

Retail Revenue Prediction

Overview

This project focuses on predicting retail revenue using data-driven models by analyzing factors like price, discounts, product category, region, and promotions. The goal is to uncover key drivers of revenue and provide actionable strategies to improve sales forecasting and business decision-making.

Business Problem

The business problem we are solving here is the uncertainty in retail revenue forecasting. Retailers struggle to accurately predict future sales due to factors like seasonality, promotions, competitor pricing, and customer demand fluctuations. This leads to inefficient inventory planning, missed sales opportunities, or overstocking costs.

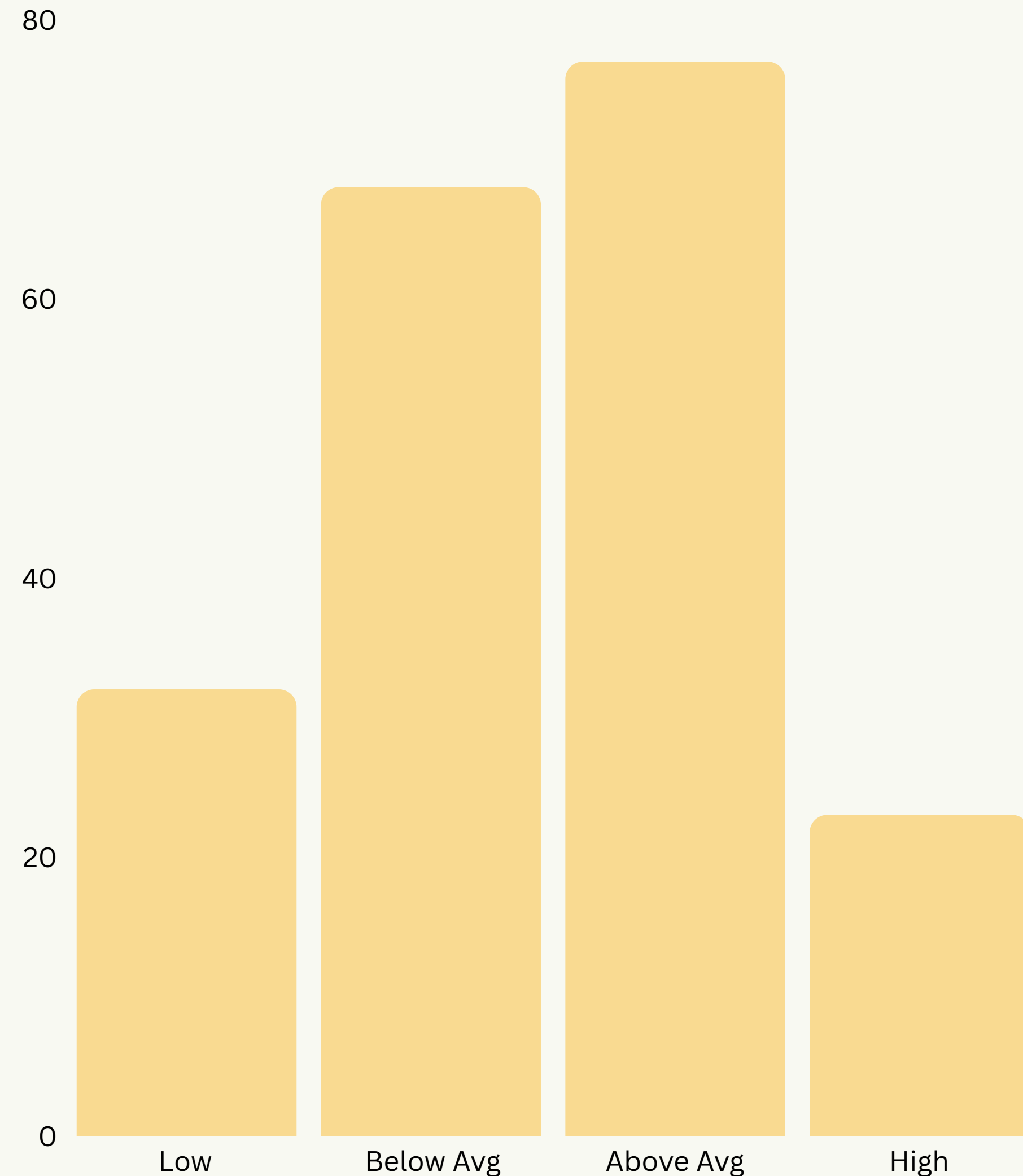
What our model trying to help ?

