MARCH 2025

MAZHOCDATA

# THE ANALYST CHALLENGE
# ANALYZE SALES & DELIVERY DATA

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# INTRODUCTION


Understanding supply chain operations and sales performance is crucial for businesses to optimize operations and drive revenue growth. Analyzing key metrics such as revenue, profitability, delivery times, return rates, and customer behavior enables businesses to make accurate strategic decisions.

The dataset provides detailed information on supply chain operations and sales performance for a retail company. It is designed to help businesses analyze order processing, logistics, delivery performance, return rates, and customer management, enabling them to optimize supply chain efficiency and improve strategic planning.


# VISION

To become a leading platform for uncovering actionable insights in supply chain operations, enabling businesses to optimize processes, increase profitability, and drive sustainable growth through data-driven decision-making.

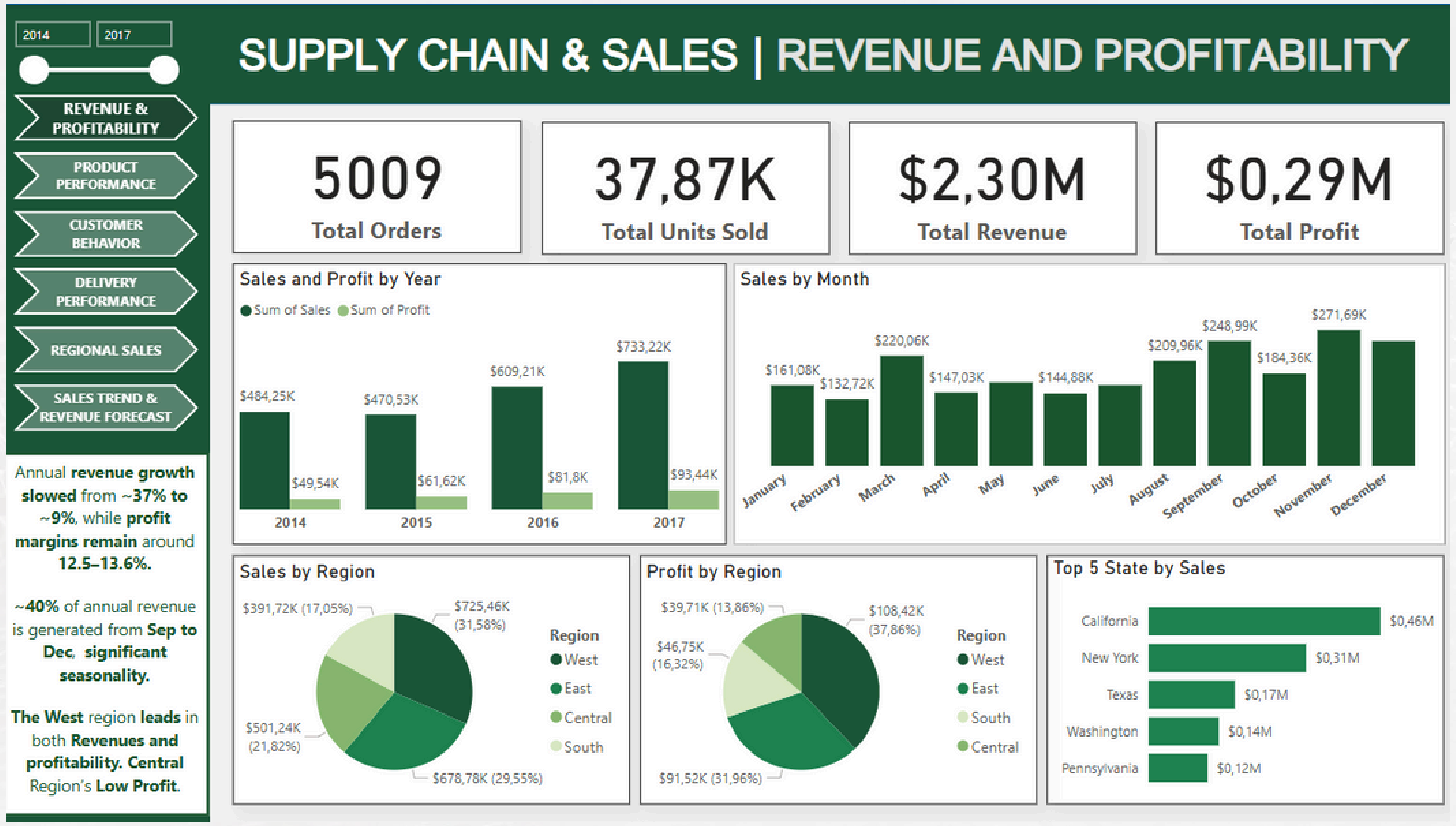
# MISSION

Our mission is to empower businesses by analyzing key supply chain metrics such as revenue, profitability, delivery times, and customer behavior. Through the use of Power BI, we aim to deliver interactive reports and dashboards that help companies streamline operations, enhance customer satisfaction, and make informed strategic decisions.

# VALUES

Innovation: Continuously exploring new ways to use data and technology for problem-solving.
Integrity: Ensuring transparency and accuracy in all data analysis.
Collaboration: Partnering with businesses to provide tailored solutions.
Excellence: Maintaining high standards in analysis and reporting.
Customer-Centricity: Prioritizing the unique needs of businesses to drive growth.

