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title: "Articulo supervivencia"
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output: html_document
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```{r setup, include=FALSE}
knitr::opts_chunk$set(echo = TRUE)
install.packages("km.ci")
```

```{r, warning = FALSE, message=FALSE}

library(survival)
str()
```

```{r}
 head(heart)
```

```{r}
t.sup<- (lung$time)/30
ed.plant<- lung$age
hibrido<- lung$sex
severidad <- lung$ph.ecog
estado<- lung$status
N17<- lung$meal.cal
P17<- lung$wt.loss
```


##IDENTIFICANDO MORTALIDAD DE LOS DATOS
```{r}
lung.sur<-Surv(t.sup, estado)
lung.sur
```


##MODELADO NO PARAMETRICO
```{r}
lung.fit<-survfit(lung.sur~1)
summary(lung.fit)
plot(lung.fit,xlab="Dias",ylab="Plantas")
abline(h = 0.5, col='red')
abline(v = 310, col='red')
abline(h = c(0.25, 0.75), col='blue')
abline(v = c(170, 550), col='blue')
```

```{r}
##INTERPRETAR EL ESTIMADOR
plot(lung.fit,xlab="Dias",ylab="Plantas")
abline(h = 0.5, col='red')
abline(v = 310, col='red')
points(c(310, 310), c(0.43, 0.57), pch =16, col='blue')
```
```

```
points(c(280, 360), c(0.5, 0.5), pch =16, col='red')
```

```{r}
lung.fit.strata<-survfit(lung.sur~severidad,lung)
plot(lung.fit.strata, lty = 1:4,col=1:4,xlab="Dias",ylab="Plantas", lwd=3)
legend(700, .9, c("ph.karno=0", "ph.karno=1","ph.karno=2","ph.karno=3"),
lty = 1:4,col=1:4, lwd=3)
abline(h = 0.5)
```

```{r}
lung.fit.strata<-survfit(lung.sur~hibrido,lung)
plot(lung.fit.strata, col=1:2, xlab = 'dias', lwd=3)
legend(700, .9, c("Male", "Female"), col=1:2, lwd=3)
abline(h = 0.5)
```

```{r}
lung.fit.strata<-survfit(lung.sur~estado,lung)
plot(lung.fit.strata, col=1:2, xlab = 'dias', lwd=3)
abline(h = 0.5)
```

```{r}
lung.fit.strata<-survfit(lung.sur~N17,lung)
plot(lung.fit.strata, col=1:2, xlab = 'dias', lwd=3)
abline(h = 0.5)
```

```{r}
lung.fit.strata<-survfit(lung.sur~P17,lung)
plot(lung.fit.strata, col=1:2, xlab = 'dias', lwd=3)
abline(h = 0.5)
```

```{r}

library(km.ci)
a<-km.ci(lung.fit, conf.level=0.95, tl=NA, tu=NA, method="loghall")
plot(a, lty=2, lwd=2, col = 'red')
lines(lung.fit, lwd=2, lty=1, col = 'black')
lines(lung.fit, lwd=1, lty=4, conf.int=T, col = 'blue')
linetype<-c(1, 2, 4)
legend(600, .9, c("Kaplan-Meier", "Hall-Wellner", "Pointwise"),
       lty = linetype,
       col = c('red', 'black', 'blue'))

abline(h = 0.5, col='maroon3', lwd=2)
abline(v = 310, col='maroon3', lwd=2)
```

```{r}
```

```
aalen.fit<- survfit(coxph(lung.sur~1), type="aalen")
sum_aalen.fit = summary(aalen.fit)

plot(aalen.fit, col="red",lwd=1,lty=1)
lines(lung.fit, lwd=1, lty=1)
legend(600, .9,
       c("Nelson-Aalen", "Kaplan-Meier"),
       lty=c(1,1),
       col=c("red", "black"))
```

```{r}
barplot(sum_aalen.fit$time, cumsum(sum_aalen.fit$n.event))
```

```{r}
mod_suv = lm(cumsum(sum_aalen.fit$n.event) ~ sum_aalen.fit$time)
summary(mod_suv)

plot(sum_aalen.fit$time, cumsum(sum_aalen.fit$n.event), pch = 16)
abline(mod_suv)
```

```{r}
survdiff(lung.sur~ph.ecog,lung)

# Prueba de log-rank or Mantel-Haenszel
survdiff(lung.sur~sex,lung, rho = 0)
# Preuba de Peto & Peto modification of the Gehan-Wilcoxon test
survdiff(lung.sur~sex,lung, rho = 1)


survdiff(lung.sur~sex + ph.ecog,lung)
```

Modelo Parametrico

```{r}
par.wei<-survreg(lung.sur~1,dist="w")
par.wei
```

```{r}
kappa<-par.wei$scale
lambda<-exp(-par.wei$coeff[1])
zeit<-seq(from=0,to=1100,length.out=1000)
s<-exp(-(lambda*zeit)^kappa)
h<-lambda^kappa *kappa*zeit^(kappa-1)
par(mfrow=c(2,1))
plot(zeit,h,xlab="Days",ylab="h(t)", pch = 16, cex = 0.1, las = 1)
plot(zeit,s,xlab="Days",ylab="s(t)", pch = 16, cex = 0.1, las = 1)
```