Capstone Project Report

Market Entry Analysis for ABG Motors in India

Submitted by:
Arundhati Brahma
MCA Student (HBTU Kanpur)
Internshala Data Science Training
June 2025

2. <u>Table of Contents</u>

3. <u>Introduction</u>

ABG Motors, a Japanese automobile manufacturer, is considering expanding to the Indian market. They want to know whether they can achieve a target of 12,000 annual car sales.

This project uses data-driven techniques — specifically a classification model trained on Japanese consumer behavior — to predict how many Indian customers are likely to purchase a car. Based on this, we recommend whether ABG should enter the Indian market.

4. <u>Dataset Description</u>

Japanese Dataset:

- Contains 20,000 customer records

- Features: `CURR_AGE`, `GENDER`, `ANN_INCOME`, `AGE_CAR`

- Target column: `PURCHASE` (1 = bought a car, 0 = didn't buy)

Indian Dataset:

- Contains 70,000 records

- Features: same as Japanese, after transformation

- No purchase data; model is used to predict

5. <u>Model Building and Performance</u>

By training a Logistic Regression model on the Japanese dataset. The model achieved:

- Accuracy: **68%**

- Precision (Buyers): **71%**

- Recall (Buyers): **78%**

Key findings from model coefficients:

- Older cars increase purchase likelihood

- Higher income slightly increases likelihood

- Female customers had slightly lower predicted purchase rates

The model was then applied to the Indian dataset (after feature alignment) to estimate potential buyers.

6. Insights from Japanese market

Before applying the model, EDA was performed on the Japanese dataset.
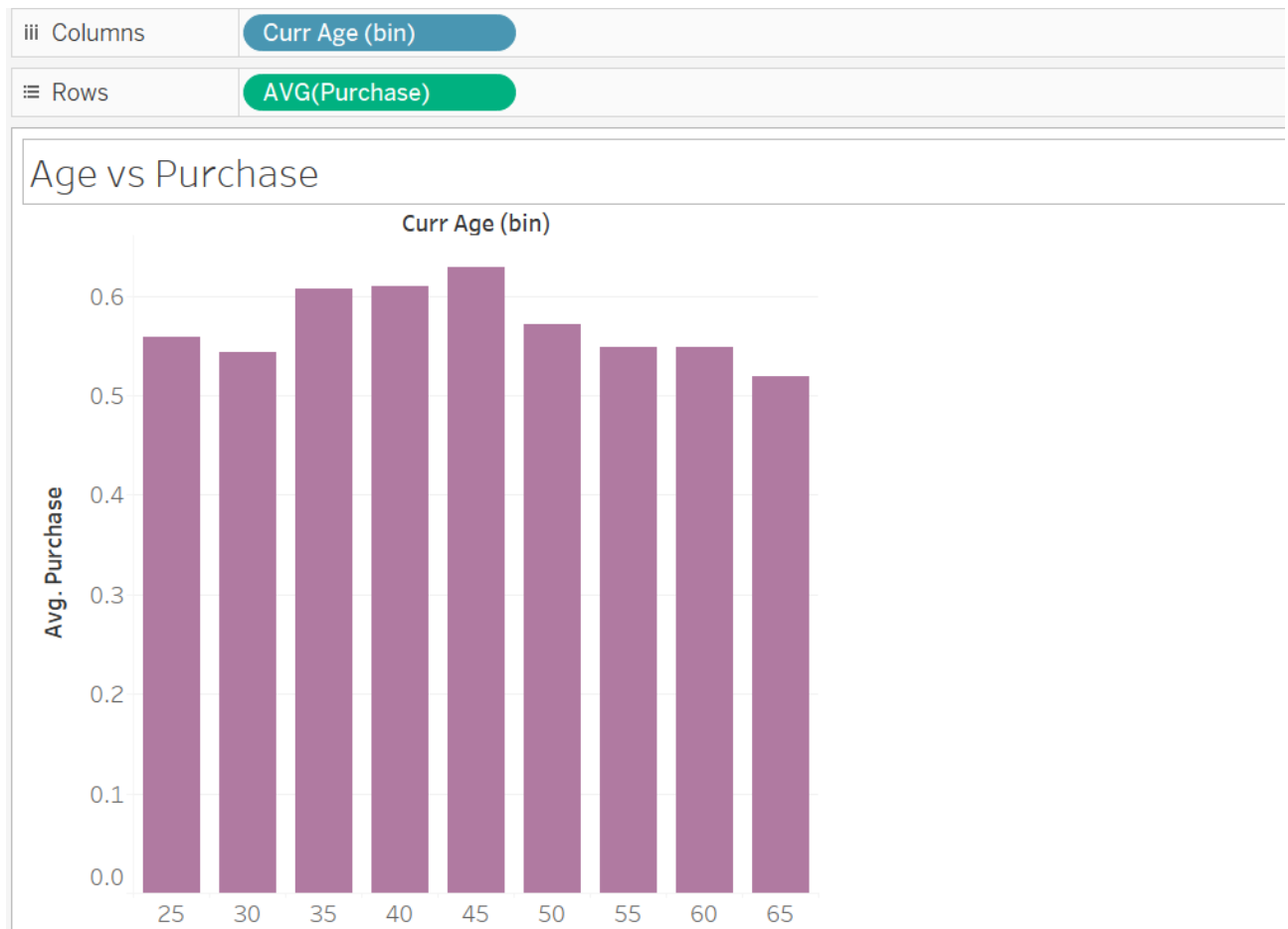
Key insights:
- 35–45 age group showed highest purchase rates
- Males slightly more likely to purchase
- Older cars are associated with higher buying probability
- Higher income increases purchase likelihood

