PROGRAM BOOK FOR

SHORT-TERM INTERNSHIP

(Onsite / Virtual)

Name of the student: Padharla Raghavendra Kumar

Name of the college: Chebrolu Engineering College

Registration Number: 21HU1A4441

Period of Internship:

Address of Intern Organization: SmartInternz

JNTUK UNIVERSITY (2024-2025)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

Chebrolu Engineering College CHEBROLU

UGC-AUTONOMOUS | Formerly Chebrolu Engineering College

CHEBROLU, GUNTUR (DIST)-522212, ANDHRA PRADESH

2021-2025

A Project report on

Tableau Visualizations of Urban Traffic Density

Submitted in partial fulfilment of the requirement for the award

BACHELOR OF TECHNOLOGY

IN

COMPUTER SCIENCE AND ENGINEERING (DATA SCIENCE)

Submitted by

Padharla Raghavendra Kumar (21HU1A4441)

Under the Esteemed Guidance of

Mr. N. Naresh, M.Tech.

ASSISTANT PROFESSOR

DEPARTMENT OF CSE

Department of CSE (DS)

CERTIFICATE

This is to certify that project work entitled **" Data Analytics with Tableau**" is a bonafide work done and submitted by **Padharla Raghavendra Kumar (21HU1A4441)** in partial fulfilment of the requirements for the award of **BACHELOR OF TECHNOLOGY** in **COMPUTER SCIENCE & ENGINEERING (DATA SCIENCE)** at **Chebrolu Engineering College** during the academic year **2024- 2025**.

PROJECT GUIDE

Mr. N. Naresh, M. TECH,

Assistant Professor,

Department of CSE (DS),

HEAD OF THE DEPARTMENT

Dr. B.Bhavani

Head of the department

Department of CSE (DS),

Declaration

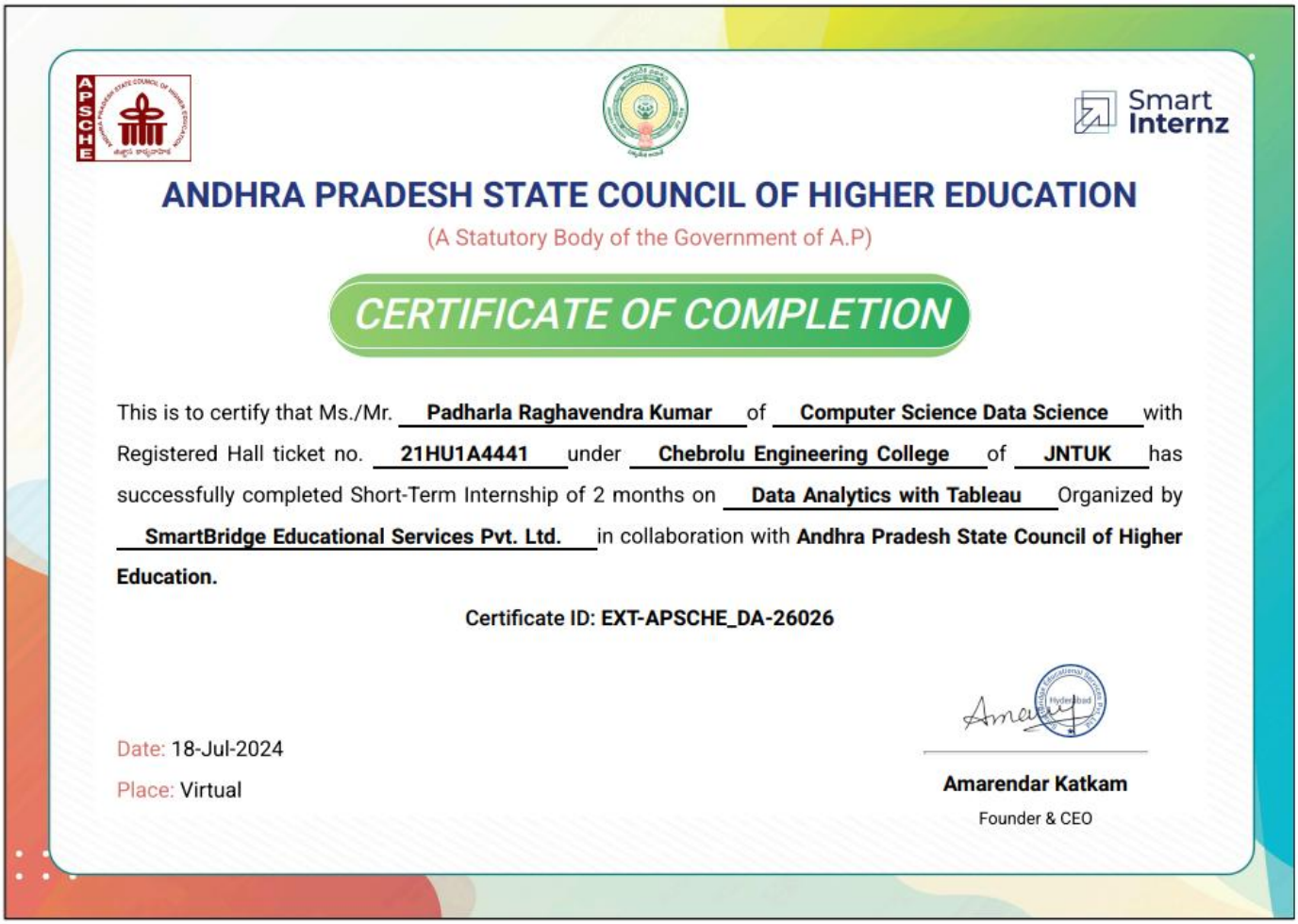
We hereby declare that the project report entitled **"Data Analytics with Tableau"** is carried out by us under the guidance of **Mr. N. Naresh**. We also declare that this project report is a result of our own efforts and has not been submitted to any other institution for the completion of the **Bachelor of Technology in Computer Science and Engineering** (Data science)

PROJECT ASSOCIATED BY

Padharla Raghavendra Kumar

(21HU1A4441)

Certificate from Intern Organization



ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION

(A Statutory Body of the Government of A.P)

CERTIFICATE OF COMPLETION

This is to certify that Ms./Mr. **Padharla Raghavendra Kumar** of **Computer Science Data Science** with Registered Hall ticket no. **21HU1A4441** under **Chebrolu Engineering College** of **JNTUK** has successfully completed Short-Term Internship of 2 months on **Data Analytics with Tableau** Organized by **SmartBridge Educational Services Pvt. Ltd.** in collaboration with **Andhra Pradesh State Council of Higher Education.**

Certificate ID: **EXT-APSCHE_DA-26026**

Date: 18-Jul-2024

Place: Virtual

Amarendar Katkam

Founder & CEO

Acknowledgement

I would like to express my heartfelt gratitude to **Dr. R.V. Krishnaiah, Ph.D, M.Tech**, for granting me the opportunity to undertake this project and for his invaluable support and encouragement.

I deeply indebted to our Head of the Department **Dr. B.Bhavani**, **Ph.D, M.tech,** who modelled us both technically and morally for achieving greater success in life.

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I also wish to acknowledge the teaching and non-teaching staff of the **Department of Computer Science and Engineering** for their cooperation and assistance during this endeavor.

Lastly, I am profoundly grateful to my friends, whose collaboration, knowledge-sharing, and support have been vital in completing this project successfully and on time.

PROJECT ASSOCIATED BY

Padharla Raghavendra Kumar

(21HU1A4441)

CONTENTS

DATA ANALYTICS

(In Partnership with Tableau)

COURSE OBJECTIVE

- Understand the fundamentals of Business Intelligence, including data integration, processing, and presentation
- Gain proficiency in using Tableau for data visualization and analysis.
- Learn how to extract data from databases and perform CRUD operations using SQL.
- Learn how to clean & prepare the data with the Tableau prep builder
- Explore the architecture of Tableau and understand its interface, field types, and data source management
- Develop skills in creating various types of visualizations and charts using Tableau
- Learn advanced techniques such as data blending, advanced data manipulations, filtering, and creating interactive dashboards and stories using Tableau.

COURSE PREREQUISITES:

- Basic understanding of data analysis concepts
- Proficiency in working with data Basic Knowledge of SQL

SOFTWARE REQUIREMENT:

- Tableau Desktop, Tableau Public, Tableau Data Prep Min 30 Mbps Internet speed

HARDWARE REQUIREMENT:

- Windows 8+, Linux 8+, Mac 10+
- Operating system with 4 GB RAM

Course Content

UNIT-I Introduction to BI & Tableau

Understand the concept of Business Intelligence - Explain the process of data integration, processing, and presentation - Familiarize with ETL (Extract, Transform, Load) architecture, Gain an introduction to data analytics and its types - Understand descriptive, diagnostic, predictive, and prescriptive analytics-Explore the applications of analytics in business.

Introduction to Tableau:

Introduction to tableau-Overview & Features–Connecting Tableau to Data Sources -Working with Flat files -Connecting spreadsheets

Data Extraction:

Understand the fundamentals of databases and their role in data management - Learn how to create databases and tables for data storage - Develop skills in performing CRUD (Create, Read, Update, Delete) operations on database tables - Gain a basic understanding of SQL operations for data extraction and manipulation

Architecture of Tableau:

Gain knowledge of the architecture of Tableau and how it functions - Explore the interface of Tableau, including layout, toolbars, data pane, and analytics pane - Understand different Tableau field types and their usage - Learn how to save and publish data sources in Tableau, Differentiate between live and extract connections in Tableau - Explore various file types and ways to share and export work done in Tableau

UNIT-II Tableau Prep Builder

What is Tableau Prep? - Installing Tableau Prep- Tableau Prep Interface - Basics of Data Preparation - Connecting to Data

Creating Data Flows:

The Input Step - The profile pane - The cleaning step - Group & replace - The output step –
The pivot step & calculated fields - The aggregate step - The union step - The joining step

UNIT-III Data Visualization & Data Blending

Understand different chart types for data visualization, including histograms, box plots, pie charts, bar charts, line charts, bubble charts, bullet charts, scatter plots, tree maps, heat maps, maps, text tables, and highlighted tables - Learn how to create effective visualizations using Tableau

Working with Metadata & Data Blending:

Connect to different data sources in Tableau - Understand Tableau data types - Learn how to connect to Excel, cubes, and PDFs in Tableau - Manage metadata and extracts in Tableau. Master joining techniques such as left, right, inner, and outer joins, as well as union operations,
Explore data blending and data preparation techniques in Tableau

UNIT-IV Advanced-Data Manipulations & Filters

Learn advanced techniques for marking and highlighting data points - Understand how to group data and create sets in Tableau - Explore bins, hierarchies, and sorting options in Tableau, Utilize the formatting pane for menu, font, alignment, and other settings - Edit axes and annotations in Tableau

Working with Filters, Organizing Data & Visual Analytics:

Gain proficiency in working with filters in Tableau - Learn different types of filters and how to add or remove them - Explore filtering techniques for continuous dates, dimensions, and measures - Understand the order of operations in filtering data - Learn techniques for organizing data and conducting visual analytics in Tableau.

Working With Mapping, Calculations, and Expressions:

Gain proficiency in working with filters in Tableau - Learn different types of filters and how to add or remove them - Explore filtering techniques for continuous dates, dimensions, and measures - Understand the order of operations in filtering data - Learn techniques for organizing data and conducting visual analytics in Tableau

Working With Mapping, Calculations, and Expressions:

Work with coordinate points and plot longitude and latitude data on maps in Tableau -Edit unrecognized locations and work with background images in Tableau - Understand map visualization and custom territories in Tableau - Learn calculation syntax and functions in Tableau. - Create calculated fields and utilize quick table calculations

Working with Parameters:

Gain knowledge of creating parameters in Tableau - Understand how to use parameters in calculations - Learn how to incorporate parameters with filters in Tableau

UNIT-V Dashboards & Stories

Build and format interactive dashboards using Tableau, incorporating various elements such as size, objects, views, filters, and legends - Apply best practices for creating visually appealing and engaging dashboards that effectively convey insights and support decision-making, Understand the concept of story points in Tableau and utilize them to create compelling data narratives - Create and update story points, combining visualizations, annotations, and descriptions to tell a coherent data story - Enhance stories and dashboards with catchy visuals and captivating design elements - Implement actions in dashboards, including highlight actions, URL actions, and filter actions, to enhance interactivity and user experience – Learn techniques for selecting and clearing values within dashboards. Explore dashboard examples using Tableau workspace and interface, gaining practical insights into effective dashboard design and layout

COURSE OUTCOMES

On completion of the course, students will be able to:

- CO1: Utilize Tableau for data visualization and analysis to derive meaningful insights
- CO2: Apply SQL and data manipulation techniques to extract and analyze data from databases
- CO3: Create a variety of visualizations and charts using Tableau to effectively communicate data findings
- CO4: Perform advanced data manipulations and calculations to uncover patterns and trends in data.
- CO5: Build interactive dashboards and stories in Tableau to present data in a compelling and informative manner
- CO6: Develop critical thinking skills to analyze and interpret data, and make datadriven recommendations.
- CO7: These outcomes will provide data analysts with the essential skills needed to excel in their role and contribute to data-driven decision-making processes within organizations.

FOR FURTHER READING

- Information Dashboard Design Displaying Data for At-a-glance Monitoring by Stephen Few
- Visual Thinking for Design" by Colin Ware
- Mastering Tableau by David Baldwin
- StaurtRussel, Peter Norvig, Artificial Intelligence: A Modern Approach, Pearson Education, 3rd Edition,2009

REFERENCE

- What is Tableau? https://www.tableau.com/why-tableau/what-is-tableau
- Download Tableau Desktop https://www.tableau.com/products/new-features/desktop
- Tableau desktop learning resource https://help.tableau.com/current/pro/desktop/enus/default.htm

INDUSTRY SCOPE

Tableau has wide scope in the industry today, with the boom of data. Tableau is widely used by business analysts, data analysts, and data scientists to deal with data. Most companies today ask for proficiency in at least one of the business intelligence tools and learning Tableau will provide you with an advantage if you want to start your career in analytics

CERTIFICATIONS

There are several official certifications provided by Tableau

- **Tableau Certified Data Analyst** – https://www.tableau.com/en-gb/learn/certification/certified-data-analyst
- **Certified Tableau Desktop Specialist -** https://www.tableau.com/en-gb/learn/certification/desktop-specialist
- **Tableau Server Certified Associate-** https://www.tableau.com/en-gb/learn/certification/server-certified-associate

