

Why Modeling Matters in Improving Population Health

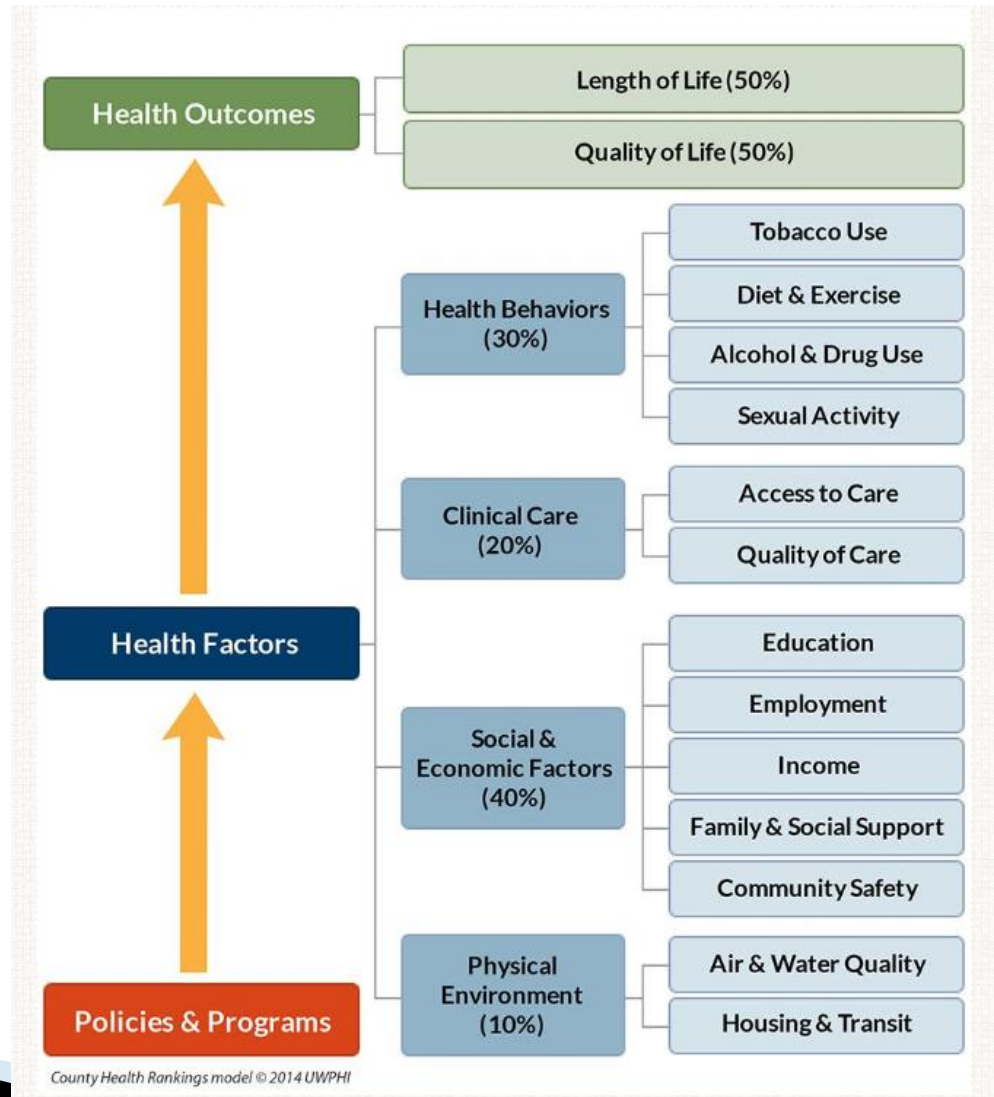
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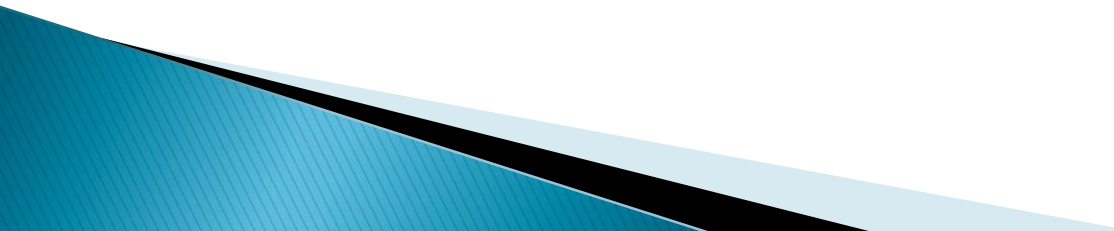
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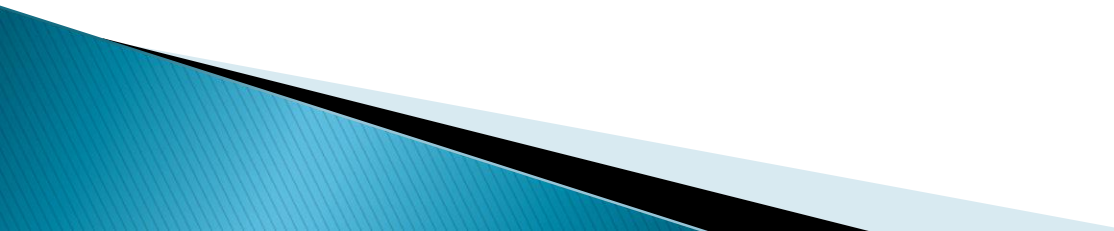
County Health Rankings



