

Presented by Ebenezer Sam

EDA

Exploratory Data Analysis

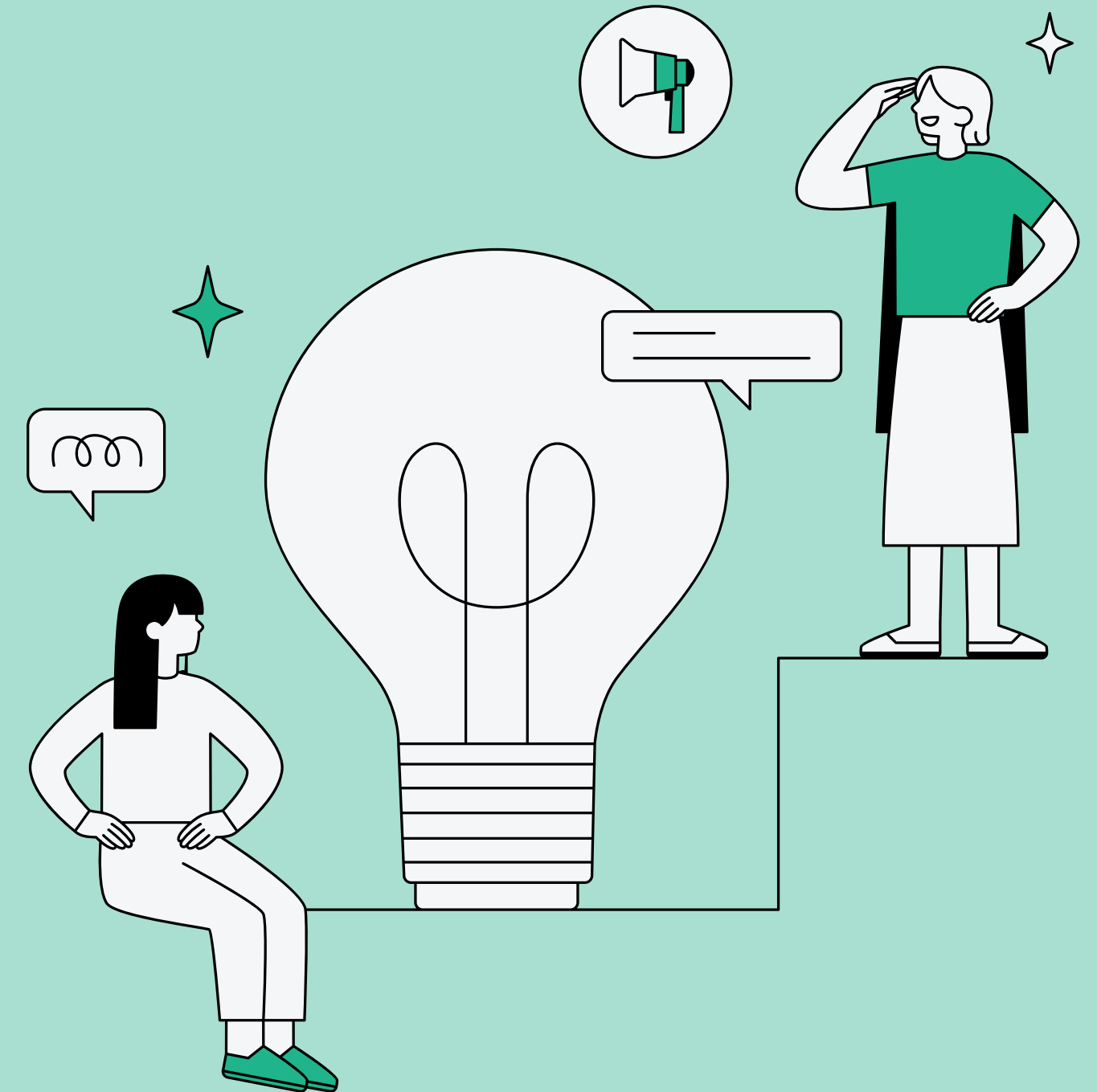
Key Insights from NovaMind AI User Historical Churn Data

NovaMind AI
A Fictitious AI Platform for Finance
and Marketing Professionals

Introduction to analysis

NovaMind AI empowers marketing and finance professionals with AI-driven research capabilities built for depth and precision.

With a rapidly expanding subscriber base, retaining users is now a strategic priority. This churn model analyses user behaviour across 15,000 historical subscribers to predict churn risk — giving our retention teams the intelligence they need to intervene at the right time, with the right action, for the right user.



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About NovaMind AI

NovaMind AI is a professional artificial intelligence platform built for marketing strategists and financial analysts who demand depth, precision and speed in their research. Unlike general-purpose AI tools, NovaMind AI is purpose-engineered for the complexity of business intelligence — delivering structured, citation-backed insights that professionals can act on immediately.

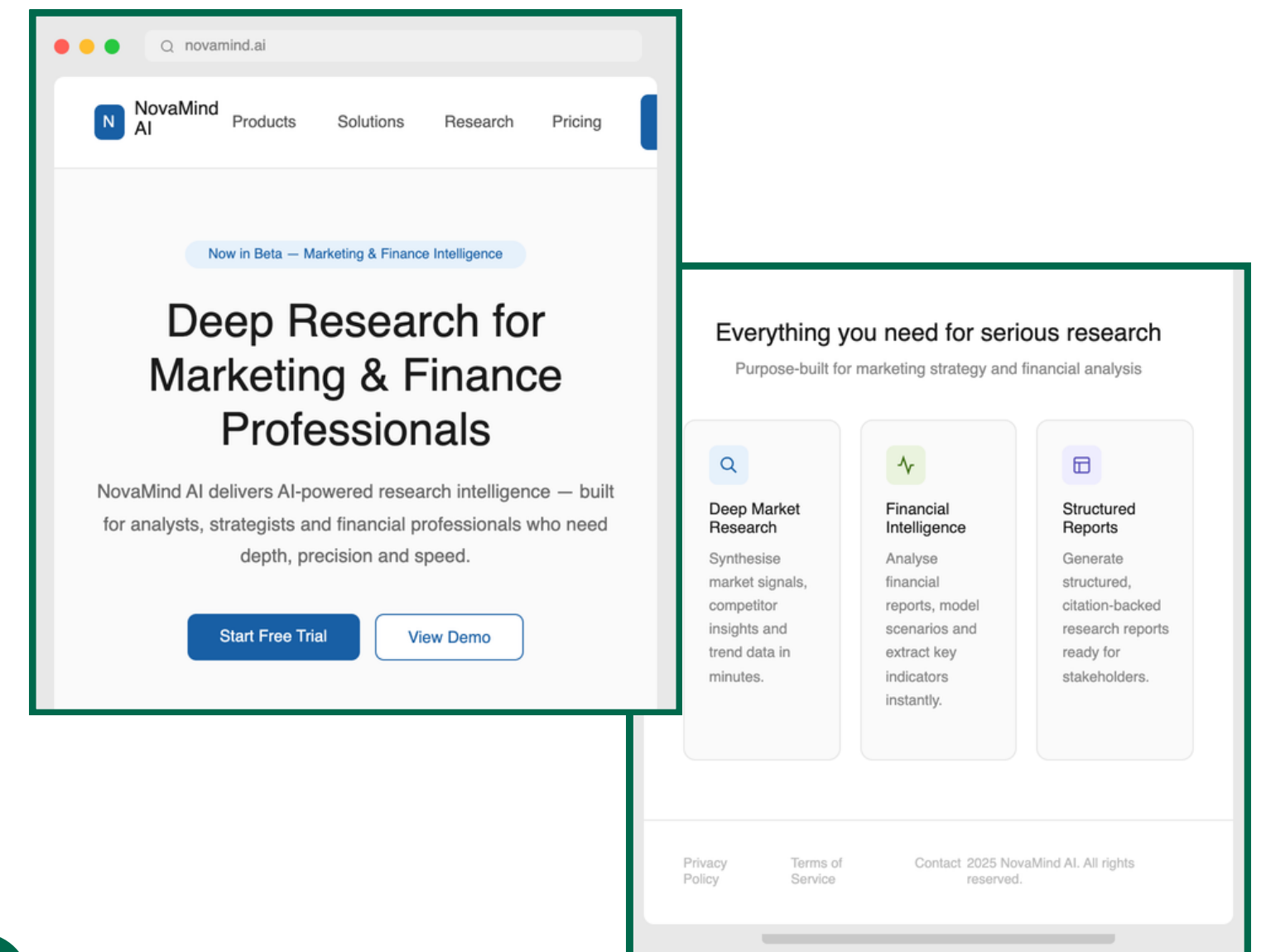
It is capable of

Deep Market Research

Competitor Intelligence

Financial Analysis & Portfolio Research

Predictive Intelligence



Project Objective

