Máster Universitario en Estadística Computacional y Ciencia de Datos para la Toma de Decisiones

Asignatura: *Técnicas de Visualización de Datos*

Funciones

Alumna: Laura Rodríguez

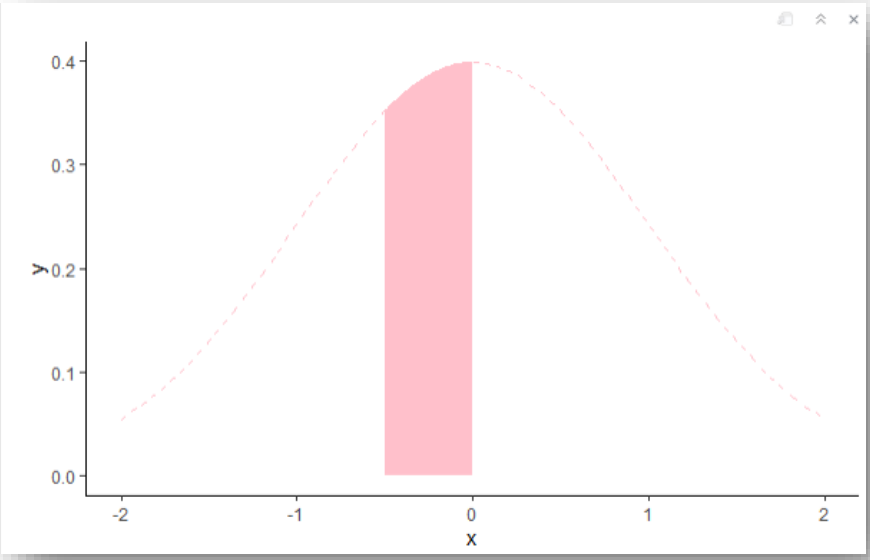
Agregamos las librerías necesarias

```
library(dplyr)
library(paletteer)
library(ggplot2)
library(maps)
```

a) Draw the canvas where we will make the plot.
b) Plot function 1, pink dashed line
c) Fill the area under function 1, pink area

a) Dibuja el lienzo donde haremos el gráfico.
b) Dibujamos la función 1, línea punteada/ rosa
c) Dibujamos el área de la función 1, área/rosa

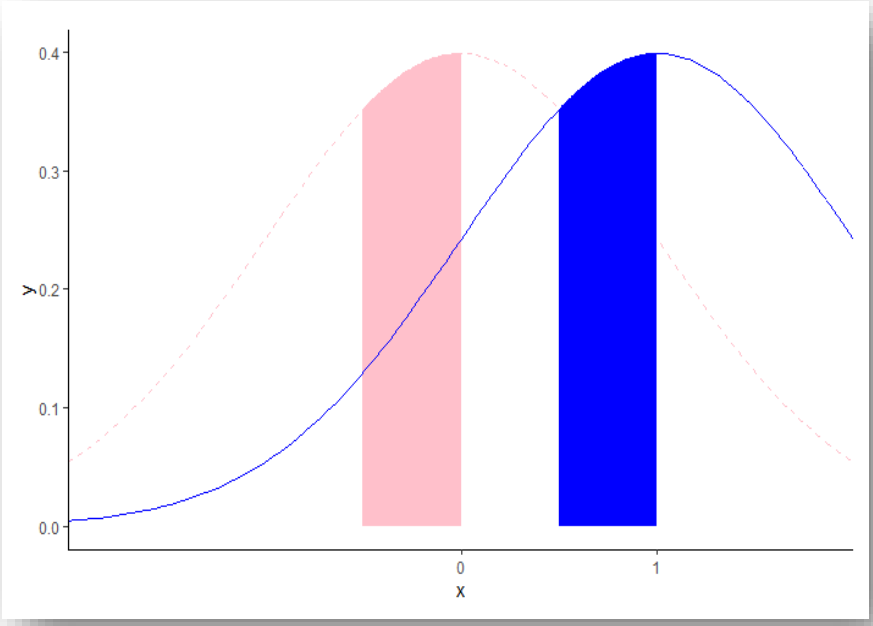
```
ggplot(data.frame(x= c(-2, 2)), aes (x = x))+
  theme_classic()+
  stat_function(fun = dnorm, geom='line',args = list(mean = 0, sd = 1),
color = "pink", lty = 2)+
    stat_function(fun = dnorm, geom='area',args = list(mean = 0, sd = 1),
fill = "pink", lty = 1, xlim =c(-.5,0))
```