Our model helps solve this by providing data-driven revenue predictions, enabling smarter demand planning, pricing, and promotion strategies.

Key Insights from the Analysis

Price Range Preferred by customers

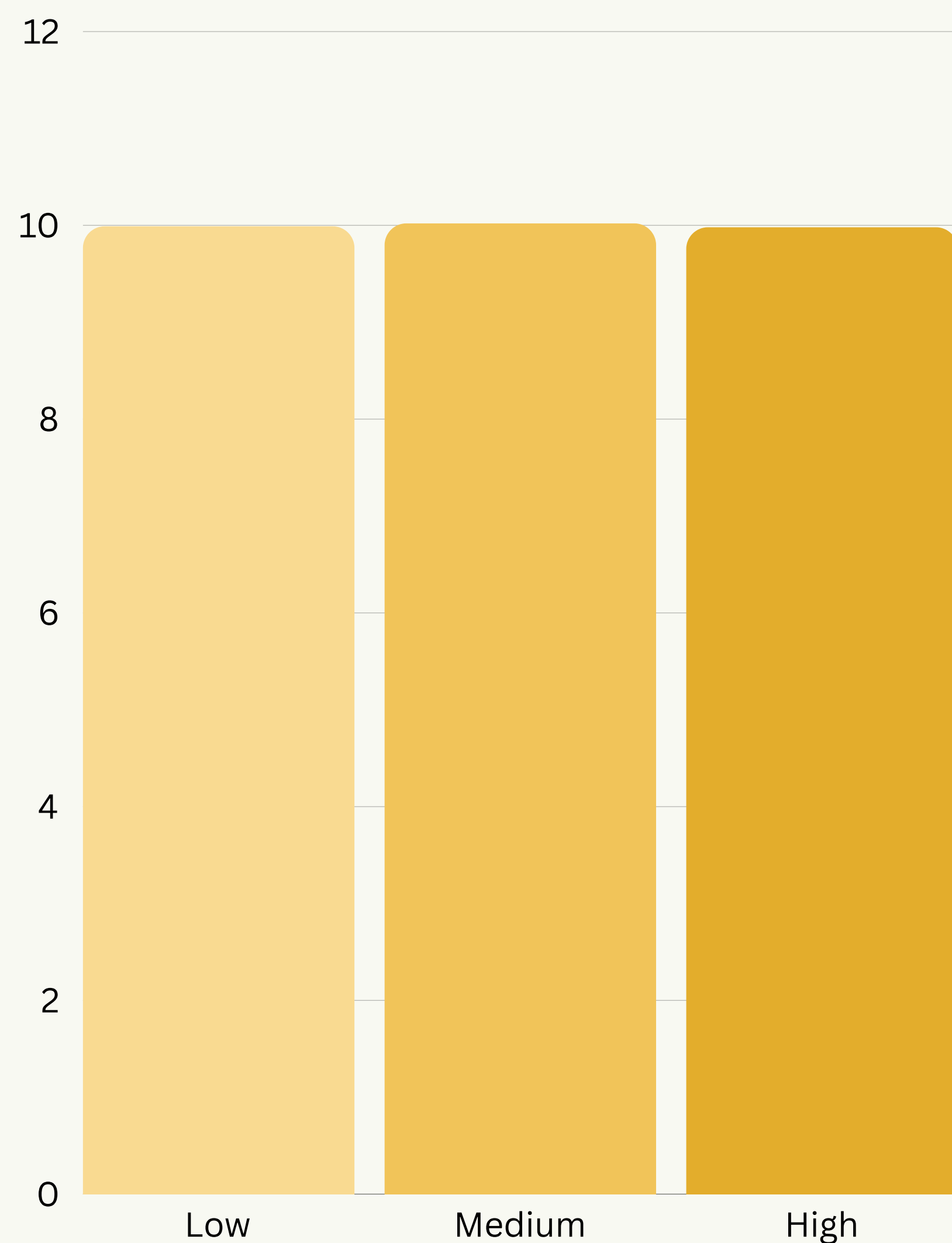
Most of our revenue drivers sit around the average range. While we have very few underperformers, what's striking is that only a handful reach the 'High' category. If we can shift even a fraction of our Above Average performers into the High segment, the business could see a significant revenue uplift.



