

DIGITAL MARKETING ANALYSIS

Presented by:

ERIC MUTUA

CONTENT

- 
- 1** Introduction
 - 2** Business Context
 - 3** Data
 - 4** Data Overview
 - 5** Process Steps
 - 6** Modeling
 - 7** Evaluation
 - 8** Results
 - 9** Recommendation
 - 10** Conclusion



INTRODUCTION

This analysis aims to offer marketing guidance and insights to a company based on demographics, customer engagement with marketing materials, and historical purchasing behavior.

In the competitive landscape of e-commerce, achieving high conversion rates is crucial for driving sales and maximizing revenue.

BUSINESS CONTEXT

An e-commerce company is looking to enhance the effectiveness of its digital marketing campaigns. Despite having a significant reach and engagement, the company is not achieving its desired conversion rates, which impacts overall sales and revenue. The company wants to understand the factors that influence customer conversions, such as demographics, customer engagement with marketing materials, and historical purchasing behavior.

DATA

- The data for this analysis was obtained from [kaggle](#).
- This dataset provides a comprehensive view of customer interactions with digital marketing campaigns.



DATA OVERVIEW

- Demographic Information
- Marketing-specific metrics
- Customer engagement indicators
- Historical purchase data





PROCESS STEPS

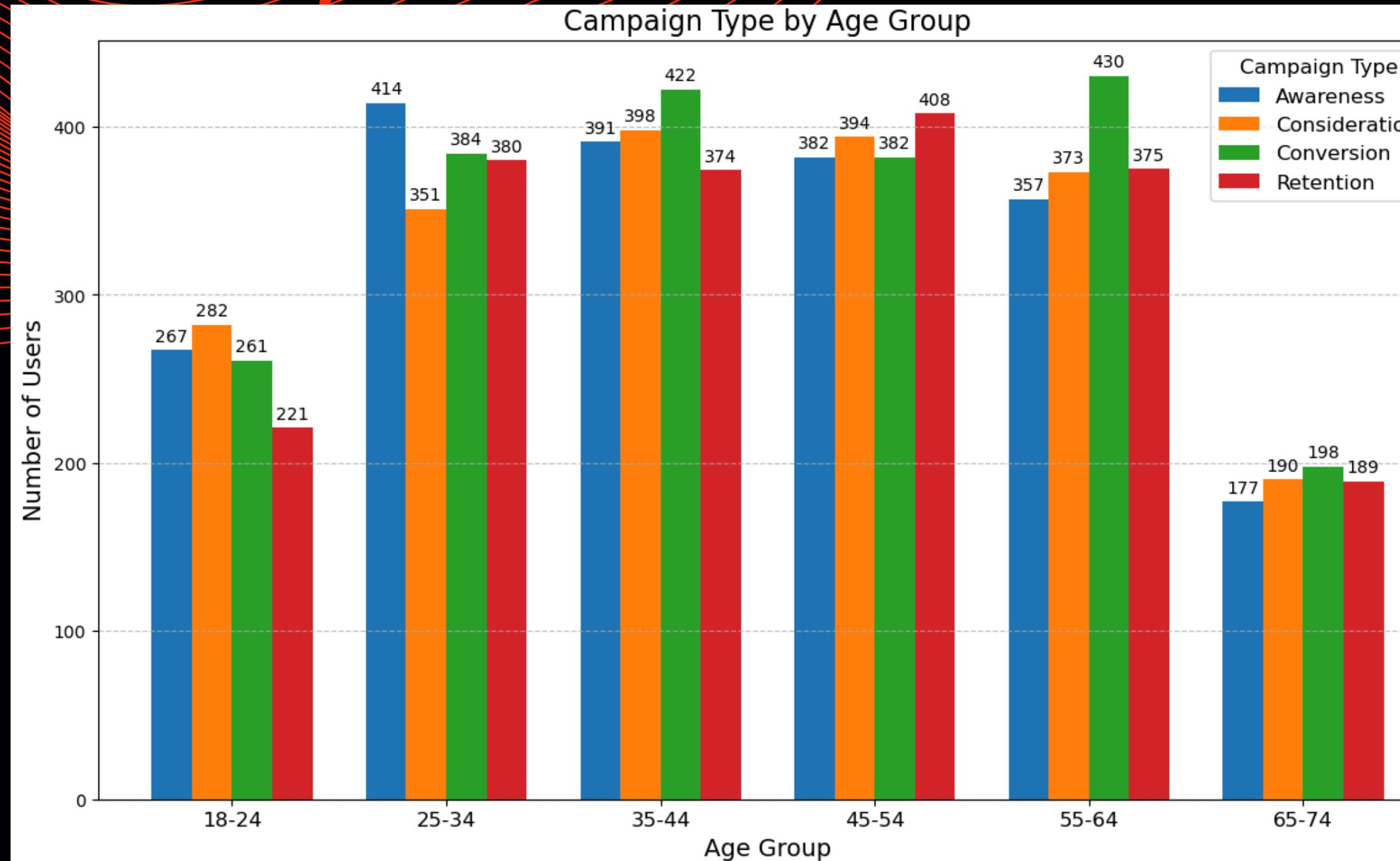
DATA CLEANING

- Checking for missing values.
- Checking for duplicates.
- Drop irrelevant columns.
- Feature selection

