

1. **Introduction**

1.1 **OverView:**

The Project "Exploring Insights from Synthetic Airline Data Analysis with Qlik" focusus on utilizing Qliks Powerful Capabilities and Data visualization to analyze synthetic airline Dataset. The Vata uses Various Factors of Airline Operations Such as Flight Schedules, Flight Status, performance Metrics, Etc.

1.2 **Purpose:**

The Purpose of the Project is to Utilize airline data to derive actionable insights that can improve decision making process within the domain. the Purpose Include Indentifying Revenue Trends, travel periods,peak traffic period,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 optimize airline Revenue,enhance efficiency,improve customer Experience by using the Data Analysis Tools using Qlik.

2.2 **Business Requirements:**

- 1. Data Integration:** Integrate synthetic airline data into Qlik, encompassing flight schedules, passenger demographics, ticket sales, and performance metrics.
- 2. Data Visualization:** Create interactive dashboards and visualizations to represent revenue trends, operational efficiency metrics, and customer satisfaction scores.
- 3. Predictive Analytics:** Utilize Qlik's predictive analytics tools to forecast demand, identify potential operational bottlenecks, and predict customer behavior.
- 4. Segmentation Analysis:** Segment customers based on purchasing behavior, travel frequency, and feedback to tailor marketing and operational strategies.

2.3 Literature Survey:

1. Historical Data Analysis: Research shows that analyzing historical ticket sales can reveal peak travel times and popular destinations.¹

2. Resource Allocation: Literature suggests that predictive analytics can improve resource allocation by forecasting peak traffic periods

3. Customer Segmentation: Studies show that segmenting customers based on demographics and purchasing behavior can help personalize 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.

 Search

Show by table

All tables



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/Airlines.csv]
(txt, utf8, embedded labels, delimiter is ',', msq);
```

```

[Airlines]:
Load *;
[Airlines]:
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 [Dparture_Date],
Year([Departure Date]) AS Year,
Month([Departure Date]) as Month
RESIDENT [Airlines]
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

