IFT 533: Data Visualization & Reporting for IT
Prof. Asmaa Elbadrawy

Project - Phase 3: Dashboard Implementation

Team 13

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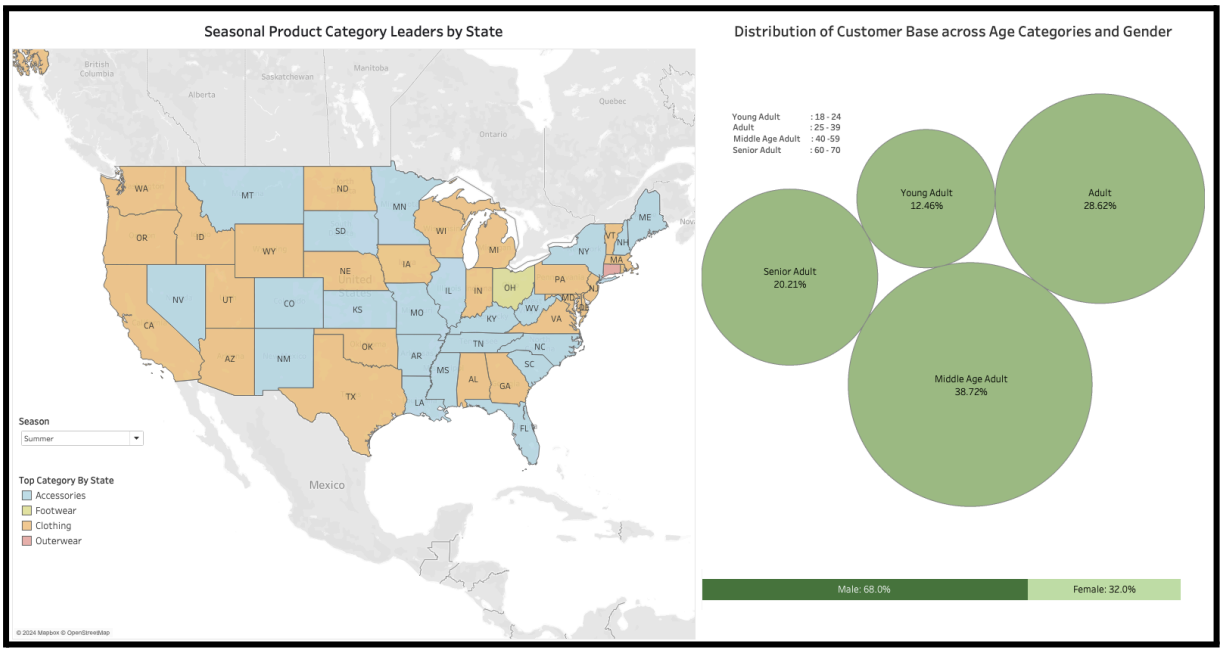
Section 1: The Dashboard

Dashboard 1: Customer Insights and Seasonal Trends

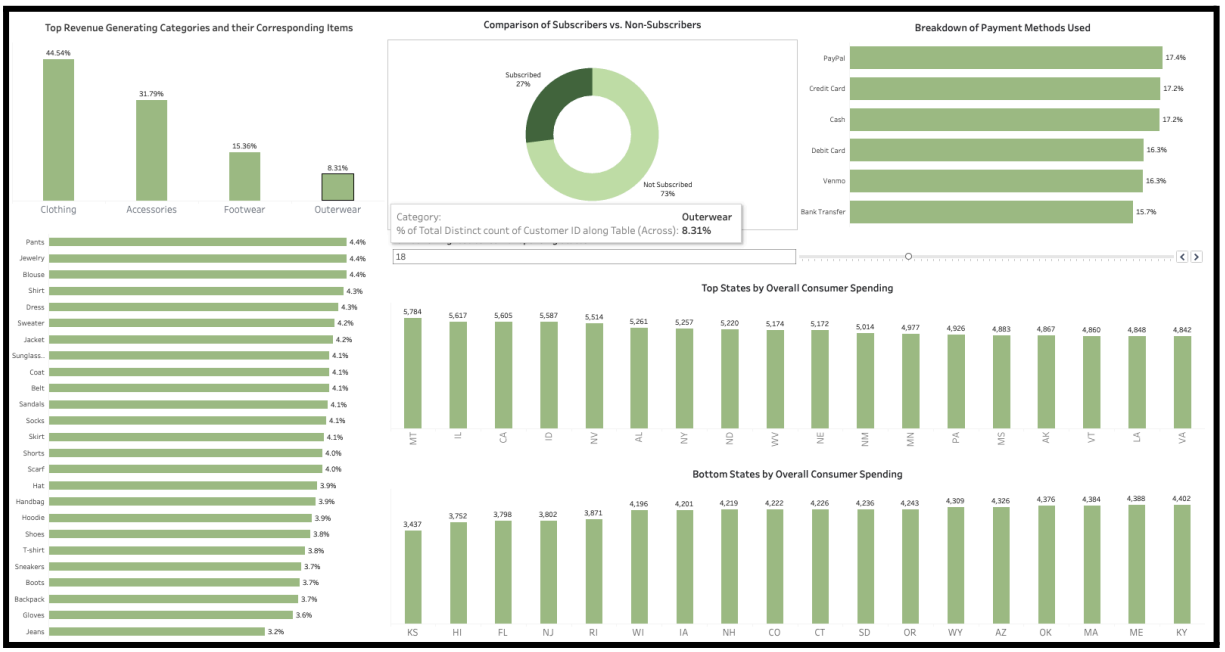


This dashboard provides a comprehensive overview of customer demographics and purchasing trends. It addresses three critical business questions:

1. **Customer Age Distribution**: Visualizes how customers are segmented across various age categories (e.g., Young Adults, Adults, Middle Age Adults, Senior Adults).
2. **Gender Distribution**: Highlights the proportion of the customer base by gender, helping to understand the demographic balance.
3. **Seasonal Product Trends**: Examines how top-selling product categories vary across states during different seasons, offering insights into regional and seasonal shopping preferences.

This dashboard can be used by marketing and sales teams to tailor campaigns, optimize product offerings, and align inventory strategies based on customer demographics and seasonal trends.

Dashboard 2: Revenue Drivers and Payment Insights

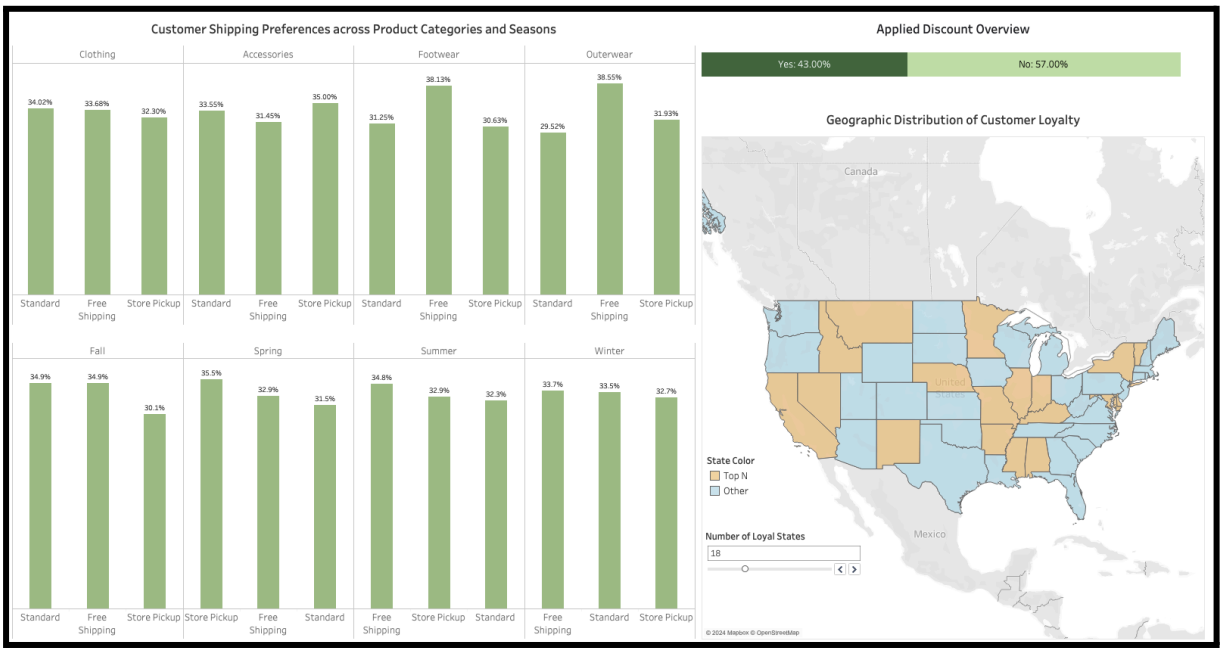


This dashboard provides a detailed analysis of consumer spending behaviors, revenue generation, and payment preferences. It addresses four key business questions:

1. **Top and Bottom Spending States**: This section highlights the states with the highest and lowest overall consumer spending based on purchase amounts.
2. **Top Revenue-Generating Categories and Items**: Identifies the product categories and items contributing the most to revenue.
3. **Consumer Payment Preferences**: Displays the most commonly used payment methods among customers, aiding in understanding transactional behaviors.
4. **Subscriber vs. Non-Subscriber Comparison**: This section examines the proportion of subscribers compared to non-subscribers, offering insights into subscription-based customer engagement.

This dashboard is designed for sales, marketing, and finance teams to optimize product strategies, target high-value regions, and enhance customer engagement.

Dashboard 3: Customer Loyalty and Shipping Preferences



This dashboard provides insights into customer behavior related to discounts, shipping preferences, and loyalty. It addresses four critical questions:

1. **Discount Applications by Category and Shipping Method**: Analyzes how discount usage varies across product categories and shipping methods.
2. **Geographic Concentration of Loyal Customers**: Highlights the states that have the highest concentration of loyal customers based on their purchase activities.
3. **Seasonal Variation in Shipping Preferences**: Examines how customer preferences for shipping methods (e.g., standard, free shipping, store pickup) change across seasons.
4. **Preferred Shipping Methods by Category**: Identifies the most popular shipping methods for different product categories.

This dashboard is designed for supply chain, marketing, and customer relationship teams to optimize shipping strategies, improve customer loyalty programs, and target promotions effectively.

Section 2: The Dataset

Dataset Description

The Customer Shopping Trends Dataset is a dataset about consumer behavior patterns within retail environments, focusing on various demographic and financial attributes that influence shopping habits. This dataset provides a detailed view of customer profiles, such as age, gender, annual income, and spending scores, as well as information about their specific purchasing transactions, including the type of product purchased and the purchase amount. By simulating this data, the dataset enables in-depth analysis of key trends and factors that shape consumer decision-making, providing valuable insights into market segmentation and targeted marketing.

The dataset's diversity in attributes makes it an ideal resource for understanding customer segmentation, loyalty behaviors, and financial impacts. Researchers, marketers, and data scientists can utilize this dataset to identify correlations between demographic characteristics and spending patterns, forecast trends in product demand, and devise strategies to optimize customer engagement. By analyzing this dataset, teams can extract insights to drive personalized marketing strategies, improve product placement, and optimize sales approaches across various product categories.

Dataset Attributes:

Column Name	Data Type	Description	Category / Range of Values
Customer ID	Categorical	Unique identifier for each customer	1 - 3900
Age	Ratio	Age of the customer in years	18 - 70
Gender	Categorical	The gender of the customer	Male , Female
Item Purchased	Categorical	Specific items bought by the customer	Belt, Skirt, etc.
Category	Categorical	Amount spent on the purchase in USD	Accessories, Clothing, Footwear, Outwear
Purchase Amount (USD)	Ratio	Location of purchase or delivery	20 - 100
Location	Categorical	Size of item purchased (e.g., S, M,L)	Arizona , Texas, etc.
Size	Ordinal	Size of item purchased (e.g.,	S , M , L , XL

		S, M, L)	
Color	Categorical	Color of the purchased item	Black, Blue, etc..
Season	Categorical	Season associated with the purchase	Fall, Spring , Summer, Winter
Review Rating	Ordinal	Customer's rating for the purchase (e.g., 1-5 stars)	2.5 - 5
Subscription Status	Categorical	Whether the customer has a subscriptions	Yes , No
Payment Method	Categorical	Method used for payment (e.g., Credit)	Cash, Credit Card, etc.
Shipping Type	Categorical	Shipping option selected by the customer	Express, Standard, etc.
Discount Applied	Categorical	Whether a discount was used for purchase	Yes , No
Promo Code Used	Categorical	Whether a promo code was used	Yes , No
Previous Purchases	Ordinal	Count of past purchases by the customer	1 - 50
Frequency of Purchases	Ordinal	How often purchases are made (e.g., monthly, weekly)	Weekly, Monthly, etc.

Pre-Processing on Dataset:

The specific data preprocessing and preparation procedures used to examine a consumer trends shopping dataset for Tableau visualization are described in this study. These procedures are essential to guaranteeing the precision and usability of our visualizations, which rank states according to purchase frequencies and divide up customer groups.

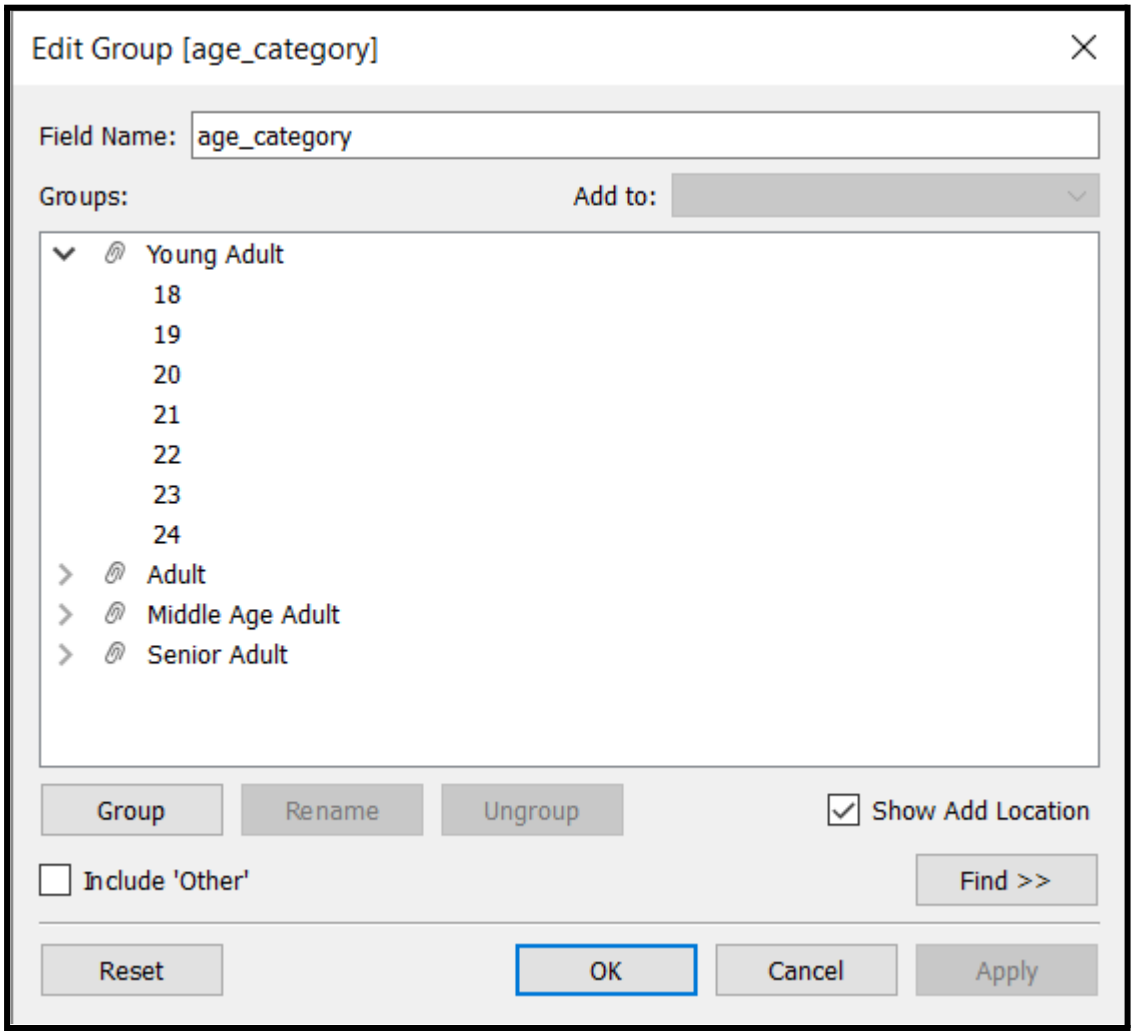
1. Categorizing Customer Ages:

For our Tableau visualization analyzing customer demographics, we have established specific age segments to better understand consumer behavior at different life stages. The defined age segments are:

- Young Adult (18-24): Typically students or early career entrants with limited disposable income.
- Adult (25-39): Young professionals often starting families and experiencing increasing income.

- Middle-Aged Adult (40-59): Established professionals with significant purchasing power and evolving needs.
- Senior Adult (60 and above): Retirees or active seniors focusing on health and leisure.

To categorize these age segments in Tableau, we make use of the 'Create Group' function. This segmentation will enhance our visualizations, enabling targeted insights into consumer preferences and spending patterns across different age groups.



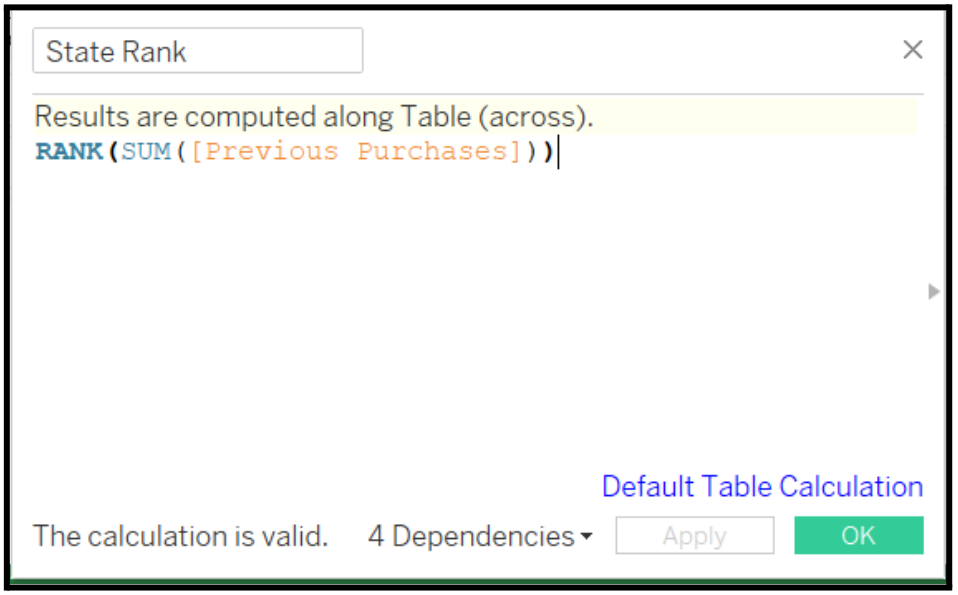
2. Ranking States by Purchase Frequency:

To gain deeper insights into customer engagement and sales performance across different states, we have implemented a ranking system based on purchase frequency. This analysis utilizes the 'Previous Purchases' data to create a hierarchical view of state-level customer activity.

We created a calculated field in Tableau named 'State Rank' using the following formula:

```
RANK(SUM([Previous Purchases]))
```

This state-level purchase frequency ranking provides a crucial metric for assessing regional sales effectiveness and customer loyalty. It serves as a valuable tool for strategic decision-making in areas such as targeted marketing campaigns, expansion planning, and customer retention strategies.



3. Coloring States Based on Ranking:

To enhance our understanding of purchase frequency patterns across states, we've implemented a dynamic color-coding system in our Tableau visualization. This approach provides an immediate visual representation of state performance based on customer purchase frequency.

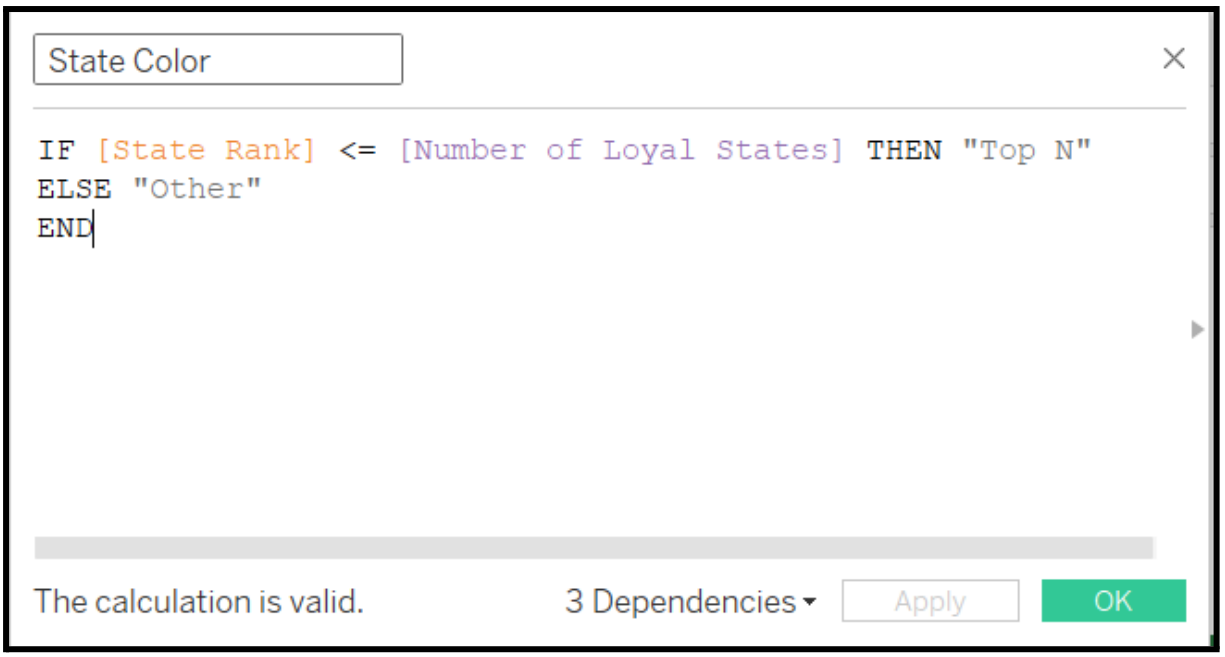
We created a calculated field in Tableau named 'State Color' using the following formula:
`IF [State Rank] <= [Number of Loyal States] THEN "Top N" ELSE "Other"`

Key features of this visualization:

- Dynamic Segmentation: The 'Number of Loyal States' parameter allows for a flexible definition of top-performing states.
- Instant Insights: Color differentiation enables quick identification of high-performing regions.
- Customizable Focus: Ability to adjust the number of highlighted states based on analysis needs.
- Comparative Visualization: Clear contrast between top performers and other states facilitates easy comparison.

