02441 Applied Statistics and Statistical Software

Exercise 4A - Caffeine

In a study the caffeine consumption by marital status among women giving birth was investigated. The results are given in the table below

Martial-status/ Caffeine	0	1-150	151-300	> 300
Married	652	1537	598	242
Prev. Married	36	46	38	21
Single	218	327	106	67

1. Type the data into R so that appropriate analysis can be carried out

```
caf <- matrix(c(652,36,218,1537,46,327,598,38,106,242,21,67), nrow = 3,
          dimnames = list(c('Married', 'Prev Married', 'Single'),
                      c('0','1-150','151-300','>300')))
```

## 2. Determine whether Caffeine consumption and Marital status are independent

```
chi1 <- chisq.test(caf)
chi1
```

```
##
##  Pearson's Chi-squared test
##
## data:  caf
## X-squared = 51.656, df = 6, p-value = 2.187e-09
```

There is an interaction between Martial status and Caffeine consumption. In other words the caffeine consumption depends on Martial Status.

3. If there is dependence between Caffeine consumption and Marital status, what is the conclusion?

```
mosaicplot(t(caf), shade=2:3)
```

t(caf)
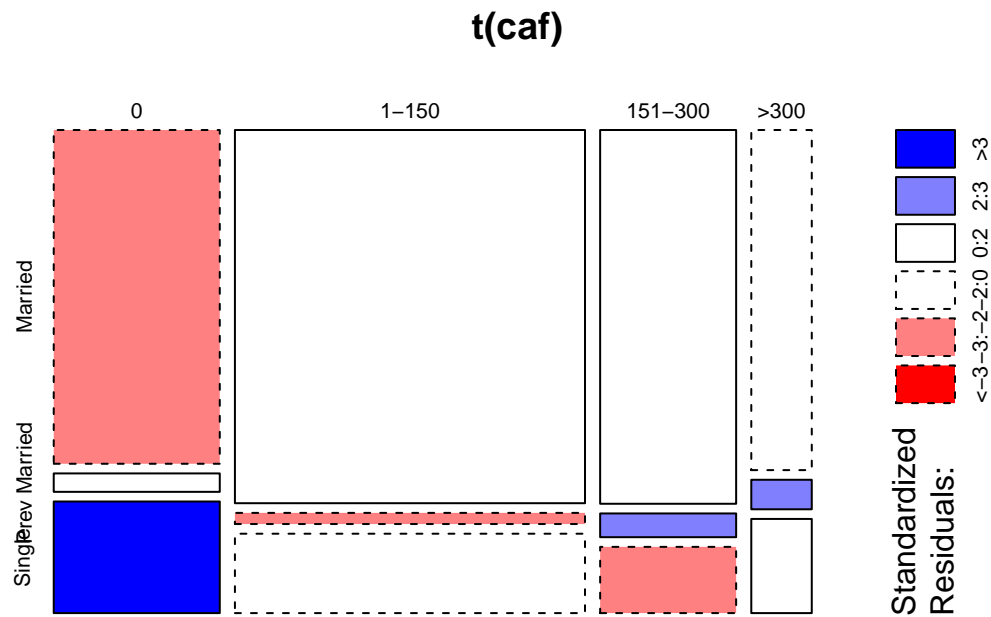
- Married people are under-represented in the group of 0 caffeine drinkers, while Singles are over-represented in this group.

- Previously married people are over-represented in the groups of 151-300 and >300 cafeine drinkers. On the other hand they are under-represented in the group of moderate (1-150) caffeine drinkers.

- Singles are under-represented in the group of 150-300 Caffeine drinkers.