Lesson 2: Intro to Math Modeling

Date: August 18, 2025

1 Admin Check List

- Instructor Website
- Schedule meeting: outlook invite and office location
- Bonus Point sign-up: the link is good
- Homework: Scavenger Hunt Exercise
- More Bonus Points: MA103 3-ring binder and folder on computer

2 Mentimeter quiz.

3 Lecture.

Example problem: do french fries cause diabetes?

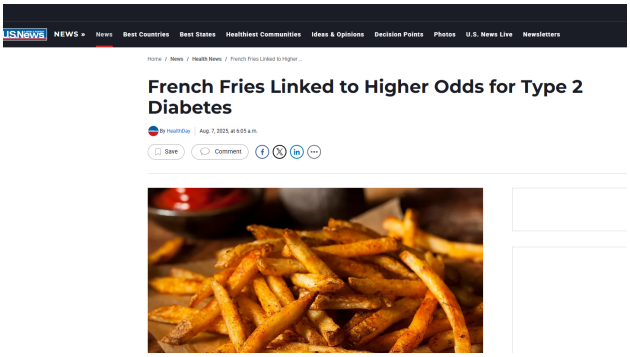

Figure 1: Modeling Triangle

3.1 Modeling decisions: what pirmary modeling decisions do we make?

- What variables to incorporate?
- What assumptions to make?
- What relationship, equation, or function to use?

- What data to use or exclude?

These decisions inherently produce **limitations** or a known boundary in the model, due to simplifying assumptions, incomplete data, or chosen structure of the model that affects its accuracy, applicability, or generalization.

3.2 Ethical Framework:

- Data validity: source of the data, who owns it, reliability or accuracy
- Model validity: ability of model to answer question, how well the model reflects the data story, how many assumptions impact the model, is a robust solution necessary
- Communication: misleading figures, uncertainties addressed in communication, clearly stating modeling decisions and justified

4 Now get with your partner - write out a problem that can be solved with descriptive statistics (simple like the peanut butter problem), and have the group to your right solve. Then we will brief to the class.

5 Work on Board Sheet