8) 100k employees → XL, L ..shirts needs to order

sample data → 500 people data $\searrow$ 200 XL
$\searrow$ 300 L

CJ = 95%.

How many XL & L tshirts need to be order?

→ N = 100,000

$n = 500$

$\bar{x} = \dfrac{300 + 200}{2} = 250$

$\alpha = 1 - 0.95$
$= 0.05$

C.J. = 95%.

As sample size > 30 we can't use z-test

so we will use t-test

$\delta^2 = Var(x) = \sum \dfrac{(x_i - \bar{x})^2}{n-1} = \dfrac{(200 - 250)^2 + (300 - 250)^2}{500 - 1}$

$= \dfrac{2500 + 2500}{499} = 10.0204$

$\delta = \sqrt{\delta^2} = 3.1654$

Lower func = $250 - t_{\alpha/2} * \left(\dfrac{s}{\sqrt{n}}\right)$ ($\sqrt{500} = 22.36$)

$t_{0.05/2} = 2.064$

$= \mp 249.70$

Higher func = 250.292

249.70   250   250.292