These insights helped guide the modeling process and validation.
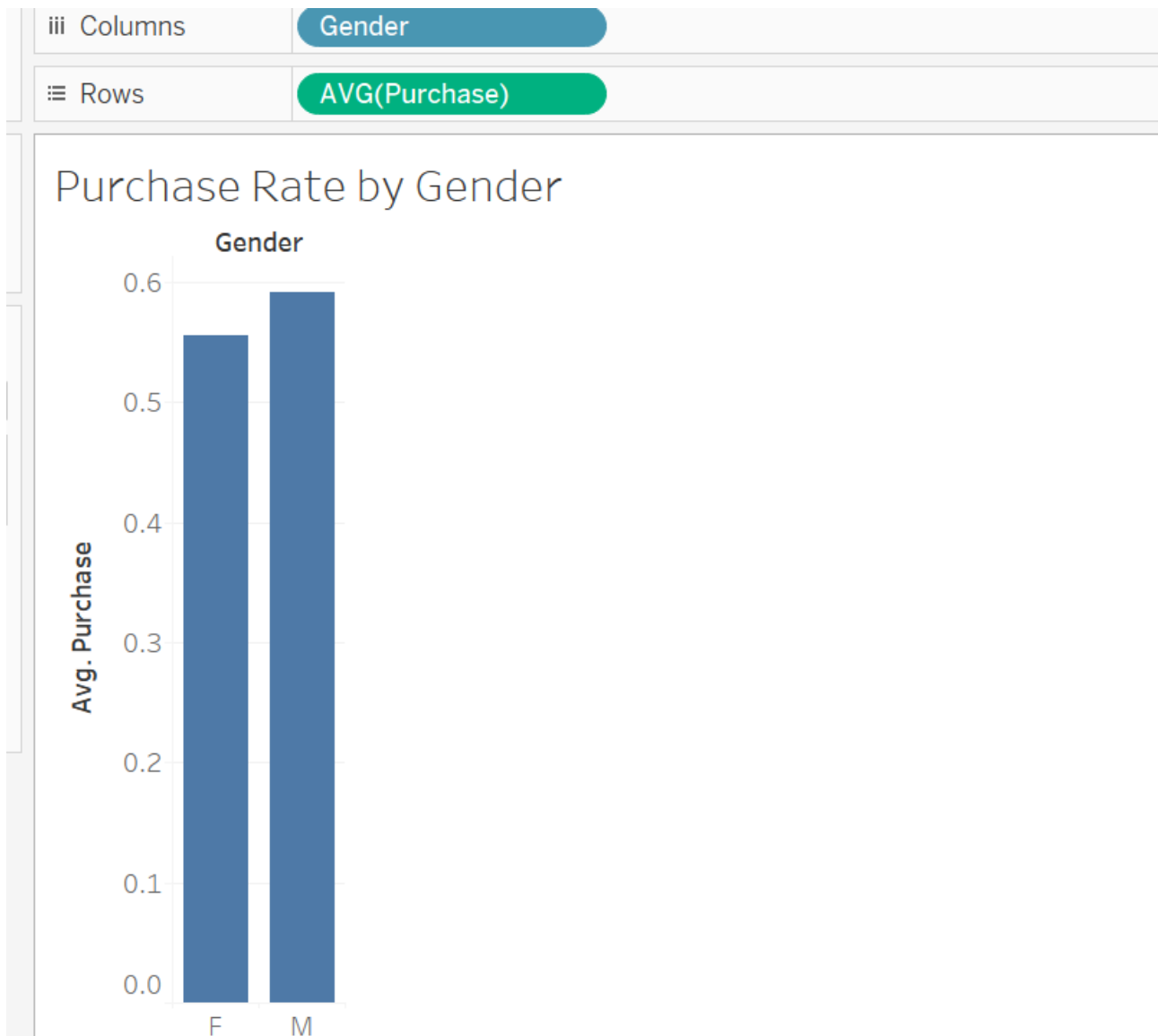
📊 7. <u>Dashboard 1 – Japanese Market</u>

<u>Age vs Purchase</u>

iii Columns	Curr Age (bin)
≡ Rows	AVG(Purchase)

Age vs Purchase

Interpretation:
Customers aged 35–45 show the highest purchase likelihood, indicating a prime target demographic for ABG Motors.

