

# Practical 8

Chi- Squared Test

Ex. 1 *Given the following contingency table for hair colour and eye colour. Find the value of  $\chi^2$ . Is there good association between the two?*

| <i>Eye colour</i> | <i>Hair colour</i> |              |              | <i>Total</i> |
|-------------------|--------------------|--------------|--------------|--------------|
|                   | <i>Fair</i>        | <i>Brown</i> | <i>Black</i> |              |
| Blue              | 15                 | 5            | 20           | 40           |
| Grey              | 20                 | 10           | 20           | 50           |
| Brown             | 25                 | 15           | 20           | 60           |
| Total             | 60                 | 30           | 60           | 150          |

**CODE:**

```
x=matrix(c(15,20,25,5,10,15,20,20,20), nrow=3)
```

```
View(x)
```

```
chisq.test(x, correct=TRUE)
```

```
c("This gives a p value greater than 0.05 so the null hypothesis is  
accepted at 5% level of significance.")
```

```
c(" there is no association between hair and eye colour")
```

Ex. 2. *Two batches each of 12 animals are taken for test of inoculation. One batch was inoculated and the other batch was not inoculated. The number of dead and surviving animals are given in the following table for both the cases. Can the inoculation be regarded as effective against the disease. Make Yate's correction for continuity of  $\chi^2$ ?*

|                | <i>Dead</i> | <i>Survived</i> | <i>Total</i> |
|----------------|-------------|-----------------|--------------|
| Inoculated     | 2           | 10              | 12           |
| Not inoculated | 8           | 4               | 12           |
| Total          | 10          | 14              | 24           |

**CODE:**

```
x=matrix(c(2,8,10,4), nrow=2)
```

```
View(x)
```

```
chisq.test(x,correct=TRUE)
```

```
c("This gives a p value less than 0.05 so the null hypothesis is rejected  
at 5% level of significance.")
```

```
c(" inoculation can be regarded as effective against the disease")
```