PruebaDistribución

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2025-02-21

```r
library(ggplot2)
library(fitdistrplus)
```

```
## Cargando paquete requerido: MASS
## Cargando paquete requerido: survival
```

```r
knitr::opts_chunk$set(echo = TRUE)
```

Distribuciones de Probabilidad y Prueba de Bonda de Ajuste

Distribución Exponencial

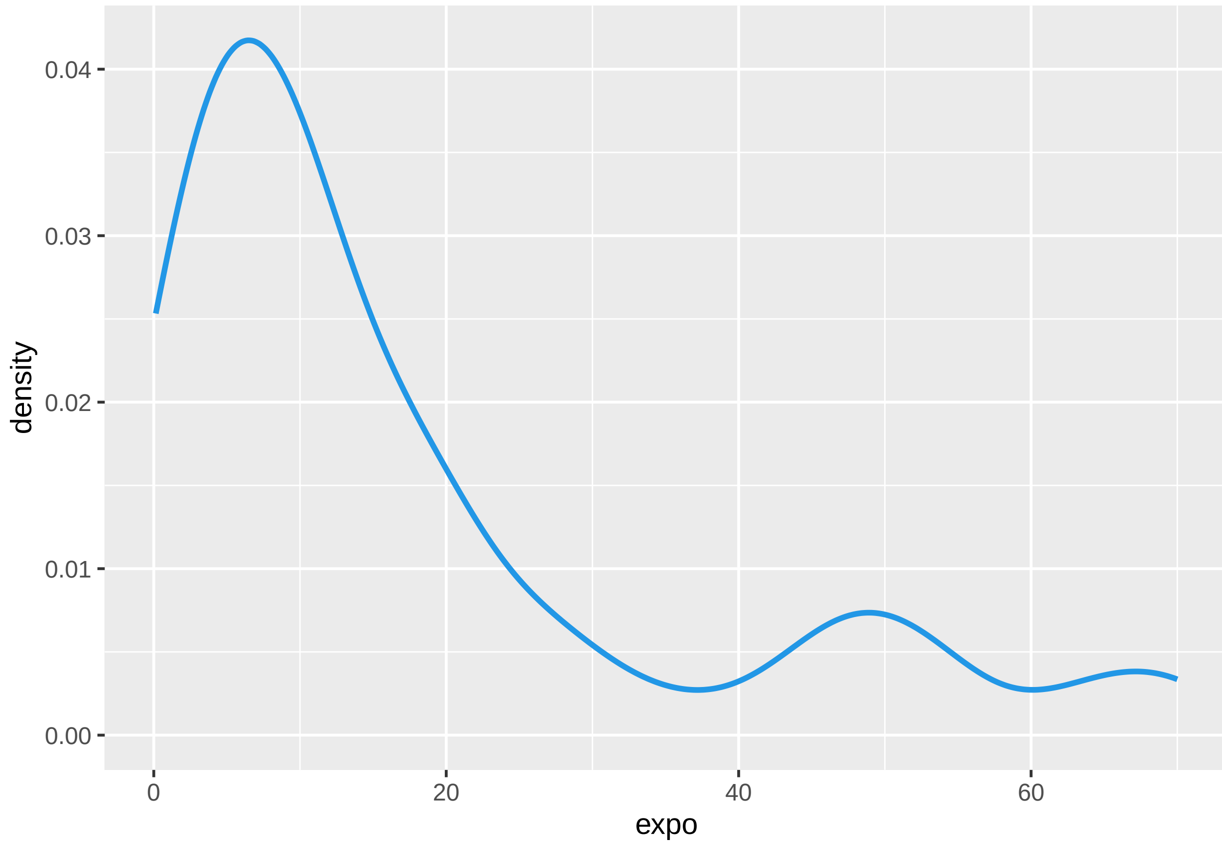
```r
set.seed(1073173761)

expo=round(rexp(100,0.0625),2) #Distribución Exponencial
print(expo)
```

```
##   [1] 21.58 20.12  4.67  5.44  7.90 27.77  4.98 35.11 49.99  5.99  6.30 19.25
##  [13] 25.87  5.15 19.73 19.59 18.46 20.38  5.13  3.93  1.45 15.22 47.39  0.50
##  [25] 70.00  9.32 12.38  2.48 16.72  8.69  8.02 10.92 18.48  0.83  9.26  8.05
##  [37] 10.71  0.16 17.30 10.40 14.11 12.56  8.53  3.28  6.44  7.23 13.59  7.35
##  [49] 40.52 13.12 12.53 63.68 11.55  0.81 20.61 12.97  9.91 46.79  3.28 15.71
##  [61]  0.93  8.37  7.79  3.71  3.24  7.72  5.41 17.86  4.49 50.31 26.71  1.68
##  [73]  7.55 52.33  0.30 44.51 69.89 28.11  0.25  1.53  5.07 54.65  7.00 63.30
##  [85] 54.37 32.04 10.06 48.97 25.83 11.86 67.90  9.44  2.15  0.14  4.02 45.14
##  [97]  2.55 13.57  9.25  2.80
```

Gráfica de Densidad de la distribución Exponencial

```r
df = data.frame(expo)
ggplot(df,aes(x=expo))+geom_density(color=4,lwd=1,linetype=1)
```



Prueba de Ajuste para la distribución Exponencial

```
fit1=fitdist(expo,"exp")
ks.test(expo,"pexp",fit1$stimate)
```

```
## Warning in ks.test.default(expo, "pexp", fit1$stimate): ties should not be
## present for the one-sample Kolmogorov-Smirnov test

## Warning in max(c(x, 1/n - x)): ningun argumento finito para max; retornando
## -Inf

##
##  Asymptotic one-sample Kolmogorov-Smirnov test
##
## data:  expo
## D = -Inf, p-value = 1
## alternative hypothesis: two-sided
```

Distribución Normal

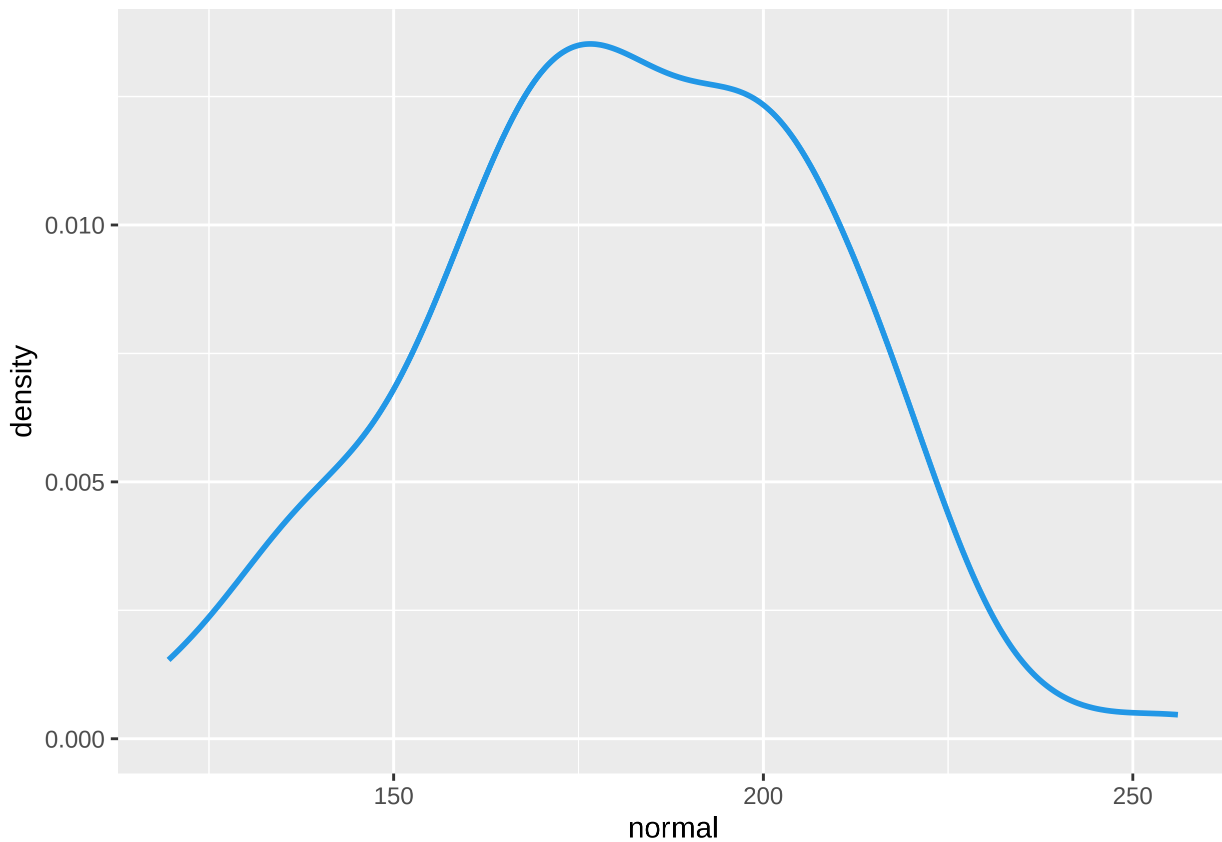
```
normal= round(rnorm(100,179.1,28.2),2) #Distribución Normal
print(normal)
```

```
##   [1] 179.25 197.35 201.32 214.84 218.50 163.22 203.27 148.93 213.71 188.98
##  [11] 218.58 172.60 153.28 202.79 180.23 235.85 199.75 172.14 183.33 164.02
##  [21] 183.29 179.14 256.10 184.80 200.73 172.12 202.80 202.17 175.31 186.19
```

```
##  [31] 158.76 179.93 154.44 186.34 134.31 131.44 152.01 158.81 139.47 212.94
##  [41] 188.11 157.89 208.05 119.53 222.24 167.04 170.15 192.23 196.04 168.29
##  [51] 213.05 138.84 216.45 197.20 224.25 201.52 207.17 217.81 174.60 154.94
##  [61] 203.79 186.70 133.33 172.49 197.81 204.15 169.28 179.28 193.30 145.30
##  [71] 219.49 154.75 181.45 170.77 201.64 213.65 179.65 157.65 203.77 197.85
##  [81] 172.14 139.55 169.34 196.07 184.77 176.44 180.73 192.52 159.69 187.22
##  [91] 121.90 213.44 165.46 194.10 140.18 139.70 166.21 167.46 166.73 167.55
```

