

1. Introduction

1.1 Overview:

The project "Exploring Insights from Synthetic Airline Data Analysis with Qlik" focuses on using Qlik's powerful capabilities and data visualisation to analyse a synthetic airline dataset. The Vata considers a variety of airline operations factors, including flight schedules, flight status, performance metrics, and so on.

1.2 Purpose:

The project's goal is to use airline data to derive actionable insights that can help improve decision-making processes in the domain. The purpose includes identifying revenue trends, travel periods, peak traffic periods, and customer feedback.

1.3 Technical Architecture:

Some Technical Architecture for the Project Are:

- 1.Excel
- 2.Qlik Sense
- 3.Custom Visualisation
- 4.Story Telling
- 5.Access Controls

2. Define Problem

2.1 Specify Business Problem:

The problem definition is to use Data Analysis Tools like Qlik to optimise airline revenue, increase efficiency, and improve customer experience.

2.2 Business Requirements:

1. Data Integration: Add synthetic airline data to Qlik, including flight schedules, passenger demographics, ticket sales, and performance metrics.
2. Data Visualisation: Create interactive dashboards and visualisations to show revenue trends, operational efficiency metrics, and customer satisfaction levels.
3. Predictive Analytics: Use Qlik's predictive analytics tools to forecast demand, identify potential operational bottlenecks, and anticipate customer behaviour.
4. Customer Segmentation Analysis: Use purchasing behaviour, travel frequency, and feedback to tailor marketing and operational strategies.

2.3 Literature Survey:

1. Historical Data Analysis: According to research, analysing past ticket sales can reveal peak travel times and popular destinations.¹
2. Resource Allocation: According to the literature, predictive analytics can help improve resource allocation by forecasting peak traffic periods.
3. Customer Segmentation: Research shows that segmenting customers based on demographics and purchasing behaviour can help personalise services and improve satisfaction.

3. **Data Collection:**

3.1 **Collect the Dataset:**

Data contains all the meta information regarding the columns described in the CSV files

3.2 **Connect Data with Qlik Sense:**

effectively connect and visualize synthetic airline data in Qlik Sense, uncovering valuable insights into revenue optimization, operational efficiency, and customer experience enhancement.

Show by table

All tables

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↺

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#

Age

Abc

Airport Continent

🌐

Airport Country Code

Abc

Airport Name

Abc

Arrival Airport

Abc

Continents

🌐

Country Name

📅

Departure Date

↳

📅

Derived fields

Abc

First Name

Abc

Flight Status

Abc

Gender

Abc

Last Name

🌐

Nationality

Abc

Passenger ID

Abc

Pilot Name

4. **Prepare Data for Visualisation:**

4.1 **Prepare Data for Visualization:**

LOAD

"Passenger 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"

FROM [lib://DataFiles/Airline Dataset.csv]

(txt, utf8, embedded labels, delimiter is ',', msq);

```

[Airline Dataset]:
Load *;

// Remove rows with a and from ArrivalAirport column

[Airline Dataset]:
NOCONCATENATE LOAD *,
if (Age>=0 AND Age <= 1, 'Baby',
    if (Age >= 1 AND Age <=3, 'Toddler',
    if (Age >= 4 AND Age <= 9, 'Child',
    if (Age >= 10 AND Age <= 12, 'Tween',
    if (Age >=13 AND Age <=19, 'Teen',
    if (Age >= 20 AND Age <= 24, 'Young Adult',
    if (Age>= 25 AND Age <= 39, 'Adult',
    if (Age >= 40 AND Age <=54, 'Middle',
    if (Age >= 55 AND Age <= 79,'Elder',
    if(Age >= 80, 'Just plain old')))))))) AS AgeGroup,
Date# ([Departure Date], 'MM/DD/YYYY') as [Departure_Date],
Year ([Departure Date]) AS Year,
Month([Departure Date]) as Month

RESIDENT [Airline Dataset]
WHERE NOT ([Arrival Airport]= '0' OR [Arrival Airport] ='-');

