Park Interventions: Can Improving Parks Increase Physical Activity?

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Introduction

• Creating and renovating parks is appealing
  – Tangible evidence of investment
  – Provides facilities for physical activity and time in the sun (Vit. D deficiency is common)
  – A place for people to socialize
  – Evidence that increasing access to opportunities for PA is effective

• However, whether all investments in parks and playgrounds are effective is unclear
  – Review several park evaluation studies
  – Share new findings on impact of poverty on parks use in parks in 5 cities
SOPARC

• Systematic observation of play and recreation in communities

• Map parks by target areas

• Systematically rotate and count people in each area several times per day, several days per week

• Count by gender, age group, race/ethnicity, activity level

• When comparing park use over time, observations are done in the same season
Physical Facility Improvements

• General park improvements
  – Skate parks
  – New pocket parks
  – Fitness Zones
  – Park renovations/new gyms
What is the Impact of Skate Parks on Park Use?
Number of Users of Renovated and New Skate Parks in Los Angeles

- Pedlow: Baseline 200, Follow-up 1700
- Stoner: Baseline 200, Follow-up 800
- Harvard: Baseline 200, Follow-up 600
- North Hollywood: Baseline 200, Follow-up 500
- Lincoln Park: Baseline 200, Follow-up 200
- Rancho Cienega: Baseline 200, Follow-up 100
- Hollenbeck: Baseline 200, Follow-up 100
Overall Park Use Increased in 5/7 Parks

- Baseline
- Follow-up

Number Observed in Park

- Pedlow
- Stoner
- Harvard
- North Hollywood
- Lincoln Park
- Rancho Cienega
- Hollenbeck
Benefits of Skate Parks

• Attracts primarily young males

• Location in park may play a role in use:
  – Skate parks that were not easily visible from the street were less used; one was vandalized.
  – Design may be relevant; no shade or trees near less used skate parks
Pocket Parks

• Three pocket parks:
  – Beverly (pop. 30,000 in ½ mile; 39% poverty)
  – Broadway (pop. 13,000 in ½ mile; 41% poverty)
  – Marson (pop. 3,400 in ½ mile; 30% poverty)

• Baseline: Summer 2006

• Follow-up: Summer 2008

• Compared use to 15 neighborhood park play areas in similar SES neighborhoods
Beverly Pocket Park
Broadway Pocket Park
Observations 2006 vs 2008

- Beverly 2006: 3
- Beverly 2008: 316
- Broadway 2006: 0
- Broadway 2008: 47
- Marson 2006: 0
- Marson 2008: 164
Utilization of Pocket Parks Compared to Neighborhood Park Play Areas

- Poverty 28%-32%
- Poverty 37% to 41%
- Poverty 41%-42%

Pocket Park
Comparison parks

3 High poverty comparison Playgrounds 201, 53, and 23 counted
Residents that Use to the Park, Usually Walk to Park

![Bar chart showing the comparison between Pocket Park and Comparison Parks for Marson, Beverly, and Broadway. The chart indicates higher usage of Pocket Park compared to Comparison Parks in all locations.](chart.png)
Resident Perception of Safety
(Very Safe or Safe)

Percent

Marson  Beverly  Broadway
Pocket Park  Comparison Parks
Level of Physical Activity

- Beverly: 79% (79%)
- Marson: 74% (15%, 11%)
- Broadway: 45% (33%, 22%)

Legend:
- Red: Sedentary
- Yellow: Walking
- Green: Vigorous
Pocket Parks

- Two parks appear to be better used by local residents than larger neighborhood parks that serve a wider area.

- All parks considered safer or as safe as larger, staffed neighborhood parks.

- Steps should be taken to mitigate safety concerns.

- Part-time staffing/programs may help.
Effectiveness of Family Fitness Zones
## Park Characteristics

<table>
<thead>
<tr>
<th>Park</th>
<th>County or City</th>
<th>1-mile Population Estimate (2000)</th>
<th>Acres</th>
<th>% Hispanic</th>
<th>% Black</th>
<th>% Poverty</th>
</tr>
</thead>
<tbody>
<tr>
<td>48th Street*</td>
<td>City</td>
<td>64,409</td>
<td>1</td>
<td>67.9</td>
<td>30.1</td>
<td>39.8</td>
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<td>Alondra*</td>
<td>County</td>
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<td>42.7</td>
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<td>15.5</td>
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<tr>
<td>Athens</td>
<td>County</td>
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<td>20</td>
<td>52.1</td>
<td>45.4</td>
<td>31.7</td>
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<tr>
<td>Cerritos*</td>
<td>County</td>
<td>26,391</td>
<td>14.4</td>
<td>19.3</td>
<td>8.4</td>
<td>6.8</td>
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<tr>
<td>Gilbert*</td>
<td>City</td>
<td>72,292</td>
<td>18</td>
<td>81.5</td>
<td>17.4</td>
<td>41.5</td>
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<tr>
<td>Ladera</td>
<td>County</td>
<td>33,213</td>
<td>15.9</td>
<td>19.1</td>
<td>68.6</td>
<td>14.9</td>
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<tr>
<td>Pathfinder</td>
<td>County</td>
<td>7,581</td>
<td>29</td>
<td>25.9</td>
<td>1.9</td>
<td>8.0</td>
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<tr>
<td>Salazar</td>
<td>City</td>
<td>42,278</td>
<td>8.4</td>
<td>97.3</td>
<td>0.3</td>
<td>61.5</td>
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<tr>
<td>Slauson*</td>
<td>City</td>
<td>48,529</td>
<td>3.6</td>
<td>83.6</td>
<td>14.8</td>
<td>41.5</td>
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<tr>
<td>South*</td>
<td>City</td>
<td>70,060</td>
<td>18</td>
<td>78.6</td>
<td>20.4</td>
<td>41.0</td>
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<tr>
<td>Steinmetz</td>
<td>County</td>
<td>19,978</td>
<td>12.8</td>
<td>52.1</td>
<td>1.4</td>
<td>11.9</td>
</tr>
<tr>
<td>Trinity</td>
<td>City</td>
<td>44,678</td>
<td>2</td>
<td>89.5</td>
<td>8.2</td>
<td>37.5</td>
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<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>40,964</strong></td>
<td><strong>14.4</strong></td>
<td><strong>59.1</strong></td>
<td><strong>18.9</strong></td>
<td><strong>29.3</strong></td>
</tr>
</tbody>
</table>

*Parks with an increase in use after FZ were installed.*
Total Observations and Surveys

• The 12 parks together serve a population of nearly 500,000

• Across three waves of observations, we counted
  – 23,577 people in 12 parks
  – 2,570 people in Fitness Zones

• We interviewed 2,637 people, including 722 in Fitness Zone areas
Fitness Zone Equipment Is Used All Day Long
(Average Users Observed in One Scan Each Hour)
Increases Concentrated in 6 of 12 Parks
### Population Density Differs in Overall Use Between Parks With and Without Increases

<table>
<thead>
<tr>
<th></th>
<th>Increased use</th>
<th>No increase</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of parks with an increase in use</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Average acreage</td>
<td>11.8</td>
<td>14.7</td>
</tr>
<tr>
<td>Average population density</td>
<td>53,274</td>
<td>28,653</td>
</tr>
<tr>
<td>% Latino in population</td>
<td>62.3%</td>
<td>56.0%</td>
</tr>
<tr>
<td>% Black in population</td>
<td>16.8%</td>
<td>20.9%</td>
</tr>
<tr>
<td>County vs city parks</td>
<td>4 city</td>
<td>4 county</td>
</tr>
<tr>
<td>% population in poverty</td>
<td>31.0%</td>
<td>27.6%</td>
</tr>
</tbody>
</table>
Compared to Similar Parks with No Fitness Zones

• We looked at changes in parks use in 10 similar parks between 2008 and 2010

• Overall park use and energy expenditure increased more in Fitness Zone parks compared to others, but not statistically significant.

• Limitations:
  – Small numbers
  – Changes in comparison parks were over 2 years vs. 1 year in FZ parks
Cost-Effectiveness is Favorable

Assumptions:

• $45,000 per zone for 15 years or $3000/year

• If maintenance is $2000 per year, annual cost is $5000

• Assume that average METs expended between time 1 and 2 holds for 12 hours/day, 7 days/week, 47 weeks/ year

• Cost per MET is $0.105/MET per FZ (1 MET= walking for 15-20 minutes)

• For adults, less than $0.50/MET is considered cost-effective; thus FZ more cost-effective than many other evaluated physical activity interventions
What Happens When Parks Get Improved Facilities?

- 5 parks changed; 5 comparison parks had no changes
- Predominantly Latino and African-American neighborhoods
- Most parks studied are in low-income neighborhoods (average 31% households in poverty) and serve an average of 67,000 people in 1 mile radius and 210,000 people in 2 mile radius
- Park size ranges from 3.4 to 16 acres, with an average of 8 acres
What Is the Effect of Adding New Facilities to Parks?

Replace this rec center . . .
What Is The Effect of Adding New Facilities to Parks?

Replace this rec center . . .

. . . with this new center
Old Sport Facilities Before Improvements
New Gym After Improvements
Play Area Prior to Improvements
Improved Play Area
Undeveloped Space
New Picnic Area
Tennis Courts Replaced with Gym
Baseline Park Use

Baseline: Avg of 2000 persons observed per park
Overall, Use of 10 Parks Declined

Baseline: Avg of 2000 persons observed per park
Follow-up: Avg of 1500 persons observed per park
Number of Organized Activities Over Time

<table>
<thead>
<tr>
<th>Activity</th>
<th>Baseline</th>
<th>Follow-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gymnasium</td>
<td>35</td>
<td>27</td>
</tr>
<tr>
<td>Outdoor Basketball Court</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Multi-purpose Field</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Baseball Field</td>
<td>27</td>
<td>9</td>
</tr>
</tbody>
</table>
Increased Use In 2/5 Intervention and 1/5 Comparison Parks

![Bar chart showing increased use in intervention and comparison parks.](chart.png)
Reported Frequency of Park Use

Baseline
Follow-up

% of Park Users and Residents

Daily > 1 x week > 1 x month < once month Only once Never

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Reported Frequency of Park Use Also Decreased
People Felt the Parks Were Safer

- % Baseline
- % Follow-up

- Very safe
- Safe
- Not very safe
- Not safe at all

% Respondents

0 10 20 30 40 50 60 70 80
What Can Explain the Decrease in Park Use Over Time?

• Secular trend for decreased park use (not due to closures)

• Reduced programming: 39% of the decline directly due to reduced organized activities
  
  • Reduced hours for several gyms; shortened baseball season

• Reduced staff “face time” with public, more administrative tasks

• No budget increases for more staff or programs, only cuts or flat funding
Lessons

• Improving physical structures alone and increasing perceptions of safety may not change physical activity

• Opportunity for social interactions (e.g., through park programming) may be needed to help park users make use of physical changes

• Probably need more attention to outreach
Case Study of Multiple Improvements

New fitness zones,
Walking path,
New Director

Number Observed

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>New Gym</td>
<td>638</td>
<td>986</td>
<td>1891</td>
<td>3973</td>
</tr>
</tbody>
</table>

RAND
Differences in Park Use Nationally

[Map of the United States with various cities and parks marked, such as Los Angeles, Albuquerque, and Philadelphia.]
**Characteristics of Park Neighborhoods**

*Parks outside of Los Angeles studied Spring, Summer and Fall*

<table>
<thead>
<tr>
<th></th>
<th>Average Park Size in Acres</th>
<th>Average Percent of Households in Poverty within ½ mile of Parks</th>
<th>Average Population Density within ½ mile of Parks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Philadelphia, PA</td>
<td>6.8</td>
<td>28.5%</td>
<td>16,182</td>
</tr>
<tr>
<td>Columbus, OH</td>
<td>6.9</td>
<td>20.5%</td>
<td>7,623</td>
</tr>
<tr>
<td>Albuquerque, NM</td>
<td>7.3</td>
<td>15.8%</td>
<td>4,426</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>12.9</td>
<td>17.1%</td>
<td>11,851</td>
</tr>
<tr>
<td>Chapel Hill, NC</td>
<td>28.2</td>
<td>10.3%</td>
<td>6,043</td>
</tr>
<tr>
<td>Overall Average</td>
<td>12.4</td>
<td>14.3%</td>
<td>9,680</td>
</tr>
</tbody>
</table>

We divided parks into high and low poverty in each city based upon the mean percentage of households in poverty in that city.
Average Number of Park Users Observed

High Poverty Parks = > average poverty level for city
**Park Users Observed**

**Controlling for Park Size and Population Density**

*(observed park users/ park acres / population in 1/2 mile)*

![Bar chart showing observed park users per park acres and population in 1/2 mile for different cities. The chart compares High Poverty and Low Poverty areas.](chart.png)
Avg. # Organized Activities
Controlling for Park Size and Population Density
(organized activities / park acres / population in 1/2 mile)

Philadelphia, PA
Chapel Hill, NC
Columbus, OH
Los Angeles, CA
Albuquerque, NM

High Poverty
Low Poverty
Residents living in ½ mile from Park
Visiting at Least Once Per Week

Over 900 residents surveyed in each city, except Los Angeles
Residents that Perceive Park as Very Safe or Safe

![Bar chart showing the percent of residents perceiving park safety in different cities, comparing high and low poverty areas.]

- Albuquerque, NM: High Poverty (95%), Low Poverty (98%)
- Los Angeles, CA: High Poverty (90%), Low Poverty (95%)
- Chapel Hill, NC: High Poverty (80%), Low Poverty (85%)
- Philadelphia, PA: High Poverty (70%), Low Poverty (75%)
- Columbus, OH: High Poverty (60%), Low Poverty (65%)
Residents that Perceive Park Unsafe Due to Crime

- High Poverty
- Low Poverty

Columbus, OH
Philadelphia, PA
Albuquerque, NM
Los Angeles, CA
Chapel Hill, NC
Poverty and Perception of Safety NOT Associated with Park Use in this Sample

• Controlled for park size, the number of active facilities, season, # of staff, population density, and site

• Associations with # of park use are:
  – Weekend days– 50% more users
  – Albuquerque and North Carolina higher than Philadelphia and Columbus
  – Supervised and organized activities increase park use by 79%
Limitations

• Small number of parks/city

• Not clear if parks are completely representative; may over-represent high poverty areas

• Main finding: Influence of poverty varies across cities
Summary

• Parks are an important venue for physical activity for all income populations; but underutilized

• Not all interventions work in all places equally well.

• Measurement can highlight importance and potential of parks to increase physical activity
**SOPARC App**

- SOPARC app will allow anyone to enter data about their park and get immediate results in graphs or Excel files

- Coming in a couple weeks....

soparc.rand.org