JOHNS HOPKINS BLOOMBERG SCHOOL of PUBLIC HEALTH

Statistics for laboratory scientists II

Solutions for the homework problems for lecture 4

1. Here is the R code for creating the observed table.

```
mydata <- rbind( c(17, 259), c(7, 274), c(10, 264) )
```

   a. Code for the chi-square test.

```
chi <- chisq.test(mydata)
chi                                       # stat=4.98; P-value = 0.083
```

   b. For calculating the LRT statistic and corresponding P-value, we can use the expected counts given within the results of `chisq.test()`.

```
ex <- chi$expected                        # expected counts
lrt <- 2 * sum( mydata * log(mydata/ex) ) # value = 4.88
1 - pchisq(lrt, 2)                        # P-value = 0.087
```

   c. Perform Fisher's exact test using the built-in function, `fisher.test()`.

```
fisher.test(mydata)                       # P-value = 0.084
```

   d. Since the p-values are ~8%, we would conclude that there is some evidence for a difference in the survival rates for the three treatments, but it is not strong.