What Contributes to Children's Physical Activity in Urban Neighborhood Parks? An Examination of Individual, Social, and Environmental Factors

Investigators:

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Perver Baran, Jason Bocarro,
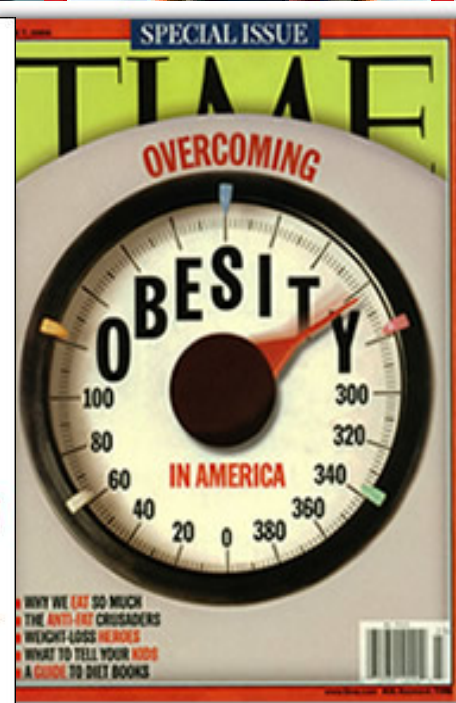**Nilda Cosco, William Smith**

Sixth Active Living Research Annual Conference
Active Communities for Youth and Families: Creating Momentum for Change
San Diego, CA. February 19, 2009

Obesity:

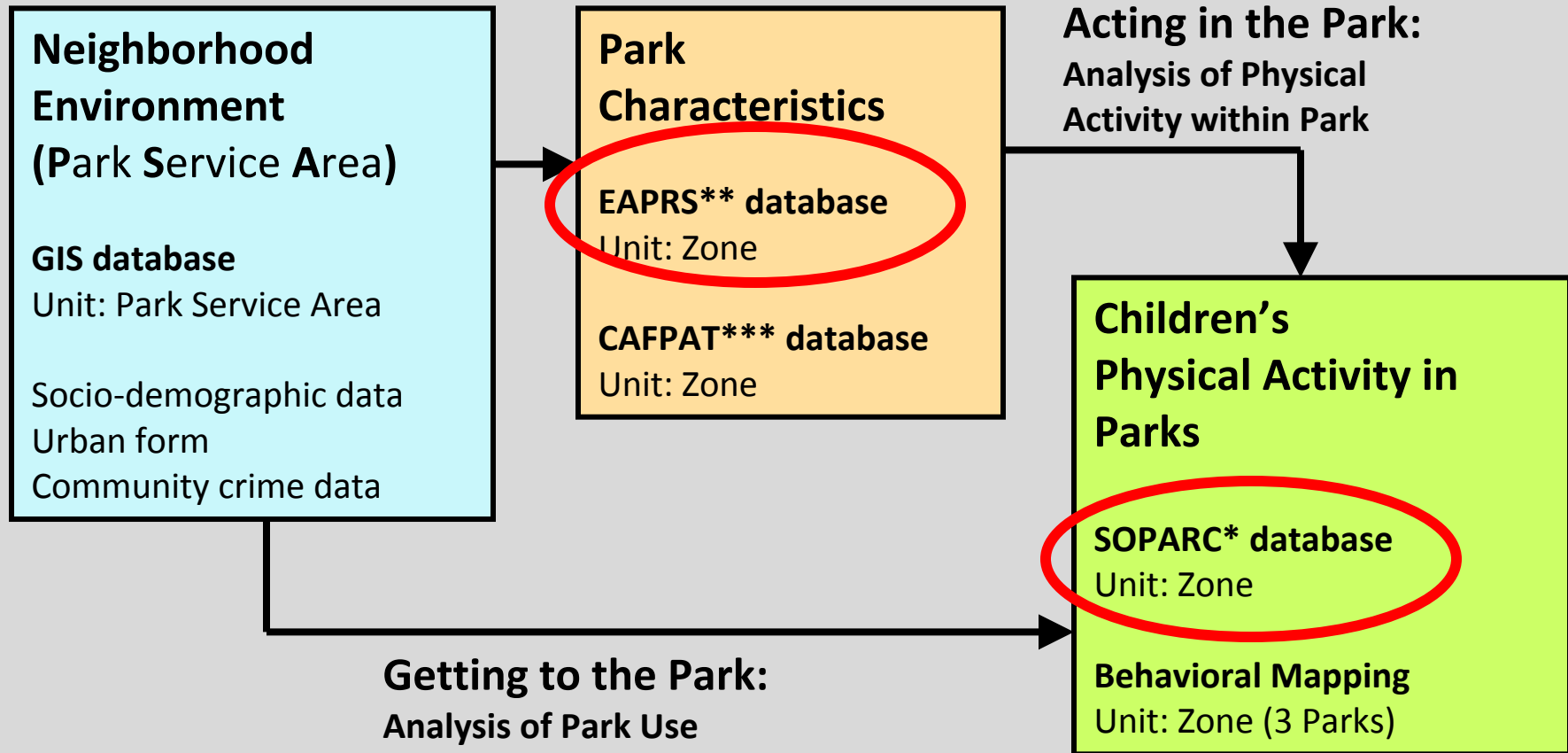## A national public health challenge

Rationale

- Public parks are viable settings to promote PA in <u>ALL</u> children

- Research on how parks contribute to children's PA is **limited** (Biddle et al., 2005; Kaczynski & Henderson, 2007) and **inconsistent** (Cohen et al., 2006; Norman et al., 2006; de Vries et al., 2007)

- Park environments can be modified to increase PA in different children

- Results can help decision-makers be more strategic in allocating limited resources

