Collaborative Modeling to Address Childhood Obesity

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Georgia State University | Andrew Young School of Policy Studies

Georgia Health Policy Center

Legislative Health Policy Certificate Program

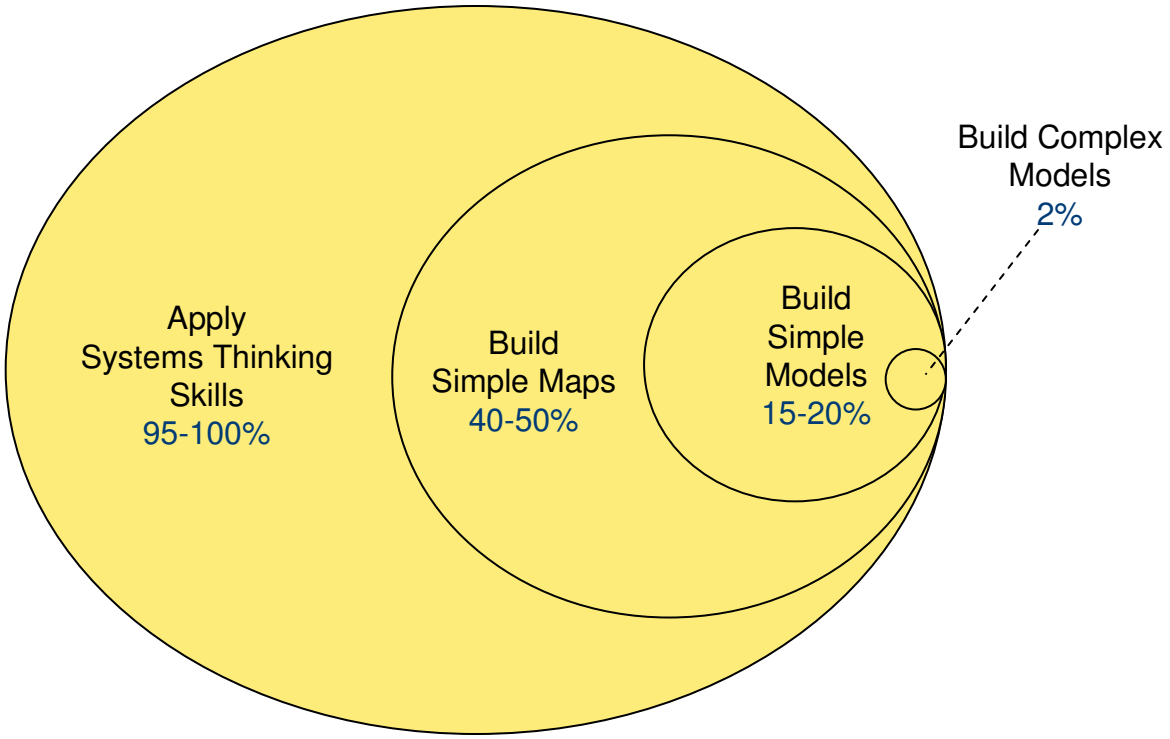
- Sponsored by the Georgia Health Policy Center
- Designed to prepare legislators and their staff to address challenging health issues
- Eight educational sessions over nine months
- Topics chosen based on priorities set by participants
- Those who complete a certain number of sessions receive Health Policy Certificate from Andrew Young School of Policy Studies

Legislative Health Policy Certificate Program

2008-2009 sessions include:

- Evaluating Health Policy: The Framework (May)
- The Impact of Health Status on the State (June)
- Financing Health Care: Challenges and Opportunities (August)
- Health Coverage and Access to Care (September)
- Financing Health Care: Provider Compensation (October)
- The Mental Health System (November)
- Interventions to Reduce Childhood Obesity (December)
- Addressing Georgia's Trauma Care Network (January)

A Range of Systems Thinking Skill Sets



A Six-Question Framework for Evaluating Policy

1. ***What*** **is the important (perhaps troublesome) trend related to health in Georgia? *What* is the shape of this trend over the past several years?**

2. ***Who*** **are the stakeholders concerned about the trend?**

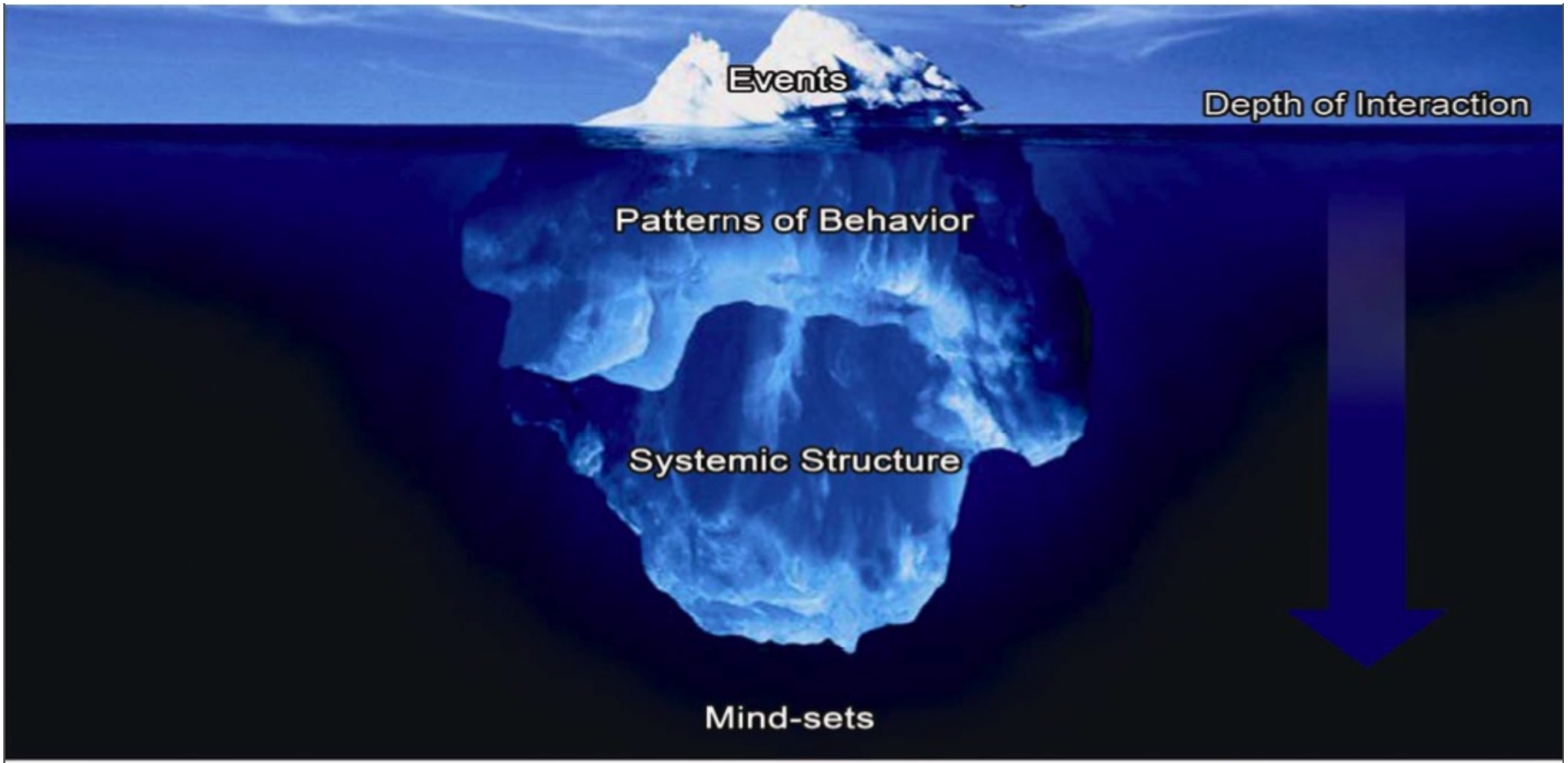
3. ***Why*** **this trend (what's the cause, what is responsible)?**

4. ***Where*** **is there *leverage* (some policy) to address the underlying cause of the trend?**

5. ***How*** **will it work? *How* will it play out *over time*? *How* might *unintended consequences* occur? *How* might the policy positively or negatively impact…**
   a) **health status?**
   b) **state health spending?**
   c) **health care system?**
   d) **health equity?**

6. ***When*** **would the policy create an impact on health status? When would you see an improvement in some other indicators (i.e., spending, services)?**

The Iceberg: A Metaphor for the Level at Which We Interact with a System



Source: Sustainability Institute, adapted from other versions from the organizational learning field

