

# **Report**

## **Exploring Insights from Synthetic Airline Dataset with Qlik**

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## **Abstract**

This report presents a comprehensive analysis of flight performance using Qlik Sense Desktop, a powerful data visualization and analytics tool. The project involves setting up Qlik Sense Desktop, creating a new app, uploading and preparing data, and generating insightful visualizations. The goal is to measure key performance indicators (KPIs) and analyze flight data across different continents to derive actionable insights that can enhance operational efficiency and customer satisfaction.

## **Introduction**

Qlik Sense Desktop is a robust data analytics and visualization tool that allows users to create interactive and informative dashboards. This project leverages Qlik Sense Desktop to analyze an airline dataset, focusing on key performance metrics such as total passengers, on-time flights, delayed flights, and cancelled flights. By visualizing this data, we aim to uncover patterns and insights that can inform strategic decision-making in the airline industry.

## **Setup and Installation**

Creating an Account and Downloading Qlik Sense Desktop

### **Login and Account Creation:**

1. Access the Qlik Sense website(<https://www.qlik.com/us/try-or-buy/download-qlik-sense>) and create a new account.
2. Download the Qlik Sense Desktop unlock file.

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### **File Placement:**

1. Navigate to the directory: `C:\Users\Dhawl\Documents\Qlik\Sense\trial`.
2. Paste the downloaded desktop unlock file in this directory.

### **Launching Qlik Sense Desktop:**

1. Open the Qlik Sense Desktop application.
2. App Creation and Data Upload

### **Create a New App and Upload Data:**

#### **Create a New App:**

1. Click on the "Create App" button to start a new project.

#### **Upload the Data File:**

1. Go to Skill Wallet and download the project flow data set.
2. In Qlik Sense, upload this data set into the new app. Ensure the dataset is embedded correctly to use the first row as headers if it is not done automatically.

## **Data Preparation**

### **Removing Duplicates and**

### **Null Values Data Load**

#### **Editor:**

1. Go to the 'Prepare' tab and open the Data Load Editor.
2. Modify the default Qlik script to handle duplicates and null values as per the requirements.

#### **Sample Code:**

```

```
// Load data from the  
source LOAD
```

```
  [Passeng  
    er ID],  
  [First  
    Name],  
  [Last  
    Name],  
  Gender,  
  Age,  
  Nationalit  
y, [Airport  
  Name],
```

```
[Airport Country  
Code], [Country  
Name], [Airport  
Continent],  
Continents,  
[Departure_Date  
, [Arrival  
Airport],  
[Pilot Name],
```

```
[Flight Status]
```

```
FROM [lib://YourDataFolder/Airline_dataset.csv]
```

```
(txt, codepage is 1252, embedded labels, delimiter is ',', msq);
```

```
// Remove
```

```
duplicates
```

```
NoConcatenate
```

```
LOAD
```

```
Distinct *
```

```
Resident Airline_dataset;
```

```
// Handle null values by replacing them with
```

```
appropriate values LOAD
```

```
[Passenger ID],
```

```
If(Len(Trim([First Name]))=0, 'Unknown', [First Name]) as [First
```

```
Name], If(Len(Trim([Last Name]))=0, 'Unknown', [Last Name]) as
```

```
[Last Name], If(IsNull(Gender), 'Unknown', Gender) as Gender,
```

```
If(IsNull(Age), 0, Age) as Age,
```

```
If(Len(Trim(Nationality))=0, 'Unknown', Nationality) as Nationality,
```

```
If(Len(Trim([Airport Name]))=0, 'Unknown', [Airport Name]) as
```

```
[Airport Name],
```

```
If(Len(Trim([Airport Country Code]))=0, 'Unknown', [Airport Country Code])
```