Objectives of this study

- Examine social and environmental factors related to park based activity

- Examine utility of SOPARC 3 different age classifications of children

- Test whether factors vary in influence based on gender
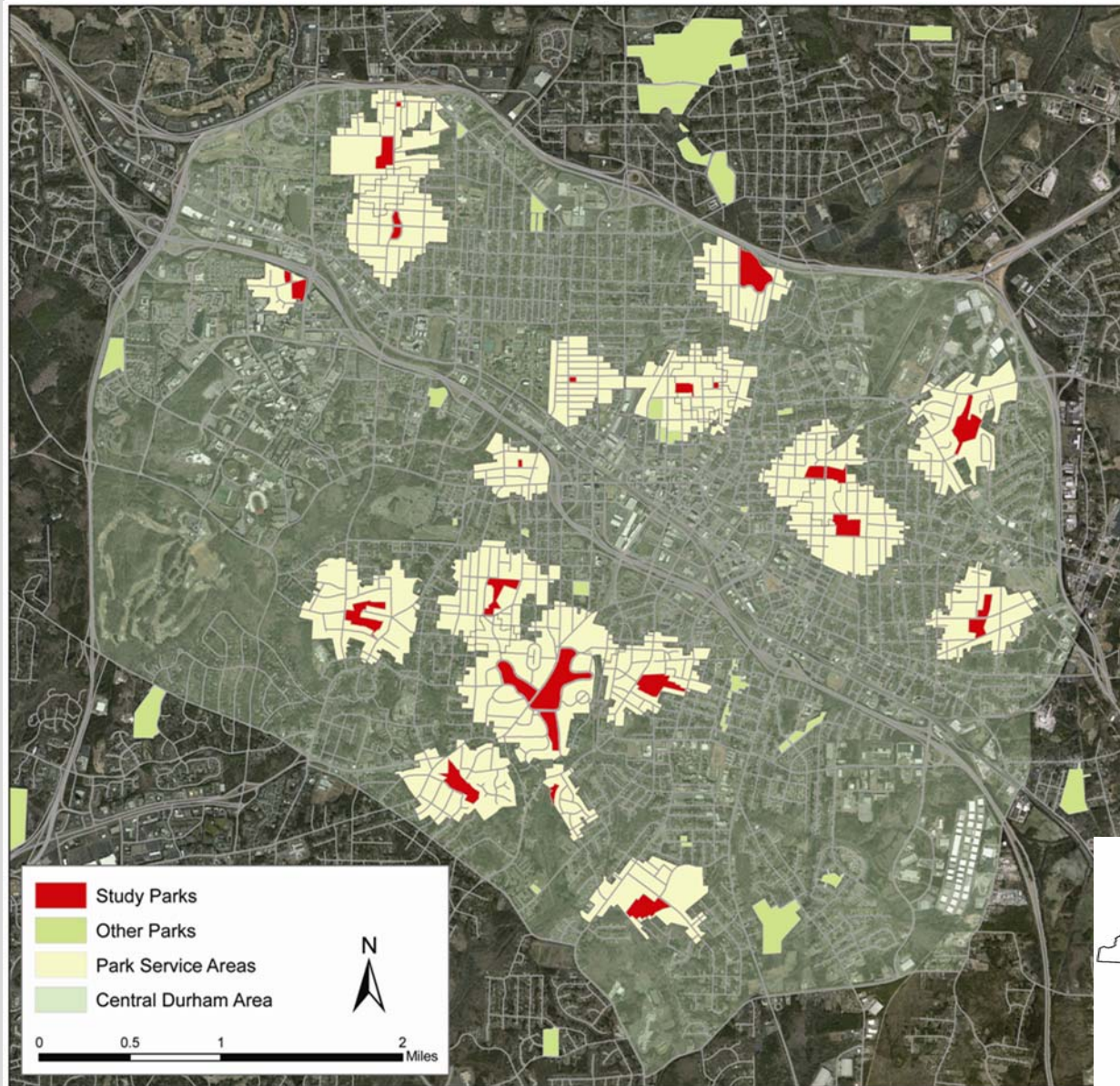
IPARK Project Background

Neighborhood Environment (Park Service Area)

GIS database
Unit: Park Service Area

Socio-demographic data
Urban form
Community crime data

Park Characteristics

EAPRS database
Unit: Zone

CAFPAT database
Unit: Zone

Acting in the Park:
Analysis of Physical Activity within Park

Children's Physical Activity in Parks

SOPARC* database
Unit: Zone

Behavioral Mapping
Unit: Zone (3 Parks)

Getting to the Park:
Analysis of Park Use

*SOPARC: The System for Observing Play and Recreation in Communities (McKenzie, et al., 2006)
**EAPRS: Environmental Assessment of Public Recreation Spaces (Saelens, et al. 2006)
***CAFPAT: Children and Families Park Audit Tool (Moore, et al. 2007)

Study Parks

Within Park Service Areas

Measures

SOPARC

System for Observing Play and Recreation in Communities (McKenzie et al., 2006)