This color-coded ranking visualization serves as a powerful tool for quickly identifying and analyzing top-performing states in terms of customer engagement and purchase frequency. It

supports data-driven decision-making in areas such as regional marketing strategies, resource allocation, and performance benchmarking.



4. Top Category by State:

To gain deeper insights into regional product preferences, we've implemented a sophisticated data preprocessing step in Tableau. This analysis identifies and highlights the top-selling product category for each state, accounting for seasonal variations.

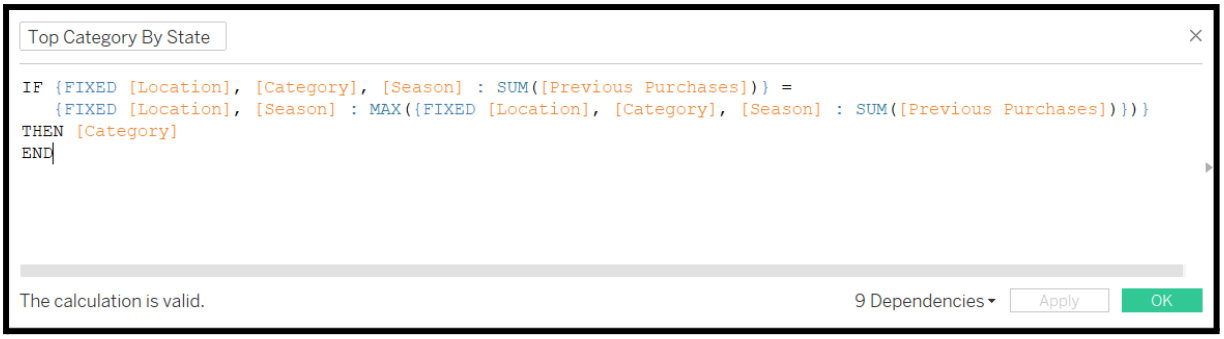
We created a calculated field named 'Top Category by State' using the following formula:

```
IF {FIXED [Location], [Category], [Season]: SUM([Previous Purchases])} =
{FIXED [Location], [Season]: MAX({FIXED [Location], [Category], [Season]: SUM([Previous Purchases])})}
THEN [Category]
END
```

Key features of this analysis:

- Dynamic Calculation: Automatically determines the highest-selling category for each state-season combination.
- Seasonal Sensitivity: Accounts for seasonal fluctuations in product preferences.
- Granular Insights: Provides state-level detail on category performance.
- Comparative Analysis: Enables easy identification of regional product trends.

This advanced categorization offers valuable insights for inventory management, marketing strategies, and regional product offerings. It supports data-driven decision-making by highlighting localized consumer preferences and seasonal trends across different states.


Top Category By State
IF {FIXED [Location], [Category], [Season] : SUM([Previous Purchases])} =
{FIXED [Location], [Season] : MAX({FIXED [Location], [Category], [Season] : SUM([Previous Purchases])})}
THEN [Category]
END
The calculation is valid.
9 Dependencies
Apply
OK

Section 3: Dashboard Users

Our comprehensive dashboard serves as a pivotal tool for multiple departments within our organization, providing tailored insights to drive strategic decision-making and operational excellence. The following key stakeholders will leverage this dashboard for specific purposes:

1. Marketing Team:

- Consumer Behavior Analysis: Dive deep into customer demographics, preferences, and spending patterns to craft targeted marketing strategies.
- Campaign Optimization: Utilize data on seasonal trends and color preferences to fine-tune marketing campaigns for maximum impact.
- Customer Segmentation: Leverage insights to create more effective personalized marketing approaches across different customer groups.
- Trend Forecasting: Anticipate emerging market trends to stay ahead of the competition and align marketing efforts accordingly.

2. Finance Team:

- Revenue Performance Tracking: Monitor real-time revenue streams, profitability metrics, and payment method preferences.
- Product Profitability Analysis: Identify top revenue-generating products and analyze their contribution to overall financial performance.
- Financial Forecasting: Utilize historical data and trend analysis to project future revenue, informing budget allocations and financial strategies.
- Risk Assessment: Evaluate financial risks associated with different product categories, regions, and customer segments.

3. Product Development Team:

- Quality Assurance: Assess product performance and customer satisfaction across various regions and categories.
- Innovation Drivers: Identify areas for product improvement and innovation based on customer feedback and regional preferences.
- Market Fit Analysis: Evaluate how well current products meet customer needs and preferences in different markets.
- Product Lifecycle Management: Track product performance over time to inform decisions on product updates or discontinuations.

4. Customer Experience Team:

- Satisfaction Metrics: Monitor and analyze customer satisfaction scores across different touchpoints and product categories.
- Service Optimization: Gain insights into customer preferences for shipping and subscription services to refine offerings.

- Loyalty Program Enhancement: Identify factors contributing to customer loyalty and retention to improve loyalty programs.
- Feedback Analysis: Aggregate and analyze customer feedback to identify areas for service improvement and innovation.

5. Supply Chain Management:

- Inventory Optimization: Use sales data and regional preferences to optimize inventory levels and distribution.
- Demand Forecasting: Leverage seasonal trends and regional data to improve demand forecasting accuracy.
- Supplier Performance: Analyze product quality metrics to evaluate and manage supplier relationships.

6. Executive Leadership:

- Strategic Decision Making: Utilize high-level insights to inform long-term business strategies and resource allocation.
- Performance Overview: Access comprehensive views of organizational performance across all key metrics.
- Competitive Analysis: Compare performance against industry benchmarks and competitor data.

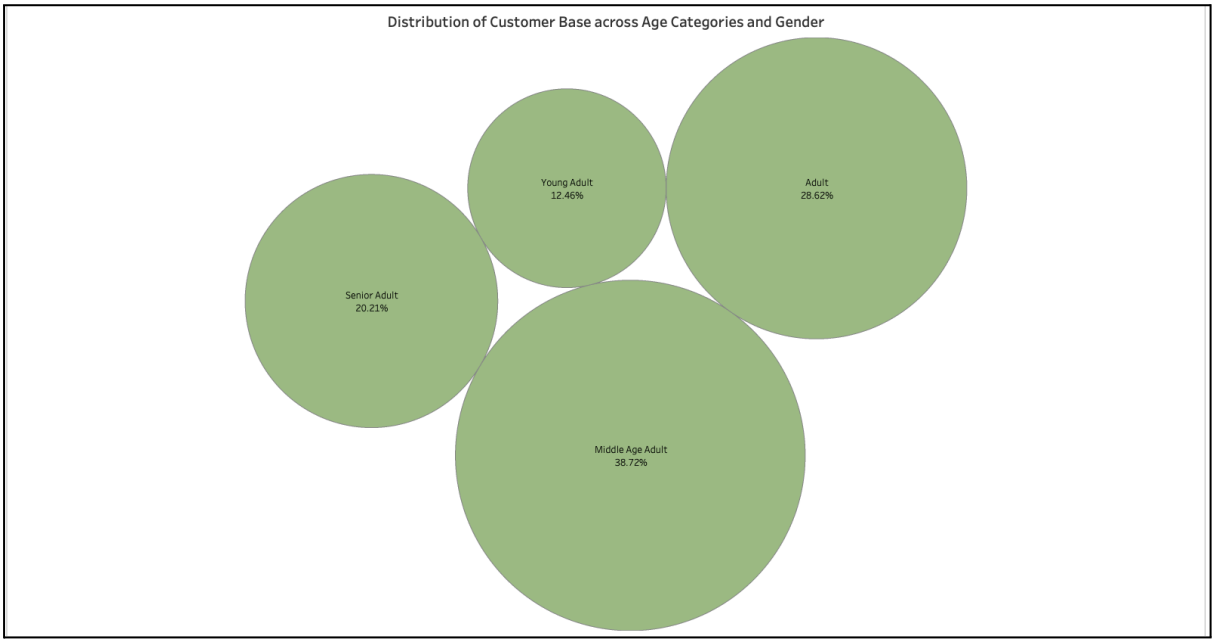
By catering to these diverse stakeholders, our dashboard serves as a central hub for data-driven decision-making, fostering collaboration across departments and aligning organizational efforts towards common goals of growth, efficiency, and customer satisfaction.

Section 4: Questions

1. What is the distribution of our customer base across different age categories?
2. How is our customer base distributed across different genders?
3. How do top-selling product categories change across states during different seasons?
4. Which states have the highest overall consumer spending in terms of purchase amount?
5. Which states have the least overall consumer spending in terms of purchase amount?
6. Which product categories and their corresponding items generate the highest revenue?
7. What are the most commonly used payment methods among consumers?
8. How does the number of subscribers compare to non-subscribers?
9. How do discount applications vary by product category and shipping method?
10. In which states are loyal customers most concentrated based on their previous purchase activity?
11. How do customer preferences for different shipping types vary across seasons?
12. What are the preferred shipping methods for different product categories?

Section 5: Plots

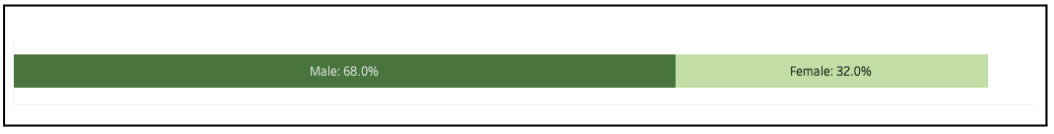
Plot 1: Distribution of Customer Base across Age Categories



Question it addresses: What is the distribution of our customer base across different age categories?

The bubble chart visualizes the distribution of our customer base across different age categories, effectively addressing the question of how customers are segmented by age. Each bubble represents a specific age group—such as Young Adult, Adult, Middle-Aged Adult, and Senior Adult—with the size of each bubble corresponding to the number of customers in that category. This proportional representation allows for quick visual comparisons, highlighting dominant demographic segments and facilitating easy identification of trends. Interactive features provide precise data insights through hover-over information. By clearly illustrating the customer distribution, this visualization not only reveals which age groups are most prominent but also identifies potential gaps, offering actionable insights for targeted marketing and strategic decision-making across various departments in the organization.

