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Spring 2-1-2023

WILD 542.01: Statistical Applications in Wildlife Biology

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Statistical Applications in Wildlife Biology
Spring Semester 2023

Instructor: Dr. Sarah Sells
WILD 542
Credit/No Credit

Class meeting time: Thursday 12-2pm Liberal Arts 202
Office Hours (NS 205): By appointment.

Statistical Applications in Wildlife Biology will explore statistical problems encountered by wildlife biology and ecology graduate students. Students will bring statistical problems of interest to class where we will explore potential analysis options, assumptions, pitfalls and alternatives to solve the problem as a group. Goals of the course include effective solutions to student problems, building knowledge of statistical software such as R, improving understanding of estimation methods, and improving communication skills for quantitative methods.

Each student is expected to lead a discussion on a statistical problem of his or her choice. The student will present the problem as well as the biological question driving the statistical problem. The student should also provide the class with relevant reading(s) prior to the discussion. The class will then discuss the problem and work towards a solution. Students are also expected to attend class and participate in discussions.

Schedule

January 19—Assignment: prepare a short writeup of the following:

- MS or PhD student/candidate, how many years in (e.g., 1st, 2nd, 3rd yr), major advisor.
- A brief (one paragraph) description of your project.
- The type(s) of statistical applications you would like to focus on for this course.
- Note any weeks you are not able to attend class (e.g., due to conferences, fieldwork, etc.; attendance is mandatory without prior approval for missed dates).
- Note if your topic is time sensitive (e.g., you hope to have it be the focal topic prior to a scheduled defense).

January 26: general discussion.

Feb 2: RSFs (Crane)

Feb 9: Simulation Design (Stewart)

Feb 16: *no class (MT TWS conference in Helena—attendance there encouraged!)*

Feb 23: Social Behavior Analyses (Rensel)

Mar 2: *no class (Sarah @ CRU meeting)*

Mar 9: Structural equation modeling w/ occupancy modeling (Wall)

Mar 16: general discussion.

Mar 23: *no class (spring break)*

Mar 30: Bayesian inference (Karnatz)

Apr 6: Bayesian logistic regression (Jackson)

Apr 13: Occupancy modeling (Lane)

Apr 20: Multi-species occupancy modeling (Piper)

Apr 27: Survival and population growth (Hinderer)

May 4: general discussion.

Prior to each class:

- Everyone: read assigned materials
- Discussion leader: suggestions for preparation, as applicable:
    - Identify relevant paper or other reading, share with class
    - Prepare overview slides of topic to be discussed
        - Your research question(s)
        - Analysis approach
        - Key points from reading
        - What have learned thus far about analytical approach that has been most helpful
        - Where having most trouble/what need help with