

Evidence Review: Reporting Guidelines to Enhance Evidence Based- Practice

Melissa Swank, MPH



Our Team



- ▶ Laura Brennan, Transtria LLC (PI)
- ▶ Ross Brownson, Washington University (Co-PI)
- ▶ Tracy Orleans, RWJF
- ▶ Melissa Swank, Transtria LLC (Project Coordinator)
- ▶ Jessica Stachecki, Transtria LLC (Project Manager)
- ▶ Current and past staff: Katherine Brown, Sarah Castro, Julie Claus, Ashley Crain, Hester Fass, Carl Filler, Whitney Henley, Courtney Jones, Allison Kemner, Tim McNeil, Andrea Pipito, Cindy Thomas



- ▶ Background on the Evidence Review Project
- ▶ Methods
- ▶ Evidence Findings
 - Reporting
 - Indicators
- ▶ Implications for the field

Evidence Base

The most effective, feasible, and sustainable strategies



Practitioners and decision-makers

Reach X **E**ffectiveness X **A**doption X **I**mplementation X **M**aintenance

=

**Public
health
impact**



Glasgow RE, Vogt TM, Boles SM. Evaluating the public health impact of health promotion interventions: The RE-AIM Framework. *Am J Public Health*. 1999;89: 1322-7.

Green LW. Making research relevant: if it is an evidence-based practice, where's the practice-based evidence? *Family Practice* 2008; 1-5.



Aims of the Evidence Review

1. To bridge research/evaluation and policy/practice efforts associated with *environmental and policy* nutrition and physical activity intervention strategies for childhood obesity prevention
1. To accelerate the translation of replicable, *evidence-based* environment and policy interventions that will lead to leveling and eventually reducing rates of childhood obesity, especially in lower income and racial/ethnic populations.

Evidence Typology

Level	Description	Sources	Examples	Indicators
Effective (1 st Tier)	Authoritative, rigorous systematic reviews (2+ studies)	Published reviews by an independent review group	Community Guide Cochrane reviews	Reach Effectiveness Design Execution
Effective (2 nd Tier)	High quality studies with peer review (1+ studies)	Published articles Technical reports Books or chapters	Journal articles Government reports	Reach Effectiveness Design Execution
Promising	Intervention evaluations and descriptive studies	Unpublished dissertations/ theses Reports	Case studies Health impact assessments	Reach Effectiveness Design Execution
Emerging	Practice-based summaries or evaluation works in progress	Websites Demonstration projects	Policy briefs Professional standards of practice	Reach Effectiveness

Review Cycle

INPUT
Identification and collection of resources (inclusion/exclusion criteria)