Purchase Rate by Gender

iii Columns	Gender
≔ Rows	AVG(Purchase)

Purchase Rate by Gender

Interpretation:

Higher annual income correlates with higher purchase likelihood, especially above ₹400K.
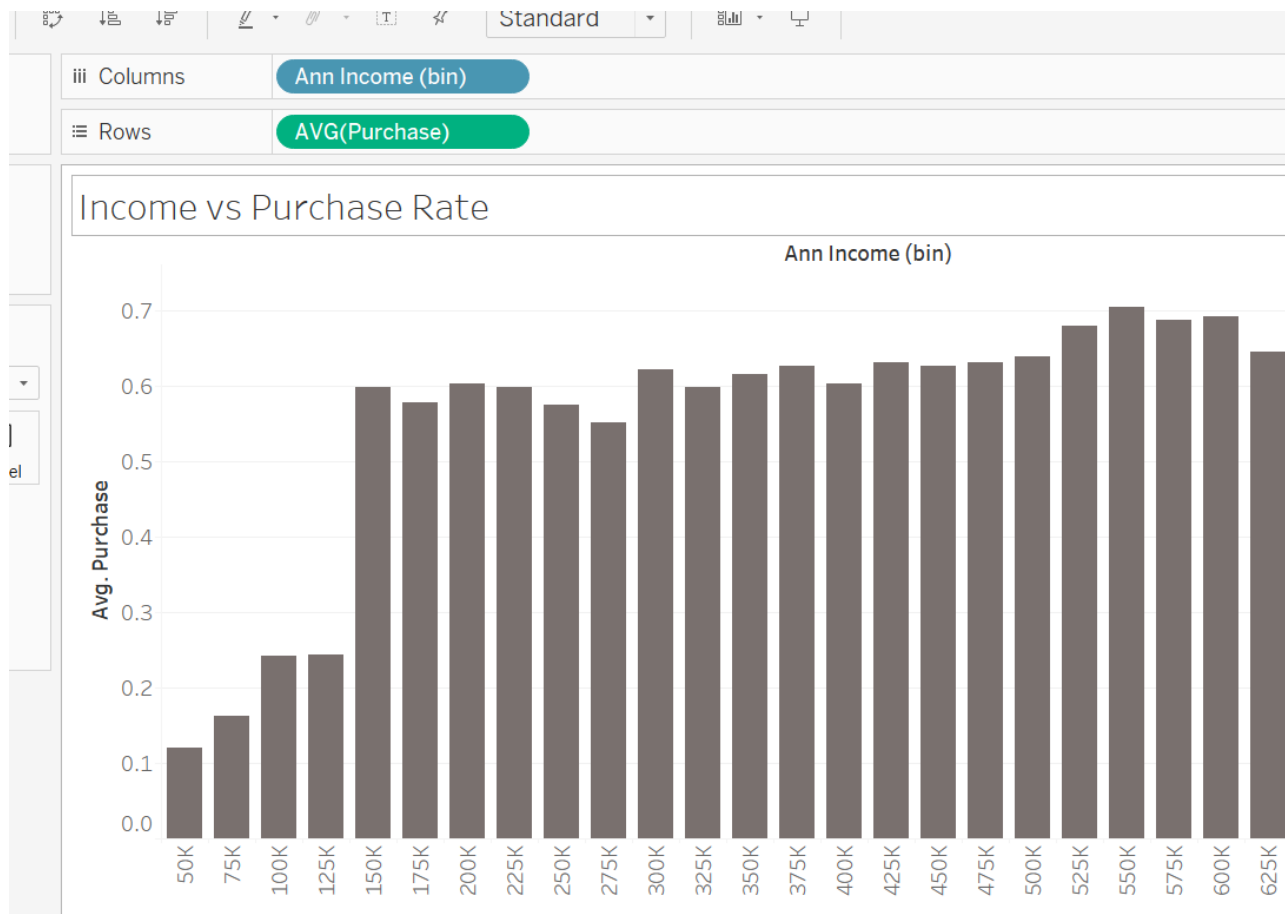Income can be a key filtering factor.

