DHL Logistics Facility Data Analytics Using IBM Cognos Analytics

A PROJECT REPORT

By

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Project Description:

INTRODUCTION

DHL is an international Umbrella brand and trademark for the courier, package delivery and express mail service, which is a division of the German logistics firm Deutsche Post. The company group delivers over 1.6 billion parcels per year.

The company DHL itself was founded in San Francisco, USA, in 1969 and expanded its service throughout the world by the late 1970s. In 1979, under the name of DHL Air Cargo, the company entered the Hawaiian Islands with an inter-island cargo service using two DC-3 and four DC-6 aircraft. Adrian Dalsey and Larry Hillblom personally oversaw the daily operations until its eventual bankruptcy closed the doors in 1983. At its peak, DHL Air Cargo employed just over 100 workers, management, and pilots.

Goal of the Project:

To provide Analytics to improve New Marks and grow the business.

Content:

This dataset contains metadata of DHL locations along with the address and contact details.

LITERATURE SURVEY

Existing Problem:

- If we are finding unusual patterns within our data analysis or our statistical significance is not strong enough, we might not have enough data to make valid conclusions.
- Without doing data analysis, we won't get the opportunity to evaluate the data before making actionable plans.
- Data is meaningless without context and we cannot turn data into information.
- Information is useless without being able to apply to something.

Project Objectives:

- Know fundamental concepts and can work on IBM Cognos Analytics
- Gain a broad understanding of plotting different visualizations to provide suitable solution.
- Able to crate meaningful Visualizations and Dashboard(s)

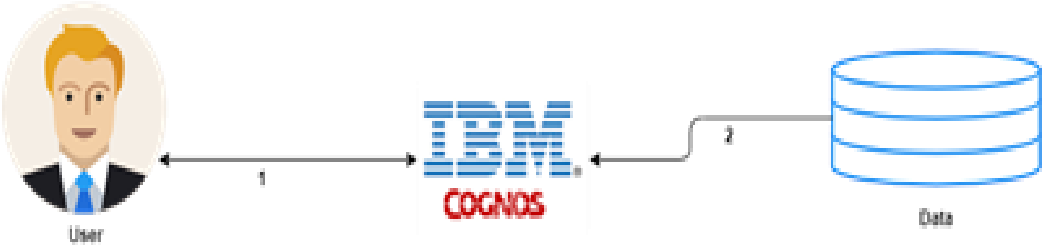
Project Flow:

- Users create multiple analytical graphs/charts/Visualizations.
- Using the Analytical Visualizations, build required Dashboard(s).
- Saving and visualizing the final dashboard in the IBM Cognos Analytics.

Proposed Solution:

- To create various data visualizations using IBM Cognos.
- To make a dashboard using IBM Cognos.
- Making dashboards can revolutionize both our success and enjoyment in running our business.

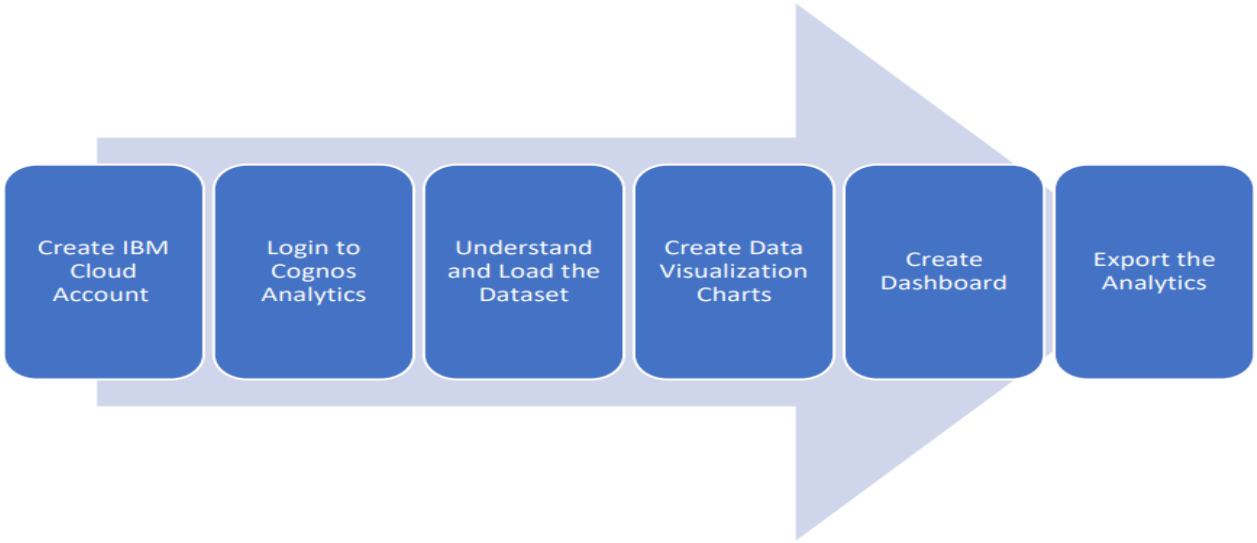
Architecture:



Solution Requirement:

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
  - Understanding the Dataset
  - Loading the Dataset



Understanding The Dataset:

The data was sourced from the Kaggle.

Let's understand the data of file we're working with i.e. DHL Courier locations and metadata (DHL_Facilities.csv) and give a brief overview of what each feature represents or should represent

- The dataset contains the below columns of data.

S#	Field Name	Type	Description
1	X	Geo	Geo Code
2	Y	Geo	Geo Code
3	OBJECTID	int	Object ID – Sequence Number
4	FEATURE_ID	Int	Feature ID – Int number
5	NAME	Text	Name of the Client
6	ADDRESS	Text	Address 1
7	ADDRESS2	Text	Address 2
8	CITY	Text	City Name
9	STATE	State	State Name
10	ZIP	Int	Zip code
11	LATITUDE	Geo	Geo value of Latitude
12	LONGITUDE	Geo	Geo value of Longitude
13	MATCH_STATUS	Text	Address Match Status
14	PLACEMENT	Text	Delivered Target
15	CENSUS_CODE	Int	Zip Code of Target
16	LAST_PICKUP	Text	Last Pickup Time and Day
17	LOCATION_TY	Text	Source Location type
18	LOCATION_TH	Text	Target Location type

- Data Visualization Charts
    - Build the following visualizations
        - City-wise No of Pickups made?
        - City-wise No of Objects serviced?
        - State-wise No of Cities, where DHFL Services are provided?
        - Total Number of Objects IDs Serviced by DHFL - Summary Card
        - Zip Code wise Number of Objects Serviced?
        - Location Type Filters
        - Placement Filters
        - Mach Status Filters
        - Location Ty Filters
        - Location Th Filters

Build A Data Module In Cognos Analytics:

In Cognos Analytics, a Data Module serves as a data repository. It can be used to import external data from files on-premise, data sources, and cloud data sources. Multiple data sources can be shaped, blended, cleansed, and joined together to create a custom, reusable and shareable data module for use in dashboards and reports.

Visualization Of The Dataset:

In Cognos, we can create different numbers of visualization and in the data exploration part we will be going to plot multiple data visualization graphs for getting the insights from our data and once the explorations are done we will build our dashboard.

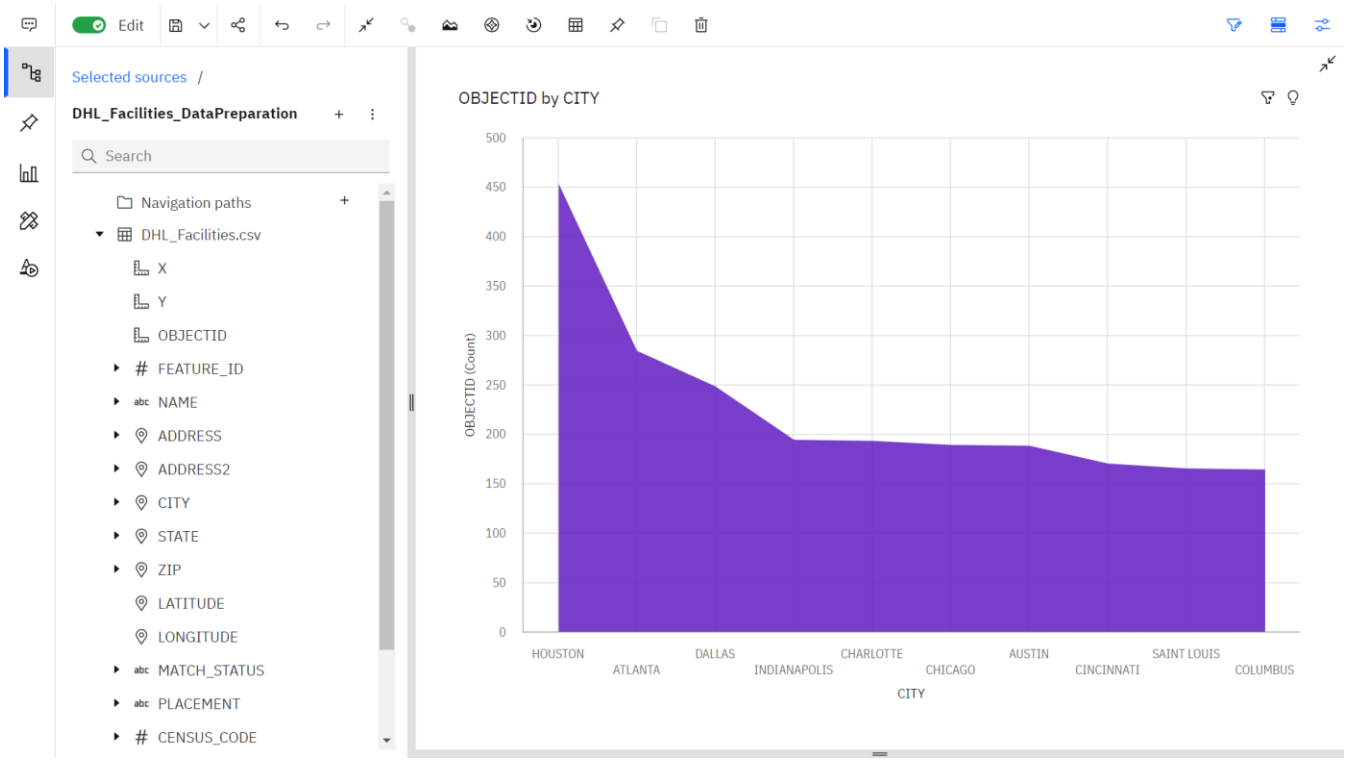
Once you've loaded all the CSV files on the data module for creating different explorations.

Build Cognos Analytics Dashboard:

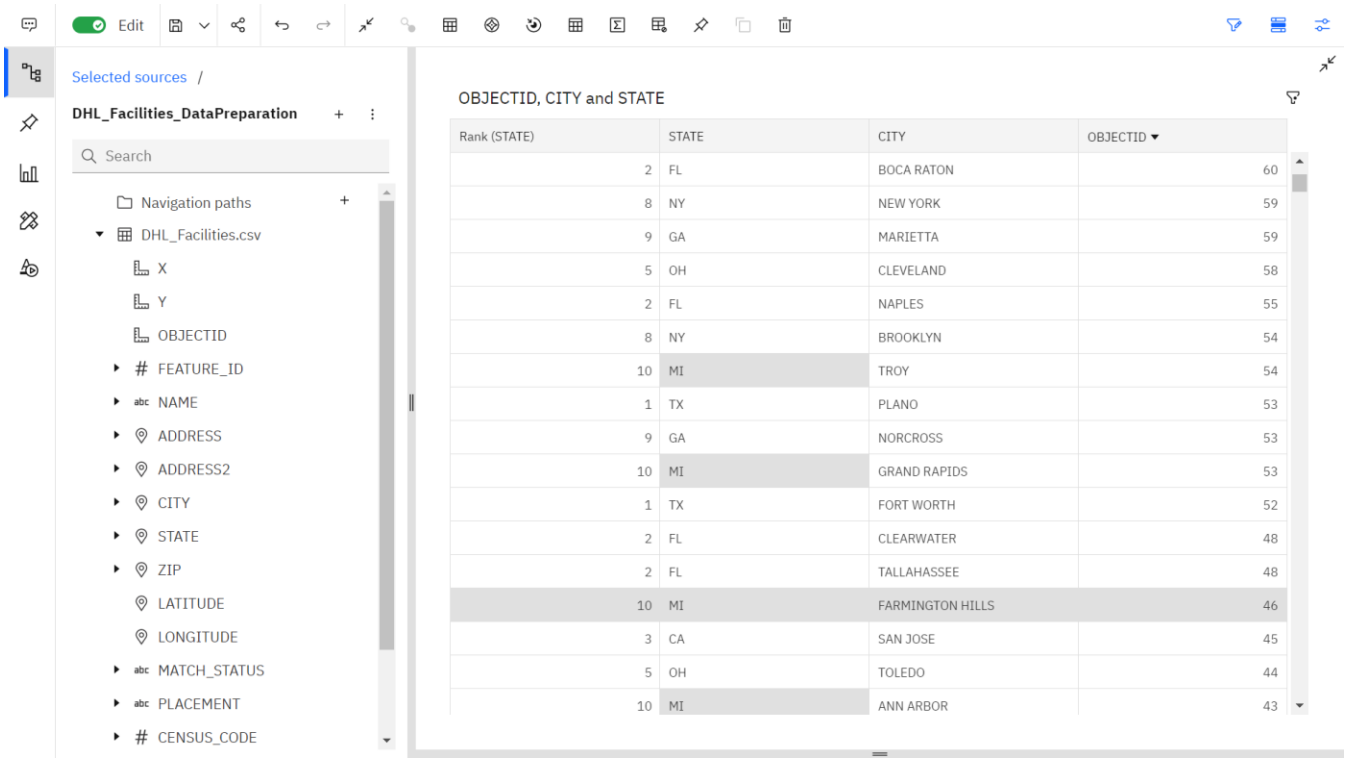
In Cognos Analytics, a Dashboard provides users a way to communicate insights and analysis of their data. A dashboard view contains visualizations such as graphs, charts, plots, tables, maps, or any other visual representation of data.

RESULT

- **Area Chart Showing City wise DHL Deliveries**
  (City-wise No of Objects serviced)

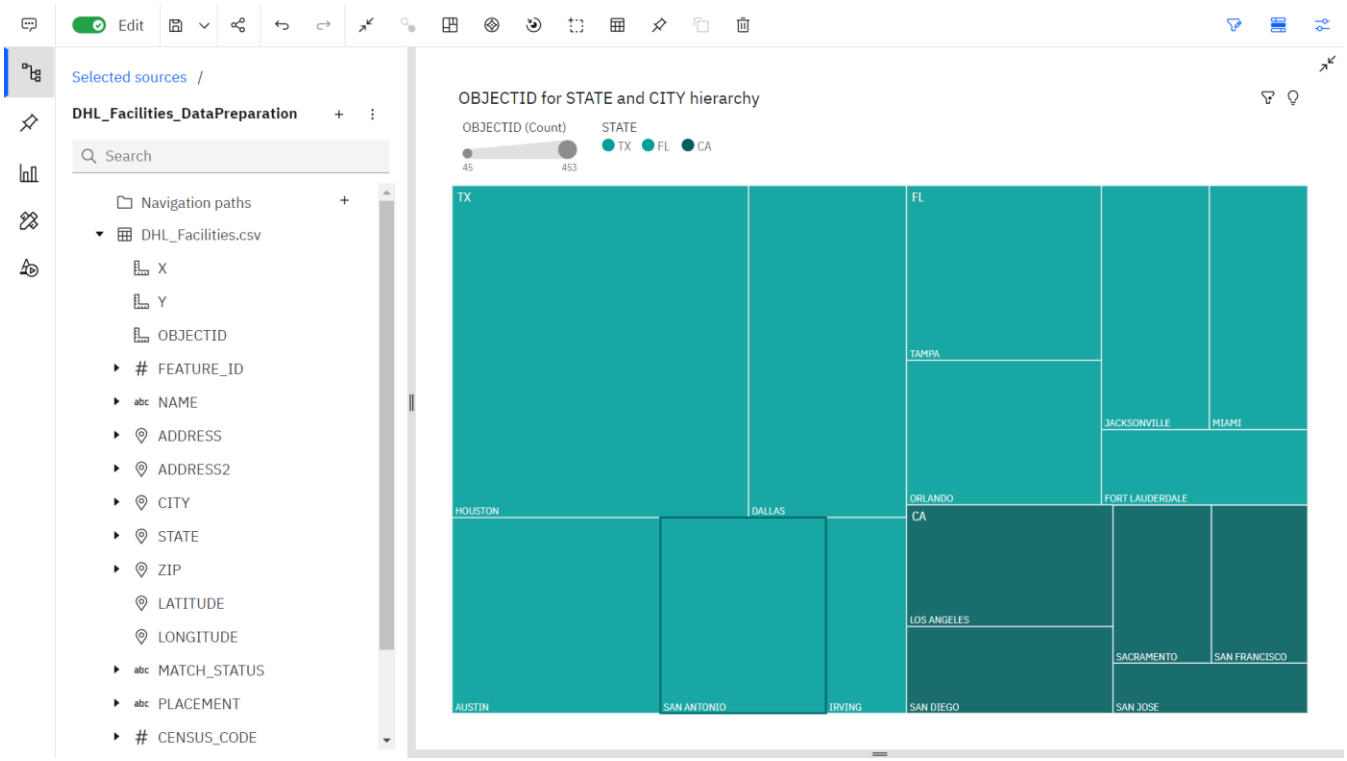


- **Top N Deliveries by State and City**
  (State-wise No of Cities, where DHFL Services are provided)

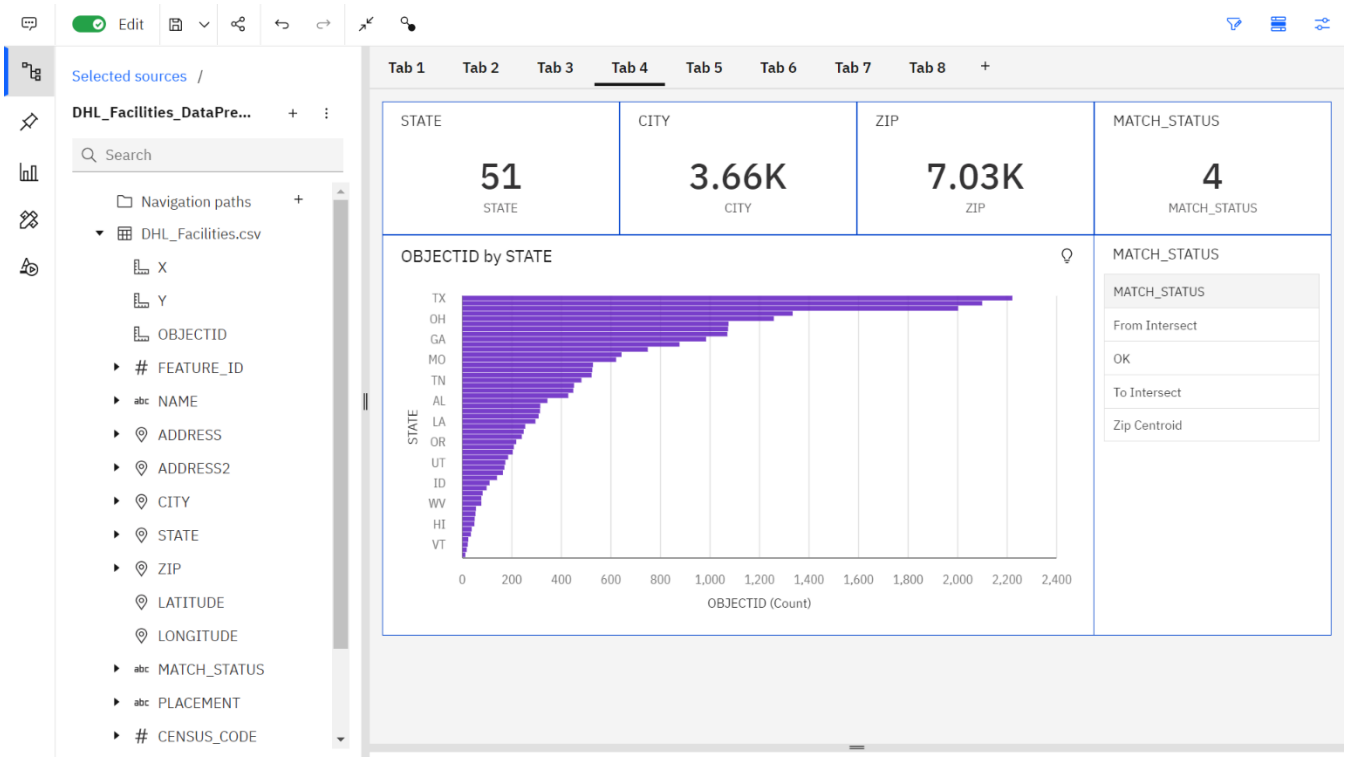


Rank (STATE)	STATE	CITY	OBJECTID
2	FL	BOCA RATON	60
8	NY	NEW YORK	59
9	GA	MARIETTA	59
5	OH	CLEVELAND	58
2	FL	NAPLES	55
8	NY	BROOKLYN	54
10	MI	TROY	54
1	TX	PLANO	53
9	GA	NORCROSS	53
10	MI	GRAND RAPIDS	53
1	TX	FORT WORTH	52
2	FL	CLEARWATER	48
2	FL	TALLAHASSEE	48
10	MI	FARMINGTON HILLS	46
3	CA	SAN JOSE	45
5	OH	TOLEDO	44
10	MI	ANN ARBOR	43

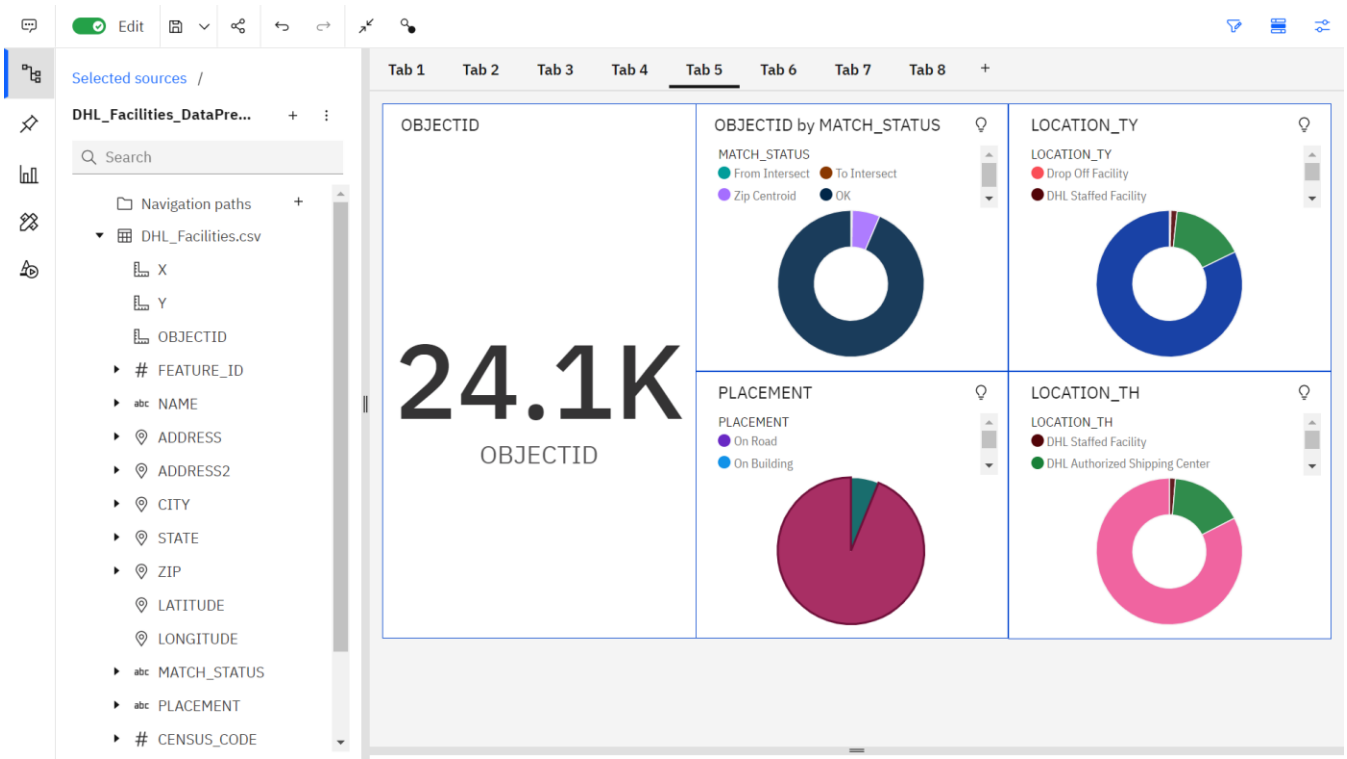
- **Showing Top 3 State Deliveries**



- **Summary Chart and Bar Chart Showing Deliveries**
  (Total Number of Objects IDs Serviced by DHFL - Summary Card)



- **Dashboard showing Deliveries Status**



ADVANTAGES AND DISADVANTAGES OF CREATING DASHBOARD

ADVANTAGES

- **Time-saving 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 analyse 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 reported.

APPLICATION

- If you manage complex campaigns, you usually end up having several analytics solutions for each platform and needing to consult them separately, which hinders the overall view. Instead, the dashboard displays data from different sources, like web analytics solutions, social media metrics. This way, makes it much easier to compare them and see how they develop.

- A good dashboard clearly shows you a number of key metrics so you don't need to be an analytics expert to understand them. If you want to look further into a particular data set, you always have the option of employing more specific tools.

- If you synchronize your dashboard automatically in the cloud, you can create different users so that your entire team can access the same information from anywhere. It's even possible to project the dashboard onto a screen in your office so that the whole team can see what is going on in real time.

- Having a centralized dashboard will save you a lot of time. Instead of collecting data from different sources and making charts on your own, dashboards do all this work for you. You just need to invest some time at the beginning to set up the metrics and decide how to present them. From that point on, the reports are created automatically.

CONCLUSION

From this project, we have successfully:

- Created multiple analysis charts/graphs.
- Used the analysed chart creation of dashboard.
- Saved and visualized the final dashboard in the IBM Cognos Analytics.