Assessing Neighborhood Environments to Improve
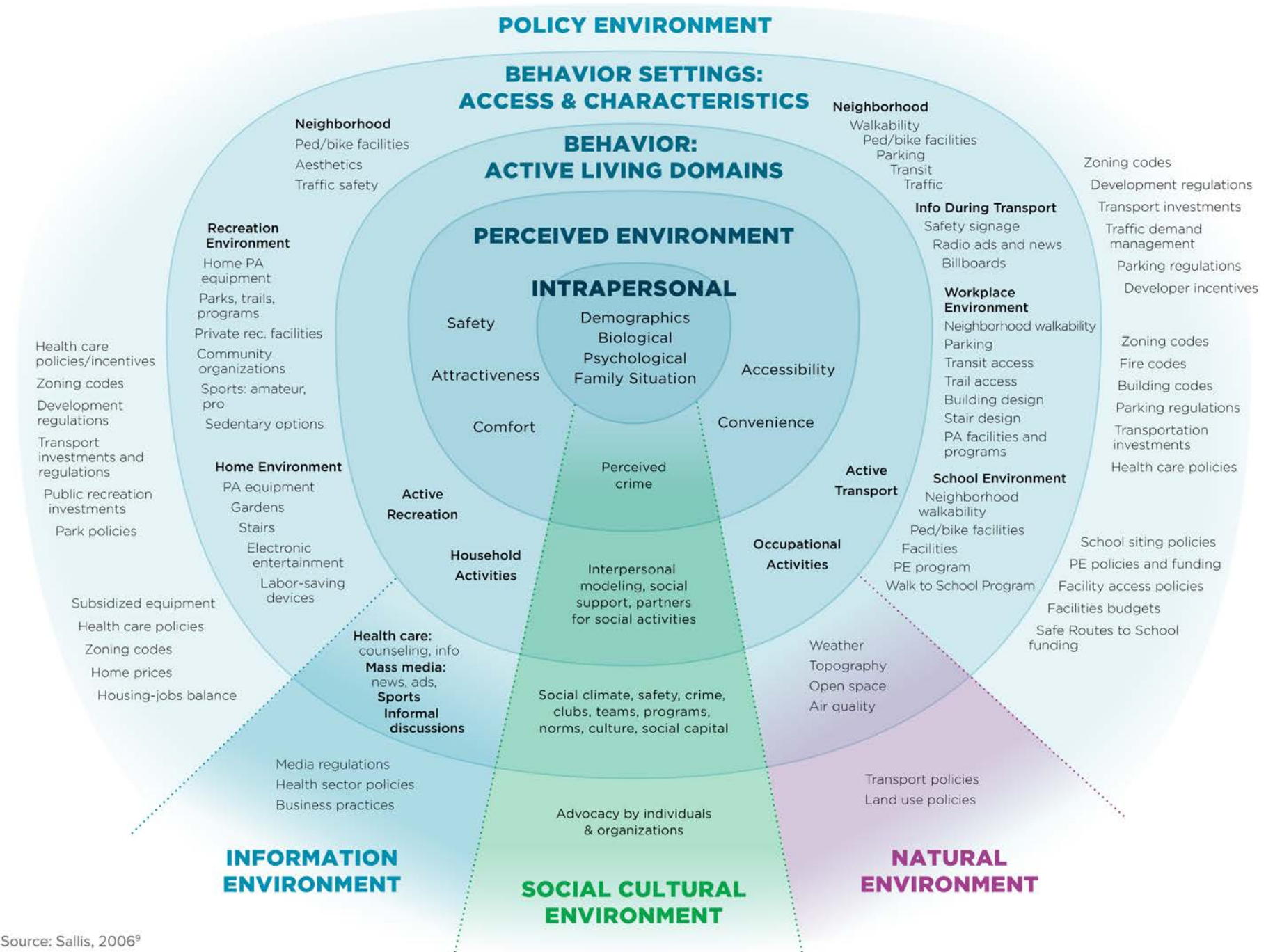# Physical Activity & Health

Weighing In Quarterly Meeting

June 1, 2017

Presentation Outline

- Neighborhood built environment and health
- Measuring the neighborhood built environment
- Measurement resources
- Selecting and adapting measures
- Measurement support
- Measurement in action
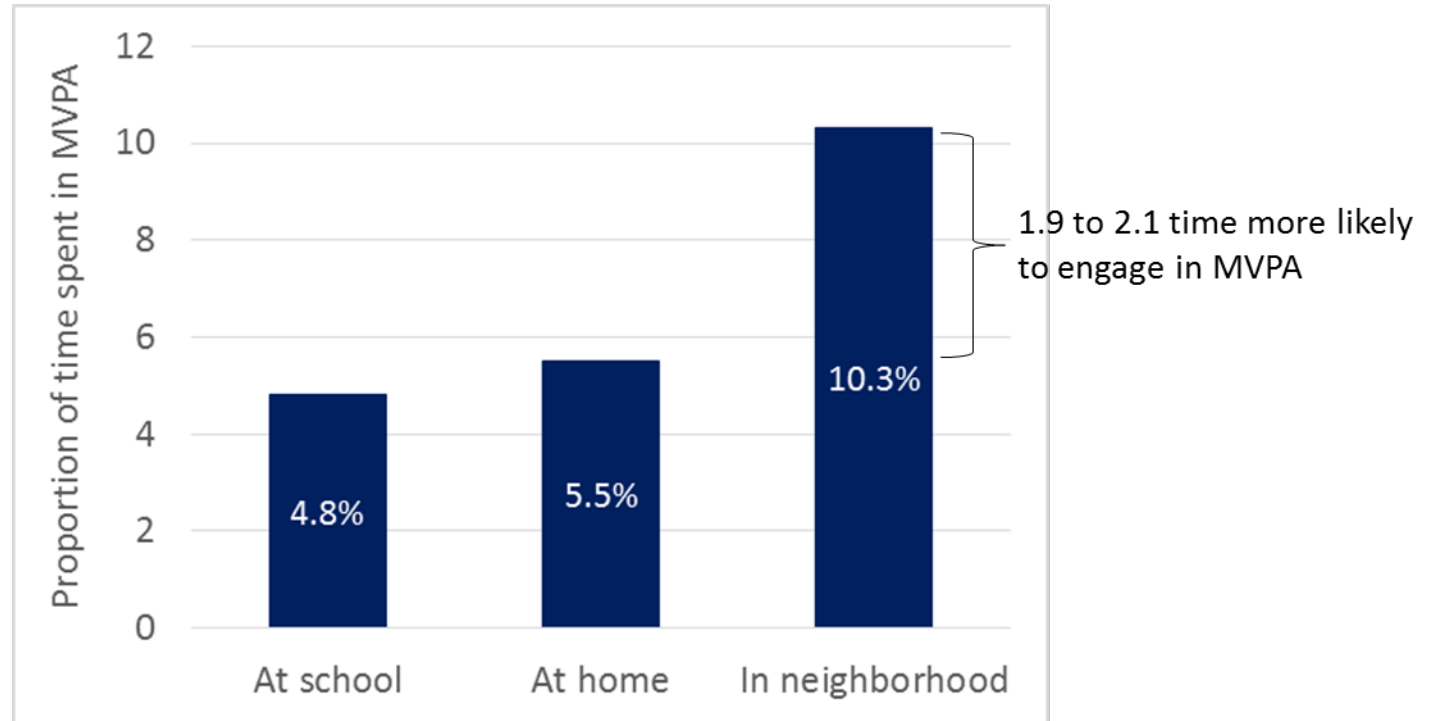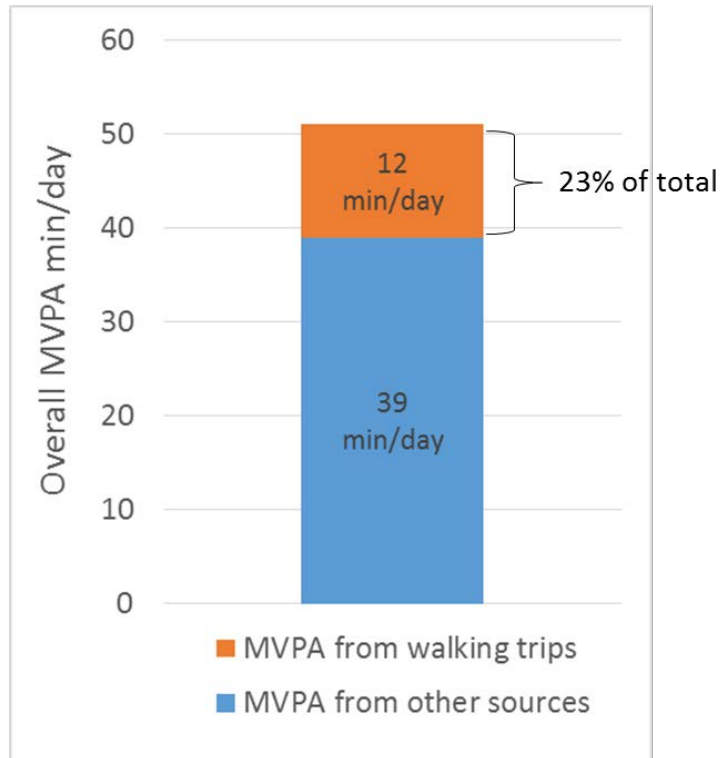
Figure 2: Ecological Model of Active Living