JOB ROLES

1. Data Analyst
2. Business Analyst
3. Tableau Consultant
4. Business Intelligence Developer

ACTIVITY LOG FOR THE FIRST WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 1	Day – 1	Introduction DA	Understanding data analysis basics, tools, techniques, and practical applications
	Day - 2	Introduction to Tableau and Installation	Understanding Tableau basics, installation steps, and initial data visualization concepts
	Day – 3	Database and MySQL Introduction	Understanding relational databases, SQL querying, data management, and MySQL fundamentals
	Day – 4	MYSQL CRUD Operation, JOINs Practical	Mastered MySQL CRUD operations and JOINs for efficient data manipulation.
	Day – 5	Tableau Architecture	Understanding data source, data engine, and visualization layers in Tableau

Weekly Report - Week 1

Objective: To Cover Basics of Data Analytics, MYSQL and tableau

Detailed Report:

Day 1: Introduction Dashboard: Overview of sales, profit, orders; key metrics visualized for initial business performance analysis and insights.

Day 2: Introduction to Tableau: Powerful data visualization tool. Install Tableau Desktop for interactive analytics and visual insights on diverse datasets.

Day 3: Introduction to databases: essential for storing and managing structured information. MySQL: popular relational database system, ideal for scalable data storage and retrieval.

Day 4: Learning creating, reading, updating, deleting data, and joining tables for comprehensive database management and query operations.

Day 5: Tableau architecture includes data connectors, data engine, and visualization layer, enabling data integration, analysis, and interactive visualizations efficiently. Reference Links

Tableau: https://www.youtube.com/watch?v=5qQJXgIXjcc

MySql: https://www.youtube.com/watch?v=k5tICunelSU

ACTIVITY LOG FOR THE SECOND WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 2	Day – 1	MYSQL Operation and Loading Dataset	"MYSQL: Operations include querying, updating, and managing databases efficiently.
	Day - 2	Tableau Prep	Data cleaning, shaping, and combining for streamlined analytics workflows in Tableau Prep.
	Day – 3	Tableau Prep	Practical's
	Day – 4	Data Visualisation	Introduction to Show Me feature for basic data visualization proficiency.
	Day – 5	Data Visualisation	Covered Visualisations for Show me section

Weekly Report - Week 2

Objective: To Cover Tableau Prep and MySQL with practical's

Detailed Report:

Day 1: MySQL Operations involve querying, updating databases. Loading datasets in MySQL involves importing CSVs. Tableau connects to MySQL for visualizing queried data.

Day 2 and Day 3: Learn data preparation techniques, workflow automation, and data cleaning using Tableau Prep's intuitive visual interface.

Day 4 and Day 5: Basic Data Visualization training covered Tableau's Show Me section, teaching essential chart types and their applications effectively

Reference Links: h ps://www.tableau.com/data-insights/reference-library/visual-analy cs/charts

ACTIVITY LOG FOR THE THIRD WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 3	Day – 1	Advanced data visualizatin	Insight into complex data through advanced Tableau visualizations and techniques.
	Day - 2	Advanced data visualizatin	Interactive visualizations for data-driven decisions
	Day – 3	Data Blending	Mastered combining data from multiple sources for insightful visualizations
	Day – 4	Filters	Explored filters in tableau
	Day – 5	Filters	Mastered filtering data for insights, interactivity, and visual clarity in Tableau.

Weekly Report - Week 3

Objective: To Cover Visualization in Tableau and filters

Detailed Report:

Day 1 and Day 2: Training covered advanced Tableau visualizations: dual-axis charts, combining multiple chart types, using parameters, and optimizing interactivity for insights.
Day 3: Data blending in Tableau: techniques for combining data sources to create integrated visualizations efficiently
Day 4 and Day 5: Basic to advanced filters in Tableau, enabling interactive data exploration and precise analysis in diverse scenarios

Reference Links:

- https://help.tableau.com/current/pro/desktop/en-us/multiple_connections.htm
- https://www.youtube.com/watch?v=KJnyggxzZwE

ACTIVITY LOG FOR THE FOURTH WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 4	Day – 1	Mapping	Mapping in Tableau: Visualizing geospatial data, enhancing location-based insights effectively
	Day - 2	Calculation Fields	Create complex metrics and derive insights for enhanced data analysis
	Day – 3	Quick Table Calculations	Explored Quick table Calculations
	Day – 4	Quick Table Calculations	Mastered quick calculations for instant insights and dynamic visualizations in Tableau
	Day – 5	Parameters	Personalized data exploration using parameters."

Weekly Report - Week 4

Objective: To cover calculation fields and Quick Table Calculations

Detailed Report:

Day 1: Mapping in Tableau training covered spatial data visualization, geocoding, custom maps, and geographic analysis for actionable insights

Day 2: Creating calculated fields in Tableau: formulas, aggregation, conditional logic, and practical applications for analysis.

Day 3 and Day 4: Learn to compute running totals, moving averages, and percent differences easily for effective data analysis.

Day 5: Tableau Parameters: dynamic inputs for enhancing interactivity and customization in. Reference Links

ACTIVITY LOG FOR THE FIFTH WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 5	Day – 1	LOD Expressions	Explored LOD Expressions
	Day - 2	LOD Expressions	Mastered Level of Detail expressions for precise data aggregation
	Day – 3	Dashboard	Dashboard training in Tableau focused on interactivity, insights, and visual clarity
	Day – 4	Dashboard	Proficiency in creating interactive and insightful data driven dashboards in Tableau
	Day – 5	Stories	Effective data storytelling through visual coherence, insights, and narrative structure

Weekly Report - Week 5

Objective: To Cover Dashboard and Story in Tableau

Detailed Report:

Day 1 and Day 2: Training covered Level of Detail (LOD) Expressions in Tableau for advanced analytics and custom aggregations. Practical exercises emphasized application.

Day 3 and Day 4: Training covered creating interactive dashboards in Tableau, emphasizing design, filters, and parameters, with data insights.

Day 5: Training covered creating cohesive narratives with data using Tableau, emphasizing flow, insights, and impactful visualizations for storytelling proficiency.

Reference Links

- https://www.tableau.com/blog/LOD-expressions

https://help.tableau.com/current/pro/desktop/en-us/dashboards_create.htm

https://help.tableau.com/current/pro/desktop/en-us/stories.htm

ACTIVITY LOG FOR THE SIXTH WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 6	Day – 1	Project Work	Detailed traffic density analysis with Tableau
	Day - 2	Project Work	Improved accuracy in Tableau visualizations
	Day – 3	Project Work	Added features for better insights
	Day – 4	Project Work	Completed dashboard layout for clarity
	Day – 5	Project Work	Integrated visualizations for storytelling

Weekly Report - Week 6

Objective: To develop a comprehensive solution for understanding and managing urban traffic density using Tableau visualizations.

Detailed Report: In Week 6, the focus was on the detailed analysis and visualization of urban traffic density using Tableau. The main activities included.

