



Measuring Environmental & Policy Exposures: Which Ones?

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For Institute of Medicine

Panel on Accelerating Progress in Childhood
Obesity Prevention

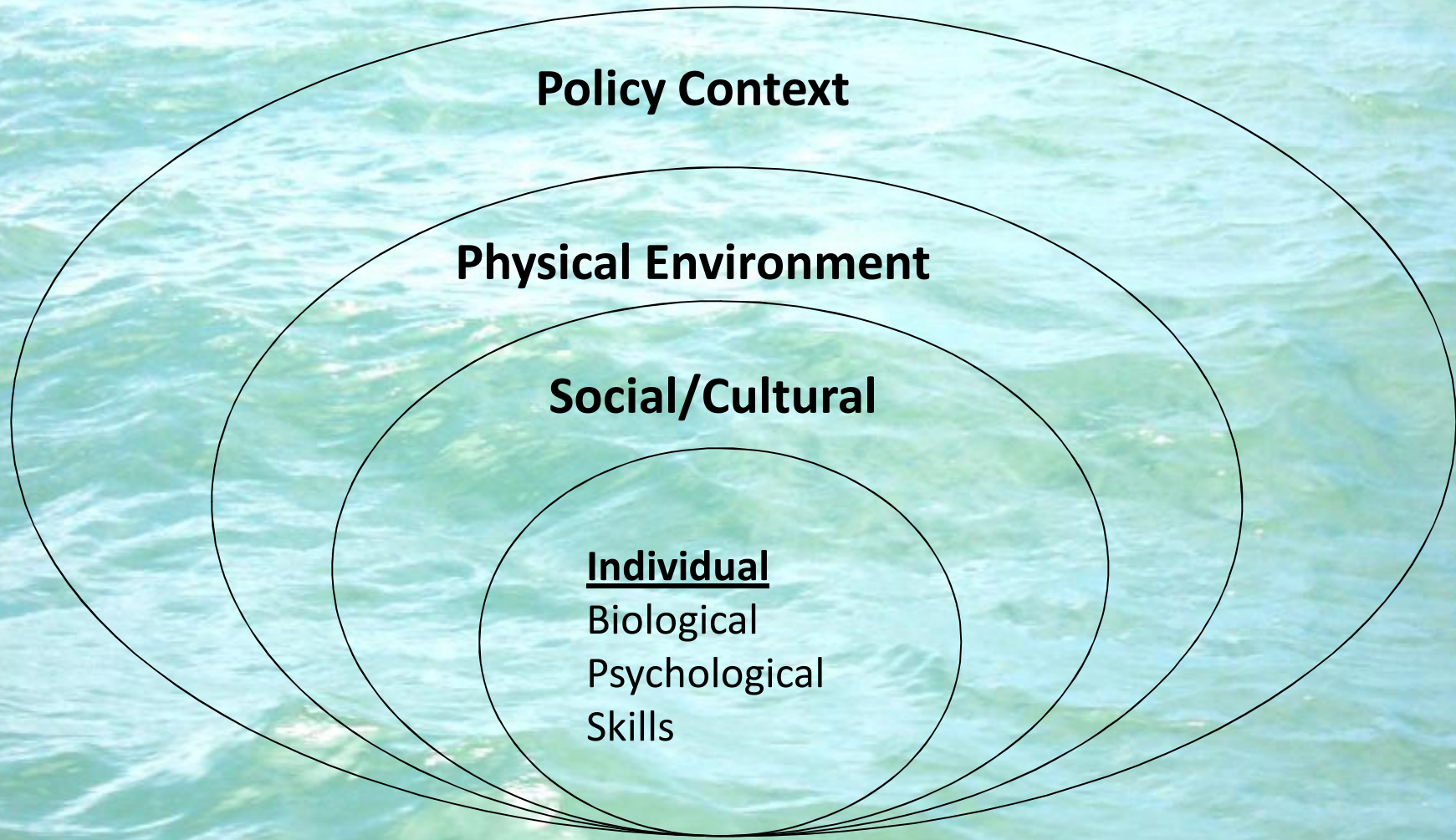
Irvine, CA

March 23, 2011

Goals of Talk

- What does evidence indicate are the main environment & policy drivers of PA & obesity?
 - Sorry but I don't have time to present the actual data
- What are the pros and cons of various measurement methods for environments & policies?
- What are next steps toward measures that can contribute to accelerating progress?
- What could non-health sectors do to improve measurement?

An Ecological Model of Health Behavior



Elements of An Active Living Community

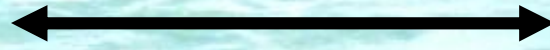
Community Design
Destinations



Home



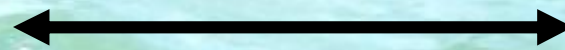
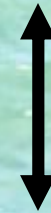
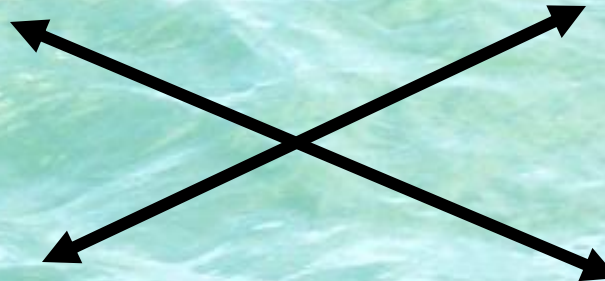
Transportation System



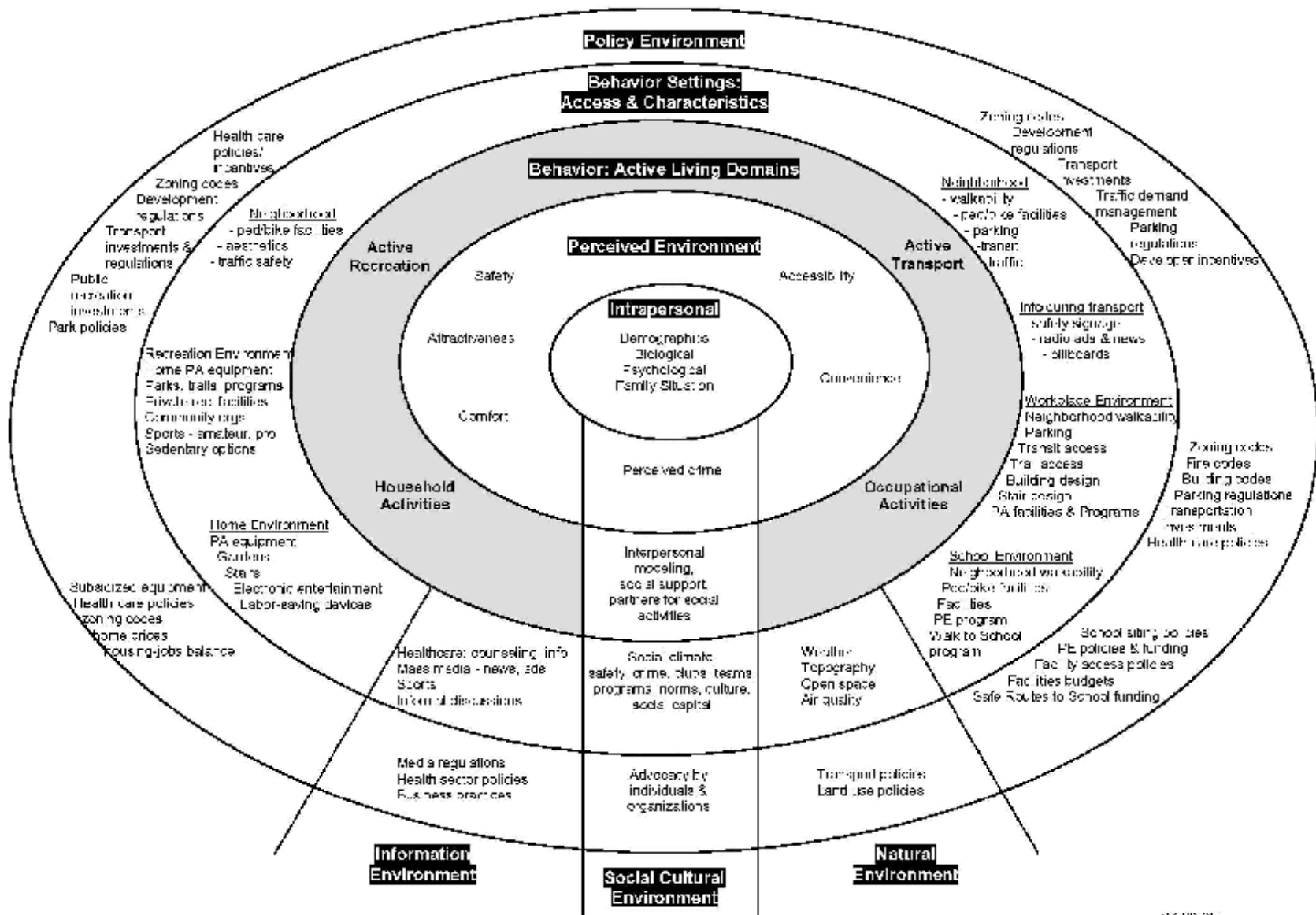
School & Worksite



