

# Adidas Synthetic Sales Analysis

Uncovering insights into customer shopping behavior, spending patterns, and product preferences to guide strategic business decisions



# Dataset Overview

## Scope

Synthetic sales data from January 2023 – September 2025

- 1,200 transactions
- 15 key features
- Multiple regions & store types

## Key Metrics

Comprehensive transaction data including:

- Product categories & SKUs
- Revenue & profit margins
- Customer demographics
- Payment methods



# Project Objectives

01

## Data Preparation

Clean, preprocess, and normalize sales data

02

## Predictive Modeling

Ridge Regression, Random Forest, Prophet forecasting

03

## SQL Analysis

Extract insights through database queries

04

## BI Dashboards

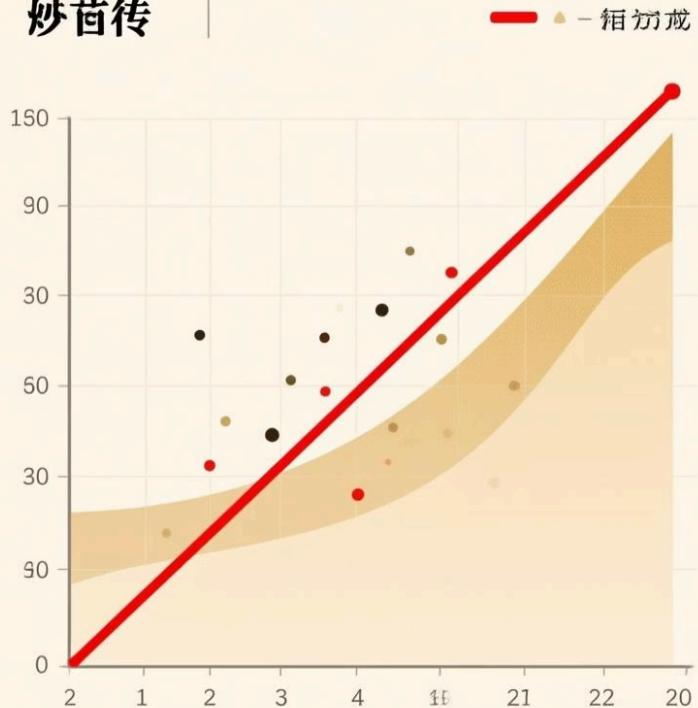
Create interactive Power BI visualizations

05

## Strategic Insights

Generate actionable business recommendations

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# Ridge Regression: Profit Prediction

92.2%

$R^2$  Score

Model accuracy for  
profit prediction

281.5

Mean Squared  
Error

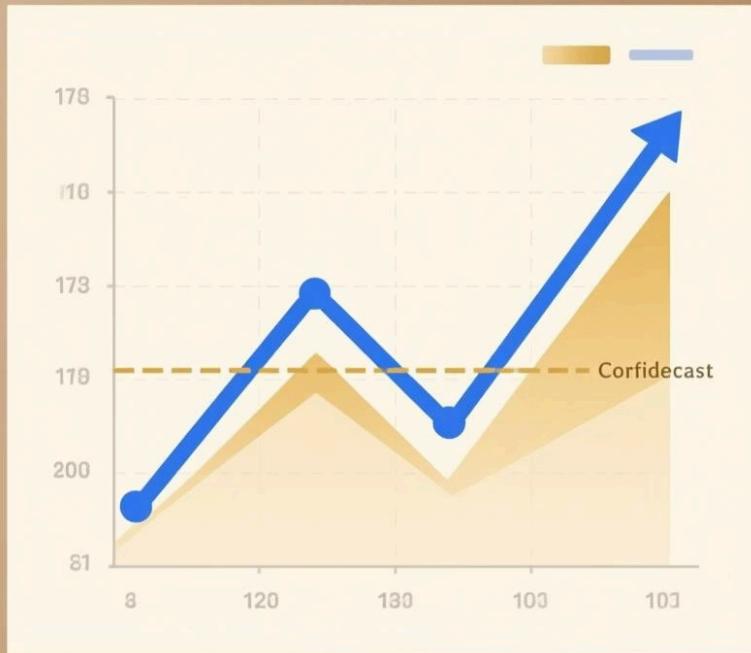
Prediction error metric

1.0

Best Alpha

Optimal regularization  
strength

Ridge regression successfully predicts profit with high accuracy, demonstrating strong model performance and reliable forecasting capability



# Prophet: 12-Month Profit Forecast

## Forecast Insights

- Profit range: 2,000–3,000 units
- Seasonal volatility observed
- Peaks in mid-year periods
- Confidence intervals widen over time

