



HEALTH

Barriers to Physical Activity: Community Settings

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How Could Adherence to the PA Guidelines Be Made Easier?

- Embed PA into school/work
- Make PA a necessary part of utilitarian activity (e.g. active transport)
- Make leisure PA opportunities ubiquitous, appealing and convenient (just like fast food)
- **WHY DON'T WE DO THIS?**

Barriers

- **Work/School**
 - Failure to appreciate the harms associated with physical inactivity;
 - No demand to mitigate prolonged sedentary behavior
- **Utilitarian PA**
 - Urban design/convenience of cars
- **Leisure PA**
 - Electronic media and spectator events are more exciting;
 - Limited science and systematic evaluations that support investment in PA opportunities

How Do We Overcome Barriers?

Reframing the Research Questions are key:

- Adherence to PA guidelines (neither loss nor gain)
- Increase population PA to improve health
- **Reduce physical inactivity to avoid harm
(loss avoidance)**

Focus on Physical Inactivity

- A measurable risk factor for multiple health outcomes
- Bias to mitigate risk factors
- Lends itself to research questions with policy level solutions
- Reframes the problem to target contextual factors

Community Settings

- Parks
- Supervised/Organized Activities
- Disparities by Neighborhood SES

Park-Based Physical Activity

- Among most common settings for leisure PA
- National infrastructure for parks;
 - Most people live within 2-5 miles of a public park
 - Scalable setting for leisure PA
- Designed to accommodate MVPA
- Huge appetite for green space and a naïve belief in “Build it and they will come”

Communities are Barriers to PA

- Many policies/rules restrict PA in public parks
- Pay to play: Permit process to use facilities
- Locked green space
- Limited hours; budget, staff cuts
- Park stakeholders have interest in limiting access

Parks and PA

- No nationally representative data to date (huge differences across localities)
- No historical data on trends in park use, staffing and programming
- Little science available to guide park policies/investments/staffing/programming/design/ management to optimize healthy outcomes for local population

Measuring Park Use

- Systematic observation (SOPARC)
- Map parks by activity target areas
- Systematically visit and count people in each area several times per day, several days per week
 - Every hour for 14 hours/day; 3-4x/day
- Count by gender, age group, race/ethnicity, activity level
- Found that 12-16 observations/week were as acceptable as 98/week

Reliability of Observation Schedules*

	Number of Days					
# Times per day	1	2	3	4	5	6
1			<.7	<.7	<.7	<.7
2			<.7	<.7	<.7	<.7
3	<.7	>.7	~.9	~.9	~.9	~.9
4	<.7	.7	~.9	~.9	~.9	~.9

* All alphas improved when one day was a weekend; Sunday better than Saturday

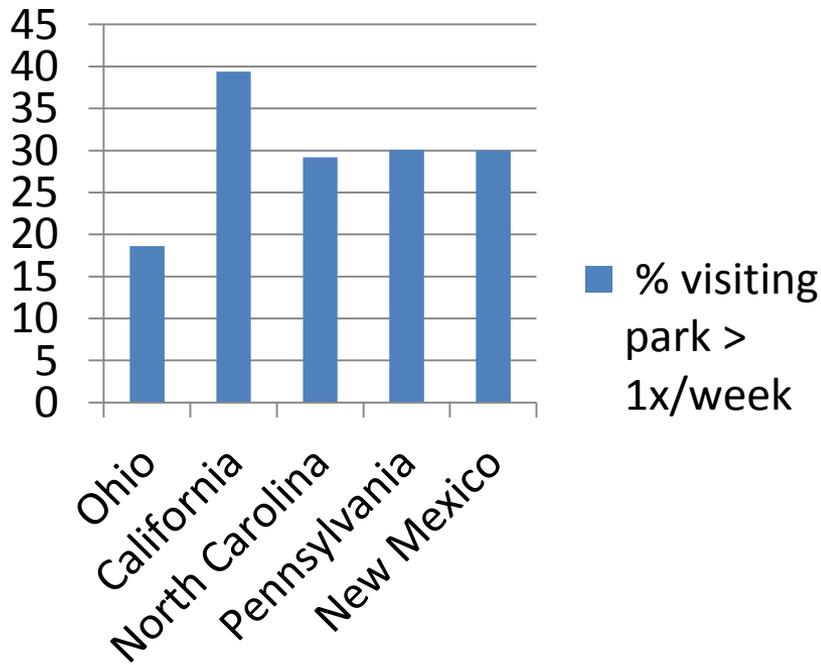
Neighborhood Parks Uniquely Suited for Moderate to Vigorous Activity

- Our data suggest parks contribute up to **50%** of **all vigorous activity** (population in 1/2 mile radius)
 - However, very few people engage in vigorous activity
 - average is < 4 min/day for boys; 2 min/day men; < 2 min/day girls; <1 min/day women)
- Parks contribute \approx 12% moderate activity
- Variability of park MVPA is high: 4-41% of local MVPA (based on 10 parks)

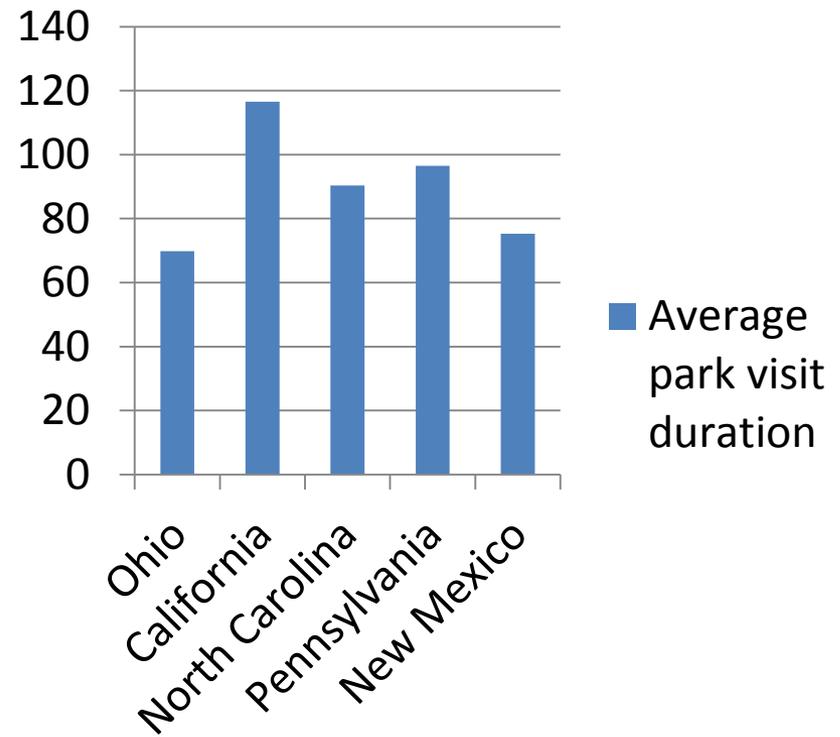
Many Like to Visit Parks

Data from SOPARC (5 cities)

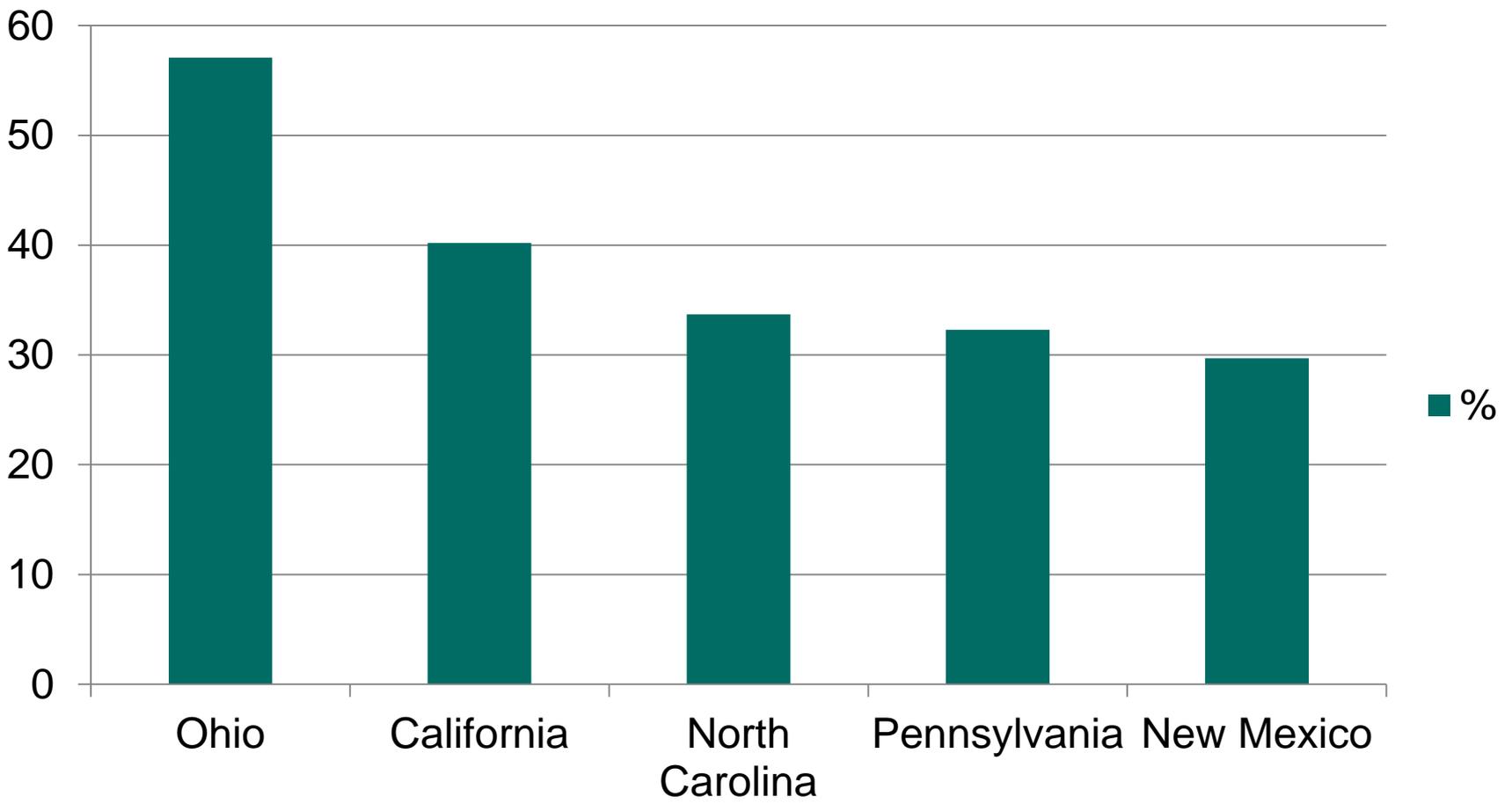
% visiting park > 1x/week
(Residents living within ½ mile from park)



Average park visit duration
(Park Users)



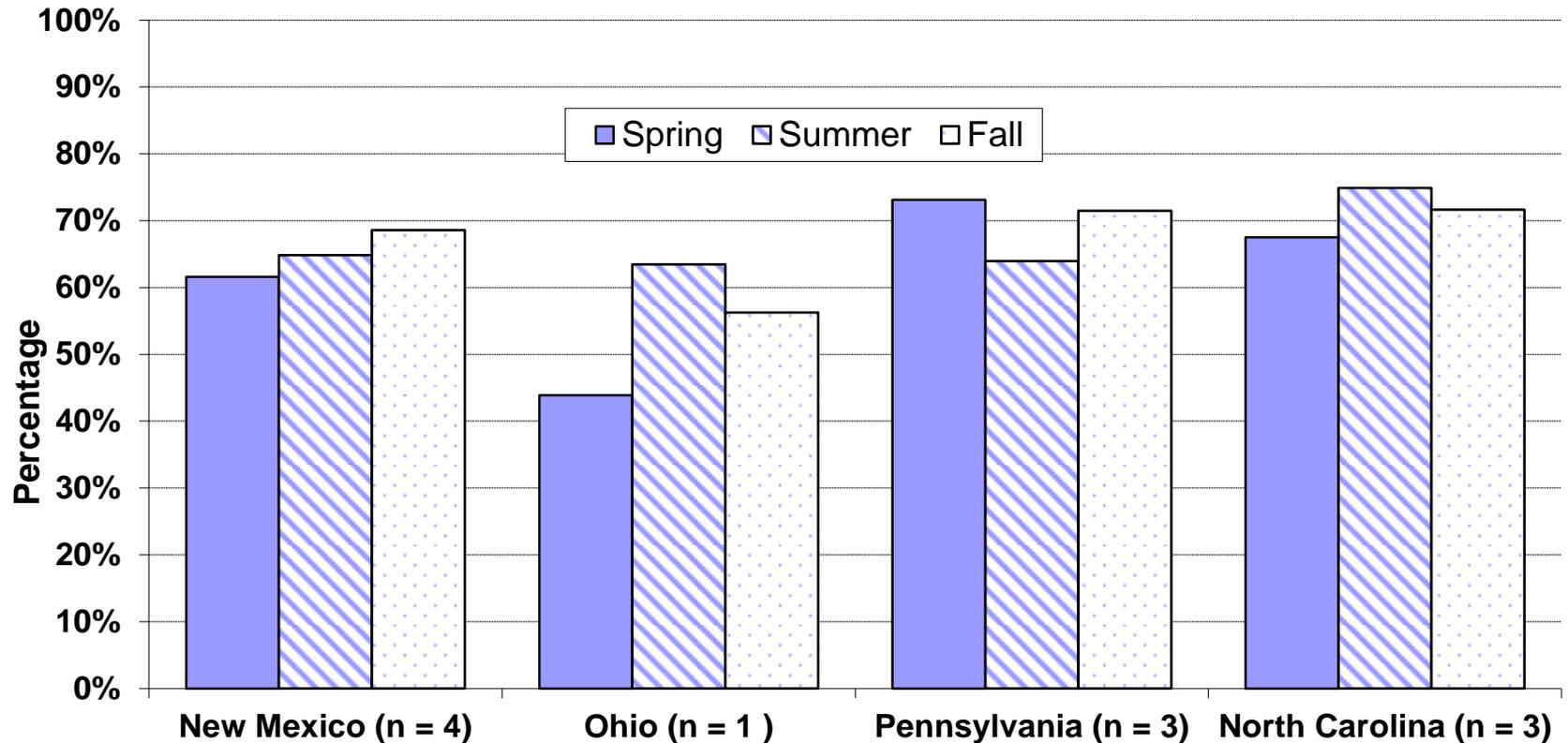
Percent of Residents Within ½ Mile of a Park That Never Visit



Parks are Often Play Deserts

% Areas Empty by State & Season

(Play areas, Multi-purpose Fields, Picnic Areas, and Outdoor Basketball Courts)



Park Use by Adolescent Girls (San Diego and Minneapolis)

Followed 268 high school girls wearing GPS and accelerometers for 2 weeks (1 wk/year)

- 13-16% went to a park 1x/week
- 6-9% went ≥ 2 times/week
- Nearest park averaged 0.3 miles from home, but visited parks were, on average, 6-8 miles away
- Engaged in 6-7 MVPA min. per park visit
- On park visit days got 5-9 more MVPA minutes

K Evenson, et al Park Use and Corresponding Physical Activity Among Adolescent Girls
2012

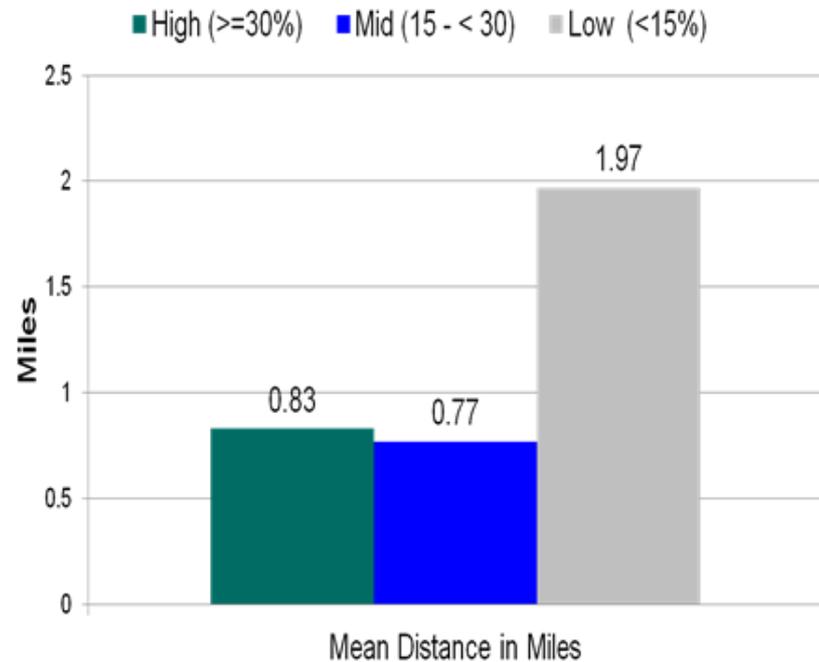
Park Visits Among Adult Park Users (NC, PA, NM, OH, CA)

- 238 adults wore GPS and accelerometers for 3 weeks; majority recruited from parks in 5 ci
- Closest park 0.4 miles from house; parks most often visited were 2.6 miles from home
- Visited parks 3.1x/week going to 2.5 different parks over 3 weeks;
- Stayed 50 minutes/visit; spent 6.2 minutes in MVPA
- Engaged in MVPA additional 3.7 minutes going to and from the park (within 30 minutes before and after park visit)

K Evenson: Assessing the Contribution of Parks to Physical Activity using Objective Measures

Disparities in Park Use by SES (50 Los Angeles Parks)

- Parks used less in low income neighborhoods
- 35% lower, controlling for park size and other factors),
- Low income area park users are more likely to walk there.
- Programming accounts for large proportion of park use disparities.



Cohen D, Han B, Derosé K, et al. Neighborhood poverty, park use, and park-based physical activity in a Southern California city. *Soc Sci Med.* 2012

Park Interventions:

Mostly Case Study-Type Data Available*

- **3 Pocket parks:** Used as well or better than playground areas of larger parks, more park users walk there.
- **12 Fitness Zones:** Used throughout the day. But how well they are used depends on placement. Modest increase in observed MVPA.
- **Renovation of 5 parks, esp. new gym:** No increased use (decreased hours and accessibility)
- **7 Skate parks:** Overall increase in park use
- **1 Bike paths:** More bike use
- **2 complete park/playground renovation–** substantial increase in use and MVPA

* Used direct observation

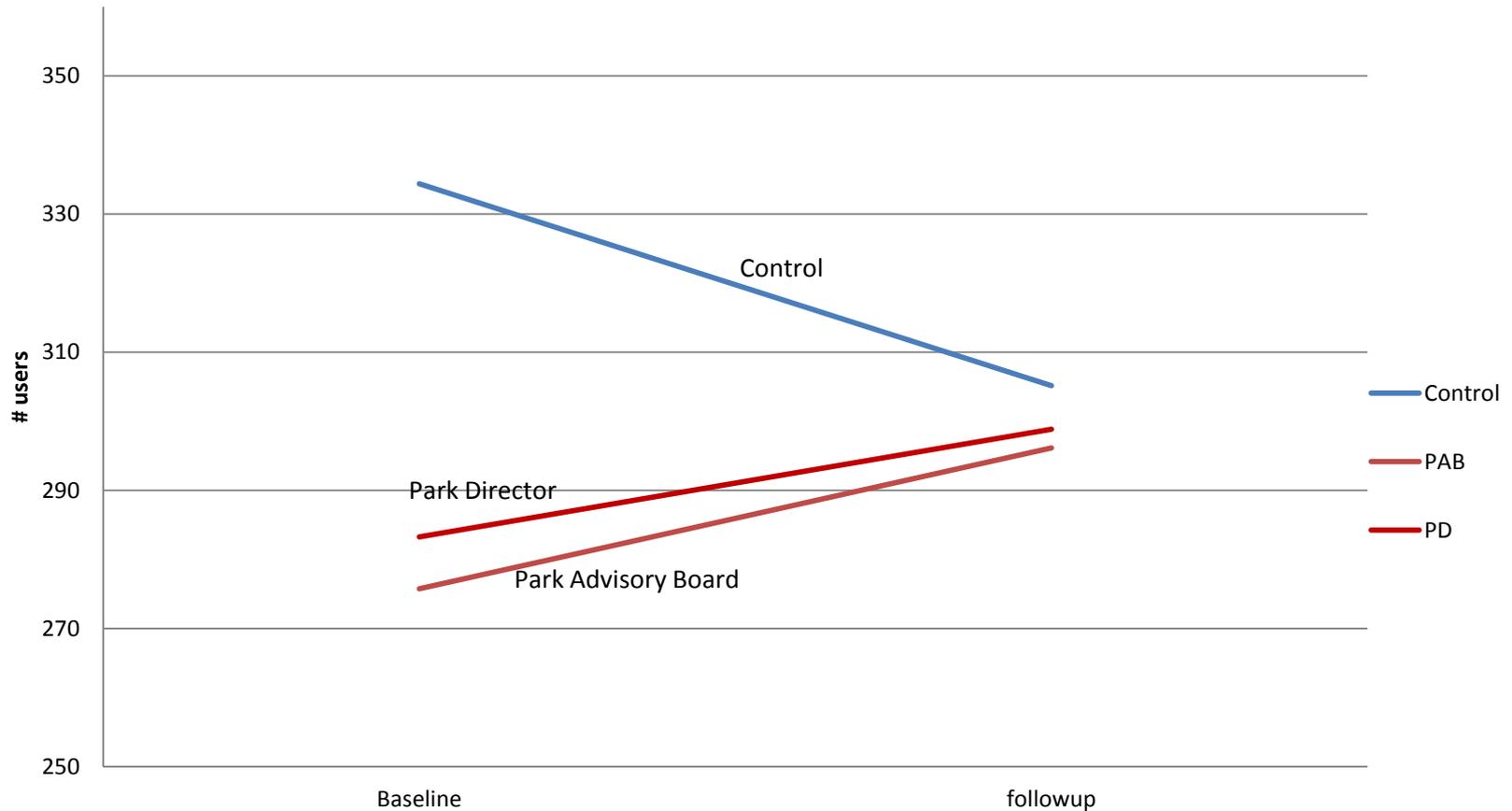
Can Parks Attract More Users and Increase On-site Physical Activity?

- Randomized 50 parks to 3 conditions:
 - Outreach/programs selected in collaboration with Park Advisory Board (+\$4000 and training)
 - Outreach/programs selected by Park Director (+\$4000 and training)
 - Comparison group-No money or training provided
- Measured park use and physical activity before and after

Park Interventions

- Signage
- Promotional incentives
- Classes/activities

Observed Average Daily Usage



Measured Changes

- Doing nothing leads to fewer users:
 - Control parks lost 146 users/park per week (6-10%);
 - 355 fewer METS expended;
 - Relatively, intervention parks gained 7-12%
- Doing something can increase users
 - Difference was 173 more users/week/park;
 - 571 more METS expended/week/park:
 - equivalent to 429 more people walking briskly for 20 minutes every week.
- If the effect lasted at least 20 weeks, the cost per MET gained is 36 cents;
- Investment in signage appeared most closely associated with changes in MVPA.

Facilities Without Programs and Outreach May Not Attract Users

- Park use highly correlated with the number of supervised/organized activities
- Jane Jacobs called this “demand goods”

Events

The Gates 2005 quadrupled walking visits in Central Park to 4 million people in two winter weeks

How Important Are Parks for Physical Activity?

- Jane Jacobs suggested that the streets were more interesting and useful than park playgrounds
- Streets can be parks for a day; Ciclovía concept
- On “parking day” parking spots are converted into mini-parks.

What research information would reduce physical inactivity?

- Work/school setting
 - Show impact of mitigating sedentary behavior
- Community setting
 - Marketing research
 - Large demonstration projects with outcomes that go beyond health, and include community economic benefits and crime reduction
 - (lots of potential community partners)

Cost-Effectiveness of PA Interventions

- CE usually uses \$/QALYs
- Recommend \$/MET-hours or \$/min of MVPA generated— important metric used in the physical activity guidelines
- Number of people reached (scalability)
- Benchmark cost per MET-hour
 - Benchmark was 2.5-5% of health care costs due to physical inactivity = 0.50-\$1.00/MET-hour

Importance of Objective Measures

- Greater CE for studies with self-reported PA vs. objectively measured.
- Poor correlation between self-report and measured PA makes studies that rely on self-report suspect.