Teaching Notes

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Course Information – Evolution & Ecology

Department: Biology

Level: Lower Undergraduate

Course type: Lecture – Fully Online

Students: Majors

Number of Students: 25

Module Information

Original Module Name: I actually used parts of two separate modules, now fused into one: Data Management using National Ecological Observatory Network’s (NEON) Small Mammal Data with Accompanying Lesson on Mark Recapture Analysis and Demography from physical cemeteries, “virtual cemeteries,” and census data

Link to Original: <https://tiee.esa.org/vol/v13/issues/data_sets/mcneil/abstract.html>, <https://www.esa.org/tiee/vol/v8/experiments/lanza/abstract.html>

Adapted Module Name: (if applicable): <https://qubeshub.org/qubesresources/publications/1850/1>

Modified Module Name: Introduction to Data Management, Life History, and Demography

Files associated: (Introductory content, Discussion Activity and Assignment for online module, Teaching Notes, Word and Excel Worksheets)

Modification Learning Goals

At completion of this learning module, you will be able to:

* explain the importance of data management in the scientific process
* identify elements of a useful, organized data sheet
* create a spreadsheet data table
* manipulate data in a spreadsheet program
* calculate vital statistics of a population using life tables
* collect, manage and analyze data to test hypotheses about human demography

Teaching Notes

 What did you change and why?

This module was developed as part of the Inclusive Pedagogy FMN, so the focus for me was about increasing inclusivity by improving accessibility for a fully online class. One challenge with this course is that the students can be from one of 3 campuses (>50 mi apart). When I teach it in the summer, the students can be from any institution (transient students). Many of the existing TIEE modules are great for face-to-face classes where the instructor can hold field trips, have hands-on activities, field questions as they arise and manage students working in groups together. My class is asynchronous, and having students work together in groups is very challenging. And many students work on the class late at night after work, so things like visiting a cemetery are out of the question. I also had to think about the different levels of students, to make sure this could be completed by everyone without needing a lot of additional explanation from me beyond what I provided in the materials. I decided to have this module be delivered as a combination of:

1. Lecture content to explain data management (using NEON as an example), life history and demography
2. Discussion (so the students could have some interaction) to brainstorm ideas about why human population dynamics may differ spatially and temporally
3. An individual assignment where they collect demography data that interests them using findagrave.com, followed by comparisons of survivorship curves and life tables for two populations using data that I collected. I felt it was important for everyone to be working on the same dataset for the analysis portion of the assignment, which also allowed me to use a template that made grading slightly easier.

How did the activity go?

Overall, I think things went surprisingly smoothly. Very few students reached out with needs for clarification about what was expected. One student who consistently asked questions about every assignment did not ask me anything. And when he turned in the assignment, he left a comment saying it was “more fun and interesting than he thought it would be when reading the instructions”.

 What went wrong and why?

The most common problems were a result of students not paying attention to the instructions. Some of them overwrote what I put in the template for them, trying to analyze their own data rather than mine. I think next time I would try to think of ways to clarify that the analysis is to be done on my dataset.

 What was the prep like?

Trying to figure out how to make this all work in an asynchronous online platform took a surprisingly long time. Collecting the data from findagrave.com for my dataset also took several hours. But now that it is done, conducting this module in the future should be relatively easy.

 Would you do this activity again?

I would definitely do this activity again. The only things to change at first would be to really make sure the instructions are as explicit as possible.

 Is there anything else you would like to make note of?

One thing I’ve learned over the past year teaching online is that students would rather deep dive the internet looking for answers before spending a few minutes thinking about anything. I spent considerable time re-vamping the original Cemetery Demography module so answers could not simply be Googled. I am happy to provide my answer key to the Excel sheet to anyone who wants it, but ask that you contact me directly, and then please not share it on any public facing platform.

 How does this activity fit in your overall course curriculum?

In my department, the curriculum in the E&E course (a required course) provides every Biology major with training for upper division ecology courses. This activity specifically fits with the goal of preparing students to conduct research, collect and manipulate data and draw conclusions, skills needed in the higher-level courses. Although I do not have them conduct statistics, and they “eyeball” the survivorship curves and life table data, I think it really helped them to think about data organization and interpretation. It’s a good complement to some of my other activities which are geared toward graphing and statistical analysis, and could work well in both the face-to-face and online sections of this course that we offer.