**Final Assignment (30pts) –** 10 pts for data science, 10 pts for statistics, 10 pts for science communication.

**DUE: December 9th by NOON**

Use your knowledge gained through ESM 206 in data science, statistics, and science communication to answer the following problem:

**Does Environmental DNA metabarcoding estimate the species area relationship (SAR) the same or different than traditional fishing gear?**

Explanations of SAR and environmental DNA can be found in Lecture 17 and the references on Gauchospace in the assignment folder.

The data are provided in SAR_data.csv

The three variables are:

- area_ha: The area of the lake surveyed in hectares
- dna_richness: The number of unique fish species detected using eDNA metabarcoding
- trad_richness: The number of unique fish species detected using traditional/conventional fishing approaches.
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**Limits and Conditions:**

4 page maximum
Use headings
You must use R markdown
You must provide an HTML file (.rmd files will not be acceptable)
Name the HTML file: last name_assignment_final.html
Use code folding. Raw output is unacceptable.
All figures and tables must have captions.
This is a professional write up, write professionally.

**Suggestions and hints:**

1. You may need to transform your data or use a log function in the model formulation (see SAR formulation in the lecture notes)
2. Make sure you address the assumptions of all analyses and make caveats about any violations of the assumptions
3. Be concise, yet thorough. Points will be deducted for excessive figures or analyses irrelevant to your argument.
4. You will need to bring the data into tidy form for analyses and plots.