## Key Predictions

**Oct 2025:** 2,736

**Dec 2025:** 3,136

**Sep 2026:** 2,626

# Random Forest: Units Sold Prediction



81.7% Accuracy

Strong predictive performance for units sold classification



75.2% OOB Score

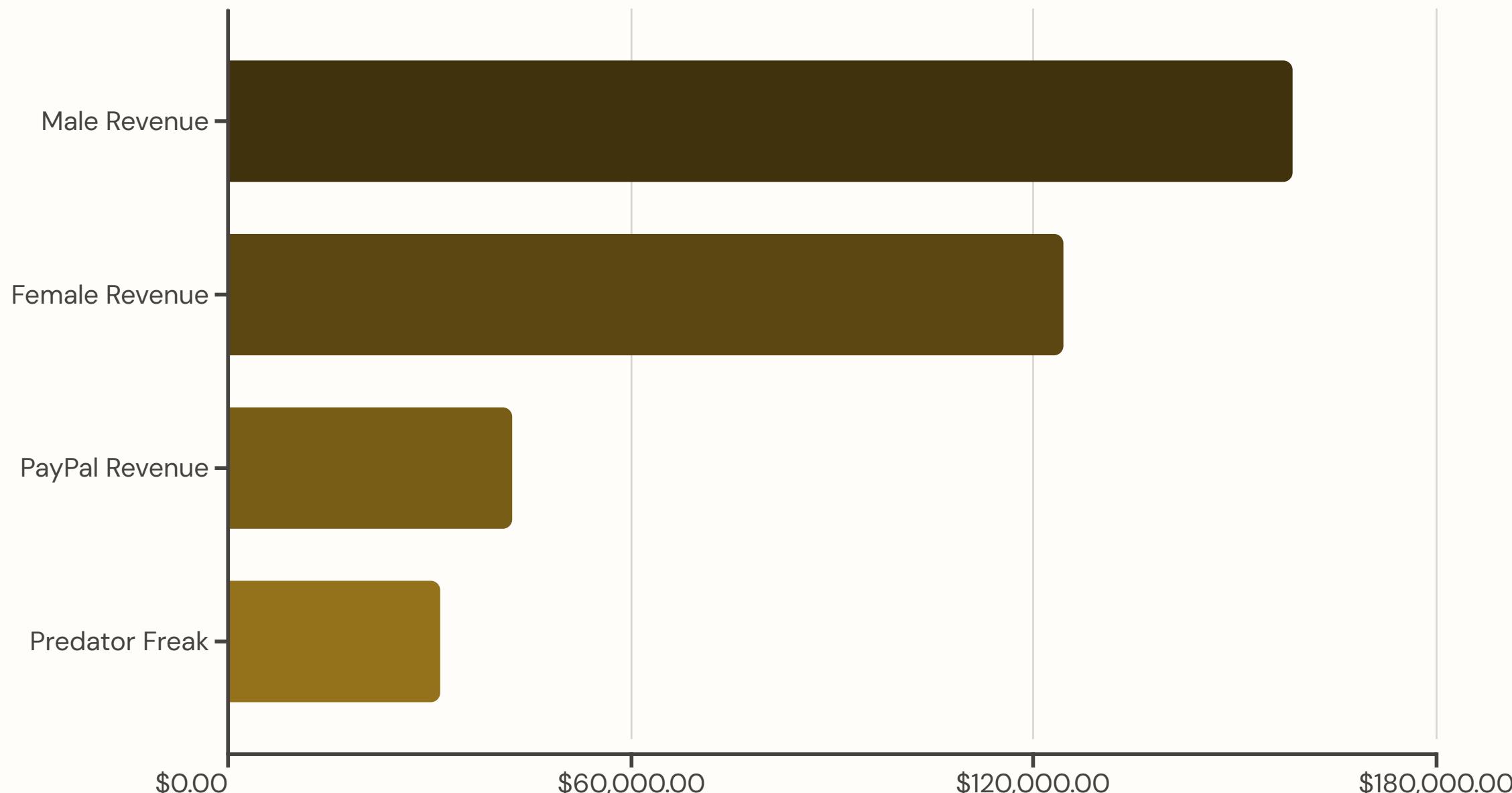
Out-of-bag validation confirms model reliability

**Top Features:** Unit Price (0.28), Revenue (0.26), and Profit (0.18) drive predictions most strongly

Feature Importance ■ Predictors



# SQL Analysis: Revenue Insights



- Gender Distribution

Male customers generate 55% of total revenue

- Payment Preference

PayPal leads payment methods in revenue generation

- Top Product

Predator Freak drives highest single-product revenue



# Power BI Dashboard: Key Findings

**1K Orders**

Total transactions processed

**287K Revenue**

Total sales generated

**5.84 Avg Discount**

Promotional pricing strategy

# Category & Channel Performance

## Revenue by Category

- **Footwear:** 180K (62%)
- **Apparel:** 80K (28%)
- **Accessories:** 30K (10%)

 **Key Insight:** Footwear dominates revenue generation—prioritize inventory and promotions in this category

## Orders by Store Type

- **Retail:** Highest volume
- **Online:** Strong growth
- **Wholesale:** Steady contributor



# Strategic Recommendations



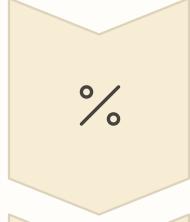
## Loyalty Programs

Reward repeat buyers to increase retention



## Footwear Focus

Highlight top-rated products in campaigns



## Discount Strategy

Balance sales boost with margin control



## Targeted Marketing

Focus on high-revenue demographics

