

DIRPLAN/MEMO1/2024

Ronald Choque

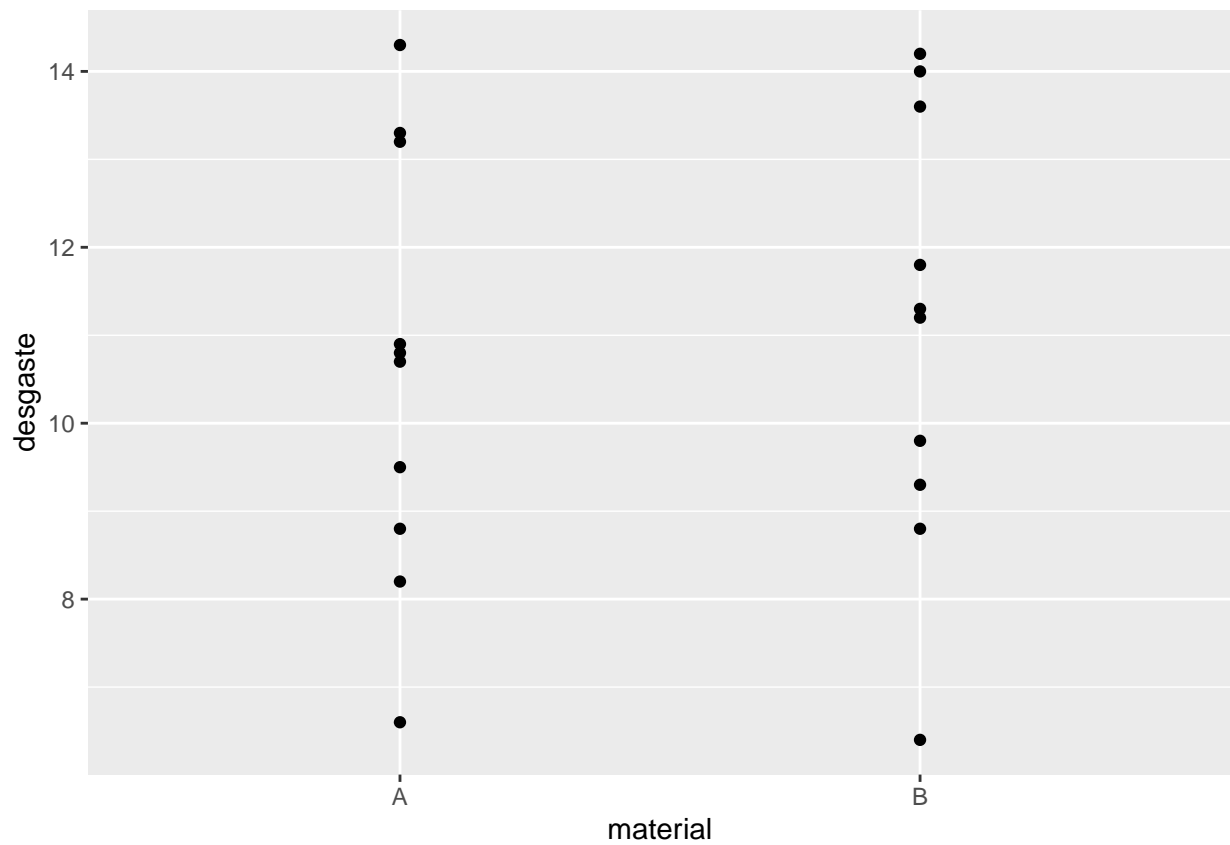
2024-10-04

Análisis del desgaste del zapato según material de la suela.

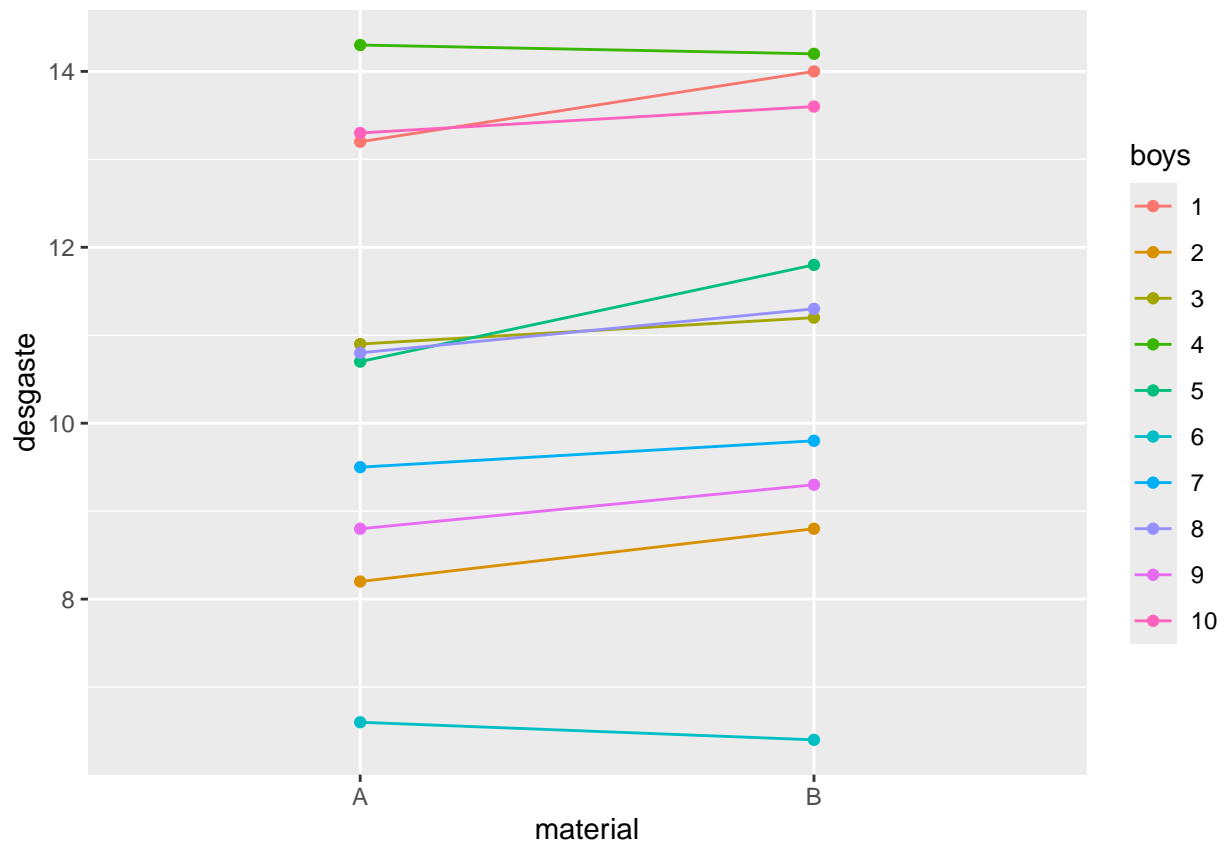
Utilizando los datos en shoes.data de la libreria BHH2:

```
data(shoes.data)
zapatos <- with(shoes.data,
  {
    boys <- rep(1:10, 2)
    desgaste <- c(matA, matB)
    material <- factor(c(rep("A",10), rep("B",10)))
    side <- factor(c(sideA, sideB), labels=c("L","R"))
    boys<-factor(boys)
    data.frame(boys, desgaste, material, side)
  }
)

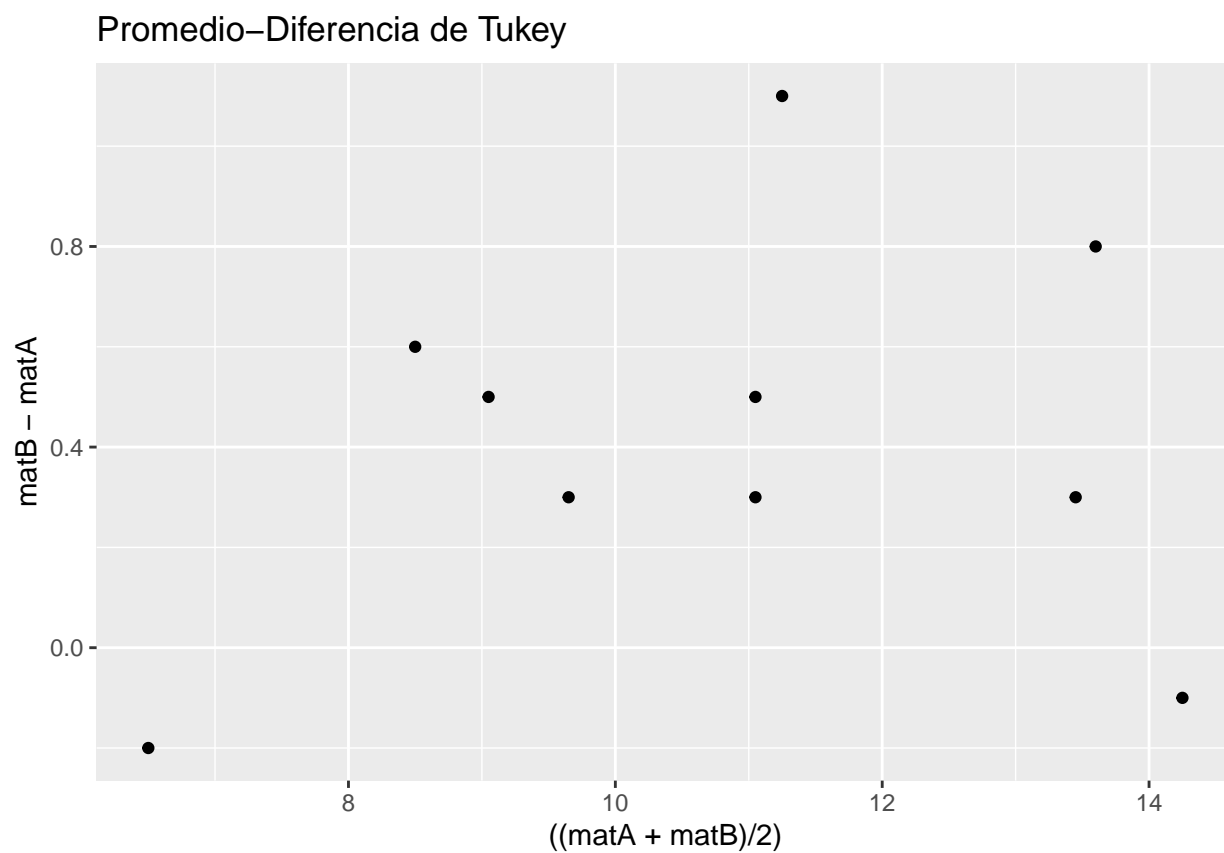
eSe <- ggplot(zapatos, aes(material, desgaste, group=material)) + geom_point()
eSe
```



```
Pe <- ggplot(zapatos, aes(material, desgaste, group=boys, color=boys)) + geom_point() + geom_line(aes(g
