



# Sales Analysis



Data-Driven Sales Analysis to uncover trends & evaluate profitability

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# Business Objective

Organizations often struggle to gain a clear, data-backed view of regional performance, which limits their ability to spot growth opportunities and allocate resources effectively.

This project focuses on analyzing and visualizing regional sales data to highlight key trends, assess profitability, and enable better strategic decisions.

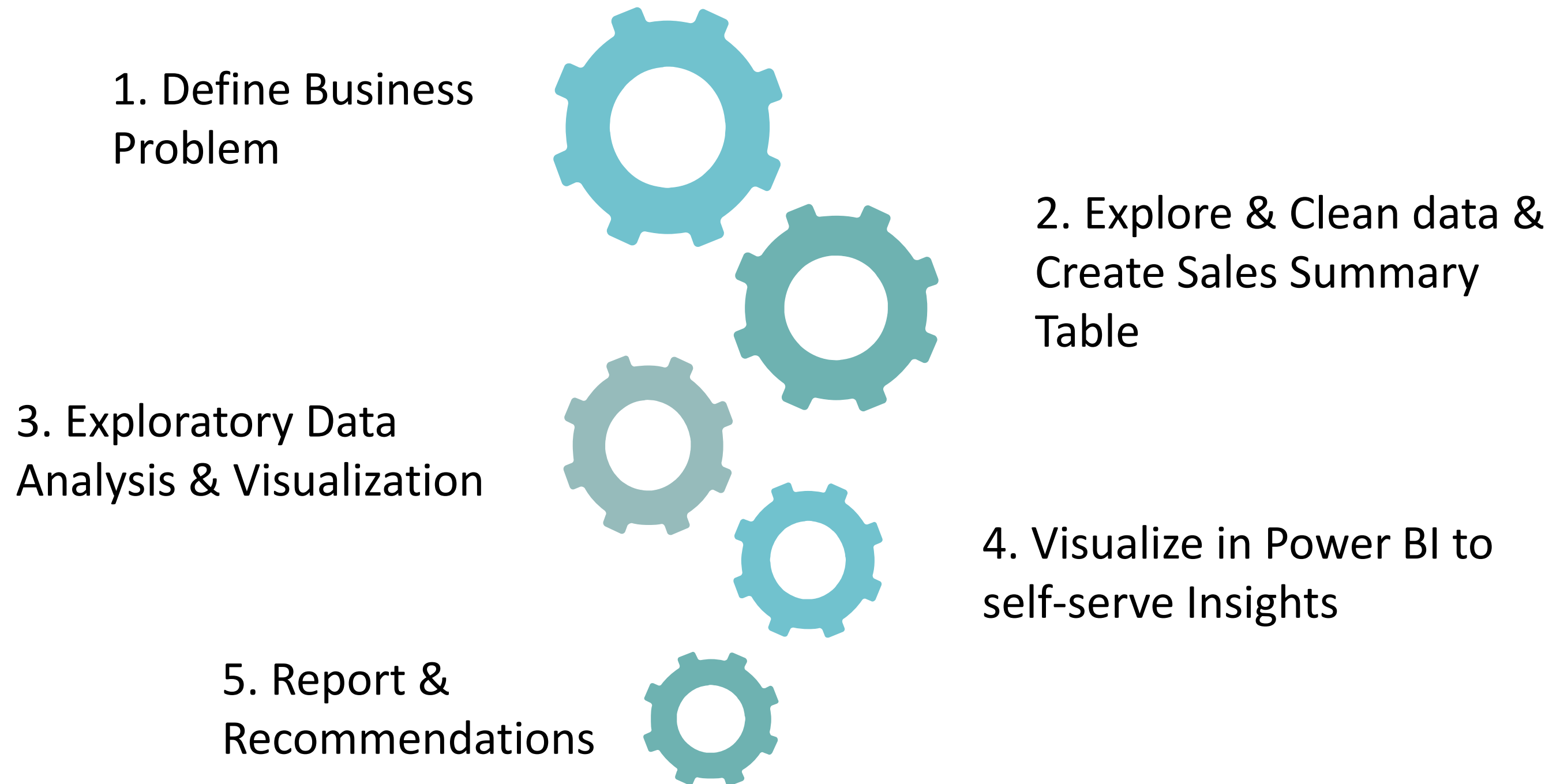
## **Business Challenge:**

- Uneven revenue and profit performance across U.S. regions
- Limited visibility into seasonality, top-selling products, and channel profitability

## **Objective:**

- Utilize five years of historical sales data to identify growth drivers and recommend strategies for optimization.

# Project Workflow



# Data Preparation

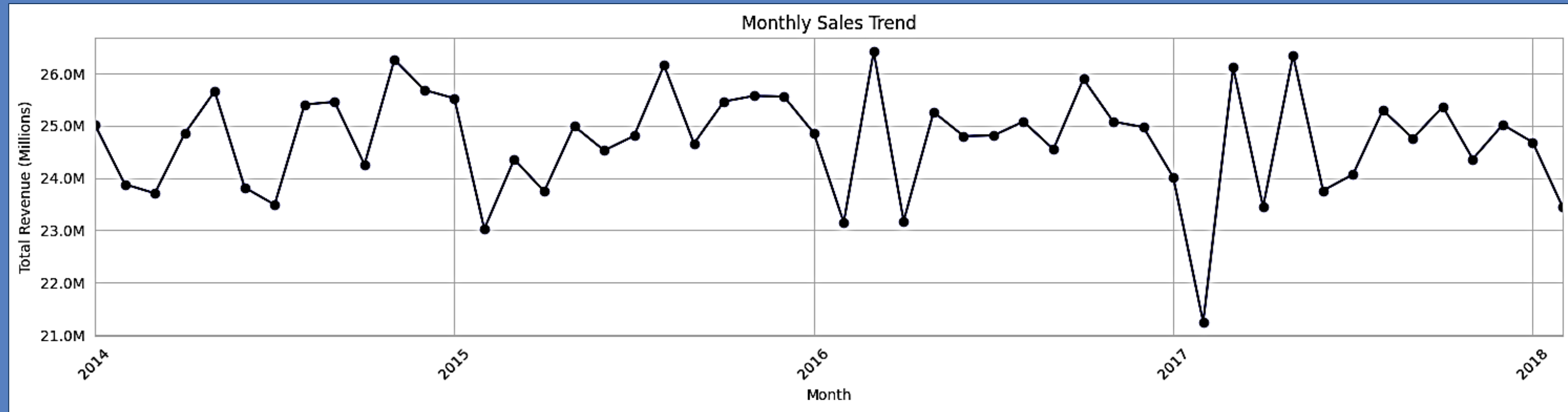
- Sales, Products, States, Regions, Customers, and Budgets were stored in separate tables
- No relationships were defined between the tables
- Required **data cleaning, normalization, and joining** before analysis

## Pre-processing:

- Defined correct header row for the State–Region table
- Combined multiple tables: Sales, Customers, Products, Regions, State–Region, and Budgets
- Removed unnecessary or duplicate columns
- Standardized column header naming convention (lowercase)
- Kept only relevant fields needed for analysis
- Renamed columns for better readability
- Created new metrics for Analysis & Insights

