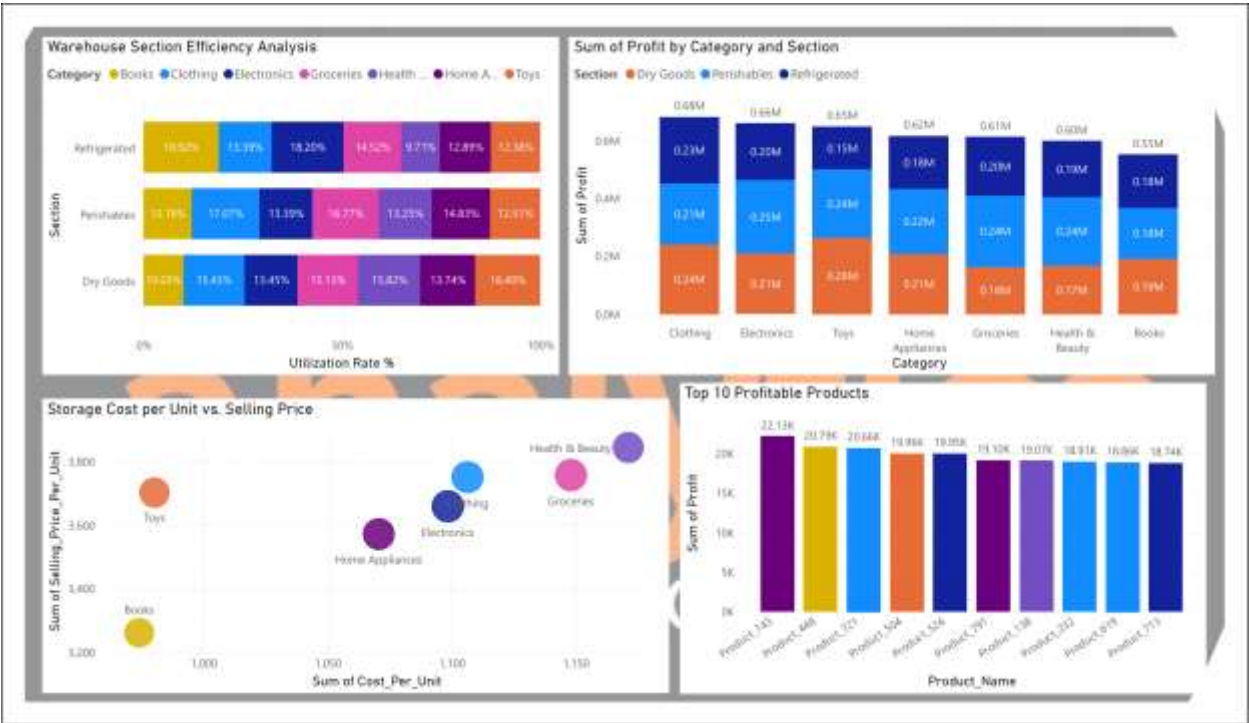
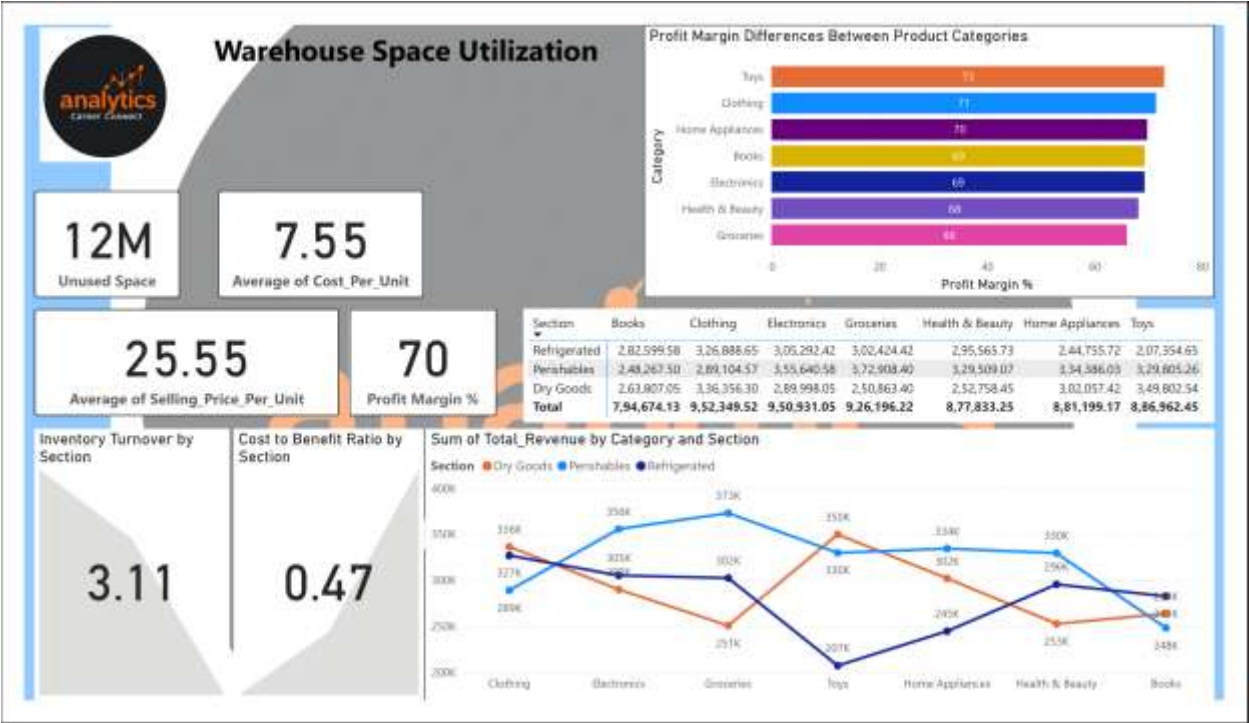