As NovaMind AI continues to expand its global subscriber base, retaining existing users has become as critical as acquiring new ones. This project was initiated to proactively identify subscribers who are at risk of cancelling their subscription — before they leave.

Specifically, this project set out to:

- Analyse historical subscriber behaviour to uncover patterns that lead to churn
 - Build a machine learning model capable of predicting churn probability for each user
 - Segment active subscribers into risk categories — High, Medium and Low Risk
 - Equip the NovaMind AI retention team with actionable intelligence to intervene early and protect revenue
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Dataset Overview

The analysis was conducted on a historical dataset of 15,000 NovaMind AI subscribers — representing users whose subscription outcomes are already known. This dataset formed the foundation for training and evaluating the churn prediction model.

Dataset at a Glance

Attribute	Detail
Total Records	15,000 users
Total Features	14 fields
Target Variable	Churned — 0 stayed, 1 churned
Churn Rate	13.8% — 2,077 users churned
Geographic Coverage	Global — 6 regions
Africa Representation	35% — 5,250 users

Data Quality Checks

Completeness

All critical fields had no null (missing) values

Uniqueness

Every user_id in the dataset was unique—no duplicates detected

Validity

All categorical fields (region, subscription_plan, renewal_behavior) contained only accepted business values.

Numeric Consistency

umeric columns (usage, payments, feature adoption, etc.) contained values strictly within expected ranges

Data Freshness

User activity levels captured recent logins and inactivity patterns aligned with business observations

For Data Quality

The data passed all five DQ checks, confirming it was clean, complete and ready to use for the model

Overall Churn Rate

Using the 15,000 historical data on subscribers,

13.9%

users churned

86.1%

users stayed

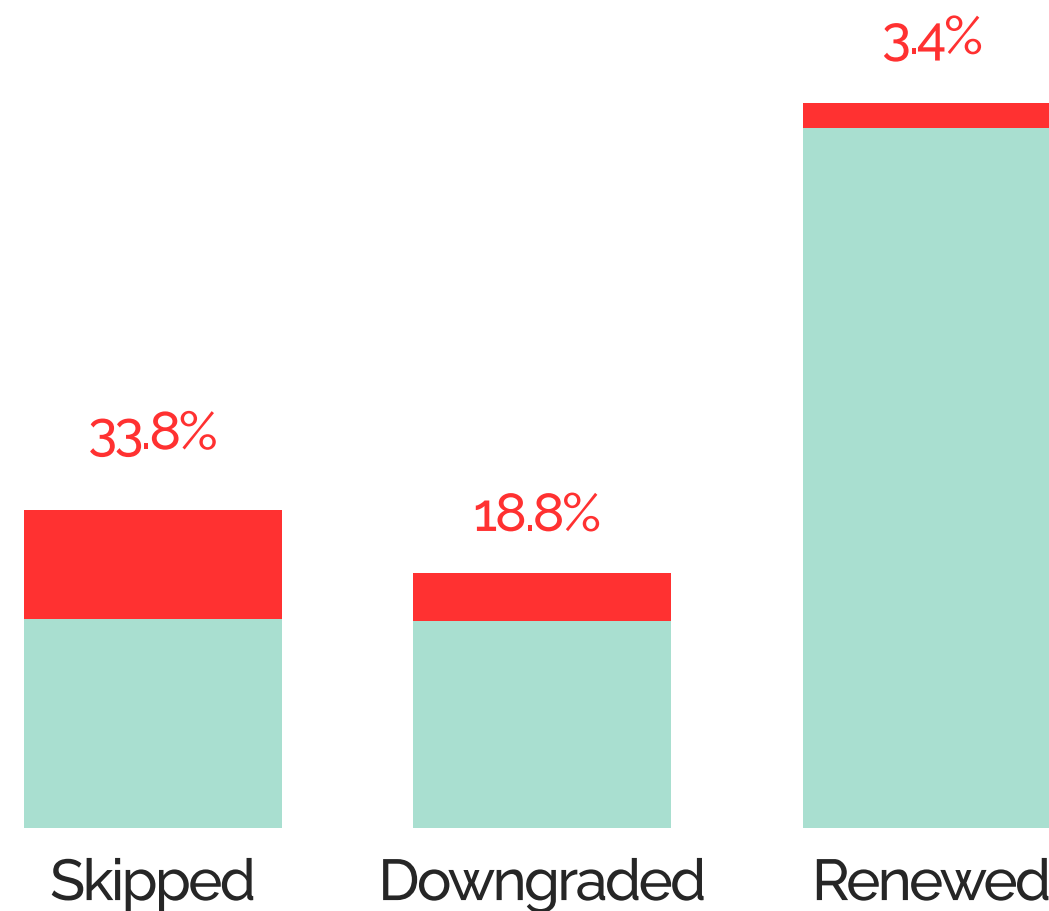
What does this means?

