Lecture 10: Chapter 7 Mastery

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UAB Mathematics

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§7.2 Mastery

How many flights must you sample in order to create an 80% CI with $E = 0.03$ for the proportion of flights which arrive on time for a particular airline if you don't already have a point estimate for this proportion? What if you have a point estimate that suggests that the proportion of flights which arrive on time is 84%?

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§7.3 Mastery

You want to estimate the average tuition paid by college students in the US. The range of tuition paid is \$0-45000. Use the range rule of thumb to estimate σ and determine the sample size needed in order to create a 99% CI with $E = \$100$. What's problematic with this value of n? The value is $n = 83973$.

§7.3 Mastery

A company is concerned that it is unfairly using age as a factor in determining promotions. The sample ages of successful applicants for promotions were 34, 37, 37, 38, 41, 45, 45, 46, 46, 48, 53, 55, 60. And the sample ages of unsuccessful applicants were 33, 36, 38, 39, 42, 42, 42, 42, 43, 43, 51, 51, 51, 56. Use a 95% confidence level to construct confidence intervals for these two samples - assume the populations are both normally distributed.

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§7.4 Mastery

The (normally distributed) waiting times for two different rides are taken on 10 randomly selected days: 6.5, 6.6, 6.7, 6.8, 7.1, 7.3, 7.4, 7.7, 7.7, 7.7 minutes for Ride 1 and 4.2, 5.4, 5.8, 6.2, 6.7, 7.7, 7.7, 8.5, 9.3, 10.0 minutes for Ride 2. If the average wait times are posted for each ride, could you say that one of these signs is more precise than the other? Use a 95% CI to answer this question.

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Note: The requirement for normality is much stricter when estimating σ than when estimating μ!