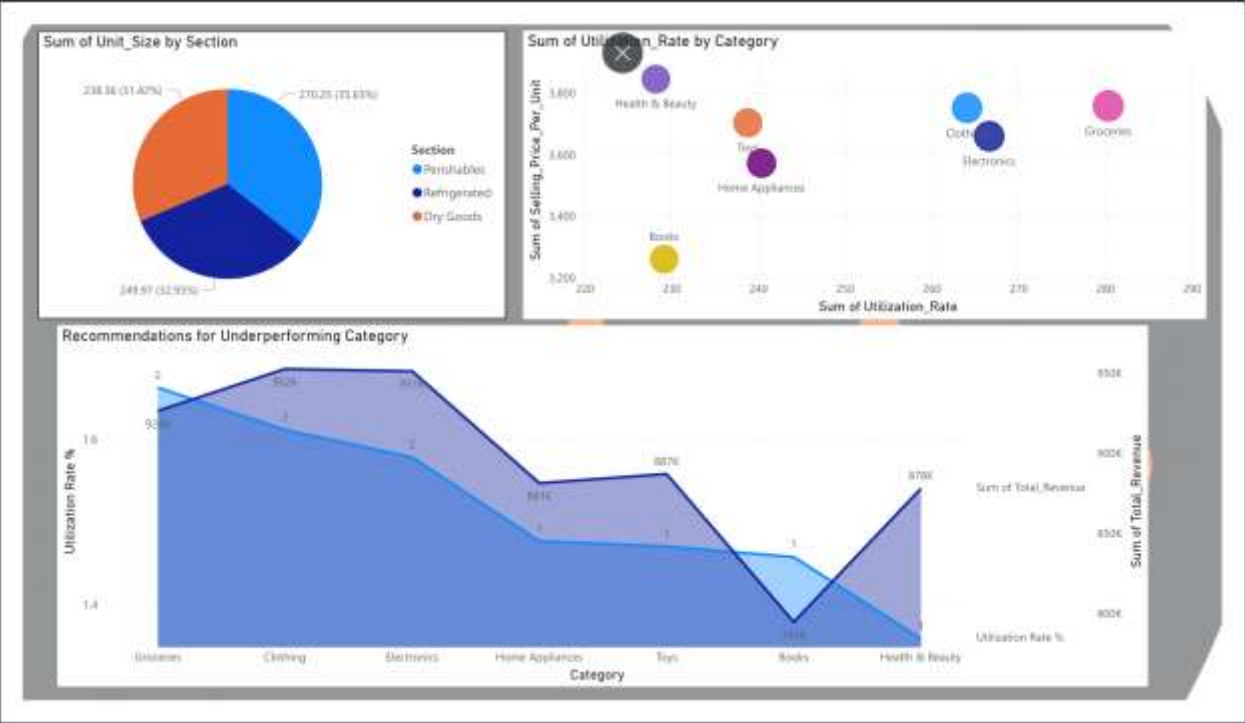
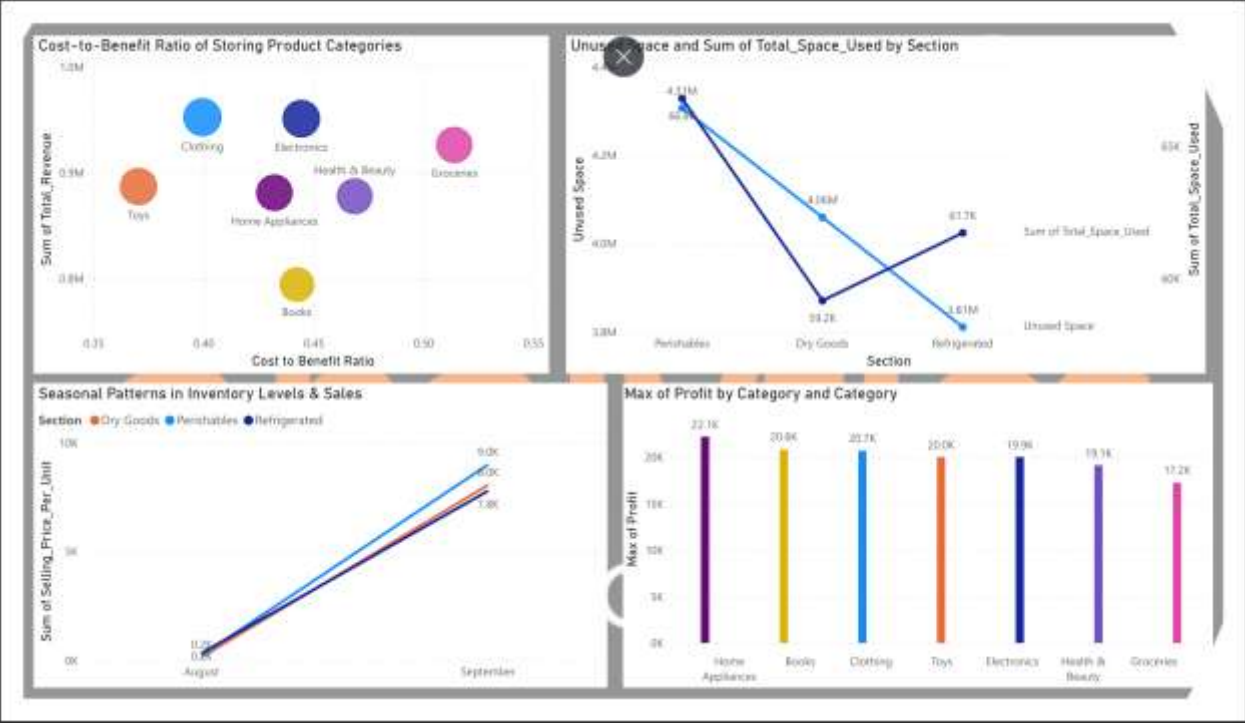