Age Group Classification:
0-5
6-12
13-18

Park visits (20 parks):
Time 1: 10am - 2pm
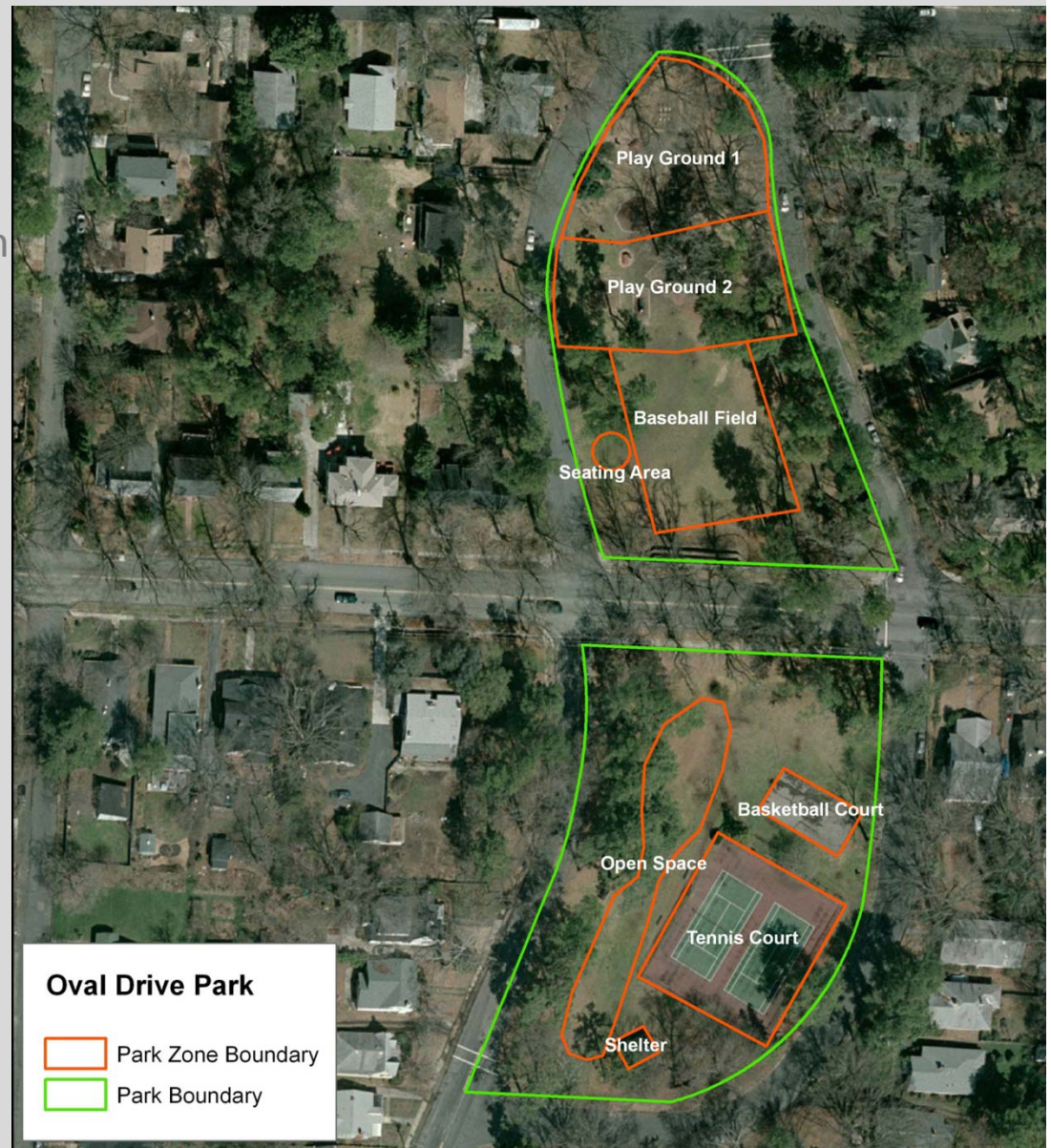Time 2: 3pm – 7pm
Each park = 16 visits
 (4 weekday time 1 and 2) = 8
 (2 Saturday time 1 and 2) = 4
 (2 Sunday time 1 and 2) = 4

EAPRS

Environmental Assessment of Public Recreation Spaces (Saelens et al. (2006)

Oval Drive Park

Play Ground 1
Play Ground 2
Baseball Field
Seating Area
Basketball Court
Open Space
Tennis Court
Shelter

Park Zone Boundary
Park Boundary

Measures

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EAPRS

Environmental Assessment of Public
Recreation Spaces (Saelens et al. (2006)
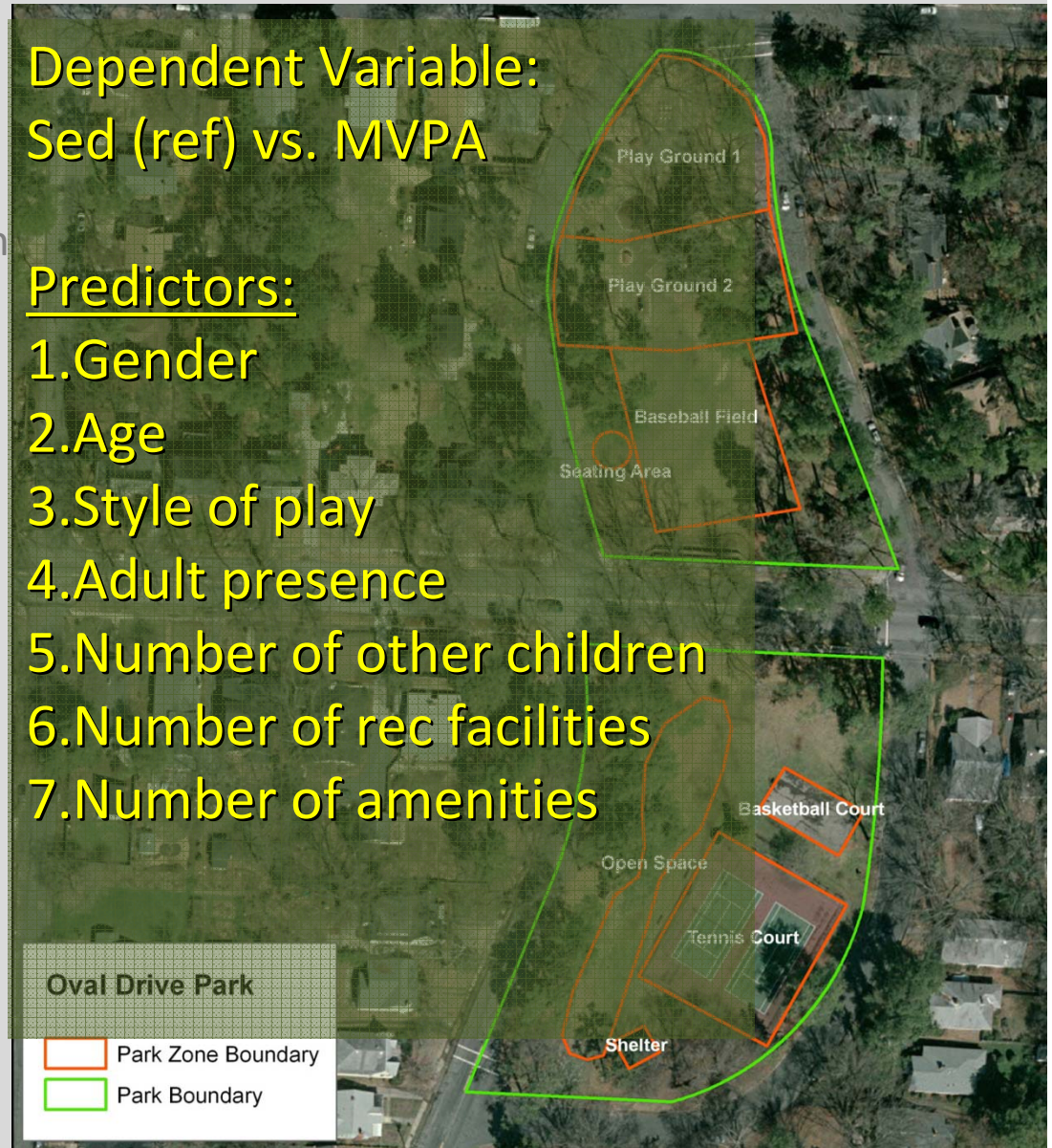
Dependent Variable:
Sed (ref) vs. MVPA

Predictors:
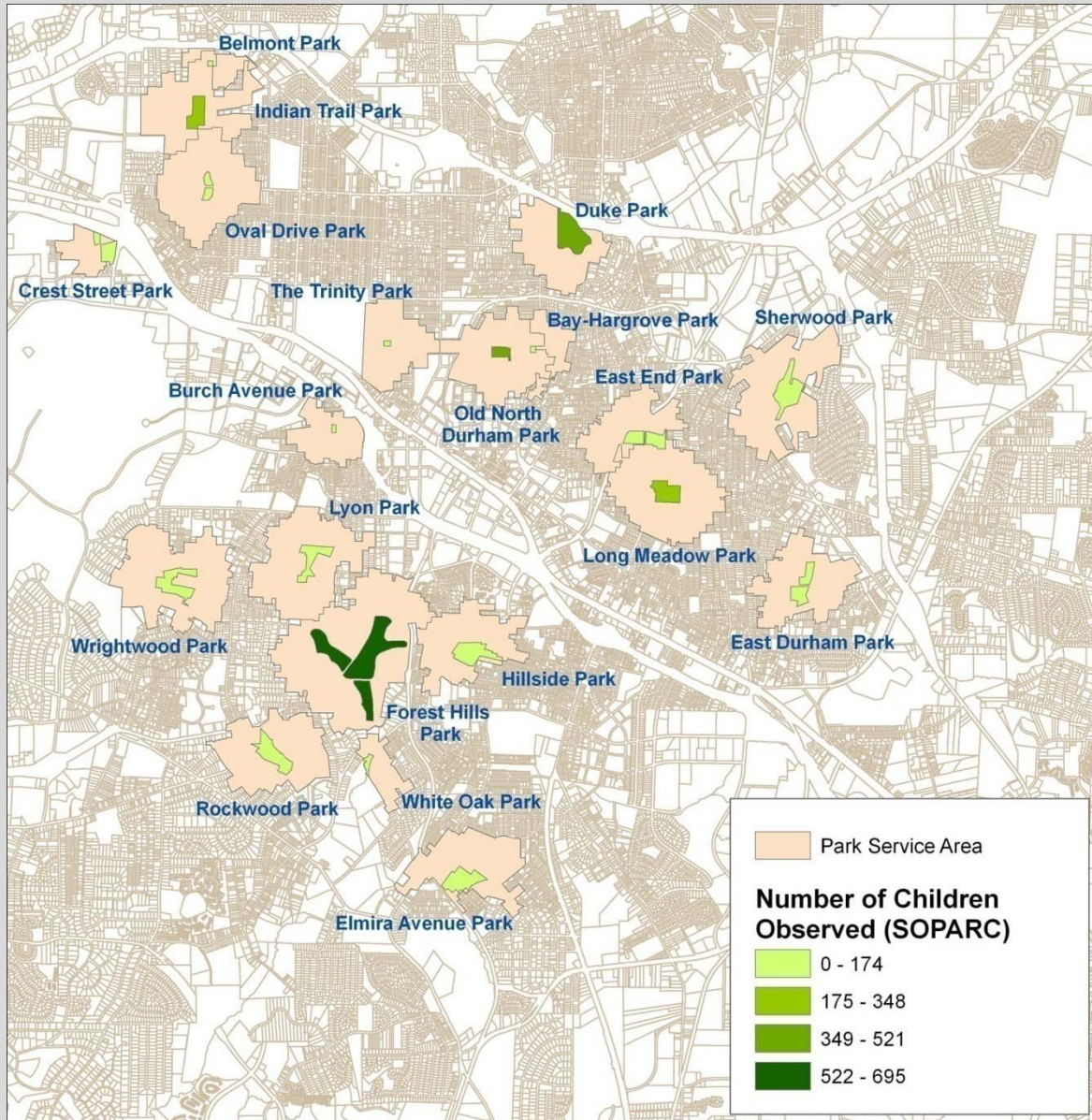1. Gender
2. Age
3. Style of play
4. Adult presence
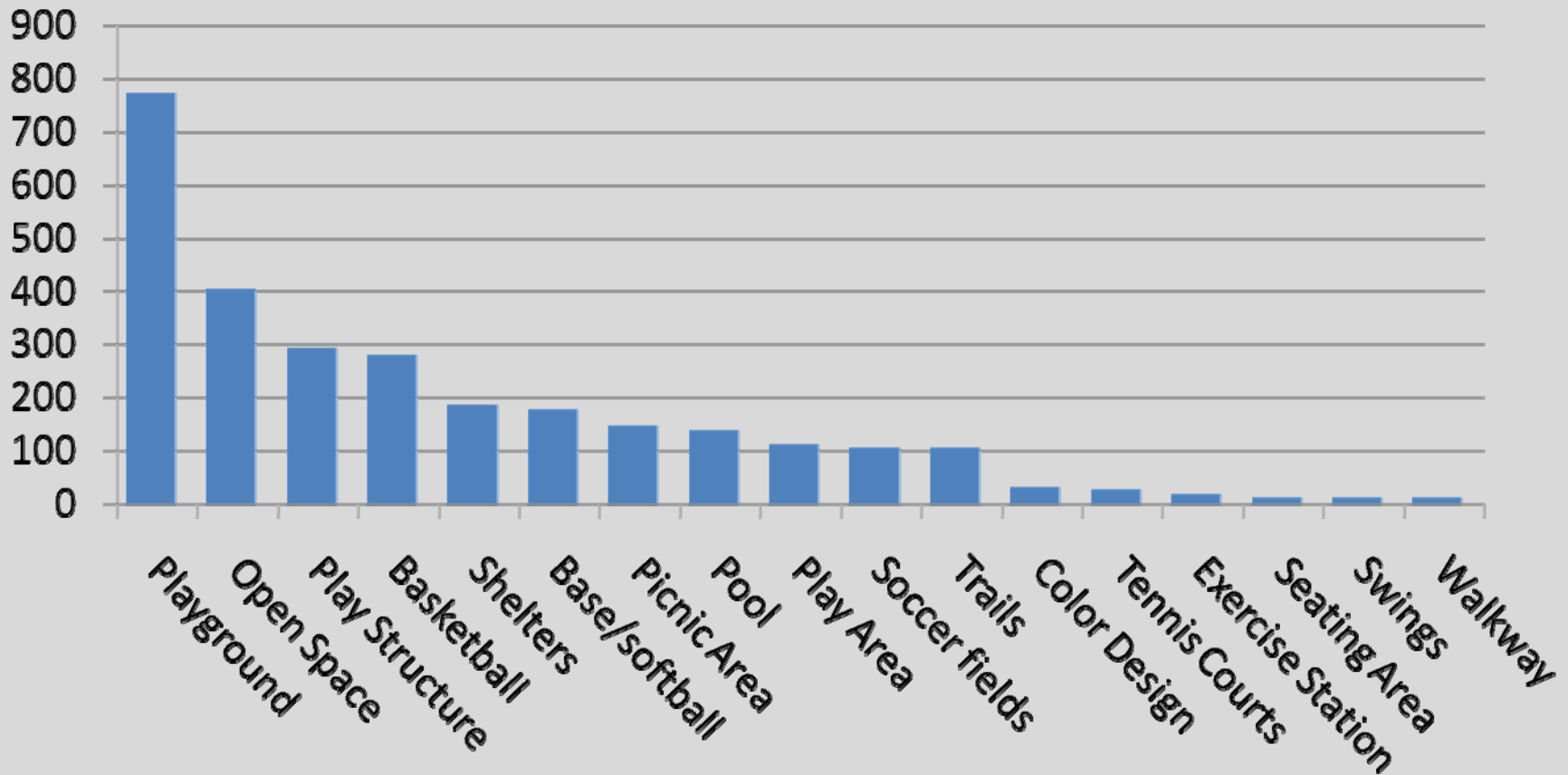5. Number of other children
6. Number of rec facilities
7. Number of amenities

