Importing Data

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Focus: The focal problem being is addressed is to have students learn to import data from a .csv file.

Overview: My swirl lesson is designed to help students with one of the most frustrating issues in using R and R studio: importing a data file into R. This swirl lesson will provide scaffolding for finding and setting the working directory, the other basic steps required to import a file into R, and how to make sure that variables are being read correctly into R from the table. I expect students to have a basic understanding of R functions and how to assign names to objects. I also expect students to not be aware of all of the syntax errors that can come from trying to format data for R.

Learning objectives: Learning objectives: 1) get a basic understanding in how tables are read into R and some common issues 2) develop an individual set of instructions so that they can later import a table on their own.

Lesson sequence:

1. _A brief overview of the lesson that defines the purpose of the lesson in Canvas and how to install the course into swirl
2. _The swirl lesson
3. _Formative assessment within the swirl lesson
4. _Canvas assessment outside of the swirl lesson that makes sure students take away the steps they should take to import data and the associated code they would need.

Pre-lesson activities: Students took the swirl lessons “Basic Building Blocks” and “Matrices and Data Frames” within the R programming course (found at https://github.com/swirldev/swirl_courses). Assessment of these lessons included building a table on their own in R.

Post-lesson activities: A Canvas assessment of the swirl lesson included uploading their .csv file to Canvas for me to check. In addition, they provided properly annotated code and instructions that will allow them (or anyone) to upload this table into

R studio. They were also given an alternative assignment in which they could provide code that will allow them to build this table in R studio.

Implementation notes: An overview of basic excel skills was not provided, but would be encouraged before this lesson. There is a supplemental powerpoint file to help, but is not comprehensive.The limitation of this lesson is that it only addresses a few of the many issues that could be faced when trying to adjust a table to import data. Modifications of this lesson to include other common issues would be welcome. Students were given 75 minutes to work on this lesson, as well as another in-class worksheet that did not require R. Depending on their comfort in R, which varies greatly, students took 20 minutes to the full class period. If this is to be done in class, which is not necessary, an alternative assignment may be needed.

Resources: I found an online resource by Simon Queensborough at Yale University (http://www.intro2r.info/unit2/importing-data.html) that summarize common syntax issues.
I also used an open source dataset from datadyrad.org that I modified. The original publication of the dataset:

Doi H, Chang K, Nakano S (2019) Trophic niche breadth of pond zooplankton species using stable isotope analysis and the relationship with the abiotic and biotic factors. Royal Society Open Science 6(1): 180917. https://doi.org/10.1098/rsos.180917

Additionally, the Dryad data package:

Doi H, Chang K, Nakano S (2019) Data from: Trophic niche breadth of pond zooplankton species using stable isotope analysis and the relationship with the abiotic and biotic factors. Dryad Digital Repository. https://doi.org/10.5061/dryad.6jr5797