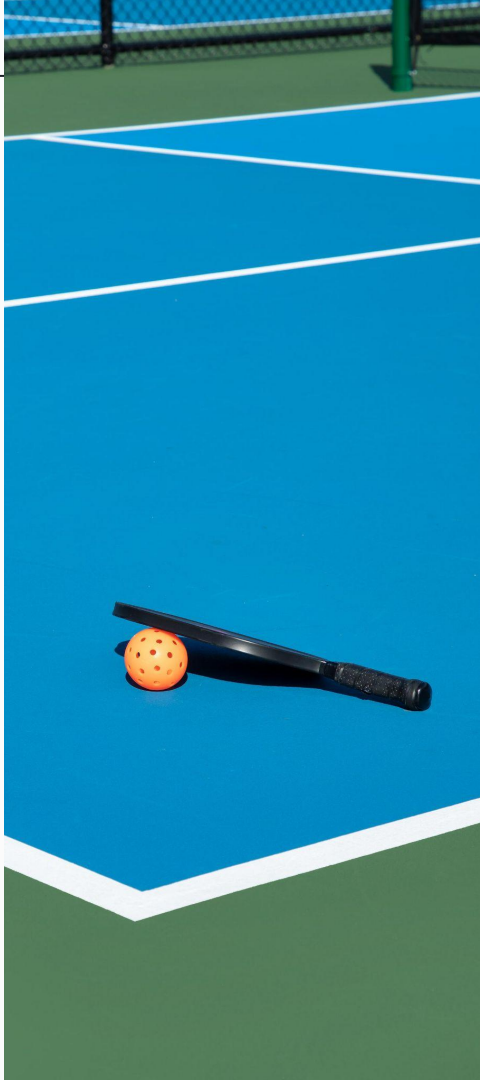


JOOLA Final Presentation

Next Gen



Our Mission: From Data to Sustainable Growth Strategy

Objective

- Identify customers most likely to churn / retained based on historical sales data from July 2024 to Sep 2025
- Help Joola design targeted retention campaigns and optimize customer lifetime value



Marketing Dataset #1

Using all the data sets from Google Analytics, including the search data, user cohorts, monthly snapshots, and user attributes

Sales Dataset #2

We used and merged:

- 5 separate sales data aggregated into one file
- 1 file named General Ledger SKU



Outcome

- Identify market opportunities and user behavior patterns
- Built predictive models for customer conversion and churn





User Behavior & Insights



Geographic Concentration: Urban Hubs Drive Majority of Traffic



Rows: 15753 | Columns: 2
Columns: ['City', 'Active users']

Top 10 Cities by Active Users:

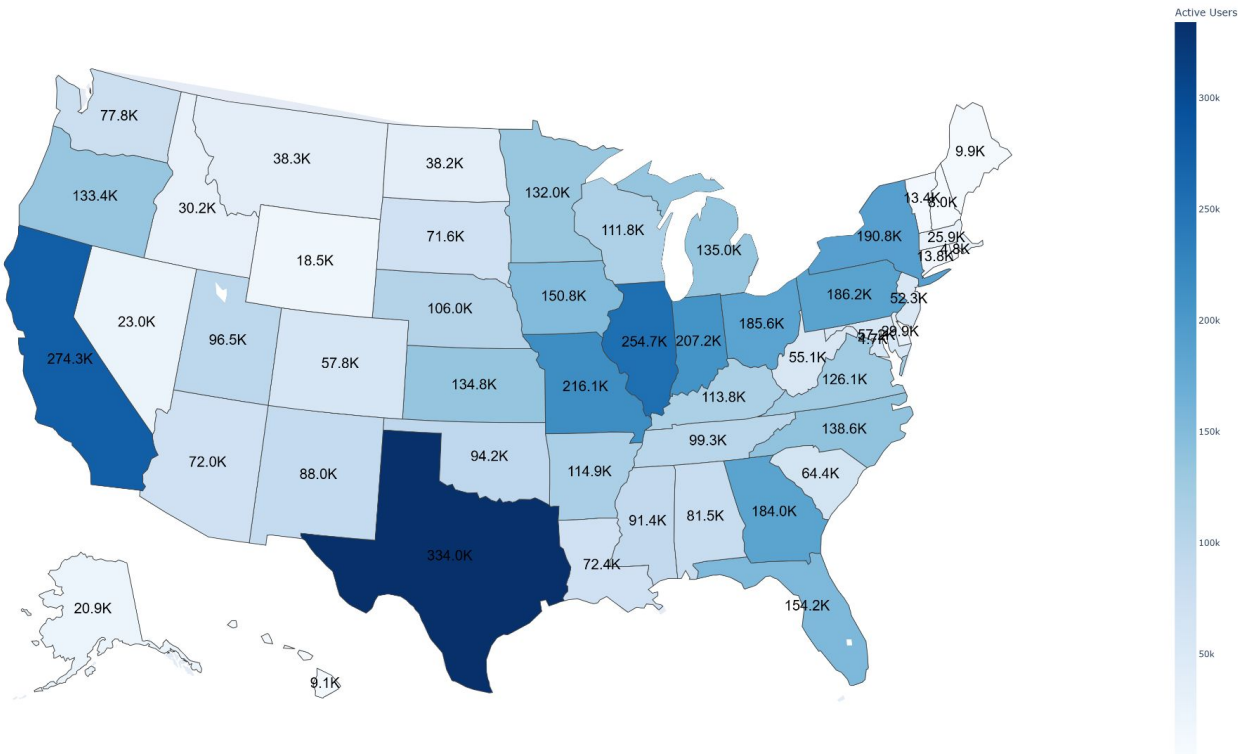
City	Active users
New York	113319
Santa Clara	35551
Los Angeles	28161
Miami	19970
Dallas	19526
Chicago	19098
Kuala Lumpur	18807
Hanoi	18713
Ashburn	17921
Ho Chi Minh City	17552

Name: Active users, dtype: int64

State-level summary (top 10):

	US_State_Abbrev	US_State	Active users
44	TX	Texas	334048
4	CA	California	274280
14	IL	Illinois	254731
24	MO	Missouri	216117
15	IN	Indiana	207241
34	NY	New York	190782
38	PA	Pennsylvania	186249
35	OH	Ohio	185620
10	GA	Georgia	183951
9	FL	Florida	154239

