

```
##### ILLUSTRATIONS/ANIMATIONS OF WHAT HAPPENS TO THE MEAN WHEN n INCREASES
##### CENTRAL LIMIT THEOREM and S.E., ESTIMATION ERROR
```

```
# Sampling distributions for the mean, with different sample sizes
```

```
X11()
```

```
x <-rnorm(6,100,15) # Draw 6 random persons and have them do an IQ-test. (We know that IQ is scaled to have mean=100, sd=15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
for(i in 1:1000) # Draw 6 random persons, repeat it 1000 times
```

```
{
```

```
x <-rnorm(6,100,15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
}
```

```
for(i in 1:1000) # Draw 12 random persons, repeat it 1000 times
```

```
{
```

```
x <-rnorm(12,100,15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
}
```

```
for(i in 1:1000) # Draw 30 random persons, repeat it 1000 times
```

```
{
```

```
x <-rnorm(30,100,15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
}
```

```
for(i in 1:1000) # Draw 100 random persons, repeat it 1000 times
```

```
{
```

```
x <-rnorm(100,100,15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
}
```

```
for(i in 1:1000) # Draw 10000 random persons, repeat it 1000 times
```

```
{
```

```
x <-rnorm(10000,100,15)
```

```
hist(x,col="light grey",xlim=c(30,170),main="",xlab="",ylab="",yaxt='n')
```

```
abline(v=mean(x),lw=4,col="red")
```

```
}
```