

A39_Hoermann

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Power of R

```
library(data.table)
```

```
data = data.table(x = c(122, 120, 123, 126, 124),  
                  y = c(114, 125, 121, 127, 128),  
                  z = c(118, 129, 131, 135, 137))  
data
```

```
##      x    y    z  
## 1: 122 114 118  
## 2: 120 125 129  
## 3: 123 121 131  
## 4: 126 127 135  
## 5: 124 128 137
```

```
kruskal.test(data)
```

```
##  
## Kruskal-Wallis rank sum test  
##  
## data: data  
## Kruskal-Wallis chi-squared = 3.92, df = 2, p-value = 0.1409
```

Thus don't drop H_0 , meaning those values stem from the same distribution.

Manual Calculation

```
drank = data.table(x = c(5, 3, 6, 9, 7),  
                   y = c(1, 8, 4, 10, 11),  
                   z = c(2, 12, 13, 14, 15))  
drank
```

```
##      x    y    z  
## 1: 5    1    2  
## 2: 3    8   12  
## 3: 6    4   13  
## 4: 9   10   14  
## 5: 7   11   15
```

```
dsum = colSums(drank)  
dsum = dsum^2  
dsum = dsum / 5  
dsum
```

```
##      x      y      z  
## 180.0 231.2 627.2
```

```
hcalc = (12 / (15 * 16)) * sum(dsum) - 3 * 16  
hcalc
```

```
## [1] 3.92
```

```
hcrit = qchisq(0.95, 2)  
hcrit
```

```
## [1] 5.991465
```

```
hcalc < hcrit
```

```
## [1] TRUE
```

Thus don't drop H_0 , values stem from the same distribution.