**Assignment 18.1**

# Problem Statement 1:

Is gender independent of education level? A random sample of 395 people were

surveyed and each person was asked to report the highest education level they

obtained. The data that resulted from the survey is summarized in the following table:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | High School | Bachelors | Masters | Ph.d. | Total |
| Female | 60 | 54 | 46 | 41 | 201 |
| Male | 40 | 44 | 53 | 57 | 194 |
|  | 100 | 98 | 99 | 98 | 395 |

Question: Are gender and education level dependent at 5% level of significance? In

other words, given the data collected above, is there a relationship between the gender

of an individual and the level of education that they have obtained?

Answer :

Below is the table of expected counts:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | High School | Bachelors | Masters | Ph.d. | Total |
| Female | 50.886 | 49.868 | 50.377 | 49.868 | 201 |
| Male | 49.114 | 48.132 | 48.623 | 48.132 | 194 |
|  | 100 | 98 | 99 | 98 | 395 |

So, working this out, χ2 =(60−50.886)2/50.886+…+(57−48.132)2/48.132=8.006χ2=(60−50.886)2/50.886+…+(57−48.132)2/48.132=8.006