

# Style Metrics: Trend and Sales Analysis in Fast Fashion

Monisha Patro

## INTRODUCTION

In the fast-paced world of fashion, trends are constantly evolving. The project titled "Decoding Fashion: A Visual Analytics Journey Through Trends, Sales, and Influencer Impact" seeks to navigate this shifting landscape through the lens of data analytics. It is designed to equip stakeholders within the fashion industry—ranging from designers to retailers—with insights that are derived from analyzing current and historical trends. The goal is to empower these professionals with the knowledge they need to predict future trends more accurately and make informed decisions in their design and sales strategies.

This analysis delves into extensive datasets that capture consumer purchasing behaviors, sales patterns, and the influential role of social media influencers in shaping trends. By converting complex datasets into straightforward visual narratives, the project offers stakeholders a clear view of the intricacies of the fashion market. This aims to chart the underlying dynamics that propel the fashion industry forward. In doing so, it provides a solid basis for strategic decision-making in an industry that values both innovation and the ability to quickly adapt to new trends.

## 1 INSIGHT NEEDS

The insight needs of this project are derived from a quest to understand the velocity of fast fashion trends and their resonance in the marketplace. The stakeholders require a granular view of how quickly items move from submission to sale and the factors influencing these transitions. By tracking the performance of various fashion items over time, the project aspires to identify patterns in consumer purchases and the overall success rate of product lines. These insights are not merely reflective; they aim to forecast future

marketing focus. This data-driven approach seeks to transform intuition into evidence, providing stakeholders with a robust foundation for crafting strategies that align with the nuanced demands of the fast fashion consumer base.

### 1.1 Stakeholder Analysis

Stakeholders in this visual analytics project span across the spectrum of the fashion industry's operational framework. Fashion retailers and brand managers stand at the forefront, relying on these insights to optimize inventory levels and minimize unsold stock. Designers and product developers look to these trends to guide their creative processes, ensuring that their new collections align with emerging patterns. Marketing teams leverage this information to craft targeted campaigns that resonate with consumer inclinations, maximizing engagement and conversion rates. Each stakeholder group, while focused on different aspects of the fashion ecosystem, shares a common objective: to synchronize their initiatives with the pulse of fast fashion trends, maximizing efficiency and capitalizing on market opportunities.

## 2 DATA ACQUISITION

The project's data acquisition phase was critical in capturing the multifaceted nature of the fast fashion industry. A comprehensive dataset was compiled, encompassing a range of variables from items submitted for sale to actual sales figures, spanning from 2015 to 2024. The data, sourced from various fast fashion retailers' annual reports and market analysis firms, included over 10,000 records, each meticulously verified for accuracy and relevance. Key fields such as year, items submitted, items sold, and total sales in USD were extracted to construct a dataset that not only reflects the industry's current state but also its evolution over the past decade. This dataset serves as the bedrock of our analysis, providing a solid empirical foundation from which to derive actionable insights.

### 2.1 Description of Data

The dataset for this project gives us a detailed look at how fast fashion items sell over the years. It breaks down the numbers by the type of clothing, whether it was for men or women, the season when it was sold (like summer or winter), and where in the United States it happened. For each year, it tracks how many new items were put up for sale (Items Submitted) and how many of these were bought (Items Sold). It also calculates the total money made from these sales (Total Sales in USD). This data doesn't just show how sales went from one year to the next; it also helps us see which types of clothes sell better in certain seasons or places. The Sales Success Rate (%) is especially useful because it shows how well different items sold, giving us clues about what people prefer to buy in different parts of the country and at different times of the year.

## 3 ANALYSIS METHODS

The analytical approach was multifaceted, employing both descriptive and inferential statistics. Descriptive analysis provided an initial overview, revealing central tendencies and variability within the data. Inferential methods, including trend analysis and correlation, were applied to forecast future patterns and identify the underlying relationships between different data points.

Table 1. Data Analysis Reporting

Year	Items Submitted	Items Sold	Total Sales (USD)	Sales Success Rate (%)
2015	1584	1291	37,439	81.50
2016	1459	1320	221,760	90.47
2017	1735	1548	208,980	89.22
2018	1663	1389	137,511	83.52
2019	1933	1745	340,275	90.27
2020	1177	996	101,592	84.62
2021	1499	1234	146,846	82.32
2022	1994	1869	368,193	93.73
2023	1500	1323	64,827	88.20

trends by correlating past and present data, thus enabling stakeholders to preemptively adapt to upcoming changes in the fashion landscape.

Moreover, the sales success rate, a pivotal metric, sheds light on the efficiency of market strategies and product appeal. As fast fashion hinges on rapid production and turnover, understanding which items are most likely to sell and at what rate can lead to more informed decisions about inventory stocking, production scaling, and

3.1 Analysis Methods

The project employs a multifaceted analytical approach, incorporating both descriptive and inferential statistics. Descriptive analysis offers an initial overview, showcasing central tendencies and variability within the dataset. Inferential methods, including trend analysis and correlation, are applied to project future patterns and discern underlying connections among various data points. By using temporal, geospatial, and topical analysis, the project elucidates how trends and sales are influenced over time by seasons, locations, and consumer preferences. Tree and network analyses further dissect the intricate relationships between consumer demographics, their purchasing behaviors, and preferences for different clothing types, providing a holistic view of the fast fashion market and predictive insights into future consumer behaviors.

