Week 9 Wednesday

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## **Summer Plans**

Make sure you know your neighbors' names, and then discuss:

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What plans do you have for the summer (as of now)?

**Difference of Means** 

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1. Below is some data about the fuel economy (in miles per gallon) of a simple random sample of automatic and manual cars. The distribution of fuel economies was roughly normal within each category.

	Automatic	Manual
Mean	16 mpg	20 mpg
SD	4 mpg	5 mpg
п	32	25

Calculate a p-value for the hypothesis that mean fuel economy of automatic cars is the same as that of manual cars.

2. Below is some data about the fuel economy (in miles per gallon) of a simple random sample of automatic and manual cars. The distribution of fuel economies was roughly normal within each category.

	Automatic	Manual
Mean	16 mpg	20 mpg
SD	4 mpg	5 mpg
п	32	25

Calculate a 92% confidence interval for true difference between mean fuel economy of automatic and manual cars.

3. Swahili is one of two official languages of Kenya (alongside English), and it coexists with numerous other languages spoken in more localized communities. Researchers are interested in understanding the attitude towards Swahili for students from the provinces of Nairobi and Pwani. They measure attitude towards Swahili using a test with scores between 40 (most negative) and 200 (most positive). They collect data from a simple random sample of 240 students from each of these two provinces. In Nairobi, the mean and standard deviation are 139 and 14. In Pwani, the mean and standard deviation are 155 and 7.5. No particularly extreme outliers are found.

Calculate and interpret a 90% confidence interval for the difference in mean student attitude score towards Swahili between Nairobi and Pwani. 4. Swahili is one of two official languages of Kenya (alongside English), and it coexists with numerous other languages spoken in more localized communities. Researchers are interested in understanding the attitude towards Swahili for students from the provinces of Nairobi and Pwani. They measure attitude towards Swahili using a test with scores between 40 (most negative) and 200 (most positive). They collect data from a simple random sample of 240 students from each of these two provinces. In Nairobi, the mean and standard deviation are 139 and 14. In Pwani, the mean and standard deviation are 155 and 7.5. No particularly extreme outliers are found.

Calculate and interpret a p-value for the data under the hypothesis that the mean student attitude scores in Nairobi and Pwani are the same.