Plot 2: Distribution of Customer Base across Gender

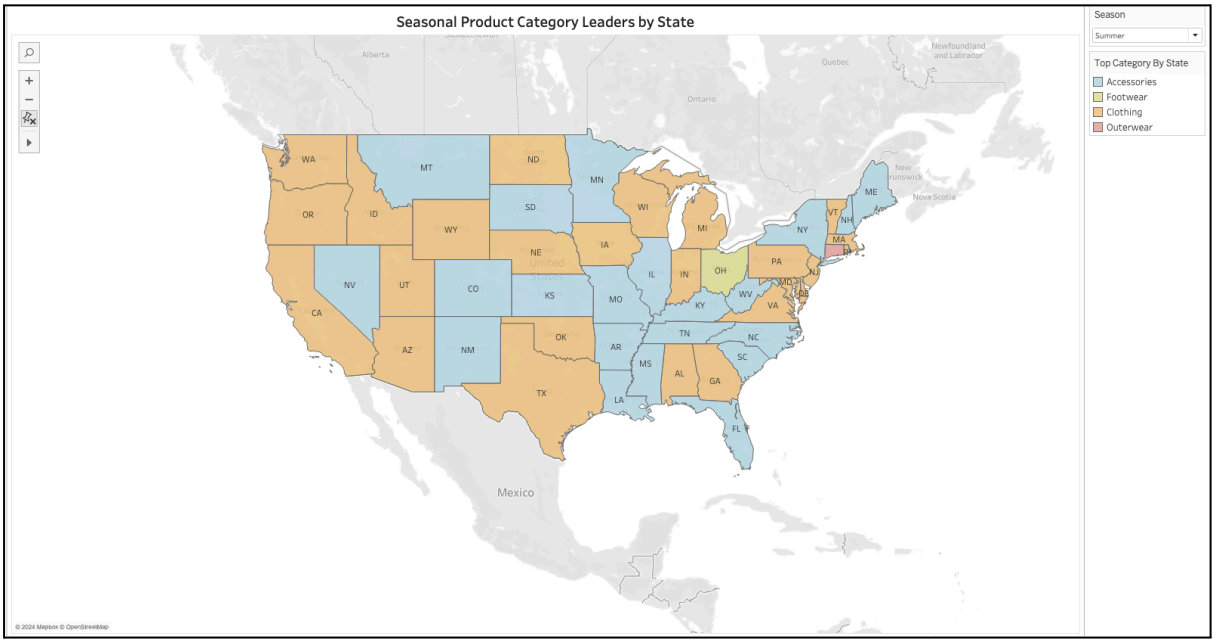


Question it addresses: How is our customer base distributed across different genders?

This plot employs a stacked bar chart to effectively visualize the percentage distribution of customers by gender, addressing the question of how our customer base is distributed across different genders. The chart presents clear, side-by-side bars representing male and female

customers, with the height of each bar corresponding to the percentage of customers in that gender category. This straightforward visualization allows for immediate comparison between gender representations in our customer base. Color coding enhances visual distinction, while precise percentage labels on each bar provide exact figures. The simplicity of this chart makes it easy to quickly grasp gender distribution trends, identify any significant imbalances, and inform gender-specific marketing strategies or product development initiatives. By clearly illustrating gender representation, this visualization offers valuable insights for tailoring customer experiences, refining marketing approaches, and ensuring inclusive business practices across all customer segments.

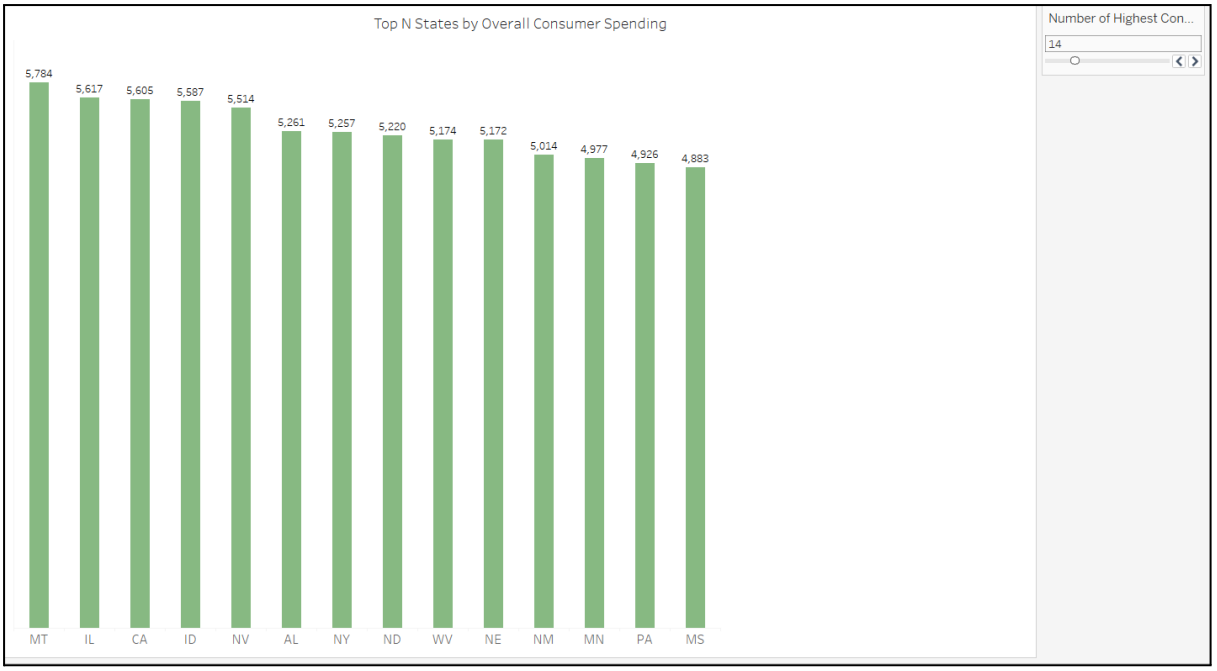
Plot 3: Seasonal Product Category Leaders by State



Question it addresses: How do top-selling product categories change across states during different seasons?

The map visualization directly addresses how top-selling product categories change across states during different seasons by providing a dynamic, color-coded representation of each state's dominant product category. By incorporating a seasonal filter, the plot allows users to instantly observe geographical shifts in product preferences throughout the year, revealing nuanced patterns of consumer demand. The color-coded states enable quick identification of leading categories, while the ability to toggle between seasons highlights how regional product preferences transform, offering insights into seasonal consumer behavior, regional market variations, and potential opportunities for targeted marketing and inventory management strategies.

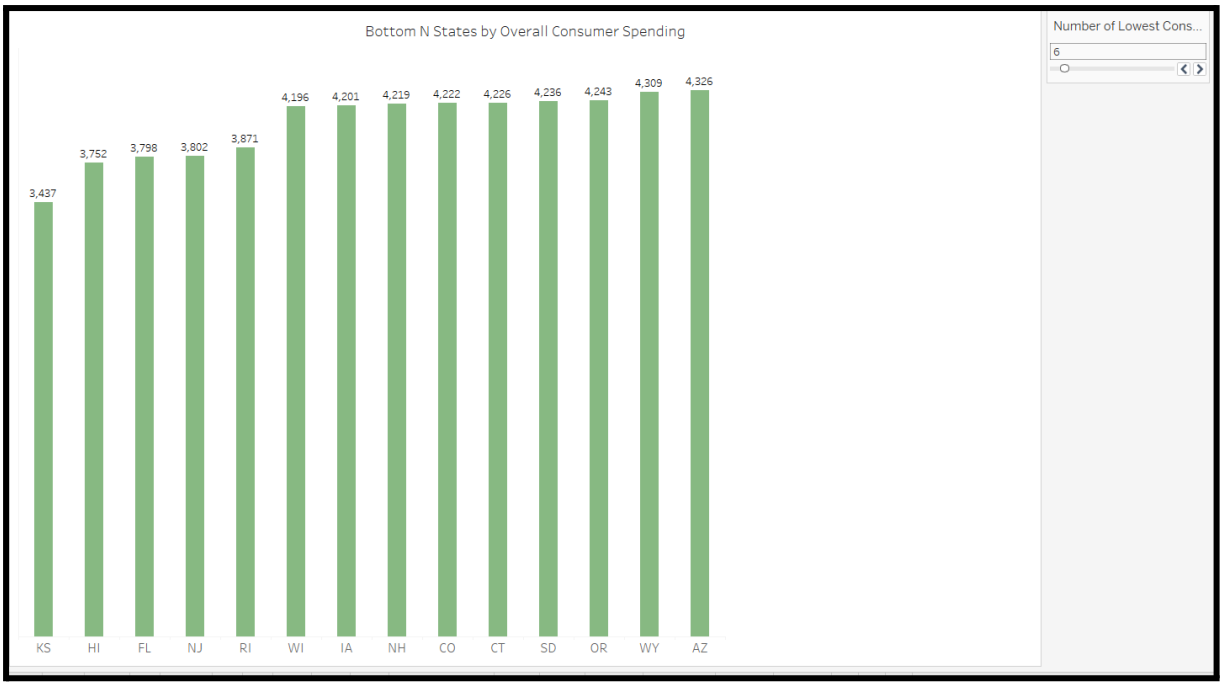
Plot 4: Top States by Overall Consumer Spending



Question it addresses: Which states have the highest overall consumer spending in terms of purchase amount?

The bar chart visualization of Top States by Overall Consumer Spending answers the question of which states have the highest overall consumer spending by presenting a ranked comparison of states based on total purchase amounts. Each bar represents a state, with its length corresponding to the total consumer expenditures, allowing for immediate identification of the highest-spending regions. This clear visualization enables businesses to recognize their most lucrative markets, facilitating targeted marketing campaigns and strategic resource allocation. By highlighting spending patterns across states, it provides essential insights for decision-makers to focus their efforts on areas with the greatest potential for revenue generation.

