

A density curve describes the overall pattern of a distribution. The area under the curve and above any range of values is the proportion of all observations that fall in that range.

The **median** of a density curve is the equal-areas point, the point that divides the area under the curve in half.

The **mean** of a density curve is the balance point, at which the curve would balance if made of solid material.

A **Normal distribution** is described by a Normal density curve. Any particular Normal distribution is completely specified by two numbers, its mean and standard deviation.

THE 68-95-99.7 RULE

In the Normal distribution with mean μ and standard deviation σ :

- Approximately **68%** of the observations fall within σ of the mean μ .
- Approximately **95%** of the observations fall within 2σ of μ .
- Approximately **99.7%** of the observations fall within 3σ of μ .

If x is an observation from a distribution that has mean μ and standard deviation σ , the **standardized value** of x is

$$z = \frac{x - \mu}{\sigma}$$

A standardized value is often called a **z-score**.

The **standard Normal distribution** is the Normal distribution $N(0, 1)$ with mean 0 and standard deviation 1.