



**Illinois Prevention
Research Center**

The Chicago Plays! Initiative: Evaluation of a Natural Experiment to Increase Park Use

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Presenter Disclosures

Sandy Slater

- (1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

“No relationships to disclose”



Research Team and Partners

- Anita Bontu, MPH
- Oksana Pugach, PhD
- Shannon Zenk, PhD
- Angela Odoms-Young, PhD
- Wan-Ting Lin, JD
- Chicago Park District
- Friends of the Parks



Benefits of Physical Activity

Physical Health

Fitness
Quality of life
Prevention of Chronic disease

Mental Health

Reduced anxiety
and depression

Psychosocial Health

Self-efficacy
Social behaviors
Goal orientation

Brain Health

Memory
Time on task
Executive function



Parks and Physical Activity

- **Neighborhood parks are usually freely accessible to all community members.**
- **Low-income urban neighborhoods have access to a greater number of parks.**
- **Are park improvements enough to increase use and physical activity?**
 - **Studies of park renovations have shown mixed results.**
 - **May need to introduce other intervention activities.**

(Wen et al. 2013, Vaughan et al. 2013, Franzini et al. 2010, Cohen et al. 2009)



The Community Guide Recommends the following environmental approaches to increase physical activity

Environmental Policy Approach	Strategies
Enhanced School-based Physical Education	Increase # of minutes spent in MVPA
Creation of or Enhanced Access to Places for PA combined with Informational Outreach Activities	Build trails or facilities, reduce access barriers (e.g., reducing fees or changing operating hours of facilities).
Community-Scale and Urban Design Land Use Policies	Mixed use, street connectivity, aesthetics and safety
Street-Scale Urban Design Land Use Policies	Roadway design standards, traffic calming, safe street crossings, street lighting
Transportation and Travel Design Policies and Practices	Facilitating walking, biking, public transportation use, reducing car use



Background

- **Study by Broyles et al. found that parks with higher levels of social capital had higher daily visitation rates and higher social capital was associated with greater levels of physical activity by park users.**
- **This study focused only on adult use and activity, and did not examine added impact that renovations may have on these outcomes.**



Background

- A needs assessment of all Chicago parks, conducted in 2009 through 2011, identified 300 playgrounds in need of repair.
- The Chicago Plays! Initiative was created to renovate these 300 playgrounds over the next five years and enhance safety and accessibility for all Chicago residents. (Project is funded with existing capital improvement funds)
- The Chicago Park District and Friends of the Parks developed a competitive application process where community *groups* (e.g., park advisory councils, block and church groups): 1) nominated playgrounds to be renovated in Year 1 of the program and 2) proposed plans for ongoing playground maintenance.
- The process was meant to empower residents living in intervention areas (i.e., those receiving *first stage* renovated playgrounds) to improve their neighborhoods and health by increasing park utilization and PA for children and their families.



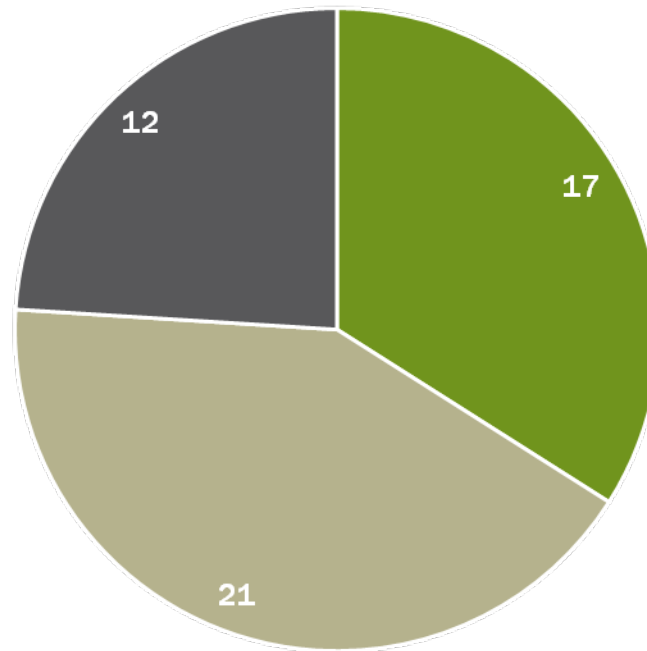
Study Purpose

- **Primary Objective: To examine the impact of community engagement (i.e., involvement in the playground design selection process, installation, and ongoing maintenance) + park renovation compared to a matched control group of un-renovated playgrounds, not yet exposed to these community engagement activities and renovations, on park-based utilization and physical activity.**



Submitted Applications

Chicago Plays! Applicants



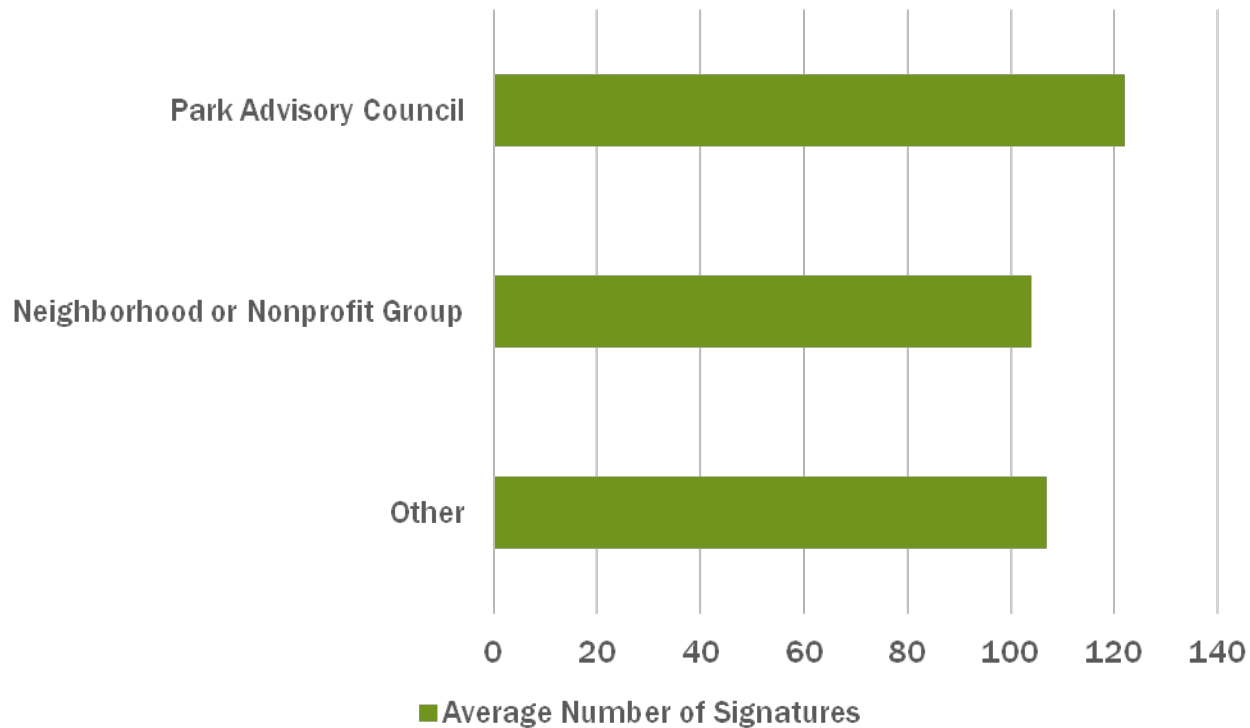
■ Park Advisory Councils ■ Neighborhood or Nonprofit Group ■ Other



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Community Support

Average Number of Signatures



Statement of Impact (Safety)

- **Creating safe playground space for kids**
- **Neighborhood safety**
- **Clean (problems with graffiti, dilapidated equipment)**
- **Decrease violence/crime /gang presence**
- **Playground equipment safety**
- **Minimize crossing unsafe intersections**
- **Drug-free (problems with drug/alcohol use)**



Statement of Impact (For the Community)

- **Unity among community members**
- **Attract new families**
- **Community engagement**
- **Community revitalization**
- **Benefit local businesses**
- **Neighborhood pride**
- **Cultural diversity**
- **Healthy social interactions with neighbors**
- **Quality of family life**

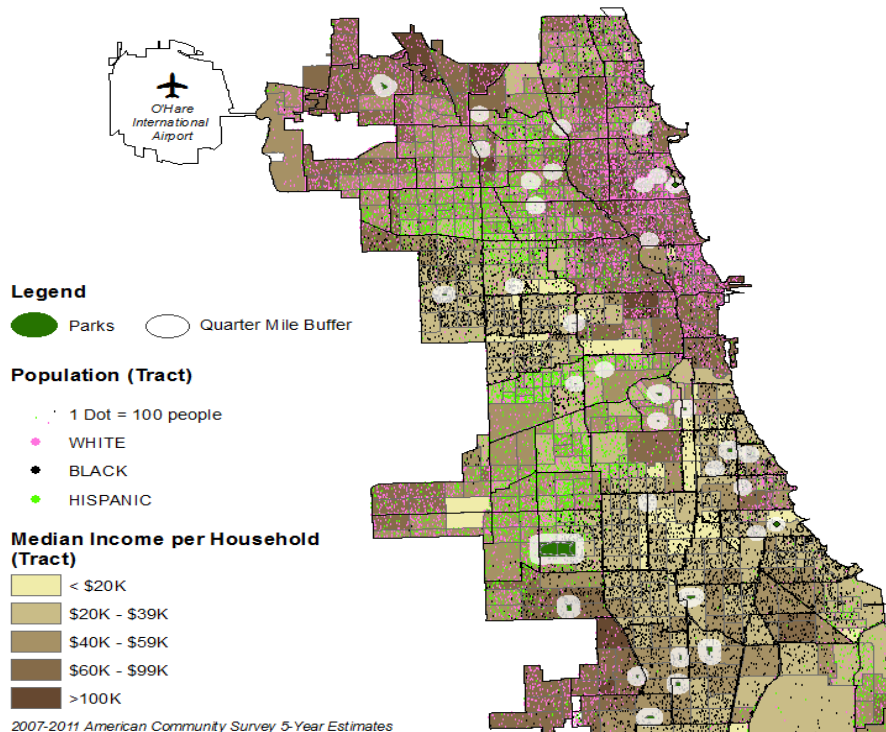


Park Sample

- **39 renovation parks, 39 control parks**
 - All renovation parks part of 2013 class of Chicago Plays! program
 - Control parks matched on park size and features, neighborhood predominant race/ethnicity, median household income level, and distance from renovation park



Park Sample Distribution



- Sample parks in 31 of 77 Chicago Community Areas
- Distribution by Area
 - Northside - 24 parks
 - Westside - 22 parks
 - Southside - 32 parks



Methods

- **Systematically assessed park use pre- and post-playground renovations using SOPARC (The System for Observing Play and Recreation in Communities).**
- **Observed park use on both weekdays and weekends, during the morning, afternoon and evening.**
- **Counted park users by gender, age and activity level (sedentary, moderate, vigorous PA).**



Methods

- **Conducted park audits (EAPRS, BTG-COMP).**
- **Observations were conducted July through September at each time point.**
- **Obtained Chicago Park District programming data.**
- **Obtained Chicago Police Department crime data.**



Results: Summary Statistics

Variable	Total Sample			
	N	Average/%	S.D.	Range
<i>Outcome Measures</i>				
Park Utilization ¹	77	32.51	44.49	0-222
MVPA ¹	77	14.68	20.75	0-113
Sedentary Behavior ¹	77	18.03	26.55	0-150
<i>Neighborhood Socio-demographic Measures</i>				
Temperature	77	74.23	6.17	60-87
Median Household Income	77	45.98	22.83	12.33-121.54
Distance	77	0.76	0.48	0.15-2.2
Predominant Race	77	55%	0.50	0-1
Park Size (sq. acres)	77	3.86	6.76	0.09-40.48
<i>Independent Park Measures</i>				
Park Maintenance Scale	76	1.75	1.64	0-9
Neighborhood crime count	77	662.55	692.67	90-5437
Park has programs	77	46%	0.50	0-1

¹Counts of park users were first summed across time and all observed park target areas and then averaged over days to represent the total mean number of people observed per day across parks at baseline and 12-month follow up.



Results: Summary Statistics

Variable	Intervention Parks at Baseline				Control Parks at Baseline			
	N	Average/%	S.D.	Range	N	Average/%	S.D.	Range
<i>Outcome Measures</i>								
Park Utilization ¹	38	35.71	39.97	2-156	39	29.38	48.82	0-222
MVPA ¹	38	17.07	21.87	0-113	39	12.33	19.59	0-72
Sedentary Behavior ¹	38	18.87	21.02	1-82	39	17.21	31.27	0-150
<i>Neighborhood Socio-demographic Measures</i>								
Temperature	38	73.66	6.01	60-87	39	74.79	6.35	60-87
Median Household Income	38	48.14	22.90	18.40-121.54	39	43.88	22.86	12.33-121.54
Distance (in miles)	38	0.77	0.49	0.15-2.2	39	0.77	0.49	0.15-2.2
Predominant Race	38	53%	0.51	0-1	39	56%	0.50	0-1
Park Size (sq. acres)	38	3.6	5.01	0.09-15.25	39	4.05	8.18	0.09-40.48
<i>Independent Park Measures</i>								
Park Maintenance Scale	38	1.66	1.36	0-6	39	1.84	1.89	0-9
Neighborhood crime count	38	747.89	904.68	94-5437	39	579.41	385.11	90-1381
Park has programs	38	55%	0.50	0-1	39	36%	0.49	0-1

¹Counts of park users were first summed across time and all observed park target areas and then averaged over days to represent the total mean number of people observed per day across parks at baseline and 12-month follow up.



Results: Summary Statistics

Variable	Intervention Parks				Control Parks			
	N	Average/ %	Standard Deviation	Range	N	Average/ %	Standard Deviation	Range
<i>Outcome Measures</i>								
Park Utilization ¹	47	42.26	40.09	3-183	30	27.33	38.01	0-163
MVPA ¹	47	24.95	23.93	1-121	30	15.33	20.44	0-83
Sedentary behavior ¹	47	17.62	18.32	1-88	30	12.60	18.15	0-80
<i>Independent Park Measures</i>								
Park maintenance scale	47	2.19	2.26	0-10	30	2.53	2.27	0-9
Neighborhood crime count	47	622.68	721.28	78-4661	30	498.90	297.18	94-1167
Park has programs	47	53%	0.50	0-1	30	32%	0.33	0-1

¹Counts of park users were first summed across time and all observed park target areas and then averaged over days to represent the total mean number of people observed per day across parks at baseline and 12-month follow up.



Results: Park Utilization

	<i>Model 1</i>	<i>Model 2</i>
<i>Covariate</i>	<i>Coefficient (SE)</i>	<i>Coefficient (SE)</i>
Group	0.201 (0.091)**	0.056(0.096)
Time	0.031 (0.049)	0.097 (0.052)*
Group*Time	0.174 (0.062)**	0.211 (0.063)**
Park maintenance scale		-0.072 (0.014)**
Neighborhood crime count (log)		0.359 (0.104)**
Park has programs		0.159 (0.199)

Notes: Models 1 and 2 also included median household income, distance between matched parks, park size, majority race, and outside temperature as control variables.

*) p-value<0.10

***) p-value<0.05



Results: Park-based Physical Activity

	Sedentary Behavior		MVPA	
	Model 1	Model 2	Model 1	Model 2
<i>Covariate</i>	<i>Coefficient (SE)</i>	<i>Coefficient (SE)</i>	<i>Coefficient (SE)</i>	<i>Coefficient (SE)</i>
Group	0.409(0.119)**	0.264(0.123)**	0.079(0.121)	- .005(0.126)
Time	-0.194(.068)**	-0.112(.071)	0.262(0.069)**	0.306(0.071)**
Group*Time	0.139(0.089)	0.173(.089)*	0.174(0.088)**	0.199(0.089)**
Park maintenance scale		-0.090(.019)**		-0.028(0.019)
Neighborhood crime count (log)		0.316(.119)**		0.344(0.108)**
Park has programs		0.124(.222)		0.151(0.201)

Notes: Models 1 and 2 also included median household income, distance between matched parks, park size, majority race, and outside temperature as control variables.

*) p-value<0.10

***) p-value<0.05



Study Strengths

- 1. Prospective longitudinal study design;**
- 2. Baseline data**
- 3. Large, matched sample of intervention and control parks;**
- 4. Racially/ethnically and socioeconomically diverse neighborhoods; and,**
- 5. Objective measures of park programming, safety, and maintenance measures.**



Limitations

- **No individual-level physical activity measures.**
- **The number of days of park observation**
- **Cannot fully disentangle effects of the community engagement and renovation components on park utilization and MVPA.**



Conclusions

- **Involving community members in playground renovations can have a positive effect on park utilization and MVPA and can be applied to future park and playground renovations in both Chicago and other urban cities.**
- **Future research is needed that includes a systematic method for collecting and measuring community engagement and its effect on park utilization and PA.**



Acknowledgments

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- The content of this presentation is solely the responsibility of the authors and does not necessarily represent the official views of the Centers for Disease Control and Prevention, or the State of Illinois.
- Learn more at <http://go.uic.edu/IllinoisPRC>



Thank You!

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