Gráfica de la Distribución Normal

```
df = data.frame(normal)
ggplot(df,aes(x=normal))+geom_density(color=4,lwd=1,linetype=1)
```



Prueba de Shapiro para la distribución Normal

```
shapiro.test(normal)
```

```
##
##  Shapiro-Wilk normality test
##
## data:  normal
## W = 0.9906, p-value = 0.7132
```

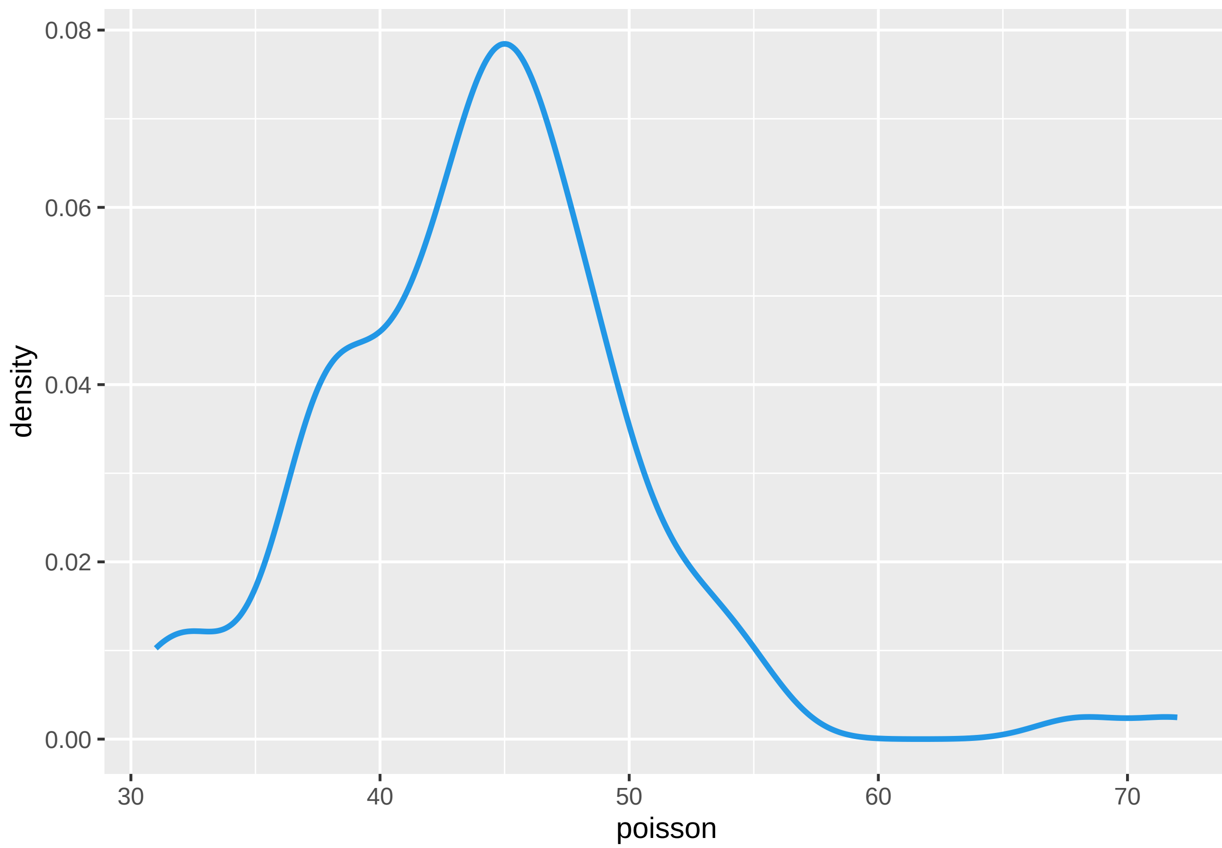
Distribución de Poisson

```
poisson =round(rpois(100,43.2) ,2) # Distribución Poisson
print(poisson)
```

```
##   [1] 45 43 45 43 37 51 48 39 45 46 42 49 47 38 55 44 41 45 41 46 44 46 49 46 38
##  [26] 42 49 37 44 32 47 39 49 43 46 52 46 45 48 44 37 54 44 47 55 46 72 36 38 48
##  [51] 31 38 39 41 44 47 50 46 48 41 43 38 40 40 49 46 44 38 41 41 45 68 43 34 45
##  [76] 42 48 37 32 37 42 44 53 31 45 41 38 51 38 33 49 53 50 47 45 45 48 44 52 43
```

