

Neighborhood Level Influences and Physical Activity in Public Parks in Diverse Communities

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2007 Active Living Research Conference
Coronado, CA

Supported by the Robert Wood Johnson Foundation. Active Living Research

Research Team and Disciplinary Background



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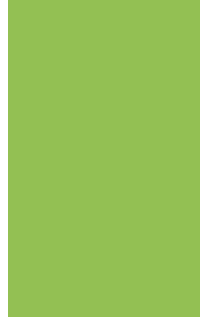
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(Recreation and Leisure Studies; GIS/Spatial Analysis of Crime)



Background and Rationale

- ❖ **Most Americans do not get recommended levels of physical activity (Healthy People 2010).**
 - >50% of African Americans and Hispanic Americans report no LTPA compared to 36% of non-Hispanic Whites.

- ❖ **Inactivity within minority populations poses serious health risks:**
 - Death from heart disease is 30% higher among African Americans compared to non-Hispanic Whites.
 - Blacks and Hispanics are 2 times as likely to have diabetes (compared to non-Hispanic whites of similar age).
 - Among children and adolescents, African Americans and Hispanics have higher rates of overweight and obesity.



Parks are resources for physical activity.

- ❖ **Most adults (70%) live within walking distance of a municipal park (Godbey et al., 1992).**
- ❖ **Access to parks is an important predictor of physical activity.**
 - **Living within 1-mile of a park is related to greater LTPA than living farther away (Cohen et al., 2007).**
 - **Parks were associated with increased non-school minutes of MVPA among girls (Cohen et al., 2006).**
- ❖ **Additional research is needed on how parks contribute to LTPA in diverse communities:**
 - **How are parks used, and what settings support PA?**
 - **Is there an association between neighborhood race/ ethnicity and SES and PA?**



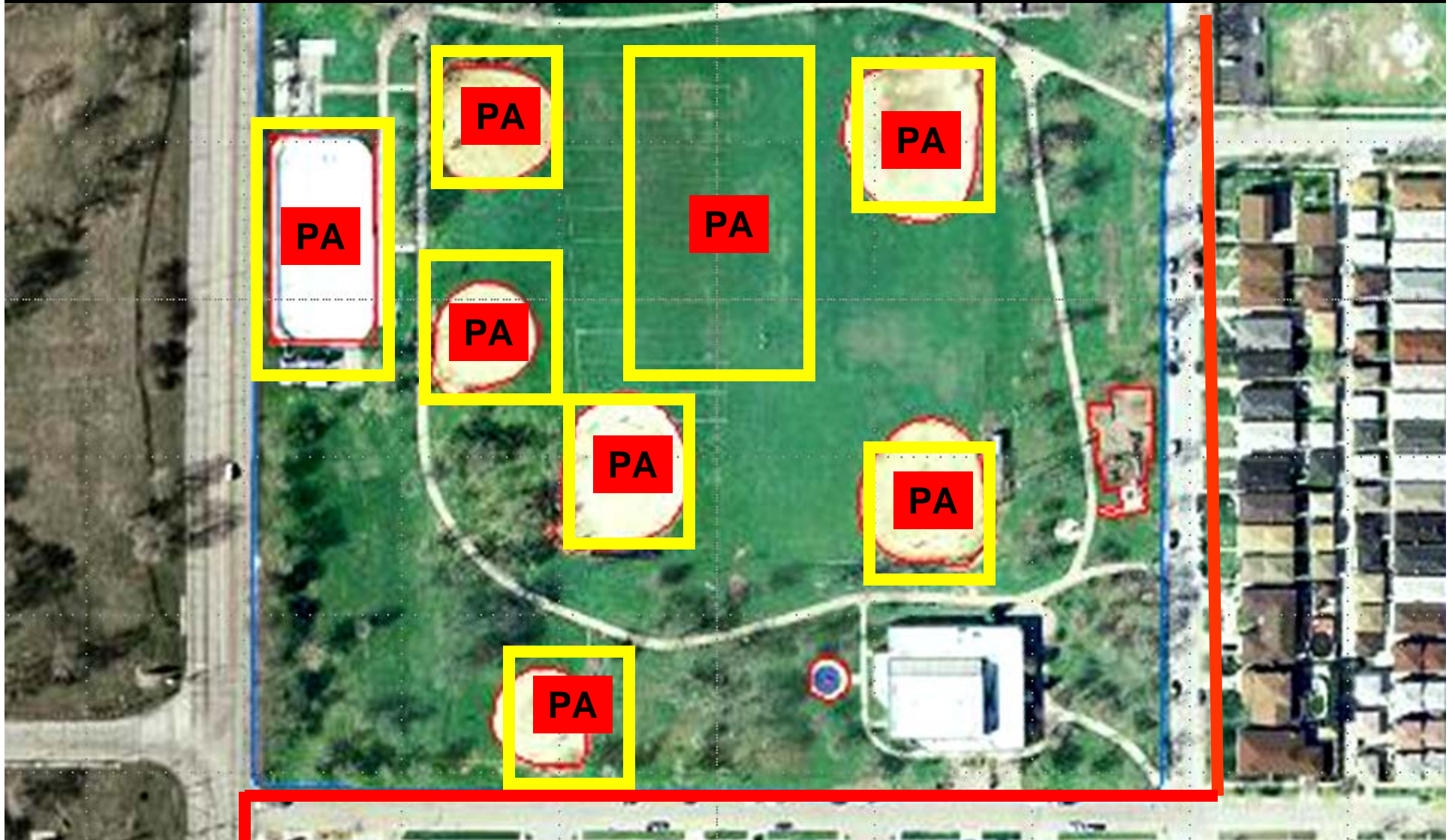
Study Objectives



- ❖ **Assess physical activity in public parks in diverse neighborhoods;**
- ❖ **Compare physical activity in parks by neighborhood composition (race/ethnicity and income); and**
- ❖ **Compare physical activity by designated activity zones.**