d) Plot function 2, solid blue line
e) Fill the area under function 2, blue area

d) Dibujamos la función 2, línea rellena/ azul
e) Dibujamos el área de la función 2, área/azul

```
ggplot(data.frame(x= c(-2, 2)), aes (x = x))+
  theme_classic()+
  stat_function(fun = dnorm, geom='line',args = list(mean = 0, sd = 1), color = "pink", lty = 2)+
    stat_function(fun = dnorm, geom='area',args = list(mean = 0, sd = 1), fill = "pink", lty = 1, xlim =c(-.5,0))+
  stat_function(fun = dnorm, geom='area',args = list(mean = 1, sd = 1), fill = "blue", lty = 1, xlim =c(.5,1)) +
    scale_x_continuous(expand=c(0,0),breaks = c(0,1))+
  stat_function(fun = dnorm, geom='line',args = list(mean = 1, sd = 1), color = "blue", lty = 1)
```



f) Set the plot limits so it looks like the example
g) The function should be visible on the plot, in black color
h) Create the legend (with the respective colors)
i) From the functions, draw arrows pointing to the areas
(solid pink arrow, dashed blue arrow)

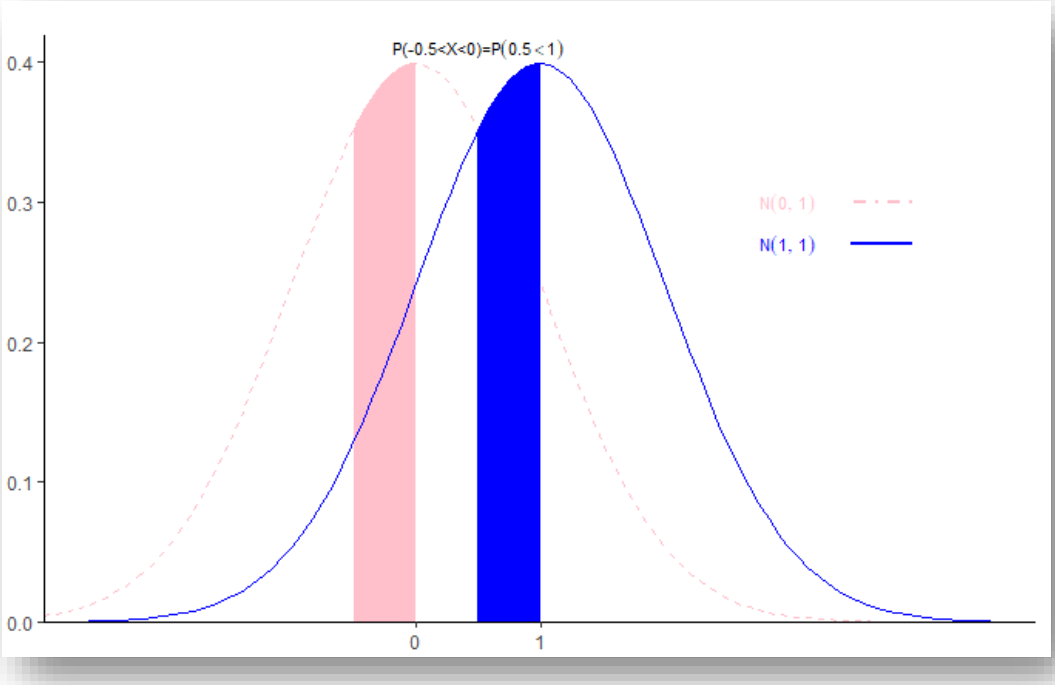
f) Creamos los límites del gráfico para que se vea igual que el ejemplo.

g) Debe visualizarse de la función en el gráfico, color negro.

h) Creamos la leyenda (con los respectivos colores)

i) Desde las funciones, debe salir una flecha señalando las áreas (flecha rosa/rellena, flecha azul/punteada)