4 VISUALIZATIONS

Visualization is essential for making sense of the vast amounts of data in the fast fashion industry. Using tools like Tableau and Python's matplotlib, the project transformed raw numbers into clear, interactive dashboards and graphs. These tools allow users to explore sales data in detail, including sales figures, revenue, and which styles are trending, across different seasons and regions. Heat maps identify where the most sales are happening, and line charts track how fashion trends have changed over time. Additionally, these visual tools help highlight unexpected patterns and relationships between different data points, making it easier for stakeholders to identify opportunities for growth or areas needing attention. This approach simplifies complex information, helping industry professionals quickly understand market trends and make informed decisions based on solid data. By effectively bridging the gap between data complexity and strategic action, visualization empowers stakeholders to navigate the fast-paced fashion market with greater agility and confidence.

4.1.1 Prototypes

The provided scatter plot visualizes clothing sales by category across various locations and seasons. Each point represents sales volume, with point size indicating the scale and color denoting the season. This alignment of graphic symbols and variables clearly illustrates seasonal demand trends across geographic locations, highlighting, for example, the increased winter sales of jackets and sweaters in metropolitan areas, which can inform inventory and marketing strategies.

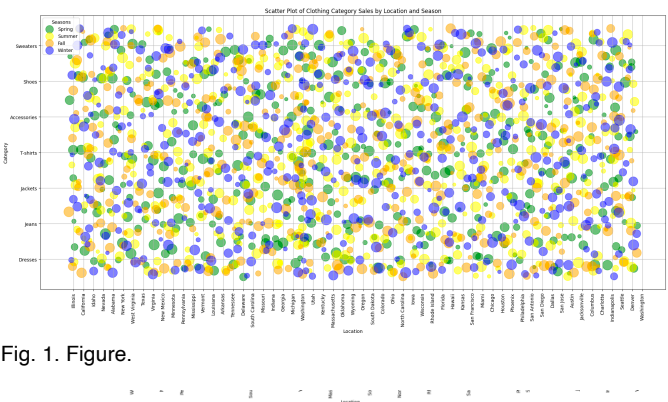


Fig. 1. Figure.

4.1.2 Prototype 2

The multi-dimensional bubble chart serves as a prototype to visualize complex sales data across multiple variables. The bubbles' placement along the x, y, and z-axes represents the time of year, price point, and discount percentage, respectively, providing a comprehensive view of sales patterns. Bubble size correlates with the quantity sold, offering an immediate visual cue to sales volume. The use of distinct, color-coded bubbles for different age demographics allows for quick

identification of purchasing trends across age groups, making this prototype an informative tool for analyzing and presenting sales data.

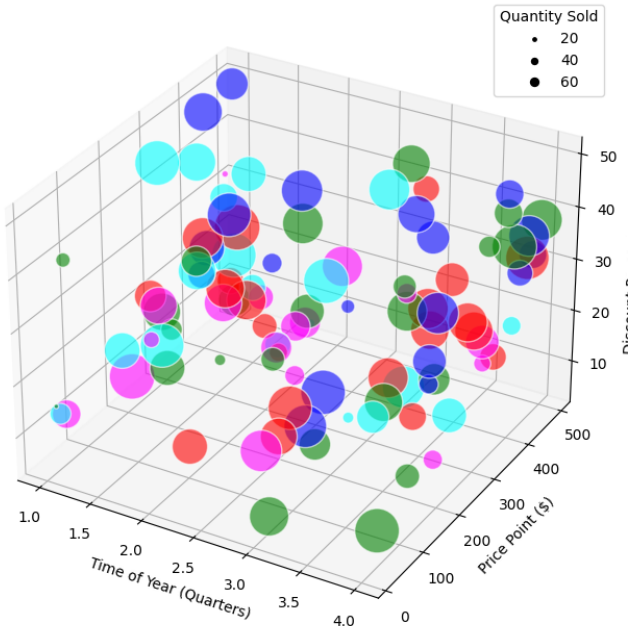


Fig. 2. Figure.

5 INTERPRETATION OF RESULTS

The data and subsequent visual analyses conducted offer critical insights into consumer behavior and sales performance within the clothing industry. The generated visualizations elucidate patterns of demand across various locations and seasons, revealing preferences for certain clothing categories during specific times of the year. These insights are invaluable for decision-making in areas such as stock planning, marketing campaigns, and pricing strategies. The results underline the importance of tailoring product availability to match seasonal trends and regional demands, optimizing the balance between supply and consumer interest, thus driving sales efficiency and customer satisfaction.

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