Active Users by U.S. State



Target Audience: Affluent Males 25-54 Years Old



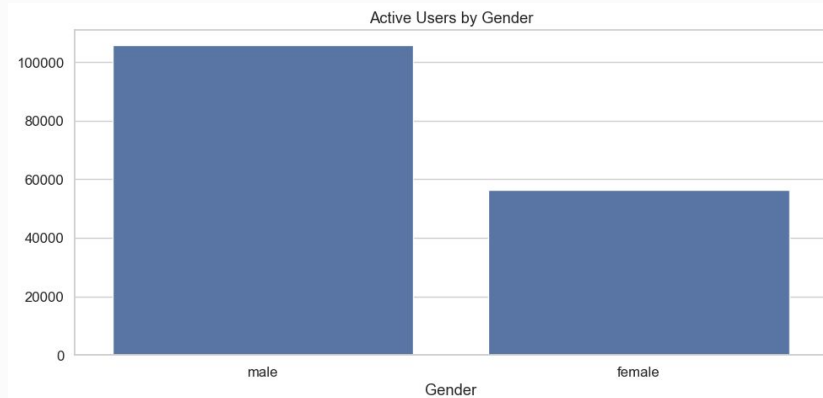
Active Users By Gender:

- Male takes majority of the users, doubling that of the female users

```
Rows: 2 | Columns: 2
Columns: ['Gender', 'Active users']

Missing values:
  Gender      0
Active users  0
dtype: int64

Active Users by Gender:
  Gender
male    105742
female   56374
Name: Active users, dtype: int64
```



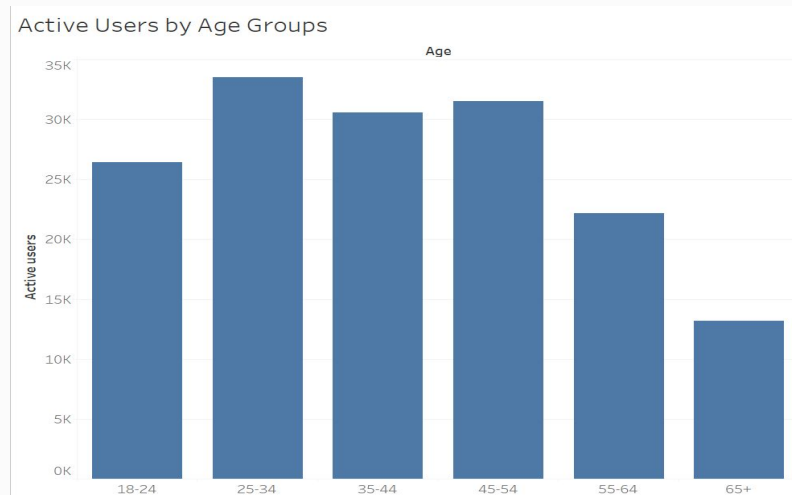
Active Users By Age groups:

- Active users are pretty evenly spread out throughout the age groups
- Majority** of users are between the **age of 25-54**

```
Rows: 6 | Columns: 2
Columns: ['Age', 'Active users']

Missing values:
  Age      0
Active users  0
dtype: int64

Active Users by Age Group:
  Age
25-34  33526
45-54  31505
35-44  30584
18-24  26439
55-64  22174
65+    13176
Name: Active users, dtype: int64
```

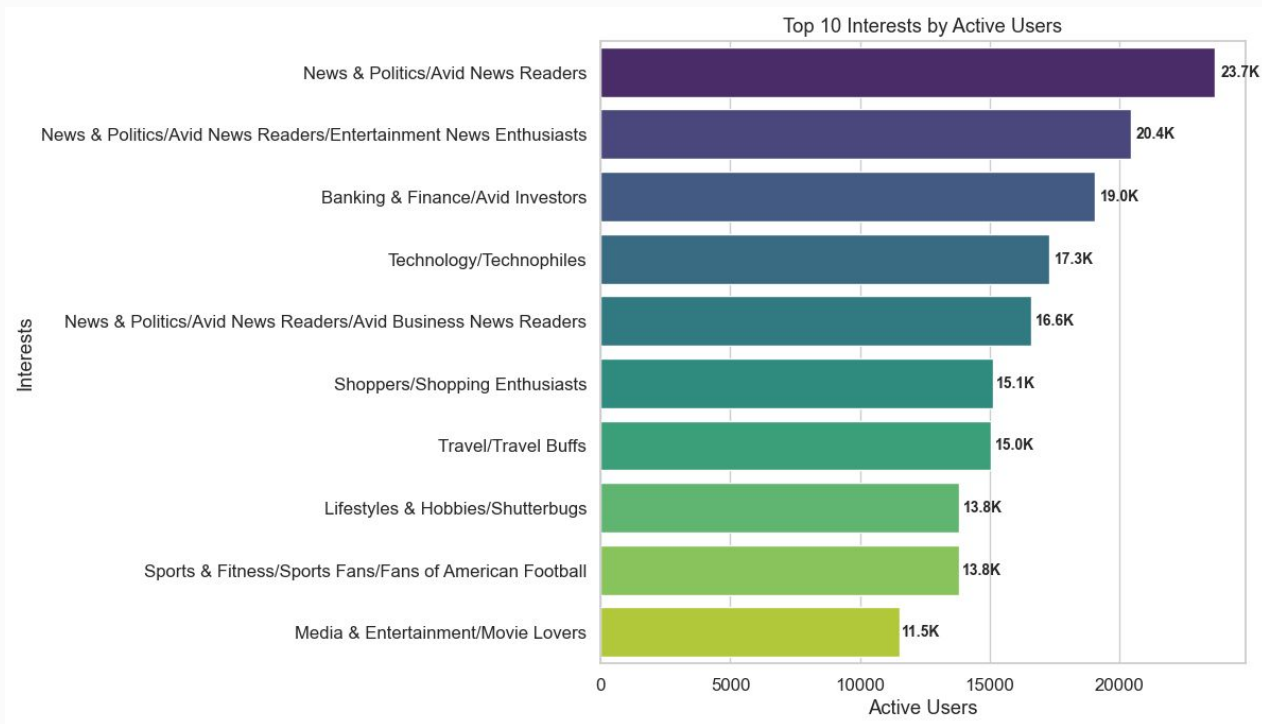


Customer Profile: Decision-Makers with Premium Interests



Active Users by Interests:

- Out of many interests available in GA, the top users tend to be interested in
 - Political News
 - Finance / Investors
 - Technology Industry

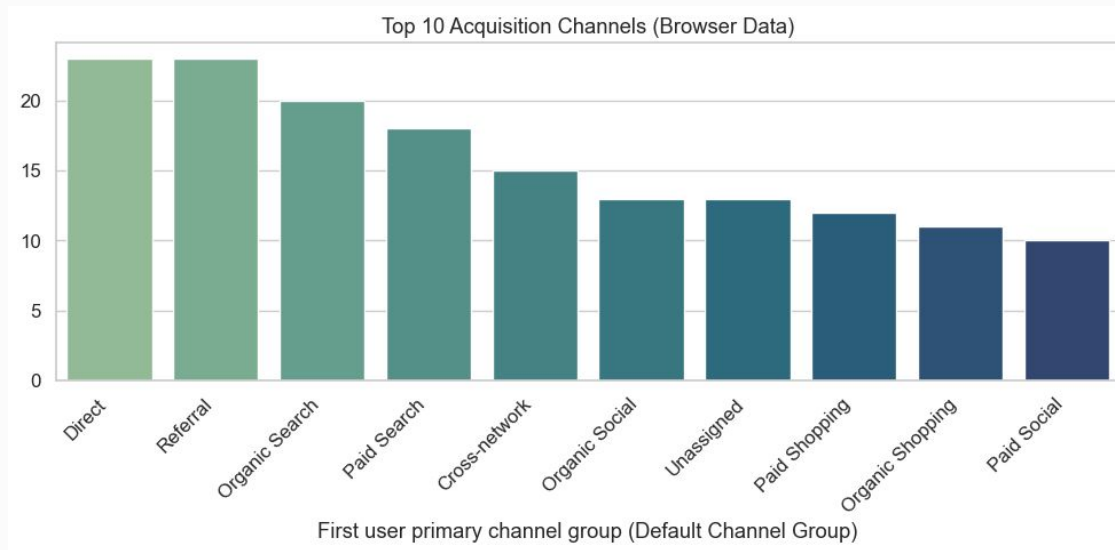


Google Analytics – User Acquisition Channels



- **Top Acquisition channels tend to be:**
 - Direct purchase
 - Referral
 - Self-drive searches
- Data was **extracted** from the **User_Channel_Browser** data that was used in the previously slide

```
Top 10 Acquisition Channels:
First user primary channel group (Default Channel Group)
Direct      23
Referral    23
Organic Search 20
Paid Search 18
Cross-network 15
Organic Social 13
Unassigned  13
Paid Shopping 12
Organic Shopping 11
Paid Social 10
Name: count, dtype: int64
```



Google Analytics – Search Data



Data Structure: It has 5,149 rows and 58 columns.

High-volume, low-competition opportunities identified:

- Court-related keywords show 110,000 monthly searches with low competition

Significant cost differences in paid search:

- Court-related keywords: \$0.86–\$3.69 per click
- Location-based "near me" searches: \$1.11–\$3.62 per click (90,500 monthly searches)
- General awareness terms: \$0.01–\$0.10 per click (high competition)
- "Pickle tennis rules": \$0.01–\$0.05 per click

The combination of high search volume (110,000/month) with "low competition" status on court-related keywords reveals an underexploited paid search opportunity

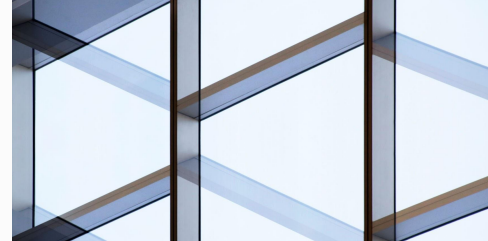
Top 10 Searches with Lowest Competition

	Keyword	Avg. monthly searches	Competition	Top of page bid (low range)	Top of page bid (high range)
2	court pickleball	110000	Low	0.86	3.69
3	pickleball court	110000	Low	0.86	3.69
4	pickleball courts	110000	Low	0.86	3.69
5	pickle ball court near me	90500	Low	1.11	3.62
7	pickleball courts near me	90500	Low	1.11	3.62
12	pickle ball near me	74000	Low	0.70	2.66
13	pickle tennis rules	74000	Low	0.01	0.05
14	pickleball near me	74000	Low	0.70	2.66
15	pickle ball what is it	49500	Low	0.03	0.10
16	pickleball what is it	49500	Low	0.03	0.10

Top 10 Average Monthly Searches

	Keyword	Avg. monthly searches	Competition	Top of page bid (low range)	Top of page bid (high range)
2	court pickleball	110000	Low	0.86	3.69
3	pickleball court	110000	Low	0.86	3.69
4	pickleball courts	110000	Low	0.86	3.69
5	pickle ball court near me	90500	Low	1.11	3.62
7	pickleball courts near me	90500	Low	1.11	3.62
12	pickle ball near me	74000	Low	0.70	2.66
13	pickle tennis rules	74000	Low	0.01	0.05
14	pickleball near me	74000	Low	0.70	2.66
15	pickle ball what is it	49500	Low	0.03	0.10
16	pickleball what is it	49500	Low	0.03	0.10

Key Insights: Google Analytics



Insights

01

Court-related keywords show high volume with "low competition" status, revealing an underexploited paid search opportunity

02

Male users double female users; core age group is 25-54; users interested in politics, finance, and technology

03

Direct purchases and referrals dominate acquisition channels, while organic search underperforms

Action

Launch targeted paid search campaigns for court-related keywords to capture 110K monthly searches. Combine with SEO content strategy around court installation, maintenance, and "near me" searches to dominate in this segment.

Develop targeted campaigns for urban, professional women aged 25-54 as an underserved growth segment. Create content addressing female pickleball players' specific needs and partner with women's sports influencers.

Invest in referral incentive programs (e.g., "Give \$20, Get \$20") and post-purchase experience optimization to amplify word-of-mouth.



JOOLA's Profitability



Sales Data EDA

Data & Grain

- **Inputs:** 5 CSV exports (Sales order line items) + 1 General Ledger SKU file
- **Analytic grain:** line item (one row per order × SKU).
- **Time key:** `created_at` (order date) » derived **month** (month-start timestamp).

Merge & Preparation

1. **Schema alignment:** normalized column names to snake_case; removed “Unnamed:” junk columns and missing values.
2. **Union + de-duplication:** concatenated all files, then **deduped by** `id + lineitem_sku (+ lineitem_name)`, keeping the freshest record by `created_at`.
3. **Typing & derived fields:**
 - Parsed dates » `created_at_ts`, `month`.
 - Cleaned numerics (removed \$, commas (“,”), %, and parentheses negatives).
 - Built **quantity**, **price**, **revenue = quantity × price**.

Merged Dataset

- 1.19 GB: 89 attributes (columns) and 1,926,104 records (rows)
- Timeframe: July 2024 to September 2025

With a complete and reliable sales dataset, our next step was to uncover **what truly drives JOOLA's profitability**, and how these insights can inform **marketing, product, and customer strategy**



Key Questions We Asked

How do sales and revenue patterns evolve over time?

To understand seasonality, post-recall recovery, and the timing of major growth opportunities

Which products and categories drive the most profit?

To pinpoint JOOLA financial growth engines and identify where revenue concentration or dependency may exist

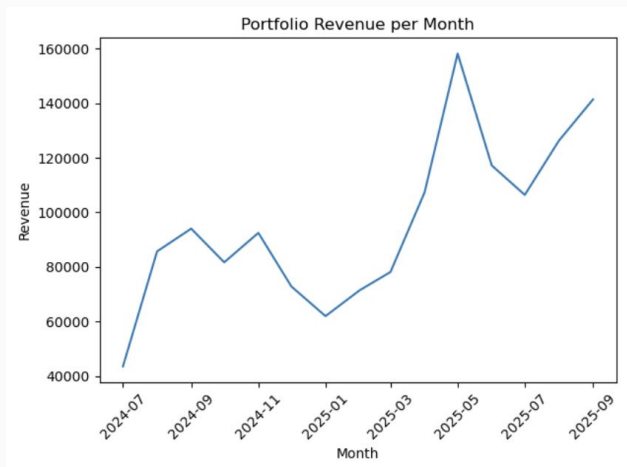
What customer behaviors and traits linked most closely with profitability?

To reveal which customer segments contribute the most value and how to attract more of them



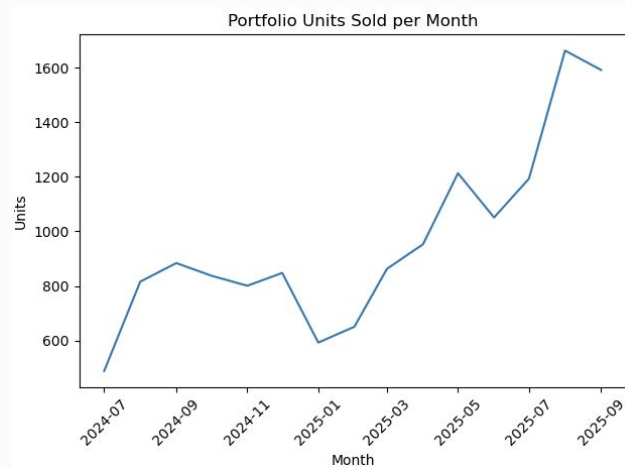
Revenue & Unit Growth Signal Strong Brand Resilience & Expanding Customer Reach

Revenue Trend Highlights



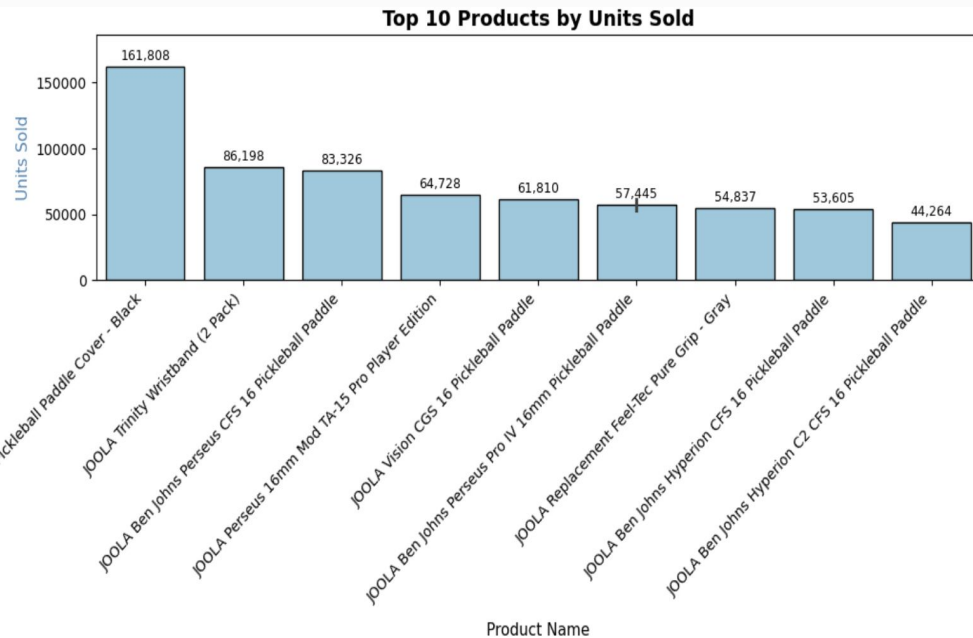
- **Quick rebound after disruption:** Revenue dipped to ~\$60K in Jan 2025 due to the TA-15 recall but recovered to ~\$155K by May with the Perseus Pro IV launch.
- **Sustained upward momentum:** From Jul 2024 to Sep 2025 revenue shows a steady climb despite short-term fluctuations, reflecting healthy demand and brand trust.
- **Seasonal effects:** Jan dips and mid-year peaks align with major product launches and tournaments.

Unit Growth Highlights



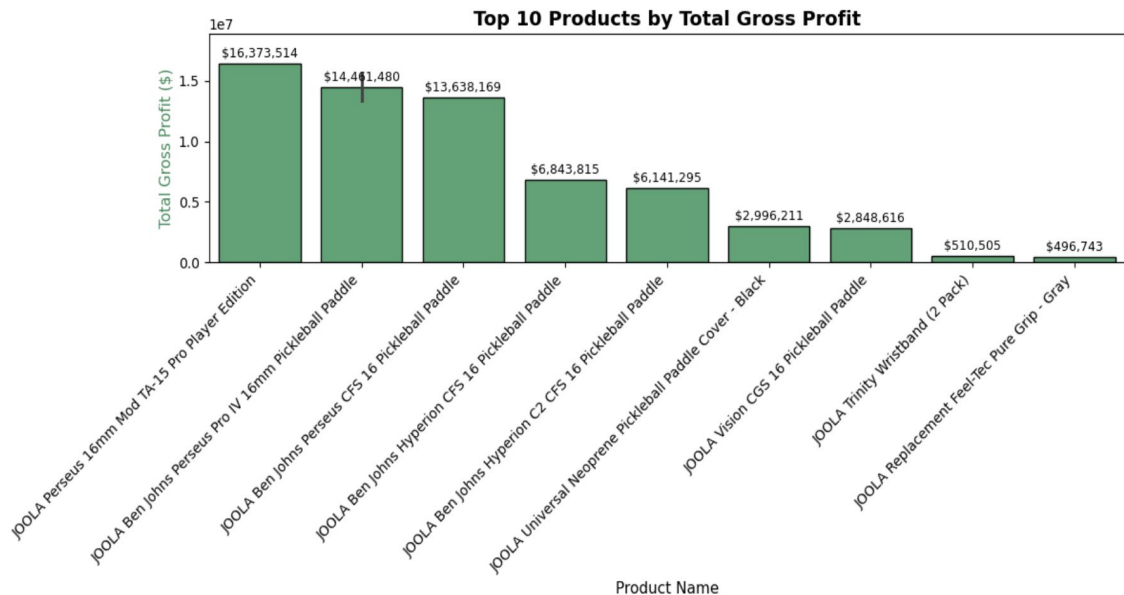
- **Fast recovery in units:** Sales fell to ~600 units in Jan 2025 due to the recall but rebounded to ~1,650 by Aug 2025.
- **Expanding market reach:** Units nearly tripled vs mid-2024 levels, indicating stronger brand momentum and widening customer acquisition.
- **Units outpacing revenue:** Units peak later than revenue, suggesting increasing mix of lower-priced or entry-level products.

Top-Performing SKUs by Quantity Sold



- High-volume items: **JOOLA Universal Neoprene Pickleball Paddle Cover – Black** dominate sales, moving **161,808 units**
 - This is likely a low-cost, accessory-type item “volume driver.”
- Products like the Ben Johns Perseus 16mm and Vision CGS 16mm paddles show that paddles dominate the top 10, meaning **JOOLA’s core business strength is still in equipment, not apparel.**
- The **drop-off from 1st to 2nd is significant (~47%)**
 - Suggests the paddle cover may be a gateway product or an upsell opportunity (attach to paddle purchases).

Top-Performing SKUs by Total Gross Profit



High-end paddles drive profits

- The *Perseus* and *Ben Johns* paddle lines generate over **\$13–16M each**, making them JOOLA's top profit drivers.

High volume ≠ high profit

- The *Neoprene Paddle Cover* sold the most units but ranks only mid-tier in total profit, showing strong volume but low margin.

Accessories and apparel contribute little

- Wristbands and grips add minimal profit (<\$0.5M), serving more as brand or bundle add-ons than revenue drivers.

Profit concentration risk:

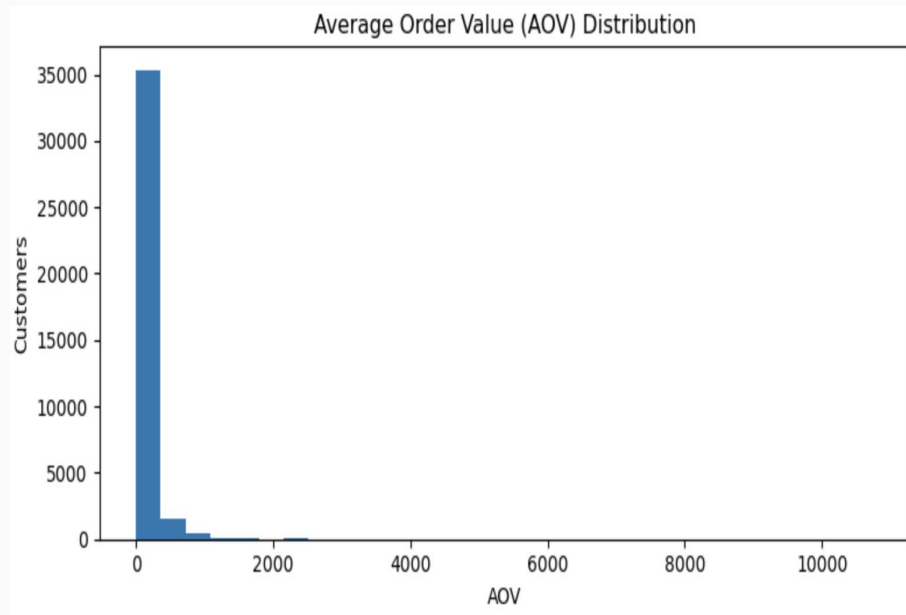
- Over half of total gross profit comes from just **three premium SKUs**, meaning JOOLA's financial performance heavily depends on a few flagship paddles.

Typical Customer Spend: Most Orders Under \$200

Most customers spend under \$200 per order.

The distribution is **highly right-skewed**, meaning a few customers make very large purchases (likely equipment bundles or premium tables), while the vast majority place small, lower-ticket orders.

This suggests JOOLA's customer base is primarily composed of **entry-level or casual buyers**, not just pros.

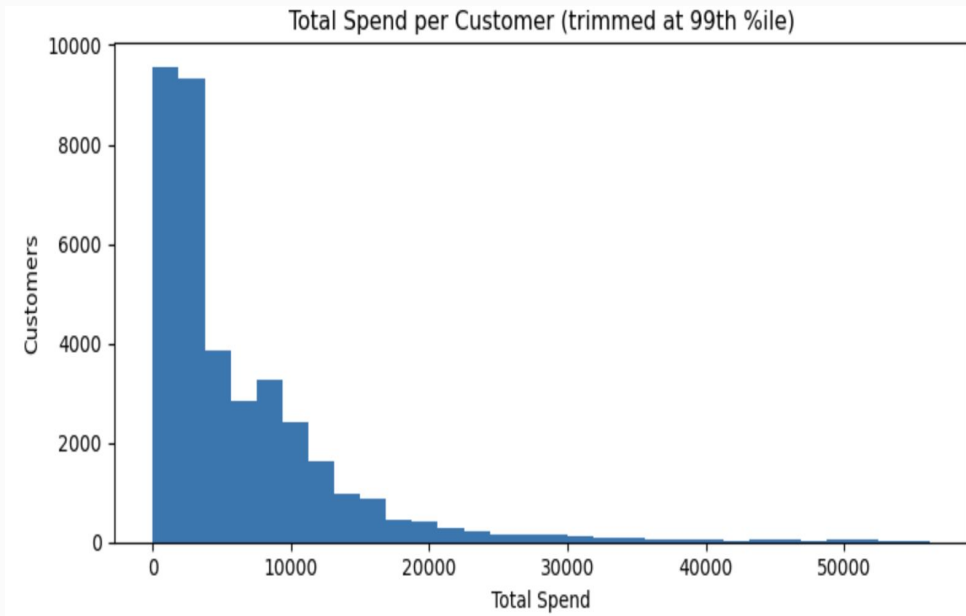


Small Elite Drives Disproportionate Revenue

Even after trimming the top 1%, there's a **long tail of high-value customers**, while a small group spends well above \$10K lifetime.

80% – 90% of customers fall below \$5K in total purchases.

This reinforces a “**Pareto**” pattern – a small elite drives a big portion of revenue.

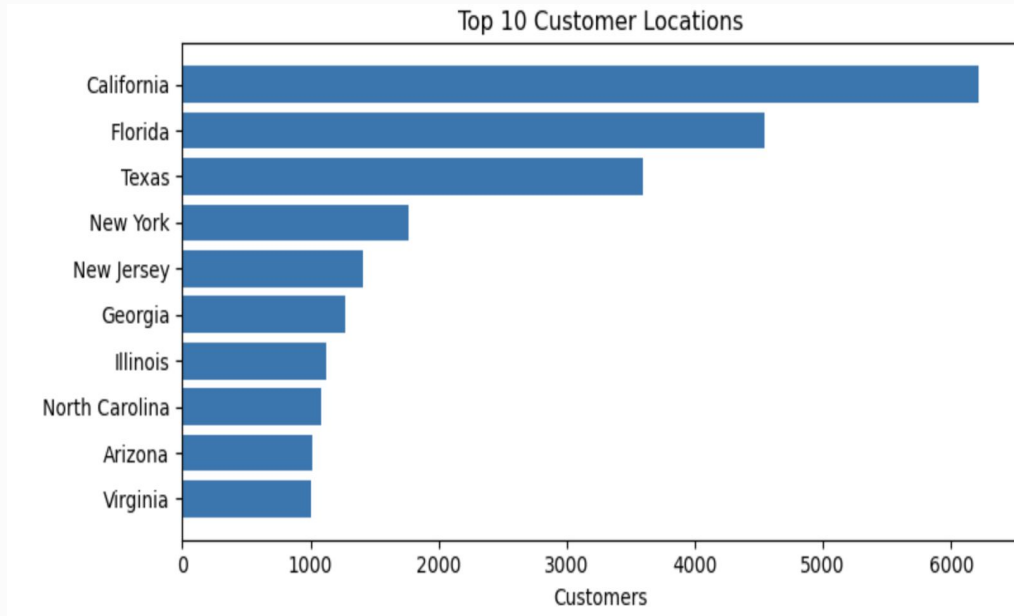


Top 10 Customer Locations

The **top states (California, Florida, Texas, New York)** align with **major pickleball growth markets**.

These four states alone likely account for **40% – 50% of JOOLA's customers**.

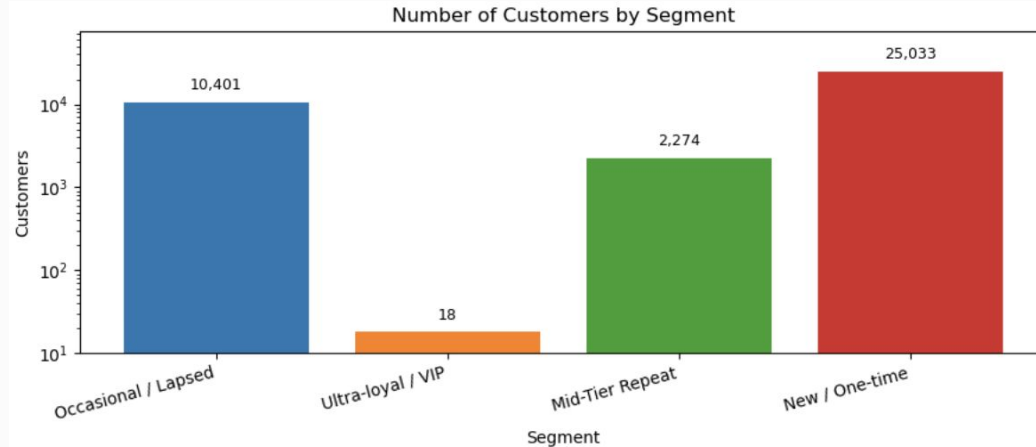
Emerging markets like **North Carolina, Arizona, and Georgia** also appear, suggesting new clusters of players forming outside the coasts.



Customer Segmentation



Customer Breakdown by using RFM (Recency, Frequency, and Monetary) Framework



4 Segments:

1. **Occasional / Lapsed buyers** – They used to buy, but haven't returned in a long time. Mid spenders who are now inactive.
2. **Ultra-loyal / VIP buyers** – Extremely frequent and high-spending customers. Likely JOOLA's professional partners, retailers, or very dedicated players.
3. **Mid-tier repeat buyers** – Healthy purchase frequency and spend, relatively recent.
4. **New or one-time buyers** – The largest segment, but low engagement and small spend. They might have bought one paddle or accessory.

66% of JOOLA's customers are either one-time or lapsed buyers. Retention is the single largest growth lever.

Most of JOOLA's Customers Buy Once and Disappear



Why this matters:

- Over 66% of JOOLA customers buy only once or lapse without returning.
- Revenue is disproportionately dependent on a tiny group of ultra-loyal buyers (the 18 VIPs).
- Converting even 5% of one-time buyers (~1,250 customers) into repeat purchasers would generate \$6M+ in incremental lifetime value, with no new acquisition cost.

Strategic Opportunity:

Grow Mid-tier repeat buyers + Win back Occasional/Lapsed buyers » High ROI because these customers already know JOOLA

Segment	Recency (days)	Frequency	Monetary (\$)	Customers
Occasional / Lapsed buyers – They used to buy, but haven't returned in a long time. Mid spenders who are now inactive.	338	65	\$8,568	10,401
Ultra-loyal / VIP buyers – Extremely frequent and high-spending customers. Likely JOOLA's professional partners, retailers, or very dedicated players.	117	1,205	\$472,637	18
Mid-tier repeat buyers – Healthy purchase frequency and spend, relatively recent. This is JOOLA's growth opportunity group.	160	186	\$35,658	2,274
New or one-time buyers – The largest segment, but low engagement and small spend. They might have bought one paddle or accessory.	125	32	\$4,437	25,033

Key Insights: Profitability



Insights

01

Revenue Concentration Risk: 3 Premium Paddle SKUs Generate ~50% of Total Gross Profit

02

Volume ≠ Value: High-Volume Accessories Generate Minimal Profit Despite Massive Unit Sales

03

Customer Lifetime Value Gap: 66% Are One-Time Buyers While 6% Drive Disproportionate Revenue

Action

Diversify revenue streams by developing 3-5 complementary high-margin product lines (premium accessories, performance apparel, training equipment). Create "paddle ecosystem" bundles that increase AOV while reducing single-SKU dependency.

Reposition low-margin accessories as **strategic bundle attachments** rather than standalone profit drivers. Implement "paddle + cover" bundles at checkout to boost attachment rates. Shift marketing investment and inventory focus toward high-margin premium paddles. Use accessories to drive premium product discovery, not as primary revenue generators.

Implement segment-specific retention programs:
(1) Re-engage lapsed / one-time buyers with personalized product recommendations and retention offers
(2) Launch loyalty milestone program for repeat buyers with exclusive access and rewards
Moving at least 5% of one-timers into repeat behavior would generate \$6M+ in additional LTV.

Predictive Model: Customer Churn

Customer Churn Predictive Model Overview

Objective

Predict customer churn and uncover key behavioral drivers to help Joola retain valuable customers through data-driven actions

Customer-level features for the model

- **n_orders** — Number of unique orders placed by each customer (count distinct id).
- **first_purchase** — Date of the customer's earliest order.
- **last_purchase** — Date of the most recent order.
- **avg_spend** — Average spending amount per order (mean of total).
- **total_spend** — Total money spent by the customer across all orders.
- **avg_items** — Average number of items purchased per order.
- **marketing_optin** — Binary flag (1 if ever opted into marketing emails).
- **n_discounts** — Number of orders where a discount code was applied.
- **avg_discount** — Average discount amount received per order.

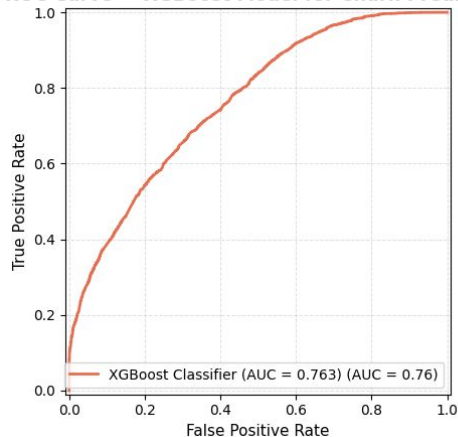
XGBoost Model



Model Performance

AUC: 0.76

ROC Curve — XGBoost Model for Churn Prediction



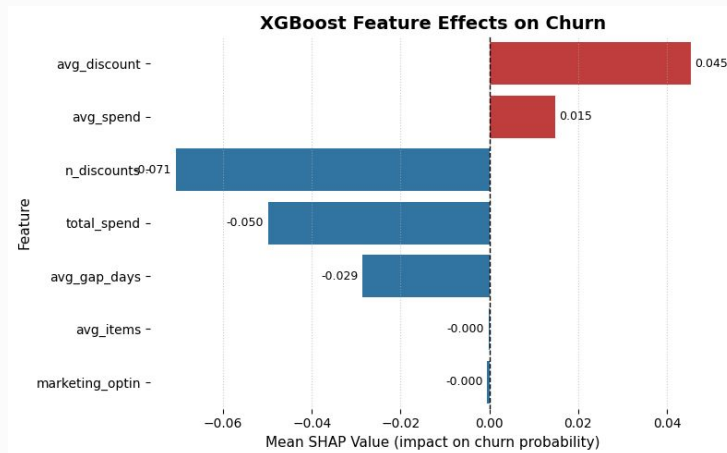
Feature Insights

1. Key Retention Signals

- **Number of discount** (-0.071)
Customers who frequently use discounts actually churn less
- **Total Spending** (-0.05)
Higher lifetime spend strongly predicts retention

2. Key Drivers of Churn

- **Average Discount** ($+0.045$)
Customers receiving higher average discounts are more likely to churn.
- **Average Spending** ($+0.015$)
Customers who spend more per order may also churn more



Key Insights

Insights

01

Customers who engage with promotions more often are less likely to churn; while heavy discount customers churn easily

02

Customers with higher total spending are more likely to remain loyal

Action

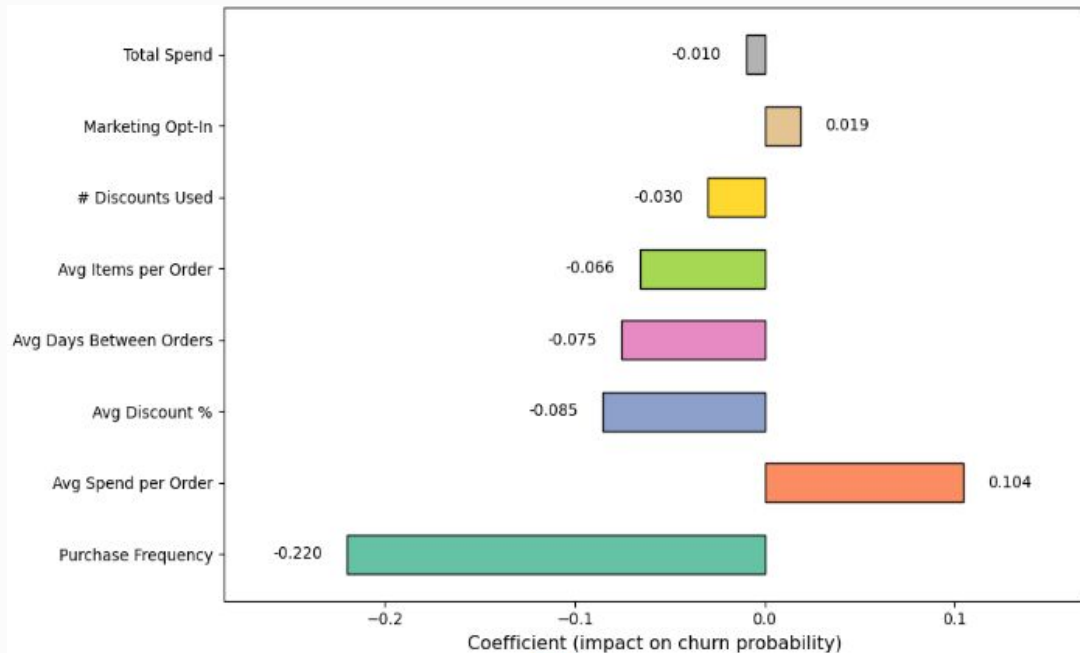
Maintain a **regular promotion cadence** (e.g., weekly or monthly campaigns) to sustain engagement, while avoiding overly high discount rates that could hurt margins or create price dependency

Develop **VIP or high-value customer programs** that offer personalized experiences, early product access, or tailored communication to reinforce long-term loyalty

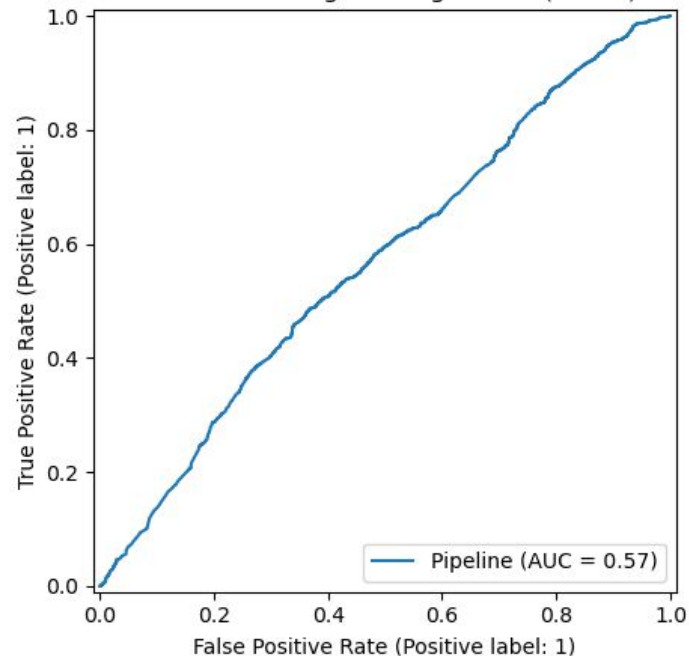


Logistic Regression Model

Feature Coefficient



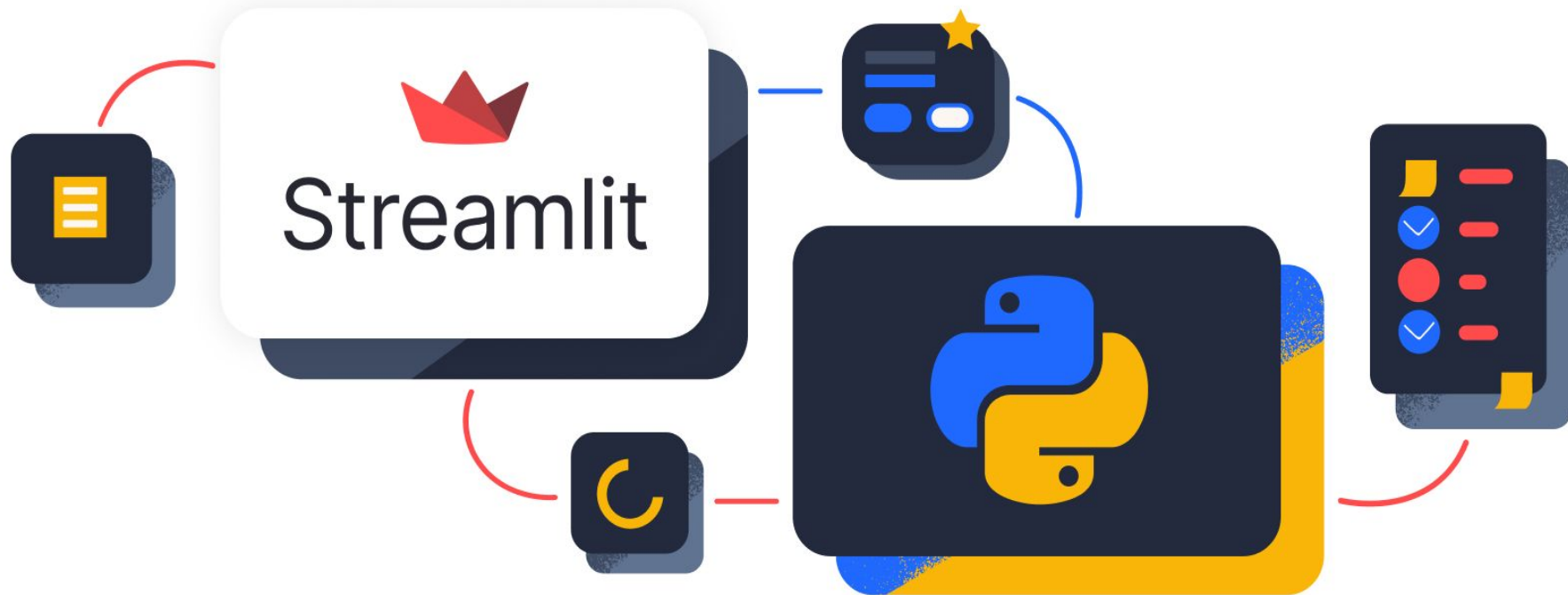
ROC Curve - Logistic Regression (Churn)



Feature Importance Comparison

Logistic Regression	XGBoost
Purchase Frequency	Number of Discount
Average Spend Per Order	Total Spending
Average Discount	Average Discount

Interactive Dashboard Demo



Interactive Dashboard Demo



Conclusion

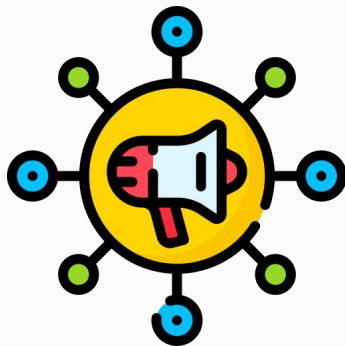
Key Takeaways



01

Revenue Concentration Creates Risk and Opportunity

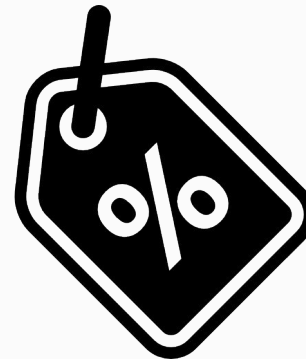
Three premium paddle SKUs generate ~50% of gross profit, while 66% of customers are one-time buyers. Moving just 5% of one-time buyers to repeat purchases would add \$6M+ in lifetime value. JOOLA must diversify both product mix and customer retention to sustain growth.



02

Market Inefficiencies Reveal Untapped Growth Channels

Court-related keywords offer 110K monthly searches with low competition, while female customers remain underrepresented despite fitting the affluent, 25-54 demographic profile. Strategic paid search and demographic expansion can capture share before competitors recognize these opportunities.



03

Discount Strategy Requires Refinement

Frequent small promotions drive engagement and reduce churn, but high average discounts predict customer loss. Implement regular promotional cadence (weekly/monthly) at moderate levels while developing VIP programs for high-value customers to balance acquisition cost with long-term profitability.



Thank You!



Appendix: Understanding JOOLA’s Female Customer Opportunity

JOOLA’s internal customer dataset does not contain gender information (no gender field, no inferred gender variables like name or title). As a result, we cannot directly measure the size or behavior of JOOLA’s female customer base today.

However... We can infer where female customers likely sit. Based on national pickleball participation trends:

Industry Pattern	JOOLA Segment Most Likely Impacted
Women enter the sport at higher rates through recreational/casual play ¹	Segment 3 — New / One-time Buyers
Women show more gradual upgrade cycles (paddles » bags » accessories)	Segment 0 — Occasional / Lapsed Buyers
Women are more responsive to community, coaching, and bundled value offers	Both Segments 0 & 3

Key Insights

- Female customers represent a minority of JOOLA’s customer base.
- Slightly higher AOV in some product categories (bags, apparel).
- Tend to purchase beginner/intermediate paddles and lifestyle accessories.
- Lower order frequency » retention opportunity.

Strategic Opportunities

- Build women-focused bundles (starter set, paddle + apparel + bag).
- Feature female influencers in JOOLA campaigns.
- Improve sizing, fit guides, and product imagery.
- Create a women-focused community or ambassador program.

Footnote: 1. [APP & Sports & Fitness Association Data](#)