EXPLORATORY DATA ANALYSIS

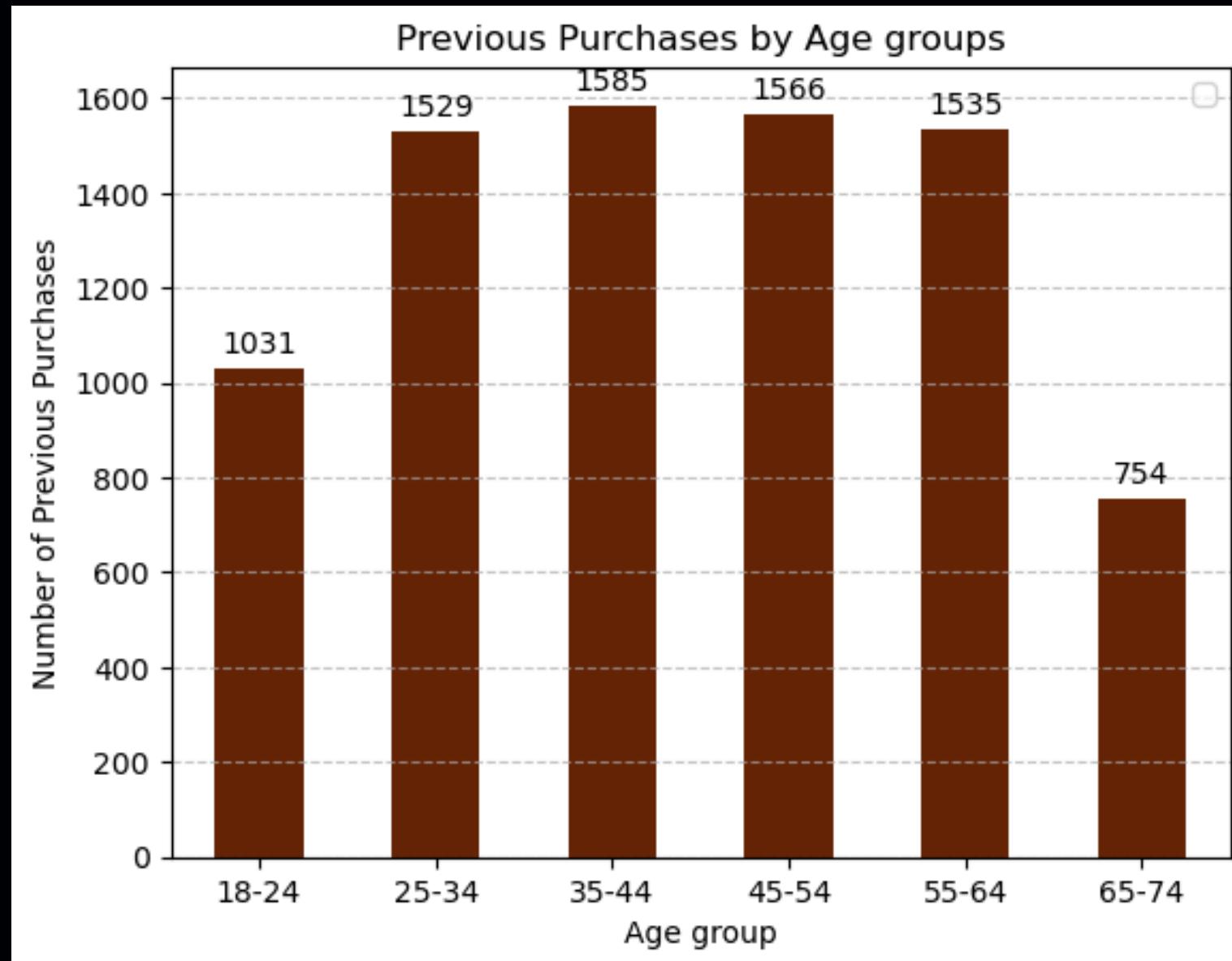
EXPLORATORY DATA ANALYSIS

• ANALYZING AGE AND CAMPAIGN TYPE



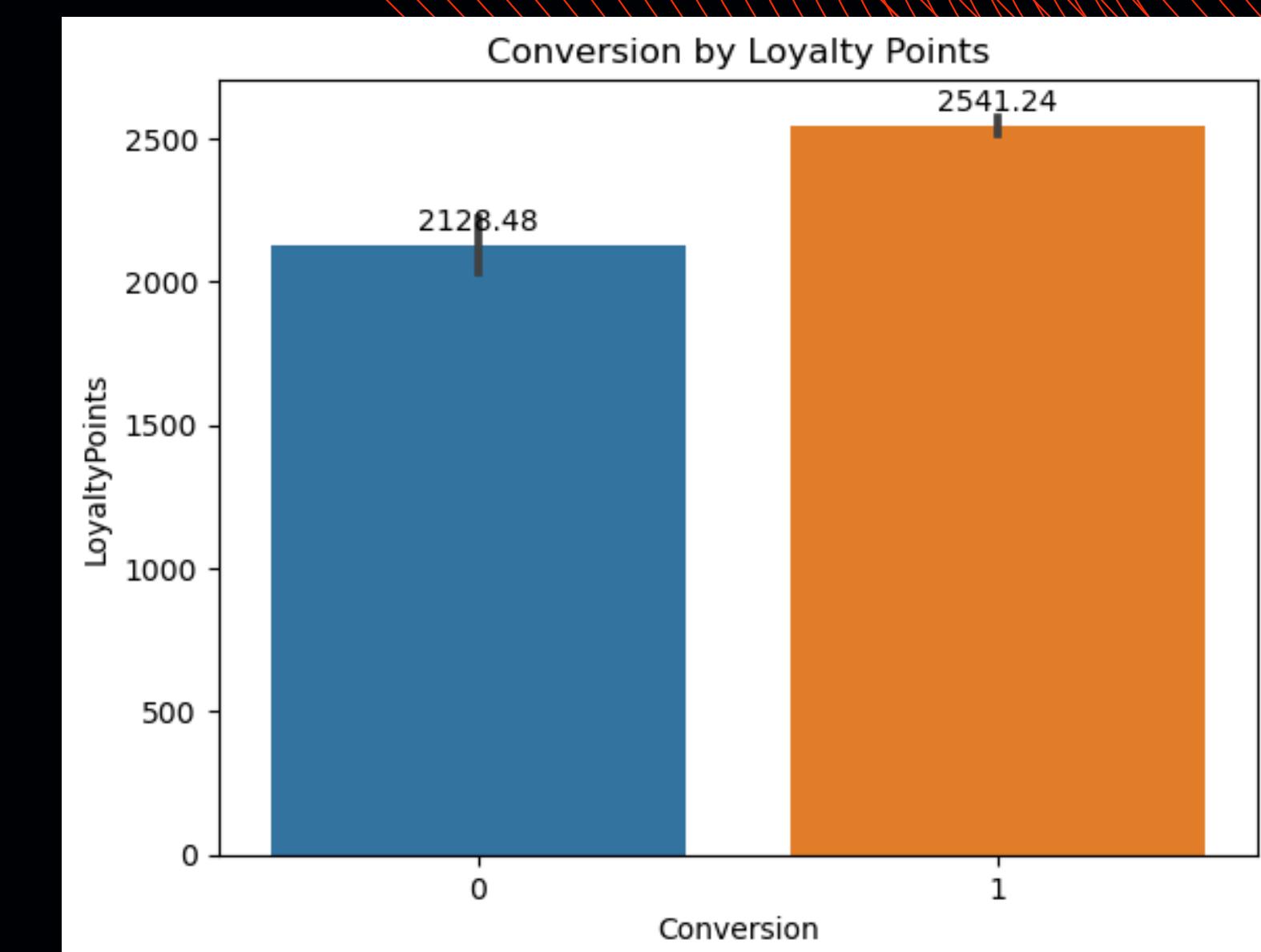
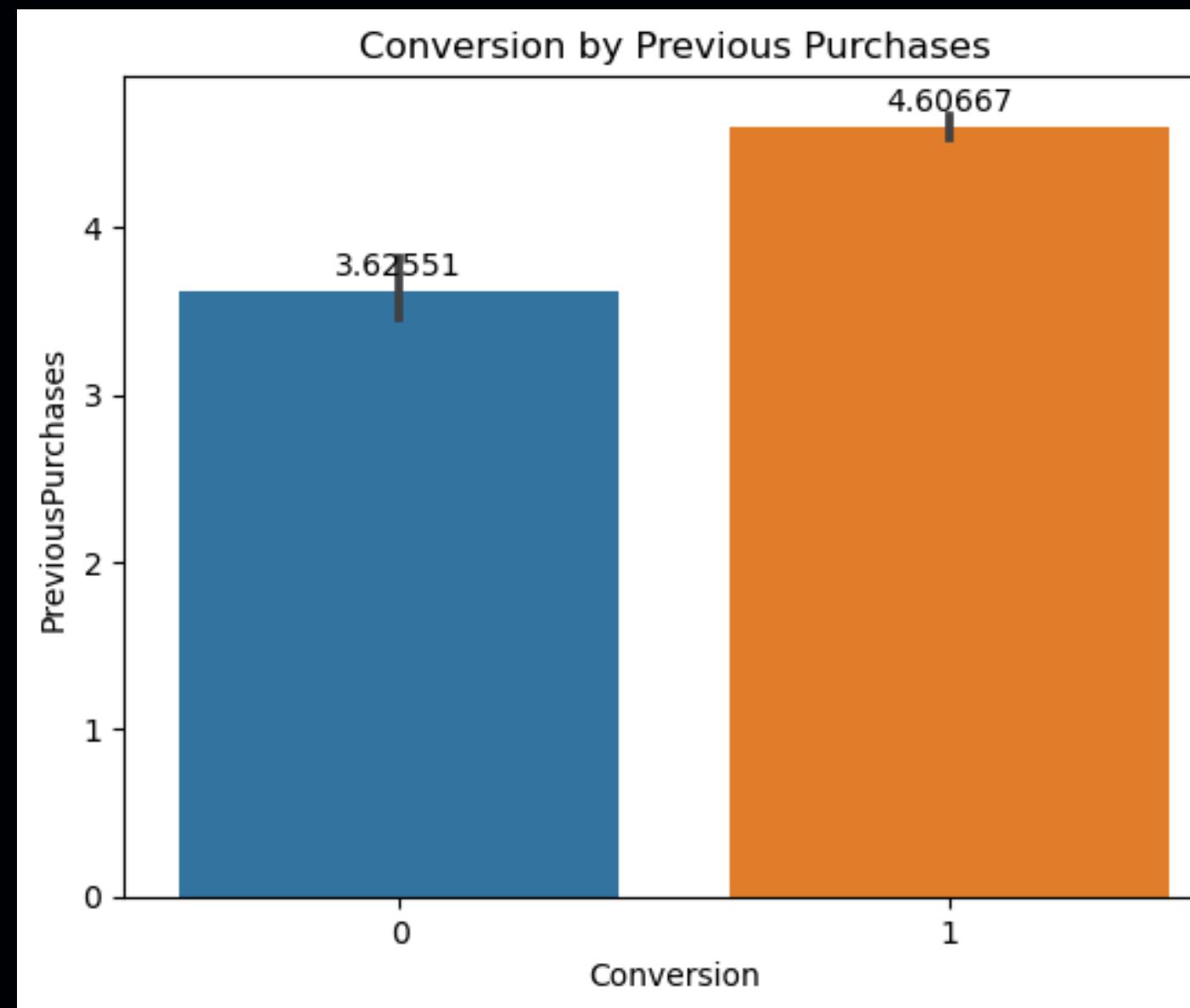
Different Marketing campaigns types should target different age groups as they respond differently as seen.

ANALYZING AGE AND PREVIOUS PURCHASES



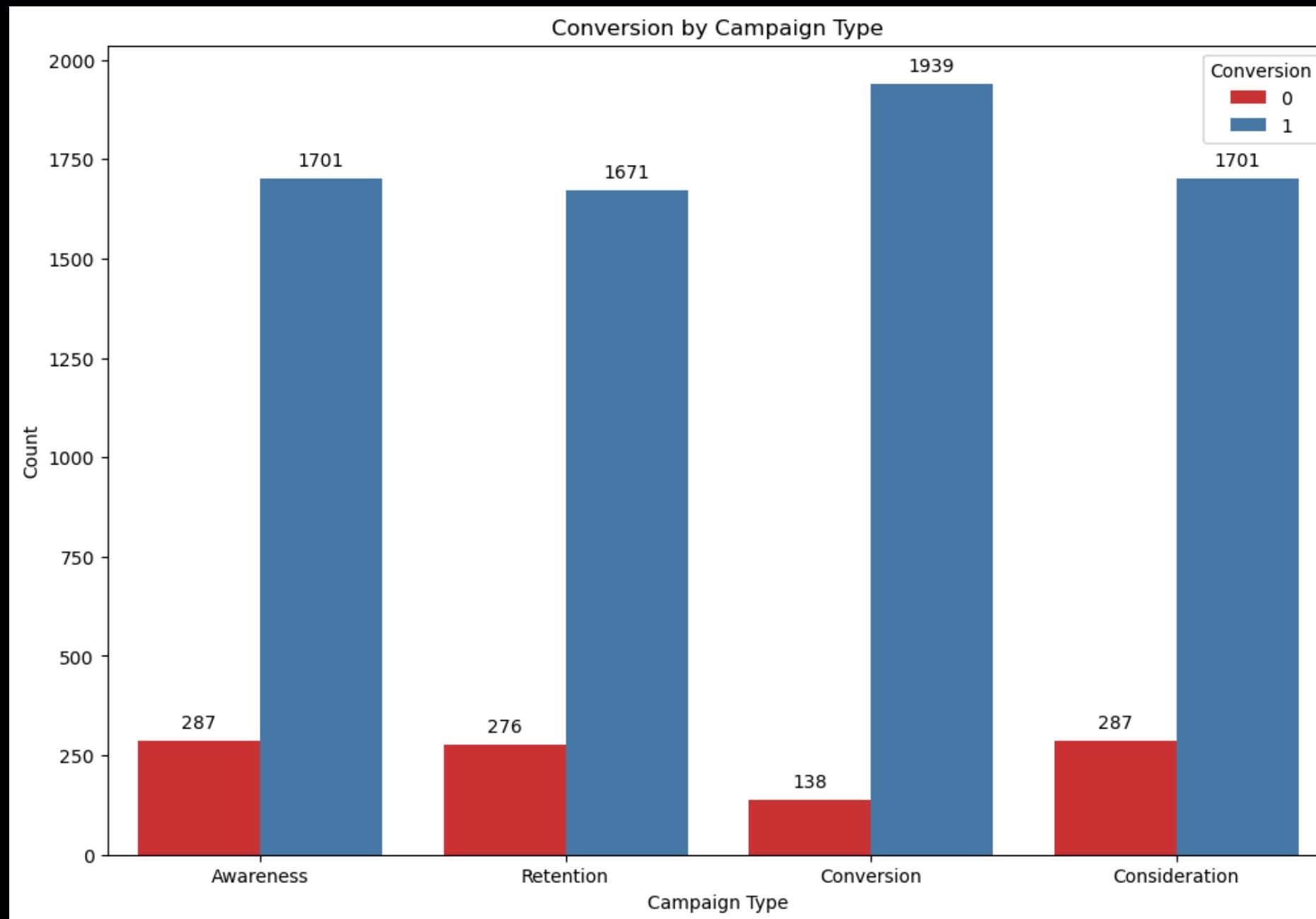
- **34-44:** Have the highest previous purchases count (1585).
- **25-34, 45-64 and 55-64 :** have high previous purchases (above 1500).

ANALYZE CUSTOMER HISTORY ON CONVERSION



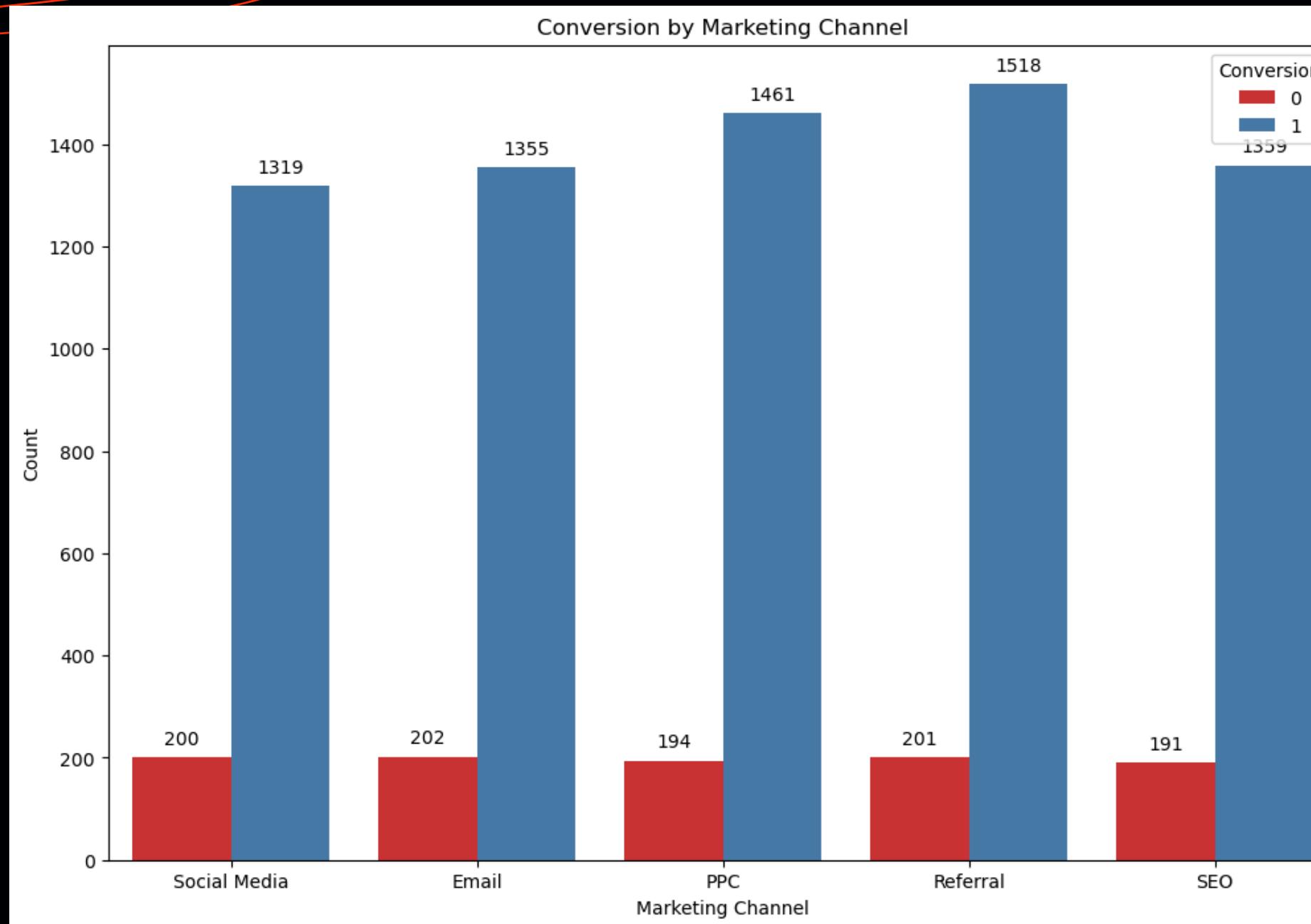
- Higher previous purchases and loyalty points correlate with higher conversion rates.

ANALYZING CONVERSION ON CAMPAIGN TYPE



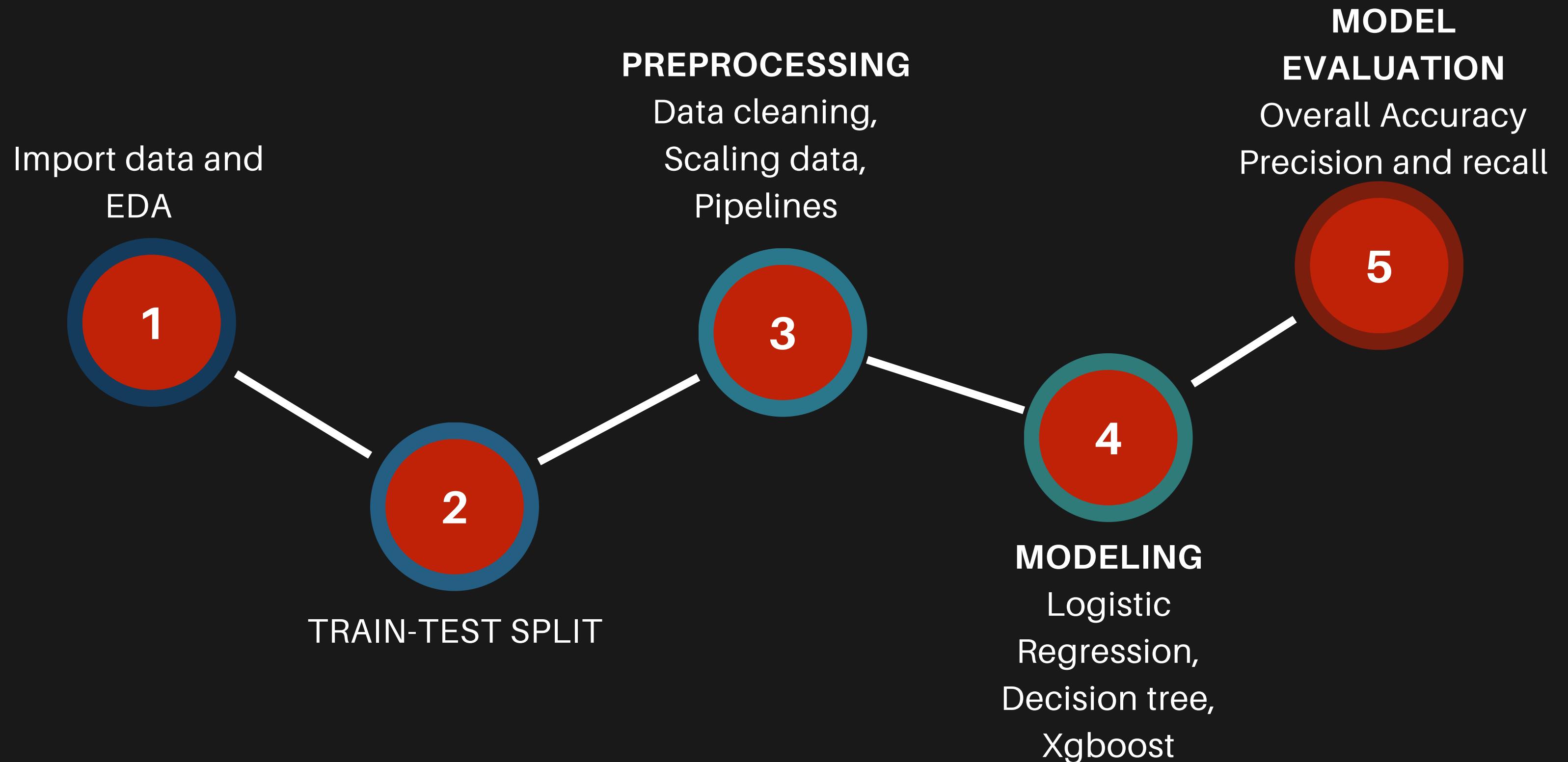
- 'Conversion' campaign type has the highest conversion (1913)

ANALYZING CONVERSION ON MARKETING CHANNEL



- 'Referral' leads the marketing channels on conversion with (1518)

MODELING



MODEL EVALUATION

MODEL PERFORMANCE

Model	Class	Precision	Recall	F1 Score
Logistic Regression	Class 0	0.67	0.02	0.04
	Class 1	0.88	1.00	0.94
Decision Tree	Class 0	0.37	0.43	0.40
	Class 1	0.92	0.90	0.91
XGBClassifier	Class 0	0.90	0.42	0.58
	Class 1	0.93	0.99	0.96

MODEL EVALUATION

FINAL MODEL

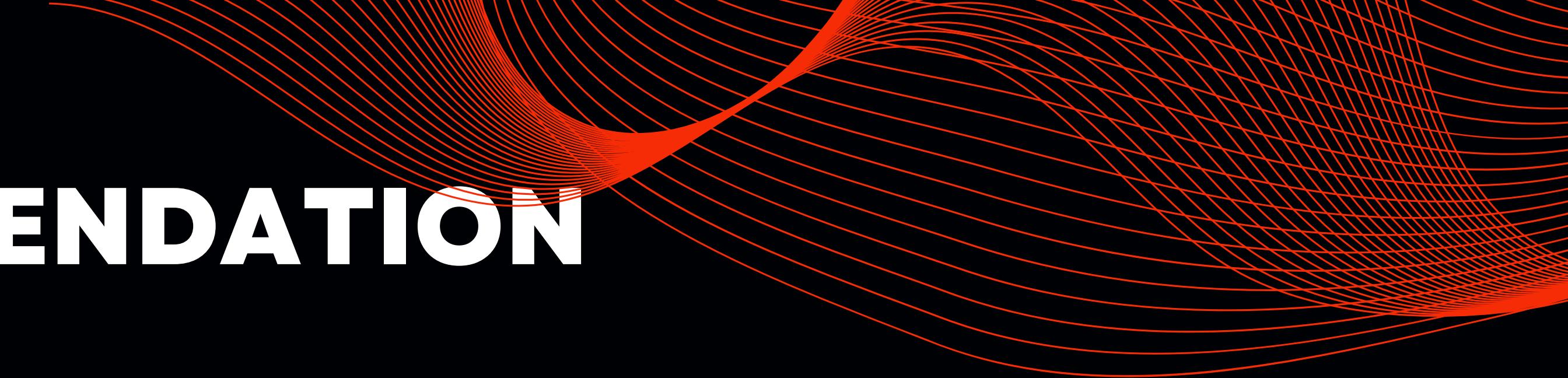
Model	Class	Precision	Recall	F1 Score
XGBClassifier	Class 0	0.90	0.42	0.58
	Class 1	0.93	0.99	0.96

MODEL EVALUATION

KEY RESULTS:

- Logistic Regression: Iterative improvements using SMOTE and feature selection.
- Decision Tree: The model showed signs of overfitting; iterative improvements did not fully resolve this.
- XGBoost: Demonstrated strong performance with the ability to handle complex relationships in the data.