POLICY ENVIRONMENT

BEHAVIOR SETTINGS: ACCESS & CHARACTERISTICS

BEHAVIOR: ACTIVE LIVING DOMAINS

PERCEIVED ENVIRONMENT

INTRAPERSONAL

Demographics
Biological
Psychological
Family Situation

Safety

Attractiveness

Comfort

Accessibility

Convenience

Perceived crime

Neighborhood
Ped/bike facilities
Aesthetics
Traffic safety

Neighborhood
Walkability
Ped/bike facilities
Parking
Transit
Traffic

Recreation Environment
Home PA equipment
Parks, trails, programs
Private rec. facilities
Community organizations
Sports: amateur, pro
Sedentary options

Zoning codes
Development regulations
Transport investments
Traffic demand management
Parking regulations
Developer incentives

Info During Transport
Safety signage
Radio ads and news
Billboards

Workplace Environment
Neighborhood walkability
Parking
Transit access
Trail access
Building design
Stair design
PA facilities and programs

Zoning codes
Fire codes
Building codes
Parking regulations
Transportation investments
Health care policies

Health care policies/incentives
Zoning codes
Development regulations
Transport investments and regulations
Public recreation investments
Park policies

Home Environment
PA equipment
Gardens
Stairs
Electronic entertainment
Labor-saving devices

Active Recreation

Household Activities

Active Transport

School Environment
Neighborhood walkability
Ped/bike facilities
Facilities
PE program
Walk to School Program

Occupational Activities

Interpersonal modeling, social support, partners for social activities

School siting policies
PE policies and funding
Facility access policies
Facilities budgets
Safe Routes to School funding

Subsidized equipment
Health care policies
Zoning codes
Home prices
Housing-jobs balance

Health care: counseling, info
Mass media: news, ads,
Sports
Informal discussions

Weather
Topography
Open space
Air quality

Social climate, safety, crime, clubs, teams, programs, norms, culture, social capital

Media regulations
Health sector policies
Business practices

Transport policies
Land use policies

Advocacy by individuals & organizations

INFORMATION ENVIRONMENT

SOCIAL CULTURAL ENVIRONMENT

NATURAL ENVIRONMENT

Source: Sallis, 2006[9]

The Role of Neighborhoods in Physical Activity

Kids in walkable neighborhoods:
- Twice as much walking
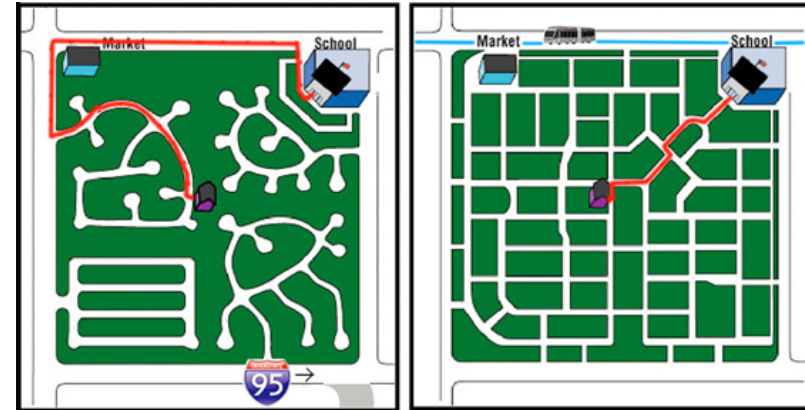- 15% less time in a vehicle

12-16 year olds
N = 574

Carlson et al. 2016, Pediatrics
Carlson et al. 2015, Health & Place

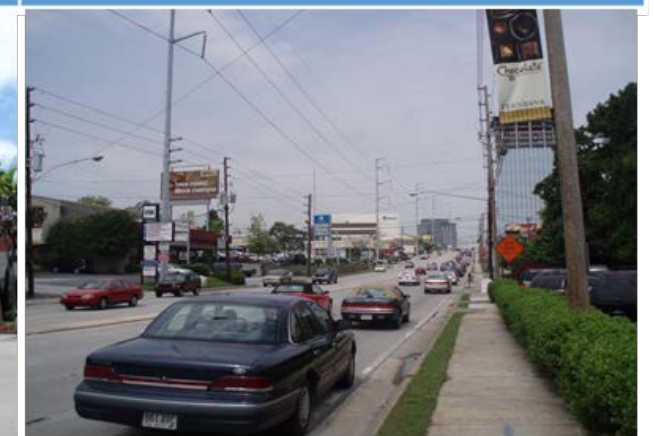# Community Design and Physical Activity
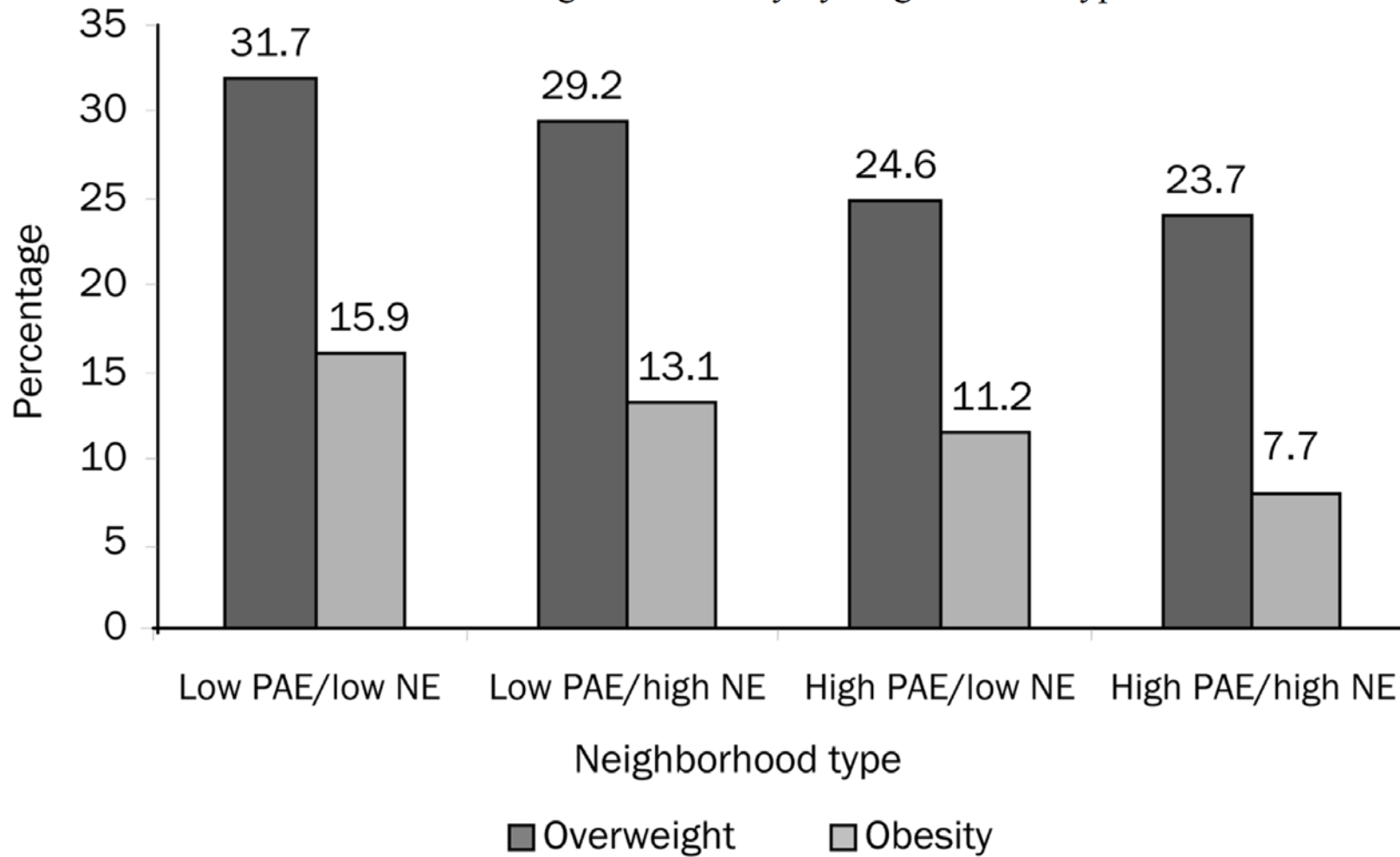
Residential density

Mixed land use

Street connectivity

High Walkable | Low Walkable

Child overweight and obesity by neighborhood type

6-11 year olds
N = 730

PAE = physical activity environment
- Residential density (↑)
- Mixed land use (↑)
- Street connectivity (↑)
- Parks (↑)

NE = nutrition environment
- Supermarkets (↑)
- Fast-food outlets (↓)

Saelens et al. 2012
Am J Prev Med

Streetscape Features and Physical Activity

- Street segment features
  - Sidewalk presence and condition
  - Aesthetics/condition of properties
  - Speed limit
- Crossing/intersection features
  - Safe crossings
  - Curb ramps

6-16 year olds
N = 1655

Cain et al. 2014
Soc Sci & Med

Why Measure the Built Environment in KC?

- To identify features related to physical activity and health
  - Which improvements will have the greatest impacts on health?

- To education or engage community members and decision makers
  - Can engagement result in environmental improvements?

- To identify and prioritize specific environmental improvements
  - Which areas and features are in greatest need of improvement?

- To track/evaluate progress over time or due to an intervention
  - At what pace are we heading in the right direction?

Measures Selection Resources

National Collaborative for Childhood Obesity Research (NCCOR)

NCCOR Measures Registry

http://www.nccor.org/nccor-tools/measures/
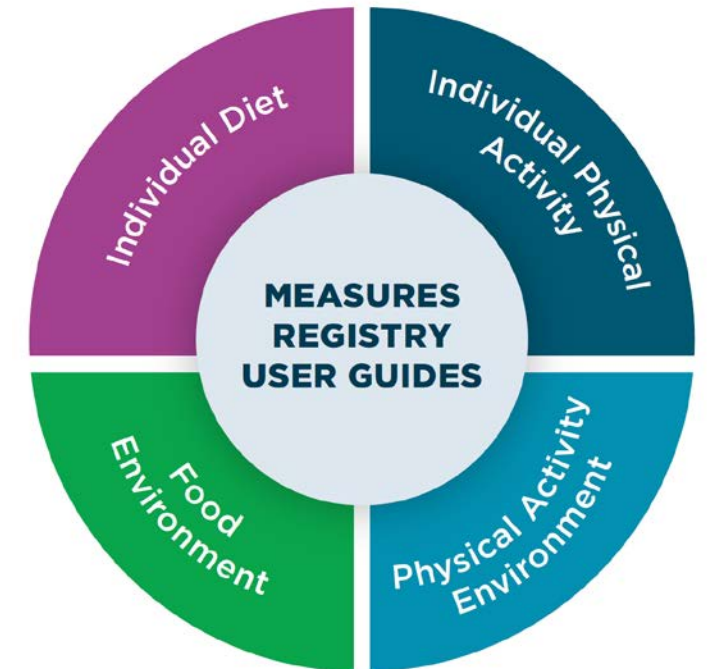
Measures Covered in NCCOR Registry