# Warehouse Space Utilization Analysis





# Insights

## 1. Profitability & Cost Analysis:

- **Profit Margins Across Categories:**
  - i. Highest in **Toys (73%)** and **Clothing (71%)**.
  - ii. **Electronics, Books, and Home Appliances** have similar profit margins (~69-70%).
  - iii. **Health & Beauty (68%)** and **Groceries (66%)** are slightly lower.
- **Top 10 Most Profitable Products:**
  - iv. **Product\_7** leads with **22.13K** profit.
  - v. The top 10 products generate profits between **18.74K - 22.13K**.
- **Cost-to-Benefit Ratio:**
  - vi. The ratio is highest for **Clothing and Groceries**.
  - vii. **Health & Beauty** and **Books** have lower cost efficiency.
- **Storage Cost vs. Selling Price:**
  - viii. **Electronics and Toys** have a **higher selling price** relative to cost.
  - ix. **Books and Groceries** have **lower margins** due to higher storage costs.

## 2. Warehouse Utilization & Space Efficiency:

- **Overall Warehouse Space Utilization:**
  - i. **12M** of warehouse space is **unused**, indicating inefficiencies.
  - ii. **Utilization Rate** is highest in **Refrigerated (18.92%)**, followed by **Perishables (17.07%)** and **Dry Goods (10.03%)**.
- **Warehouse Space by Section:**
  - iii. **Refrigerated section** has **4.06M total space** but a lower **59.2K utilized**.
  - iv. **Perishables (4.31M total, 66.8K utilized)** show higher space usage.
  - v. **Dry Goods (3.81M total, 61.7K utilized)** has the lowest space allocation.
- **Inventory Turnover:**
  - vi. **3.11 turnover rate**, meaning inventory moves at a moderate pace.

## 3. Revenue & Sales Trends:

- **Total Revenue by Category & Section:**
  - i. **Clothing (952K)** and **Electronics (950K)** generate the highest revenue.
  - ii. **Groceries (926K)** follows closely.
  - iii. **Books (887K)** and **Health & Beauty (878K)** are on the lower end.
- **Seasonal Sales Trends:**
  - iv. **Sales peak in August & September**, suggesting seasonal demand.
  - v. **Refrigerated and Perishables** categories see more fluctuation.

#### 4. Recommendations for Improvement:

- **Optimize Space Utilization:**
  - i. Reduce **unused space** (12M) by improving allocation.
  - ii. Increase **utilization rates** in Dry Goods (only 10.03%).
- **Improve Low-Profit Categories:**
  - iii. Focus on optimizing **Groceries (66% margin)** by reducing storage costs.
  - iv. **Books (69% margin)** should be reconsidered for storage efficiency.
- **Boost High-Profit Items:**
  - v. Prioritize **Toys and Clothing** in stock replenishment.
  - vi. Leverage **seasonal demand patterns** for Electronics and Home Appliances.
- **Enhance Inventory Turnover:**
  - vii. Strategies like demand forecasting & dynamic pricing to move slow-moving items faster.