Remove

Building the Evidence for
Environment & Policy Change

EFFECTIVE (1st TIER) STRATEGIES

OUTPUT
Implementation guides

EFFECTIVE (2nd TIER) STRATEGIES

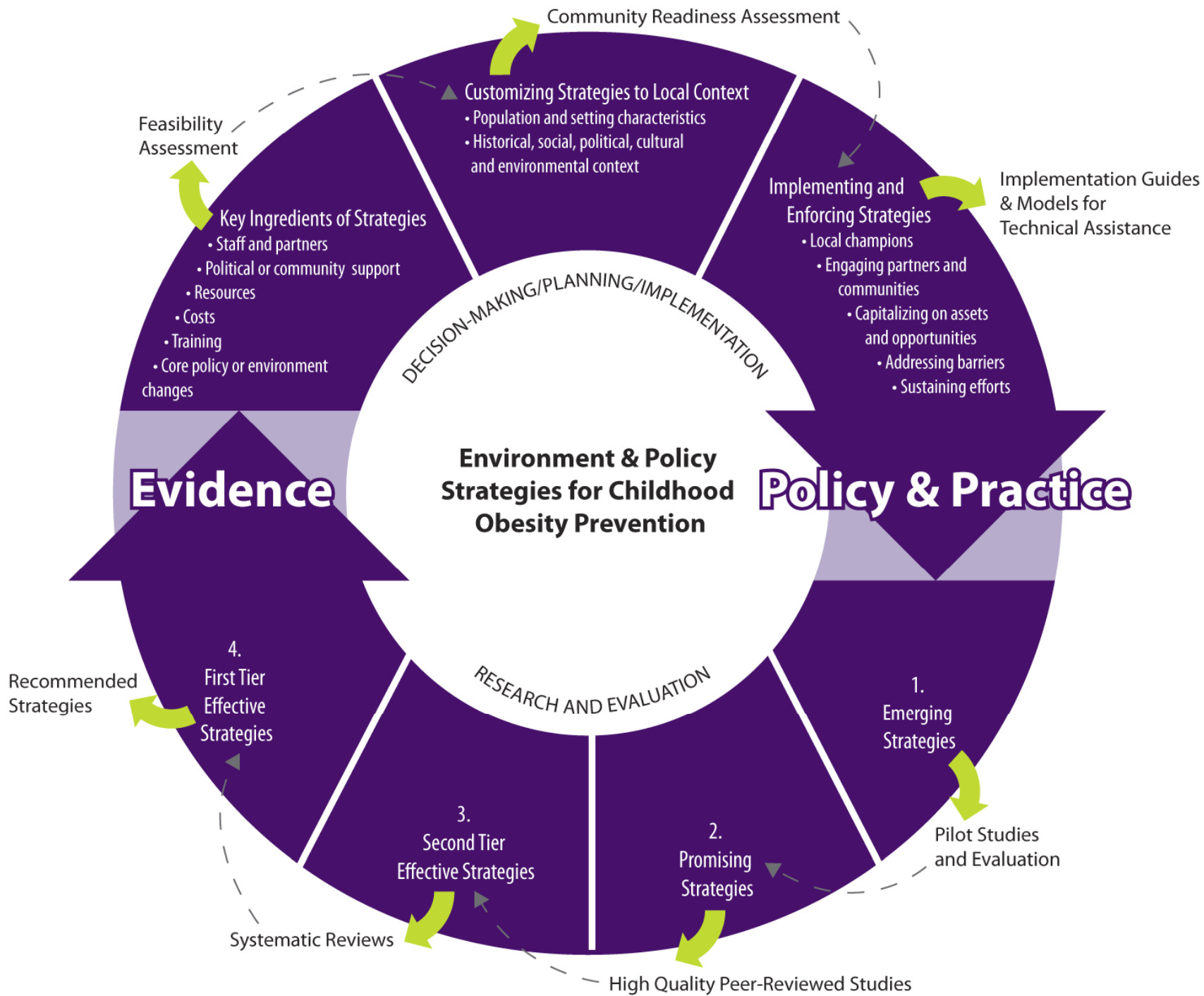
OUTPUT
Systematic review
Evidence gaps

PROMISING STRATEGIES

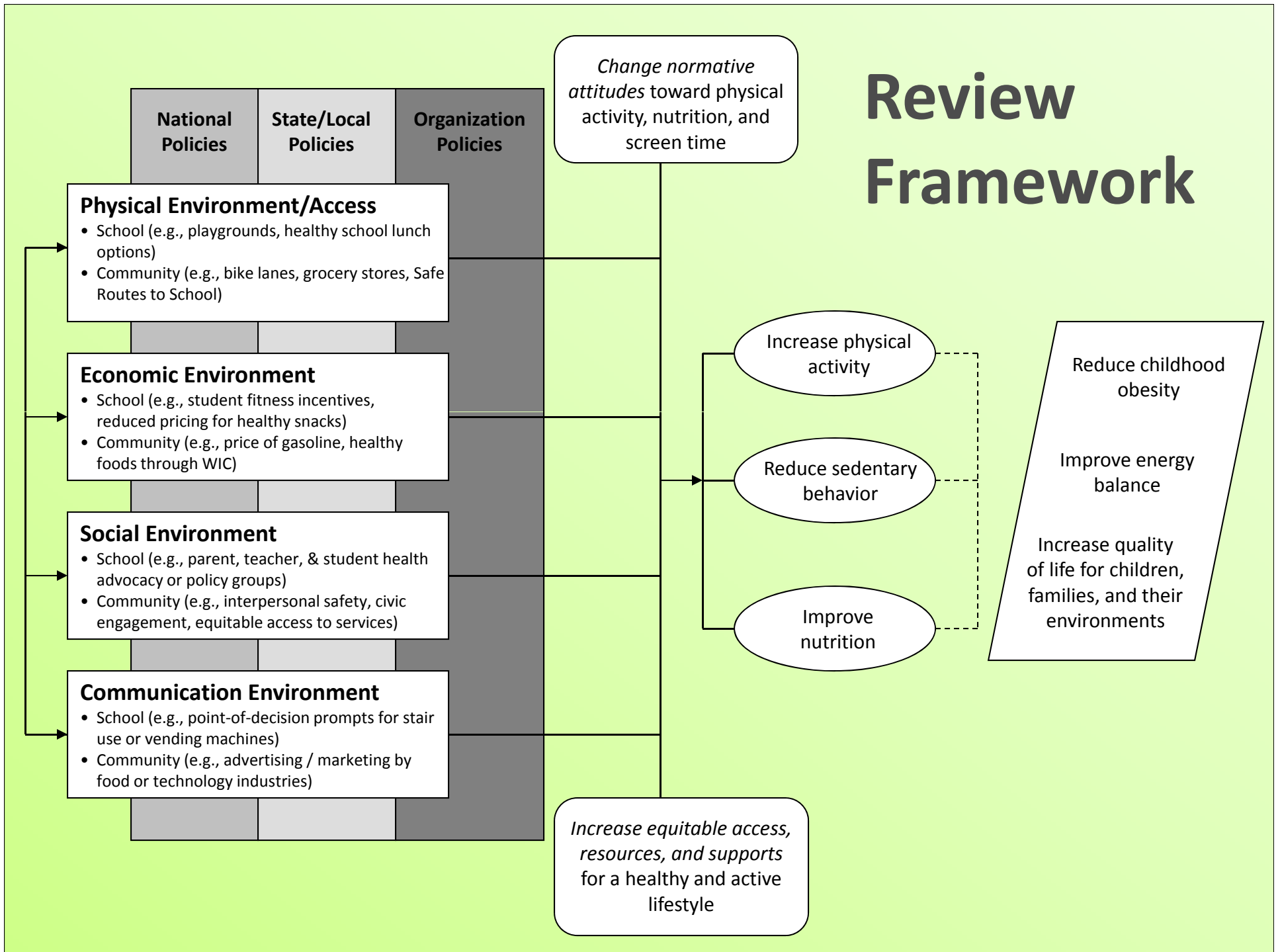
OUTPUT
Evaluation,
feasibility & impact
studies