**Ecological approach:
neighborhood factors and activity zones
influence PA**



Methods

❖ Settings:

- 10 parks in Tampa (FL)
- 18 parks in Chicago (IL)

❖ PA Measures:

- Modified System for Observing Play and Leisure Among Youth (SOPLAY)
- Energy expenditure (Kkcal/kg/min)

❖ Neighborhood composition:

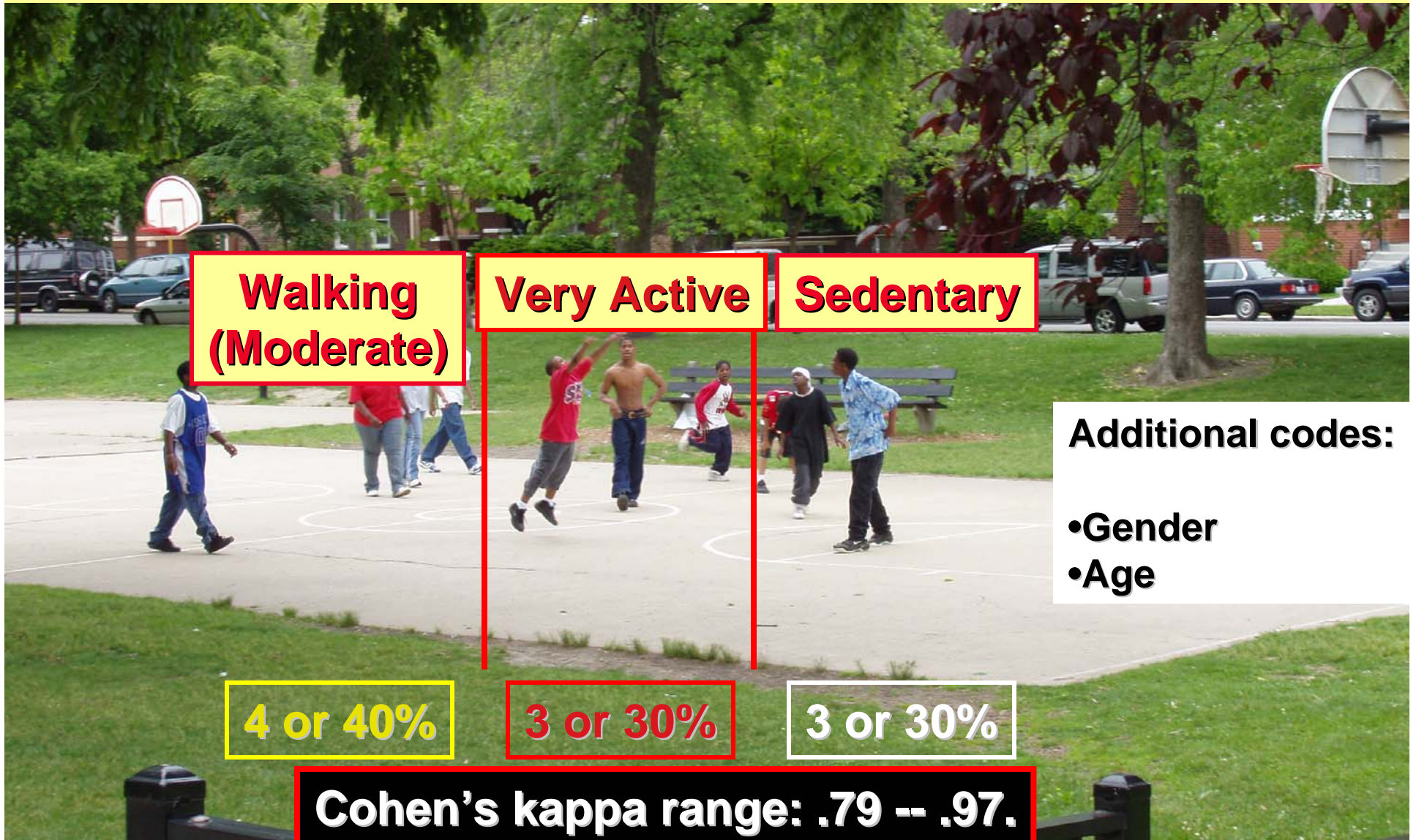
- Non-Hispanic White, Black, and Hispanic
- Low income vs. High Income

❖ Activity Zones:

- Correspond to established recreation use areas.
- Boundaries established by two team members.



Converting physical activity codes to energy expenditure (EE) (Kkcal/kg/min) (SOPLAY)(McKenzie, 2000).






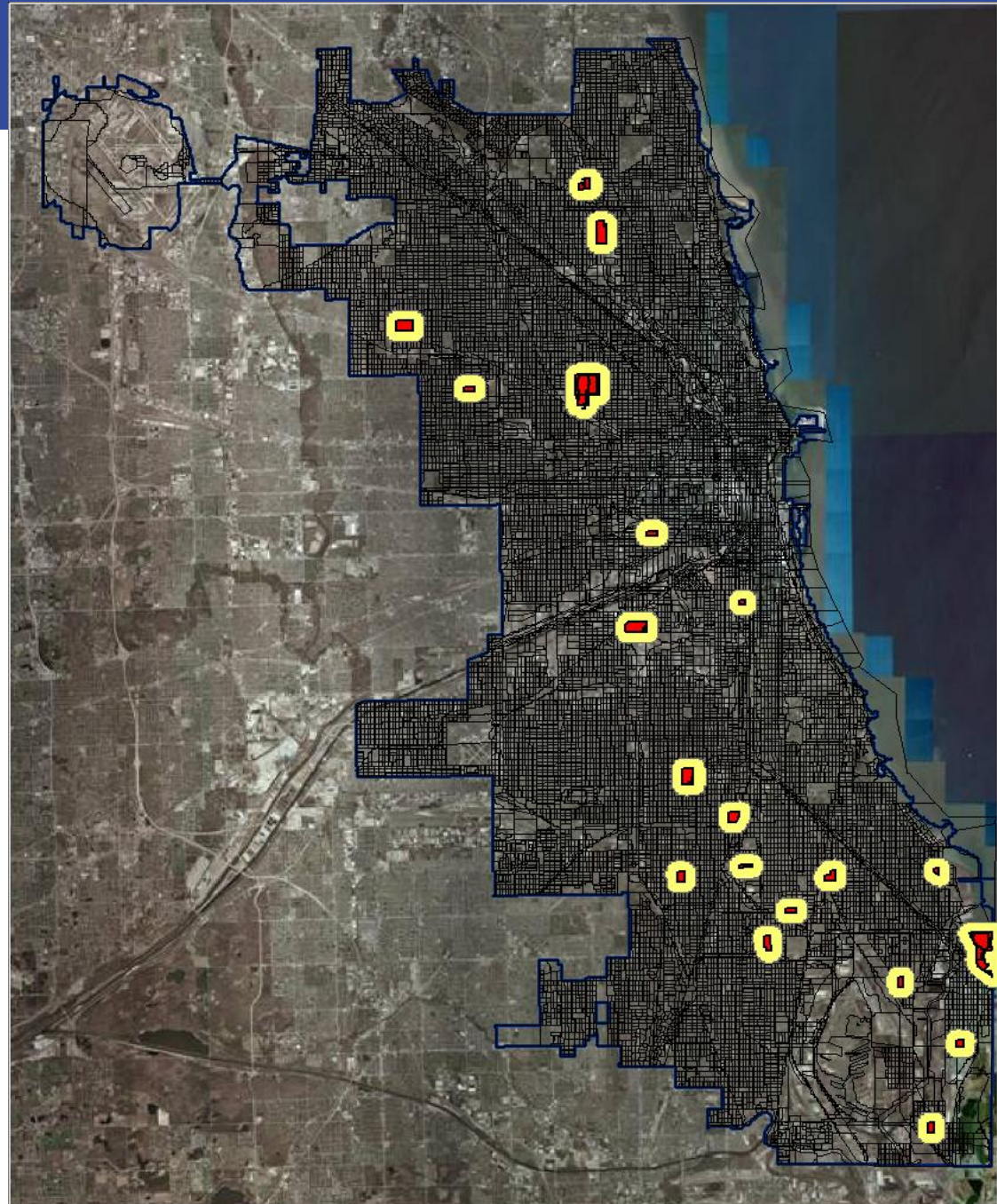
Converting physical activity codes to energy expenditure (EE) (Kkcal/kg/min)



Park Selection

Legend

-  Census Block
-  Buffer
-  Selected Parks



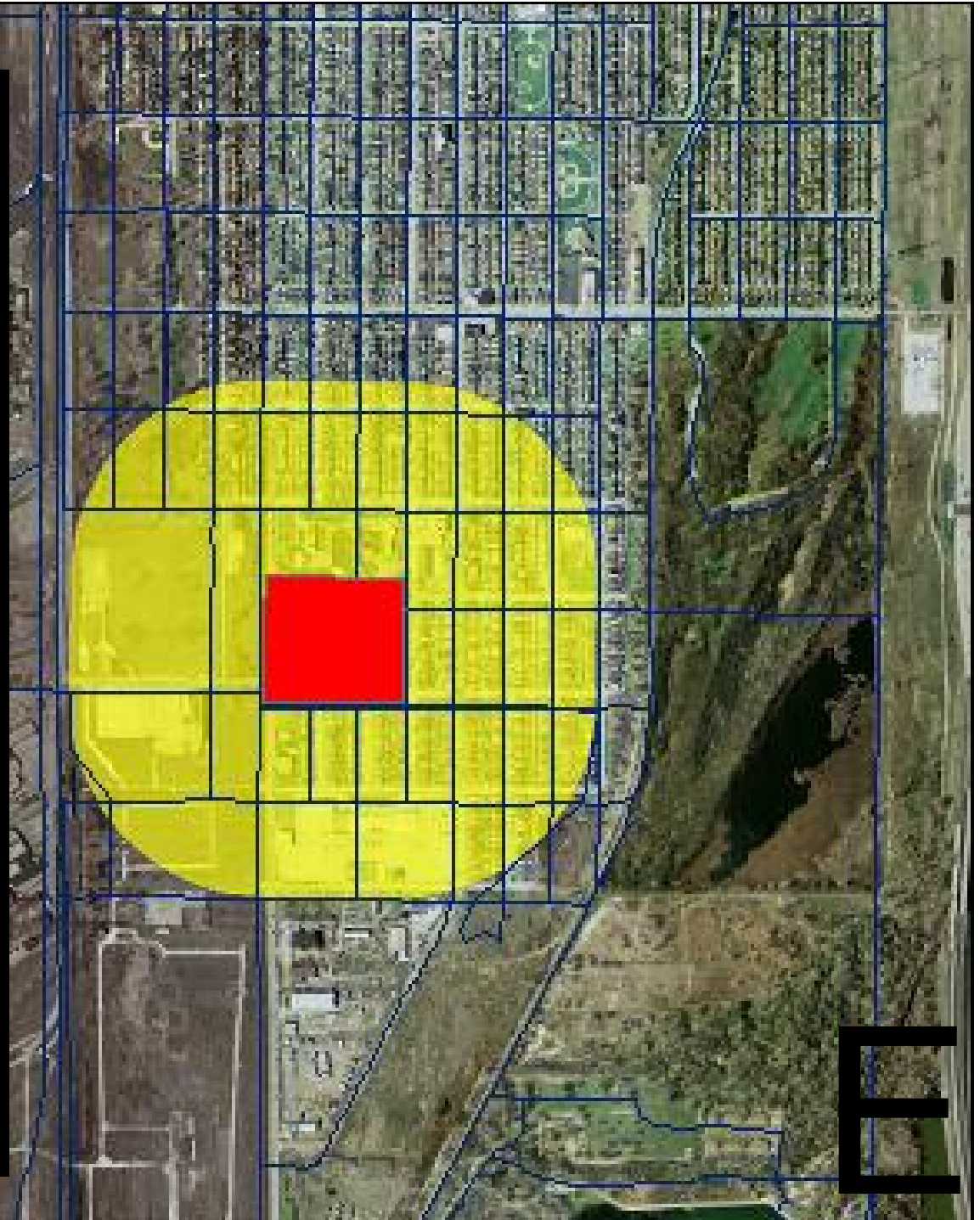
**% race/ethnic
composition of selected
census tracts:**

Tampa:

Black: 42 – 70
White: 72 – 88
Hispanic: 49 – 61

Chicago:

Black: 60 – 99
White: 53 – 84
Hispanic: 70 – 93



Frequency and Percent of Physical Activity

	SEDENTARY	WALKING	VERY ACTIVE
Tampa Parks	4,907 (64.8%)	1,549 (23.5%)	587 (11.7%)
Chicago Parks	1,223 (50.7%)	669 (27.7%)	519 (21.5%)
Total (Both Cities)	6,130 (64.8%)	2,218 (23.5%)	1,106 (11.7%)

Sedentary activity was the predominant level of physical activity.

Association of Gender, Age, and Physical Activity (Tampa).

	Level of Physical Activity		
	Sedentary (%)	Walking (%)	Very Active (%)
Gender			
Male (n=3613)	66.3	23.7	9.9
Female (n=3418)	73.2	20.1	6.7
Age			
Children (n=2358)	55.6	26.5	17.9
Adults (n=4673)	76.8	19.7	3.5

χ^2 p values < 0.001..

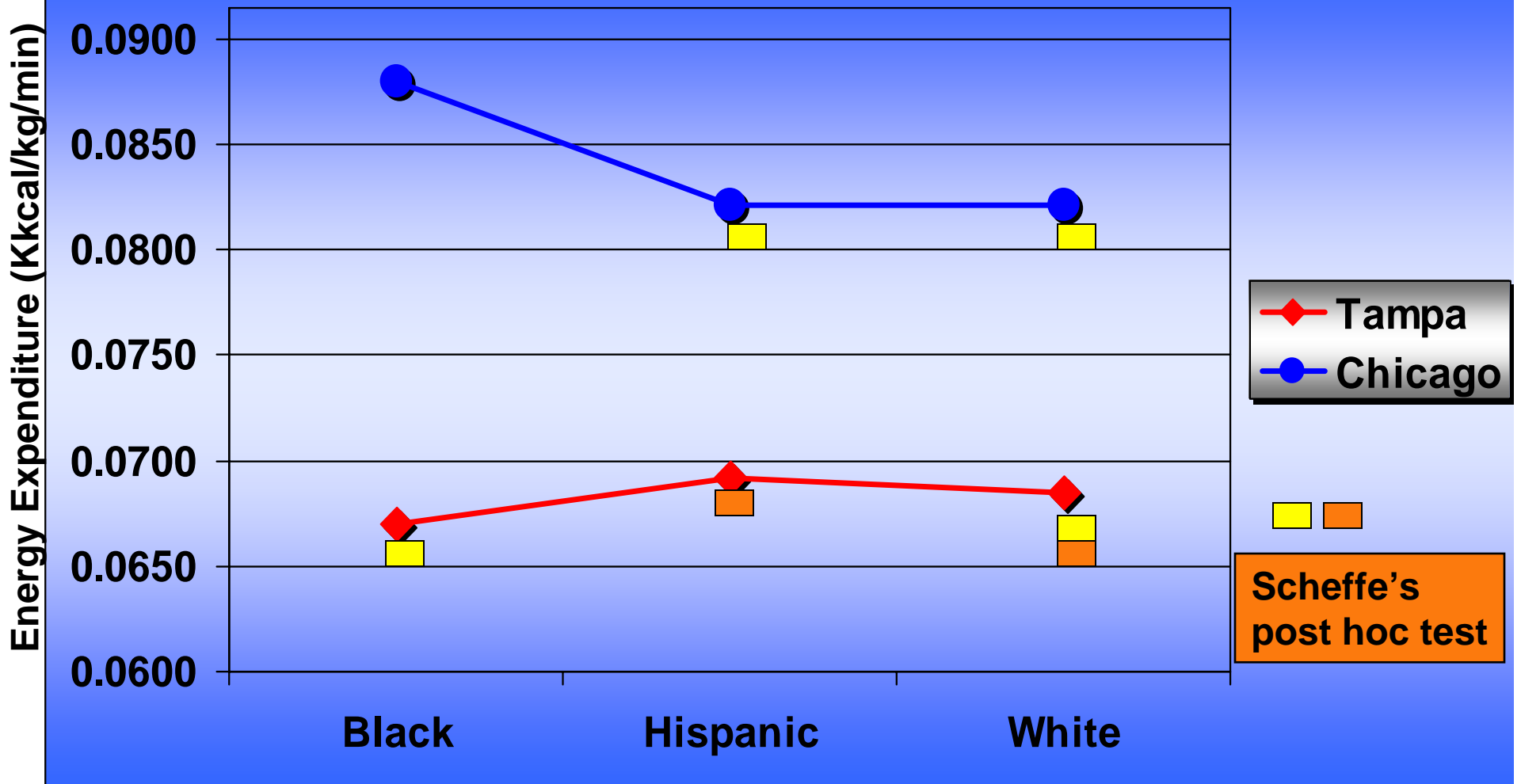


Association of Gender, Age, and Physical Activity (Chicago).

	Level of Physical Activity		
	Sedentary (%)	Walking (%)	Very Active (%)
Gender			
Male (n=1648)	49.9	28.2	21.9
Female (n=762)	52.4	26.9	20.7
Age			
Children (n=1052)	48	27.7	24.3
Adults (n=1358)	52.8	27.8	19.4

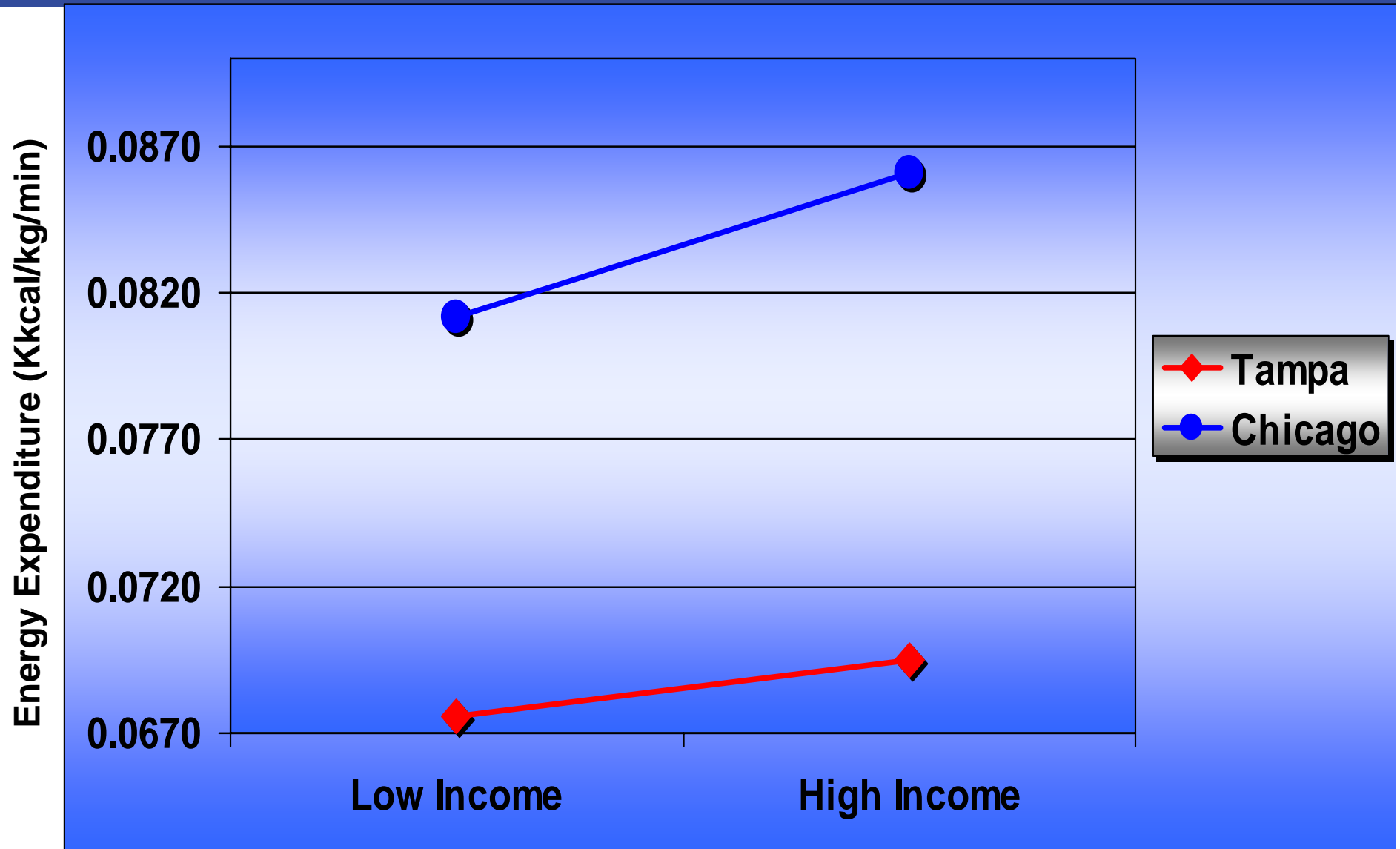
Age: X^2 p value < 0.01; Gender X^2 p value NS.

