RAND HEALTH

Promoting Health in Low-Wealth Communities: Physical Activity

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Large Health Disparities Exist Among Low Income Communities

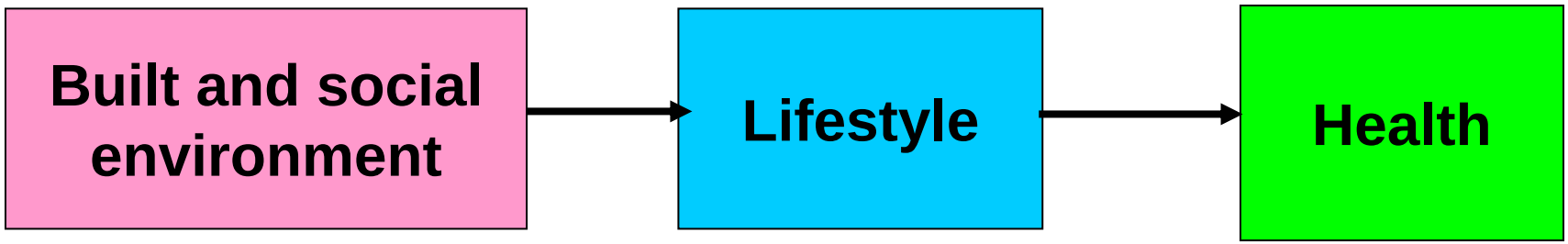
- Higher prevalence of overweight and obesity
- Higher rates of diabetes, heart disease, violence
- Higher rates of mortality and premature mortality

  – Is this only due to income?
  – How are low-income communities different?
  – What can be done to improve health?

Differences in mortality are not merely due to income

- Income explains only part of the problem
- Race explains only part of the problem
- Genetics explains some
- The most important, remediable component is **lifestyle**, which explains up to 50% of mortality in general

Traditional Prevention Has Focused on Modifying Individuals' Lifestyles



- Housing
- Street design
- Mass transit
- Land use
- Parks
- Media/Marketing
- Social support

- Diet
- Physical activity
- Substance use
- Sexual activity
- Violence

- Obesity
- Diabetes
- Heart disease
- Cancer
- STD/HIV
- Injury

Parks and Physical Activity in Low-Wealth Communities

- Parks are venues for physical activity
- Does having a neighborhood park matter in determining how physically active a person is?
- What are the important features of parks? Size? Features? Facilities? Programming?

Study of Physical Activity in 12 Los Angeles Neighborhood Parks

- Most parks in Latino and African-American neighborhoods
- Low-income neighborhoods serving an average of 67,000 people in 1 mile radius and 210,000 people in 2 mile radius
- Size ranges from 3.4 to 16 acres, with an average of 8 acres. Active parks, mostly with gymnasiums, baseball diamonds, playground areas, picnic areas, fields

SES of 12 Park Neighborhoods

•	**Mean**	**(range)**
% Individuals in poverty	30%	(10%-55%)
% Renters	66%	(24%-95%)
% Hispanic/Latino	57%	(11%-95%)
% African American	20%	(0%-88%)

Observation Methods

- Park activity was observed four times per day
  - 7:30 - 8:30am
  - 12:30 - 1:30pm
  - 3:30 - 4:30pm
  - 6:30 - 7:30pm

- Park activity was observed for each day of the week and primary and secondary activities in each target area recorded, including being a spectator.

- Individuals were counted and recorded by:
  - Gender (female or male)
  - Age group (child, teen, adult, or senior)
  - Race/ethnicity (Latino, black, white, or other)
  - Activity level (sedentary, walking, or vigorous)

Survey Methods

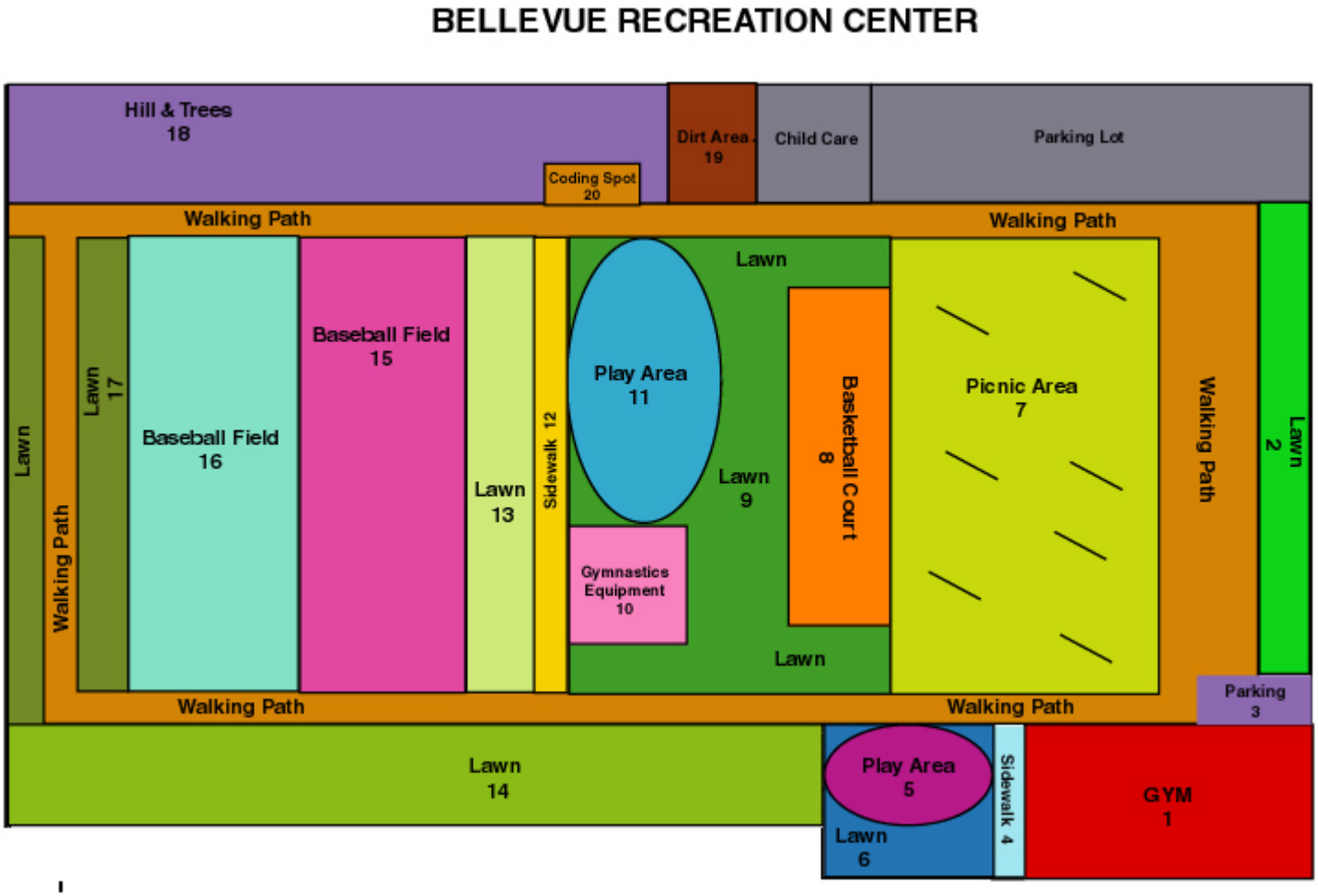
- Park users were surveyed based on:
  - Target Area (busy and quiet areas)
  - Activity Level (sedentary, walking, or vigorous)
  - Gender (50% male, 50% female)

- Neighborhood residents were surveyed based on random selection of households in specified increments from the park:
  - 1/4 mile
  - 1/2 mile
  - One mile
  - Two miles