Income vs Purchase Rate

Interpretation:
Higher annual income correlates with higher purchase likelihood, especially above ₹400K. Income can be a key filtering factor.
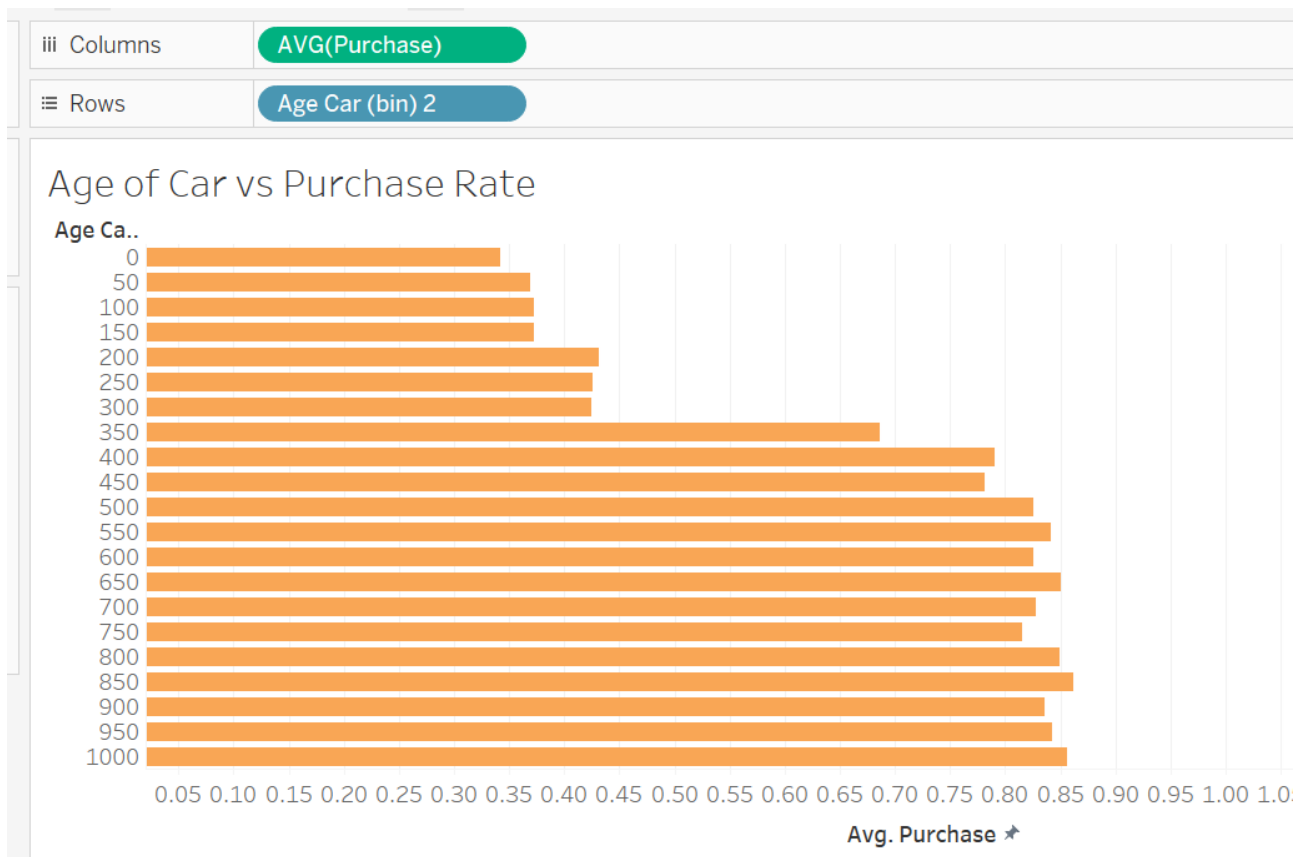
Age of Car vs Purchase Rate

iii Columns	AVG(Purchase)
≡ Rows	Age Car (bin) 2

Age of Car vs Purchase Rate

Age Ca..

0	
50	
100	
150	
200	
250	
300	
350	
400	
450	
500	
550	
600	
650	
700	
750	
800	
850	
900	
950	
1000	

0.05 0.10 0.15 0.20 0.25 0.30 0.35 0.40 0.45 0.50 0.55 0.60 0.65 0.70 0.75 0.80 0.85 0.90 0.95 1.00 1.0

Avg. Purchase ✶

Interpretation:
Customers owning **older cars** (above 300–350 months) are more likely to buy a new one —
a strong targeting angle.

Combined Dashboard View (Japanese)
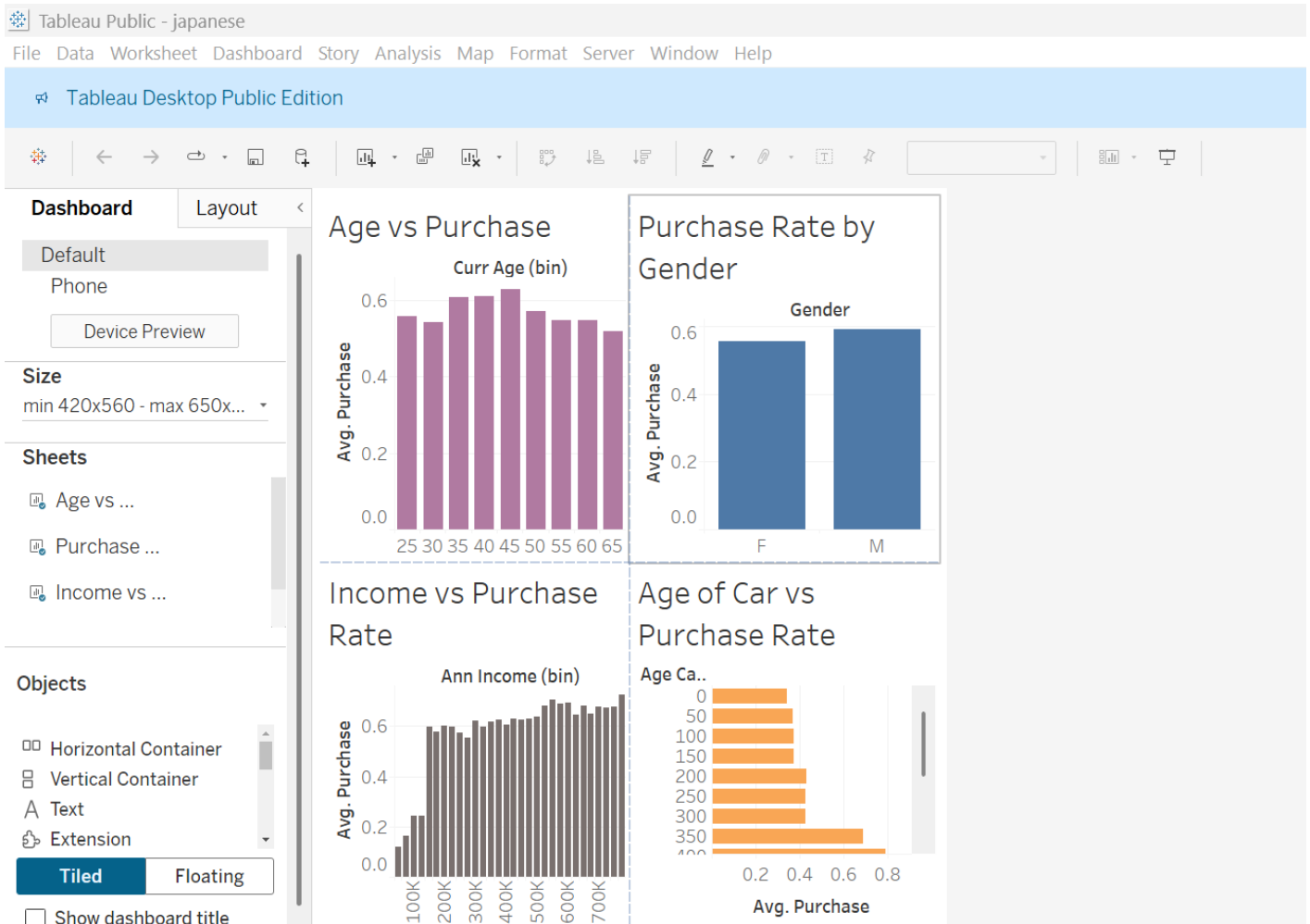
8. Indian Market Predictions

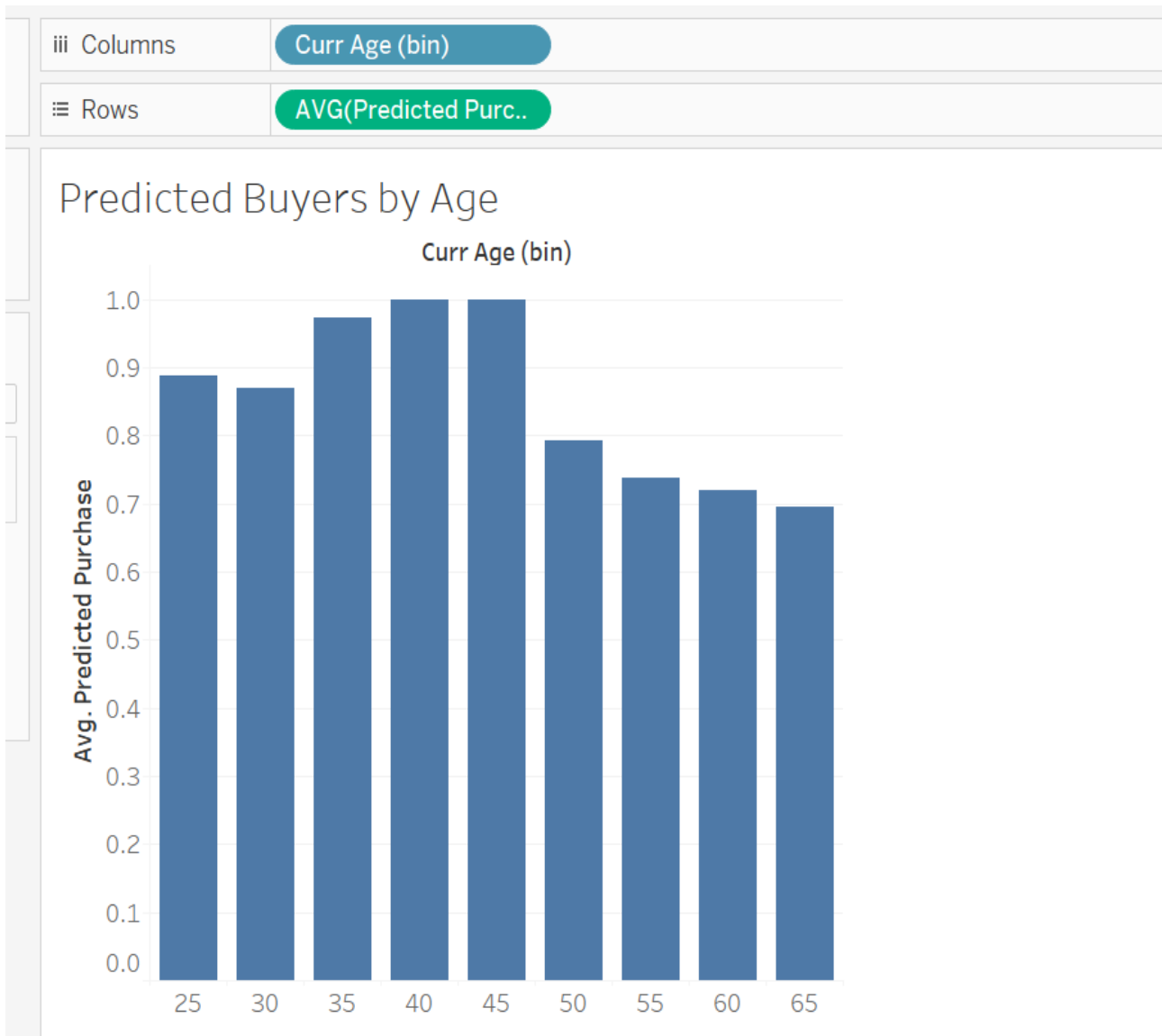The trained model was used to predict outcomes on the Indian dataset (70,000 rows).