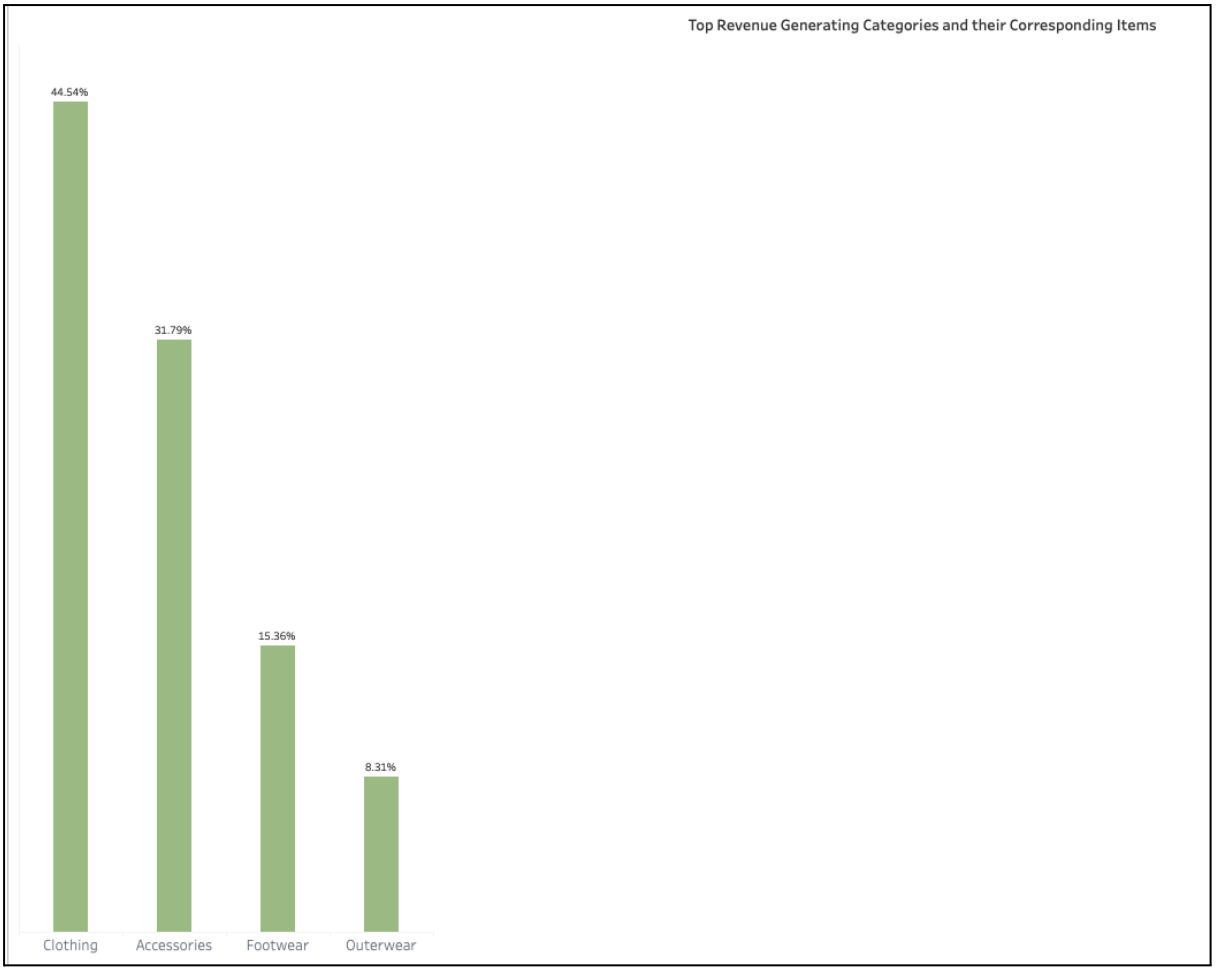
Plot 5: Bottom States by Overall Consumer Spending



Question it addresses: Which states have the least overall consumer spending in terms of purchase amount?

The bar chart visualization of Bottom States by Overall Consumer Spending answers the question of which states have the least overall consumer spending by presenting a ranked comparison of states based on their total purchase amounts in ascending order. Each bar represents a state, with its length indicating lower consumer expenditures, allowing for immediate identification of regions with minimal spending activity. This insight enables businesses to assess potential opportunities for growth and strategically reallocate marketing and operational efforts to boost engagement in these underperforming areas, ultimately informing targeted initiatives to stimulate consumer spending and enhance market presence.

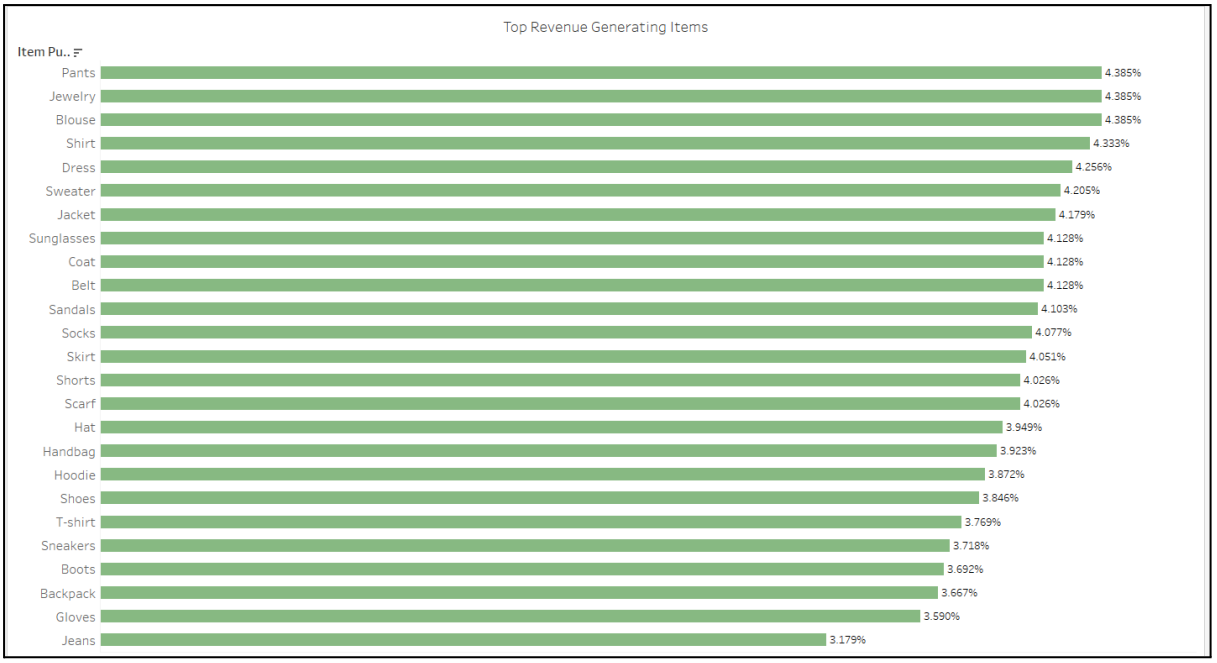
Plot 6: Top Revenue Generators by Product Category



Question it addresses: Which product categories and their corresponding items generate the highest revenue?

This plot uses a bar chart to display product categories in descending order of revenue, with the length or size of each bar/section proportional to the revenue generated. By highlighting top performers such as Clothing, Accessories, Footwear, and Outerwear, the visualization immediately identifies the most lucrative segments of the product line. This insight is crucial for businesses to prioritize inventory management, allocate marketing resources, and focus product development efforts on high-performing categories. Additionally, the plot serves as a foundation for deeper analysis of specific items within these categories, enabling data-driven decision-making to optimize revenue strategies and capitalize on the most profitable product lines.

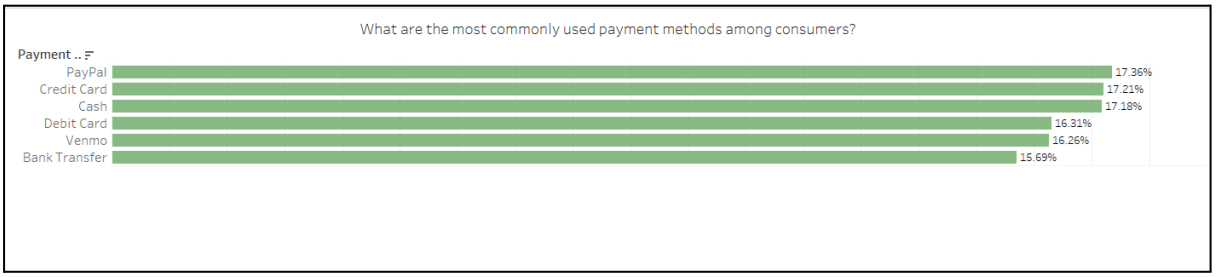
Plot 7: Top Revenue-Generating Items



Question it addresses: Which product categories and their corresponding items generate the highest revenue?

This plot complements the previous one by providing a detailed breakdown of the individual items within the top revenue-generating product categories. While the earlier plot identifies broader categories contributing to revenue, this plot focuses on specific items, such as Pants, Jewelry, and Blouses, highlighting their exact contribution to overall sales. Together, these plots offer a comprehensive view of revenue performance, enabling businesses to target high-performing items and categories for inventory optimization, pricing strategies, and promotional efforts.

Plot 8: Breakdown of Payment Methods Used

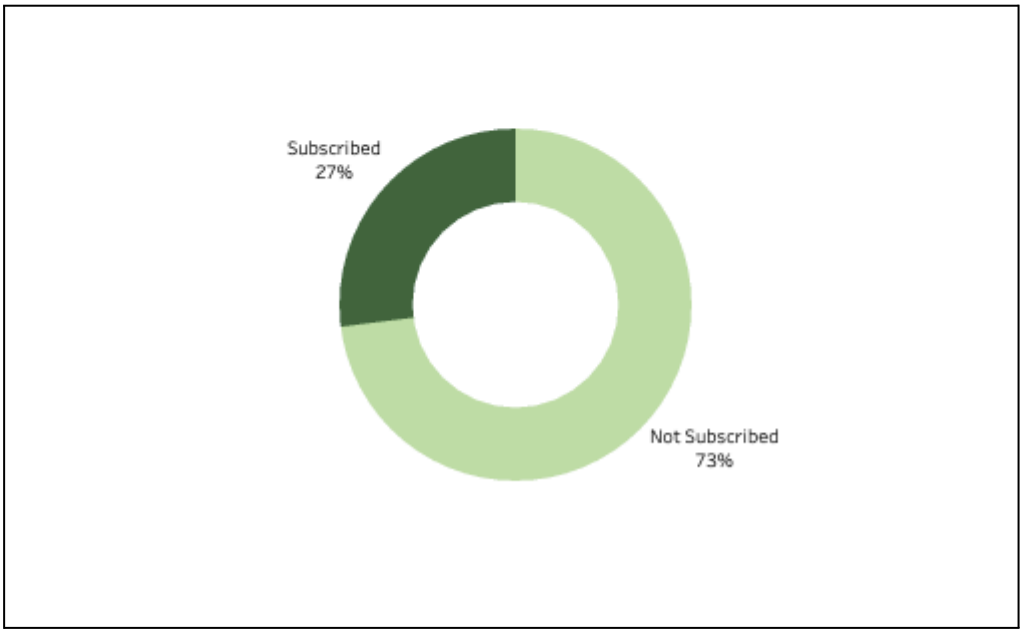


Question it addresses: What are the most commonly used payment methods among consumers?

This visualization uses a bar chart to display specific products like Pants, Jewelry, and Blouses in descending order of revenue contribution. By highlighting exact sales figures for

these items, the plot offers granular insights into which products drive the most revenue within broader categories. This detailed view enables businesses to make data-driven decisions on inventory management, pricing strategies, and targeted promotions for high-performing items. When combined with the broader category overview from the previous plot, it provides a comprehensive understanding of revenue performance across different levels of product hierarchy, allowing for optimized business strategies focused on the most lucrative items and categories.

Plot 9: Comparison of Subscribers vs. Non-Subscribers



Question it addresses: How does the number of subscribers compare to non-subscribers?

