Active Living, Park Design, and Using Technology to Promote Health

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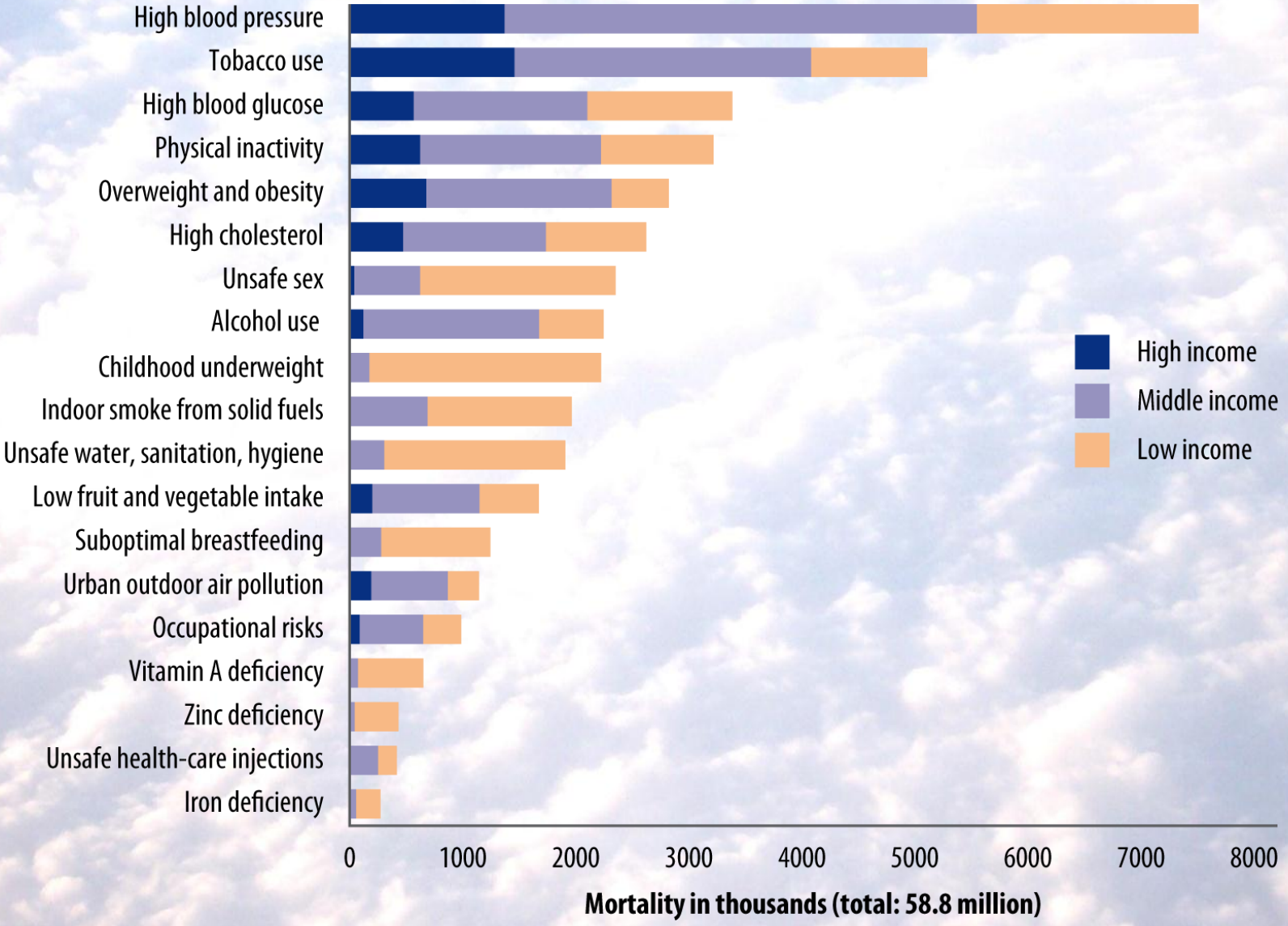
For "Why Do We Bother?"
Odense, Denmark
December 2, 2011

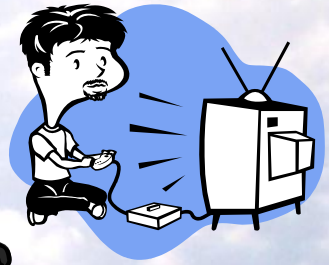
Deaths attributed to 19 leading factors, by country income level, 2004

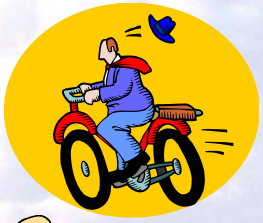


SLOTH Model of Physical Activity

- Sleep
- Leisure
- Occupation
- Transportation
- Household




The Future?

Elements of An Active Living Community

Community Design
Destinations

Transportation System

Home

School & Worksite

Park & Rec

“Walkable”: Mixed use, connected, dense

Not "walkable"

↓ street connectivity and ↓ mixed land use

The Neighborhood Quality of Life (NQLS) Study: The Link Between Neighborhood Design and Physical Activity

James Sallis
Brian Saelens
Lawrence Frank
And team

Results published March 2009 in Social Science and Medicine

NQLS Neighborhood Categories

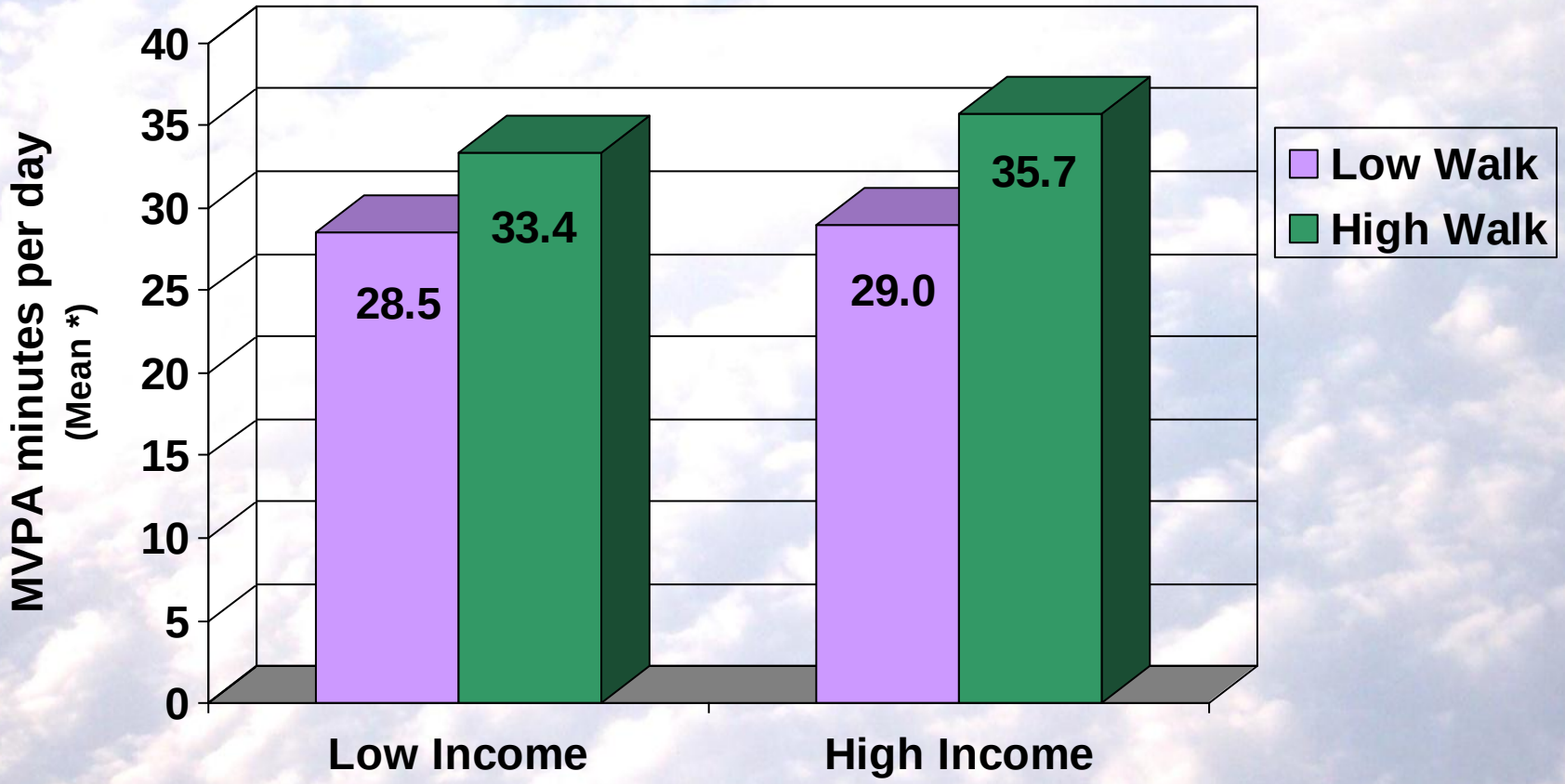
Socioeconomic Status	Walkability: Low	Walkability: High
Low	4 per city	4 per city
High	4 per city	4 per city

