

Business Statistics Assignment-
GROUP 3

Q1.

Net Sales

Mean	77.60
Median	59.71
Standard deviation	55.66
Minimum	13.23
Maximum	287.59
Range	274.36

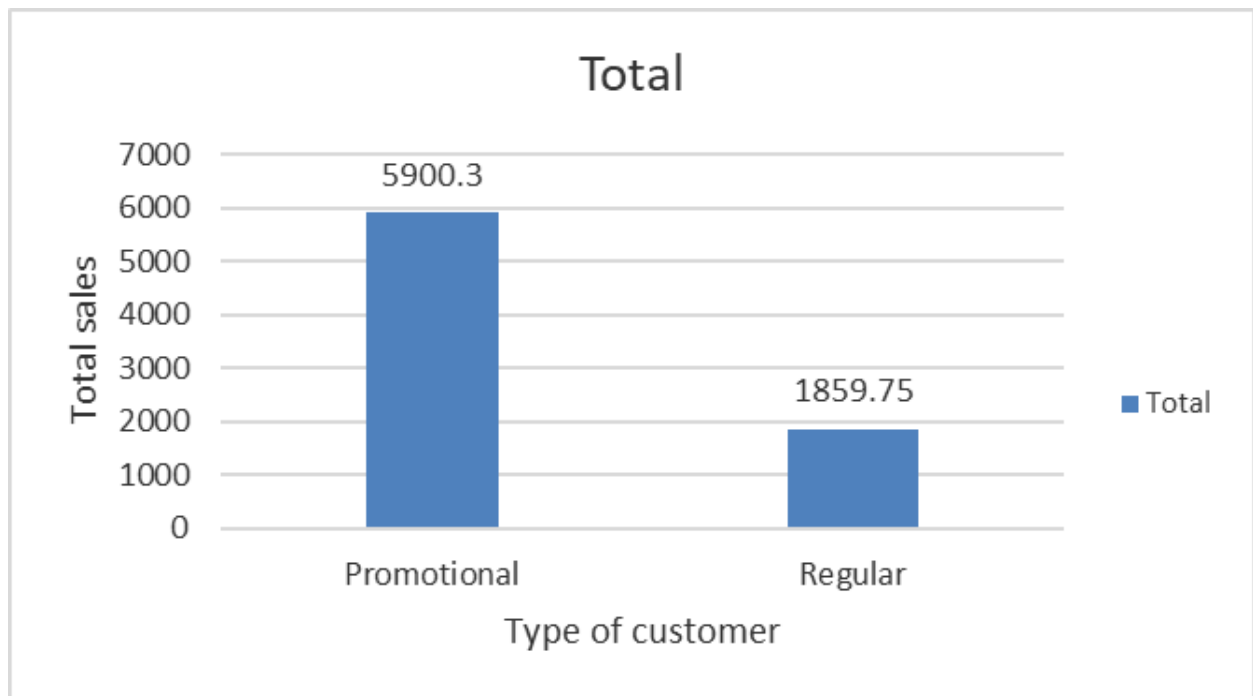
Mean = Sum of all observations/No. of all

Median = [(n + 1)/2] th term (if N is odd)

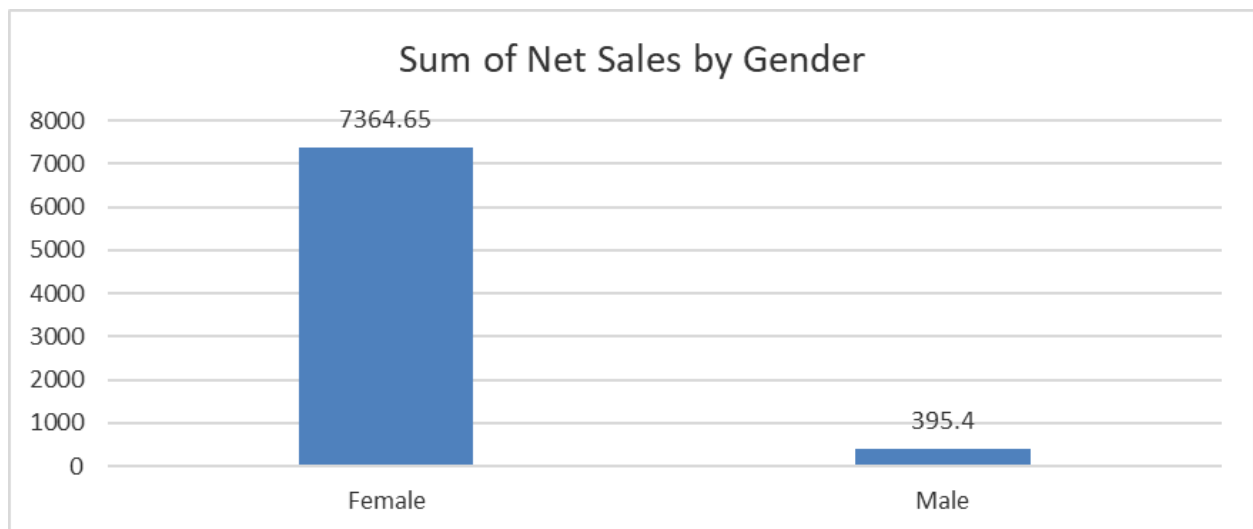
Median = [(n/2) th term + ((n/2) + 1) th term]/2 (if N is even)

