MSP Auto Industry Sales Data

BY:

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INTRODUCTION

Profit is what drives every institution. No institution is created to dash out cash without expecting something in return. They all thrive and survive on profit they make from services offered to their customers. For this reason, most firms task their managers (particularly those that head the sales & marketing department) with exploring new ways and opportunity to maximize and increase profitability from goods and services offered while running on a low expense.

BUSINESS PROBLEM

MSP Autos Industry is currently pondering on expanding its business venture. After the annual general meeting, they concluded it was best for them to maximize sales and profit from current product categories. The data team has been tasked to help identify areas of strength and weaknesses. In addition, they are to make recommendation(s) on how to improve sales from the weak territories.

OVERVIEW

MSP's Market

Top 3:

USA – 36%
Spain – 12%
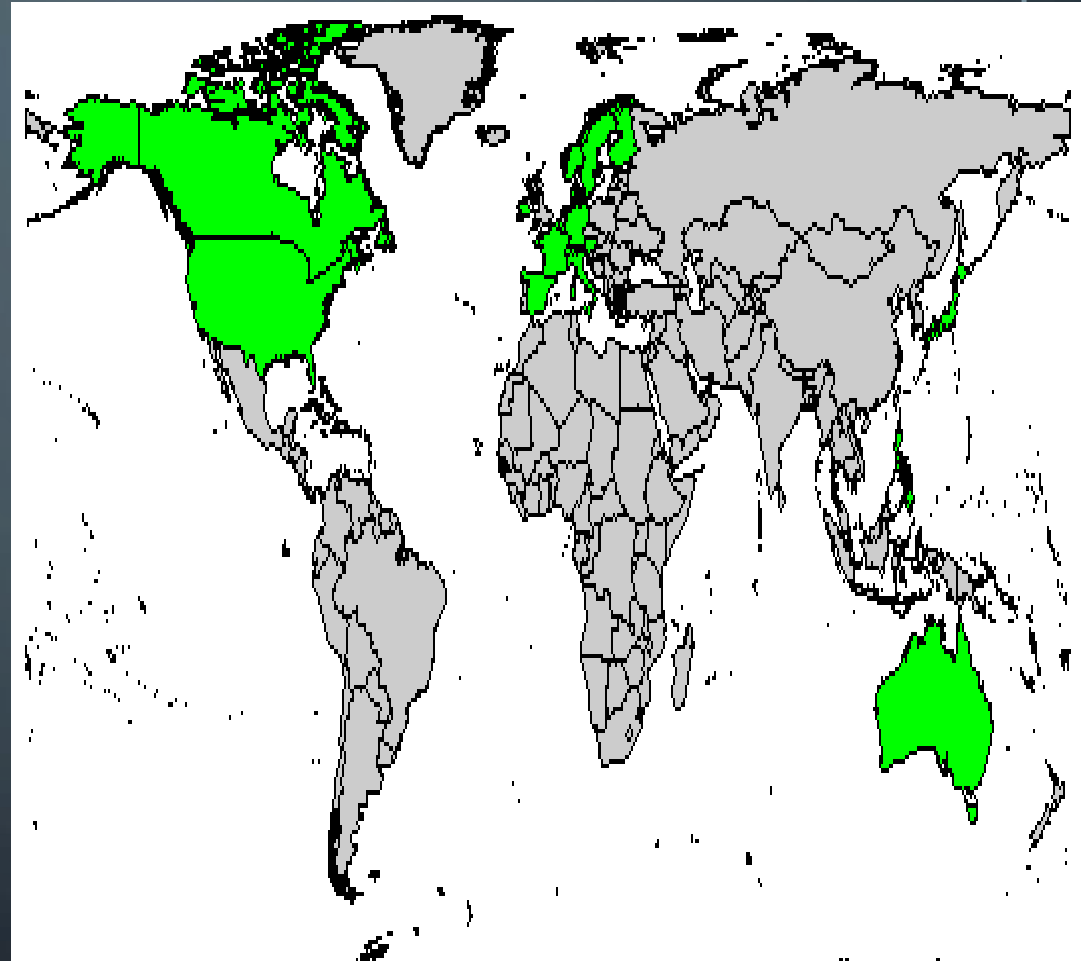France – 11%

Bottom 3:
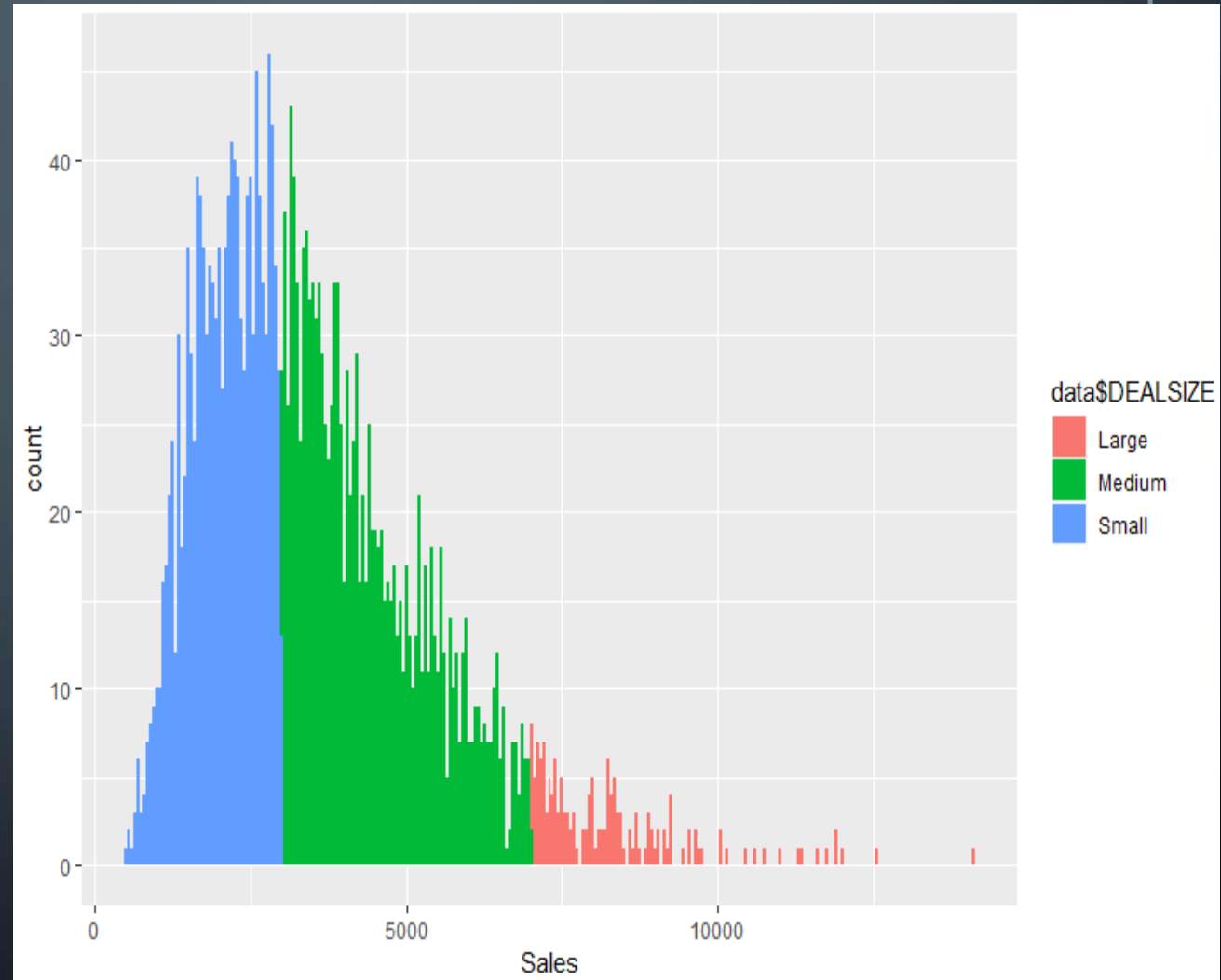
Belgium – 1.08%
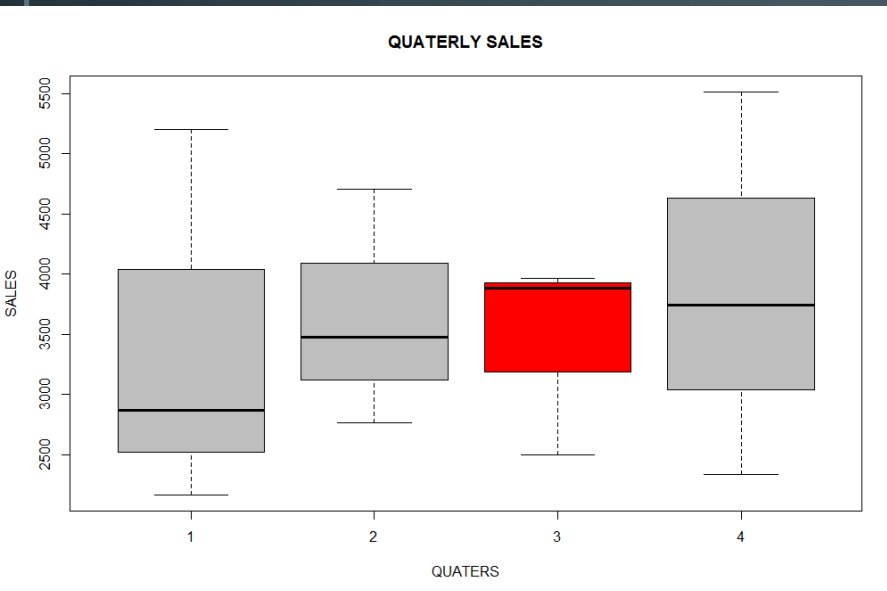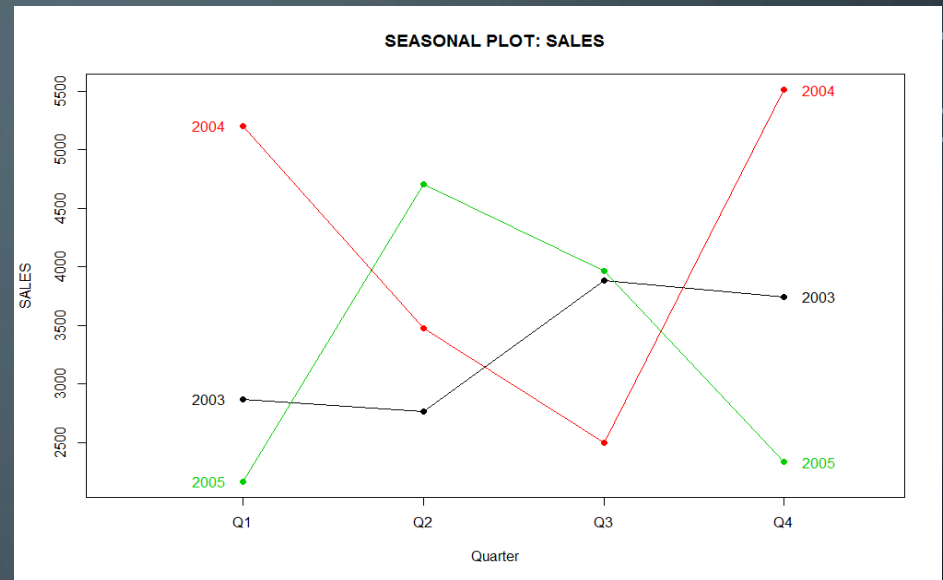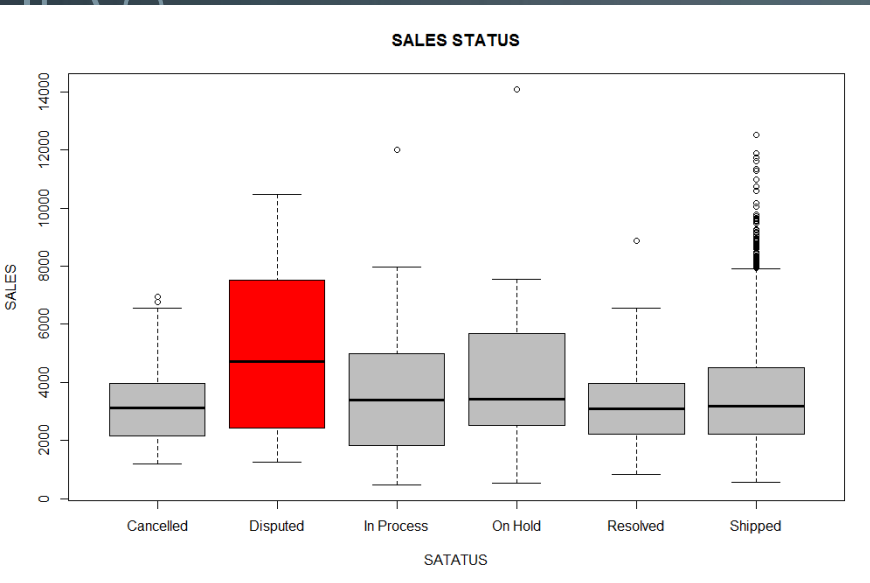Philippines – 0.94%
Ireland – 0.58%

OVERVIEW

Distribution of Deal Size:

- Large: 13%

- Medium: 61%

- Small: 26%

DESCRIPTIVE ANALYTICS: JOURNEY SO FAR (2003-2005)

SALES STATUS

SEASONAL PLOT: SALES

QUATERLY SALES
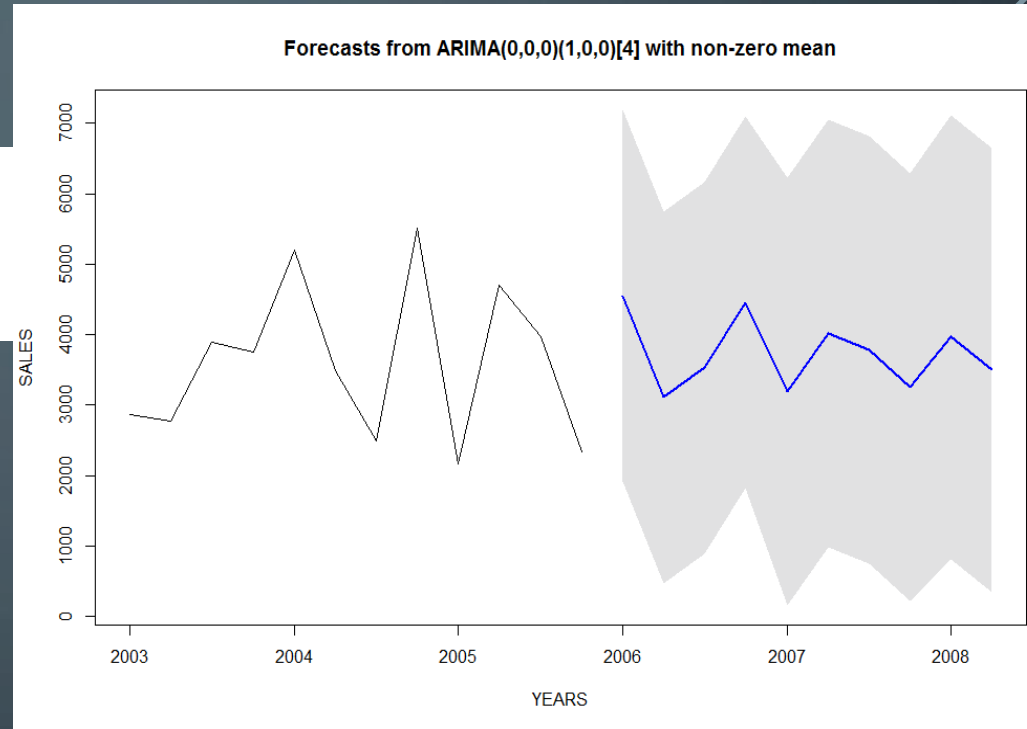
✓ Over the past three years, there are more disputed sales than sales shipped and received

✓Sales in the Q3 of every year start well but ends poorly

✓Q2 drop in sales for two consecutive year i.e. 2003 and 2004

✓Highest sales always come in Q4

THREE YEARS SALES FORECAST 2006-2008

Autoregressive Moving Average (ARMA) Model

$$X_t = \beta_1 X_{t-1} + \beta_2 X_{t-2} + \ldots + \beta_p X_{t-p} + \delta + Z_t + \alpha_1 Z_{t-1} + \alpha_2 Z_{t-2} + \ldots + \alpha_q Z_{t-q}$$

```
> #dISPLAY COEFFICIENT
> coef(app.forc)
        sar1      intercept
-0.5678864 3687.0353586
```

	Qtr1	Qtr2	Qtr3	Qtr4
2006	4549.368	3106.994	3528.808	4455.905
2007	3197.328	4016.433	3776.890	3250.404
2008	3965.133	3499.975	3636.008	3934.992

Console   Terminal ×

~/

Forecasts from ARIMA(0,0,0)(1,0,0)[4] with non-zero mean

✓ ARIMA MODEL (0,0,0)(1,0,0) i.e. AR(1) is used.

✓ Sales projected to increase in the first quarter of 2006 by 82%
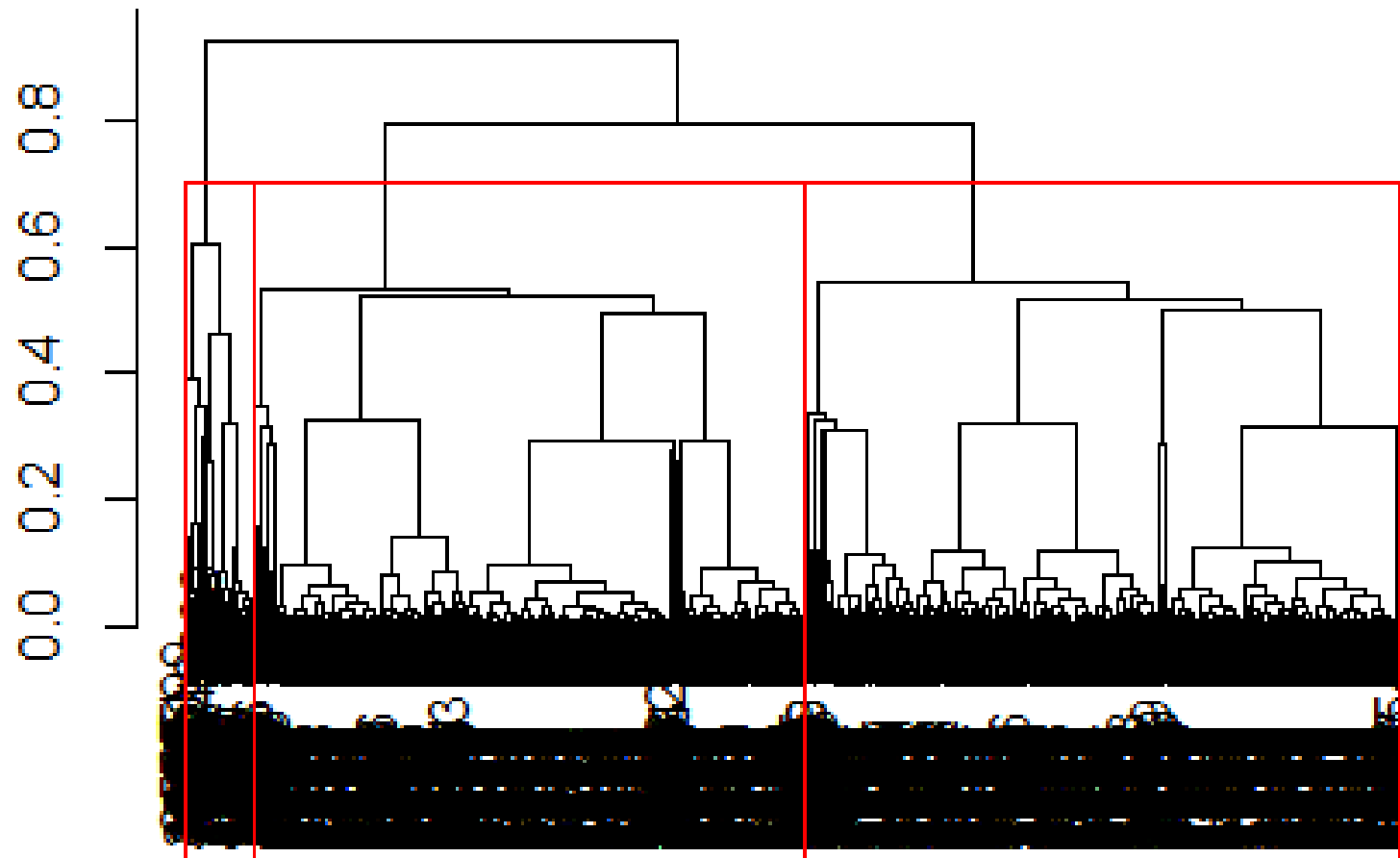
✓ Sales projected to drop between 2007 and 2008

SEGREGATION OF DATA

- Create clusters of Data

- Determine clusters with less sales

- Variable used:
  - Quantity of order
  - status of order
  - quarter
  - deal size
  - sales

- Use of "Gower" distance due to mix data types.

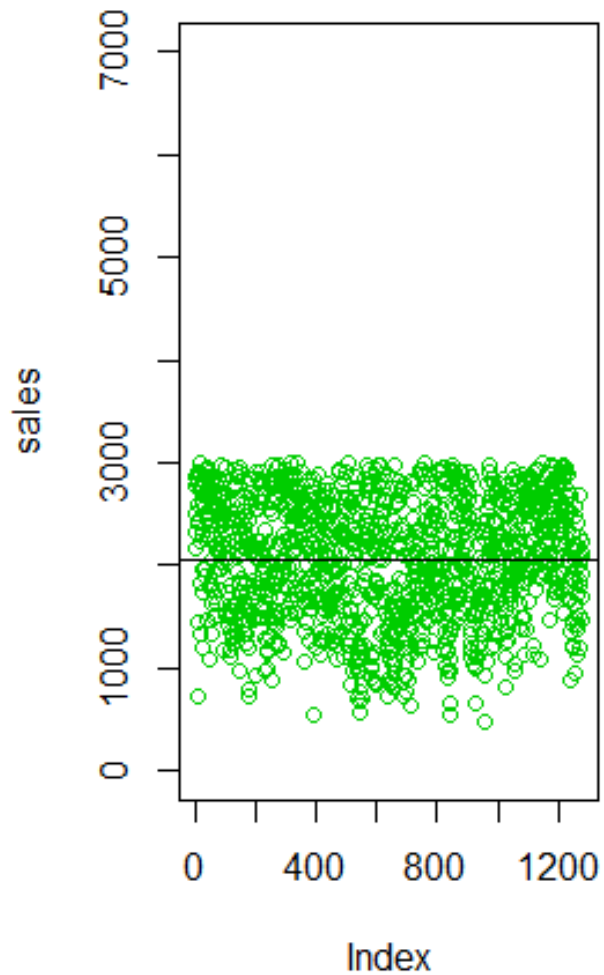## Cluster Dendrogram

```
> table(cu)
cu
    1     2     3
1282  1384   157
```

Only small size deal   **Only medium size deal**

```
> table(cluster1$DEALSIZE)

Large Medium  Small
    0      0   1282
```
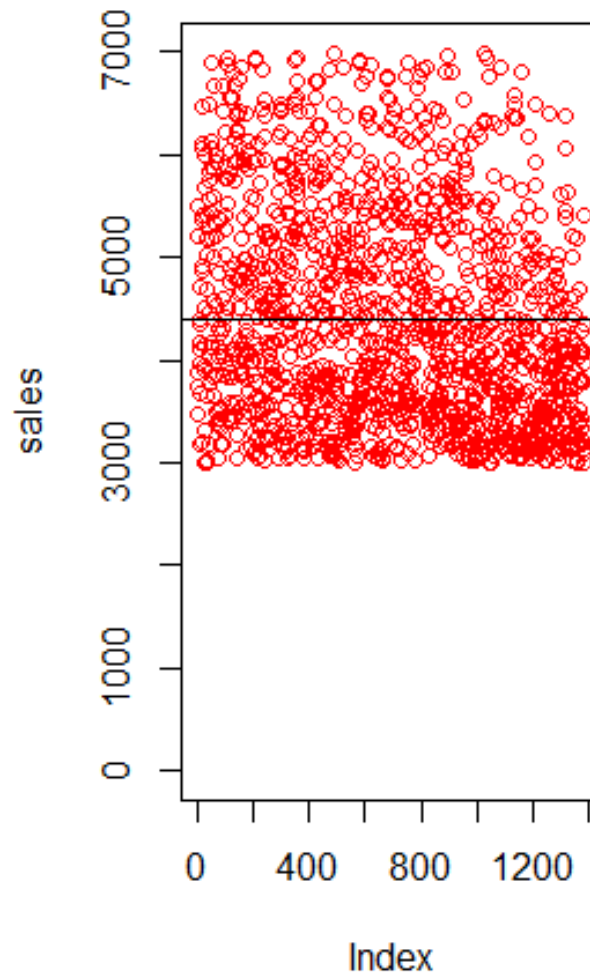
```
> table(cluster2$DEALSIZE)

Large Medium  Small
    0   1384      0
```

OUTCOME

```
> table(df$PRODUCTLINE[df$DEALSIZE=="Large"])

   Classic Cars        Motorcycles            Planes            Ships           Trains
             97                  19                 9                0                1
Trucks and Buses       Vintage Cars
              7                  24
```

- Large deals mainly have classic cars, not ships and planes.

- Deal size increases the mean sales value.

- Company needs to focus on increasing big size deal.

CONCLUSION

Q3 Promotions
- Q4 strongest quarter
- Focusing on deals/promotions in Q3 that will carry over

Maintain Large Deals
- Make Classic Cars, Vintage Cars Top 2 in countries that are almost there
(Belgium, Japan, Finland)

Countries
- Uncharted markets
(China, India, S.Korea)
- Canada(2%); Belgium(4%)