

The Influence of Park Conditions and Supporting Features on Park- Based Physical Activity

Ariane L. Rung, PhD, MPH
LSU School of Public Health

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Co-Authors

- **Andrew J. Mowen, PhD**, The Pennsylvania State University
- **Stephanie T. Broyles, PhD**, Pennington Biomedical Research Center
- **Jeanette Gustat, PhD**, Tulane University School of Public Health and Tropical Medicine

Background

- Relationships between parks and physical activity (Cohen, 2006; Frank, 2007; Kaczynski, 2007)
- More recent focus on park-based physical activity (PBPA) (Cohen, 2007; Floyd, 2008a; Floyd, 2008b; Kaczynski, 2008; Shores, 2008)
- Less work on specific characteristics of parks associated with PBPA (Floyd, 2008b; Shores, 2008; Kaczynski, 2008; Shores, 2010)
- Data analysis can be methodologically challenging

Rationale

- Do we want to bring more people to parks?
- Do we want the people who are already in parks to be more physically active?
- Do we want to maximize park areas to achieve both?

Study Objective

- To describe the impact on park-based physical activity (PBPA) of:
 - Type of activity area
 - Condition of activity area
 - Presence of supporting features

Park-Based Physical Activity (Outcome)

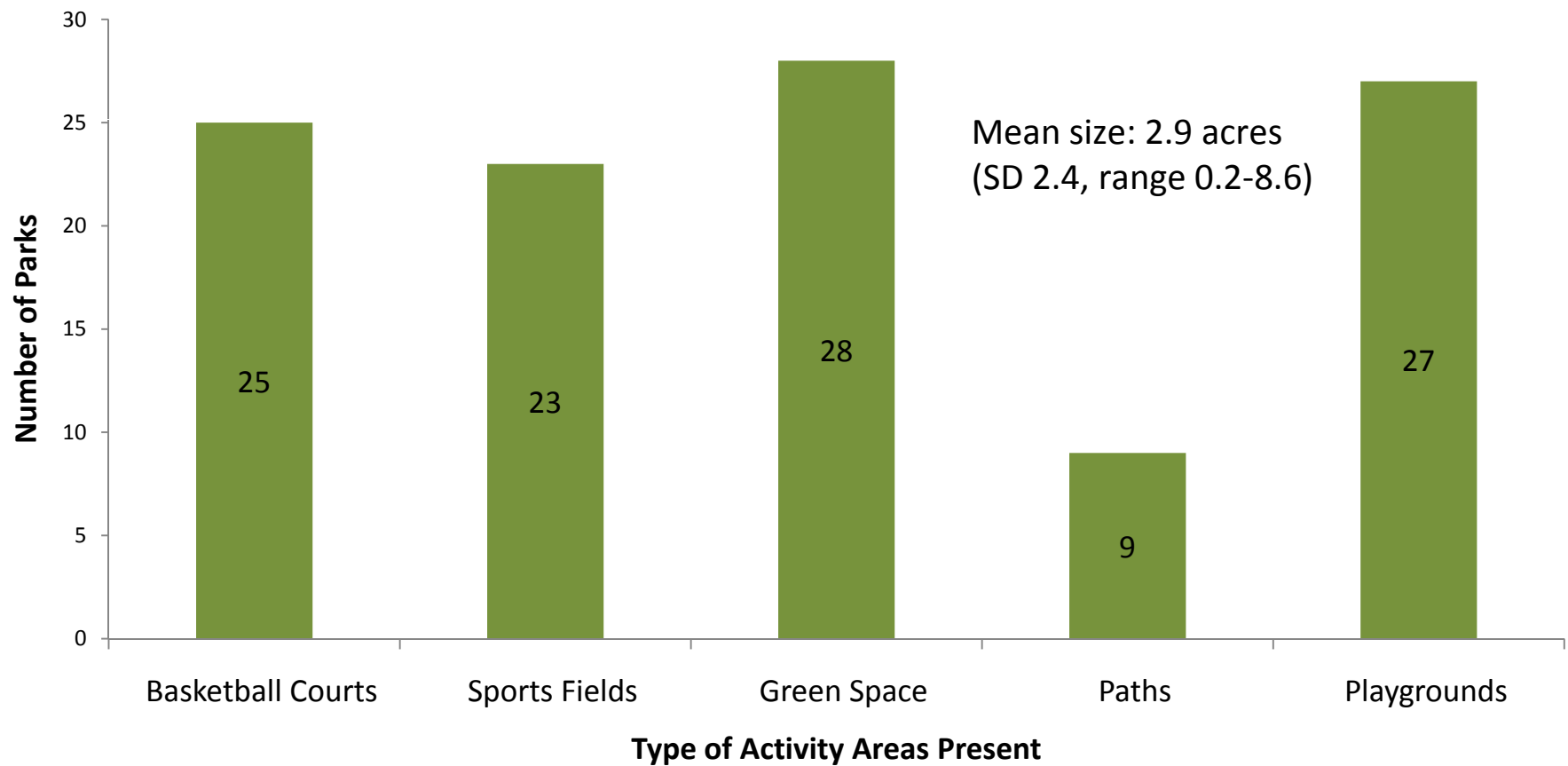
- **Number of Park Users** (total count of visitors observed in a daily aggregated scan).
- **Mean Estimated Energy Expenditure** (average for each observed person in daily aggregated scans, kcal/kg/min).
- **Total (3-hour) Estimated Energy Expenditure** (total over 3-hour time period within daily aggregated scans, kcal/kg).

Independent Variables

- **Type of Activity Area** (basketball court, sports field, green space, path, playground).
- **Condition of Activity Area** (average of items related to area-specific conditions, measured on scale of 1 to 5, then dichotomized into « poor » vs. « good »).
- **Supporting Features Present in Activity Area** (shelters, restrooms, drinking fountains, bike racks, benches, picnic tables).
- **Gender**
- **Day of Week**

Park Sample

Parks by Activity Area Type 37 Neighborhood Parks (113 Activity Areas)



Instruments


- **BRAT-DO** (Bedimo-Rung, 2006)
 - Audit of park environmental features that may be associated with physical activity
- **SOPARC** (McKenzie, 2006)
 - Observations of park-based physical activity (PBPA)
 - Counts of park visitors
 - Counts of « sedentary », « walking », & « vigorous » park visitors

Assessments

- Summer 2008 (June – August)
- Mondays through Thursdays
- Park audits conducted once per park (between 3 and 4 pm)
- PBPA observations conducted 2 to 4 days per park (between 4 and 7 pm)
- All assessments done on non-holidays with no inclement weather

Analysis

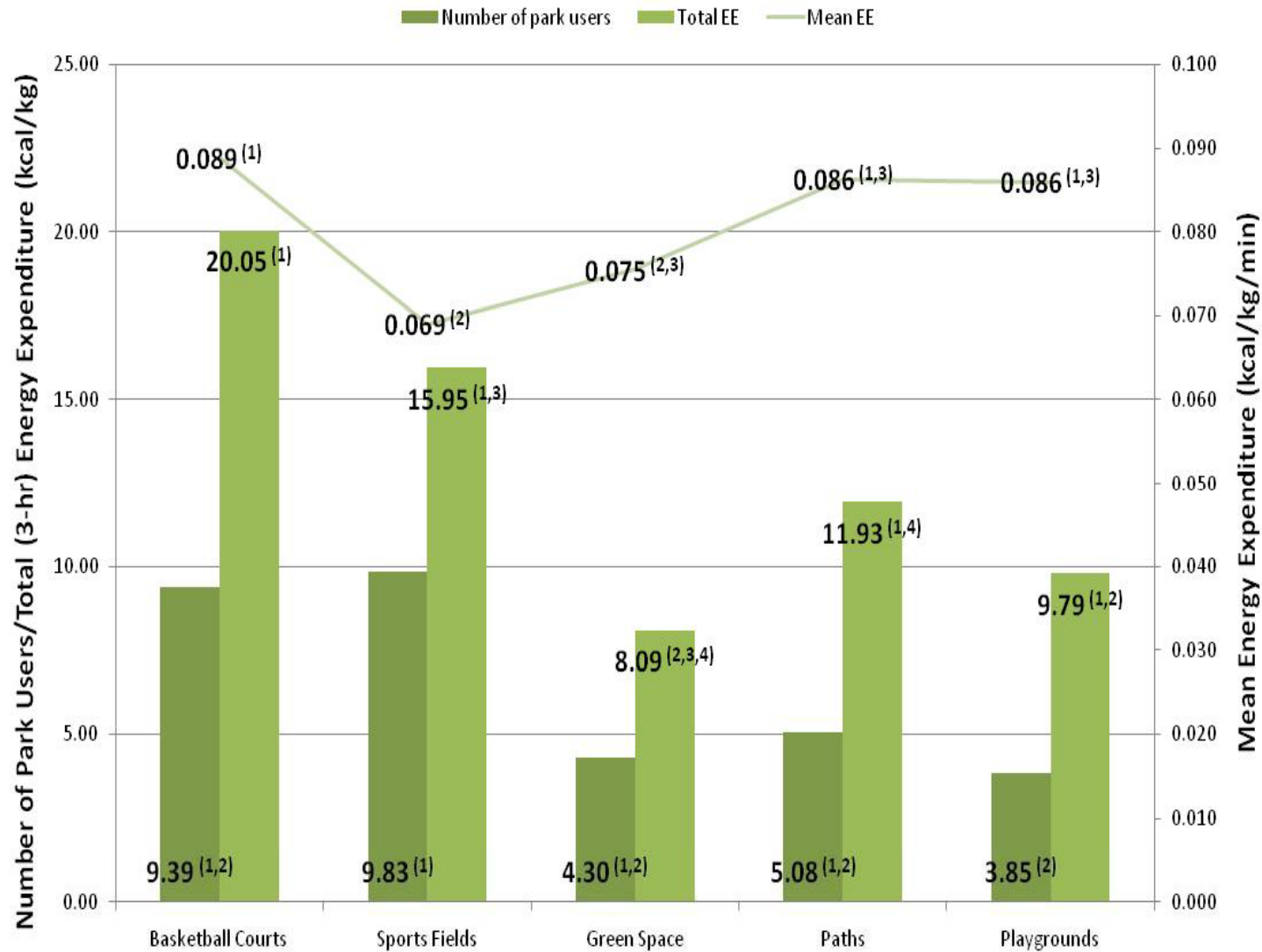
- Multilevel (mixed model) analyses
 - Generalized linear mixed models (number of park users)
 - Linear mixed models (mean energy expenditure and log-transformed total energy expenditure)
- Control for non-independence (clustering) of observations at the level of activity area and park



