t-distribution

Used to find CI for $\mu$ when $\sigma$ is unknown

Pop

All NEIU students heights
$\{ \mu = $ avg height
$\{ \sigma = $ pop st. dev.

both unknown

Sample of size n
$\bar{x} = $ sample mean
$S = $ sample st. dev
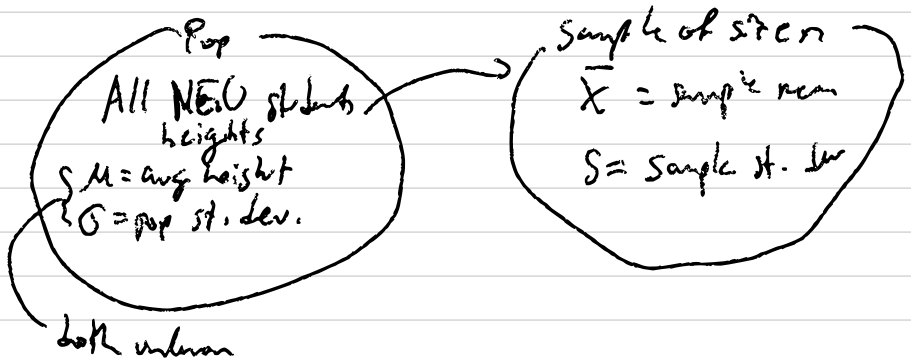
Use point estimator, use S as our estimator for $\sigma$

$$S = \sqrt{\frac{\sum_i (Y_i - \bar{Y})^2}{n-1}}$$

$$\bar{x} \sim t\left(\mu, \frac{s}{\sqrt{n}}\right)$$