KJPipho_PS_5

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Question 1.

Are Ts in common and uncommon words equally perceptible? We will test this by assessing T finding while reading a passage.

a. Ho : p(Finding Ts in common words) = p(Finding Ts in uncommon words)

If common words contain 28 out of the 94 Ts in the passage we would expect mistakes in common words to comprise 28/94ths of the total mistakes.

b. My results are as follows:

Ts found in common words: 15 Ts missed in common words: 13 Ts found in uncommon words: 53 Ts missed in uncommon words: 13

```
# Input my results into 'results'
results <- c(15,53,13,13)
# Format 'results' to have 2 rows and 2 columns
dim(results) = c(2,2)
results
```

```
##      [,1] [,2]
## [1,]   15   13
## [2,]   53   13
```

```
# Naming columns in 'results'
colnames(results) <- c("Correct", "Incorrect")
# Naming rows in 'results'
rownames(results) <- c("Common", "Uncommon")
# Making 'results' be of the type 'table'
results <- as.table(results)

# Performing chi square analysis on results and 'parking it' as results.chi
results.chi <- chisq.test(results)
# Print results of chi sq
results.chi
```

```
##
##  Pearson's Chi-squared test with Yates' continuity correction
##
## data:  results
## X-squared = 5.7486, df = 1, p-value = 0.0165
```

```
print ("Observed")
```

```
## [1] "Observed"
```

```
results.chi$observed
```

```
##          Correct Incorrect
## Common        15        13
## Uncommon      53        13
```

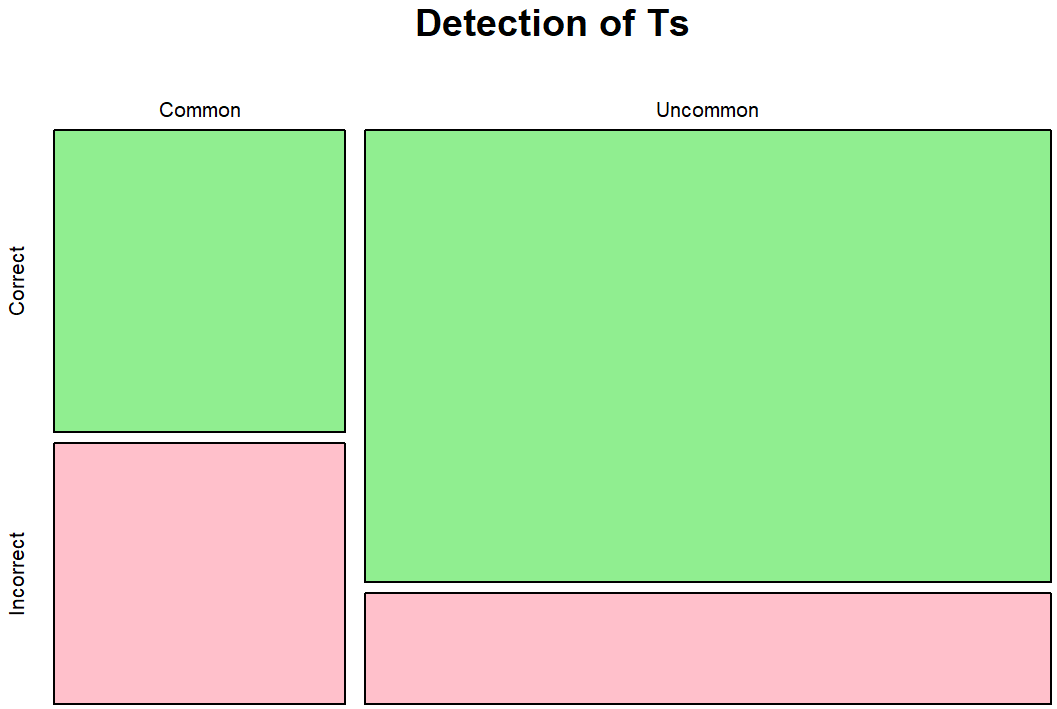
```
print ("Expected")
```

```
## [1] "Expected"
```

```
results.chi$expected
```

```
##           Correct Incorrect
## Common   20.25532  7.744681
## Uncommon 47.74468 18.255319
```

```
# Make mossaic plot to visualize relationship
mosaicplot(results, main = "Detection of Ts", col = c("Light Green", "Pink"))
```



It appears that

we must reject Ho and accept that Ts are more likely to go unnoticed when situated in common words.

