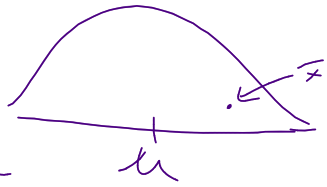
Notes: Topic 19

	pop	sample
Quant → means →	μ	$\bar{x}$
st. dev.	σ	s_x



$\mu_{\bar{x}} = \mu$

$\sigma_{\bar{x}} = \frac{\sigma}{\sqrt{n}}$

Cond:
* $n \geq 30$ or pop. is normal
* SRS from pop. of interest

if given data:
L1
1-Var stats

$\frac{s}{\sqrt{n}}$ ← St. error

C.I.

$$\bar{x} \pm t^* \frac{s}{\sqrt{n}}$$

d.f. = n − 1
↓
degrees of freedom

t-dist

- look like normal curves
- wider/fatter than normal dist.
- as n inc. / curve gets smaller / St. dev. dec.
- t^* approaches z^*

★ use t^* instead of z^* when you use s_x $\left(\frac{s}{\sqrt{n}}\right)$ (don't know σ) $\left(\frac{\sigma}{\sqrt{n}}\right)$

19-3

$n = 130$

$\bar{x} = 98.249$

$s_x = 0.733$

d.f. = 129

95% C.I.

a) $t^*_{\infty} = 1.984$

$\bar{x} \pm t^*\left(\frac{s}{\sqrt{n}}\right)$

$98.249 \pm 1.984\left(\frac{.733}{\sqrt{130}}\right)$

$1.9785 = t^*_{129}$

$98.249 \pm .1275$

$(98.12, 98.38)$

b) I'm 95% conf. the true (μ) mean body temp. of all healthy adults is in this interval.

19-8

19-11