# REVENUE AND PROFITABILITY




**Revenue & Profit Trends:**

- Total revenue reached $2.30M, with a total profit of $0.29M. This indicates a relatively low profit margin compared to revenue, highlighting areas for improvement in cost efficiency or pricing strategies.
- Revenue growth has slowed down from around 37% in previous years to just 9%, with profit margins remaining consistent between 12.5% and 13.6%.

**Yearly Performance:**

- Sales and profits show a steady increase from 2014 to 2017. However, 2017 saw the highest revenue at $733.22K, with $93.44K in profit, indicating solid growth. Still, the profit margin seems to drop slightly compared to revenue in 2016.

**Monthly Sales Patterns:**

- The company experiences significant seasonality, with a clear peak in sales and profits in the last quarter (September to December).
- Sales dip in the early months of the year, particularly in February and April.

**Regional Performance:**

- The West region's profitability could serve as a benchmark for other regions.
- South needs an in-depth analysis to identify bottlenecks (e.g., distribution, marketing, or competition).

# REVENUE AND PROFITABILITY

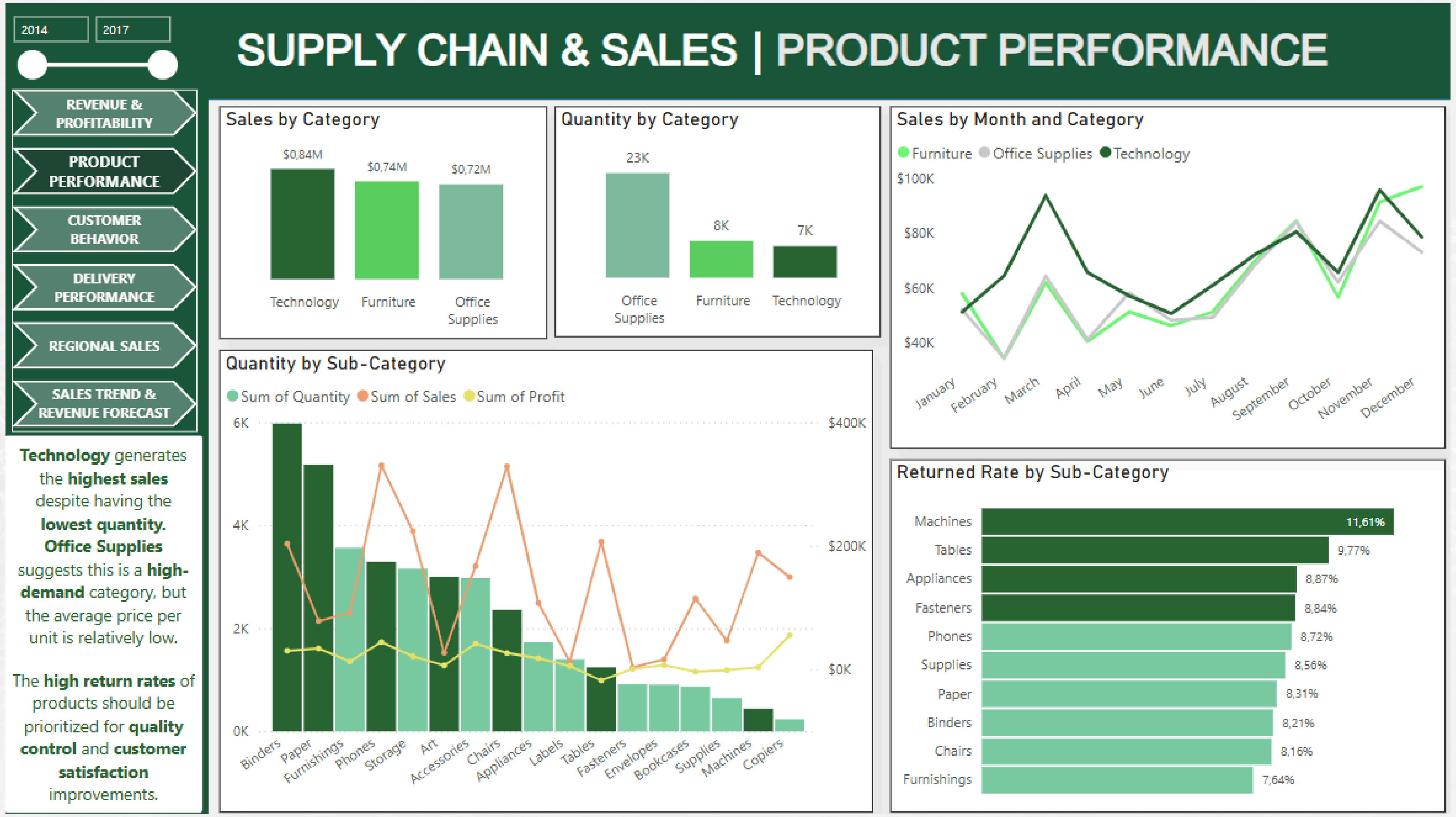
→ The dashboard shows consistent year-over-year **revenue and profit growth from 2014 to 2017**, albeit at a slowing pace. Monthly data reveals **strong seasonality**, with **peaks in late summer to early winter and dips in Q1**.

→ The **West** region has the **highest revenue** share (~32.4%), followed by Central (~24.5%), East (~23.9%), and South (~19.2%). The **lowest revenue** region is the **South**. California leads by a large margin ($0.94M), followed by New York, Texas, Washington, and Pennsylvania.

**Strategic Recommendations:**

- Address Slowing Growth: Expand into new markets and launch new products to boost growth. Focus on improving marketing efforts in mid-level regions like the South to enhance brand visibility and sales.
- Leverage Seasonal Peaks & Mitigate Lows: Maximize revenue during peak season (Aug–Nov) by ensuring adequate inventory, enhancing customer service, and running targeted promotions. During off-peak months (Jan–Feb), introduce clearance sales, bundle deals, or loyalty programs to stimulate demand.
- Regional and State-Level Focus:
  - In the West Region & California, introduce premium products and maintain operational efficiencies to capitalize on strong sales.
  - In the South Region, investigate factors hindering performance and allocate more resources to marketing or local partnerships.
- Diversify Beyond High-Concentration States: Reduce reliance on California and New York by expanding efforts in states like Texas, Washington, and Pennsylvania. Replicate successful strategies from California to other states.
- Monitor Profit Margins: Focus on cost management to prevent rising costs from eroding profits. Streamline supply chain processes, negotiate better shipping rates, and enhance efficiency, particularly in underperforming regions.

# PRODUCT PERFORMANCE




## Returned Rate:

- Many products across different sub-categories exhibit relatively high return rates, especially Machines with an 11.61% return rate, followed by Tables at 9.77% and Appliances at 8.87%. These rates are considerably above acceptable thresholds, indicating that returns could be significantly impacting both revenue and customer satisfaction.

## Sales by Category

- Technology leads the sales, generating $0.84M despite having the lowest quantity sold at 7K units.
- Office Supplies has the highest quantity sold at 23K units, but it generates the lowest revenue of $0.72M, showing that it's a high-demand but low-value category.
- Sales across all categories, particularly Furniture and Technology, peak towards the end of the year (October to December), likely due to holiday shopping.

## Sub-Category:

- Binders and Paper are the top sellers in Office Supplies, but their overall sales don't contribute as significantly to revenue compared to high-ticket items like Appliances or Machines.
- Machines and Copiers, despite lower sales volume, show higher value per unit, which indicates they could be a strategic focus for premium offerings.

# PRODUCT PERFORMANCE

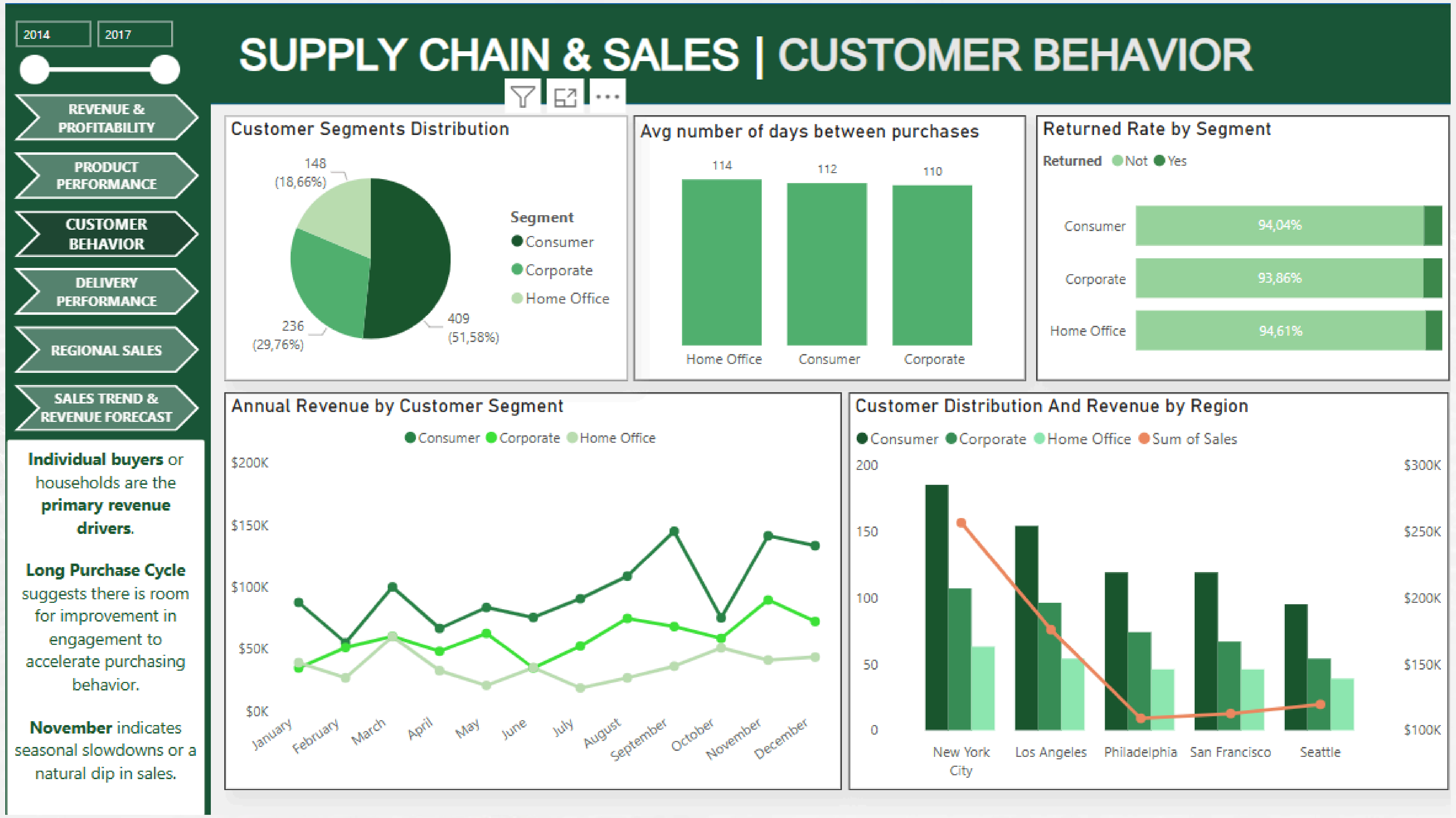
→ **Machines** have the **highest return rate (11.61%)** due to shipping damage, high customer expectations, and potential incompatibility with customer needs, often stemming from insufficient product information at the time of purchase.

