Dynamic Price Analysis of Aritzia E-commerce Products

1. Problem Statement

Fashion e-commerce platforms frequently employ dynamic pricing mechanisms that remain unclear to consumers. This project aims to analyze temporal price changes in Aritzia's online product catalog to uncover discount patterns, cross-category price behaviors, and potential pricing cycles.

This project explores the following research questions:

- Which product categories show the most frequent and significant discounts?
- How do product prices change over time?
- Are there identifiable patterns that can help consumers determine the best time to buy?
- The goal is to provide data-driven insights into Aritzia's pricing behavior and empower consumers with better purchasing strategies.

2. Data Collection Methodology

Data Source: Aritzia official e-commerce website (https://www.aritzia.com)

Collection Technique:

Data will be collected using Python's requests + BeautifulSoup libraries, primarily through publicly available JSON endpoints used by Aritzia's frontend. This avoids the complexities of Selenium and aligns with recommended practices for scraping semi-static web pages.

Only publicly accessible product data will be collected; no login or private information will be accessed.

Frequency:

Data will be collected once every 24 hours for 7–10 consecutive days, providing sufficient temporal resolution for time-series analysis.

Variables to Collect:

- Product identifiers: name, SKU, product URL
- Pricing information: original price, sale price, discount percentage
- Product metadata: category, color options, stock/availability
- Timestamp of daily data collection

Expected Sample Size:

Approximately 200–500 products across 3–5 major categories (outerwear, dresses, tops, pants, accessories).

3. Analytical Approach and Visualization

Data Cleaning & Preprocessing:

- Removing duplicate entries
- Handling missing or inconsistent values

- Standardizing pricing formats
- Computing discount rates
- Organizing the cleaned data into structured JSON/CSV files

Analytical Methods:

- Descriptive statistics (mean price, discount distribution)
- Time-series analysis of daily price changes
- Category-based comparison of discount patterns
- Correlation analysis between original price and discount magnitude
- Planned Visualizations:
- Line charts showing daily price trajectories
- Bar charts comparing average category discounts
- Box plots of price/discount distributions by category
- Heatmaps showing category-level discount frequency across days
- Scatter plots illustrating original price vs. discount rate

Expected Outcome:

The analysis will reveal meaningful pricing and discount trends in Aritzia's catalog, highlight the most volatile categories, and identify temporal discount patterns that may guide better purchasing decisions. These results contribute to understanding dynamic pricing strategies in fashion e-commerce.