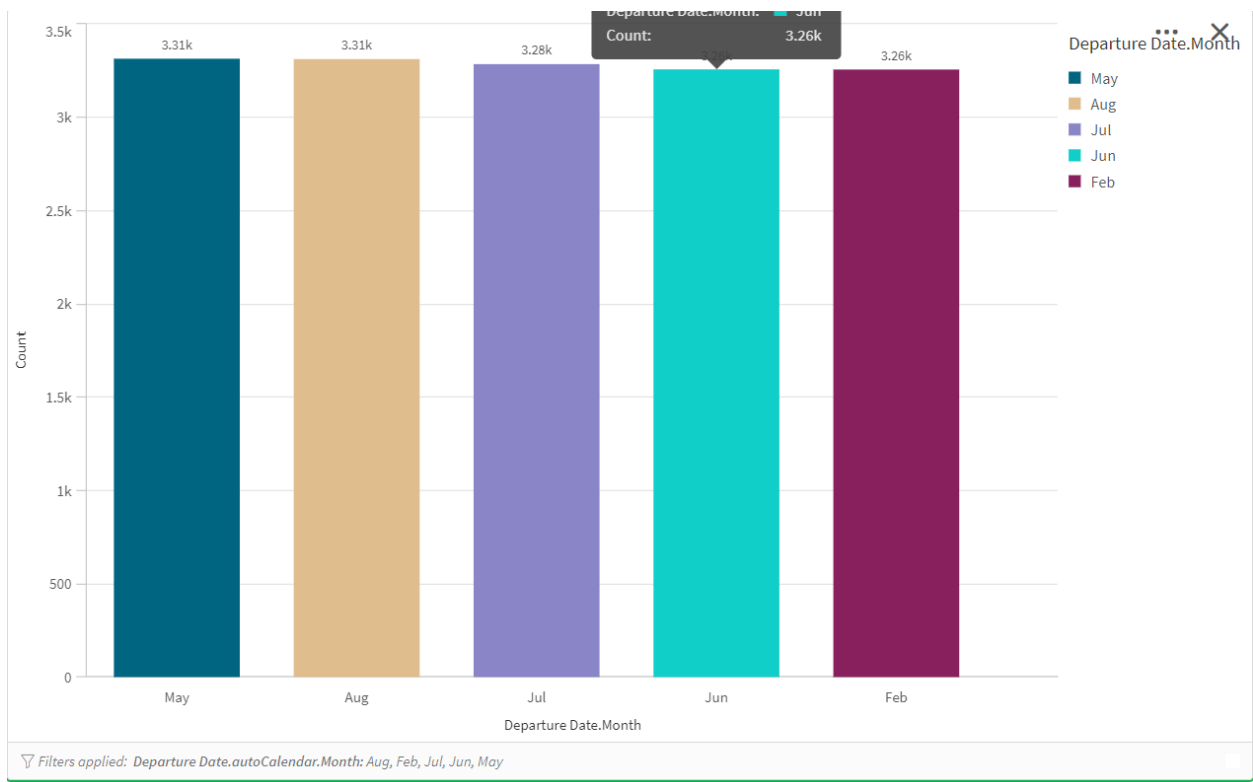
49.02k

6.Number of Flights on Time:

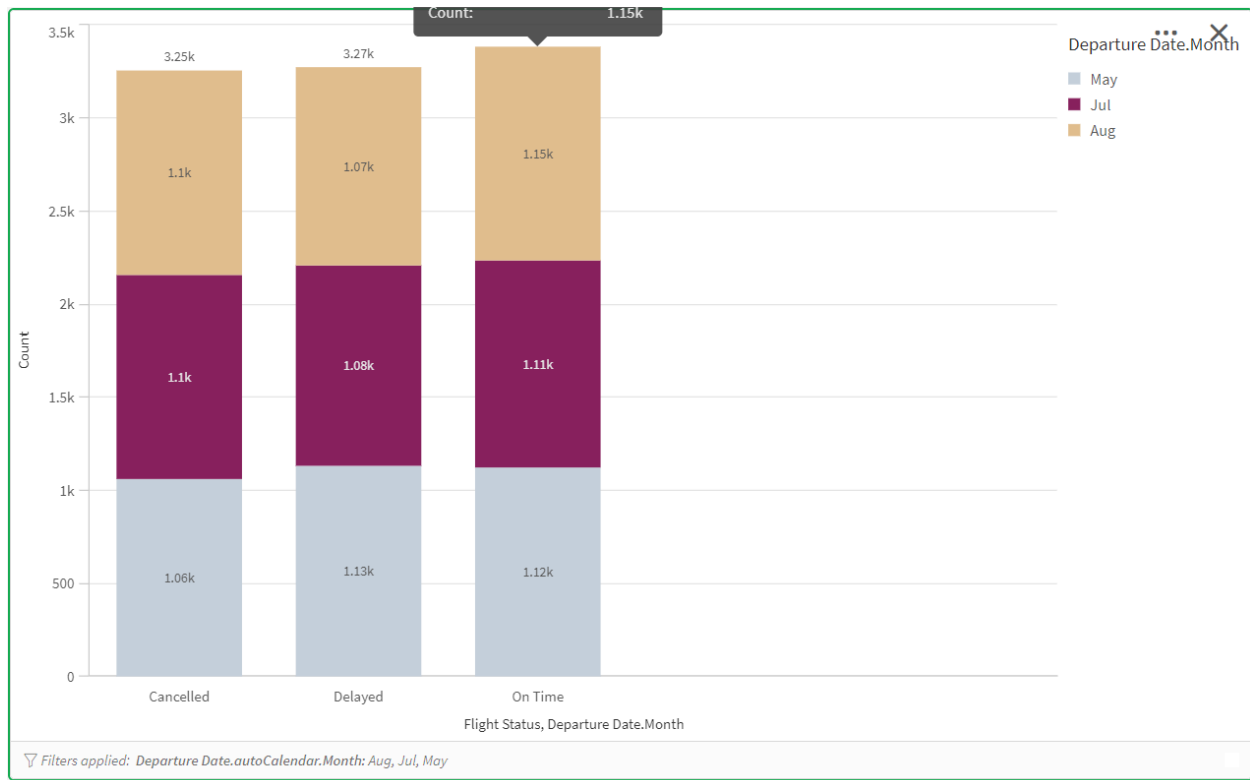
Number of Flights on Time

32.85k

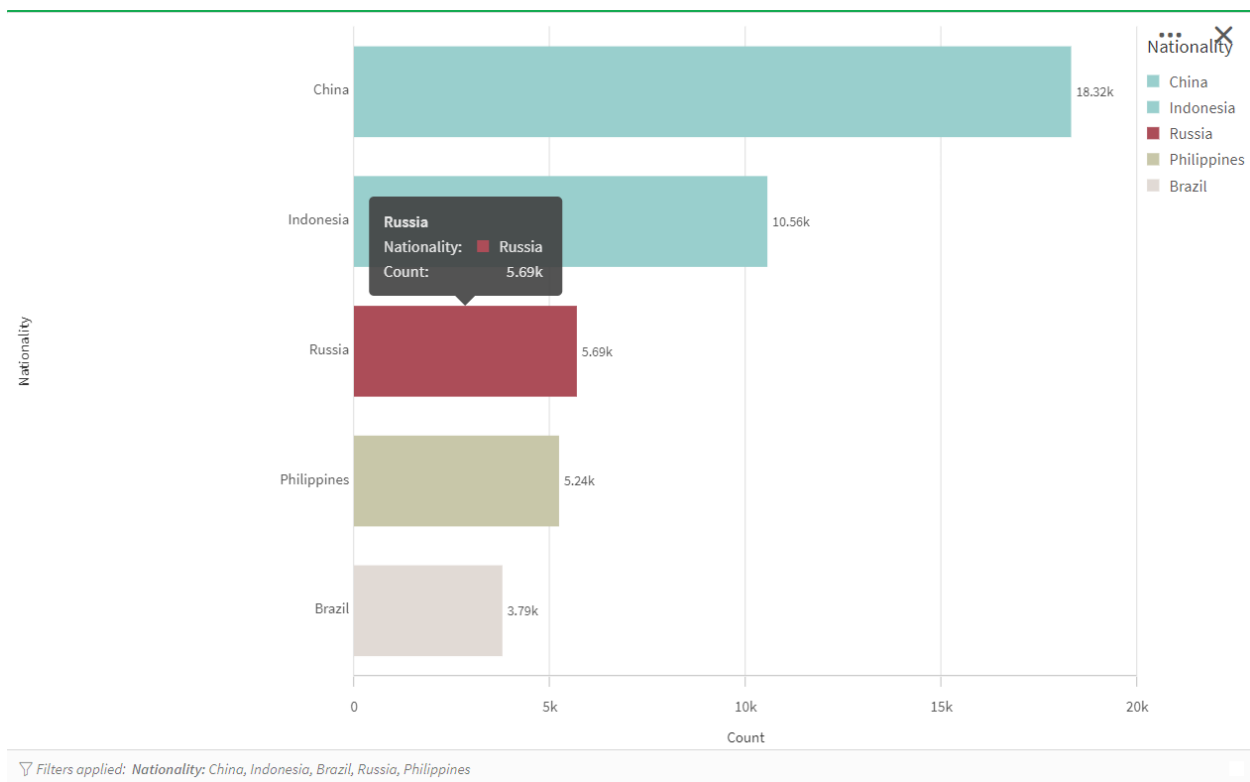
7.Top 5 Months where Passengers Travle the Most:



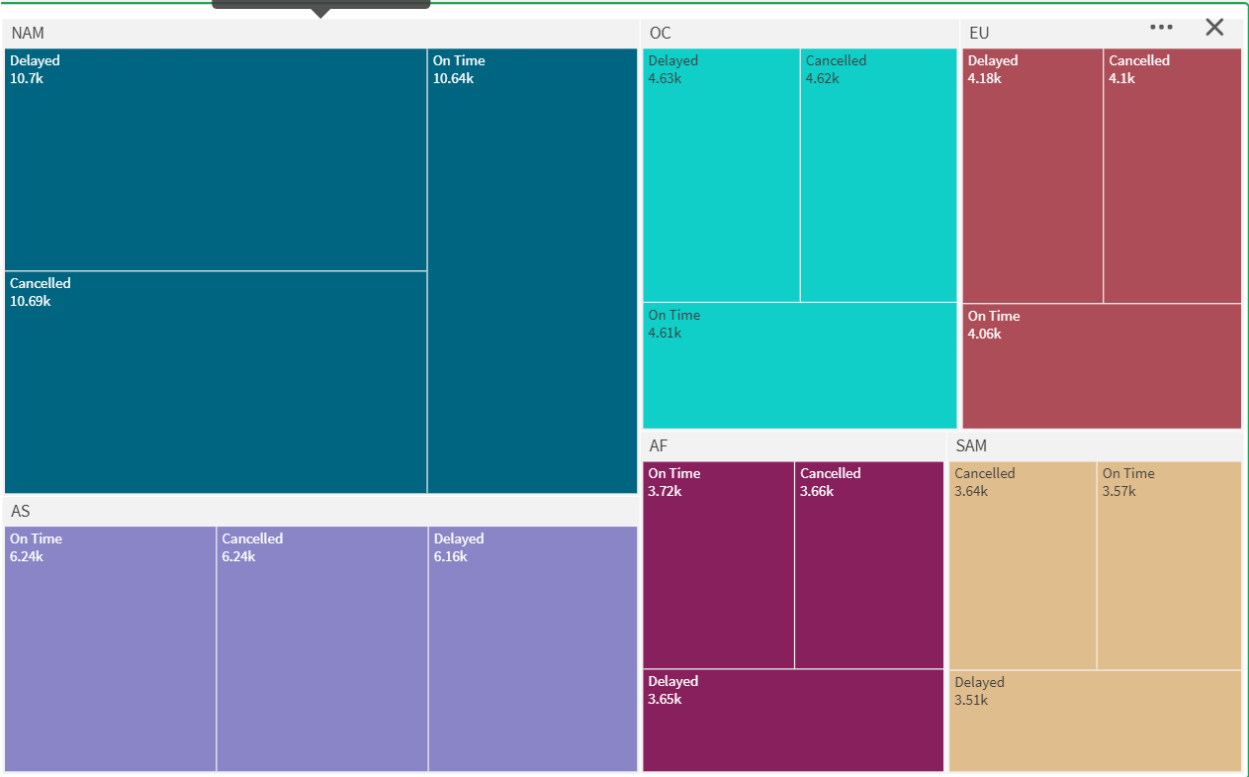
8.Top 3 Months Flight Status Wise:



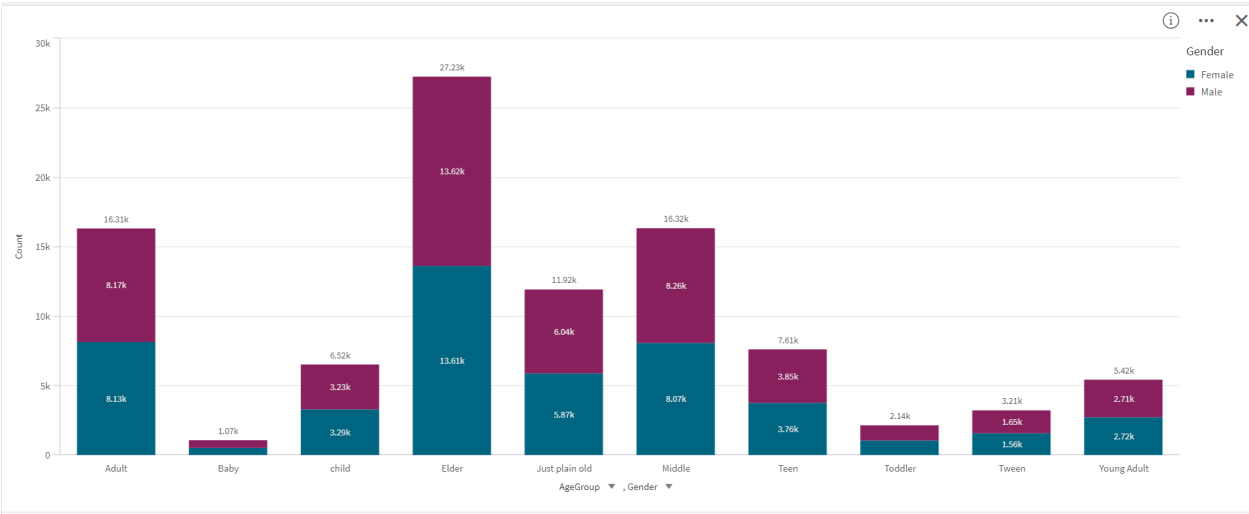
9. Number of Passengers nationality wise:



10. Continent Wise Flight Status:



11.Age Group Gender Wise:



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

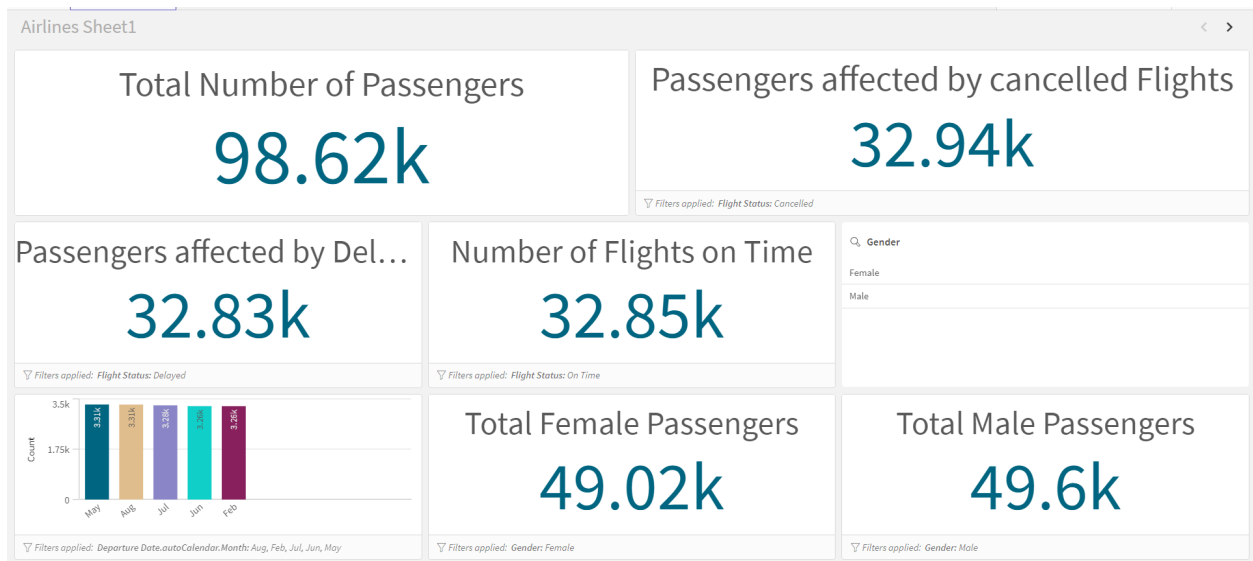
Gender

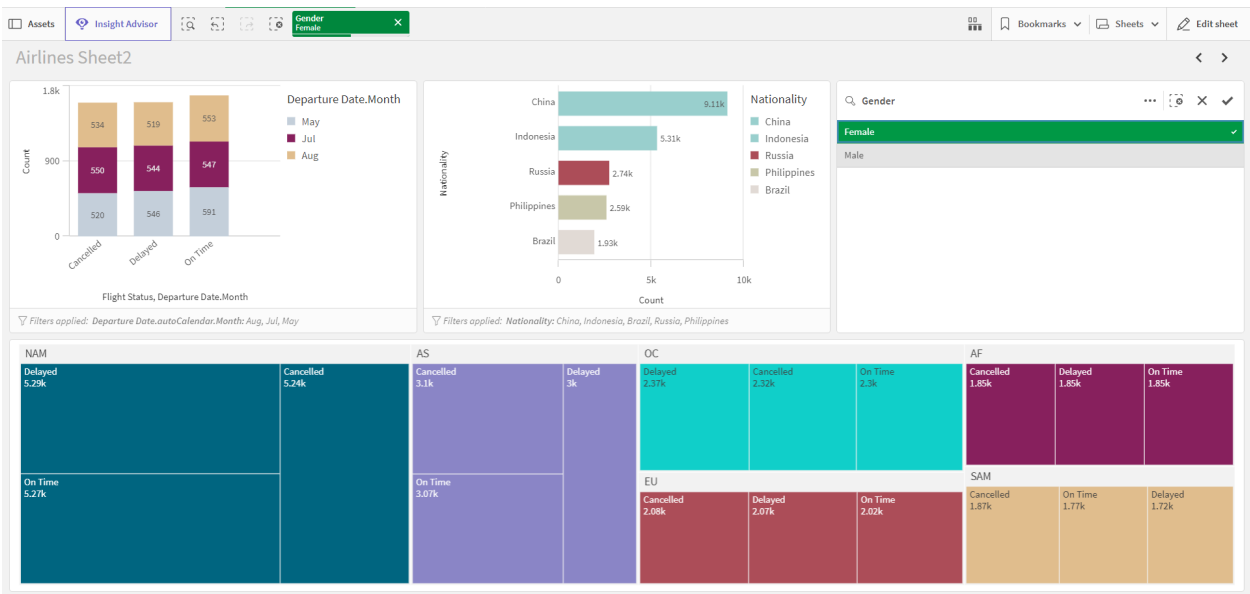
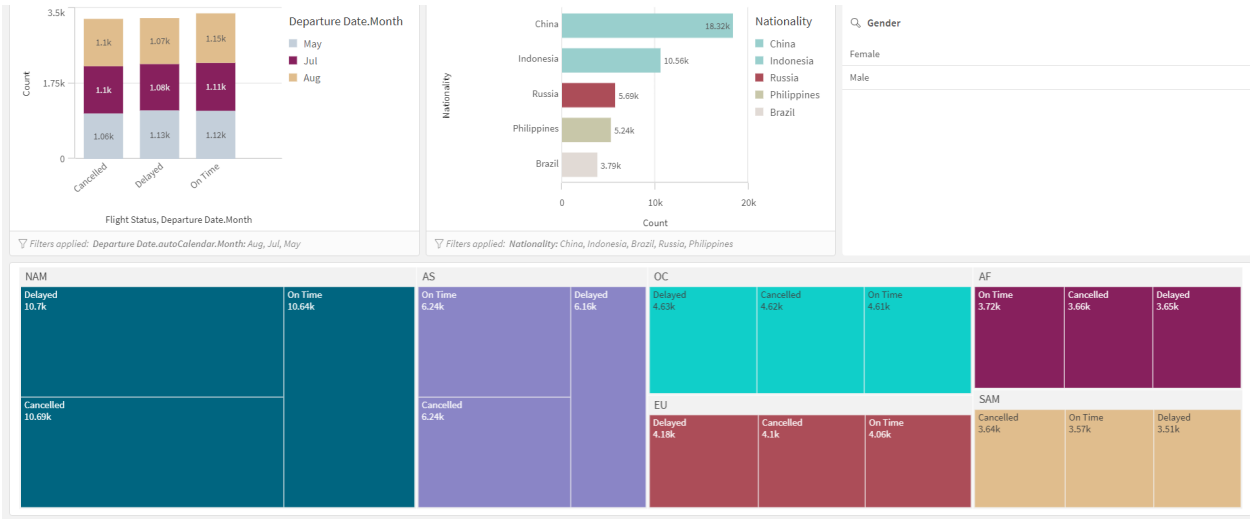
Female

