# Sales Data Sample Analysis

## Introduction:

In our analysis of sales data, we'll be looking at different parts of our sales transactions. Our dataset includes information like order numbers, how many items were ordered, the price of each item, order details, sales totals, dates of orders, order statuses, and various details about our products and customers. Each piece of information gives us important insights into how our sales are going, what customers are buying, and how well our business is performing. By studying this data, we hope to understand trends in sales, what customers like to buy, and how well we're doing overall. This knowledge will help us make smart decisions to grow our business and make our customers happy.

## Questionnaires :

1. Compare the sale of Vintage cars and Classic cars for all the countries.

2. Find out average sales of all the products? which product yield most sale?

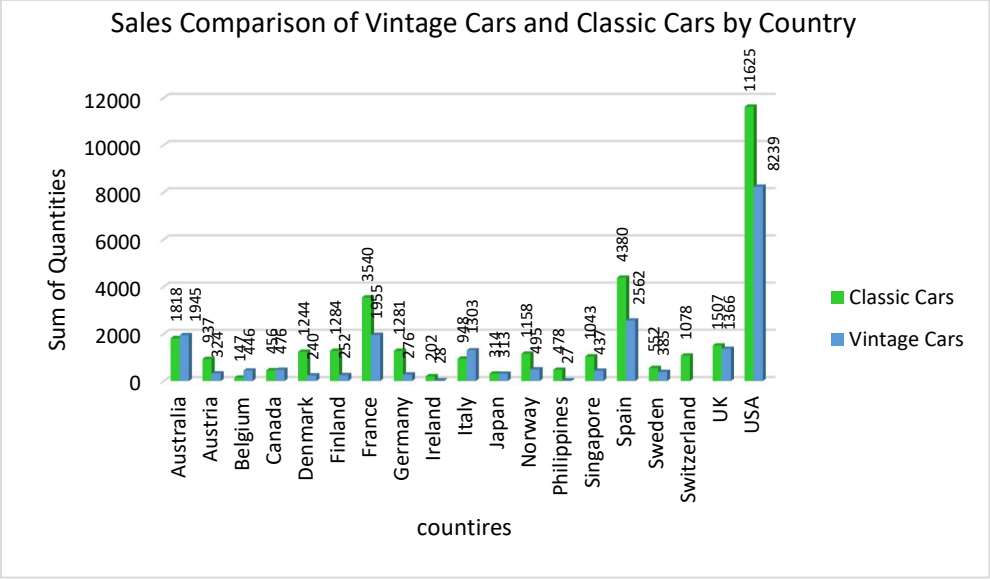
3. Which country yields most of the profit for Motorcycles, Trucks and buses?

4. Compare sales of all the items for the years of 2004, 2005.

5. Compare all the countries on the basis of deal size.

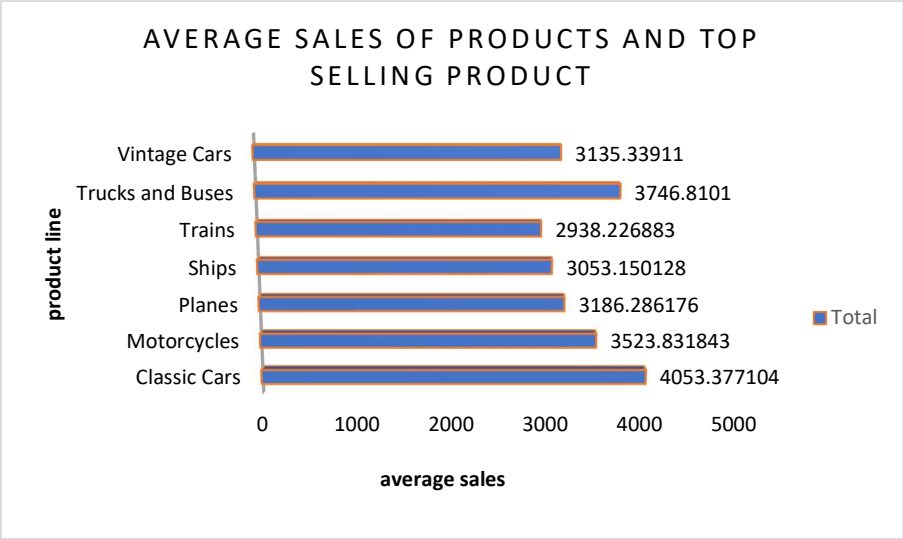
## Analytics :

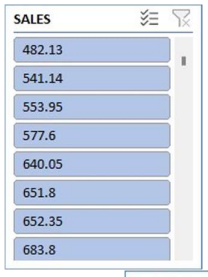
**Q1.Compare the sale of Vintage cars and Classic cars for all the countries.**

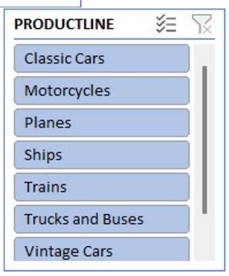



Ans: The United States is a major player in the vintage and classic car world. They have a wide range of cars from different eras, and they host glamorous events like the Pebble Beach Concours d'Elegance. These events are where people proudly display their stunning vintage cars for everyone to admire.

**Q2. Find out average sales of all the products? which product yield most sale?**



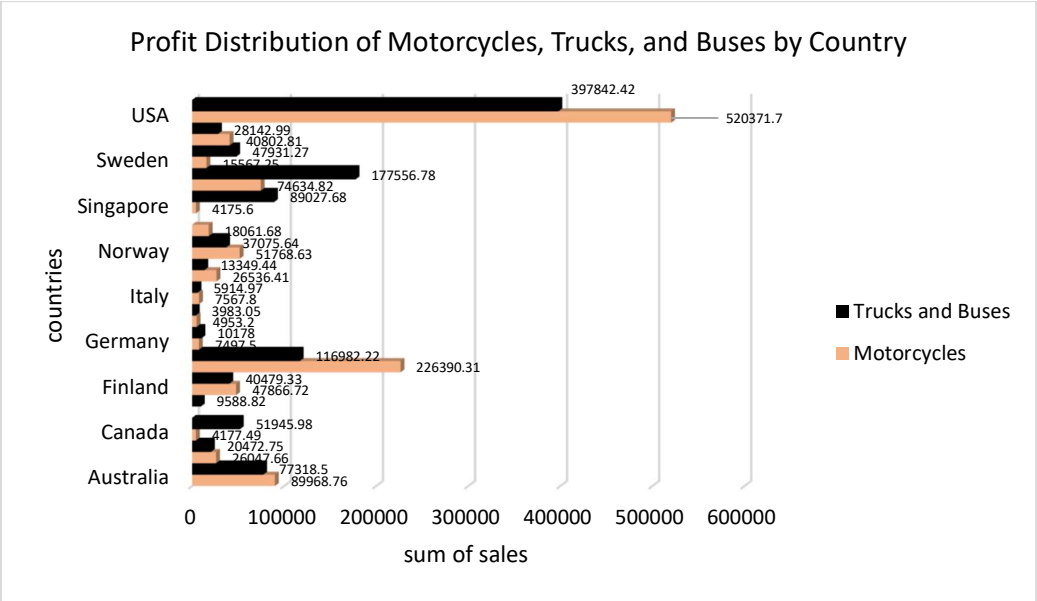




Ans: The Average Sales of all products are given below:-

i. Motorcycles :- 3523.831843
ii. Vintage Cars :- 3135.33911
iii. Classic Cars :- 4053.377104
iv. Truck and Buses :- 3746.8101
v. Trains :- 2938.226883
vi. Ships :- 3053.150128
vii. Plane :- 3186.286176

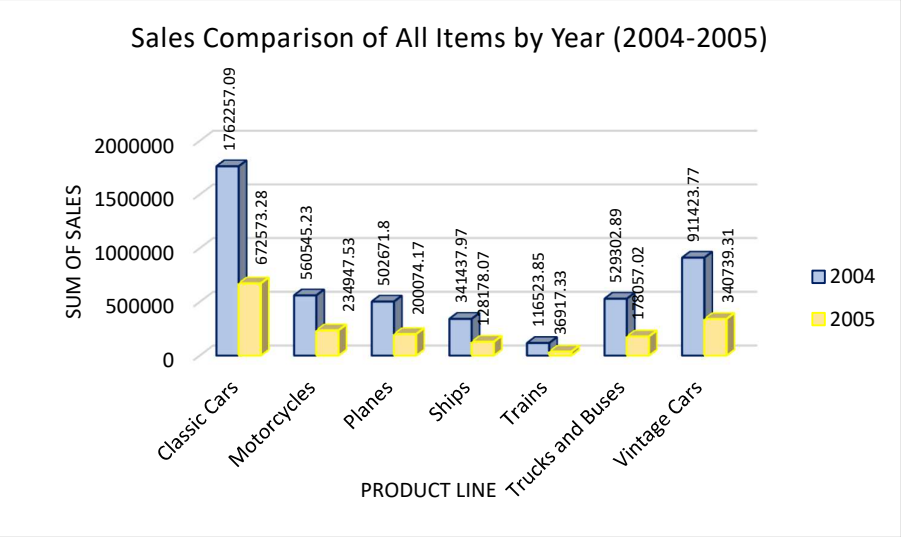
Trucks and buses are the heavy hitters in terms of sales worldwide. Their utility and versatility make them essential in various industries, from transportation and logistics to construction and public services.

**Q3. Which country yields most of the profit for Motorcycles, Trucks and buses?**



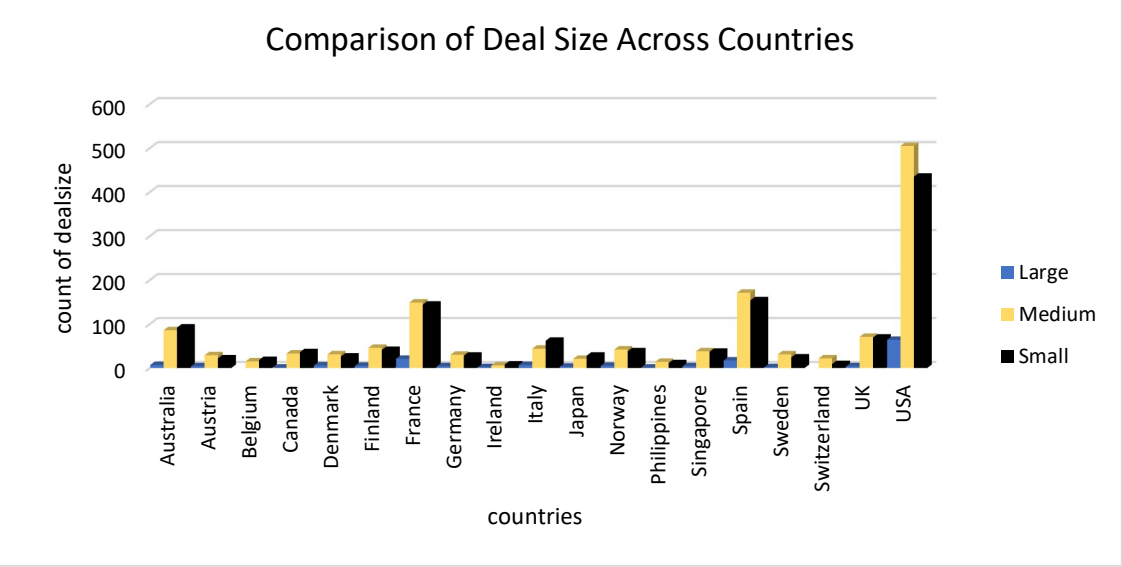
Ans: the USA is a big player in both motorcycles and trucks/buses. They rake in a hefty profit of $40,802.81 from motorcycles, showing how much Americans love hitting the open road on two wheels. And when it comes to trucks and buses, they're not far behind, making $28,142.99 in profit. Put together, that's a total profit of $68,945.8.

**Q4. Compare sales of all the items for the years of 2004, 2005?**




Ans: During 2004 and 2005, classic cars were the top sellers in the automotive world. In 2004, there was a big craze for vintage cars, with lots of people excited about getting their hands on those iconic models from way back when. This excitement carried on into 2005, as classic cars remained super popular among folks who loved their timeless style and the nostalgic vibes they brought. So, for those two years, classic cars were definitely the stars of the show in the automotive market.

**Q5. Compare all the countries on the basis of deal size?**



Ans: When it comes to deal sizes, the USA leads the pack across the board. Whether it's small, medium, or large deals, the USA comes out on top. In small deals, they're making the most significant transactions, Moving up to medium deals, once again, the USA is leading the way, And when it comes to large deals, they're still the champions, sealing the biggest and most impactful agreements.

# Conclusion and Review :

Our analysis of the sales data sample has given us valuable insights into how our sales are going, what customers prefer, and how well we're doing overall. While the report did a good job of explaining what data we looked at and what we wanted to find out, it could be even better with more detailed analysis and visual aids to make things clearer. Still, the things we've learned will help us make smarter decisions about how to improve our sales processes. It's important for us to keep analysing and fine-tuning our sales data to reach our business goals.

# Regression:

| | |
|---|---|
| Multiple R | 0.551426 |
| R Square | 0.304071 |
| Adjusted R Square | 0.303824 |
| Standard Error | 8.127982 |
| Observations | 2823 |

ANOVA

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 1 | 81428.86 | 81428.86 | 1232.574 | 2.4E-224 |
| Residual | 2821 | 186366.8 | 66.0641 | | |
| Total | 2822 | 267795.7 | | | |

| | *Coefficients* | *Standard Error* | *t Stat* | *P-value* | *Lower 95%* | *Upper 95%* | *Lower 95.0%* | *Upper 95.0%* |
|---|---|---|---|---|---|---|---|---|
| Intercept | 24.72811 | 0.332504 | 74.36941 | 0 | 24.07613 | 25.38008 | 24.07613 | 25.38008 |
| SALES | 0.002916 | 8.31E-05 | 35.10803 | 2.4E-224 | 0.002754 | 0.003079 | 0.002754 | 0.003079 |

The analysis shows that there's a strong connection between sales and the outcome we're looking at, with a p-value so low it's basically zero. This means the relationship is very likely real, not just due to chance. The model explains about 30.41% of what's going on, which is pretty good. And the standard error, which tells us how much our predictions might be off by, is around 8.128 units.

# Correlation:

| | *ORDERLINENUMBER* | *SALES* |
|---|---|---|
| ORDERLINENUMBER | 1 | -0.0584 |
| SALES | -0.0584 | 1 |

The correlation coefficient between ORDERLINENUMBER and SALES is -0.0584, which indicates a weak negative correlation between these two variables

## Anova (single Factor) :

Anova: Single Factor

SUMMARY

| *Groups* | *Count* | *Sum* | *Average* | *Variance* |
|---|---|---|---|---|
| 30 | 2822 | 99037 | 35.09461 | 94.92015 |
| 95.7 | 2822 | 236072.4 | 83.65428 | 407.0943 |
| 2 | 2822 | 18252 | 6.467753 | 17.85699 |
| 2871 | 2822 | 10029758 | 3554.131 | 3393504 |

ANOVA

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Between Groups | 2.61E+10 | 3 | 8.71E+09 | 10261.03 | 0 | 2.605696 |
| Within Groups | 9.57E+09 | 11284 | 848506 | | | |
| Total | 3.57E+10 | 11287 | | | | |

The single-factor ANOVA analysis unveils significant variations among the groups, with a high F-value of 10261.03 and an ultra-low p-value close to zero, indicating a strong impact of the factor being analysed. The degrees of freedom (df) for the between-groups factor are 3, representing the variability in means across the groups. Within the groups, the df is 11284, reflecting the variation within each group, and an error (standard error of the residuals) of approximately 848506.0368.

## Anova without Replication :

ANOVA

| *Source of Variation* | *SS* | *df* | *MS* | *F* | *P-value* | *F crit* |
|---|---|---|---|---|---|---|
| Rows | 3.24E+09 | 2822 | 1146956 | 1.021361 | 0.257009 | 1.054809 |
| Columns | 2.32E+10 | 2 | 1.16E+10 | 10320.57 | 0 | 2.997323 |
| Error | 6.34E+09 | 5644 | 1122968 | | | |
| Total | 3.28E+10 | 8468 | | | | |

The ANOVA analysis reveals no significant differences in the means across rows, as indicated by the non-significant F-value of 1.021 ($p = 0.257$) and the degrees of freedom (df) of 2822. Similarly, for columns, a highly significant difference is observed among the means, with an F-value of 10320.57 ($p < 0.001$) and df of 2. The error term, representing variability within groups, has an MS of approximately 1122968.007, reflecting the average amount of variation not explained by the model.

## Descriptive Statistics :

| *QUANTITYORDERED* | | *PRICEEACH* | | *ORDERLINENUMBER* | | *SALES* | |
|---|---|---|---|---|---|---|---|
| Mean | 35.09281 | Mean | 83.65854 | Mean | 6.466171 | Mean | 3553.889 |
| Standard Error | 0.183344 | Standard Error | 0.379702 | Standard Error | 0.079535 | Standard Error | 34.66589 |
| Median | 35 | Median | 95.7 | Median | 6 | Median | 3184.8 |
| Mode | 34 | Mode | 100 | Mode | 1 | Mode | 3003 |
| Standard Deviation | 9.741443 | Standard Deviation | 20.17428 | Standard Deviation | 4.225841 | Standard Deviation | 1841.865 |
| Sample Variance | 94.89571 | Sample Variance | 407.0014 | Sample Variance | 17.85773 | Sample Variance | 3392467 |
| Kurtosis | 0.415744 | Kurtosis | -0.37482 | Kurtosis | -0.56115 | Kurtosis | 1.792676 |
| Skewness | 0.362585 | Skewness | -0.94665 | Skewness | 0.590741 | Skewness | 1.161076 |
| Range | 91 | Range | 73.12 | Range | 17 | Range | 13600.67 |
| Minimum | 6 | Minimum | 26.88 | Minimum | 1 | Minimum | 482.13 |
| Maximum | 97 | Maximum | 100 | Maximum | 18 | Maximum | 14082.8 |
| Sum | 99067 | Sum | 236168.1 | Sum | 18254 | Sum | 10032629 |
| Count | 2823 | Count | 2823 | Count | 2823 | Count | 2823 |
| Largest(1) | 97 | Largest(1) | 100 | Largest(1) | 18 | Largest(1) | 14082.8 |
| Smallest(1) | 6 | Smallest(1) | 26.88 | Smallest (1) | 1 | Smallest(1) | 482.13 |
| Confidence Level(95.0%) | 0.359503 | Confidence Level(95.0%) | 0.744521 | Confidence Level(95.0%) | 0.155952 | Confidence Level(95.0%) | 67.97305 |

The descriptive statistics provide valuable insights into the dataset's variables. Notably, QUANTITYORDERED has a mean of 35.09 and a standard deviation of 9.74, indicating moderate variability. PRICEEACH shows wider variability, with a mean of 83.66 and a standard deviation of 20.17. ORDERLINENUMBER and SALES follow similar patterns, with means of 6.47 and 3553.89, and standard deviations of 4.23 and 1841.87, respectively. The largest QUANTITYORDERED is 97, while the smallest is 6. Similarly, the largest PRICEEACH is 100, and the smallest is 26.88. For ORDERLINENUMBER, the largest value is 18, and the smallest is 1. Finally, the largest SALES amount to 14082.8, while the smallest is 482.13. These statistics shed light on the central tendencies and variability within the dataset, providing crucial insights for analysis.