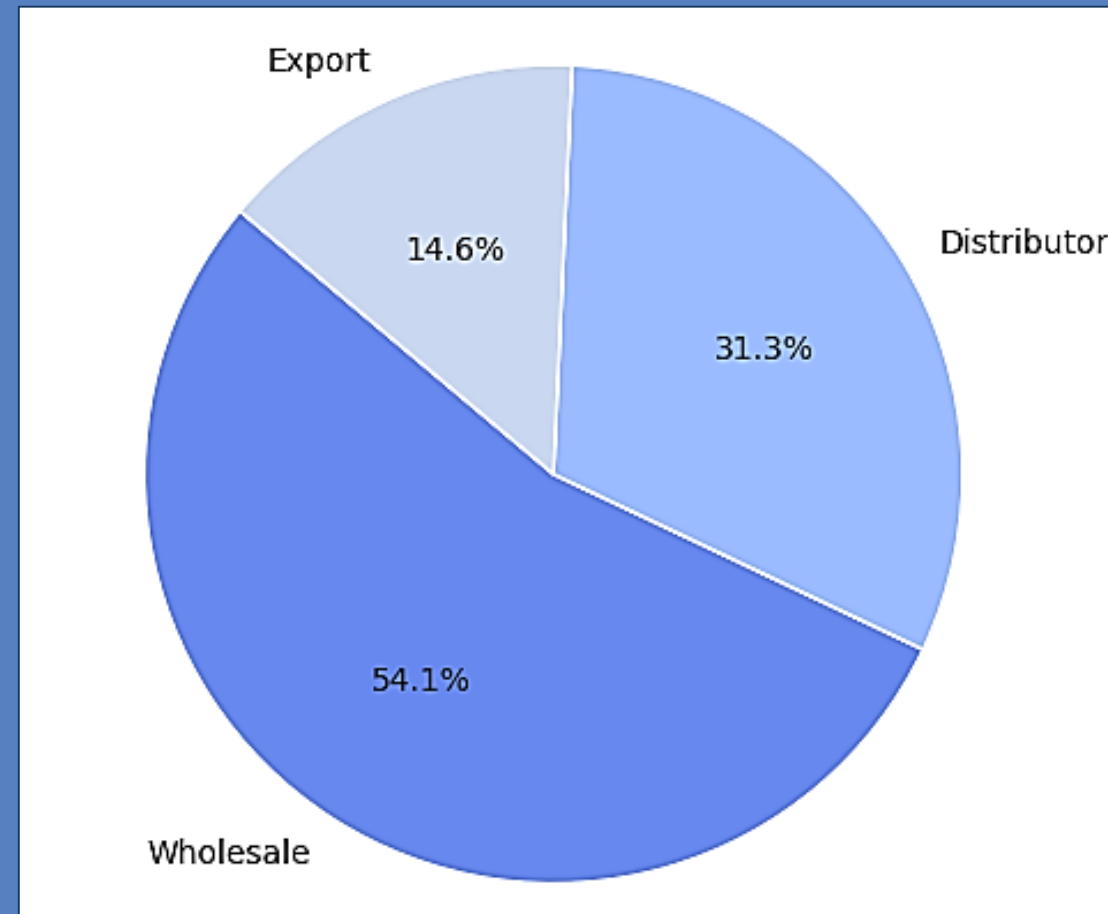
# Analysis & Findings

# ▶ Monthly Sales Trend over Time



- **Significant Volatility:** Monthly sales show high fluctuation, ranging between \$21M and \$26.5M.
- **Performance Peaks:** The highest revenue points occurred during May to June.
- **Sharp Decline:** The most severe sales drop was in early 2017, where revenue fell to its lowest point.
- **No Consistent Growth:** Despite periods of high performance, there is no clear upward trend in overall sales from 2014 to 2018.

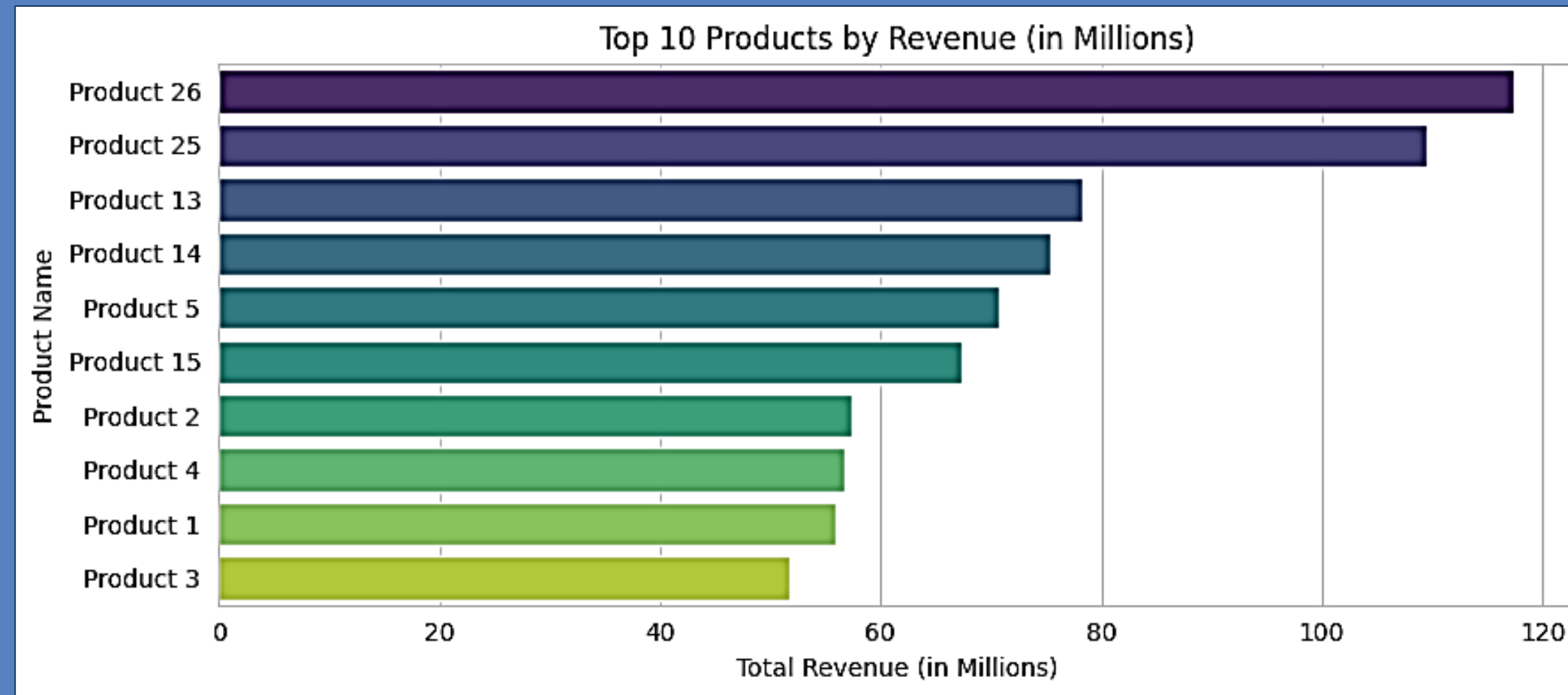
# ➤ Sales by Channel



- The Wholesale channel is the primary source of sales, accounting for over half of the total at 54.1%.
- The Wholesale and Distributor channels combined generate over 85% of total sales, showing a high reliance on these two channels.
- The Export channel contributes the least, representing just 14.6% of total sales.

