Evaluating dietary policies with simulation models: overview and challenges

Insights from a systematic scoping review* and beyond

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Solution: Simulation modeling to analyze long-term health and economic impacts of dietary policies.

Simulation Modeling in Public Health

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- Analyze multiple uncertainties
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- Predict future trajectories and events

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Examples:

- Screening strategies
- Infectious diseases
- Health Tech. Assessment
- NCD prevention
- Health services research

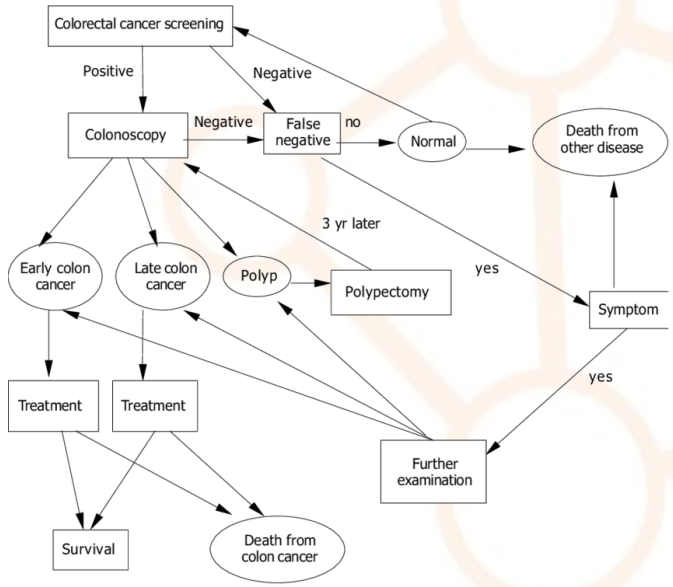

Figure from Park et al. (2005)

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3. **Markov microsimulation models**

   Individual risk factor trajectories and outcomes are calculated and aggregated to get population results

So what's the general idea?

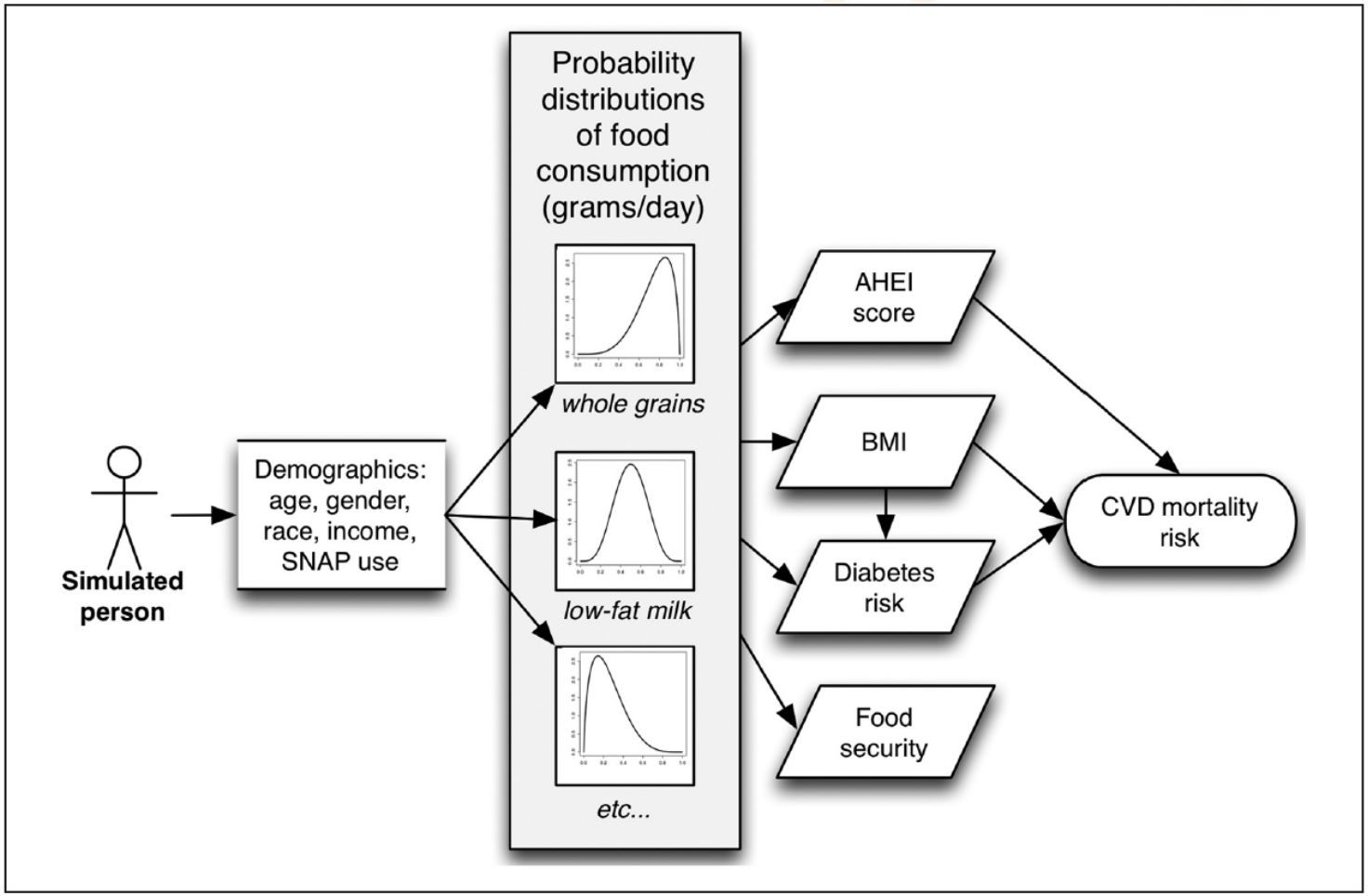
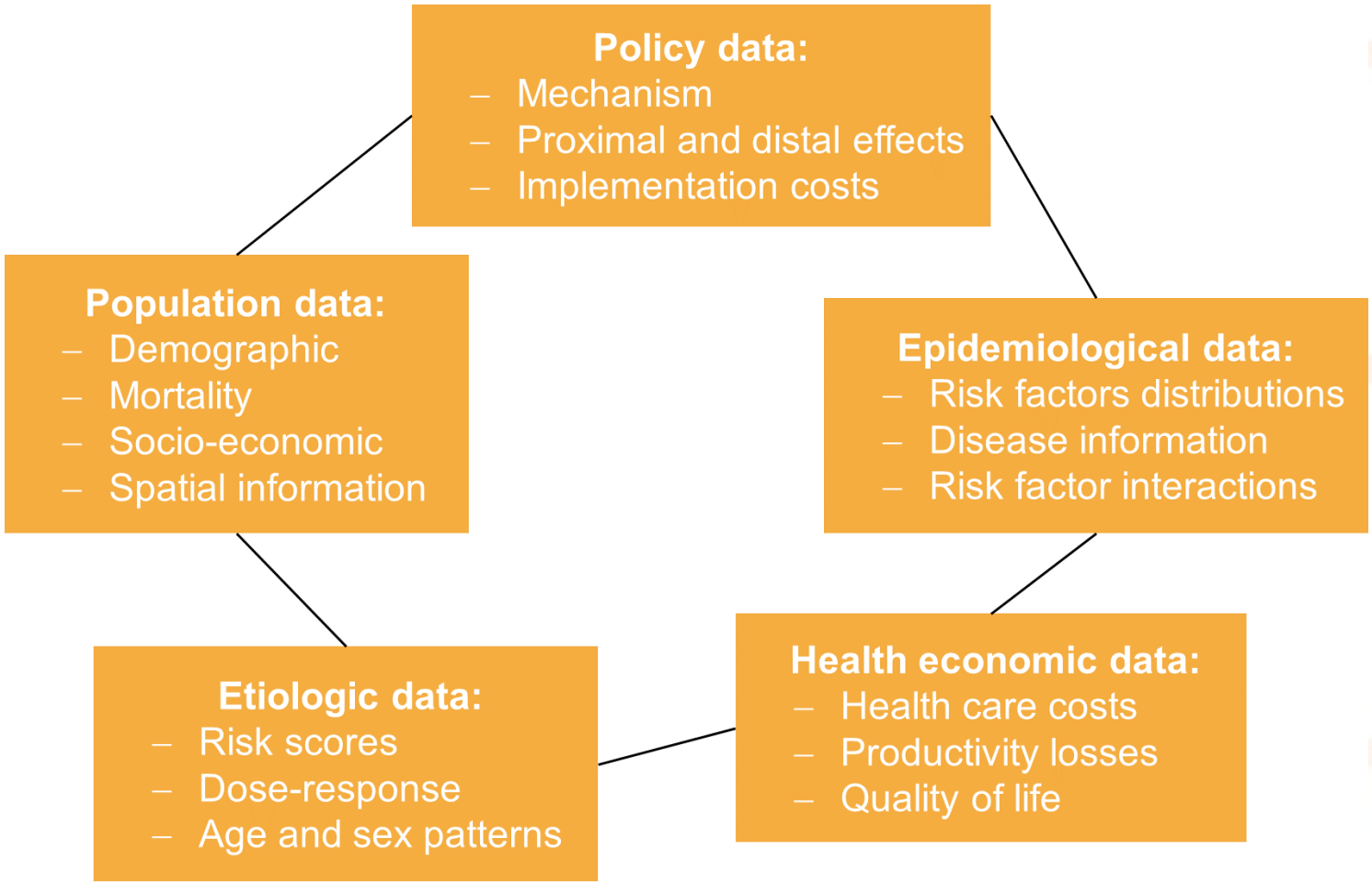


Figure from Basu et al. (2013)

Data requirements?



Related Challenges in the Evaluation of Dietary Policies

Specific challenges

Adequate understanding and reflection of **complex nutritional processes**

- Energy balance
- Dietary quality vs. quantity
- Macro- vs. micronutrients

Knowledge and assumptions about **causal policy effects**

- Heterogeneity in policy response (equity effects!)
- Multi-component interventions
- Compensation behaviour

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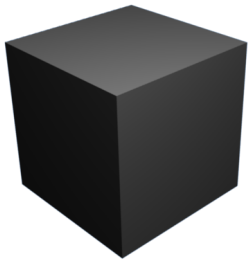


General challenges I

Validity is one of the biggest issues in simulation modeling in general

- Systematic biases in self-reported population dietary data?
- Policy and effect estimate assumptions?
- Unforeseen behavioral changes?

Transparency is often not implemented but crucial for trust in modeling results

- Reporting guidelines
- Access to code *(e.g. GitHub)*
- Extensive documentation

General challenges II

Inclusion of **non-health sector effects** of dietary policies

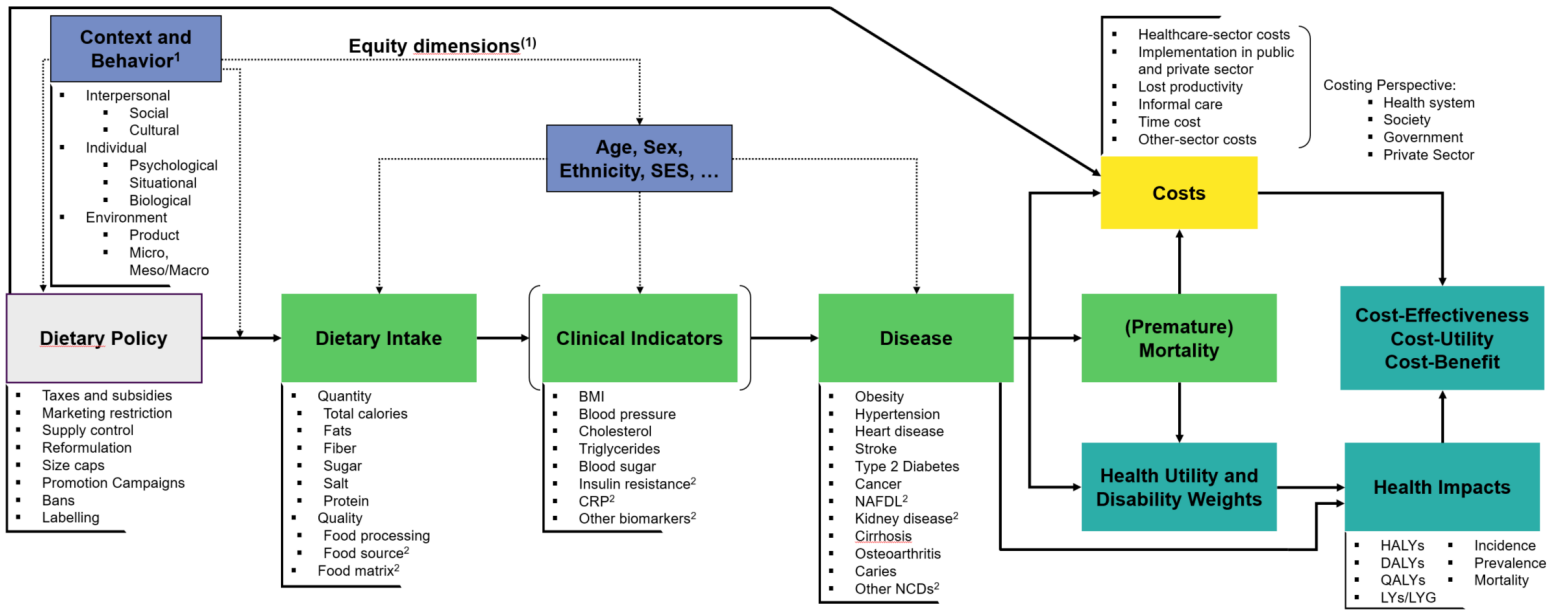
- Environmental consequences
- Productivity losses
- Systems thinking

Comparison of modeling approaches and assumptions

- Comparative modeling to assess structural uncertainty
- Complexity vs. usability of models in policy making
- Comparison with results from quasi-experimental studies

Putting everything into context

Which (health) aspects need to be considered in dietary policy simulation?



Logic model of dietary policy evaluation

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Thank you for your attention!

Questions?

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