Mean Energy Expenditure (EE) by Neighborhood Race/Ethnicity



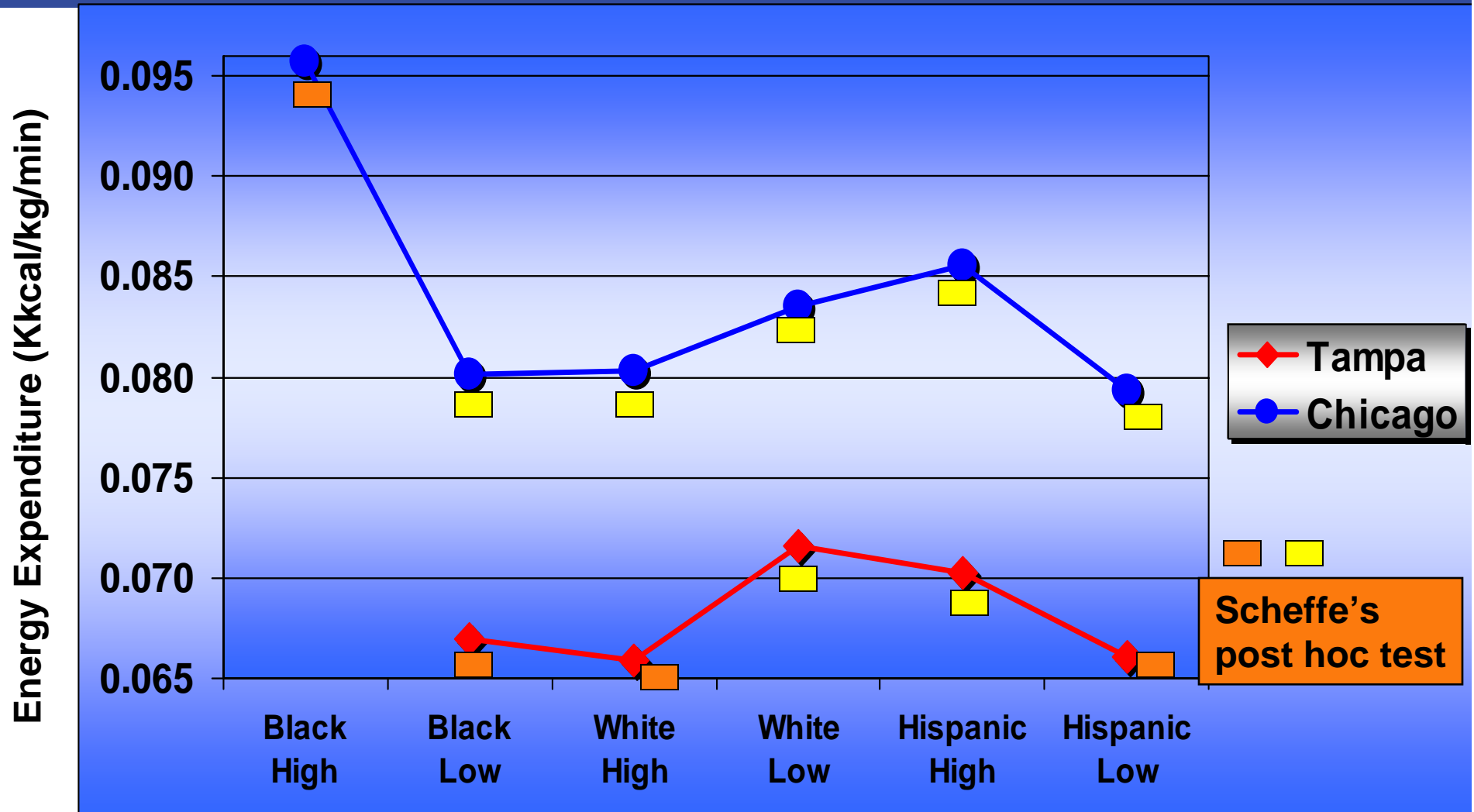
Tampa, $F = 3.06$, $p < .001$; Chicago, $F = 6.74$, $p < .01$.

