Section 1- Data

The dataset used to develop the visuals in Tableau was obtained from Kaggle, an open-source data platform. It is sales data that provides insights into various functions of a business. This dataset is ideal for creating meaningful visualizations as it is a structured dataset and has diverse variables, which allows for multiple perspectives in data analysis. This makes it highly valuable for businesses aiming to make strategic decisions about their operations.

Key variables in the dataset include:

Variable	Description
ORDERDATE	Allows for time-based analysis (monthly/quarterly/yearly trends)
PRODUCTLINE	Product categories to compare and analyze sales performance.
MSRP	Suggested retail price, helps assess pricing strategies and revenue.
COUNTRY	Facilitates the study of sales distribution by geographic regions.
DEALSIZE	Sales size categorized as Small, Medium, or Large.
STATUS	Order status to track fulfillment and performance.
QUANTITYORDERED	Evaluates the volume of products sold in each transaction.

Additionally, the dataset includes variables like CustomerName, City, State, and Territory, which allows for microscopic segmentation and regional analysis. These geographic variables are useful for visualizing sales trends, identifying high-performing regions, and creating targeted marketing strategies.

The dataset offers a comprehensive overview of sales performance, customer behavior, and product trends. It can help a business make smarter decision-making in areas such as inventory management, marketing, and customer targeting. For instance, time-based variables reveal seasonal trends and revenue fluctuations, enabling businesses to adjust sales strategies and forecast future performance. Product and deal-size data highlight purchasing patterns, such as frequently purchased items and the influence of pricing on buying decisions.

By analyzing this data, businesses can refine their sales strategies, improve marketing efforts, and develop marketing strategies tailored to specific customer segments. This approach helps organizations enhance efficiency, boost profitability, and maintain a competitive edge in the market.

One major advantage of using this dataset is that similar data can be obtained for any business, thus making the dashboards developed highly versatile. The visualizations and insights developed using the dataset can be extended to analyze and improve operations in any business organization that we are interested in.

Section 2 - Reflection on Self Learning

To learn Tableau, I utilized the Udemy course Tableau 2024 A-Z: Hands-On Tableau Training for Data Science (n.d.), which I purchased last semester. This course provided a comprehensive introduction to Tableau's key functionalities, including establishing data connections, creating visualizations, and designing dashboards. Although I initially was unable to dedicate enough time to complete the course due to other commitments, reviewing the course allowed me to build a solid foundation in Tableau and gain the skills necessary to complete my assignment. This learning experience not only helped me meet the assignment deliverables but also added another data visualization tool to my resume.

While working on the assignment, I encountered two significant challenges: understanding calculated fields and using dual-axis and synchronized-axis charts. Calculated fields allows for the creation of custom metrics and advanced visualizations by applying functions and mathematical equations to the dataset. Initially, I was struggling to understand if the tool is being implemented accurately as it heavily relies on understating and familiarity with Tableau's function library. The Udemy course briefly introduced calculated fields, but I found that it lacked detailed explanations and real-world applications, which led to a gap in the understanding of the concept.

To overcome this challenge, I supported my learning with YouTube tutorials by Chandoo (2024), particularly his video Learn Tableau in 15 Minutes, and Create Your First Report (FREE Sample Files). Chandoo's tutorials broke down calculated fields into simple steps and provided practical examples, such as using logical functions to categorize data and applying arithmetic functions to generate new metrics. Practising these examples alongside the videos helped me gain confidence in creating calculated fields and solidify my understanding.

Another challenge was learning to use dual-axis and synchronized-axis charts effectively, which are essential for comparing datasets with different scales. For example, while practicing I worked on plotting revenue and customer count on a single chart while ensuring the data was accurately represented. Chandoo's YouTube tutorials proved very useful. He explained how to synchronize axes to avoid errors and adjust formatting options like color and labels, to make it easier to understand the charts. Practicing with sample data allowed me to refine my skills and become confident in creating clear and accurate visualizations.

Overall, the Udemy course was a great starting point, offering a structured learning approach, but the YouTube tutorials were more impactful for addressing specific challenges like dual-axis charts. Additionally, the comment sections of the videos guided me to more resources, enriching my learning experience.

For future self-learning, I plan to research courses thoroughly to ensure they meet my learning goals and leverage free resources like YouTube tutorials and community discussions to address specific questions. I also plan to prioritize hands-on practice to deepen my understanding and enhance my ability to apply new skills. This experience has shown me the effectiveness of combining different learning approaches to become proficient with tools like Tableau.