EMERGING STRATEGIES

OUTPUT
Pilot studies



Review Framework



Reviewed over 2,000 peer-reviewed articles

Applied inclusion/exclusion criteria

Analyzed 600 articles (396 study groupings)

Physical Activity Policy and Environment Strategy Ratings

Strategies	Community Guide Rating	1 st Tier Effective	2 nd Tier Effective	Promising	Emerging
Community Design	Recommended (Community-scale urban design and land use policies)	X			
School Physical Activity & Environment	Recommended (Enhanced school-based physical education)	X			
Street Design	Recommended (Street-scale urban design and land use policies)	X			
Availability of Parks and Recreation Facilities	Recommended (Creation of or enhanced access to places for physical activity combined with informational outreach activities)	X			
Point of Decision Prompts	Recommended (Point-of-decision prompts to encourage use of stairs)	X			
Transportation	Insufficient Evidence (Transportation and travel policies and practices)		X		
Childcare Physical Activity			X		
Safe Routes to School				X	
Traffic Safety				X	
Interpersonal Safety				X	
Screen Time	Policy and environmental strategies are not reviewed				X
School Wellness					X

Results

EFFECTIVENESS (n = 588 independent studies, 396 independent interventions or observations – study groupings)			
Indicator	Operational definition		Proportion
	Types	Subtypes	
Study design	Intervention evaluation	TOTAL	36%
		Group randomized trial	14%
		Non-randomized trial	9%
		Before and after study	9%
		Randomized trial	<1%
		Prospective cohort study	1%
		Retrospective cohort study	<1%
		Time series study	2%
	Associational study	TOTAL	62%
		Cross-sectional study	61%
		Prospective cross-sectional	<1%
		Retrospective cross-sectional	1%
	Descriptive study	TOTAL	2%
Intervention duration	High - intervention > 1 year		15%
	Moderate = intervention 6-12 months		10%
	Low = intervention < 6 months		9%
	Intervention duration not reported		5%
	No intervention		61%
Outcomes (n = 525 across study groupings)	Overweight and obesity		25%
	Physical activity		45%
	Nutrition		18%
	Sedentary behaviors		2%
	Short-term proxies (e.g., purchasing behavior, bikeway use, behavioral intention)		10%

Effectiveness



- Evaluation or research design
- Quality of execution and internal validity
 - Sampling
 - Power
 - Measurement: IVs, DVs
 - Effects
 - Subgroup differences
 - Attrition
- Intervention duration



Somerville, MA

EFFECTIVENESS (n = 588 independent studies, 396 independent interventions or observations – study groupings)			
Indicator	Operational definition		Proportion
	Types	Subtypes	
Effectiveness ratings (n = 263 across study groupings)*	Effective = intervention evaluation + intervention \geq 6 months + majority of positive outcomes	TOTAL	56%
		Overweight and obesity	18%
		Physical activity	21%
		Nutrition	16%
	Somewhat effective = intervention evaluation + intervention < 6 months + majority positive outcomes	TOTAL	14%
		Overweight and obesity	2%
		Physical activity	6%
		Nutrition	5%
	Not effective = intervention evaluation + majority neutral or negative outcomes	TOTAL	30%
		Overweight and obesity	16%
		Physical activity	5%
		Nutrition	9%
Association ratings (n = 598 across study groupings)*	Positive association = associational study + a majority of positive outcomes	TOTAL	77%
		Overweight and obesity	17%
		Physical activity	54%
		Nutrition	14%
	No association = associational study + neutral outcomes	TOTAL	16%
		Overweight and obesity	4%
		Physical activity	10%
		Nutrition	<2%
	Negative association = associational study + a majority of negative outcomes	TOTAL	7%
		Overweight and obesity	2%
		Physical activity	5%
		Nutrition	<1%

Potential Population Reach

- ▶ Participation
- ▶ Exposure
- ▶ Representativeness



Central Valley, CA



Somerville, MA

IMPACT (n = 142 independent interventions – study groupings)		
Indicator	Operational definition	Proportion
Participation	High \geq 75% of the intervention population	6%
	Low < 75% of the intervention population	3%
	Participation not reported	91%
Exposure	High = entire intervention population with daily/weekly exposure	67%
	Low = portion of the population and/or less than daily/weekly exposure	18%
	Exposure unable to be rated due to insufficient reporting of data	15%
High-risk population	High \geq 40% racial/ethnic or lower-income populations in the intervention population	37%
	Low < 40% racial/ethnic or lower-income populations in the intervention population	9%
	High-risk population data not reported	54%
Representativeness	High = no significant differences between the intervention (exposed) population and the target (intended) population	50%
	Low = significant differences between the intervention (exposed) population and the target (intended) population	7%
	Representativeness unable to be rated due to insufficient reporting of data	43%
Population reach	High = high participation or exposure and high representativeness	43%
	Low = low participation and exposure or low representativeness	11%
	Population reach unable to be rated due to insufficient reporting of data	46%
High-risk population reach	High = high for high-risk population and high representativeness	19%
	Low = low for high-risk population or low representativeness	6%
	High-risk population reach unable to be rated due to insufficient reporting of data	75%