How much Units Sold ?

When we look at the distribution of Units Sold, an interesting pattern emerges. The majority of sales are concentrated in the lower ranges (0–100 units), with more than 20% of products falling here. As we move toward higher unit sales, the frequency declines sharply, and only a handful of products achieve sales beyond 350 units.



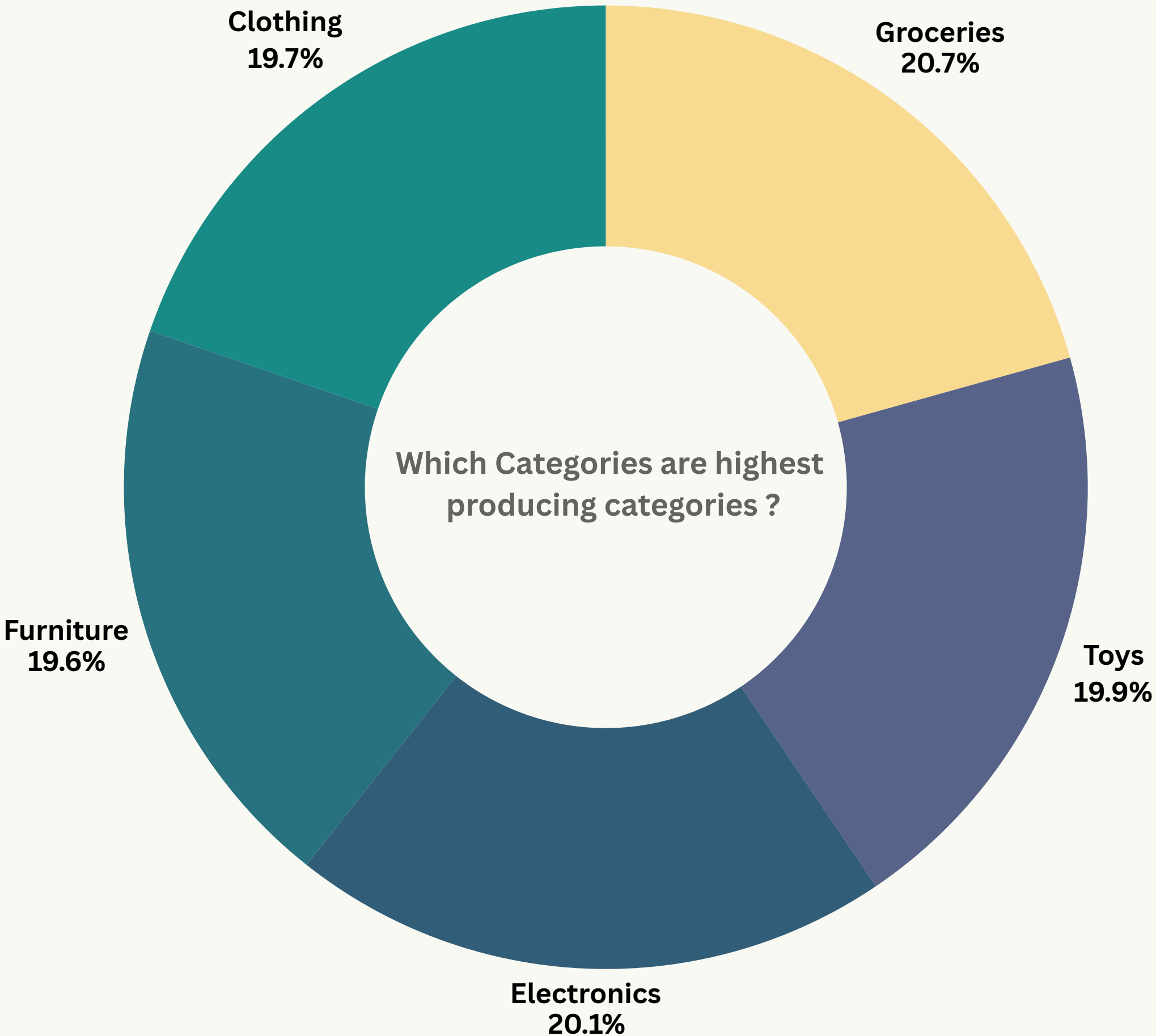


How much Units Sold based on Discount ?

Our current discounting strategy treats all products equally, regardless of their sales performance. This uniformity hides opportunities: we may be wasting discounts on products that don't need them while not boosting the ones that could benefit. A smarter, category-based discounting approach can convert medium sellers into bestsellers, reduce profit leakage, and drive more efficient revenue growth.

Revenue

Our revenue is evenly distributed across categories, showing a healthy diversification with no single dependency. Groceries and Electronics lead slightly as the top contributors, while Toys, Clothing, and Furniture present strong opportunities to close the gap through targeted growth strategies. producing categories.