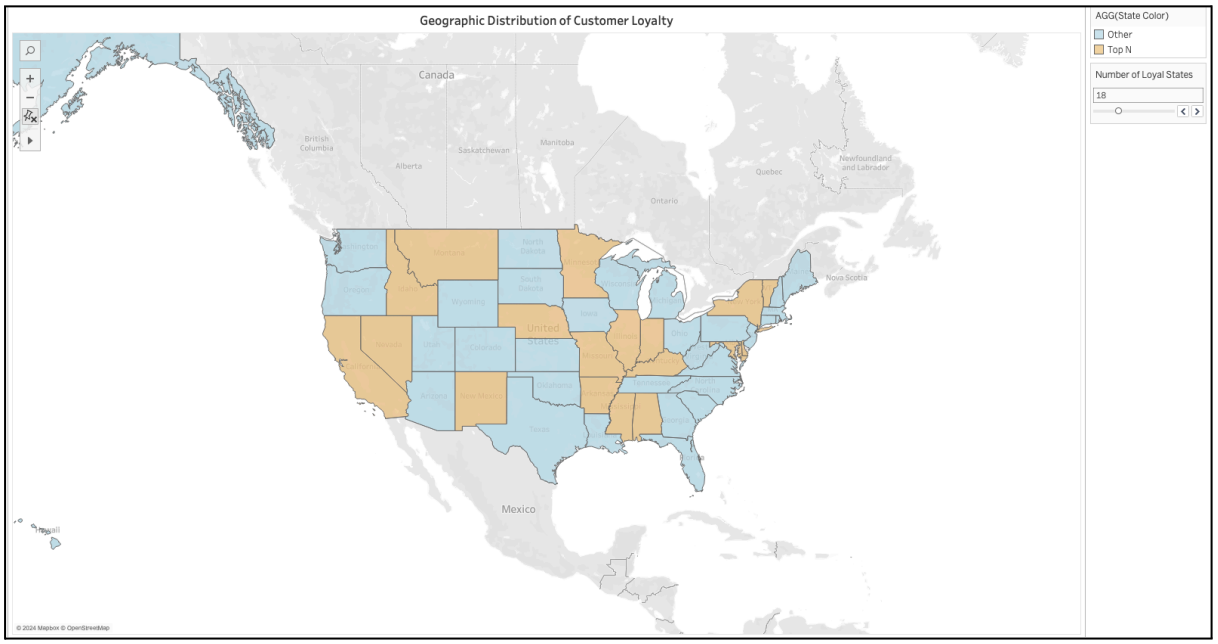
The plot, a donut chart, clearly illustrates the proportion of subscribers versus non-subscribers in the customer base. By showing that non-subscribers form a significantly larger portion, it provides an immediate understanding of the subscription status distribution. This visual comparison offers valuable insights for business strategy, highlighting the potential for growth in the subscriber segment. It enables decision-makers to quantify the opportunity for converting non-subscribers and emphasizes the importance of developing targeted marketing campaigns or incentives to increase subscription rates. Additionally, this plot serves as a baseline for measuring the effectiveness of future subscription drive initiatives and retention strategies.

Plot 10: Discount Usage Overview

Question it addresses: How do discount applications vary by product category and shipping method?

This plot addresses the question of how discount applications vary by product category and shipping method by providing a general overview of the proportion of customers who utilize discounts compared to those who do not. This plot employs a bar chart to visually represent the overall trend in discount usage across the customer base. Not only does it directly break down discount usage by specific product categories, but it also establishes a foundational understanding of customer behavior regarding discounts. This context is essential for interpreting more detailed analyses in subsequent plots, which can explore variations in discount adoption rates among different product categories and shipping options. By highlighting the overall trend in discount usage, this plot helps businesses identify potential areas for improvement in promotional strategies and informs decisions on how to optimize discount offerings to enhance customer engagement and drive sales.

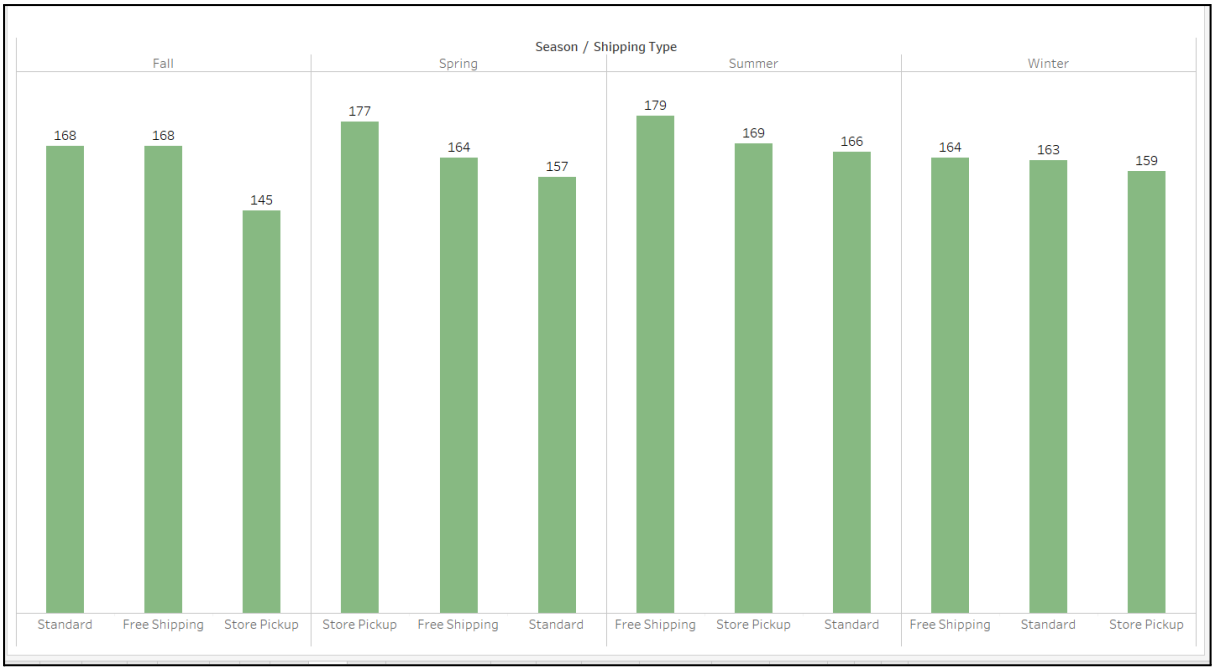
Plot 11: Geographic Distribution of Customer Loyalty



Question it addresses: In which states are loyal customers most concentrated based on their previous purchase activity?

This plot visually represents the geographic distribution of customer loyalty across different states. This map categorizes states into "Top N" (indicating high loyalty) and "Other" (indicating lower loyalty), providing a clear visual analysis of customer retention patterns. By highlighting states with the highest concentrations of loyal customers, the plot enables businesses to identify regions where customer engagement is strong, which can inform targeted marketing strategies and the development of loyalty programs. This geographic insight is crucial for optimizing resource allocation and enhancing customer retention efforts in areas that show significant loyalty, ultimately contributing to improved business performance and customer satisfaction.

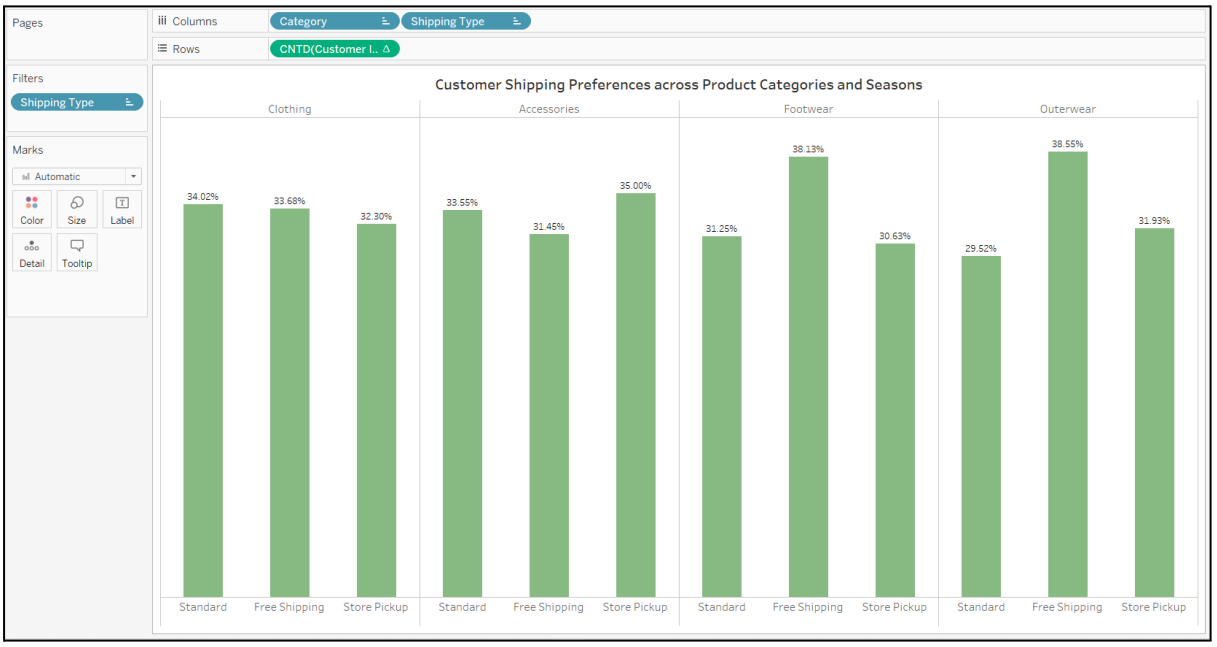
Plot 12: Preferred Shipping Methods by Seasons



Question it addresses: How do customer preferences for different shipping types vary across seasons?

This plot provides a seasonal analysis of shipping method usage, such as "Standard," "Free Shipping," and "Store Pickup." This plot categorizes shipping preferences across fall, spring, summer, and winter, revealing patterns in customer choices that adapt to seasonal factors. For instance, it may highlight an increase in "Free Shipping" during holiday seasons when consumers are more price-sensitive or a preference for "Store Pickup" in the summer months when customers prefer immediate access to their purchases. This information is invaluable for businesses as it helps optimize inventory and logistics strategies to align with seasonal demand fluctuations, ensuring that shipping options meet customer expectations and enhance overall satisfaction. By understanding these trends, companies can better allocate resources and tailor their marketing efforts to promote the most popular shipping methods during specific seasons, ultimately driving sales and improving customer loyalty.

Plot 13: Preferred Shipping Methods by Product Category



Question it address- What are the preferred shipping methods for different product categories?

This plot provides a detailed breakdown of the top three shipping methods utilized for each category. This plot highlights the percentage preference for various shipping options, such as "Standard," "PickUp," and "Free Shipping," within categories like Clothing, Electronics, and Home Goods. By showcasing consumer behavior trends specific to each product category, the visualization reveals how preferences may shift based on the nature of the items being purchased. For instance, customers might favor expedited shipping for time-sensitive products like electronics while opting for free shipping for clothing purchases. This insight not only helps businesses understand their customers' shipping preferences but also complements analyses regarding how discount applications vary by product category and shipping method, enabling more informed decisions on inventory management, pricing strategies, and promotional efforts tailored to specific product lines.

