Executive Summary

Purpose and Strategic Value

The primary objective is to empower supply chain analysts, store and regional managers, warehouse managers, and executives with distinct, data-driven findings that allow for rapid and reliable inventory choices. Through the delivery of timely, actionable analytics, the dashboard allows every stakeholder to proactively manage stock, replenish optimally, and react in a prompt manner to evolving inventory trends for improved operational results. This system accommodates both weekly and daily tracking, with the scalability to evolve to real-time updates as data integration continues to mature. The long-term objectives are to save money, lower stockout and overstock, improve customer satisfaction, and fuel business growth through proactive, analytics-driven inventory management.

Key Performance Indicators (KPIs) & Data Infrastructure

The dashboard relies on a targeted set of KPIs-including inventory turnover, stockouts, overstocks, reorder alerts, stock-to-sales ratio, sell-through rate, DSI, weeks on-hand, backorder rate, and inventory age ratio-to present a transparent, actionable picture of inventory health and effectiveness. These metrics are derived from a normalized relational data model (3NF) with distinct tables for stores, products, weather, and inventory facts to ensure accurate, consistent, and efficient decision-making analytics.

Data Preparing and Tech Stack

The process of preparing data consisted of denormalized dataset normalization, isolating key dimensions (store, product, weather) from transaction facts. SQL Workbench was the principal platform for extraction, transformation, and KPI calculation, utilizing sophisticated queries on the denormalized schema. Power BI was utilized for interactive dashboards and live visualization. The combined toolset facilitates an easy data modeling workflow to actionable reporting and executive decision support.

Dashboard Design and User Experience

The dashboard is designed for readability, ease of use, and actionable intelligence:

Top-Level Metrics: Highly visible KPI cards (e.g., Total Inventory Value, Turnover Rate, Stockouts) enable users to evaluate overall inventory health instantly.

Stock Health & Alerts: Bar charts and color-coded markers (red for alert, green for good stock) identify key stockouts and low stock conditions.

Fast/Slow Movers: Tables and charts present best-selling and slow-moving SKUs, which influence managers to replenish, promote, or markdown them.

Inventory Age & Turnover: Visualizations monitor the pace at which stock is turning, enabling identification of slow inventory.

Trends & Seasonality: Line and pie charts show monthly, seasonal, and geographic sales patterns, including weather information for forward planning.

Category & Store Performance: Comparative tables and charts allow benchmarking between stores and product lines.

User experience is enabled by interactive capabilities such as filters and drill-downs across stores, categories, or time intervals. The layout accommodates both high-level strategic planning and granular operational management so all stakeholders-from warehouse supervisors to CEOs-can easily see problems and opportunities.

Visualization and Communication of Insights: A wide range of visualization techniques is used to make insights accessible and actionable:

Bar Charts: Compare inventory levels across products, stores, or warehouses.

Line Charts: Monitor trends in sales, inventory, and turnover over a period of time.

Pie Charts: Display sales and inventory breakdown by region or category.

Conditional Formatting: Makes critical items (e.g., stockouts) stand out in red for prompt action.

All visualizations are created to be clear and interactive, enabling users to drill down into data at both macro and micro levels.

Strategic Impact and Next Steps: Through the transition from reactive, manual inventory management to an analytics-based, proactive approach, Urban Retail Co. is poised to:

Cut holding costs and stockouts and Better coordinate with suppliers and forecast demand

Improve customer satisfaction with greater product availability and Enable business growth through data-informed decisions

As data integration advances, the dashboard's real-time capabilities will further empower operational agility. Ongoing refinement of forecasting models and ordering processes-guided by dashboard insights-will strengthen Urban Retail Co.'s competitive edge in inventory management.