A12_Hoermann

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Function definition

```r
i = c(1:10000)
x = c(1:9)
calcor <- function(i) {
  y = sample(x, 9);
  cor(x, y, method="spearman")
}
rk = sapply(i, calcor)
```

Summary

```r
summary(rk)
```

```
##       Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -0.950000 -0.266667  0.000000 -0.001525  0.250000  0.966667
```
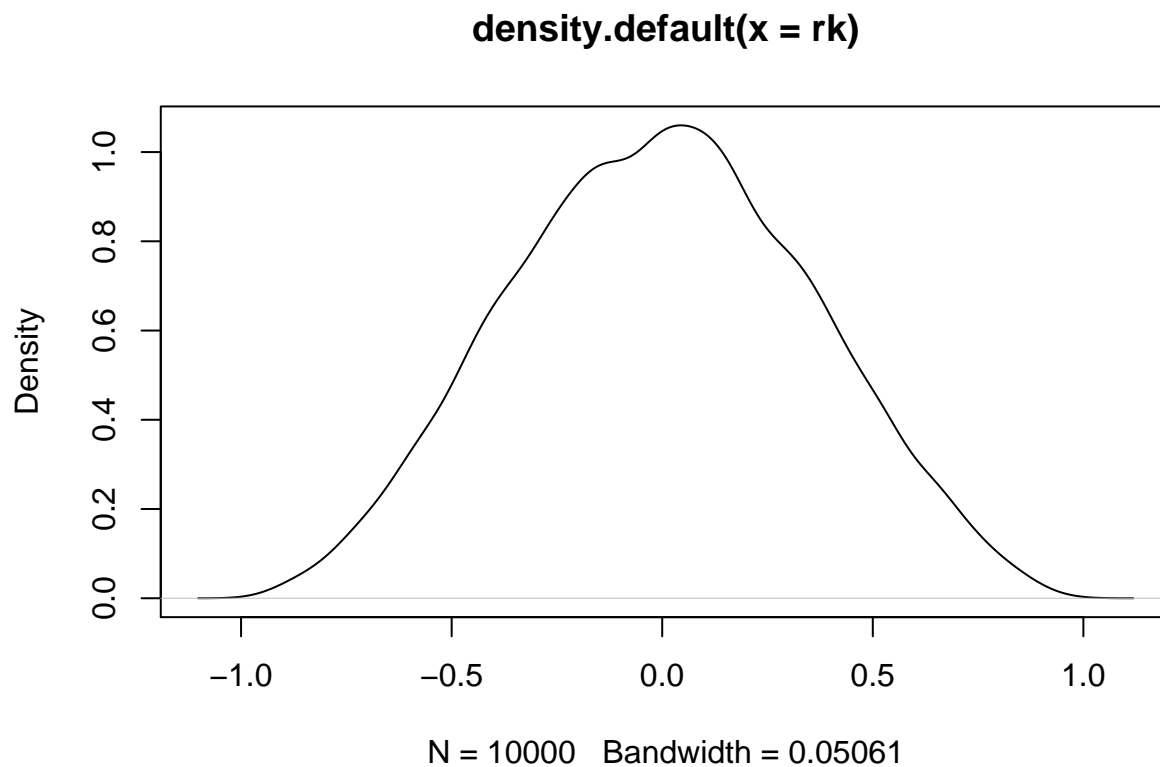
Standard deviation

```r
sd(rk)
```

```
## [1] 0.3548387
```

Density plot

```r
plot(density(rk))
```

density.default(x = rk)

N = 10000   Bandwidth = 0.05061

Transform values

```r
transform <- function(i) {
  i * sqrt(7 / (1 - i^2))
}
rkt = sapply(rk, transform)
```

Summary

```r
summary(rkt)
```

```
##       Min.   1st Qu.    Median      Mean   3rd Qu.      Max.
## -8.049526 -0.732042  0.000000 -0.003813  0.683130  9.988977
```
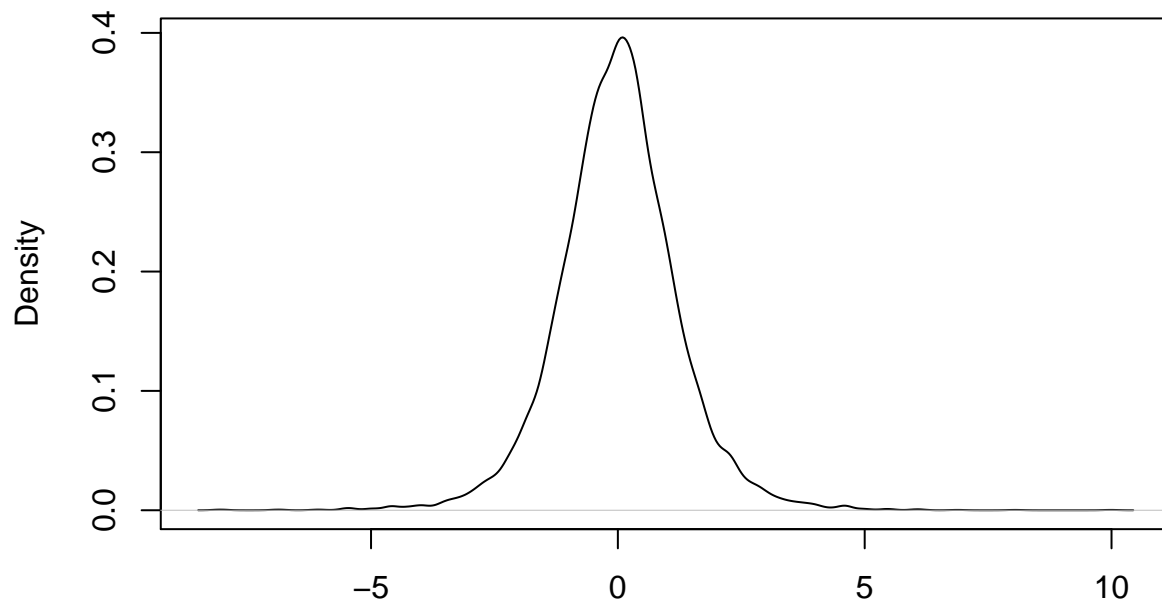
Standard deviation

```r
sd(rkt)
```

```
## [1] 1.218633
```

Density plot (original scaling)

```r
plot(density(rkt))
```
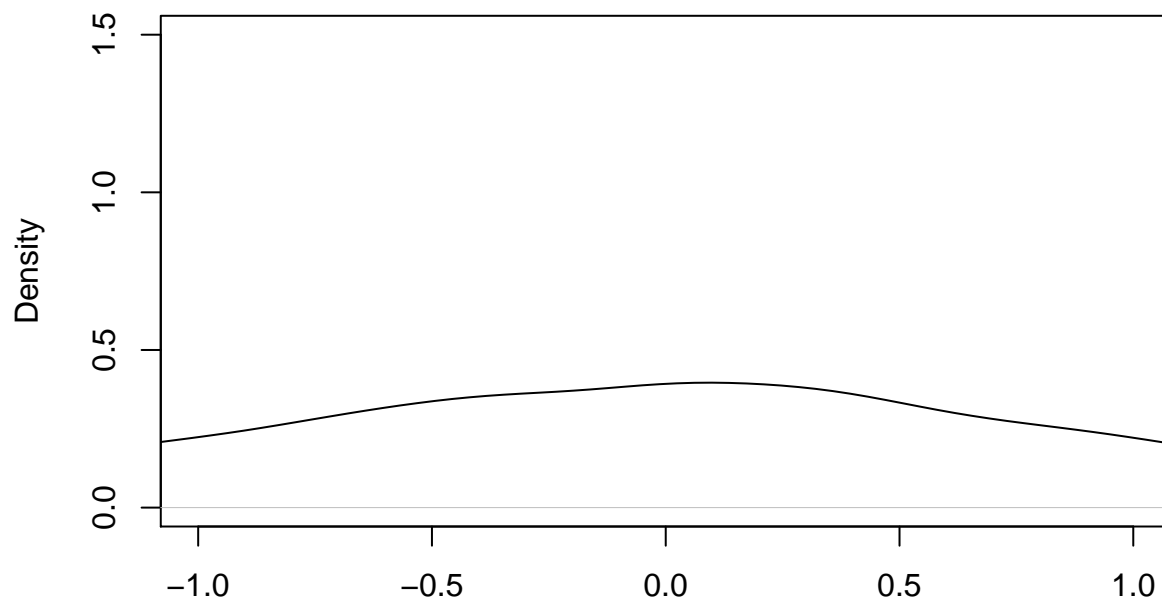
density.default(x = rkt)

N = 10000   Bandwidth = 0.1506

Density plot (adjusted scaling)

```
plot(density(rkt), ylim=c(0,1.5), xlim=c(-1, 1))
```

density.default(x = rkt)

N = 10000   Bandwidth = 0.1506

As visible from above, the transformation spreads the values further out, where the spread is increasing by the size of the coefficient. Meaning that the farther the values are from the center, the more the transformation moves them away from the center. In other words: it flattens the distribution.