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Lecture 3c: Practice Problems

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Estimating a 95% Confidence Interval

- Suppose an independent environmental group computes the gas mileage for a random sample of 100 new models of the same car make and model in order to make a statement about the gas mileage of this make and model. The results on these 100 cars include the following summary statistics:
 - Sample mean mileage, 31.4 mpg
 - Sample standard deviation: 1.2 mpg
 - Sample median: 31.2 mpg

Estimating a 95% Confidence Interval

1. Assuming the gas mileage data is normally distributed, estimate a range of gas mileage for most (95%) of the cars of this make and model based on the sample results
2. Without assuming normality, estimate a range of gas mileage for most (95%) of the cars of this make and model based on the sample results
3. Assuming the gas mileage data is normally distributed, estimate a 95% confidence interval for the mean gas mileage for all cars that are this make and model
4. Without assuming normality, estimate a 95% confidence interval for the mean gas mileage for all cars that are this make and model.
5. What is the difference in the interpretation of the intervals created in questions 1/2 and questions 3/4?