

DATA VISUALIZATION

ASSIGNMENT - 10

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Question :

An Interactive Dashboard

May be built using Tableau, Power BI, or another tool (check with me)

Assignment Constraints:

- Based on a large and rich dataset
- Your Dashboard should have at least three display areas
- Your Dashboard should have at least two different display types
- You need to employ at least three interactions

I am looking for flawless execution

- Graphic design principles
- Cognitive models and gestalt principles
- Good user interface

You will also need to submit a short report

- Objectives
- Steps to develop
- Key principles you employed

Output :

Dataset :

The dataset that I am using is Amazon India clothes sales and shipping (kaggle) it consists of approximately 129,000 rows of sales data from an Amazon store. The dataset size is approximately 72MB, indicating a substantial amount of information to analyze. It includes details such as order IDs, dates, order statuses, fulfillment methods, sales channels, shipping service levels, product styles, SKUs, categories,

sizes, ASINs, courier statuses, quantities, currencies, amounts, shipping locations, promotional IDs, B2B indicators, fulfillment methods, and an unnamed column. With this dataset, we can explore and gain insights into sales trends, customer behavior and more through data visualizations. The dataset provides a comprehensive view of the e-commerce sales activities and can serve as a valuable resource for analytical purposes.

index	Order ID	Date	Status	Fulfillment	Sales Channel	ship-service-level	Style	SKU	Category	Size	
0	408-8078784-5731545	04-30-22	Cancelled	Merchant	Amazon.in	Standard	SET388	JNE3781-KR-NP-S	Set	S	
1	171-9198151-1101146	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3781	JNE3781-KR-XXXL	kurta	3XL	B
2	404-0687676-7273146	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3371	JNE3371-KR-XL	kurta	XL	B
3	404-9615377-7133951	04-30-22	Cancelled	Merchant	Amazon.in	Standard	J0341	J0341-KR-L	Western Dress	L	B
4	407-1069791-7240320	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3671	JNE3671-KR-XXXL	Top	3XL	B
5	504-8690884-575765	04-30-22	Shipped	Amazon	Amazon.in	Expedited	SET284	SET284-KR-NP-XL	Set	XL	B
6	604-5748409-6856555	04-30-22	Shipped	Amazon	Amazon.in	Expedited	J0095	J0095-SET-L	Set	L	B
7	708-7807733-3785945	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-S	kurta	S	B
8	807-5443024-9233168	04-30-22	Cancelled	Amazon	Amazon.in	Expedited	SET200	SET200-KR-NP-A-XXXL	Set	3XL	B
9	902-4393761-0311520	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3461	JNE3461-KR-XL	kurta	XXL	B
10	407-5633205-6970741	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3101	JNE3101-KR-G-S	kurta	S	B
11	111-14638481-6326716	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3501	JNE3501-KR-XS	kurta	XS	B
12	120-5513694-1416768	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3405	JNE3405-KR-XS	kurta	XS	B
13	130-7955686-3083534	04-30-22	Shipped	Amazon	Amazon.in	Expedited	SET182	SET182-KR-DH-XS	Set	XS	B
14	140-1298370-1920302	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	J0351	J0351-SET-L	Set	L	B
15	150-965581-9520319	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JUN3388	JUN3388-KR-6XL	kurta	6XL	B
16	160-9379318-4555504	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3721	JNE3721-KR-XXL	kurta	XXL	B
17	170-9013803-8009918	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3405	JNE3405-KR-XL	kurta	XL	B
18	180-4020358-6833511	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3697	JNE3697-KR-XXL	kurta	XXL	B
19	190-9567686-1051546	04-30-22	Shipped	Amazon	Amazon.in	Expedited	SET254	SET254-KR-NP-XS	Set	XS	B
20	200-4050779-0710360	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3795	JNE3795-KR-XXXL	kurta	3XL	B
21	210-8494550-5860325	04-30-22	Shipped	Amazon	Amazon.in	Expedited	SET345	SET345-KR-NP-M	Set	M	B
22	220-1050577-2819394	04-30-22	Shipped	Amazon	Amazon.in	Expedited	JNE3373	JNE3373-KR-L	kurta	L	B
23	230-6019946-2909498	04-30-22	Cancelled	Merchant	Amazon.in	Standard	SET291	SET291-KR-PP-M	Set	M	B
24	240-3384087-4005164	04-30-22	Shipped	Amazon	Amazon.in	Expedited	MEN5002	MEN5002-KR-L	kurta	L	B
25	250-8191138-5176316	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	NW030	NW030-TP-PJ-XS	Set	XS	B
26	260-9230474-9657916	04-30-22	Shipped - Delivered to Buyer	Merchant	Amazon.in	Standard	JNE3415	JNE3415-KR-XXXL	kurta	3XL	B