Independent Effect of Type of Activity Area on Park-Based Physical Activity

Number of Park Users, Mean Energy Expenditure, and Total Energy Expenditure by Activity Area

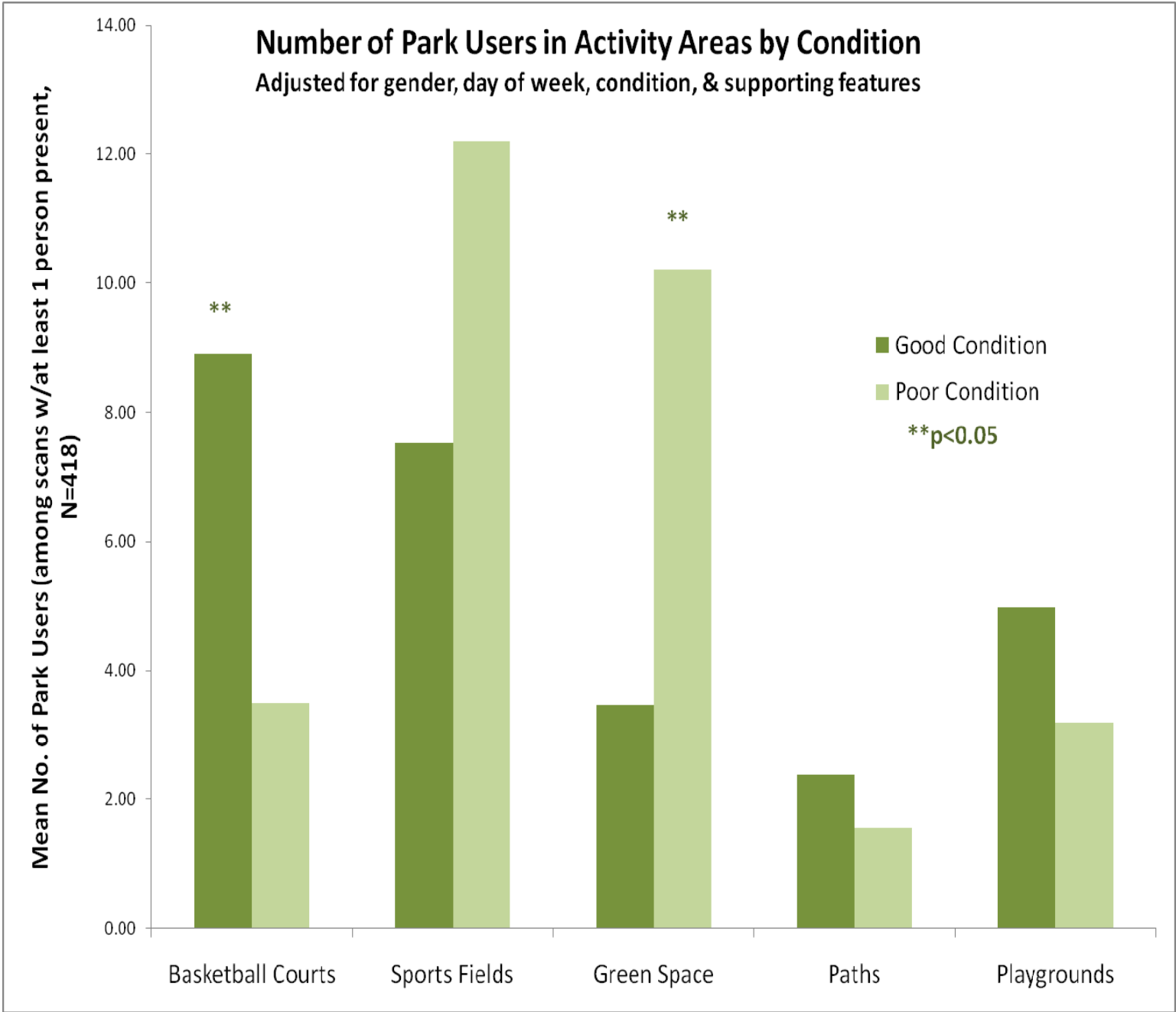
Adjusted for gender, day of week, condition, & supporting features



