Tableau Certification Project IV

Tableau Assignment Report: Refund Analysis & Forecast Dashboard

Author: Akram M'Tir
Dashboard Link: Tableau Public - Refund Analysis & Forecast Dashboard

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1. Introduction

The objective of this assignment was to analyze refunded sales using **Tableau** and provide insights through a **dashboard**. This involved:

- **Data Preprocessing**: Cleaning and modifying the dataset.
- **Data Visualization**: Creating sheets to analyze refund trends.
- **Predictive Analysis**: Forecasting refunded sales for the next year.
- **Interactivity & Insights**: Adding dynamic filters and URL actions.
- **Dashboard Creation**: Compiling insights into a **single, interactive dashboard**.

2. Data Processing in Python (Jupyter Notebook)

Before loading the data into Tableau, we performed **data preprocessing** using Python:

1. **Loaded the dataset** from `Global Superstore Orders 2016.xlsx`.
2. **Added a new column** `Order Returned`:
   - Assigned `1` (Returned) to **10% of orders** randomly.
   - Assigned `0` (Not Returned) to **90% of orders**.
3. **Checked for missing values** and ensured data integrity.
4. **Saved the updated dataset** as `Global_Superstore_Orders_Updated.xlsx`.

Python Code Used:

```
import pandas as pd
import numpy as np

# Load the Excel file
file_path = "Global Superstore Orders 2016.xlsx"
xls = pd.ExcelFile(file_path)

# Load the "Orders" sheet into a DataFrame
orders_df = pd.read_excel(xls, sheet_name="Orders")
people_df = pd.read_excel(xls, sheet_name="People")

# Set a random seed for reproducibility
np.random.seed(42)

# Assign "Order Returned" as 1 (returned) with a 10% probability, else 0
orders_df["Order Returned"] = np.random.choice([0, 1], size=len(orders_df), p=[0.9, 0.1])

# Save the modified DataFrame to a new Excel file
output_file_path = "Global_Superstore_Orders_Updated.xlsx"
with pd.ExcelWriter(output_file_path, engine="xlsxwriter") as writer:
    orders_df.to_excel(writer, sheet_name="Orders", index=False)
    people_df.to_excel(writer, sheet_name="People", index=False)
```

3. Data Visualization & Analysis in Tableau

3.1 Sheets Created

To analyze refunded sales, we created **four sheets**:

1. **Top 10 Refund Countries Map**
    - A **world map** showing the top 10 countries with the highest refunded sales.
    - Uses **color encoding** where darker colors indicate **higher refunds**.
2. **Refunded Sales by Country**
    - A **bar chart** ranking countries by refunded sales.
    - Sorted in **descending order** to highlight the worst-performing countries.
3. **Forecast Returned Sales**
    - A **time-series line chart** predicting refunds for the **next year**.
    - Uses **Tableau's Forecasting feature** to generate **confidence intervals**.
4. **Total Refund Sales (KPI Card)**
    - Displays the **sum of all refunded sales** in a **large KPI format**.
    - Filters dynamically when selecting a country.

3.2 Dashboard Creation

All sheets were compiled into a **dashboard** with:

- **Title**: "Refund Analysis & Forecast Dashboard".
- **Dynamic Country Filter**: Allows users to filter visuals based on a selected country.
- **KPI Card for Total Refunded Sales**.
- **URL Actions**: Clicking on a country opens its Wikipedia page for further details.

4. Key Insights from the Dashboard

- **United States** had the **highest refunded sales** (~$225K), followed by **Australia** and **France**.
- The **refund trend is increasing**, meaning the company **might face higher refund costs in the future**.
- Countries with **high refund rates** may require **better product quality control** or **stricter return policies**.
- Seasonal refund trends indicate that **refunds peak at certain times of the year**.

