Guided Notes -- 8.2 Estimating a Population Proportion

1. Give 2 examples of a ***population proportion: p*** ?
2. How do you calculate a ***sampling proportion:*** ?
3. Describe the ***“sampling distribution of a sample proportion*** $\hat{p}$***”*** “as learned in section 7.2. **Use the correct variable notations.**
* Shape (and state conditions)
* Center (mean of the sampling distribution of $\hat{p}$)
* Spread (standard deviation of the sampling distribution of $\hat{p}$)
	+ What condition is requred to calculate the standard deviation?

General form to calculate a confidence interval is on the **Green Sheet:**

**statistic ± (critical value) ● (standard deviation of the statistic)**

1. What ***statistic*** will be used to calculate the cofidence interval for proportions?
2. How does the standard deviation differ to to standard error for the sampling distribution of $\hat{p}$ ?

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| Formula for **standard deviation** of sampling distribution of $\hat{p}$ :$μ\_{\hat{p}}$ **=** | Formula for **standard error** of sample proporttion $\hat{p}$ to calculate CI :**SE (**$\hat{p}$**)=** |

1. Define ***standard error*** of a statistic
2. (in context) The SE**(**$\hat{p}$**)**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ describes how close the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_($\hat{p}$) will be, on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (p) in repeated \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of size \_\_\_.
3. How do you get the ***critical value ( z\****)? **Hint**: follow steps outlined on pages 487-488. Use the graphing calculator. Do **not** use Table A. **Use invNorm.**
4. What is the value of *z*\* for a *95% confidence interval*? Include a sketch (see figure 8.8).
5. What is the value of *z*\* for a *90% confidence interval*? Include a sketch.
6. What is the value of *z*\* for a *99% confidence interval*? Include a sketch.
7. What is the formula for a ***one-sample z interval for a population proportion***?

1. Describe z\*
2. What part of this formula is the margin of error (ME)?
3. What conditions are required?
4. The 4 step process (simplified) to contruct and interpret a confidence interval.

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| Follow these required steps: |  Example “Teens Say Sex Can Wait” Complete these steps to construct the 95% CI for p. |
| 1. Define population parameter
 | p= |
| 1. State the inference method
 | **1-Sample Z-Interval for a proportion** |
| 1. Check conditions
 | RandomNormalIndependent |
| 1. Sketch graph (label CL and $\hat{p}$)
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| 1. Show calculations with numbers **and** state SE($\hat{p}$)
* ***Check with [1-PropZInt]***
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| 1. Answer in contex
 |  |

1. What formula is used to determine the sample size necessary for a given margin of error?
2. Refer to thr Example “Customer Satisfaction,” to complete the table below. Clearly show the steps to determine the sample sizes.

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| 1. ***Use the*** $\hat{p}$ ***to produce the largest sample size in this example.***
 | 1. ***Now, find the sample size if you are told use*** $\hat{p}=.31$
 |
| $\hat{p}$ ***= \_\_\_\_\_*** | $\hat{p}=.31$ ***CL=95%******ME=.03 z\*= \_\_\_\_\_\_\_\_\_\_\_*** |

1. What is the rounding rule for determining sample sizes?