Promotoras

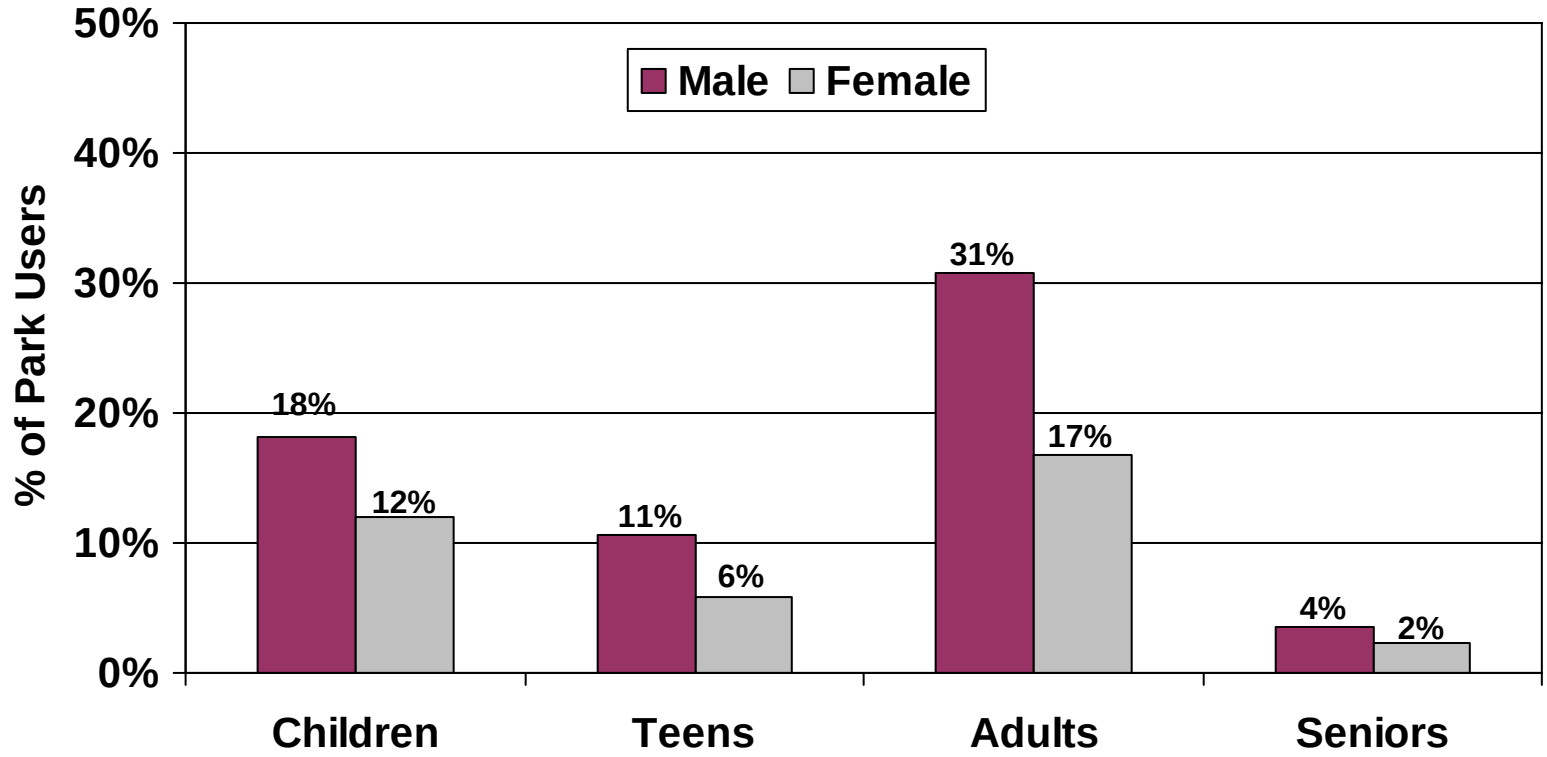
Counter

Park Map of Activity Areas



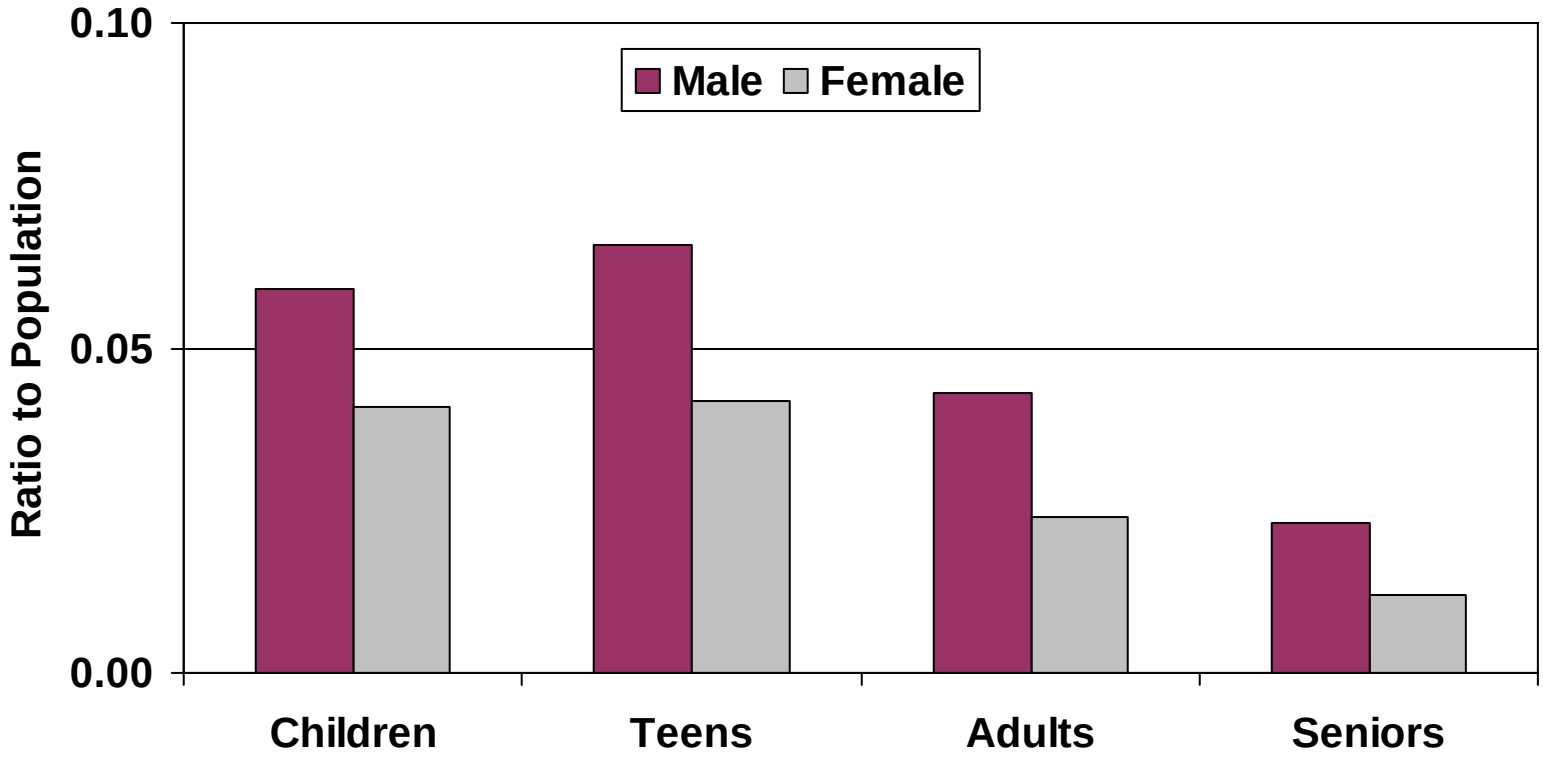
More Males than Females Use the Parks

(63% vs. 37%)

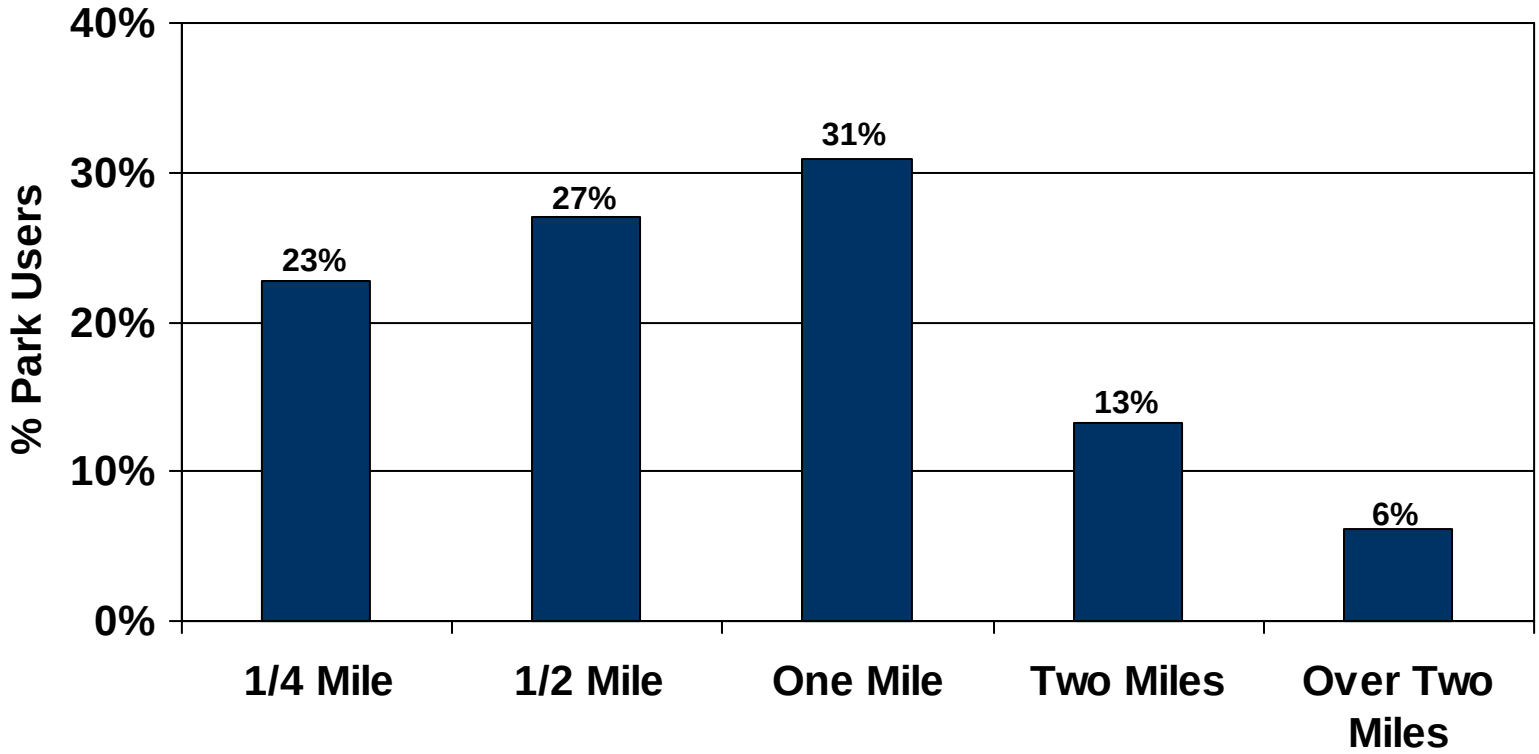


Average of 2000 persons observed per park over 7 days

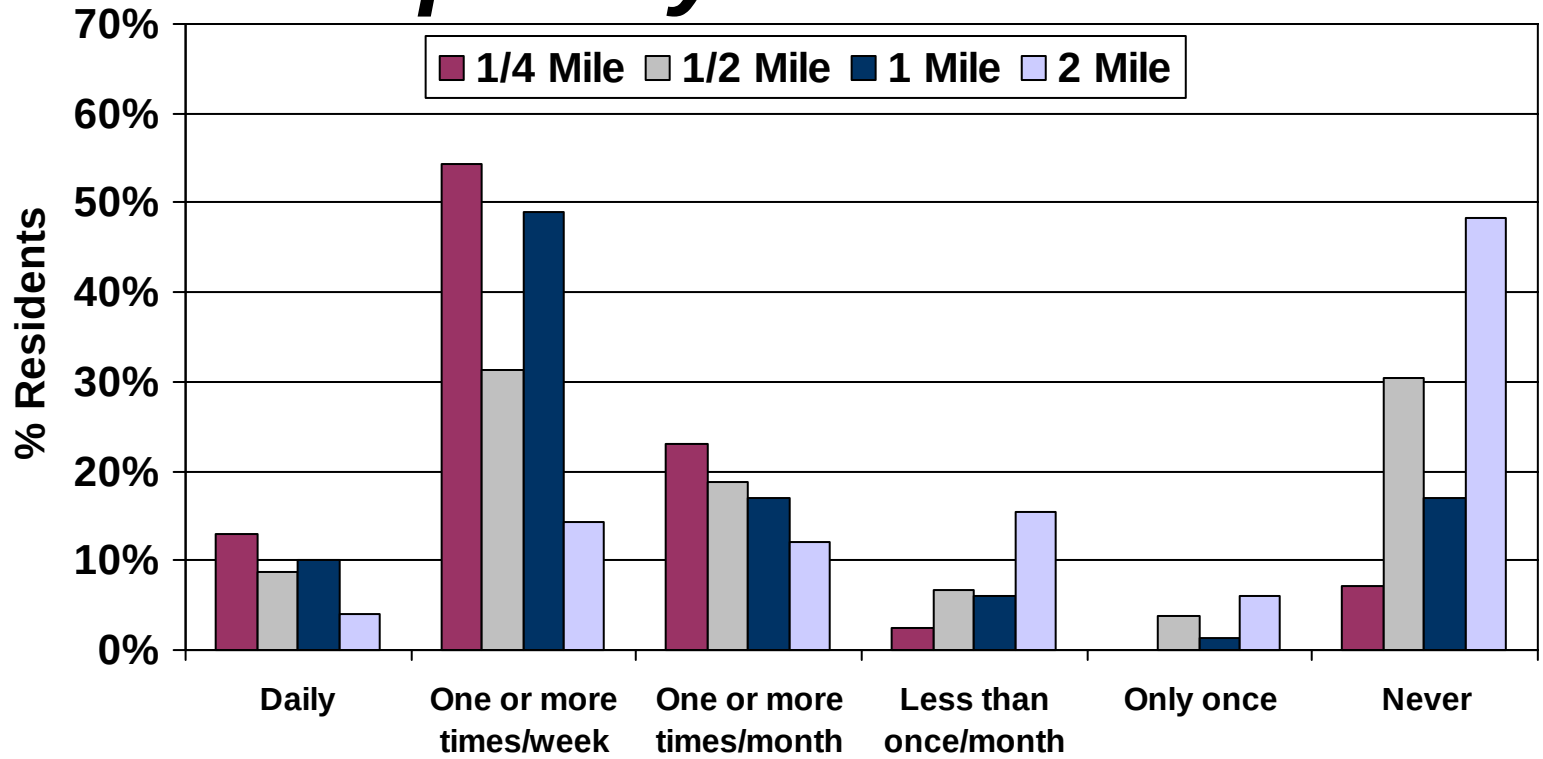
Children and Teens Use Parks More than Adults



Most Park Users Live Within 1 Mile of the Park

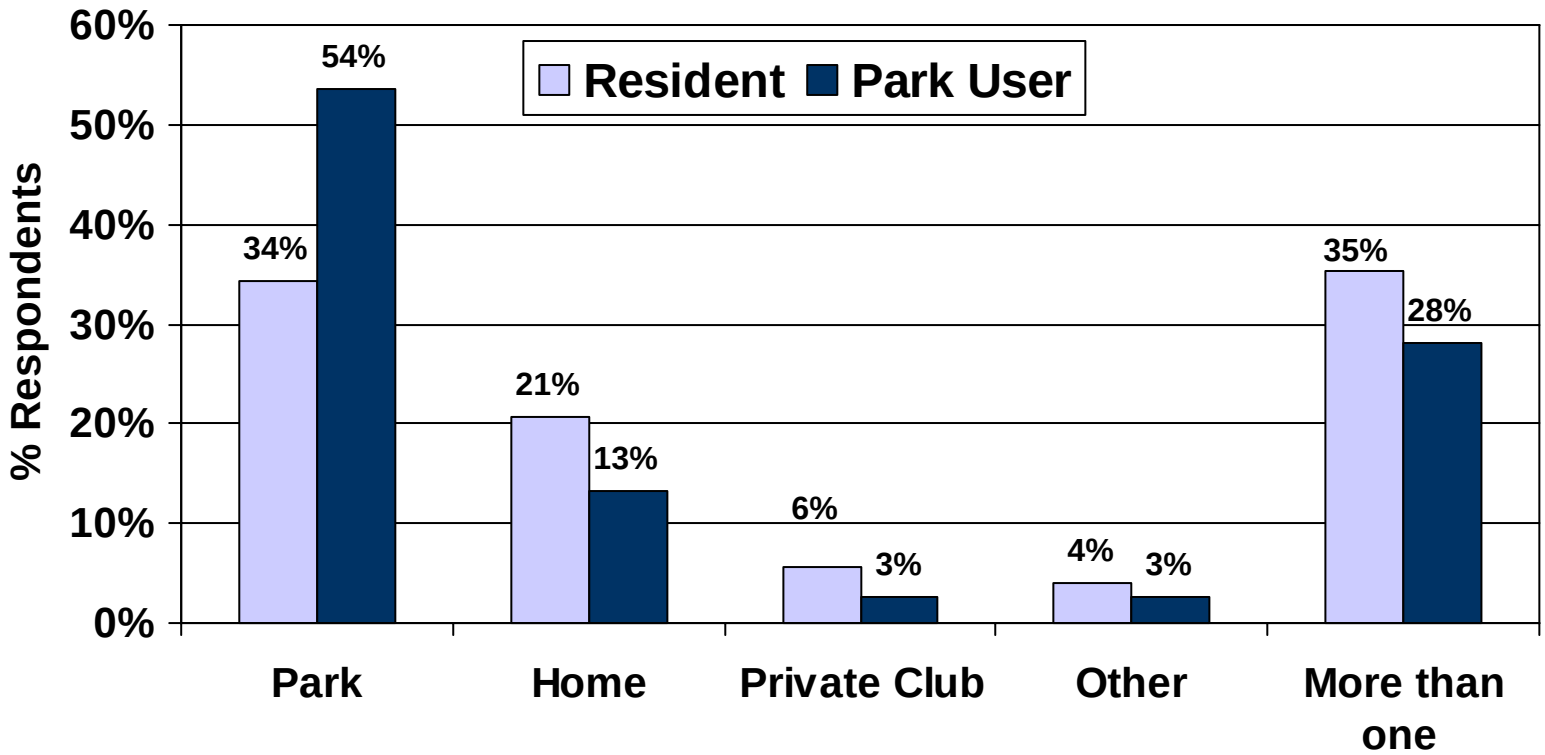


Residential Proximity Associated with Frequency of Park Use



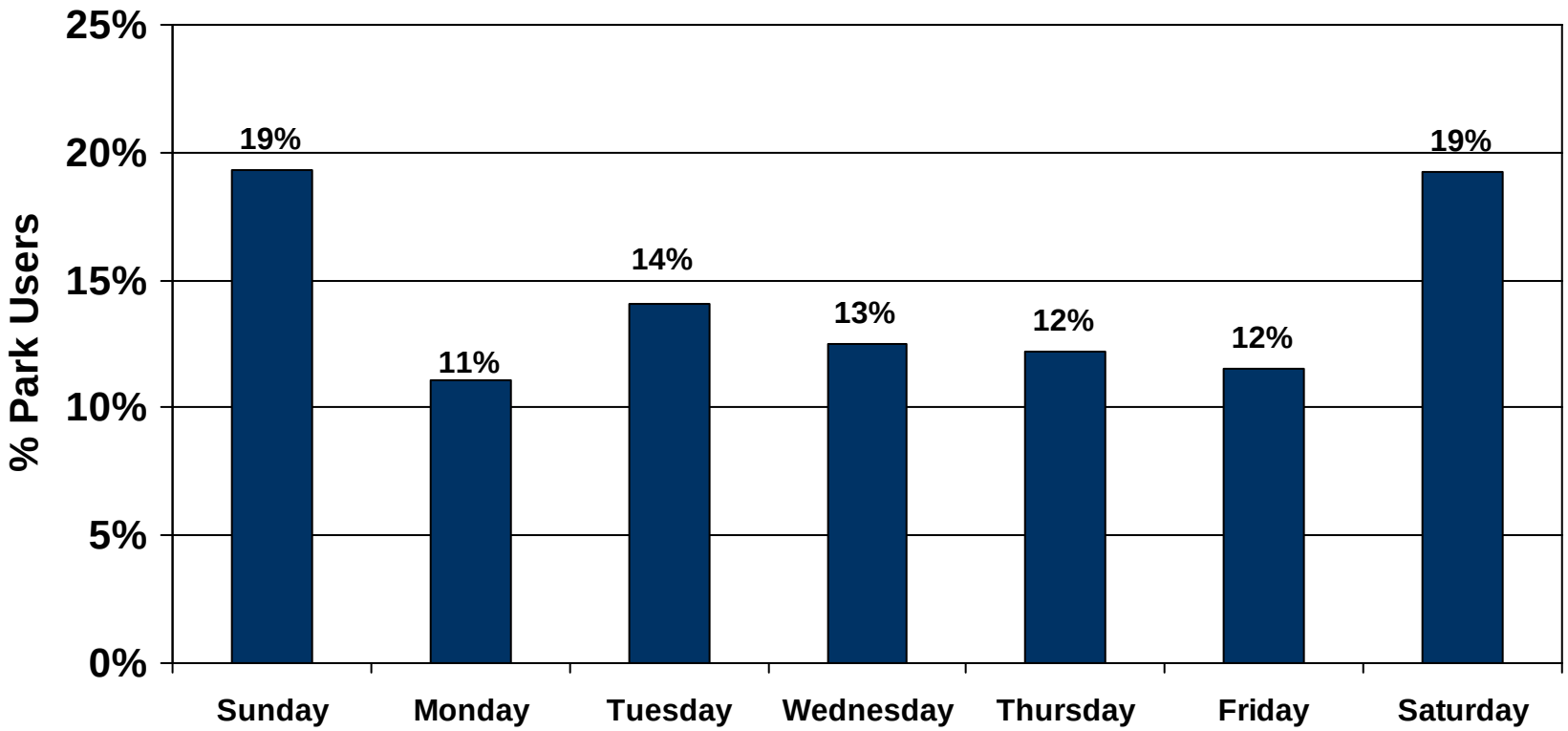
- People living within one mile of the park were four times as likely to visit the park once a week or more
- Those living within one mile had an average of 38% more exercise sessions per week than those living farther away