5. Conclusion

This project successfully analyzed refund trends using **Python & Tableau**. The final **interactive dashboard** allows stakeholders to:

- Identify **problematic countries** with high refunds.
- Predict future refund trends for strategic planning.
- Explore country-specific details via **URL actions**.

The dashboard was **published on Tableau Public**:
View the Dashboard Here

6. Screenshots of the Analysis

The following screenshots illustrate the steps and final results:

- **Dataset Preprocessing in Python**
- **Tableau Sheets (Refund Map, Bar Chart, Forecast Chart, KPI Card)**
- **Final Dashboard Layout**

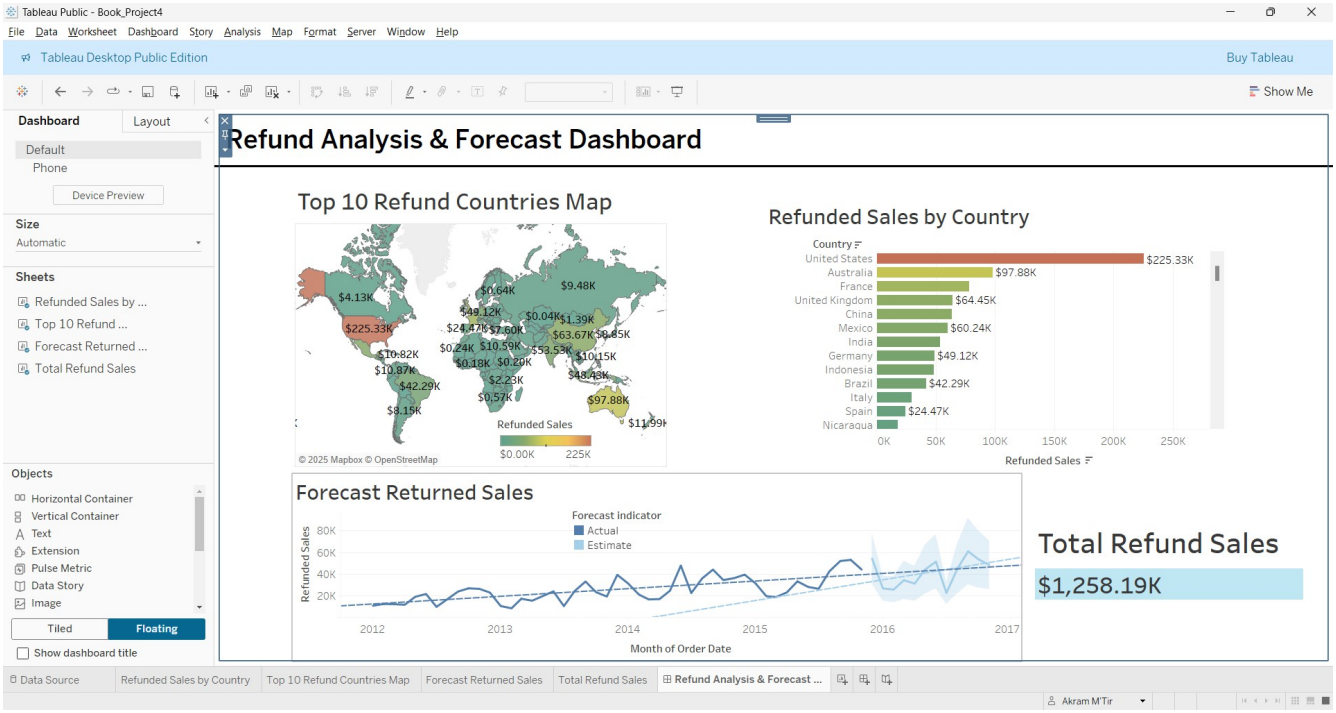
(Screenshots are attached separately for reference.)

7. Future Improvements

For future analysis, we could:

- **Drill down by product category** to identify **which products** cause most refunds.
- **Analyze customer segments** to see if refunds vary between B2B and B2C customers.
- **Compare refund trends over multiple years** to find long-term patterns.

https://public.tableau.com/app/profile/akram.m.tir/viz/Book_Project4/RefundAnalysisForecastDashboard?publish=yes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© 2025 Mapbox © OpenStreetMap
Refunded Sales by Country
Country
United States $225.33K
Australia $97.88K
France
United Kingdom $64.45K
China
Mexico $60.24K
India
Germany $49.12K
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Refund Analysis & Forecast ...
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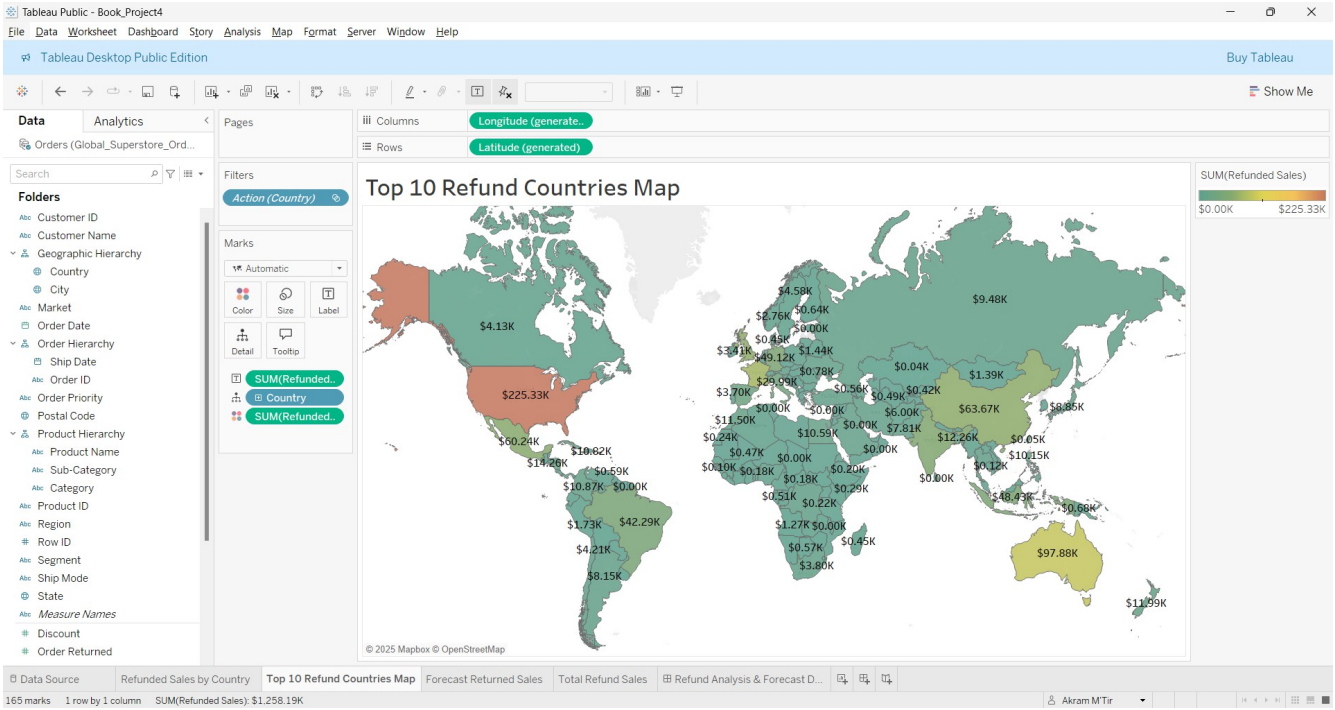