Gráfica de la distribución de Poisson

```
df = data.frame(poisson)
ggplot(df,aes(x=poisson))+geom_density(color=4,lwd=1,linetype=1)
```



Prueba de Bondad de ajuste de la distribución Poisson

```
fit1=fitdist(poisson,"pois",method="mle")
summary(fit1)
```

```
## Fitting of the distribution ' pois ' by maximum likelihood
## Parameters :
##        estimate Std. Error
## lambda    44.21   0.664906
## Loglikelihood:  -326.3517   AIC:  654.7034   BIC:  657.3086
```

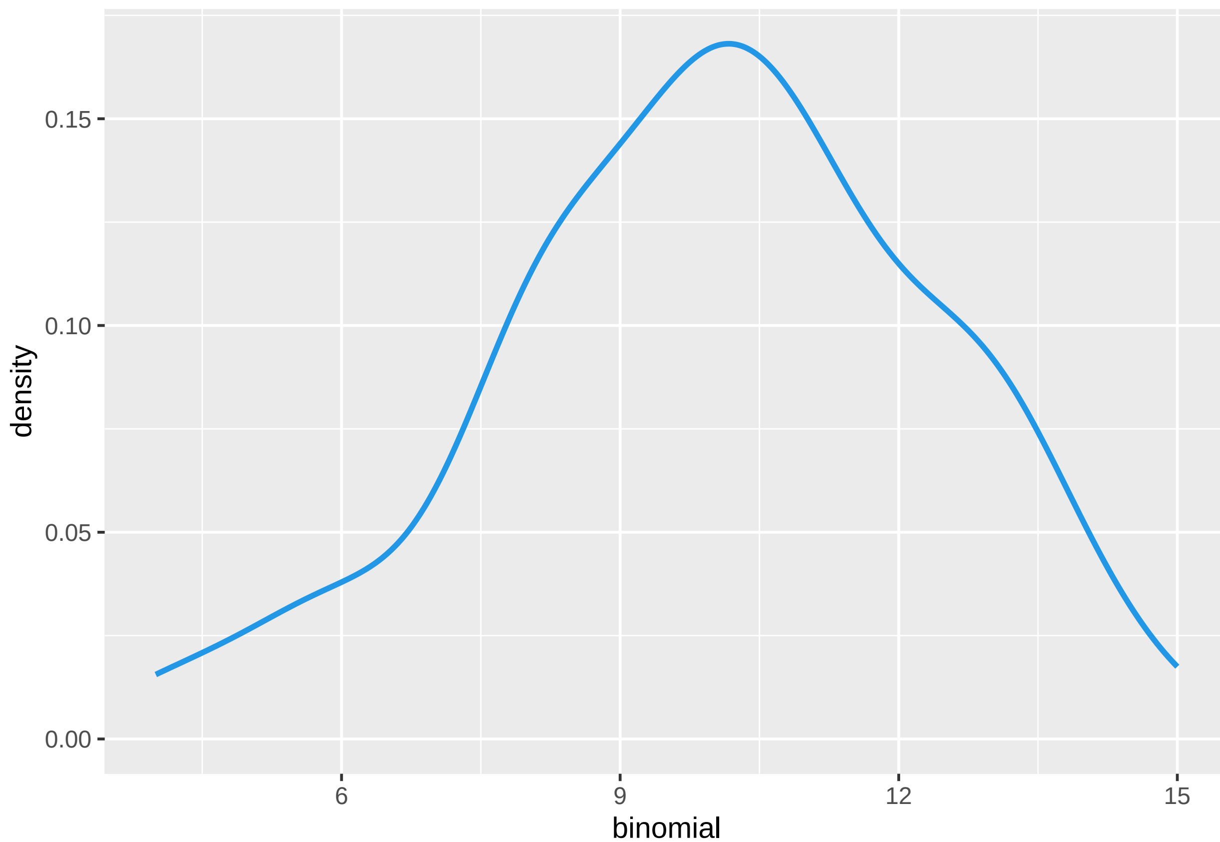
Distribución Binomial

```
binomial=round(rbinom(100,20,0.5) ,2) #Distibución binomial.
print(binomial)
```

```
##   [1] 13 13 11  4 14  8 10 10 11 10 11  8  9 11  8 10  9 14 11 12 12 11  6  9 14
##  [26]  8  8 13 13  9  8 10 11  9 10 15 12 10 11  6  8 10  9  8  9 10  8  9  8  8
##  [51] 13 13 13 11  9 13 10 11  6 11 12 13 14 11 10  5 12  8  5 13 10  8 11 10 10
##  [76] 13 10 11  7 10  6 11  9  4  9  8 13 12 10 12  7 10  9  8 12 11 12 10  6 10
```

