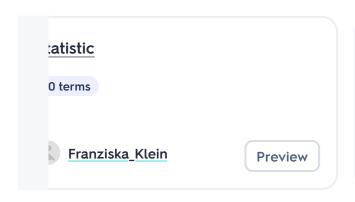
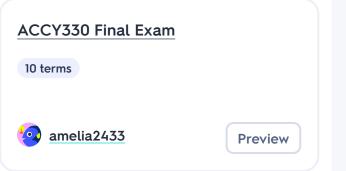
Confidence Interval - STAT110 Otago

Students also viewed





Terms in this set (21)

the standard normal critical value for a 95% interval	1.96
confidence interval formula	estimate for the mean \pm multiplier \pm standard error for the mean $1-lpha/2$)
the standard normal critical value for a 99% interval	2.58
Multiplier formula	z = (x - mean) / sd
what is the α <i>in the</i> multiplier	tail probability
Multiplier pattern	when CI is bigger (e.g., 95% to 99%,) the multiplier will be bigger

<u>s_X</u>	sample standard deviation
	In practice the true standard deviation σX is not known.
	We estimate it with the sample standard deviation.
	This means our critical values must now come from
	the 't' distribution, not the standard normal.
t distribution CI	$=t_{\left(1-\frac{\alpha}{2},\nu\right)}\frac{\varsigma}{\varsigma}$
v(degree of freedom) for t-distribution	v = n - 1
	either
The t-distribution will be	the underlying distribution of X is normal,
the correct sampling	and/or
distribution if	the sample size is sufficiently large (Central Limit Theorem holds).
what is degree of	to replace the mean and sd in normal distribution
freedom in t-distribution	(because t-distribution is always standardised)
when to use t-distribution	when the sample size is small
calculate the estimate	assuming knows the sd and mean (normally given in
sample size when knows	the question)
the CI	solve the equation
	rounding UP
Comparing means with CI	$\vdash t_{\left(1-\frac{\alpha}{2},\nu\right)}$

Using CLT to test appropriate normal distribution	gives two values between 0 and n if not, then fail the test. This approximation is good only when: n is large π is not close to 0 or 1 (this increases symmetry)
formula for estimating π	P = X / n p = x / n x is the observed value of X. (and more)
Using the Central Limit Theorem , the resulting distribution of these proportions is approximately normal if	n is large enough π far enough from 0 or 1. As before, we judge this using: $\pi + V = \pi (1 - \pi)$ gives values between 0 and n.
Derivation of the mean of the sampling distribution	If P = X / n, then $\mu_P = \pi$ $sd = \sigma_P = sqrt ([\pi(1 - \pi) / n])$
95% confidence interval for π (use the sample proportion (p) to estimate the unknown true population proportion (π))	$1.96\sqrt{\frac{p(1-n)}{n}}$
margin of error	multipliers * sd
note for CI	This confidence interval (and margin of error) are correct only if the normal approximation to the binomial is appropriate. In practice, bias due to non-response should also be considered in our interpretation of an estimate.