Link - <https://www.kaggle.com/datasets/thedevastator/unlock-profits-with-e-commerce-sales-data?select=Amazon+Sale+Report.csv>

Objectives :

- Analyzing Sales Performance:** The visualizations aims to analyze the sales performance of the clothes category on Amazon India. It explores the quantity of clothes shipped, sales channels used to provide insights into overall sales trends.
- Identifying Key Markets:** The visualizations focuses on identifying key markets by analyzing the quantity of clothes shipped across different states. It highlights the top-performing states, such as Maharashtra, Karnataka, and Tamil Nadu, to understand geographical demand patterns.
- Evaluating Sales Channels:** The visualizations assesses the effectiveness of different sales channels by comparing the quantity of clothes sold on Amazon.in versus Non-Amazon channels. This evaluation helps understand the dominance of Amazon's own platform and the potential impact of external sales channels.

- **Identifying Popular Ship Service Levels:** The visualizations ranks states based on quantity and category, considering the ship service levels used. This analysis helps identify popular ship service options and their impact on sales and customer satisfaction.
- **Identifying Popular Clothes Sub Category:** The visualizations examines the cloth sub category with the total amount , so that the organization can concentrate more on one.
- **Monitoring Order Status and Courier Performance:** The visualizations examines the quantity of clothes by status and category to understand the distribution across different stages of the order process. Additionally, it assesses the quantity by courier status and category to evaluate the performance of different courier services.

Visualizations :

- **Map: Quantity by States**

The visualization "Map: Quantity by States" provides insights into the quantity of clothes shipped across different states. Based on the data, the top three states with the highest quantity of clothes shipped are:

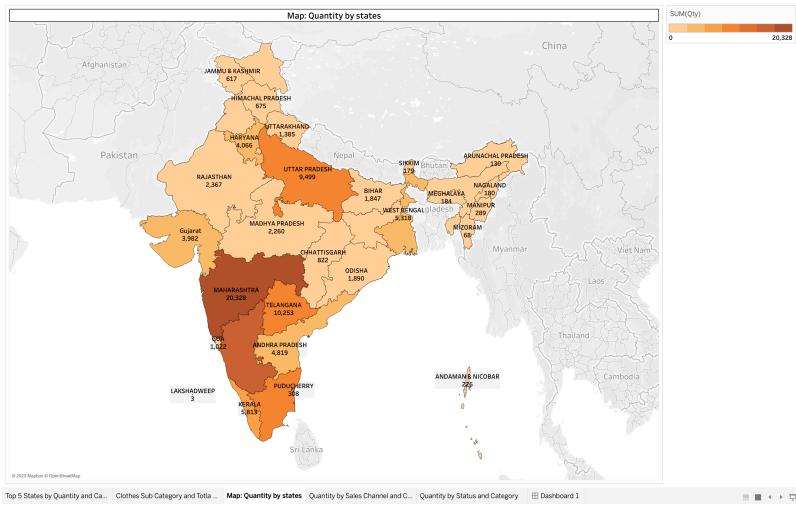
1. Maharashtra: The state of Maharashtra leads with a total quantity of 20,328 clothes shipped.
2. Karnataka: Following closely is Karnataka, with a significant quantity of 15,901 clothes shipped.
3. Tamil Nadu: Tamil Nadu secures the third position with a quantity of 10,412 clothes shipped.

These findings highlight the importance of these states as key markets for the clothes category on Amazon India. Understanding the distribution of sales quantity across states allows us to identify areas of high demand and tailor marketing and inventory strategies accordingly. Maharashtra, Karnataka, and Tamil Nadu present promising opportunities for growth and further market penetration in the clothes category.

