

Regional Sales Analysis

Agenda

- Problem Statement
- Approach
- Data Overview
- Project Workflow
- Exploratory Data Analysis
- Key Insights
- Recommendation
- Dashboard Preview





Problem Statement

Problem Statement

Sales teams often lack a clear, data-driven understanding of regional performance, making it difficult to identify growth opportunities and optimize resources. This project aims to analyse and visualize regional sales data to uncover trends, evaluate profitability, and support strategic decision-making.

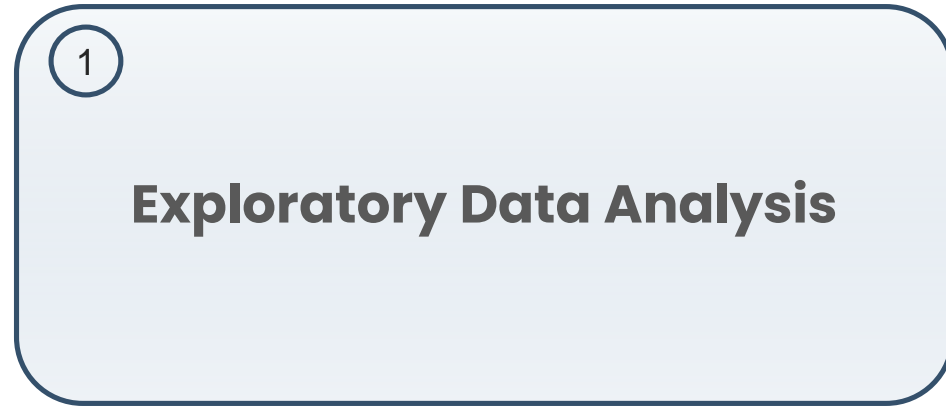
What's the Business Question?

- Inconsistent revenue and profit performance across U.S. regions
- Lack of visibility into seasonal swings, top SKUs, and channel profitability
- Goal: Leverage 5 years of historical data to pinpoint growth levers and optimize strategy

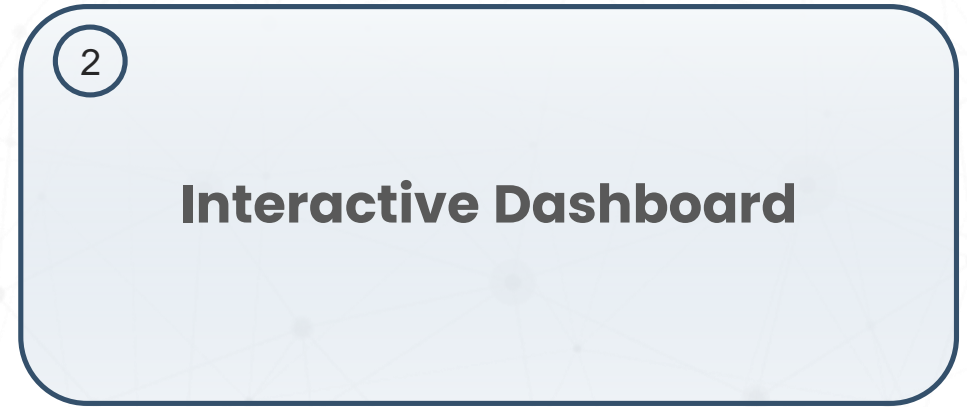


Approach

Approach – Two phase solution



- Dive into historical sales, margins, products, channels, regions
- Surface trend, outliers & relationships

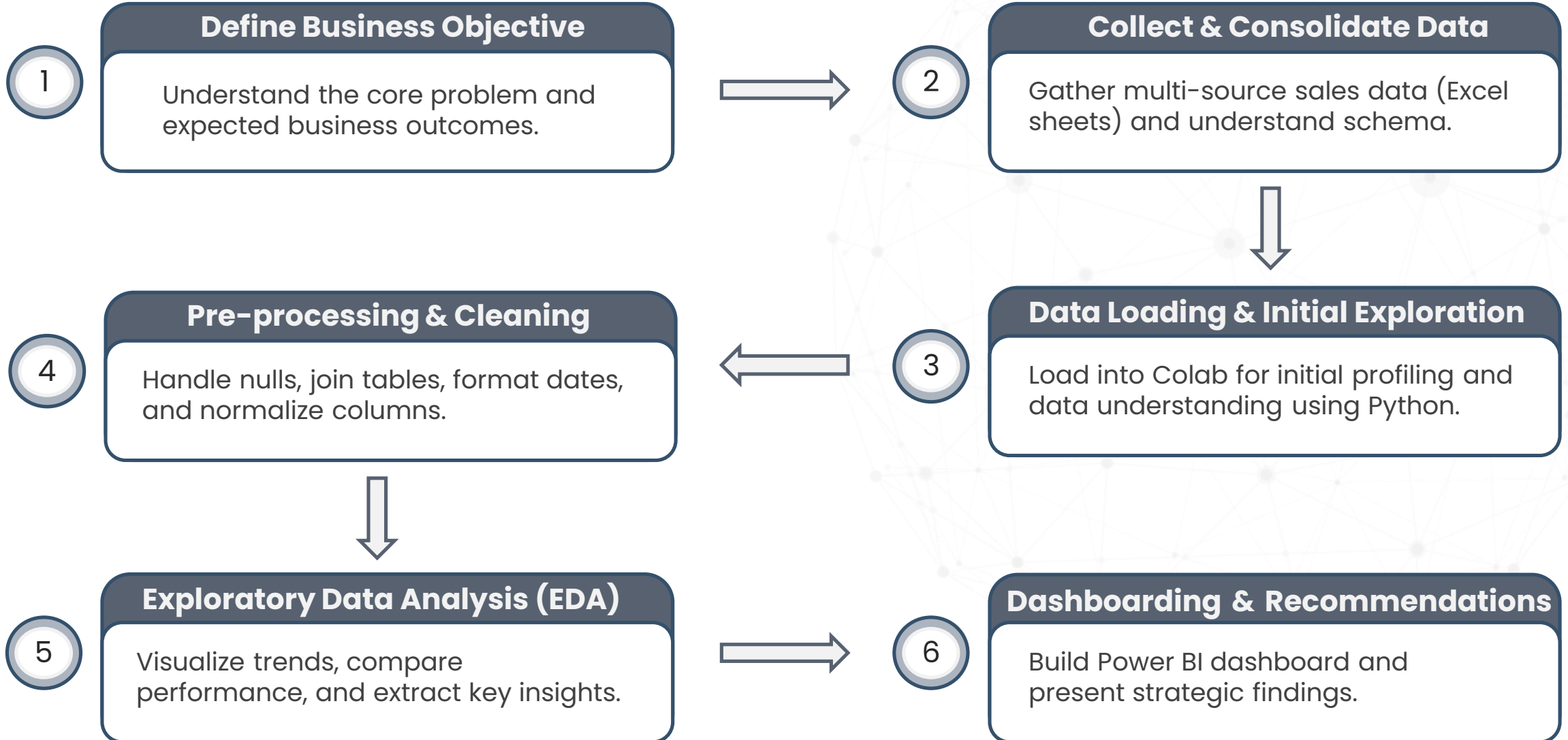


- Build a live view for business Users to self serve insights
- Enable ad-hoc slicing by time, product, region, channel



Project Workflow

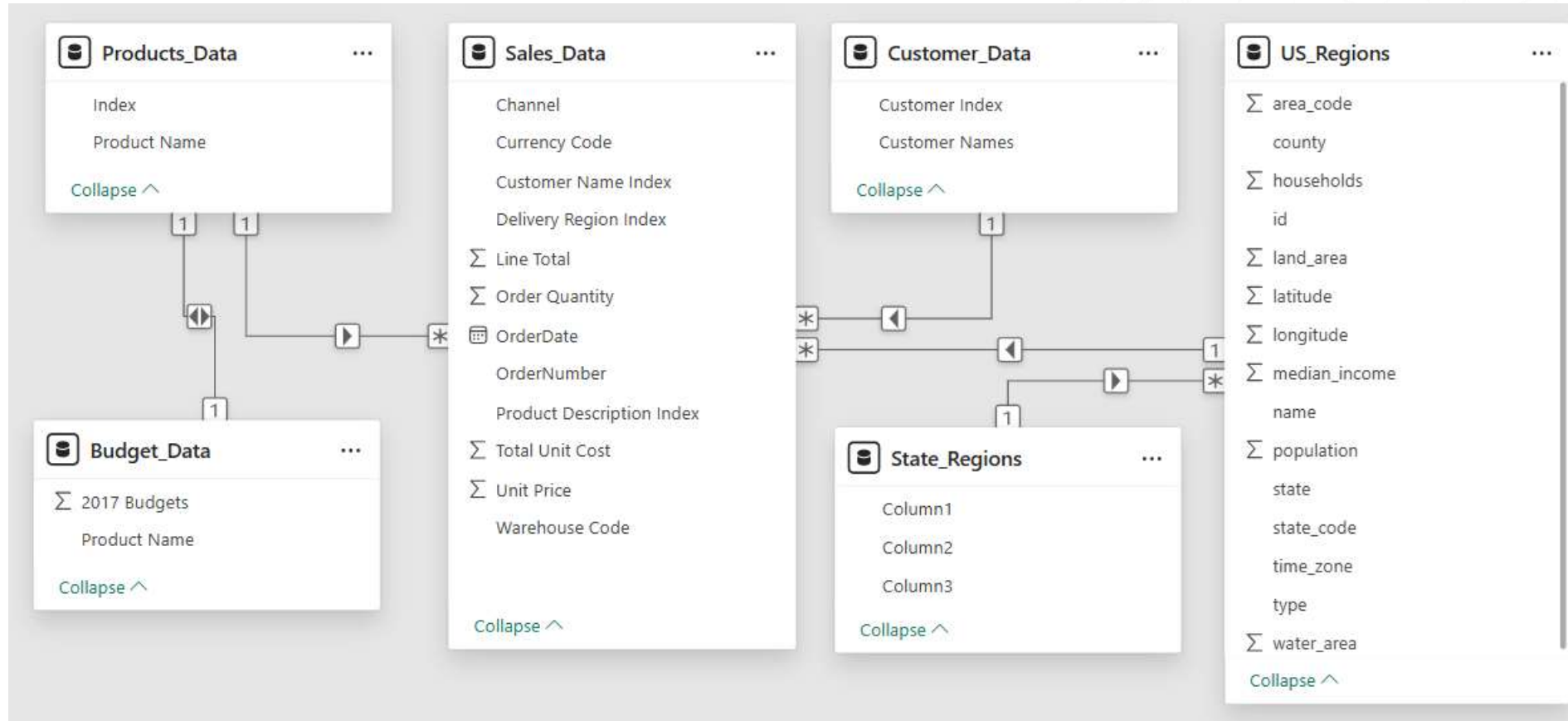
Project Workflow





Exploratory Data Analysis

Raw Dataset Structure – Before Processing



Sales, products, budgets, customers, regions, and states were spread across unlinked tables. No relationships were defined initially— Pre-processing was required to clean, normalize, and join them for analysis.

Exploratory Data Analysis (EDA)

Uncovering patterns, trends, and business insights from historical data !

Understanding the “What, Where & Why” behind the sales numbers

Exploring data through visuals, aggregations, and comparisons

Laying the groundwork for informed recommendations

Let's Dive In



EDA: Step-by-Step Process

- Import Libraries
- Load Data
- Initial Exploration
- Pre-processing & Cleaning
- Feature Engineering
- EDA & Visualization
- Key Insights
- Recommendations



Pre-processing & Feature Engineering

The necessary steps applied to prepare this dataset for analysis.

- Set header row for state – region table
- Merge Sales, Customers, Products, Regions, State–Region & Budgets tables
- Drop redundant columns
- Standardize column names to lowercase
- Select key columns that are used for that analysis
- Rename columns to more sensible names
- Create profit and profit_margin_pct columns

✓ *Note: No missing values or duplicate rows were found in the dataset*

Final Dataset Structure – Ready for Analysis

	order_number	order_date	customer_name	channel	product_name	quantity	unit_price	revenue	cost	state	state_name	us_region	lat	lon	budget	profit	profit_margin_pct
0	SO - 000225	2014-01-01	Rhynoodle Ltd	Wholesale	Product 27	6	2499.1	14994.6	1824.343	GA	Georgia	South	32.08354	-81.09983	NaN	13170.257	87.833333
1	SO - 0003378	2014-01-01	Thoughtmix Ltd	Distributor	Product 20	11	2351.7	25868.7	1269.918	IN	Indiana	Midwest	39.61366	-86.10665	NaN	24598.782	95.090909
2	SO - 0005126	2014-01-01	Amerisourc Corp	Wholesale	Product 26	6	978.2	5869.2	684.740	CA	California	West	37.66243	-121.87468	NaN	5184.460	88.333333
3	SO - 0005614	2014-01-01	Colgate-Pa Group	Export	Product 7	7	2338.3	16368.1	1028.852	IN	Indiana	Midwest	39.16533	-86.52639	NaN	15339.248	93.714286
4	SO - 0005781	2014-01-01	Deseret Group	Wholesale	Product 8	8	2291.4	18331.2	1260.270	CT	Connecticut	Northeast	41.77524	-72.52443	NaN	17070.930	93.125000