Pe
```



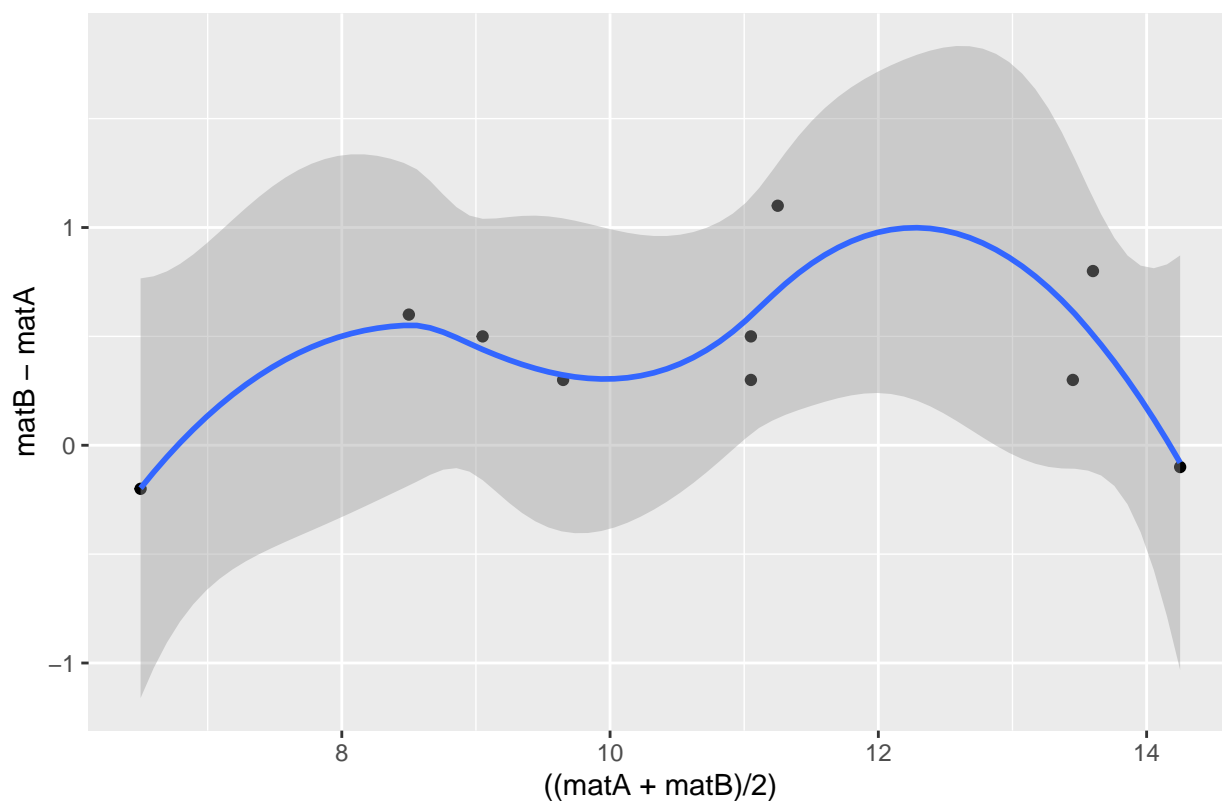
```
T <- ggplot(shoes.data, aes(((matA+matB) / 2), matB-matA)) + geom_point() + ggtitle("Promedio-Diferencia")
T
```



```
T + geom_smooth()
```

```
## `geom_smooth()` using method = 'loess' and formula = 'y ~ x'
```

Promedio-Diferencia de Tukey



```
signos <- c(rep("+", 5), rep("-", 5))
signos

## [1] "+" "+" "+" "+" "+" "-" "-" "-" "-" "-"

sample(signos, 10, replace=FALSE)

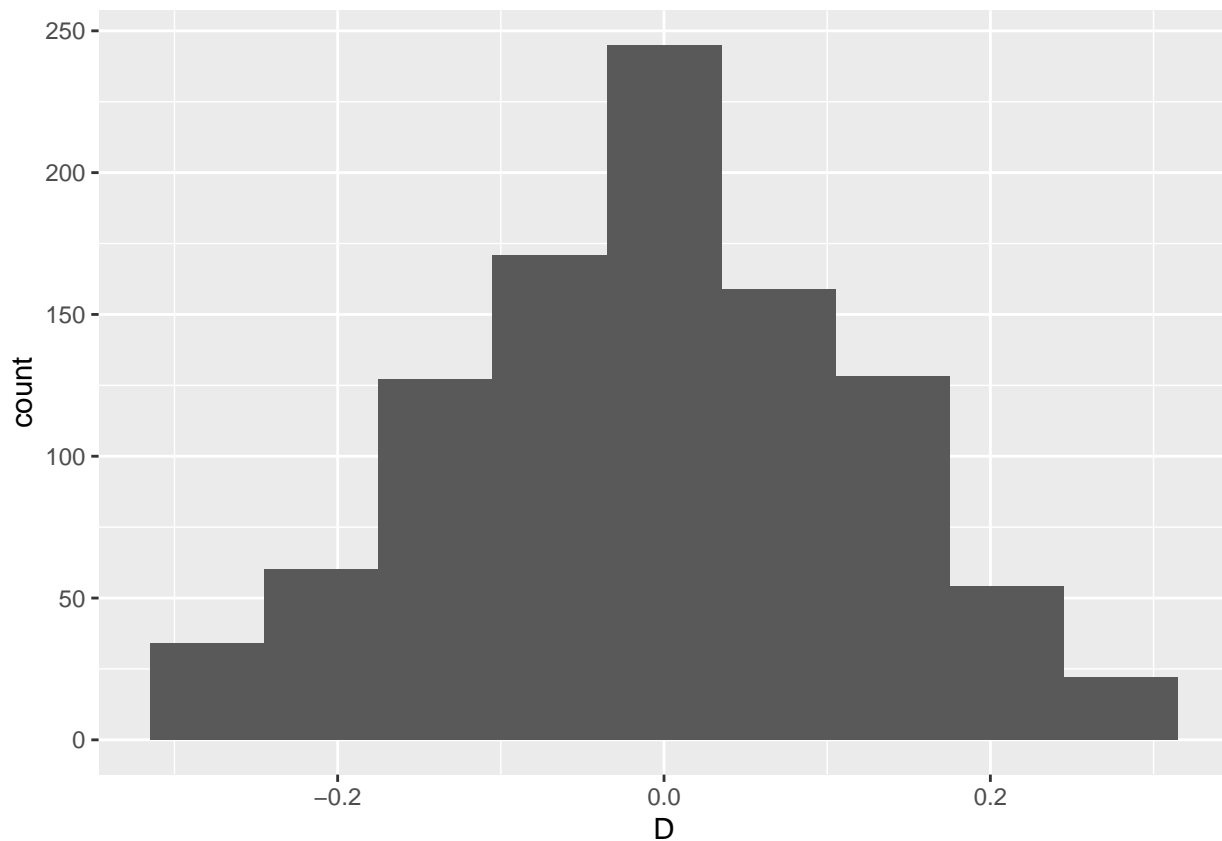
## [1] "-" "-" "+" "+" "+" "-" "+" "-" "-" "+"

zapatos_diff <- function() {
  s <- sample(signos, 10, replace=FALSE)
  d <- with(shoes.data, matB - matA)
  #cambiamos el signo de la diferencia aleatoriamente
  d <- ifelse(s=="+", d, -d)
  mean(d)
}

D <- replicate(1000, zapatos_diff())
d_obs <- with(shoes.data, matB - matA)
mean(d_obs)

## [1] 0.41

ggplot(data.frame(), aes(D)) + geom_histogram(binwidth = .07)
```



```
with(shoes.data, t.test(matB, matA,paired= TRUE))
```

```
##
## Paired t-test
##
## data: matB and matA
## t = 3.3489, df = 9, p-value = 0.008539
## alternative hypothesis: true mean difference is not equal to 0
## 95 percent confidence interval:
##  0.1330461 0.6869539
## sample estimates:
## mean difference
##          0.41
```

¿Cual es el material que mas se desgasta?

```
# Calcular los promedios de desgaste
promedio_matA <- mean(shoes.data$matA)
promedio_matB <- mean(shoes.data$matB)
```

```
# Mostrar los resultados
promedio_matA
```

```
## [1] 10.63
```

```
promedio_matB
```

```
## [1] 11.04
```

```
if (promedio_matB>promedio_matA){  
  cat("El material B es de mayor desgaste: ", promedio_matB, "\n")  
} else {  
  cat("El material A es de mayor desgaste: ", promedio_matA, "\n")  
}
```

```
## El material B es de mayor desgaste: 11.04
```