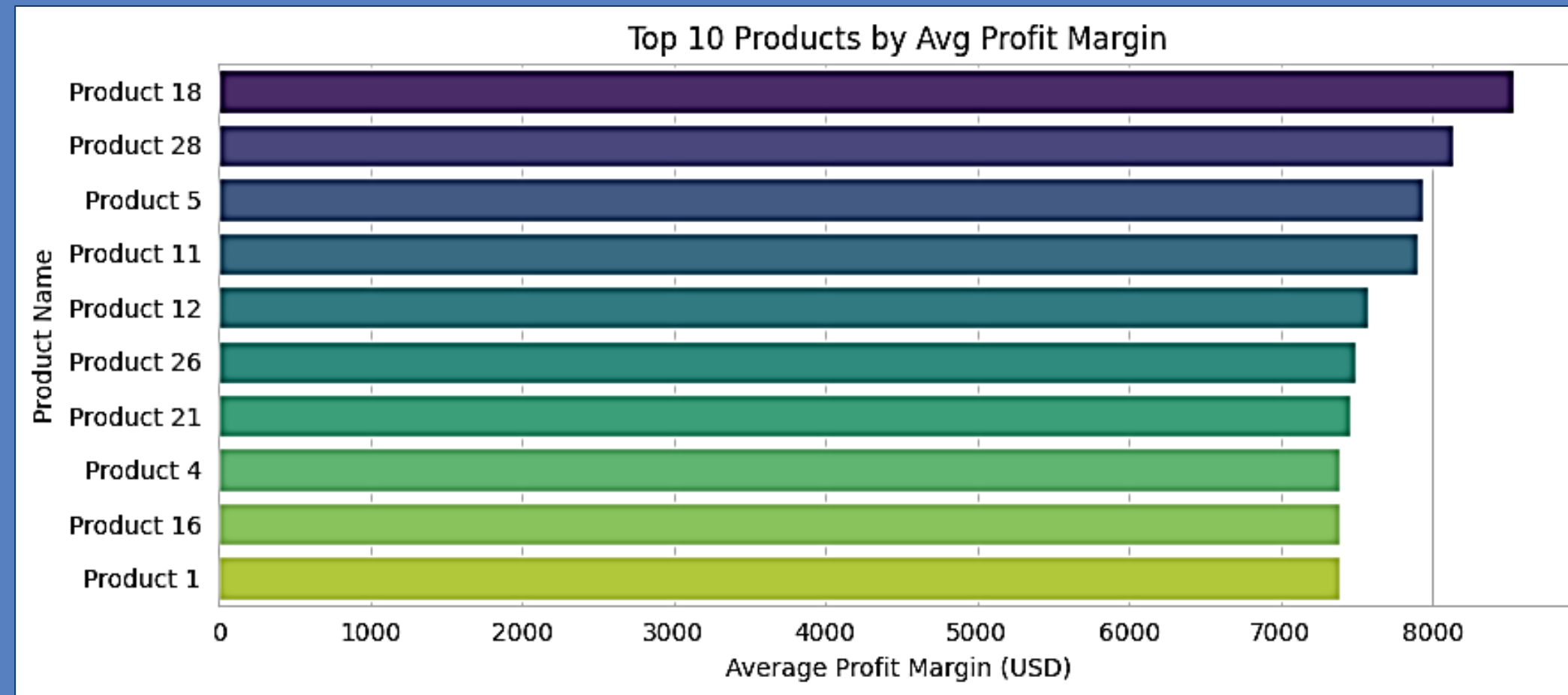


# ➤ Top Products by Revenue



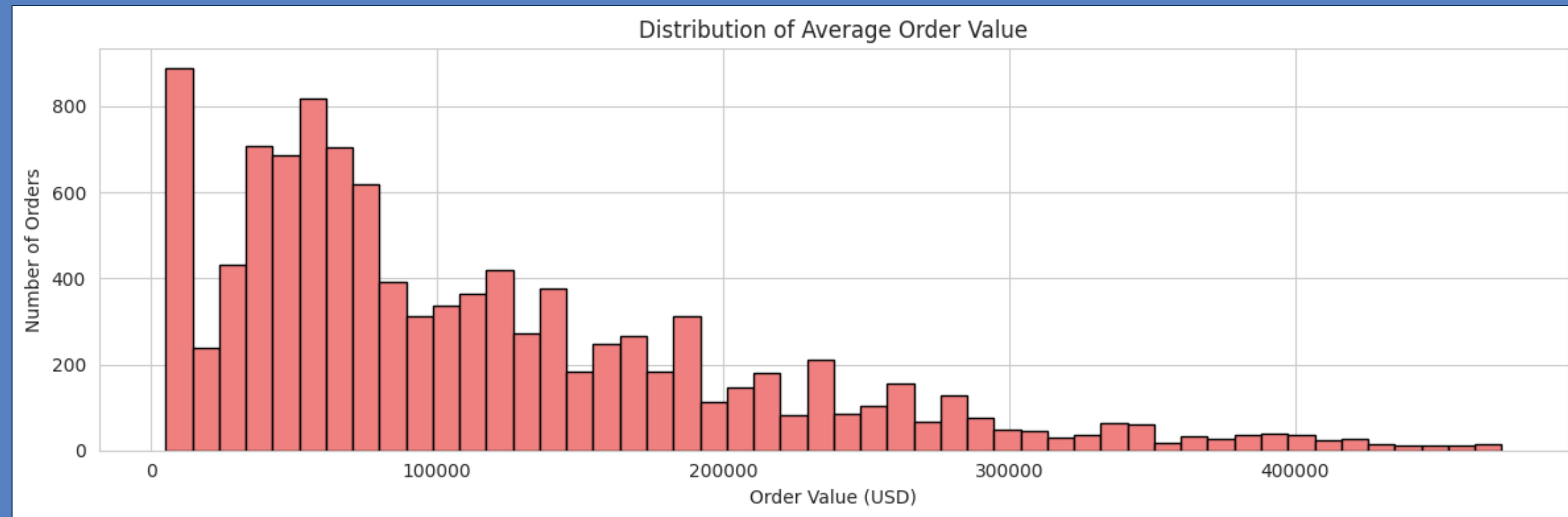
- **Top-Heavy Revenue:** The top two products contribute over 20% of the total revenue from the top 10 list.
- **Steep Drop-off:** There is a sharp decline in revenue after the top two products, with the third-ranked product generating over 30% less than the top performer.
- **Consistent Bottom Performers:** The bottom five products on the list all have similar revenue figures, clustering between \$50M and \$65M.

# ➤ Top Products by Average Profit Margin



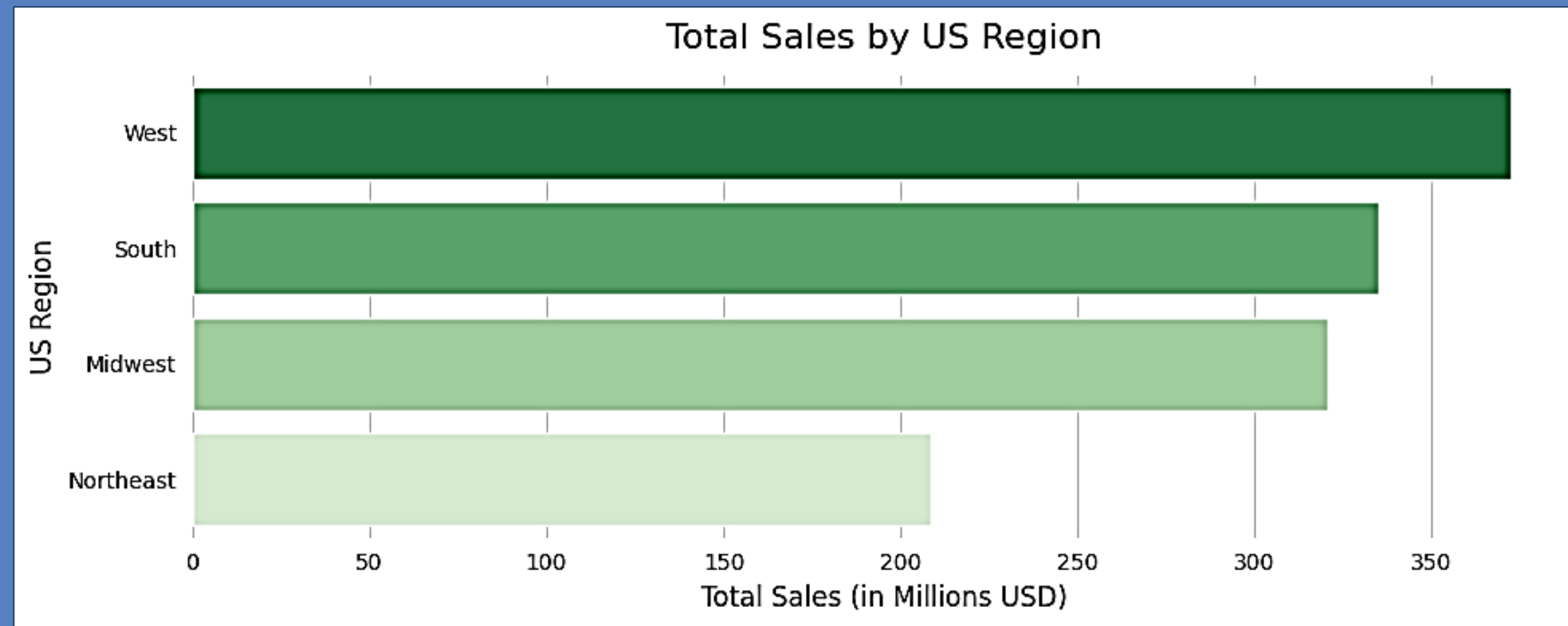
- **Highest Profitability:** Top 2 Products lead the list with the highest average profit margins.
- **Minor Disparity:** Unlike the revenue chart, the profit margins are relatively consistent across the top 10, with only a small gap between the best and worst performers on this list.

# ➤ Average Order Value Distribution



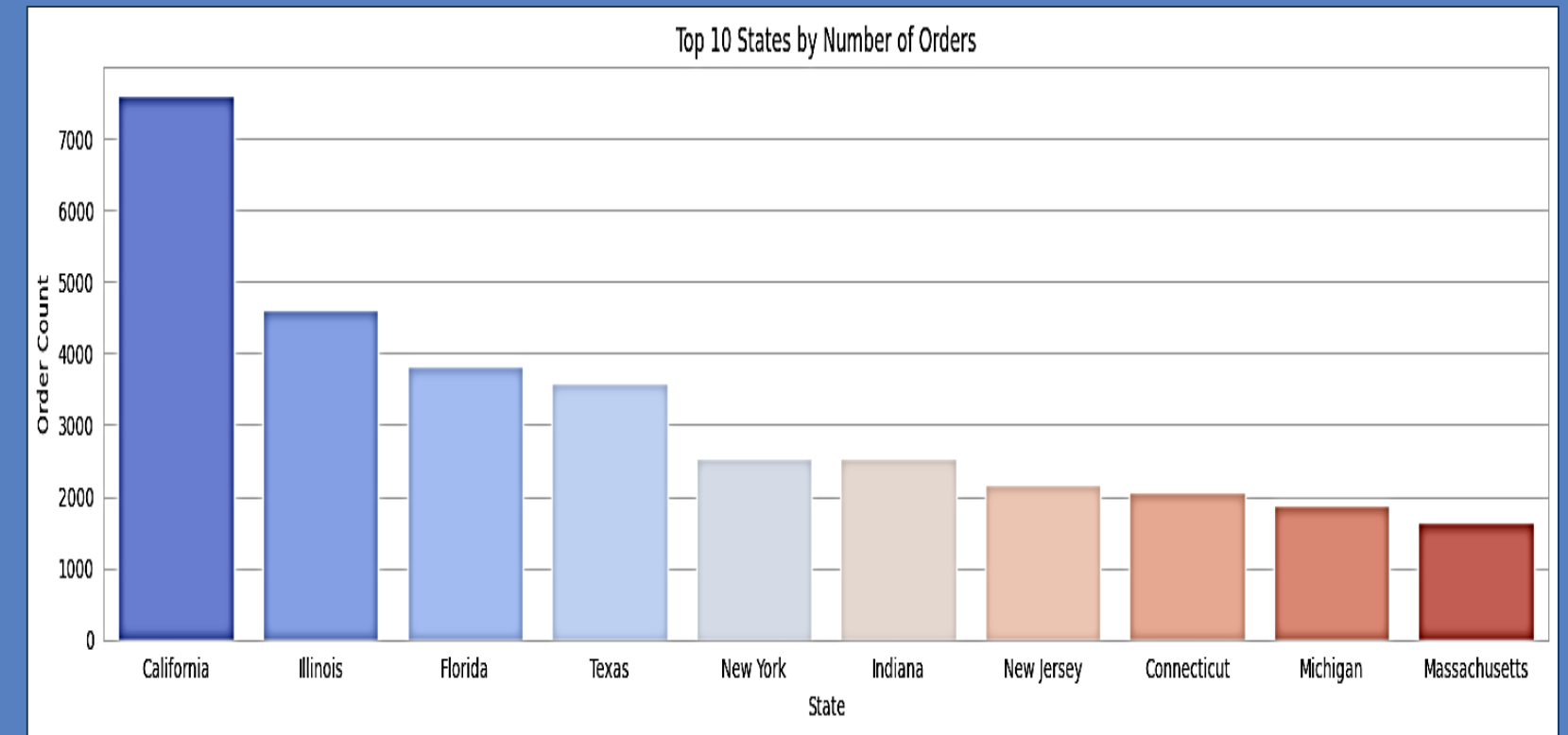
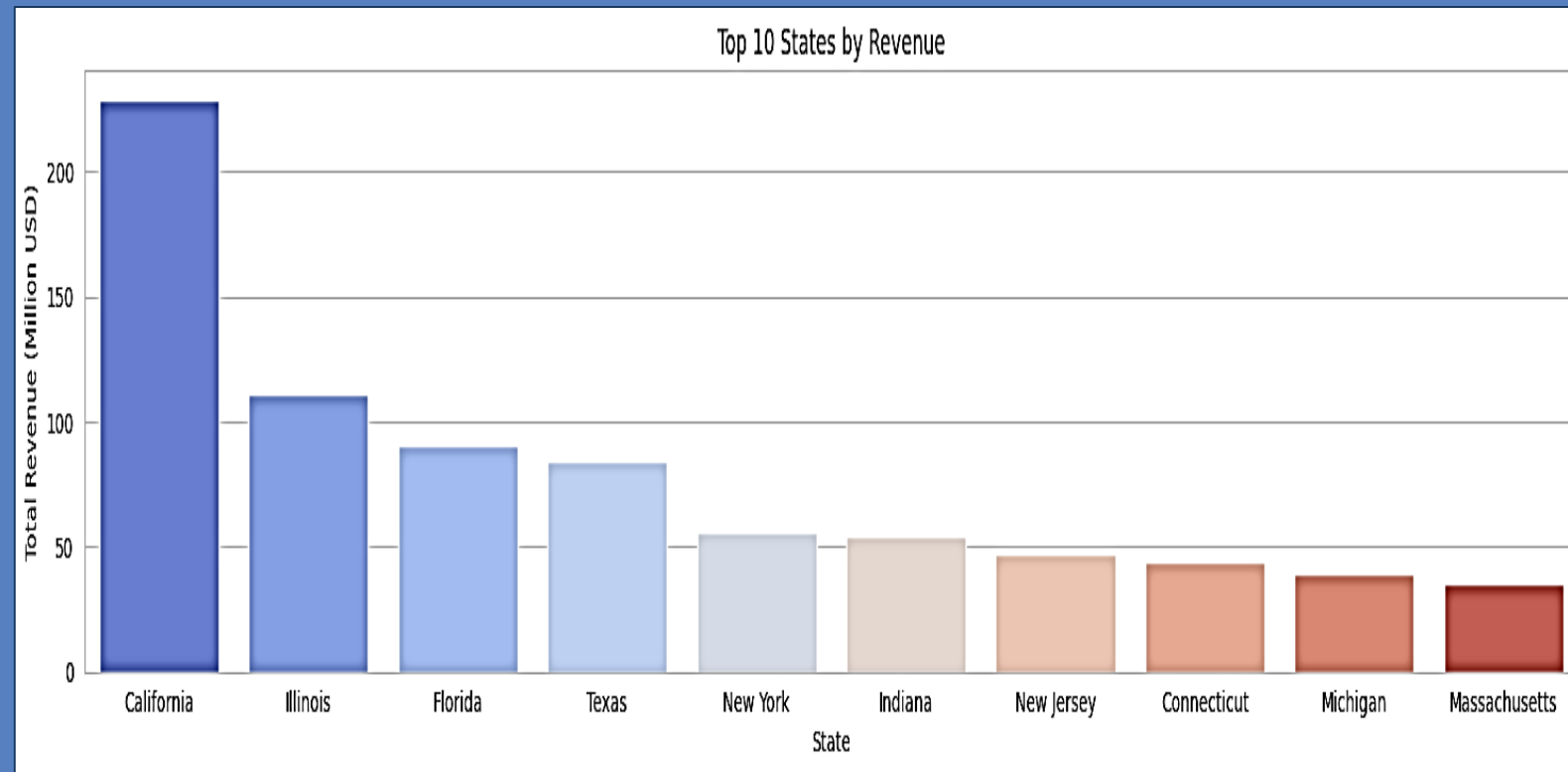
- **Most Orders are Small:** The distribution is heavily skewed, with the vast majority of orders having a value under \$100,000.
- **Highest Frequency:** The most common order value is within the \$0 to \$25,000 range.
- **High-Value Orders are Rare:** Orders with a value greater than \$300,000 are very infrequent, representing a "long tail" of high-value, low-volume sales.

# ➤ Total Sales by Region



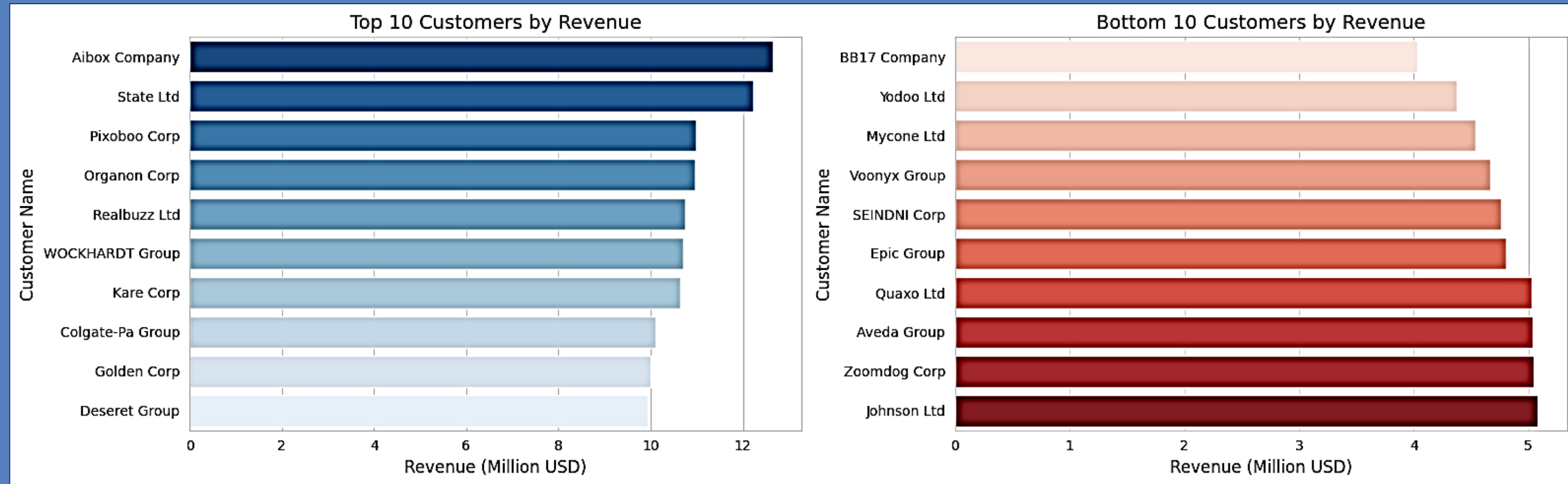
- The West is the highest-performing region, with sales exceeding \$350 million.
- There is a major sales gap between the top-performing and the lowest-performing Northeast region.
- The Northeast region significantly underperforms, with sales of only about \$200 million.

# ➤ Top State Performance



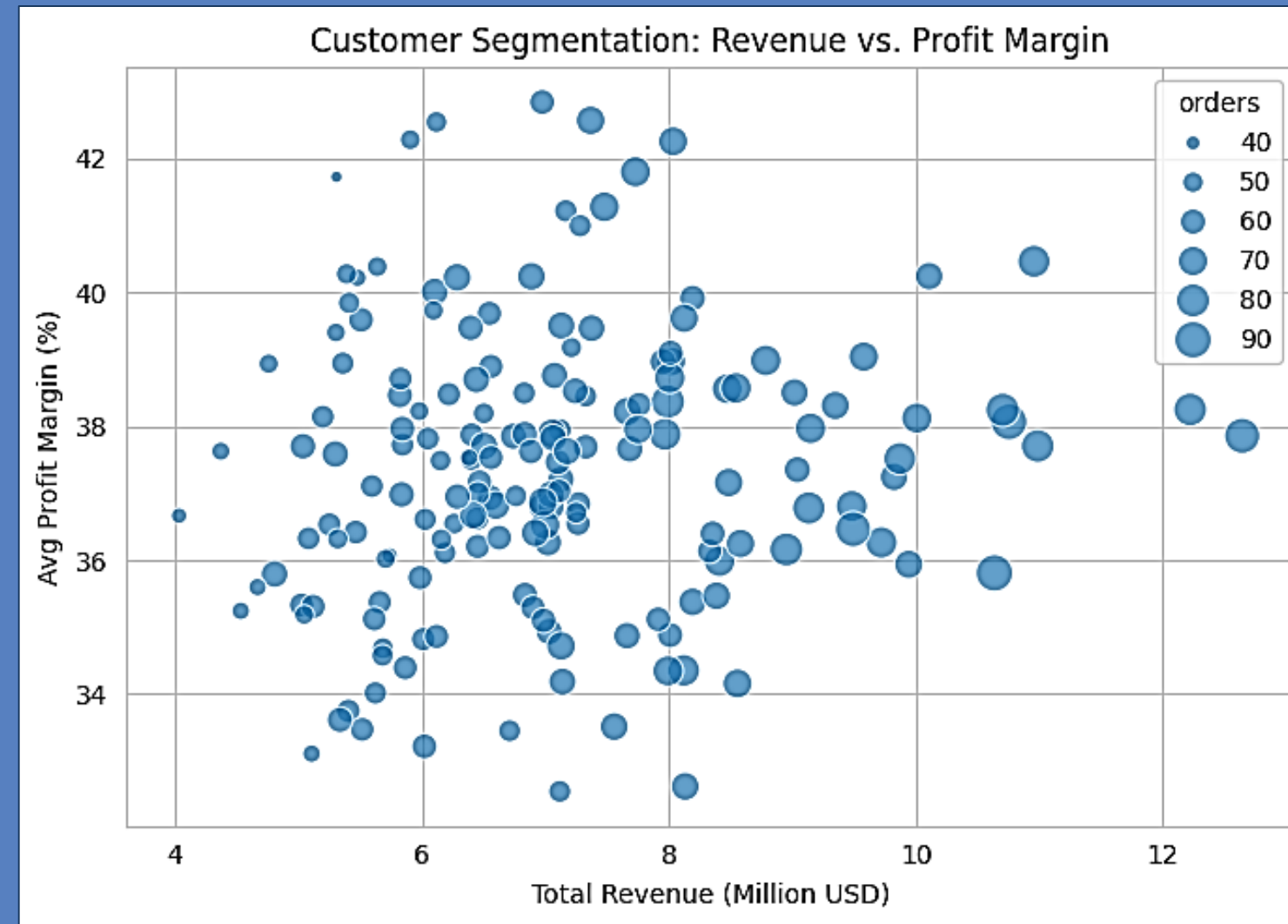
- California leads by a wide margin in both revenue and total orders compared to all other states.
- States with the highest order counts also generate the most revenue, showing a strong correlation.
- A small group of states contributes the majority of revenue and orders, with steep drop-offs after the top two.
- Similar rankings in orders and revenue indicate that average order value remains consistent across leading states.

# Customers by Revenue



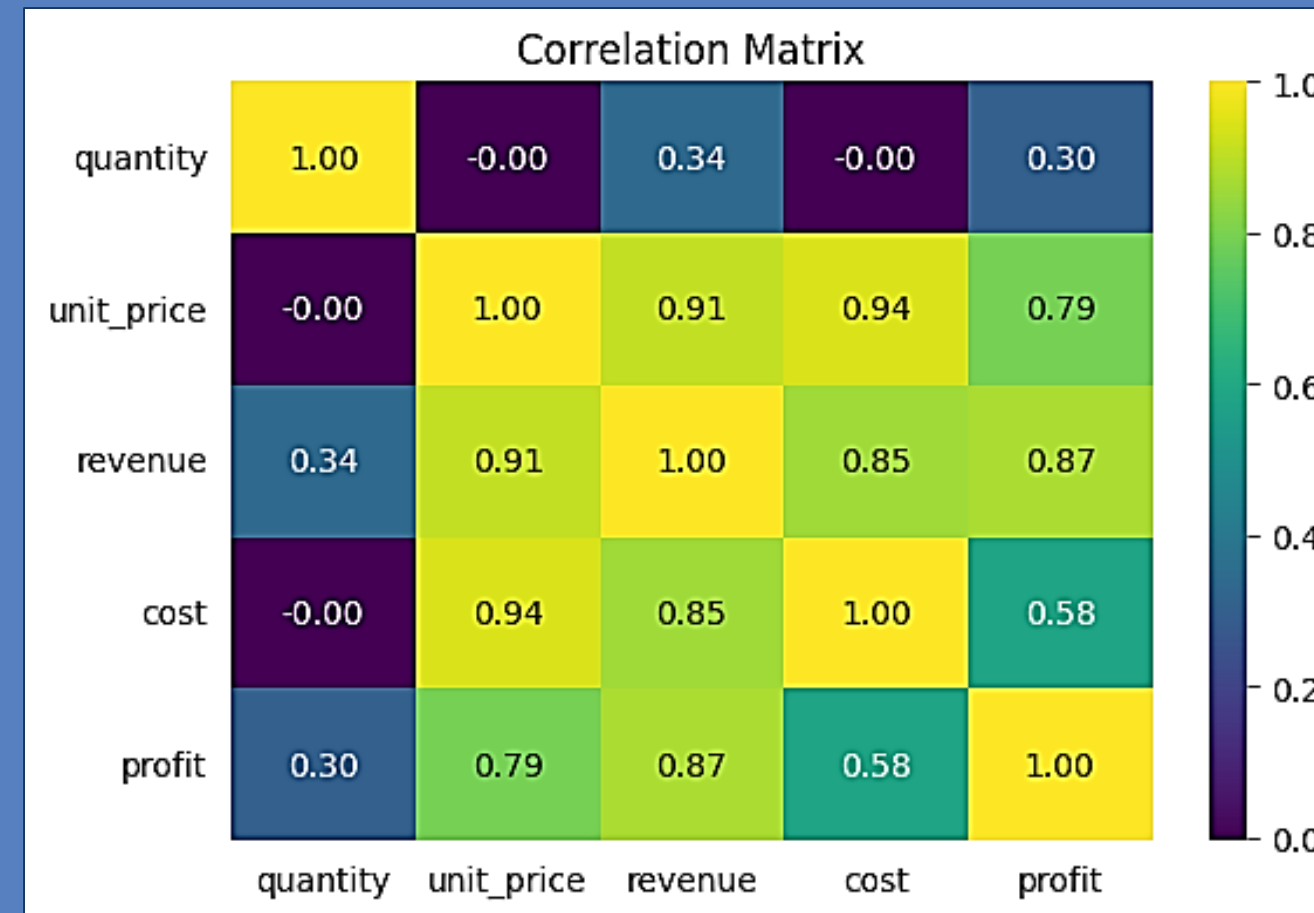
- **Significant Revenue Disparity:** Massive gap between the top and bottom customers.
- **Low-Value Bottom Tier:** The bottom 10 customers are clustered in a very low-revenue range, all generating between \$4 million and \$5 million.
- **Highly Stratified Customer Base:** This revenue distribution shows that the company relies on a small number of high-value customers for a significant portion of its sales.

# Customers Segmentation



- **No Clear Correlation:** High-revenue customers don't always deliver high profit margins, and vice versa.
- Most customers fall in the \$6M–\$9M revenue range with 40% profit margin.
- >\$10M clients with <36% margins reveal discounting hotspots.
- Number of orders varies widely across all segments, showing no consistent pattern.

# Correlation Analysis



- **Strong Positive Correlations:** Revenue and profit are strongly linked (0.87). Unit price also shows strong correlation with cost (0.94) and revenue (0.91).
- **No Link with Quantity:** Units sold have no relationship with unit price or cost, meaning expensive products aren't sold in lower volumes.
- **Quantity Not a Key Driver:** Quantity has only a weak impact on revenue (0.34) and profit (0.30); pricing and cost play a bigger role in performance.



# Key Insights

- **Overall Financial Performance**

- Revenue is volatile, fluctuating \$21M - \$26.5M monthly, with no steady growth trend.
- Pronounced seasonality: January averages \$124M, dropping to \$95M in April.

- **Revenue & Profit Drivers**

- Correlation: Revenue–Profit strongly linked (0.87). Unit price drives both revenue (0.91) and profit (0.79); units sold have weak impact.
- Profitability: Volume is not the main driver — pricing and cost control matter more.
- Channel Trade-Off: Wholesale delivers 54% of sales volume, while Export leads in profitability with ~38% average margin.

# Key Insights

- **Regional & Geographic Performance**

- California leads: 7.6K orders (~\$230M revenue), far ahead of other states.
- Regional gap: West region generates \$350M revenue, creating a \$150M lead over Northeast.
- Geographic volatility: West shows largest swings in sales over time.

- **Customer & Product Insights**

- Customer concentration: Top customers (e.g., Aibox Company, State Ltd) generate >2× revenue of bottom 10.
- Product concentration: Top 2 SKUs (Products 25 & 26) contribute ~25% of total sales, each >\$100M.
- Order distribution: Majority of orders are small (<\$100k), most frequent in the \$0–\$25k range.

# Recommendations

- **Manage Seasonality:** Smooth revenue swings by launching recovery campaigns in April and amplifying January promotions.
- **Optimize Product Portfolio:** Focus on top-performing SKUs 26 & 25 (~25% of total sales) while re-evaluating or phasing out low-margin SKUs.
- **Channel Strategy:** Expand Export partnerships (highest margins ~38%) and strengthen Wholesale with attractive volume-based deals.
- **Regional Growth:** Replicate California's \$230M model in other states; prioritize marketing and sales efforts in the underperforming Northeast and Midwest.
- **Customer Strategy:** Protect high-value customers (Aibox Company, State Ltd.) with loyalty incentives, while targeting mid-tier customers for upselling and cross-selling opportunities.
- **Profit & Margin Monitoring:** Implement alerts for orders below 80% margin; analyze cost drivers and adjust pricing to improve profitability.

# Dashboard Preview

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Total Revenue

\$1.2bn

Total Profit

\$461.8M

Profit Margin %

37.36%

Total Orders

64K

Revenue per order

\$19.3K

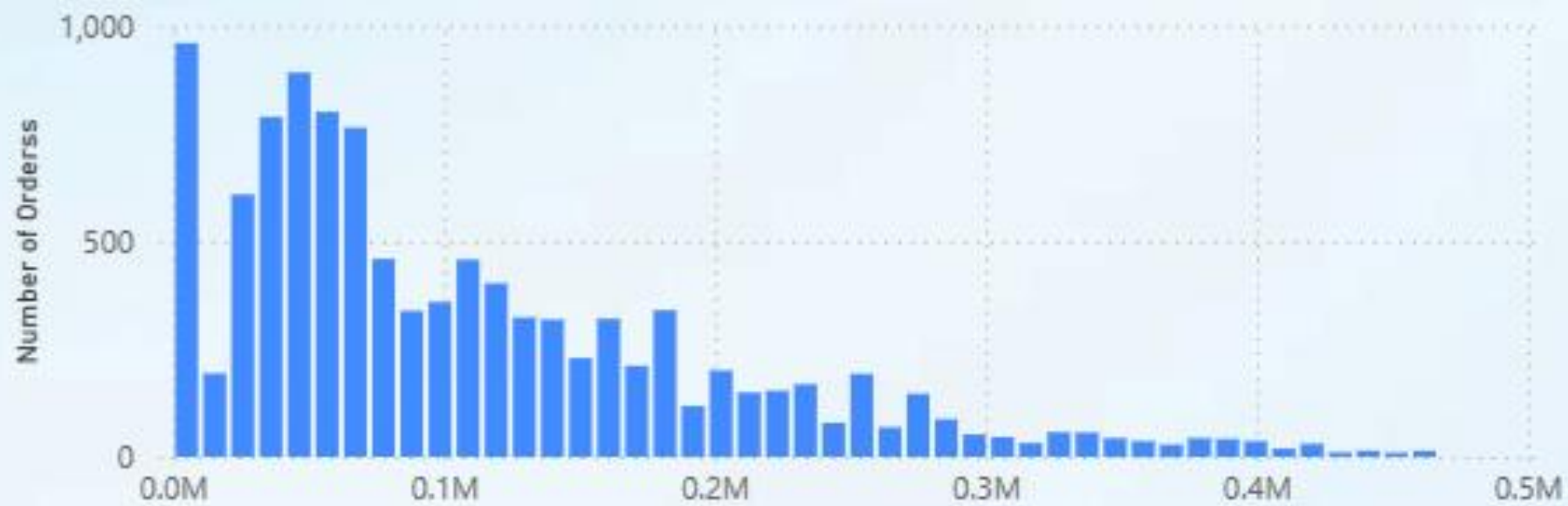
Monthly Revenue Rhythm: Uncovering Seasonality Peaks



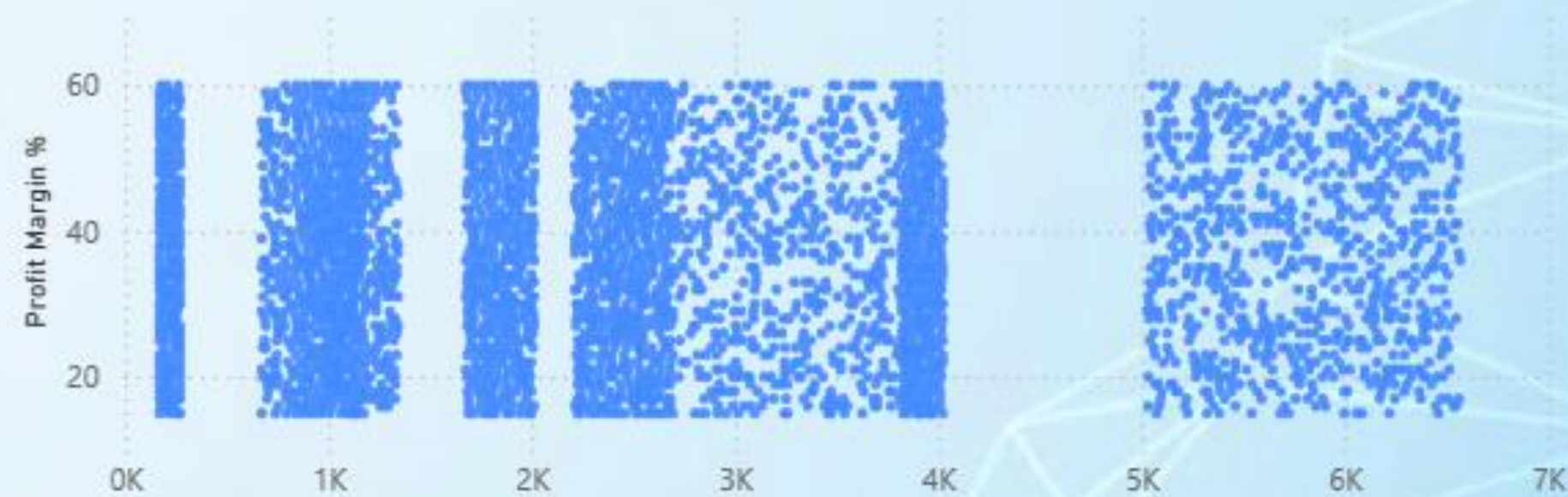
Profit Pulse: Tracking Monthly Earnings Momentum



