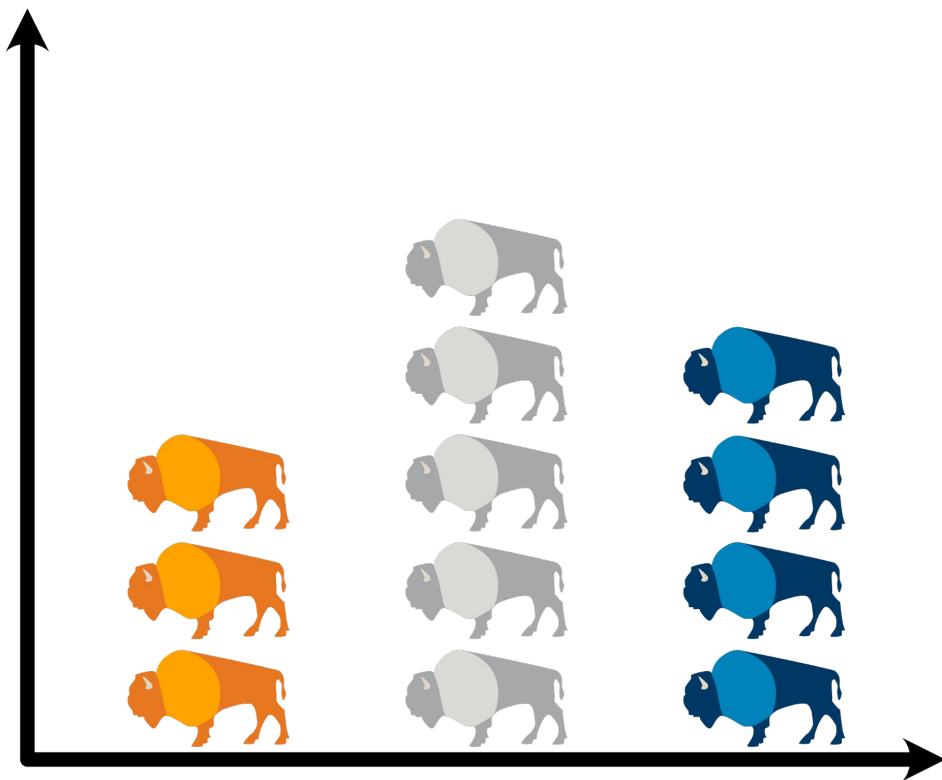
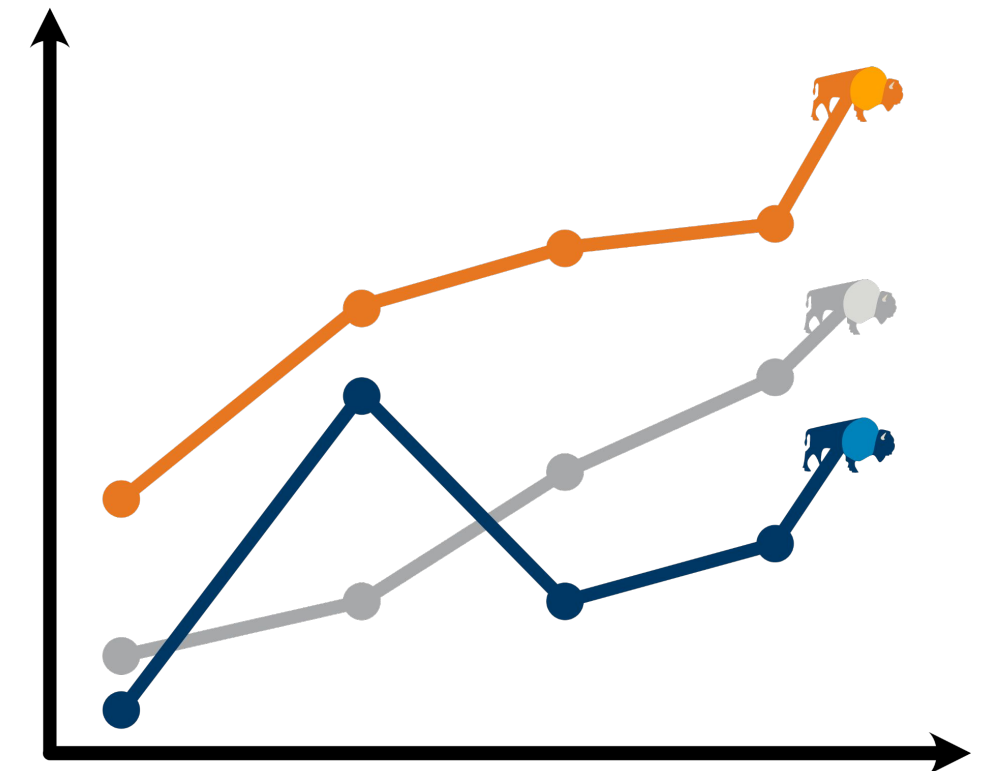


Intro Stats AND Data Science: Tackling **Both** in One Course?



Kelly McConville
Bucknell University



Q: Why teach **two separate courses**?

A: There is too much material to cover in a single course.

Q: Why teach **one combined course**?

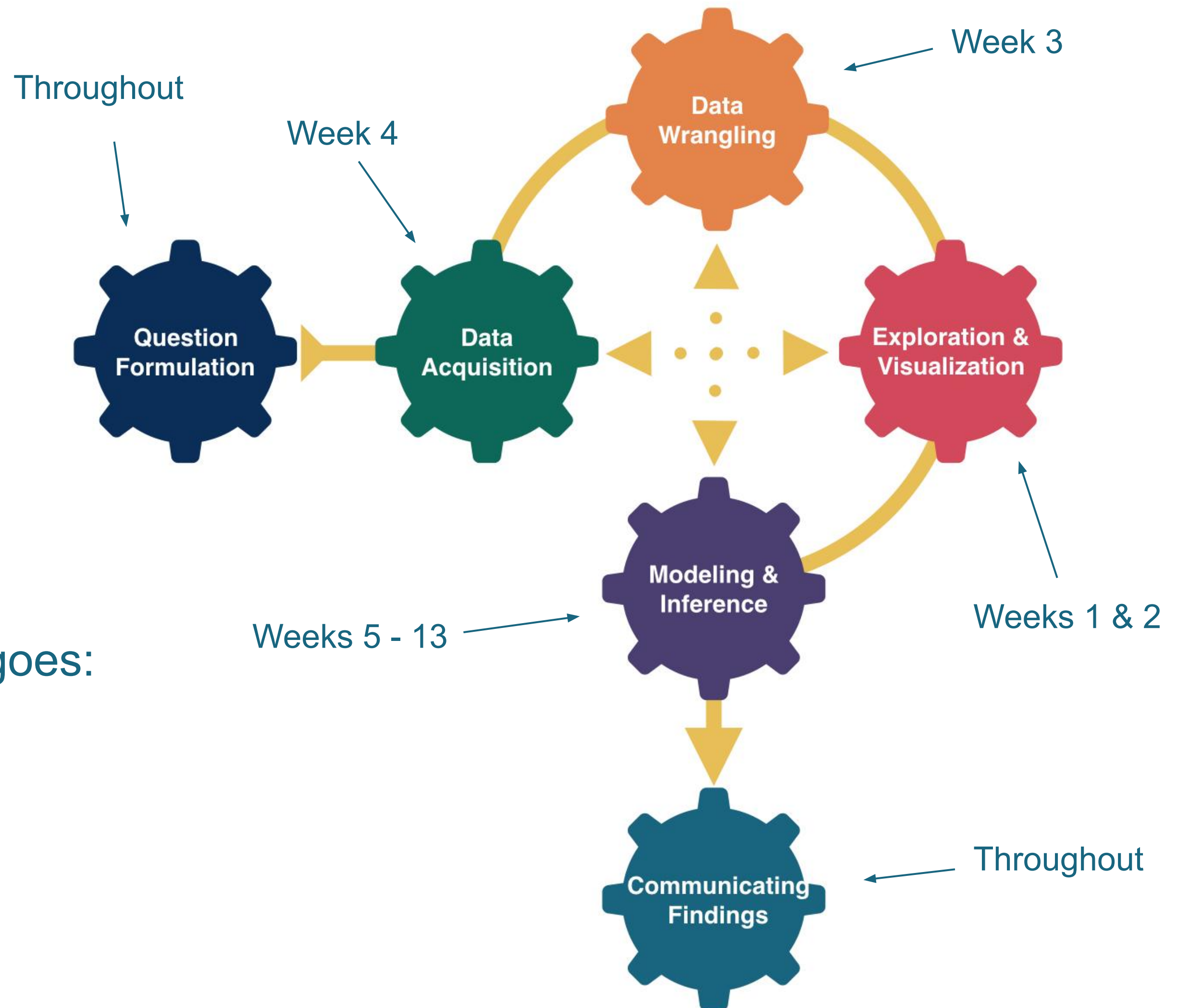
A: Most students are only going to take a single course.

