QUIZ 2 Review

Chapter 15 (Sampling Distributions):
Central Limit Theorem: The sampling distribution from a randomly selected sample (when the sample size is sufficiently large) is approximately normal with a mean that approximates the population mean.

We use a sample to approximate the actual population mean.

Standard Error (standard deviation/sq rt of n)

Chapter 16 (Confidence Intervals):
Confidence Intervals: Univariate inference for continuous variables.

Conf. Level & **Margin of Error** (Interval)

1.645, 1.96, 2.575 (90, 95, 99, respectively)
Estimate: x-bar +/- z * (sigma/sq rt of n)
Higher confidence equals larger interval.

Law of large numbers: As the sample size increases, the mean of the sample tends to get closer to the mean of the population.

Population distribution: The distribution of the actual values of the population.

Sampling distribution: The distribution of sample means taken from a population.

Chapter 17 (Significance Tests):
Hypothesis Tests – One sided/Two sided (Greater than/less than/not equal to)

Null and Alt. hypothesis (null = statement of no effect) – (alternative = research hypothesis)

Statistical Significance:
p-value: the likelihood of getting the results produced by the sample if the null hypothesis is true. If p-value<alpha level (alpha is usually set to .05), we have statistical significance and reject the null

Critical value: if test statistic is greater than critical value, we have stat sig and reject the null

Z-tests (use when we know the population standard deviation)

Larger sample SIZE reduces margin of error.

One sample tests: Comparing a sample mean to some standard. This is bivariate (IV=categorical) – (DV=continuous) inference.
Assumptions: 1. SRS 2. Normal distribution (relatively) n=30 or more 3. We know the population standard deviation.

Calculating the z-score for the sample (how many standard errors away from the standard)

Formula for z-statistic: P#401: know how to use.

Chapter 18 – Inference in Practice
Always create a histogram of the data to start w/ (identify the distribution & presence of outliers)

Type 1 vs Type 2 errors (Type 1 Rejecting the null even though it is true) (Type 2 Failing to reject the null even though it is false) – P# 429.

Larger sample size = smaller margin of error, Lower stand. dev. equals smaller margin of error

Writing up sig. test results: Based on the results from our sample, there is only about a __% that we would get this result if executives had the same average as the rest of the pop. There is only a __% chance that our null is true.

As confidence goes up, p-value goes down. P-value is the possibility of error (a type one error)

Chapter 20 – Inference with unknown pop standard deviation (estimation and hyp tests)
We will use the t-distribution and t-tests for this kind of problem:
Using Table C (page 701) – the distribution of t-values.
Degrees of Freedom for one-sample t-test = n-1

Apply this to conf. intervals AND hyp. testing.

Chapter 21 – Comparing two means (matched and independent)
This is the same idea as before except now we are testing how many (stand. errors) apart the 2 group averages are.
                    AND
Is it far enough to say that the true averages of the respective groups are likely to be different?