Section 3 – Data Visualisation

3.1 Sales Overview Dashboard

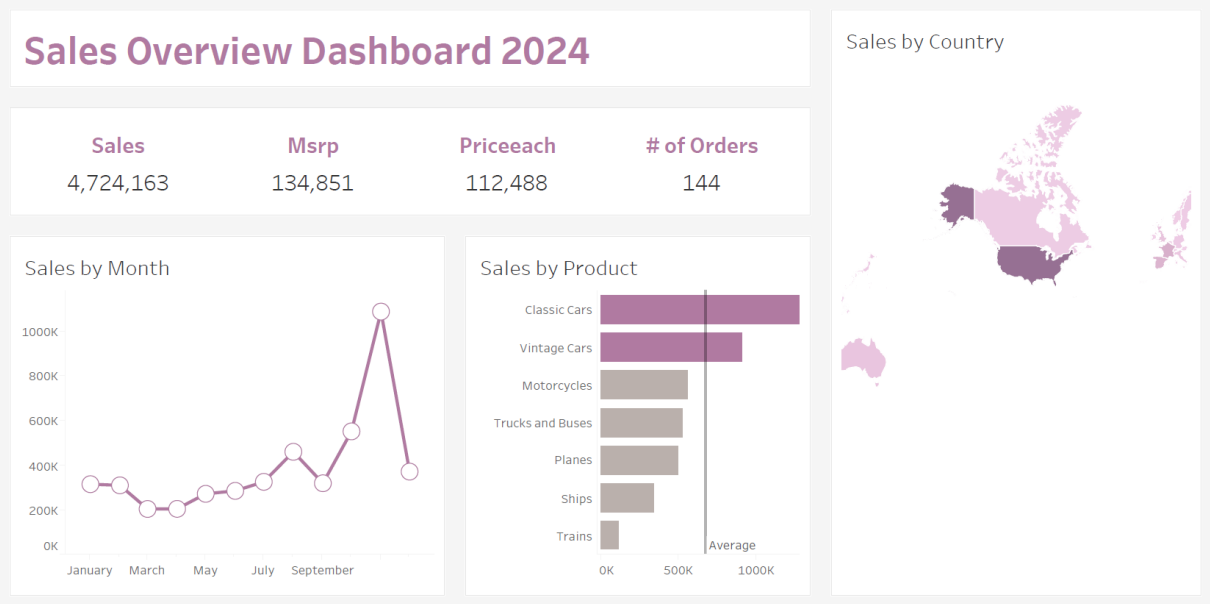

Figure 3.1 – Sales Overview Dashboard

The Sales Overview Dashboard provides a comprehensive look at how the business performed in 2004, offering a summary of key performance metrics. It highlights important numbers from a business point of view such as total sales, MSRP (Manufacturer's Suggested Retail Price), the average price per unit, and the number of distinct orders received. These numbers so provide a good starting point for the analysis. However, the true value of the dashboard lies in its graphical representation as they help us better understand trends and patterns in the sales data.

The "Sales by Month" chart shows how revenue fluctuates throughout the year. It highlights months with low and high sales and helps identify any seasonal trends in the data. A sharp increase in sales during September and October suggests a potential seasonal demand for the products sold by the business, or it could be due to external factors affecting consumer behavior. Understanding these patterns is important as it helps prepare for necessary marketing efforts and inventory management during expected sales peak months.

The "Sales by Product" bar chart helps identify top-performing and underperforming product categories. Classic Cars and Vintage Cars lead in sales, while categories like Trains and Ships generate much lower revenue. The chart also includes an average sales line, which color-codes products based on whether their sales are above or below average. This simple visual helps identify which product lines need more marketing focus, and which may require changes in inventory or pricing strategies.

Finally, the "Sales by Country" map adds geographical context, showing where the business is doing well across the globe. The United States is the strongest market, highlighted with darker shading, while other regions show relatively lower sales. This

map provides crucial insights into regional marketing strategies and potential expansion opportunities.

This dashboard is important as it allows businesses to track overall sales trends and identify key areas for growth. It answers important questions like: Which months do customers purchase the most? Which products are driving revenue? Where are our strongest markets? With this information, businesses can plan, manage inventory effectively, and refine sales strategies.

The insights from this dashboard can be put to practical use in several ways. The sales peak in the later months of the year means the company can prepare better by stocking up inventory, adjusting marketing campaigns, and ensuring logistics are ready for the surge in demand. Understanding that Classic and Vintage Cars are the top-selling products allows businesses to focus their advertising efforts on these categories while reconsidering investment in lower-performing ones. The country-wise sales distribution highlights regions with high demand, making it easier to decide where to expand or where to launch location-based promotions.