```
as [Airport Country Code],
```

```

If(Len(Trim([Country Name]))=0, 'Unknown', [Country Name]) as
[Country Name], If(Len(Trim([Airport Continent]))=0, 'Unknown',
[Airport Continent]) as [Airport Continent],
If(Len(Trim(Continents))=0, 'Unknown', Continents) as Continents,
If(IsNull([Departure_Date]), '1900-01-01', [Departure_Date]) as
[Departure_Date], If(Len(Trim([Arrival Airport]))=0, 'Unknown',
[Arrival Airport]) as [Arrival Airport], If(Len(Trim([Pilot Name]))=0,
'Unknown', [Pilot Name]) as [Pilot Name], If(Len(Trim([Flight
Status]))=0, 'Unknown', [Flight Status]) as [Flight Status],
MonthName([Departure_Date]) AS MonthYear
Resident Airline_dataset;

```

```

// Drop the temporary
table Drop Table
Airline_dataset;
```

```

## **Visualization Creation**

### **Key Performance**

#### **Indicators Total**

#### **Passengers:**

Measure: `Count (distinct [Passenger ID])`

#### **On-time Flights:**

Measure: `Count ({< [Flight Status] = {'On Time'} >} DISTINCT  
[Passenger ID])`

#### **Delayed Flights:**

Measure: `Count ({< [Flight Status] = {'Delayed'} >} DISTINCT [Passenger ID])`

### **Cancelled Flights:**

Measure: `Count ({< [Flight Status] = {'Cancelled'} >} DISTINCT [Passenger ID])`

### **Continent-wise Flight Status**

Visualization: Tree Map

Dimension: `Continent`

Rectangle Size: `Flight

Status` Measure: `Count (Flight Status)`

- 
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- 
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### **Dashboard and Storytelling**

#### **Dashboard**

#### **Creation**

## **Design**

### **Dashboards:**

1. Create two dashboards, aligning the visualizations and key performance indicators effectively.

## **Storytelling**

### **Create**

#### **Story:**

1. Use the storytelling feature in Qlik Sense to create a presentation (PPT).
2. Include the visualizations and narrative to explain the insights derived from the data.

## **Project Analysis and Scope**

### **Analysis:**

The analysis of the project data involves several steps to ensure data quality and derive meaningful insights. Initially, the raw data is pre-processed to handle duplicates and null values. The data is then structured to create key performance indicators (KPIs) such as the total number of passengers, on-time flights, delayed flights, and cancelled flights. Visualizations, such as tree maps, help in understanding the distribution of flight status across different continents. These visualizations facilitate an in-depth analysis of the operational performance and customer satisfaction.

### **Scope:**



The scope of this project encompasses the following areas:

- a. **Data Quality Improvement:** Ensuring the accuracy and completeness of data by handling duplicates and null values.
- b. **Performance Measurement:** Developing KPIs to monitor the performance of flights, including on-time performance, delays, and cancellations.
- c. **Geographical Analysis:** Using visualizations to analyze flight performance across different continents, providing insights into regional performance variations.
- d. **Business Insights:** Deriving actionable insights to improve operational efficiency, customer satisfaction, and strategic decision-making.
- e. **Dashboard Creation:** Creating interactive dashboards that provide a comprehensive view of the airline's performance.
- f. **Storytelling and Presentation:** Using Qlik Sense's storytelling feature to create presentations that effectively communicate the insights derived from the data.

## **Conclusion**

This report outlines the process of setting up Qlik Sense Desktop, preparing the data, creating visualizations, and compiling them into a cohesive story. The provided script and steps ensure a comprehensive approach to analyzing and presenting data effectively using Qlik Sense. The project analysis highlights the importance of data quality, performance measurement, and geographical analysis in deriving business insights and making informed decisions. The scope of the

project demonstrates the potential of Qlik Sense in transforming raw data into valuable insights that can drive operational improvements and strategic planning.

**GitHub link: <https://github.com/dhawaldc/Exploring-Insights-from-Synthetic-Airline-Dataset-with-Qlik>**