Identifiers: order_number, order_date, customer_name, channel, product_name

Financials: quantity, unit_price, revenue, cost, profit, profit_margin_pct

Calendar: order_month_name, order_month_num, order_month

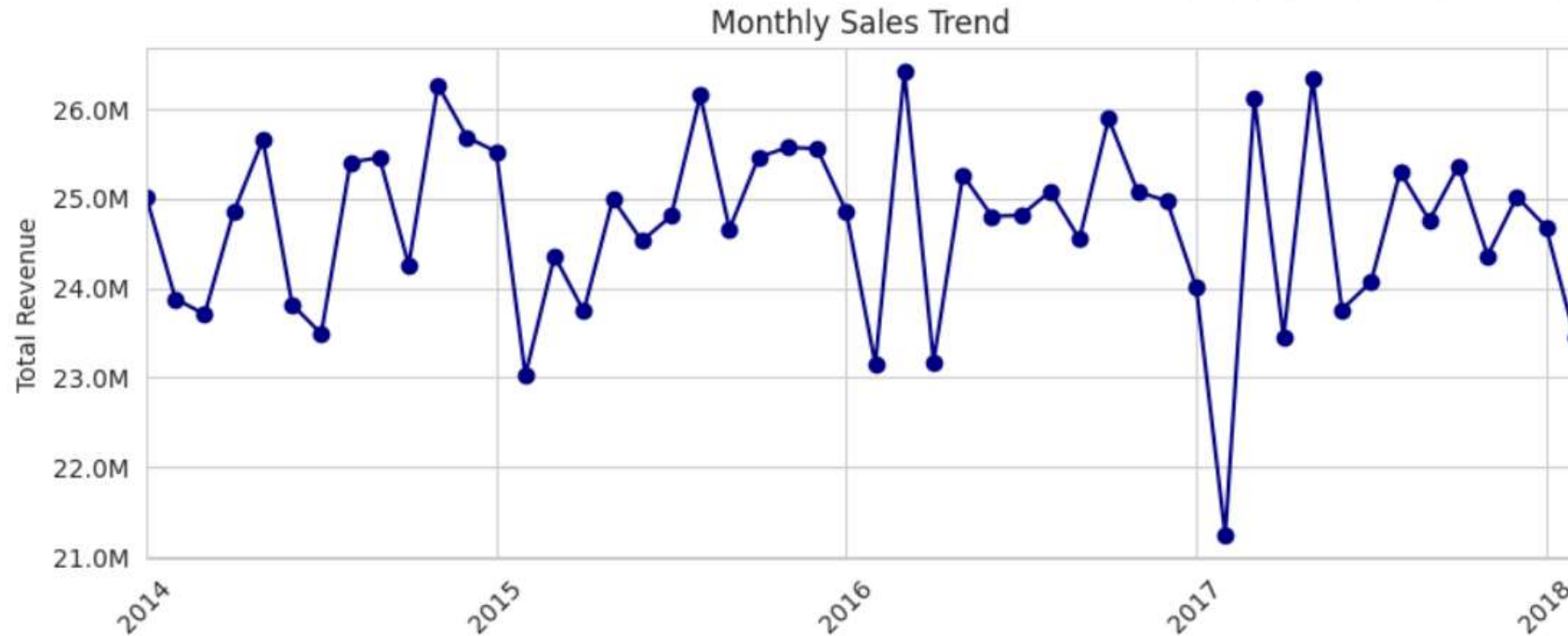
Geography: state (code), state_name, us_region, lat, lon

Planning: budget (2017)



Charts & Insights

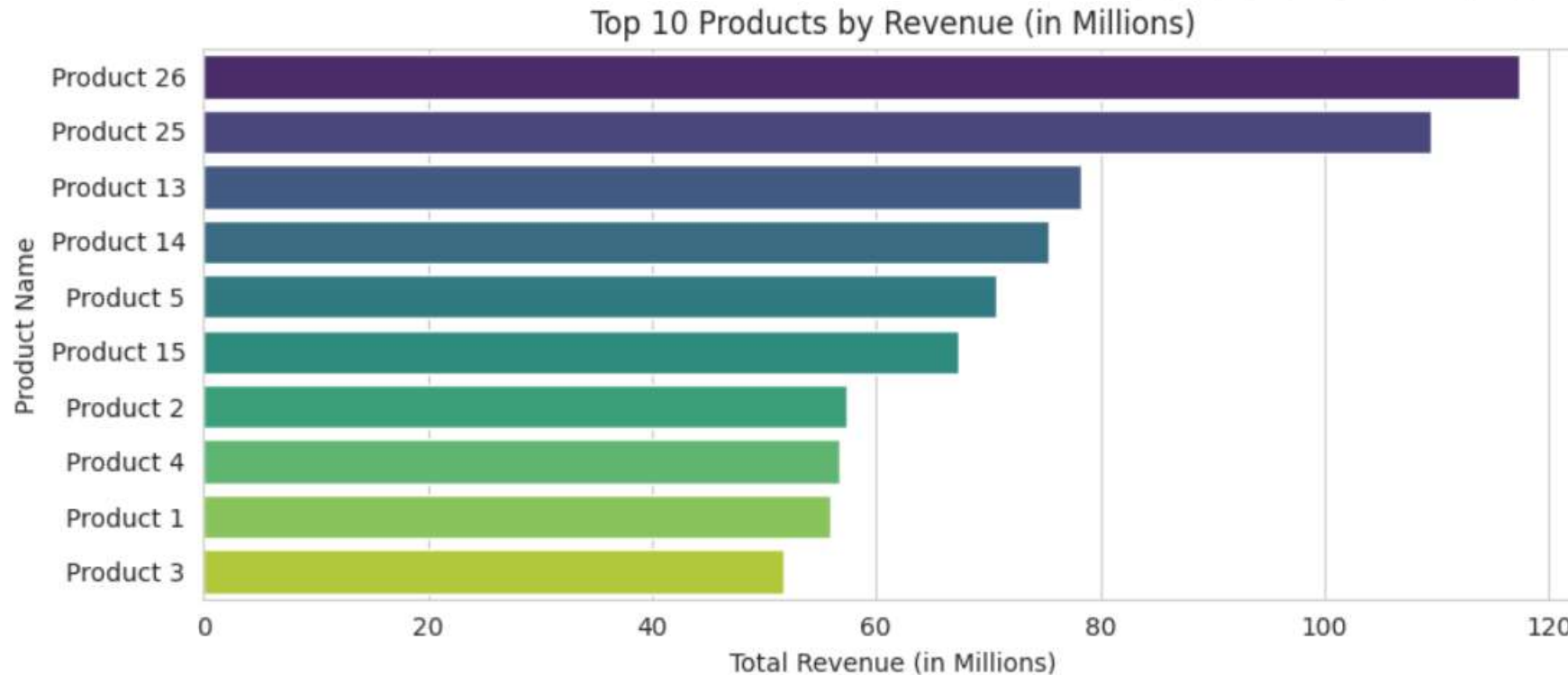
Monthly Sales Trend Over Time



Insights

- Consistent sales cycle: \$24M to \$26M.
- Seasonal peaks: Late spring/early summer (May-June).
- Annual low: January.
- Notable outlier: Sharp revenue drop in early 2017.

