

# Exploring Insights From Synthetic Airline Data Analysis With Qlik

## 1. Introduction

### 1.1 Overview:

Exploring insights from synthetic airline data analysis with Qlik involves Business Goals, Data Scope, Data Preparation, Using Qlik for Data Analysis, Exploratory Data Analysis, Advanced Analytics, Insights and Actionable Recommendations, Implementing and Monitoring, Tools and Features in Qlik.

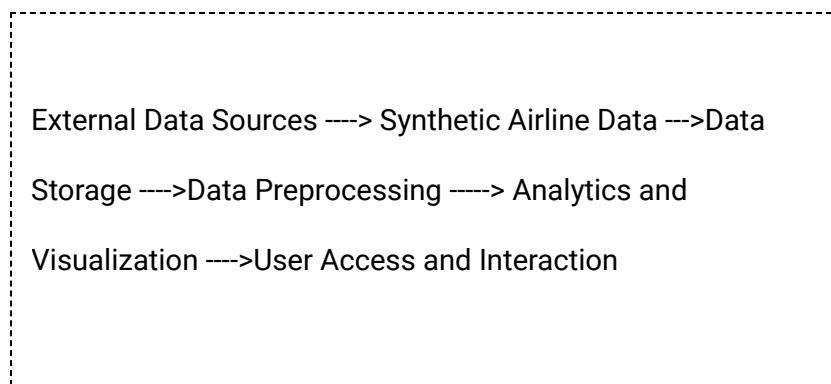
Analyzing Synthetic airline data with Qlik can provide valuable insights that drive operational efficiency and business growth. By leveraging Qlik's powerful data visualization and analytical capabilities, airline companies can make informed decisions, optimize their operations, and enhance the overall customer experience.

### 1.2 Purpose:

In this project, the airline data involves various aspects of airline operations like ticket sales, passengers flows, flight schedules and departures etc. The purpose of exploring insights from synthetic data analysis simulates data-driven decision making, operational efficiency, customer experience, revenue optimization, predictive maintenance, market trends and competitive analysis, simulation and scenario planning, performance monitoring, Innovative solutions. The Qlik capabilities such as interactive dashboards and advanced analytics, organizations can transform raw data into actionable insights, leading to better strategic and operational decisions in the airline industry.

### 1.3 Technical Architecture:

The image shows the Technical Architecture of Qlik.



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## **2. Problem Understanding**

### **2.1 Specify the business problem:**

The project includes the problems like Operational Efficiency, Revenue Management, Customer Experience, Market and Competitor, Safety and Compliance.

Exploring Insights from synthetic airline data using Qlik addresses critical business problems by enhancing decision-making process, improving operational efficiency, optimizing revenue management, and enhancing customer satisfaction. By leveraging Qlik's powerful data integration, real-time analytics, and visualization capabilities, airlines can gain a competitive edge in the industry.

### **2.2 Business requirements:**

The business requirements provide a comprehensive framework for exploring insights from synthetic airline data using Qlik. The following requirements address the project deliverable insights and significant business improvements.

1. Data Integration and Management
2. Data Analysis and Visualization
3. Operational Efficiency
4. Revenue Management
5. Customer Experience
6. Market and Competitor Analysis
7. Compliance and Security
8. User Access and Interaction
9. Performance and Scalability
10. Project Management and Governance

### **2.3 Literature Survey:**

The Literature Survey indicates that Qlik is a powerful tool for exploring insights from synthetic airline data. Its capabilities in data integration, visualization, and predictive analytics make it well suited for addressing various business problems in the aviation industry.

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## **3. Data Collection**

### **3.1 Collect the dataset:**

In this project, "Exploring Insights From Synthetic Airline Data Analysis With Qlik" the dataset was collected from the 'Kaggle'. The dataset downloaded from the website Kaggle contains all the meta information regarding the fields in the CSV file. The fields are Passengers ID, First Name, Last Name, Gender, Age, Nationality, Airport Name, Airport Country Code, Country Name, Airport Continent, Continents, Departure Date, Arrival Airport, Pilot Name, Flight Status.

### **3.2 Connect Data with Qlik Sense:**

After collection of dataset, to Connect the data with Qlik Sense, upload the dataset in the platform directly or create an analytics app and upload the data in the created app.

## **4. Data Preparation**

### **4.1 Prepare the Data for Visualization:**

The preparation of data for Visualizations needs data Loading, data cleaning, and preprocessing.

- Data Loading: After connecting the data with Qlik Sense, the data loading involves loading of data in the data Load Editor.
- Data Cleaning and Preprocessing: The cleaning of data involves removing missing or irrelevant data. The preprocessing helps to make data easily understandable for creating visualizations.

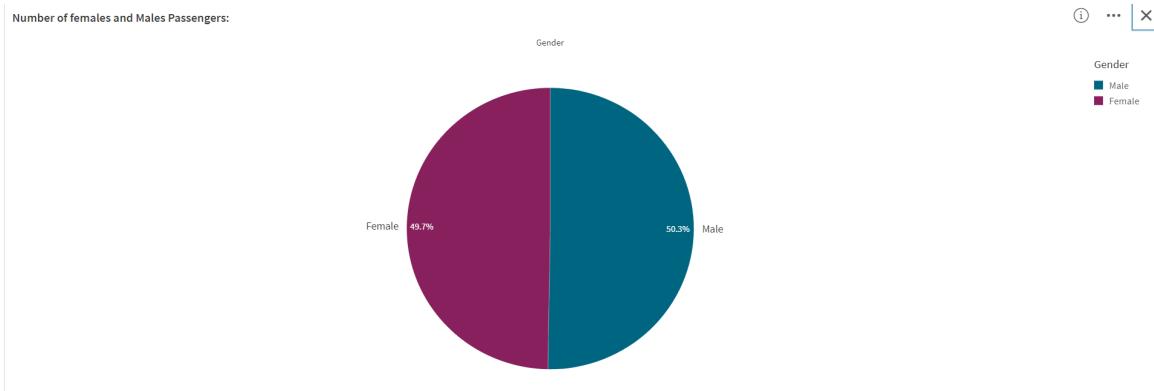
## **5. Data Visualizations**

### **5.1 Visualizations:**

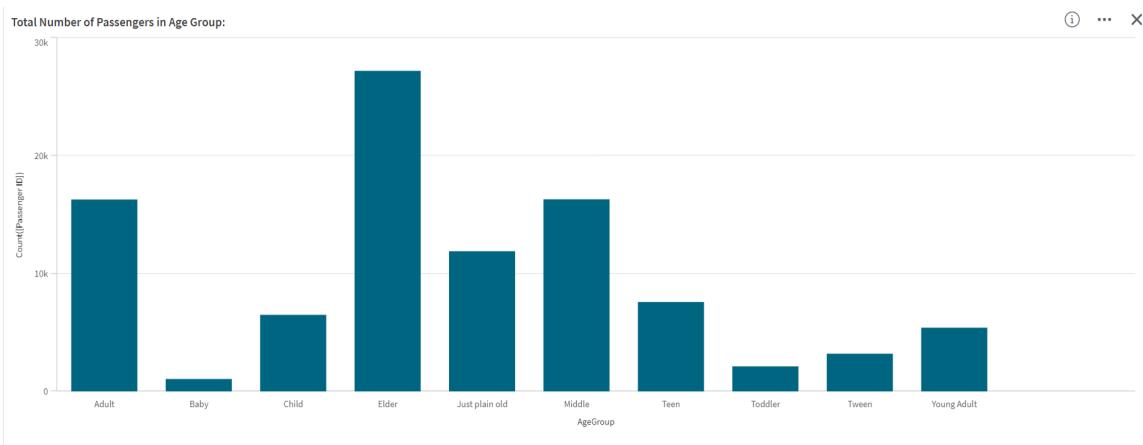
Data visualizations is a part of many business-intelligence tools and key to advanced analytics. With data visualization, information is represented in graphical form, as a pie chart, graph, or another type of visual presentation.

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**Activity 5.1.1:** Pie chart of number of female and male passengers.



**Activity 5.1.2:** Bar chart represents the AgeGruop of the passengers.

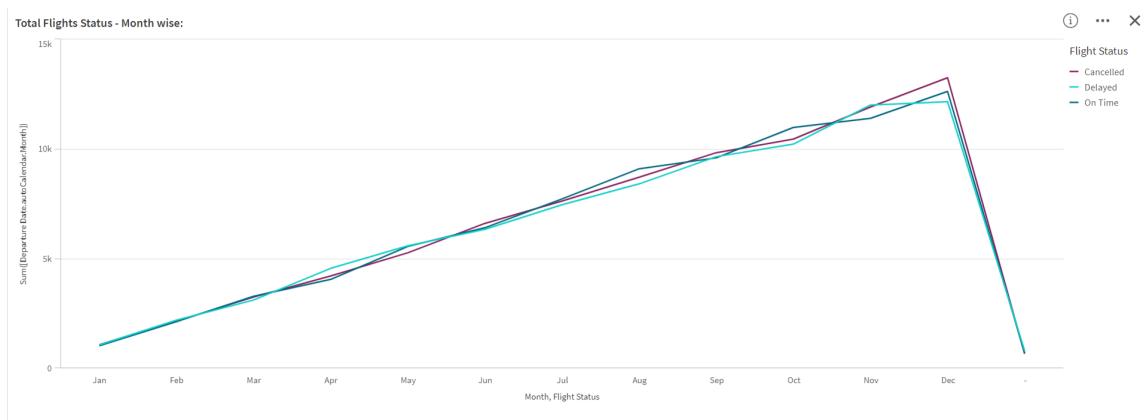


**Activity 5.1.3:** KPI shows the total number of country names's.



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**Activity 5.1.4:** The Line chart represents the count of the flight status in every month.



**Activity 5.1.5:** Donut chart shows the total passengers in all continents.

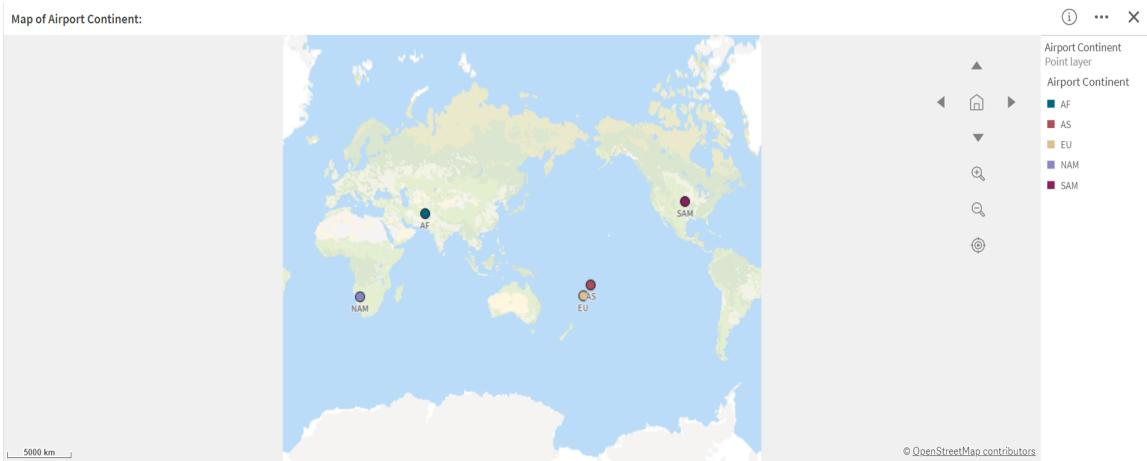


**Activity 5.1.6:** KPI shows the distinct number of genders.

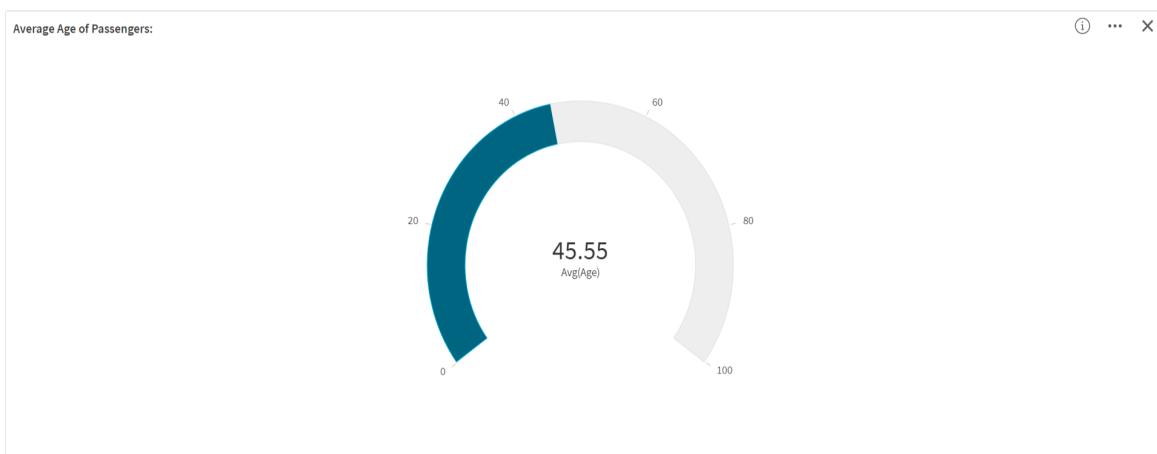


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**Activity 5.1.7:** The map shows the Airport Continent.



**Activity 5.1.8:** Gauge represents the Average age of the passengers.

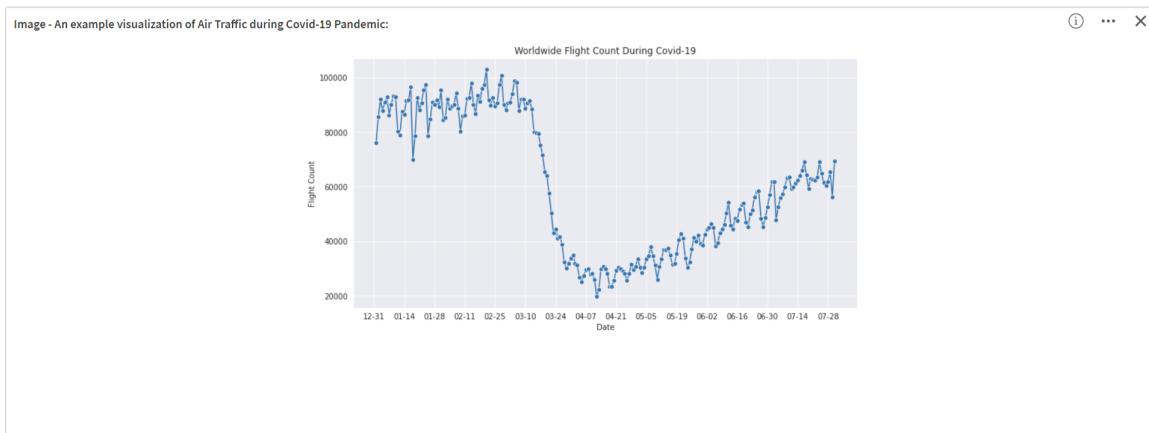


**Activity 5.1.9:** The KPI shows the total number of passengers.

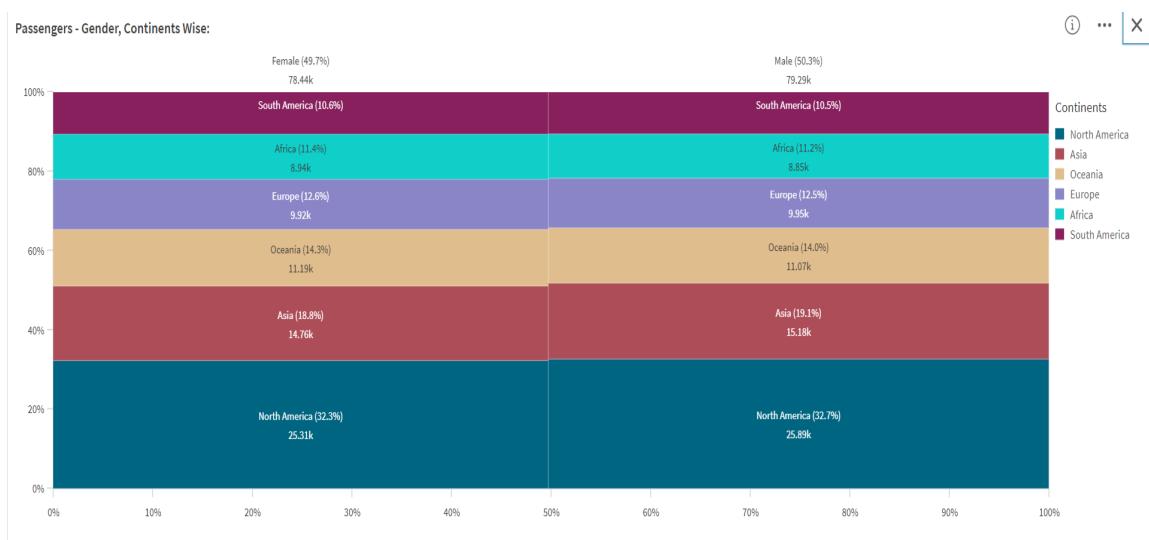


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**Activity 5.1.10:** The Image shows an example the airline data analysis during COVID-19.



**Activity 5.1.11:** The Mekko chart shows the females and males count in all continents.



**Activity 5.1.12:** The Text represents the title of the project.

Text: Exploring Insights From Synthetic Airline Data Analysis With Qlik

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## 6. Dashboard

### 6.1 Responsive and Design of Dashboard:

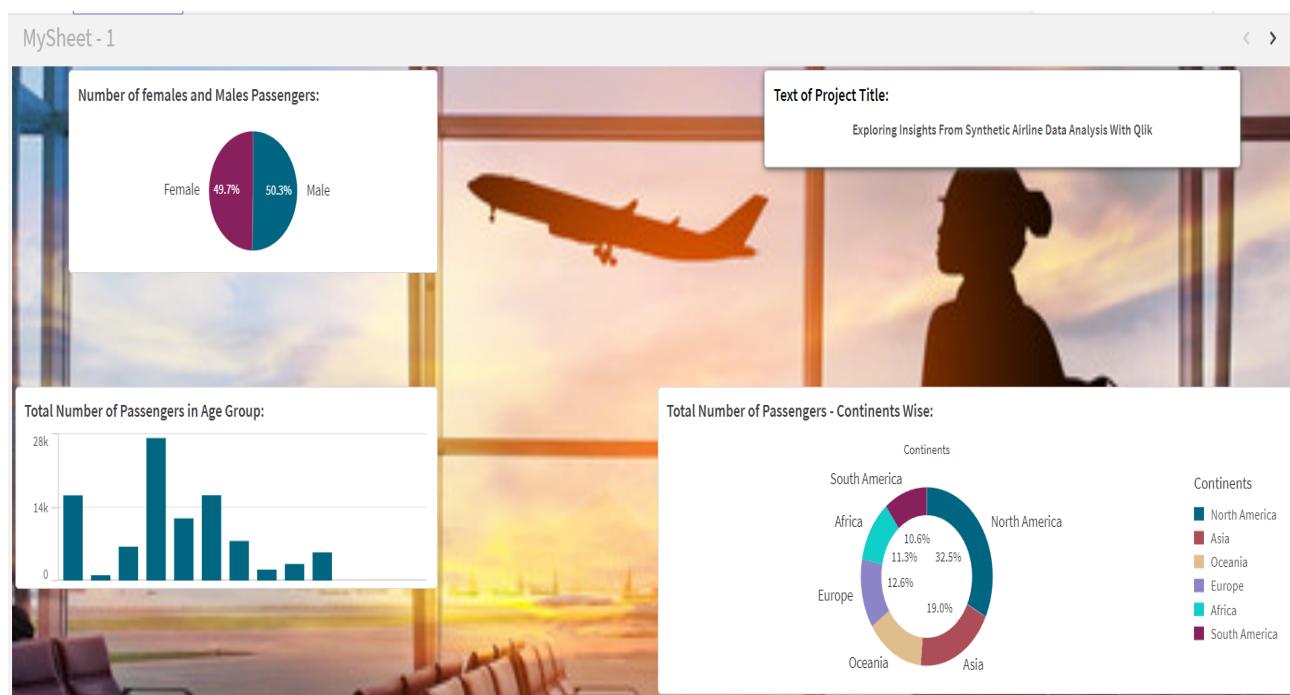
The dashboards are reporting tools that aggregate and display visualizations in a single screen. It is a way of creating various types of visual data like charts, graphs, tables, and filter pane, KPI's, buttons, maps, etc in one place. In the dashboards, it is easy to create visualizations using data fields as dimensions and measures. Dashboards are often used to analyze data and designed for various use cases.

Dashboards are a graphical user interface (GUI) that displays information and data in an organized, easy-to-read format.

The dashboard allows users to track, analyze, and report on key performance indicators and other metrics. We can add background images and also can download the dashboard as pdf format. It displays visualizations from many fields simultaneously.

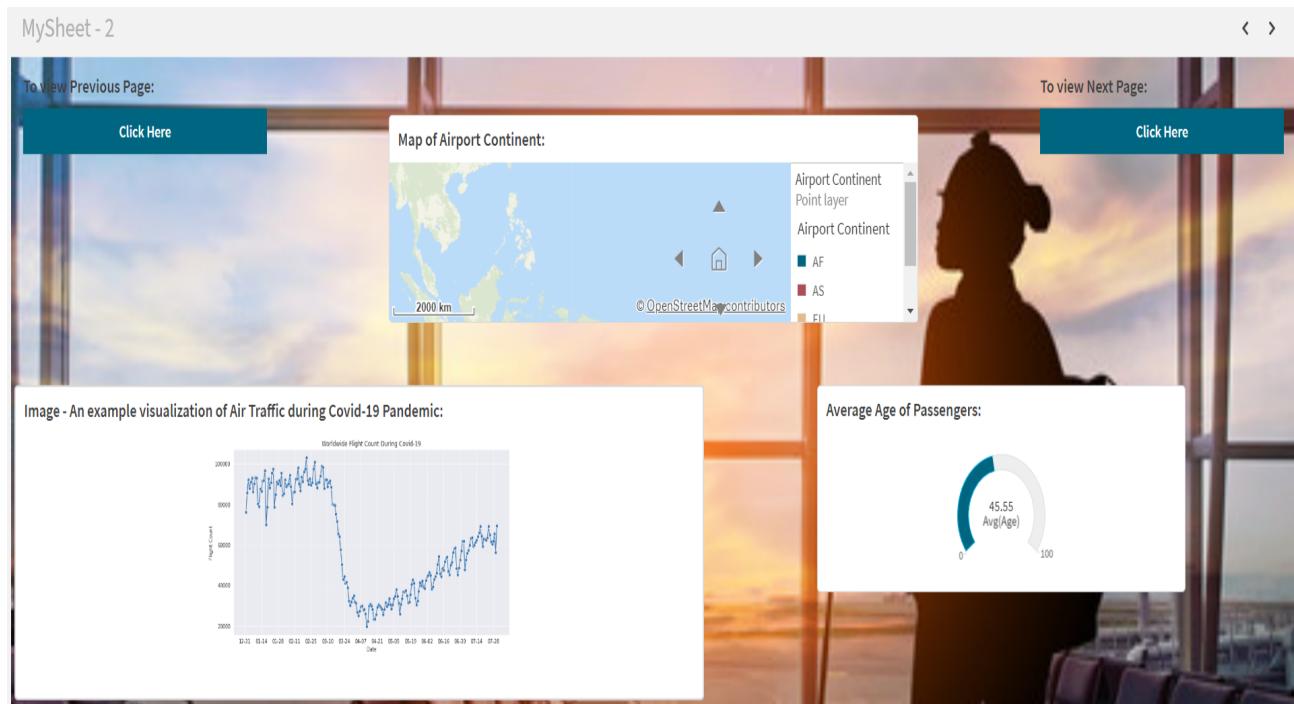
To create a dashboard, firstly analyze the data and understand the data fields to make an effective dashboard with many visualizations.

#### Dashboard-1:

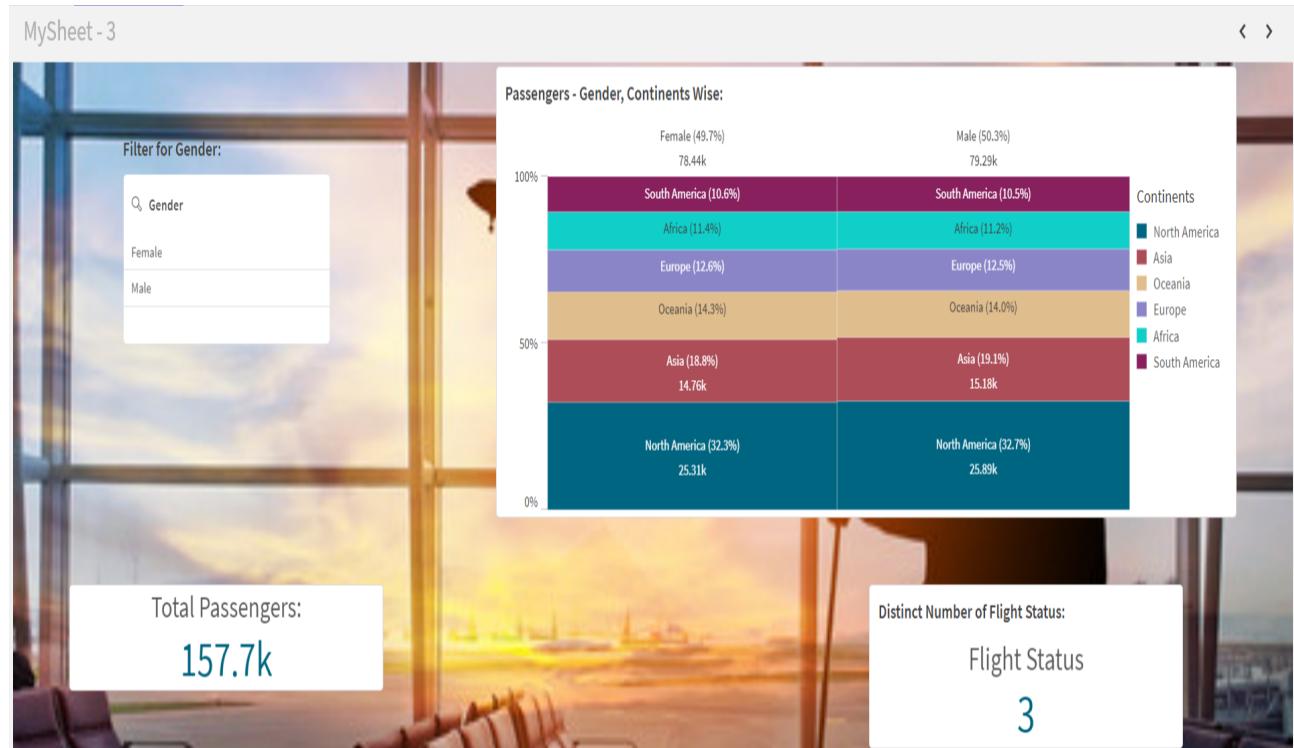


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## Dashboard-2:



## Dashboard-3:



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## Dashboard-4:



## 7. Report

### 7.1 Report Creation:

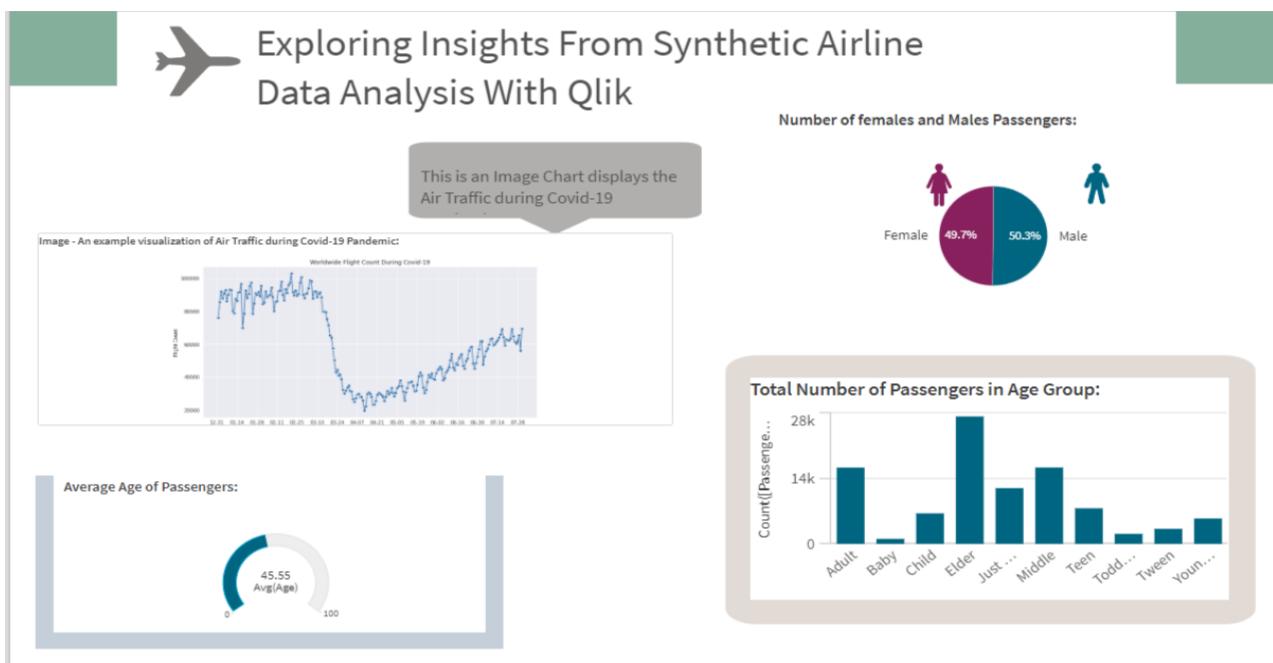
**Story Telling:** The concept of story telling is building a compelling narrative based on data and analytics. By presenting data as a story, it makes it easier for stakeholders to grasp the key insights and implications.

In Qlik, we take the snapshots of each visualizations for narrating the story of the data analysis. The all snapshots are stored in Snap Library; by dragging and dropping on the slide, we can create a report for the data in the form of story telling.

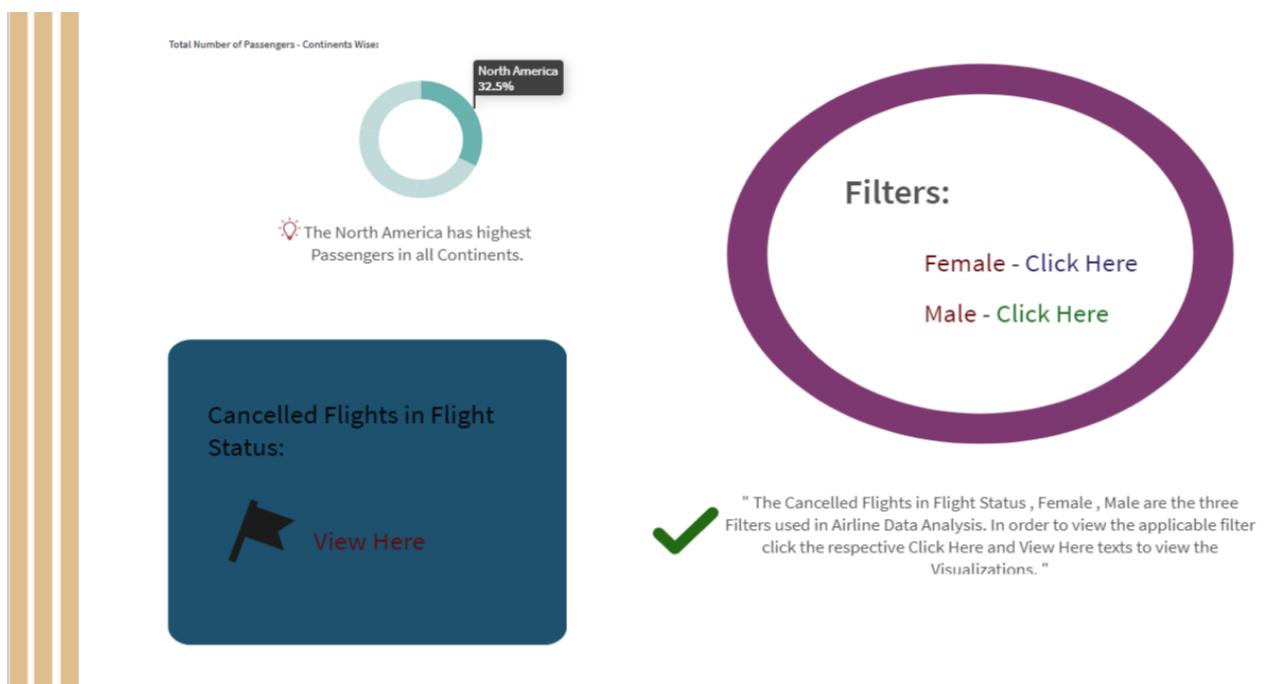
It is a new way of sharing your data discovery insights with other people. The purpose of data storytelling is to build a narrative around the story and to emphasize elements of it. With data storytelling, you can create a presentation based on the data in your app. The visualizations, we use them, can narrate together with text, shapes, and effects.

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## Slide-1:



## Slide-2:



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Slide-3:



## 8. Performance testing

### 8.1 Amount of Data Rendered:

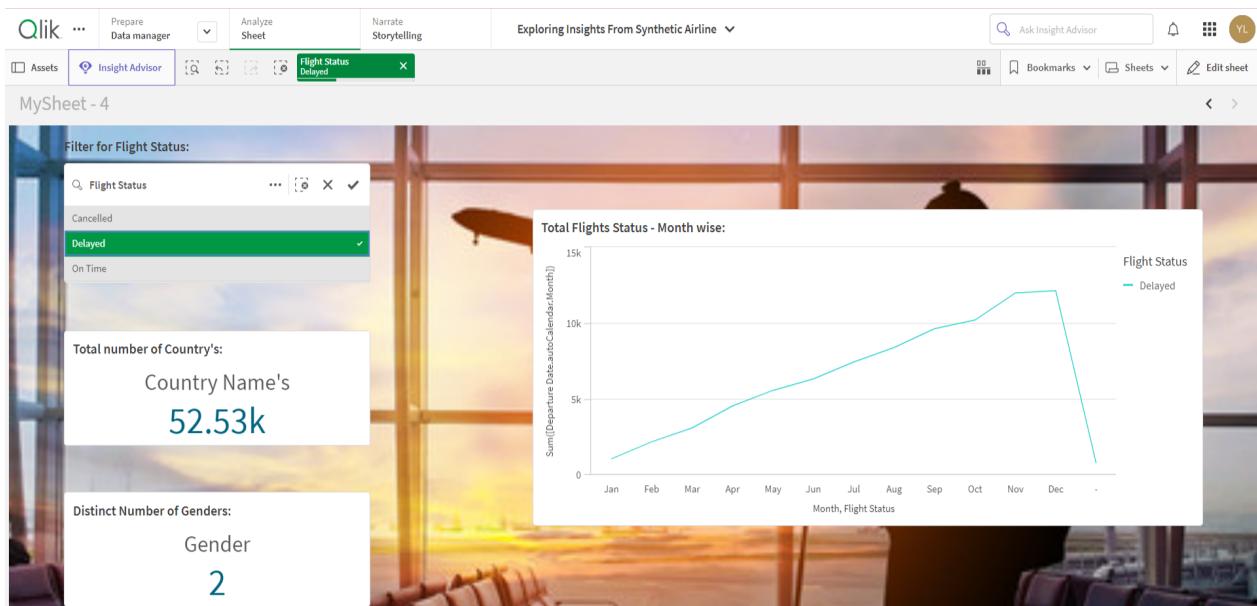
The amount of data rendered refers to the data we extract from the 'Kaggle' website. The data includes the following columns fields listed below. It is a measure of how much data has been successfully processed and made available for analysis, manipulation, and use within the system.

- passenger ID
- First Name, Last Name
- Age, AgeGroup
- Continent, Country Name
- Gender
- Flight Status
- Departure Date
- Pilot Name
- Airport Name, Arrival Airport, Airport Country Code, Airport Continent
- Nationality

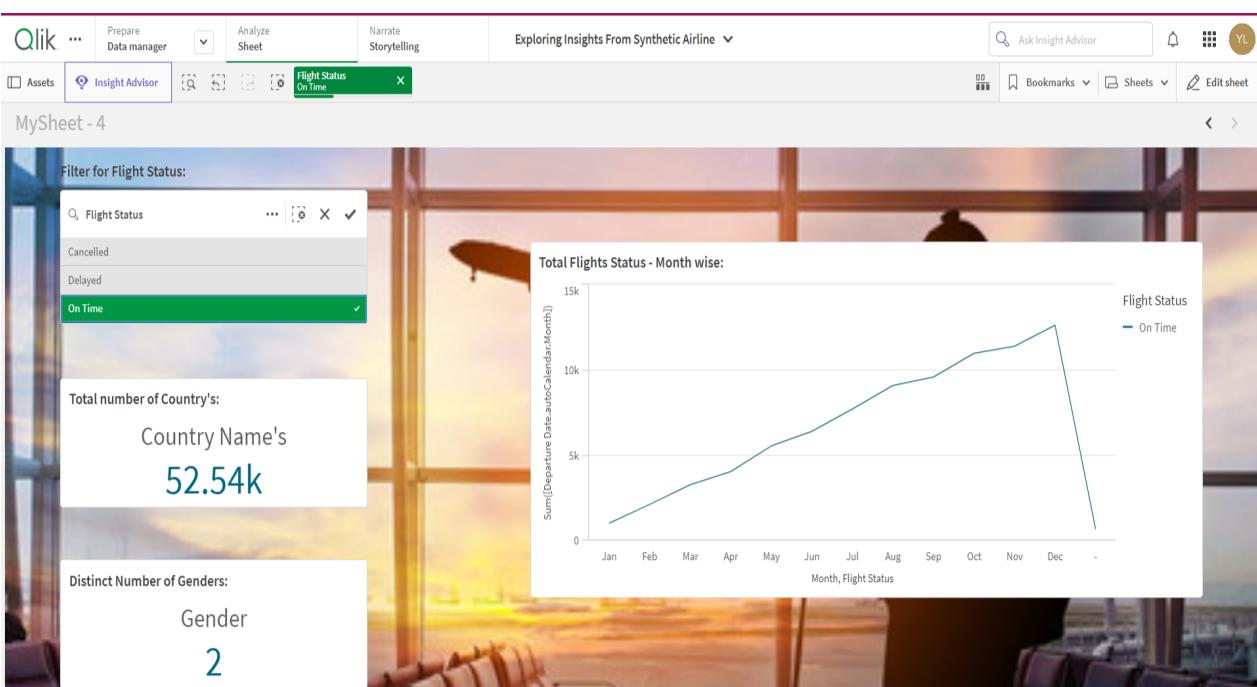
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## 8.2 Utilization of Data Filters:

**Filter 8.2.1:** The image represents the Flight status on filtering with 'Delayed' key value.

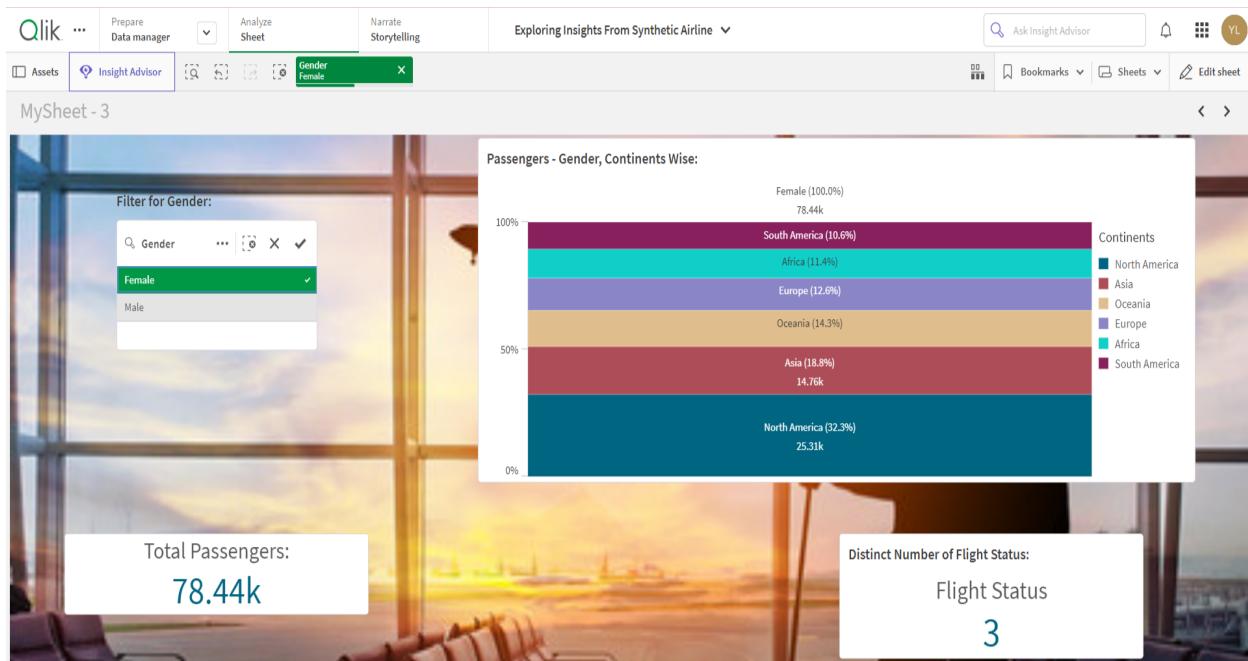


**Filter 8.2.2:** The image shows the Flight status of 'On Time' on applying filter.



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**Filter 8.2.3:** The image shows the filter of females based on the gender and visualizations changes based on the filtering.



**Filter 8.2.4:** The images shows the filtering of males that applied on dashboard using filter pane.