My Proposal

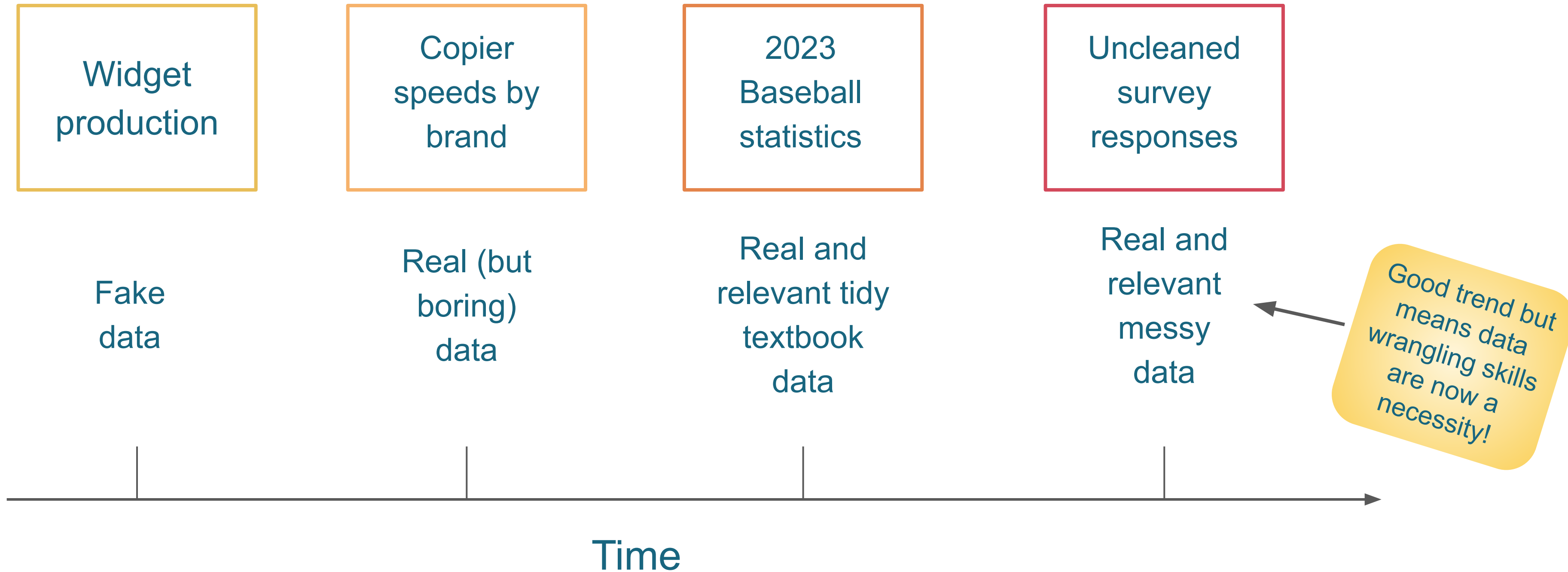
- *Teach the whole data analysis workflow.*
- *Include messy data.*
- *Emphasize our multivariate world.*
- *Create producers, not just consumers.*
- *Be ready to cut some material from intro stats.*

Prepare students to handle data from start to finish.

