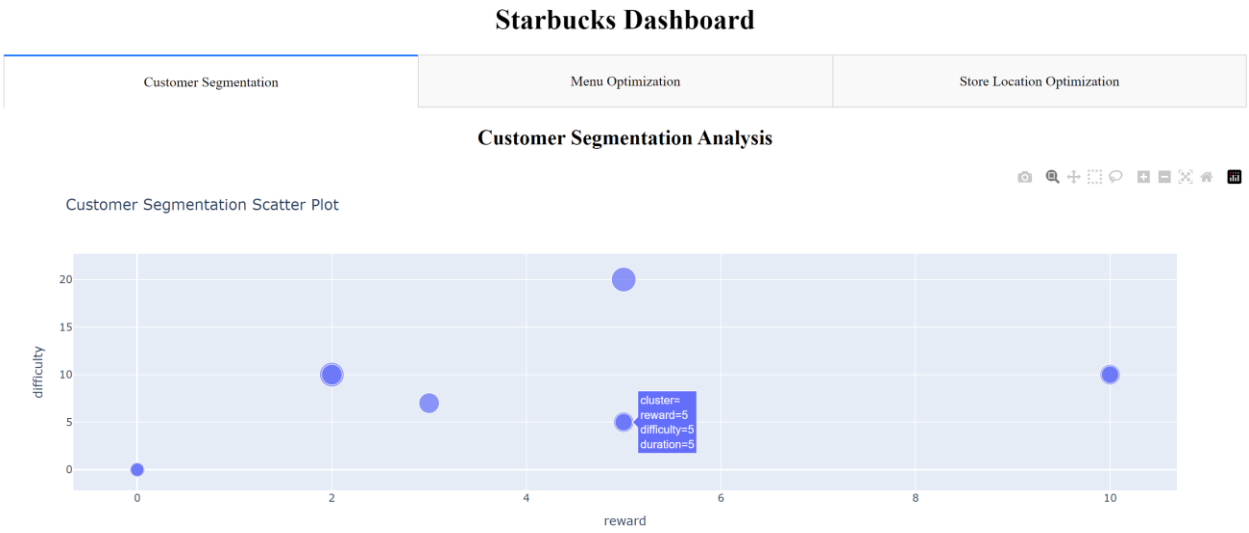

Figure 1

1. Customer Segmentation Scatter Plot

What it Shows:

- **X-axis (Reward):** Indicates the level of reward offered in different clusters.
- **Y-axis (Difficulty):** Represents the difficulty level associated with the offer or service.
- **Bubble Size:** Represents the duration of engagement for the respective cluster.
- **Clusters:** Each point belongs to a customer cluster, differentiated by color.

Insights:

- Customers in clusters with high rewards and lower difficulty are likely more engaged.
- Larger bubbles indicate offers or services that retain customers for a longer duration.
- Helps identify which customer segments are most lucrative or require targeted improvements.

Figure 2

2. Menu Optimization - Calorie Distribution

What it Shows:

- **X-axis (Calorie Levels):** Displays the calorie range of Starbucks menu items.
- **Y-axis (Count):** Shows the number of menu items within each calorie range.

Insights:

- The majority of menu items have low-calorie content, appealing to health-conscious customers.
- Items with higher calorie levels are fewer but could cater to a niche audience seeking indulgence.
- Helps in identifying gaps for creating balanced menu items across all calorie levels.

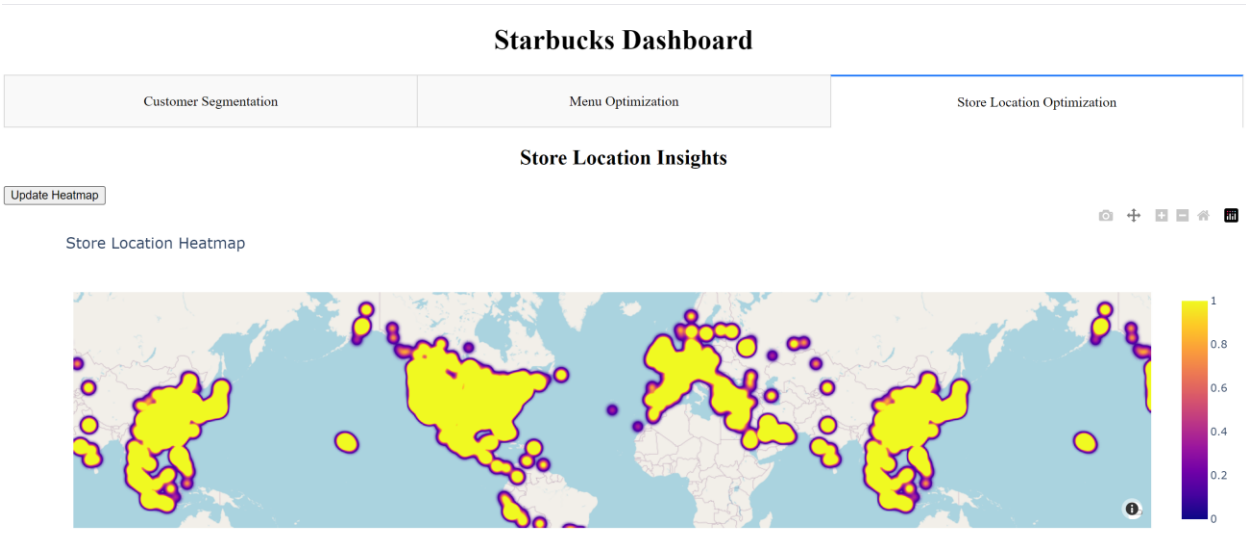

Figure 3

3. Store Location Heatmap

What it Shows:

- **Map Visualization:** Highlights the density of Starbucks store locations globally.
- **Color Intensity:** Indicates store concentration in specific areas.

Insights:

- High-density regions include urban and metropolitan areas (e.g., USA, Europe, East Asia).
- Sparsely covered areas could represent potential expansion opportunities.
- This heatmap enables strategic planning for new store locations.

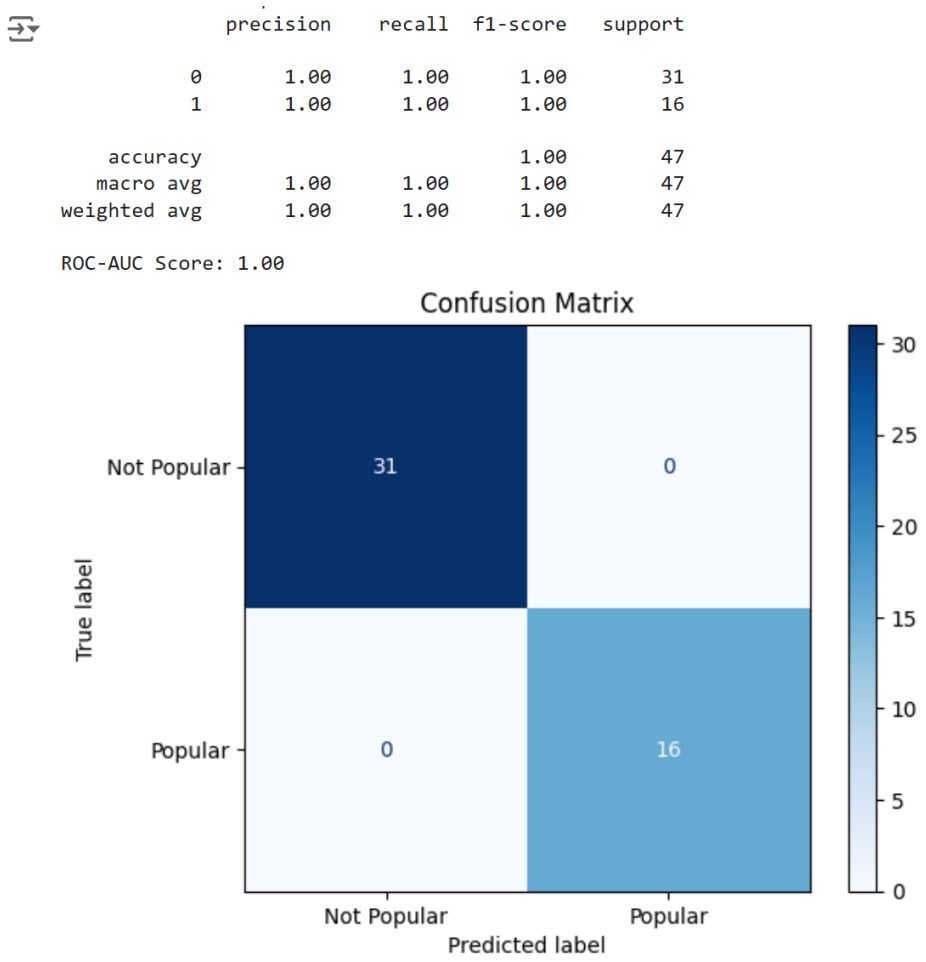

Figure 4

4. Confusion Matrix for Popularity Prediction

What it Shows:

- **True Label vs. Predicted Label:** Highlights the accuracy of the machine learning model in predicting "Popular" or "Not Popular" outcomes.
- **Diagonal Cells:** Represent correct predictions.
- **Off-diagonal Cells:** Represent misclassifications.
- **AUC-ROC** score of 1.00 indicates the model's ability to distinguish between classes perfectly.

Insights:

- **Model Performance:** Excellent performance with 100% accuracy, precision, and recall.
- **Actionable Insight:** The model successfully distinguishes between popular and less popular items, which can guide marketing and inventory decisions.