Accelerometer-based MVPA Min/day in Walkability-by-Income Quadrants

Walkability: *p* =.0002

Income: *p* =.36

Walkability X Income: *p* =.57



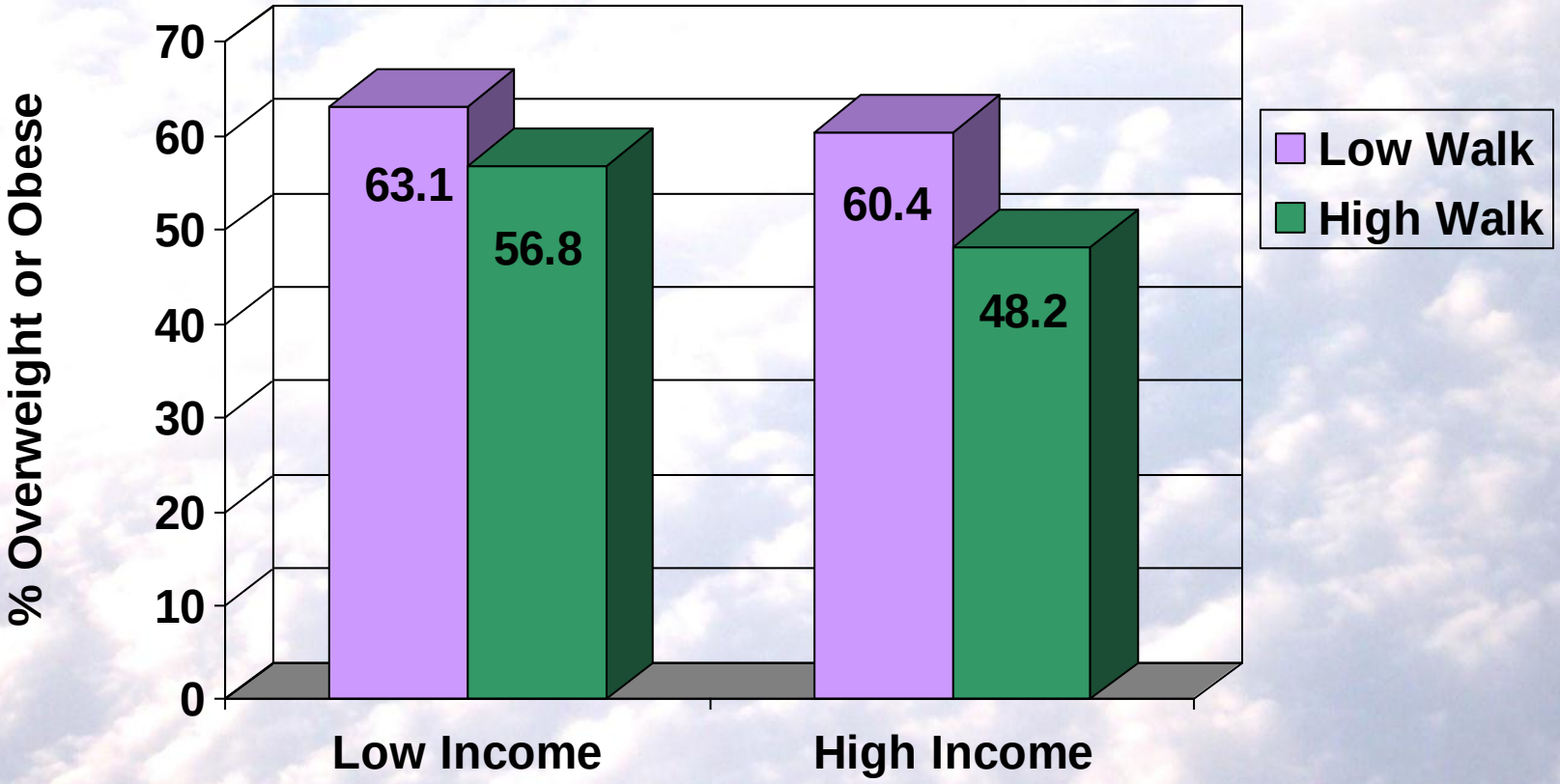
* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.

Percent Overweight or Obese (BMI≥25) in Walkability-by-Income Quadrants

Walkability: *p* =.007

Income: *p* =.081

Walkability X Income: *p* =.26



* Adjusted for neighborhood clustering, gender, age, education, ethnicity, # motor vehicles/adult in household, site, marital status, number of people in household, and length of time at current address.

Adolescents' Physical Activity as Related to Built Environments: TEAN Study in the US

James F. Sallis, PhD, [1] Terry L. Conway, PhD, [1] Jacqueline Kerr, PhD [1], Brian E. Saelens, PhD,[2] Lawrence D. Frank, PhD,[3,4] Karen Glanz, PhD, MPH,[5] Donald J. Slymen, Ph.D., [1] Kelli Cain, MA,[1] James C. Chapman, MSCE, [4]

[1]San Diego State University; [2]Children's Hospital Seattle; [3]University of British Columbia; [4]Urban Design 4 Health; [5] University of Pennsylvania

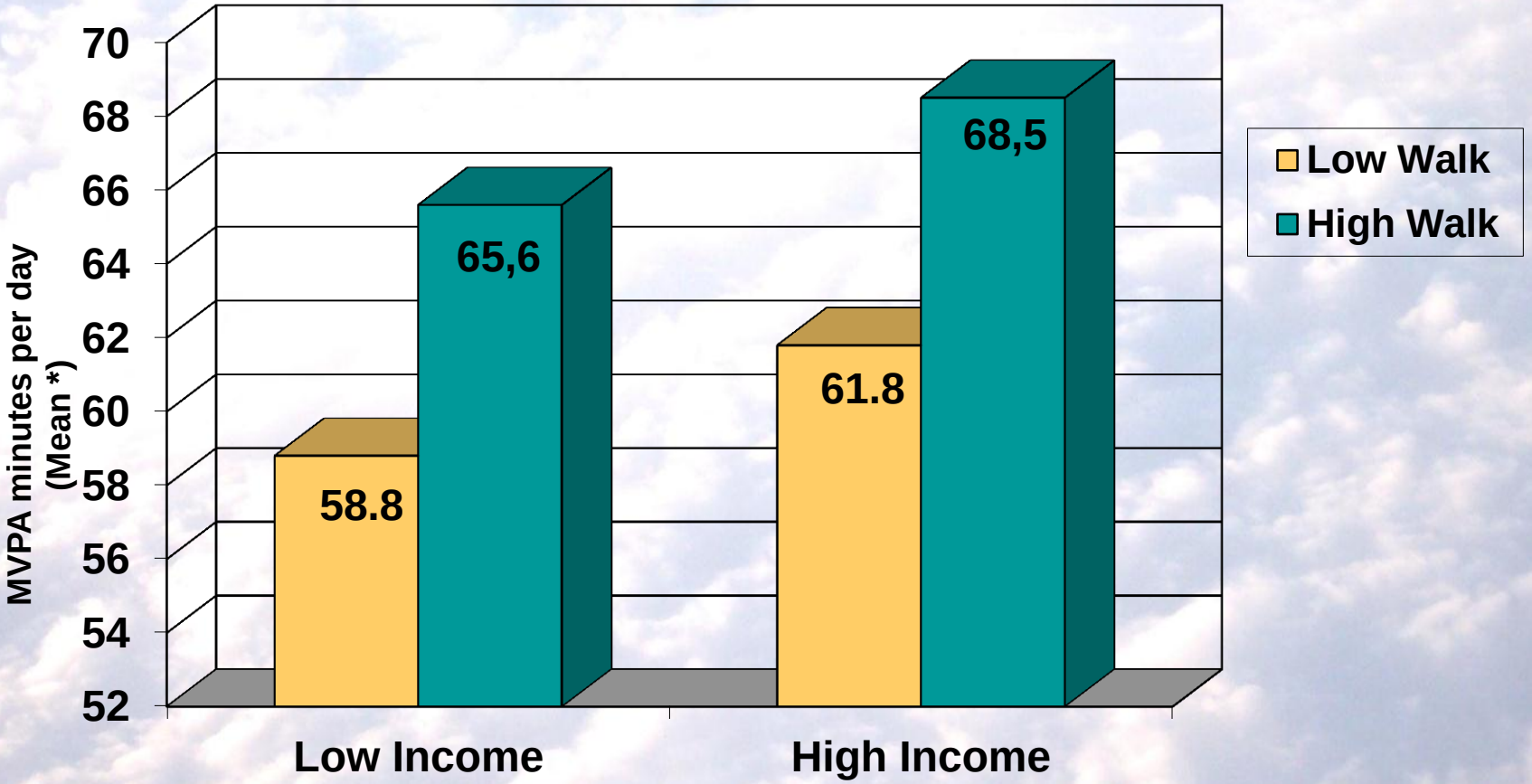
Funded by NIH/NHLBI 2007-2011; Grant HL083454

Accelerometer-based MVPA Min/day in Walkability-by-Income Quadrants

Walkability: F=13.74; *p* =.000

Income: F=2.59; *p* =.108

Walkability X Income: F=.001; *p* =.981



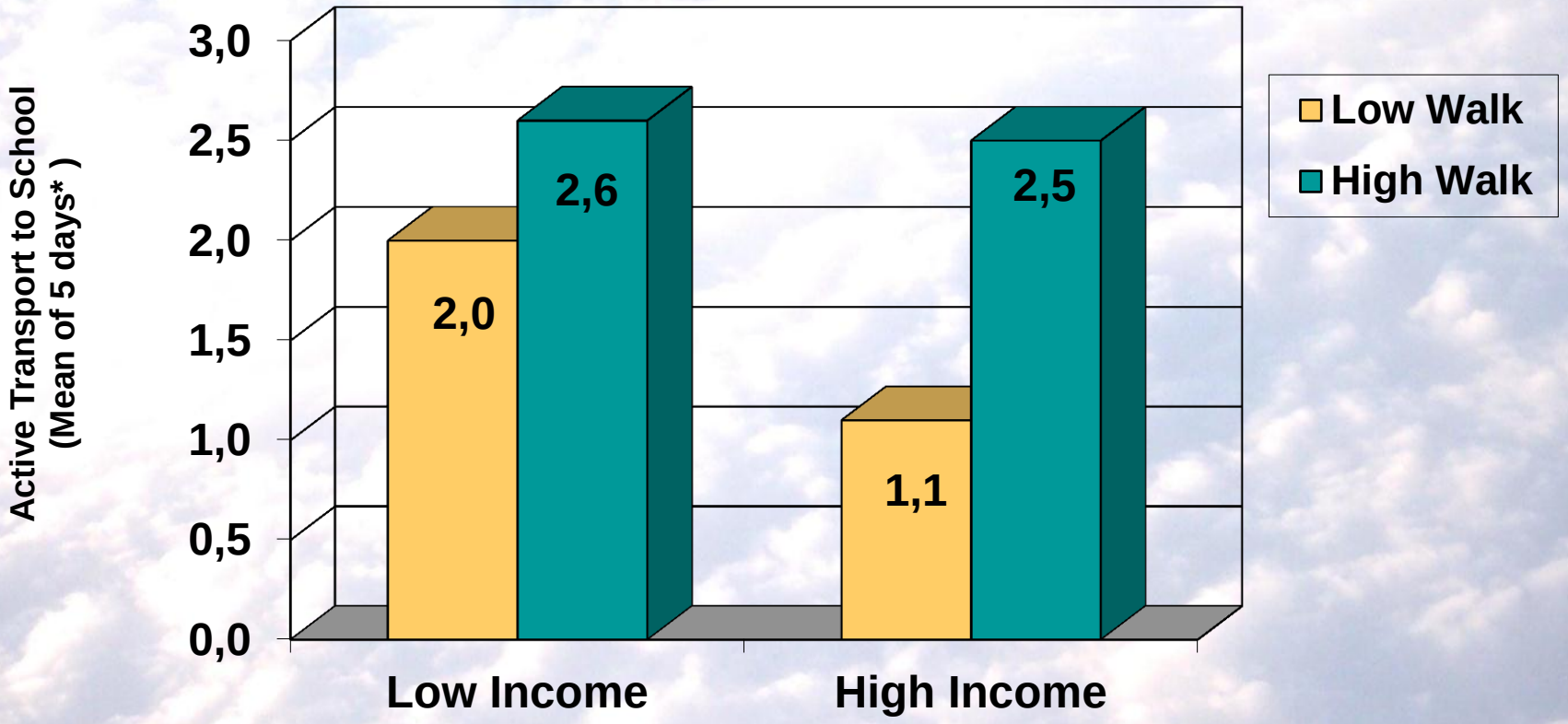
* Adjusted for gender and age

Active Transport to School† --Trips Per Week in Walkability-by-Income Quadrants

Walkability: F=21.2; *p* =.000

Income: F=4.02; *p* =.045

Walkability X Income: F=3.5; *p* =.062



† Includes walking, biking, and skateboarding to and from school

* Adjusted for gender and age

Walkable neighborhoods encourage more walking in older adults

•Older women who live within walking distance of trails, parks or stores recorded significantly higher pedometer readings than women who did not. The more destinations that were close by, the more they walked.

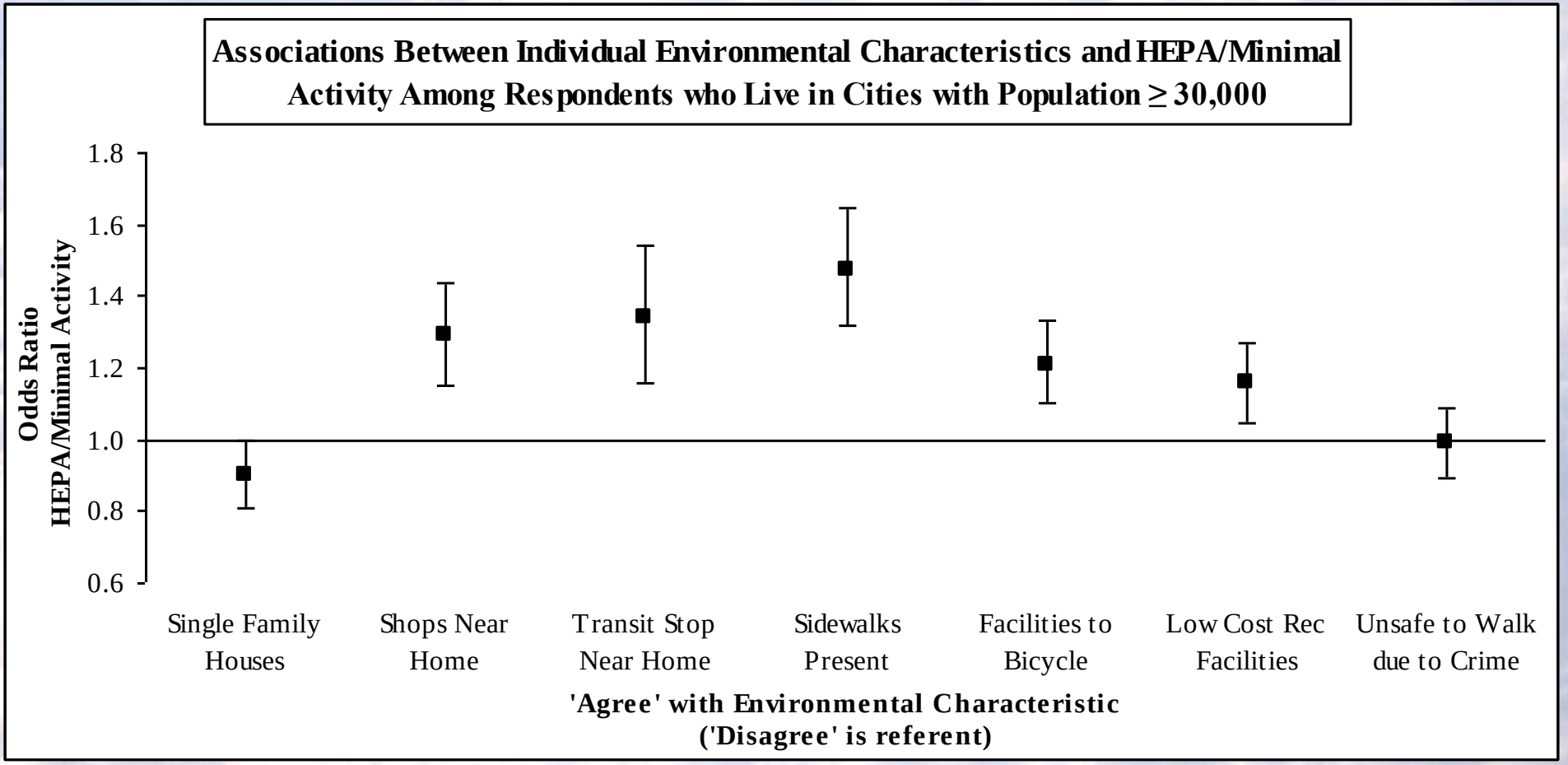
King, W., *Am. J. of Public Health* 2003

