Common Mistakes made in Business Statistics
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"[Organizations should] improve constantly, and forever, the system of production, service, planning, of any activity. This will improve quality and productivity and thus constantly decrease costs."
--W. Edwards Deming (1900-1993)

Errors of Perspective:
The largest error students make is not having enough confidence in their ability to pass the exam. At some point, BUS 302L students passed a college-level course in business statistics. Students can indeed pass this review exam. The next largest error students make is not allocating the time to diagnose the gaps in their knowledge, formulate a study plan to fill in those gaps, and then answer enough sample questions to reinforce that knowledge. Rectifying both of these two "errors of perspective" will enable success.

Errors of Statistical Application:
The following are common anomalies (errors and omissions) made by students on business statistics exams in general.

1. **Failing to distinguish between the sample and the population.** Samples (subsets of the population) are drawn from the population (universe). Students need to slow down and read each question carefully.
2. **Confusing the mean with the proportion.** The mean is used with quantitative (interval/ratio) variables and the proportion is used with qualitative (categorical) variables.
3. **Misstating one-tailed and two-tailed hypothesis tests.** One-tailed tests predict that one value with be higher than another. Two-tailed tests predict that one value with be different (higher or lower) than another. Two-tailed tests are more common and are used when we do not have enough good information to be able to make a one-tailed test reliably.
4. **Failing to split the alpha level for two-tailed hypothesis tests and confidence intervals.** Two-tailed tests (including confidence intervals) concerns errors on either side of a hypothesized mean or proportion. The alpha level (e.g., $\alpha = .05$) must be split in half (e.g., $\frac{\alpha}{2} = .05$) for two-tailed tests and confidence intervals. Slow down and think about it for a moment.
5. **Failing to use n-1 in *t*-tests.** In *t*-tests, use n-1 (the "degrees of freedom") rather than the n (the "sample size").
6. **Confusing confidence level with confidence interval.** A confidence level is 1 – significance level. A confidence interval is an error interval "wrapped around" a point estimate.