People Exercise in Parks

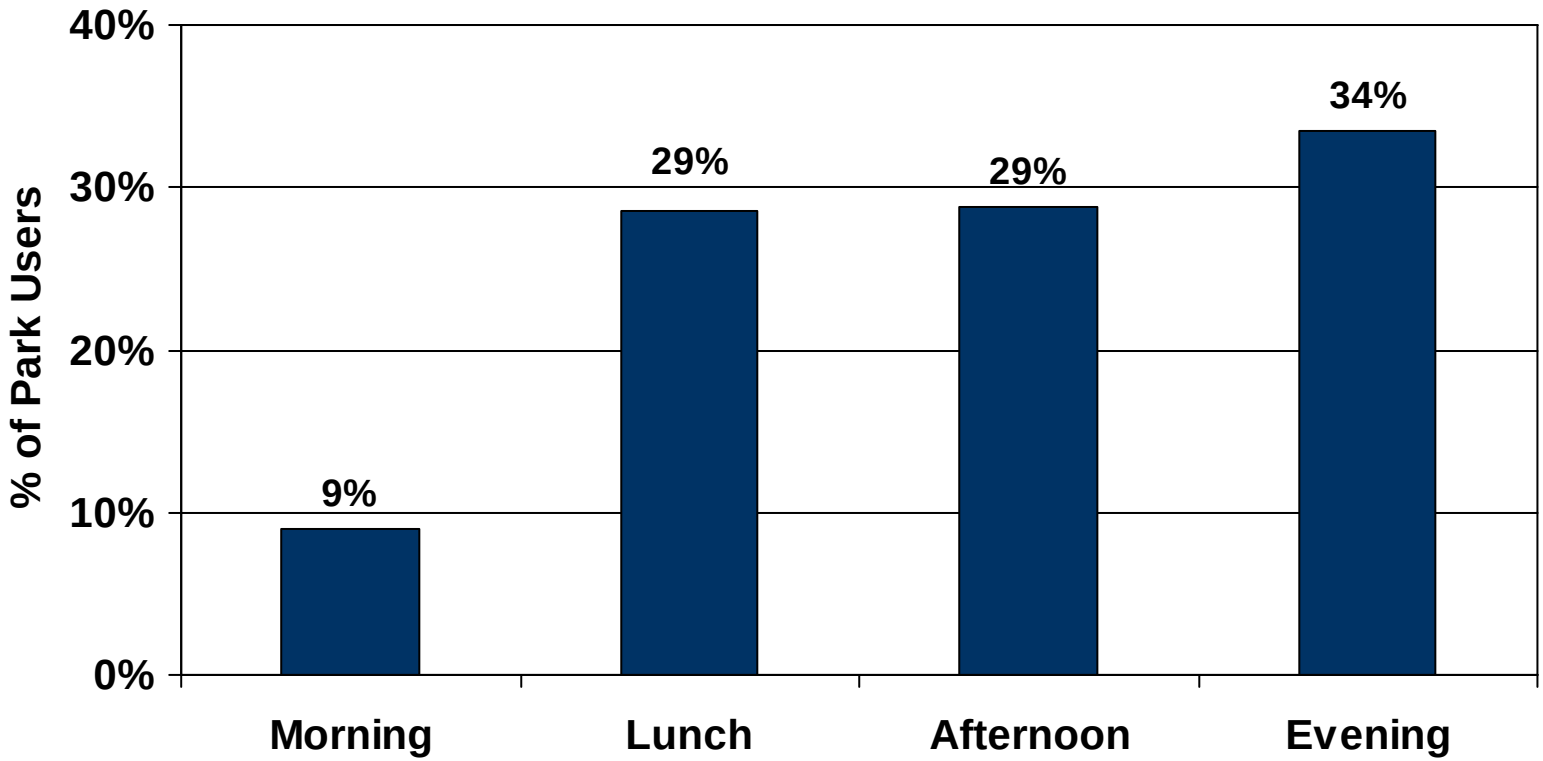


People who live closer to parks are more likely to exercise

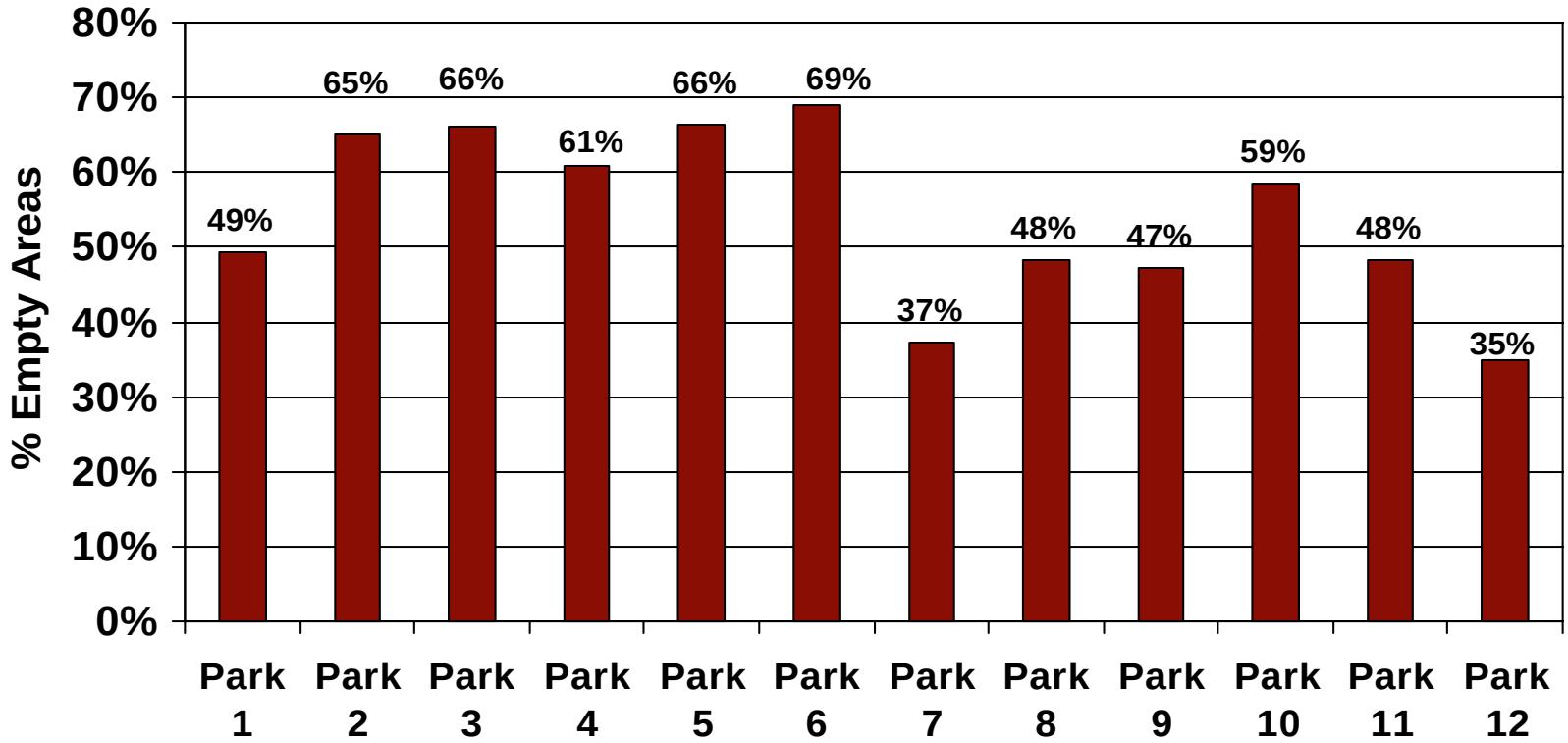
Parks Used Most on Weekends



Parks Used Least in the Morning

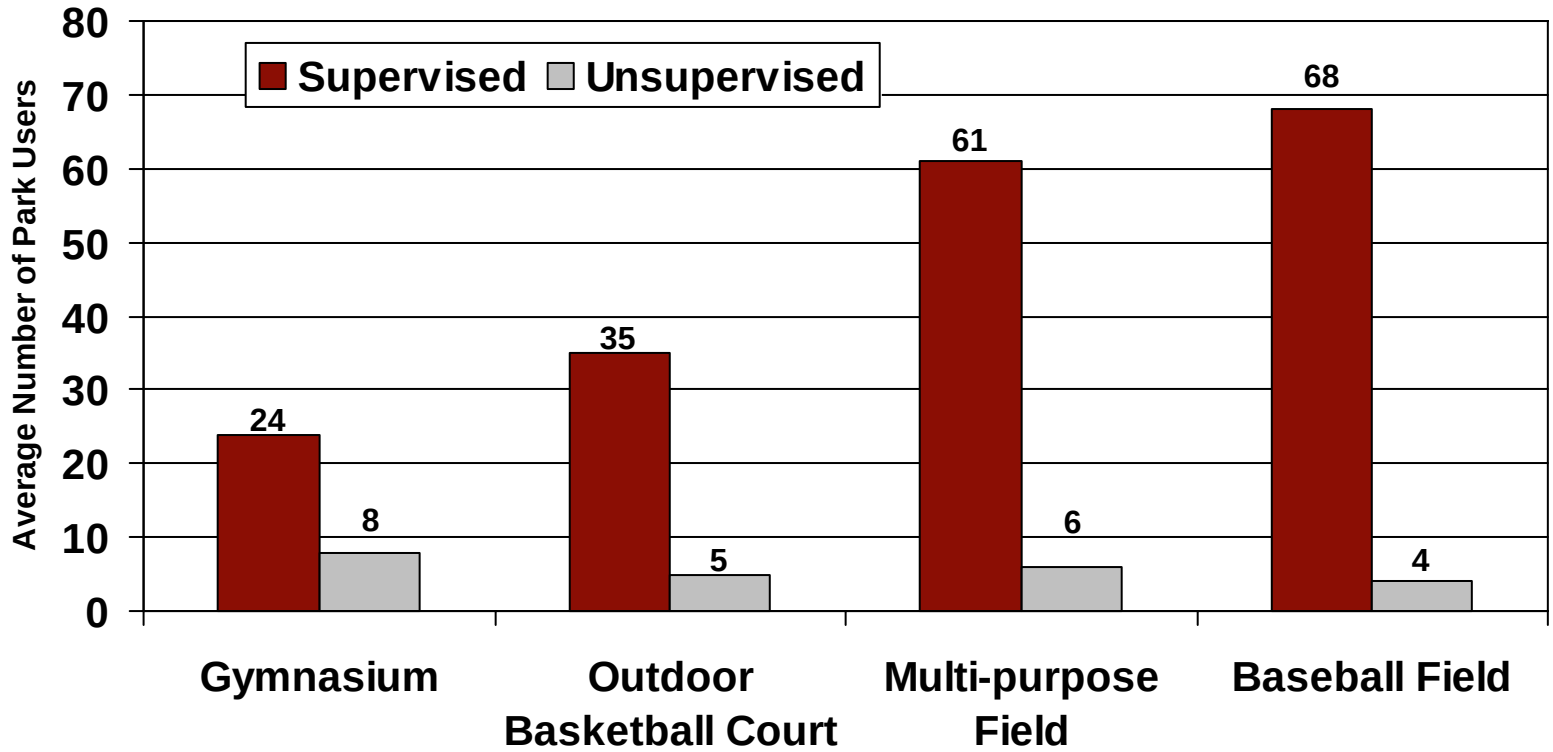


Many Target Areas in the Parks were Empty

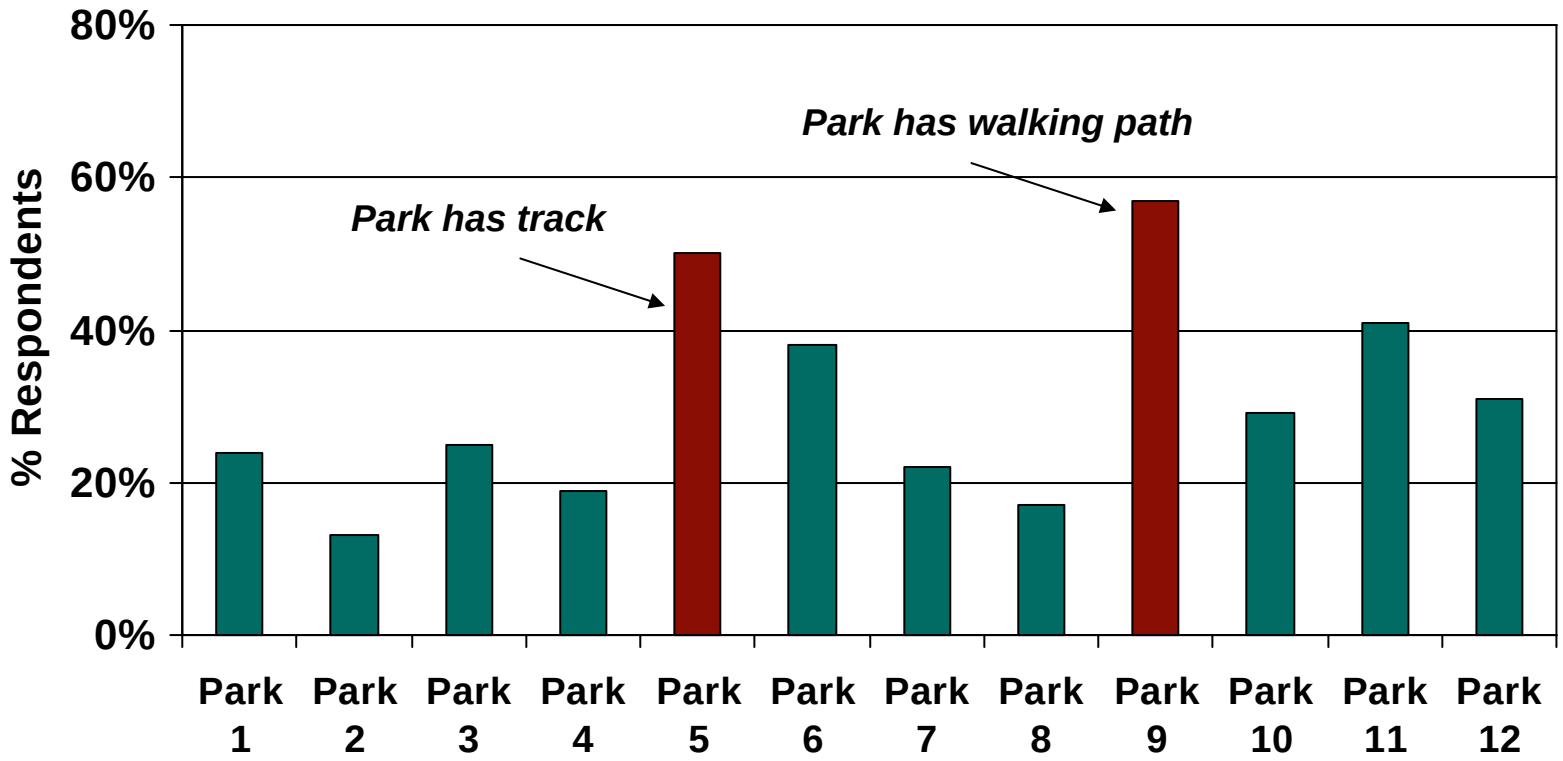


An average of 54% of park areas were empty during 28 observations/week.

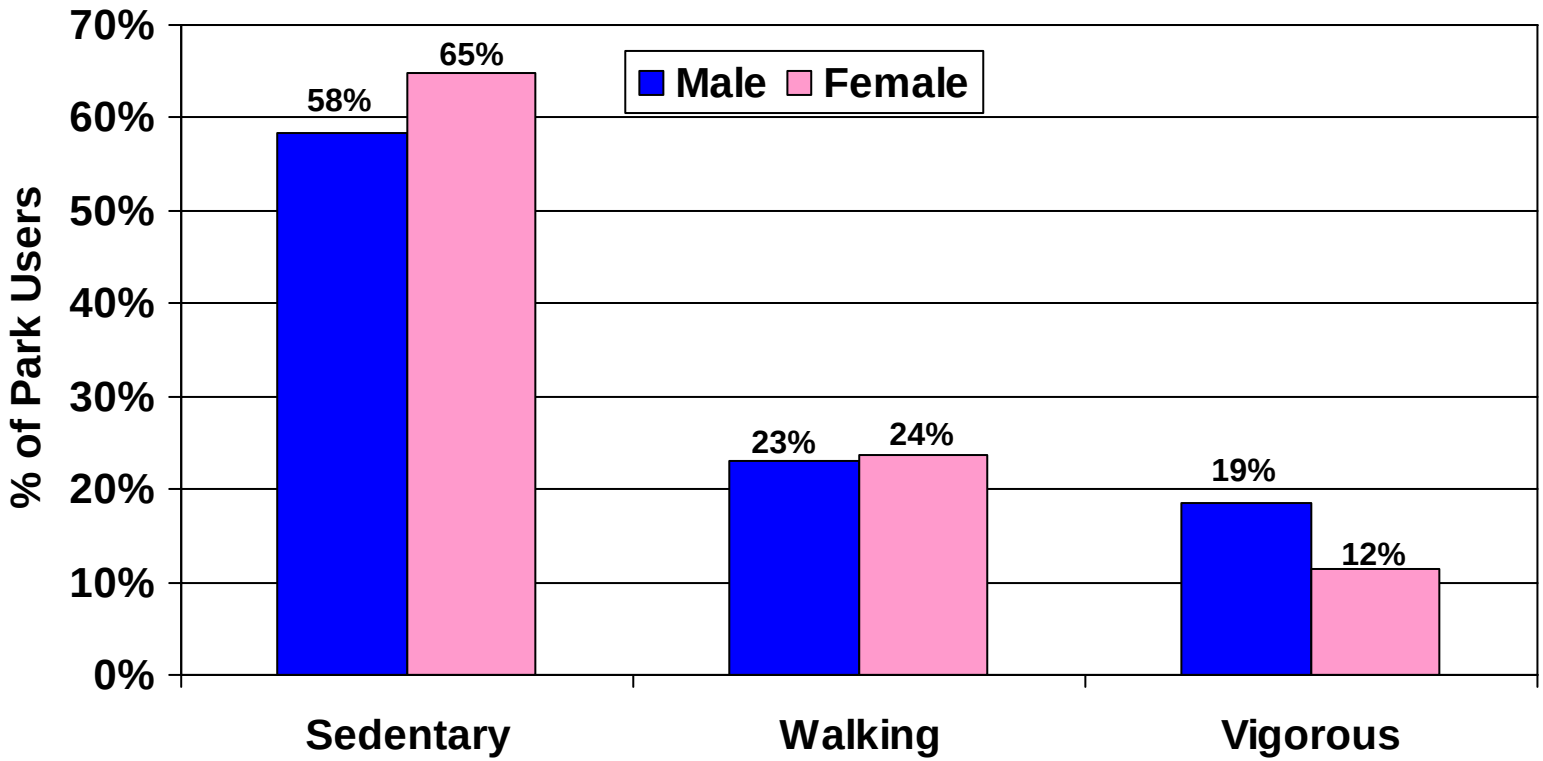
Supervised Activities Draw More Park Users



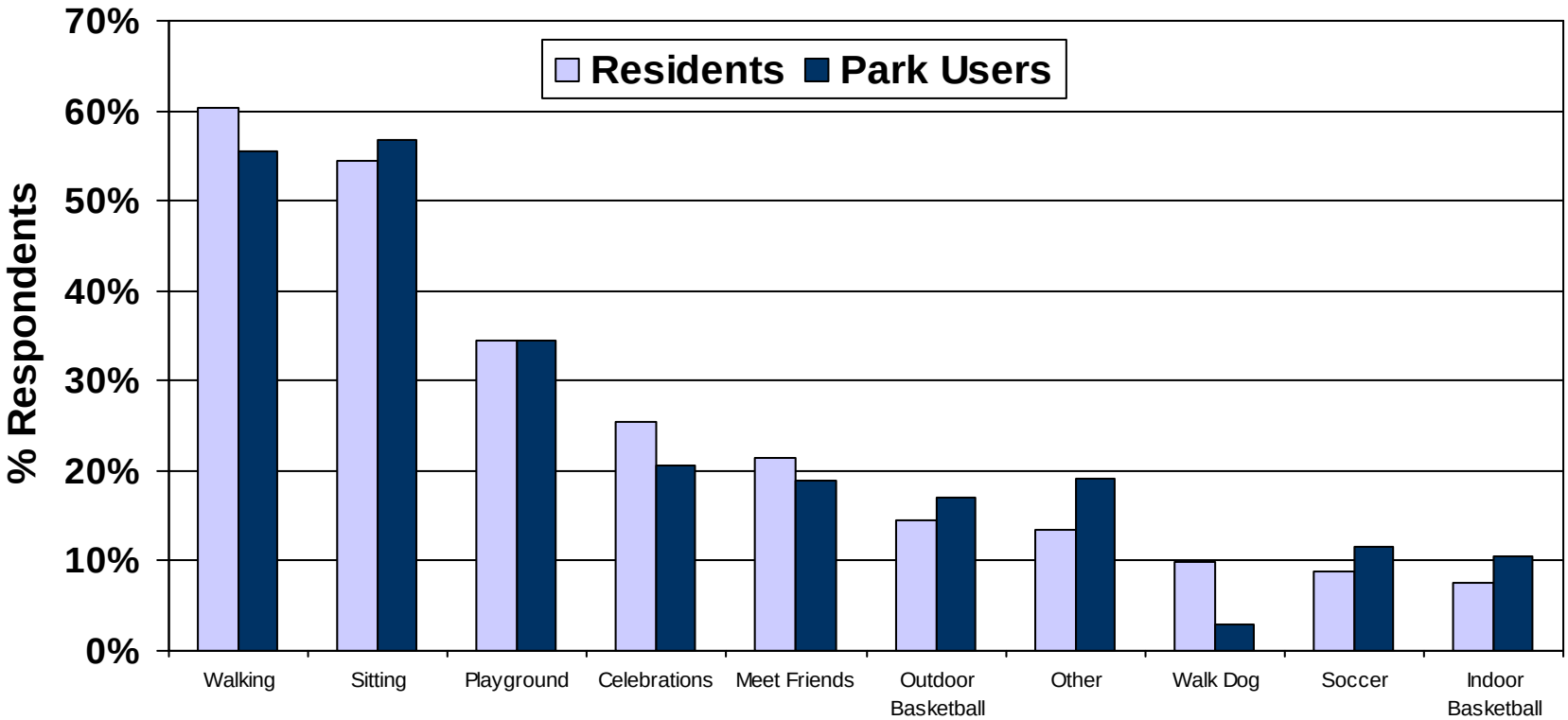
Percentage Walking Among Those Not Engaged in Specific Activities



