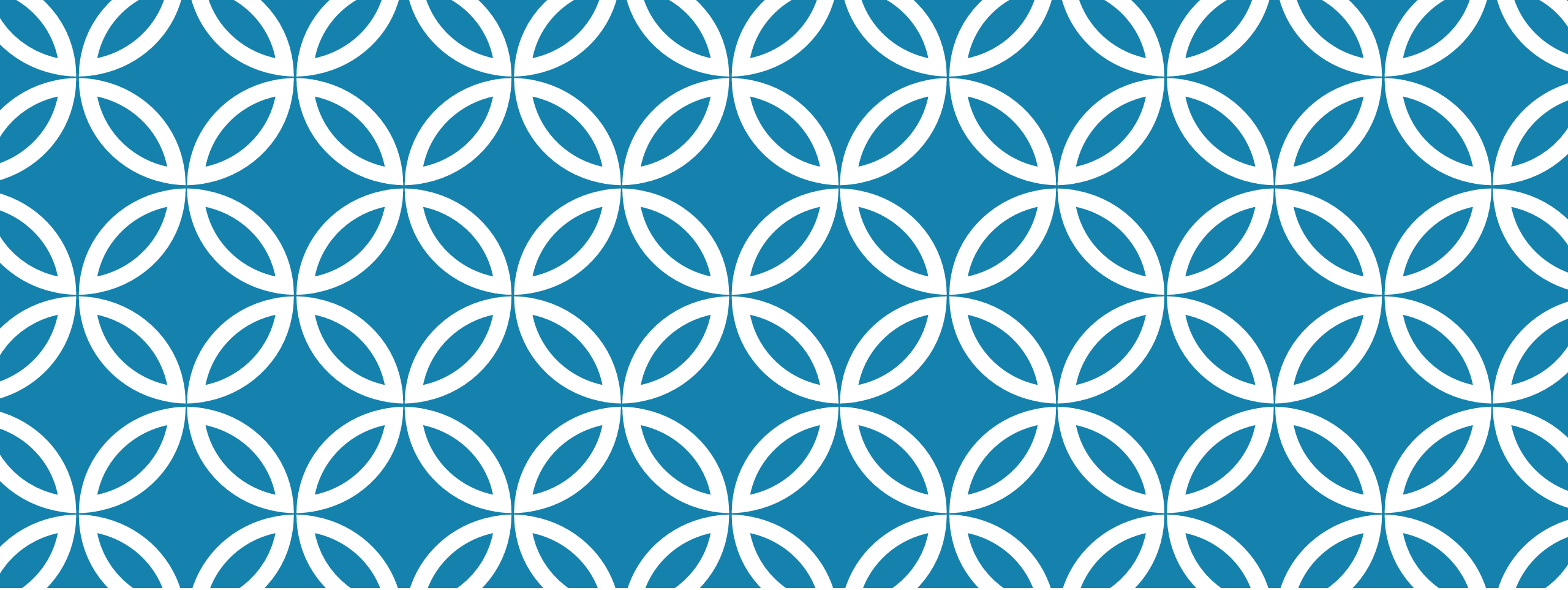


# CUSTOMER BEHAVIOUR ANALYSIS FOR ENHANCED MARKETING STRATEGIES

Optimizing Marketing Efforts through Data-Driven Insights

# PROJECT OVERVIEW

Objective: To analyze customer behavior patterns to enhance marketing strategies and improve retention rates.

Data Summary: Overview of the data, highlighting customer interaction points, session information, transactions, and churn.

Methodology: Brief mention of data processing and analysis approach

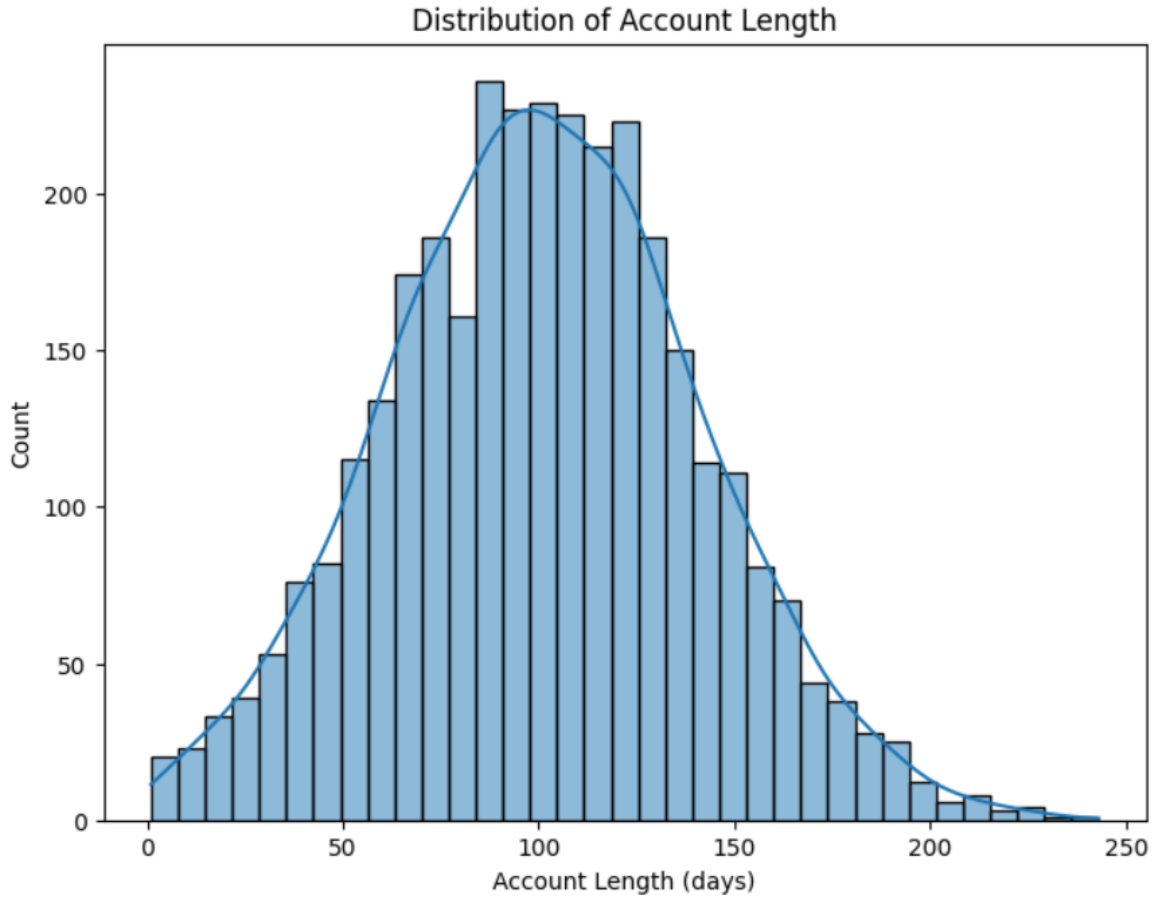
# DATA OVERVIEW

- Dataset Structure: Briefly outline data columns like **account length, desktop/app sessions, transactions, promotion clicks, churn.**
- Sample Size: “The dataset consists of 3,333 customer records with 20 features each.”

| | account length | location code | user id | credit card info save | push status | add to wishlist | desktop sessions | app sessions | desktop transactions | total product detail views | session duration | promotion clicks | avg order value | sale product views | discount rate per visited products | product detail view per app session | app transactions | add to cart per session | customer service calls | churn |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 128 | 415 | 3824657 | no | yes | 25 | 265 | 45 | 17 | 110 | 197 | 87 | 244,7 | 91 | 11,01 | 10 | 3 | 2,7 | 1 | 0 |
| **1** | 107 | 415 | 3717191 | no | yes | 26 | 162 | 27 | 17 | 123 | 196 | 103 | 254,4 | 103 | 11,45 | 13,7 | 3 | 3,7 | 1 | 0 |
| **2** | 137 | 415 | 3581921 | no | no | 0 | 243 | 41 | 10 | 114 | 121 | 110 | 162,6 | 104 | 7,32 | 12,2 | 5 | 3,29 | 0 | 0 |
| **3** | 84 | 408 | 3759999 | yes | no | 0 | 299 | 51 | 5 | 71 | 62 | 88 | 196,9 | 89 | 8,86 | 6,6 | 7 | 1,78 | 2 | 0 |
| **4** | 75 | 415 | 3306626 | yes | no | 0 | 167 | 28 | 13 | 113 | 148 | 122 | 186,9 | 121 | 8,41 | 10,1 | 3 | 2,73 | 3 | 0 |

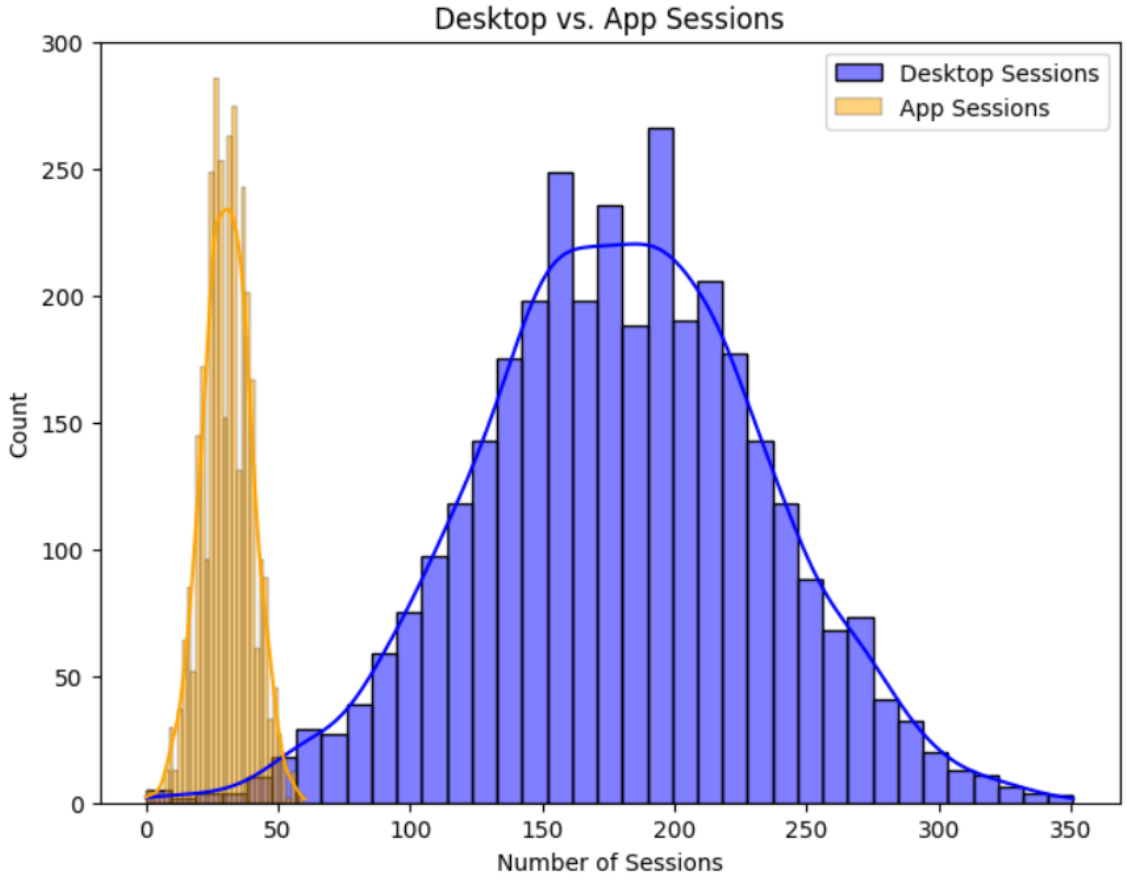
# DISTRIBUTION OF ACCOUNT LENGTH

- This plot shows the frequency distribution of customer account lengths, highlighting how long users typically stay with the service.
- Plot Name: Distribution of Account Length
- Insight: Most customers have account lengths centered around a moderate duration, with fewer very short or long tenures, suggesting a stable user base.



# ANALYSIS INSIGHTS - CUSTOMER BEHAVIOR

- Desktop sessions are notably higher than app sessions, indicating desktop as a primary channel.
- The difference suggests the potential for app-specific promotions to boost engagement.
- Plot: Histogram/Density Plot of Desktop and App Sessions.
- Insight: “Higher desktop session frequency indicates desktop as the primary channel, suggesting an opportunity to boost app engagement.”