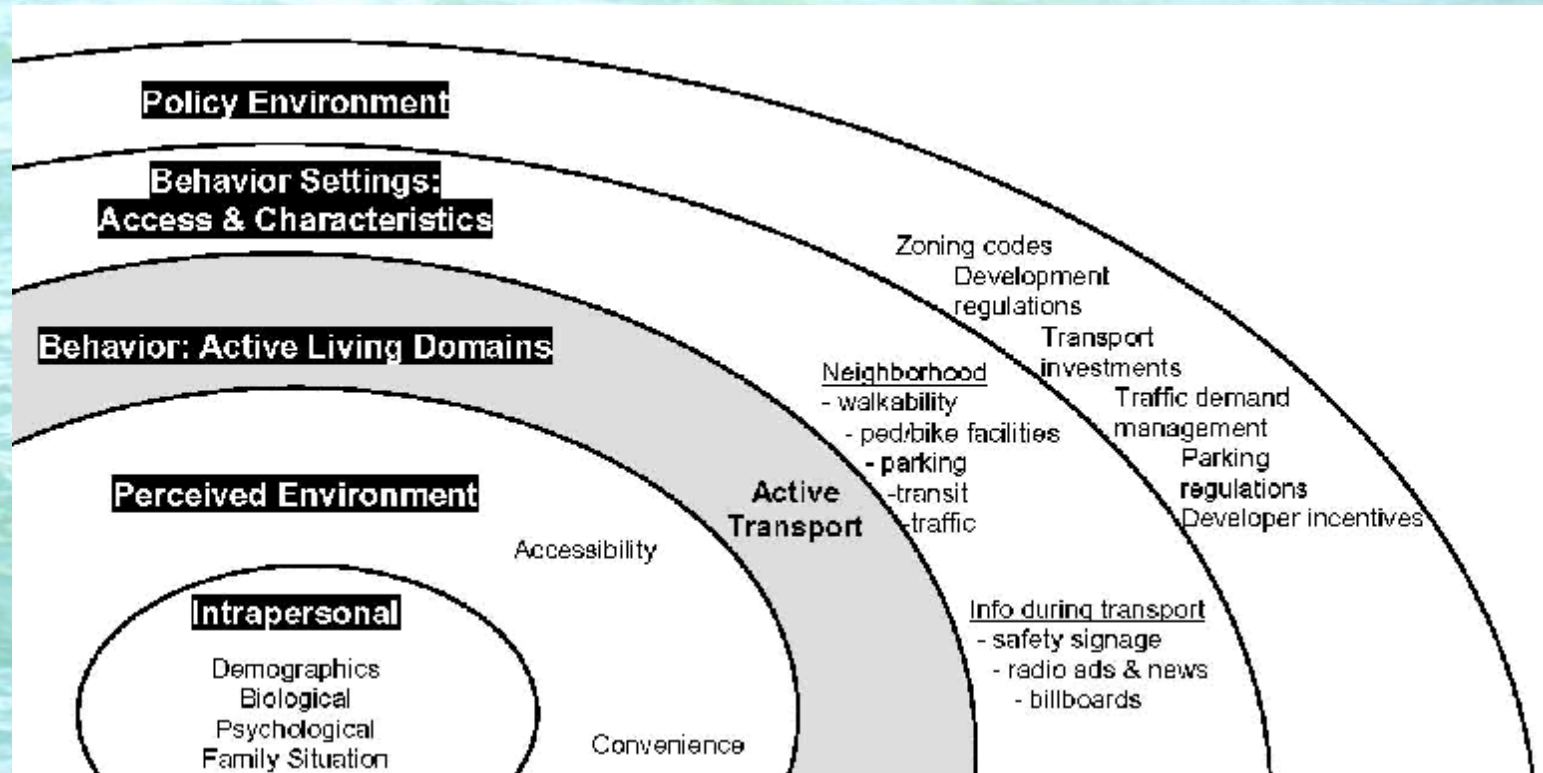
Park & Rec



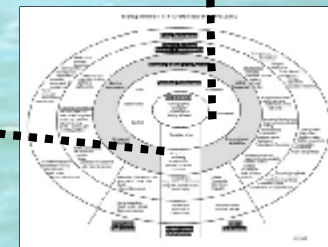
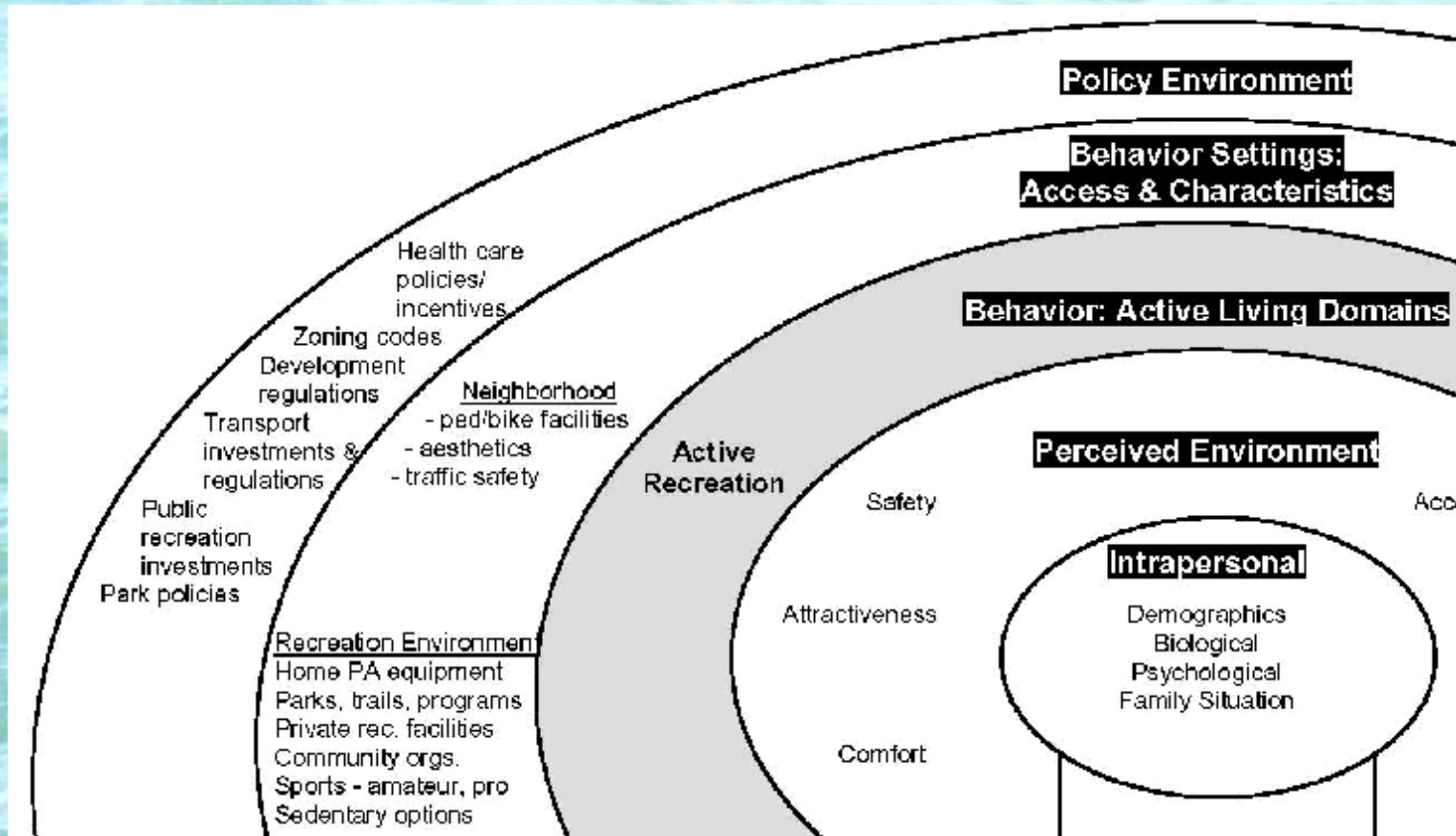
Ecological Model of Four Domains of Active Living