Steps to develop :

In the visualization "Map: Quantity by States," I have utilized default latitudes and longitudes developed by Tableau to represent the quantity of clothes shipped across different states. To create this visualization, I employed the "sum of quantity" as

the primary measure and utilized the fields "ship state" and "ship country" to geographically map the data. By leveraging these default coordinates, I was able to effectively visualize the distribution of clothes quantity across various states, providing a clear understanding of the sales patterns on a geographical level. This visualization offers valuable insights into which states have higher demand for clothes, allowing for targeted marketing strategies and optimized inventory management in those regions.



• Clothes Sub Category and Total Amount

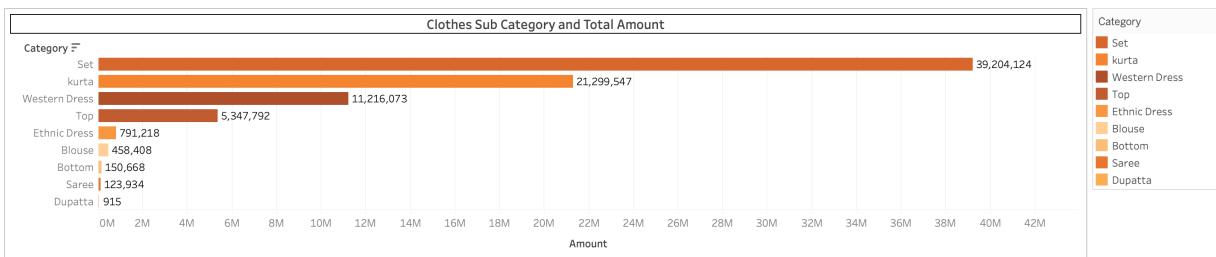
The visualization "Clothes Sub Category and Total Amount" reveals the top three clothes subcategories based on their total sales amount. These subcategories are:

1. Set: The "Set" subcategory has achieved the highest total sales amount (39,204,124) among all clothes subcategories.
2. Kurta: Following closely is the "Kurta" subcategory, which also demonstrates a significant total sales amount (21,299,547).
3. Western Dress: The "Western Dress" subcategory secures the third position in terms of total sales amount(11,216,073).

These findings emphasize the popularity and profitability of these subcategories within the clothes category on Amazon India. The success of "Set," "Kurta," and "Western Dress" subcategories suggests that they resonate well with customers, potentially indicating strong demand and customer preference. Understanding the performance of specific subcategories allows for strategic decision-making, such as inventory management and marketing efforts, to further capitalize on these successful subcategories.

Steps to develop :

In this visualization "Clothes Sub Category and Total Amount," I examined the relationship between different clothes subcategories and their corresponding total sales amounts. By aggregating the data based on categories, I determined the total amount associated with each subcategory. This analysis provides valuable insights into the popularity and profitability of different subcategories within the clothes category. By understanding which subcategories generate higher sales amounts, we can make informed decisions regarding inventory management, marketing strategies, and product development.



• Top 5 States by Quantity and Shipping Type

The visualization "Top 5 States by Quantity and Shipping Type" highlights the top five states based on the quantity of clothes shipped, categorized by shipping type. The states are as follows:

1. Maharashtra: Maharashtra is the top state in terms of the quantity of clothes shipped.
2. Karnataka: Following closely is Karnataka, securing the second position in terms of the quantity of clothes shipped.
3. Tamil Nadu: Tamil Nadu ranks third among the top five states based on the quantity of clothes shipped.

