6.7: Chapter 6 Formula Review

6.3 A Confidence Interval for a Population Standard Deviation Unknown, Small Sample Case

s = the standard deviation of sample values.

$t = \frac{\overline{x} - \mu}{\frac{s}{\sqrt{n}}}$ is the formula for the *t*-score which measures how far away a sample mean is from the population mean in the Student's *t*-distribution

$df = n - 1$; the degrees of freedom for a Student's *t*-distribution where n represents the size of the sample

$T \sim t_{df}$ the random variable, T, has a Student's t-distribution with df degrees of freedom

The general form for a confidence interval for a single mean, population standard deviation unknown, and sample size less than 100 is given by:

$$\overline{x} - t_{\frac{\alpha}{2},df}\left(\frac{s}{\sqrt{n}}\right) \leq \mu \leq \overline{x} + t_{\frac{\alpha}{2},df}\left(\frac{s}{\sqrt{n}}\right)$$

6.4 A Confidence Interval for A Population Proportion

$P' = \frac{x}{n}$ where x represents the number of successes in a sample and n represents the sample size. The variable P' is the sample proportion and serves as the point estimate for the true population proportion, P.

The confidence interval for the true population proportion is given by the formula:

$$P' - z_\alpha \sqrt{\frac{P'(1-P')}{n}} \leq P \leq P' + z_\alpha \sqrt{\frac{P'(1-P')}{n}}$$