Implementation

Implementation: Three Parts



◀ Part 1:

- Multi-component, complex, & simple strategies

◀ Part 2:

- Design and Plan
- Construction

◀ Part 3:

- Quality
- Fidelity



Central Valley, CA



Somerville, MA

Maintenance/Sustainability

- ◀ Resources leveraged
- ◀ Enforcement
- ◀ Improvements

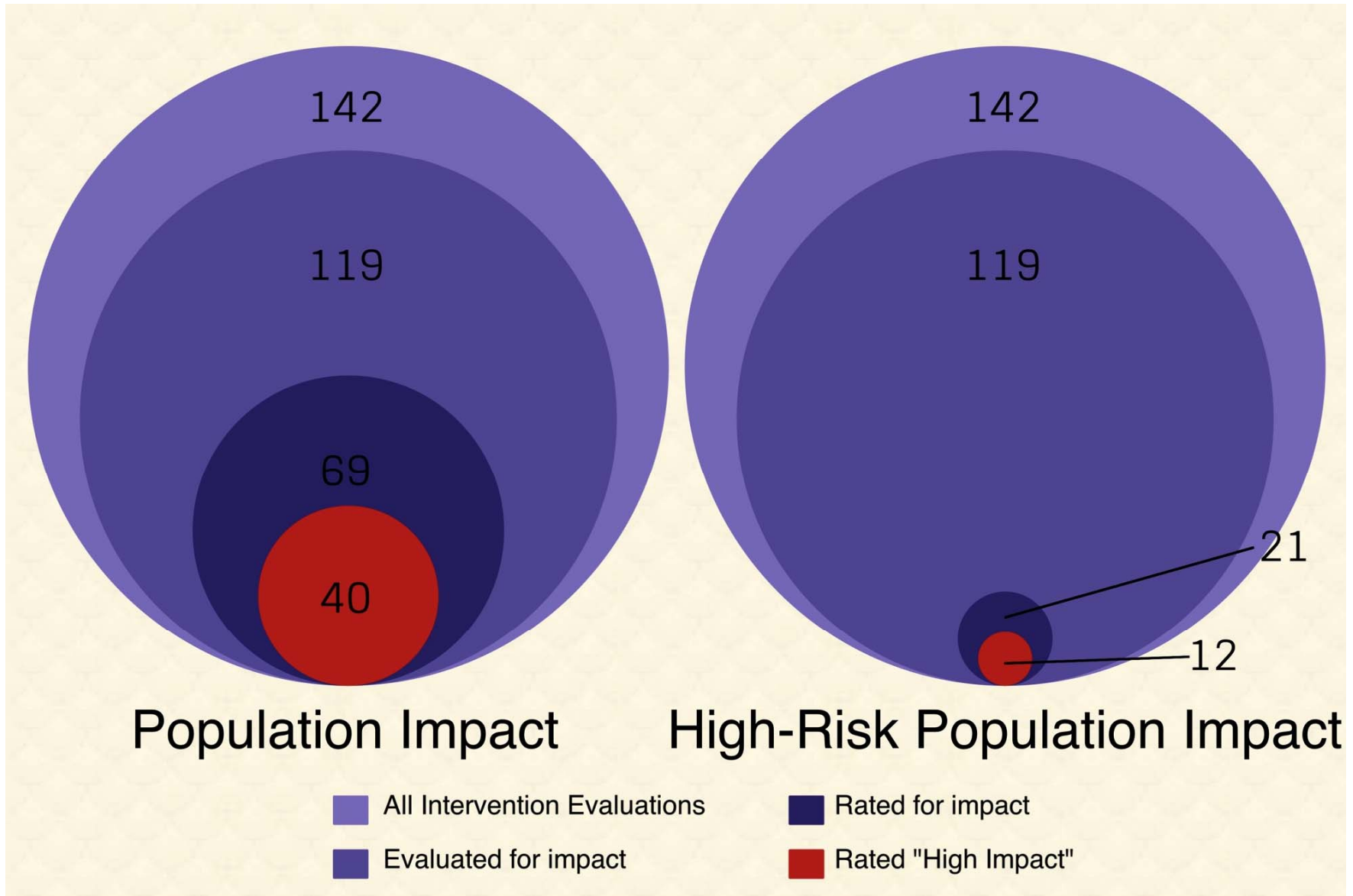


Central Valley, CA



Somerville, MA

Impact Ratings



Physical Activity Strategy Indicators

Strategy	# of Indicators (by type of study)	
	Associational	Intervention
School Physical Activity and Environment Policies	6	5
Child Care Physical Activity Policies	2	3
Safe Routes to Schools	5	5
Screen Time	0	1
Neighborhood Safety—Interpersonal	4	0
Neighborhood Safety—Traffic	6	1
Point of Decision Prompts for Physical Activity	5	0
Street Design	7	2
Community Design	7	2
Transportation Policies	2	1
Neighborhood Availability of Parks, Playgrounds, Trails, and Recreation Centers	4	3
School Wellness (Physical Activity) Policies	1	1

Associations: 90 studies with a total of 283 associations (positive (n=226), negative (n=18), and not associated (n=39)).