Photo: Michael Ronkin, ODOT

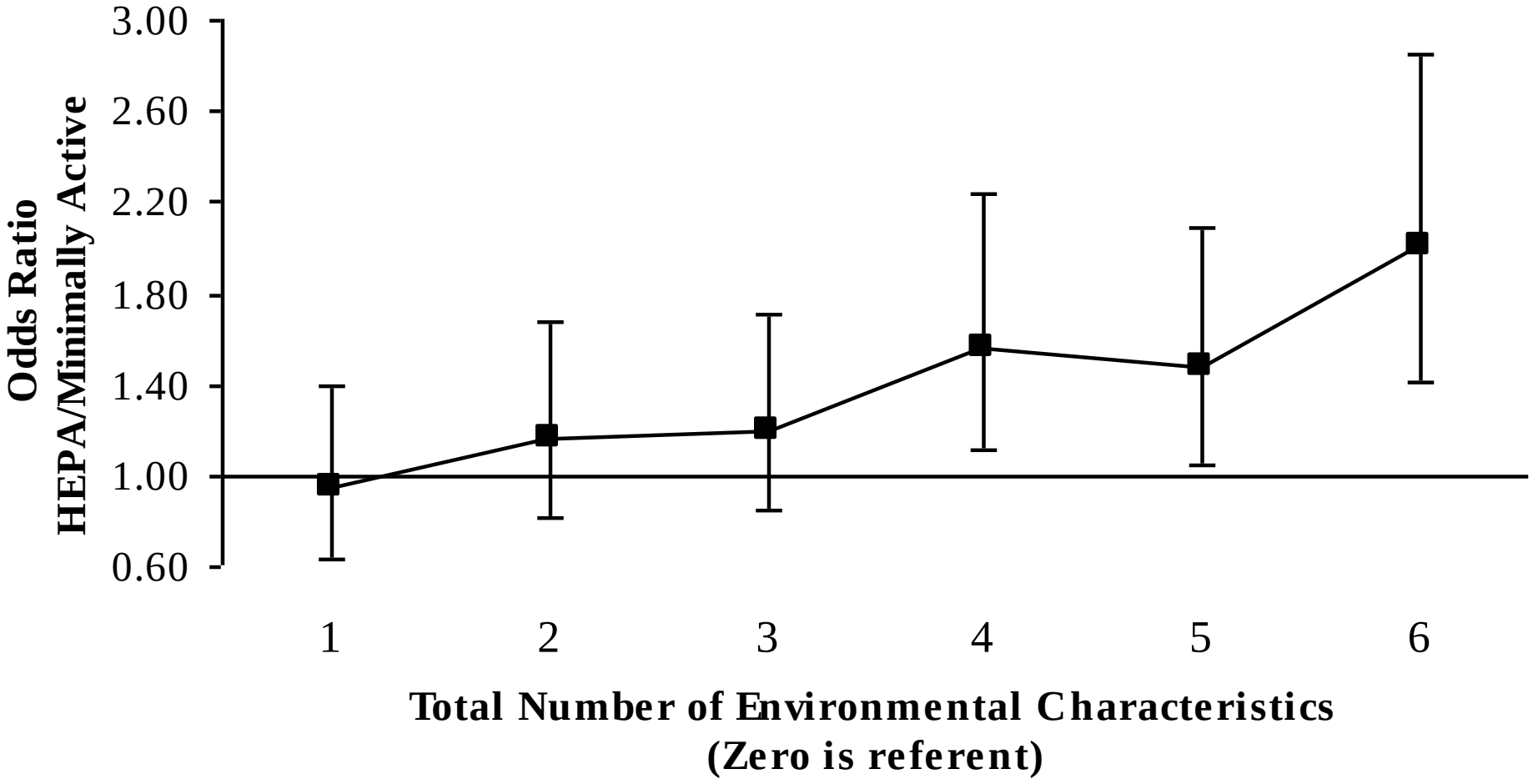
Built Environments & Physical Activity: An 11-Country Study

James F. Sallis, USA
Heather Bowles, Australia
Adrian Bauman, Australia
Barbara E. Ainsworth, USA
Fiona C. Bull, UK
Michael Sjostrom, Sweden
Cora Craig, Canada
Et al.

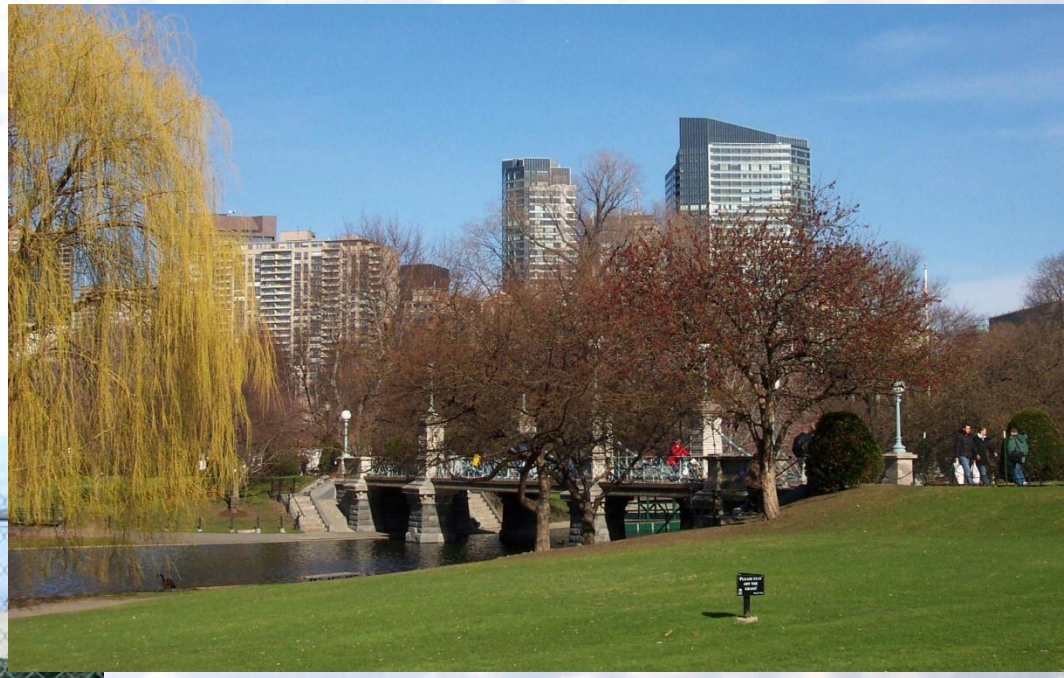
Am J Prev Med, 2009


Associations Between Individual Environmental Characteristics and HEPA/Minimal Activity Among Respondents who Live in Cities with Population ≥ 30,000
Odds Ratio HEPA/Minimal Activity
1.8
1.6
1.4
1.2
1.0
0.8
0.6
Single Family Houses
Shops Near Home
Transit Stop Near Home
Sidewalks Present
Facilities to Bicycle
Low Cost Rec Facilities
Unsafe to Walk due to Crime
'Agree' with Environmental Characteristic ('Disagree' is referent)

Dose Response between Number of Environmental Characteristics and HEPA/Minimal Activity (Pooled City Sample)

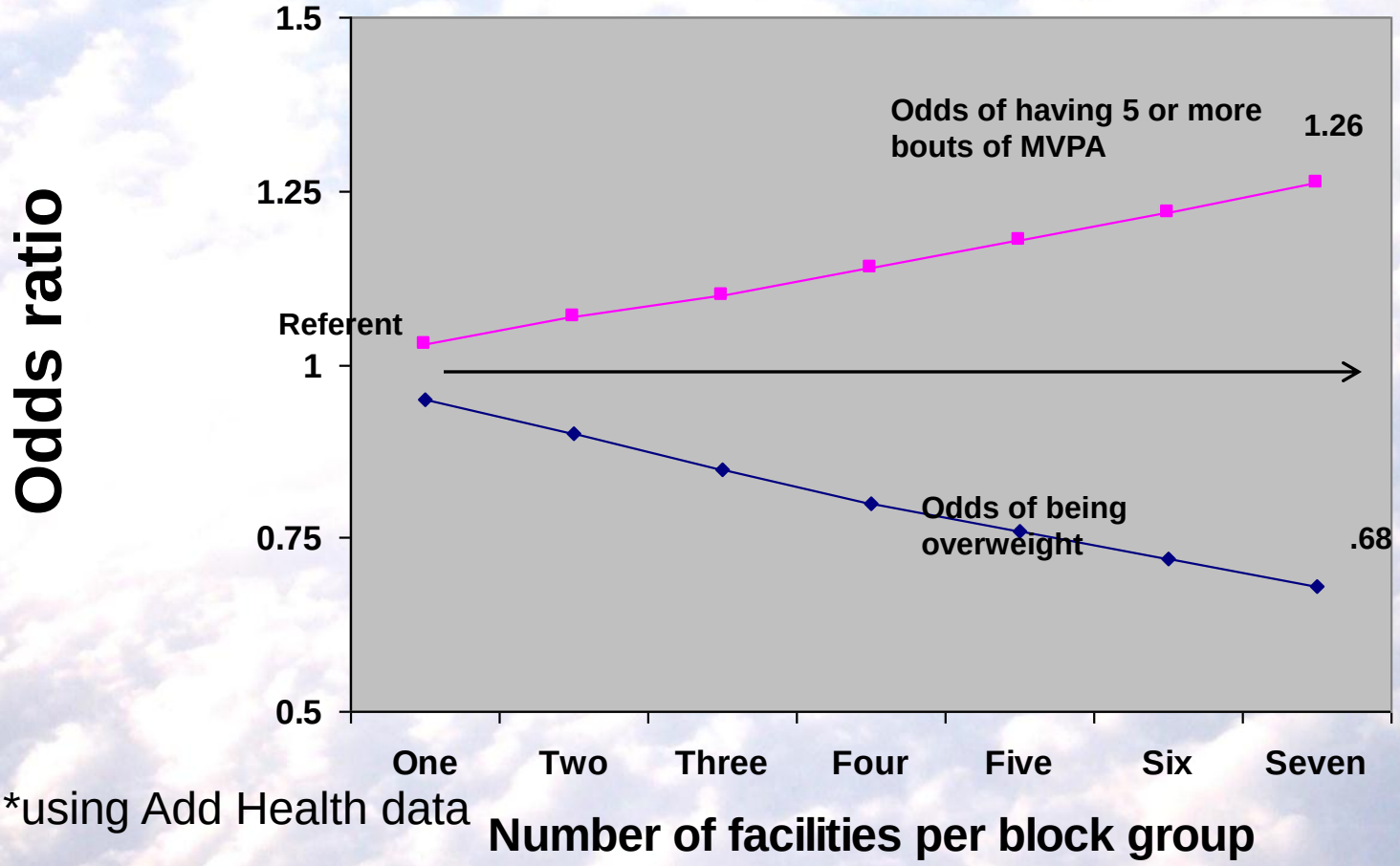


Parks & Active Living:
Q1: Is there a park at all?



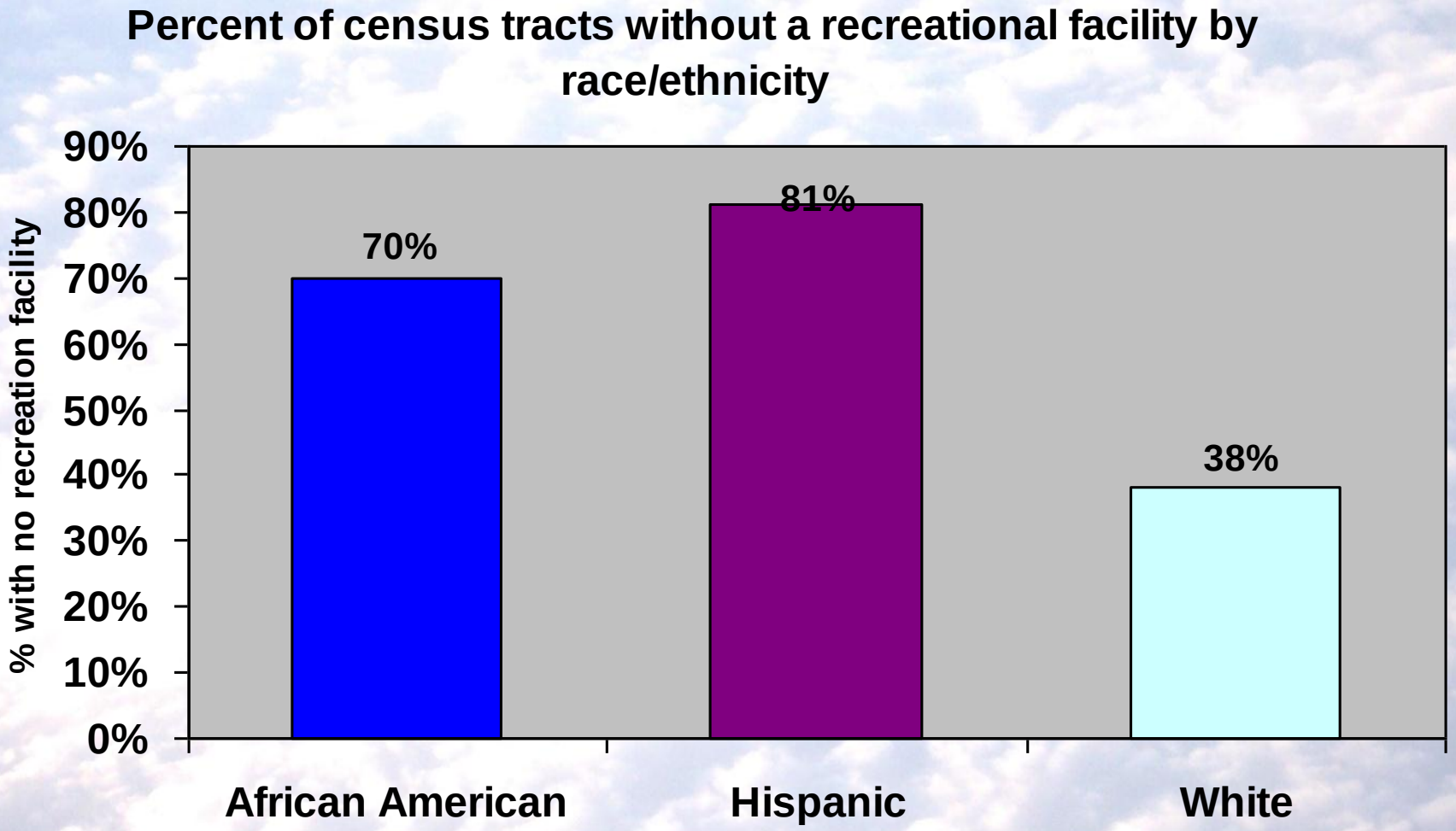
People with access to parks & recreation Facilities are more likely to be active

A national study of US adolescents (N=20,745)* found a greater number of physical activity facilities is directly related to physical activity and inversely related to risk of overweight



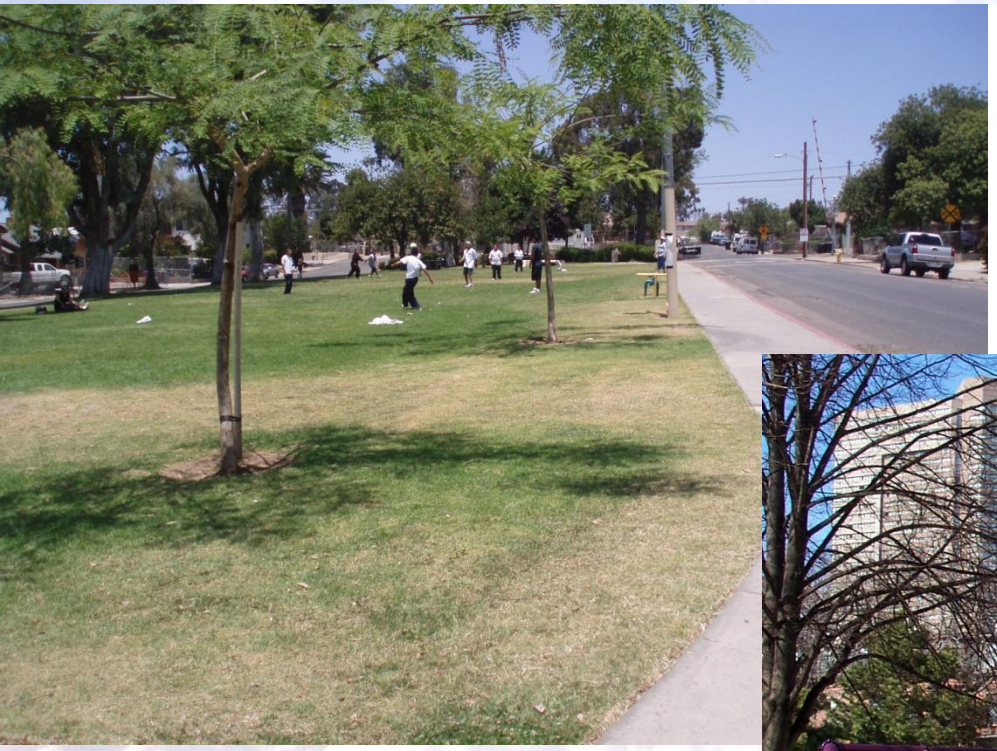
*using Add Health data

Gordon-Larsen et al, Pediatrics, 2006
http://www.pediatrics.org/cgi/content/full/117/2/417



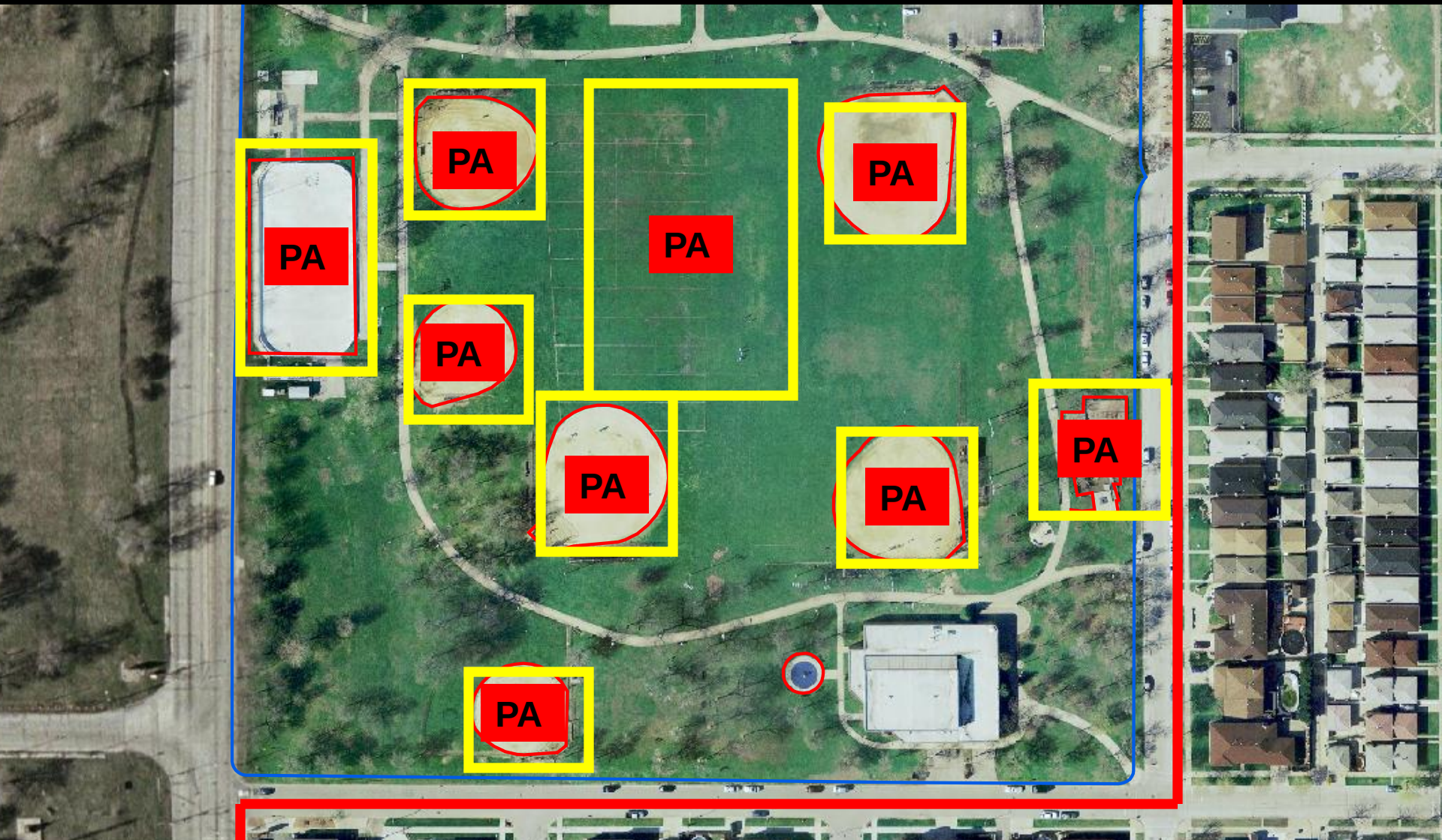
Moore, Am J Prev Med, 2007

Q2: Is the park designed to maximize activity?

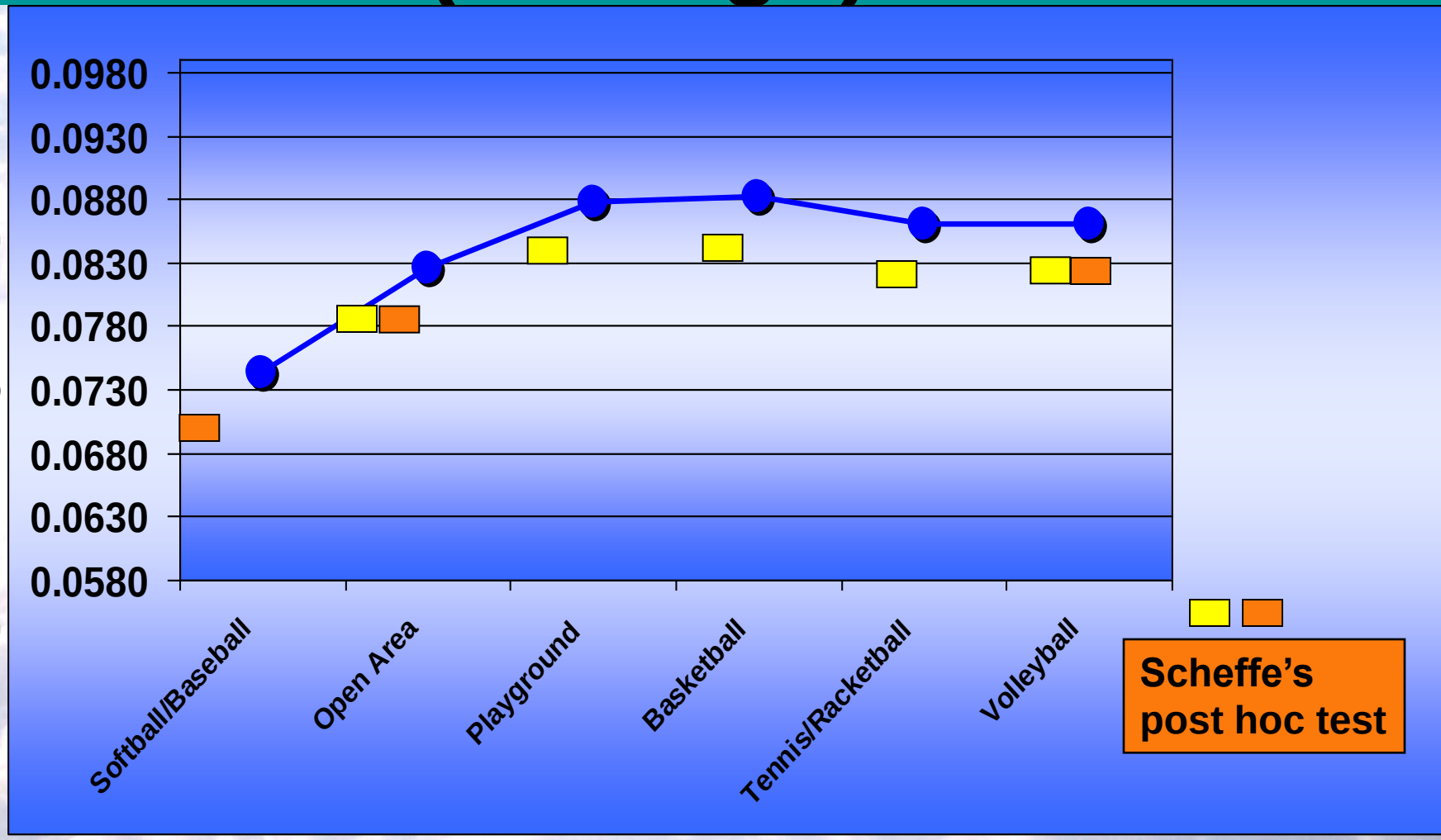


Ecological approach:

neighborhood factors and activity zones influence PA

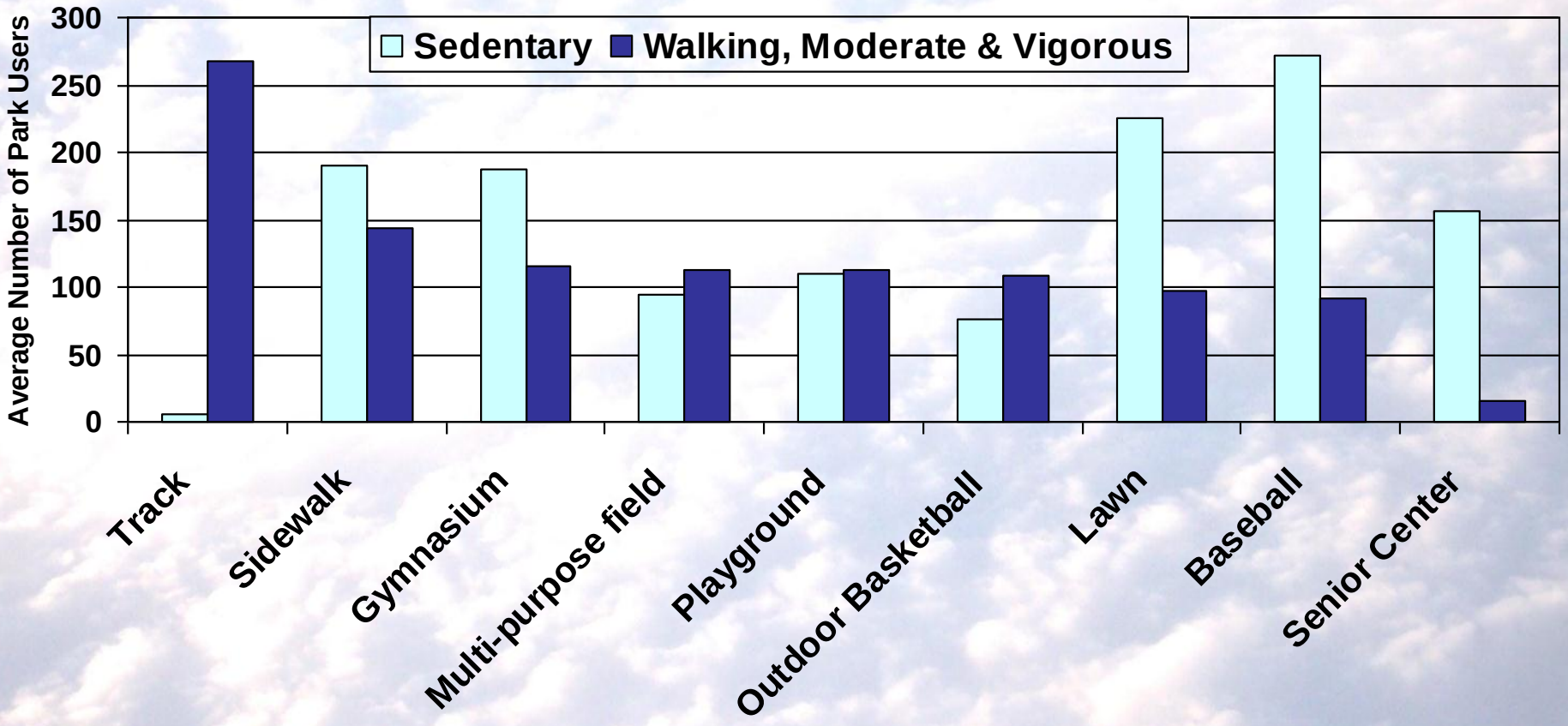


Mean EE by Park Activity Zones (Chicago)



Chicago, $F = 10.20$, $p < .001$

People are Most Active on Tracks and Walking Paths



Cohen. RAND

Don’t Miss This Lesson

- Trails & linear elements are key to promoting activity

Don’t Forget About Access

- When people walk, bike, or take transit to parks, they get more activity

Low Tech Solutions

RAND HEALTH

Family Fitness Zone Evaluation

Deborah Cohen, Terry Marsh,
Stephanie Williamson, and Thom McKenzie

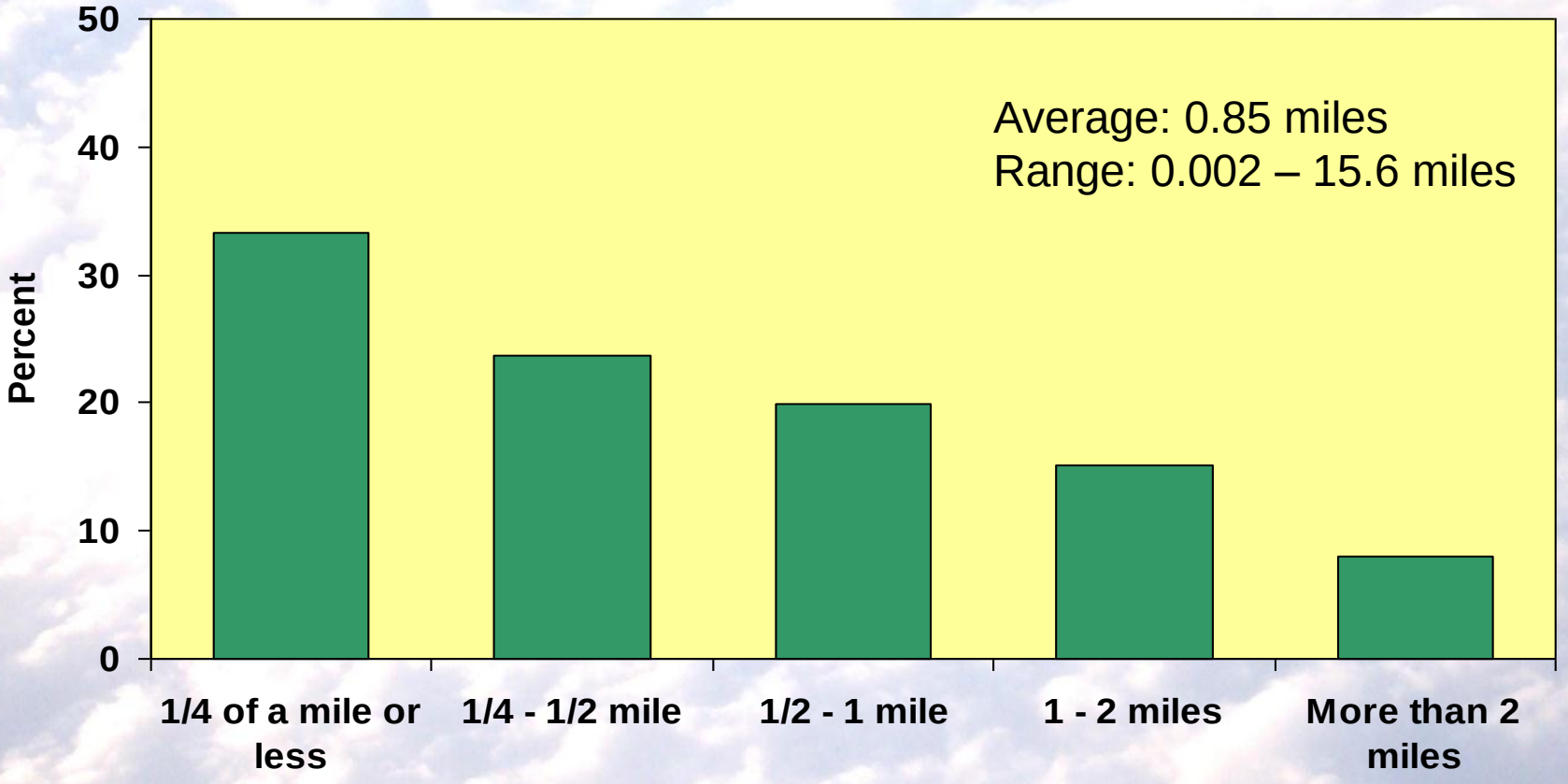
Background

- With funding from a variety of sources, the Trust for Public Land worked with the County and City of Los Angeles to install Fitness Zone equipment

- RWJ Active Living Research Program provided funding to RAND to evaluate the impact on physical activity in 12 parks

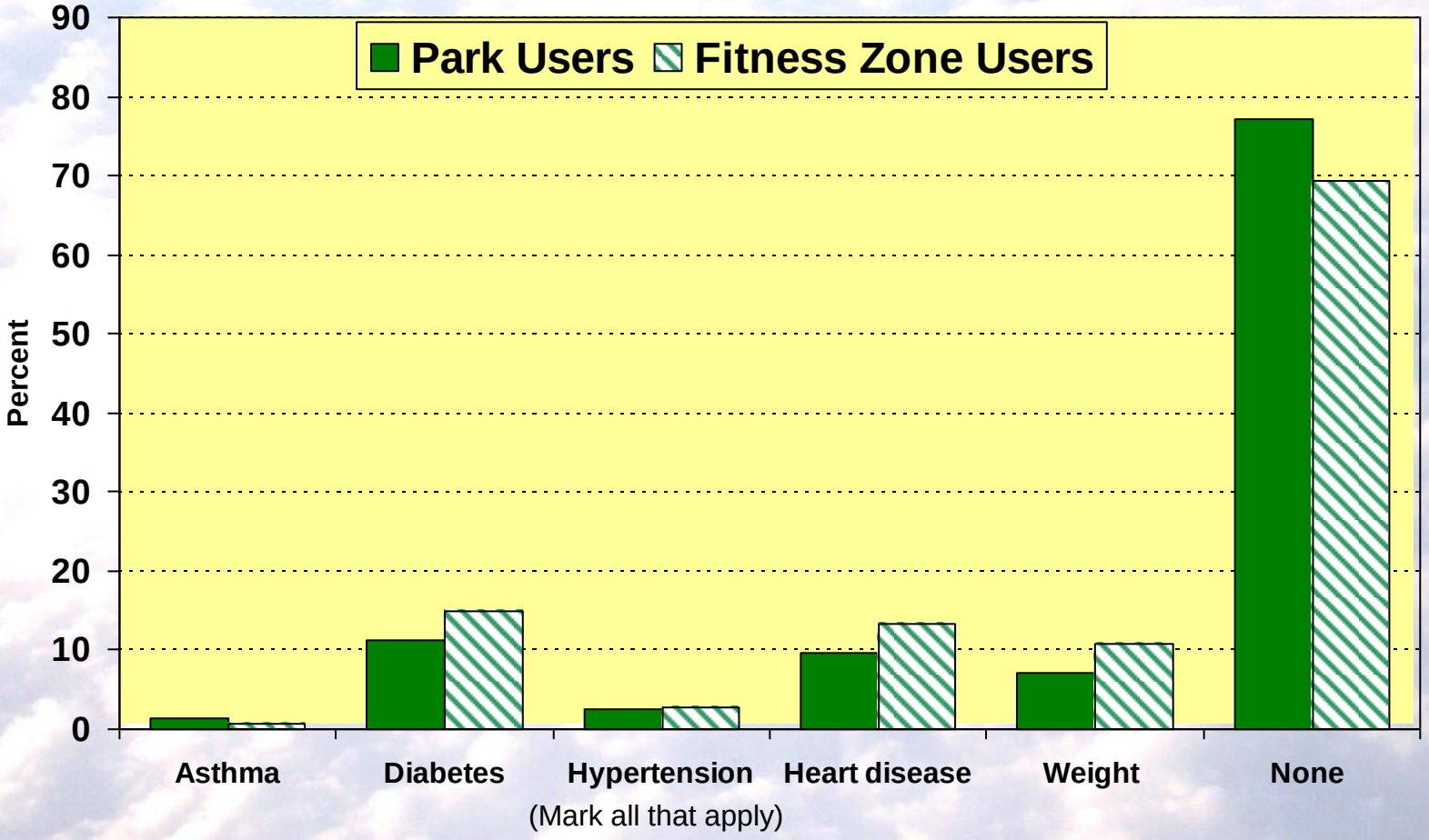
Distance Fitness Zone Users Live from Park

(1st and 2nd Follow-up Combined)



Medical Concerns of Park Users and Fitness Zone Users

(1st FU and 2nd FU Combined)



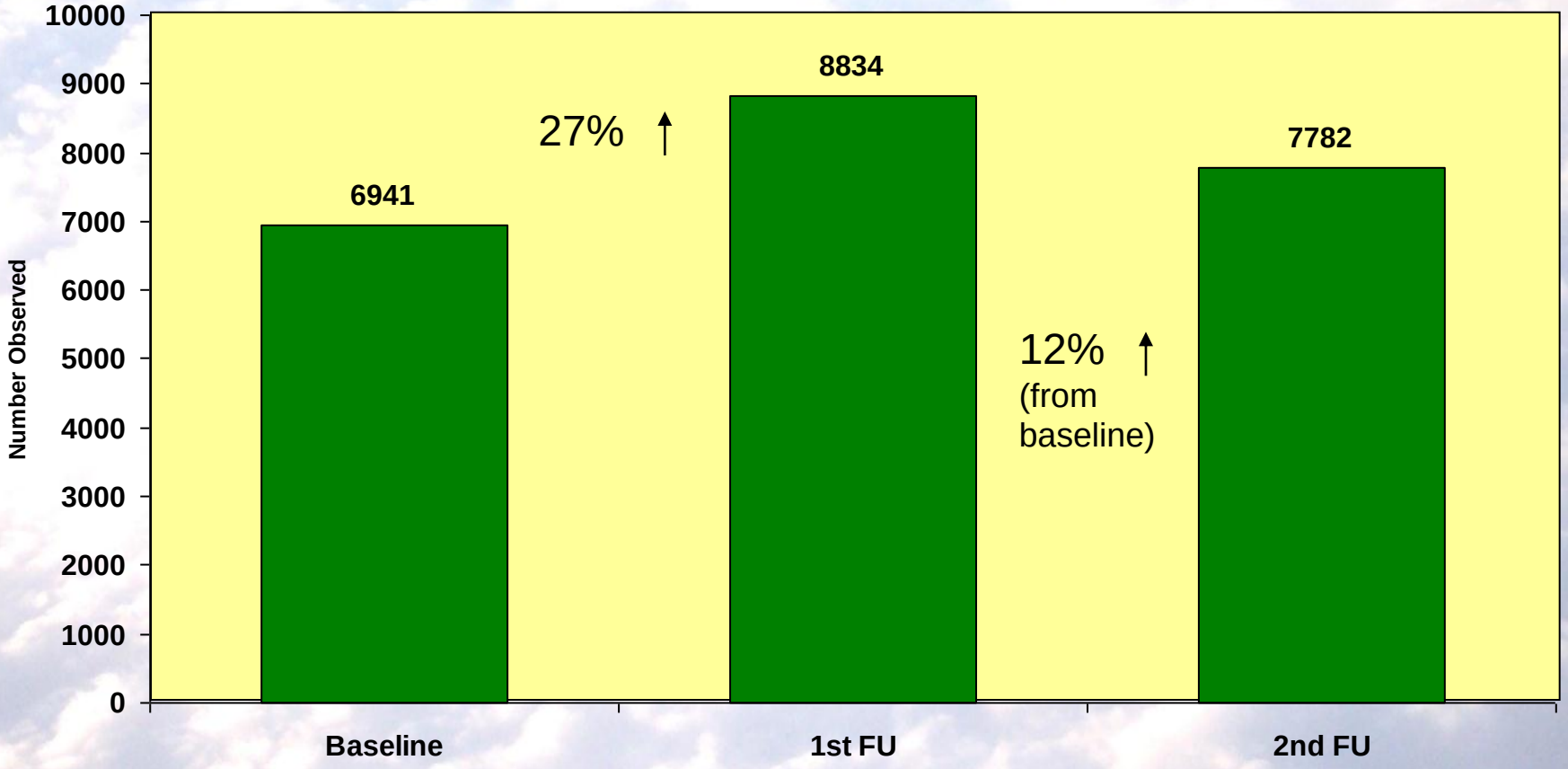
(Mark all that apply)

Favorite Equipment Reported by Users

- Dual pendulum (75%)
- Ski machine (72%)
- Leg press (57%)

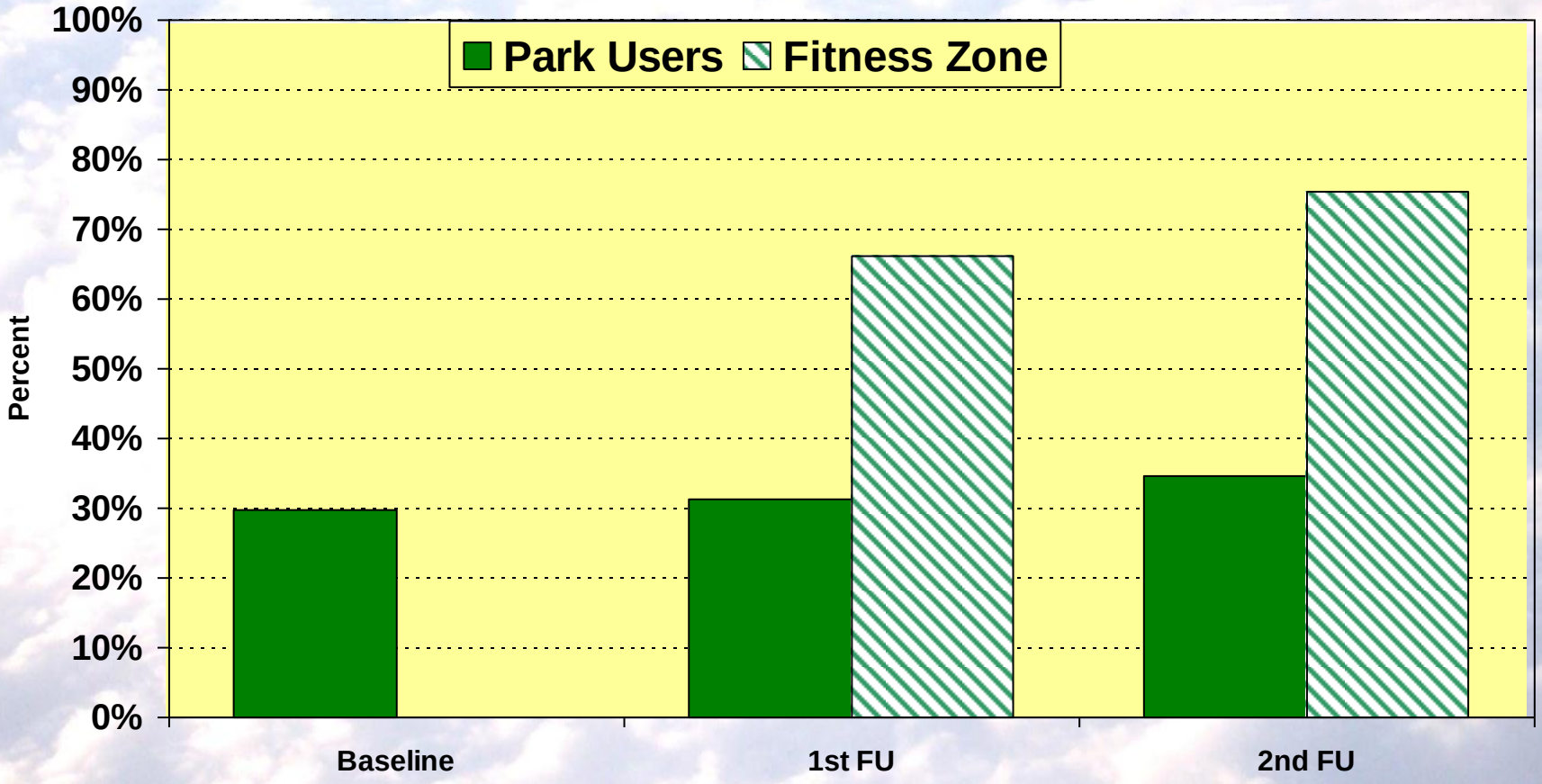
Overall, Park Use Increased

(All 12 parks in aggregate)



Percentage Engaging in MVPA

In Fitness Zones vs. Rest of Park



Conclusions

- Fitness Zones are an important addition, especially to small parks
- Recommend installing equipment most favored by users
- Should add outreach efforts to increase equipment use

High Tech Solutions

- Let's harness technology to promote active use of parks
- Incorporate technology into play equipment (must be bulletproof)
- Park "frequent player" app could assess PA during park visit, graph results, show where they were most active, give discount coupons if they were active enough, give feedback to park managers on who is using parks & what features they use

Resources at www.activelivingresearch.org

Vision for The Future

More of this

Less of this

www.drjamessallis.sdsu.edu

www.activelivingresearch.org