Standard Deviation = $(1/n-1 \sum_{i=1}^n (x_i - \bar{x})^2)^{1/2}$

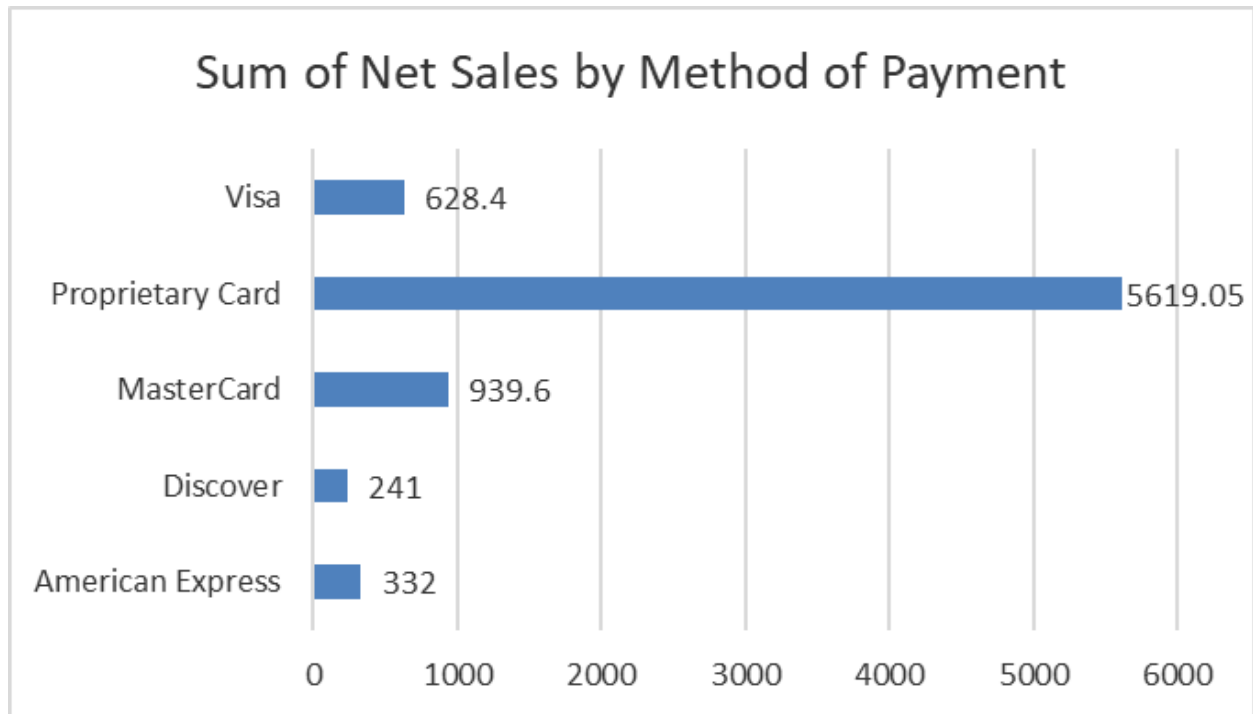
Range = Maximum – Minimum



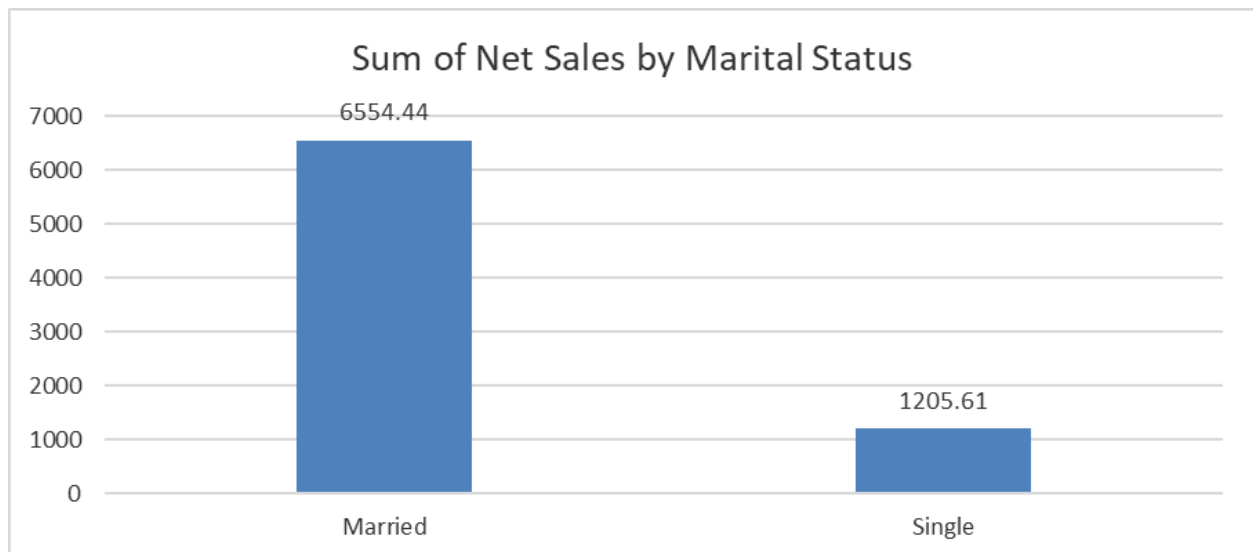
The ratio for Promotional to Regular customers is approximately 318:100.



The approximate ratio of female to male for total sales is approximately 186:10.



The number of transactions made through Proprietary card are the most and the number of transactions made using Discover are the least.



The sales made to married and single buyers is approximately 547:100.

Net Sales (Promotional)

Mean	84.29
Mode	63.42
Median	31.6
Standard deviation	61.46
Minimum	13.23
Maximum	287.59
First Quartile	43.5
Third Quartile	109.4

Mean = Sum of all observations/No. of all

Mode = 3 Median - 2 Mean

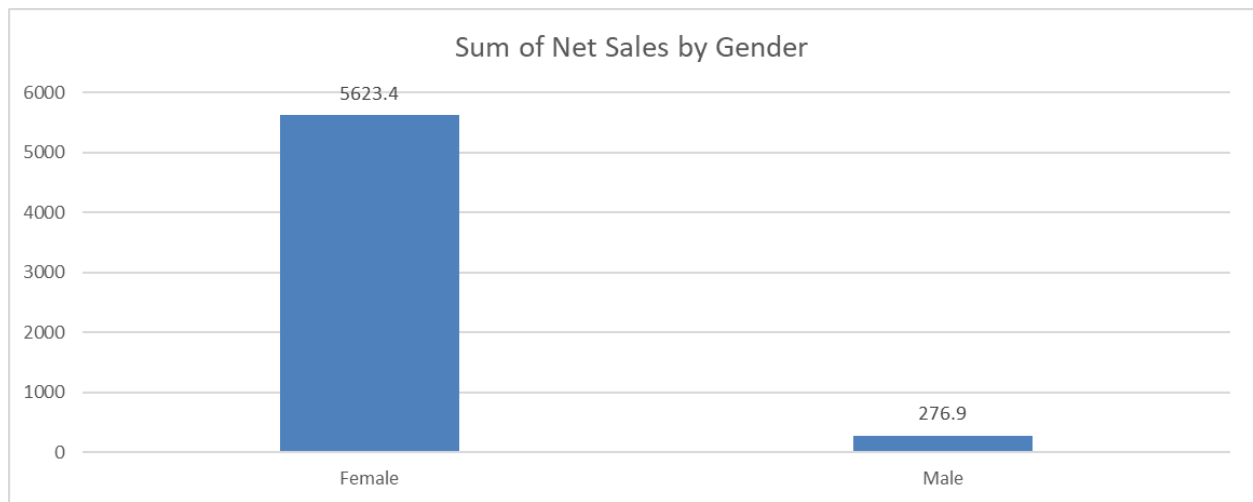
Median = $[(n + 1)/2]$ th term (if N is odd)

Median = $[(n/2)$ th term + $((n/2) + 1)$ th term]/2 (if N is even)

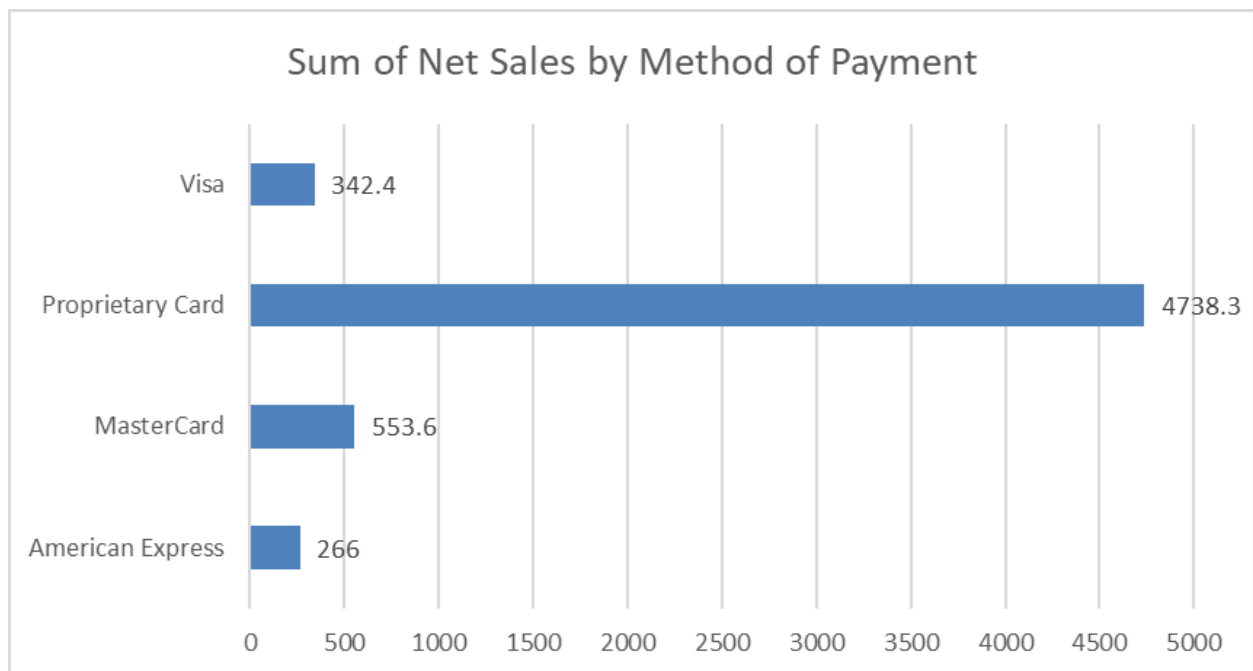
Standard Deviation = $(1/n-1 \sum_{i=1}^n (x_i - \bar{x})^2)^{1/2}$

First Quartile(Q1) = $((n+1)/4)$ th Term also known as the lower quartile.

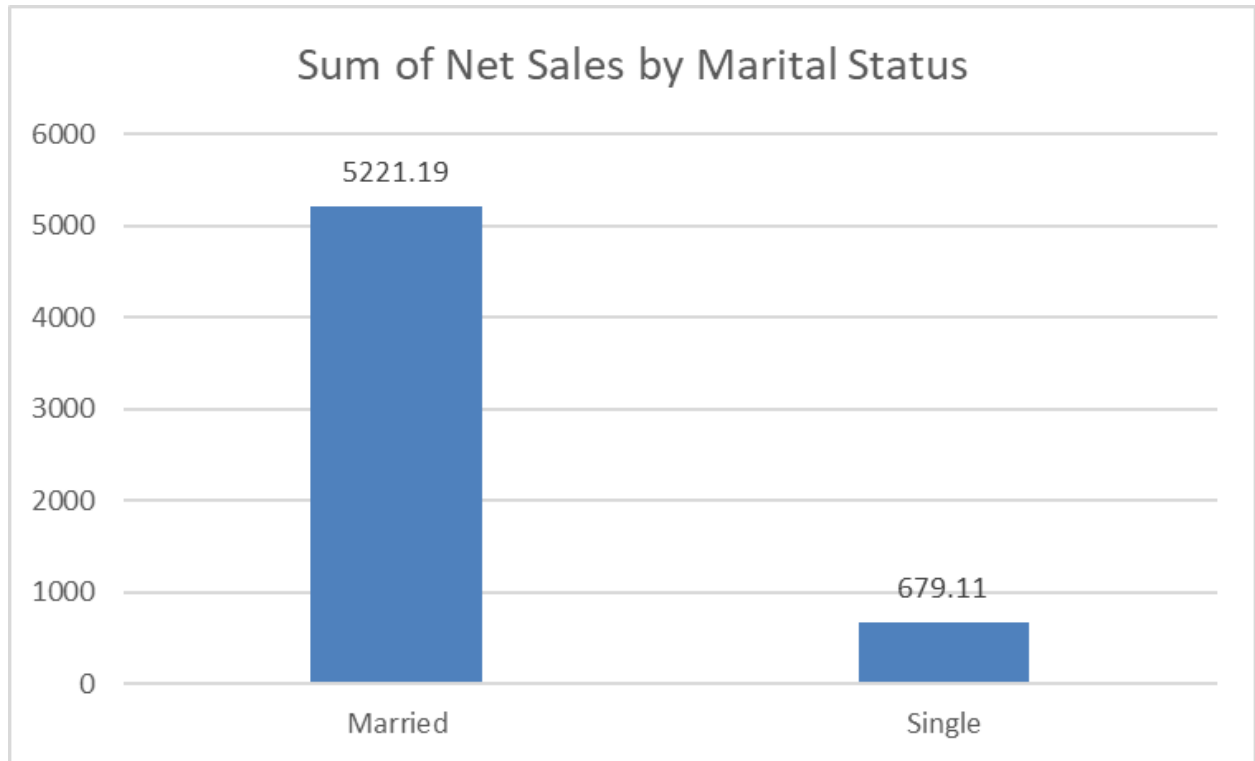
Third Quartile(Q3) = $(3(n+1)/4)$ th Term also known as the upper quartile.



Through this Bar graph it is visible that most of the net purchases in promotional category are done by the females.



Through this Bar graph we can interpret that most of the payment method through which payments are done in promotional category is through proprietary cards, then MasterCard, then Visa card and lastly less no of share is for American Express cards.



Through this bar graph we can infer that out of all customers on the basis of marital status in promotional category the most volume of purchase is done by the customers who are married i.e., 5221.

Net Sales (Regular)

<u>Mean:</u>	<u>61.99</u>
<u>Median:</u>	<u>51.00</u>
<u>Standard Deviation:</u>	<u>35.07</u>
<u>Minimum:</u>	<u>22.50</u>
<u>Maximum:</u>	<u>159.75</u>
<u>First Quartile</u>	<u>39.38</u>
<u>Third Quartile</u>	<u>74.25</u>
<u>Mode</u>	<u>44.5</u>

Mean = Sum of all observations/No. of all

Median = $[(n + 1)/2]$ th term (if N is odd)

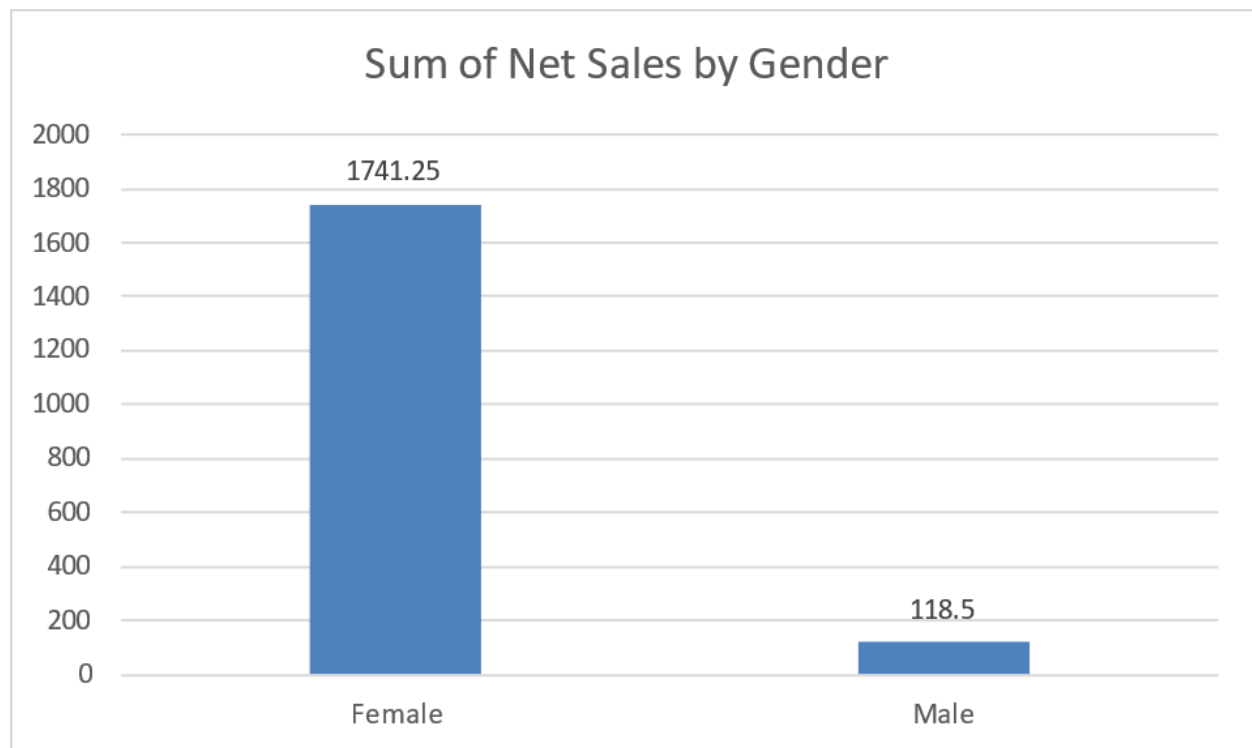
Median = $[(n/2)$ th term + $((n/2) + 1)$ th term]/2 (if N is even)

Standard Deviation = $(1/n-1 \sum_{i=1}^n (x_i - \bar{x})^2)^{1/2}$

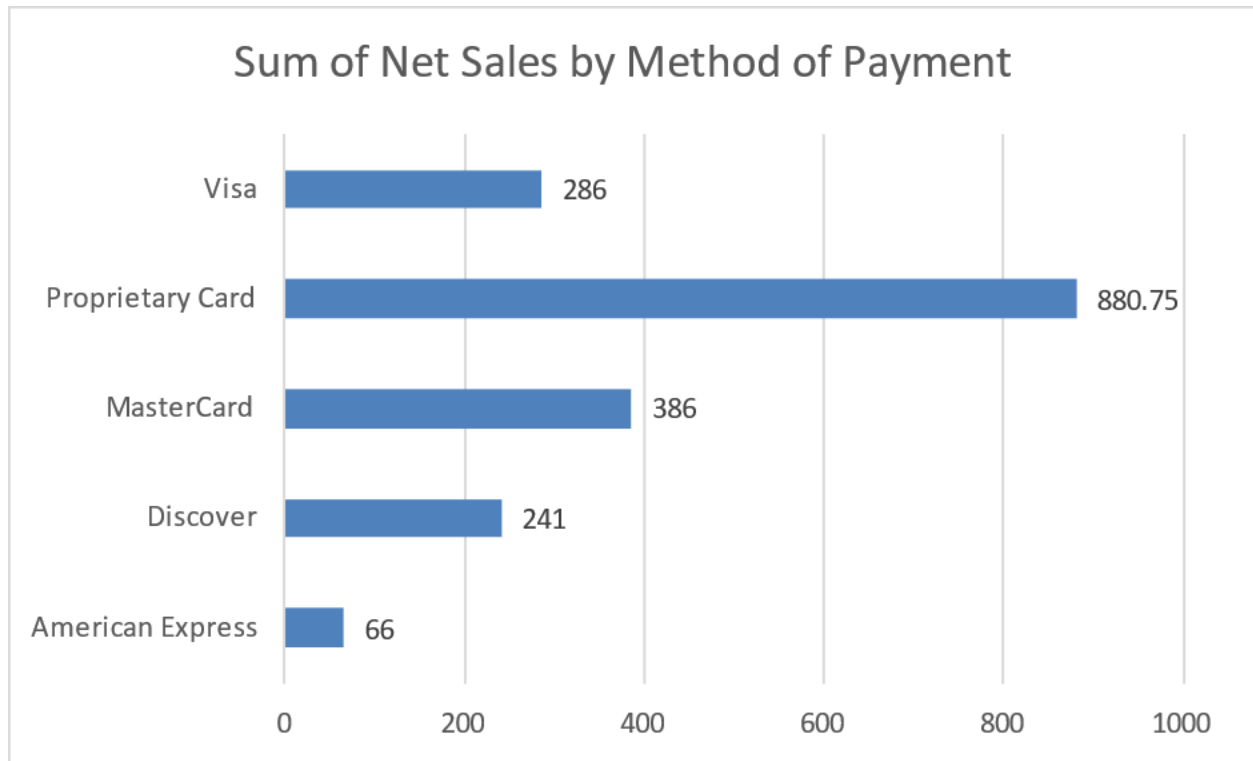
Range = Maximum – Minimum

First Quartile(Q1) = $((n+1)/4)$ th Term also known as the lower quartile.

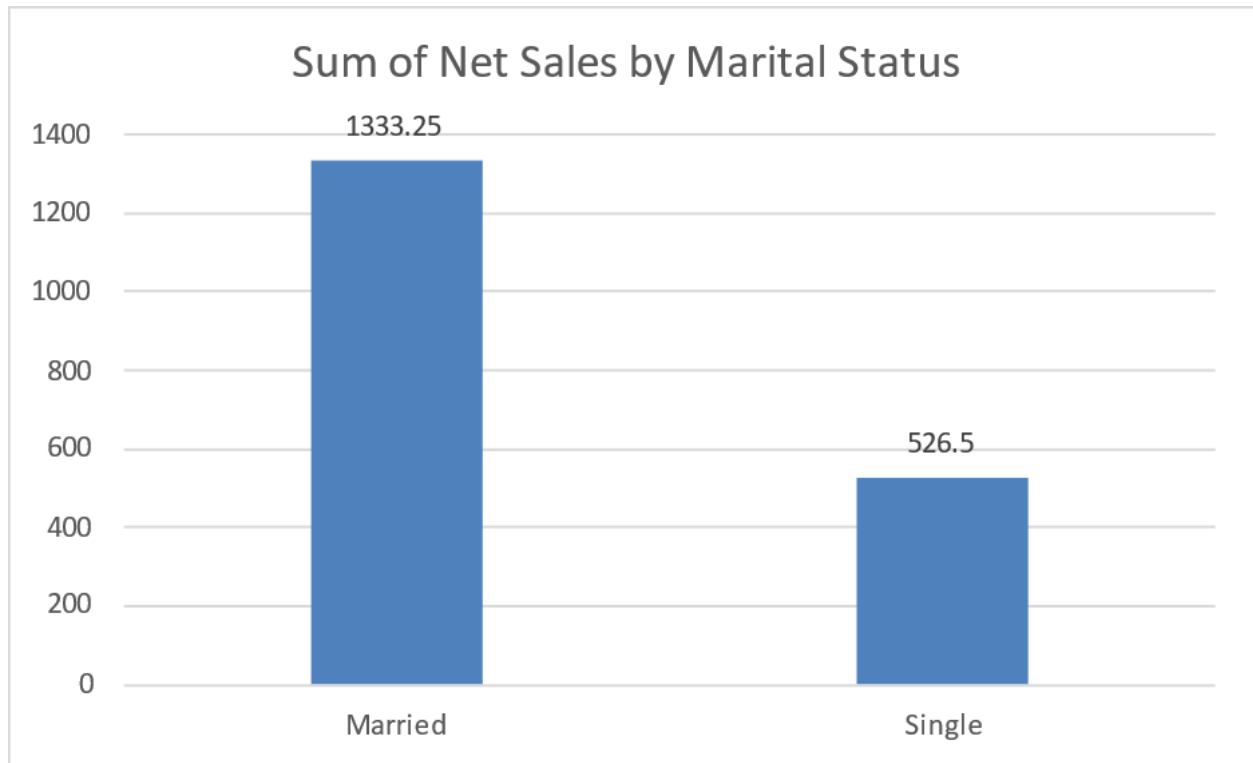
Third Quartile(Q3) = $(3(n+1)/4)$ th Term also known as the upper quartile.



Through this Bar graph it is visible that most of the net purchases in promotional category are done by the females.



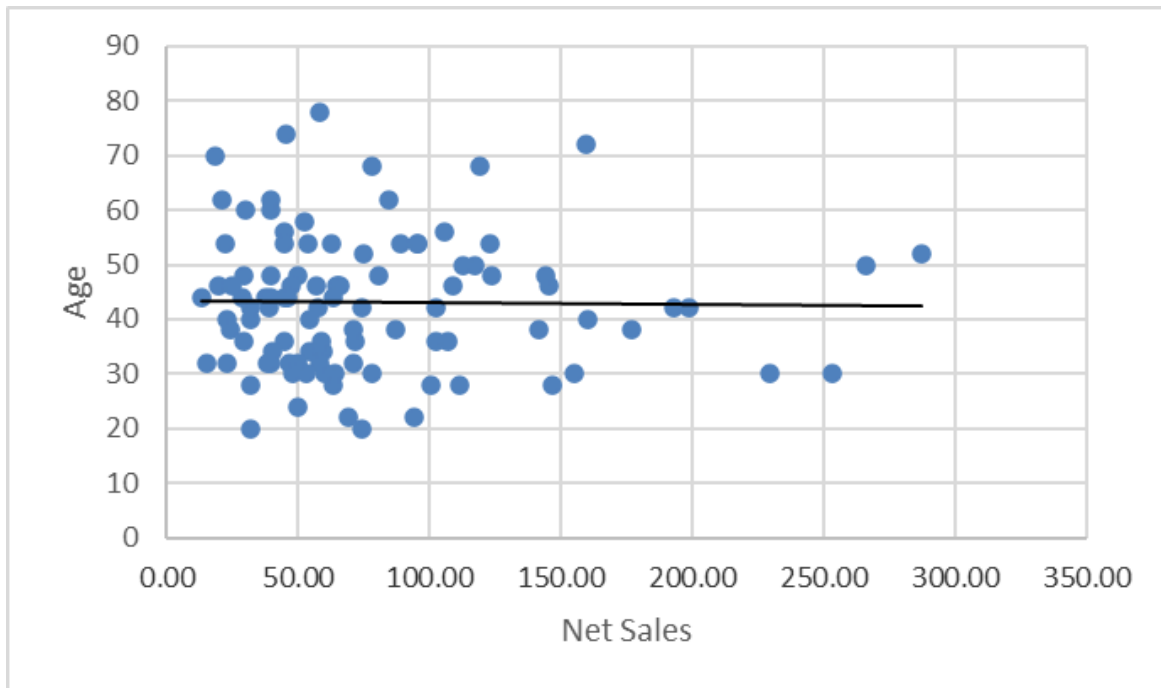
Through this Bar graph we can interpret that most of the payment methods through which payments are made in the Regular category is through proprietary cards. Mastercard, then Visa card, then Discover cards and lastly less no of share is for American Express cards.



Through this bar graph we can infer that out of all customers on the basis of marital status in the regular category the most volume of purchase is done by the customers who are married i.e.,1333.25

Q2.

Relationship Between Age and Net Sales



Equation of trendline - $y = -0.0024x + 43.264$

- **Negative Correlation-** It is a relationship between two variables in which one variable increases as the other decreases, and vice versa.
- `=CORREL(H2:H101,D2:D101)`
- Value of Correlation= **-0.01064**

The correlation coefficient value always lies between -1 and +1. If the correlation coefficient value is positive, then there is a similar and identical relation between the two variables. Else, it indicates the dissimilarity between the two variables.

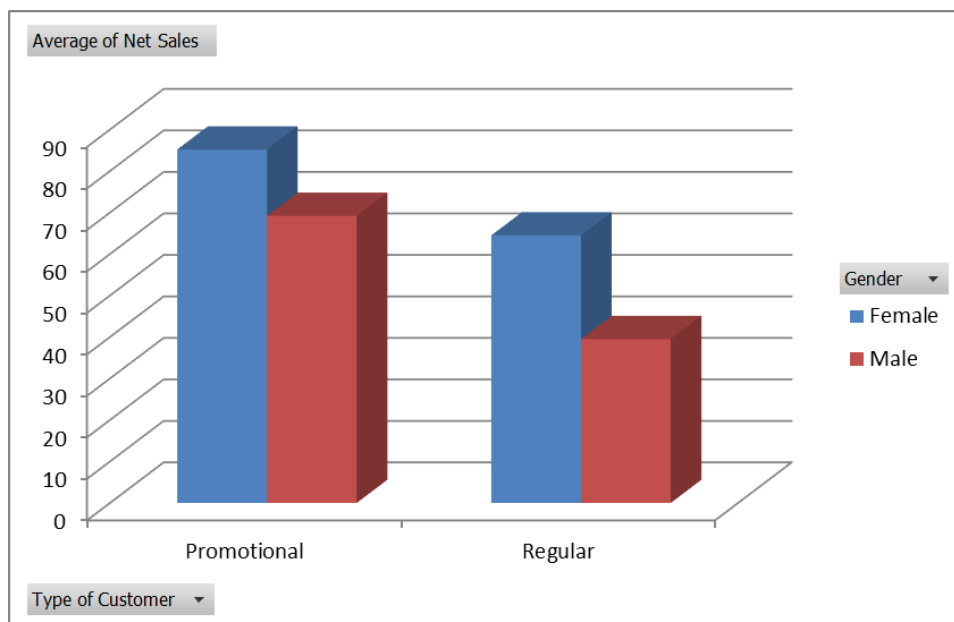
The covariance of two variables divided by the product of their standard deviations gives Pearson's correlation coefficient. It is usually represented by ρ (rho).

$$\rho(X,Y) = \text{cov}(X,Y) / \sigma_X \cdot \sigma_Y.$$

Here, cov is the covariance. σ_X is the standard deviation of X, and σ_Y is the standard deviation of Y. The given equation for the correlation coefficient can be expressed in terms of means and expectations.

Tabular Representation

Average of Net Sales			
	Female	Male	Grand Total
Promotional	85	69	84
Regular	64	40	62
Grand Total	79	56	78



INSIGHTS

- ▶ 1. As the store is Women's apparel store, the Female customers are purchasing more items than that of Male customers.
- ▶ 2. The people of age group 30-34 are purchasing more items with a share of 19%.
- ▶ 3. 70% of the customers are promotional customers v/s 30% of Regular customers.
- ▶ 4. The users of Proprietary cards are more in number than that of other card users i.e, 70% of the customers are using proprietary cards.
- ▶ 5. Married customers are more in number than unmarried customers. 84% of the customers are married than that of 16% of unmarried.
- ▶ 6. More number of customers are buying only 1 or 2 items.