Top 10 Products by Revenue



Insights

- Revenue leaders: Products 26 & 25 dominate.
- Mid-range: Products 5, 13, 14, 15 show similar revenue.
- Bottom cluster: Products 1, 2, 3, 4 have the lowest revenue.
- Strategy: Grow mid-tier, improve lower performers.

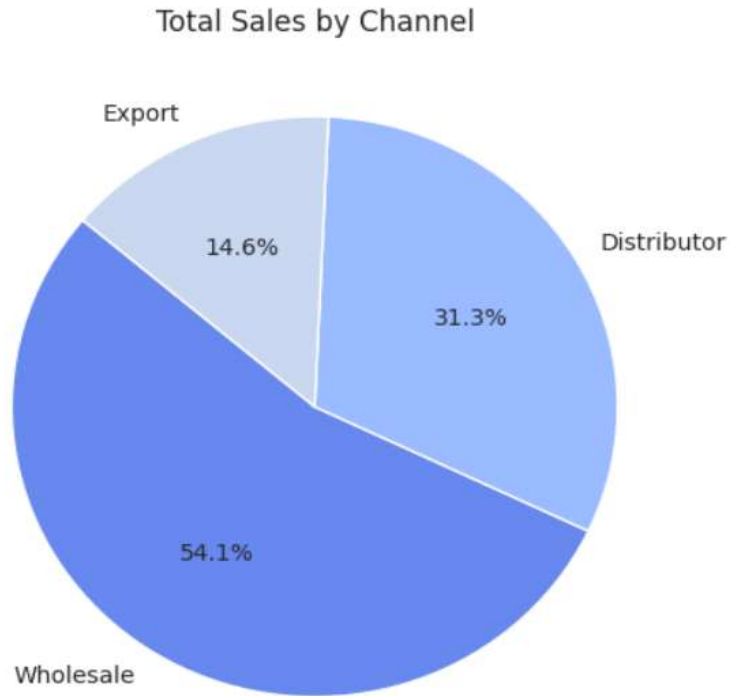
Top 10 Products by Average Profit Margin



Insights

- Top: Products 18 & 28 lead at ~\$8.1–8.4K.
- Next tier: Products 5, 11, 12 & 26 at ~\$7.5–7.8K.
- Entry-level: Products 1, 4, 16 & 21 around \$7.3K.
- Takeaway: Top 10 all exceed \$7.3K—consistent high margins.

Sales by Channel



Insights

- Wholesale dominates: Generates the majority of total sales at 54.1%.
- Distributor is significant: Contributes a substantial 31.3% to total sales.
- Export is a smaller portion: Accounts for 14.6% of the total sales.

Total Sales by State (Choropleth Map)

Total Sales by State



Total Sales

200M

150M

100M

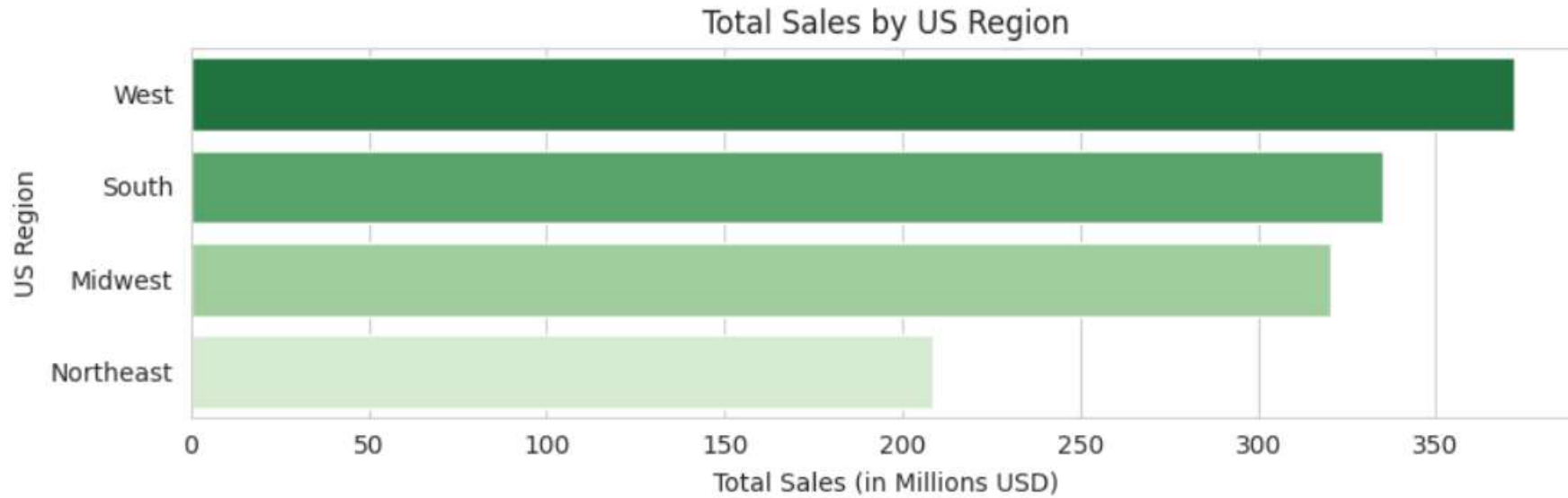
50M



Insights

- California leads: Highest total sales.
- Texas, Florida, Illinois: Significant sales.
- Varying sales: Other states show moderate to low sales.
- Visual pattern: Higher sales in larger and some coastal states.

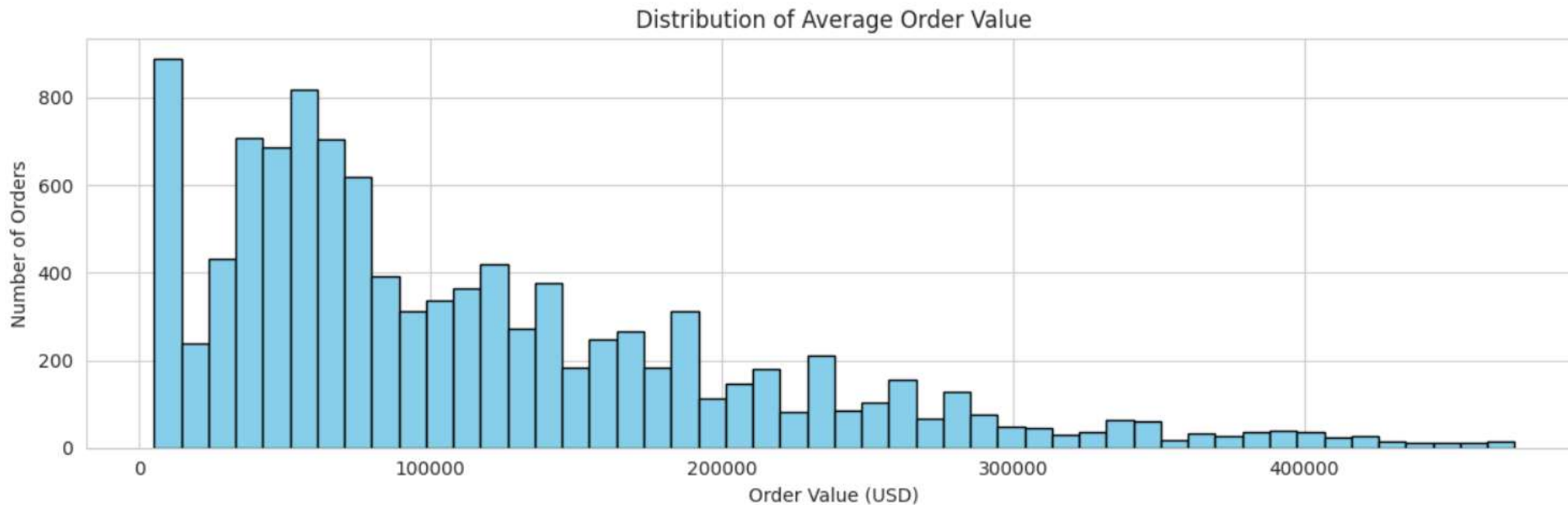
Total Sales by US Region



Insights

- West: Highest sales, strong market influence.
- South: Major sales contributor, key market area.
- Midwest: Steady sales performance, moderate market size.
- Northeast: Lowest sales, suggests need for deeper market understanding.

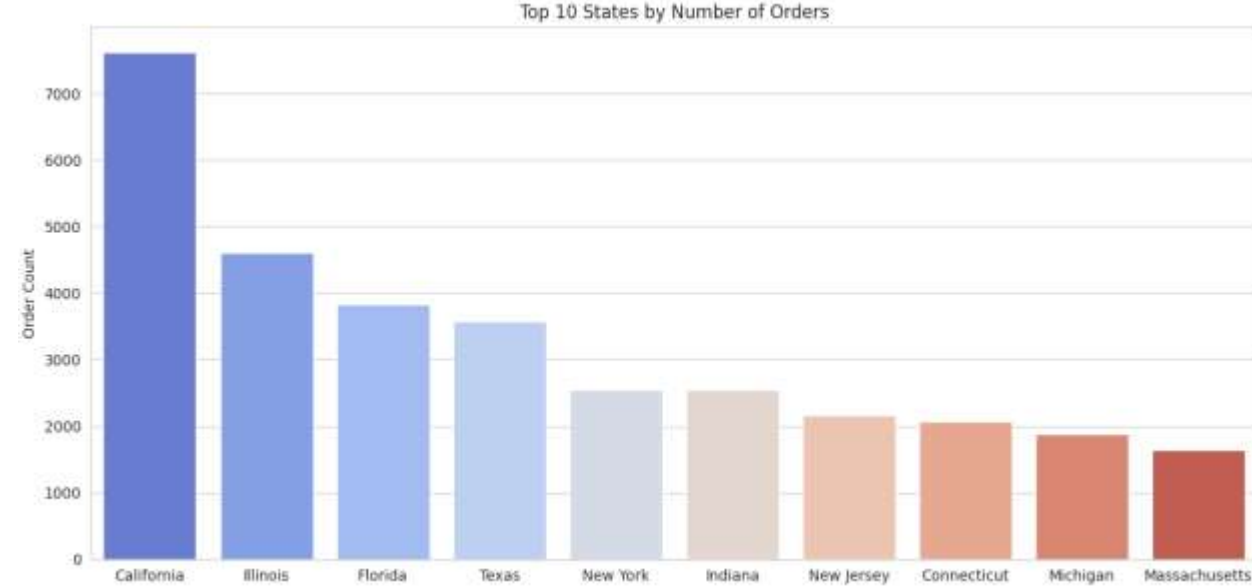
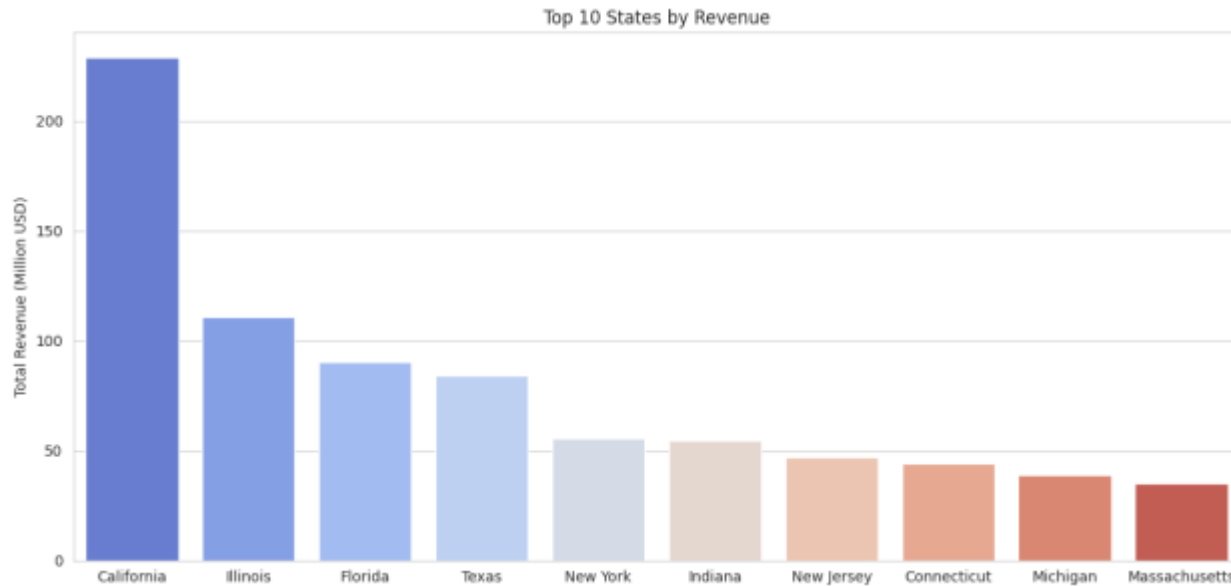
Average Order Value (AOV) Distribution



Insights

- Low average order values are frequent.
- Distribution is right-skewed (long tail of high-value orders).
- Multiple order value clusters exist.
- Higher order values are less common.