```

5. Data Visualization

5.1 Visualization

1.Total Number of Passengers:

Total Number of Passengers

98.62k

2. Number of Passengers affected by cancelled Flights:

Passengers affected by cancelled Flights

32.94k

3. Number of Passengers affected by Delayed Flights:

Passengers affected by Delayed Flights

32.83k

4.Number of Male Passengers:

Total Male Passengers

49.6k

5.Number of Female Passengers:

Total Female Passengers

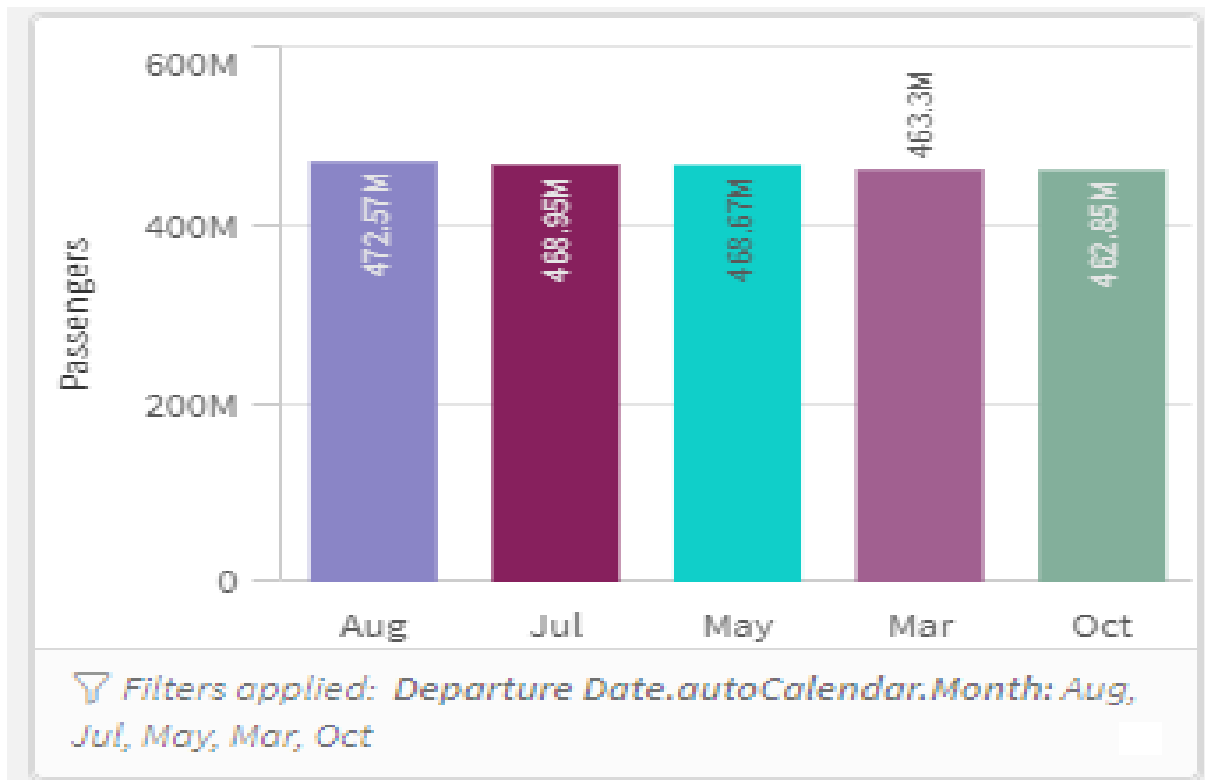
49.02k

6.Number of Flights on Time:

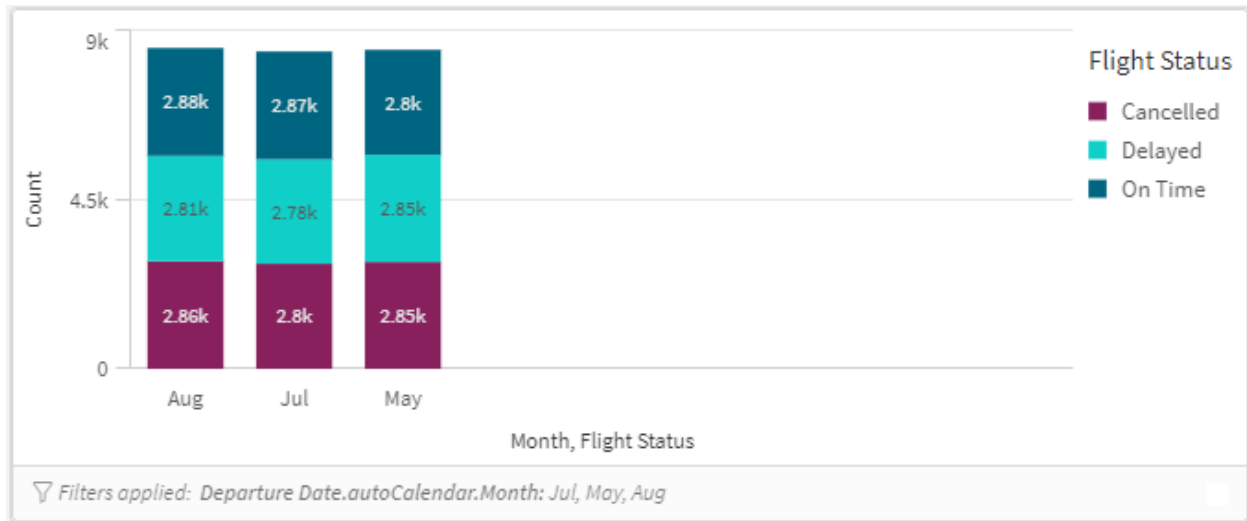
Number of Flights on Time

32.85k

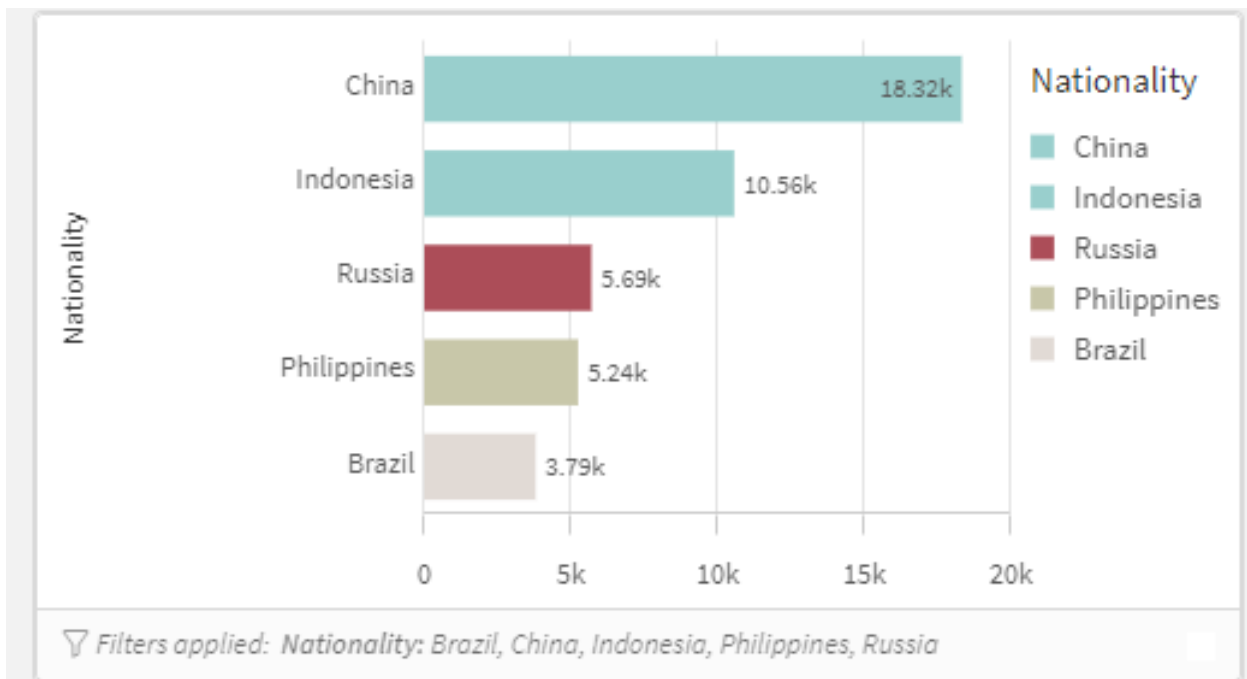
7.Top 5 Months where Passengers Travle the Most:



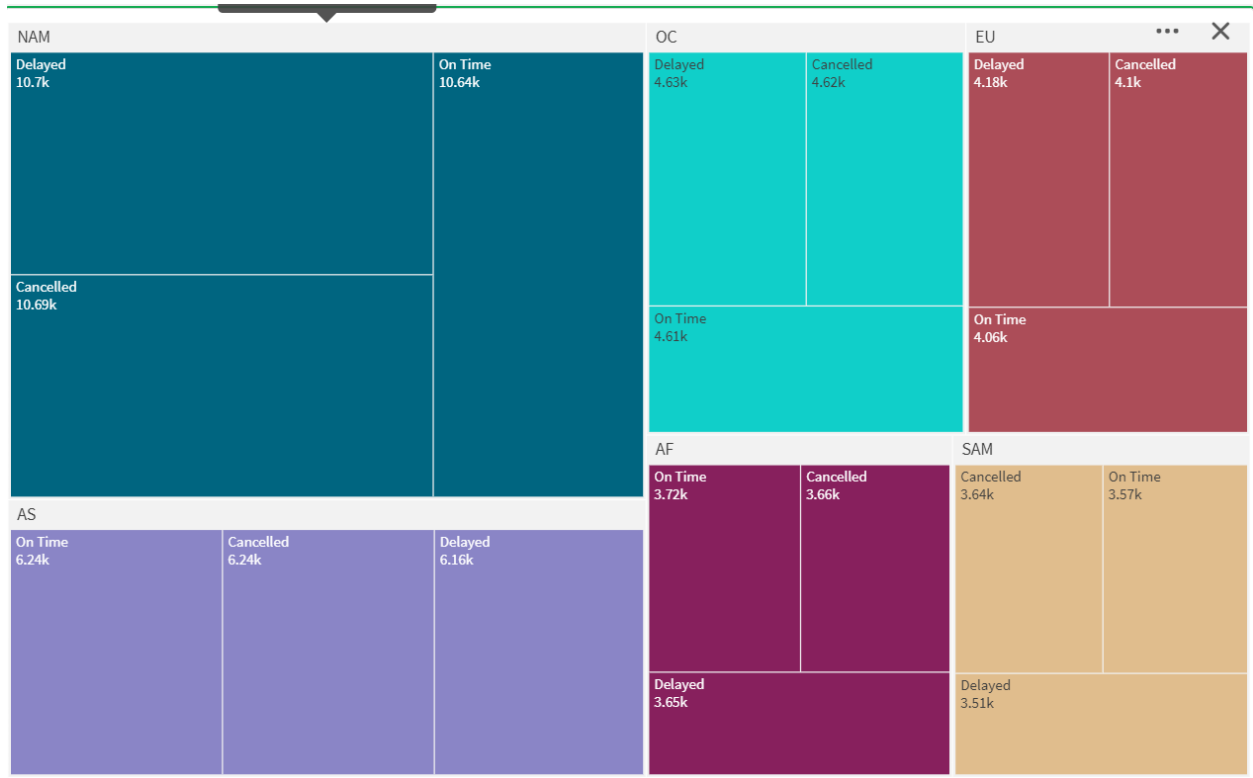
8. Top 3 Months Flight Status Wise:



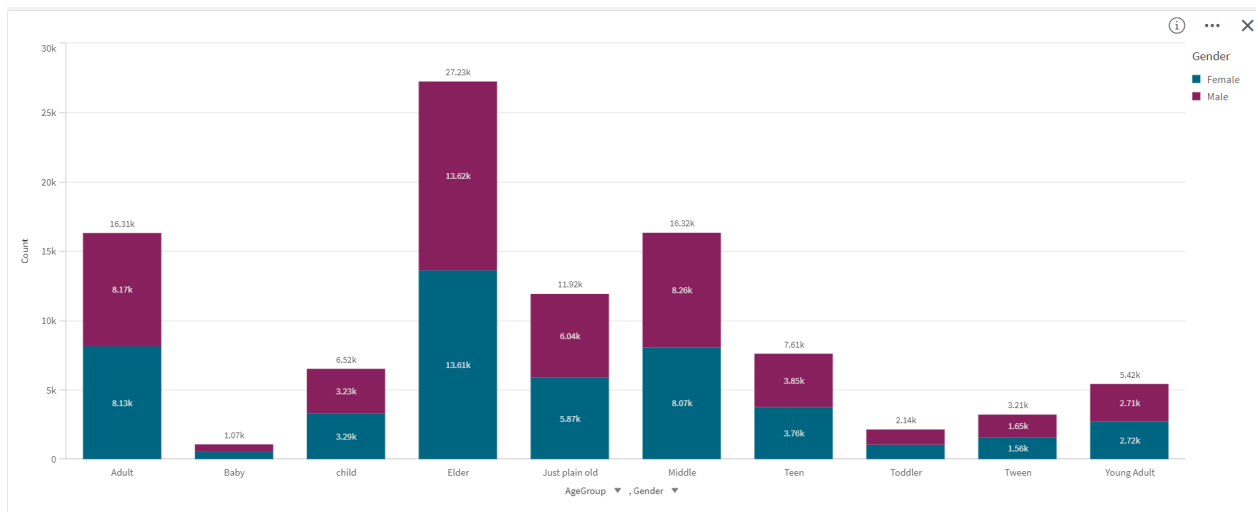
9. Number of Passengers nationality wise:



10. Continent Wise Flight Status:



11. Age Group Gender Wise:



12. Filter Pane Consisting of Gender(M/F):

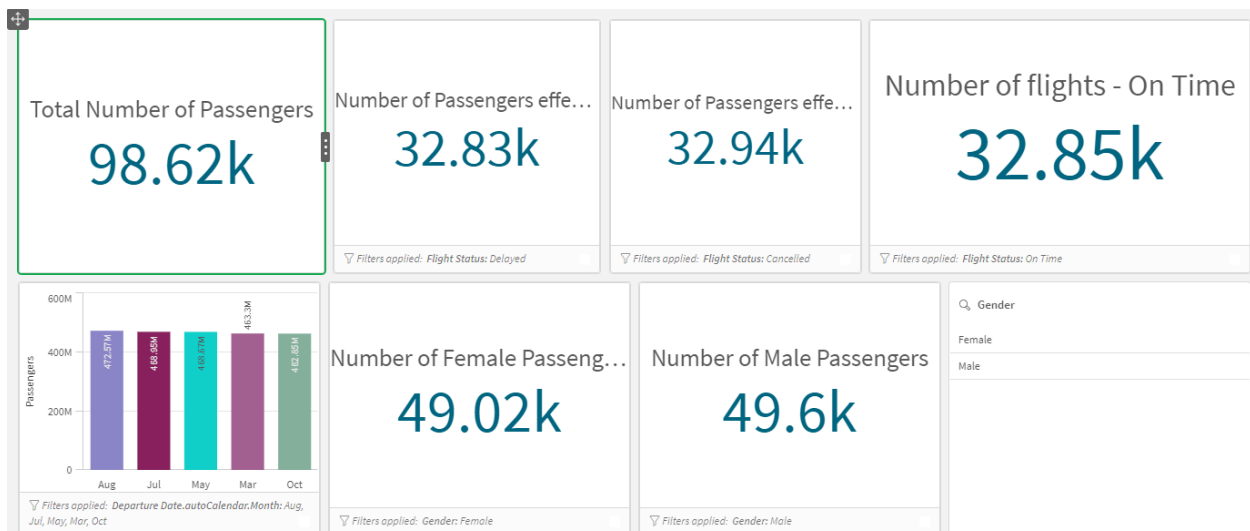
Gender

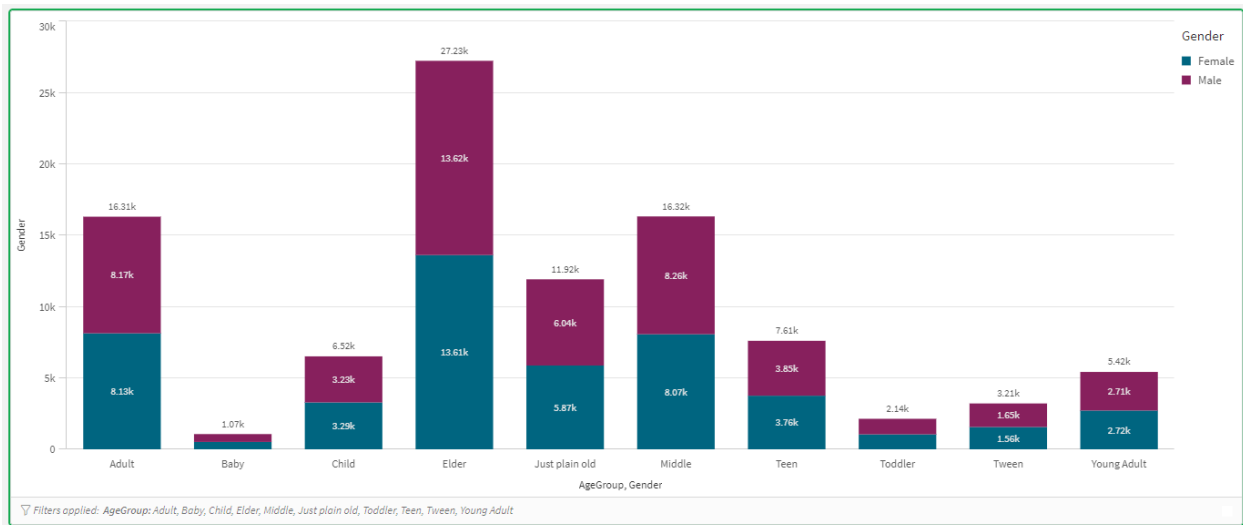
Female

Male

1. Dashboards/Sheets:

6.1 Responsive and Design of Dashboards





7.Report:

-

7.1 Report Creation

The report uses synthetic data to provide insight into various aspects of airline operations. The visualisations provide various insights into the dataset. Some of the insights are provided below.

1. There are 98.62K passengers travelling, with 49.6K males and 49.02K females.
2. A total of 32.94K passengers were affected by cancelled flights, 32.83K by delayed flights, and 32.85K by flights that arrived on

time.3. The highest number of passengers travelled during the month of May, totaling 3.31k.4. China has the highest number of passengers (18.32K).5. Age Group Elder has the highest number of passengers (27.23K), and Baby Agegroup is the Minimum Number of Passengers.

1. **Performance Testing:**

8.1 **Amount of Data Rendered:**

 Search

Show by table

All tables



Age

Abc AgeGroup


Abc Airport Continent

 Airport Country Code

Abc Airport Name

Abc Arrival Airport

Abc Continents

 Country Name

Abc Departure Date

 Abc Derived fields

Abc Dparture_Date


Abc First Name

Abc Flight Status

Abc Gender

Abc Last Name

Month

 Nationality

Abc Passenger ID

Abc Pilot Name

Year

8.2 Utilization of Data Filters:

