***Formulating Research Questions***

**Tuesday, January 7: 2pm-3:30pm**

**2:00-2:10pm: Ask,** audience for (1) example research question that could be modeled statistically and (2) example research question that could be modeled mechanistically.

* Ex: statistical model: *what are the risk factors associated with being TB+ across Madagascar?*
* Ex: mechanistic model: *how does the population prevalence of HIV impact the transmission rate of TB?*

**2:10-2:20pm: Brainstorm** *statistical model.* Highlight *response* variable and *predictor* variables. If relevant, discuss the *type* of data in the response variable (i.e. the *distribution/family* that the model will take).

**2:20-2:35pm: Brainstorm** *mechanistic model.* Highlight *populations* in your system, *states* that those populations can take and *processes* that describe how individuals can move between these states. Highlight how some *processes* are dependent on various *states.*

**2:35-2:40pm: Pair up** with a partner you do not know.

**2:40-2:50pm: Write** down your (1) statistical research question and (2) mechanistic model question in plain language. Use words that anyone could understand.

**2:50-3:05pm: Share** with partner.

--State your two research questions, then allow them to ask you questions about your question. Discuss your questions until you arrive at a common understanding of what the questions are about and why they are important.

--With partner, for the statistical model, list *response variable* and *predictor variables* you can identify in your system.

--With partner, for the mechanistic model, list *states* and *processes* you can identify in your system.

**3:05-3:20pm: Repeat** for the otherpartner.

**3:20pm-3:30pm: Wrap up with a few comments from the audience. For homework,** make any further adjustments to your research questions that seem appropriate after hearing your partner’s interpretation of your research. You can adopt their language if you feel they have done a particularly good job of wording your question so it can be understood by those outside your field of study.

***Bring your edited questions to tomorrow’s small group session, ‘*Refining research questions for modeling’, *at 4:30pm***