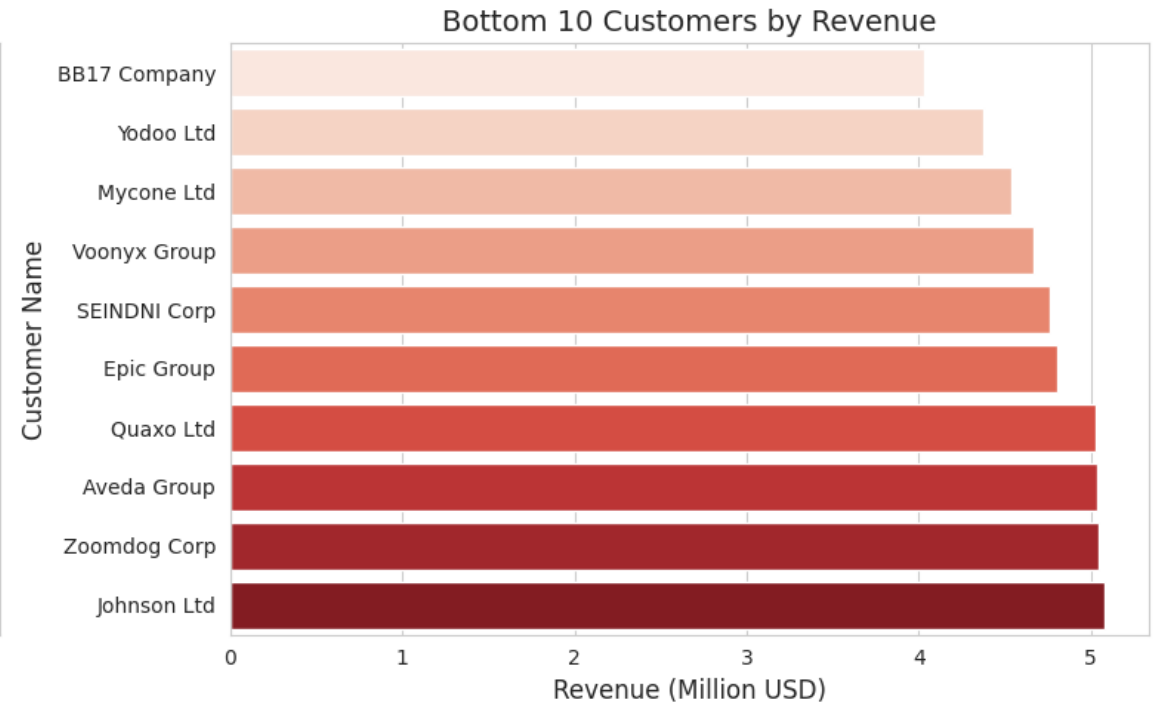
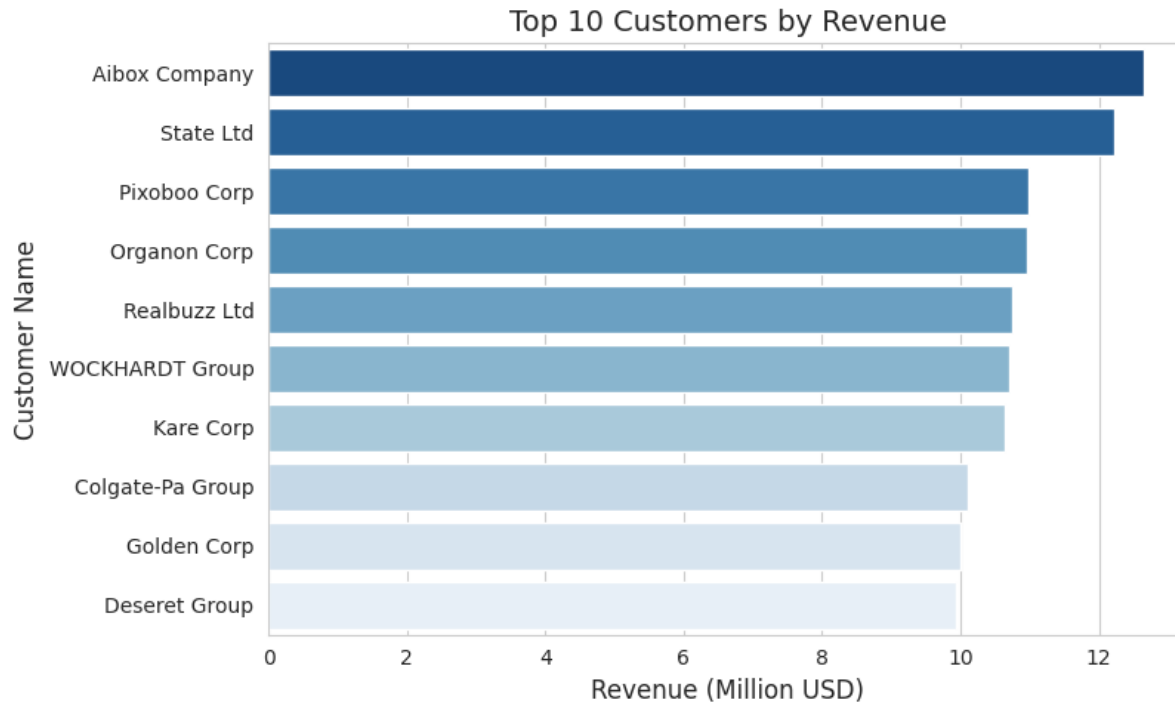
Top State Performance: Revenue vs. Orders



Insights

- California tops revenue & orders.
- IL, FL, TX: High in both.
- Revenue & orders linked.
- Other top states: Lower contribution.

Top and Bottom 10 Customers by Revenue



Insights

- Aibox Company leads significantly as the top revenue generator.
- Bottom 10 customers generate substantially less revenue (around \$4-5M).
- Revenue concentration: Top customers drive a disproportionate share.
- Large gap: Exists between the revenue of top and bottom tier customers.