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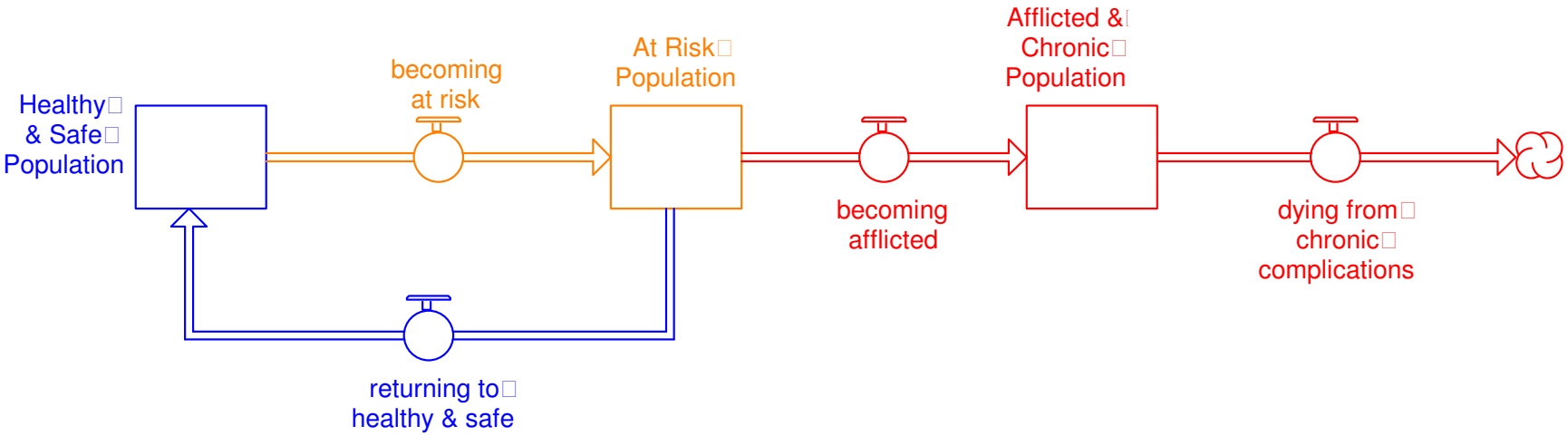
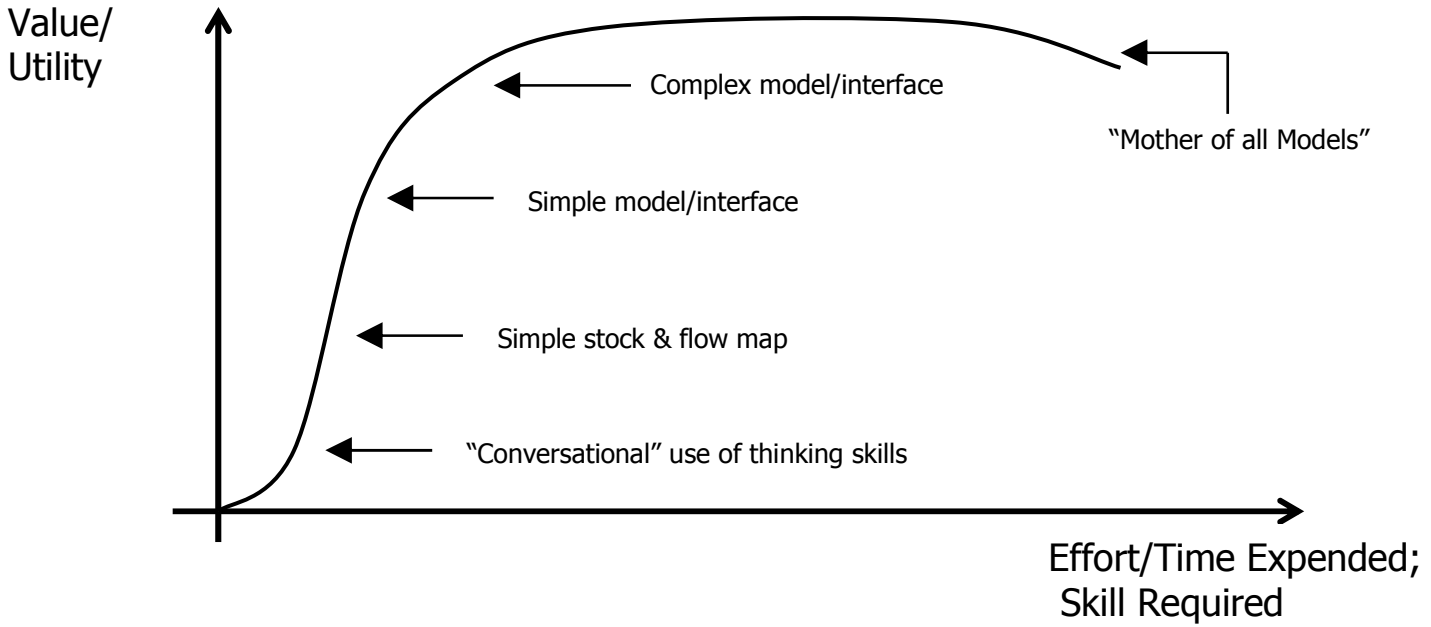
Stock and Flow Map



