In the "Bi-variate Analysis", the researcher often wants to look for relationships between two variables. Tools that are used are correlation and regression, contingency table (cross tabulation or two-way tables) analysis and many more.

A contingency table (cross tabulation or two-way tables) is a joint frequency distribution and is one of the most commonly used analytic methods in the social sciences. When the variables we want to examine the relationship are categorical variables, then we use "Contingency Table".

Ex: Suppose we have a complete data on which two variables are "Smoking Status" and "Presence of Lung-Cancer". Both of them are categorical variables and the possible responses for both them are same, which are "Yes" and "No".

Presence of Lung-Cancer	Smoking Status		Total	Chi-square (df)	p-value
	Yes	No			
Yes	795	55	850		
No	149	551	700	54.64(5)	<0.01
Total	944	606	1550		

This contingency table can be analyzed with the "Chisquare Statistic" to determine whether the variables are statistically independent or if they are associated. Here -value<0.01. So at 1% level of significance there exist significant association.