SETTING	METHOD OF ASSESSMENT		
	GIS	OBSERVATION	QUESTIONNAIRE
Community design	X		
Transportation system			X
Streetscapes		X	
Trails			
Parks		X	X
Recreation			
Schools and child care		X	X
Homes		X	X
Workplaces		X	X
Other buildings			
Rural		X	X

NCCOR Measures Registry

Filter options

Active Living Research

http://activelivingresearch.org/

Considerations in Selecting Measures

- Project purpose
    - To educate or engage community members? –resident audit
    - To inform environmental improvement projects or priorities? –detailed audit
    - To evaluate if a project resulted in environmental changes? –case studies or surveillance system
- Burden to respondents and/or investigators
    - Will response rates be low if the tool is too long/burdensome?
    - Will important information be missed if tool is too brief?
- Comprehensiveness, specificity (breadth or depth)
    - Cover multiple constructs, or a specific construct in detail?
- Evidence of reliability and/or validity

Reliability and Validity

- Identifying if a measure is reliable
  - Survey/questionnaire: Have the same people complete the questionnaire twice over a two-week period, responses should be similar.
  - Audit tool: Have two raters audit the same feature, responses should be similar.

- Identifying is a measure if valid
  - Compare to a criterion measure if available; for measuring attitudes/perceptions and for environmental audits, reliability is often sufficient.
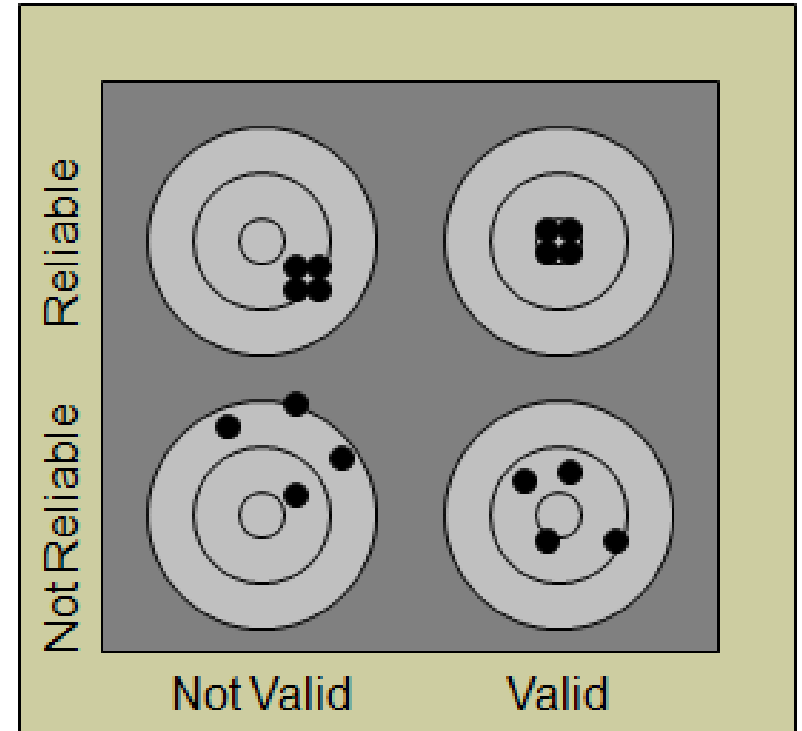
Measurement Support

- Consulting on measure selection and data collection

- Collecting and managing data

- Analyzing and interpreting data

Measurement in Action