Gráfica de la distribución Binomial

```
df = data.frame(binomial)
ggplot(df,aes(x=binomial))+geom_density(color=4,lwd=1,linetype=1)
```



Distribución Chi Cuadrado

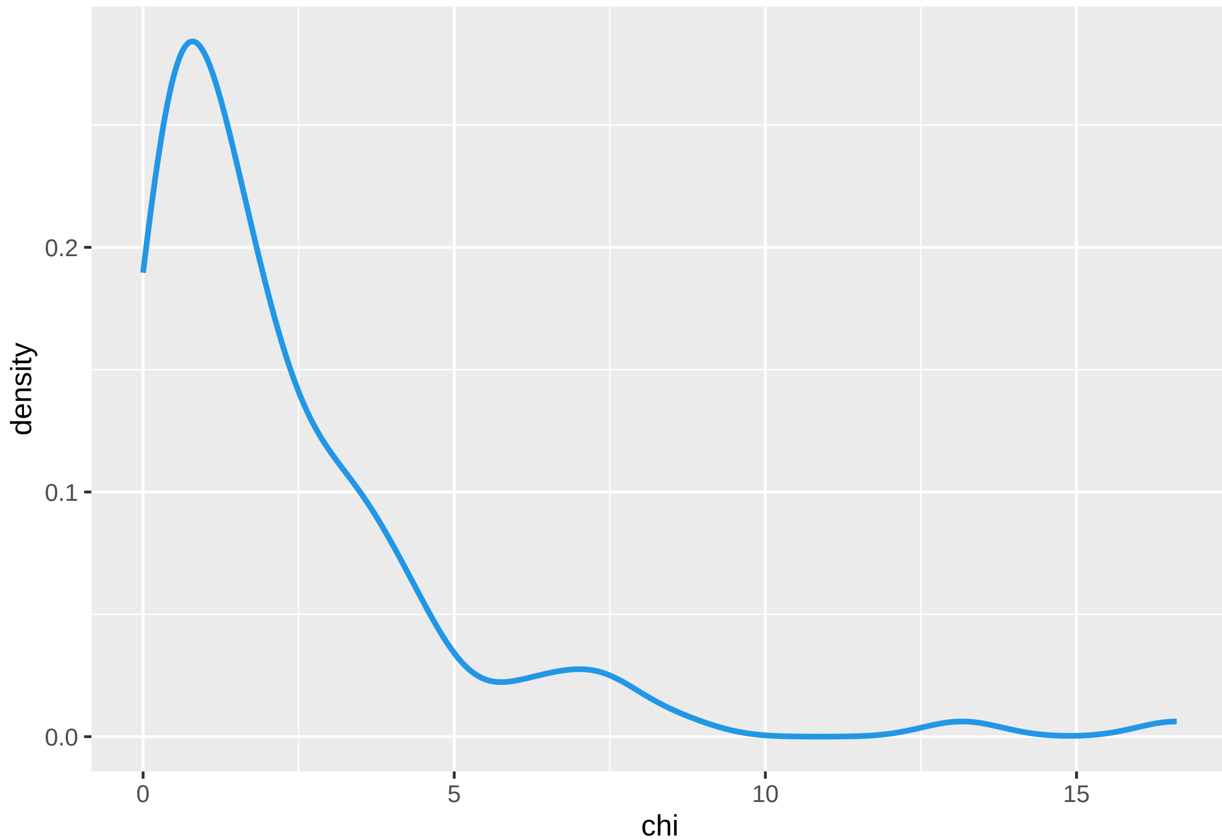
```
chi=round(rchisq(100,2) ,2) #Distribución Chi Cuadrado.
print(chi)
```

```
##   [1]  1.79  1.99  7.54  0.03  2.02  1.29  0.23  2.32  0.43  1.31  1.27  0.29
##  [13]  0.74  0.48  0.67  3.64  0.51  3.01  2.94  6.81  2.03  0.28  6.27  0.98
##  [25]  1.68  1.75  0.12  2.55  0.32  0.68  3.68  0.07  3.09  7.47  0.19  4.40
##  [37]  0.95  2.71  0.62  0.78  3.58  0.96  3.36  0.89  4.61  1.67  1.38  0.34
##  [49]  0.32  0.36  4.22  1.78  0.19  1.70  0.97  7.27  8.58  1.66  3.45  1.68
##  [61]  0.11  2.36  3.93  4.49  1.17  3.06  0.45  0.23  1.31  2.82  0.43 16.61
```

```
## [73]  0.90  0.53  2.33  0.43  0.00  4.59  3.76  1.47  1.48  0.40  0.70  3.58
## [85]  0.84  1.05  0.06  2.16  0.75  2.55  0.86  0.87 13.16  1.98  3.06  5.54
## [97]  1.08  6.19  1.67  0.87
```

Gráfica de la distribución Chi Cuadrado

```r
df = data.frame(chi)
ggplot(df,aes(x=chi))+geom_density(color=4,lwd=1,linetype=1)
```



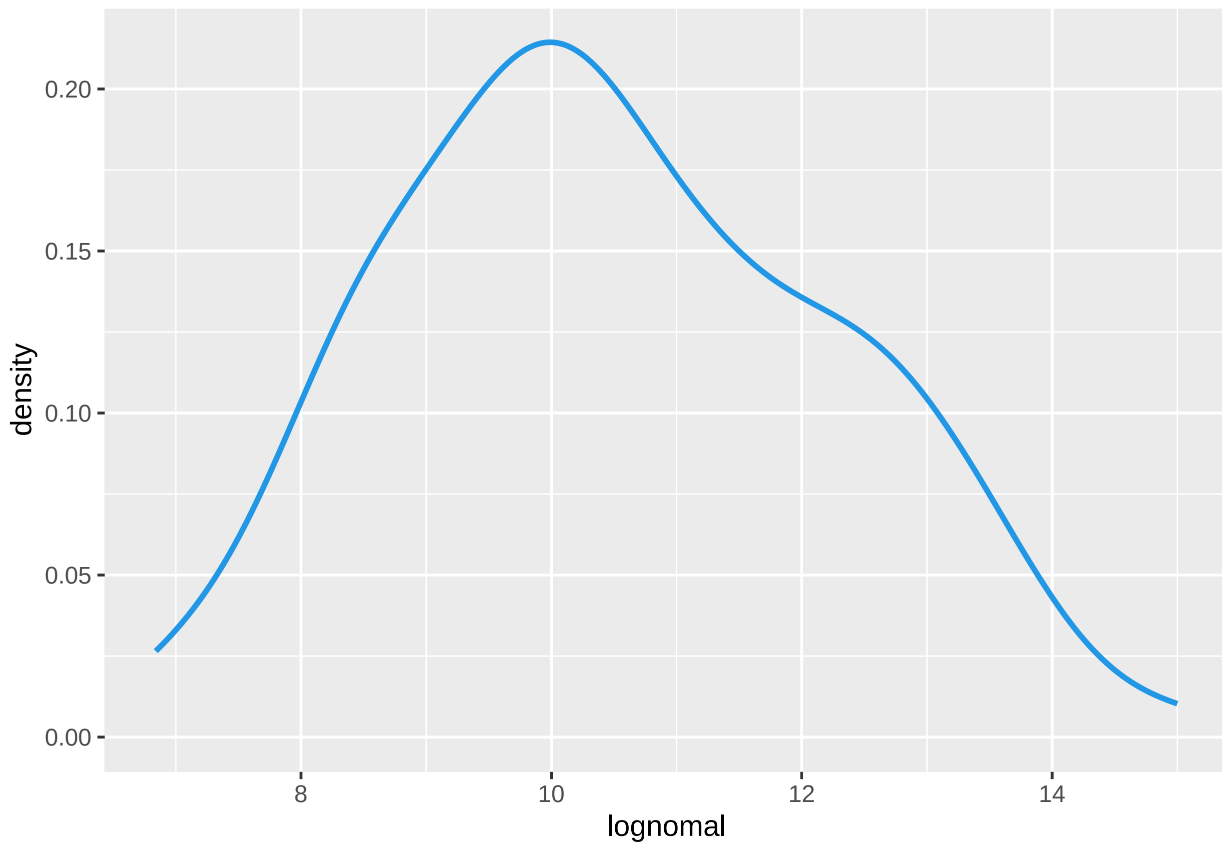
Distribución Log Normal

```r
lognomal=round(rlnorm(100,2.32,0.2),2)
print(lognomal)
```

```
##   [1] 10.06  9.33 15.00 13.40 13.16 12.49  9.58 11.02  8.43  7.19 11.94  7.74
##  [13]  9.88 11.32 12.24 12.73 10.22 13.63 12.33 11.02  8.26 10.27 12.04 11.77
##  [25] 12.68 11.12  9.54  9.30 12.24  7.16  9.45 10.07 11.26  8.49 10.75  9.63
##  [37]  9.16  9.00 10.25  7.84  9.97 11.26 12.53 13.95  9.90  9.86  8.56  8.57
##  [49] 13.15  9.81 11.40 11.37  9.48  8.43  8.14 10.98  8.64 11.22  9.30 10.49
##  [61] 12.79 10.82  8.69 12.33  8.24  9.26 12.00 10.40 13.71  9.43 13.00 10.60
##  [73]  8.44 12.54 11.91  9.43  8.93 11.30 10.18 11.68 12.74 13.56 10.40 10.88
##  [85]  8.64 11.55  8.16 13.20 10.19 10.44  9.85  8.04 10.24 10.37 10.15  8.75
##  [97] 10.37  9.81  9.28  6.84
```

Gráfica de la Distribución Log Normal

```
df = data.frame(lognomal)
ggplot(df,aes(x=lognomal))+geom_density(color=4,lwd=1,linetype=1)
```



