Chapter 6 and Chapter 7

		chapter 7	chapter 6
	Assumptions	Test statistics (T.S.) $T.S. = \frac{\text{Estimator} - \text{hypothesized parameter}}{(\text{standard error})}$	Confidence Interval (C.I.) Estimator $\pm$ (reliability cofficent)(standard error) Estimator $\pm$ *margin error*
Single population mean (μ)	• Normal + σ^2 Known • Non-normal + σ^2 Known + $n \geq 30$ (large)	$Z = \frac{\bar{X} - \mu_0}{\sigma / \sqrt{n}}$	$\bar{X} \pm Z_{1-\frac{\alpha}{2}} \frac{\sigma}{\sqrt{n}}$
	• Normal + σ^2 Unknown + $n < 30$ (small)	$T = \frac{\bar{X} - \mu_0}{S / \sqrt{n}}$	$\bar{X} \pm t_{1-\frac{\alpha}{2}} \frac{S}{\sqrt{n}}$ $df = n - 1$
	• Non-normal + σ^2 Unknown + $n \geq 30$ (large)	$Z = \frac{\bar{X} - \mu_0}{S / \sqrt{n}}$	
Difference between Two Population Means $(\mu_1 - \mu_2)$	• Normal + σ_1^2 and σ_2^2 Known • Non-normal + σ_1^2 and σ_2^2 Known + $n_1, n_2 \geq 30$ (large)	$Z = \frac{(\bar{X}_1 - \bar{X}_2) - \mu_0}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$	$(\bar{X}_1 - \bar{X}_2) \pm Z_{1-\frac{\alpha}{2}} \sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}$
	• Normal + $\sigma_1^2 = \sigma_2^2 = \sigma^2$ Unknown , equal + $n_1, n_2 < 30$ (small)	$T = \frac{(\bar{X}_1 - \bar{X}_2) - \mu_0}{\sqrt{\frac{S_p^2}{n_1} + \frac{S_p^2}{n_2}}}$ $S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$	$(\bar{X}_1 - \bar{X}_2) \pm t_{1-\frac{\alpha}{2}} \sqrt{\frac{S_p^2}{n_1} + \frac{S_p^2}{n_2}}$ $df = n_1 + n_2 - 2$ $S_p^2 = \frac{(n_1 - 1)S_1^2 + (n_2 - 1)S_2^2}{n_1 + n_2 - 2}$
	Related population	$T = \frac{\bar{D}}{S_D / \sqrt{n}}$	$\bar{D} \pm t_{1-\frac{\alpha}{2}} \frac{S_D}{\sqrt{n}}$, $df = n - 1$

	Assumptions	chapter 7	chapter 6
Population Proportion (P)	$n \geq 30$ (large)	$Z = \frac{\hat{p} - p_0}{\sqrt{\frac{p_0 q_0}{n}}}$ $q_0 = 1 - p_0$ $\hat{p} = \frac{x}{n}$	$\hat{p} \pm Z_{1-\frac{\alpha}{2}} \sqrt{\frac{\hat{p}(1-\hat{p})}{n}}$ $\hat{p} = \frac{x}{n}$
Difference between Two Population Proportion $P_1 - P_2$	$n_1 \geq 30$ (large) $n_2 \geq 30$ (large)	$Z = \frac{\hat{p}_1 - \hat{p}_2}{\sqrt{\frac{\bar{p}\bar{q}}{n_1} + \frac{\bar{p}\bar{q}}{n_2}}}$ $\bar{p} = \frac{x_1 + x_2}{n_1 + n_2}$	$(\hat{P}_1 - \hat{P}_2) \pm Z_{1-\frac{\alpha}{2}} \sqrt{\frac{\hat{P}_1\hat{q}_1}{n_1} + \frac{\hat{P}_2\hat{q}_2}{n_2}}$ $\hat{p}_1 = \frac{x_1}{n_1}$, $\hat{p}_2 = \frac{x_2}{n_2}$

	Sample	Population
Size	n	N
Mean	$\bar{x}$	μ
Variance	S^2	σ^2
Standard deviation	S	σ
Proportion	$\hat{p}$	P