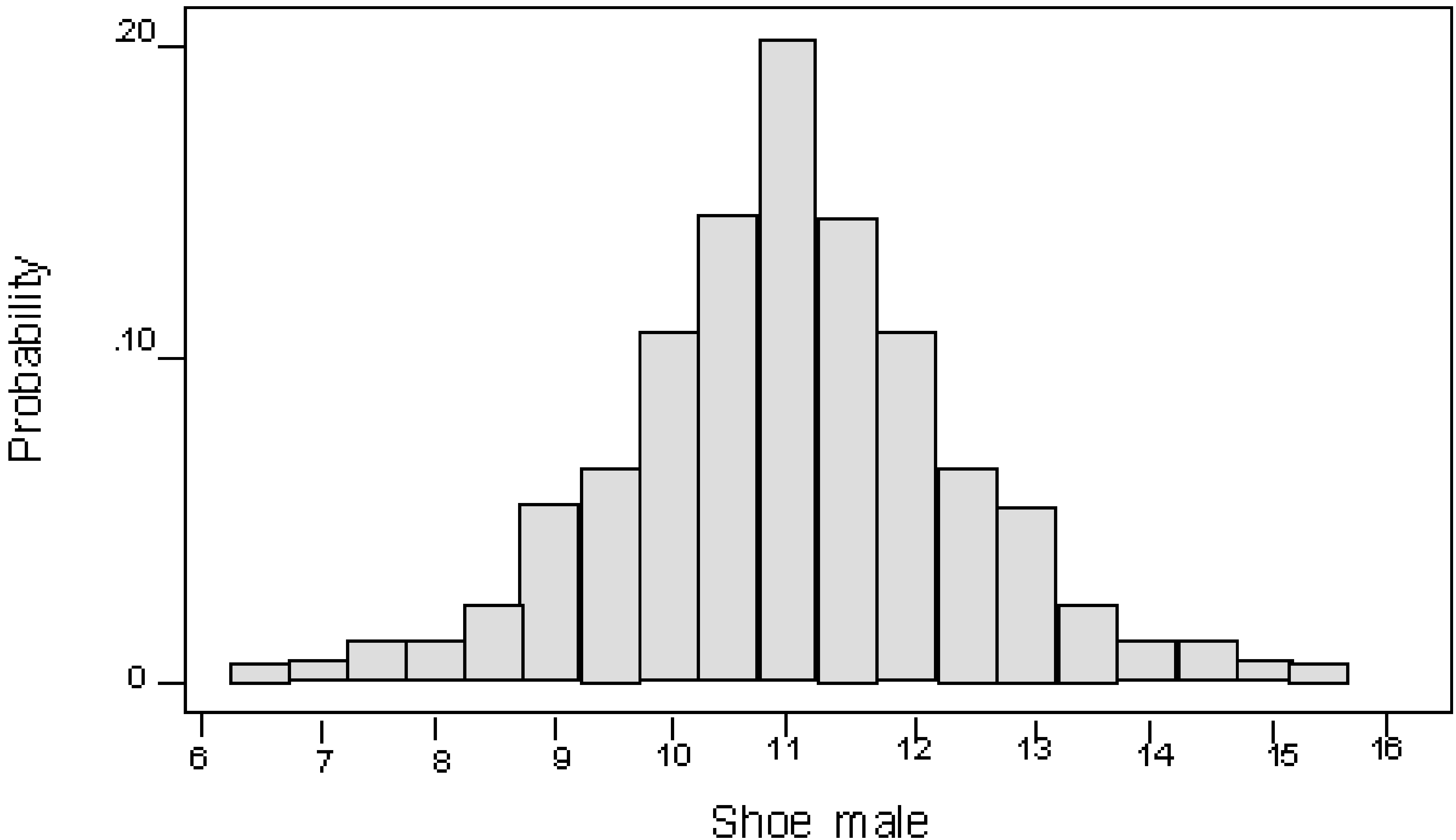
$$\mu = 11$$



Variance

population

$$\sigma^2 = \frac{\Sigma(x_i - \mu)^2}{n}$$

sample

$$s^2 = \frac{\Sigma(x_i - \bar{x})^2}{n - 1}$$

Standard Deviation $= \sqrt{Variance}$

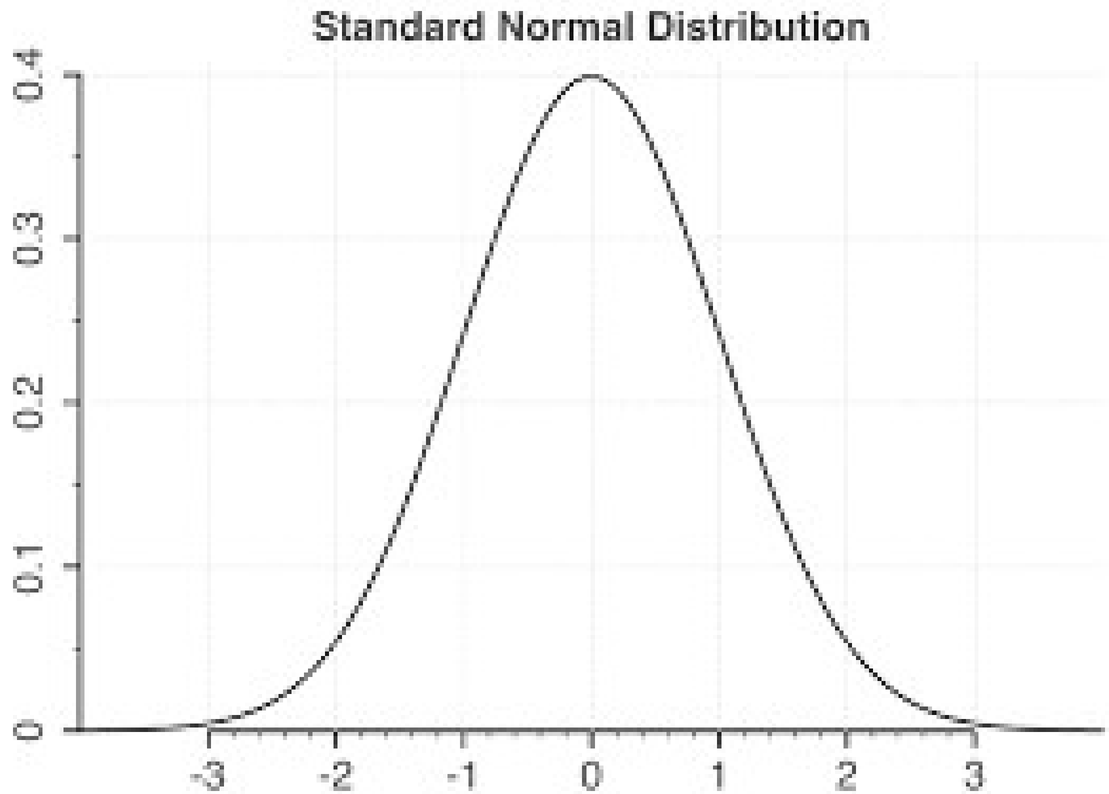
population: σ

sample: s

$$\sigma = \sqrt{\sigma^2} = \sqrt{\frac{\Sigma(x_i - \mu)^2}{n}}$$

$$s = \sqrt{s^2} = \sqrt{\frac{\Sigma(x_i - \bar{x})^2}{n - 1}}$$

Standard Normal Distribution



$$y = \frac{1}{\sqrt{2\pi}} e^{-x^2/2}$$

Not All Data is of a Normal Distribution!

But

The Standard Devision (std dev) is often a useful measure of dispersion irregardless of how the data is distributed.

Further, the sample means of any data distribution are normally distributed. This is a fundamental fact for inferential statistics, and we will exploit this fact relentlessly.