1. Earlier in the semester, we read about a study designed to test whether applying a metal tag to a penguin is detrimental to the penguin, as opposed to applying an electronic tag; some penguins were randomly assigned to be tagged with a metal tag and some were randomly assigned to be tagged electronically. One variable examined is the length of foraging trips. Longer foraging trips can jeopardize both breeding success and the survival of chicks waiting for food. The mean length of 344 foraging trips for penguins with a metal tag was 12.70 days, with a standard deviation of 3.71 days. For those with an electronic tag, the mean length of 512 foraging trips was 11.60 days, with a standard deviation of 4.53 days.

a. Identify both variables in this data.

b. Do these data provide evidence that metal-tagged penguins spend more time, on average, on foraging trips than electronically tagged penguins? Show all of the details of the test.

c. How large is this difference in the average length of foraging trips for metal and electronically tagged penguins? Answer this by reporting a 95% confidence interval.

1. On the first day survey, students were asked to report which type of computer they use (Mac or PC) and their GPA. A plot of the data and a table of summary statistics are provided below. Assume that the GPAs and computer usage of students in Stat 113 are representative of all St. Lawrence students.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Descriptive Statistics: GPA**   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **Computer** | **N** | **Mean** | **StDev** | **SE Mean** | | Mac | 144 | 3.319 | 0.404 | 0.034 | | PC | 46 | 3.243 | 0.355 | 0.052 | |

* 1. Does our sample provide evidence that average GPA differs depending on the type of computer used? Include all details of the appropriate hypothesis test.
  2. Even though we failed to reject the null hypothesis in part a, construct a 95% confidence interval in average GPA for Mac and PC users. What do you notice about this confidence interval?