|  |  |
| --- | --- |
| **Sampling Distribution** | Statistic ~ N (Parameter, SE) |
| **Confidence Interval** | Statistic ± Critical Value · SE |
| **Test Statistic** |  |

**6.1-D**: **Sampling Distribution of a Sample Proportion** ()

The sampling distribution of the sample proportion may be considered approximately normal only if np ≥ 10 and n(1 − p) ≥ 10.

1. Mean of the sampling distribution of  : 
2. Standard error of the sampling distribution of :

**6.1-CI**: **Confidence Interval for a Proportion**

± z\*· SE =± z\*· SE=

Sample size for P: if unknow, use 0.5

**6.1-HT:** **Hypothesis Test for a Proportion**

The test statistic is: (when we test a hypothesis, the null hypothesis is always assumed true)



**6.2-D:** **The Sampling Distribution of the Sample Mean** :

Central Limit Theorem:

1. For large *n (roughly 30 or more)*, the sampling distribution is approximately normal even if the population distribution x is not.
2. If the population distribution x is approximately normal, then the sampling distribution is approximately normal for *all* sample sizes.
3. mean of :  standard error of :

**6.2-CI: Confidence Interval for a Mean**

Sample size for mean: n=

**6.2-HT: Hypothesis Test for a Mean**

 The test statistic is:

Degrees of freedom: n - 1

**6.3-D: Distribution of a Difference in Proportions**

#### Distribution for a Difference in Two Sample Proportions

When choosing random samples of size n1 and n2 from populations with proportions p1 and p2, respectively, the distribution of the differences in the sample proportions, , is centered at the difference in population proportions, p1 − p2, has standard error for given by

and is reasonably normally distributed if n1p1 ≥ 10 and n1(1 − p1) ≥ 10 and n2p2 ≥ 10 and n2(1 − p2) ≥ 10.

**Section 6.3-CI: Confidence Interval for a Difference in Proportions**

± z\*· SE

**Section 6.3-HT: Hypothesis Test for a Difference in Proportions**

test statistic for a difference in proportions:

SE=

Where is the pooled proportion

**Section 6.4-D: Distribution of a Difference in Means**

The mean is equal to the population difference in means, µ1-µ2  **SE =**

A normal distribution is a good approximation as long as *n1* ≥ 30 and *n2* ≥ 30.

**Section 6.4-CI: Confidence Interval for a Difference in Means**

t-distribution with the smaller of *n1* -1 and n2-1 degrees of freedom.

**Section 6.4-HT: Hypothesis Test for a Difference in Means**

The test statistic for a difference of means:

t =

t-distribution with the smaller of *n*1 – 1 and *n*2 – 1 degrees of freedom to find the p-value

**Section 6.5: Paired Difference in Means**

* Sampling Distribution:

N(µd, )

* Confidence Interval:

± ·

 where t\* is a percentile from a t-distribution with nd − 1 degrees of freedom.

* Test Statistic: