########### SIMULACION VARIABLES 3 ###########

LLAMAR DATOS

```
rm(list=ls(all=TRUE))
vihope <- read.csv2("G:/UNA MAS/vihope7.csv", sep=";")
colnames(vihope)
library(sqldf)
Basei=sqldf("select Mpios_n,AREA_GEOGRAFICA,Tot_PerHog from vihope")
colnames(Basei)
Ni=nrow(Basei)
BaseI=sqldf('select Mpios_n,sum(Tot_PerHog)as Sum_Tot_PerHog from Basei group by Mpios_n')
colnames(BaseI)
NI=nrow(BaseI)
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.01 (S0_1) #####
set.seed(12345)
tS0_1=matrix(round(0.8*BaseI$Sum_Tot_PerHog+300+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_1)
for (i in 1:NI) {
 if(tS0_1[[i,1]]<0)
   tS0_1[[i,1]]=tS0_1[i]-ms+1
 else
   tS0_1[[i,1]]=tS0_1[[i,1]]
}
cor(tS0_1,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_1) # media de la variable respuesta
a1=as.matrix(lm(tS0_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_1 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_1 <- tS0_1
# Repartación de ty en las USM.
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG, sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,       Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_1', sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_1, cons2$tx)
m=mean(cons2$S0_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
err=tS0_1-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei=Basei[order(Basei[,2]),]
vihope$S0_1=Basei$S0_1
colnames(vihope)


write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.10 (S0_2) #####
set.seed(12345)
tS0_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog+3500+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_3)
for (i in 1:NI) {
 if(tS0_3[[i,1]]<0)
   tS0_3[[i,1]]=tS0_3[i]-ms+1
 else
   tS0_3[[i,1]]=tS0_3[[i,1]]
}
cor(tS0_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_3) # media de la variable respuesta
a1=as.matrix(lm(tS0_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_3 <- tS0_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_3',   sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_3, cons2$tx)
m=mean(cons2$S0_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS0_3-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S0_3=Basei$S0_3
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.30 (S0_3)

```
set.seed(12345)
tS0_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog+35000+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_3)
for (i in 1:NI) {
  if(tS0_3[[i,1]]<0)
    tS0_3[[i,1]]=tS0_3[i]-ms+1
  else
    tS0_3[[i,1]]=tS0_3[[i,1]]
}
cor(tS0_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_3) # media de la variable respuesta
a1=as.matrix(lm(tS0_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_3 <- tS0_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_3',  sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_3, cons2$tx)
m=mean(cons2$S0_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS0_3-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S0_3=Basei$S0_3
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.50 (S0_4)

```
set.seed(12345)
tS0_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog+30500+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_4)
for (i in 1:NI) {
  if(tS0_4[[i,1]]<0)
    tS0_4[[i,1]]=tS0_4[i]-ms+1
  else
    tS0_4[[i,1]]=tS0_4[[i,1]]
}
cor(tS0_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_4) # media de la variable respuesta
a1=as.matrix(lm(tS0_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_4 <- tS0_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_4',  sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_4, cons2$tx)
m=mean(cons2$S0_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS0_4-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S0_4=Basei$S0_4
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.70 (S0_5) #####
set.seed(12345)
tS0_5=matrix(round(0.8*BaseI$Sum_Tot_PerHog+72000+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_5)
for (i in 1:NI) {
 if(tS0_5[[i,1]]<0)
   tS0_5[[i,1]]=tS0_5[i]-ms+1
 else
   tS0_5[[i,1]]=tS0_5[[i,1]]
}
cor(tS0_5,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_5) # media de la variable respuesta
a1=as.matrix(lm(tS0_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_5 <- tS0_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_5',
           sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_5, cons2$tx)
m=mean(cons2$S0_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS0_5-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S0_5=Basei$S0_5
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.99 INTERCEPTO 0.90 (S0_6) #####
set.seed(12345)
tS0_6=matrix(round(0.8*BaseI$Sum_Tot_PerHog+275000+rnorm(NI,mean=0,sd=700),digits=0))
ms=min(tS0_6)
for (i in 1:NI) {
 if(tS0_6[[i,1]]<0)
   tS0_6[[i,1]]=tS0_6[i]-ms+1
 else
   tS0_6[[i,1]]=tS0_6[[i,1]]
}
cor(tS0_6,BaseI$Sum_Tot_PerHog)
m1=mean(tS0_6) # media de la variable respuesta
a1=as.matrix(lm(tS0_6~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS0_6, pch = 20, xlim = c(0, 500000))
abline(lm(tS0_6 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS0_6 <- tS0_6
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS0_6 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S0_6 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S0_6',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S0_6, cons2$tx)
m=mean(cons2$S0_6) # media de la variable respuesta
a=as.matrix(lm(cons2$S0_6~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS0_6-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S0_6=Basei$S0_6
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.01 (S1_1) #####
set.seed(12345)
tS1_1=matrix(round(0.8*BaseI$Sum_Tot_PerHog-300000+rnorm(NI,mean=0,sd=600),digits=0))
ms=min(tS1_1)
for (i in 1:NI) {
 if(tS1_1[[i,1]]<0)
   tS1_1[[i,1]]=tS1_1[i]-ms+1
 else
   tS1_1[[i,1]]=tS1_1[[i,1]]
}
cor(tS1_1,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_1) # media de la variable respuesta
a1=as.matrix(lm(tS1_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_1 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_1 <- tS1_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_1',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_1, cons2$tx)
m=mean(cons2$S1_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_1-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_1=Basei$S1_1
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.10 (S1_2) #####
set.seed(12345)
tS1_2=matrix(round(0.8*BaseI$Sum_Tot_PerHog-520000+rnorm(NI,mean=0,sd=600),digits=0))
ms=min(tS1_2)
for (i in 1:NI) {
 if(tS1_2[[i,1]]<0)
   tS1_2[[i,1]]=tS1_2[i]-ms+1
 else
   tS1_2[[i,1]]=tS1_2[[i,1]]
}
cor(tS1_2,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_2) # media de la variable respuesta
a1=as.matrix(lm(tS1_2~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_2 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_2 <- tS1_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_2',
           sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_2, cons2$tx)
m=mean(cons2$S1_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_2-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_2=Basei$S1_2
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.30 (S1_3) #####
set.seed(12345)
tS1_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog-520000+rnorm(NI,mean=0,sd=4400),digits=0))
ms=min(tS1_3)
for (i in 1:NI) {
 if(tS1_3[[i,1]]<0)
   tS1_3[[i,1]]=tS1_3[i]-ms+1
 else
   tS1_3[[i,1]]=tS1_3[[i,1]]
}
cor(tS1_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_3) # media de la variable respuesta
a1=as.matrix(lm(tS1_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_3 <- tS1_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_3',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_3, cons2$tx)
m=mean(cons2$S1_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_3-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_3=Basei$S1_3
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.50 (S1_4) #####
set.seed(12345)
tS1_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog-520000+rnorm(NI,mean=0,sd=10000),digits=0))
ms=min(tS1_4)
for (i in 1:NI) {
 if(tS1_4[[i,1]]<0)
   tS1_4[[i,1]]=tS1_4[i]-ms+1
 else
   tS1_4[[i,1]]=tS1_4[[i,1]]
}
cor(tS1_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_4) # media de la variable respuesta
a1=as.matrix(lm(tS1_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_4 <- tS1_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_4',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_4, cons2$tx)
m=mean(cons2$S1_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_4-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_4=Basei$S1_4
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.70 (S1_5) #####
set.seed(12345)
tS1_6=matrix(round(0.8*BaseI$Sum_Tot_PerHog+160000+rnorm(NI,mean=0,sd=40000),digits=0))
ms=min(tS1_6)
for (i in 1:NI) {
 if(tS1_6[[i,1]]<0)
   tS1_6[[i,1]]=tS1_6[i]-ms+1
 else
   tS1_6[[i,1]]=tS1_6[[i,1]]
}
cor(tS1_6,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_6) # media de la variable respuesta
a1=as.matrix(lm(tS1_6~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_6, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_6 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_6 <- tS1_6
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_6 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_6 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_6',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_6, cons2$tx)
m=mean(cons2$S1_6) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_6~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_6-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_6=Basei$S1_6
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.97 INTERCEPTO 0.90 (S1_6) #####
set.seed(12345)
tS1_6=matrix(round(0.8*BaseI$Sum_Tot_PerHog+260000+rnorm(NI,mean=0,sd=40000),digits=0))
ms=min(tS1_6)
for (i in 1:NI) {
 if(tS1_6[[i,1]]<0)
   tS1_6[[i,1]]=tS1_6[i]-ms+1
 else
   tS1_6[[i,1]]=tS1_6[[i,1]]
}
cor(tS1_6,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_6) # media de la variable respuesta
a1=as.matrix(lm(tS1_6~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_6, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_6 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_6 <- tS1_6
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_6 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_6 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_6',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_6, cons2$tx)
m=mean(cons2$S1_6) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_6~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS1_6-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S1_6=Basei$S1_6
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.95 INTERCEPTO 0.10 (S2_2) #####
set.seed(12345)
tS2_2=matrix(round(0.8*BaseI$Sum_Tot_PerHog-75000+rnorm(NI,mean=0,sd=105000),digits=0))
ms=min(tS2_2)
for (i in 1:NI) {
 if(tS2_2[[i,1]]<0)
   tS2_2[[i,1]]=(tS2_2[i]-ms+1000)/3000
 else
   tS2_2[[i,1]]=tS2_2[[i,1]]
}
cor(tS2_2,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_2) # media de la variable respuesta
a1=as.matrix(lm(tS2_2~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_2 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_2 <- tS2_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_2',
           sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_2, cons2$tx)
m=mean(cons2$S2_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS2_2-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S2_2=Basei$S2_2
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.95 INTERCEPTO 0.30 (S2_3)

```
set.seed(12345)
tS2_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog-1550000+rnorm(NI,mean=0,sd=1800),digits=0))
ms=min(tS2_3)
for (i in 1:NI) {
 if(tS2_3[[i,1]]<0)
   tS2_3[[i,1]]=tS2_3[i]-ms+1
 else
   tS2_3[[i,1]]=tS2_3[[i,1]]
}
cor(tS2_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_3) # media de la variable respuesta
a1=as.matrix(lm(tS2_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_3 <- tS2_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_3',  sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_3, cons2$tx)
m=mean(cons2$S2_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS2_3-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S2_3=Basei$S2_3
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.95 INTERCEPTO 0.70 (S2_4) #####
set.seed(12345)
tS2_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog+25500+rnorm(NI,mean=0,sd=15000),digits=0))
ms=min(tS2_4)
for (i in 1:NI) {
 if(tS2_4[[i,1]]<0)
   tS2_4[[i,1]]=tS2_4[i]-ms+1+500000
 else
   tS2_4[[i,1]]=tS2_4[[i,1]]
}
cor(tS2_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_4) # media de la variable respuesta
a1=as.matrix(lm(tS2_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_4 <- tS2_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_4',
            sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_4, cons2$tx)
m=mean(cons2$S2_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS2_4-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S2_4=Basei$S2_4
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.95 INTERCEPTO 0.70 (S2_5)

```
set.seed(12345)
tS2_5=matrix(round(0.8*BaseI$Sum_Tot_PerHog+10000+rnorm(NI,mean=0,sd=70000),digits=0))
ms=min(tS2_5)
for (i in 1:NI) {
 if(tS2_5[[i,1]]<0)
   tS2_5[[i,1]]=tS2_5[i]-ms+1
 else
   tS2_5[[i,1]]=tS2_5[[i,1]]
}
cor(tS2_5,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_5) # media de la variable respuesta
a1=as.matrix(lm(tS2_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_5 <- tS2_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_5',
           sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_5, cons2$tx)
m=mean(cons2$S2_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS2_5-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S2_5=Basei$S2_5
colnames(vihope)
write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.95 INTERCEPTO 0.90 (S2_6) #####
set.seed(12345)
tS2_6=matrix(round(0.8*BaseI$Sum_Tot_PerHog-670000+rnorm(NI,mean=0,sd=250000),digits=0))
ms=min(tS2_6)
for (i in 1:NI) {
 if(tS2_6[[i,1]]<0)
   tS2_6[[i,1]]=tS2_6[i]-ms+1
 else
   tS2_6[[i,1]]=tS2_6[[i,1]]
}
cor(tS2_6,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_6) # media de la variable respuesta
a1=as.matrix(lm(tS2_6~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_6, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_6 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_6 <- tS2_6
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
            group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_6 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,   Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_6 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_6',
           sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_6, cons2$tx)
m=mean(cons2$S2_6) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_6~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable

err=tS2_6-(BaseI$Sum_Tot_PerHog*a1[2,1]+a1[1,1])
mean(err)
var(err)
shapiro.test(err)
hist (err)
Basei$repar_tyAG <- NULL
Basei=Basei[order(Basei[,2]),]
vihope$S2_6=Basei$S2_6
colnames(vihope)

write.csv2(vihope, file = 'G:/Una mas/vihope7.csv')
```

```
rm(list=ls(all=TRUE))
vihope <- read.csv2("D:/vihope7.csv", sep=";")
colnames(vihope)
library(sqldf)
Basei=sqldf("select Mpios_n,AREA_GEOGRAFICA,Tot_PerHog from vihope")
colnames(Basei)
Ni=nrow(Basei)
BaseI=sqldf('select Mpios_n,sum(Tot_PerHog)as Sum_Tot_PerHog from Basei group by Mpios_n')
colnames(BaseI)
NI=nrow(BaseI)


##### SIMULACIÖN DE Ty CORRELACION 0.9 INTERGEPTO 0.01 (S1_1) #####
am=1002000
res=matrix(c(numeric(am),numeric(am),numeric(am),numeric(am),numeric(am)),ncol=5)

for (j in 0:1000){
  for (k in 1:1000){
    set.seed(12345)
    tS1_1=matrix(round(0.8*BaseI$Sum_Tot_PerHog-(100*k+100000)+rnorm(NI,mean=0,sd=100*j+100000),digits=0))
    ms=min(tS1_1)
    for (i in 1:NI) {
      if(tS1_1[[i,1]]<0)
        tS1_1[[i,1]]=tS1_1[i]-ms+1
      else
        tS1_1[[i,1]]=tS1_1[[i,1]]
    }
    c=cor(tS1_1,BaseI$Sum_Tot_PerHog)
    m1=mean(tS1_1) # media de la variable respuesta
    a1=as.matrix(lm(tS1_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
    d=a1[1,1]/m1 #razón entre el intercepto y la media de la varable
    res[1000*j+k,1]=1000*j+k
    res[1000*j+k,2]=j
    res[1000*j+k,3]=k
    res[1000*j+k,4]=round(c,digits=2)
    res[1000*j+k,5]=round(d,digits=2)
  }


  print(paste("Paso",j,k,sep=" "))

}


write.csv2(res, file = 'D:/kellogs2.csv2')
```

```
############# SIMULACIÓN DE LA VARIABLES #############
###SELECCION BASE DE DATOS###
rm(list=ls(all=TRUE))
vihope <- read.csv2("G:/UNA MAS/vihope6.csv", sep=";")
colnames(vihope)
library(sqldf)
Basei=sqldf("select Mpios_n,AREA_GEOGRAFICA,Tot_PerHog from vihope")
colnames(Basei)
Ni=nrow(Basei)
BaseI=sqldf('select Mpios_n,sum(Tot_PerHog)as Sum_Tot_PerHog from Basei group by Mpios_n')
colnames(BaseI)
NI=nrow(BaseI)

##### SIMULACIÖN DE Ty CORRELACION 0.9 INTERCEPTO 0.90 (S1_1) #####
set.seed(12345)
tS1_1=matrix(round(0.8*BaseI$Sum_Tot_PerHog+265000+rnorm(NI,mean=0,sd=85000),digits=0))
for (i in 1:NI) {
  if(tS1_1[[i,1]]<0)
    tS1_1[[i,1]]=round(0.8*BaseI$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS1_1[[i,1]]=tS1_1[[i,1]]
}
cor(tS1_1,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_1) # media de la variable respuesta
a1=as.matrix(lm(tS1_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_1 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_1 <- tS1_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                           sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                            Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_1',
sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_1, cons2$tx)
m=mean(cons2$S1_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS1_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)

Basei=Basei[order(Basei[,2]),]
vihope$S1_1=Basei$S1_1
colnames(vihope)
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.9 INTERCEPTO 0.70 (S1_2)

