

USER CHURN PROJECT | Exploratory Data Analysis

Prepared for the Waze Leadership Team



Overview

The Waze data team is executing a churn-prevention initiative aimed at improving monthly active-user growth. Churn is defined as users who have either uninstalled the app or stopped using it altogether.

This report provides an executive summary of Milestone 3--data compilation and exploratory analysis--and highlights the most important insights. These findings will directly inform feature engineering and guide model development in the next phase of the churn-prediction project.

Key Insights

Drivers of Churn:

- Users who drove **long distances per driving day** were **more likely to churn**.
- Users who drove on **more days during the month** were **less likely to churn**.
- This contrast suggests that usage *intensity* (long-distance drivers) versus usage *frequency* (daily drivers) affect churn risk in different ways.

Distribution of User Behavior:

- Most usage-related variables are **heavily right-skewed**, meaning the majority of users fall toward the lower end of activity ranges.
- Certain variables, such as user tenure (`n_days_after_onboarding`), are **uniformly distributed**, suggesting representation across both new and long-tenured users.

Data Quality Observations:

Outliers:

- Several variables contained **improbable values**, such as daily driving distances exceeding 15,000 km. These outliers appear to stem from the heavy-tailed nature of the data rather than entry errors, but they require capping or treatment during modeling.

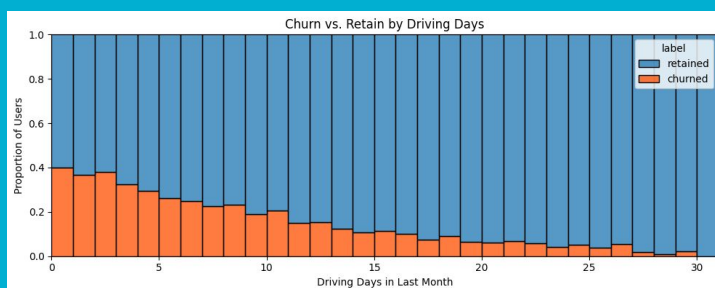
Monthly Variables:

- `activity_days` has a maximum of 31, while `driving_days` has a maximum of 30. This mismatch suggests that these metrics may not have been collected during the exact same month, and needs clarification.

Recent Usage Spike:

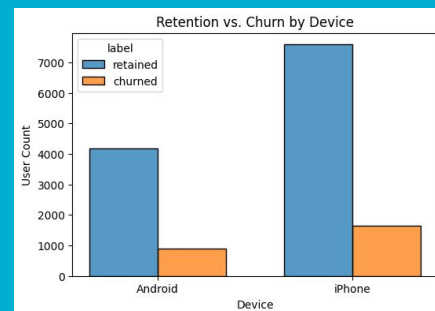
- Many long-tenured users concentrated a disproportionately large share of their lifetime sessions in the last month, which may indicate a behavior change, data artifact, or both.

Details



The churn rate is highest among users who barely used Waze in the last month.

Churn rates were **consistent across device type** (iPhone vs. Android).



Next Steps

- Investigate discrepancies between sessions, `driving_days`, and `activity_days`.
- Work with the Waze team to explore user profiles, especially long-distance drivers.
- Run deeper statistical analyses to quantify variable impact on churn.