

E-commerce EDA for Customer Behavior

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Marketing Analytics

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Introduction



Objectives

- Understand usage patterns and their relationship with churn.
- Identify actionable variables to reduce churn.

Key Questions

- How balanced is the churn target?
- Which customer behaviours are linked to churn?
- Are there any outliers or trends that affect churn?

Dataset Overview

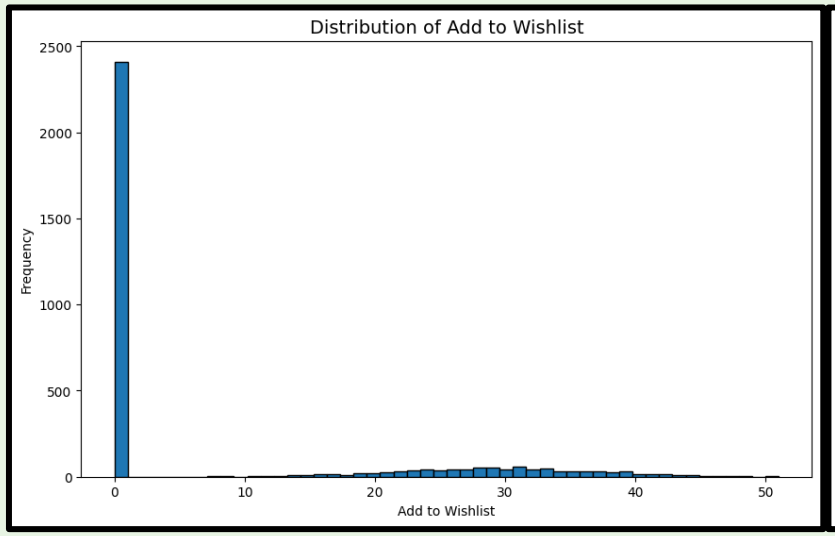
Data Size

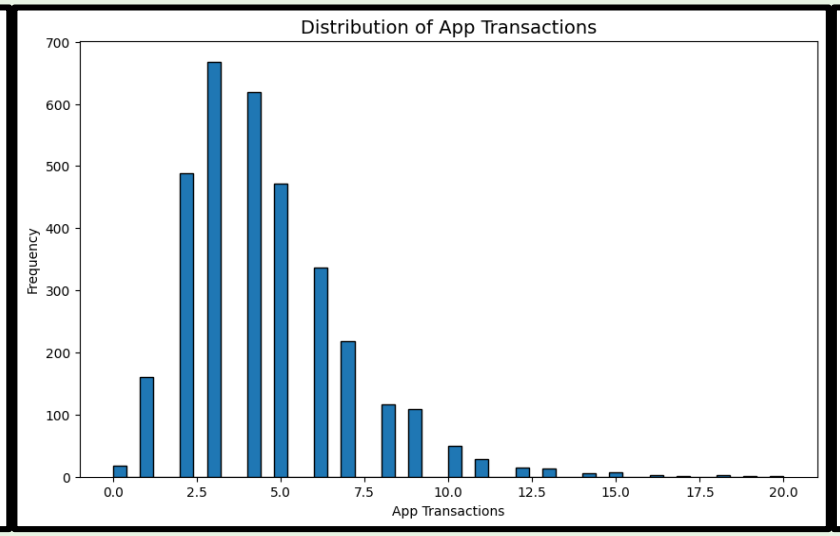
- 3,333 rows (Customers)
- 20 columns (18 numeric; 2 categorical)

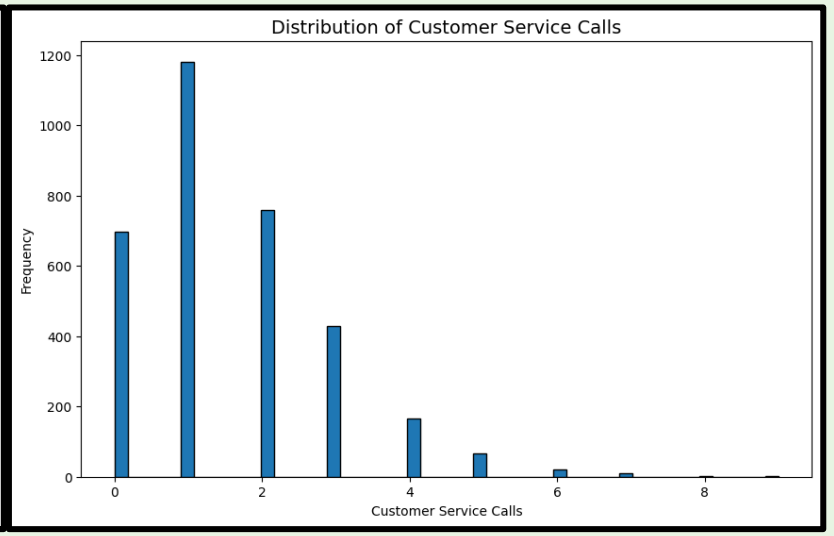
Features	Description
account_length, location_code, user_id	Basic customer identification.
desktop_sessions, app_sessions, session_duration, total_product_detail_views, add_to_wishlist, sale_product_views	Measures how often and how long the user interacts with the platform.
desktop_transactions, app_transactions, avg_order_value, add_to_cart_per_session, product_detail_view_per_app_session, discount_rate_per_visited_products	Track purchase activity, transaction frequency, and purchase value.
promotion_clicks	Captures user response to marketing efforts and promotions.
customer_service_calls, credit_card_info_save, push_status	Reflects customer trust, satisfaction and retention related actions.
churn	Indicates whether the customer left or stayed.

Distribution of Numeric Variables

While many numeric variables are approximately normal, key engagement behaviors are highly skewed.







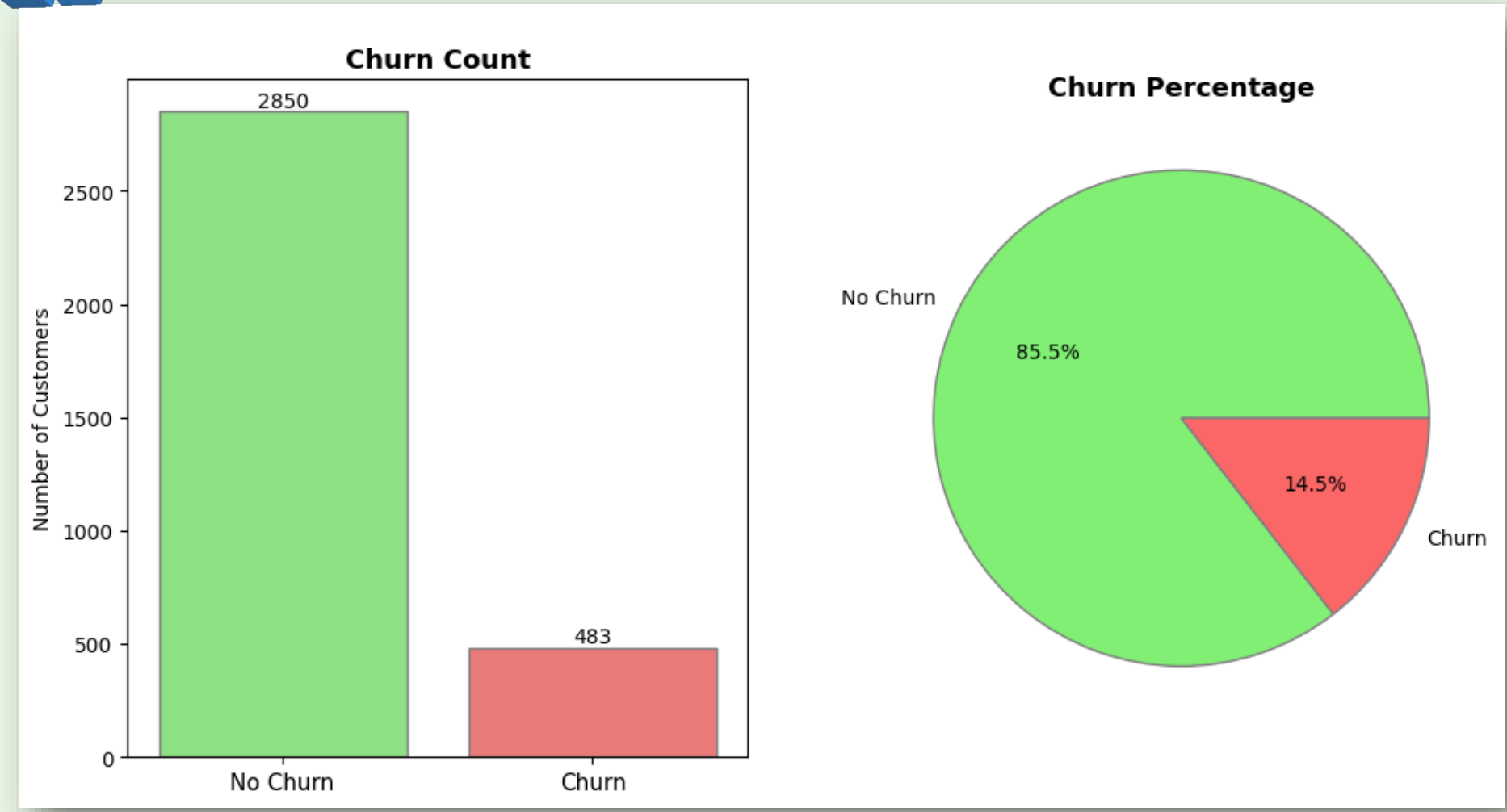
The majority of values are 0, indicating that **most customers do not use the wish list feature**.

- Distribution right-skewed; **most users complete between 1 and 5 transactions per session**.
- Values above 9 may be outliers.

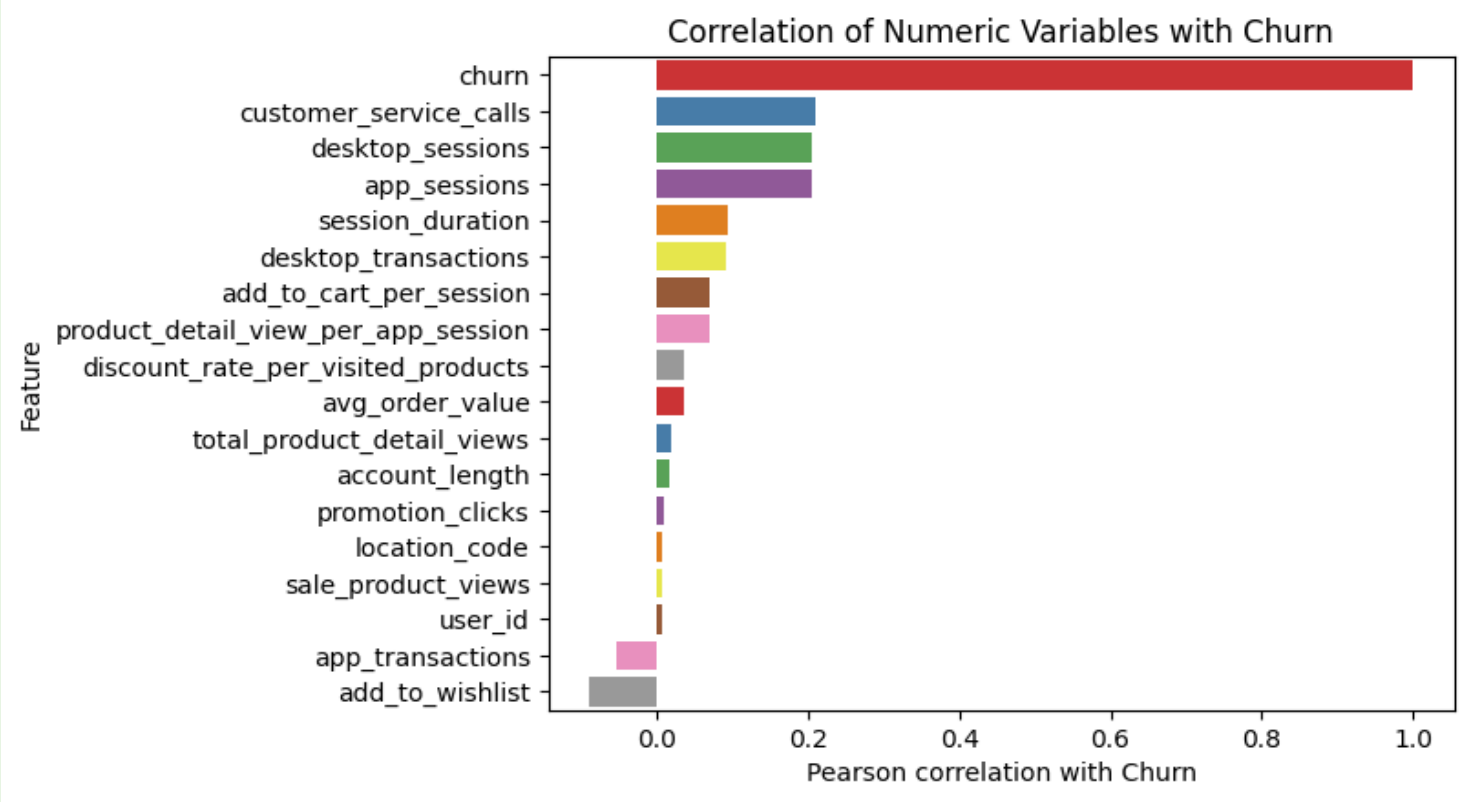
- Distribution highly right-skewed; **most customers making between 0 and 2 calls**.
- Most users do not experience significant issues requiring assistance.

Churn Overview



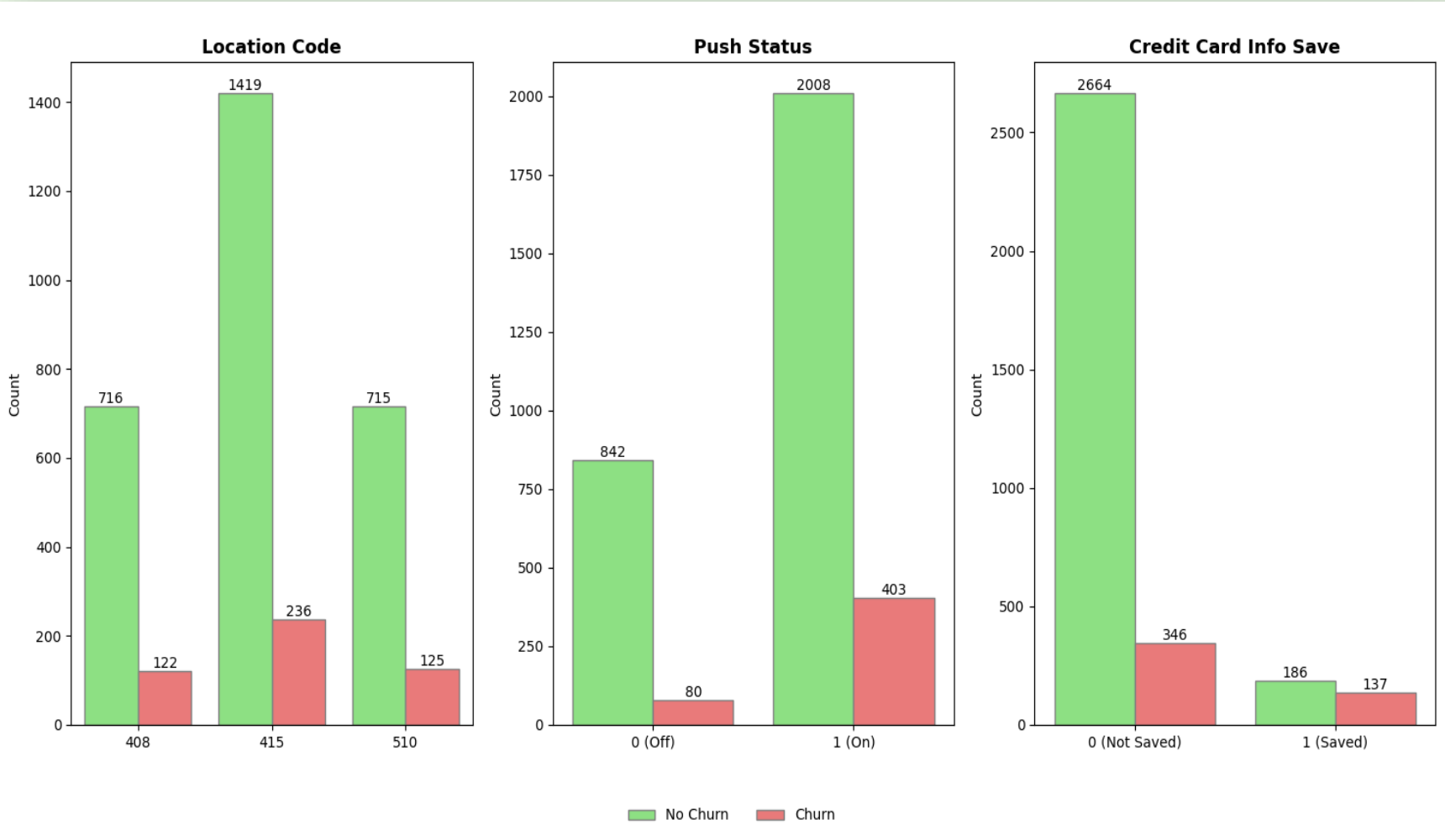


Correlation of Numeric Variables with Churn



Correlations with churn are weak overall. The strongest links are *customer service calls* and *session activities*, indicating that **user experience and engagement** may influence churn.

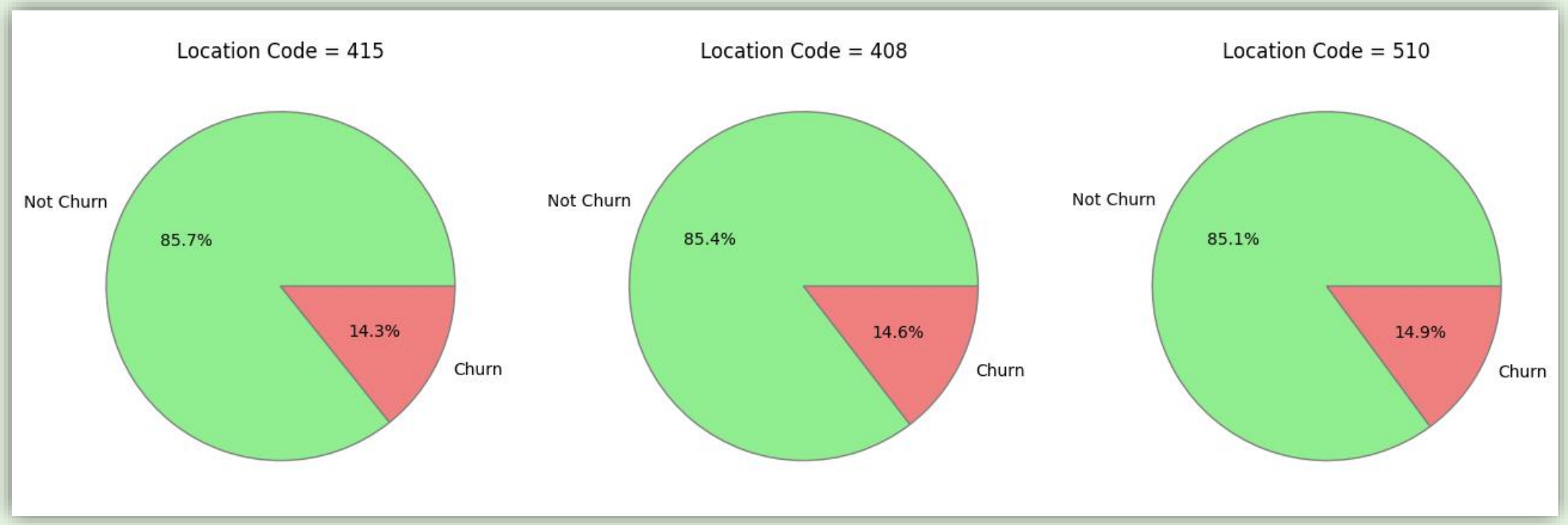
Churn vs. Categorical Variables



- Customer base is unevenly distributed across locations.
- Most customers have push notifications enabled, though churn is also higher among this group.
- Few customers save their credit card info, and those who do show a higher churn rate.

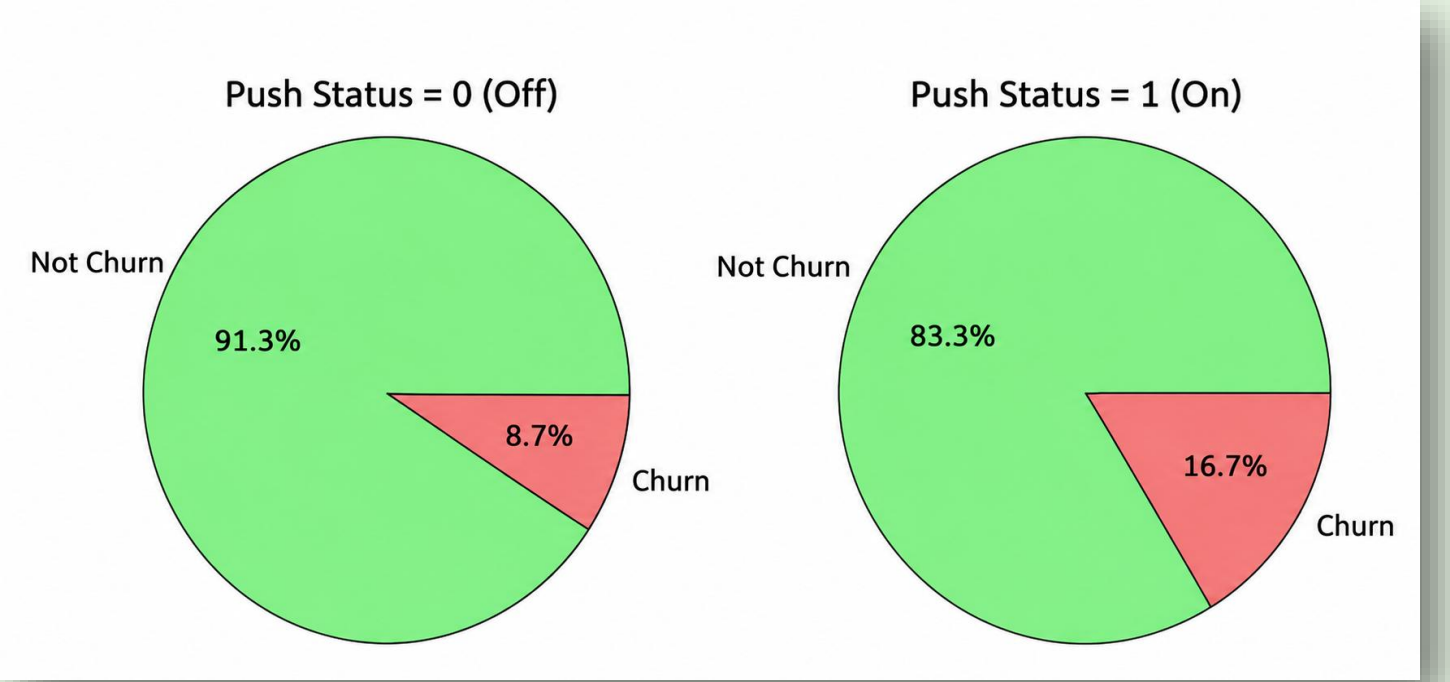
Churn Percentage by Location Code

Although location 415 has the largest number of customers, the churn percentage across all locations is almost the same (~14–15%), suggesting that churn is not influenced by location.



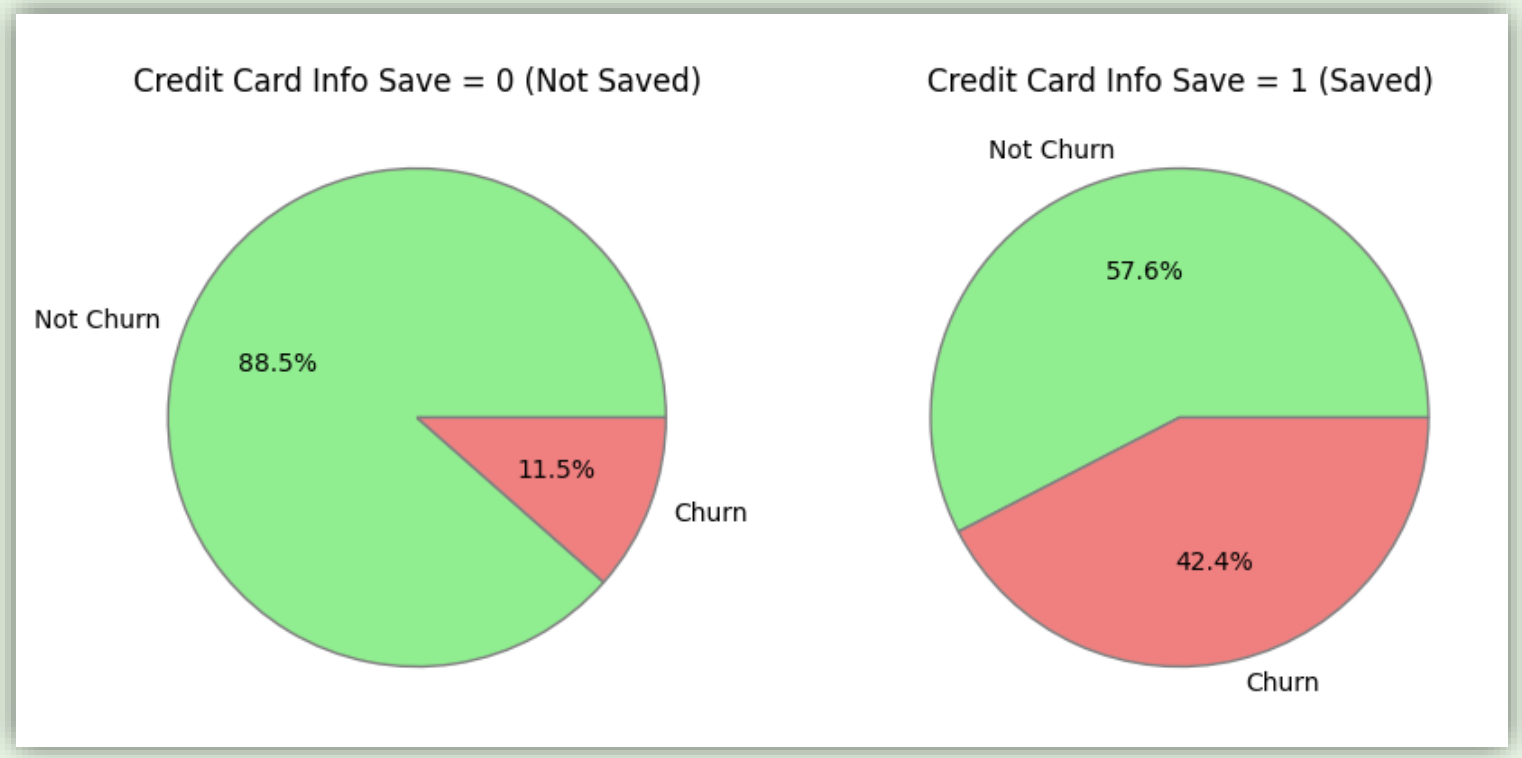
Churn Percentage by Push Notification Status

Most customers have push notifications enabled (1), but their churn rate is higher (16.7%) compared to those with notifications disabled (0), at 8.7%. This may suggest notification fatigue, where frequent or irrelevant messages push users away.



Churn Percentage by Credit Card Info Save

While the majority of users have not saved their credit card info (0), those who did save it (1) show a much higher churn rate (42%) compared to 11% for those who didn't. This may indicate trust or security concerns affecting retention among customers who saved payment details.



Conclusions



- The overall churn rate is around 15%, indicating **moderate customer loss**.
- Location has minimal influence on churn; **behavior is consistent across regions**.
- **Push notifications are linked to higher churn:** users who enable them leave at nearly twice the rate, possibly due to notification fatigue.
- Saving credit card info is associated with higher churn, possibly linked to **trust or user experience issues**.
- **Customer service interactions and wishlist engagement** may influence retention, highlighting areas for improvement.
- Overall, enhancing **engagement, trust, and support quality** could significantly reduce churn.

Business Recommendations



Optimize Push Notifications

- Review frequency and relevance of notifications; test personalized, less frequent messaging to reduce fatigue.

Support Credit Card Users

- Build trust through security messages and loyalty rewards.

Enhance Wishlist Experience

- Encourage users to add products to their wishlists through reminders and personalized offers.

Improve Customer Service

- Introduce faster support options and chatbot to reduce frustration and prevent churn.

Retention Focus

- Follow-up campaigns for new credit card users and frequent buyers.


Thank you