Ecological Model of Four Domains of Active Living



Ecological Model of Four Domains of Active Living



Roles of Policies in PA

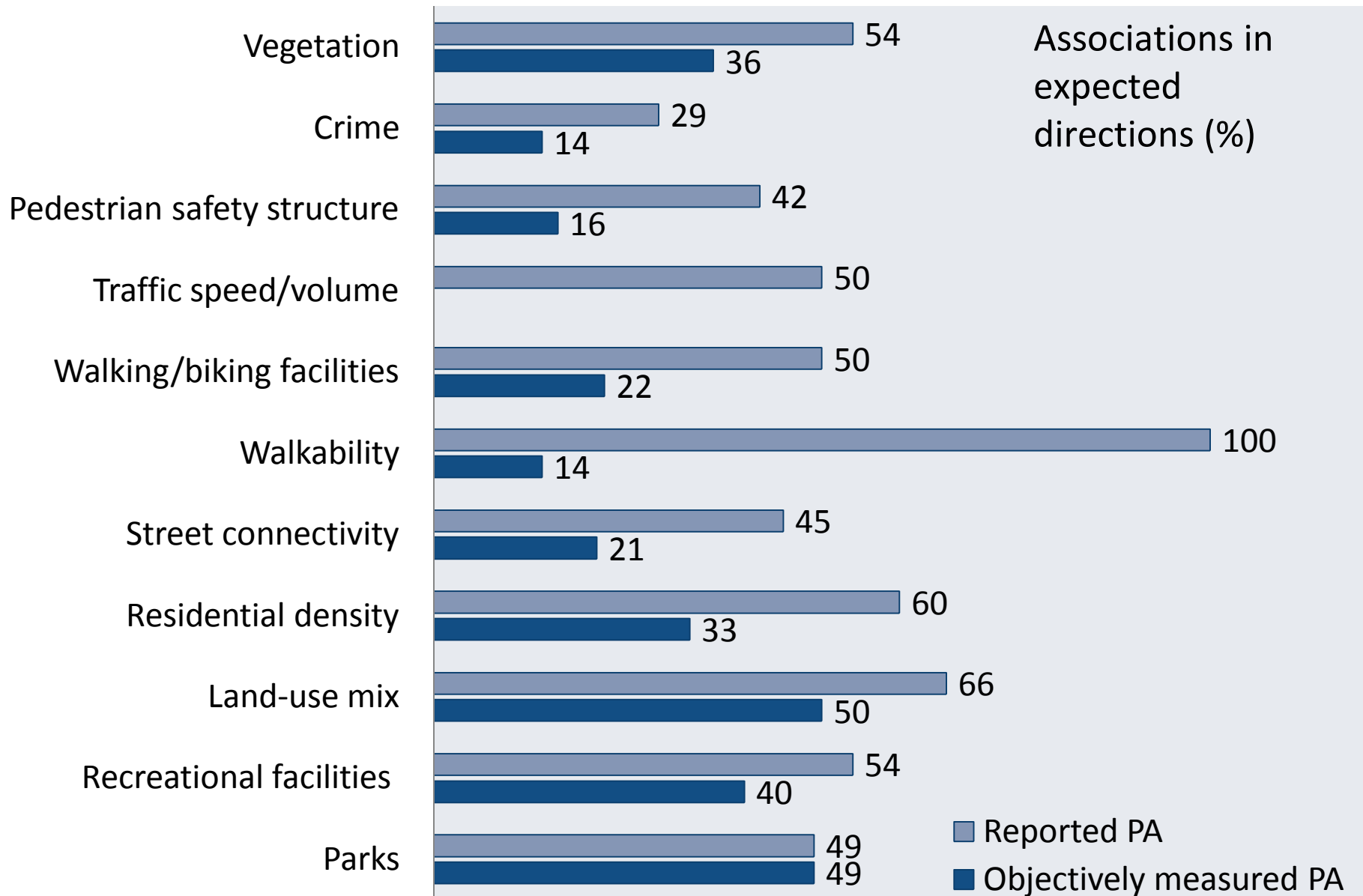
- Affect built environments
 - Zoning, building codes, transport goals, street stds
- Affect programs
 - PE requirements, programs in parks, youth sports
- Incentives
 - Insurance discounts, subsidize gas, parking fees or cash-out
- Funding
 - Parks, transport formulae, schools

