## Chapter 3: Data Visualization

**Objectives**:

This chapter aims to visualize key sales metrics, including Monthly Sales Trends, Average Sales, and Total Sales by State. Additionally, Top Sales Products, Monthly and Daily Order Trends, and Hourly Order Trends are also analyzed, along with their respective averages, to provide comprehensive insights into sales performance.

**Visualizing Sales Performance: Key Insights**

a. Monthly Sales Trend vs Average Monthly Sales:

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The monthly sales trend for Dibbs shows a significant peak in December, reaching $4.6 million, while the lowest sales occurred in January at $1.8 million. This trend likely reflects the impact of the holiday shopping season, where consumer spending surges in December due to gift purchases. Conversely, January sales dip as consumer **spending slows down post-holidays**.

A graph with lines and dots

Description automatically generated

The average monthly sales peak in May and June, followed by a significant drop in July. This might be due to the end of the financial year in June, after which sales may not be as strong. Despite the total sales peak in December, the average monthly sales remained low during this month. This discrepancy might be due to a high volume of lower-priced items sold during the holiday season, boosting total sales but not the average sale.

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Description automatically generated with medium confidenceb. Total Sales by State:

The total sales by state analysis reveals that California dominates with the highest sales figures, while Maine records the lowest sales. This disparity could be attributed to California's larger population, higher economic activity, and greater market reach, which provides a broader customer base for Dibbs. In contrast, Maine's smaller population and less robust economic environment likely contributed to its lower sales.

c. Top 10 Products in the best year of Sales:

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In the best year of sales – 2019, the top 10 products reveals that mobile devices dominate the list, including laptops, mobile phones, monitors, and headphones. Among these, the MacBook Pro stood out with the highest sales, around $8 million. Overall, Apple products led in sales, highlighting the **strong consumer preference** for high-end mobile devices and the brand's significant impact on Dibbs' success. This trend underscores the importance of stocking popular, high-demand products to drive sales growth.

A graph of a bar graph

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However, in 2020 and 2021, the MacBook Pro no longer dominated Dibbs' top 10 products, being replaced by the ThinkPad laptop. This shift was likely due to the impact of COVID-19 on Apple's supply chain. With over 90% of Apple's products manufactured in China, the pandemic significantly disrupted production and supply chains, leading to shortages (Tom Coughlin, 2020). At the same time, the demand for consumer electronics surged as people shifted to remote work and online activities (Boston, 2021). Unable to secure enough Apple products, consumers might turn to alternative brands like ThinkPad. This resulted in Apple losing market share during a period of high demand.

d. Monthly Order vs Monthly Average:

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Description automatically generated with medium confidence

The monthly order analysis shows that the average quantity ordered is around 17,000 units. December had the highest quantity ordered, while volume in January was the lowest. The ordered quantity in April, May, October, November, and December exceeded the average orders. This pattern suggests a seasonal increase in consumer demand, particularly during the holiday season and year-end sales events. Additionally, spring months like April and May might see higher orders due to new product launches and promotions. These trends highlight the importance of strategic inventory planning to meet fluctuating demand.

e. Daily Order vs Daily Average Order:

A graph with lines and dots

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The daily order analysis indicates an average daily order volume of 6,746 units. Throughout most of the month, from days 1 to 27, daily orders sightly fluctuated around the average index. However, a significant drop in order volumes was observed post-day 27, with the lowest numbers recorded on the 31st. This decline could attribute to the end of monthly promotional cycles or consumer spending habits, where purchases taper off as consumers await new month promotions or paycheck arrivals

f. Hourly Order vs Hourly Average Order:

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The hourly order trend reveals an average of 8,714 units per hour, with significant variations throughout the day. The order volume exceeded this average from 10 AM to 10 PM, peaking at 7 PM with approximately 14,500 units. This peak likely coincides with consumers' post-work shopping activities, suggesting that **evenings** **are** **prime time** for online shopping. Conversely, the lowest order volumes are recorded between 3 AM and 4 AM, a period when most consumers are asleep. These insights highlight the need for Dibbs to optimize staffing and logistics for peak hours while considering energy and resource conservation strategies during off-peak times to maintain efficiency.

References:

Boston, F. R. B. of. (2021, December 17). *Has COVID Changed Consumer Payment Behavior?* Federal Reserve Bank of Boston. https://www.bostonfed.org/publications/research-department-working-paper/2021/has-covid-changed-consumer-payment-behavior.aspx

Tom Coughlin, T. (2020). *Impact of COVID-19 on the Consumer Electronics Market*.