**Unit 4 Exam Review – Important Formulas, Terminology & Calculator Commands**

Chapter 8: Confidence Intervals

*Interpretation of Confidence Level –*

*Interpretation of Confidence Interval –*

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|  | **Confidence Interval for Proportions** | **Confidence Intervals for Means** |
| **Conditions** |  |  |
| **Confidence Interval Formula** |  |  |
| **Choosing the Sample Size** |  |  |
| **Confidence Interval on the Calculator** |  |  |

Chapter 9: Significance Tests

*Type I error –*

*Type II error –*

*Power –*

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|  | **Significance Test for Proportions** | **Significance Tests for Means** |
| **Hypotheses** |  |  |
| **Conditions** |  |  |
| **Test Statistic** |  |  |
| **P-value** |  |  |
| **Significance Test Conclusion** |  |  |
| **Significance Test on the Calculator** |  |  |

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Chapter 8: Confidence Intervals

*Interpretation of Confidence Level – “\_\_\_% of all possible samples of a given size from this population will result in an interval that captures the unknown parameter.”*

*Interpretation of Confidence Interval – “We are \_\_\_% confident that the interval from \_\_\_ to \_\_\_ captures the actual value of the population parameter.”*

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|  | **Confidence Interval for Proportions** | **Confidence Intervals for Means** |
| **Conditions** | **Random**  **Independent** – check 10% condition:    **Normal** – check sample size conditions: | **Random**  **Independent** – check 10% condition:    **Normal** – check sample size conditions:    If , then you can assume the Normal distribution as long as & the sample is approximately symmetric. |
| **Confidence Interval Formula** |  | If is unknown  OR  If is known |
| **Choosing the Sample Size** | Solve for *n.* | Solve for *n.* |
| **Confidence Interval on the Calculator** | To find 2nd Vars invNorm(lower tail probability)  To find CI: Stat Tests 1-PropZInt  x: # of successes, n: sample size, C-level: confidence level  Calculate | To find use the Table with degrees of freedom = n – 1  To find CI: Stat Tests TInterval Stats  : sample mean, sample standard deviation, C-level: confidence level  Calculate |

Chapter 9: Significance Tests

*Type I error – Reject when is really true (Type I error = ).*

*Type II error – Fail to reject when is really false (Type II error = ).*

*Power – Correctly reject when is really false (Power = 1 – Type I error = 1 – ).*

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|  | **Significance Test for Proportions** | **Significance Tests for Means** |
| **Hypotheses** | (one-sided test)  (one-sided test)  (two-sided test) | (one-sided test)  (one-sided test)  (two-sided test) |
| **Conditions** | **Random**  **Independent** – check 10% condition:    **Normal** – check sample size conditions: | **Random**  **Independent** – check 10% condition:    **Normal** – check sample size conditions:    If , then you can assume the Normal distribution as long as & the sample is approximately symmetric. |
| **Test Statistic** | Tells you how many standard deviations is from the null hypothesis parameter . | Tells you how many standard deviations is from the null hypothesis parameter. |
| http://ebooks.bfwpub.com/tps4e/figures/9_UN5530001_big.gif**P-value**  Area under curve = p-value | Total area under curve = p-value | Same as for proportions, but with appropriate hypotheses and test statistic t. |
| **Significance Test Conclusion** | If p-value is less than the prior stated level of significance, , reject . If p-value is greater than or equal to the prior stated level of significance, , fail to reject . NEVER accept . | If p-value is less than the prior stated level of significance, , reject . If p-value is greater than or equal to the prior stated level of significance, , fail to reject . NEVER accept . |
| **Significance Test on the Calculator** | To find the p-value: 2nd Vars normalcdf(lower bound =z-score, upper bound=100)  To run the whole test: Stat Tests 1-PropZTest | To find the p-value: 2nd Vars tcdf(lower bound =t-score, upper bound=100)  To run the whole test: Stat Tests T-Test |