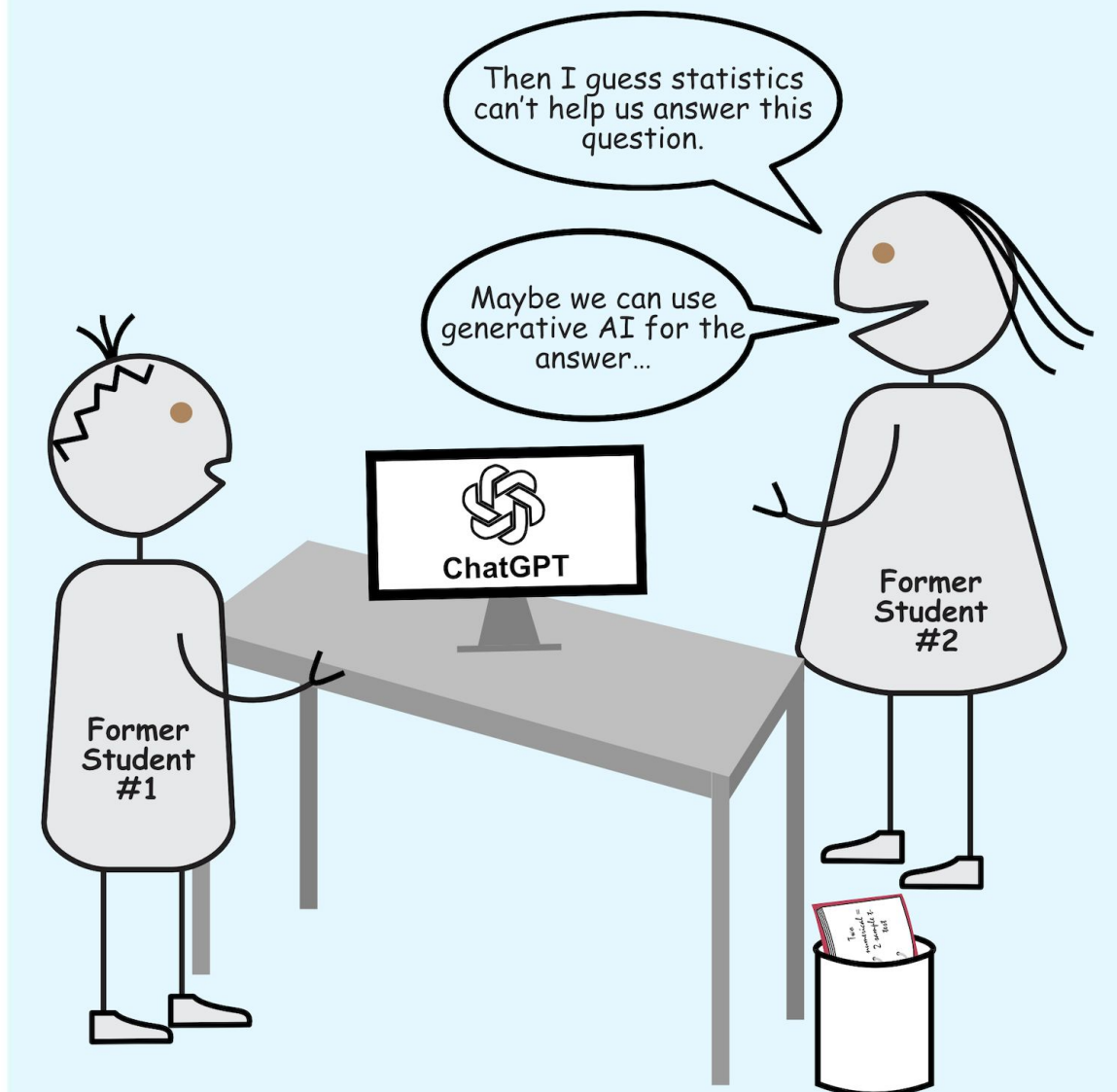
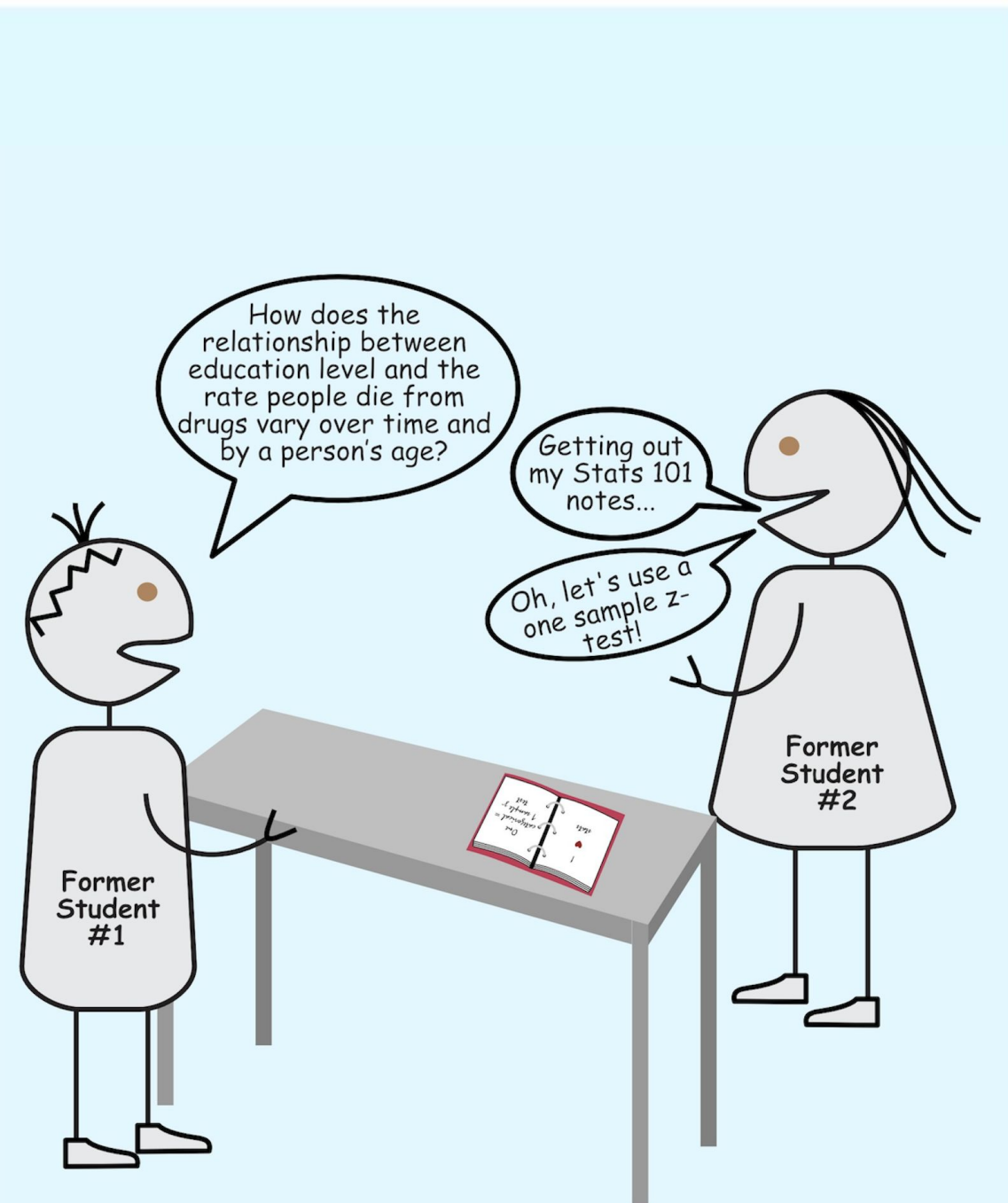
My combined course goes:



The evolution of data in Intro Stats



My worst nightmare



womp womp

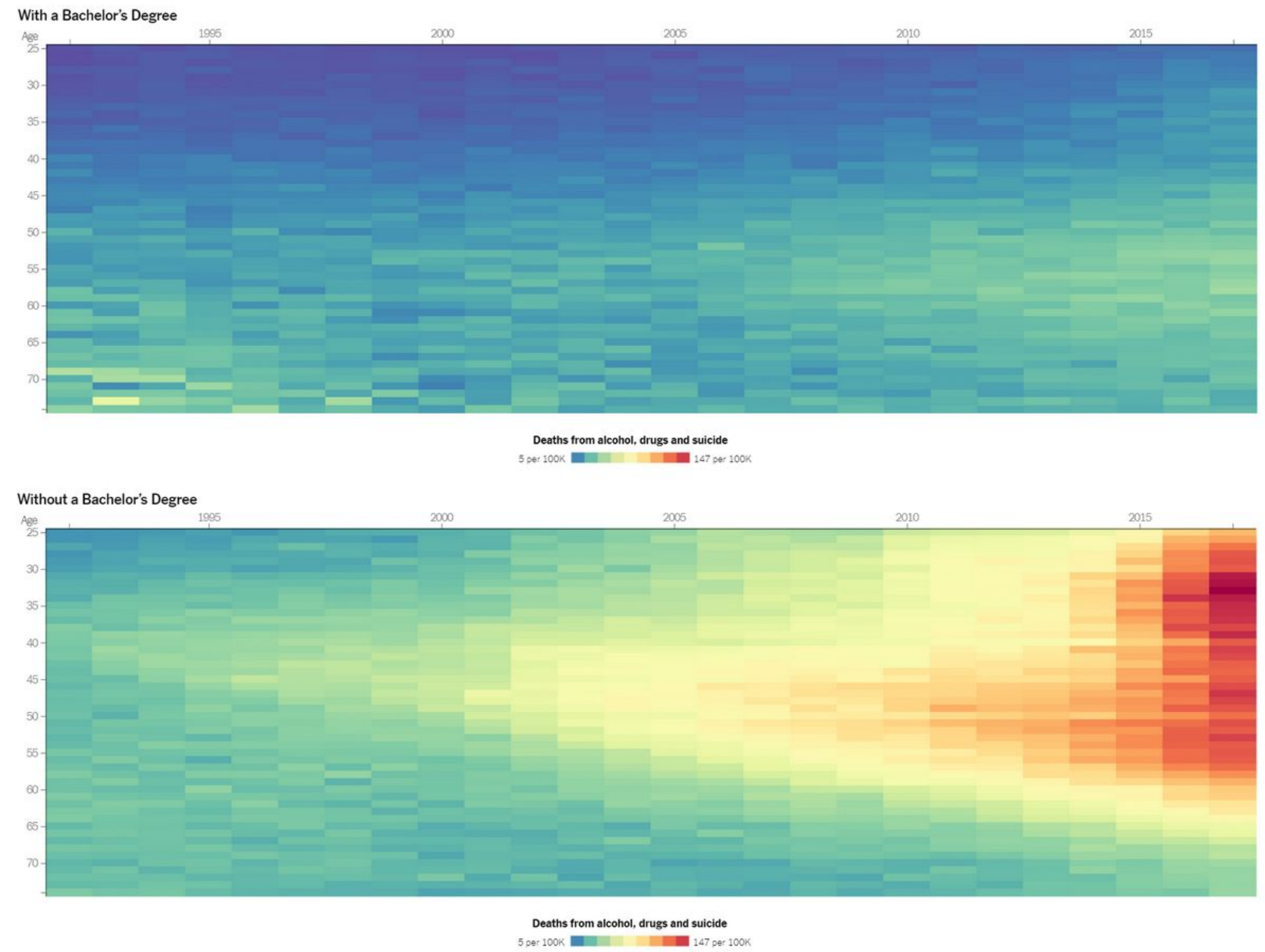
Teach multivariate thinking

- There are **lots** of ways to infuse multivariate thinking into the intro course!
 - Modeling
 - Data wrangling
 - Data collection
 - Data visualization

GRAPH R

What is the relationship between education level and the rate white people die from alcohol, drugs and suicide?

Rates of Death From Alcohol, Drugs and Suicide for Non-Hispanic Whites With and Without a College Degree



Adapted from the 2020 article “How Working-Class Life Is Killing Americans, in Charts”

Source: “Deaths of Despair and the Future of Capitalism” by Anne Case and Angus Deaton.

Consumers AND Producers

- Teach students to be able to interpret data results they see in the world **but also produce their own findings.**
 - Students should be able to **interpret** and **produce** summary statistics, graphs, and models.
 - Leverage software.



What to cut from Intro Stats?

1 | Probability Rules

Focus only on the probability ideas needed to understand statistical inference concepts.

2 | Long List of Inference Methods

Move toward “There is only one test.”