Mean EE by Neighborhood Income



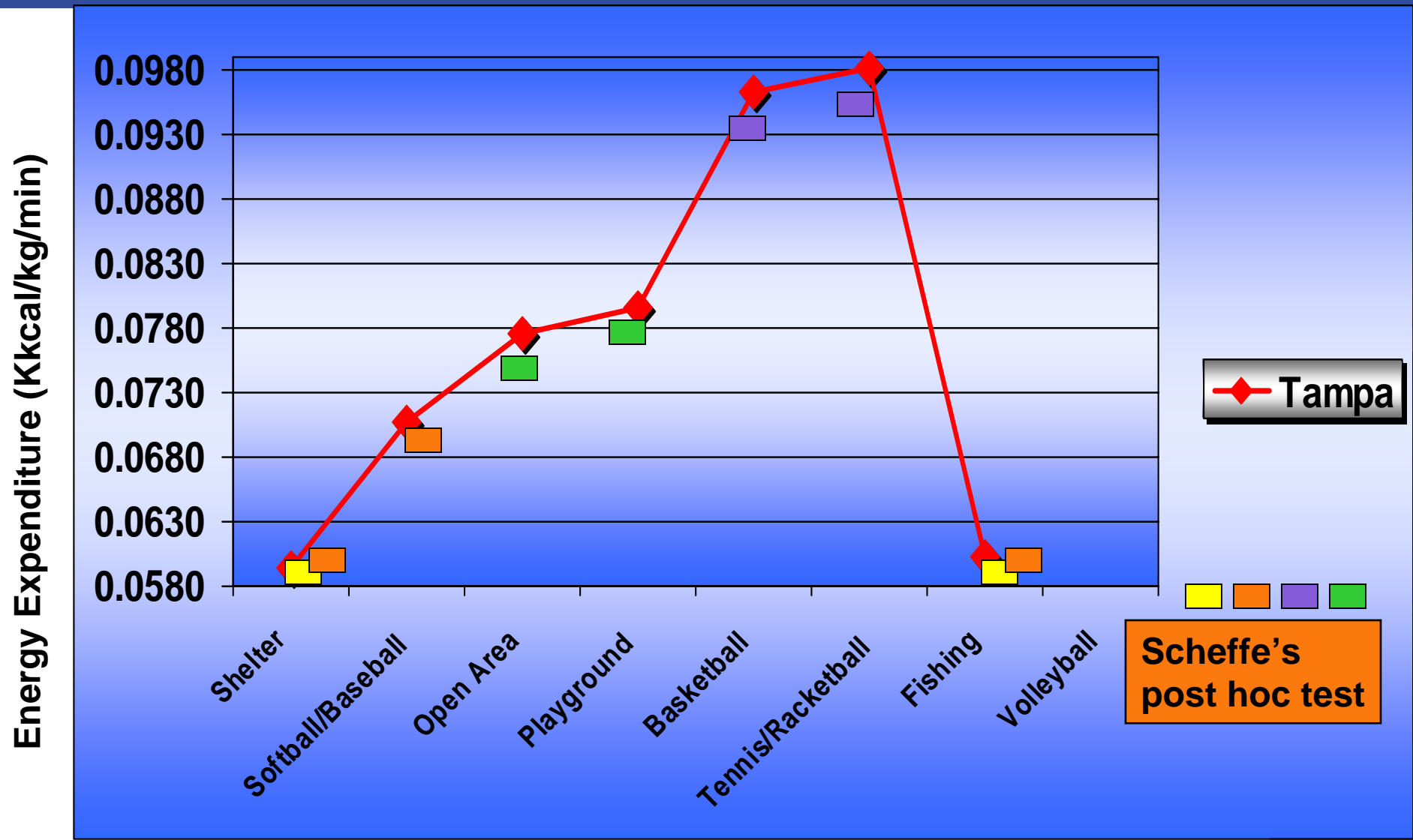
Tampa, $t = -2.54$, $p < .05$; Chicago, $t = -3.19$, $p < .01$.