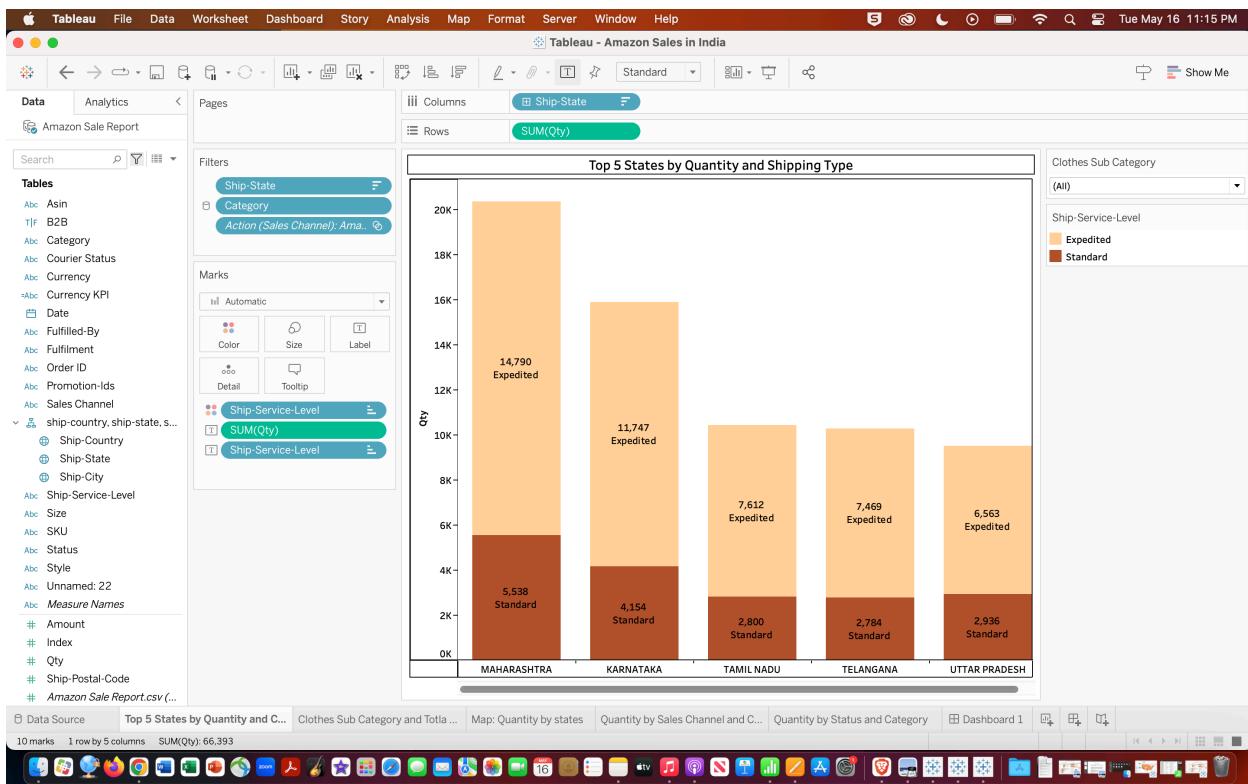
The visualization provides valuable insights into the distribution of clothes shipped across different states and allows us to understand the preferences for shipping types in each state. By analyzing these top states, we can identify key markets and tailor our logistics and shipping strategies accordingly to optimize the delivery process and enhance customer satisfaction.

Steps to develop :

In the visualization "Top 5 States by Quantity and Shipping Type," I explored the top five states based on the quantity of clothes shipped, categorized by ship service

level. By aggregating the data and analyzing the sum of quantity for each state and ship service level, and have filtered the data by taking only top 5 using the edit filter option, here we can gain insights into the preferences and trends in shipping methods. Additionally, I considered the category of the clothes being shipped as a filter.

This visualization allows us to identify the states that have the highest quantities of clothes shipped and understand the specific ship service levels chosen by customers in those states.



• Quantity by Sales Channel

The visualization "Quantity by Sales Channel" presents the distribution of clothes quantity based on different sales channels. The analysis reveals the following insights:

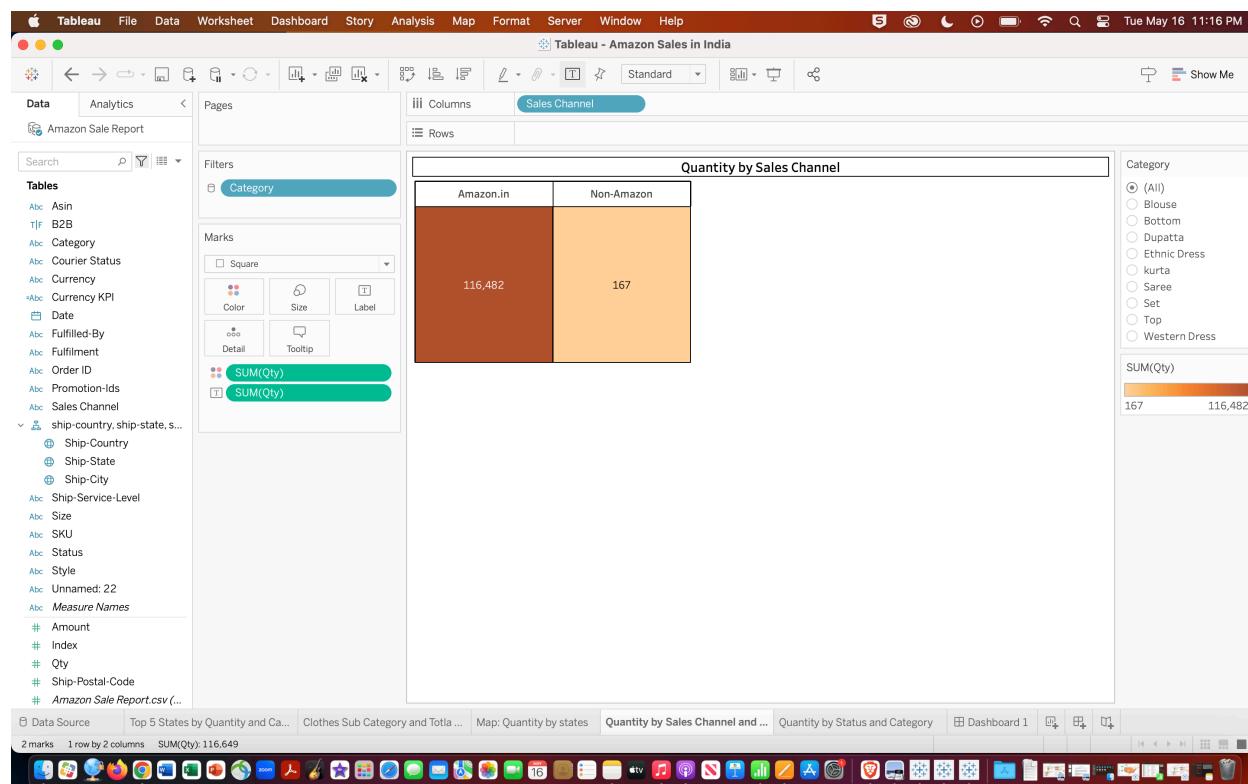
1. Amazon.in: The sales channel Amazon.in stands out as the dominant platform, accounting for a substantial quantity of 116,482 clothes shipped.
2. Non-Amazon: Non-Amazon channels, on the other hand, contribute a comparatively smaller quantity of 167 clothes shipped.

This visualization underscores the significance of Amazon's own platform, Amazon.in, as the primary sales channel for the clothes category on Amazon India. The large quantity associated with Amazon.in highlights its strong presence and customer reach, indicating its influence on overall sales performance. While the contribution from Non-Amazon channels is relatively smaller, it still represents an opportunity for growth and diversification. Analyzing the quantity by sales channel allows us to understand the market landscape and make informed decisions regarding channel optimization and resource allocation.

Steps to develop :

In the visualization "Quantity by Sales Channel," I examined by creating a square using the quantity of clothes sold across different sales channels. By aggregating the data and analyzing the sum of quantity for each sales channel, I gained insights into the distribution of sales among various channels. Additionally, I considered the category of the clothes as a filter .

This visualization allowed me to identify the dominant sales channel, Amazon.in, which accounted for a significant quantity of clothes sold. I also observed a smaller quantity of clothes sold through Non-Amazon channels.



• Quantity by Status of the Delivery

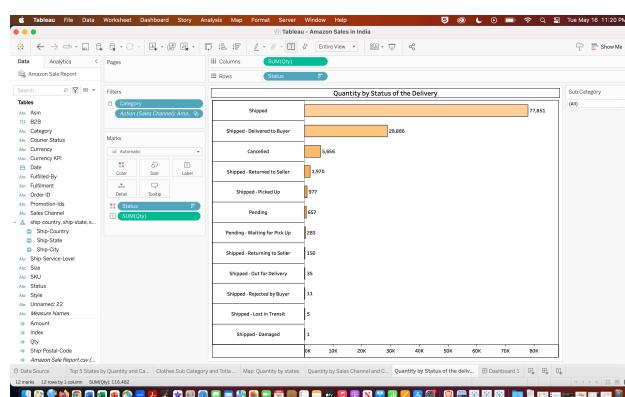
The visualization "Quantity by Status of the Delivery" provides insights into the distribution of clothes quantity based on the status of delivery. Here are the key findings:

1. Shipped: The majority of clothes, with a quantity of 77,851, are in the "Shipped" status. This indicates that these orders have been dispatched for delivery.
2. Shipped - Delivered to Buyer: A significant quantity of 28,886 clothes have been successfully delivered to the buyers.
3. Cancelled: A smaller quantity of 5,656 clothes orders have been cancelled.
4. Shipped and Returned to Seller: A quantity of 1,970 clothes orders were initially shipped but subsequently returned to the seller.
5. Shipped - Pickup: There are 977 clothes orders in the "Shipped - Pickup" status.
6. Pending: A total of 657 clothes orders are currently in the "Pending" status.

By examining the quantity by status of the delivery, we gain insights into the various stages of the delivery process and order fulfillment. This information allows us to monitor the performance of the delivery system, identify potential bottlenecks, and take corrective actions to improve customer satisfaction.

Steps to develop :

In the visualization "Quantity by Status of the Delivery," I created a bar chart to explore the distribution of clothes quantity based on different delivery statuses. By selecting and dragging the appropriate chart type, I visually represented the sum of quantity for each delivery status. Additionally, I took into account the category of the clothes being delivered.



Interactive Dashboard Filter:

In the design of this interactive dashboard, filtering functionality has been implemented based on clothing subcategories. Users can leverage the interactive filters to refine the data and focus on specific subcategories of interest. By selecting a particular subcategory, the visualizations dynamically update to display insights and patterns specific to that clothing subcategory. This filtering capability allows users to drill down into the data, analyze individual subcategories in detail, and gain a deeper understanding of their performance and trends. By filtering based on clothing subcategories, users can explore and extract valuable insights tailored to their specific areas of interest within the clothes category. This interactive feature enhances the usability and flexibility of the dashboard, empowering users to perform targeted analysis and make data-driven decisions related to different clothing subcategories.

Key Principles Employed :

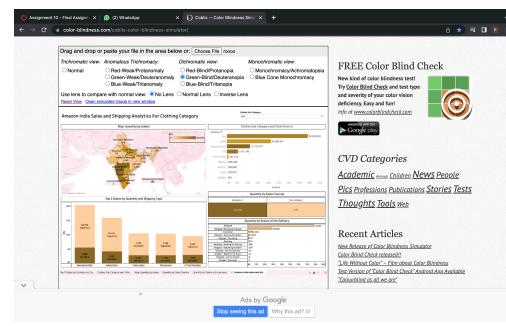
The successful implementation of Gestalt principles of visual perception has greatly enhanced the clarity and organization of the dashboard used in this report. By strategically applying principles such as proximity, similarity, and closure, related elements have been intuitively grouped together, enabling viewers to easily identify patterns and establish a cohesive visual structure. This design approach ensures that the dashboard effectively communicates information and facilitates efficient data interpretation.

Furthermore, inclusivity and accessibility have been prioritized throughout the design process. I took the initiative to check for color blindness issues using the Coblis website, ensuring that the chosen color palette is accessible to individuals with different color perception abilities. By addressing potential barriers to comprehension, the dashboard accommodates a wider audience and promotes equal access to information.