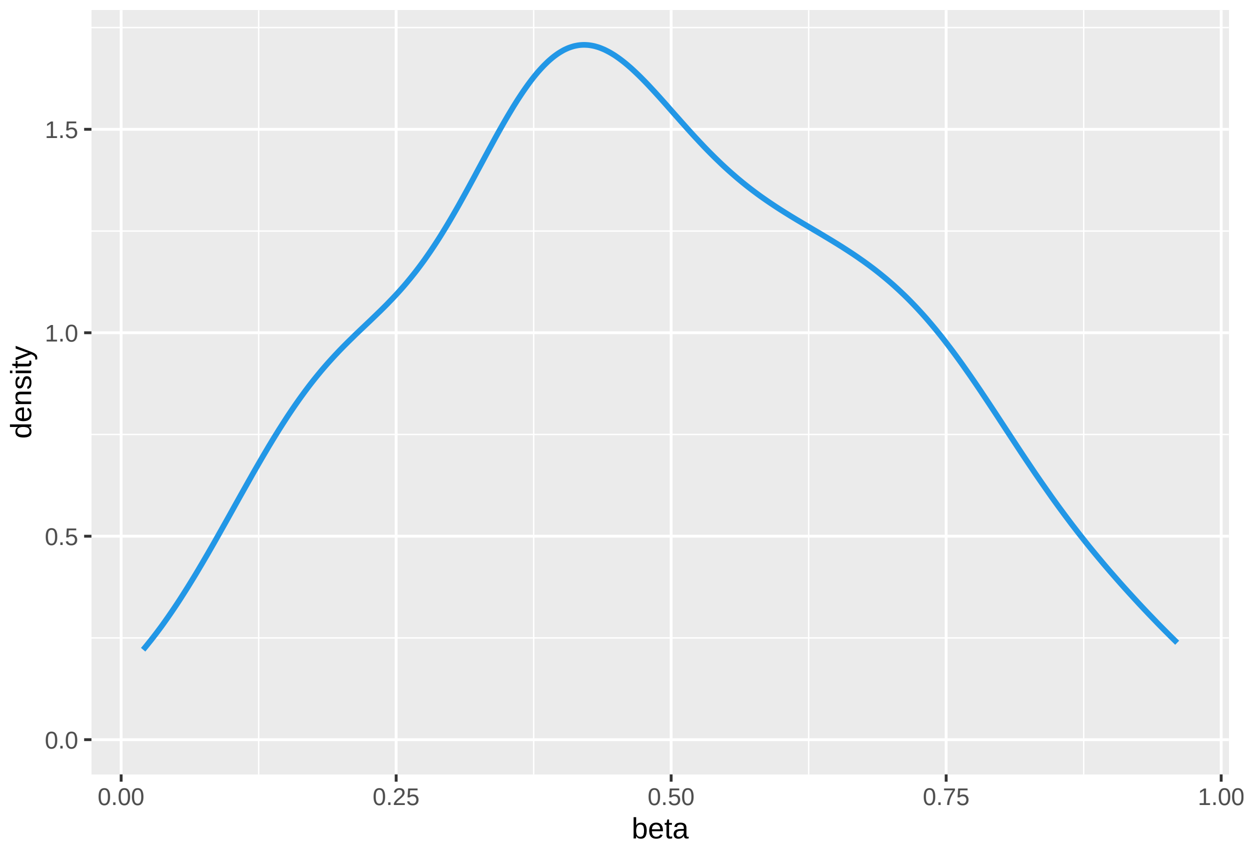
Distribución Beta

```
beta =round(rbeta(100,2,2),2)
print(beta)
```

```
##   [1] 0.37 0.37 0.96 0.40 0.77 0.66 0.33 0.37 0.58 0.75 0.21 0.35 0.41 0.70 0.54
##  [16] 0.60 0.48 0.49 0.42 0.19 0.61 0.39 0.59 0.28 0.48 0.51 0.18 0.74 0.71 0.83
##  [31] 0.25 0.19 0.64 0.57 0.51 0.60 0.18 0.11 0.11 0.45 0.37 0.82 0.71 0.02 0.76
##  [46] 0.67 0.34 0.36 0.24 0.82 0.24 0.47 0.90 0.40 0.62 0.52 0.13 0.74 0.45 0.41
##  [61] 0.65 0.10 0.17 0.74 0.40 0.92 0.44 0.48 0.32 0.67 0.45 0.60 0.24 0.51 0.53
##  [76] 0.39 0.77 0.28 0.63 0.12 0.53 0.33 0.40 0.46 0.49 0.19 0.66 0.56 0.34 0.60
##  [91] 0.42 0.20 0.23 0.90 0.72 0.41 0.33 0.75 0.85 0.38
```

Gráfica de la distribución Beta

```
df = data.frame(beta)
ggplot(df,aes(x=beta))+geom_density(color=4,lwd=1,linetype=1)
```



