

RavenStack SaaS Subscription Analysis

End-to-end analysis of subscription growth, revenue performance, churn behavior, and customer retention using Python, PostgreSQL, and Power BI.



Dataset Foundation

500 Accounts

Customer base across multiple industries and regions

5,000 Subscriptions

Active and historical subscription records

25,000 Feature Usage

Detailed engagement tracking

600 Churn Events

Customer departure patterns

2,000 Support Tickets

Customer service interactions

Five relational tables supporting comprehensive growth, funnel, churn, cohort, and retention analysis.



Data Preparation Excellence

Subscription Status

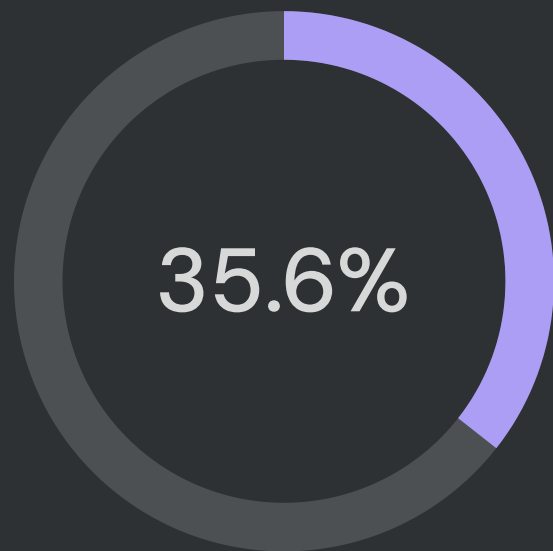
4,514 active subscriptions with null end dates intentionally retained. Created derived column for Active-Paid, Active-Free, and Ended status.

Data Integrity

Zero MRR subscriptions preserved for free plans and trials. Missing churn feedback filled as "Feedback Not Provided." No duplicates found.

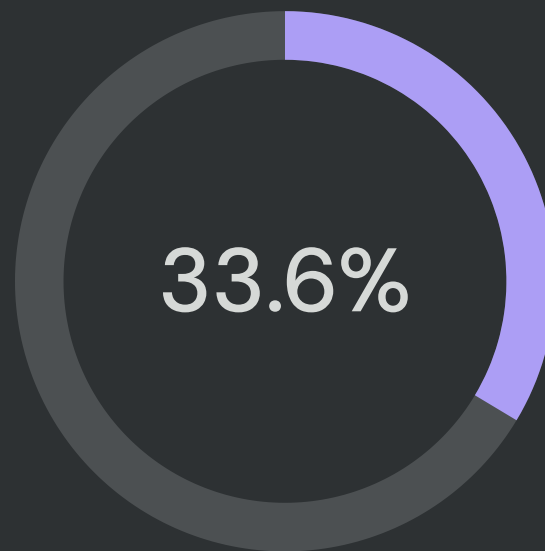
All date columns converted to proper datetime format, ensuring data integrity without artificial bias.

Account Distribution & Growth



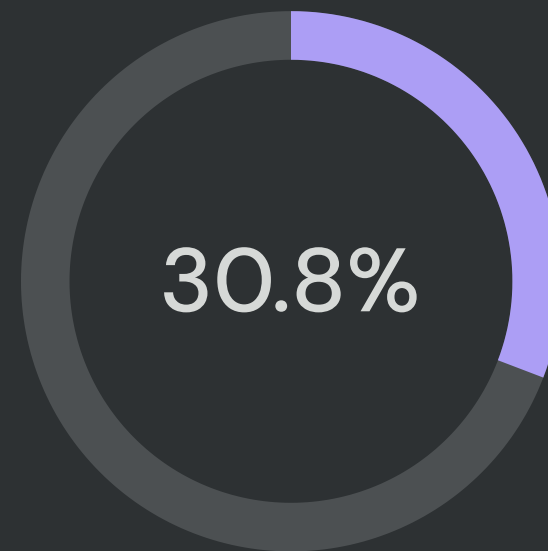
Pro Plans

178 accounts showing strong mid-tier adoption



Basic Plans

168 accounts providing volume base

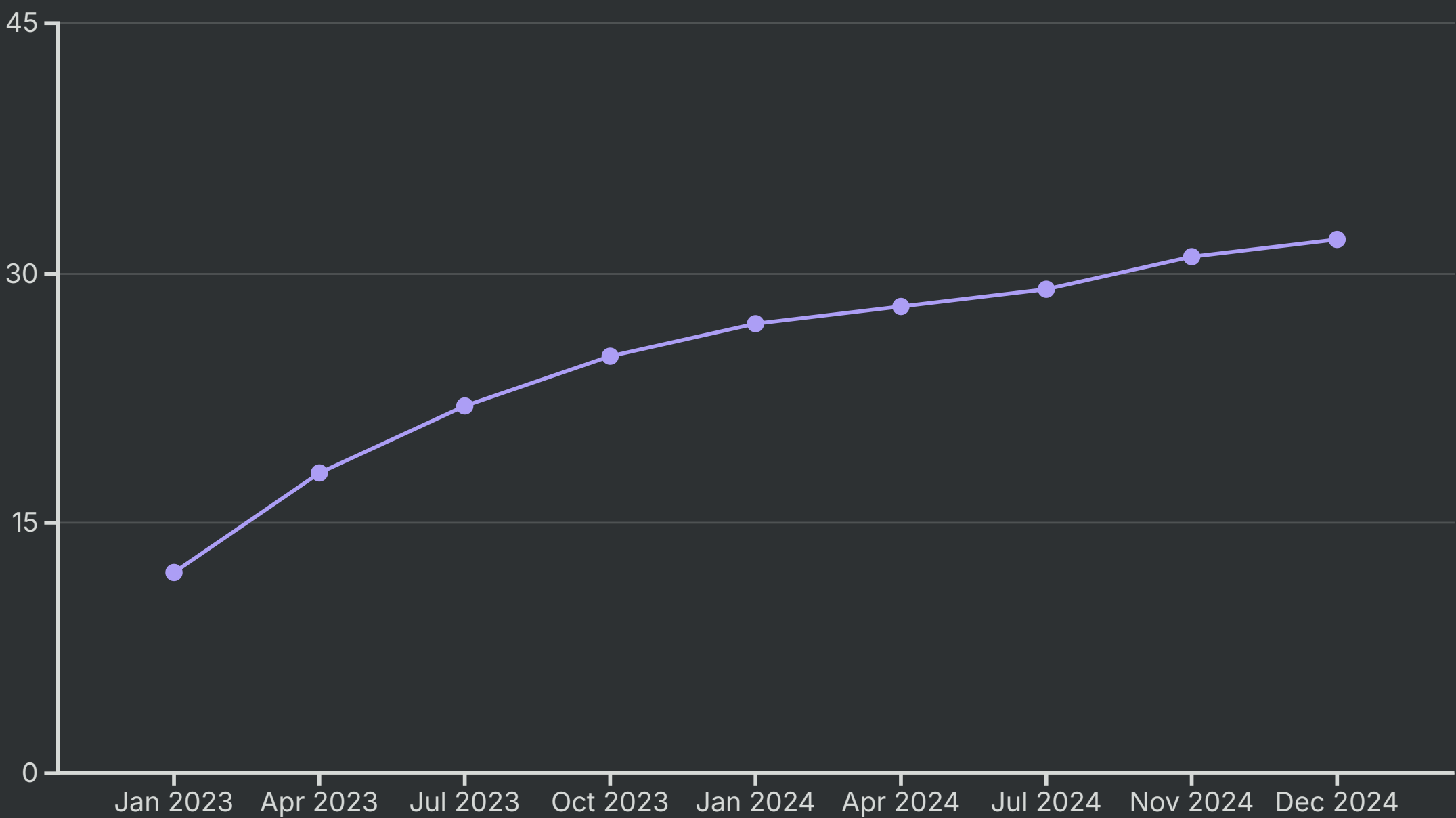


Enterprise Plans

154 accounts driving highest revenue

Balanced adoption across tiers with slight preference for Pro plans. Trial accounts represent 19.4% (97 accounts), while 80.6% join directly as paid users—indicating strong product positioning.

Signup Momentum



Signups increased steadily from early 2023, peaking at 31-32 signups in Nov-Dec 2024. Growth remains consistent with minor seasonal dips.

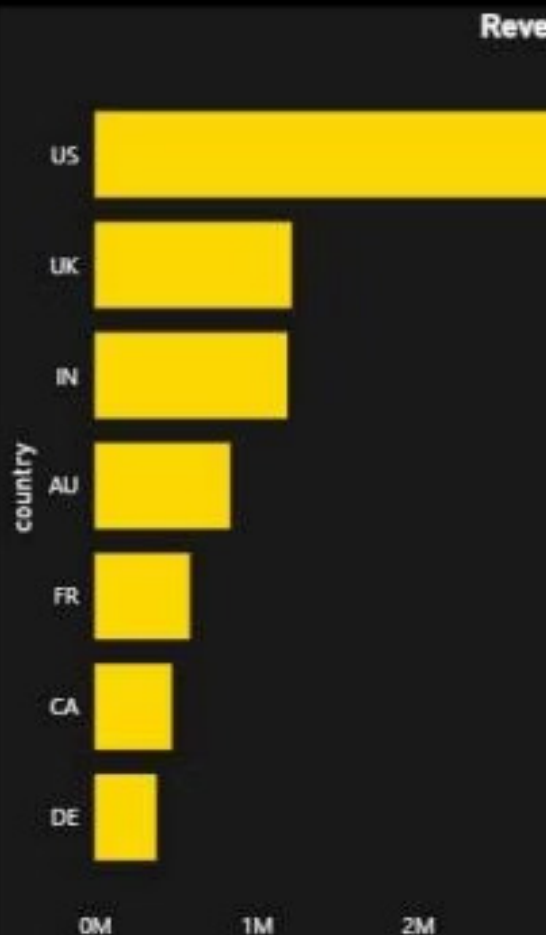
EXECUTIVE OVERVIEW

11M

Total MRR

0.22

Churn Rate %



Basic

is_trial

● False

● True

Revenue & Market Performance

11M

Total MRR

Monthly recurring revenue across all tiers

500

Total Accounts

Active customer base

22%

Churn Rate

110 churned accounts

Enterprise plans generate highest total MRR. Top industries: FinTech, DevTools, EdTech. United States leads revenue, followed by UK, India, Canada, and Germany.

