



The Interactive Contribution to Adolescent Physical Activity of Psychosocial and Environmental Factors



Dan J. Graham, PhD
Obesity Prevention
Center
University of Minnesota,
Twin Cities

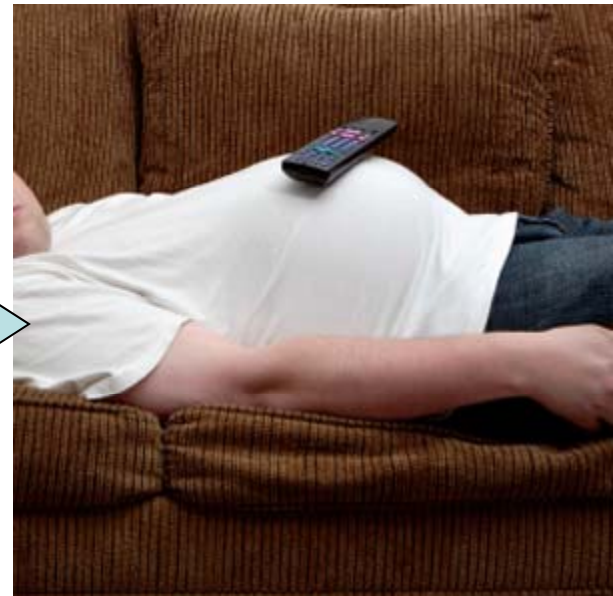


Physical Activity (PA) Benefits Health

- Dose-response relation between PA and health
 - (Haskell et al., 2007)



PA Decreases in Adolescence



(E.g. Nader, Bradley, Houts, McRitchie, & O'Brien, 2008)

Objective

- Examine factors related to adolescent PA



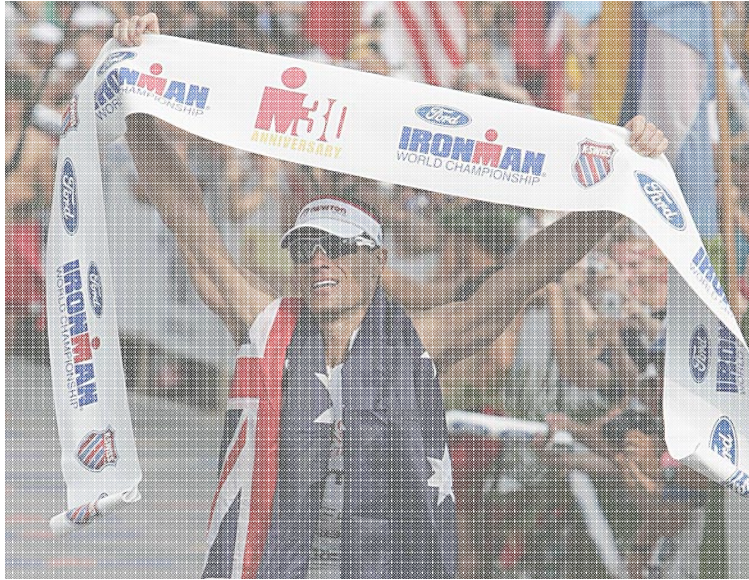
Psychosocial factors



Perceived Physical Competence
associated with higher PA

(e.g. Barnett, Morgan, van Beurden, & Beard, 2008)

Psychosocial factors



Perceived Physical Competence
associated with higher PA

(e.g. Barnett, Morgan, van Beurden, & Beard, 2008)

Perceived Social Support
associated with higher PA

(e.g. Motl, Dishman, Saunders, Dowda, & Pate, 2007)

Environmental factors



Access to environmental PA opportunities

associated with higher levels of PA among adolescents.

(e.g. Gordon-Larsen, Nelson, Page, & Popkin, 2006)