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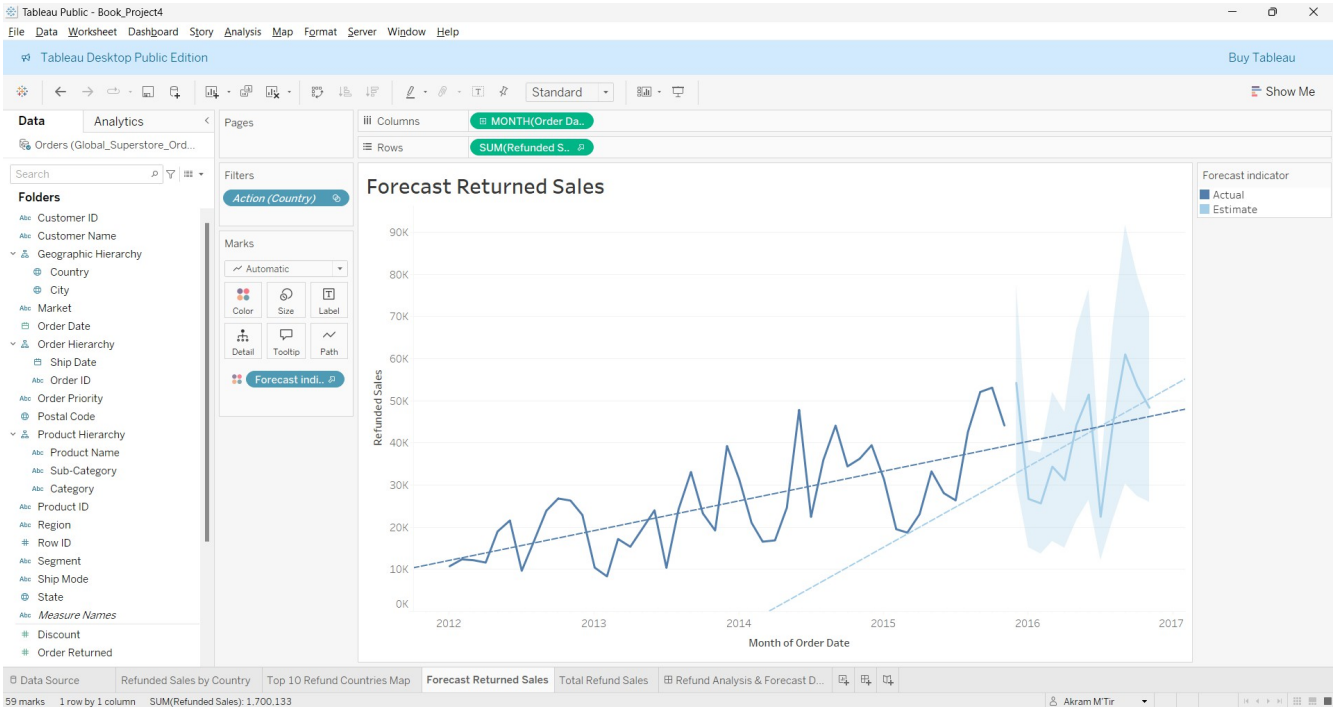
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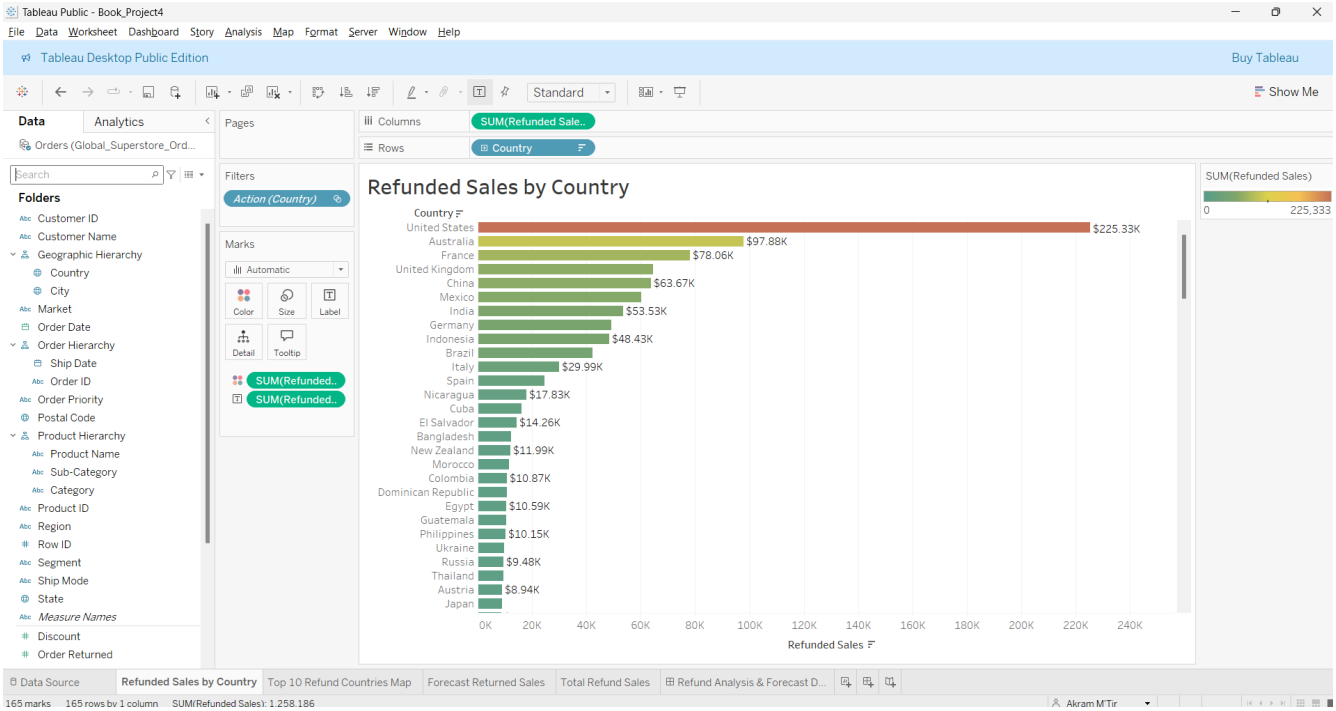
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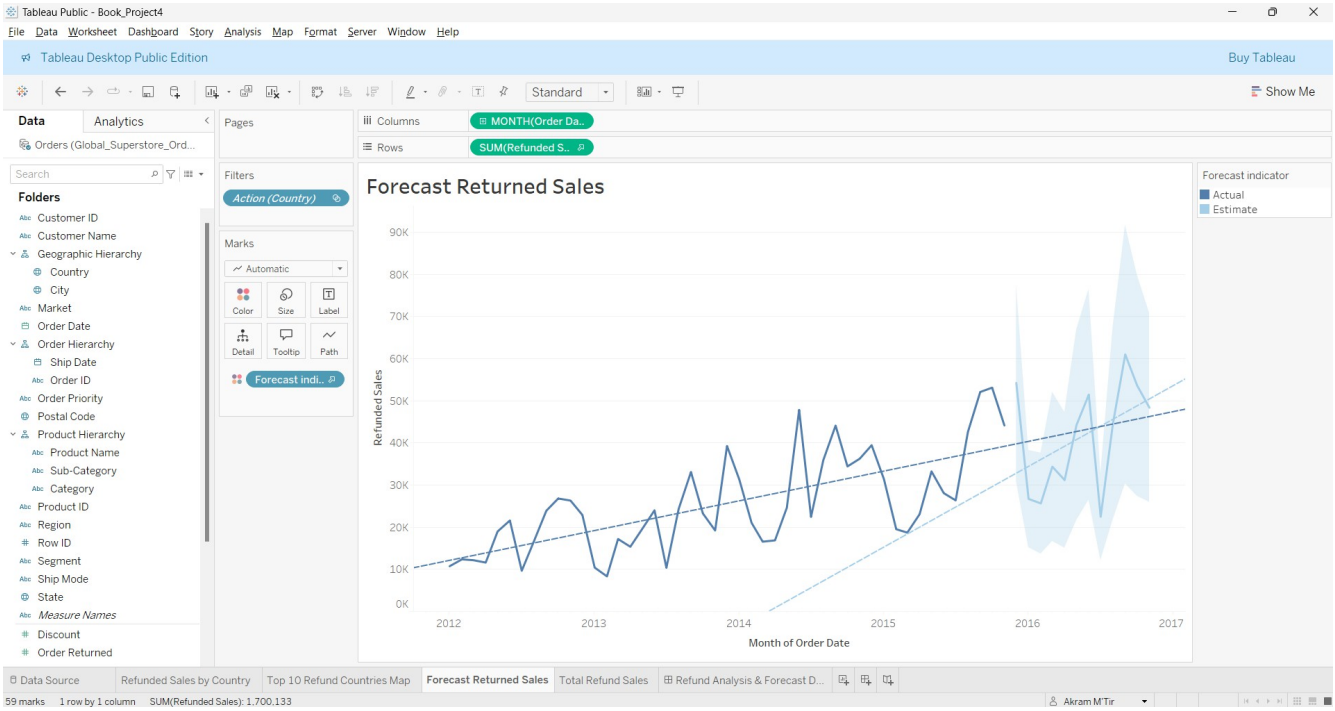
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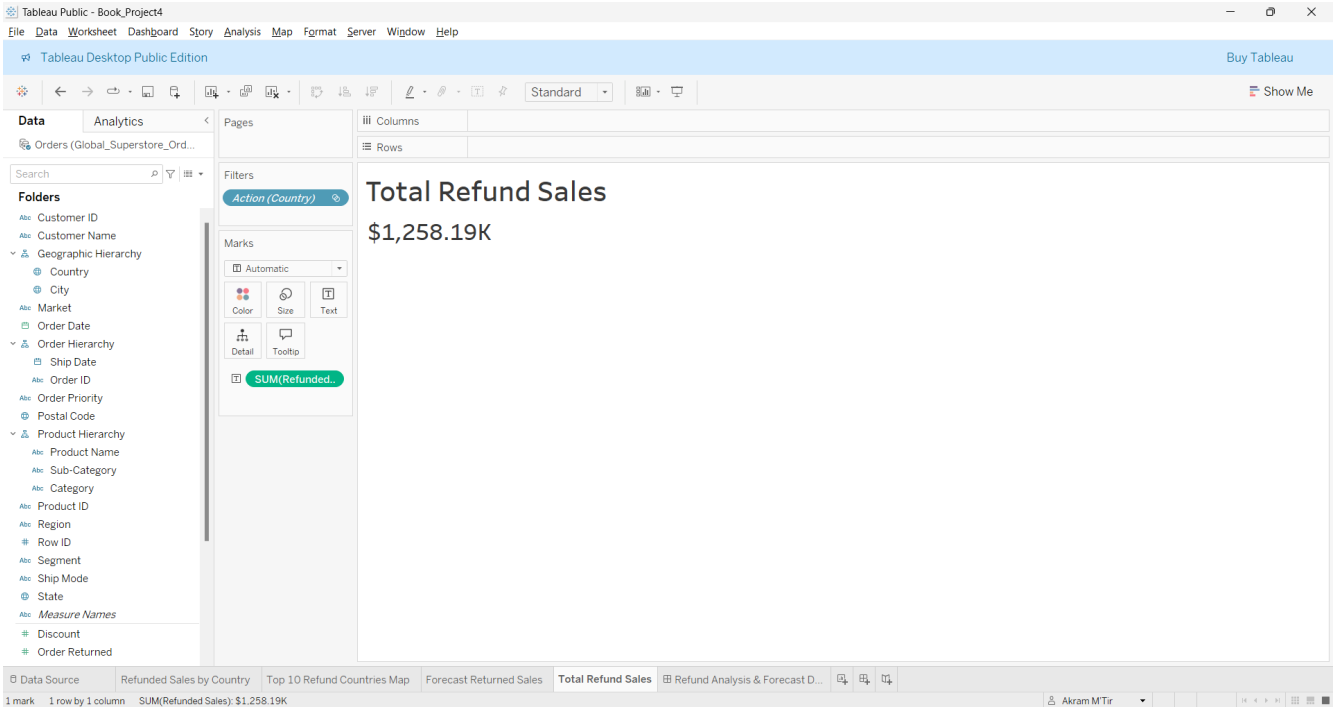
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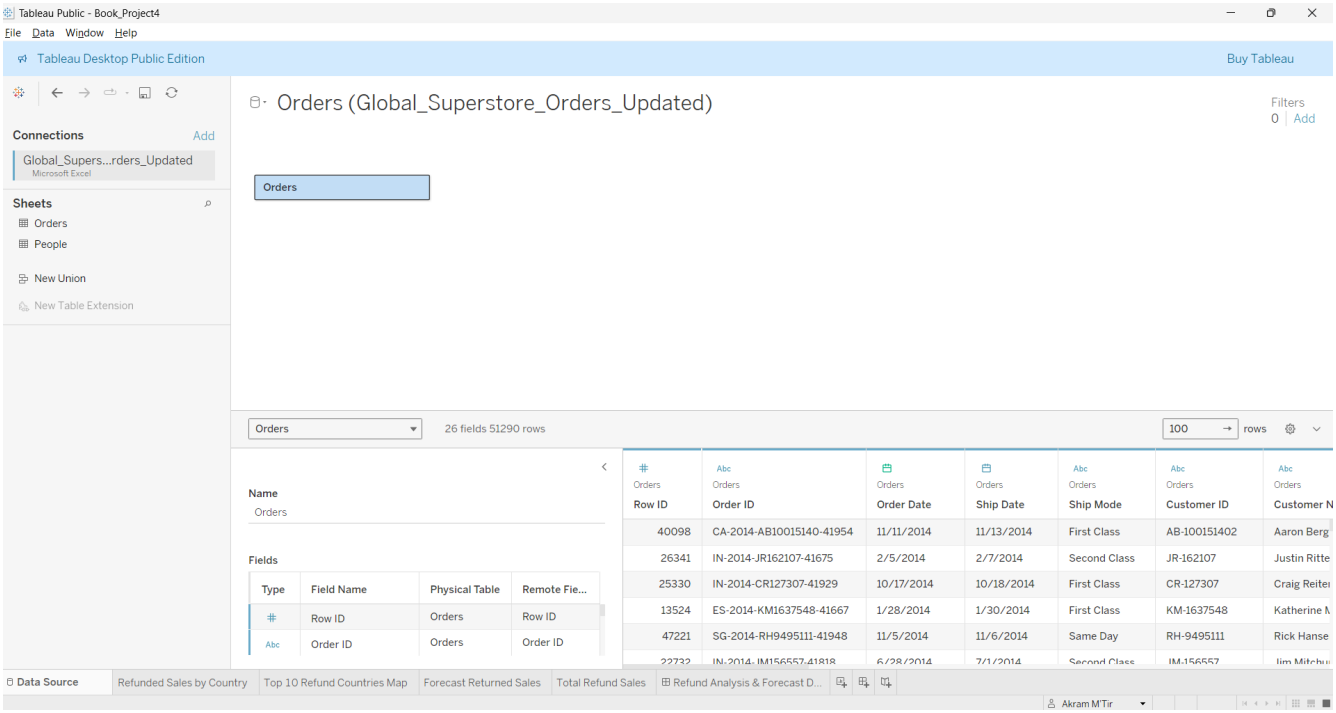
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