Feature Engagement Insights

Core Feature Concentration

Top used features by usage count:

- Feature 32 - highest engagement
- Feature 15 - strong adoption
- Feature 6 - core functionality
- Feature 20 - consistent usage

MRR distribution is right-skewed with majority in low-mid range. Few high-value enterprise subscriptions contribute disproportionately to revenue.



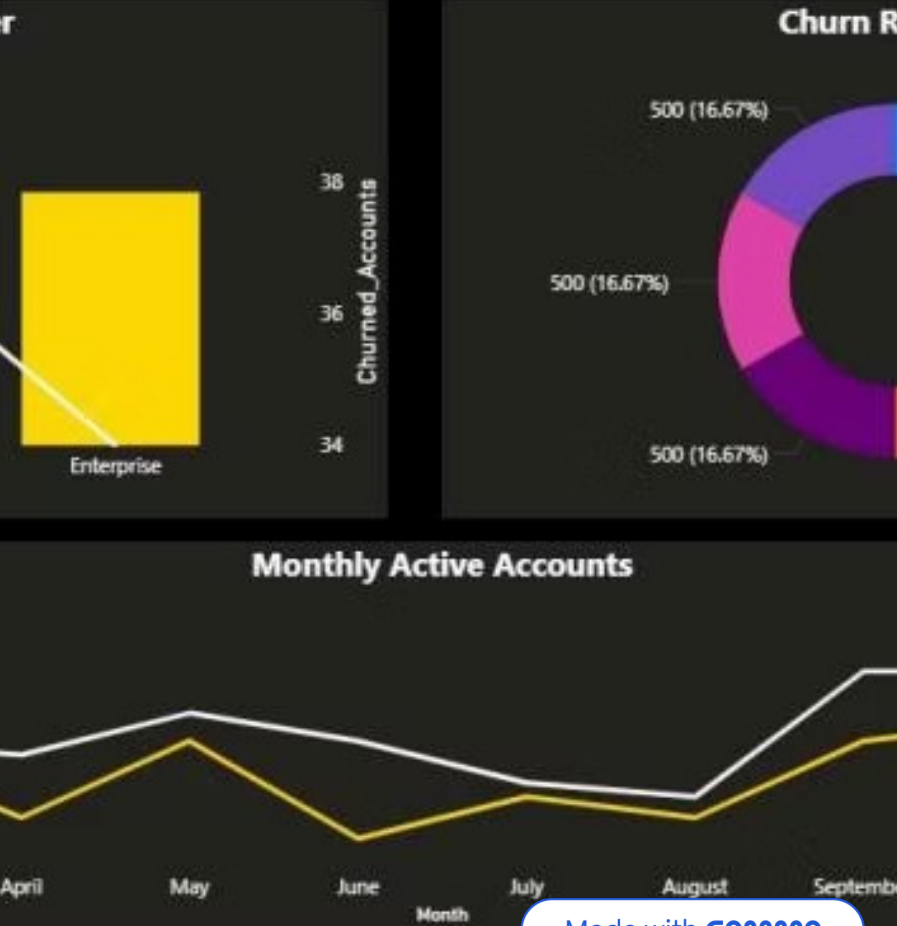
Session duration varies significantly across features, indicating some drive deep engagement while others serve as lightweight auxiliary tools.

Churn & Retention Patterns

- 1 — 0–30 Days
Highest churn risk window begins
- 2 — 30–60 Days
Peak early-stage churn period
- 3 — 60–90 Days
Churn begins to stabilize
- 4 — 90+ Days
Strong retention achieved

Basic plans show higher churn rates while Enterprise exhibits stronger retention. Downgrades act as early churn signals—downgraded accounts contribute meaningful MRR loss before departure.

Retention and Cohort Analysis



Strategic Recommendations

1

Strengthen Early Onboarding

Focus on first 60 days with enhanced support and engagement to reduce early-stage churn.

2

Monitor Downgrade Signals

Track downgrade activity as leading churn indicator and intervene proactively.

3

Optimize Channel Investment

Invest more in high-performing organic and partner referrals over paid channels.

4

Prioritize Basic Plan Retention

Develop targeted strategies to reduce higher churn rates in Basic tier.

5

Launch Reactivation Campaigns

Structure win-back programs—reactivated users generate positive average MRR.

Project Impact

Complete Analytics Workflow

This project demonstrates real-world SaaS analytics combining Python for EDA, PostgreSQL for business intelligence, and Power BI for visualization.

Key achievements:

- 100% trial conversion rate
- Identified 60-day churn window
- Validated reactivation viability
- Mapped revenue by tier and geography



By combining technical rigor with business interpretation, the analysis delivers actionable insights supporting growth optimization, churn reduction, and revenue sustainability.