# Week 2

Goal: In this assignment, students attempt their first statistical test. Responses are shared in small group discussion boards (~4-5 students). Students develop procedural fluency in the statistical test procedure by receiving feedback from the instructor and by interacting with their classmates’ posts.

## Part 1

This week, we will revisit the Islands and the data we collected last week.

#### Scenario:

There has been major economic development and population growth in the Islands over the last few years. As such, Island health officials want to conduct a survey to ensure that the health of Islanders has not deteriorated.

#### Choose one of the following questions to analyze:

(1) Is the average blood glucose level of Islanders equal to 90 mg/dL?  [Estimate based on data collected by students in Summer 2019]

(2) Is the average blood cholesterol level of Islanders equal to 176 mg/dL?  [Estimate based on data collected by students in Spring 2019]

(3) Is the proportion of Islanders that are children under the age of 18 equal to 31%?

#### Complete the following steps to answer your question. Submit your results following this same outline:

(1) Clearly state the question you wish to answer. Clearly state the null hypothesis to be evaluated.

(2) Compute summary statistics for your sample. Include the appropriate summary table, as well as one appropriate data visualization.

(3) Compare your sample statistics to the null hypothesis in terms of absolute difference and relative difference. Does there appear to be any practically significant differences between your sample and the null hypothesis? Interpret these differences in the context of the Islanders' health.

(4) One explanation for why the sample mean is different from the null hypothesis is sampling variability. Conduct a randomization test to compare your observed sample mean to our expectations based on the null hypothesis to test this explanation. Report the p-value. Does there appear to be any statistically significant differences between your sample and the null hypothesis? Interpret the p-value in terms of whether or not the average value appears to be different now than in the past. Hint: Use the 'randomization hypothesis test for a single mean' link in StatKey.

(5) Provide a succinct answer to the question you asked in (1). Summarize the quantitative evidence that supports your decision.

Share your summary with your classmates.  Post your contribution to the board by **Thursday night**. Do not attach documents to the post. Insert images via the toolbar (bottom row, third icon from the left).

## Part 2

Respond to at least two other colleagues' posts. Comment on the statistics they analyzed, the procedure they implemented, or their communication of statistical information. Be sure to interact with and comment on the statistical content of their post. Ask questions of any procedures you don't yet fully understand. This is your chance to practice applying statistical tools, and to work together and collaboratively to improve your statistical practice.

Answer any questions that your classmates or instructors ask about your post.

due **Sunday.**