*Facility use, trail use, and park use were included as short-term proxies for physical activity. Other short-term outcomes are not reflected in the peer-reviewed literature.

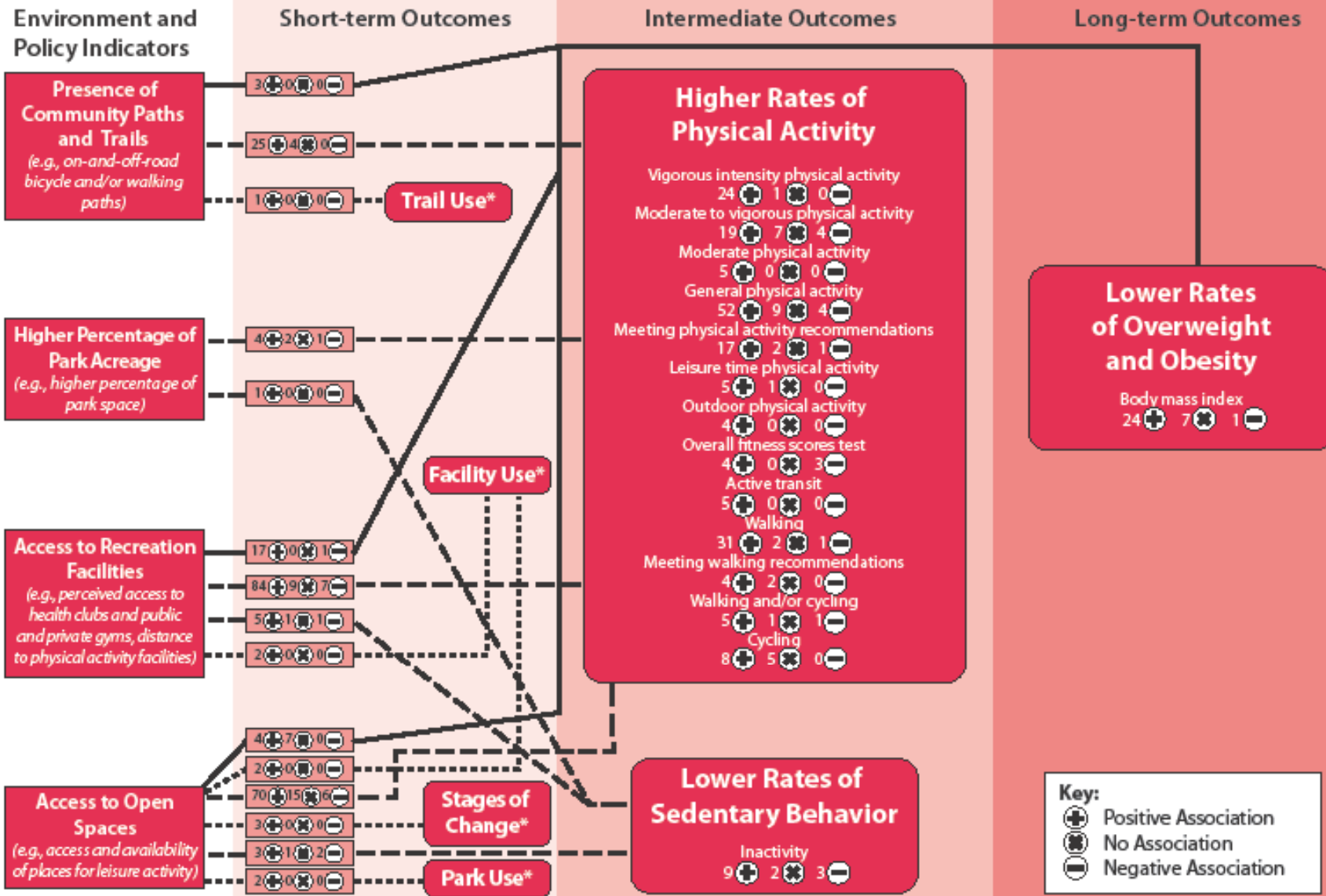


Figure 17B: Neighborhood Availability of Parks, Playgrounds, Trails, and Recreation Centers

Interventions: 7 studies with a total of 40 effects (net positive (n=28), net negative (n=6), and neutral (n=6)). Multiple study designs were reflected in the literature including before and after studies and group randomized and non-randomized trials. Two studies were conducted with lower-income participants, one of these was conducted with African American participants.
 *Trail use and park use were included as a short-term proxy for physical activity. Other short-term outcomes are not reflected in the peer-reviewed literature.

