

STAT 455 Homework 04 - R Code

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2019-11-07

Problem 3.3

```
shots <- matrix(c(251, 48, 34, 5), nrow=2, ncol=2)
chisq.test(shots, correct=FALSE)
```

```
##
## Pearson's Chi-squared test
##
## data: shots
## X-squared = 0.27274, df = 1, p-value = 0.6015
```

Problem 3.9a

```
r <- 5
c <- 2
names.r <- c("Schizophrenia",
             "Affective disorder",
             "Neurosis",
             "Personality disorder",
             "Special Systems")
names.c <- c("Drugs", "No Drugs")
row <- c(rep(1,c), rep(2, c), rep(3, c), rep(4, c), rep(5, c)) #row data
column <- c(rep(c(1:2), r)) # column data
count <- c(105, 19, 8, 47, 12, 52, 2, 0, 18, 13)
count.m <- matrix(count, nrow=r, ncol=c)
rownames(count.m) <- names.r
colnames(count.m) <- names.c
fit <- glm(count~as.factor(column)+as.factor(row), family=poisson(link="log"))
stdreschi <- glm.diag(fit)$rp #need book package
res.matrix <- matrix(stdreschi, nrow=r, ncol=c, byrow=TRUE)
rownames(res.matrix) <- names.r
colnames(res.matrix) <- names.c
t1 <- kable(count.m, format="latex", booktabs=TRUE)
t2 <- kable(res.matrix, format="latex", booktabs=TRUE)
```

Counts

	Drugs	No Drugs
Schizophrenia	105	52
Affective disorder	19	2
Neurosis	8	0
Personality disorder	47	18
Special Systems	12	13

Perason Standard Residuals

	Drugs	No Drugs
Schizophrenia	9.6581715	-9.6581716
Affective disorder	-6.3053235	6.3053236
Neurosis	-6.1759785	6.1759786
Personality disorder	1.3491055	-1.3491055
Special Systems	0.6542325	-0.6542325

Counts

	Disapprove	Middle	Approve
Less than highschool	209	101	237

	Disapprove	Middle	Approve
Highschool	151	126	426
More than highschool	16	21	138

Problem 3.15

```
count <- c(7, 8, 0, 15)
n <- sum(count)
Count <- matrix(count, nrow=2, ncol=2, byrow=TRUE)
OR <- (Count[1,1]*Count[2,2]) / (Count[1,2]*Count[2,1])
#WOOLF'S APPROXIMATE CI
se_log <- sqrt( sum(1/count))
z.star <- qnorm(0.975, 0, 1)
CI.up_log <- log(OR) + z.star*se_log
CI.low_log <- log(OR) - z.star*se_log
CI.up <- exp(CI.up_log)
Woolf_CI <- c(CI.low, CI.up)

paste("OR:", decimal(OR, dec))
paste("Woolf CI Interval: (", decimal(Woolf_CI[1], dec), ",", decimal(Woolf_CI[2], dec), ")")
```