Name: Ragib Ahsan
Eco602:Week7 Reading Assignment- Confidence and Sampling Distribution

Q1_Answer:

Population means are unknown and mainly predicted from the samples. So, the width of CIs won't be affected by the population mean. In terms of normal distribution of sample, the mean of the distribution is estimated as the population mean.

Q2_Answer:

Population standard deviation affects the CIs width. Here, confidence interval width proportional to the standard deviation of the population. As, the standard deviation of the population decreased, the CIs width became narrower (decreased) and on the other hand when, the standard deviation of the population increased the CIs width increased.

Q3_Answer:

The width of CIs does not affect by the population size but by the size of samples. The width of the CIs is closely corelated to the sample size. Usually, the population size is not accurately known.

Q4_Answer:

When the sample size increases the CIs width decrease (became narrower). Here standard error played a key role, because it is related to the sample size (smaller sample size makes the standard error larger and the larger sample size makes the standard error smaller).

Q5_Answer:

If I want to study the morphology of one specific eukaryotic microorganism (Ciliate) population from marine habitat, I would collect samples from that habitat and I would measure 20 individual (sample size = 20) ciliates body length and width.

Once I finish the individual measurement to get the idea and record about their size, I would not get exactly the same size (length + width) in each individual but get an average size (e.g. length x width = 50μm x 20μm). That means in most of the studied ciliate body size (length x width) is 50μm x 20μm.

Using this above-mentioned assumption, the frequentist 95% confidence interval (CIs) really means that, the population size is not the exactly same as 50μm x 20μm in the 5% of the sample population (might be lower or higher than 50μm x 20μm) but the size is true for the 95% sample population and we prioritize that.