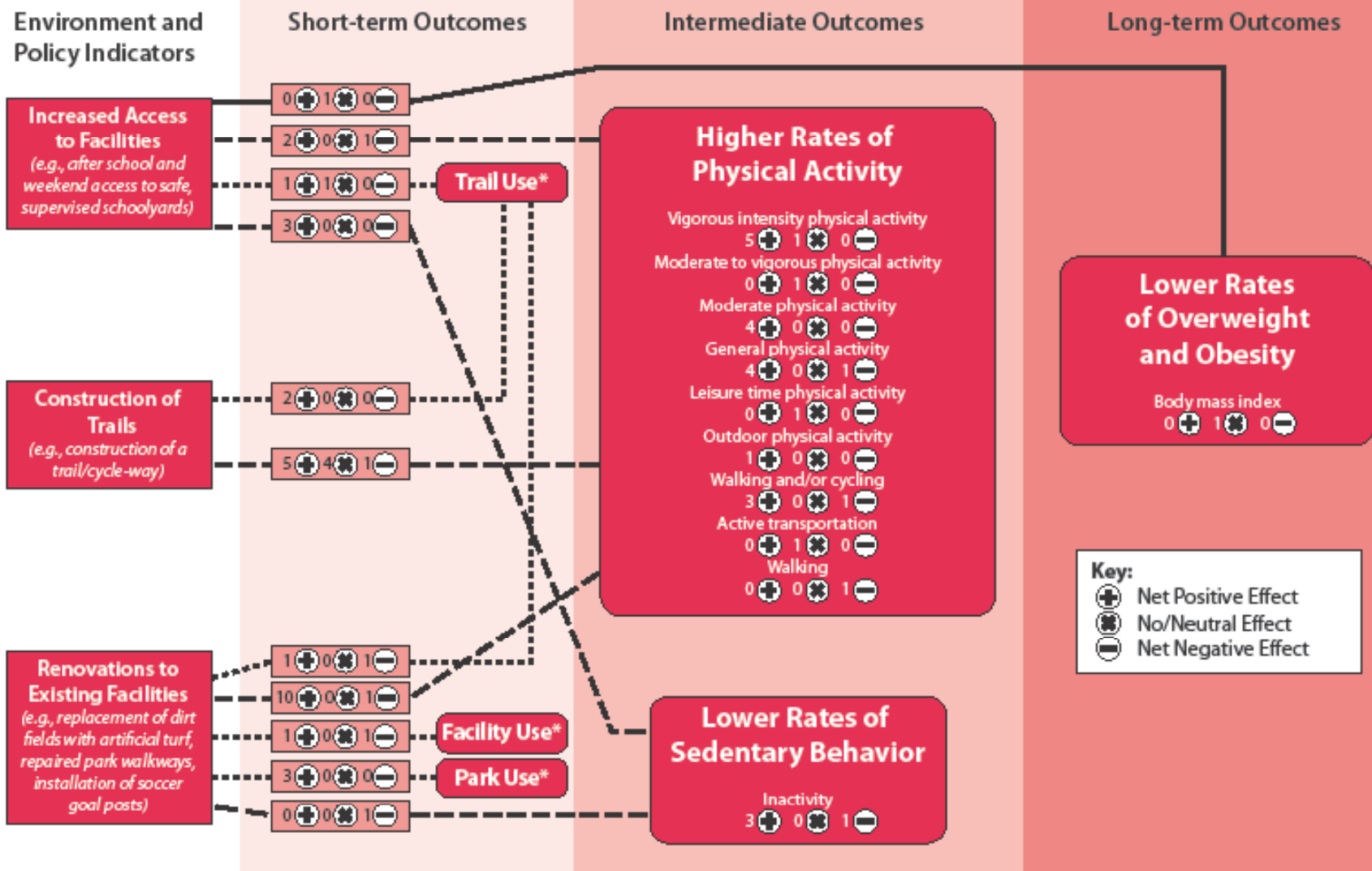


Figure 17A: Neighborhood Availability of Parks, Playgrounds, Trails, and Recreation Centers

Indicators and Measures of Progress



- ▶ Standardize indicators for measuring progress
- ▶ Work with peer-reviewed publications to enhance reporting of key measures
 - Adoption
 - Implementation
 - Maintenance/Sustainability