```
set.seed(12345)
tS1_2=matrix(round(0.8*Basel$Sum_Tot_PerHog+38100+rnorm(Nl,mean=0,sd=120000),digits=0))
for (i in 1:Nl) {
  if(tS1_2[[i,1]]<0)
    tS1_2[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS1_2[[i,1]]=tS1_2[[i,1]]
}
cor(tS1_2,Basel$Sum_Tot_PerHog)
m1=mean(tS1_2) # media de la variable respuesta
a1=as.matrix(lm(tS1_2~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS1_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_2 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS1_2 <- tS1_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG, sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0, Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_2 <- round(Basei$repar_tyAG_final,digits = 0)

# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_2',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_2, cons2$tx)
m=mean(cons2$S1_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS1_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)
Basei=Basei[order(Basei[,2]),]
vihope$S1_2=Basei$S1_2
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.9 INTERCEPTO 0.50 (S1_3)

```
set.seed(12345)
tS1_3=matrix(round(0.8*Basel$Sum_Tot_PerHog-185000+rnorm(Nl,mean=0,sd=250000),digits=0))
for (i in 1:Nl) {
  if(tS1_3[[i,1]]<0)
    tS1_3[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
```

```
   tS1_3[[i,1]]=tS1_3[[i,1]]
}
cor(tS1_3,Basel$Sum_Tot_PerHog)
m1=mean(tS1_3) # media de la variable respuesta
a1=as.matrix(lm(tS1_3~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS1_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_3 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS1_3 <- tS1_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                          sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                           Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_3 <- round(Basei$repar_tyAG_final,digits = 0)

# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_3',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_3, cons2$tx)
m=mean(cons2$S1_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS1_3 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)

Basei=Basei[order(Basei[,2]),]
vihope$S1_3=Basei$S1_3
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.9 INTERCEPTO 0.30 (S1_4)

```
set.seed(12345)
tS1_4=matrix(round(0.8*Basel$Sum_Tot_PerHog-1030000+rnorm(NI,mean=0,sd=546000),digits=0))
for (i in 1:NI) {
  if(tS1_4[[i,1]]<0)
    tS1_4[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+10,digits=0)
  else
    tS1_4[[i,1]]=tS1_4[[i,1]]
}
cor(tS1_4,Basel$Sum_Tot_PerHog)
m1=mean(tS1_4) # media de la variable respuesta
a1=as.matrix(lm(tS1_4~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
```

```
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_4 <- tS1_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_4',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_4, cons2$tx)
m=mean(cons2$S1_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS1_4 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S1_4=Basei$S1_4
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.9 INTERCEPTO 0.10 (S1_5)

```
set.seed(12345)
tS1_5=matrix(round(0.8*BaseI$Sum_Tot_PerHog-430000+rnorm(NI,mean=0,sd=315000),digits=0))
for (i in 1:NI) {
  if(tS1_5[[i,1]]<0)
    tS1_5[[i,1]]=round(2*BaseI$Sum_Tot_PerHog[i]/20,digits=0)
  else
    tS1_5[[i,1]]=tS1_5[[i,1]]
}
cor(tS1_5,BaseI$Sum_Tot_PerHog)
m1=mean(tS1_5) # media de la variable respuesta
a1=as.matrix(lm(tS1_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS1_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS1_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS1_5 <- tS1_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
```

```
              group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS1_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                          sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                           Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S1_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S1_5',
              sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S1_5, cons2$tx)
m=mean(cons2$S1_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S1_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS1_5 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S1_5=Basei$S1_5
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.7 INTERCEPTO 0.90 (S2_1)

```
set.seed(12345)
tS2_1=matrix(round(0.8*BaseI$Sum_Tot_PerHog+260000+rnorm(NI,mean=0,sd=194000),digits=0))
for (i in 1:NI) {
  if(tS2_1[[i,1]]<0)
    tS2_1[[i,1]]=round(0.8*BaseI$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS2_1[[i,1]]=tS2_1[[i,1]]
}
cor(tS2_1,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_1) # media de la variable respuesta
a1=as.matrix(lm(tS2_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_1 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_1 <- tS2_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei  group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,  sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0, Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
```

```
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_1', sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_1, cons2$tx)
m=mean(cons2$S2_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS2_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S2_1=Basei$S2_1
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.7 INTERCEPTO 0.70 (S2_2)

```
set.seed(12345)
tS2_2=matrix(round(0.8*BaseI$Sum_Tot_PerHog-418000+rnorm(NI,mean=0,sd=475000),digits=0))
for (i in 1:NI) {
  if(tS2_2[[i,1]]<0)
    tS2_2[[i,1]]=round(0.8*BaseI$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS2_2[[i,1]]=tS2_2[[i,1]]
}
cor(tS2_2,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_2) # media de la variable respuesta
a1=as.matrix(lm(tS2_2~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_2 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_2 <- tS2_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                                sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                                 Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_2',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_2, cons2$tx)
m=mean(cons2$S2_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
```

```
Basei$tS2_2 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S2_2=Basei$S2_2
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.7 INTERCEPTO 0.50 (S2_3)

```
set.seed(12345)
tS2_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog-970000+rnorm(NI,mean=0,sd=665000),digits=0))
for (i in 1:NI) {
  if(tS2_3[[i,1]]<0)
    tS2_3[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/4,digits=0)
  else
    tS2_3[[i,1]]=tS2_3[[i,1]]
}
cor(tS2_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_3) # media de la variable respuesta
a1=as.matrix(lm(tS2_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_3 <- tS2_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_3',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_3, cons2$tx)
m=mean(cons2$S2_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS2_3 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S2_3=Basei$S2_3
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.7 INTERCEPTO 0.30 (S2_4)

```
set.seed(12345)
tS2_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog-1210000+rnorm(NI,mean=0,sd=720500),digits=0))
for (i in 1:NI) {
  if(tS2_4[[i,1]]<0)
    tS2_4[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/18,digits=0)
  else
    tS2_4[[i,1]]=tS2_4[[i,1]]
}
cor(tS2_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_4) # media de la variable respuesta
a1=as.matrix(lm(tS2_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
plot(BaseI$Sum_Tot_PerHog, tS2_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_4 <- tS2_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
              group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_4',
             sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_4, cons2$tx)
m=mean(cons2$S2_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS2_4 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S2_4=Basei$S2_4
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.7 INTERCEPTO 0.10 (S2_5) #####
set.seed(12345)
tS2_5=matrix(round(0.8*BaseI$Sum_Tot_PerHog-2110000+rnorm(NI,mean=0,sd=975000),digits=0))
for (i in 1:NI) {
  if(tS2_5[[i,1]]<0)
    tS2_5[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/8,digits=0)
  else
    tS2_5[[i,1]]=tS2_5[[i,1]]
}
cor(tS2_5,BaseI$Sum_Tot_PerHog)
m1=mean(tS2_5) # media de la variable respuesta
a1=as.matrix(lm(tS2_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS2_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS2_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS2_5 <- tS2_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS2_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S2_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S2_5',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S2_5, cons2$tx)
m=mean(cons2$S2_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S2_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS2_5 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S2_5=Basei$S2_5
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.5 INTERCEPTO 0.90 (S3_1)

```
set.seed(12345)
tS3_1=matrix(round(0.8*Basel$Sum_Tot_PerHog+38000+rnorm(NI,mean=0,sd=454000),digits=0))
for (i in 1:NI) {
  if(tS3_1[[i,1]]<0)
    tS3_1[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS3_1[[i,1]]=tS3_1[[i,1]]
}
cor(tS3_1,Basel$Sum_Tot_PerHog)
m1=mean(tS3_1) # media de la variable respuesta
a1=as.matrix(lm(tS3_1~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS3_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS3_1 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS3_1 <- tS3_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS3_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S3_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S3_1',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S3_1, cons2$tx)
m=mean(cons2$S3_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S3_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS3_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S3_1=Basei$S3_1
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.5 INTERCEPTO 0.70 (S3_2)

```
set.seed(12345)
tS3_2=matrix(round(0.8*Basel$Sum_Tot_PerHog-2350000+rnorm(NI,mean=0,sd=1235000),digits=0))
for (i in 1:NI) {
  if(tS3_2[[i,1]]<0)
    tS3_2[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS3_2[[i,1]]=tS3_2[[i,1]]
```

```
}
cor(tS3_2,Basel$Sum_Tot_PerHog)
m1=mean(tS3_2) # media de la variable respuesta
a1=as.matrix(lm(tS3_2~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS3_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS3_2 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS3_2 <- tS3_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS3_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S3_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S3_2',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S3_2, cons2$tx)
m=mean(cons2$S3_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S3_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS3_2 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)




Basei=Basei[order(Basei[,2]),]
vihope$S3_2=Basei$S3_2
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.5 INTERCEPTO 0.50 (S3_3)