- ✅ Results: **60,766 predicted buyers**
- ✅ Business goal: **12,000/year**

This indicates a strong potential market opportunity for ABG Motors in India.

📊 9. Dashboard 2 – Indian Market

Predicted Buyers by Age Group

iii Columns	Curr Age (bin)
≣ Rows	AVG(Predicted Purc..

Predicted Buyers by Age

Curr Age (bin)

Interpretation:

The model predicts the highest car purchase likelihood among Indian customers aged **30–40**, consistent with Japanese trends. This age group should be prioritized in ABG's India strategy.
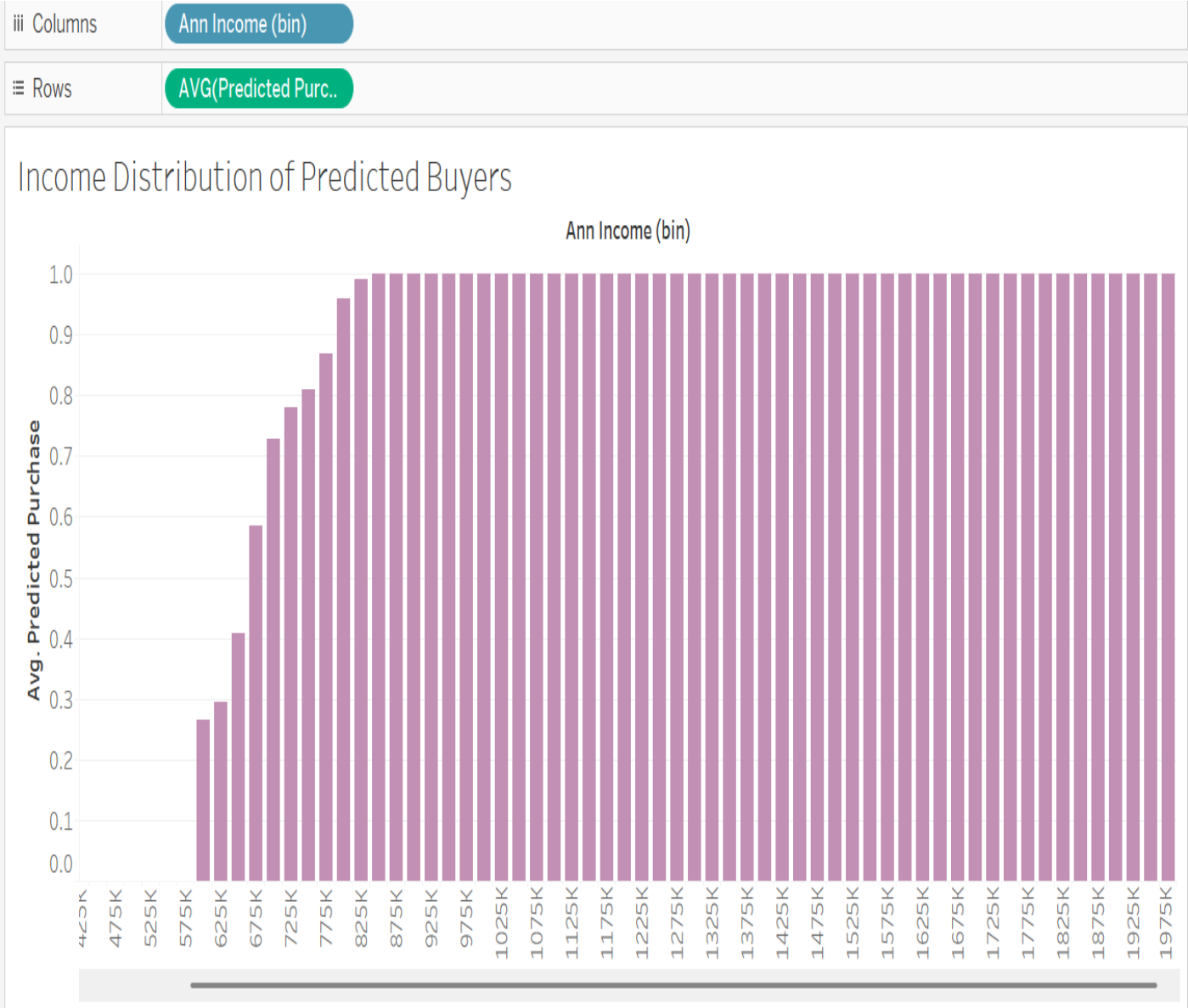
Predicted Buyers by Gender