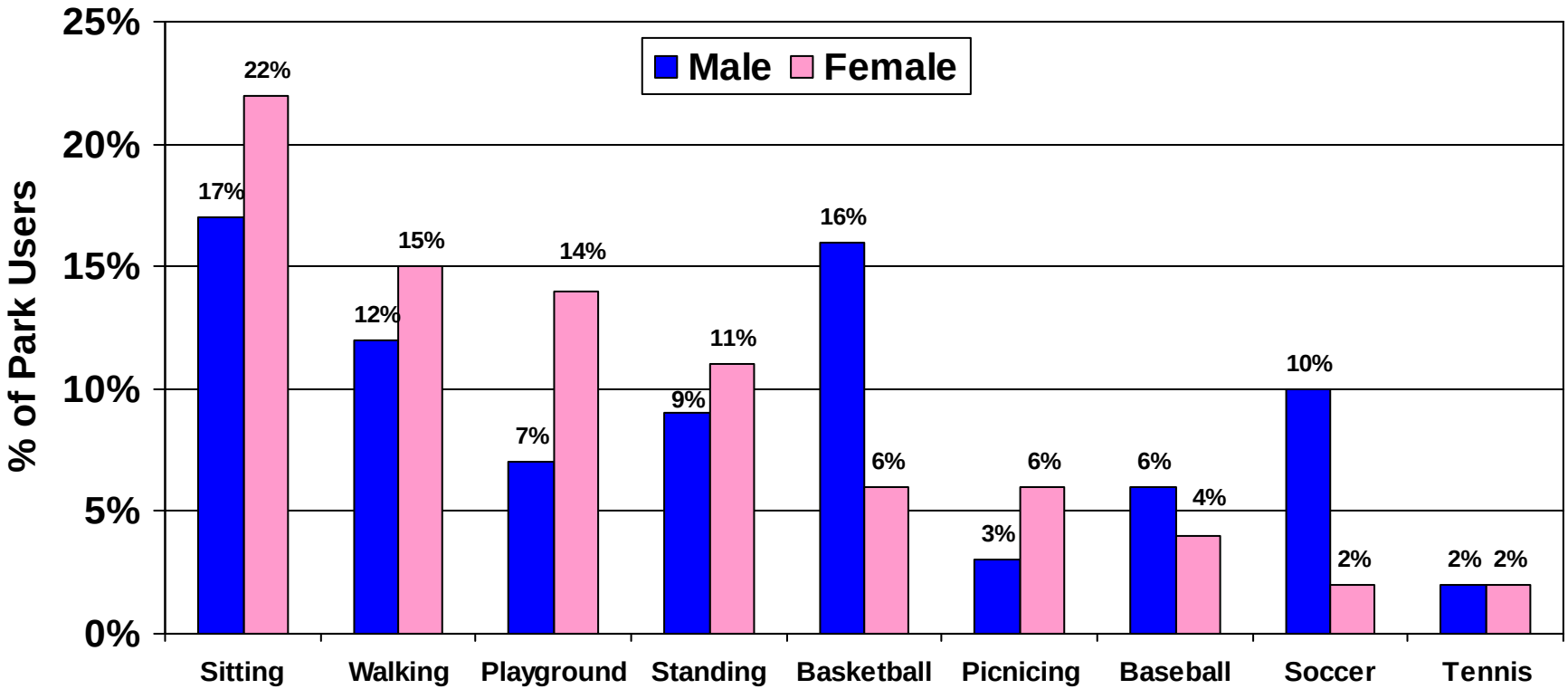
Males Are More Vigorously Active than Females



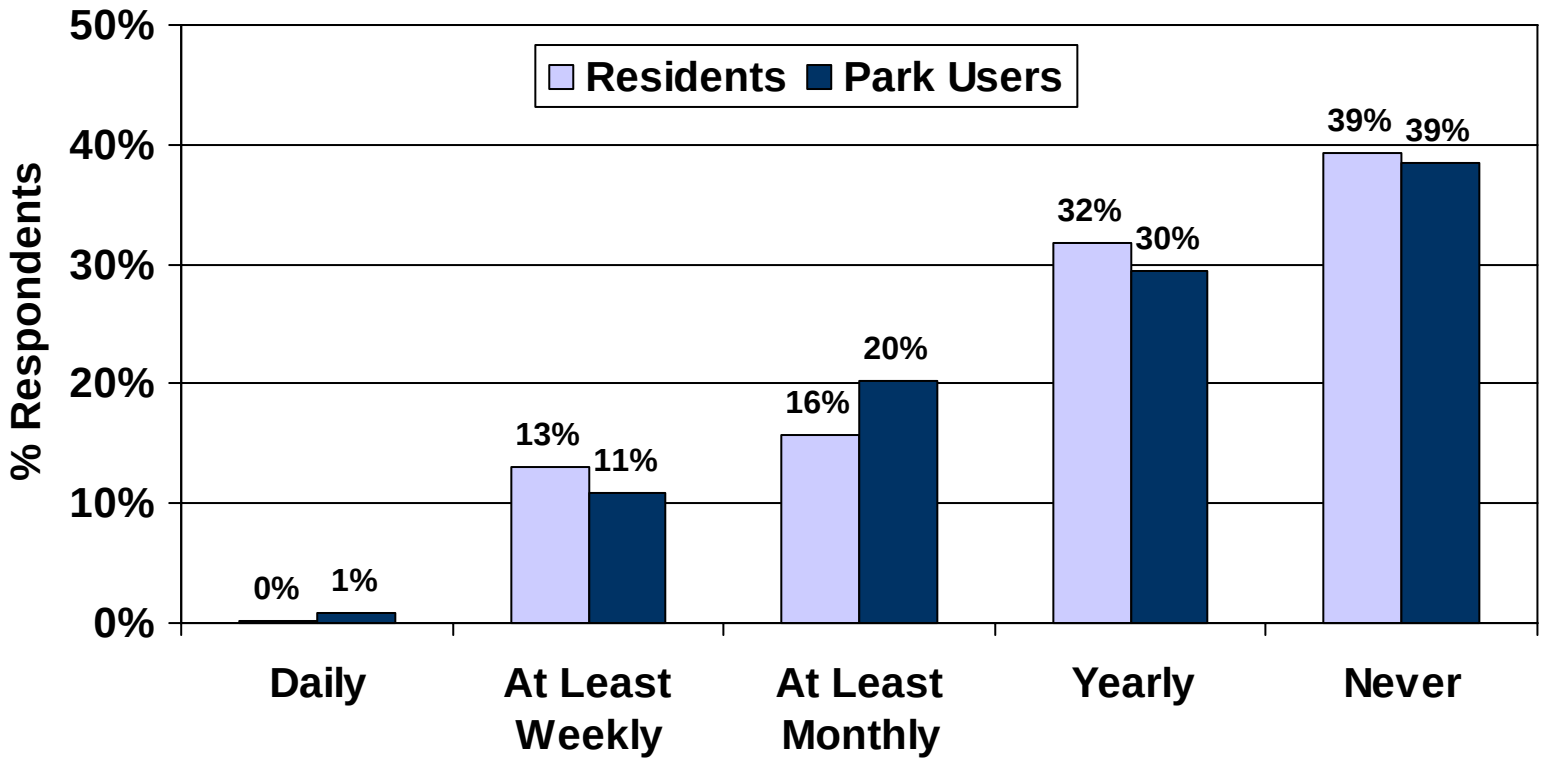
Walking and Sitting Are the Most Common Self Reported Activities