Roughly 1 in every 7 NovaMind AI subscribers left the platform. While the majority of users stayed, the 13.9% who churned represent a significant revenue risk — particularly as the platform scales globally

Users who skipped or downgraded likely churned

Churn Rate per Renewal Behaviour

● not churned ● churned



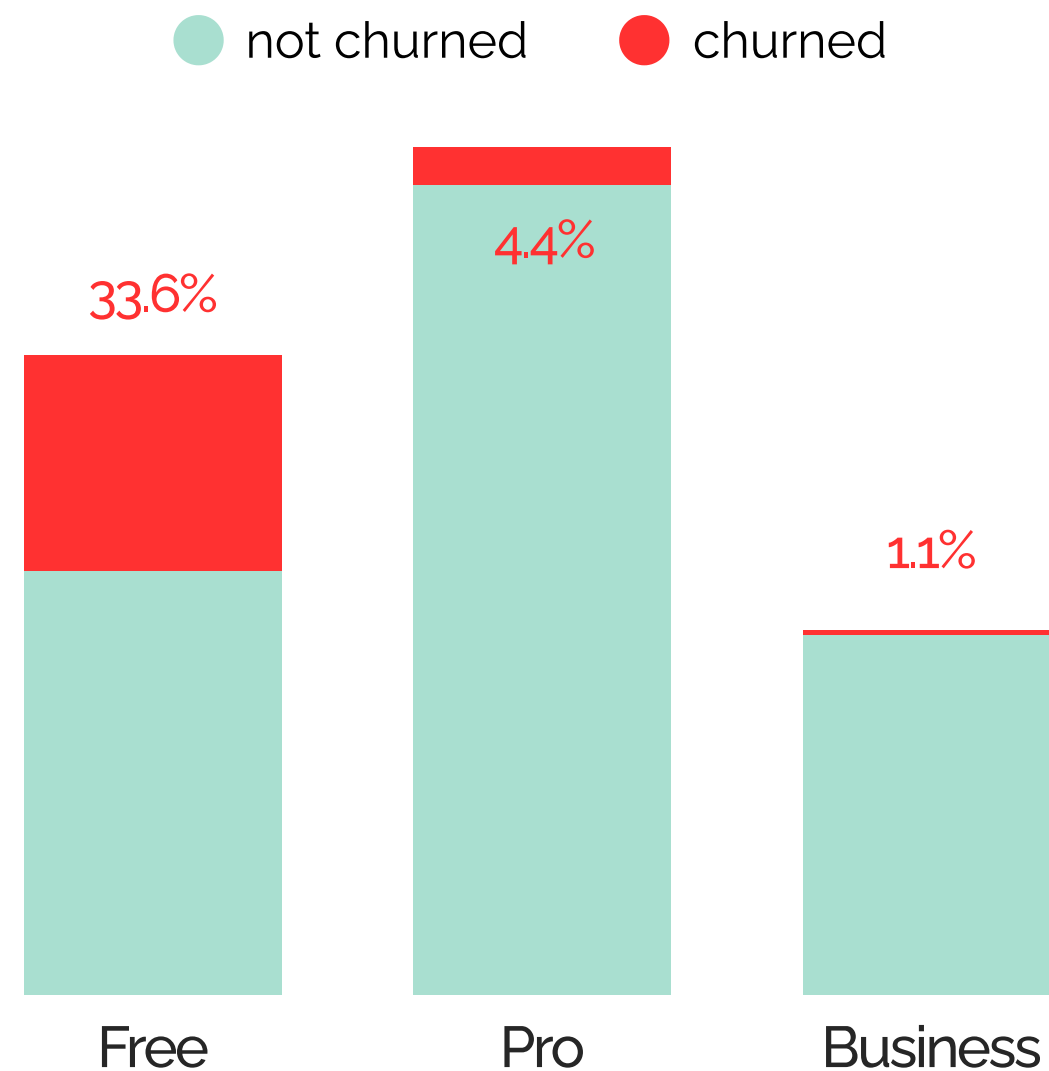
Renewal behavior is one of the strongest indicators of churn across the NovaMind AI subscriber base. Users who skipped their renewal churned at a rate of 33.8% — 10 times higher than users who renewed at just 3.4%.

Users who downgraded their plan sat in the middle at 18.8%, signalling dissatisfaction but not yet a full exit. In simple terms — the moment a subscriber stops renewing or reduces their plan, the likelihood of losing them increases dramatically.

1 in 3 users who skipped their renewal left the platform

Free plan users churn at 30x the rate of Business subscribers

Churn Rate by Subscription Plan



Churn rate drops significantly as subscribers move up the plan tier. Free plan users churn at 33.64% — meaning 1 in 3 free users left the platform. Pro users are far more stable at 4.39%, while Business subscribers are the most loyal of all at just 1.12%. This pattern is expected — users who invest more in a platform are more committed to getting value from it.

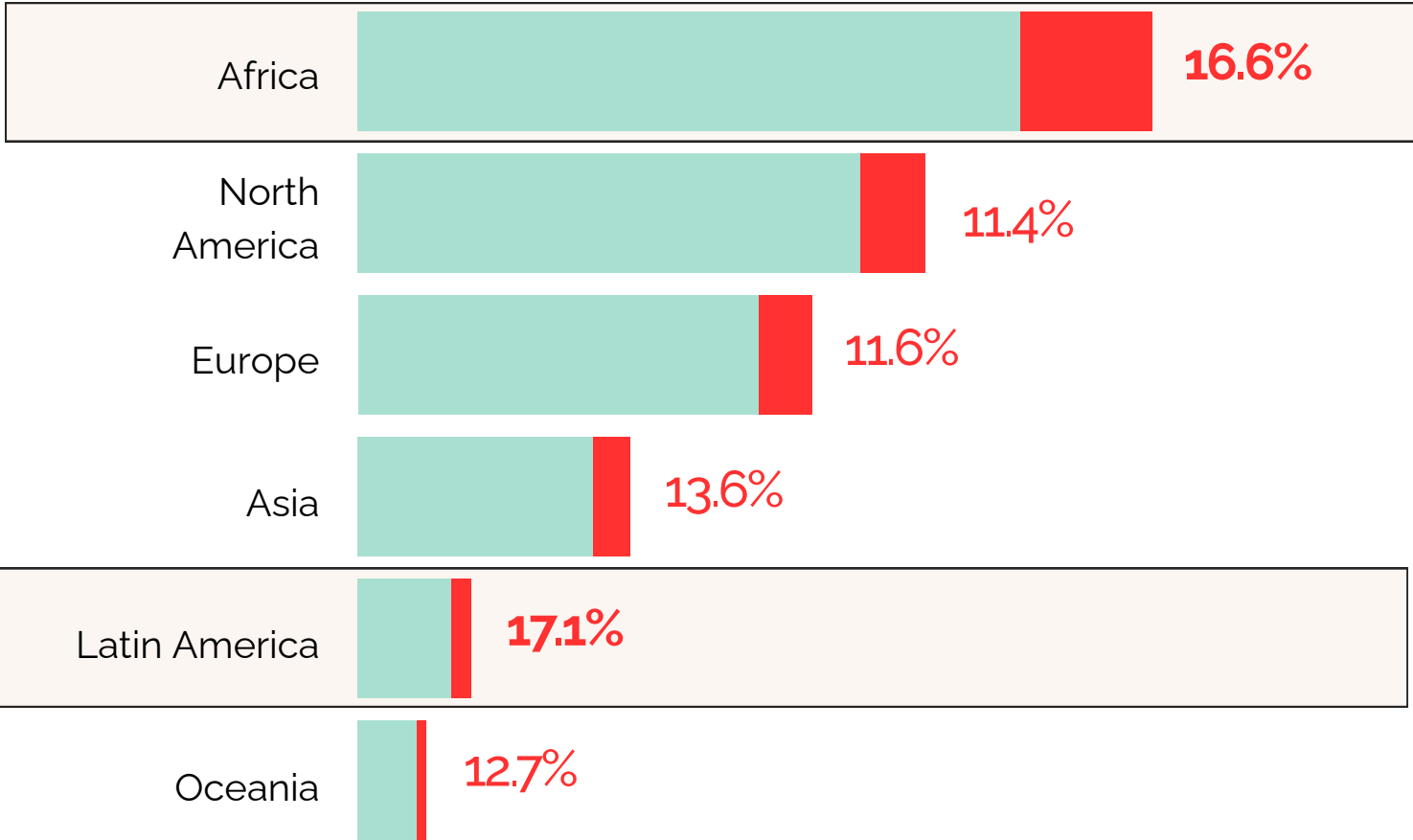
The critical focus area is the Free tier, which accounts for 1,743 of the 2,077 total churned users — representing 84% of all churn on the platform.

84% of all churned users were on the Free plan

Latin America and Africa show the highest churn rates globally

Churn Rate by Region

● not churned ● churned



Churn rates vary across regions but remain within a relatively narrow band — ranging from 11.41% in North America to 17.07% in Latin America. Africa, which represents the largest user base at 35% of all subscribers, churns at 16.57%. North America and Europe are the most stable regions, both sitting below 12%.

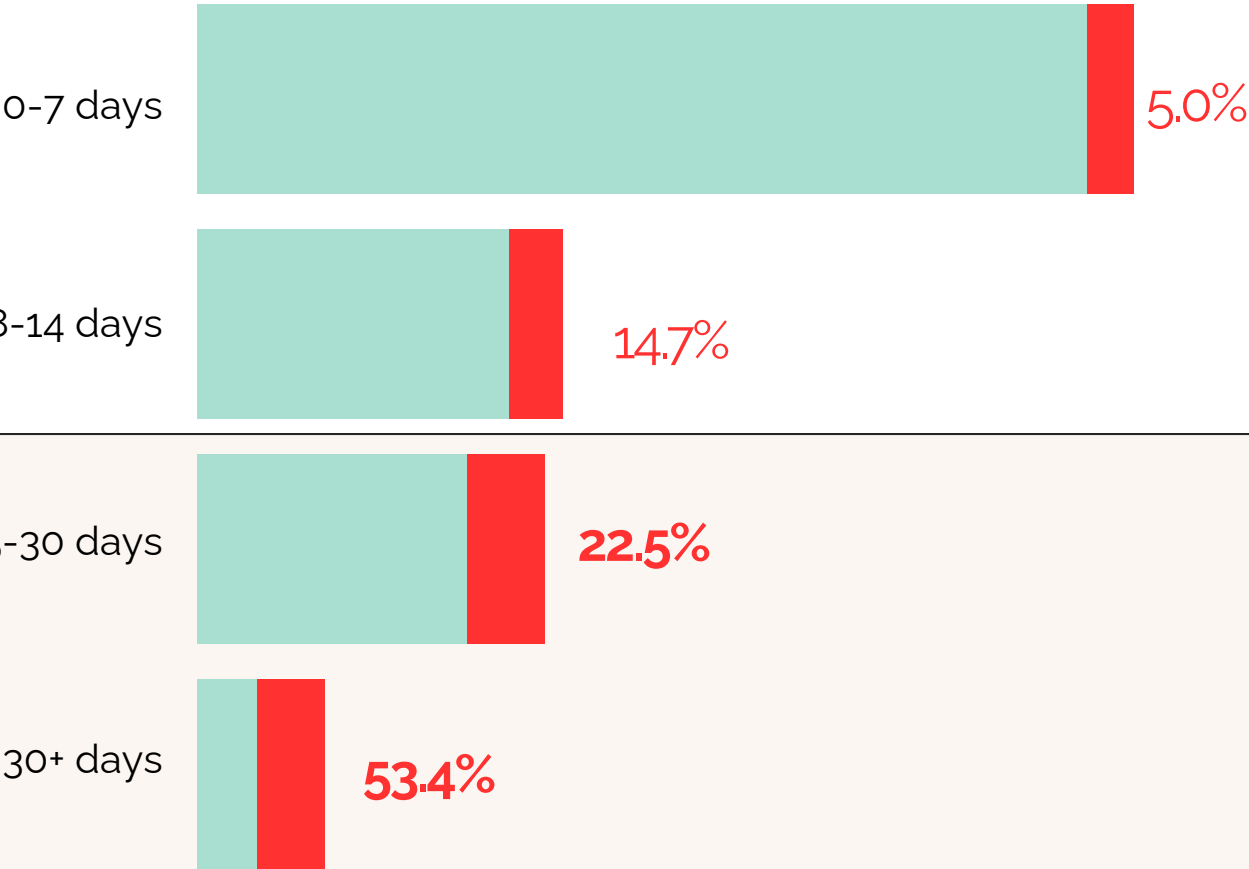
While no single region shows an alarming outlier, Latin America and Africa warrant closer attention given their elevated churn rates.

Africa holds the largest user base but churns above the global average, a key retention opportunity.

The longer a user is inactive, the more likely they are to leave

Inactivity of Users and Churn Rate

● not churned ● churned



Inactivity is one of the clearest warning signs of churn across the NovaMind AI platform. Users who logged in within the last 7 days churn at just 4.95% — meaning active users almost never leave. However as inactivity grows, so does the risk. Users inactive for 8 to 14 days churn at 14.65%, rising sharply to 22.49% for those inactive between 15 and 30 days.

Most critically, users who have not been active for over 30 days churn at 53.35% — meaning more than 1 in 2 of those users are already gone. By the time a user reaches 30 days of inactivity, the decision to leave has most likely already been made.

A user inactive for 30 days is 10 times more likely to churn than one active within the last week

Users with payment failures and inactivity always churn

Analysis is based on users with at least one failed payment and inactive for more than 15 days.

327
total high risk users

44
churned

100%
churn rate

When failed payments and inactivity occur together, the outcome is decisive. Of the 327 users who had at least one failed payment and had not been active for more than 15 days, 44 had already churned — at a rate of 100%. The remaining 283 users in this group had not yet churned but carry the same risk profile.