iii Columns	Gender Label
☰ Rows	AVG(Predicted Purc..

Predicted Buyers by Gender

**Gender Label**
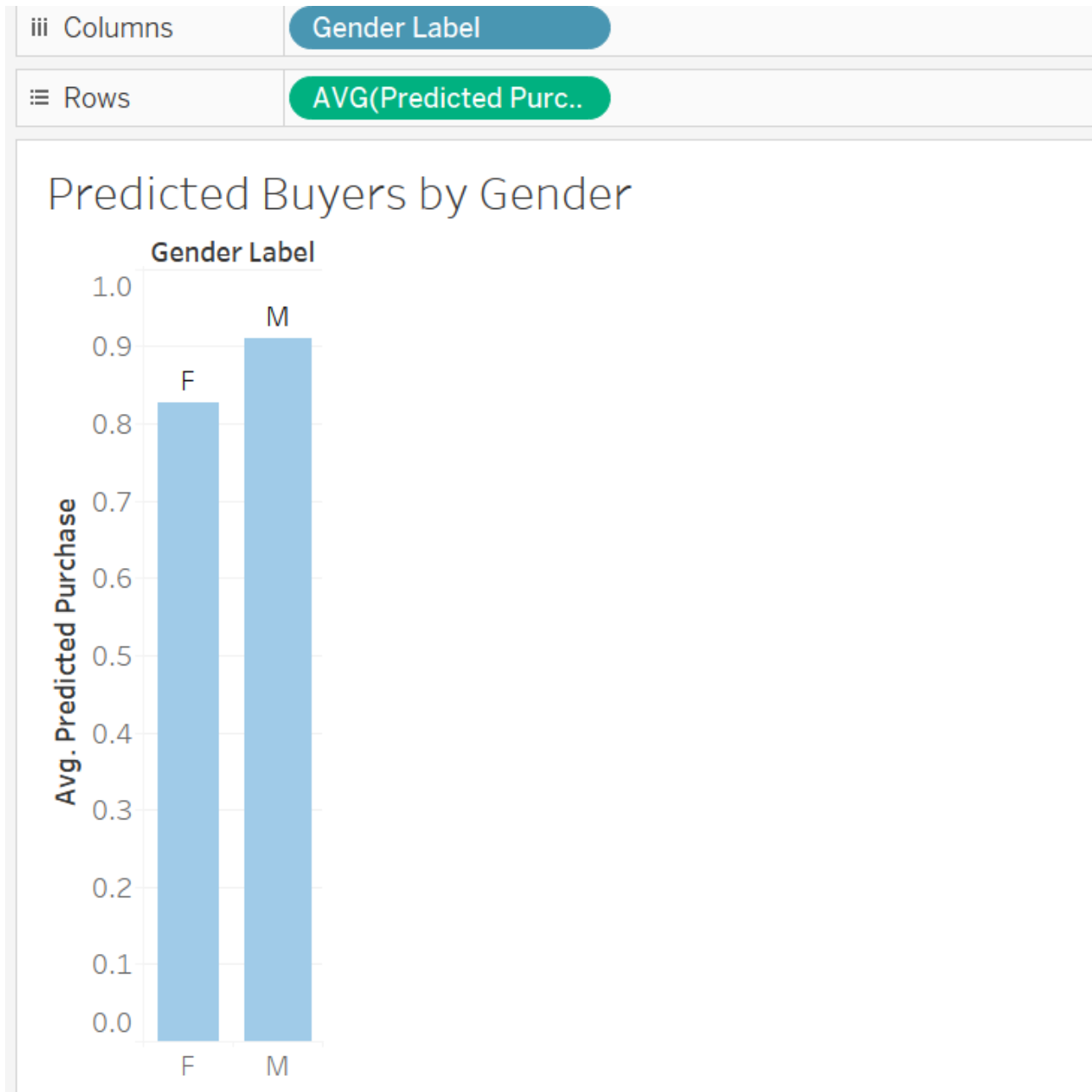
Interpretation:
Male customers show a slightly higher average predicted purchase rate than female customers, suggesting a mild gender preference in purchase intent.