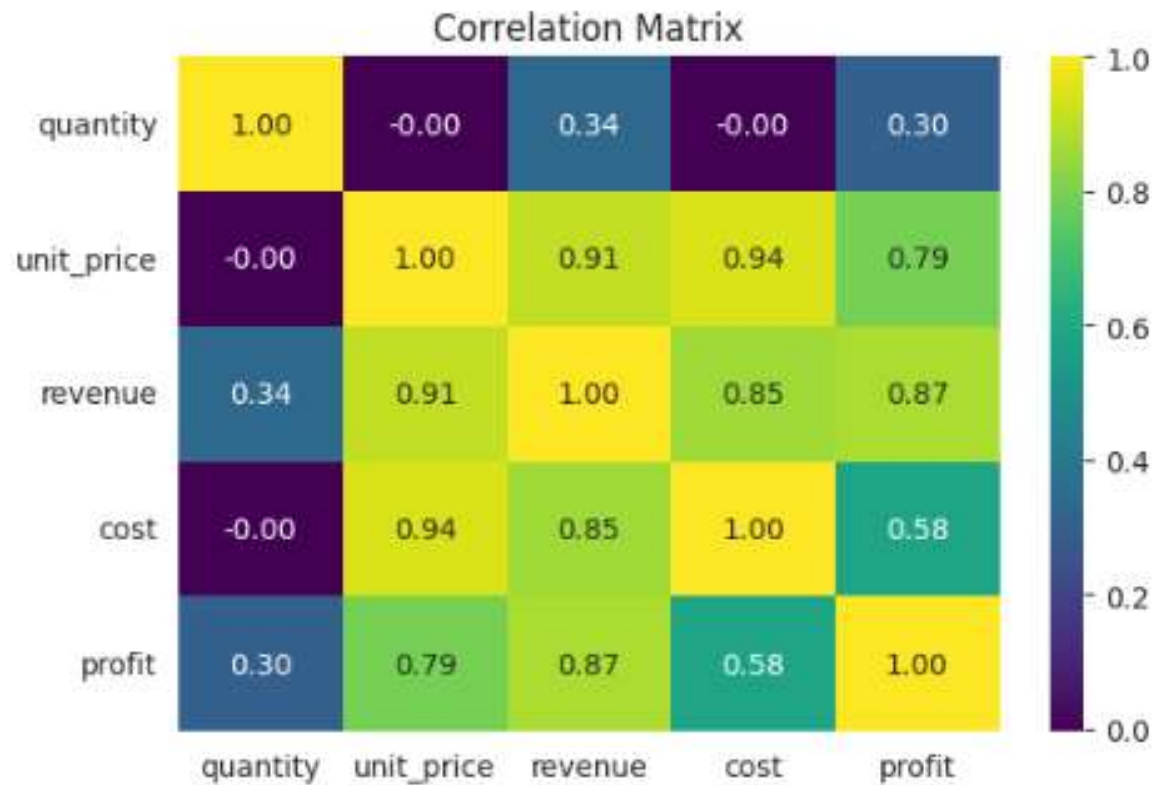
Customer Segmentation: Revenue vs. Profit Margin



Insights

- Those Uniform 35–40 % margins confirm strong, consistent pricing and cost control.
- >\$10 M clients with <36 % margins reveal discounting hotspots—re evaluate large-account terms.
- \$6–9 M clients with >40 % margins are high-value candidates for targeted upsell.

Correlation Heatmap of Numeric Features



Insights

- Unit price is the primary driver, showing very strong correlations with cost (0.94), revenue (0.91) and profit (0.79).
- Revenue & profit maintain a high link (0.87), underscoring direct profitability gains.
- Quantity's impact is minimal (≤ 0.34 vs. financials), indicating volume plays a secondary role.
- Cost vs. profit correlation (0.58) is moderate, suggesting margin improvement focus should center on pricing.



Key Insights

Key Insights

- Pronounced Seasonality: January revenues average \$124 M, dipping to \$95 M in April.
- SKU Concentration: Products 26 & 25 together drive ~25 % of total sales.
- Channel Trade-Off: Wholesale captures 54 % of volume; Export leads with ~38 % average margin.
- Geographic Dominance: California alone logs 7.6K orders (\$230 M); the West region shows the largest swings.
- Aibox Company and State Ltd are the most valuable customers in terms of Revenue.



Recommendations

Recommendations

- Seasonal Promotions: Launch recovery campaigns in April and amplify January offers to smooth revenue swings.
- SKU Optimization: Double down on top products 26 & 25 and re-evaluate pricing or phase out low-margin SKUs.
- Channel Expansion: Incentivize Export partnerships for high margins and introduce volume deals in Wholesale.
- Regional Investment: Replicate California's success in other regions and boost marketing in the Northeast & Midwest.
- Margin Monitoring: Flag orders below 80 % margin and analyse cost drivers to uplift underperforming segments.