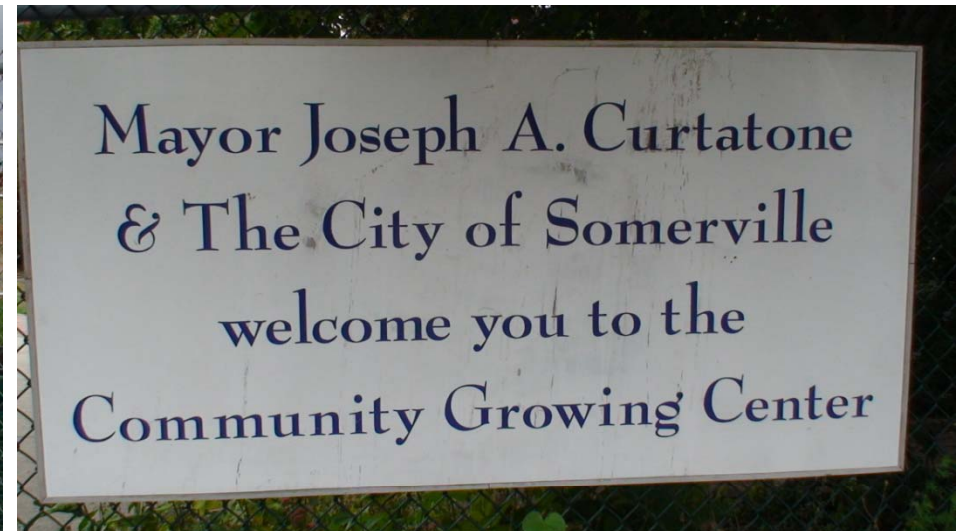
Improve Reporting of Key Measures

◀ E.g., Adoption

- Resources
- Support
- Opposition



Central Valley, CA



Somerville, MA

Next Steps



- ▶ Use indicators to standardize the field
- ▶ Facilitate consistent reporting
- ▶ Continue with second phase of evidence review
 - Updating existing strategies
 - Addition of two new strategies
- ▶ Establish an interactive portal on Community Commons

Stay tuned!

Visit www.transtria.com/evidence

Melissa Swank, MPH

mswank@transtria.com

Laura Brennan, PhD, MPH

laura@transtria.com

Allison Kemner, MPH

akemner@transtria.com



6514 Lansdowne Avenue
St. Louis, Missouri 63109

phone (314) 352-8800
fax (314) 352-8909
www.transtria.com



◀ Additional slides not presented

Nutrition Policy and Environment Strategy Ratings

Strategies	Community Guide Rating	1 st Tier Effective	2 nd Tier Effective	Promising	Emerging
Childcare Food and Beverage Policies			X		
School Food and Beverage Policies	Insufficient Evidence (School-based programs promoting nutrition and physical activity)		X		
Food Pricing			X		
Government Nutrition Assistance			X		
School Wellness Policies				X	
School and Community Gardens				X	
Menu Labeling					X
Neighborhood Availability of Food Stores					X
Neighborhood Availability of Restaurants					X
Neighborhood Availability of Food Stores and Restaurants					X
Provision of Free or Subscription Fruits and Vegetables at School					X
Provision of Drinking Water at School					X
Point of Purchase Prompts					X

Study Description	Measures & Outcomes	Effect Size or % Change	Effectiveness	Maintenance & Representativeness
United States (Parks)				
<p>Author Tester, Baker (2009)</p> <p>California</p> <p>Design Intervention Evaluation</p> <p>Before and after study</p> <p>Duration High</p> <p>1 year</p>	<p>Measures <i>Accessibility in the neighborhoods</i> (access to community places to be physically active, access to staff at parks, increased quality in parks [artificial turf, new fencing, landscaping, lighting and picnic benches])</p> <p>Outcome(s) Affected Moderate and vigorous intensity physical activity (System for Observing Play and Recreation in Communities [SOPARC])</p>	<p>Net Positive for Physical Activity in Lower-income Individuals (Availability of Parks, Playgrounds, Trails, and Recreation Centers)</p> <p>Net Positive for Park Use in Lower-income Individuals (Availability of Parks, Playgrounds, Trails, and Recreation Centers)</p> <p>Availability of Parks, Playgrounds, Trails, and Recreation Centers</p> <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> 1. In the two intervention parks combined, there were 1681 physically active visitors in the follow up week, compared to a total of 360 at baseline. 2. In Park A (renovated park), there was a significant increase in the mean number of moderately active individuals observed from baseline to follow-up for both males (from 1.51 to 6.07, $p \leq 0.05$) and females (from 0.13 to 1.73, $p \leq 0.05$). Observations also found a significant increase in vigorous activity in males (from 1.04 to 2.21, $p \leq 0.05$) and females (from 0 to 0.29, $p \leq 0.05$). 3. In Park B (renovated park), there was a significant increase in the mean number of moderately active individuals observed from baseline to follow-up for both males (from 1.64 to 8.92, $p \leq 0.05$) and females (from 1.58 to 5.30, $p \leq 0.05$). Observations also found a significant increase in vigorous activity in males (from 0.36 to 3.08, $p \leq 0.05$) and females (from 0.29 to 1.1, $p \leq 0.05$). 4. In the control park, only the number of moderately active males increased significantly from baseline to follow-up (from 1.84 to 4.23, $p \leq 0.05$). 5. The overall proportion of sedentary visitors to the playfields increased in both intervention parks and decreased in the control park. In Park A, there was an increase in the number of sedentary males (from 2.02 to 10.46) and females (from 0.11 to 3.61, $p \leq 0.05$ for both). The same increase was seen in Park B for sedentary males (from 0.64 to 8.93) and females (from 0.2 to 5.02, $p \leq 0.05$ for both). The decrease in the number of sedentary individuals in the control park was not significant. <p><u>OTHER:</u></p> <ol style="list-style-type: none"> 6. There was a significant increase in playfield use, from 28 children counted in both intervention playfields combined at baseline, to 199 and 261 children, respectively, who visited the playfields in Parks A and B at follow-up. There was a nearly five-fold increase in the total adult visitors to the playfield in Park A, and a nine-fold increase in the total adult visitors to Park B. There were almost no seniors present on the playfield at baseline at all parks, and they increased significantly at Park B. 	<p>Effective for Physical Activity in Lower-income Individuals</p> <p>Study design – Intervention evaluation</p> <p>Duration – High</p> <p>Effect size – Net positive for physical activity in lower-income individuals</p>	<p>Maintenance Not Reported</p> <p>Sampling / Representativeness Not Reported</p>
<p>Author Floyd, Spengler (2008)</p> <p>Florida, Illinois</p> <p>Design Association</p> <p>Cross-sectional study</p> <p>Duration Not Applicable</p>	<p>Measures <i>Neighborhood accessibility</i> (access to parks)</p> <p>Outcome(s) Affected Moderate and vigorous physical activity and walking (modified version of the System for Observing Play and Leisure Activity in Youth [SOPLAY])</p>	<p>Positive Association for Physical Activity in the Study Population (Availability of Parks, Playgrounds, Trails, and Recreation Centers)</p> <p>(Assumption: Greater access to parks will lead to increased levels of physical activity.)</p> <p>Availability of Parks, Playgrounds, Trails, and Recreation Centers</p> <p><u>PHYSICAL ACTIVITY:</u></p> <ol style="list-style-type: none"> 1. For Tampa parks, the greatest energy expenditure was associated with tennis/racquetball and basketball courts (mean expenditure=0.098 and $p < 0.05$ for both). Dog play areas (mean=0.057), picnic shelters (mean=0.059), and fishing piers (mean=0.060) were associated with the lowest energy expenditure ($p < 0.05$ for all). 2. For Chicago parks, mean energy expenditure per person on basketball courts (mean=0.088), playgrounds (mean=0.088), and soccer fields (mean=0.094) was significantly higher than that observed on baseball/softball fields (mean=0.074) ($p < 0.05$ for all). 	<p>Positive Association for Physical Activity in the Study Population</p> <p>Study design – Association</p> <p>Effect size – Positive association for physical activity in the study population</p>	<p>Maintenance Not Applicable</p> <p>Sampling / Representativeness Not Reported</p>

