Cheatography

Stats Midterm Cheat Sheet by enrlr5npnw via cheatography.com/195263/cs/40864/

Normal Distribution

Parameters $\mu = \text{population mean}$ $a = \text{population standard deviation}$ PDF $f_{N} = \frac{1}{\sigma\sqrt{2\pi}} \sigma^{-\frac{1}{2}\left(\frac{d^{2}}{\sigma}\right)^{2}}$ Domain $-\infty < x < +\infty$ Mean μ	
Domain $-\infty < x < +\infty$	
Mean μ	
Std. Dev. σ	
Shape Symmetric, mesokurtic, and bell-shaped.	
PDF in Excel* =NORM.DIST($x, \mu, \sigma, 0$)	
CDF in Excel [*] =NORM.DIST($x, \mu, \sigma, 1$)	
Random data in Excel =NORM.INV(RAND(), μ , σ)	

Sampling distribution of $\bar{\mathbf{x}}$ is normal for each sample size

r vs Z				
Test For	Null Hypothesis (H _e)	Test Statistic	Distribution	Use When
Population mean (µ)	$\mu = \mu_{o}$	$\frac{(\bar{x}-\mu_o)}{\sigma/\sqrt{n}}$	Ζ	Normal distribution or n > 30; σ known
Population mean (µ)	$\mu=\mu_{\mathfrak{g}}$	$\frac{(\bar{x}-\mu_o)}{s/\sqrt{n}}$	t _{n-1}	n < 30, and/or σ unknown
Population proportion (p)	$p = p_{g}$	$\frac{\hat{p} - p_o}{\sqrt{\frac{p_o(1 - p_o)}{n}}}$	Ζ	$n\hat{p}, n(1-\hat{p}) \ge 10$
Difference of two means $(\mu_1 - \mu_2)$	$\mu_{i}-\mu_{z}=0$	$\frac{\left(\bar{x}_{1}-\bar{x}_{2}\right)-0}{\sqrt{\frac{\sigma_{1}^{2}}{n_{1}}+\frac{\sigma_{2}^{2}}{n_{2}}}}$	Ζ	Both normal distributions, or $n_1, n_2 \ge 30;$ σ_1, σ_2 known
Difference of two means $(\mu_1 - \mu_2)$	$\mu_{1}-\mu_{2}=0$	$\frac{\left(\bar{x}_{1}-\bar{x}_{2}\right)-0}{\sqrt{\frac{s_{1}^{2}}{n_{1}}+\frac{s_{2}^{2}}{n_{2}}}}$	t distribution with $df =$ the smaller of n_1-1 and n_2-1	n ₁ , n ₂ < 30; and/or σ ₁ , σ ₂ unknown
Mean difference μ_d (paired data)	$\mu_d = 0$	$\frac{\left(\overline{d}-\mu_{d}\right)}{s_{d}/\sqrt{n}}$	t _{n-1}	n < 30 pairs of data and/or $\sigma_{_d}$ unknown
Difference of two proportions $(p_1 - p_2)$	$p_1 - p_2 = 0$	$\frac{(\hat{\rho}_1-\hat{\rho}_2)-0}{\sqrt{\hat{\rho}(1-\hat{\rho})\left(\frac{1}{n_1}+\frac{1}{n_s}\right)}}$	Ζ	$n\hat{p}, n(1-\hat{p}) \ge 10$ for each group



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