

Statistica - Introduzione a



a cura di Antonio Iovanella

iovanella@disp.uniroma2.it

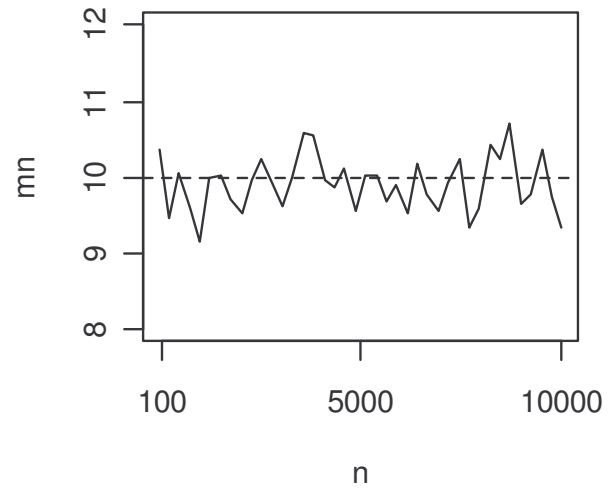
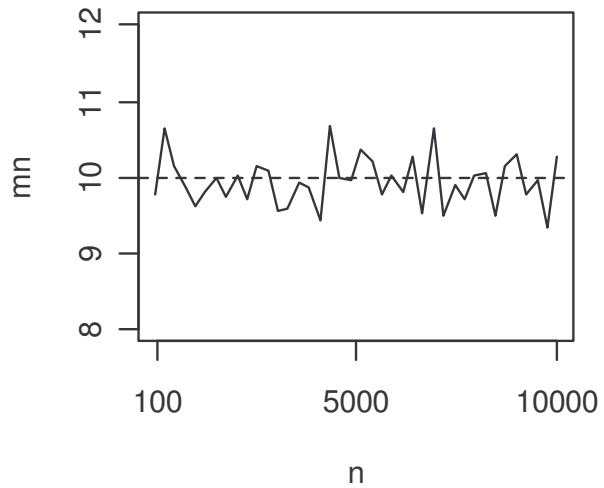
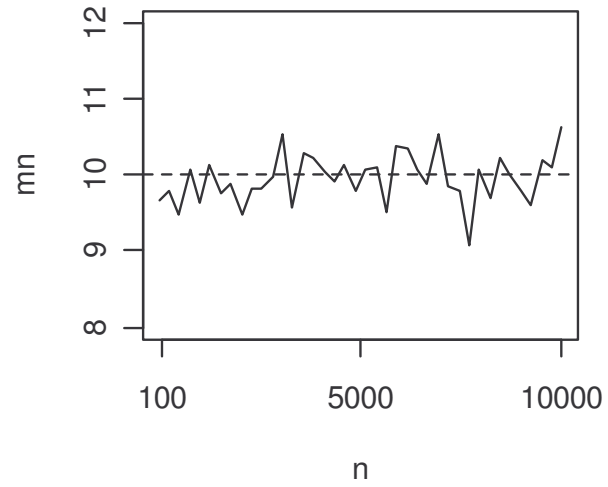
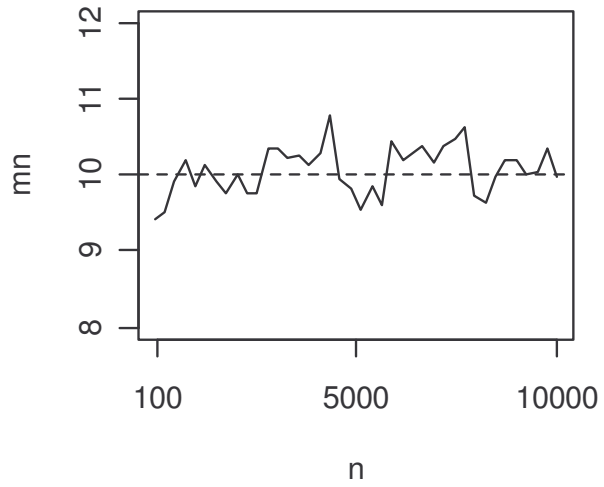
<http://www.disp.uniroma2.it/Users/iovanella>

***La legge dei grandi numeri ed
il Teorema del limite centrale***

##GRANDI NUMERI

```
n <- seq(10, 10000, length = 40)
par(mfrow = c(2, 2))
for(k in 1:4) {
  mn <- numeric(40)
  for(i in 1:40)
    mn[i] <- mean(rnorm(n, mean = 10, sd = 2))
  plot(n, mn, type = "l", ylim = c(8,12), xaxt = "n")
  abline(h = 10, lty = 2)
  axis(1, c(100, 5000, 10000))
}
par(mfrow = c(1,1))
```

##GRANDI NUMERI



##LIMITE CENTRALE

```
n <- c(1, 50, 100, 1000)
p <- 0.1
par(mfrow = c(2,2))
for(k in n){
  mn <- numeric(500)
  for(i in 1:500){
    x <- rbinom(k, 1, p)
    mn[i] <- mean(x)
  }
  z <- (mn - p)/sqrt(p * (1 - p) / k)
  hist(z, freq = FALSE, ylim = c(0, pnorm(0)), xlim =
c(-4, 4), col = "red", main = paste("n =", k))
  curve(dnorm(x), -4, 4, add = TRUE)
}
par(mfrow = c(1,1))
```

LIMITE CENTRALE