Question 2.

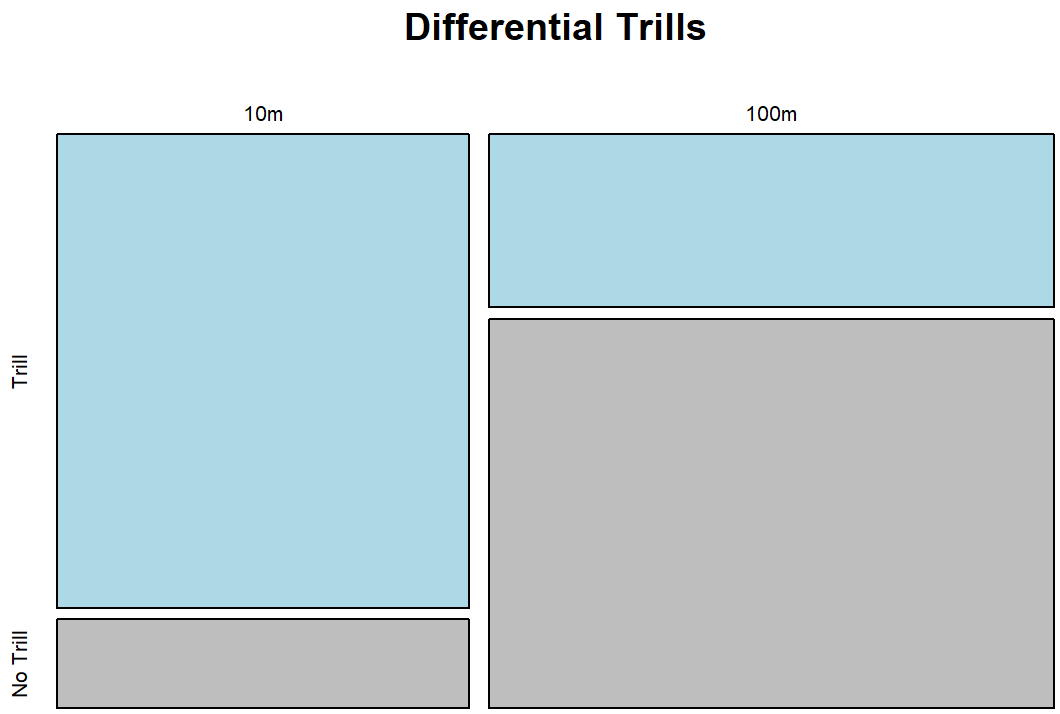
Do chipmunks trill differently under different circumstances?

Ho : p(trill,near) = p(trill,far) Ha : p(trill,near) != p(trill,far)

```
# Placing data in Chipmonk_Trill
Chipmunk_Trill <- c(16,8,3,18)
# Setting dimensions
dim(Chipmunk_Trill) <- c(2,2)
# Making Chipmonk_Trill a 'table' type
Chipmunk_Trill <- as.table(Chipmunk_Trill)
# Naming columns
colnames(Chipmunk_Trill) <- c("Trill", "No Trill")
# Naming rows
rownames(Chipmunk_Trill) <- c("10m", "100m")
# Printing the table
Chipmunk_Trill
```

```
##      Trill No Trill
## 10m     16        3
## 100m     8       18
```

```
# Making a mosaic plot of the table
mosaicplot(Chipmunk_Trill, main = "Differential Trills", color = c("light blue", "gray"))
```




```
# Performing Fisher test
Chipmunk_Trill.Fisher <- fisher.test(Chipmunk_Trill)
# Printing test results
Chipmunk_Trill.Fisher
```

```
##
##  Fisher's Exact Test for Count Data
##
## data:  Chipmunk_Trill
## p-value = 0.0006862
## alternative hypothesis: true odds ratio is not equal to 1
## 95 percent confidence interval:
##   2.32073 77.46500
## sample estimates:
## odds ratio
##   11.23249
```

Conclusion : We reject the null hypothesis and conclude that chipmunks are more likely to trill when close to their burrow

Question 3.