```
set.seed(12345)
tS3_3=matrix(round(0.8*Basel$Sum_Tot_PerHog-10500000+rnorm(NI,mean=0,sd=5080000),digits=0))
for (i in 1:NI) {
  if(tS3_3[[i,1]]<0)
    tS3_3[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS3_3[[i,1]]=tS3_3[[i,1]]
}
cor(tS3_3,Basel$Sum_Tot_PerHog)
m1=mean(tS3_3) # media de la variable respuesta
a1=as.matrix(lm(tS3_3~Basel$Sum_Tot_PerHog)$coef,ncol=2)
```

```
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS3_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS3_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS3_3 <- tS3_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS3_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S3_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S3_3',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S3_3, cons2$tx)
m=mean(cons2$S3_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S3_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS3_3 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S3_3=Basei$S3_3
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.5 INTERCEPTO 0.30 (S3_4)

```
set.seed(12345)
tS3_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog-4110000+rnorm(NI,mean=0,sd=1550000),digits=0))
for (i in 1:NI) {
  if(tS3_4[[i,1]]<0)
    tS3_4[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/10,digits=0)
  else
    tS3_4[[i,1]]=tS3_4[[i,1]]
}
cor(tS3_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS3_4) # media de la variable respuesta
a1=as.matrix(lm(tS3_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable
#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS3_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS3_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS3_4 <- tS3_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
```

```
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS3_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                              Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S3_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S3_4',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S3_4, cons2$tx)
m=mean(cons2$S3_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S3_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS3_4 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S3_4=Basei$S3_4
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.5 INTERCEPTO 0.10 (S3_5)

```
set.seed(12345)
tS3_5=matrix(round(0.8*BaseI$Sum_Tot_PerHog-5530000+rnorm(NI,mean=0,sd=1650000),digits=0))
for (i in 1:NI) {
  if(tS3_5[[i,1]]<0)
    tS3_5[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/205,digits=0)
  else
    tS3_5[[i,1]]=tS3_5[[i,1]]
}
cor(tS3_5,BaseI$Sum_Tot_PerHog)
m1=mean(tS3_5) # media de la variable respuesta
a1=as.matrix(lm(tS3_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS3_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS3_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS3_5 <- tS3_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS3_5 / Basei$N_AG
set.seed(12345)
```

```
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                          sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                           Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S3_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S3_5',
              sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S3_5, cons2$tx)
m=mean(cons2$S3_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S3_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS3_5 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)

Basei=Basei[order(Basei[,2]),]
vihope$S3_5=Basei$S3_5
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.3 INTERCEPTO 0.90 (S4_1) #####
set.seed(12345)
tS4_1=matrix(round(0.8*Basel$Sum_Tot_PerHog-645000+rnorm(Nl,mean=0,sd=1085000),digits=0))
for (i in 1:Nl) {
  if(tS4_1[[i,1]]<0)
    tS4_1[[i,1]]=round(Basel$Sum_Tot_PerHog[i]+100,digits=0)
  else
    tS4_1[[i,1]]=tS4_1[[i,1]]
}
cor(tS4_1,Basel$Sum_Tot_PerHog)
m1=mean(tS4_1) # media de la variable respuesta
a1=as.matrix(lm(tS4_1~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS4_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS4_1 ~ Basel$Sum_Tot_PerHog ), col = "red")

##### distribucion de TY en Basel a Basei
Basel$tS4_1 <- tS4_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS4_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S4_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S4_1',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S4_1, cons2$tx)
m=mean(cons2$S4_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S4_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS4_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S4_1=Basei$S4_1
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

```
##### SIMULACIÖN DE Ty CORRELACION 0.3 INTERCEPTO 0.70 (S4_2) #####
set.seed(12345)
tS4_2=matrix(round(0.8*Basel$Sum_Tot_PerHog-2050000+rnorm(Nl,mean=0,sd=1250000),digits=0))
for (i in 1:Nl) {
  if(tS4_2[[i,1]]<0)
    tS4_2[[i,1]]=round(0.8*Basel$Sum_Tot_PerHog[i]/20,digits=0)
  else
    tS4_2[[i,1]]=tS4_2[[i,1]]
}
cor(tS4_2,Basel$Sum_Tot_PerHog)
m1=mean(tS4_2) # media de la variable respuesta
a1=as.matrix(lm(tS4_2~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS4_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS4_2 ~ Basel$Sum_Tot_PerHog ), col = "red")

##### distribucion de TY en Basel a Basei
Basel$tS4_2 <- tS4_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS4_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                                sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                                 Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S4_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S4_2',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S4_2, cons2$tx)
m=mean(cons2$S4_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S4_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS4_2 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S4_2=Basei$S4_2
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.3 INTERCEPTO 0.50 (S4_3)