14

Predicted Buyers by Income Range

iii Columns   Ann Income (bin)

≡ Rows   AVG(Predicted Purc..

Income Distribution of Predicted Buyers

Ann Income (bin)

Interpretation:
Most predicted buyers fall within the ₹5,00,000 to ₹7,50,000 annual income range, indicating ABG Motors should target mid-income Indian consumers.

15

Combined Dashboard
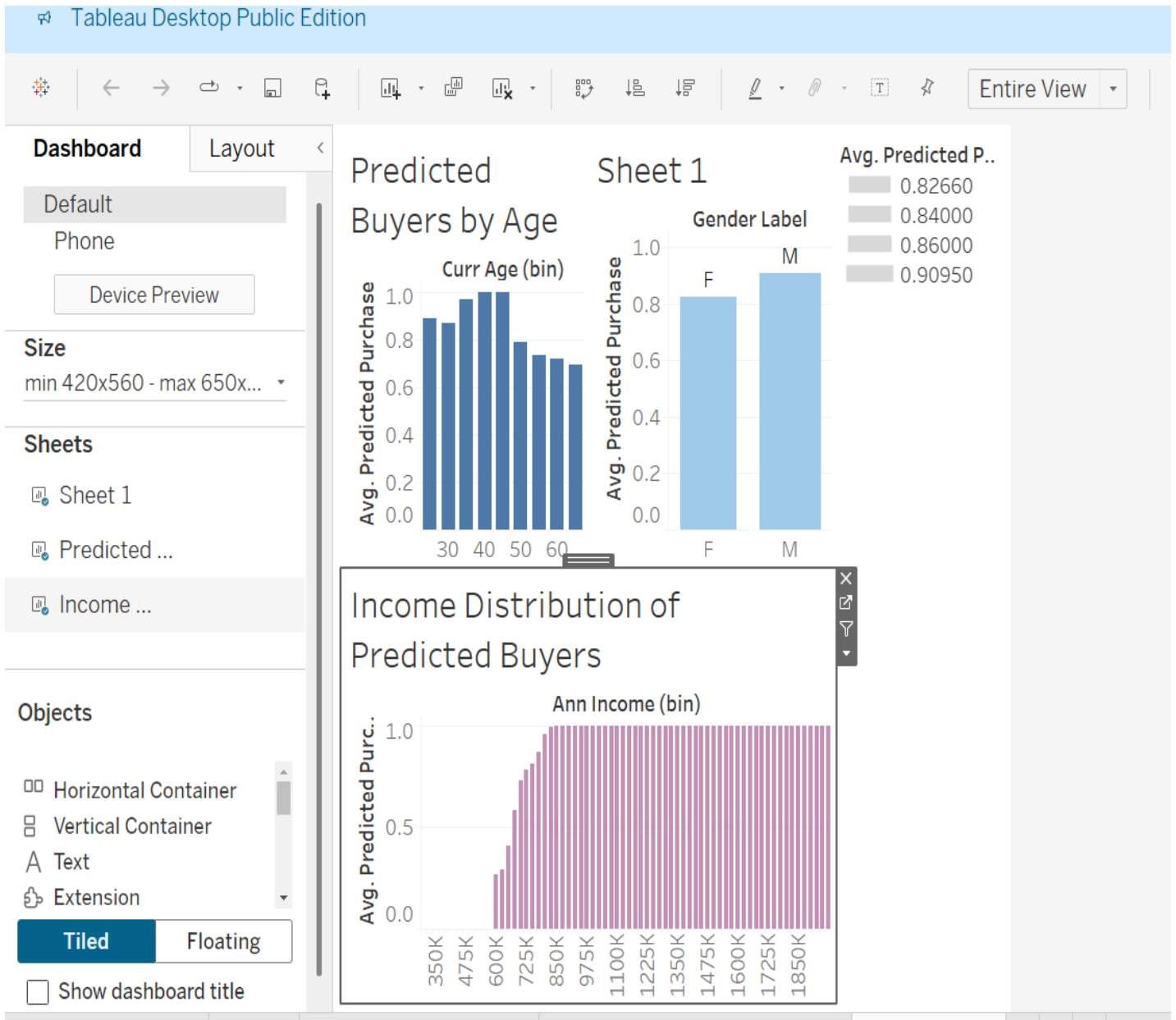
10. Business Recommendation

Based on the predicted number of buyers, ABG Motors is strongly recommended to enter the Indian market.

The model forecasts over 60,000 potential buyers — far exceeding the minimum target of 12,000 sales per year.

Key focus segments:
- Age: 30–40
- Gender: Male (slightly higher)
- Income: ₹500,000–₹750,000
- Car age: Customers with older cars

11. <u>Personal Learnings</u>

This capstone helped me apply data science to a real-world business problem. I learned:

- How to clean and analyze real datasets
- How to build a classification model and evaluate it
- How to apply a model to new, unseen data
- How to communicate insights using Tableau dashboards
- How to draw business conclusions from data

This project improved both my technical and business understanding of data science.