Friedrich-Schiller-Universität Jena

seit 1558

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Resampling methods

19.7.2014, Time: 30 Minutes. Please write yours answers (with the necessary commands) into a file, save the file as a PDF, and send me the file at the end of the exam to oliver@kirchkamp.de

1. Have another look at the `mouse.c` and `mouse.t` data we have studied during the course. Your null hypothesis is that the standard deviations of `mouse.t` and `mouse.c` are the same. Your alternative hypothesis is that the standard deviation of `mouse.t` is larger than the standard deviation of `mouse.c`.

   (a) How large is the difference between the two standard deviations in your sample?

   (b) Provide a 95% confidence interval for the difference $\sigma_{\texttt{mouse.t}} - \sigma_{\texttt{mouse.c}}$. Explain why you have chosen this type of confidence interval.

   (c) Provide a permutation test for your hypothesis.

2. Have a look at the `tuna` data from the `boot` library. You are interested in the median of `tuna$y`

   (a) What is the (estimated) bias of your estimate for the median?

   (b) Provide a 95% confidence interval for the median.