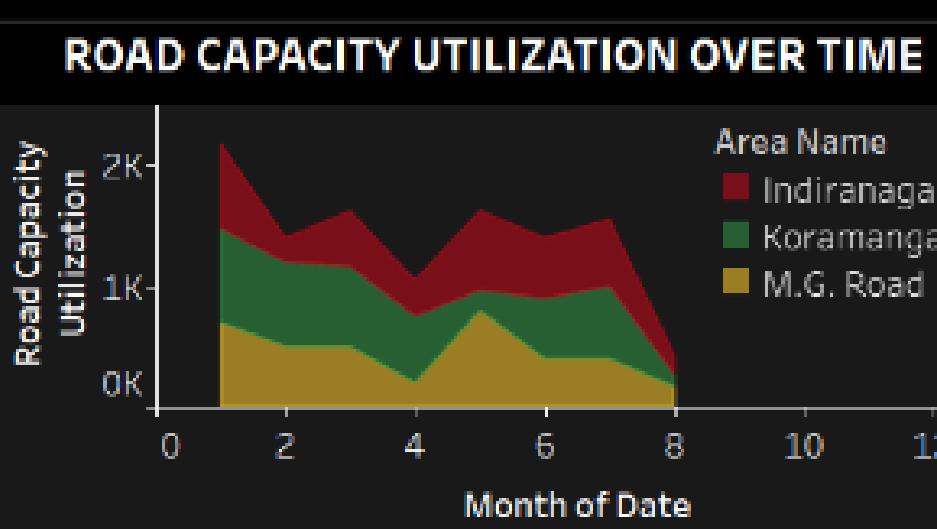
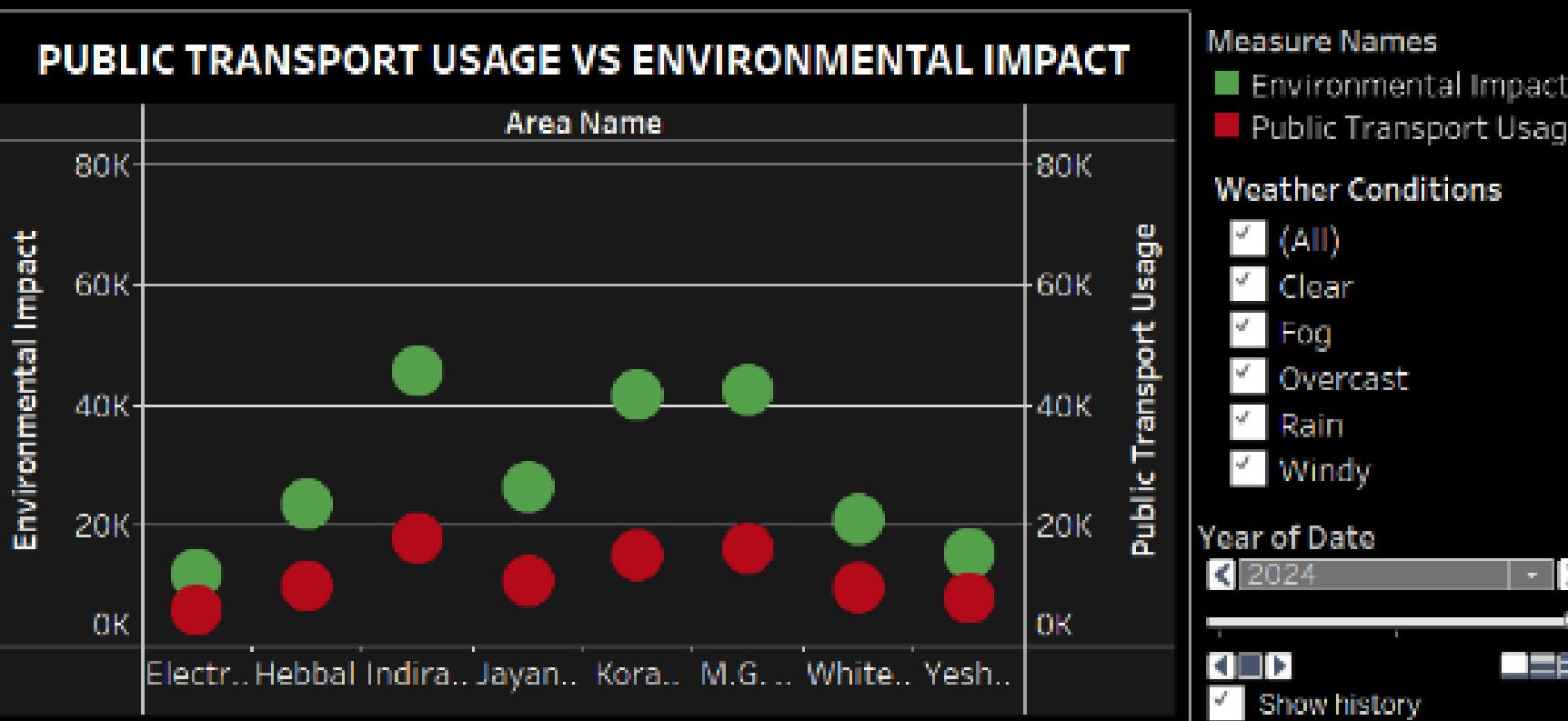
The Road Safety and Incident Analysis Dashboard provides a detailed overview of the condition of traffic flow, incidents reported, and other prevailing factors that enable safety agencies and local governments to focus on road safety. The visualizations combined in this dashboard aim to explore the correlation between traffic volume, weather conditions, and incident reports to identify areas of immediate concern that need to be improved.

This dashboard is a tool for identification and an understanding of what contributes to road incidents. It offers the means of strategizing interventions more appropriately and aids in advancing the measures in place concerning road safety by highlighting relationships and correlations between incident rates, volume of traffic, weather conditions, and compliance levels.



SUSTAINABLE TRANSPORT AND ENVIRONMENTAL IMPACT

SUSTAINABLE TRANSPORT AND ENVIRONMENTAL IMPACT DASHBOARD

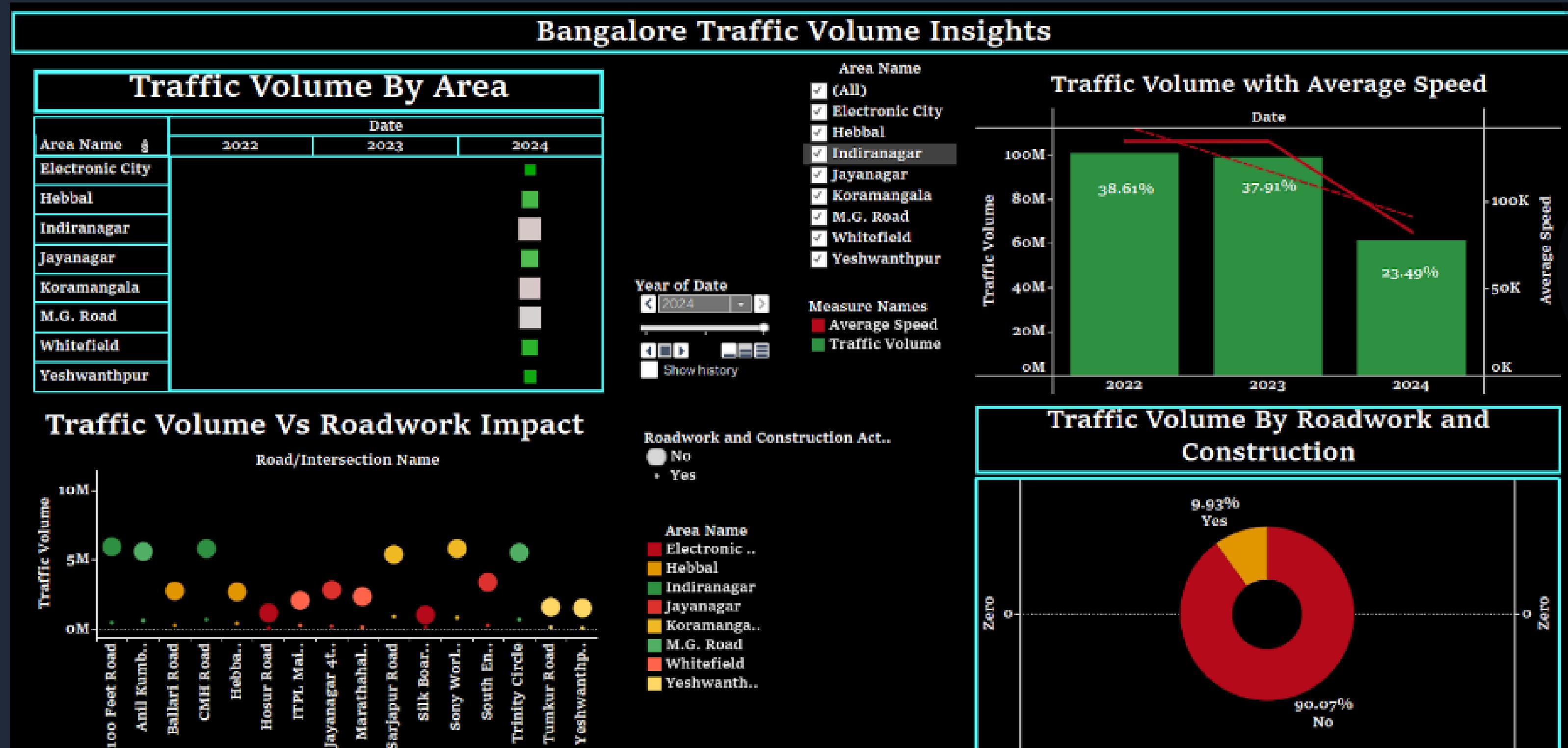


ABOUT THE DASHBOARD: SUSTAINABLE TRANSPORT AND ENVIRONMENTAL IMPACT

The "Sustainable Transport and Environmental Impact Dashboard" conveys pictorially significant factors in transport and their environmental impacts within Bengaluru. The visualization provides information to city planners on how public transport, non-motorized transport, and usage of roads influence environmental impact. Weather condition and time have been provided as filters for further information. Taken together, all these visual elements work to emphasize the various transport modes, road capacity, environmental sustainability, and pedestrian safety across different quarters of the city.



BANGALORE TRAFFIC VOLUME INSIGHTS



ABOUT THE DASHBOARD: BANGALORE TRAFFIC VOLUME INSIGHTS

This dashboard looks into the analysis of traffic volume over major areas in Bangalore from 2022 to 2024, underlining key areas such as Electronic City, Whitefield, and Koramangala. Looking at the chart "Traffic Volume with Average Speed", it reflects the downfall in both traffic volume and average speed for 2022 to 2024, which could reflect congestion. It can be seen from the scatter plot "Traffic Volume vs Roadwork Impact" that, out of these many roads, the impact of roadwork is witnessed mainly on busy roads like Hebbal and Hosur Road. The pie chart finally shows that 9.93% of the traffic is affected by roadwork and the remaining portion, 90.07%, remains unaffected. Overall, the road construction is influencing traffic flow in some areas.



CONCLUSION

The urban transport system of Bangalore is severely stressed by rapidly growing congestion, increasing traffic accidents, and environmental problems. The following dashboard tries to present hotspots in traffic flow, congestion locations, and causes related to delays, such as roadwork, especially in places like M.G. Road, Whitefield, and Koramangala. The findings indicate that more volumes of traffic pose a greater risk of accidents, especially if the weather conditions are bad; therefore, more safety on the roads is needed. Public transport utilization, particularly in Indiranagar and Koramangala, shows less menace to the ecology, while private transport continues to pollute the environment. The roadwork also delays the movement of traffic, which basically indicates that there is more need for better planning of projects with a view to minimal disruption on such an important piece of infrastructure. These aspects highlight the integration of sustainable transport, infrastructure improvement, and efficient management of flow as the key agendas for the urban future of Bangalore.





A collage of four images depicting a futuristic urban environment. The top-left image shows a dense cluster of skyscrapers with illuminated windows. The top-right image features a prominent skyscraper with a glowing circular opening at the top. The bottom-left image shows a complex highway interchange with multiple levels and glowing lights. The bottom-right image captures a high-speed train in motion, with blurred lights creating a sense of speed.

THANK YOU!