Section 6: Interactivity

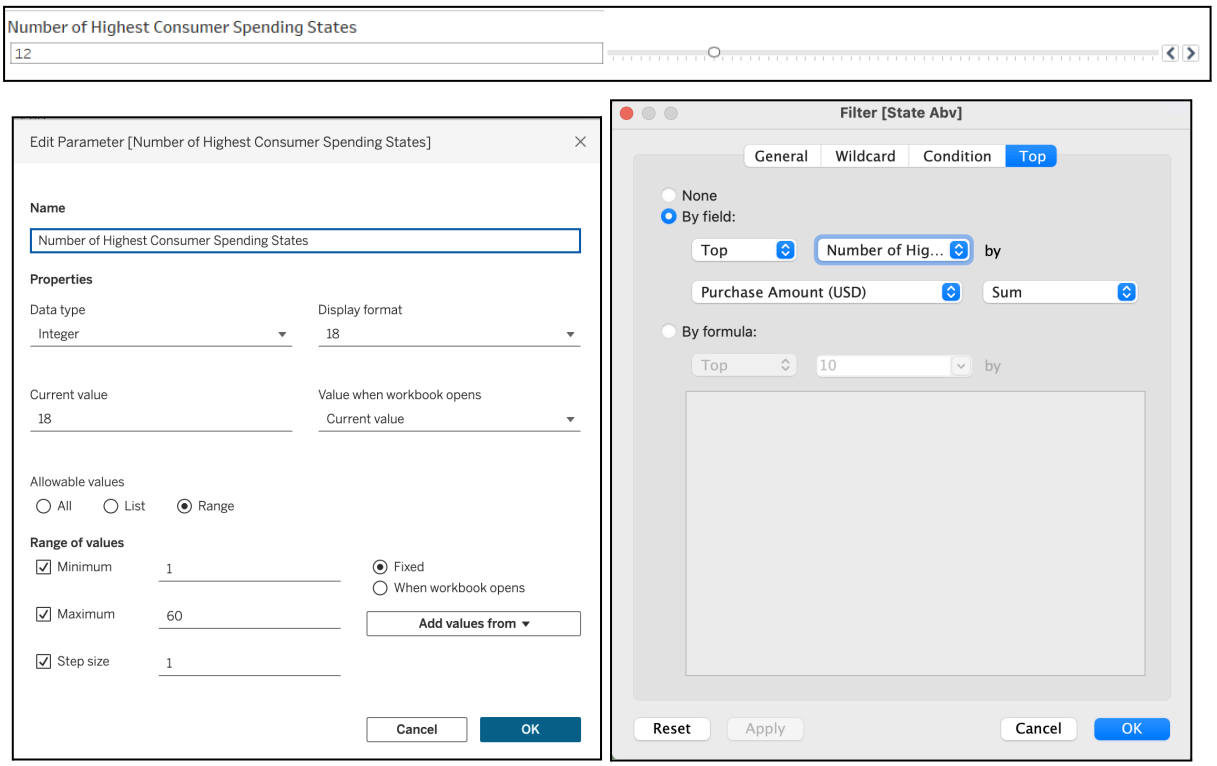
1. Interactive Slider for Top States by Total Purchase Amount (Dashboard 2)

A parameter called 'Number of Highest Consumer Spending States' has been created to control the display of the top states by total purchase amounts in the ‘Top States by Overall Consumer Spending’ visualization. Represented by a slider in the Tableau dashboard, it allows users to select the number of top-spending states, ranging from 1 to 60, with a step size of 1. Adjusting the slider dynamically updates the visualization, providing a flexible view of the data.

A Top N Filter is applied to the Location (states) dimension, utilizing the parameter to display the top N states based on SUM([Purchase Amount]). Configured as a Filter by Field, the filter dynamically updates the visualization in real-time as users adjust the slider.

Similarly, a Bottom N Filter is applied to display the lowest-spending states using the 'Number of Lowest Consumer Spending States' parameter. This filter identifies the bottom N states based on SUM([Purchase Amount]), enabling dynamic exploration through a slider.

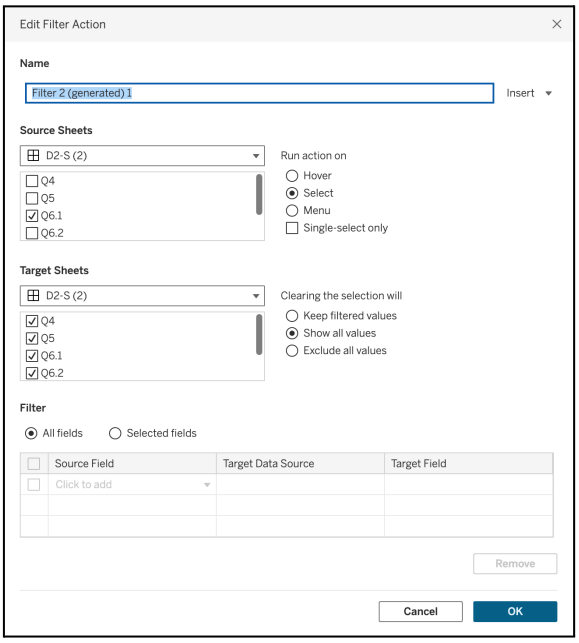
These features enhance interactivity in the dashboard. Plot 4 displays the top N states, while Plot 5 highlights the bottom N states, allowing users to effectively explore consumer spending trends.

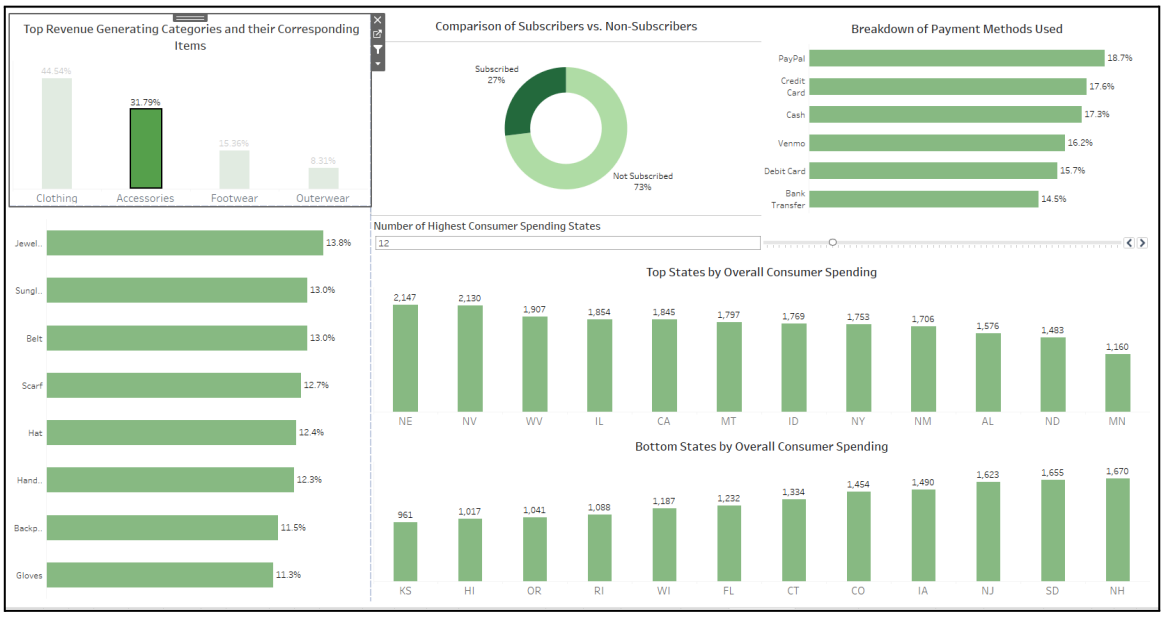


2. Filter Action for Product Categories and Items (Dashboard 2)

To enable interactive exploration of top-selling categories and items, a Filter Action has been implemented in Tableau. This action uses the Category field as the source field and dynamically updates the target fields across multiple visualizations. The 'Top Revenue Generators by Product Category' (Plot 6) serves as the source visualization, and the target visualizations include 'Top Revenue-Generating Items' (Plot 7) as well as Plots 4, 5, 8, and 9 in the dashboard.

When a user selects a specific category in Plot 6, the Filter Action updates the remaining visualizations to display relevant data, such as the top-selling items within the selected category, a comparison of subscribers versus non-subscribers, and the top and bottom states by overall consumer spending for that category. This action ensures seamless interactivity and allows users to drill down into specific data points across related visualizations, enhancing the overall exploration and analysis experience.

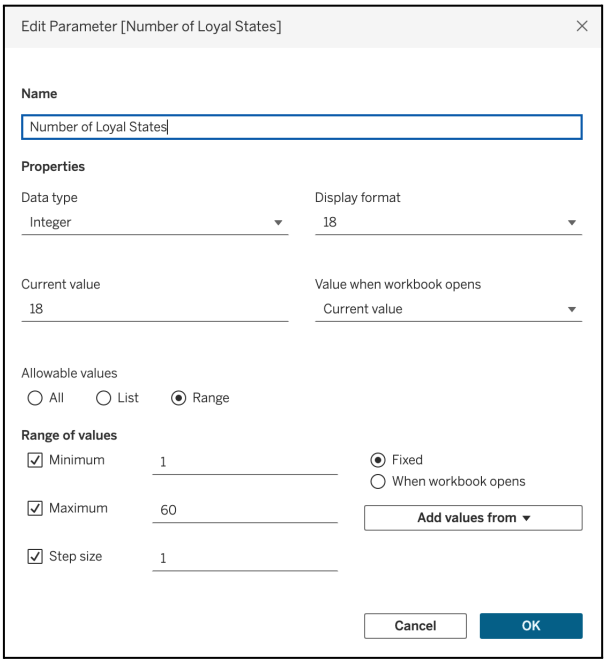


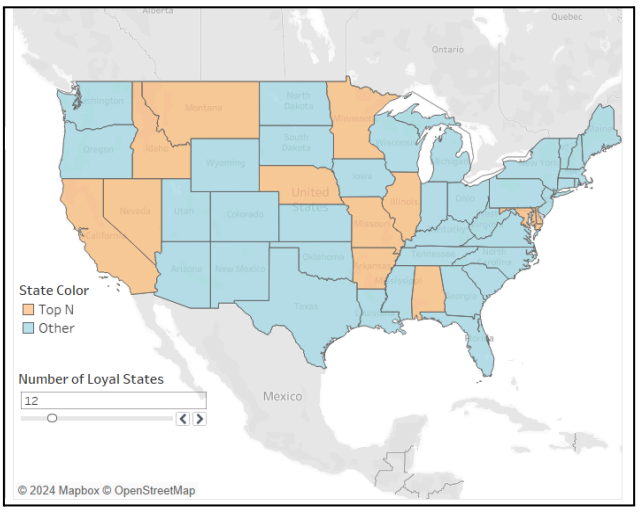


3. Loyal Customer States Visualization (Dashboard 3)

For visualizing states with the most loyal customers in the ‘Geographic Distribution of Customer Loyalty’ plot, a parameter named 'Number of Loyal States' has been created. This parameter is adjustable via a slider in the Tableau dashboard, allowing users to select a value between 1 and 55 with a step size of 1. A Top N Filter is applied to the Location (states) field, using the parameter to display the top N loyal states based on the SUM([Previous Purchases]).

The visualization is represented as a choropleth map (Plot 11), where the top N states are highlighted in green, and the remaining states are colored in orange. The color dynamically adjusts based on the user’s input through the parameter slider. For example, setting the slider to 5 highlights the top 5 states with the highest customer loyalty in green, distinctly marking them as areas with high loyalty. This interactive setup provides a clear and customizable visualization of customer loyalty across states.





4. Interactive Visualization of Seasonal Product Category Leaders Across States (Dashboard 1)

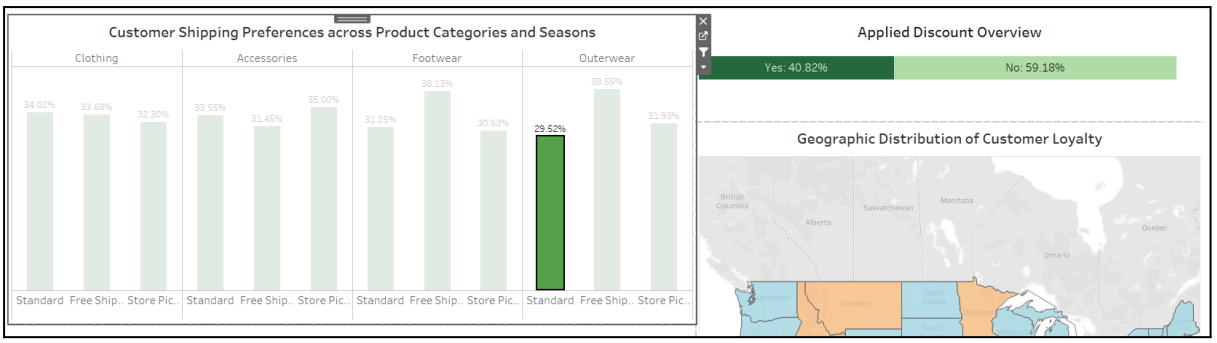
Plot 3 showcases the top-selling product categories across states, based on seasonal trends. A calculated field named 'Top Category by State' is used to dynamically color the states by the product category with the highest SUM([Previous Purchases]) for the selected season. The calculation incorporates both Category and Season dimensions to ensure accurate results within the given context.

An interactive Season filter has been implemented as a single-select dropdown, allowing users to select only one season at a time. This filter dynamically updates Plot 3, ensuring that the visualization reflects the selected season. By interacting with the dropdown, users can explore how the leading product categories vary across states for the chosen season, providing an intuitive way to analyze seasonal consumer behavior trends.

5. Interactivity for Exploring Discount Usage and Shipping Preferences (Dashboard 3)

The dashboard combining Plot 10 and Plot 13 utilizes Tableau's Action Filters to provide interactive insights into the relationship between discount usage and shipping preferences across product categories. Users can explore this connection through two visualizations: a bar chart (Plot 13) titled "Preferred Shipping Methods by Product Category" and a stacked bar chart (Plot 10) titled "Discount Usage Overview."

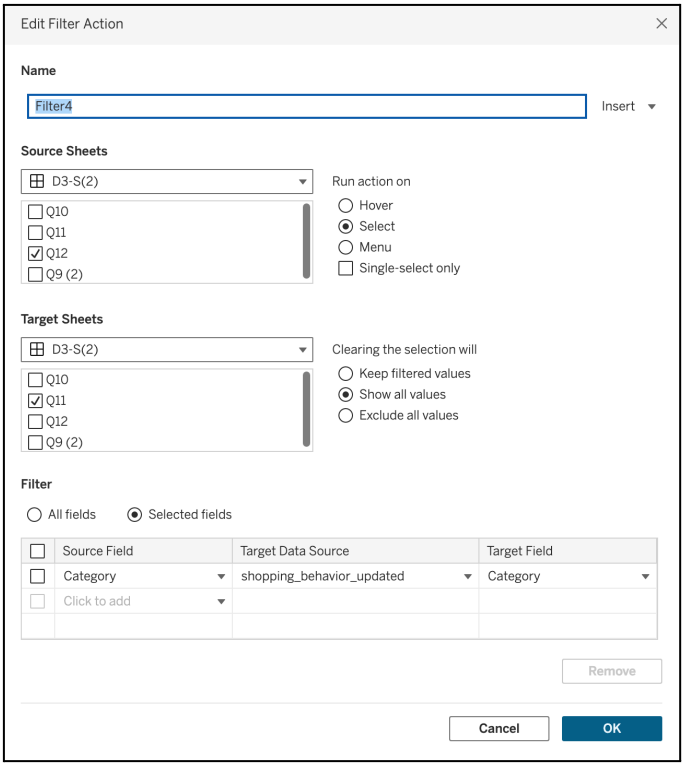
When a user selects a specific product category or shipping method in Plot 13, the Action Filter dynamically updates Plot 10 to display the percentage of orders within the selected category or shipping method where a discount was applied versus not applied. This interactivity is implemented by setting the bar chart (Plot 13) as the source sheet and the stacked bar chart (Plot 10) as the target sheet, with the fields 'Category' and 'Shipping Type' as the source and target fields. This setup enables seamless exploration of consumer behavior trends, allowing users to drill down into the relationship between discounts and shipping preferences across product categories.

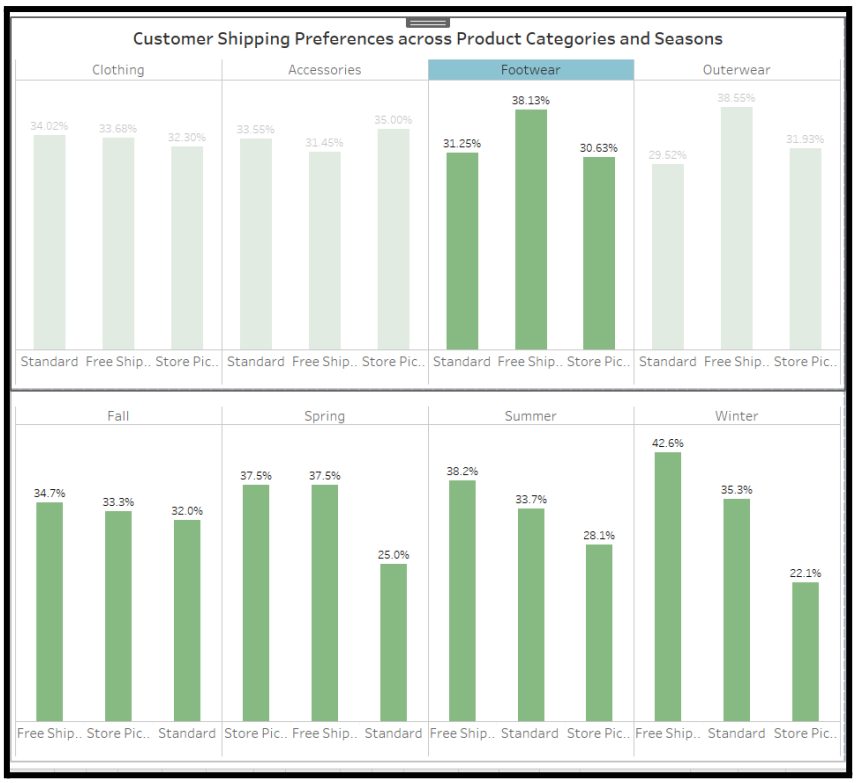


6. Interactivity for Exploring Shipping Preferences Across Product Categories and Seasons (Dashboard 3)

The dashboard integrates Plot 13 ("Preferred Shipping Methods by Product Category") and Plot 12 ("Preferred Shipping Methods by Seasons") to enable interactive exploration of shipping preferences. A Filter Action has been implemented in Tableau, where Plot 13 serves as the source sheet and Plot 12 as the target sheet.

The Category field is used as the source field, allowing users to select a specific product category in Plot 13. This selection dynamically updates Plot 12 to display the seasonal distribution of preferred shipping methods for the chosen category. This functionality provides an interactive and seamless way to analyze how shipping preferences vary across seasons for different product categories, uncovering valuable seasonal trends and consumer behavior insights.





7. Interactivity for Exploring Demographics of the Customer Base (Dashboard 1)

The dashboard features two interactive visualizations: Plot 1 ("Distribution of Customer Base across Age Categories") and Plot 2 ("Distribution of Customer Base across Gender"), linked through Tableau's Action Filters to enable seamless interactivity. When a user selects an age category in Plot 1, Plot 2 dynamically updates to show the gender distribution for that age group, and vice versa—selecting a gender category in Plot 2 updates Plot 1 to reflect the age distribution within the selected gender. These Action Filters, with Age Category and Gender as the source fields, provide an intuitive way to explore demographic relationships and identify trends, such as the age groups where gender representation shifts or overlaps. This interactive approach offers valuable insights into the customer base's composition, allowing businesses to understand demographic patterns and tailor their strategies accordingly.

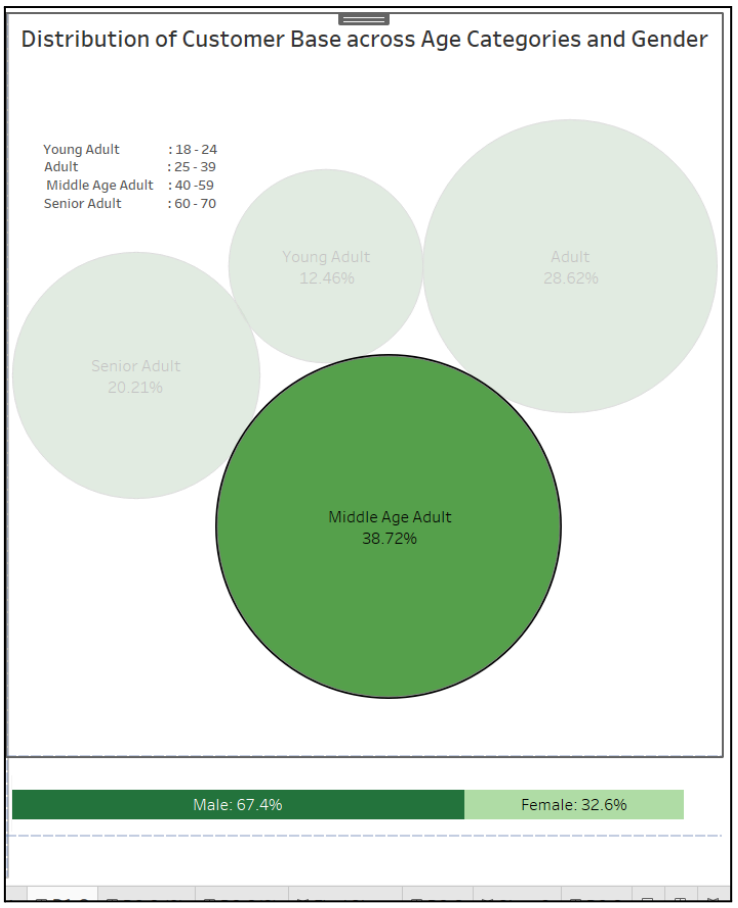


TABLEAU STORY LINK:
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