20000

15000

10000

5000

0

North

South

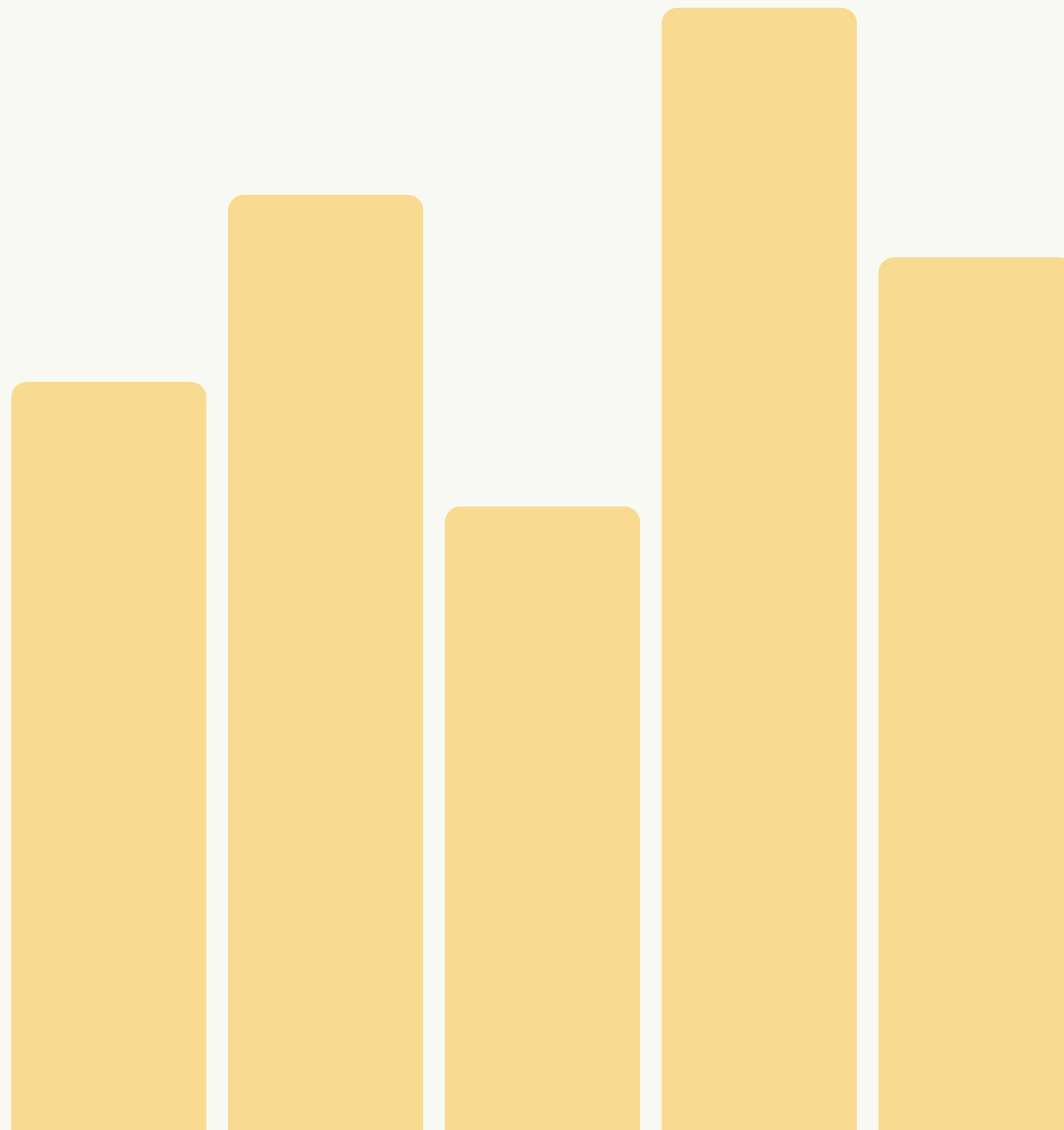
East

West

Central

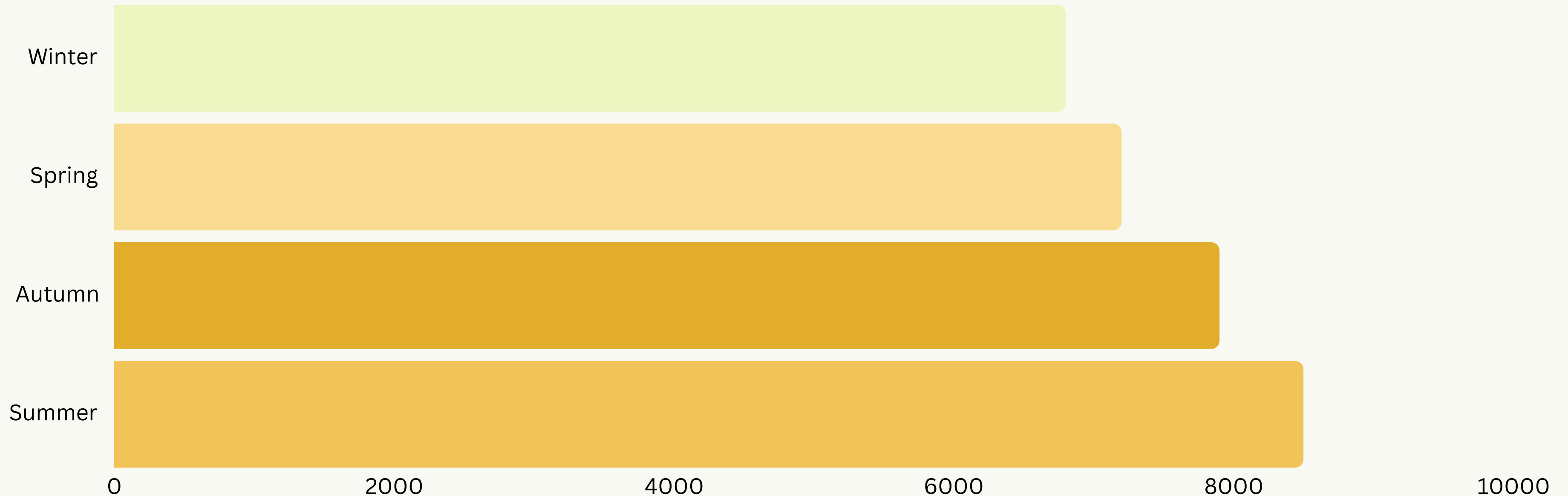
Revenue based on Region

