**Example**

1000 students at university were graded according to their IQ and the economic condition of their homes. Use chi-square test to find out whether there is any association between economic condition at home and IQ Level. At significance level 0.05 test if there is an association between economic condition at home and IQ?

|  |  |  |  |
| --- | --- | --- | --- |
| **Economic**  **conditions** | **IQ Level** | | **Total** |
| **High** | **Low** |
| **Rich** | 460 | 140 | 600 |
| **Poor** | 240 | 160 | 400 |
| **Total** | 700 | 300 | 1000 |

Source: Johikumar and all, 2006, p. 168.

**Step1: state the null and alternative hypothesis**

(economic condition at home and IQ Level are independent)

(economic condition at home and IQ Level are NOT independent)

**Step 2: select the level of significance**

0.05

**Step 3. determine the test statistics**

The base for assessment on the level of discrepancy between nij i  is the statistic (test) χ2 defined as:



Statistic χ2 belongs to distribution χ2 with the number of degrees of freedom s=(k-1)(l-1); where k is the number of variants (classes) of variable X, l is the number of variants (classes) of variable Y.