Summary of Research on Built Environment & Adults' Physical Activity

Built Environment Attribute	Active Transport	Active Recreation or Total Physical Activity
Walkability: mixed land use, street connectivity, residential density	++	0
Sidewalks	?	+
Proximity of recreation facilities (parks, trails, private facilities)	0	++
Aesthetics of recreation facilities	xx	++

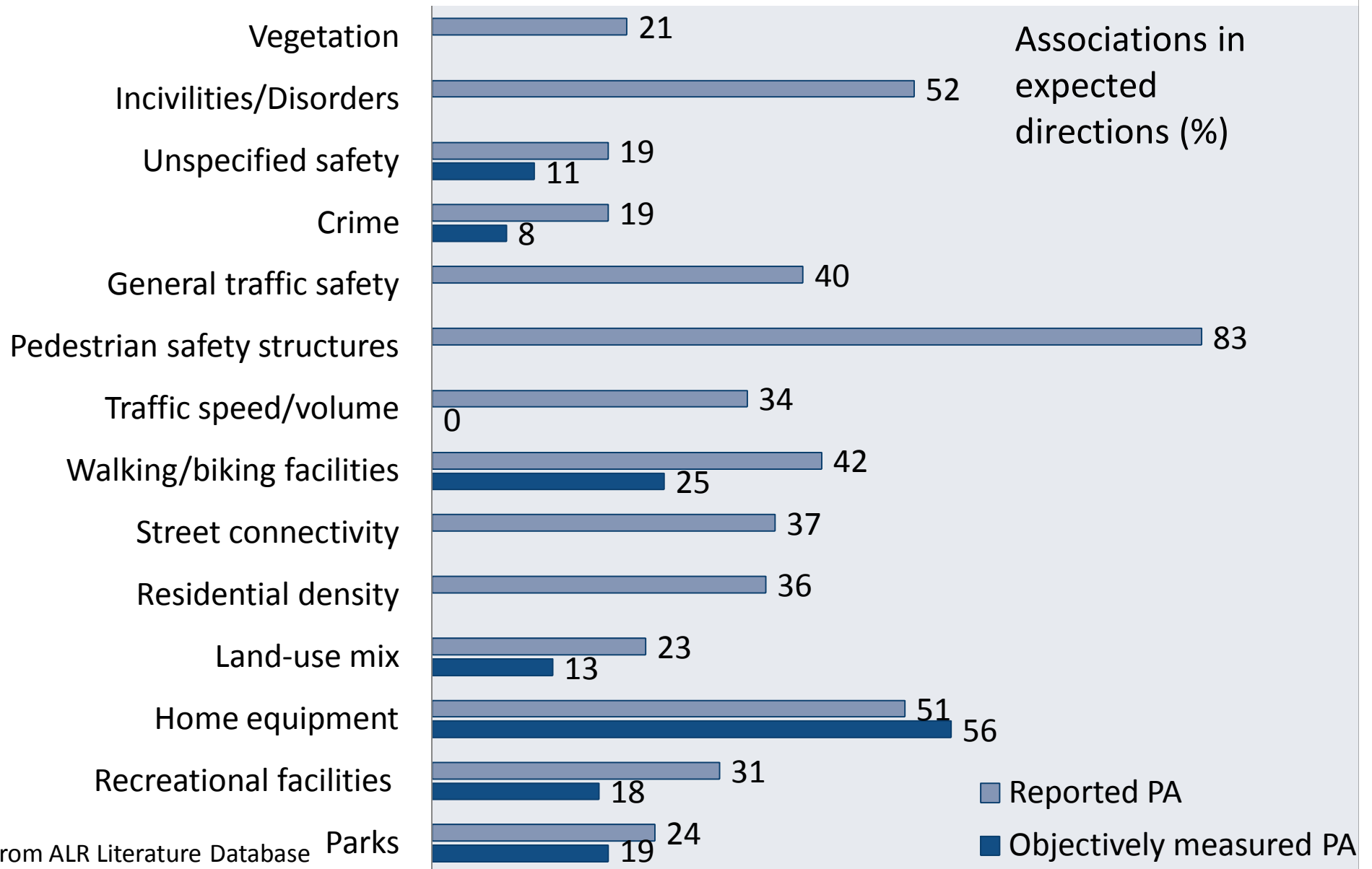
Sallis & Kerr. For PCPFS Research Digest. 2007

