Applied Data Science with Python

Report of Sales Analysis

AAL is a household name in Australia, known for its clothing business since 2000. It caters to all groups— kids, women, men, and seniors. It has opened branches in many states in Australia, in metropolises and tier-1 and tier-2 cities.
The business is booming, and the company is in an expansion mode. It wants to get an in-depth understanding of its sales so that it can make investment decisions.

Describe Dataset

The data set contains 7 columns :

- **Date**
  This column represents the date on which sales data was recorded.
  It is in the datetime format, ensuring consistency and ease of date-based analysis.
  The date range in the sample data spans from October 1, 2020, and onwards.
- **Time**
  The time column captures the time of day when sales data was recorded, categorized as "Morning," "Afternoon," or "Evening."
  This column provides insight into the temporal distribution of sales.
- **State**

  The State column contains information about the geographical location where the sales data was recorded, represented by state codes (e.g., "WA" for Western Australia). It indicates the region or location of the sales activities, which can be valuable for regional analysis.
- **Group**

  The Group *column categorizes sales data into different groups or categories, such as "Kids," "Men," "Women," and "Seniors." This column likely represents the target customer demographic or product categories. It allows for segmenting sales data based on customer groups for more focused analysis.*
- **Unit**

  The Unit column indicates the number of units or items sold in each sales transaction. In the sample data, it ranges from 3 to 15 units, depending on the specific transaction. Understanding unit sales is important for assessing product popularity and inventory management.
- **Sales**

  The Sales column represents the total sales revenue for each transaction, measured in the currency (e.g., USD or another currency) used for these transactions. In the sample data, sales figures range from 7,500 to 37,500. This column provides insights into the financial aspect of the sales data and is crucial

  for revenue analysis.

Data Wrangling

In this section, we checked for missing values, null values, and illogical values, and we renamed the values by entering the States column .Then, using the Seaborn library, we searched for the outlier sales . and there were no outliers. There are no missing values or null values.

Data Analysis

1. Based on analyzes to determine which groups achieve the highest sales and which group achieve the lowest sales.

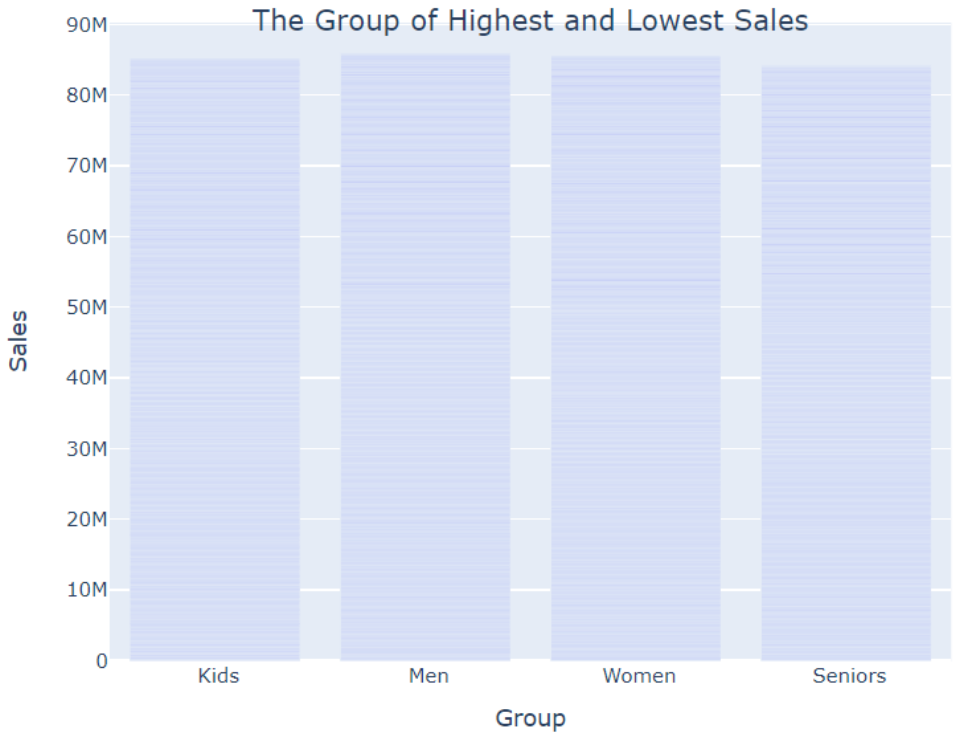

FIG :1

From the graph, we notice that men achieved the highest sales and Seniors achieved the least sales.

2. Determine which state is generating the highest sales, and which state is generating the lowest sales.

Fig :2

From the graph, we notice that the state of Victoria achieves the highest sales, and the state of Western Australia achieves the lowest sales.

3. Weekly, monthly and reports for the analysis made.
I generate weekly, monthly, and reports, to illustrate sales trends, seasonality, and anomalies. To make it easier to see which periods had the highest and lowest sales.

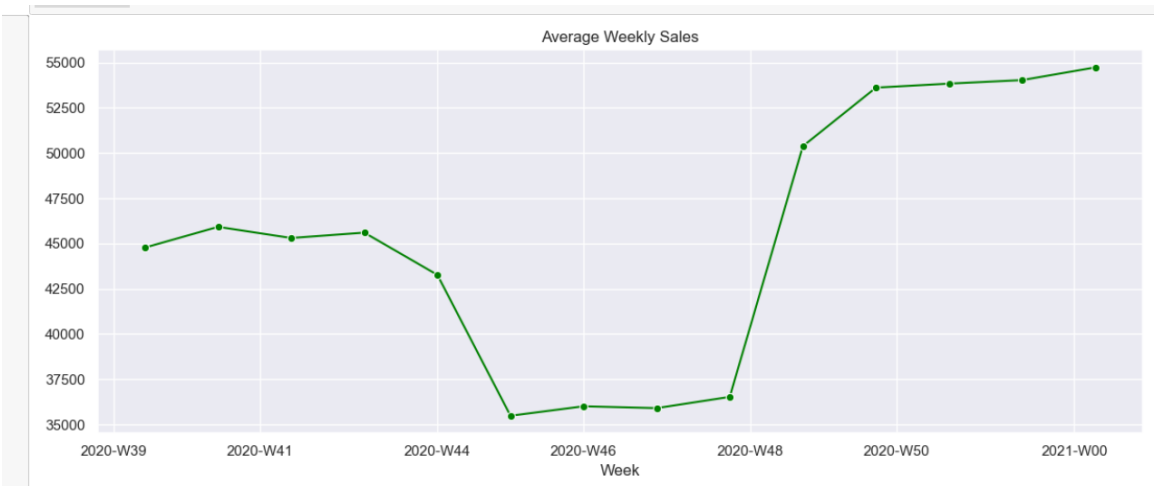

Fig :3

We note that the level of sales was average from the 39th week to the middle of the 44th week, after which it decreased to the middle of the week to 48, and a high increase rose in the last weeks of the year 2020 until the beginning of the first week of 2021.

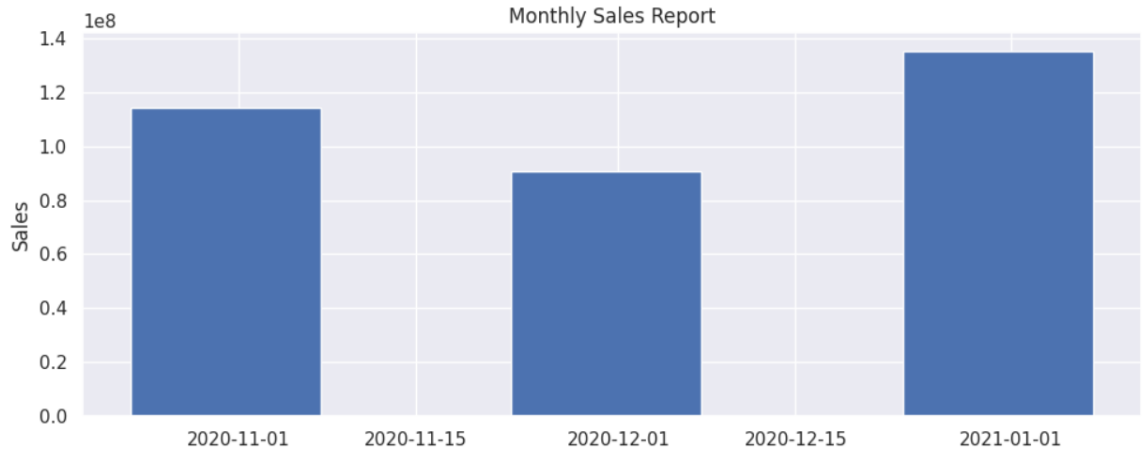

Fig :4

We note that sales are highest in the first month of 2021 and decrease at the end of the year and increase in the 11th month this may be due to Black Friday offers.

4. State-wise sales analysis for different customer groups (kids, women, men, and seniors)

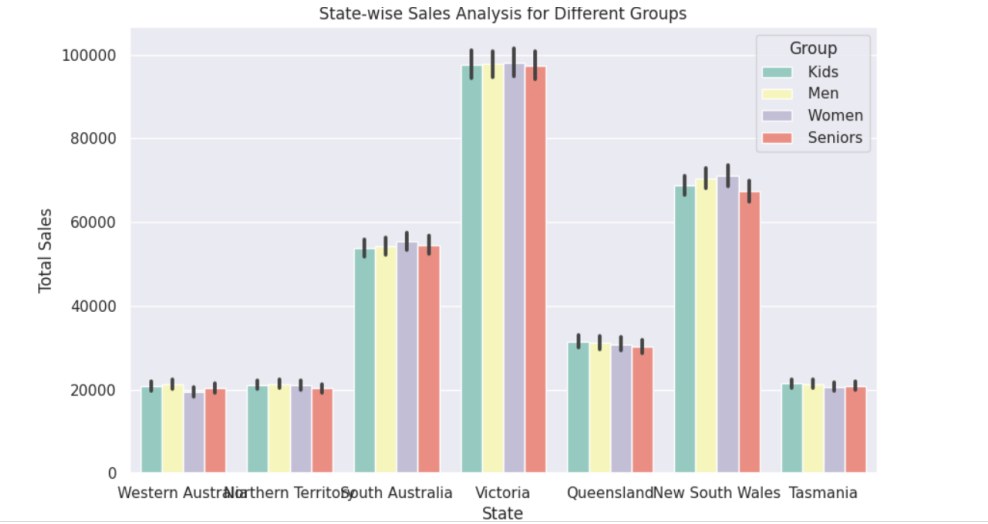

Fig :5

We note that the highest sales in the categories are in the state of Victoria, then the state of South Wales and the state of South Australia.

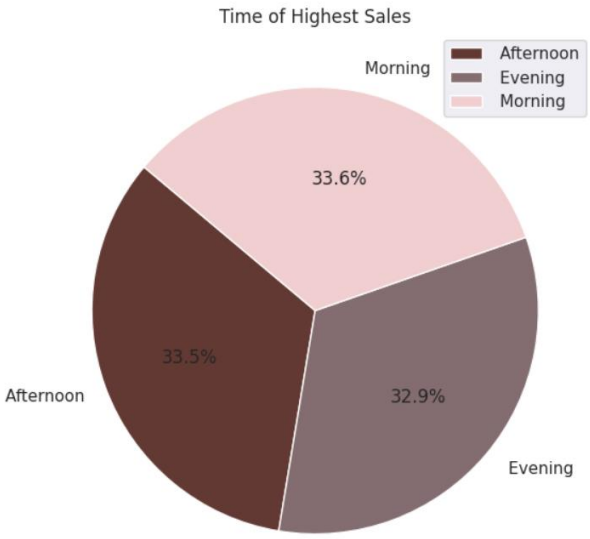

Fig :6

We notice that sales during the morning and afternoon periods are similar in sales while evening sales have a lower percentage.

Recommendations :

1) Determine the states that are generating the highest revenues and
2) Formulate sales programs for states with lower revenues.

According to the data analysis above, we concluded that the highest revenue is in state VIC, on the other hand, the following states scored the lowest revenue : WA, NT , QLD , and TAS, therefore we suggest the following plan.

- Marketing and Promotion: Intensifying promotional campaigns in areas with less sales. Businesses can schedule marketing campaigns or promotions to coincide with peak sales hours, increasing their effectiveness.

- Inventory management: A company can stock popular items or replenish inventory before periods of high demand, reducing the risk of running out of inventory in higher-revenue states.

- Pricing strategies: The company can direct pricing strategies in states with lower revenues. The company offers discounts or promotions during slower periods to attract more customers.

- Resource Allocation: The company must optimize the allocation of resources, such as sales staff or distribution centers, based on states' needs.

- Targeted Marketing: Through our analysis, it is clear that men are the group that achieves the highest sales. Companies can design their marketing strategies to effectively target the rest of these groups. Marketing efforts can focus on products or services