

First Cut Model worksheet, due Monday, March 5

1. In the book, you've read about two examples: Bike Share and World Population Growth. You got to know the models before thinking about what metrics might be of interest or what work you might do with each model. Ideally, in real world modeling, we make some decisions about what work to do first and then begin creating a model that can do that work. One way to think about a model "doing work" is to think about what questions the model can help you answer.

For each model we've met—the bike share system and world population growth—list several questions you might be able to answer using output from the model. If you're not sure where to begin, think about the metrics identified for each model as the answers to questions: What would the questions be? For each question write down if it's an explanatory question or a prediction question.

Bike Share System:

World Population Growth:

2. Now think about your own model for Project 1. What will the output from a single run of the model look like? Draw the figure your model will produce, with labeled axes and an informed-guess sketch of the graph.

3. Who cares about what you're modeling, and what specifically do they care about?

4. Based on "who cares" and "about what", what metric(s) are important and interesting for your model?

5. What are some questions you want your model to answer? Refer back to your brainstorming worksheet — what questions did you think of then? For each question, write down whether it's an explanatory question or a prediction question.

6. What are the model parameters? List all of them (at least the ones you plan to include in your model).

7. Which model parameter(s) do you think it will be most useful to vary in order to learn about your metric(s), and why?

8. Keeping in mind what parameter(s) you're going to vary and what metric(s) you're interested in, sketch one or more parameter sweep figures. At the very least, draw and label the axes. Try to make an informed-guess sketch.

9. Now compare what you sketched in #2 and what you sketched in #8. Are these the same figures? Do they have identical axes? If so, you need to have a conversation with your instructor. (Why?)