

Wrapping Up: Different Approaches for Different Questions

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Problem-driven Design

- ⦿ Choose a model based on the question you want to answer
- ⦿ Does the disease process act along personal or societal connections? Is the population large enough that random mixing can be assumed?
- ⦿ Answer the *question* don't design the system or choose a model type that's "hot"

Seductive Complexity

- ⊗ The real world is complex
- ⊗ Epidemiologists and other public health professionals deal with real-world problems
- ⊗ It's very easy to start adding complexity to make a “realistic” model
 - ⊗ These models often *aren't* realistic
 - ⊗ Parameter choices start to become harder to find and defend
 - ⊗ Results may be unexpected interactions between small effects that don't reflect the system
- ⊗ It also becomes much harder to implement
- ⊗ That being said, be aware of the appeal of oversimplification from many mathematicians

“Go Get a Modeler”

- ⊗ Advice I once got from a Biostatistics professor: “These are the assumptions of linear regression. If you think these assumptions have been violated, go get a biostatistician.”
- ⊗ The same is true for mathematical models
 - ⊗ But you should still understand what they’re saying when they come back with their model
- ⊗ Collaboration makes for better models
 - ⊗ Public health professionals are subject experts...
 - ⊗ ...and they have data

Contact Information

- I'm a graduate student currently living in Washington, DC. I will be around for the entirety of APHA, and if you would like to talk further, I'd be happy to meet with you.
- I will also be presenting some work involving network epidemiology and mathematical models in Session 4209: Influenza on Tuesday at 12:30.
- Email: Eric.Lofgren@unc.edu

Thank You

