

## Gaussian Densities

## 1 Why

We want a density that is symmetric about some central value with some spread.

## 2 Definition

Let R denote the set of real numbers. Let  $\mu \in R,$  let  $\sigma \in R$  with  $\sigma > 0.$ 

Then  $f: R \to R$  is a gaussian density if

$$f(x) = \frac{1}{\sqrt{2\pi}\sigma} \exp\left(\frac{1}{2\sigma^2}(x-\mu)^2\right)$$