3.2 Customer Insights Dashboard

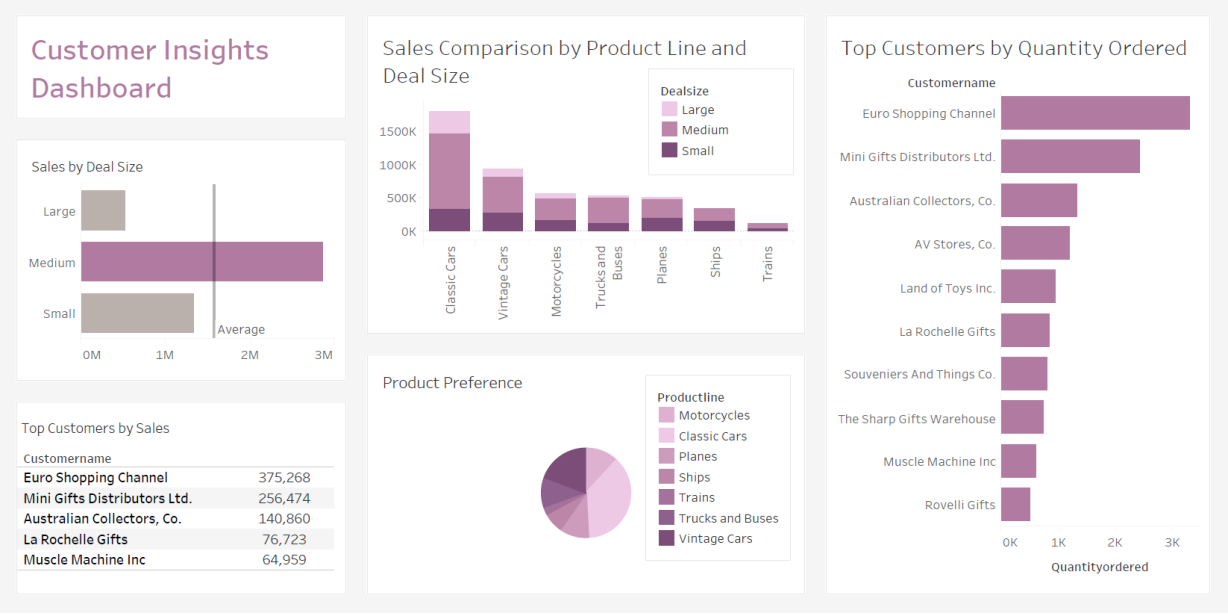

Figure 3.2 - Customer Insights Dashboard

The previous dashboard gave an insight to the revenue and the sales data of the business however it is also important for business to keep an eye on the trends displayed by its consumers. Hence, the Customer Insights Dashboard takes a deeper dive into understanding the patterns of our customers. This dashboard can help understand buying patterns by breaking down sales into different deal sizes (small, medium, and large) and showing which product categories are most popular across these deals.

The key detail that stands out the most here is the fact that medium-sized deals make up most of sales, making them a vital aspect for revenue growth. Another important part of the dashboard is the "Top Customers by Sales and Quantity Ordered," which reveals the most valuable customers, with Euro Shopping Channel leading in numbers. Lastly, the "Product Preference" chart shows a clear dominance of Classic and Vintage Cars, showing that they are the most popular product line amongst buyers.

This information is incredibly useful because their customers is just as important as knowing the products for the business. By identifying top customers, businesses can build stronger relationships with them through loyalty programs, exclusive deals, or personalized services. The dominance of medium-sized deals suggests that businesses can maximize revenue by encouraging customers to move from small to medium or medium to large deals through bundle offers, volume discounts, or upselling. Since Classic and Vintage Cars continue to be customer favorites, marketing efforts can be emphasised to promote these products more aggressively while reconsidering the lower-performing categories.

While these dashboards offer great insights, they do have some gaps. Since they only use data from 2004, they don’t necessarily predict future trends. They show what happened, but not why. For instance, we see a sales spike in September and October, but we don’t know if that’s due to promotions, holidays, or something else. Additionally, we don’t know if this pattern repeats every year.

Another limitation is the lack of customer details. We can see which countries buy the most, but we don’t know much about the actual customers, like their age, gender etc. This makes it harder to create targeted marketing strategies. Similarly, there’s no data on inventory or supply chain issues, so if sales dropped, we don’t know if it was due to low demand or low supply. Lastly, these dashboards aren’t real-time, due to these businesses can’t make instant decisions based on sudden changes. Adding live updates or predictive insights would make them even more useful. Despite these limitations, they still provide a strong starting point for smarter business decisions.

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