→ Despite having the **highest sales volume**, **Office Supplies lag in revenue compared to Technology**, indicating that higher-value items such as those in the Technology category drive more significant profits.

**Strategic Recommendations:**

- **Increase Revenue from Office Supplies**: To boost revenue from Office Supplies, introduce premium versions of products like Binders and Paper to attract customers seeking higher-quality items. Bundle low-cost items with higher-value products to increase the average transaction value. Offer volume discounts for bulk purchases and implement a loyalty program to encourage repeat customers.
- **Maximize Profit from Technology & High-Value Products:** Maximize profit by focusing on marketing Technology products' premium features and exclusivity. Bundle high-ticket items with complementary products to increase sales value. Leverage seasonal demand with targeted promotions and ensure efficient inventory management to avoid stockouts during peak sales periods.
- **Reduce Return Rates for High-Return Products:** To reduce return rates for products like Machines and Tables, improve product quality control, enhance packaging to prevent shipping damage, and offer detailed product education to manage customer expectations. Provide warranties and customer support to increase satisfaction and reduce returns due to defects.
- **Optimize Inventory Management**: Forecast demand accurately for peak seasons and use just-in-time (JIT) inventory for high-volume, low-margin products like Office Supplies. Prioritize stock for best-selling categories, ensuring adequate supply without overstocking, to improve cash flow and meet customer demand efficiently.

# CUSTOMER BEHAVIOR




**Customer Insights:**

- The **Consumer segment** represents over half of the customer base. Despite being a larger segment, Consumers may exhibit higher variability in purchase behavior.
- **Corporate (29.76%)**: Although it's the second-largest segment, Corporate customers buy most frequently (110 days). Focus on customized contracts, bulk purchasing incentives, and exclusive corporate services to drive more repeat business.
- **Home Office (18.66%)**: Smaller segment with a longer purchase cycle (114 days). Opportunities to increase revenue through volume discounts, tailored business solutions, and subscription models to encourage bulk purchases.
- **New York City** leads in both customer distribution and revenue, and efforts should continue to optimize this region.
- **Philadelphia** has the lowest revenue despite a moderate customer distribution. Even though the customer base is there, they are not contributing as significantly to sales.

**Purchase Frequency and Average Days Between Purchases**

- **Corporate: 6.14% , Consumer: 5.96%, Home Office: 5.39%** return rate. Although not alarmingly high, it indicates that there may be mismatches in product fit or business expectations. Providing more tailored solutions and clearer product communication could help reduce returns in all segments.

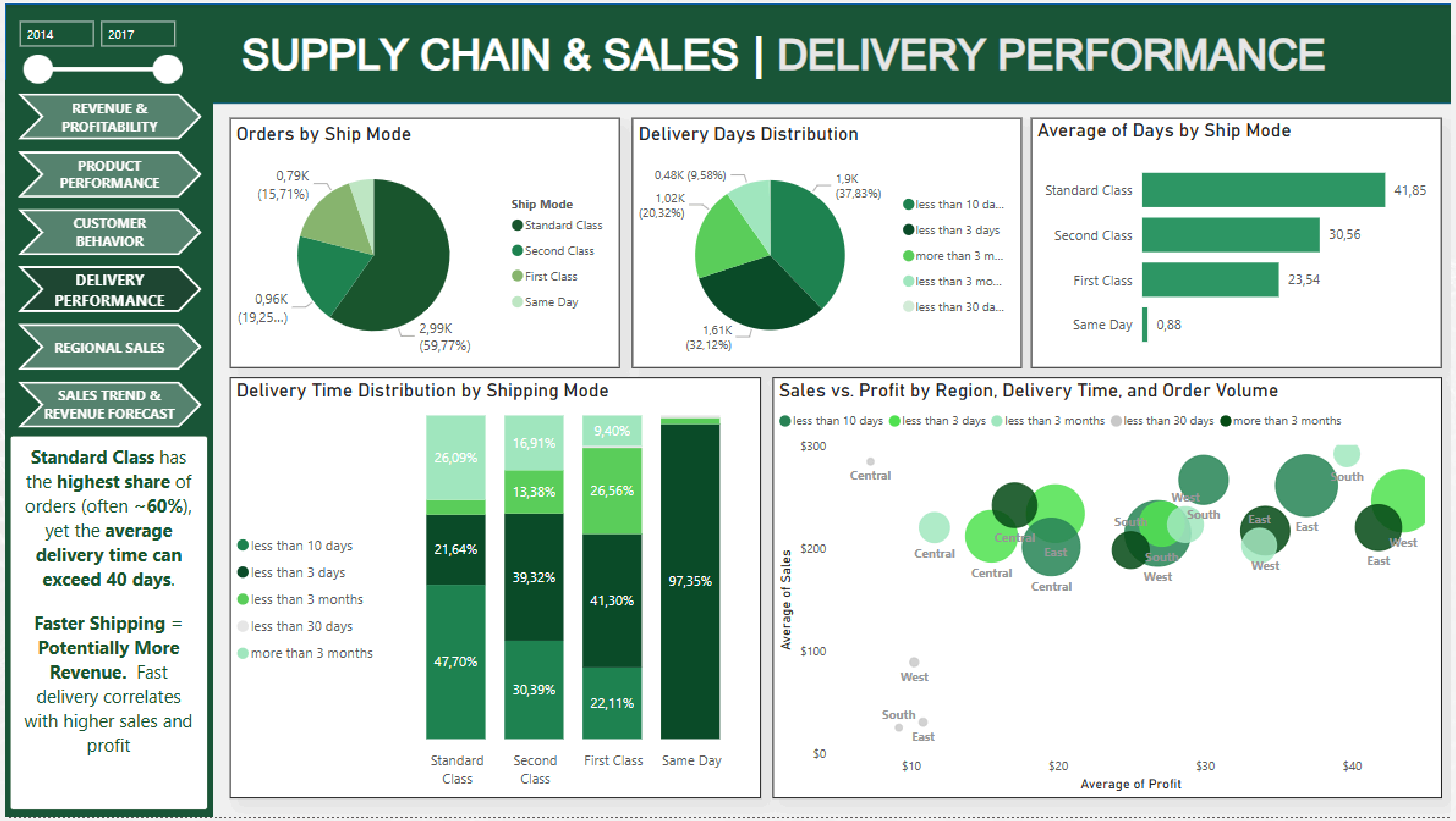
# CUSTOMER BEHAVIOR

→ **The Consumer** segment contributes **the most to total revenue,** as it has **the largest customer base (51.58%) and consistently generates significant sales.** Despite having a slightly longer purchase cycle (112 days), this segment's high volume of customers results in the highest revenue across the business.

**Strategic Recommendations:**

- **Consumer Segment**: Implement personalized marketing, loyalty programs, and subscription services to increase repeat purchases and shorten the purchase cycle.
- **Corporate Segment**: Offer customized solutions, bulk discounts, and dedicated corporate accounts to drive larger, repeat orders.
- **Home Office Segment**: Provide tailored packages, bulk discounts, and long-term subscriptions to reduce the purchase cycle and better align with business needs.
- **Regional Focus**: Target Philadelphia and Seattle with regional promotions to boost revenue, and strengthen marketing in Los Angeles and San Francisco, especially for Corporate and Home Office segments.
- **Return Rate Management**: Businesses need to identify and understand the reasons for product returns from customers, such as dissatisfaction, poor quality, or unmet expectations. By improving product descriptions, enhancing customer support, and addressing common return causes, businesses can reduce return rates and improve customer satisfaction, particularly in the Corporate segment.
- **Delivery Optimization:** Improve delivery speed and reliability with real-time tracking and consider regional fulfillment centers to ensure faster, on-time deliveries.

# DELIVERY PERFORMANCE




## Delivery Situation:

- The majority of orders are shipped via **Standard Class.** Despite its cost-effectiveness, Standard Class takes the longest average delivery time (41.85 days) compared to other shipping modes. A large portion of Standard Class deliveries takes more than 30 days to reach the customer, which is likely a major pain point. This not only impacts customer satisfaction but also profitability as customers may prefer faster alternatives if available.
- **Same Day shipping** has the fastest delivery time (an average of 0.88 days), which is a key driver of customer satisfaction, especially for those with time-sensitive needs. However, it only accounts for 5.17% of orders, indicating that it is still a niche service, limited by its higher cost.
- **Second Class and First Class** are both integral to offering balance between cost and delivery speed. **Second Class** remains the preferred middle-ground option for customers who need reasonable delivery times at an affordable cost. On the other hand, **First Class** appeals to premium customers who are looking for faster service but not at the expense of same-day delivery.

## Delivery Time's Impact on Sales and Profitability:

- **Faster delivery times (such as Same Day or First Class) significantly contribute to higher sales and profitability**. Regions like the West, with efficient logistics and faster deliveries, perform the best in terms of both sales volume and profit margins. On the other hand, regions like South and Central face challenges with slower delivery times, leading to lower sales and profitability.

