

Developing an index of exposure to obesity-related community interventions and policies

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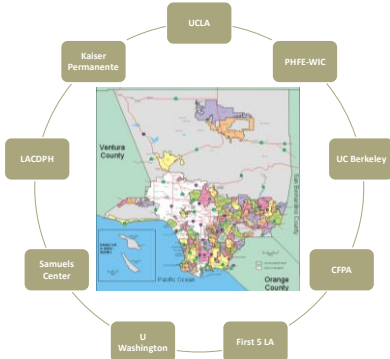
Presenter Disclosures

Michael Prelip

(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

"No relationships to disclose"

Collaborators



Background

- 1990s: Increasing focus on obesity throughout country
- Increased interest in the role of environmental factors on food and physical activity behaviors (major determinants of obesity) – 1990s
- Beginning of a series of place-based initiatives (e.g. HEAC, HEAL)

Background: LA County

- Obesity-related policies and community interventions (2002-2012) – examples:

National:

- New WIC food package mandate (2009)

State/Regional/Local:

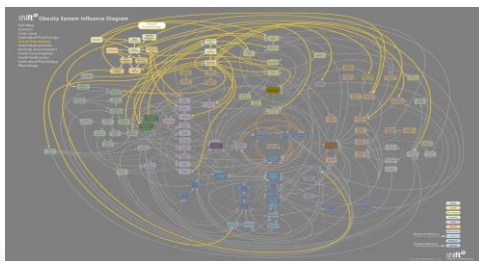
- HEAC (TCE); Community Benefits Program (KP)
- School wellness programs (California Project LEAN)
- School food policies (state, local)
- First 5 LA's programs to promote breastfeeding and healthy eating among preschool-aged children
- CDC's Community Transformation Grants

Study Aims

- Identify obesity-related interventions and policies in LA County since 2003
- Develop and validate community-level **"intervention dose index"**
- Estimate obesity trends in preschool-aged WIC participants
- Evaluate relationships between preschool-aged obesity trends and community-level intervention dose
 - Use multilevel modeling, causal inference methods
- Apply *systems science approach* (agent-based modeling) to explore dynamic interactions, feedback mechanisms, and efficacy of policies

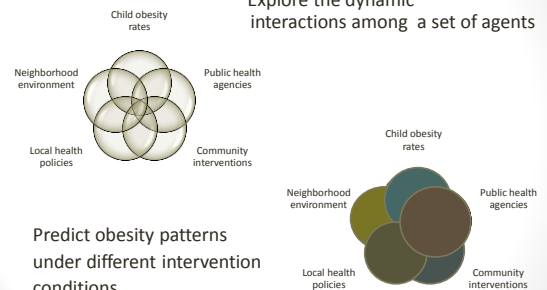
Emergence of Systems Science

- Public health issues are often complex, with multiple factors that interact with each other
- Systems science helps address complex issues by considering all of these interactions

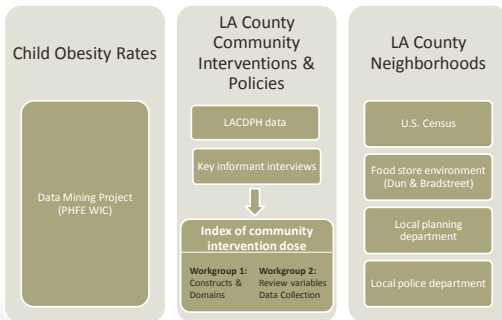


Systems science approach...

Explore the dynamic interactions among a set of agents



Data Sources (2002-2012)



How do we find the intervention dose?

- Much of what has been described in terms of dose is related to interventions more generally focused on individuals
- Dose delivered and dose received
- Exposure (dose delivered in clinical trials)
- Reach (dose delivered in community trials)
- Exposure = dose in communication world

Goal: Develop community level intervention dose/intervention dose index

- **Population dose** is the estimated community level change in the desired outcome expected to result from a given community change strategy
Reach X Strength
- –Reach = Penetration = # exposed/# in population
- –Strength = effect size

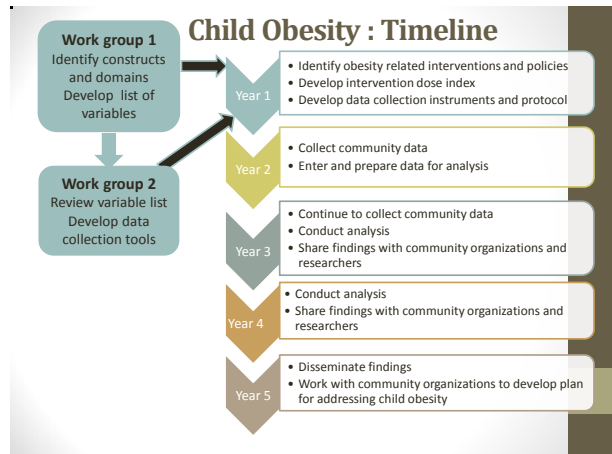
Strength of Tobacco Control Index (SoTC)

- Created to measure program effects of the American Stop Smoking Intervention Study (ASSIST)
- Serve as overall measure of tobacco control intensity at state level
- Comprised of three constructs (resources, capacity, and efforts) each comprised of multiple domains

SoTC Development

1. **Identified potential index components** related to tobacco programming through literature review
2. **Expert panel** convened to determine components
3. **Identified 27 domains** related to Resources, Capacity and Efforts
4. **Rated each domain** (Parsimony, Scientific Support, Feasibility)
5. Examine variables, develop instruments, collect data
 - Work divided between two Workgroups

Results: Per capita adult cigarette consumption levels were correlated with both the SoTC index and its capacity construct



Workgroup 1's Tasks

- **Identify potential key domains and constructs** related to obesity and preschool children through literature
- **Convene expert panel** (Workgroup 1) to further determine key domains and constructs
- **Consult further experts** to further verify domains through key informant interviews
- **Analyze data from interviews** to determine suggested domains for Workgroup 2
 - (in Tobacco control index they selected final domains based on parsimony, scientific support, and feasibility)

Quick Snapshot of Progress

- Ongoing meetings since December (both in-person and telephonic)
- Ongoing discussions about domains and concepts
- Draft conceptual model developed
- Draft key informant interview guide developed
- Key informant interview guide pretested
- Key informant interview guide finalized
- Key informants identified
- IRB Approval for key informant interviews
- Recruit key informants
- Conduct key informant interviews to verify conceptual model
- Analyze data from KI interviews
- Workgroup 1 developed a "final" list of domains and constructs for workgroup 2

WG1: Framework for Domains and Constructs to Develop Intervention Dose Index

PHYSICAL RESOURCES	SOCIAL RESOURCES	CAPACITY DEVELOPMENT	PROGRAMS AND POLICIES	CONTEXT
<ul style="list-style-type: none"> Recreation (e.g., parks, playgrounds, rec centers, etc.) Places where food is sold (e.g., grocery stores, convenience stores, mobile food vendors, etc.) Schools and preschools Child care facilities Health care facilities 	<ul style="list-style-type: none"> CBOs: Community Based Organizations FBOs: Faith Based Organizations Social Networks Local leadership Program staff Funding Engaged community Members 	<ul style="list-style-type: none"> Coordination of activities with other organizations Technical assistance to groups and individuals Training 	<ul style="list-style-type: none"> Public policies (e.g., nutrition, physical activity, health care, etc.) Laws (e.g. soda tax) Organizational policies (e.g., wellness, health care, workplace policies, work-family policies, etc.) Clinical programs Health promotion programs (e.g., promotion, education, support, etc.) Social Marketing and Health Communication School policies Economic incentives 	<ul style="list-style-type: none"> Neighborhood characteristics (e.g., crime rates, walkability, poverty rates, SES, age, race, # of new immigrants, languages spoken, housing/crowding, family size, etc.) Competing priorities (e.g., money) Targeted marketing (e.g., to kids)

Key Informant Interview Guide

1. Screening Questions

- What experience do you have working on issues related to obesity, diet, nutrition, physical activity, or child well-being in general?
- Which populations and communities have you worked with in Los Angeles County?

2. Questions about the how the five domains have been classified.

- What do you think about these broad classifications?

3. Specific questions on the constructs

- Are they appropriate and relevant?
- Are there other constructs you would include?
- How important are these constructs in order of their relevance to childhood obesity? Which construct is the most important and which is the least important?
- Where or from whom do you suggest we can get information or data about these constructs?

Key Informants

Organization	Brief Description
Food Policy Advocates	<ul style="list-style-type: none"> Testing
Los Angeles County Department of Public Health-Nutrition and Physical Activity Program	<ul style="list-style-type: none"> Testing
California Restaurant Association	<ul style="list-style-type: none"> Large, state, food environment
Kaiser Permanente	<ul style="list-style-type: none"> Large, national, local grantees
The Endowment	<ul style="list-style-type: none"> Large, state, local grantees
LAC Dept of Parks and Recreation	<ul style="list-style-type: none"> Large, local chapters, built environment
LA City or LA County Planning Dept	<ul style="list-style-type: none"> Medium, local, built environment
YMCA Metropolitan LA	<ul style="list-style-type: none"> Medium, local chapters, physical activity
Head Start	<ul style="list-style-type: none"> Medium, local chapters, school environment
WIC	<ul style="list-style-type: none"> Medium, local chapters, nutrition
Community Clinic Association of	<ul style="list-style-type: none"> Medium, local, local health services
Community Health Councils, Inc.	<ul style="list-style-type: none"> Medium, local, community health programs
Promotoras de Salud (through Esperanza Community Housing Corporation)	<ul style="list-style-type: none"> Small, local, community health programs

Next Steps: Workgroup 2

- Workgroup 2
 - Review work of Workgroup 1
 - Develop data collection instruments and interview guide
 - Develop criteria for rating measures
 - Domains (Key indicators)
 - Constructs (broad range of interventions)
 - Measures(to quantify dose)

Thank you

- Questions?
- For more about our system science approach come see our poster presentation
- **Tuesday, November 18, 2014: 2:30 PM - 3:30 PM**
 - [Applying a Novel Systems Science Approach to Understand Child Obesity Trends in Los Angeles County, 2002-2011](#)
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 - #310112