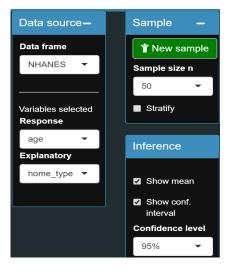
## **Comparing two samples with Confidence Intervals**

- 1. Go to <a href="http://statprep.org/">http://statprep.org/</a> 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?



- 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 of getting your samples this different or more by chance.
- 11. Are 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<br>Different? | Overlapping Confidence interval<br>(Click on "Conf.Interval") | P-value<br>(Click on t) |
|----------------------|-------------------|---------------------------------|---|-------------------------|
| HomeOwn              | Poverty           | Yes                             | No overlap  | 0.0011                  |
| HomeOwn              | BMI               | No                              | Lot of overlap  | 0.88                    |
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12. What are you noticing about the relationships between if something seems significantly different, confidence intervals overlapping or not, and what the corresponding p-value would be? Write at least four sentences.