Executive Summary

Project: Inventory Optimization using SQL

Submitted by: Team Holiday Homework
Members : 1) Siddharth Bohra (Team Leader)
2) Sushil Singh Chauhan
3) Tanush Dhiman
Role: Data Analyst (Summer Projects '25)
Organization: Urban Retail Co.

Objective

Urban Retail Co. faced critical inventory inefficiencies: frequent stockouts of high-demand items, overstocking of slow-movers, and lack of actionable insights into sales and supply chain trends. This project aimed to address these challenges using advanced SQL analytics on historical sales and inventory data.

Key Insights from SQL Analysis

1. **Stockouts Risk Identified**
   Products like `P068`, `P153`, and `P183` consistently had inventory levels across multiple stores — indicating high demand and understocking.
2. **Fast vs Slow Movers**

- Fast-moving SKUs: High average units sold (e.g., `P126`, `P133`)
- Slow-moving SKUs: Products like `P187` showed low turnover, causing unnecessary capital lock-in.

3. **Reorder Point Estimation**
   Using average daily sales, reorder points were dynamically estimated per product-store pair. Many products had reorders , which were often not met.
4. **Inventory Turnover Variance**
   Products in categories like `Snacks` and `Personal Care` showed high turnover ratios, while `Furniture` and `Home Decor` had lower turnover — highlighting overstocking in those segments.
5. **Discount and Promo Insights**
   While Discounts had no major effects in average units sold. Holiday and promotional periods saw significant demand spikes (~22%).
6. **External Influences**

- Sales were positively correlated with sunny weather for categories like beverages and ice cream.
- Price sensitivity observed: lower competitor pricing reduced sales for similar items.

7. **Category-Wise Analysis**
   Electronics and clothing led in total sales, while Furniture ,toys had high stock with relatively low movement — needing strategic reduction.
8. **Regional Inventory Gaps**
   North and South region stores had comparatively lower average inventory levels — potential candidates for redistribution or replenishment prioritization.

Recommendations

- **Set Automated Reorder Thresholds** using a 7-day rolling average per SKU.
- **Prioritize Restocking** of fast-moving SKUs in high-demand regions.
- **Reduce Orders** for slow-moving inventory like Furniture to free up warehouse space.
- **Leverage Promotions** and discounts tactically on price-sensitive items.
- **Rebalance Inventory Across Regions** to prevent both stockouts and holding cost excesses.

Project Deliverables

- `SQL_Code.sql`: Clean, modular SQL scripts
- Tableau dashboard visualizing key trends
- `ERD.pdf`: Single-table schema with column definitions
- `Executive_Summary.pdf`: This document