Associations between Objectively Measured Built Environment Attributes and Physical Activity (PA) among Youth



From ALR Literature Database

Associations between Perceived Built Environment Attributes and Physical Activity (PA) among Youth



Key Policy & Environment Issues for Youth PA

- **School PA Opportunities**

- PE quantity & quality
- Recess
- Classroom activity breaks
- After school programs & sports
- Joint use agreements
- School siting
- School grounds
- Equity of opportunities
- Covers school, preschool, daycare

- **Built Environment**

- Walkability (land use) to support active transport
- Complete streets (ped & bike facilities; safe crossings)
- Park access
- Park quality & amenities
- Safe routes to schools
- Crime, disorder, & personal safety
- Aesthetics (vegetation)
- Equity of access

Environments, Policies, & Decision Makers

Environment Attribute	Policy Determinant	Decision Makers
Mixed land use	Zoning	Local government, planners
Street connectivity	Guidelines, standards	ITE, developers, local gov't
Residential density	Zoning	Local gov't, planners
Ped/bike facilities	Transport/complete streets	Transport dept, gov't officials
Traffic volume/speed	Transport	Transport dept, gov't officials
Transit access	Transport	Transport dept, gov't officials
Parks, trails	Park & rec standards & funding	Nat'l standards, local gov't
Private rec facilities	Marketplace	Business owner
Aesthetics, vegetation	Various	Multiple
School grounds, siting	Standards, joint use agreements	Educ dept, gov'ts

Key Measurement Objectives

- Presence/absence of environmental attribute or policy
- Quality of attribute or policy
- Adoption vs implementation of policy
- Disparities in access
- Geographic scale of measure (is it local?)
- Recency of data

Options for Measuring PA Environments & Policies

- Self-report measures ask people to rate characteristics
- Geographic Information Systems—GIS
- Observations or audits
- Policy audits
- Crime statistics