- Day **1:** Conducted detailed traffic density analysis using Tableau for insights.
- Day **2:** Improved visualization accuracy for reliable data representation.
- Day **3:** Added dynamic features like filters and calculated fields for better interactivity.
- Day **4:** Finalized dashboard layout with clarity and user-friendly design.
- Day **5:** Integrated visualizations into cohesive dashboards for impactful storytelling.

ACTIVITY LOG FOR THE SEVENTH WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 6	Day – 1	Project Work	Developed visualizations, integrated datasets
	Day - 2	Project Work	Enhanced interactivity in the project
	Day – 3	Project Work	Implemented real-time traffic updates
	Day – 4	Project Work	Tested dashboard load times
	Day – 5	Project Work	Documentation and presentation

Weekly Report for Week 7: Advanced Project Development

- **Day 1:** Developed visualizations and integrated datasets to create meaningful insights.
- **Day 2:** Enhanced interactivity within the project for improved user experience.
- **Day 3:** Implemented real-time traffic updates to make dashboards dynamic.
- **Day 4:** Tested dashboard load times to ensure performance optimization.
- **Day 5:** Completed project documentation and prepared for final presentation.

ACTIVITY LOG FOR THE EIGHT WEEK

Week	Day & Date	Brief Description of the Daily Activity	Learning Outcome
Week - 6	Day – 1	Self-Paced Learning	Improved visualization techniques
	Day - 2	Self-Paced Learning	Studied traffic analysis implications
	Day – 3	Self-Paced Learning	Developed custom Tableau calculations and expressions to improve visual accuracy.
	Day – 4	Self-Paced Learning	Worked on creating engaging narratives within dashboards.
	Day – 5	Self-Paced Learning	Finalized the Tableau project, ensuring scalability and sustainability for future updates.

Weekly Report for Week 8: Self-Paced Refinement and Finalization

- **Day 1:** Improved visualization techniques to enhance data presentation.
- **Day 2:** Studied traffic analysis implications to identify actionable insights.
- **Day 3:** Developed custom Tableau calculations and expressions for visual accuracy.
- **Day 4:** Worked on creating engaging narratives within dashboards for impactful storytelling.
- **Day 5:** Finalized the Tableau project, ensuring scalability and sustainability for future updates.

Tableau Visualizations of Urban Traffic Density

Problem Statement:

Urban centers worldwide face significant challenges related to traffic density, which adversely affects both the environment and quality of life. As cities grow, so does the complexity of managing traffic flow, congestion, and related issues. Current methods often lack real-time insights and comprehensive strategies to effectively mitigate these challenges.

Pre-Requirements for Tableau Visualizations of Urban Traffic Density Project:

Before embarking on the development of Tableau visualizations for managing urban traffic density, it is crucial to address several pre-requisites to ensure the project's success. These pre-requirements include:

1) **Data Sources and Integration:**

- **Traffic Data:** Identify and acquire comprehensive traffic data sources, including real-time data from traffic sensors, historical data from transportation agencies, GPS data from vehicles, and data from public transport schedules.
- **Geographical Data:** Obtain geospatial data such as road networks, traffic signal locations, and city boundaries to overlay with traffic data for spatial analysis.
- **Data Quality:** Ensure data cleanliness, accuracy, and consistency through data cleansing and preprocessing steps. Establish protocols for data updates and maintenance.

2) **Infrastructure and Technology:**

- **Tableau Software:** Acquire licenses for Tableau Desktop and/or Tableau Server, depending on the deployment needs (development vs. production).
- **Data Integration Tools:** Implement tools or scripts for integrating diverse data sources into Tableau, ensuring compatibility and efficiency.
- **Hardware and Cloud Services:** Determine the necessary hardware requirements (e.g., servers, storage) and cloud services (e.g., AWS, Azure) for hosting data and running Tableau Server, if applicable.

3) **Team and Expertise:**

- **Project Team:** Formulate a multidisciplinary team including project managers, data engineers, Tableau developers, data analysts, and domain experts in urban transportation.
- **Tableau Expertise:** Ensure team members have proficiency in Tableau software, including dashboard design, data visualization best practices, and familiarity with Tableau Server administration if deploying dashboards for wider access.
- **Domain Knowledge:** Include experts in urban planning, transportation engineering, and data analytics to provide insights and validation for dashboard designs and data interpretations.

4) **Stakeholder Engagement:**

    - **Identify Stakeholders:** Determine key stakeholders including city officials, transportation authorities, urban planners, and community representatives who will utilize and benefit from the Tableau visualizations.

- **Requirements Gathering:** Conduct workshops and meetings to gather requirements and expectations from stakeholders regarding the types of insights, metrics, and functionalities they need from the Tableau dashboards.
- **Feedback Mechanism:** Establish a feedback loop to incorporate stakeholder inputs during the development and testing phases to ensure the Tableau visualizations meet user needs effectively.

DOWNLOAD TABLEAU PUBLIC DESKTOP:

https://www.tableau.com/products/desktop/download

Objectives:

- Data Acquisition and Integration.
- Dashboard Design and Development.
- Real-time Monitoring and Analytics.
- Stakeholder Engagement and User Feedback.
- Performance Evaluation and Optimization.
- Deployment and Training.
- Impact Assessment and Reporting.
- Sustainability and Scalability.

Tasks:-

1. The primary objective of the project is to develop a comprehensive solution for understanding and managing urban traffic density in cities.

2. Develop a clear roadmap outlining the project's goals, milestones, and timelines. This involves setting achievable objectives and allocating resources effectively to ensure timely completion.

Dataset: https://www.kaggle.com/datasets/tanishqdublish/urban-traffic-density-in-cities

SOLUTION DEVELOPMENT PROCEDURES:

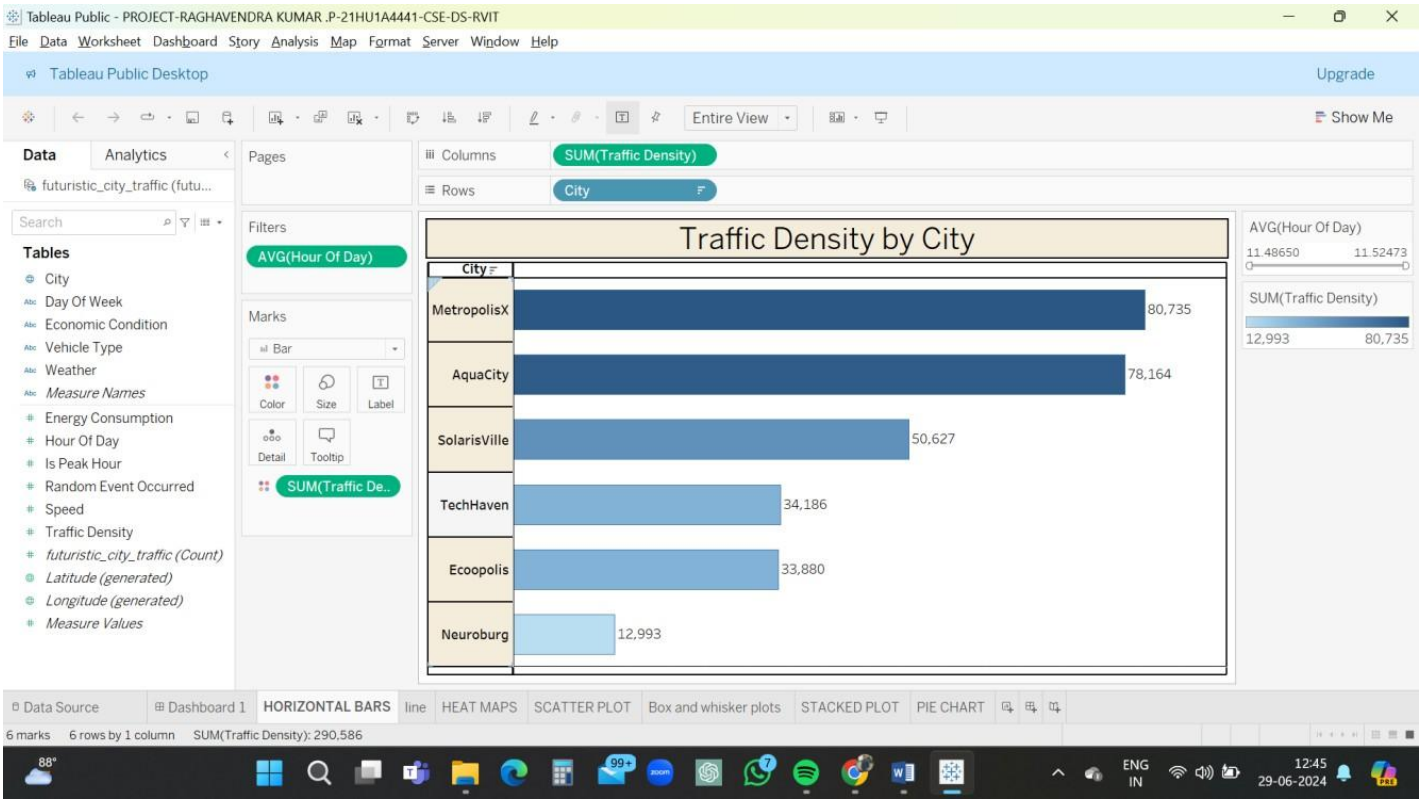
TABLEAU WORKBOOK FILE:

https://drive.google.com/file/d/10HQSO4I7MvcPzP0KsW0foBGmE3TyllmR/view?usp=drive_link

HORIZONTAL BAR CHART:

Visualization of Traffic Density by City Using Horizontal Bar Charts:

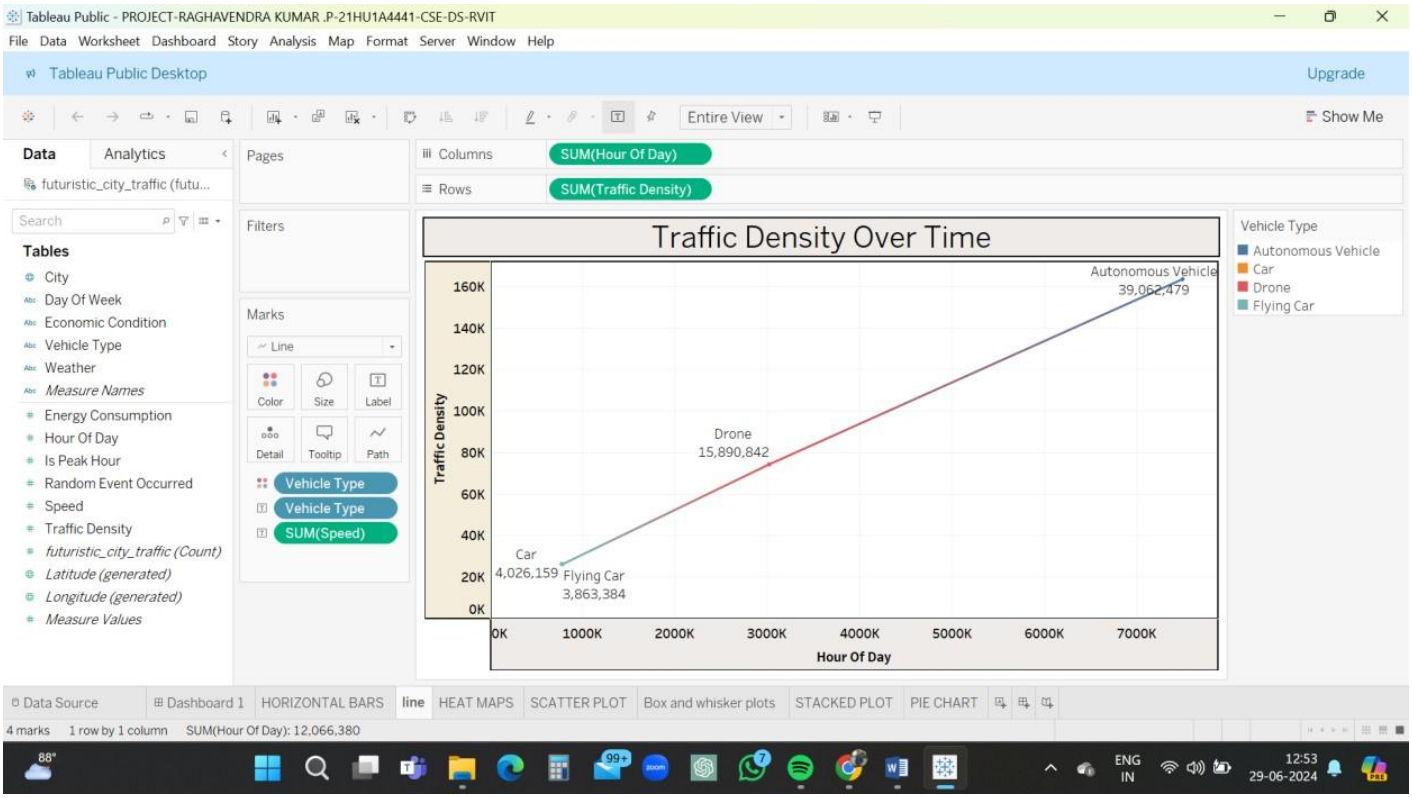
1. **Data Preparation:**
   - Import the dataset into Tableau, ensuring all relevant fields (City and Traffic Density) are included.
   - Verify that each record represents a unique snapshot of traffic density across the six fictional cities.
2. **Setting up the Visualization:**
   - Drag the "City" field to the Rows shelf and the "Traffic Density" field to the Columns shelf.
   - Choose the "Bar" mark type to display each city's traffic density as horizontal bars.



LINE CHART:

Visualization of Traffic Density over Time Using a Line Chart:

1. **Data Preparation:**
   - Import the dataset into Tableau, ensuring all relevant fields (Date/Time, Traffic Density) are correctly recognized.
   - If the dataset doesn't have a specific date/time field, create one by combining "Day of Week" and "Hour of Day" fields into a timestamp format.
2. **Setting up the Visualization:**
   - Drag the date/time field (or the combined timestamp field) to the Columns shelf.
   - Drag the "Traffic Density" field to the Rows shelf.
   - Tableau will automatically aggregate the traffic density values over time. Ensure that the aggregation (e.g., average, sum) reflects your analysis needs (e.g., average traffic density per hour).