Dashboard Preview

Page 1 – Performance Summary

Executive Overview & Trends

Product & Channel Performance

Geographic & Customer Insights



Total Revenue

\$1.2bn

Total Profit

\$461.8M

Profit Margin %

37.36%

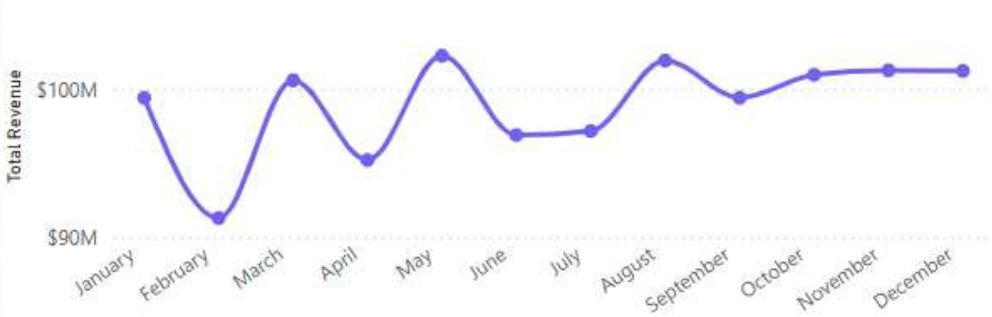
Total Orders

64K

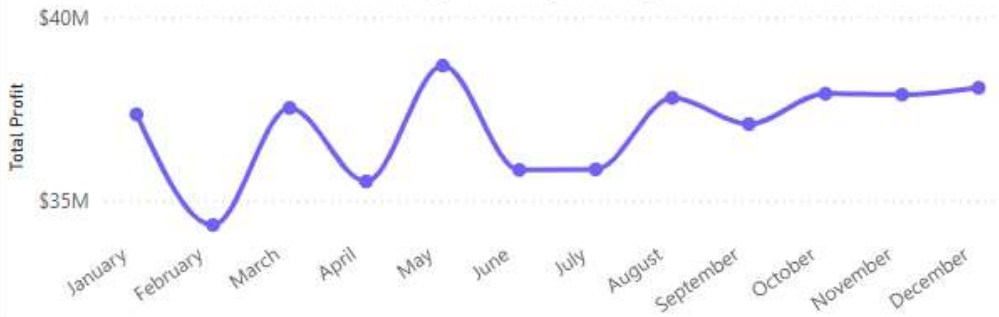
Revenue per order

\$19.3K

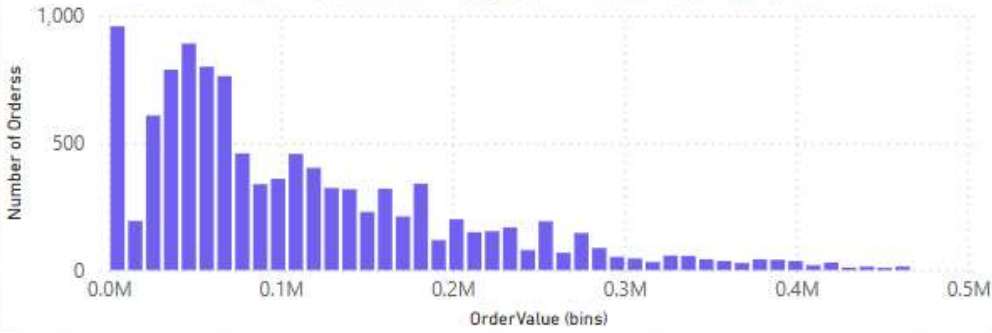
Monthly Revenue Rhythm: Uncovering Seasonality Peaks



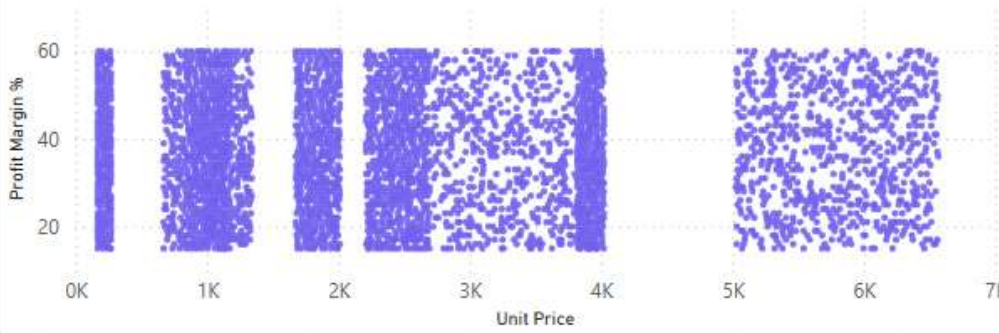
Profit Pulse: Tracking Monthly Earnings Momentum



Order Value Spectrum: Mapping Customer Spending Tiers



Unit Price Vs Profit Margin: Spotting High Margin Price Bands



Page 2 – Customer Segmentation



Page 3 – Revenue Scenarios

Executive Overview & Trends

Product & Channel Performance

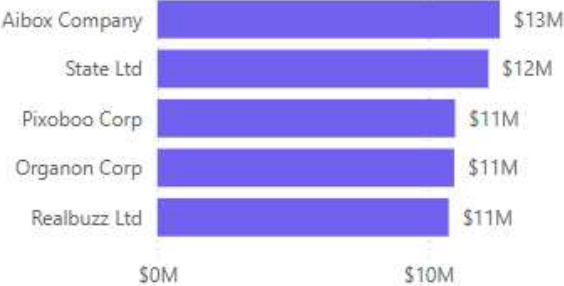
Geographic & Customer Insights



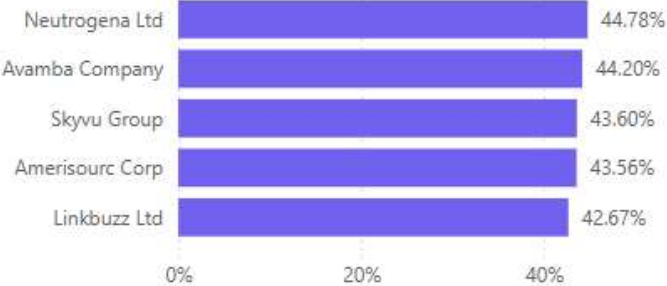
California drives 19.5% of revenue (\$228.8 M), while the West region boasts the highest profit margin at 37.5%.

Top 5
Bottom 5

Top 5 Customers by Revenue



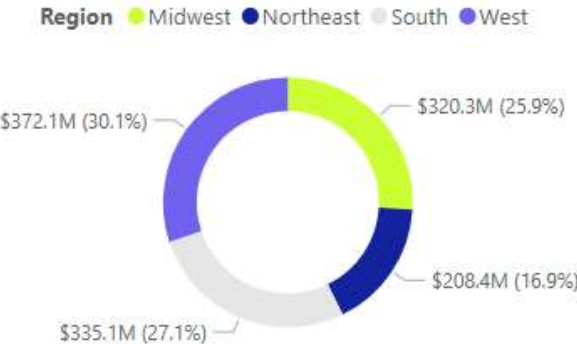
Top 5 Customers by Revenue



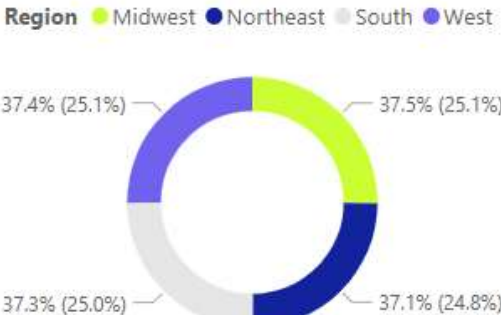
Top 5 States by Revenue



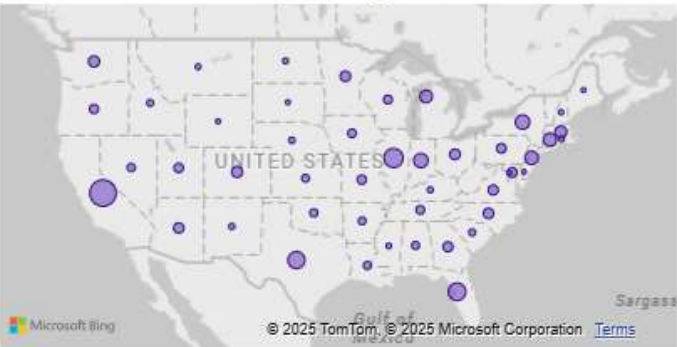
Total Revenue by Region



Profit Margin % by Region



Total Profit by state





Conclusion

Conclusions

- Completed end-to-end EDA and interactive Power BI dashboard, surfacing seasonality, SKU, channel & regional insights.
- Insights inform sales policies and operational planning (store & warehouse prep aligned with annual trends).
- Stakeholders can self-serve real-time analysis and confidently onboard new datasets for additional use cases.

Thank You 🙏

