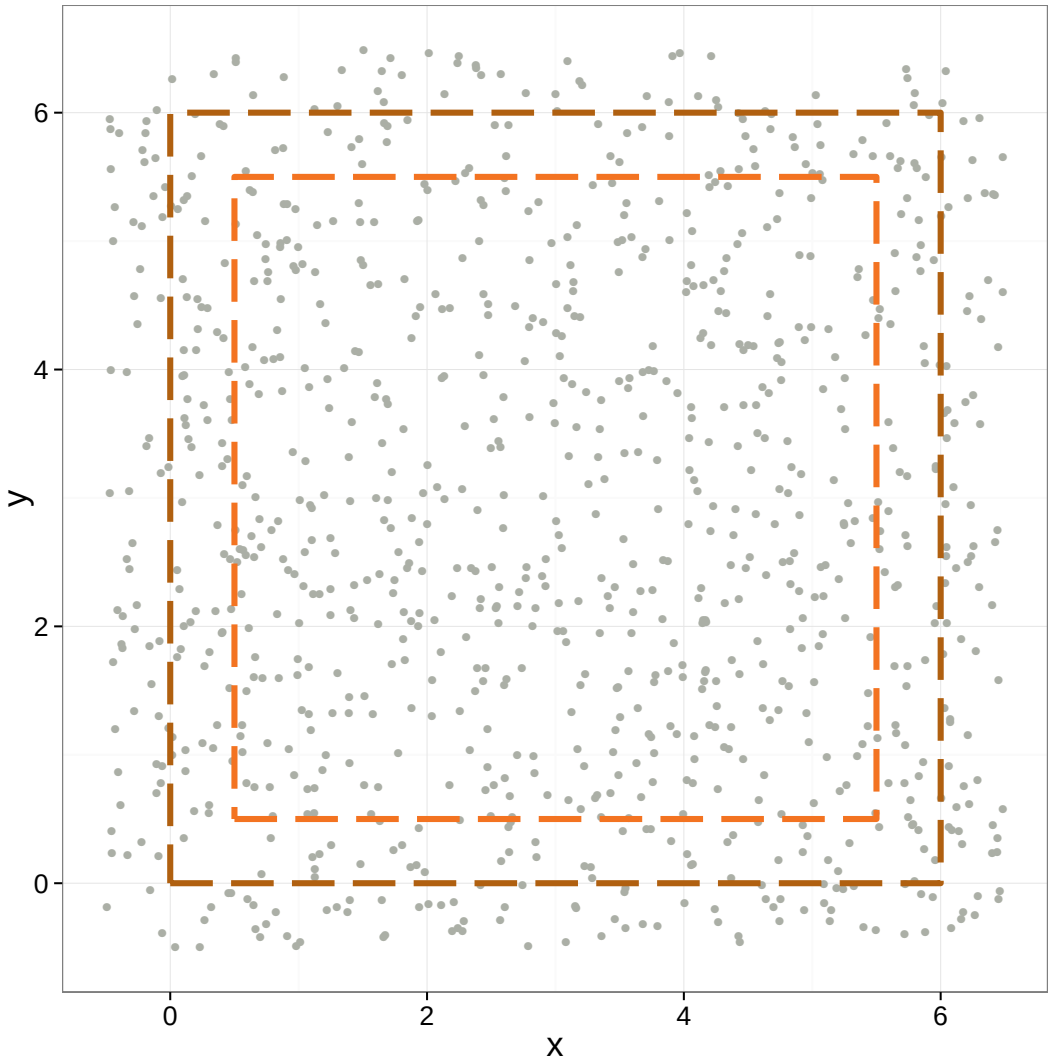
Object placement Simulation



Half-Normal Scaling

The half-normal parameter θ is related to the standard deviation of a standard normal distribution by the relationship:

$$\theta = \frac{\sqrt{\pi/2}}{\sigma}$$

If we estimate σ by $w/3.5$ (with w being the maximum distance at which we might observe an object, and 3.5 being the standard deviation point where $P(X > 3.5) < 0.001$) then θ is:

$$\sigma = \frac{w}{3.5} = 0.1429$$

$$\theta = \frac{\sqrt{\pi/2}}{0.1429} = 8.7732$$

Half-Normal Scaling

For a half-normal with parameter $\theta = 8.7732$, $f(0) = 5.5852$ so to scale the value to 1:

$$\delta_{HN} = \frac{1}{5.5852} = 0.1790$$

Half-normal density functions were executed in R with the `fdrtool` package.