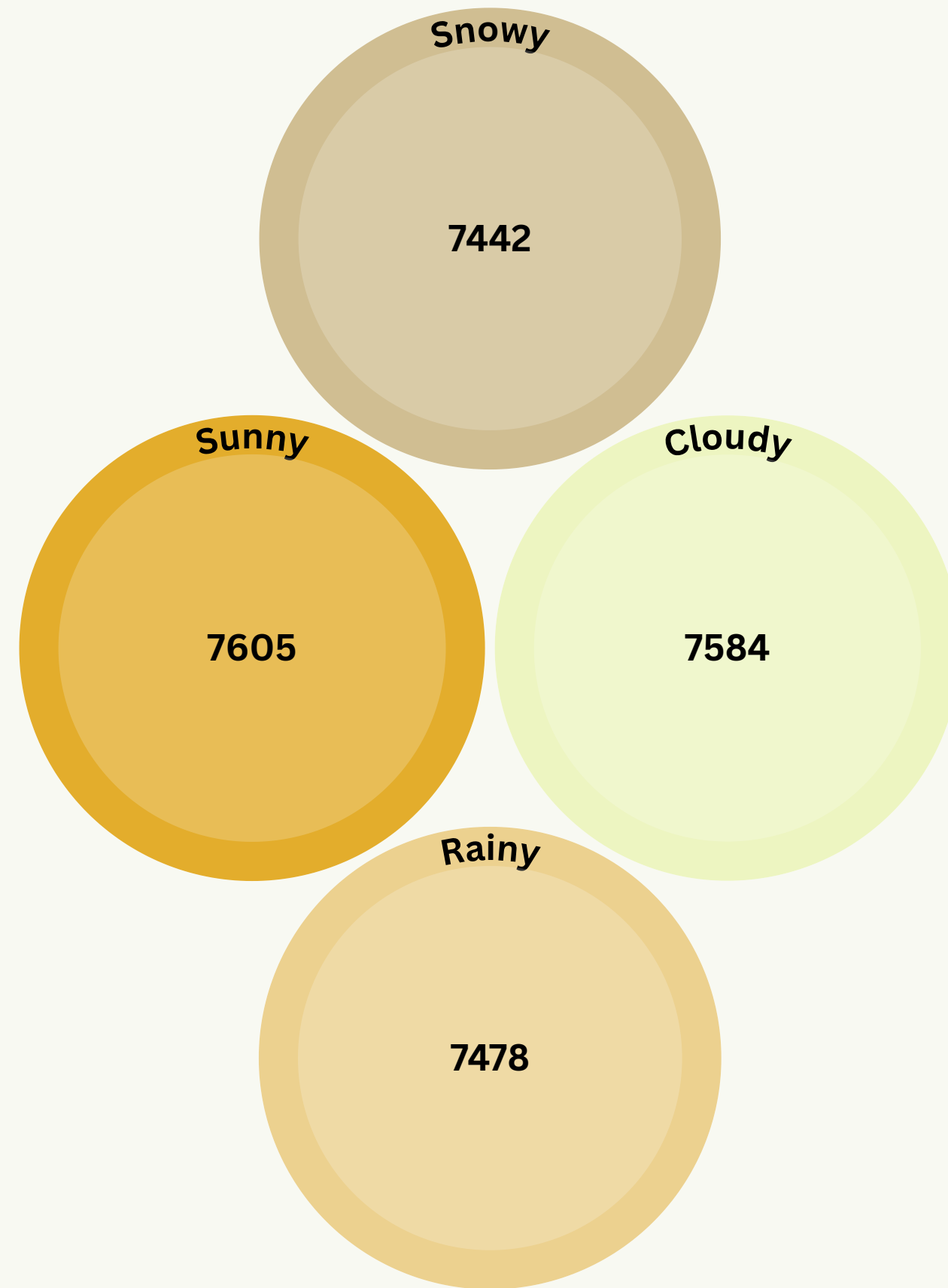
The West region is the strongest revenue contributor, significantly outperforming other regions, while the East lags behind. This highlights an opportunity to replicate successful strategies from the West in underperforming regions like East to balance overall growth.



Revenue based on Seasonality

Revenue patterns clearly reflect the impact of seasons. Summer stands out as the most profitable period, showing peak demand, while Autumn follows closely, highlighting sustained customer spending. Spring indicates a strong mid-level performance, whereas Winter lags behind, signaling an opportunity to boost sales through targeted campaigns and promotions during the off-season.





Revenue based on Weather

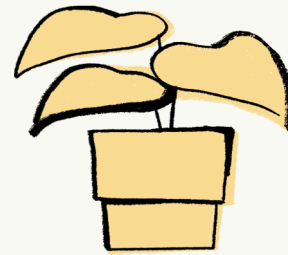
Among different weather conditions, revenue is highest during Sunny days, slightly outperforming Cloudy and Rainy conditions, while Snowy days generate the lowest revenue. This suggests that favorable weather, especially Sunny conditions, positively influences customer spending, and strategies such as promotions during less favorable weather could help balance sales.”

Trends and analysis



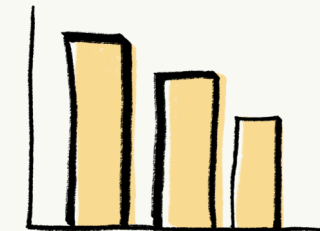
Price Doesn't Drive Demand

Our customers value the products themselves, not just the price tag. In other words, we are not in a price war; our advantage lies elsewhere.



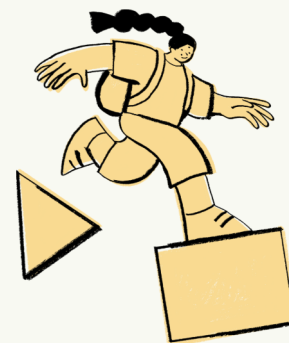
Discounts Don't Always Pay Off

The next pattern we noticed was around discounts. Even when discounts were introduced—5%, 10%, or even 20%—sales volume barely moved. Customers were already buying, so discounts simply cut into profit without lifting sales



Competitors Don't Define Us

Our customers are loyal and less sensitive to competitor pricing. They come to us for our brand trust, experience, and availability



Categories Create the Big Picture

Electronics and Furniture brought in the highest revenue per sale, making them our premium engines, while Groceries fueled consistent volume sales. Clothing and Toys, though lower in per-sale revenue, kept sales flowing steadily.



Regions Shape the Story

Groceries thrived in the East and South, Electronics and Toys in the North, while the West struggled in Electronics. This pattern proved that our business isn't uniform—it is regional and preference-driven.

Final Strategic Insight

- Together, these patterns reveal that our revenue is shaped more by category and region than by price or discounts. Customers are loyal, value-driven, and regionally diverse. To maximize growth, our strategy should shift from price-based competition to product mix optimization and regional targeting.
- Our retail revenue growth should move away from competing on price and instead focus on optimizing product mix, tailoring strategies regionally, and leveraging seasonal/loyalty patterns. By focusing on category-based discounts, region-specific tactics, and seasonal campaigns, we can unlock higher efficiency, reduce profit leakage, and achieve sustainable revenue growth.

Conclusion

1. Our customers are loyal and value-driven. They do not shop primarily based on discounts or competitor pricing.
2. Retail performance is not uniform—it varies across categories, regions, and external factors like weather/season.
3. Revenue growth is shaped more by product category, region, and seasonality than by pricing tactics.
4. Uniform strategies (discounting, promotions) are suboptimal. Tailored, data-driven actions are the way forward.

Strategic Recommendations

For consideration for future reporting periods

01

Target High Potential Performers

02

Smarter Discounting (Category & Region-Specific)

03

Category-Specific Growth Strategies

04

Regional Playbook, Seasonal Optimization & Weather-Based Promotions

05

Leverage Customer Loyalty

Thank you!

Feel free to approach us if you have any questions.