Applying Systems Thinking

The following curve is instructive regarding how to apply system dynamics



There's value to be added at many points along the curve!

Perspectives on Models
Voices from the Cynic to Mystic

"It's only a model!"

"The world is much more complex, so it's not useful."

"Our situation is *unique* so your model doesn't apply."

"I use models all the time to make decisions, they're just implicit and usually untested."

"I can use a model to make my assumptions explicit, share them, improve them, *and* test them."

"It will improve our ability to rigorously discuss the issues!"

"It can predict the future."

"If I can just get everything into the model, then it will be perfect."

"All models are wrong, some are useful!"
-Box & Deming

Research Objective

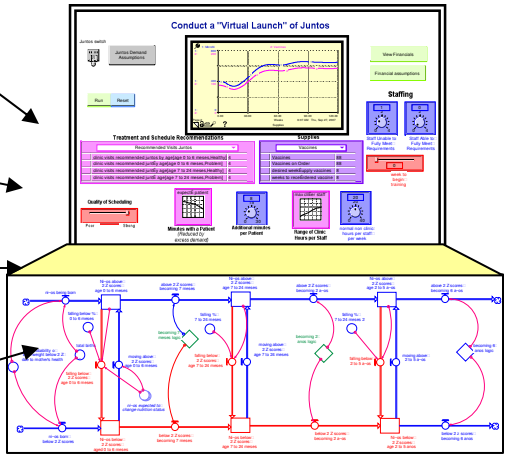
- To apply systems thinking methods to broaden health policy discussions regarding causes of, and solutions to, childhood obesity.

Collaborative Modeling

Experts provide input to model

- Legislators & Staff
- Nutritionists
- Epidemiologists
- Physical Activity Experts
- Economists