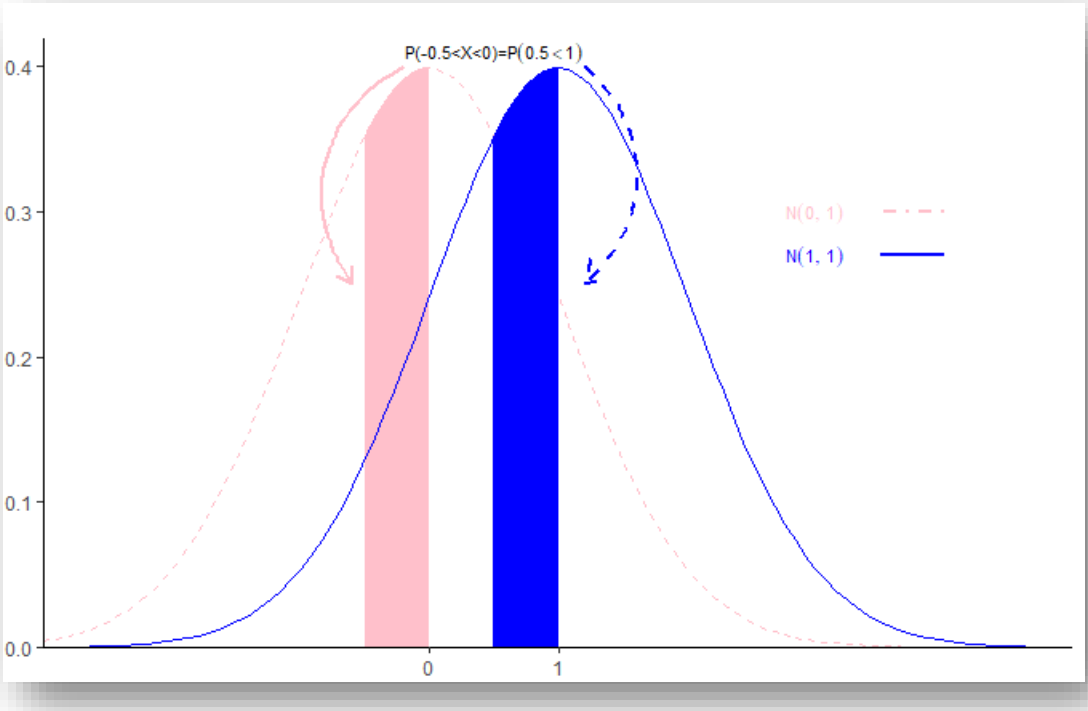
```
ggplot(data.frame(x= c(-2, 2)), aes (x = x))+
  theme_classic()+
  stat_function(fun = dnorm, geom='line',args = list(mean = 0, sd = 1), color = "pink", lty = 2)+
    stat_function(fun = dnorm, geom='area',args = list(mean = 0, sd = 1), fill = "pink", lty = 1, xlim =c(-.5,0))+

  stat_function(fun = dnorm, geom='area',args = list(mean = 1, sd = 1), fill = "blue", lty = 1, xlim =c(.5,1)) +
    scale_x_continuous(expand=c(0,0),breaks = c(0,1))+
  stat_function(fun = dnorm, geom='line',args = list(mean = 1, sd = 1), color = "blue", lty = 1)+



  coord_cartesian(ylim=c(0.019, 0.4))+
  xlab("Valores de x")+
  ylab("Probabilidad")+

  annotate("text", x = .5, y = .41, parse = TRUE,
           label = "'P(-0.5<X<0)='* P(0.5<1)", color = "black", size = 3)+



  annotate("text", x= 3, y=0.3, label = "N(0, 1)", parse = TRUE, color = "pink", size = 3)+
  annotate("text", x= 3, y=0.27, label = "N(1, 1)", parse = TRUE, color = "blue", size = 3)+

  geom_segment(x = 4, y = 0.3, xend = 3.5, yend =.3, color = "pink", lwd=1, lty= 4)+
  geom_segment(x = 4, y = 0.27, xend = 3.5, yend =.27, color = "blue", lwd=1, lty= 1)
```



j) Arrow style according to the example

j) Formato de flechas según ejemplo.

```
  geom_segment(x = 4, y = 0.3, xend = 3.5, yend =.3, color = "pink", lwd=1, lty= 4)+
  geom_segment(x = 4, y = 0.27, xend = 3.5, yend =.27, color = "blue", lwd=1, lty= 1)+

geom_curve(x = 1.2, y = .4,
               xend = 1.2, yend = .25,
               color = "blue",
               arrow = arrow(length=unit(.45,"cm")),
             curvature = -.5,
             lty = 2,size = .8) +

    geom_curve(x = -.2, y = .4,
               xend = -.6, yend = .25,
               color = "pink",
               arrow = arrow(length=unit(.30,"cm")),
             curvature = .5,
             lty = 1,size = .8)
```



k) Title of the plot
l) General format of the plot

k) Título del grafico
l) Formato general del gráfico

```
ggtitle("Distribucion Normal")+

theme(axis.line.x.bottom=element_line(color="red"),
      axis.line.y.left = element_blank(),
      axis.text.x = element_text(color="blue"),
      axis.text.y = element_text(color="blue"),
      axis.title.x = element_text(face = "bold"),
      axis.title.y = element_text(face = "bold"),
      plot.title = element_text(size= 10))
```