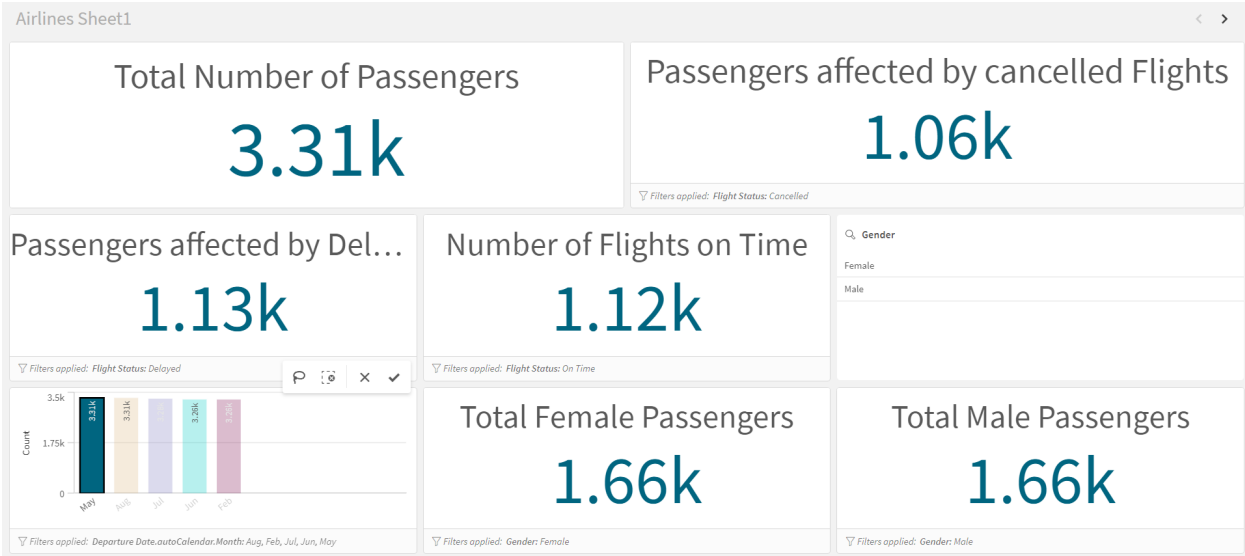
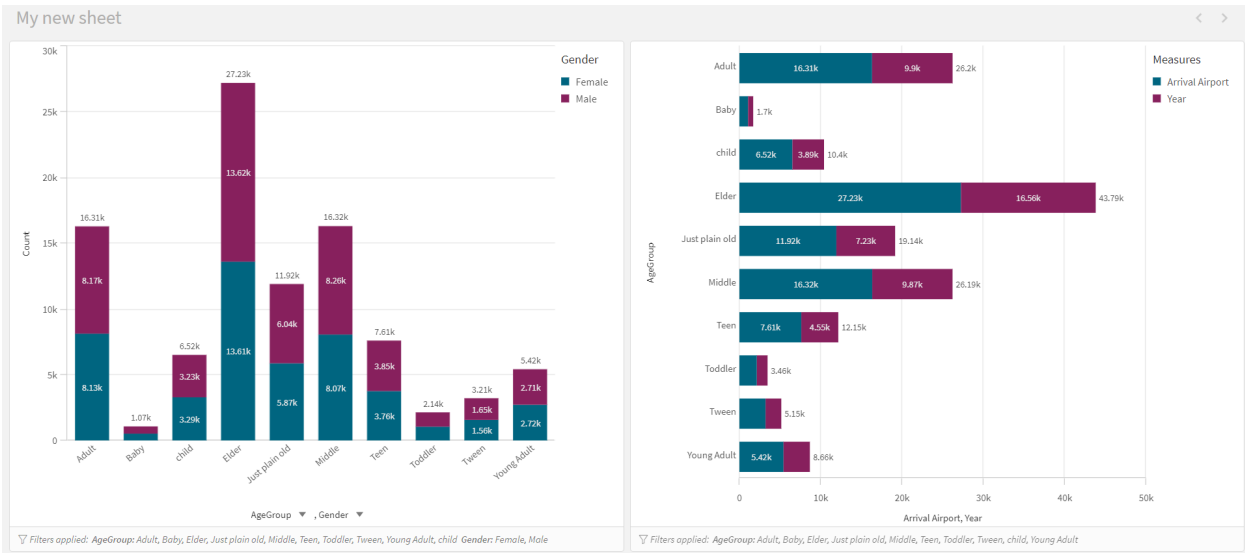
Male

6. Dashboards/Sheets:

6.1 Responsive and Design of Dashboards







7. Report:

7.1 Report Creation

The report provides insights into various aspects of airline operation using synthetic data. The visualisations show us various insights about the Dataset. Some of the insights are given below:

1. There are total of 98.62K passengers travelling out of which 49.6K are Male and 49.02K are Female Passengers.
2. Total 32.94K passengers were affected by cancelled flights, 32.83K passengers affected by delayed flights and 32.85K passengers flight were on time.
3. Highest number of passengers travelled during the month of May accounting to a

Total of 3.31K

4. China has the Highest Number of Passengers with 18.32K Passengers.

5. Age Group Elder has the highest Number of Passengers with 27.23K and Baby Agegroup is the Minimum Number of Passengers.

8. 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:

