Permutation testing

# Testing within-block unpaired permuting of SELECT format data

**Here, block is day and it is necessary to preserve Gear effort within block**

**Haul must be a unique haul identifier OVER ALL hauls.**

## Permuting data

df.perm=df=DF2  
#Obtain the unique grp value for each block-haul combo  
#NB, grouping of Day and Haul is sorted alphabetically  
haulgrp= df |> group\_by(Day,Haul) |>   
 summarize (grp=unique(Gear), .groups = "drop\_last")   
#haulgrp tibble is still grouped by day, so slice\_sample is within day  
permgrp= haulgrp |> slice\_sample(n=nhauls)  
#Identify which hauls are permuted  
permuted.hauls=haulgrp$Haul[haulgrp$grp!=permgrp$grp]  
#Identify the permuted rows in the data frame, and permute  
permuted.obs=(df$Haul %in% permuted.hauls)  
df.perm[permuted.obs,n.names]=df[permuted.obs,rev(n.names)]  
df.perm$Permuted=permuted.obs

## Test and permuted data

df

## Gear Haul lgth n1 n2 q1 q2 Day  
## 1 T0 One 1 3 0 0.5 1 B  
## 2 T0 One 2 6 0 0.5 1 B  
## 3 T0 One 3 1 0 0.5 1 B  
## 4 T45 Two 1 0 4 0.5 1 B  
## 5 T45 Two 2 0 5 0.5 1 B  
## 6 T0 Three 1 2 0 1.0 1 B  
## 7 T0 Three 2 1 0 1.0 1 B  
## 8 T45 Four 1 0 4 0.6 1 B  
## 9 T45 Four 2 0 5 0.6 1 B  
## 10 T45 Four 3 0 6 0.6 1 B  
## 11 T0 Five 1 1 0 0.6 1 B  
## 12 T0 Five 2 6 0 0.6 1 B  
## 13 T0 OneA 1 13 0 0.5 1 A  
## 14 T0 OneA 2 16 0 0.5 1 A  
## 15 T0 OneA 3 11 0 0.5 1 A  
## 16 T45 TwoA 1 10 4 0.5 1 A  
## 17 T45 TwoA 2 10 5 0.5 1 A  
## 18 T0 ThreeA 1 12 0 1.0 1 A  
## 19 T0 ThreeA 2 11 0 1.0 1 A  
## 20 T45 FourA 1 10 4 0.6 1 A  
## 21 T45 FourA 2 10 5 0.6 1 A  
## 22 T45 FourA 3 10 6 0.6 1 A  
## 23 T0 FiveA 1 11 0 0.6 1 A  
## 24 T0 FiveA 2 16 0 0.6 1 A

df.perm

## Gear Haul lgth n1 n2 q1 q2 Day Permuted  
## 1 T0 One 1 3 0 0.5 1 B FALSE  
## 2 T0 One 2 6 0 0.5 1 B FALSE  
## 3 T0 One 3 1 0 0.5 1 B FALSE  
## 4 T45 Two 1 4 0 0.5 1 B TRUE  
## 5 T45 Two 2 5 0 0.5 1 B TRUE  
## 6 T0 Three 1 0 2 1.0 1 B TRUE  
## 7 T0 Three 2 0 1 1.0 1 B TRUE  
## 8 T45 Four 1 0 4 0.6 1 B FALSE  
## 9 T45 Four 2 0 5 0.6 1 B FALSE  
## 10 T45 Four 3 0 6 0.6 1 B FALSE  
## 11 T0 Five 1 1 0 0.6 1 B FALSE  
## 12 T0 Five 2 6 0 0.6 1 B FALSE  
## 13 T0 OneA 1 13 0 0.5 1 A FALSE  
## 14 T0 OneA 2 16 0 0.5 1 A FALSE  
## 15 T0 OneA 3 11 0 0.5 1 A FALSE  
## 16 T45 TwoA 1 10 4 0.5 1 A FALSE  
## 17 T45 TwoA 2 10 5 0.5 1 A FALSE  
## 18 T0 ThreeA 1 12 0 1.0 1 A FALSE  
## 19 T0 ThreeA 2 11 0 1.0 1 A FALSE  
## 20 T45 FourA 1 4 10 0.6 1 A TRUE  
## 21 T45 FourA 2 5 10 0.6 1 A TRUE  
## 22 T45 FourA 3 6 10 0.6 1 A TRUE  
## 23 T0 FiveA 1 0 11 0.6 1 A TRUE  
## 24 T0 FiveA 2 0 16 0.6 1 A TRUE