RECOMMENDATION

A large, abstract graphic element consisting of numerous thin, curved red lines that converge towards the top center of the slide. The lines are lighter at the edges and darker at the center, creating a sense of depth and motion.

Given the model's strong performance, i recommend proceeding with deploying the XGBoost model with the following considerations:

- **Regular Monitoring:** Implement continuous monitoring of model performance to detect and address any decline in accuracy, particularly due to data drift or unforeseen biases.
- **Business Integration:** Work closely with stakeholders to integrate model predictions into business processes, ensuring that the model's outputs are used effectively to drive decisions.

CONCLUSION

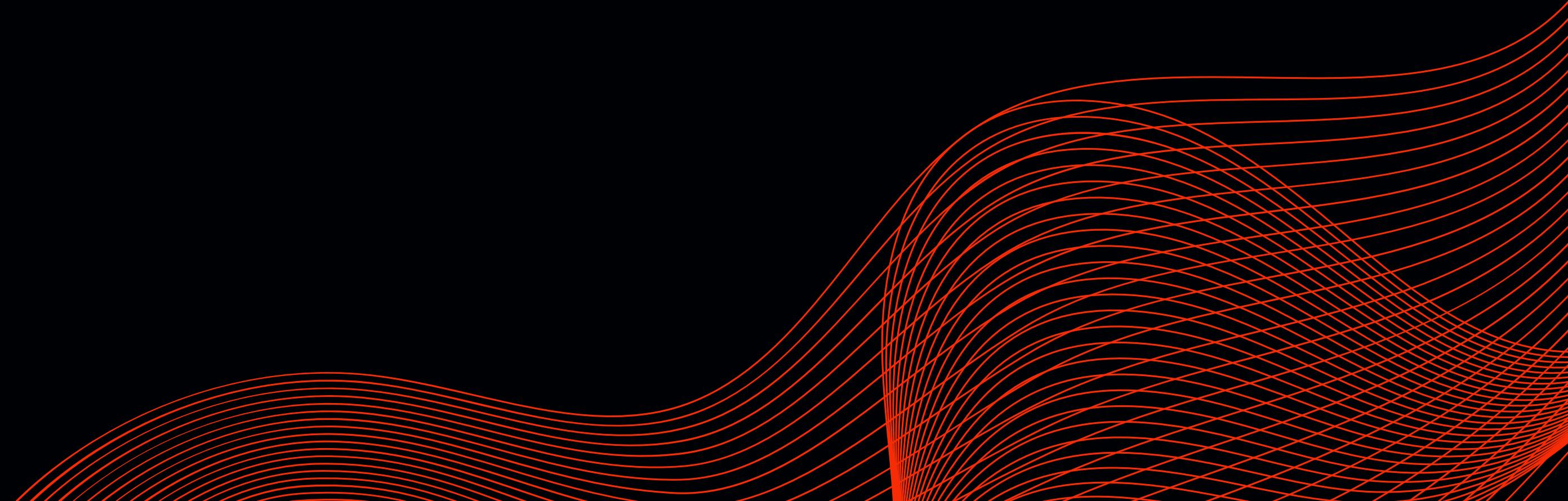
Relevant Findings:

- Demographic Targeting: Different age groups respond differently to various campaign types.
- Campaign Efficiency: Referrals and Conversion campaigns are the most effective channels.
- Retention Strategy: Higher loyalty points and previous purchases lead to higher conversion rates.



NEXT STEPS

- Prepare for Deployment: Integrate the XGBoost model into the existing production pipeline. Ensure that the necessary infrastructure is in place for real-time or batch processing, depending on the business needs.
- Continuous Data Collection: As new data is collected, ensure it is correctly labeled and stored. This data will be vital for monitoring the model's performance and retraining.



THANK YOU !



Phone number
+254711126595



PORTFOLIO



Email
ericmuema02@gmail.com



LinkedIn
Eric M.