Virtual Populations for Obesity Prevention

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Childhood Obesity is a Systems Problem
Individuals do not exist in isolation; they are all part of many different systems, such as social, political, environment, and economic systems.
Dangers of not using a systems approach

- Unsustainable solutions
- Band-aids rather than solutions
- Missing secondary and tertiary effects
- Unintended consequences
- Expended time, effort, and resources from trial and error

Need for systems science approach
Examples of complex systems

- Transportation systems
- Ecological systems
- Manufacturing systems
- Meteorological systems
- Financial systems
- Aerospace systems
Computational modeling can help understand and address complex systems

Not this type of modeling...

This type of modeling...

Laptop
Computer
Modeling is the bridge to translation

Modeling can and does occur at different time points along the research path from idea inception to policy implementation.

Considerations for study designs:
- Data availability
- Generalizability
- Granularity

- Generalizability
- Study population
- Expense
- Ethical and legal issues
A systems approach iteratively brings together various disciplines, stakeholders, and methods.

- Convene Multi-disciplinary Teams
- Create Mathematical and Computational Models to Represent System
- Elucidate Important Factors and Relationships
  - Guide and Prioritize Data Collection
  - Test Different Policies and Interventions
- Inform Stakeholders
- Design and Implement Interventions
- Update Models

Data and results
Virtual Population Obesity Prevention (VPOP): “SimCity” for Obesity Prevention
Example: Tax Credit for Urban Farmers

- Bill sponsored by Baltimore City, Councilman Pete Welch
- Provides 90% tax credit to owners of vacant lots if they will convert them to urban farms and sell fresh produce
- Provided testimony at public hearing
Questions and Discussion

Thank you!

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