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**ECO 602**

**October 17, 2021**

**Q1 Explain the effect, if any, of the population mean on the width of CIs for a population that is normally-distributed. If population mean does not affect the widths of CIs explain why not.**

I do not think that the population mean effects the width of the confidence interval because the population mean is found within a confidence interval

**Q2 Explain the effect, if any, of the population standard deviation on the width of CIs. If population standard deviation does not affect the widths of CIs explain why not.**

With the population standard deviation, the larger the standard deviation, the larger the confident interval width, and the smaller the standard deviation, the smaller the width.

**Q3 Explain the effect, if any, of the *population size* on the width of CIs. If *population size* does not affect the widths of CIs explain why not.**

I think that population size does not influence the width of a confidence interval. For most population sizes, the number of the population is very large or unknown, which is why we take a sample of the population.

**Q4 Explain the effect, if any, of the *sample size* on the width of CIs. If *sample size* does not affect the widths of CIs explain why not.**

Sample size can potentially decrease or increase a confidence interval. For example, a larger sample size usually better reflects the population so the larger the sample size, the smaller the confidence interval.

**Q5 Interpreting a CI. Use a narrative example of a real (or made up) dataset to describe what a Frequentist 95% confidence interval really means.**

The confidence interval lets us know how accurate our estimate is likely to be. A 95% confidence interval expresses that if we were to repeat the process many times, 95% of the CIs would contain the true value. This is calculated through the sample data that we have collected. For example, looking at six plots of land we want to know the population mean and other parameters of the invasive species, the Tree-of-heaven tree, for invasive species management purposes. Not all trees on these plots are able to be counted, there is most likely too many and that would be too time consuming, so instead we grab a sample from these plots. Using these samples, we can calculate the values that we need to find the confidence intervals. We look at the distribution of the sample we have collected and the other data we have collected as well to calculate the confidence interval. Within this interval of values, we are 95% certainty that the population mean lies within this confidence interval. This means that if we take lots of samples of the same sample size of these trees, we expect 95% of the confidence intervals to contain the population mean of the tree population.