Major Port Traffic & Capacity using IBM Cognos Analytics

A PROJECT REPORT

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1. **PROJECT DESCRIPTION:**

The Indian Railways has a capital base of about Rs. 100000 crores and is often referred to as the lifeline of the Indian economy because of its predominance in transportation of bulk freight and long distance passenger traffic. The network criss-crosses the nation, binding it together by ferrying freight and passengers across the length and breadth of the country. As the Indian economy moves into a high growth trajectory the Railways have also stepped-up developmental efforts and are preparing themselves for an even bigger role in the future.

Goal of the Project:

• To regain some of the market, it has lost over past decades and regain market share in some commodities and overcome the challenges and to maintain sustainable growth in all its commodities.

• Reducing the congestion on rail corridors and improving port connectivity.

• The development of two Dedicated Freight Corridors across key ports

Solution Requirements:

Services Used: IBM Cognos Analytics

2. **TECHNOLOGY & CONCEPTS Involved:**

Data Analytics:

Data analytics (DA) is the process of examining data sets in order to find trends and draw conclusions about the information they contain. Increasingly, data analytics is done with the aid of specialized systems and software. Data analytics technologies and techniques are widely used in commercial industries to enable organizations to make more-informed business decisions. Scientists and researchers also use analytics tools to verify or disprove scientific models, theories and hypotheses. As a term, data analytics predominantly refers to an assortment of applications, from basic business intelligence (BI), reporting and online analytical processing (OLAP) to various forms of advanced analytics. Data analytics initiatives can help businesses increase revenue, improve operational efficiency, optimize marketing campaigns and bolster customer service efforts. Analytics also enable organizations to respond quickly to emerging market trends and gain a competitive edge over business rivals. The

ultimate goal of data analytics, however, is boosting business performance.

Four main types of data analytics

 1. Predictive data analytics Predictive analytics may be the most commonly used category of data analytics. Businesses use predictive analytics to identify trends, correlations, and causation. The category can be further broken down into predictive modelling and statistical modelling.

2. Prescriptive data analytics Prescriptive analytics is where AI and big data combine to help predict outcomes and identify what actions to take. This category of analytics can be further broken down into optimization and random testing. Using advancements in ML, prescriptive analytics can help answer questions such as "What if we try this?" and "What is the best action?" We can test the correct variables and even suggest new variables that offer a higher chance of generating a positive outcome.

3. Diagnostic data analytics Diagnostic data analytics is the process of examining data to understand cause and event or why something happened. Techniques such as drill down, data discovery, data mining, and correlations are often employed. Diagnostic data analytics help answer why something occurred.

Like the other categories, it too is broken down into two more specific categories:

1. Discover and alerts

2. Query and Drill Downs

   Discover and alerts: notify of a potential issue before it occurs
   Query and drill downs: used to get more detail from a report

3. Descriptive data analytics Descriptive analytics are the backbone of reporting—it's impossible to have business intelligence (BI) tools and dashboards without it. It addresses basic questions of "how many, when, where, and what."

Project Flow:

· Users create multiple analysis graphs/charts/Visualizations.

· Using the analyzed chart creation of Dashboard is done.

· Saving and visualizing the final dashboard in the IBM Cognos Analytics.

To accomplish this, we have to complete all the activities and tasks listed below:

· IBM Cloud Account

· Login to Cognos Analytics

· Working with the Dataset

è Understanding the Dataset

è Loading the Dataset

1. **Flowchart:**
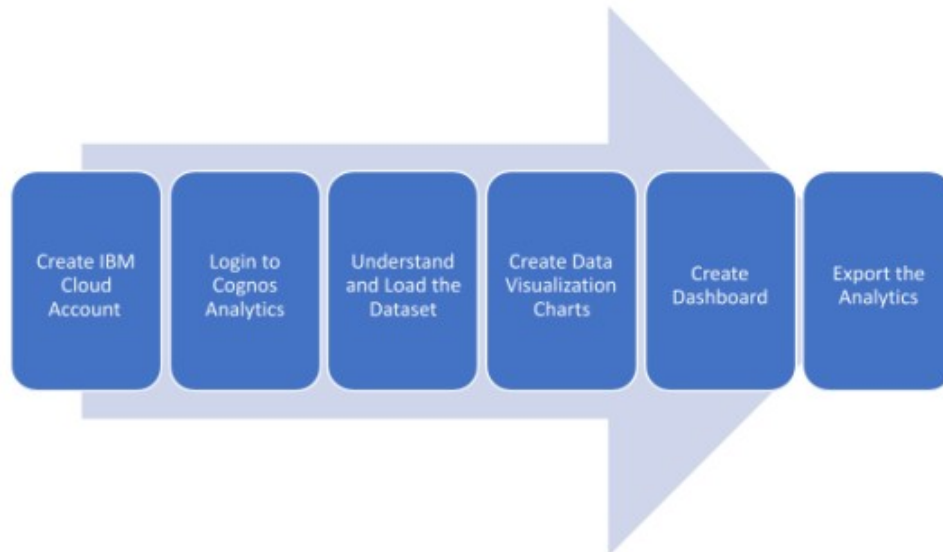
2. **PROBLEM STATEMENT:**

Because of its dominance in the transportation of bulk freight and long-distance passenger traffic, the Indian Railways is sometimes referred to as the lifeline of the Indian economy, with a capital base of almost Rs. 100000 crores. The network criss crosses the country, connecting it by ferrying freight and passengers across the country's length and width. As the Indian economy continues to grow at a rapid pace, the railways have increased their development efforts and are preparing for a larger role in the future. As a data analyst we need to:

• To regain some of the market, it has lost over past decades and regain market share in some commodities and overcome the challenges and to maintain sustainable growth in all its commodities.

• Reducing the congestion on rail corridors and improving port

connectivity.

- The development of two Dedicated Freight Corridors across key port

3. **PROCEDURE:**

To accomplish the objective, we have to follow the activities and tasks listed below:

· creating IBM Cloud Account

· Login to Cognos Analytics

· Working with the Dataset

· Understanding the Dataset

· Loading the Dataset

· Data Prep - Conversion of Data and Calculations

· Do required calculations in Dataset

· Finally, create Data Visualizations Charts

· Port-wise Traffic Distribution, Port wise Capacity Distribution

· Port-wise Traffic vs Capacity by Line Chart

· Port-wise Traffic Projected vs Achieved by Column Chart

· Port-wise Traffic Projected vs Achieve by Stacked Column Chart

· Port-wise Total Capacity Projects vs Total Capacity Achieve by Line and Bar Chart

· Port-wise Traffic Projects vs Total Projected by Area Chart

· Port-wise Total Capacity Achieve, Traffic Achieved using Stacked Bar

· Filters

· Port-wise Total Capacity Achieved using Map

· Summary Cards and Visual using Total Capacity vs Actual Capacity Column Chart So we all know the first 2 steps and can do them easily. So we shall move on and continue from 3rd step.

Working with the Dataset Before we build a view and do analysis of our data, we must first connect the data to IBM Cognos. Cognos supports connecting to a wide variety of data, stored in a variety of places. The data can be stored on our computer in a spreadsheet or a text file, or in a big data, relational, or cube (multidimensional) database on a server in our enterprise. Understanding the Dataset

This dataset consists information about used 'Major Port : Traffic and its Capacity' It has 7 columns each columns consists information about 'Major Port : Traffic and its Capacity' like Traffic in Eleventh Plan (MT) (2011-12)Proj. : traffic projected in 11th plan of project , i.e; 2011-12 session , Traffic in Eleventh Plan (MT) (2011-12) Ach. : traffic achieved in 11th plan of project , i.e; 2011-12 session , Traffic in Eleventh Plan (MT) (2011- 12) % : traffic percentage in 11th plan of project , i.e; 2011-12 session , Total Capacity in Eleventh Plan (MT) (2011-12) Proj. : total capacity projected in 11th plan of project , i.e; 2011- 12 session, Total Capacity in Eleventh Plan (MT) (2011-12) Ach. : total capacity achieved in 11th plan of project , i.e; 2011-12 session Total Capacity in Eleventh Plan (MT) (2011-12) % : total capacity percentage in 11th plan of project , i.e; 2011-12 session & Port : name of the port

4. **ADVANTAGES AND DISADVANTAGES:**

   Advantages:

● Enhanced Visibility: Dashboards provide greater visibility with information available whenever it is required to ensure businesses are better placed to respond to changing market conditions

● Timesaving Efficiency: With dashboards, we are no longer wasting valuable time generating reports from multiple systems. Instead, data is drawn from a source and displayed as an easy to interpret visual overview

● Better Forecasting: With greater insight into the data, future demand can be more accurately predicted using historic information. Businesses can be more effectively planned for demand fluctuations, setting measurable goals and deliverables for greater success

● Better Decision Making: Whether you're providing reporting and analysis for the entire organization or functional areas of the business, a dashboard allows companies to analyze key data quickly and meticulously. Visualized interactivity serves to deliver overwhelming amounts of data in a way that is easy to understand. With the ability to easily identify what the data really means; better decisions can be made relevant to the business.

Disadvantages:

●Flashy or cluttered design, with users attempting to incorporate too much information without understanding constraints or considering their specific needs from the range of different measurables detailed data analysis provides.

● The technology used in the development of dashboards differs from other software solutions already employed in organizations and can be initially difficult to understand.

● The business has no predetermined rules and hierarchies for how dashboard metrics are used. This means each employee can use the metrics in different ways, resulting in a diverse set of data being report
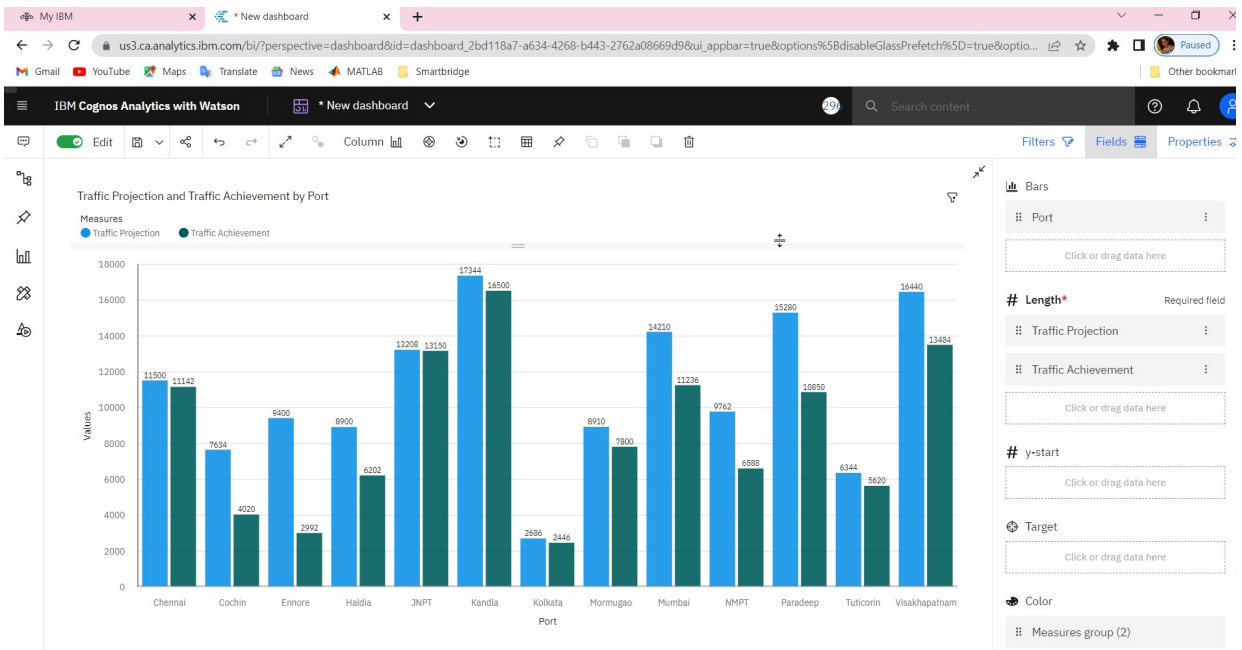
5. **List Of Figures:**

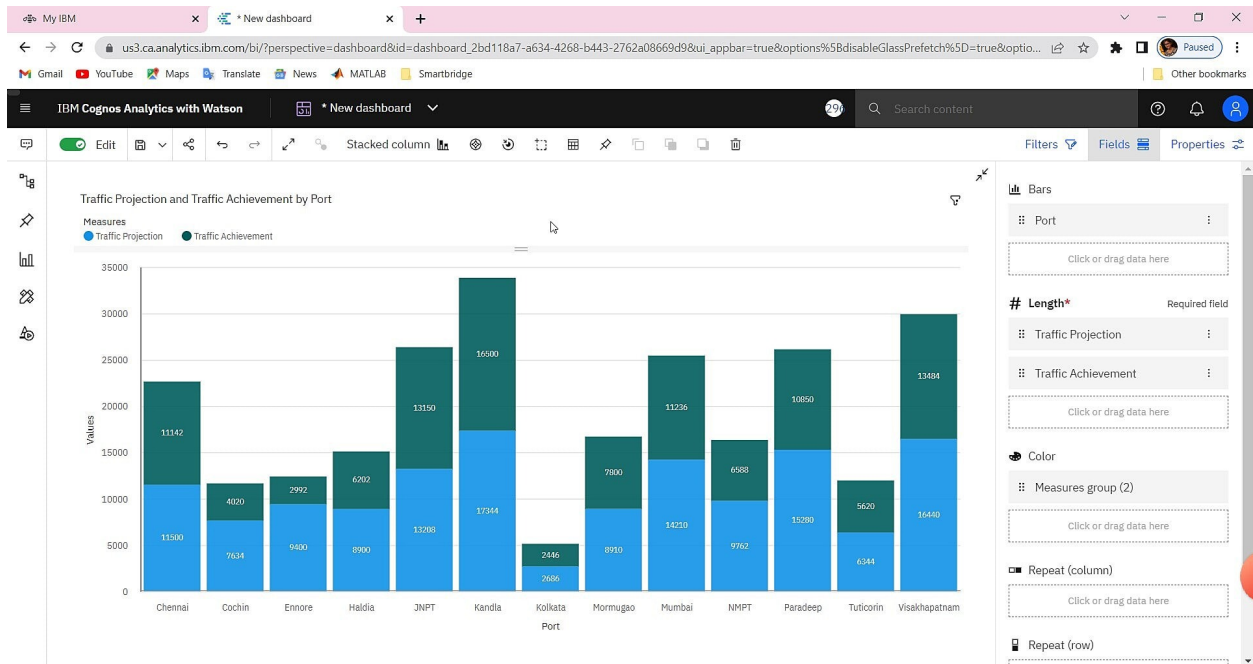1. Port-Wise Traffic Distribution, Port Wise Capacity Distribution
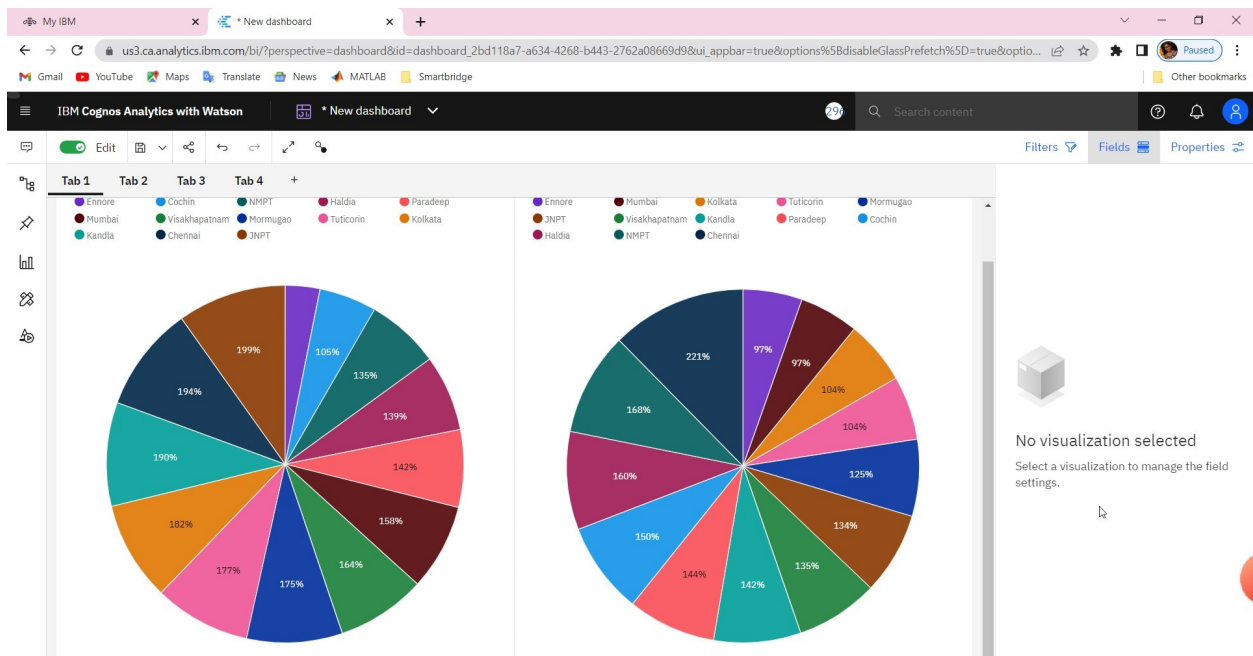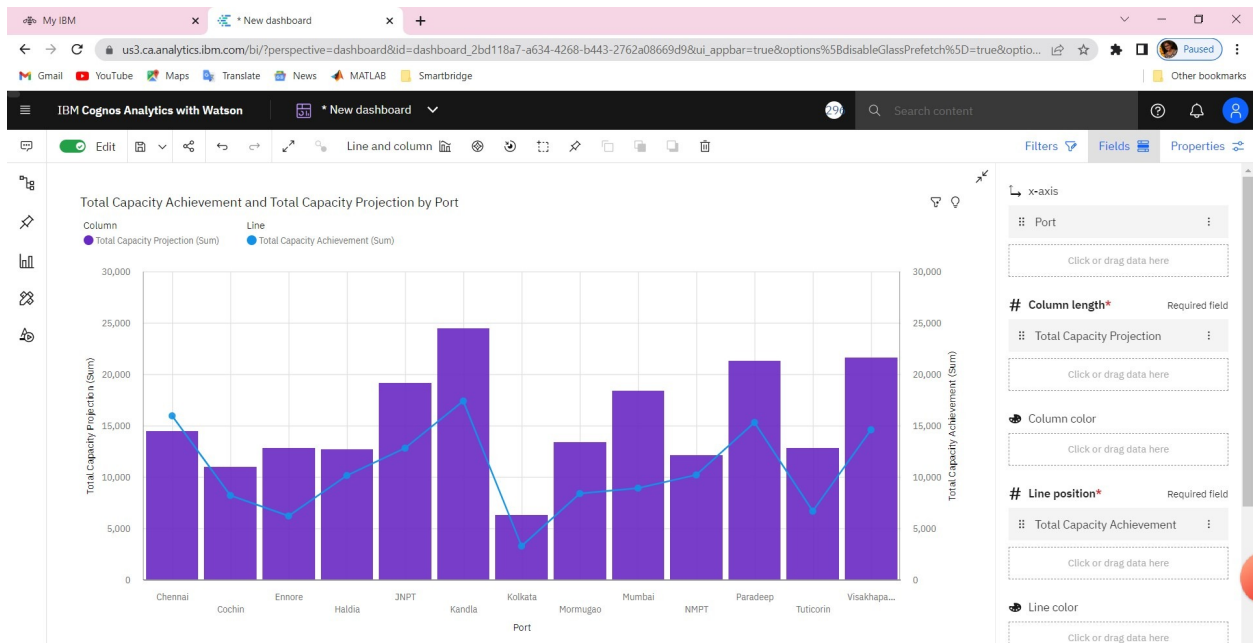
2. Port-Wise Traffic vs Capacity By Line Chart
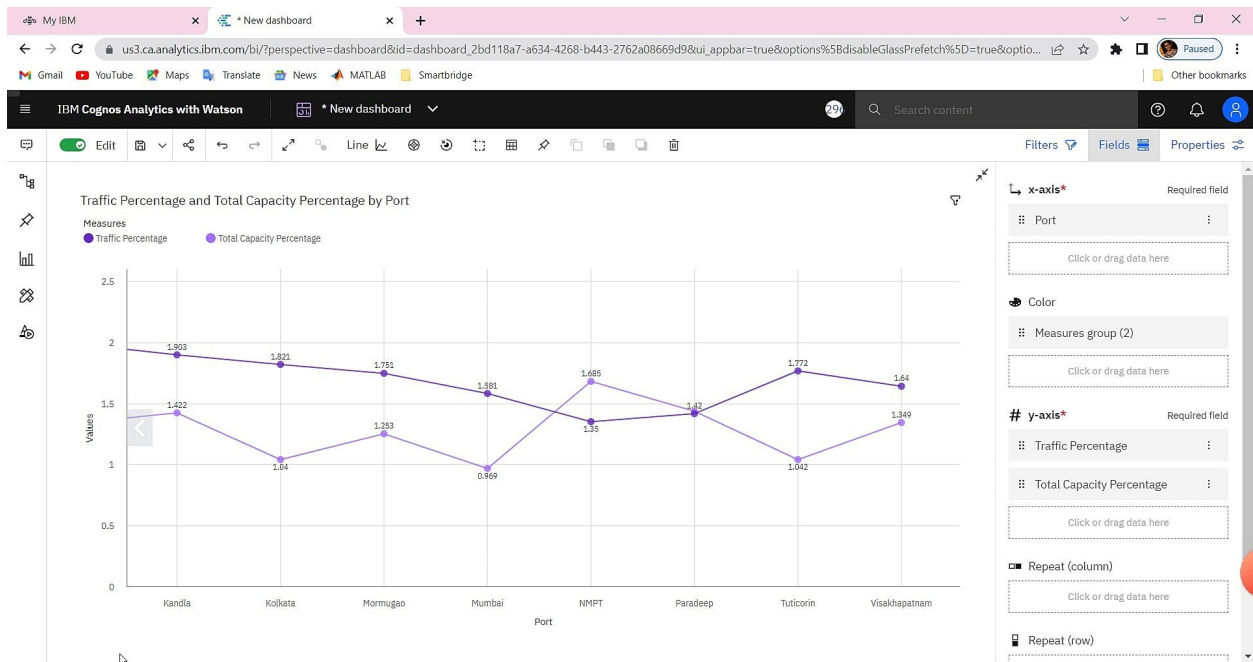
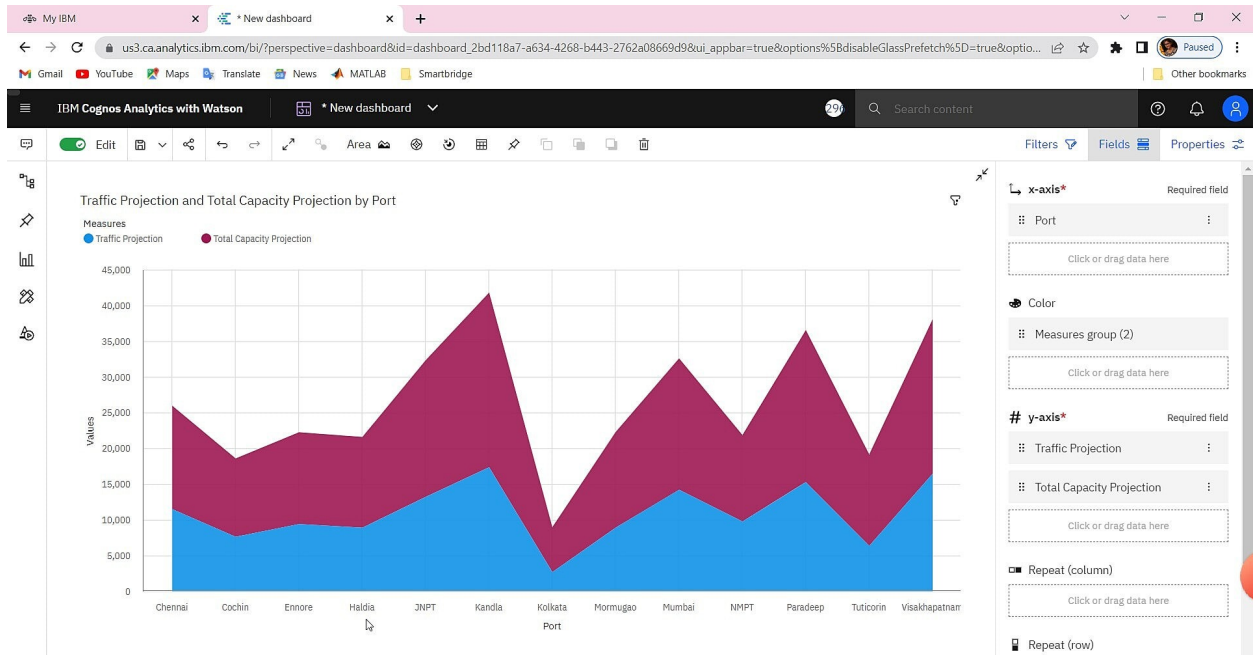## 3. Port-Wise Traffic Projected vs Achieved By Column Chart

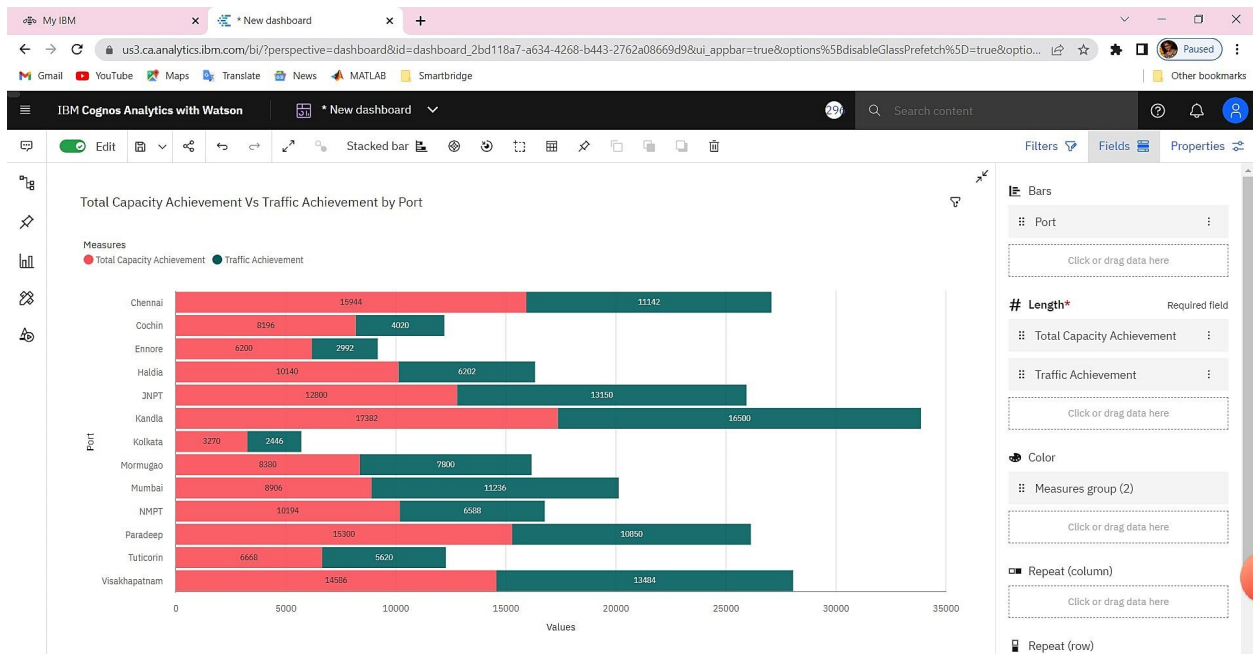## 4. Port-Wise Traffic Projected vs Achieved By Stacked Column Chart

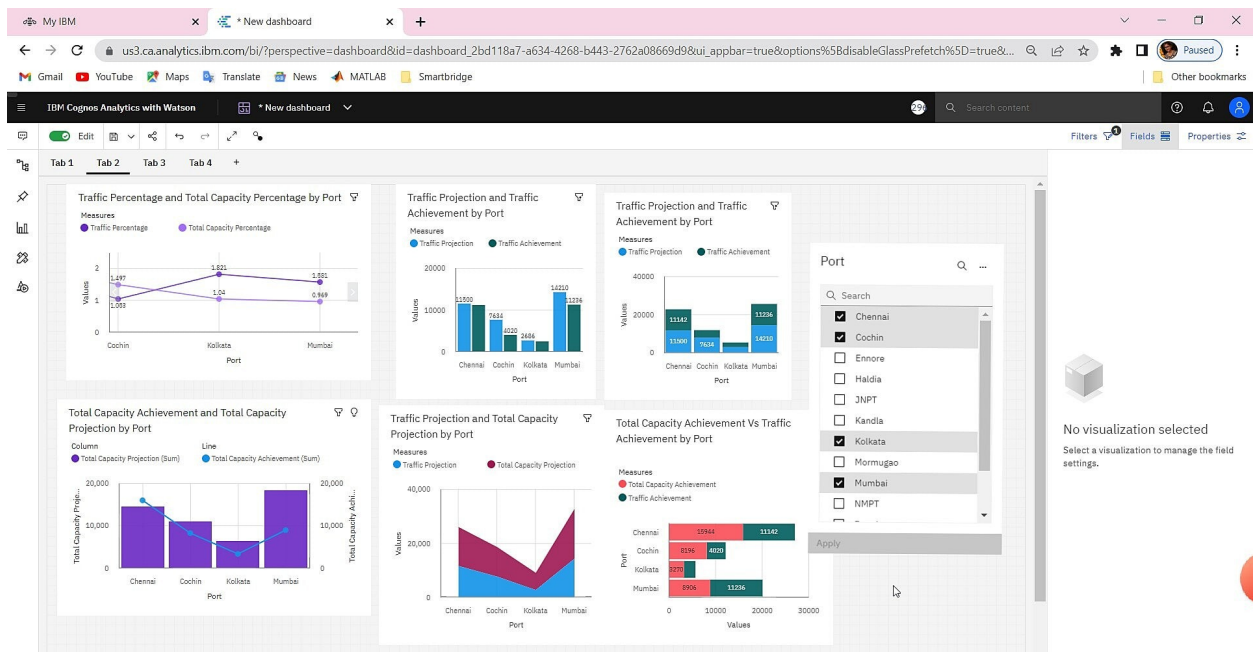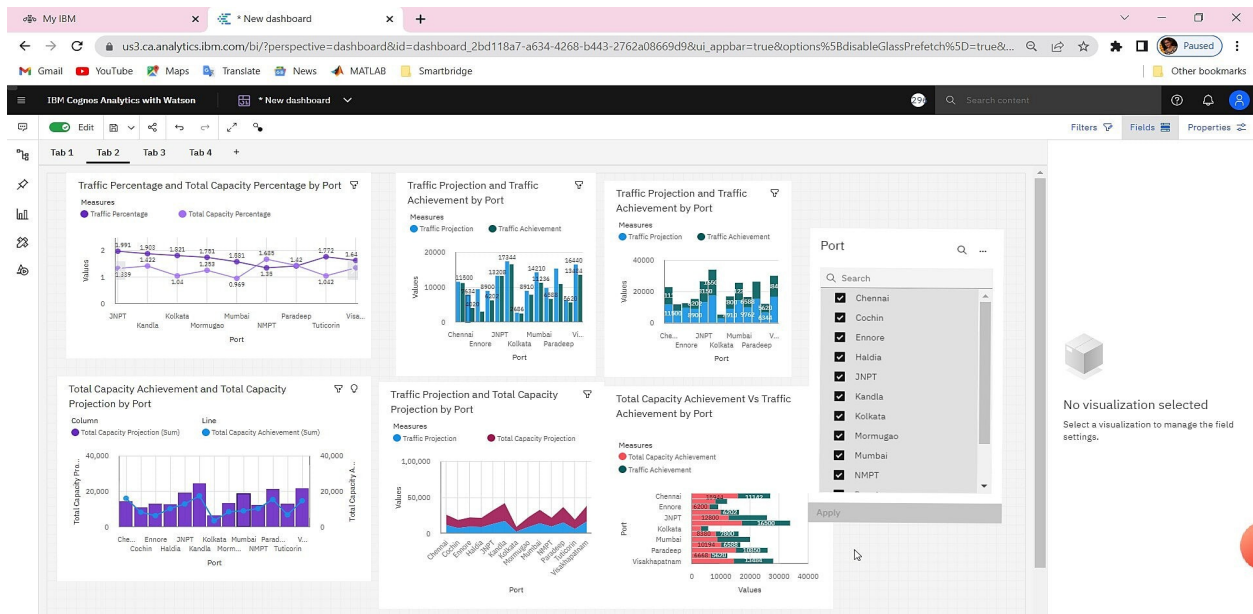## 5. Port-Wise Total Capacity Projects Vs Total Capacity Achieve By Line And Bar Chart

6. Port-Wise Traffic Projects vs Total Projected By Area Chart

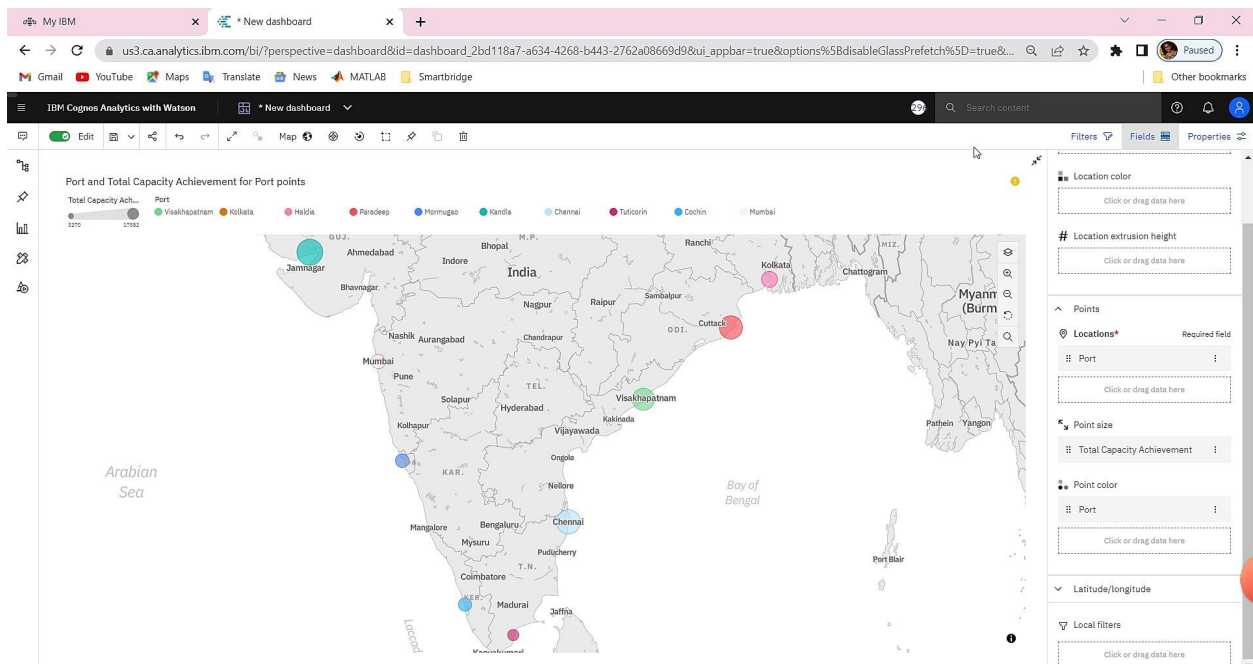## 7. Port-Wise Total Capacity Achieve, Traffic Achieved Using Stacked Bar
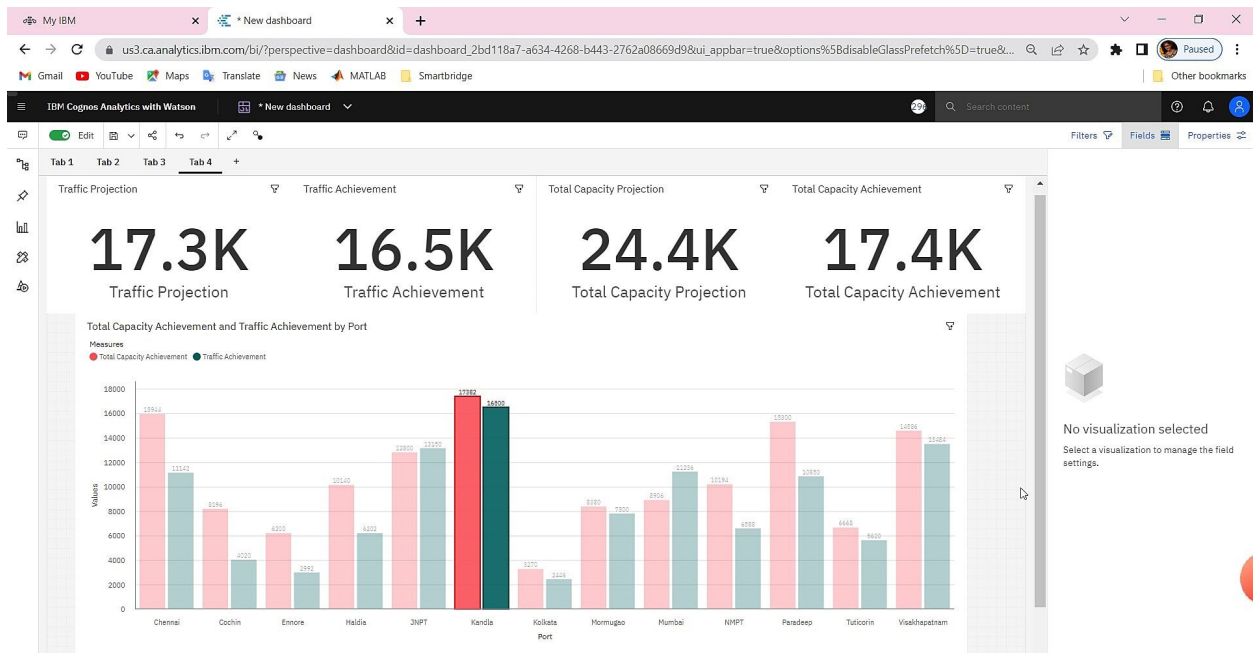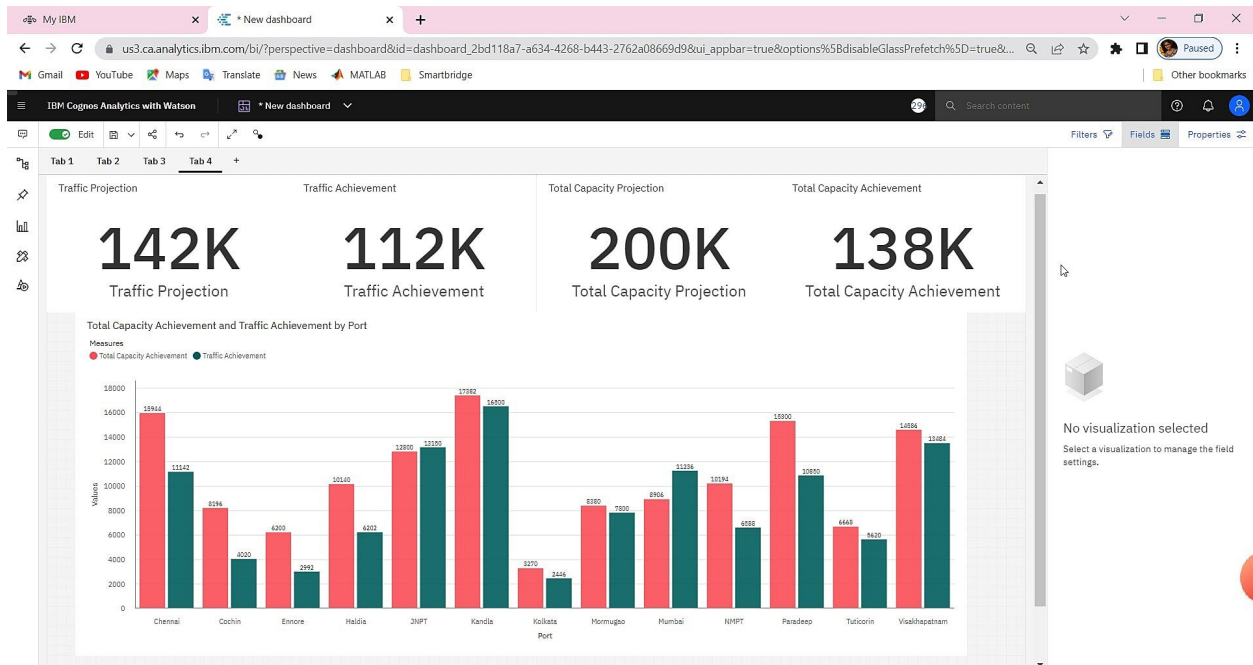
8. Filters

9. Port-Wise Total Capacity Achieved Using Map

10. Summary Cards And Visual Using Total Capacity Vs Actual Capacity Column Chart

6. **CONCLUSION:**

This way, with the help of diagrams, graphs, and maps we can understand given data. This understanding of data allows us to ask the right questions to reach our desired goals by optimizing methods. With this project, we learned how to upload and prepare data. We also statistical concepts which helped in calculations and plotting of graphs and maps to make a dashboard.