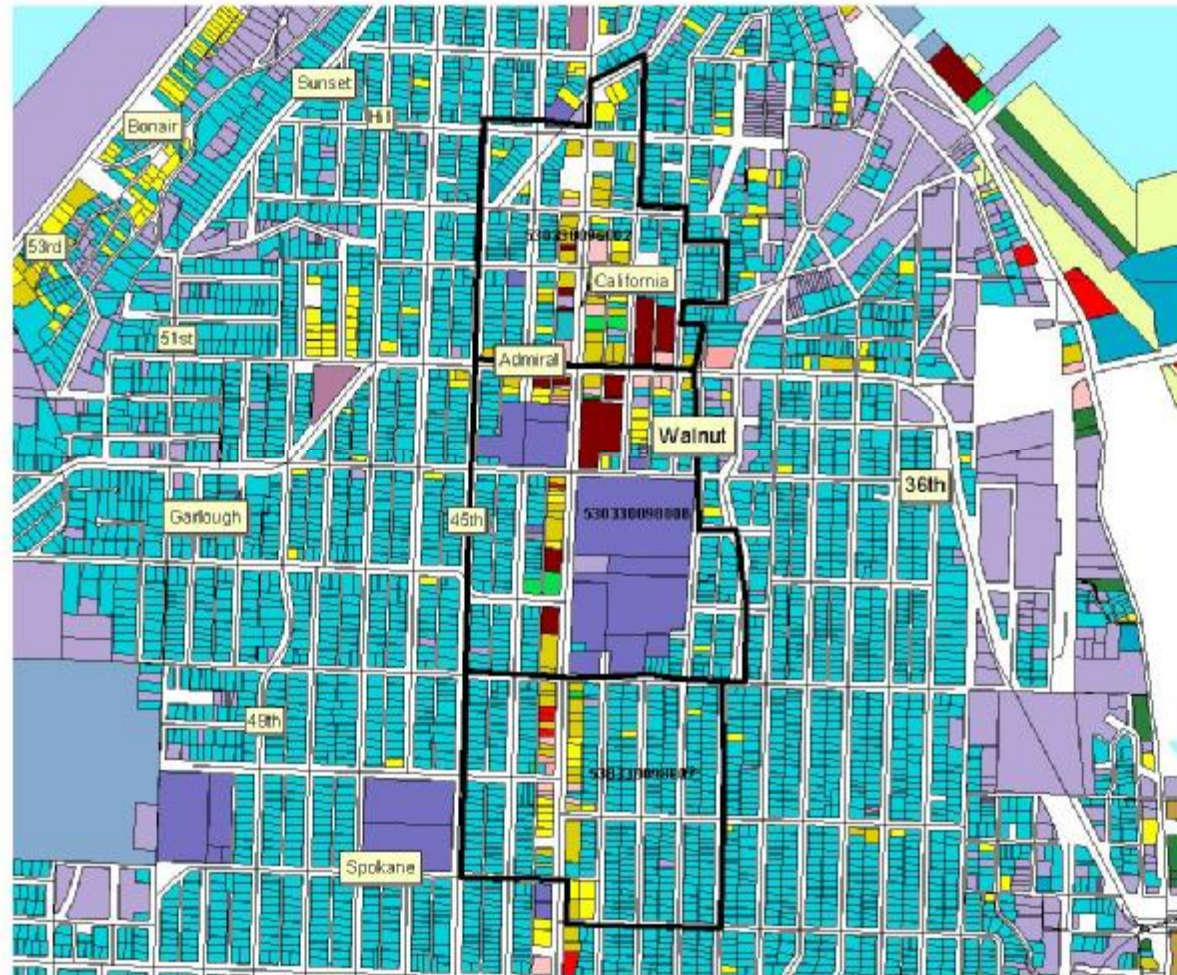
Survey Measures

- Strengths
 - Validated measures of neighborhood attributes
 - Representative US sample assessed with PANES
- Weaknesses
 - Not adapted/validated for racial & SES subgroups
 - Rural environ measure in development
 - Lack of “dose-response” data
 - No surveys of parks/trails/school environments
- What’s needed
 - Could be used for national surveillance
 - More research on limitations

Observation/Audit Measures

- Strengths
 - Multiple instruments for streets, parks, trails
- Weaknesses
 - Few analyses demonstrating their value
 - Cost of collecting data
 - Complexity of data collected; lack of clear scoring
 - Lack of info on sampling environments
- What's needed
 - Briefer instruments; improved scoring
 - Examine contextual differences in “good” scores
 - Evaluate audits based Google Earth & Streetview

Admiral District (High-High)



- Case Study Blockgroups
- Roads
- Parcels**
- Agriculture
- Comm. Food/Restaurant
- Comm. Large
- Comm. Office
- Comm. Services
- Comm. Small
- Comm. Sports
- Ent. General
- Ent. Lodging
- Ind. General
- Ind. Manufacturing
- Inst.
- Misc.
- Open Space
- Parking
- Rec. Active
- Res. Group Quarters
- Res. MF Large
- Res. MF Small
- Res. Misc.
- Res. SF
- Services
- Vacant
- Bodies of Water



From Larry Frank

GIS Measures

- Strengths
 - Good evidence of utility
 - Potential for national measures
- Weaknesses
 - Data are collected by variety of stakeholders (tax assessor, transport & parks depts, Dun & Bradstreet)
 - Lack of standardization
 - Quality & recency usually unknown
 - Access to data varies
- What's needed
 - Convince (or support) non-health agencies to collect health-relevant data and share (land use codes, sidewalks, bike paths, park amenities)
 - Develop consensus on variables

Policy Measures

- Strengths
 - Could be useful for evaluation & surveillance
 - Policy rating systems are available
- Weaknesses
 - Many relevant policies with little consensus
 - Difficult to monitor local and school policies
 - Little evidence about key attributes of policies
 - Coding policy tells nothing about implementation
- What's needed
 - Improved online search capabilities
 - Consensus on policies and attributes to track
 - More work on assessing variations in implementation

Crime Measures

- Strengths
 - Potential for national data system
- Weaknesses
 - Geo-specific data hard to obtain
 - No standardization in codes
 - Inconsistent associations between crime & PA
- What's needed
 - Systematic research agenda
 - Work with Dept of Justice to develop standardized and accessible data for health research & practice

Improved Data Systems Require Collaborating with Non-Health Groups

- Our priorities are not their priorities
- I don't know of systematic efforts to improve land use, transport, education, crime, & business data for health purposes
- Health agencies will likely need to invest in these data systems
- Who will take the lead?



I welcome your questions &
discussion

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