Type of Activity Area is associated with number of park users, total energy expenditure, and mean energy expenditure.



Independent Effect of Condition on Park- Based Physical Activity

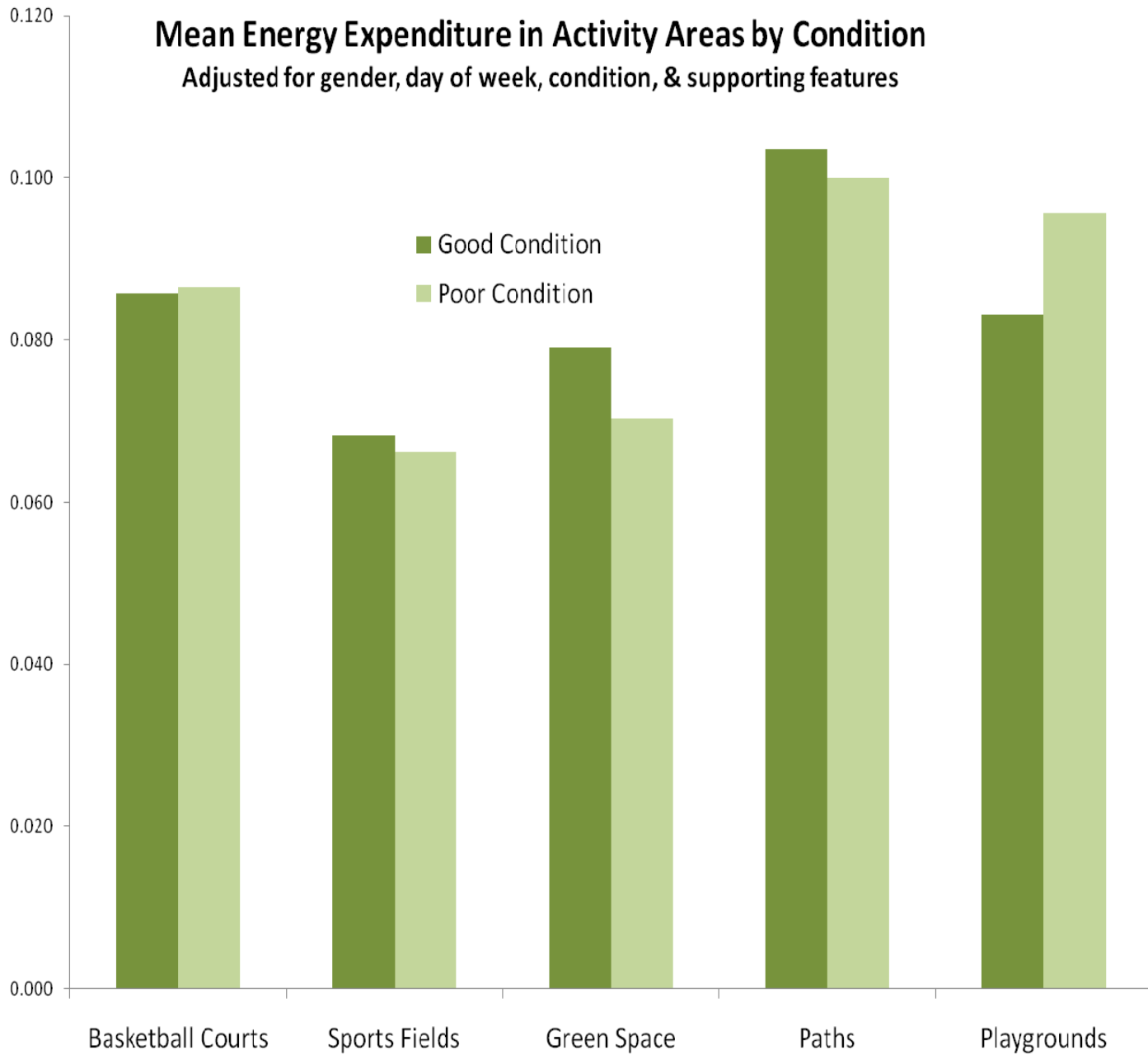