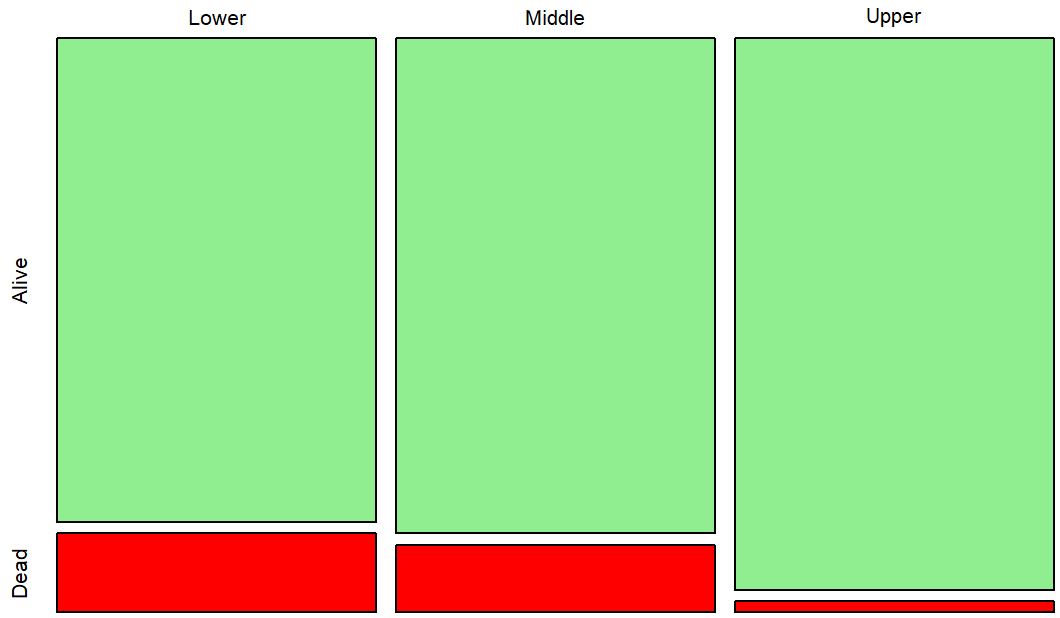
Does nesting site affect penguin survival?

Ho : p(alive,lower) = p(alive,middle) = p(alive,upper) Ha : p(alive,lower) != p(alive,middle), or p(alive,lower) != p(alive,upper) or p(alive,middle) != p(alive,upper)

```
# Placing data in Penguin_Survival
Penguin_Survival <- c(43,44,49,7,6,1)
# Setting dimensions for the data matrix
dim(Penguin_Survival) <- c(3,2)
# Naming the columns
colnames(Penguin_Survival) <- c("Alive", "Dead")
# Naming the rows
rownames(Penguin_Survival) <- c("Lower", "Middle", "Upper")
# Printing the matrix
Penguin_Survival
```

```
##        Alive Dead
## Lower     43    7
## Middle    44    6
## Upper     49    1
```

```
# Making a mosaicplot of the data
mosaicplot(Penguin_Survival, main = "Penguin Survival", color = c("light green", "red"))
```




```
# Performing fisher test
Penguin_Survival.Fisher <- fisher.test(Penguin_Survival)
# Printing test results
Penguin_Survival.Fisher
```

```
##
##  Fisher's Exact Test for Count Data
##
## data:  Penguin_Survival
## p-value = 0.08963
## alternative hypothesis: two.sided
```