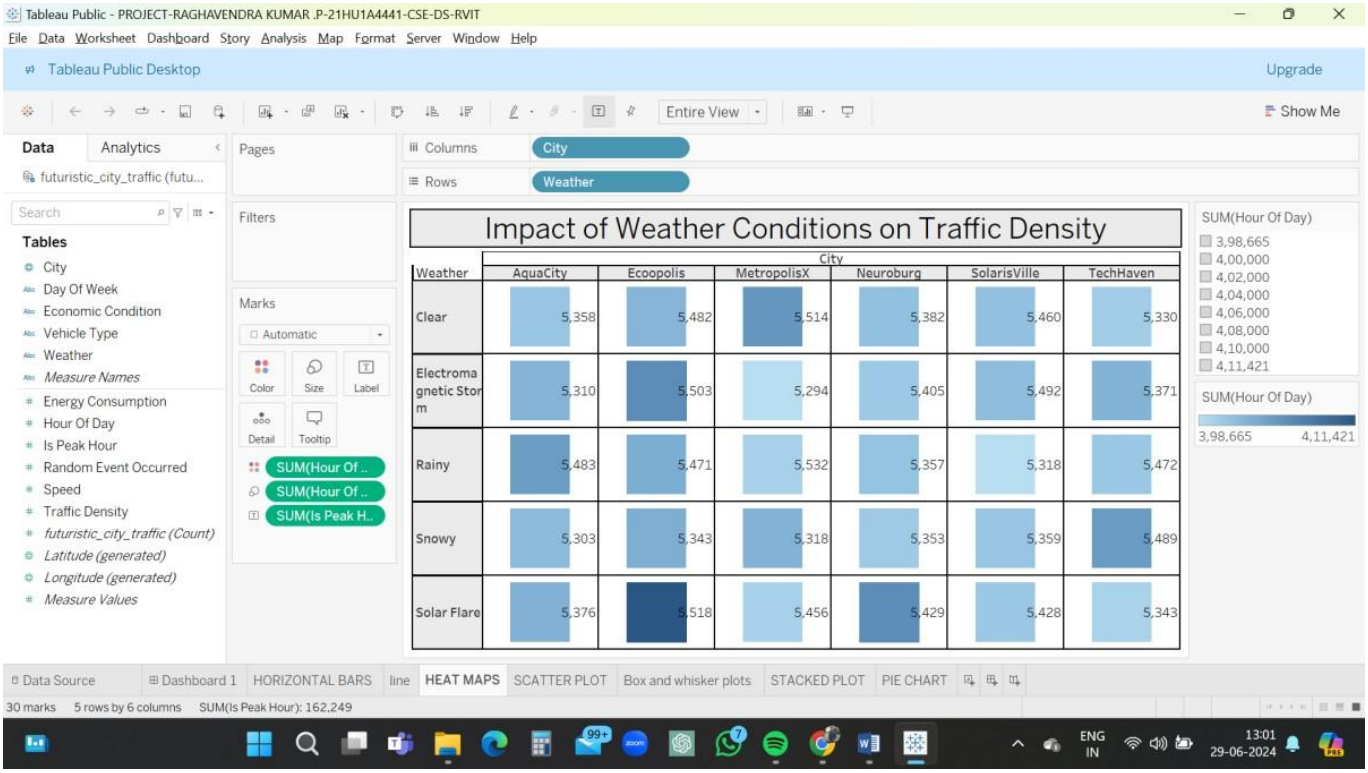
HEAT MAPS:

Visualization of Impact of Weather Conditions on Traffic Density Using Heat Maps:

1. **Data Preparation:**
   - Import the dataset into Tableau, ensuring all relevant fields (Weather Conditions, Traffic Density) are included.

- Verify that each record represents a unique snapshot of traffic conditions across different weather scenarios in the six fictional cities.

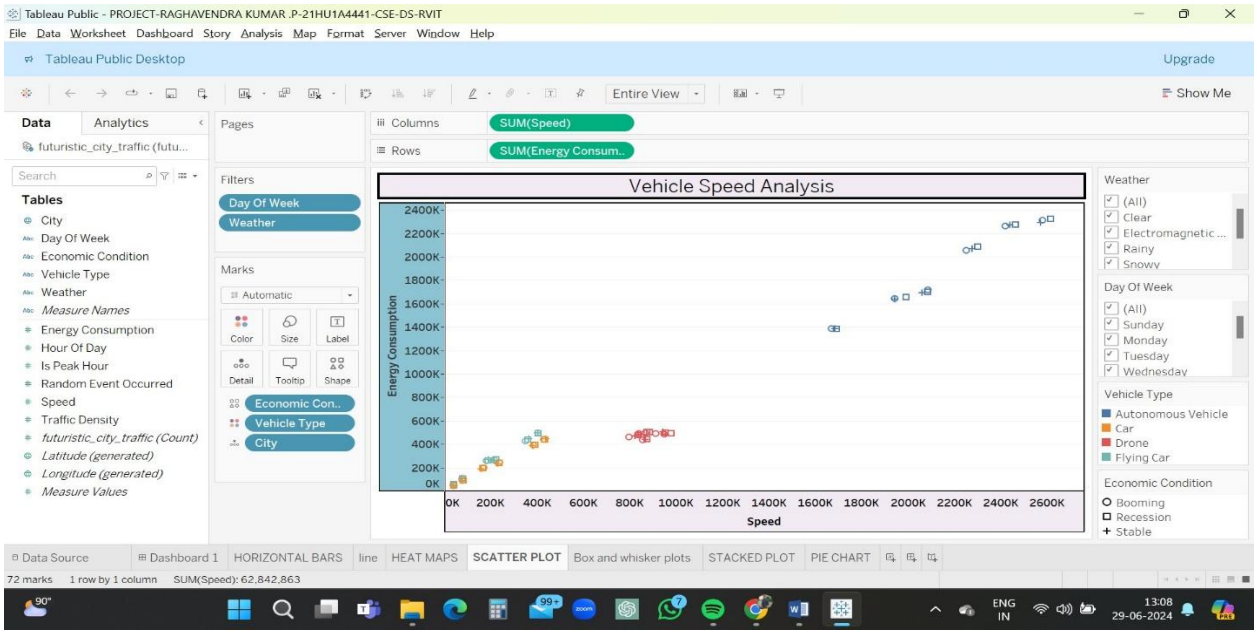
2. **Setting up the Visualization:**
   - Drag the "Weather Conditions" field to the Columns shelf and the "Day of Week" or "Hour of Day" field to the Rows shelf.
   - Drag the "Traffic Density" field to the Color shelf to represent traffic density variations with color intensity in the heat map.



SCATTER PLOT:

Visualization of Vehicle Speed Analysis Using Scatterplots:

1. **Data Preparation:**
   - Import the dataset into Tableau, ensuring all relevant fields (Vehicle Type, Speed) are included.
   - Verify that each record represents a unique snapshot of vehicle speed data across different vehicle types in the six fictional cities.
2. **Setting up the Visualization:**
   - Drag the "Speed" field to the Columns shelf and the "Energy Consumptions" field to the Rows shelf.
   - Choose the "Circle" mark type to represent each data point as a circle on the scatterplot.