Model is used to rigorously tests assumptions

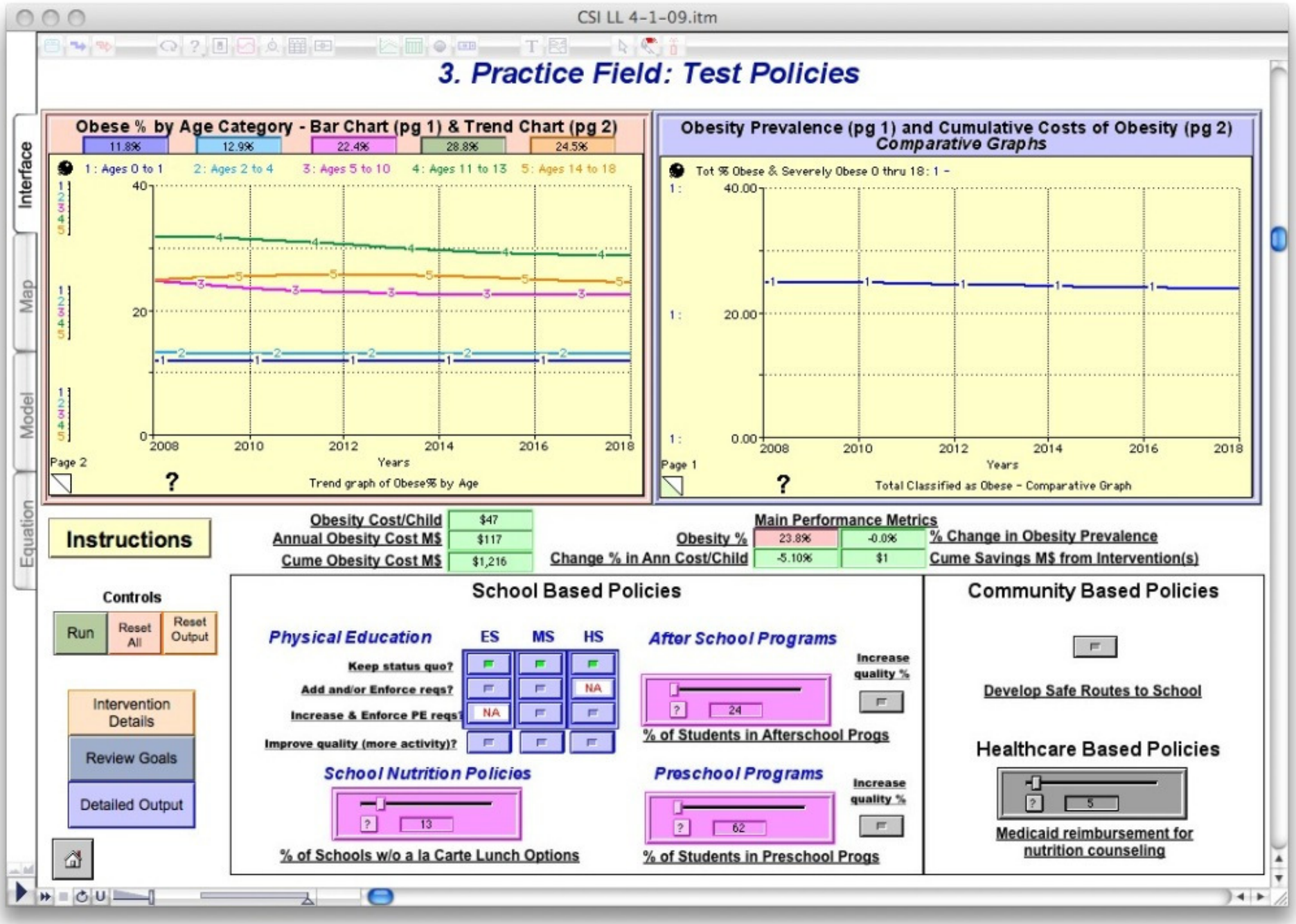


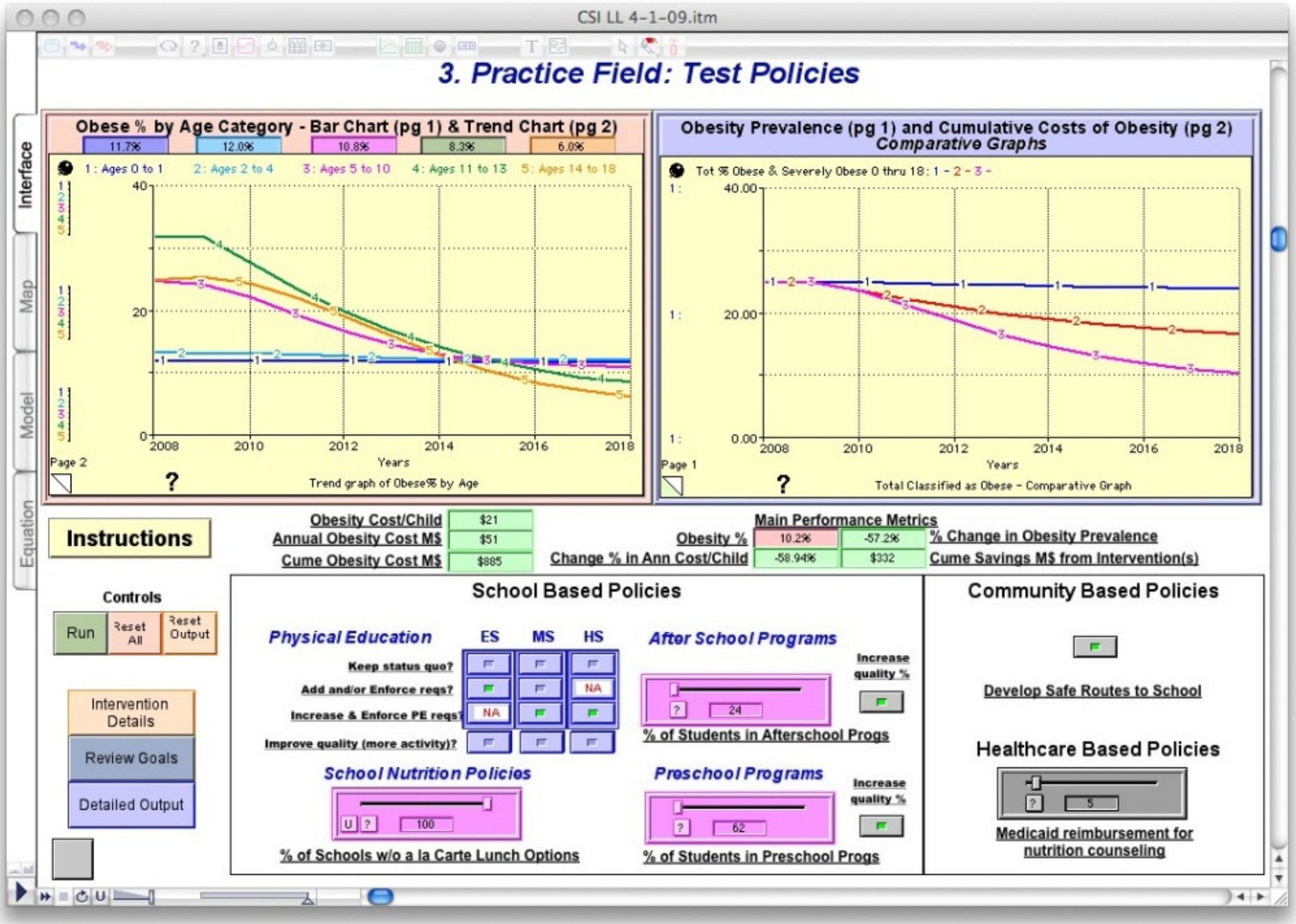
The Process

- Develop Purpose
- Build/Revise Model
- Test Model
- Add/Revise Policies
- Test Policies
- Engage Policymakers

Policy Options

- **Increase the proportion of school-aged children who walk to school.**
- **Reimburse for Medical Nutrition Therapy by Georgia Medicaid Care Management Organizations (CMOs).**
- **Impose limitations on a lá carte foods sold in public schools.**
- **Increase the number of minutes of Physical Education (PE) in school every week and improve the quality of PE activities.**
- **Increase the number of licensed preschool programs that incorporate a nutrition education and physical activity component into existing curriculum.**
- **Increase the number of elementary and middle school children in Georgia participating in after school programs that meet specified nutrition and activity standards.**


CSI LL 4-1-09.itm
3. Practice Field: Test Policies
Interface
Map
Model
Equation
Obese % by Age Category - Bar Chart (pg 1) & Trend Chart (pg 2)
11.8%
12.9%
22.4%
28.8%
24.5%
1 : Ages 0 to 1
2 : Ages 2 to 4
3 : Ages 5 to 10
4 : Ages 11 to 13
5 : Ages 14 to 18
40
20
0
2008
2010
2012
2014
2016
2018
Years
Page 2
Trend graph of Obese% by Age
Obesity Prevalence (pg 1) and Cumulative Costs of Obesity (pg 2)
Comparative Graphs
Tot % Obese & Severely Obese 0 thru 18: 1 -
40.00
20.00
0.00
Page 1
Total Classified as Obese - Comparative Graph
Instructions
Obesity Cost/Child
$47
Annual Obesity Cost M$
$117
Cume Obesity Cost M$
$1,216
Main Performance Metrics
Obesity %
23.8%
-0.0%
% Change in Obesity Prevalence
Change % in Ann Cost/Child
-5.10%
$1
Cume Savings M$ from Intervention(s)
Controls
Run
Reset All
Reset Output
Intervention Details
Review Goals
Detailed Output
School Based Policies
Physical Education
ES
MS
HS
Keep status quo?
Add and/or Enforce reqs?
Increase & Enforce PE reqs?
Improve quality (more activity)?
NA
After School Programs
Increase quality %
24
% of Students in Afterschool Progs
School Nutrition Policies
13
% of Schools w/o a la Carte Lunch Options
Preschool Programs
Increase quality %
62
% of Students in Preschool Progs
Community Based Policies
Develop Safe Routes to School
Healthcare Based Policies
5
Medicaid reimbursement for nutrition counseling


