**Inference on Proportions**

1. **One Sample Proportion – Confidence Intervals and Hypothesis Tests**

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| Confidence Interval | Hypothesis Test |
|  | Ho: p  a: p< or > or ≠  Direction of Ha depends on the question. |
| where p-hat is sample proportion (x/n), n is sample size, z\* from standard normal chart | Test Statistic    Find p-value using standard normal table |
| **Assumptions**  We have a SRS and   |  | | --- | | **1. Individuals are independent** | | 2. Sample is sufficiently large - check this by determining if np>15 and n(1-p) >15 | | |
| *p-value is the probability of obtaining this sample or one or extreme if the null is true. Therefore if p-value < given level of significance, we reject the null hypothesis.* | |

How to determine **minimum required sample size** where ME is the GIVEN margin of error, z\* comes from the standard normal table for a GIVEN level of confidence and p\* is either given or use p\*=0.50. ALWAYS ROUND UP TO THE NEAREST WHOLE NUMBER!



1. **Two Independent Samples - Confidence Intervals and Hypothesis Tests**

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| Confidence Interval | Hypothesis Test |
|  | Ho: p1p2  a: p1 < or > or ≠  This depends on the question. |
| 1 = x1/n1  2 = x2/n2  z\* from standard normal chart for a given level of confidence | Test statistic =  Where  Find p-value using standard normal table |
| **Assumptions**  The sample of differences are randomly selected and   |  | | --- | | **1. Groups are independent** | | 2. Data in **BOTH** groups are independent  Check that BOTH groups np>10 and n(1-p) >10 | | |