```
set.seed(12345)
tS4_3=matrix(round(0.8*BaseI$Sum_Tot_PerHog-6800000+rnorm(NI,mean=0,sd=2658000),digits=0))
for (i in 1:NI) {
  if(tS4_3[[i,1]]<0)
    tS4_3[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/10,digits=0)
  else
    tS4_3[[i,1]]=tS4_3[[i,1]]
}
cor(tS4_3,BaseI$Sum_Tot_PerHog)
m1=mean(tS4_3) # media de la variable respuesta
a1=as.matrix(lm(tS4_3~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS4_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS4_3 ~ BaseI$Sum_Tot_PerHog ), col = "red")

##### distribucion de TY en BaseI a Basei
BaseI$tS4_3 <- tS4_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS4_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S4_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S4_3',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S4_3, cons2$tx)
m=mean(cons2$S4_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S4_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS4_3 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S4_3=Basei$S4_3
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.3 INTERCEPTO 0.30 (S4_4)

```
set.seed(12345)
tS4_4=matrix(round(0.8*BaseI$Sum_Tot_PerHog-25600000+rnorm(NI,mean=0,sd=8180000),digits=0))
for (i in 1:NI) {
  if(tS4_4[[i,1]]<0)
    tS4_4[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/13+100,digits=0)
  else
    tS4_4[[i,1]]=tS4_4[[i,1]]
}
cor(tS4_4,BaseI$Sum_Tot_PerHog)
m1=mean(tS4_4) # media de la variable respuesta
a1=as.matrix(lm(tS4_4~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable


#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS4_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS4_4 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS4_4 <- tS4_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS4_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S4_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S4_4',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S4_4, cons2$tx)
m=mean(cons2$S4_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S4_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS4_4 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)

Basei=Basei[order(Basei[,2]),]
vihope$S4_4=Basei$S4_4
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.3 INTERCEPTO 0.10 (S4_5)

```
set.seed(12345)
tS4_5=matrix(round(0.8*Basel$Sum_Tot_PerHog-10790000+rnorm(Nl,mean=0,sd=3260000),digits=0))
for (i in 1:Nl) {
  if(tS4_5[[i,1]]<0)
    tS4_5[[i,1]]=round(Basel$Sum_Tot_PerHog[i]/120,digits=0)
  else
    tS4_5[[i,1]]=tS4_5[[i,1]]
}
cor(tS4_5,Basel$Sum_Tot_PerHog)
m1=mean(tS4_5) # media de la variable respuesta
a1=as.matrix(lm(tS4_5~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS4_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS4_5 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS4_5 <- tS4_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS4_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S4_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S4_5',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S4_5, cons2$tx)
m=mean(cons2$S4_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S4_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS4_5 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S4_5=Basei$S4_5
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.1 INTERCEPTO 0.90 (S5_1)

```
set.seed(12345)
tS5_1=matrix(round(0.8*Basel$Sum_Tot_PerHog-10500000+rnorm(Nl,mean=0,sd=9200000),digits=0))
for (i in 1:Nl) {
  if(tS5_1[[i,1]]<0)
    tS5_1[[i,1]]=round(Basel$Sum_Tot_PerHog[i]+100,digits=0)
```

```
  else
    tS5_1[[i,1]]=tS5_1[[i,1]]
}
cor(tS5_1,BaseI$Sum_Tot_PerHog)
m1=mean(tS5_1) # media de la variable respuesta
a1=as.matrix(lm(tS5_1~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable

#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS5_1, pch = 20, xlim = c(0, 500000))
abline(lm(tS5_1 ~ BaseI$Sum_Tot_PerHog ), col = "red")

##### distribucion de TY en BaseI a Basei
BaseI$tS5_1 <- tS5_1
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS5_1 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                              Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S5_1 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S5_1',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S5_1, cons2$tx)
m=mean(cons2$S5_1) # media de la variable respuesta
a=as.matrix(lm(cons2$S5_1~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS5_1 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S5_1=Basei$S5_1
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.1 INTERCEPTO 0.70 (S5_2)

```
set.seed(12345)
tS5_2=matrix(round(0.8*BaseI$Sum_Tot_PerHog-18000000+rnorm(NI,mean=0,sd=7180000),digits=0))
for (i in 1:NI) {
  if(tS5_2[[i,1]]<0)
    tS5_2[[i,1]]=round(BaseI$Sum_Tot_PerHog[i]/9,digits=0)
  else
    tS5_2[[i,1]]=tS5_2[[i,1]]
}
cor(tS5_2,BaseI$Sum_Tot_PerHog)
m1=mean(tS5_2) # media de la variable respuesta
a1=as.matrix(lm(tS5_2~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable


#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS5_2, pch = 20, xlim = c(0, 500000))
abline(lm(tS5_2 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS5_2 <- tS5_2
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS5_2 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S5_2 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S5_2',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S5_2, cons2$tx)
m=mean(cons2$S5_2) # media de la variable respuesta
a=as.matrix(lm(cons2$S5_2~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS5_2 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S5_2=Basei$S5_2
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.1 INTERCEPTO 0.50 (S5_3)

```
set.seed(12345)
tS5_3=matrix(round(0.8*Basel$Sum_Tot_PerHog-27450000+rnorm(Nl,mean=0,sd=8750000),digits=0))
for (i in 1:Nl) {
  if(tS5_3[[i,1]]<0)
    tS5_3[[i,1]]=round(Basel$Sum_Tot_PerHog[i]/32,digits=0)
  else
    tS5_3[[i,1]]=tS5_3[[i,1]]
}
cor(tS5_3,Basel$Sum_Tot_PerHog)
m1=mean(tS5_3) # media de la variable respuesta
a1=as.matrix(lm(tS5_3~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable


#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS5_3, pch = 20, xlim = c(0, 500000))
abline(lm(tS5_3 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS5_3 <- tS5_3
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS5_3 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                           sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                             Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S5_3 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S5_3',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S5_3, cons2$tx)
m=mean(cons2$S5_3) # media de la variable respuesta
a=as.matrix(lm(cons2$S5_3~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS5_3 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S5_3=Basei$S5_3
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.1 INTERCEPTO 0.30 (S5_4)

```
set.seed(12345)
tS5_4=matrix(round(0.8*Basel$Sum_Tot_PerHog-28000000+rnorm(Nl,mean=0,sd=8750000),digits=0))
for (i in 1:Nl) {
  if(tS5_4[[i,1]]<0)
    tS5_4[[i,1]]=round(Basel$Sum_Tot_PerHog[i]/35,digits=0)
```

```
  else
    tS5_4[[i,1]]=tS5_4[[i,1]]
}
cor(tS5_4,Basel$Sum_Tot_PerHog)
m1=mean(tS5_4) # media de la variable respuesta
a1=as.matrix(lm(tS5_4~Basel$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable


#### Gráficos ####
plot(Basel$Sum_Tot_PerHog, tS5_4, pch = 20, xlim = c(0, 500000))
abline(lm(tS5_4 ~ Basel$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en Basel a Basei
Basel$tS5_4 <- tS5_4
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,Basel)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS5_4 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                            sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                              Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S5_4 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S5_4',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S5_4, cons2$tx)
m=mean(cons2$S5_4) # media de la variable respuesta
a=as.matrix(lm(cons2$S5_4~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS5_4 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)



Basei=Basei[order(Basei[,2]),]
vihope$S5_4=Basei$S5_4
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```

SIMULACIÖN DE Ty CORRELACION 0.1 INTERCEPTO 0.10 (S5_5)

```
set.seed(12345)
tS5_5=matrix(round(0.8*Basel$Sum_Tot_PerHog-29000000+rnorm(NI,mean=0,sd=9000000),digits=0))
for (i in 1:NI) {
  if(tS5_5[[i,1]]<0)
    tS5_5[[i,1]]=round(Basel$Sum_Tot_PerHog[i]/40,digits=0)
  else
    tS5_5[[i,1]]=tS5_5[[i,1]]
}
cor(tS5_5,Basel$Sum_Tot_PerHog)
m1=mean(tS5_5) # media de la variable respuesta
```

```
a1=as.matrix(lm(tS5_5~BaseI$Sum_Tot_PerHog)$coef,ncol=2)
a1[1,1]/m1 #razón entre el intercepto y la media de la varable


#### Gráficos ####
plot(BaseI$Sum_Tot_PerHog, tS5_5, pch = 20, xlim = c(0, 500000))
abline(lm(tS5_5 ~ BaseI$Sum_Tot_PerHog ), col = "red")
##### distribucion de TY en BaseI a Basei
BaseI$tS5_5 <- tS5_5
# Repartación de ty en las USM.
ls() #liste objetos
Basei <- merge(Basei,BaseI)
#Contar cuantos USM (AG) hay en cada uno de los municipios
Tot_MG <- sqldf("select Mpios_n, count(*) as 'N_AG'  from Basei
                group by Mpios_n")
Basei <- merge(Basei, Tot_MG)
Basei$repar_tyAG <- Basei$tS5_5 / Basei$N_AG
set.seed(12345)
Basei$repar_tyAG_final <- rnorm(n = nrow(Basei), mean = Basei$repar_tyAG,
                           sd = Basei$repar_tyAG/3)
Basei$repar_tyAG_final <- ifelse(Basei$repar_tyAG_final < 0,
                            Basei$repar_tyAG, Basei$repar_tyAG_final )
table(Basei$repar_tyAG_final < 0)
Basei$S5_5 <- round(Basei$repar_tyAG_final,digits = 0)
# Comprobación de que la correlación entre tx y ty se mantiene
cons2 <- sqldf("select Mpios_n, sum(repar_tyAG_final) as 'S5_5',
               sum(Tot_PerHog) as 'tx' from Basei group by Mpios_n")
cor(cons2$S5_5, cons2$tx)
m=mean(cons2$S5_5) # media de la variable respuesta
a=as.matrix(lm(cons2$S5_5~cons2$tx)$coef,ncol=2)
a[1,1]/m #razón entre el intercepto y la media de la varable
Basei$repar_tyAG <- NULL
Basei$Sum_Tot_PerHog <- NULL
Basei$tS5_5 <- NULL
Basei$repar_tyAG_final <- NULL
Basei$N_AG <- NULL
head(Basei)


Basei=Basei[order(Basei[,2]),]
vihope$S5_5=Basei$S5_5
write.csv2(vihope, file = 'G:/Una mas/vihope6.csv')
```