BOX AND WHISKER PLOTS:

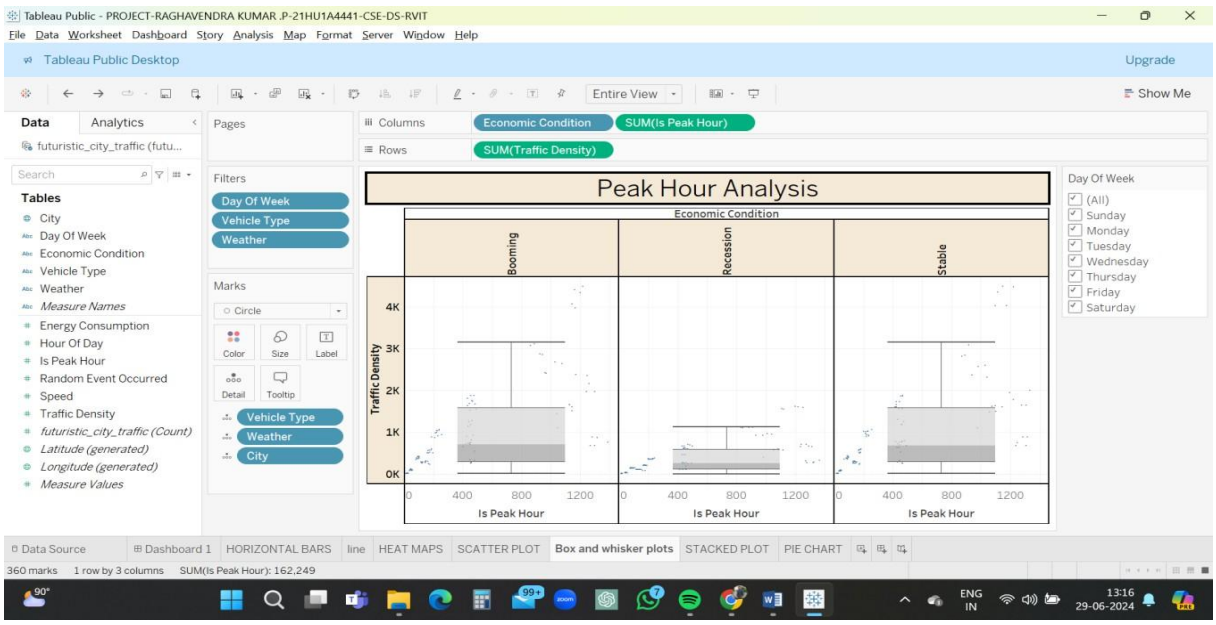
Visualization of Peak Hour Analysis Using Box and Whisker Plots:

1. **Data Preparation:**

- Import the dataset into Tableau, ensuring all relevant fields (Is Peak Hour, Traffic Density) are included.
- Verify that each record accurately reflects whether it occurred during peak traffic hours and includes corresponding traffic density data.

2. **Setting up the Visualization:**

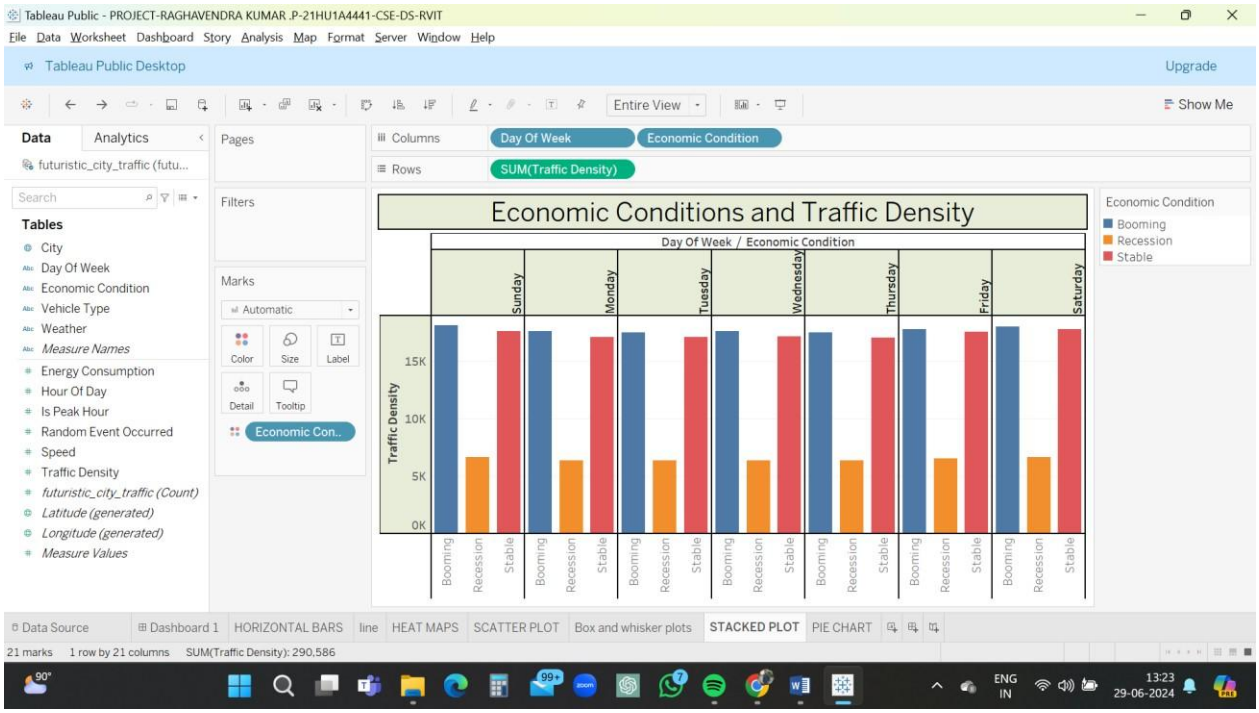
- Drag the "Is Peak Hour" field to the Columns shelf and the "Traffic Density" field to the Rows shelf.
- Choose the "Box Plot" mark type to visualize the distribution of traffic density during peak and non-peak hours.



STACKED PLOT:

Visualization of Economic Conditions and Traffic Density Using Stacked Plots:

1. **Data Preparation:**
    - Import the dataset into Tableau, ensuring all relevant fields (Economic Conditions, Traffic Density) are included.
    - Verify that each record accurately reflects the economic state of the city and corresponding traffic density data.
2. **Setting up the Visualization:**
    - Drag the "Economic Conditions" field to the Columns shelf and the "Traffic Density" field to the Rows shelf. Choose the "Area" mark type to visualize stacked plots, which will show the distribution of traffic density across different economic conditions.