Play Ground 1
Play Ground 2
Baseball Field
Seating Area
Basketball Court
Open Space
Tennis Court
Oval Drive Park
Shelter

Park Zone Boundary
Park Boundary

# Number of Children Observed By Park (N= 2847)

Predominant Activity Observed by Age Group (n=2,823)

| Activity (% of children)	% MVPA	0-5 Girls	0-5 Boys	6-12 Girls	6-12 Boys	13-18 Girls	13-18 Boys
Playground	56.5	59.9	52.1	35.3	32.4	7.8	1.7
Not identifiable	50.4	13.4	15.8	19.0	15.3	23.5	16.2
Hanging w/others	39.4	6.5	11.8	11.2	6.5	10.2	9.2
Basketball	82.7	.5	.8	2.4	7.3	27.7	38.7
Soccer	74.4	2.0	3.8	4.1	17.1	.6	9.0
Picnicking	18.5	4.0	1.8	7.4	.5	12.7	2.2
Swimming	58.7	1.0	2.1	5.9	6.0	7.2	3.6
Walking/jogging	96.2	2.3	4.5	6.2	3.4	1.8	1.1
Base/softball	64.4	2.8	1.1	.6	7.5	.6	13.7
Tennis	50.7	2.5	1.0	.1	.5	2.4	1.1
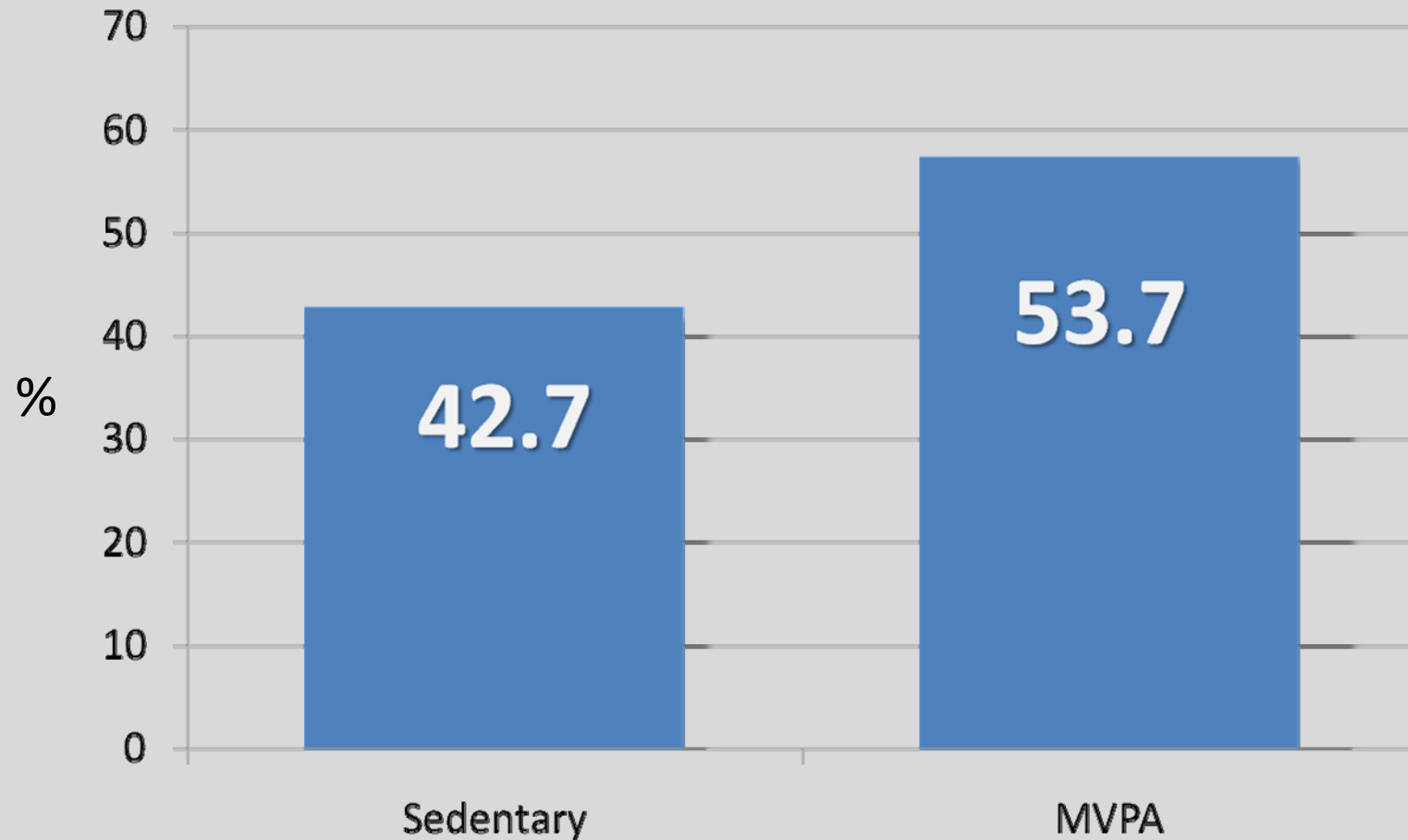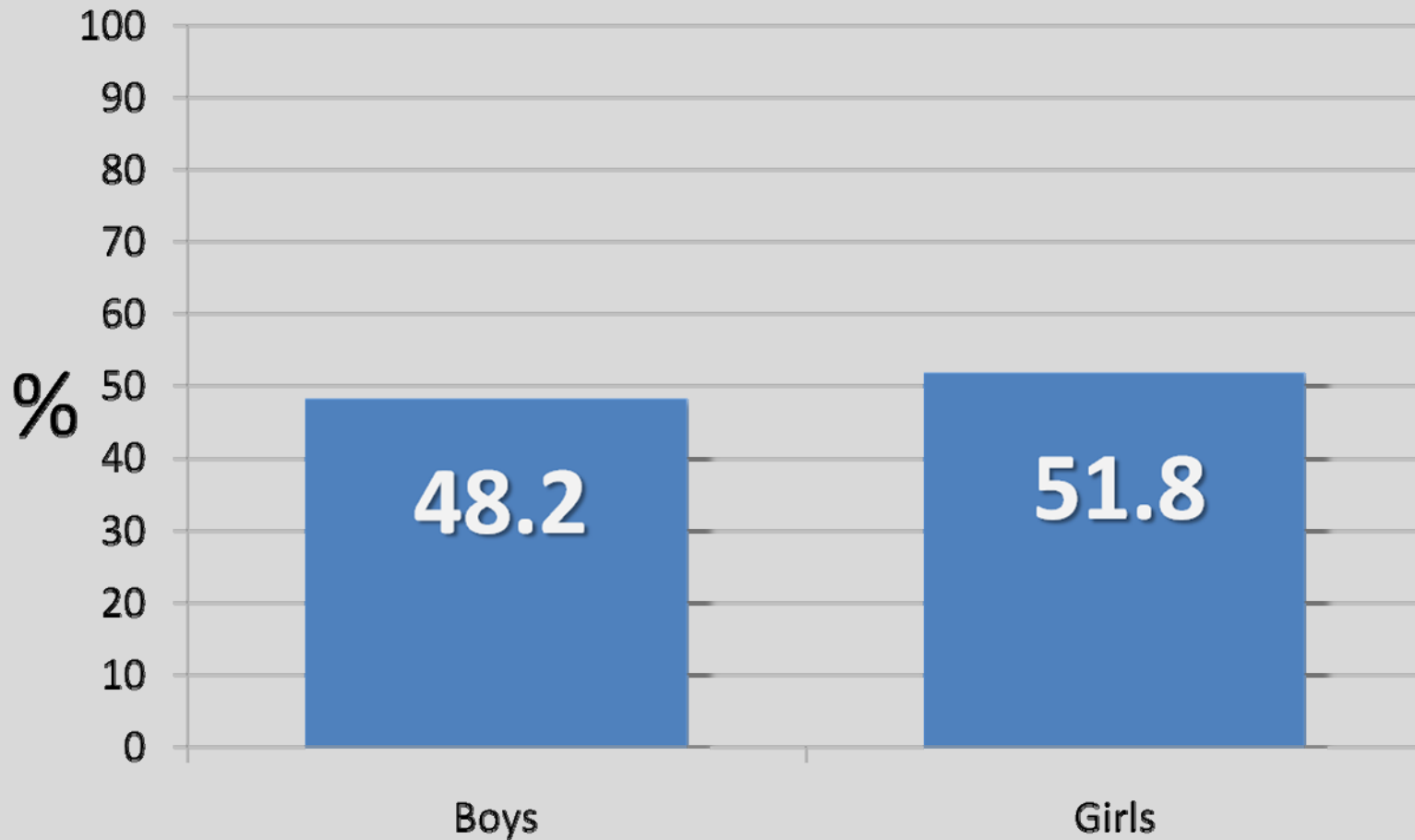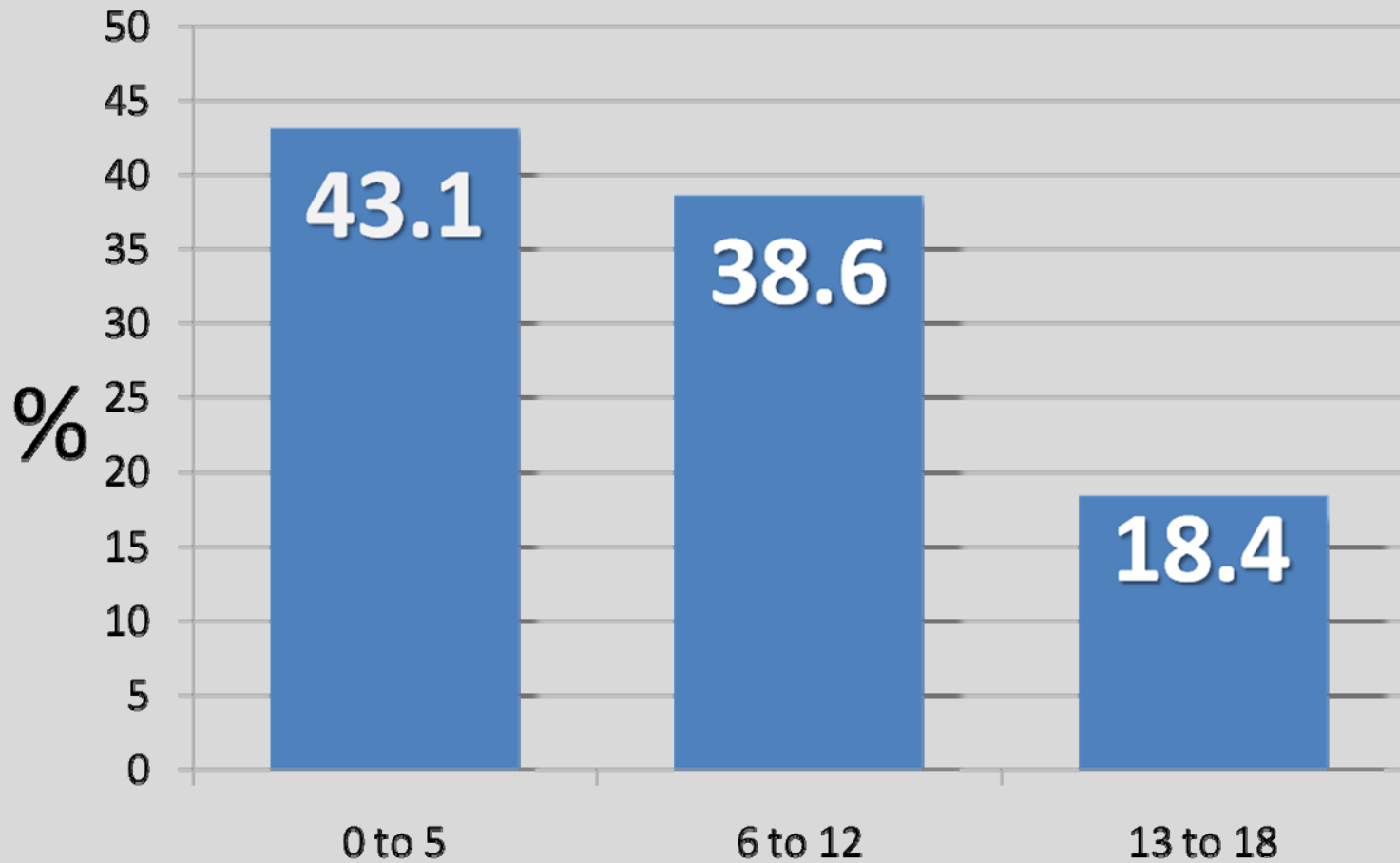
Odds Ratios for Individual, Social & Environmental Factors (n=2,847)