Condition of Activity Area is associated with number of Basketball Court users, and inversely associated with number of Green Space users.

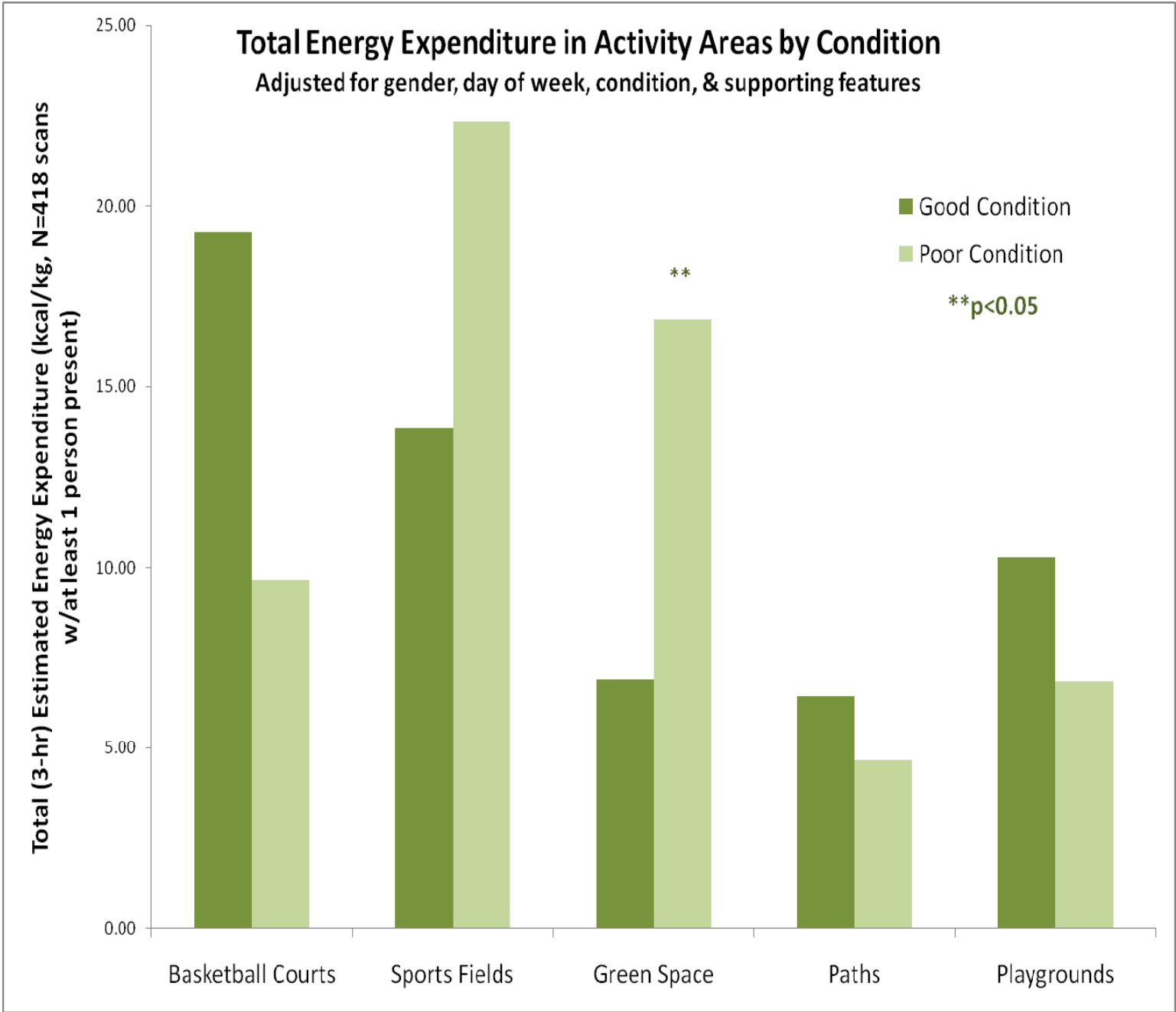
Mean Energy Expenditure in Activity Areas by Condition

Adjusted for gender, day of week, condition, & supporting features

Mean Estimated Energy Expenditure (kcal/kg/min, N=418 scans w/at least 1 person present)



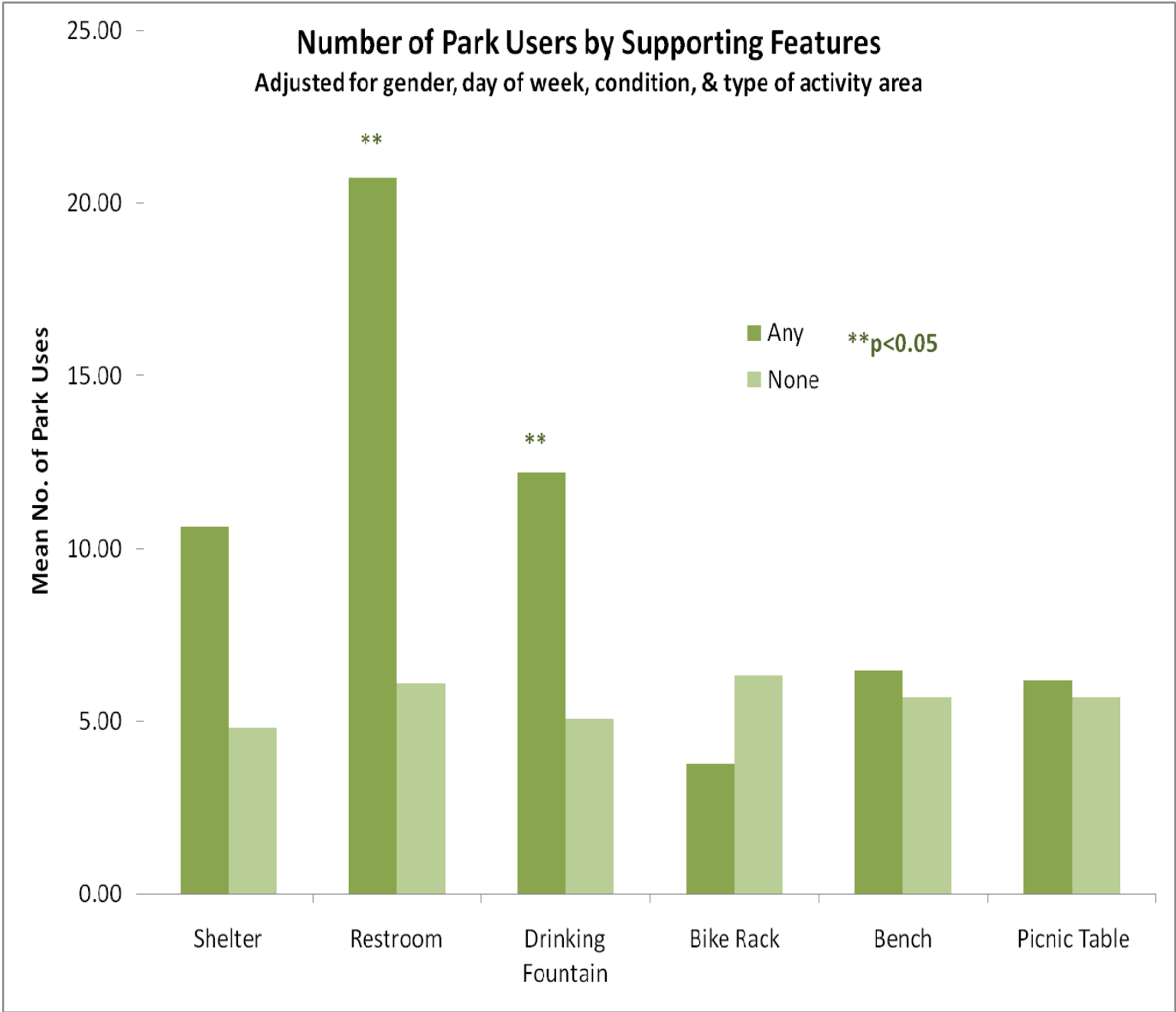
Condition is not associated with mean energy expenditure in any Activity Area.



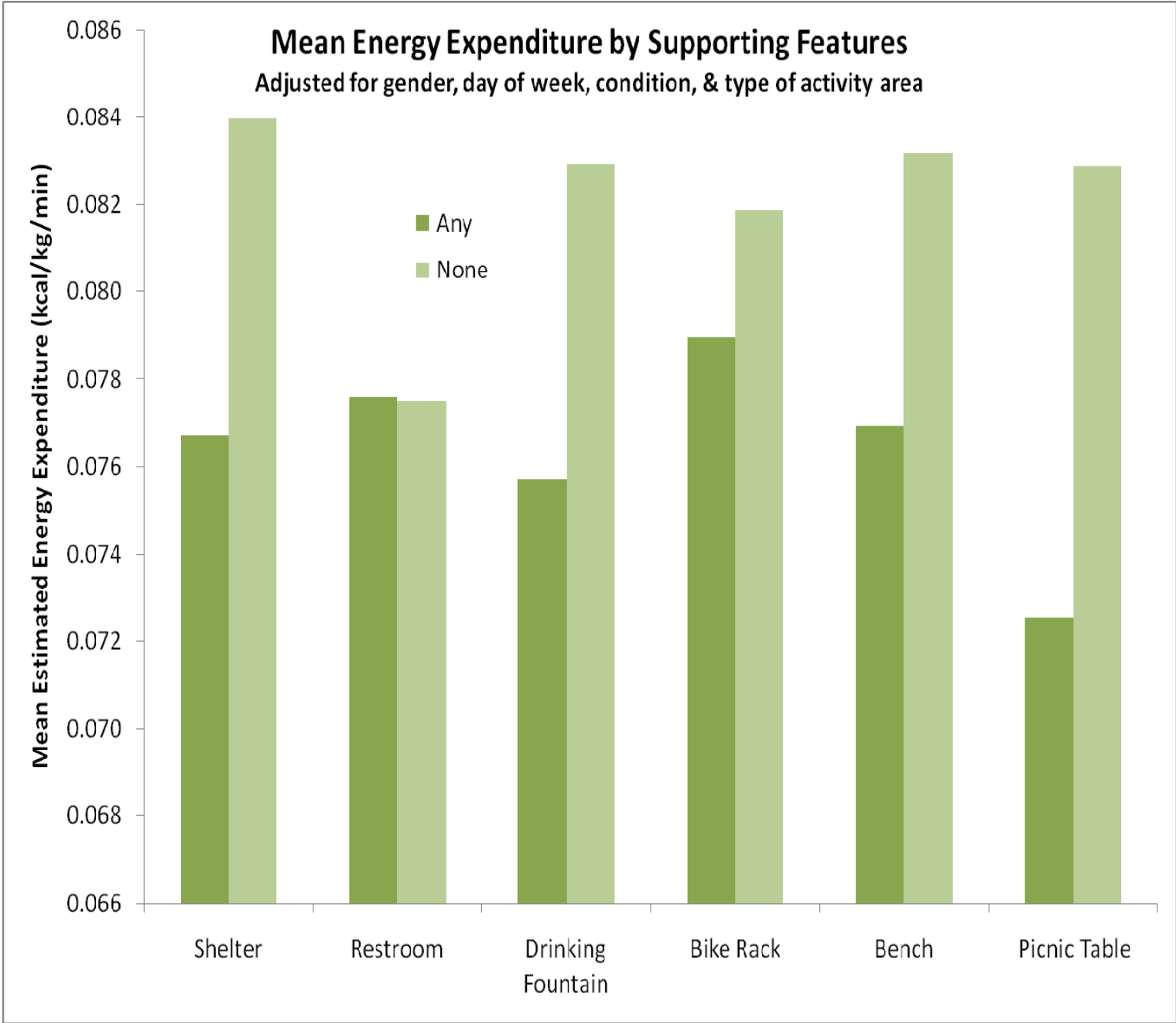
Condition is inversely associated with total energy expenditure in Green Spaces.



Independent Effect of Supporting Features on Park-Based Physical Activity



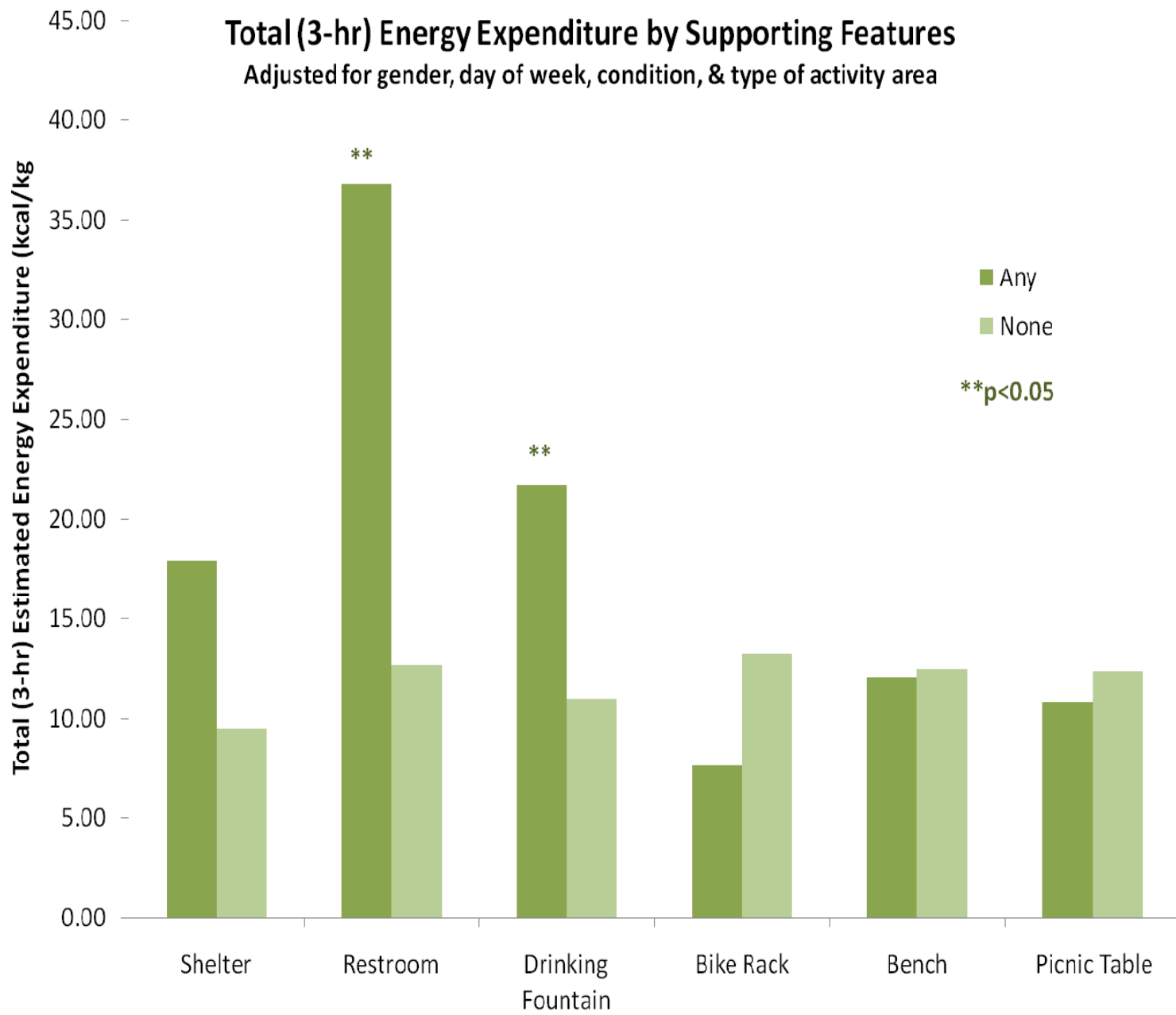
Restrooms and drinking fountains are associated with greater numbers of park users.



No supporting features are associated with mean energy expenditure.

Total (3-hr) Energy Expenditure by Supporting Features

Adjusted for gender, day of week, condition, & type of activity area



Restrooms and drinking fountains are associated with total (3-hr) energy expenditure.

Summary

- Type of Activity Area is associated with PBPA

	Fewer people	More people
Less active	green space	sports fields
More active	playgrounds, paths	basketball courts

Summary

- Better Activity Area condition is associated with some PBPA outcomes:
 - Greater numbers of basketball court users
 - Fewer numbers of green spacer users and less total energy expenditure in green space
- Condition NOT associated with:
 - Mean energy expenditure

Summary

- Some supporting features associated with PBPA:
 - Number of park users: restrooms, drinking fountains
 - Total (3-hr) energy expenditure: restrooms, drinking fountains
- No supporting features associated with mean energy expenditure

Implications

- Park planners should consider their goals and target audiences when allocating resources for individual activity areas.
- Condition and Supporting features do not appear to be related to physical activity levels, but they are related to number of park visitors.

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