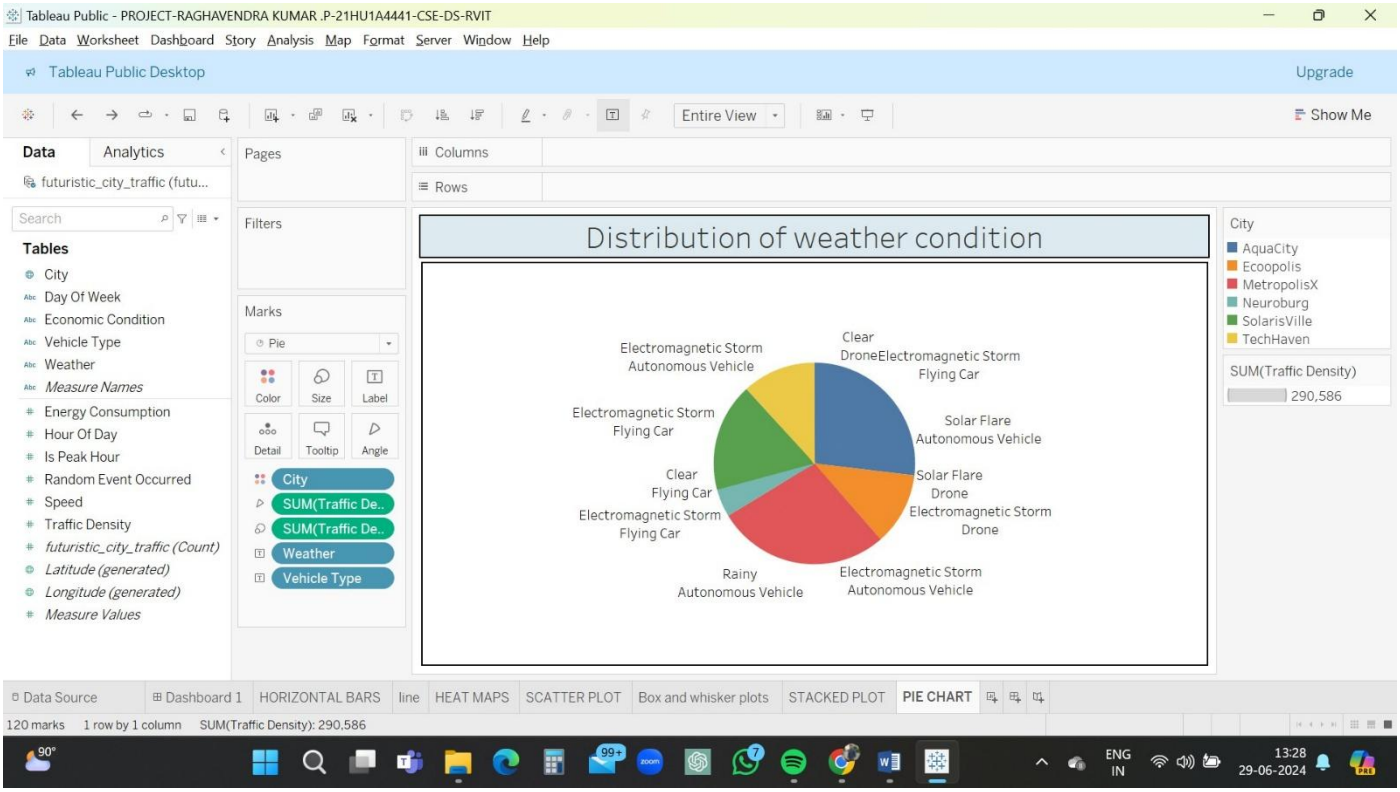
PIE CHART:

Visualization of Distribution of Weather Conditions Using Pie Chart:

1. **Data Preparation:** ○ Import the dataset into Tableau, ensuring the "Weather Conditions" field is included.
    - Verify that each record accurately reflects the current weather condition snapshot across the six fictional cities.
2. **Setting up the Visualization:**
    - Drag the "Weather Conditions" field to the "Angle" or "Size" shelf in Tableau.

- Choose the "Pie" mark type to visualize the distribution of different weather conditions as segments of a pie chart.

3. **Configuring the Pie Chart:**
   - Tableau will automatically create segments in the pie chart corresponding to each unique weather condition (e.g., Clear, Rainy).
   - Ensure that colours used for each segment are distinct and easily distinguishable to enhance readability.
4. **Adding Labels and Percentages:**
   - Display labels and percentages within or outside each pie chart segment to provide precise information on the proportion of each weather condition.
   - Customize the label format to include both the weather condition name and the percentage of records associated with it.



Conclusion:

This dataset offers extensive opportunities for visualization-driven insights into traffic patterns, factors affecting traffic conditions, and the development of sophisticated algorithms for futuristic urban environments. By leveraging visual analytics techniques, stakeholders can gain deeper understanding and actionable intelligence to optimize traffic management strategies and enhance urban mobility solutions effectively.

Student Self Evaluation of the Short-Term Internship

Student Name : Padharla Raghavendra Kumar

Registration Number :21HU1A4441

Term Of Internship :

Date Of Evaluation :

Please rate your performance in the following areas:

Rating Scale: **Letter grade of CGPA calculation to be provided**

1	Oral communication	1	2	3	4	5
2	Written communication	1	2	3	4	5
3	Proactiveness	1	2	3	4	5
4	Interaction ability with community	1	2	3	4	5
5	Positive Attitude	1	2	3	4	5
6	Self-confidence	1	2	3	4	5
7	Ability to learn	1	2	3	4	5
8	Work Plan and organization	1	2	3	4	5
9	Professionalism	1	2	3	4	5
10	Creativity	1	2	3	4	5
11	Quality of work done	1	2	3	4	5
12	Time Management	1	2	3	4	5
13	Understanding the Community	1	2	3	4	5
14	Achievement of Desired Outcomes	1	2	3	4	5
15	**OVERALL PERFORMANCE**	**1**	**2**	**3**	**4**	**5**

Date: **Signature of the Student**

Internal Evaluation for Short Term Internship (On-site/Virtual)

Objectives:

- To integrate theory and practice.
- To learn to appreciate work and its function towards the future.
- To develop work habits and attitudes necessary for job success.
- To develop communication, interpersonal and other critical skills in the future job.
- To acquire additional skills required for the world of work.

Assessment Model:

- There shall only be internal evaluation.
- The Faculty Guide assigned is in-charge of the learning activities of the students and for the comprehensive and continuous assessment of the students.
- The assessment is to be conducted for 100 marks.
- The number of credits assigned is 4. Later the marks shall be converted into grades and grade points to include finally in the SGPA and CGPA.
- The weightings shall be:
    - Activity Log 25 marks
    - Internship Evaluation 50marks
    - Oral Presentation 25 marks
- Activity Log is the record of the day-to-day activities. The Activity Log is assessed on an individual basis, thus allowing for individual members within groups to be assessed this way. The assessment will take into consideration the individual student's involvement in the assigned work.
- While evaluating the student's Activity Log, the following shall be considered –

    a. The individual student's effort and commitment.

b. The originality and quality of the work produced by the individual student.

c. The student's integration and co-operation with the work assigned.

d. The completeness of the Activity Log.

- The Internship Evaluation shall include the following components and based on Weekly Reports and Outcomes Description

Description of the Work Environment.

a. Description of the Work Environment.

b. Real Time Technical Skills acquired

c. Managerial Skills acquired

d. Improvement of Communication Skills

e. Team Dynamics f. Technological Developments Recorded

INTERNAL ASSESSMENT STATEMENT

Name of the student : Padharla Raghavendra Kumar

Programme of Study : B.TECH

Year of Study :

Group : CSE (DS)

Register Number : 21HU1A4441

Name of the College : CHEBROLU ENGINEERING COLLEGE

University : JNTUK

Sl.No	Evaluation Criterion	Maximum Marks	Marks Awarded
1.	Activity Log	25	
2.	Internship Evaluation	50	
3.	Oral Presentation	25	
	GRAND TOTAL	100	

Certified by:

Date: Signature of the Faculty Guide:

Date: Signature of the Head of Department/Principal:

Seal: