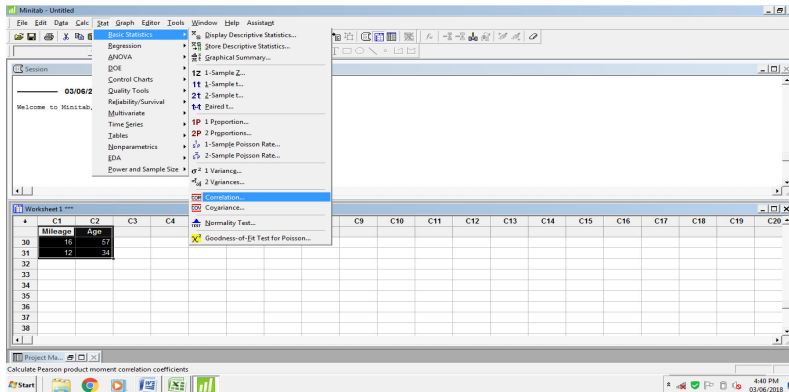


## (A) Correlation

- Used when both “Y” and “X” is in continuous form.
- (a) Purpose: To see whether there is significant relationship between two or more continuous variables or not.
- (b) Path: Stat → Basic Stat → Correlation (Minitab snap shot given below)



- (c) Hypothesis: If  $H_0$  (Null) means  $P \text{ Value} \geq 0.05$ , then no significant relationship.  
If  $H_a$  (Alternate) means  $P \text{ Value} < 0.05$ , yes significant relationship between two variables.

- (d) Pearson Correlation (PC): if hypothesis is Null, then no need to check PC. If hypothesis is Alternate, need to check PC. PC value will vary from  $-1$  to  $+1$  through  $0$ .

If PC value is  $0.04$ , which is positive, means there is +ve relationship between two variables. And increase of one increases another also. If value of PC is  $-ve$ , then increase of one, decrease another. Example: Demand of Gold depends on its prices. More is the price, less demand of Gold. Hence  $-ve$  relationship.

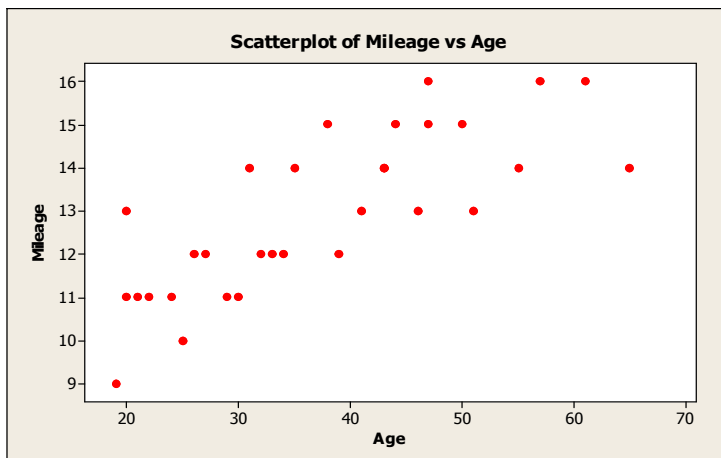
- (e) Example: Car used by different age group and mileage given by the car in the city.

For the date set used below are the findings :

$P\text{-value} = 0.000$  – Hypothesis is alternate, as  $P\text{-value}$  is  $< 0.005$ . Means there is significant relationship between Age of the driver and Mileage given by the car.

Pearson correlation of mileage and Age =  $0.786$

Which means there is +ve relationship between Age of the driver and Mileage of the car. As the age increases mileage of the car also increases.



Scatter plot can be used to for graphical representation of correlation calculated.