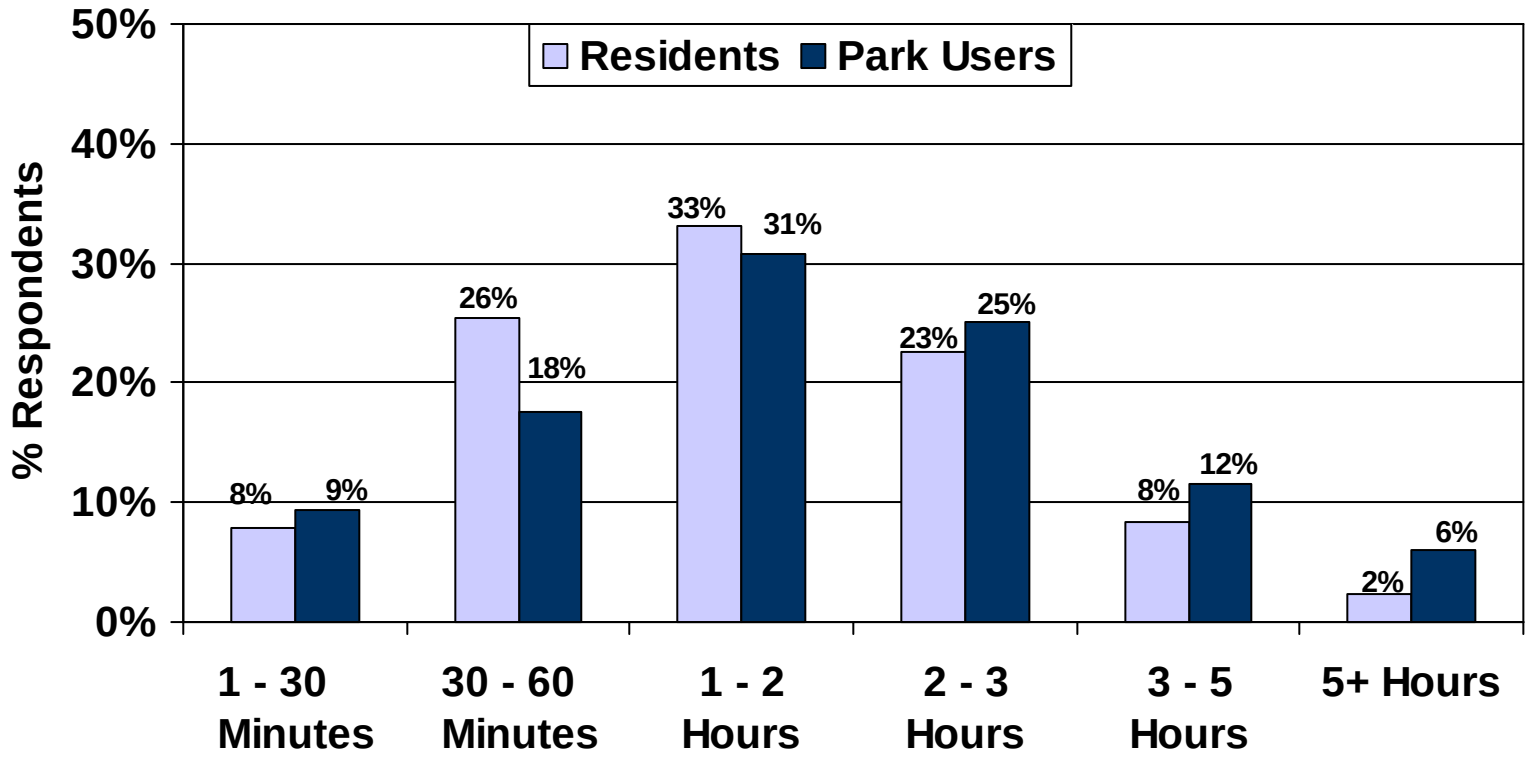
Observed Activities Reflect Self-Report



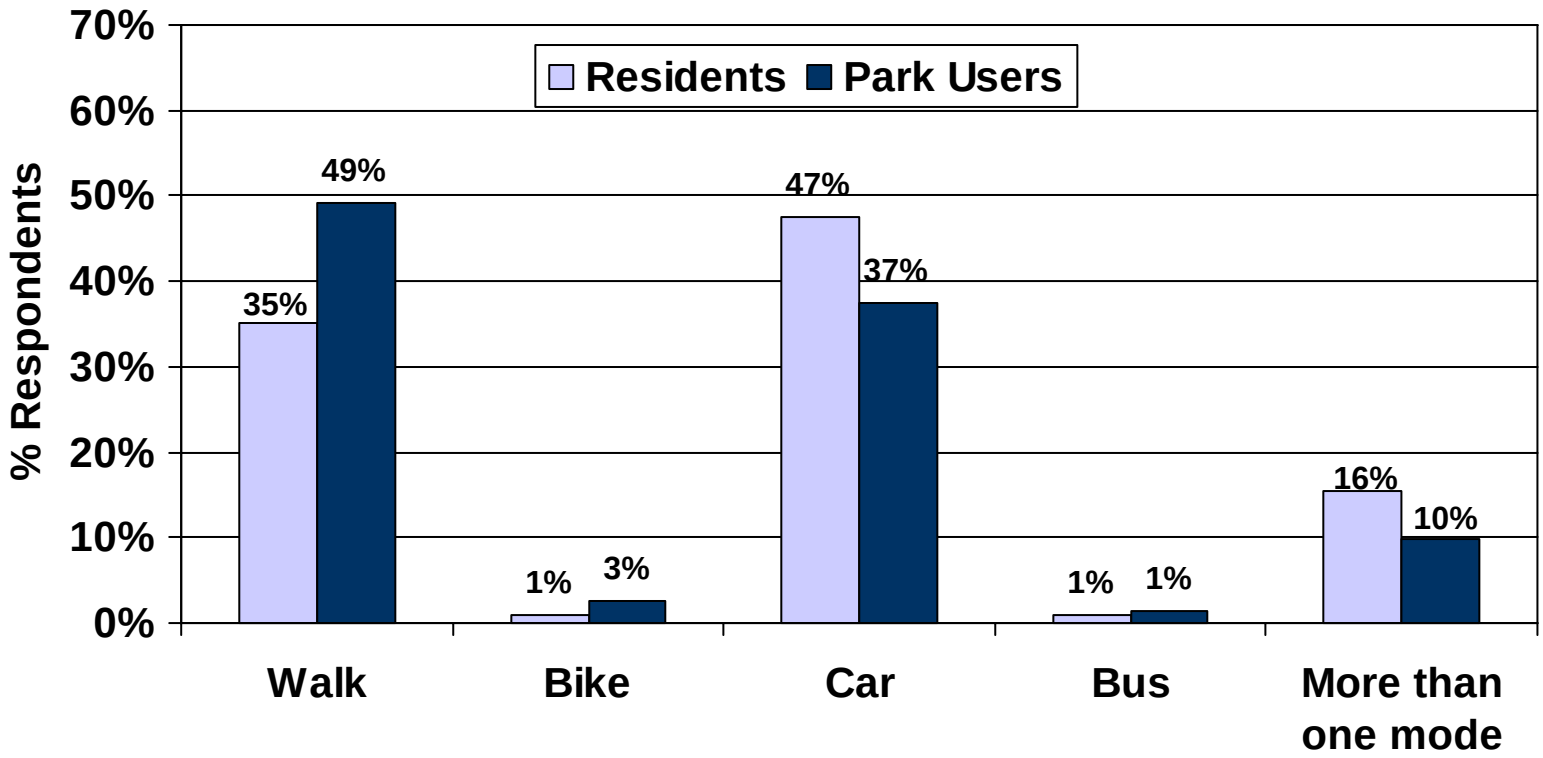
Respondents Rarely Visit Other Neighborhood Parks



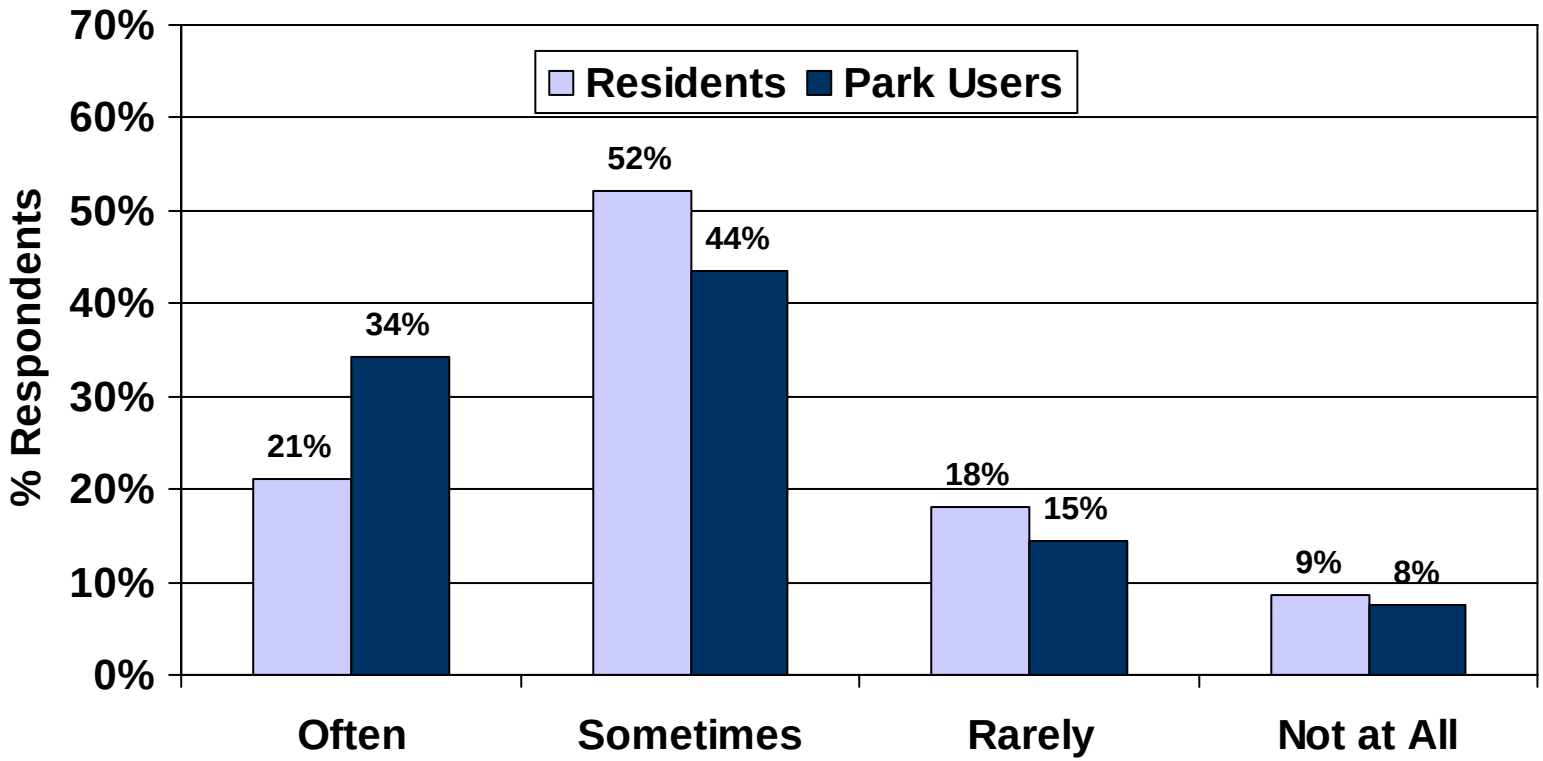
Respondents Report Long Visits to the Parks



Most Park Users Walk to the Park

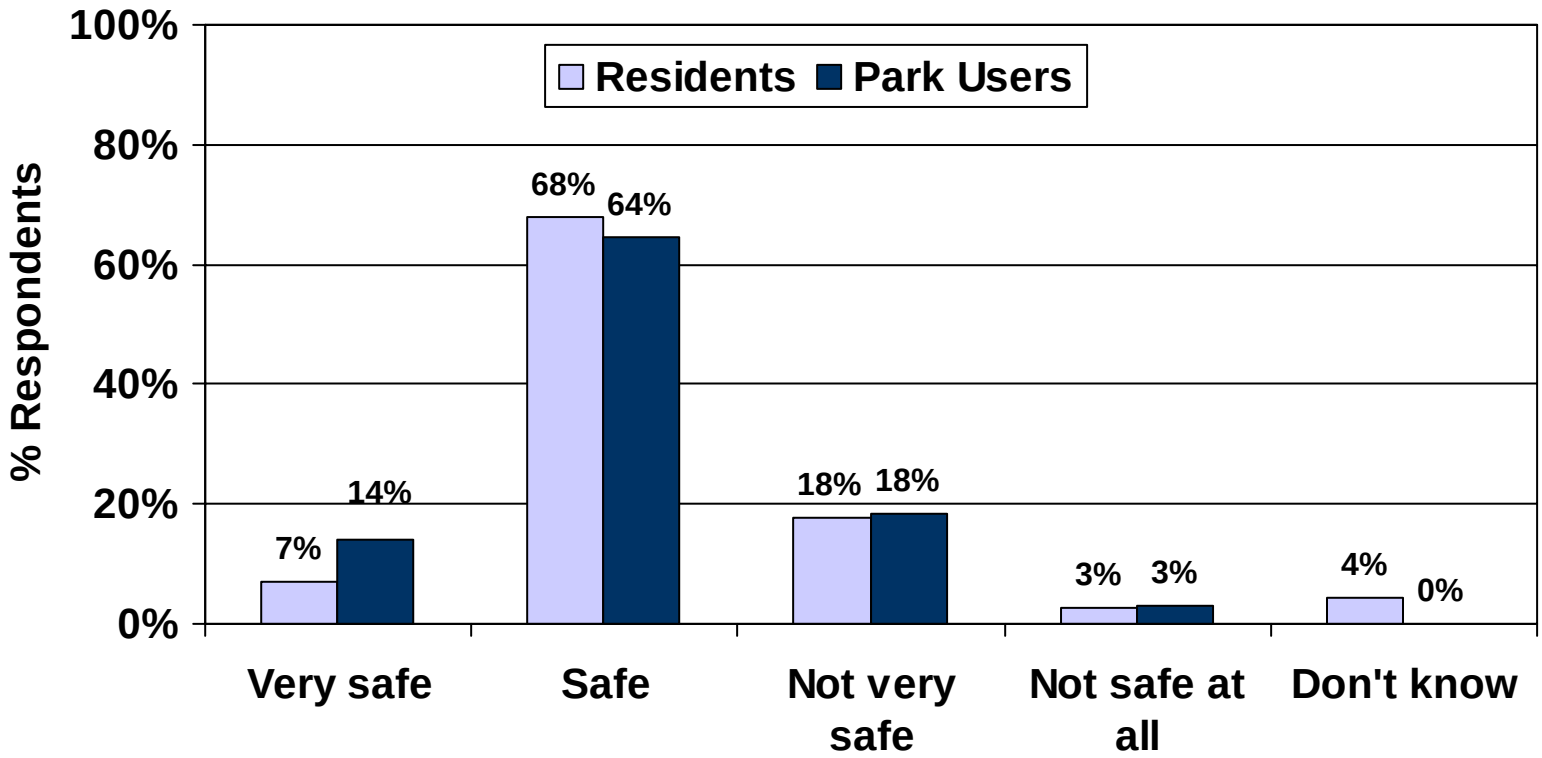


Parks Are Social Venues



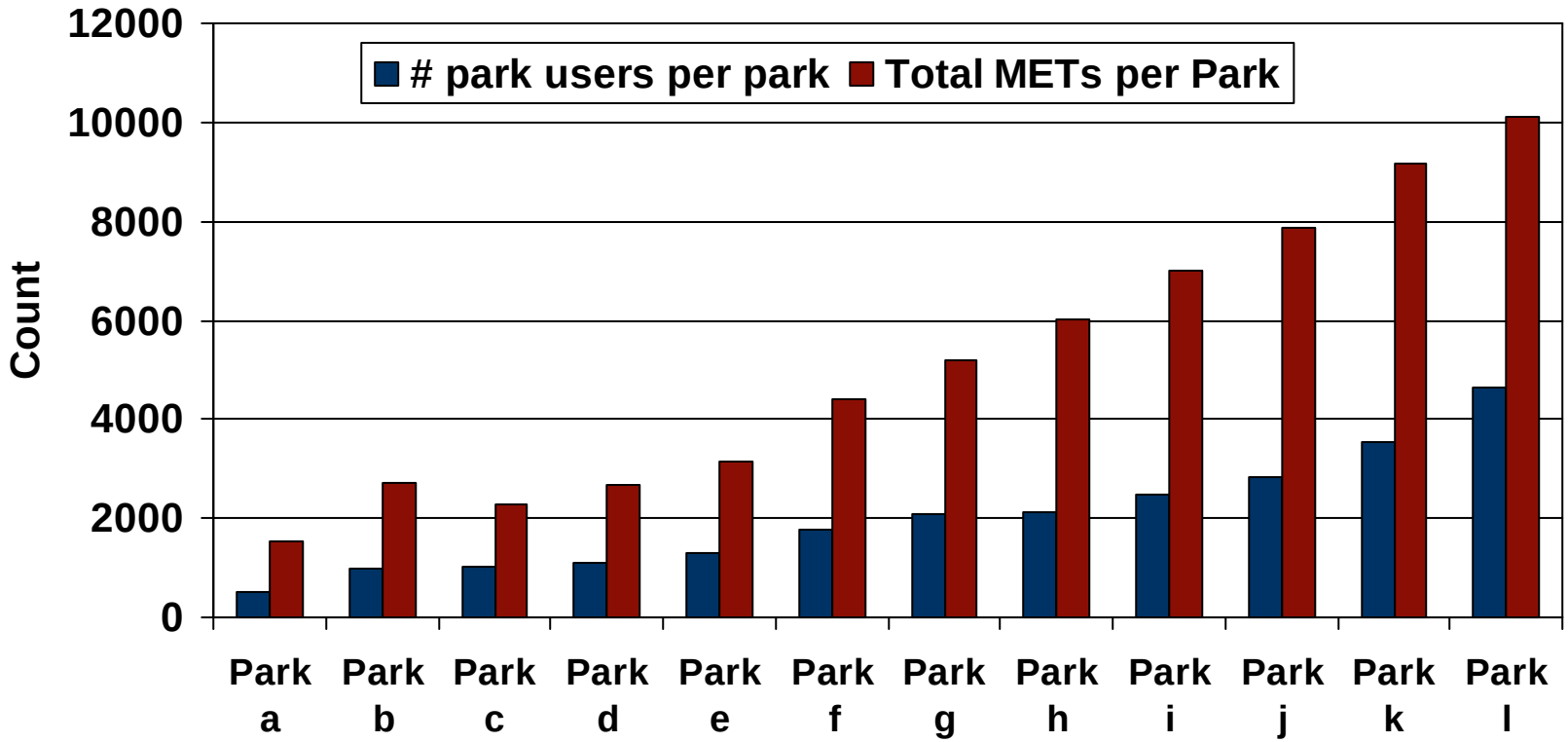
How often do you meet people you know?

Most Thought Parks Are Safe



Perceptions of safety did not predict park use.

More Users Correlates with Greater Energy Expenditure per Park



Summary

- Residential proximity to parks is a critical determinant of park use and leisure exercise – Size may be less important than the number of parks close by.
- Males use parks more than females
- Children and teens use parks more than adults and seniors
- Most people in the parks are sedentary

Summary

- People report using parks frequently, yet we observed many areas in the park to be largely unused during substantial portions of the week
- Supervised activities draw more people to the park
- Walking paths associated with more walking
- More park users correlated with more energy expended

Findings from The Trial of Activity Among Adolescent Girls

- National study to reduce the decline in physical activity among adolescent girls as they mature

- *Girls wore accelerometers for 6 days to objectively measure physical activity- outcome was MW-MVPA (intensity-weighted)*

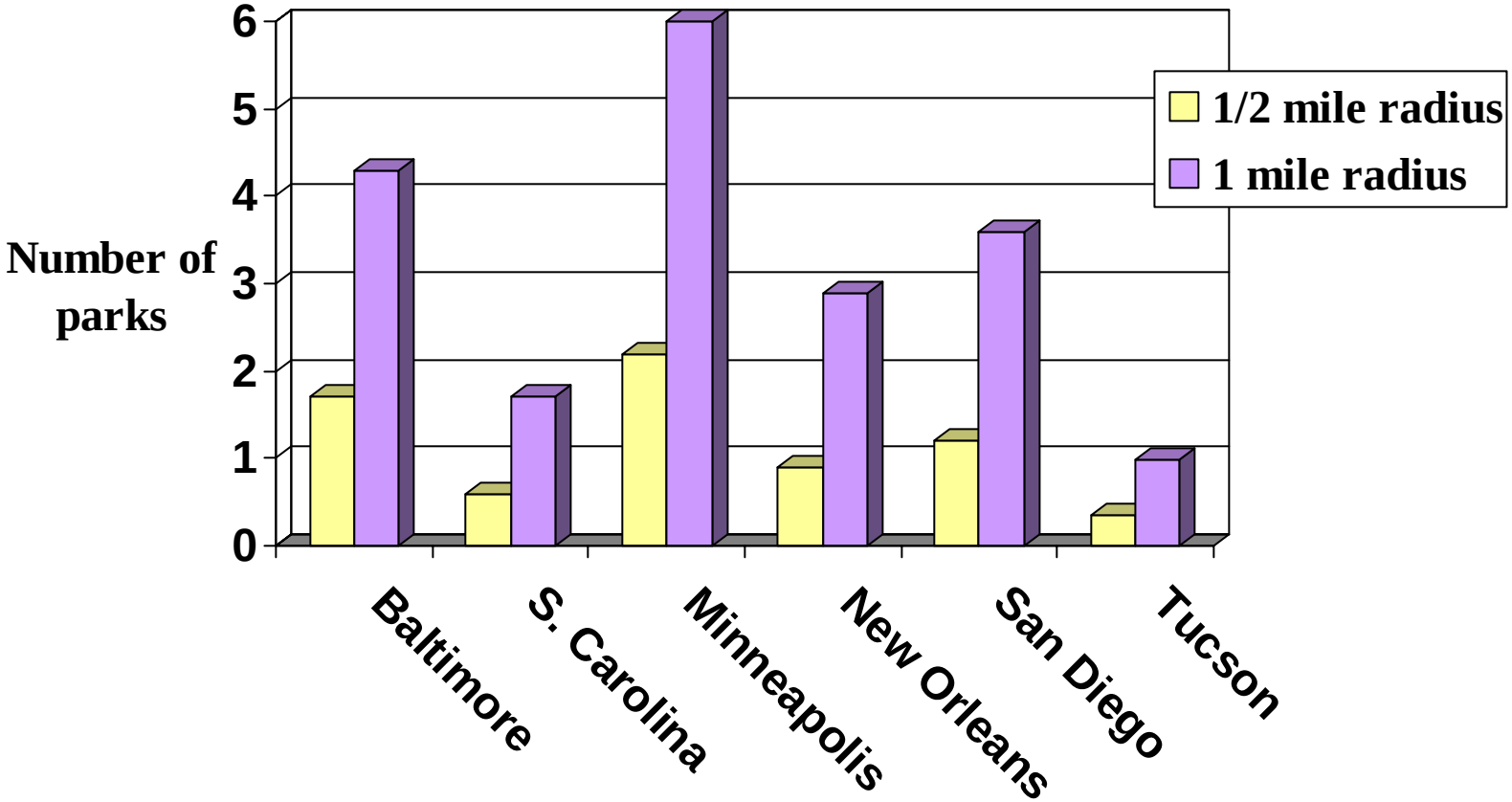
- *6 Cities: Baltimore/Wash DC, Columbia, SC, Tucson, AZ, Minn, MN, New Orleans, LA, and San Diego, CA.*

Types of Parks Visited

(definition from Mertes & Hall, 1996, NRPA)

97	Mini parks
234	Neighborhood parks
139	Community parks
24	Large urban parks
25	Sports complexes
136	Natural resource areas
52	Special use facilities
707	Total

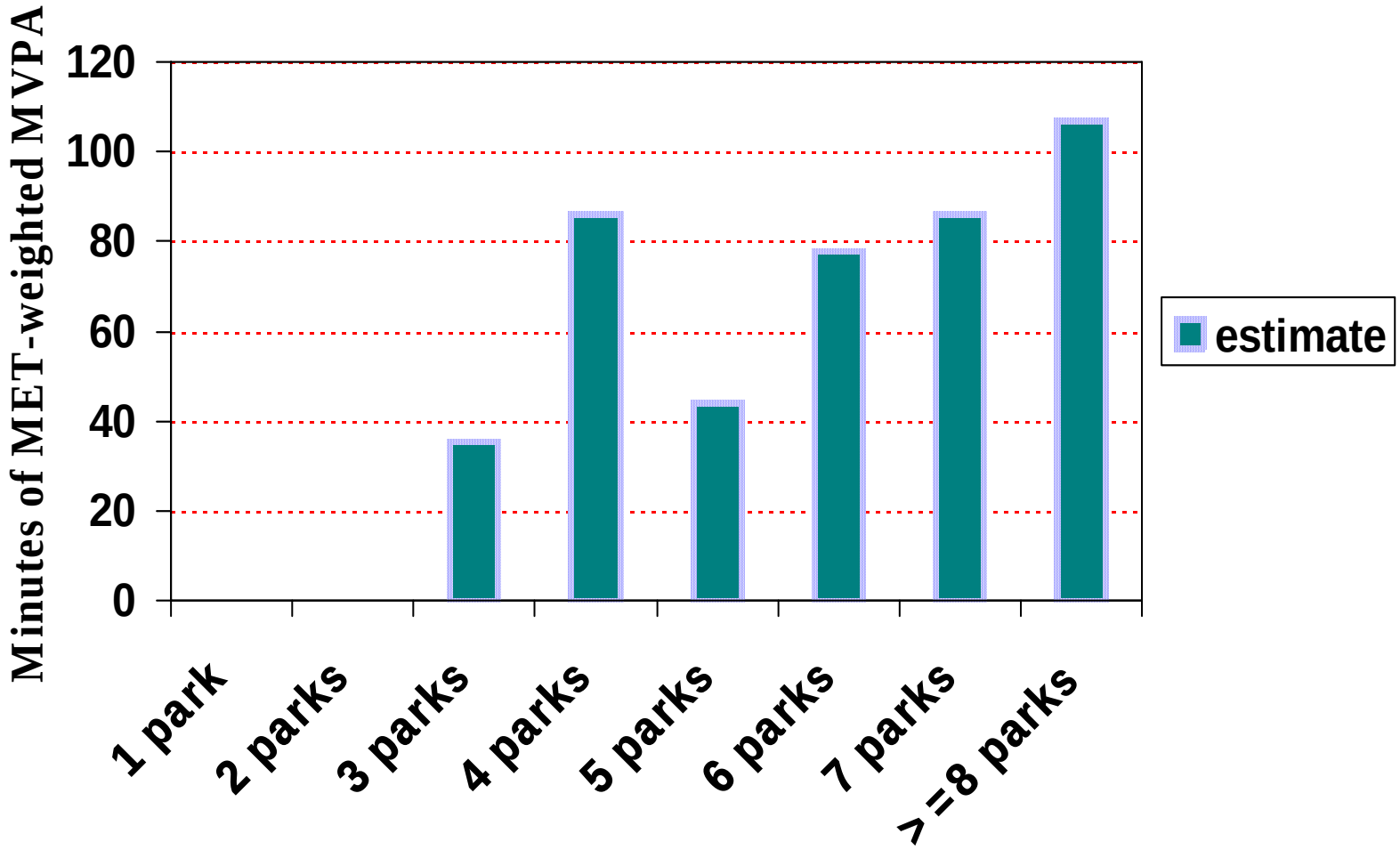
Average number of parks near girls' homes



Total Parks Associated with MET-Weighted MVPA/6 days

For every park in:	Extra minutes of MW-MVPA
1/2 mile radius	17.2 min
½ -1 mile radius	6.7 min

Number of parks in 1 mile radius associated with MW-MVPA over 6 days

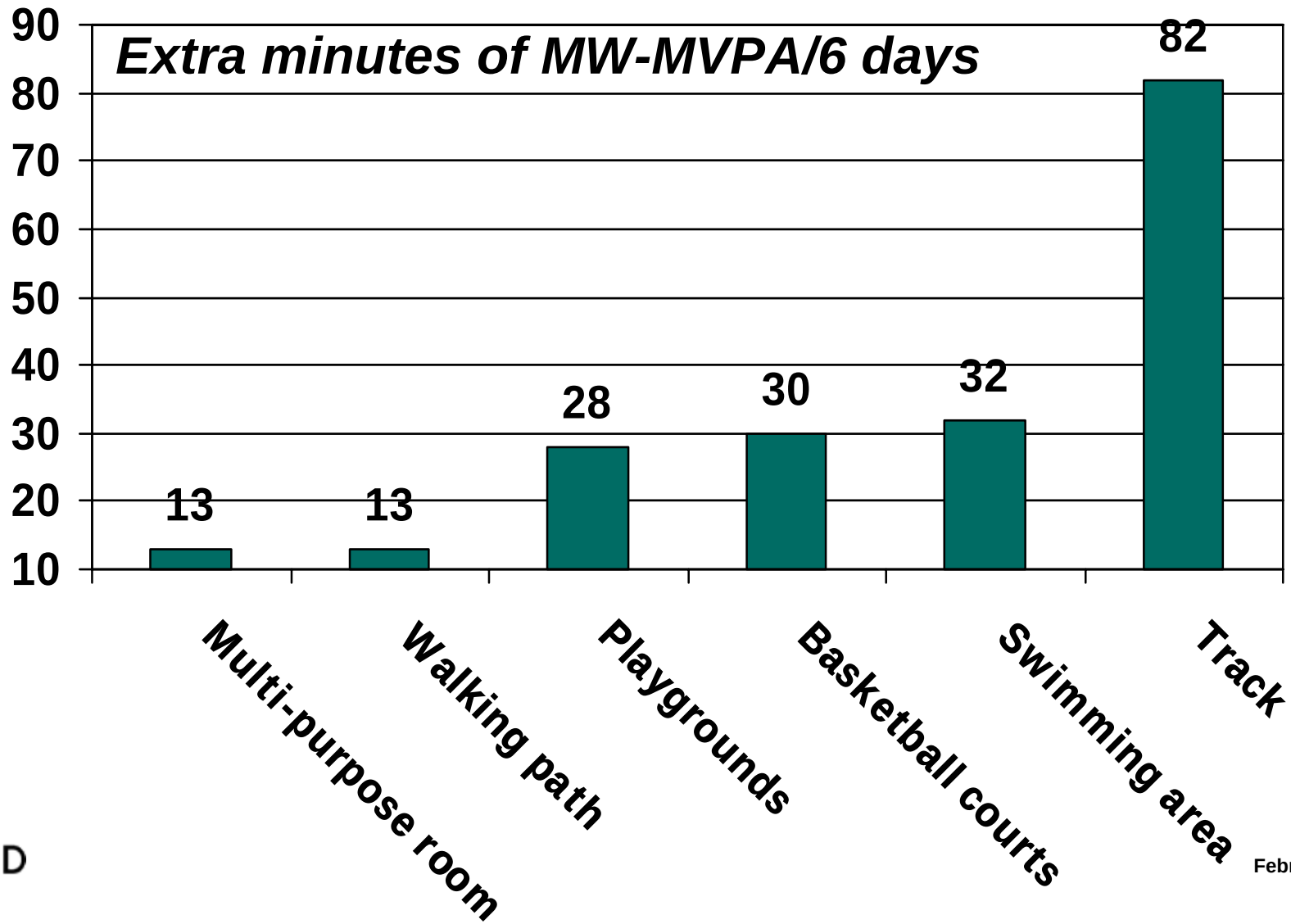


Type of Park Associated with PA

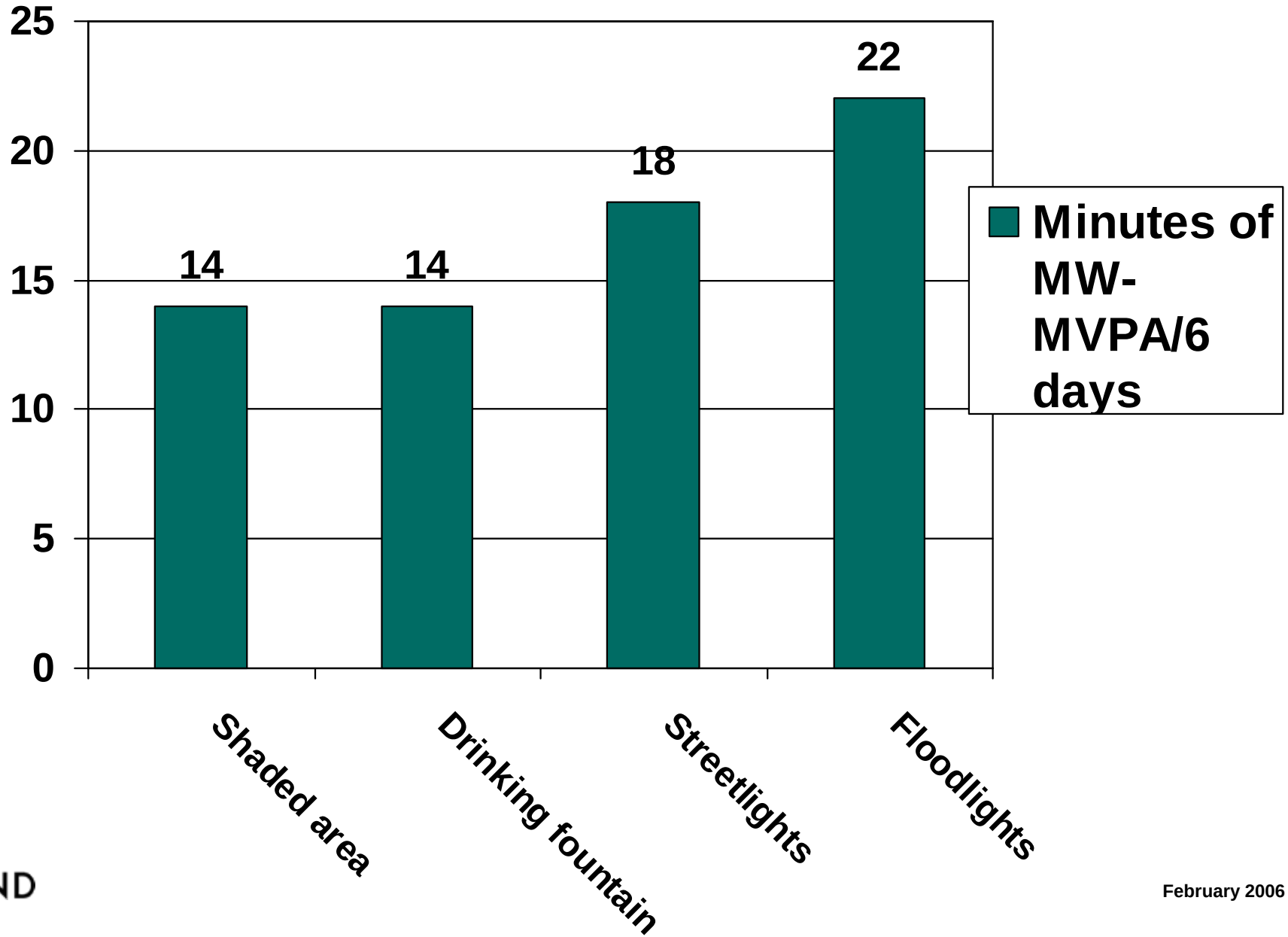
Neighborhood Park and Community parks:

	Effect Size
½ mile buffer	24.2 minutes/6 days
½ - 1 mile	18.6 minutes/6 days

Park features in ½ mile radius Associated with Physical Activity



Other Park Amenities and PA



Commercial PA Supports and MW-MVPA

- Identified PA supports within 1 mile of girls' homes

Any facility	68%
Dance/ gymnastics studio	29%
Martial arts	28%
Exercise/health club	26%
Swimming	23%
Golf	11%
Youth organizations	10%
Bowling	5%
Stables	4%
Racquet club	3%
Yoga	3%

Findings

1 or more PA supports associated with additional 28 minutes MW-MVPA/6 days

(Regression controls for BMI, Age, race, friends support, family support, ease of transportation, SES index, % free lunch)

Weekend Accessibility of Schoolyards

Visited 407 schools on Saturday

309 Public
88 private
10 college/university

Documented facilities and accessibility

Findings

57% accessible
34% locked
15% no active amenities

Large variation by site:
62% locked in New Orleans,
39% in Maryland and Tucson,
2% in Minneapolis

San Diego schools had average of 7.5 active amenities, only 2.4 in South Carolina

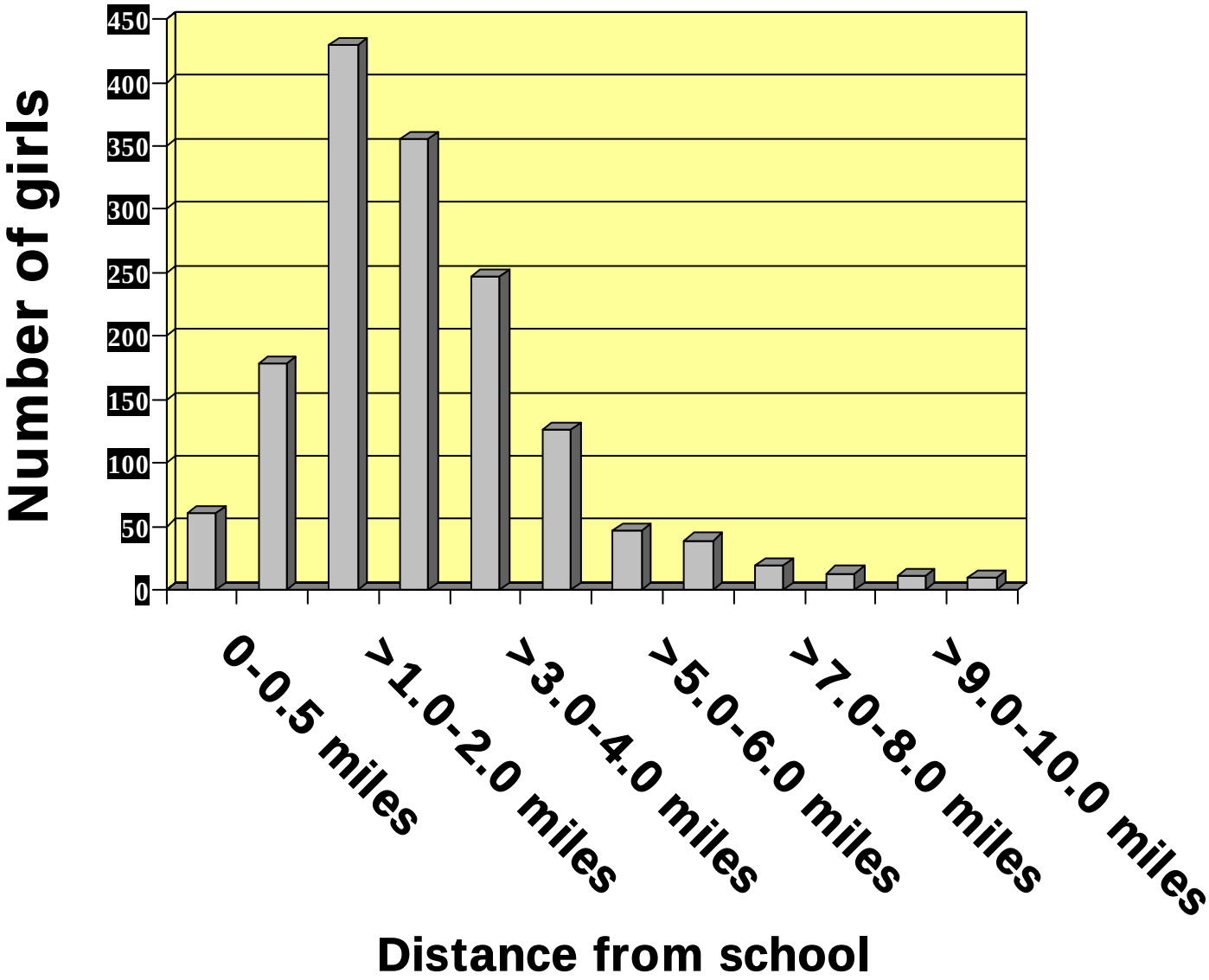
School Accessibility on Weekends

More locked in schools in neighborhoods with higher poverty, unemployment, lower education, higher population density.

Girls with locked schools in neighborhood have higher BMIs, (.5 units higher for average girls)

Girls with any accessible schools in ½ mile show a trend in higher MW-MVPA (+16 min/weekend)

Few girls live in walking distance to middle school



Distance to school and MW-MVPA

Distance to School	Weekly Minutes of MW-MVPA (C.I.)
< ½ mile	633
½-5 mile	550 (480, 631)
5-10 miles	512 (441, 594)
>10 miles	342 (248, 470)

Summary

- Greater density of parks associated with more MW-MVPA
- Park facilities (basketball, playgrounds, etc.) appear important to MVPA
- Commercial PA supports associated with MW-MVPA
- Accessible schoolyards associated with MVPA and BMI
- Greater distance from school associated with less MW-MVPA

Limitations

- Cannot rule out selection bias:

  Active families my choose to live near parks, PA supports, and schools.

Collective Efficacy and Obesity

- Collective efficacy is willingness of people to help out for the common good

- Prior studies indicate that collective efficacy associated with:
  - lower rates of crime,
  - lower total premature mortality
  - lower premature mortality from heart disease
  - lower homicide

Low Collective Efficacy Associated with Higher Risk of Overweight in Adolescents

Collective efficacy	Risk of adolescent overweight
Low	2.32
Medium	1.52
High	1.0

Possible Explanations

- Stress (allostatic load)
- Youth more likely to have healthy behaviors if can trust neighbors (?less shut in; adults provide informal controls on diet)
- Land use/access to healthy foods, recreational facilities

How do we increase collective efficacy?

- Positively related the presence of parks
- Negatively related to presence of alcohol outlets

Conclusion

- These studies add to the growing body of evidence that suggests that specific community/neighborhood structural features may be important contributors to physical activity and a variety of health behaviors and health outcomes.

- Although the mission of public health is to assure conditions in which people can be healthy, those responsibilities are increasingly left to urban planners, developers, elected officials and the private sector.

Prescription *for a* Healthy Nation

A New Approach to Improving Our Lives by Fixing Our Everyday World

Tom Farley, M.D.
and
Deborah A. Cohen, M.D.

RAND

February 2006