Challenges in Understanding the Effectiveness of Population Health Interventions

- ▶ Interventions vary
 - ▶ Complex interactions among interventions; many are synergistic
 - ▶ Many interventions are not amenable to randomized trials
 - ▶ External factors change over time
 - ▶ Often long time lags between intervention and outcome
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How Models Help Decision Makers

- ▶ Can provide “best available” assessment of health (and other impacts) and costs
 - ▶ Can incorporate decision makers’ primary concerns
 - ▶ Can be adapted to different situations
 - ▶ Can incorporate the most up-to-date science and harness uncertainty
 - ▶ Can identify key research needs
 - ▶ Can address “what if” questions
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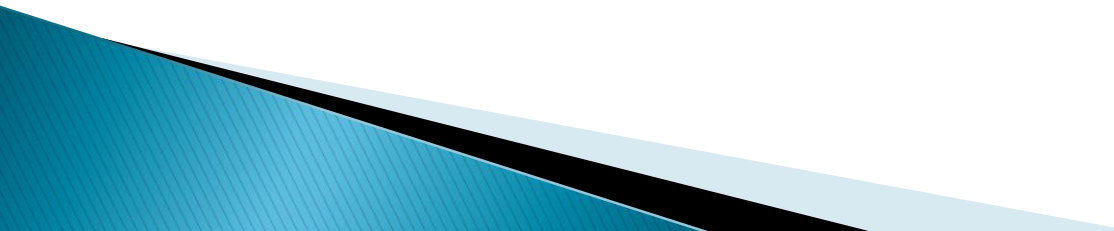
What Models Can't Do

- ▶ Provide THE answer on what to do

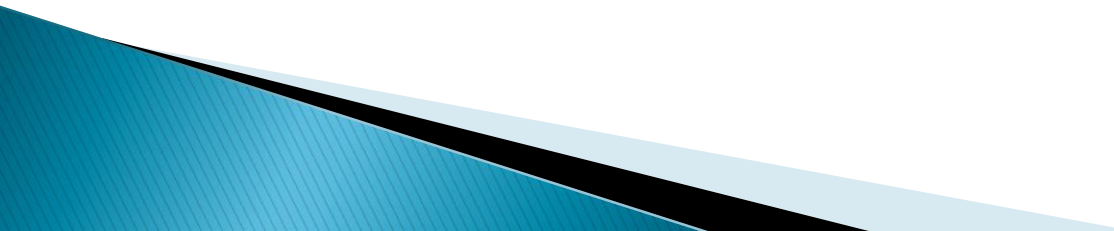
What is a Model?

“A model is an idealized representation – an abstract and simplified description – of a real world situation that is to be studied and/or analyzed.” They can be mental, iconic (like an architect’s model of a building), analog, or mathematical.

Source: *Encyclopedia of Operations Research and Management Science*



Agenda

- ▶ Overview of modeling and how models have been used
 - ▶ Case studies of how models have informed policy
 - ▶ Interactive session on what decision makers want from models
 - ▶ Overcoming skepticism, improving communication, and data science
 - ▶ Future directions
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Some Questions for the Day

For Decision Makers

- ▶ What important intractable or complex problems do you have that aren't being adequately addressed by current approaches?
- ▶ Can models help? What kind of model would be best suited for the purpose? How should you be involved in the process?
- ▶ Have models been readily accepted by scientists and decision makers? What factors increased their acceptability and usability?
- ▶ How can results best be communicated to you?

For Modelers

- ▶ What would you need to answer the questions?
- ▶ Do models need to be developed anew for each purpose or can we develop some more general models that can be applied to many questions?
- ▶ What human and financial resources will be required?
- ▶ How can models elucidate unexpected effects?
- ▶ How can modeling help us find the societal and health system ROI?
- ▶ How can modeling move from health care to health?
- ▶ Can it help develop a system to determine how and when to pay for the improvement in outcomes?

Also consider data issues: The data needed to inform models, capitalizing on available data, barriers to their use, and innovative ways to collect data