CSI LL 4-1-09.itm
3. Practice Field: Test Policies
Interface
Map
Model
Equation
Obese % by Age Category - Bar Chart (pg 1) & Trend Chart (pg 2)
11.7%
12.0%
10.8%
8.3%
6.0%
1 : Ages 0 to 1
2 : Ages 2 to 4
3 : Ages 5 to 10
4 : Ages 11 to 13
5 : Ages 14 to 18
40
20
0
2008
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Trend graph of Obese% by Age
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Comparative Graphs
Tot % Obese & Severely Obese 0 thru 18: 1 - 2 - 3 -
40.00
20.00
0.00
Page 1
Total Classified as Obese - Comparative Graph
Instructions
Obesity Cost/Child $21
Annual Obesity Cost M$ $51
Cume Obesity Cost M$ $885
Main Performance Metrics
Obesity % 10.2% -57.2% % Change in Obesity Prevalence
Change % in Ann Cost/Child -58.94% $332 Cume Savings M$ from Intervention(s)
Controls
Run
Reset All
Reset Output
Intervention Details
Review Goals
Detailed Output
School Based Policies
Physical Education
ES MS HS
Keep status quo?
Add and/or Enforce reqs?
Increase & Enforce PE reqs?
Improve quality (more activity)?
NA
After School Programs
Increase quality %
24
% of Students in Afterschool Progs
School Nutrition Policies
100
% of Schools w/o a la Carte Lunch Options
Preschool Programs
Increase quality %
62
% of Students in Preschool Progs
Community Based Policies
Develop Safe Routes to School
Healthcare Based Policies
5
Medicaid reimbursement for nutrition counseling

Conclusion & Implications

- This process brought together legislators, researchers, and other experts to develop a set of actionable policy options to address childhood obesity.
- Focus is not on finding "the answer" but on supporting a more rigorous conversation.

Acknowledgements

- Members of the Childhood Obesity Collaborative Systems Inquiry Team
  - Jeremy Betts, Georgia House of Representatives
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  - Fredrick Trowbridge, M.D., Consultant
  - Jesse Weathington, Georgia House of Representatives

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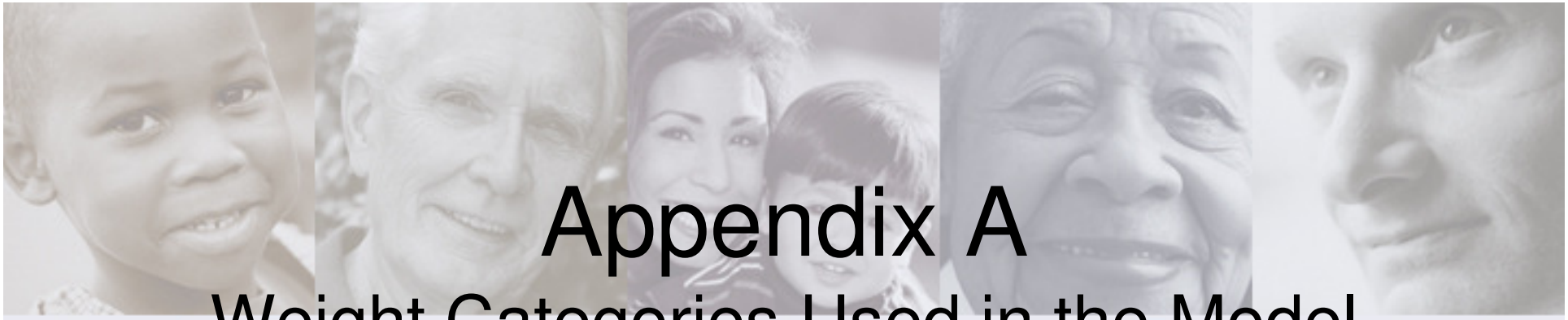

Appendix A
Weight Categories Used in the Model

Infants (0-23 months)

Data is from CDC/NHANES 2006 for Weight for Recumbent Length (WRL)

- Not overweight: WRL<85th percentile;
- Moderately overweight: WRL>85th percentile and <95th percentile;
- Obese: WRL>95th percentile and <99th percentile;
- Severely obese: WRL>99th percentile.

Youth (2-19 years)

Based on comparison of BMI to standard growth chart percentiles.

- Not overweight: BMI<{85th percentile or 25};
- Moderately overweight: BMI>{85th percentile and 25} and <{95th percentile or 30};
- Obese: BMI>{95th percentile and 30} and <{99th percentile or 35};
- Severely obese: BMI>{99th percentile and 35}.

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