Order Value Spectrum: Mapping Customer Spending Tiers

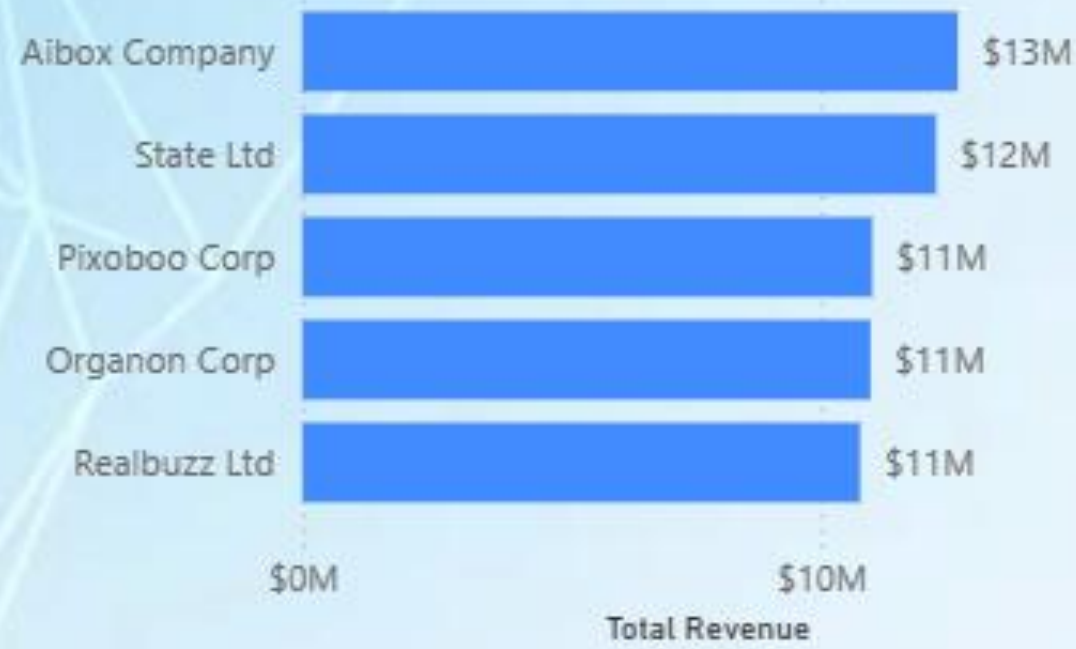


Unit Price Vs Profit Margin: Spotting High Margin Price Bands





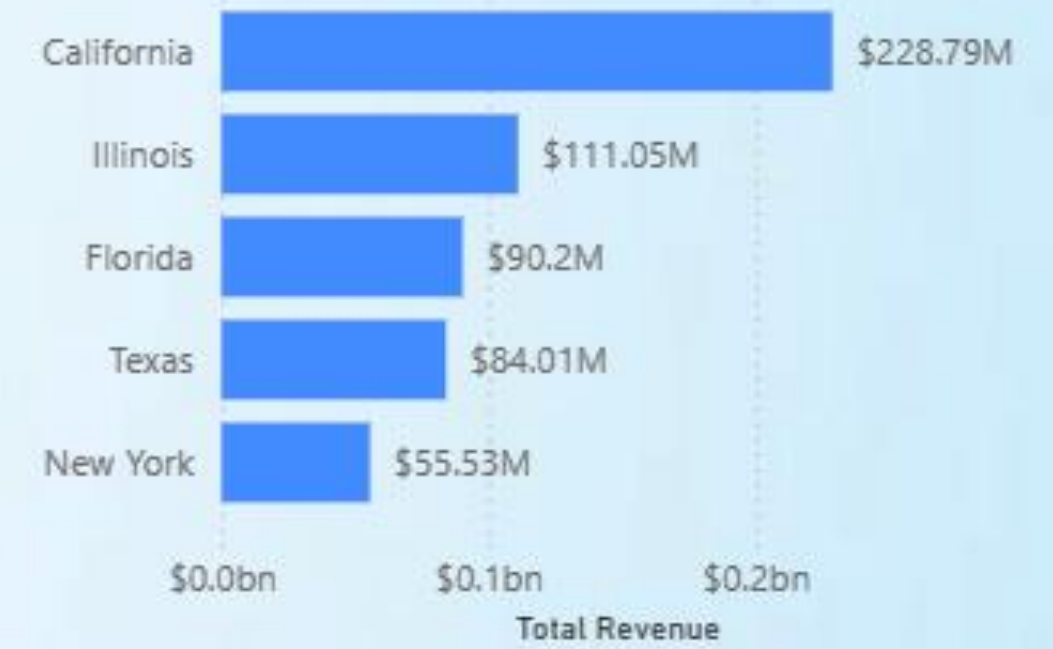
### Top 5 Customers by Revenue



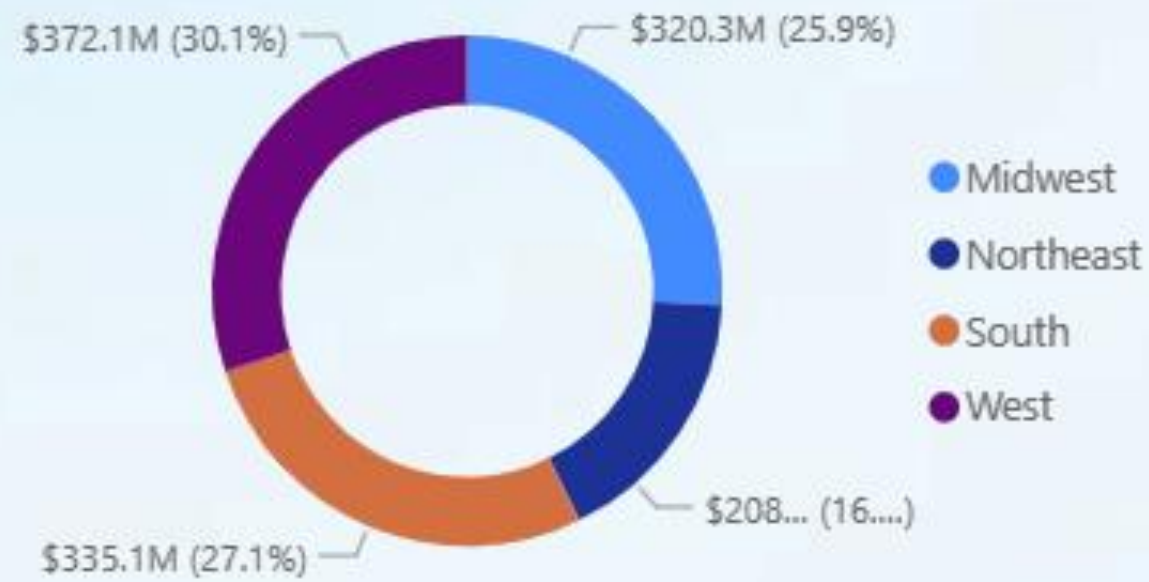
### Top 5 Customers by Revenue



### Top 5 States by Revenue



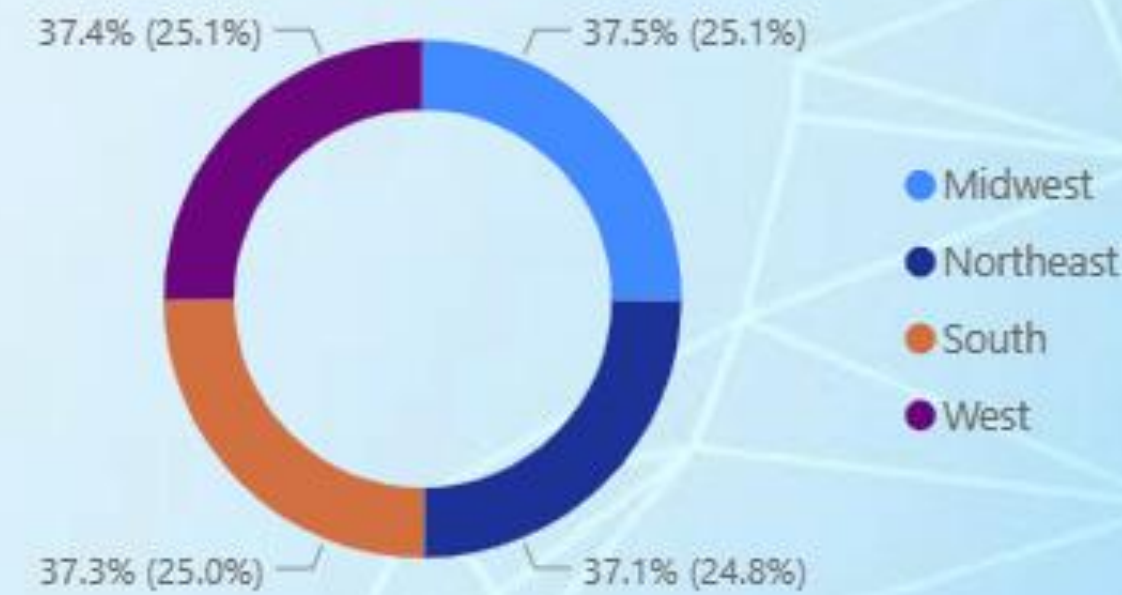
### Total Revenue by Region



### Total Profit by state



### Profit Margin % by Region





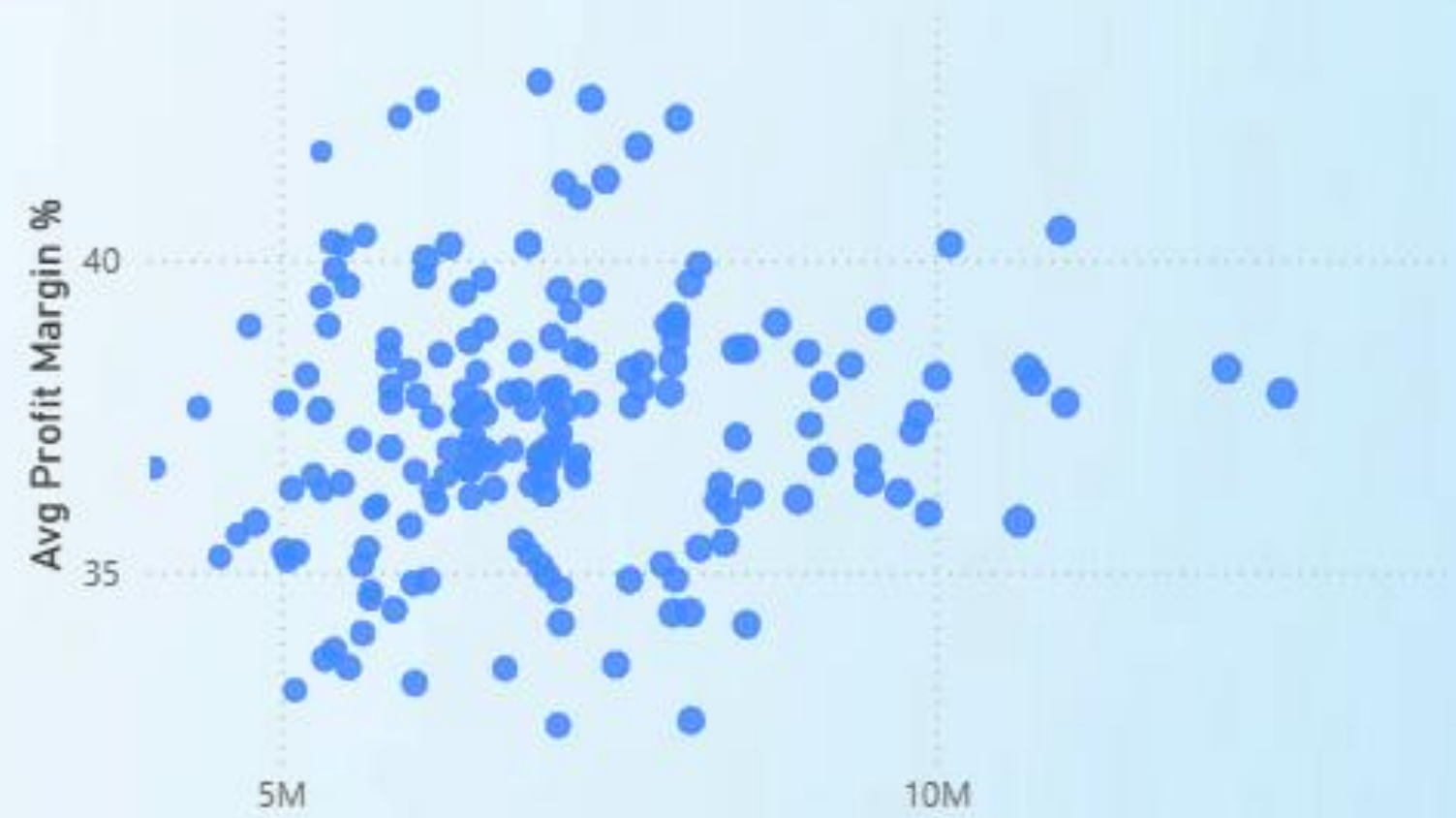
Revenue Champions: Best-Selling Products Driving Growth



