The Spock Conspiracy Trial

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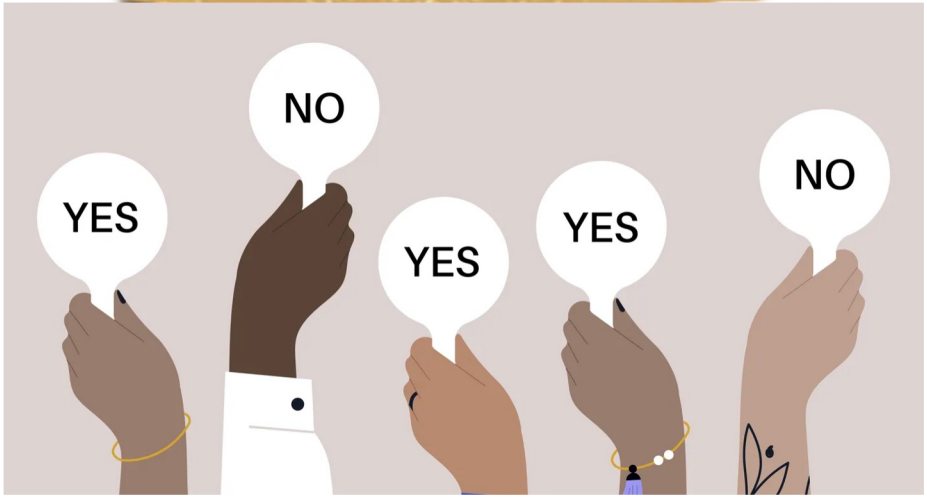
Overview

- The Spock Trial
- Explore the Dataset
- Graphical Analysis
- Overall Findings (i.e. Test results)
- Limitations of the Study

The Spock Trial

"Women in Spock's jury selection were systematically underrepresented in Spock's trial."



Problem: The Client team would like to check whether women are underrepresented in Spock's trial jury selection or not.

Explore the Dataset

```
##    Percent   Judge
## 1      6.4 Spock's
## 2      8.7 Spock's
## 3     13.3 Spock's
## 4     13.6 Spock's
## 5     15.0 Spock's
## 6     15.2 Spock's
## 7     17.7 Spock's
## 8     18.6 Spock's
## 9     23.1 Spock's
## 10    16.8       A
## 11    30.8       A
## 12    33.6       A
## 13    40.5       A
## 14    48.9       A
## 15    27.0       B
```

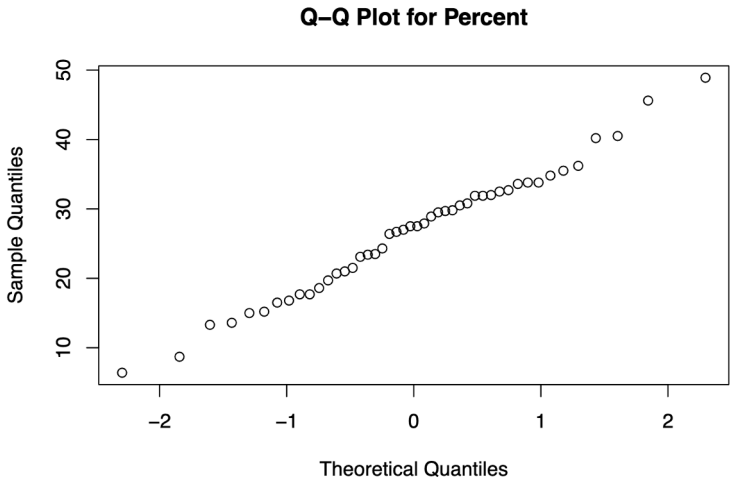
Data structure:

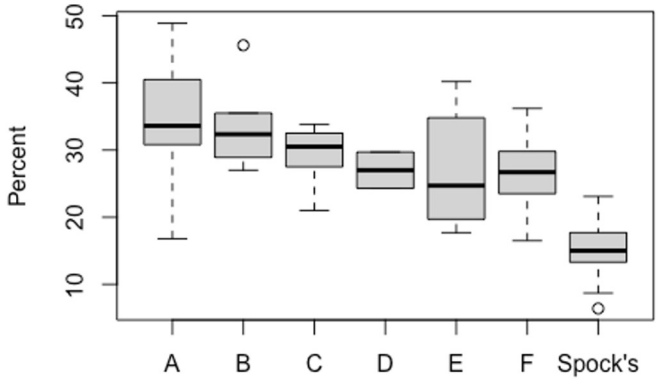
```
## 'data.frame':    46 obs. of  2 variables:
##  $ Percent: num  6.4 8.7 13.3 13.6 15 15.2 17.7 18.6 23.1 16.8 ...
##  $ Judge  : chr  "Spock's" "Spock's" "Spock's" "Spock's" ...
```

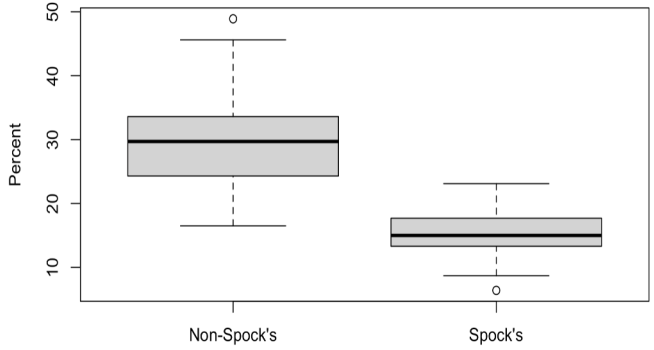
Frequency table of Judges:

```
 A       B       C       D       E       F Spock's
 5       6       9       2       6       9       9
```

Graphical Analysis







Overall Findings

Pairwise Comparison between Spock and Others

```
TukeyHSD(res.aov)

##   Tukey multiple comparisons of means
##     95% family-wise confidence level
##
## Fit: aov(formula = Percent ~ Judge, data = jury)
##
## $Judge
##                     diff       lwr       upr     p adj
## B-A          -0.50333333 -13.51242 12.505755 0.9999997
## C-A          -5.02000000 -17.00309  6.963092 0.8470097
## D-A          -7.12000000 -25.09464 10.854638 0.8777485
## E-A          -7.15333333 -20.16242  5.855755 0.6146238
## F-A          -7.32000000 -19.30309  4.663092 0.4936379
## Spock's-A   -19.49777778 -31.48087 -7.514686 0.0001992
## C-B          -4.51666667 -15.83962  6.806291 0.8742030
## D-B          -6.61666667 -24.15812 10.924784 0.9003280
## E-B          -6.65000000 -19.05368  5.753679 0.6418002
## F-B          -6.81666667 -18.13962  4.506291 0.5109582
## Spock's-B   -18.99444444 -30.31740 -7.671487 0.0001224
## D-C          -2.10000000 -18.89466 14.694661 0.9996956
## E-C          -2.13333333 -13.45629  9.189625 0.9968973
## F-C          -2.30000000 -12.42756  7.827561 0.9914731
## Spock's-C   -14.47777778 -24.60534 -4.350216 0.0012936
## E-D          -0.03333333 -17.57478 17.508118 1.0000000
## F-D          -0.20000000 -16.99466 16.594661 1.0000000
## Spock's-D   -12.37777778 -29.17244  4.416883 0.2744263
## F-E          -0.16666667 -11.48962 11.156291 1.0000000
## Spock's-E   -12.34444444 -23.66740 -1.021487 0.0248789
## Spock's-F   -12.17777778 -22.30534 -2.050216 0.0098340
```

Compare Spock and Combined Area Judges

```
t.test(jury$Percent ~ jury$Reduced_YN, var.equal=TRUE)

##
##  Two Sample t-test
##
## data:  jury$Percent by jury$Reduced_YN
## t = 5.6697, df = 44, p-value = 1.03e-06
## alternative hypothesis: true difference in means between group Non-Spock's
 and group Spock's is not equal to 0
## 95 percent confidence interval:
##   9.584045 20.155294
## sample estimates:
## mean in group Non-Spock's     mean in group Spock's
##                  29.49189                  14.62222
```

Limitations of the Study

Small sample size

- Nonconstant variance
- Time series problem

Any

Question