Study Description	Population	Reach	Intervention	Impact & Sustainability	Other Results	Related Benefits & Consequences
United States (Parks)						
<p>Author Tester, Baker (2009) California</p>	<p>Participation/Potential Exposure Participation – Not Reported Exposure – High Renovation occurred to 2 different parks within the community all residents were exposed.</p> <p>High-Risk Population High General population in a lower income neighborhood was observed</p>	<p>Representative Not Reported</p> <p>Potential Population Reach More Evidence Needed Participation – Not reported Exposure – High Representativeness – Not reported</p> <p>Potential High Risk Population Reach More Evidence Needed High-risk population – High Representativeness – Not reported</p>	<p>Intervention Components Complex Renovation of 2 parks including replacement of dirt fields with artificial turf, new fencing, landscaping, lighting and picnic benches. Park A also received permanent soccer goals and Park B restored a walkway around the field.</p> <p>COMPLEX: 1. Expanded hours of park operation 2. Professional training and skills development for park and recreation program staff 3. Expanded park programming</p> <p>Feasibility Intervention Feasibility – Low Policy Feasibility – High Intervention activities: Renovation of parks (replacement of dirt fields with artificial turf, new fencing, landscaping, lighting, picnic benches, soccer goals, and walkway), training of park staff, expanded park hours and programming Specialized expertise: Trained park staff Resources needed: Artificial turf, new fencing, landscaping materials, lighting, picnic benches, soccer goals, materials to restore the walkway, personnel for expanded park hours and programming, materials to train park staff, labor for improvements to the parks Costs: Not reported</p> <p>Implementation Complexity High Intervention components – Complex Feasibility – High</p>	<p>Population Impact More Evidence Needed Effectiveness – Not reported Potential population reach – More evidence needed Implementation complexity – High</p> <p>High-risk Population Impact More Evidence Needed Effectiveness for high-risk population – Effective for physical activity in lower-income population Potential high-risk population reach – More evidence needed Implementation complexity – High</p> <p>Sustainability Not Reported</p>	Not Reported	Not Reported

IMPACT (n = 142 independent interventions – study groupings)			
Indicator	Operational definition		Proportion
	Types	Subtypes	
Population impact ratings (n = 155 across study groupings)*	High = effective rating and high population reach	TOTAL	45%
		Overweight and obesity	14%
		Physical activity	16%
		Nutrition	14%
	Low = effective rating and low population reach <u>or</u> somewhat effective rating	TOTAL	23%
		Overweight and obesity	6%
		Physical activity	12%
		Nutrition	5%
	No impact = not effective rating	TOTAL	32%
		Overweight and obesity	20%
		Physical activity	6%
		Nutrition	6%
High-risk population impact ratings (n = 42 across study groupings)*	High = effective rating (specific to racial/ethnic or lower-income populations) and high for high-risk population reach	TOTAL	45%
		Overweight and obesity	19%
		Physical activity	14%
		Nutrition	12%
	Low = effective rating (high-risk populations) and low population reach <u>or</u> somewhat effective rating (high-risk populations)	TOTAL	14%
		Overweight and obesity	2%
		Physical activity	5%
		Nutrition	7%
	No impact = not effective rating (high-risk populations)	TOTAL	41%
		Overweight and obesity	21%
		Physical activity	7%
		Nutrition	12%