	Model 1	Model 2	Model 3
Gender (ref=Girls)			
Boys	2.44**	2.42**	2.28**
Age (ref=0-5)			
6-12	3.32**	3.07**	3.40**
13-18	1.14	.83	.898
Style of Play (ref=None)			
Free play		1.73**	1.56**
Informal organized		2.86**	2.60**
Formal organized		1.59*	1.52*
Adult Presence (ref=None)			
Parent/caregiver		.55**	.58**
Supervising adult		.76*	.78*
Number of children		1.00	1.02
Number of facilities			1.26**
Number of amenities			.840**

**p<.001 *p<.05

Analysis of Zone Level Environmental Factors w/ HLM

	Odds ratios	P
Predictors		
Gender (ref=Girls)		
Male	**2.08**	**.000**
Age (ref=0-5)		
6-12	**2.56**	**.000**
13-18	**.824**	**.225**
Style of Play (ref=No play)		
Free play	**1.14**	**.463**
Informal organized	**1.31**	**.261**
Formal organized	**1.31**	**.322**
Adult Presence (ref=None)		
Parent/caregiver	**.64**	**.008**
Supervising adult	**.65**	**.033**
Number of amenities	**.88**	**.030**
Informal org X Facilities	**.82**	**.021**

Adjusted Odds Ratios for Individual, Social & Environmental Factors

By Gender

Predictors	O.R. Girls	O.R. Boys
Style of Play (ref=None)		
Free play	1.41**	1.80***
Informal organized	1.97***	3.03***
Formal organized	1.99*	1.57
Adult Presence (ref = none)		
Parent/caregiver	.67***	.31***
Supervising adult	1.17	.46**
Number of facilities	1.27***	1.09
Number of amenities	.82***	.90*

***p<.001   **p<.01   *p<.05

Summary

- <u>Individual</u>
  - Park use among older children (13-18 yrs) drops off considerably
  - Different activities encourage PA among different groups
    - Basketball (older children); Playgrounds (younger children)
- <u>Social</u>
  - Formal organized activities increased odds of MVPA more among girls than boys
  - Presence of caregivers reduced odds of MVPA (more among boys)
- <u>Environmental</u>
  - Recreation facilities increased PA among girls but not boys
  - Facilities seemed to "interact" with style of play
  - Amenities associated with lower levels of PA
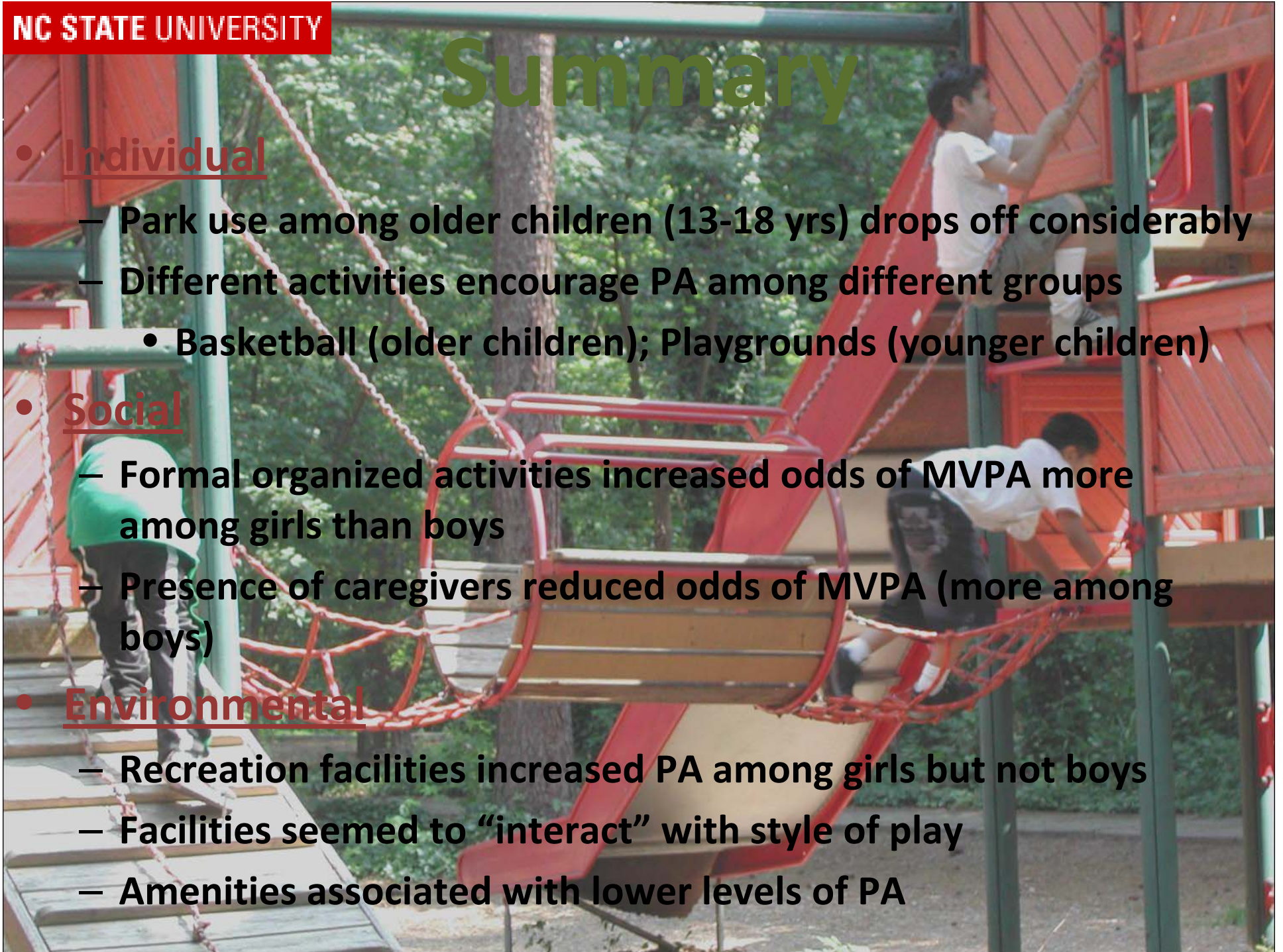
Conclusions & Implications

- Increasing formal activities within parks may be necessary for some groups (e.g., girls)

- Activities provide different PA benefits among different groups
  - How design of nearby parks can reflect that

- Design of amenities and where situated is important

- Limitations
  - Momentary time sampling
  - Age codes not validated
  - One season (summer)
  - Uniqueness of Durham parks

Acknowledgements