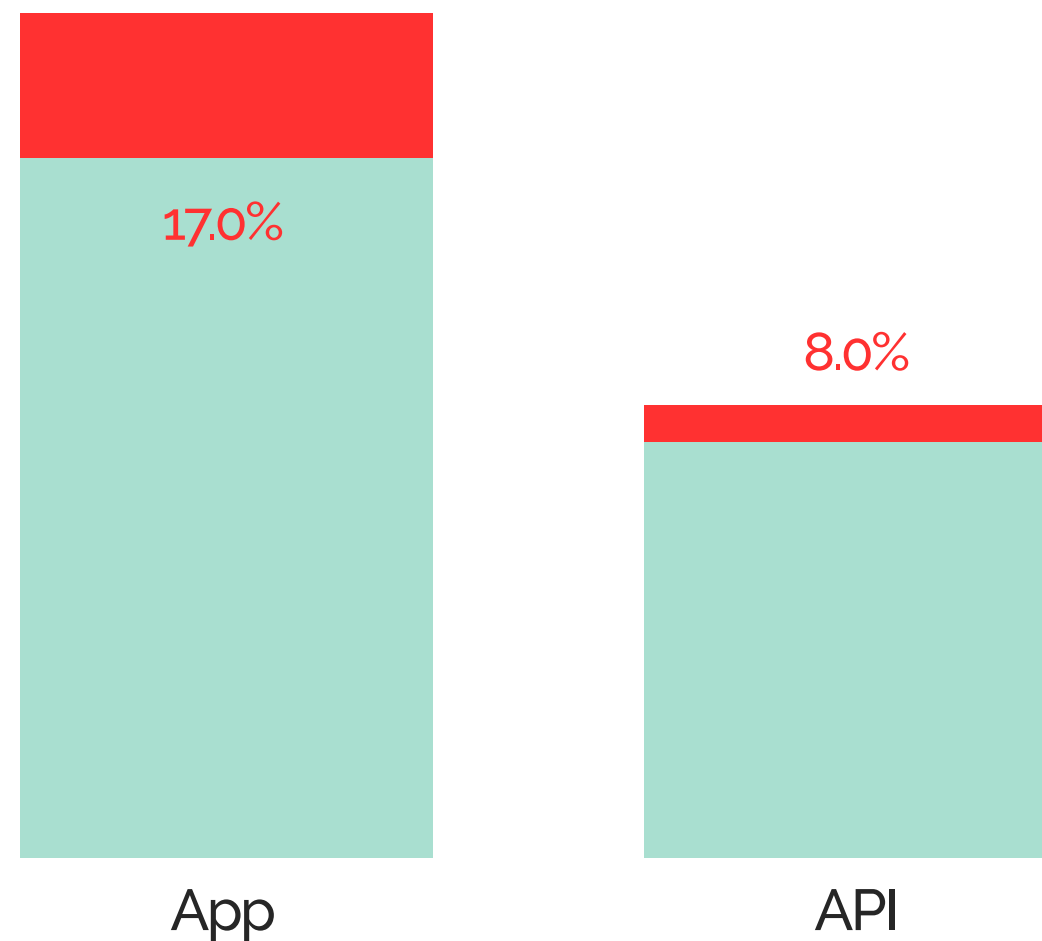
Clearly, a NovaMind AI subscriber who has missed a payment and gone quiet is not a maybe. They are a near certainty to leave without intervention.

Every user who combined a failed payment with inactivity churned — no exceptions.

App users churn at twice the rate of API users

Churn Rate per Renewal Behaviour

● not churned ● churned



How a subscriber accesses NovaMind AI has a significant impact on their likelihood to churn. App users churn at 16.98% compared to just 8.01% for API users — meaning App users are more than twice as likely to leave. This pattern is common across subscription platforms.

API users are typically developers or technical teams who have integrated NovaMind AI directly into their workflows, making them far more invested in the platform. App users on the other hand tend to be casual or exploratory users whose engagement is less deeply embedded and therefore easier to walk away from.

API users are twice as sticky as App users — integration drives retention

Key Takeaways

01. Churn is driven by low engagement — not payment failures
02. Skipping renewal is a 10x churn risk compared to renewing
03. Users inactive for 30+ days are more likely gone than not
04. 84% of all churn comes from Free plan users
05. API users churn at half the rate of App users
06. Latin America and Africa churn above the global average



Recommendations

01. **Trigger re-engagement at 15 days** — contact inactive users before they reach the point of no return at 30 days
02. **Prioritise Free tier conversion** — retention efforts on Free users should focus on upgrading them, not just keeping them
03. **Use skipped renewals as an alert** — any user who skips renewal should immediately enter a retention workflow
04. **Drive API adoption among App users** — the more embedded a user is, the less likely they are to leave
05. **Build regional retention campaigns for Africa and Latin America** — both regions churn above average despite strong user numbers

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Thank you