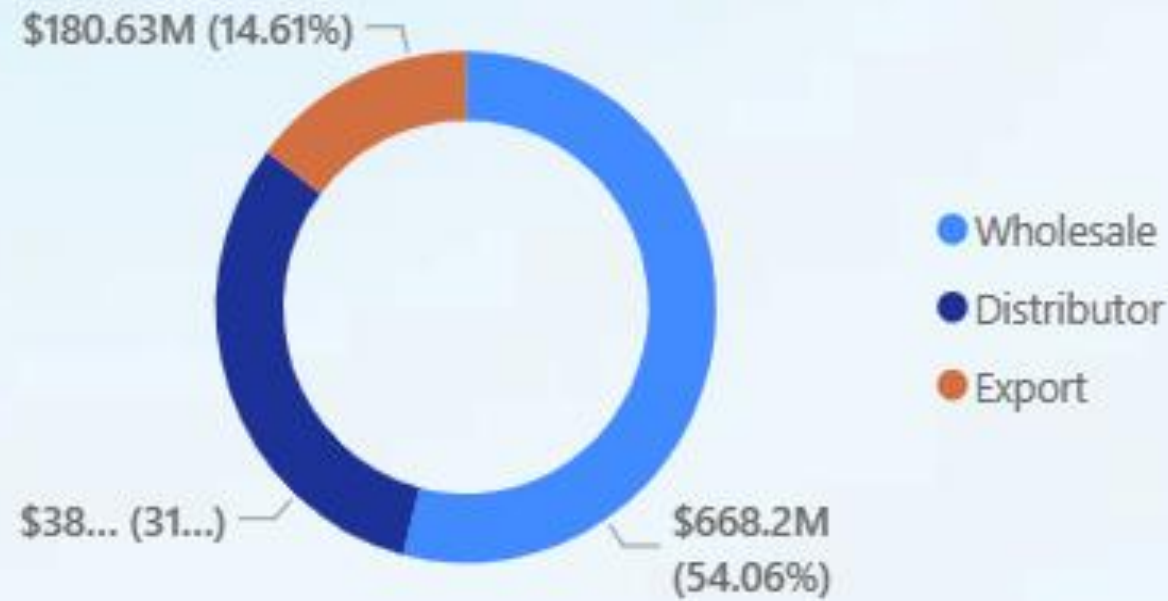
High-Margin Heroes: Most Efficient Products to Sell



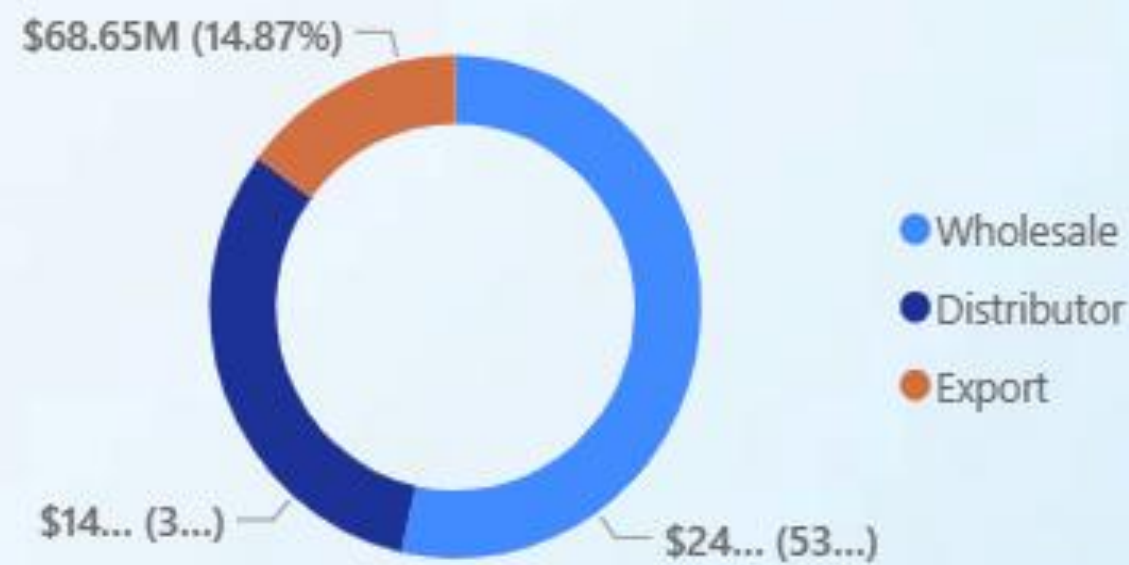
Strategic Product Positioning: Revenue vs. Profitability



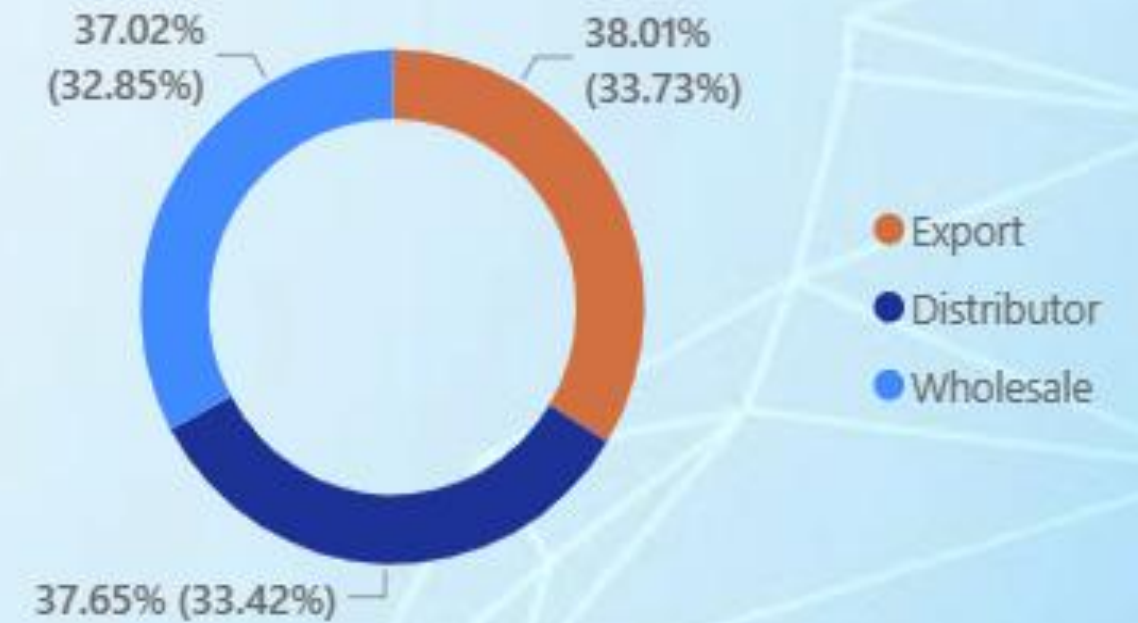
Channel Power Play: Where the Revenue Comes From



Profit Pipeline by Channel: Who's Really Paying Off?



Channel Efficiency Scorecard: Margin per Sale by Route



# Conclusion

- Completed end-to-end EDA and built an interactive Power BI dashboard highlighting seasonality, SKU, channel, and regional performance.
- Business performance is promising but uneven, with revenue swings and dependence on limited products, customers, and regions.
- By addressing seasonal dips, optimizing SKUs, and expanding high-margin channels, the company can achieve sustainable and balanced growth.



THANK  
*YOU*

Salonee Singh

[https://github.com/salonee-singh/sales\\_analysis\\_python](https://github.com/salonee-singh/sales_analysis_python)