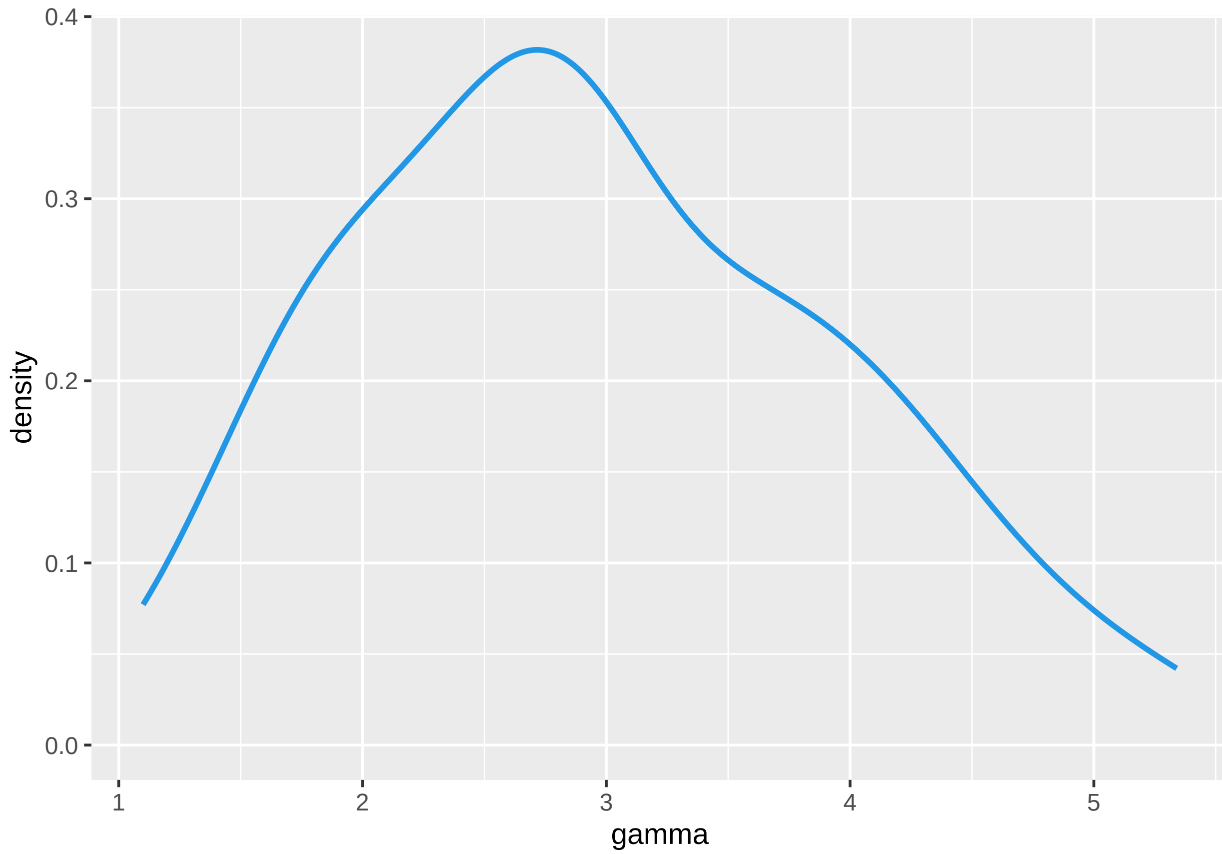
Distribución Gamma

```
gamma = round(rgamma(100,6,2),2)
print(gamma)
```

```
##   [1] 1.20 1.87 3.15 2.66 2.26 2.17 2.83 3.74 3.47 2.47 2.22 3.23 1.75 3.57 3.57
##  [16] 2.94 2.87 1.37 4.24 4.11 5.03 4.05 1.91 3.46 3.83 3.60 1.74 3.86 4.18 2.34
##  [31] 1.31 2.61 4.27 4.26 2.74 4.79 1.60 2.47 2.94 2.57 2.71 2.45 1.10 2.83 2.64
##  [46] 2.60 2.59 1.82 1.92 4.26 3.71 2.33 3.76 1.60 3.42 2.11 4.76 3.45 1.67 1.87
##  [61] 3.09 3.03 3.90 4.01 5.31 2.91 2.10 3.09 3.36 3.06 4.63 3.70 4.26 1.91 3.54
##  [76] 4.54 2.90 2.28 3.08 1.79 2.52 1.94 2.90 1.73 2.93 2.20 5.34 1.59 2.23 2.56
##  [91] 4.72 1.53 4.30 2.90 2.72 2.75 2.73 2.24 3.08 3.79
```

Gráfica de la distribución Gamma

```
df = data.frame(gamma)
ggplot(df,aes(x=gamma))+geom_density(color=4,lwd=1,linetype=1)
```


0.4
0.3
0.2
0.1
0.0
density
1
2
3
4
5
gamma