Assignment 5

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Problem A- Chi Square Test for Differences in Probabilities

```
library(tidyverse)
library(broom)
```

Problem B- Fisher's Exact Test

Problem C- Chi Square Test for Differences in Probabilities

Problem D- Chi-Square Test

Problem E- Median Test

```
# packages needed
library(agricolae)

sampl_1 <- c(35, 42, 42, 30, 15, 31, 29, 29, 17)
sampl_2 <- c(34, 38, 26, 17, 42, 28, 35, 33, 16)
sampl_3 <- c(17, 29, 30, 36, 41, 30, 31, 23, 38)

sample_col <- c(rep("samp_1", length(sampl_1)),
    rep("samp_2", length(sampl_2)), rep("samp_3",
        length(sampl_3)))

medians <- c(sampl_1, sampl_2, sampl_3)

med_frame <- data.frame(sample_col = as.factor(sample_col),
    medians = medians) %>% as.tibble()

med_test <- Median.test(trt = med_frame$sample_col,
    y = med_frame$medians)
```

Hypotheses:

H_0: All c populations have the same median.
H_1: At least two of the populations have different medians.

Test Statistic

The test statistic of this Median test is 0.8269.

Critical Region

We are looking for a $\chi^2_{0.95,2}$, which is equal to 5.9941.

Conclusion

With the test statistic greater than the critical region, we can reject the Null hypothesis that the medians are the same. There is evidence to suggest that at least two medians are different.