Mean EE by Neighborhoods Defined by Race/Ethnicity and Income



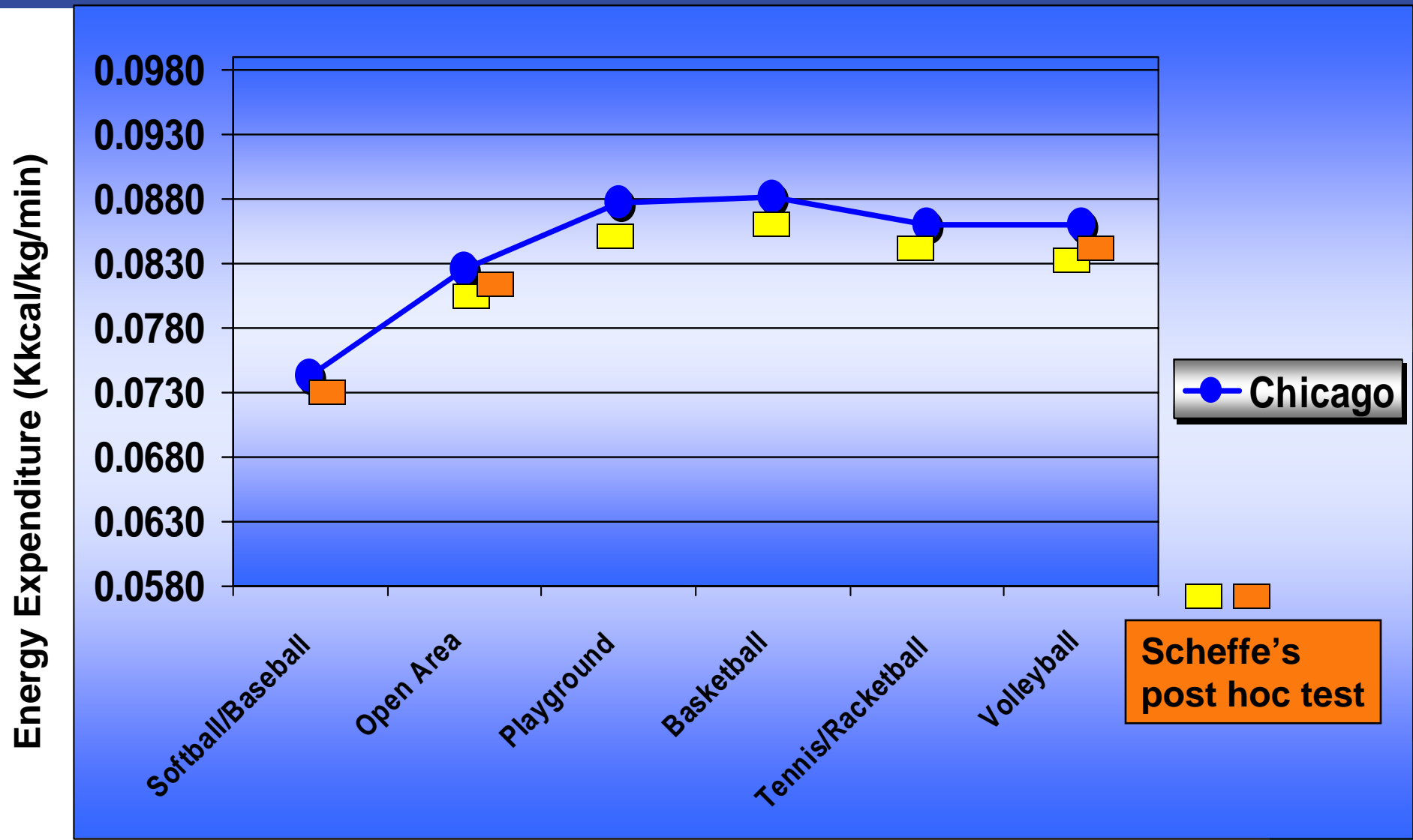
Tampa, $F = 8.96$, $p < .001$; Chicago, $F = 10.16$, $p < .001$.

Mean EE by Park Activity Zones (Tampa)



Tampa, $F = 144.13$, $p < .0001$.

Mean EE by Park Activity Zones (Chicago)



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

Neighborhood Composition and EE by Activity Zones (Tampa)

High income White	Low income Hispanic	Low income Black	High income Hispanic	Low income White
EE=.065	EE=.066	EE=.067	EE=.070	EE=.072
Shelters (63%)	Shelters (66.5%)	Shelters (59.2%)	Shelters (47.5%)	Baseball (76.8%)
Open space (19%)	Playground (15.2%)	Playground (16.3%)	Playground (32%)	Open space (12%)
Playground (17.3%)	Open space (9.7%)	Open space (13.6%)	Open Space (16%)	Playground (6.4%)

PA/EE in zones underlie differences by race/ethnicity.

Neighborhood Composition and EE by Activity Zones (Chicago)

Low income Hispanic	Low income Black	Low income White	High income Hispanic	High income Black
EE=.079	EE=.080	EE=.084	EE=.086	EE=.096
Baseball (43.2%)	Baseball (48.8%)	Open space (38%)	Baseball (40.4%)	Playground (36.6%)
Playground (29.8%)	Basketball (21.1%)	Baseball (26.1%)	Playground (18.8%)	Baseball (30%)
Open space (15%)	Playground (16.1%)	Playground (15.5%)	Tennis (18.3%)	Tennis (13.9%)

PA/EE in zones underlie differences by race/ethnicity.

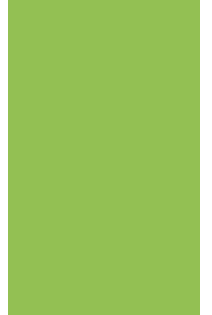
Conclusions

- ❖ Overall, a majority of park users were observed in sedentary behavior (51 and 70%).
- ❖ Males and children were more likely to be active than females and adults.
- ❖ Greater EE associated with parks in higher SES Hispanic and lower SES white areas (Tampa) and African American areas (Chicago).
- ❖ Within parks, EE varied by activity zones:
 - Tampa (e.g., shelters, fishing piers < baseball).
 - Chicago (e.g., baseball < playground, basketball, tennis)



Limitations

- ❖ **SOPLAY observations are based on momentary time sampling.**
- ❖ **PA categories encompass a broad range of intensities.**
- ❖ **Observations do not represent early AM, midweek, and seasonal park use.**



Implications

- ❖ **Recognize full range of park benefits and encourage interventions to increase active park visits.**
- ❖ **Public parks are critical resources for children's physical activity.**
- ❖ **Attention should focus on facilities available in areas at risk of low activity.**



Thank You !



Acknowledgements:

*The Robert Wood Johnson
Foundation, Active Living
Research*

The Chicago Park District

*City of Tampa Parks and
Recreation Department*

*UF & NCSU Graduate
Assistants*

