ABC Food Market

From Spreadsheets to Real-Time Insights

Client Profile

1993

ABC Foodmart founded in Queens, NY. Started as a neighborhood grocery and has grown a loyal customer base over 30+ years.

2025 (Mid-Year)

Opened 3 new stores in Brooklyn, expanding from 2 to 5 locations across the city.

2025 (Now)

Hired our team to design a new data system and real-time dashboards.

Project Goals

Objective

Build an integrated relational database, streamline ETL, deploy real-time dashboards

Scope

Centralize data across staffing, inventory, vendors, deliveries, sales, accounting

Approach

- Scalable data model (5 locations)
- Standardize & clean data
- Key metrics in 1–2 clicks

Original Data Overview

Operational Data

- Stores
- Employees
- Inventory Lots
- Purchase Orders

Transaction Data

- Transactions
- Sales Detailed Items
- Refunds

Other Linking Tables

Vendors, **Products**, **Payment Methods**, and **Shifts…**

connect operational and transactional data, enabling full traceability from supplier to customer.

Database Design

Master Data

Procure & Stock

Sell & Return

ETL Process

- **Extract**: Cleaned or synthetically generated data using Python Faker for reproducibility.
- **Transform**: Normalize data, fix column names, handle missing values.
- **Load**: Sequential loading into PostgreSQL via SQLAlchemy, maintaining referential integrity.

Loading Data Logic:

- Load master tables first (stores, products, vendors, etc.) to satisfy foreign keys.
- Load transactional tables in order such as: purchase orders → purchase products → inventory lots → transactions → sales details → refunds.
- Assign realistic dates, quantities, costs, and link sales to inventory lots for traceability.

Why: customer needs → insights we deliver

Managers need **fast, trusted answers** (sales, margins, inventory, refunds, labor)

Analysts need **repeatable** Python+SQL workflows (not ad-hoc spreadsheets)

Insights provided (examples):

- **Category/Store P&L** (revenue, COGS, GP, trend)
- **Low-stock & reorder** list; **near-expiration** FEFO monitor/markdowns
- **Refund rate & reasons** with drill-through to transactions
- **Revenue per labor hour** vs. store benchmark; **vendor fill/on-time**
- **Basket pairs** for cross-sell; operating expenses by store/type

One source of truth → **consistent KPIs** in Metabase for decision-making

How: tools, workflows, and operating model

Stack: **PostgreSQL** (tables + views/MVs), **Python** (SQLAlchemy + pandas), **Metabase**

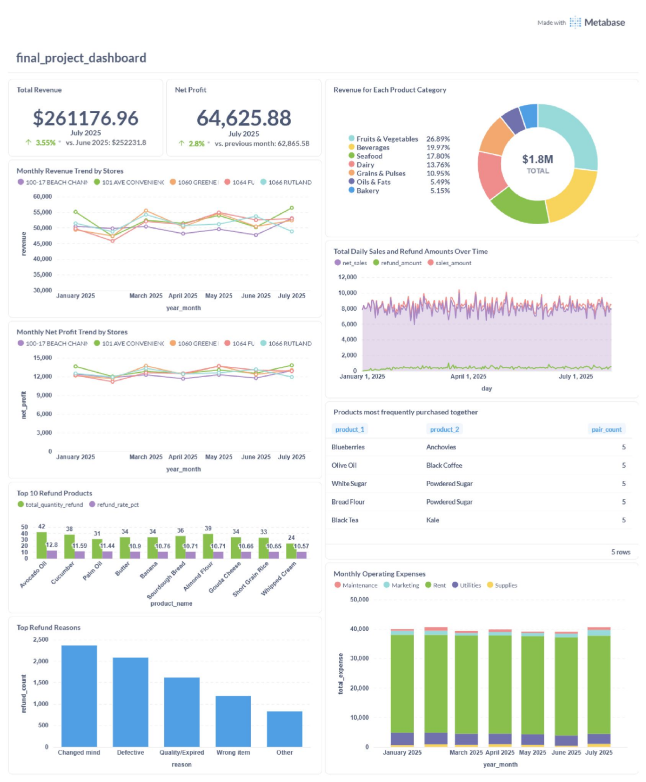
Workflow: Python jobs run 10+ procedures, persist results as **views/MVs** → Metabase “Questions” power **auto-refreshing dashboards**

Examples: SQL window functions for **category P&L rank**; Python-parameterized **low-stock** + reorder quantities (lead time, sell-through); **refund hotspots** drill-downs

Performance & trust: indexed foreign keys; composite PK on inventory(store_id, product_sku); workload separation (OLTP writes vs. analytics reads); ingest **data-quality checks**; curated views for non-technical users

Access & security: roles for **analysts** (SQL + staging where appropriate) and **executives** (read-only dashboards); optional **row-level security**; PII minimized/aggregated in dashboards

Dashboard Showcase



Made with Metabase

final_project_dashboard

Total Revenue

$261176.96

July 2025

↑ 3.55% • vs. June 2025: $252231.8

Net Profit

64,625.88

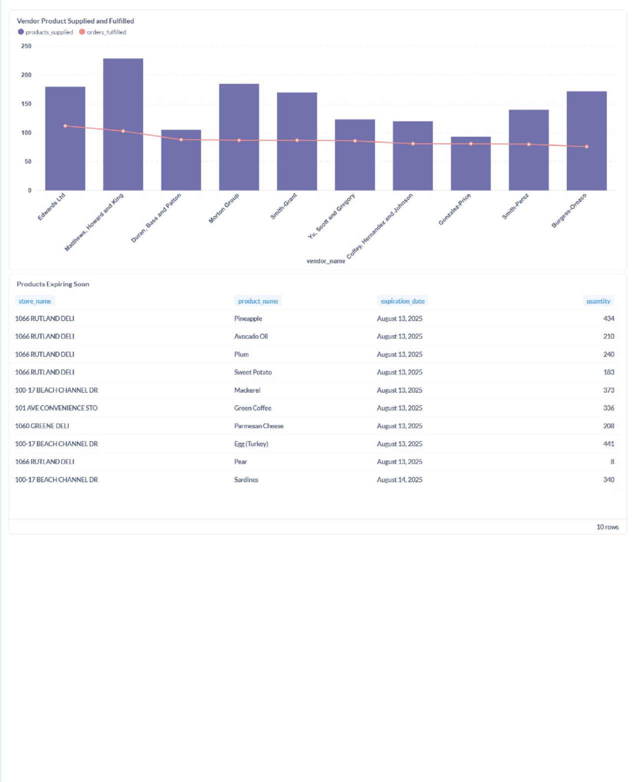
July 2025

↑ 2.8% • vs. previous month: 62,865.58

Products most frequently purchased together

product_1	product_2	pair_count
Blueberries	Anchovies	5
Olive Oil	Black Coffee	5
White Sugar	Powdered Sugar	5
Bread Flour	Powdered Sugar	5
Black Tea	Kale	5

5 rows



Products Expiring Soon

store_name	product_name	expiration_date	quantity
1066 RUTLAND DELI	Pineapple	August 13, 2025	434
1066 RUTLAND DELI	Avocado Oil	August 13, 2025	210
1066 RUTLAND DELI	Plum	August 13, 2025	240
1066 RUTLAND DELI	Sweet Potato	August 13, 2025	183
100-17 BEACH CHANNEL DR	Mackerel	August 13, 2025	373
101 AVE CONVENIENCE STO	Green Coffee	August 13, 2025	336
1060 GREENE DELI	Parmesan Cheese	August 13, 2025	208
100-17 BEACH CHANNEL DR	Egg (Turkey)	August 13, 2025	441
1066 RUTLAND DELI	Pear	August 13, 2025	8
100-17 BEACH CHANNEL DR	Sardines	August 14, 2025	340

10 rows