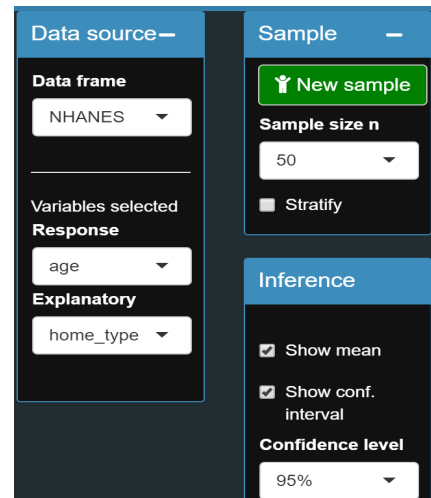


## Comparing two samples with Confidence Intervals

1. Go to <http://statprep.org/> then click on resources, and select “Little Apps”.
2. Open the “Two-sample t” applet, and keep the NHANES data (should be default)
3. Choose the “home\_type” as your Explanatory variable and “Age” as the response variable.
4. Fill out the following table:

Variable	Categorical or Quantitative
“home_type”	
“Age “	

5. Click on the “Show Confidence Interval” and “Show mean”  
Who seems to have a higher average age? How can you tell?



The screenshot shows the StatPrep Two-sample t applet interface. It is divided into three main panels: Data source, Sample, and Inference. In the Data source panel, the Data frame is set to NHANES, the Response variable is age, and the Explanatory variable is home\_type. In the Sample panel, there is a New sample button, the Sample size n is set to 50, and the Stratify checkbox is unchecked. In the Inference panel, the Show mean and Show conf. interval checkboxes are both checked, and the Confidence level is set to 95%.

6. Trying going from a confidence level of 50% to a confidence level of 99%, what do you notice happens?
7. Finish this statement: The higher the confidence level, the \_\_\_\_\_ the interval gets.
8. Now try changing the sample size: Go from  $n = 50$  to  $n = 200$ , what do you notice happens?
9. Finish this statement: The bigger the sample size, the \_\_\_\_\_ the interval gets.

10. Click on the “Show t Interval” and you should see a p-value pop on the screen. Write down your p-value, this is the probability that your samples are as different as they are if there was no difference.

11. Is your confidence intervals overlapping? Does there seem to be a significant difference in ages between the average person who owns a house and the average person who rents?

Play around with it, find variables that you think and do have a difference/no difference based on data. Try not using gender as one of your variables. Explore!!!

Explanatory Variable	Response Variable	Seems significant Different?	Overlapping Confidence interval (Click on “Conf.Interval”)	P-value (Click on t)
HomeOwn	Poverty	Yes	No overlap	0.0011
HomeOwn	BMI	No	Lot of overlap	0.88

12. What are you noticing about the relationships between if something seems significantly different, whether they overlap, and what the corresponding p-value would be? Write at least four sentences.