– Allen Downey

3 | Univariate Statistics

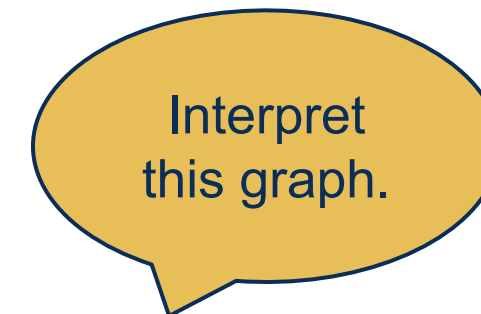
Provide an abridged version of univariate summary statistics and graphs.

Assessment in the age of generative AI

The beloved take home exam is dead.



It is time to (re-)embrace the oral exam.



zoom

U.S. Conference on Teaching Statistics

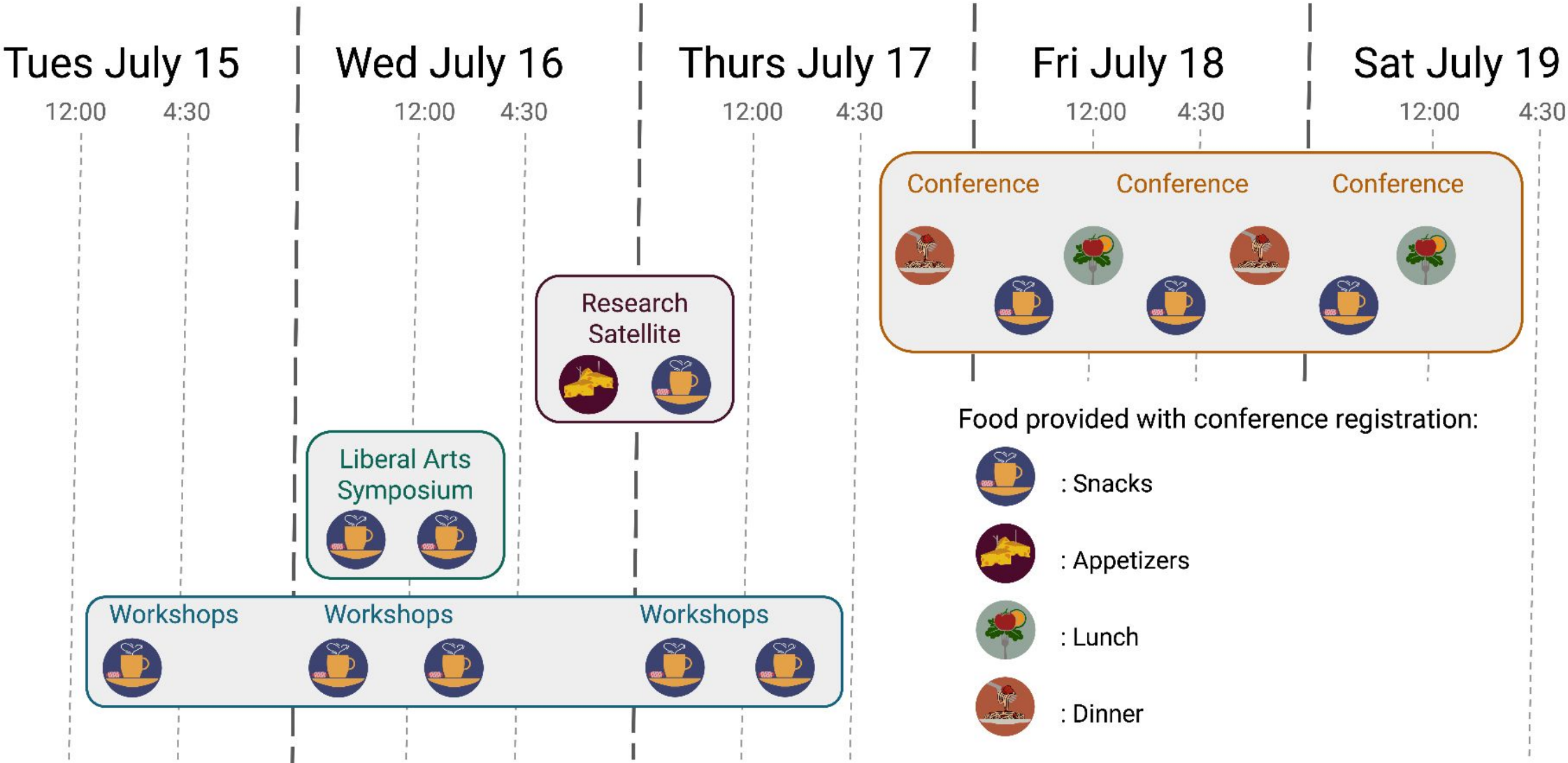
Useful
Models

USCOTS 2025

Iowa State University

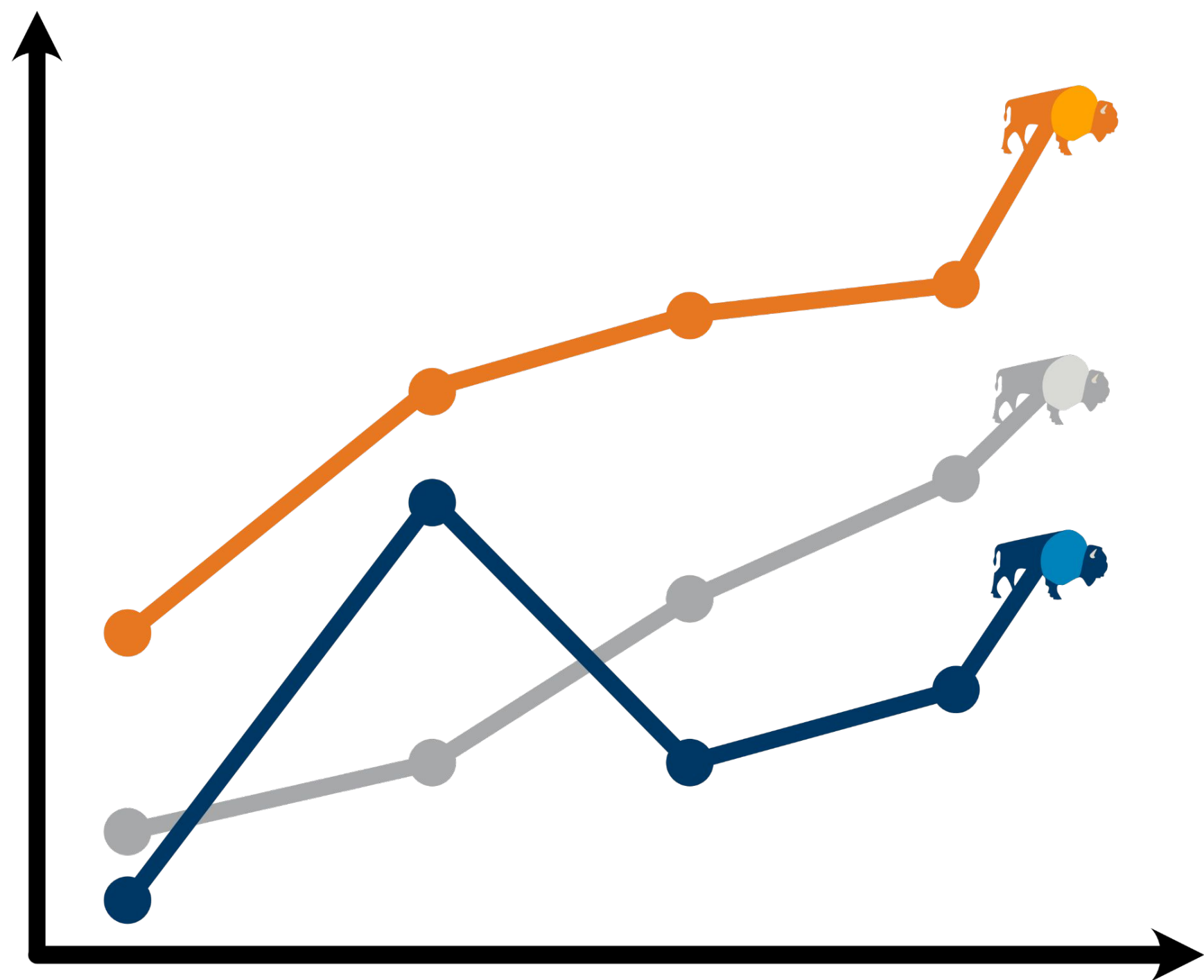
Pre-Conference: July 15th - 17th

Conference: July 17th - 19th



Keynotes





Happy to chat!

k.mcconville@bucknell.edu