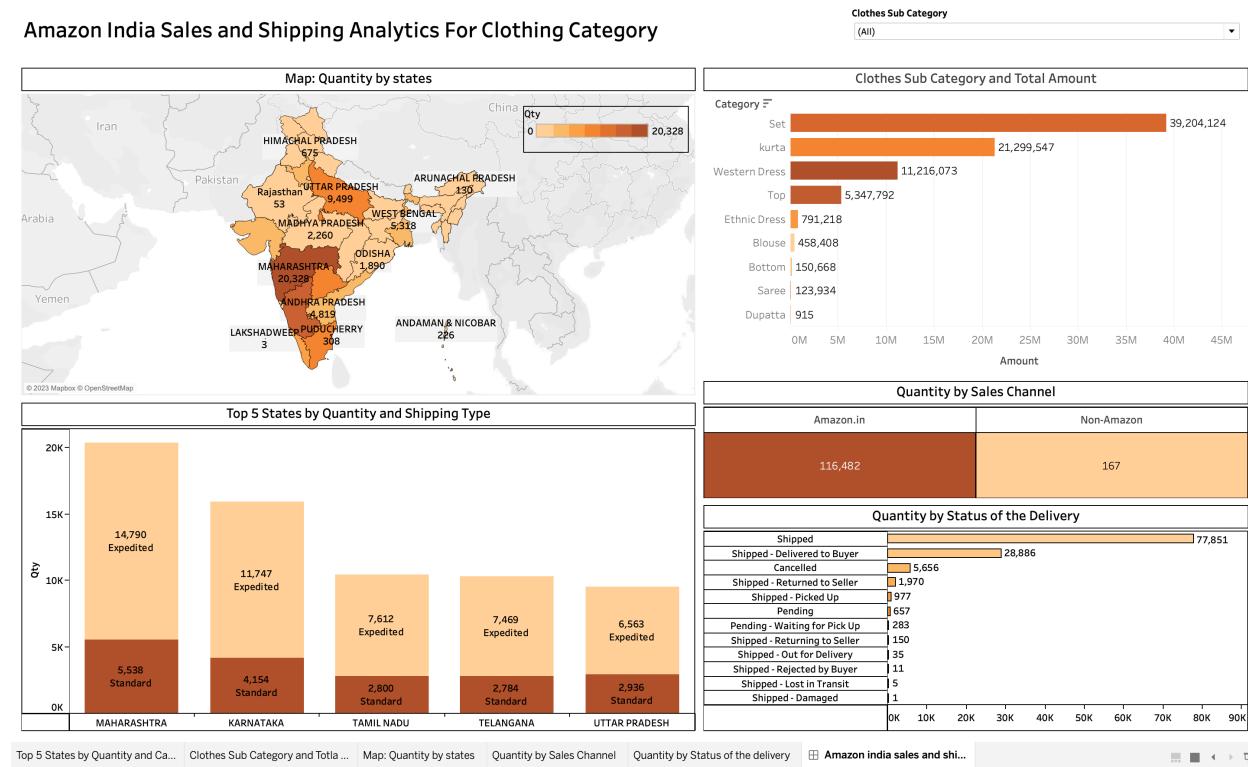
Additionally, the selection of an appropriate font significantly contributes to the overall clarity and legibility of the dashboard.

By choosing a font that is clear, visually appealing, and suitable for the content, the readability of the presented information is enhanced. This careful font selection ensures that viewers can comfortably engage with the data, eliminating any unnecessary strain or difficulty in reading.

In conclusion, through the thoughtful



application of Gestalt principles, consideration for accessibility, and the use of an appropriate font, the dashboard design for this report successfully delivers information in a visually appealing and accessible manner. By utilizing these design strategies, the dashboard not only effectively communicates insights but also promotes better comprehension and engagement. It serves as a valuable tool for data analysis and decision-making, and I am confident in the quality and effectiveness of the visualizations presented in my report.



Conclusion:

In conclusion, the visualizations presented in this dashboard provide valuable insights into the sales and shipping analytics of the clothes category on Amazon India. Through the use of interactive and visually appealing visualizations, I have explored various aspects of the data, including quantity by states, sales channel distribution, clothing subcategories, top-performing states by quantity and shipping type, and quantity by delivery status. These visualizations enable us to identify key market trends, understand customer preferences, optimize sales channels, and evaluate the efficiency of the delivery process.

By leveraging the Gestalt principles of visual perception, I have enhanced the clarity and organization of the dashboard, allowing for easy comprehension and data exploration. Additionally, I have considered accessibility by checking for color blindness issues and selecting an appropriate font, ensuring inclusivity and improved readability for all users.

The interactive features of the dashboard, such as filtering by clothing subcategory, further enhance user engagement and enable customized data exploration. Users can drill down into specific subcategories to uncover deeper insights and make informed decisions based on their specific interests.

Overall, this dashboard provides a comprehensive and actionable view of the sales and shipping analytics in the clothes category on Amazon India. It serves as a valuable tool for decision-making, enabling us to optimize inventory management, tailor marketing strategies, improve delivery processes, and ultimately enhance customer satisfaction. By leveraging the insights gained from these visualizations, we are well-equipped to drive growth, maximize profitability, and make data-driven decisions in the dynamic e-commerce landscape.

THE END