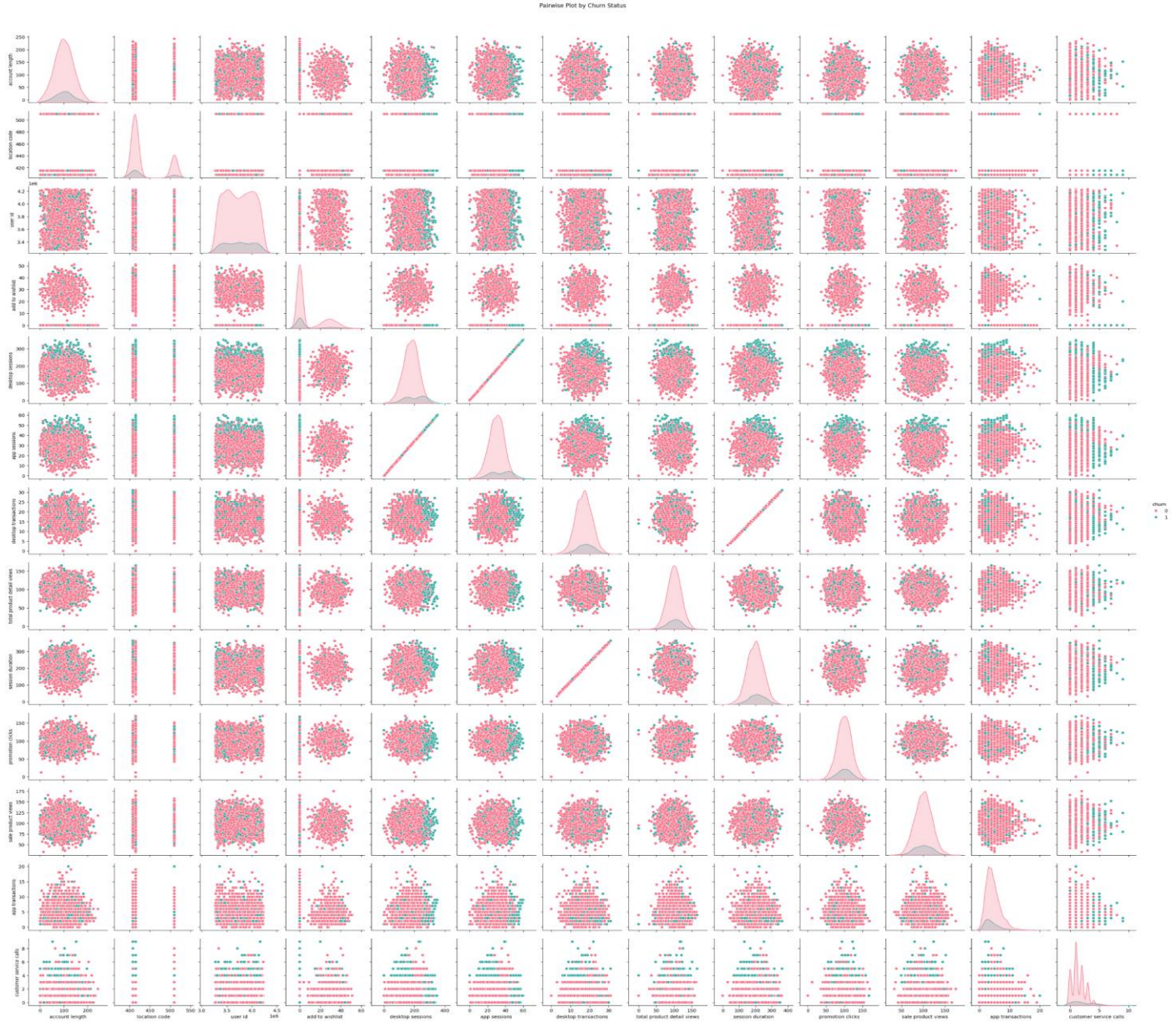
# MODEL ACCURACY AND PERFORMANCE

- Churn Prediction Model: Random Forest Classifier
- Model Accuracy Score: 95%
  - This score reflects the model's ability to accurately predict customer churn.
- Detailed Metrics:
- Precision:
  - Churn (1): 96% (percentage of customers predicted to churn who actually churned)
  - No Churn (0): 95% (percentage of customers predicted not to churn who actually did not churn)
- Recall:
  - Churn (1): 68% (percentage of actual churners correctly predicted)
  - No Churn (0): 100% (percentage of actual non-churners correctly predicted)
- F1-Score:
  - Churn (1): 80% (harmonic mean of precision and recall for the positive class)
  - No Churn (0): 97%
- Support: Total Samples: 1,000 (857 non-churners and 143 churners)

| | precision | recall | f1-score | support |
|---|---|---|---|---|
| 0 | 0.95 | 1.00 | 0.97 | 857 |
| 1 | 0.96 | 0.68 | 0.80 | 143 |
| accuracy | | | 0.95 | 1000 |
| macro avg | 0.95 | 0.84 | 0.88 | 1000 |
| weighted avg | 0.95 | 0.95 | 0.95 | 1000 |

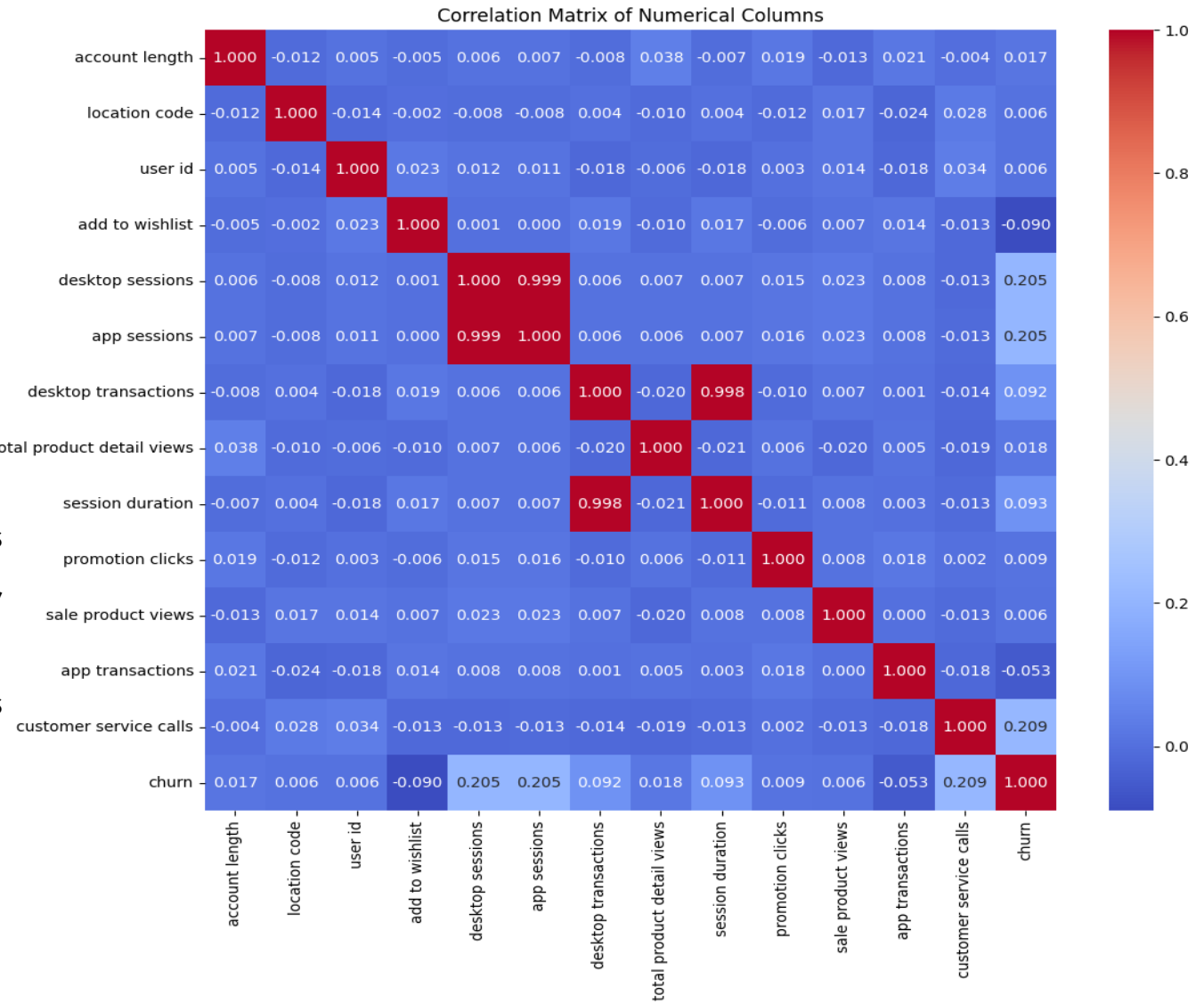
# CHURN PREDICTION INSIGHTS

- Churn Prediction: High accuracy model with Random Forest classifier.
- Primary Indicators of Churn: Session duration, customer service calls, promotion clicks.
- Plot: Pairwise Plot by Churn Status showing relationships among key metrics like desktop/app sessions, promotion clicks, session duration.
- Insight: "Higher desktop sessions and longer session durations correlate with lower churn, suggesting strong desktop engagement as a retention factor."



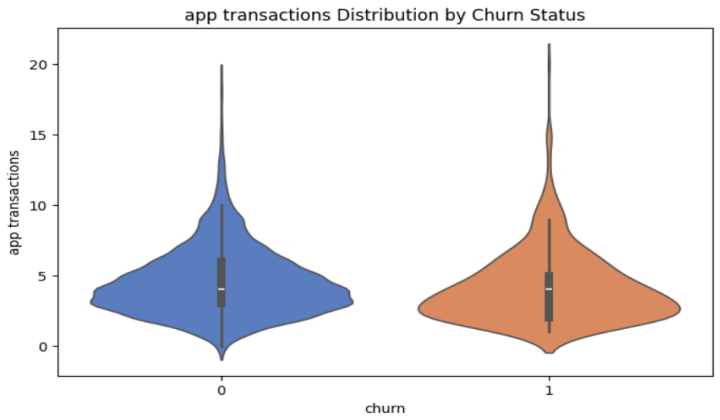
# CORRELATION ANALYSIS

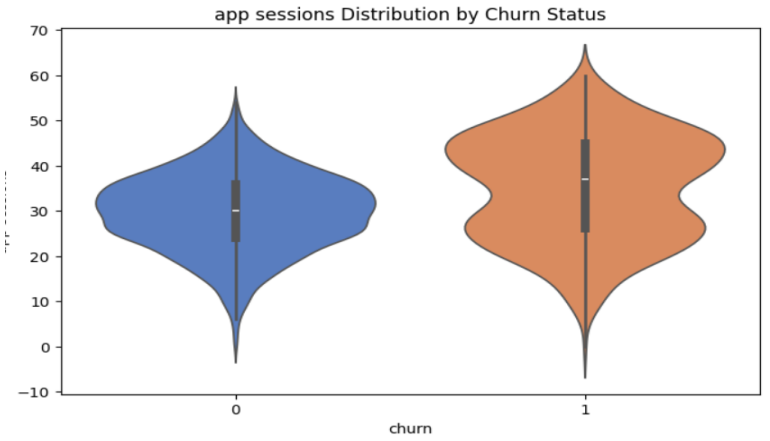
- High correlations found between promotion clicks and desktop transactions, indicating effective promotional engagement.
- Plot: Correlation Heatmap showing correlations between sessions, transactions, promotion clicks, etc.
- Insight: "Strong correlation between promotions and transactions suggests that targeted promotions drive engagement, especially on desktop."

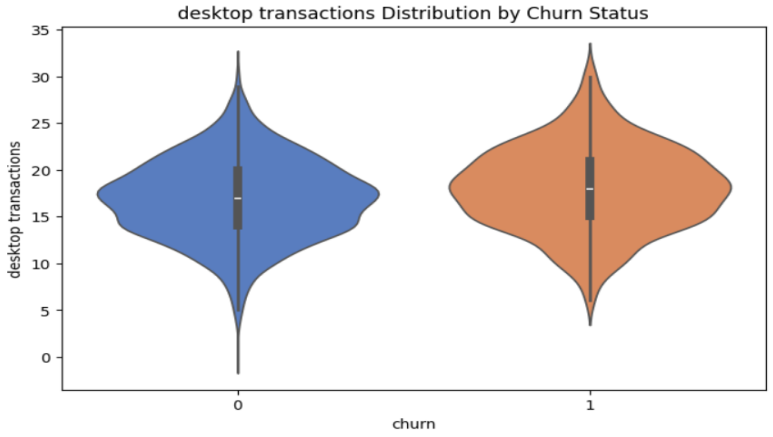


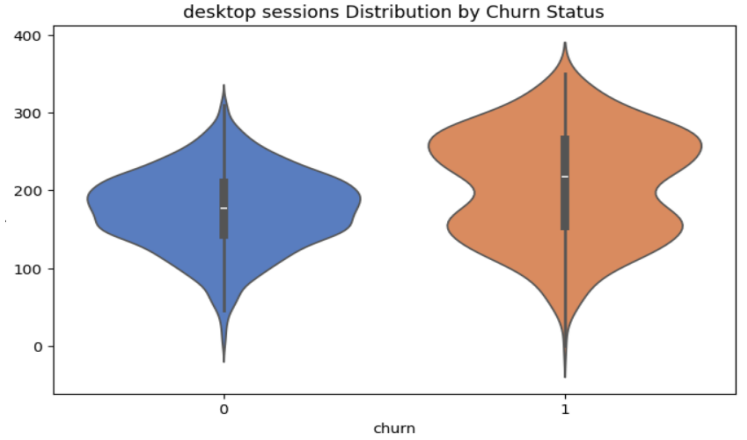
# RECOMMENDATION #1 - ENHANCE CUSTOMER SEGMENTATION

- Segment customers based on desktop sess
  app usage, churn status, and customer ser
  interactions.
- Target high desktop users and those with
  frequent customer service calls.
- Plot: Violin Plot of Desktop vs. App Sessi
  Churn Status.
- Insight: “Segmenting based on usage and
  service interaction can identify retention
  opportunities.”



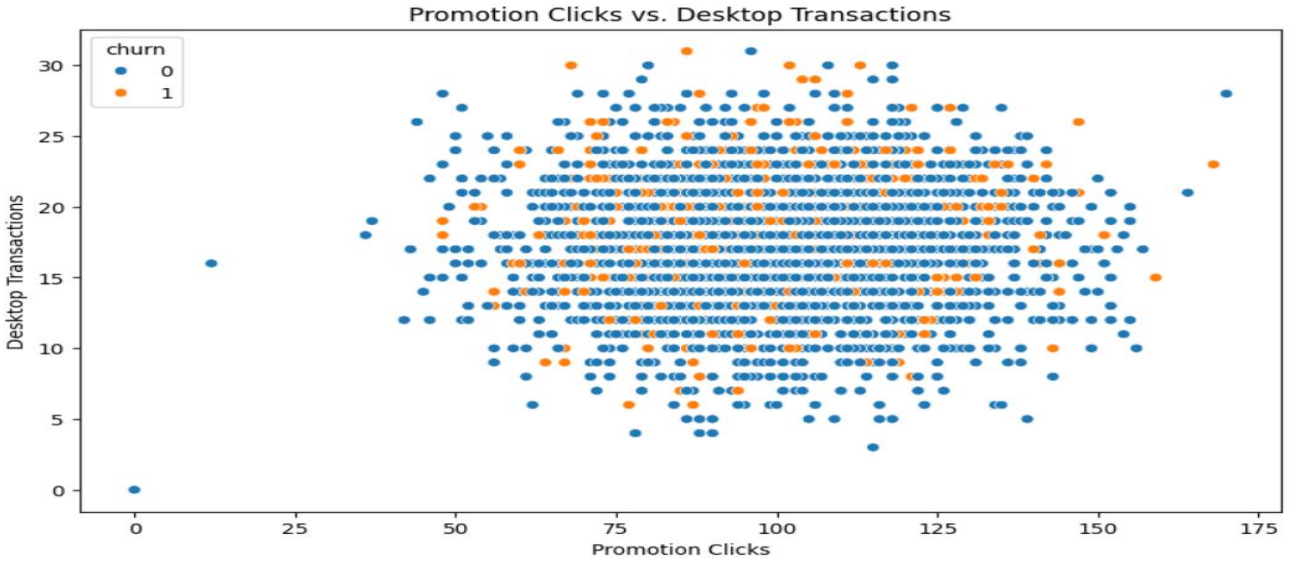



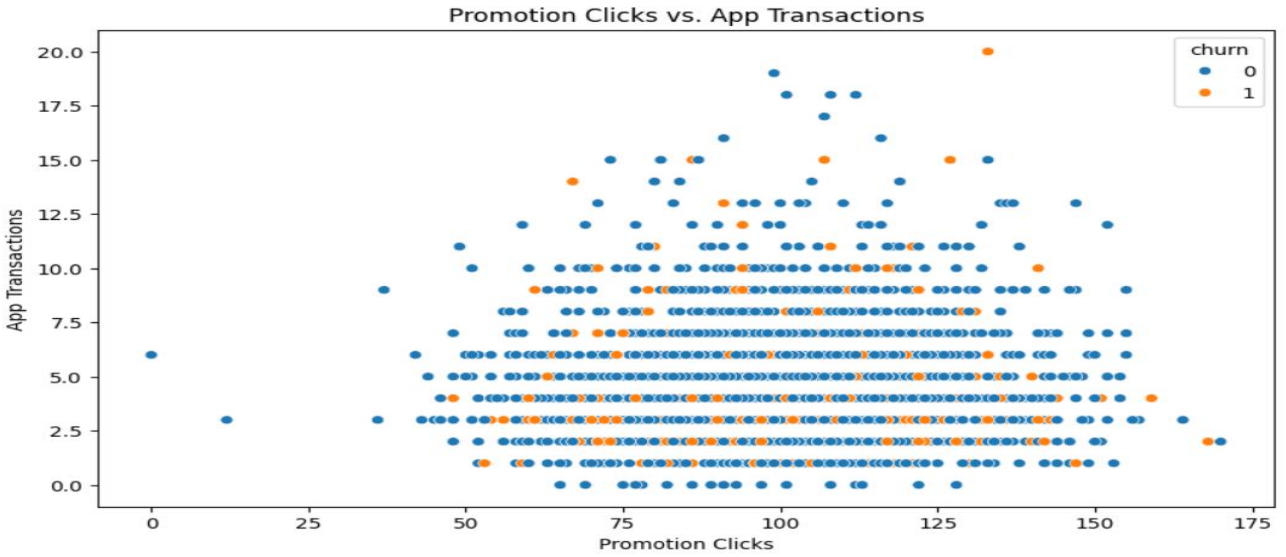



# RECOMMENDATION #2 - OPTIMIZE PROMOTIONS AND DISCOUNT STRATEGY

- Leverage insights from promotion clicks to increase transaction counts.
- Optimize discount rates per product based on user responsiveness.
- Plot: Scatter Plot of Promotion Clicks vs. Transactions (Desktop vs. App).
- Insight: “Desktop users show stronger response to promotions, so desktop-focused discounts co increase transaction volume.”



# FINAL RECOMMENDATIONS & NEXT STEPS

Key Recommendations:

- Enhance Segmentation: Use detailed segmentation based on engagement metrics such as session frequency and customer interactions to personalize marketing efforts.
- Tailor Promotions: Develop targeted promotions by channel (e.g., app-specific offers) to increase engagement and retention.
- Implement Churn Prediction: Utilize the Random Forest model for ongoing churn prediction, enabling proactive outreach to at-risk customers.
- Test and Optimize: Regularly conduct A/B testing on promotional strategies to assess effectiveness and optimize campaigns based on data-driven insights.
- Feedback Loop: Establish a feedback mechanism from customers to continually refine customer profiles and improve promotional strategies based on their responses.

Next Steps:

- Conduct periodic reviews of customer data to adjust segmentation strategies as behavior changes over time.
- Monitor key performance indicators (KPIs) post-implementation to measure the impact of recommendations and make necessary adjustments.
- Schedule regular training sessions for the marketing team on data analytics tools and techniques to enhance their ability to leverage insights effectively.