Nature hacks for life

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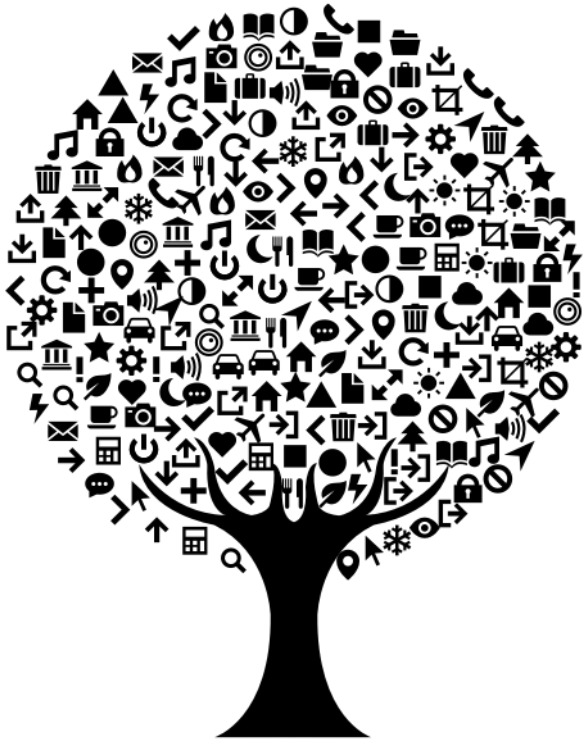
Contents

Chapter 1

Sustainability



This is the prework before we meet.

Context

Nature deficit disorder

Reciprocal restoration

Sustainability and feedback loops

Learning outcomes

1. Build a tidy, logical data model for a graduate-level dataset.

2. Develop a reproducible data and statistical workflow.

3. Design and complete intermediate-level data visualizations appropriate for a graduate-level tidy dataset.

4. Identify a range of suitable univariate or multivariate statistical approaches that can be applied to any dataset.

5. Interpret statistical output to quantify statistical model performance.

6. Complete fundamental exploratory data analysis on a representative dataset.

7. Appreciate the strengths and limitations of open science, data science, and evidence-based collaboration models.

Schedule

Slide decks are optional. The decks simply highlight some of the connections between the criteria for critical thinking and statistical heuristics.

week	challenge	tasks
1	Explore sustainability and reciprocity with natural systems	take ecological footprint quiz, tra
2	Nature hacks deck and discussion	reflect on meaning, list purpose,
3	Practice	explore nature practice, track cr
4	Next steps	futureproof daily practice, identi

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Challenge time

Do the footprint quiz.

Reflection questions

1. What can a t-test do? Can you imagine other functions for a t-test in the context of your work and life?
2. What are the limitations of a t-test?
3. Is the data structure wide, long, and how can you consider tidying this evidence? Are there variables that represent the same concept?

Chapter 2

Nature hacks

Many approaches and critical thinking heuristics in ecology & evolutionary biology (eeb) are relevant to other disciplines.

Context

Learning outcomes

1. Develop your data viz skills.

2. Hone your critical thinking statistically by iterative plotting-modeling a dataset.

3. Do a regression analysis.

Challenge time

Reflection questions

1. When do you use regression versus correlation?

2. How could you incorporate time into your plots or statistical models?

3. Did the visualization highlight some of the criteria associated with critical thinking statistically more than others?

Chapter 3

Daily practice

Context

Exploratory data analyses is everything we have done. This is a primary approach to better understanding your evidence without introducing bias. Transparency is key.

Learning outcomes

1. Practice your critical workflow for data and statistics that is replicable and literate.

2. Appreciate the value of generalized statistical models that connect to one another conceptually.

3. Do a GLM.

Challenge time

Here is an impressive ..

Reflection questions

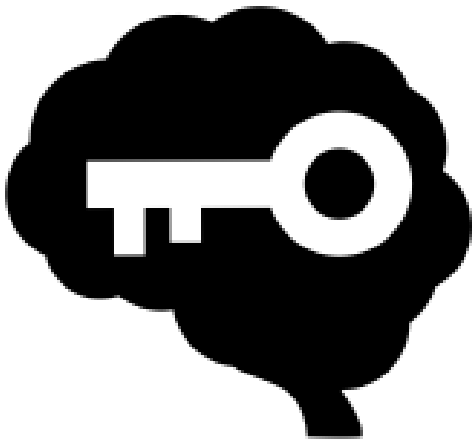
1. When do you move from EDA to model fitting?

2. Are there ways to mitigate bias and p-hacking through formal workflows?

3. Did building a model such as GLM align with critical thinking and intuition, i.e from critical thinking was it accurate and fair? Did the EDA-to-model process legitimately represent the patterns in the observations recorded.

Chapter 4

Consolidate



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