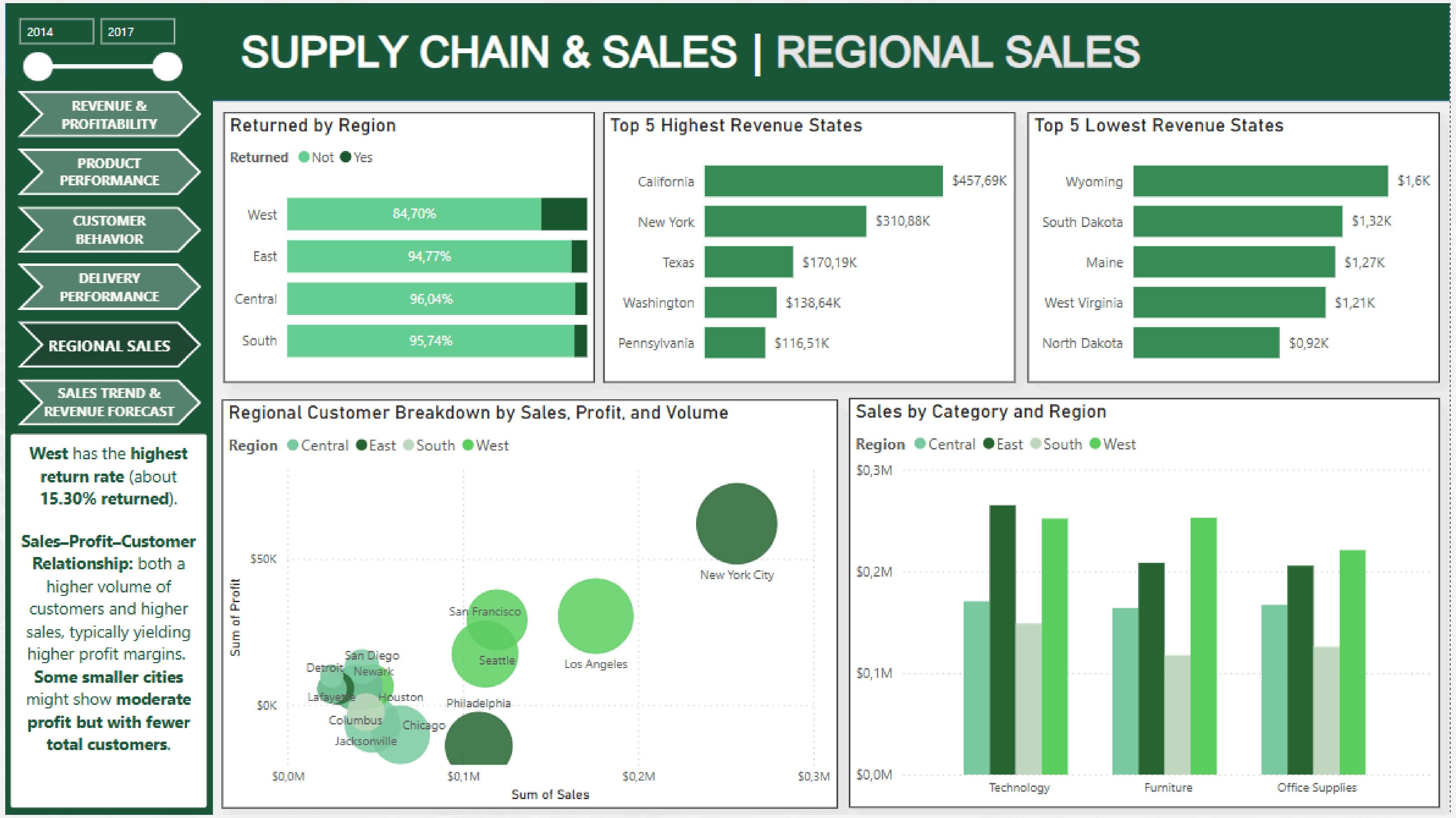
# DELIVERY PERFORMANCE

→ Faster delivery correlates with higher sales and profit, as evidenced by the West region's performance. Regions with faster deliveries (especially Same Day and First Class) show higher profitability.

**Strategic Recommendations**

- **Optimize Delivery Speed and Efficiency:** Focus on improving the delivery speed of Standard Class shipping. This can be achieved through logistics optimization or upgrading technology for faster processing. Additionally, consider offering premium shipping options like Second Class or First Class to cater to customers willing to pay for faster delivery.
- **Promote Faster Shipping Methods:** Increase the promotion of Same Day and First Class options, especially for high-value customers. Use targeted marketing to demonstrate the benefits of faster deliveries for premium customers.
- **Optimize Logistics for Slow Regions:** The South and Central region, which shows lower profits and slower delivery times, needs attention. Focus on optimizing local logistics, such as working with regional courier services or enhancing warehouse efficiency. Analyze supply chain inefficiencies in South and Central to optimize inventory management, distribution center locations, and carrier performance to reduce overall delivery times, improve profit margins and enhance customer satisfaction.
- **Educate Customers on Shipping Options:** Many customers may not understand the differences between Second Class and First Class in terms of delivery speed and cost. Educating customers on these shipping options will encourage the use of faster services. Provide clear information on product pages, checkout pages, and via email marketing to educate customers about the value of First Class and Second Class shipping.

# REGIONAL SALES




## Returned Rate

- The **West** region has the **highest return rate**, with approximately 15.30% of sales being returned. This rate is significantly higher than the other regions, signaling potential challenges with customer satisfaction and logistics in this area.
- On the other hand, the **East, South, and Central** regions show much l**ower return rates**, with the Central region having the lowest return rate at approximately 3.96%. Lower return rates in these regions indicate smoother operations, better customer service, or perhaps a simpler product mix that leads to fewer returns.

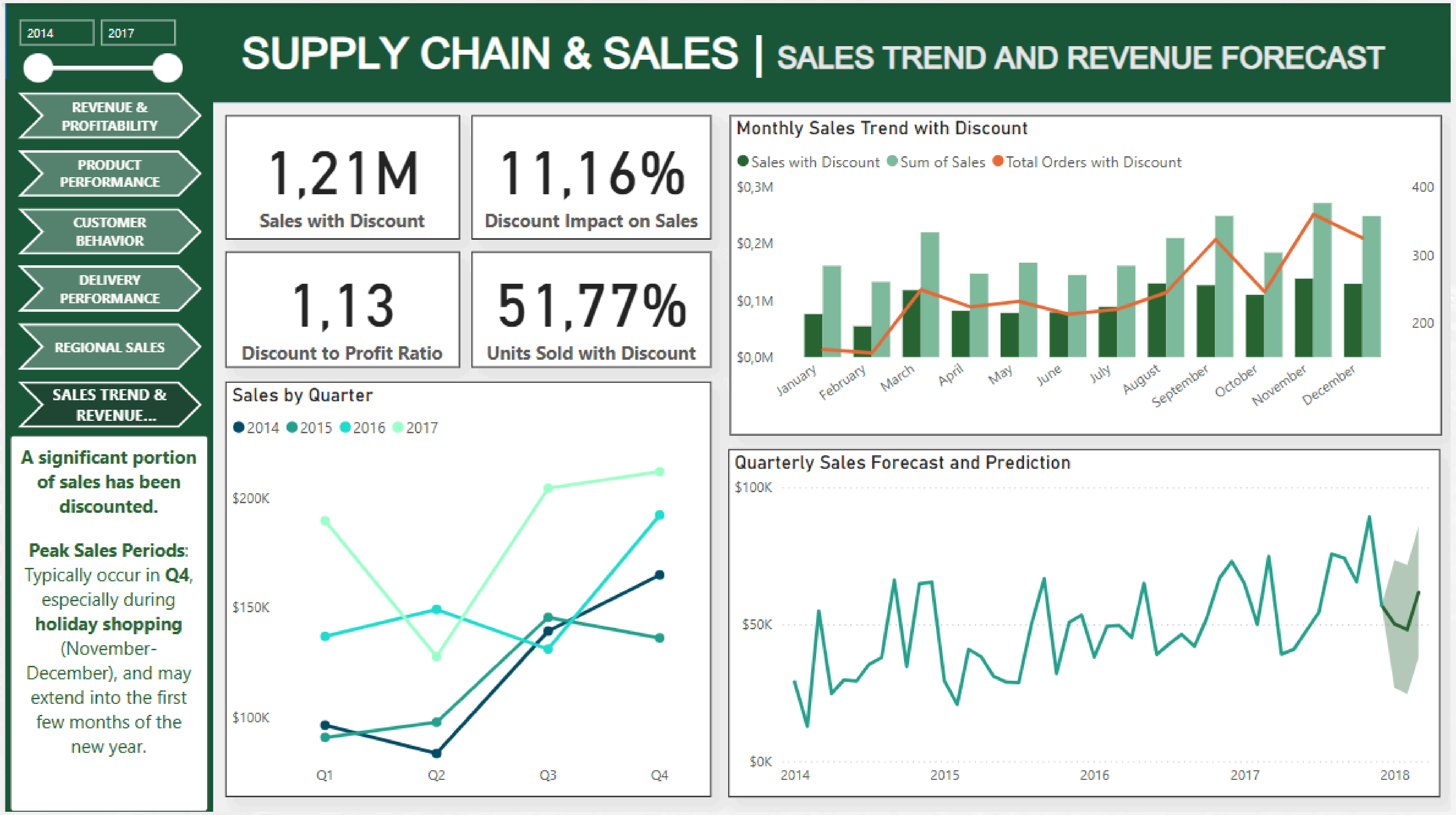
## Performance

- The **West and East** regions dominate revenue generation, with **California and New York** leading the pack. California and New York are the highest-grossing states, contributing a substantial portion of total sales. These regions are home to major metropolitan areas and tech hubs, which have high purchasing power and a strong consumer market. The high revenue in these states is also driven by strong demand for high-margin products like **technology and office supplies**, which are prevalent in these areas.
- The **Central and South regions**, including states like **South Dakota, West Virginia, and North Dakota**, **generate lower revenue due to limited demand for high-margin technology products**. These areas lack tech hubs and large urban centers, focusing more on furniture and office supplies, which have steady but lower profit margins. While these regions may have low return rates and stable customer bases, logistical challenges and fewer distribution centers further hinder tech product availability, limiting revenue growth.

# REGIONAL SALES

- **Addressing High Return Rates in the West:** Enhance online tools and product descriptions to set clearer expectations, particularly for high-ticket items like electronics and furniture, which have higher return rates; Establish or expand regional warehouses on the West Coast to reduce shipping time, decrease product damage during transit, and improve customer satisfaction, lowering return rates; Offer more robust customer service options, such as pre-purchase consultations or extended return windows, to reduce the likelihood of returns and improve the overall customer experience.
- **Maximizing Revenue in High-Grossing States:** Given the strong demand for technology products in states like California, New York, and Texas, allocate more resources to marketing high-margin tech products. Use digital ads and partnerships with tech influencers to further drive sales. Utilize customer data to create personalized promotions, such as tailored offers or discounts on complementary tech products (e.g., accessories, warranties) to increase cross-selling opportunities and enhance customer loyalty.
- **Boosting Sales in the Central and South Regions:** To boost sales in the Central and South regions, focus on localized promotions for furniture and office supplies, targeting local businesses and home offices. Leverage e-commerce and digital campaigns, utilizing local influencers to drive awareness and improve online sales. Offering free shipping for larger orders or same-day delivery for businesses can enhance customer satisfaction and increase sales.
- **Capitalizing on Emerging Markets in Low-Grossing States: Explore Niche Opportunities,** while the low-revenue states generate fewer sales, there may be untapped opportunities in niche markets (e.g., eco-friendly products or budget tech options). Tailor marketing and product strategies to appeal to local needs. **Localized Campaigns,** implement targeted digital campaigns in low-grossing regions, offering special promotions or exclusive discounts on products with lower upfront costs like office supplies or furniture that meet the needs of small businesses or rural customers.

# SALES TREND AND REVENUE FORECAST




## Promotion

- **1.21M is the total sales achieved with discounts , 11.16% of sales are influenced by discounts and 51.77% of total units sold are discounted**, showing that a large portion of sales is driven by discounts. This indicates a significant reliance on discounts to attract customers and drive sales.
- 1.13 means the company is giving more in discounts than it is earning in profits. This could signal that the company is relying too heavily on discounts, which might erode profitability, especially if margins are thin.

## Sales Trend

- **Seasonality:** The data indicates clear seasonal fluctuations in sales, with the highest sales in **Q4**, primarily driven by holiday shopping. This aligns with typical consumer buying behavior during the end of the year. **November-December** sees the highest sales, driven by holiday shopping and discounts. Ideal for targeted promotions and loyalty programs.
- **Steady Growth in Certain Quarters**: Sales generally show an upward trend over time, suggesting consistent growth, especially in the later quarters of the year.
- **Fluctuations in Q1**: There's often a noticeable dip in Q1, likely due to the post-holiday slowdown. This is common across many industries where consumer spending decreases after the high activity in Q4.

- **Seasonal Decline: Q1 typically experiences a decline in sales after the holiday rush of Q4. This slowdown is largely due to consumers reducing spending following the holiday season.**
- **Post-Holiday Consumer Behavior: In January and February, consumers focus on debt repayment and post-holiday recovery, leading to lower discretionary spending. Retailers often see fewer promotions, and demand for non-essential goods drops.**
- **Forecasting Strategy: Sales in Q1 should be forecasted with a 5-10% decline from Q4, and businesses should prepare for slower growth. This decline is consistent with consumer behavior and industry-wide trends, making it essential to adjust marketing and inventory strategies accordingly.**

# SALES TREND AND REVENUE FORECAST

**→ Peak Sales (Q4 - Nov-Dec): Driven by holiday shopping, Black Friday, Cyber Monday, and Christmas, with heavy discounts and high sales volume.**
**Low Sales (Q1 - Jan-Feb): Post-holiday slump as consumers reduce spending, focus on debt repayment, and there are fewer promotions.**

**→ Q1 next year is expected to experience a typical sales decline due to the post-holiday slowdown. Consumers are likely to spend less after the holidays, focusing on debt repayment and recovering from holiday expenses. This will result in lower sales volumes and a potential 5-10% drop in revenue compared to Q4.**

**Strategic Recommendations**

- **Optimize Discount Strategy:** With a high discount-to-profit ratio, reassess the current discount strategy. Focus on targeted discounts for specific customer segments or products to avoid eroding profitability. Align promotions with peak seasons, particularly during Q4, and plan post-holiday discounts in Q1 to maintain customer engagement during slower months.
- **Improve Inventory Management:** Utilize the Sales Forecast to adjust inventory ahead of peak and low periods. This will help prevent overstocking in Q1 and ensure the right products are available during Q4. Focus on high-demand products during the peak period, ensuring a steady flow of products without overstocking.
- **Focus on Customer Retention:** Use Customer Segmentation to target loyal customers with exclusive offers in Q1 to counter the sales dip. Encourage repeat purchases with personalized promotions. Leverage Customer ID data to identify inactive customers and provide special incentives to reignite their purchasing behavior, especially during the low period in Q1.
- **Enhance Marketing and Promotions:** Targeted Marketing in Q4 - Given the peak sales in Q4, ramp up digital marketing campaigns and special offers (e.g., flash sales, bundle offers) to maximize sales during the high-demand period. After the holiday season, use email marketing, loyalty rewards, and special offers to retain customers and drive sales during the typically slower Q1.
- **Refine Forecasting and Planning:** Given the uncertainty in predictions, the company can refine its forecasting methods by incorporating more seasonal adjustments or external market factors that influence sales, have flexible marketing strategies that can quickly adapt to market changes (e.g., increasing ad spend during slower months or introducing time-limited promotions).

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# END!

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