Social-Ecological Theory

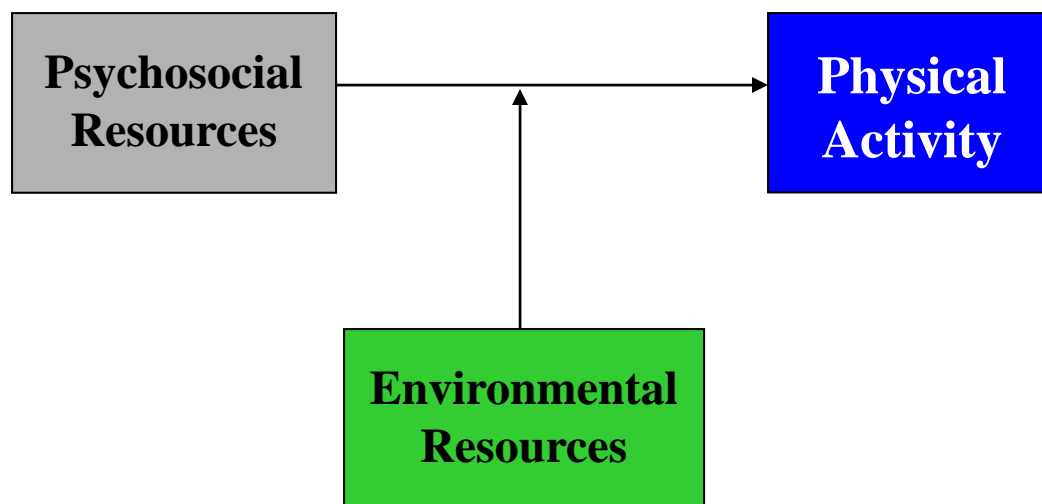


“...emphasizes the dynamic interaction of intrapersonal and environmental factors in health and illness.”

(Stokols, 1996, p.289)

Research Question

How do psychosocial and environmental resources *interactively* relate to PA among adolescents?



Participants

- N = 192
- 45% Female / 55% Male
- Mean age = 14.79 ± 0.46 years
- 68% Caucasian, 19% Hispanic, 13% Other

Constructs:

**Psychosocial
Resources**

**Physical
Activity**

**Environmental
Resources**

Constructs:

**Physical
Activity**

Measures:

Physical
Activity

- Actigraph®
Accelerometer



Measures:

Physical Activity

- Actigraph® Accelerometer
- 3 Day Physical Activity Recall (3DPAR)

Day of Week:
DATE:

Put a '✓' to rate the intensity of each activity

Write activity numbers in this column



		Activity Number	Light	Moderate	Hard	Very Hard
Before school	7:00-7:30					
	7:30-8:00					
During school	8:00-8:30					
	8:30-9:00					
	9:00-9:30					
	9:30-10:00					
	10:00-10:30					
	10:30-11:00					
	11:00-11:30					
Lunch time	11:30-12:00					
	12:00-12:30					
	12:30-1:00					
	1:00-1:30					

Measures:

Physical Activity

- Actigraph® Accelerometer
- 3 Day Physical Activity Recall (3DPAR)
- School Sports Participation



Measures:

Physical Activity

- Actigraph® Accelerometer
- 3 Day Physical Activity Recall (3DPAR)
- School Sports Participation
- Out-of-School Sports Participation



Constructs:

**Psychosocial
Resources**

**Physical
Activity**

**Environmental
Resources**

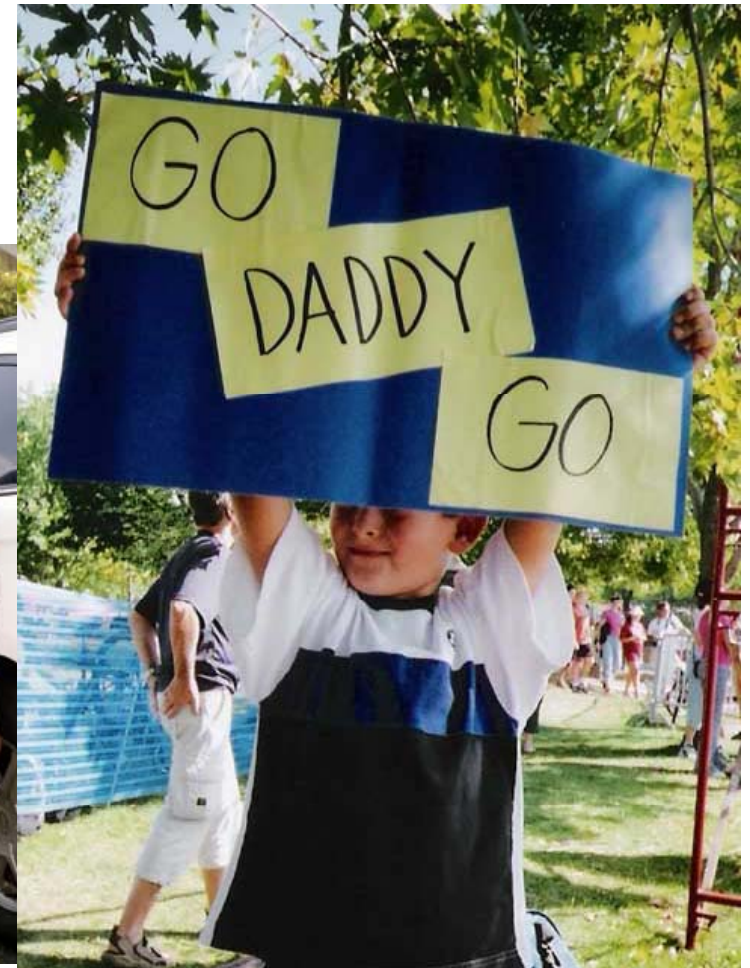
Constructs:

**Psychosocial
Resources**

Measures:

Psychosocial
Resources

- Social Support
– Family



Measures:

Psychosocial
Resources

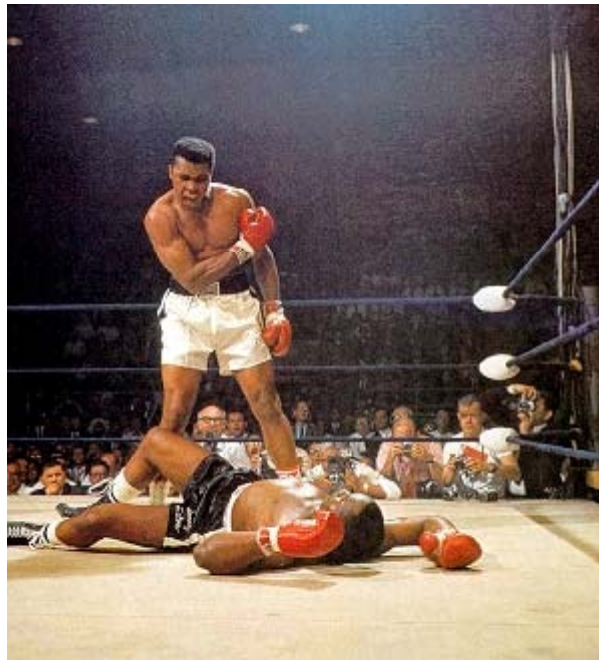
- Social Support
 - Friend



Measures:

Psychosocial Resources

- Social Support
- Perceived Competence



Constructs:

**Psychosocial
Resources**

**Physical
Activity**

**Environmental
Resources**

Constructs:

**Environmental
Resources**

Measures:

- Access to:
 - Schools

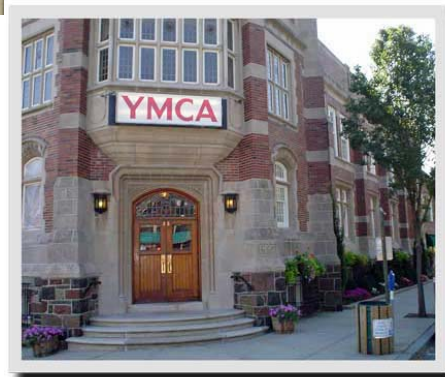
**Environmental
Resources**



Measures:

Environmental Resources

- Access to:
 - Schools
 - Gyms



Measures:

Environmental Resources

- Access to:
 - Schools
 - Gyms
 - Trails



Measures:

Environmental Resources

- Access to:
 - Schools
 - Gyms
 - Trails
 - Parks



Measures:

Environmental Resources

- Access to:
 - Schools
 - Gyms
 - Trails
 - Parks
 - Athletic Fields

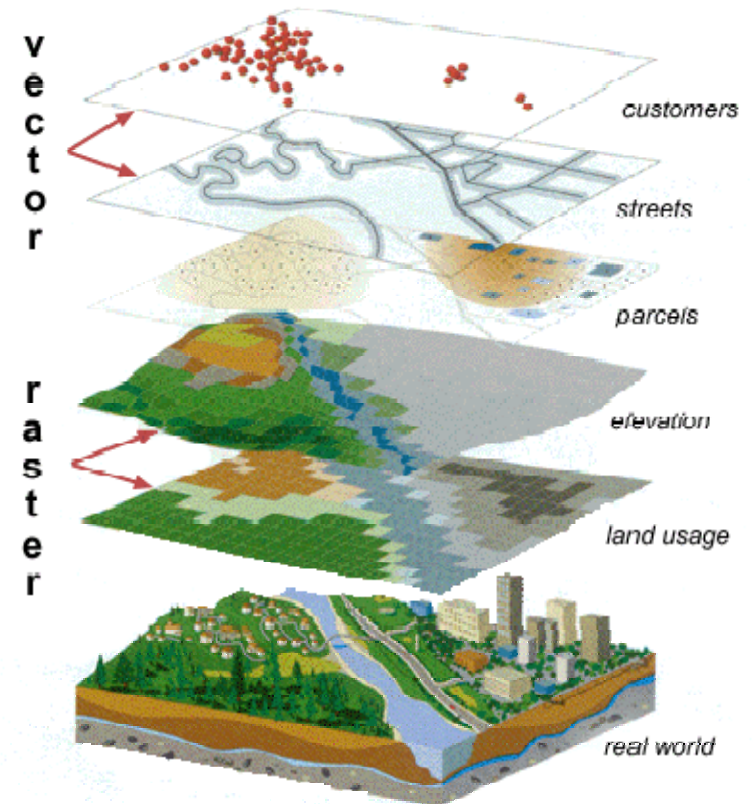




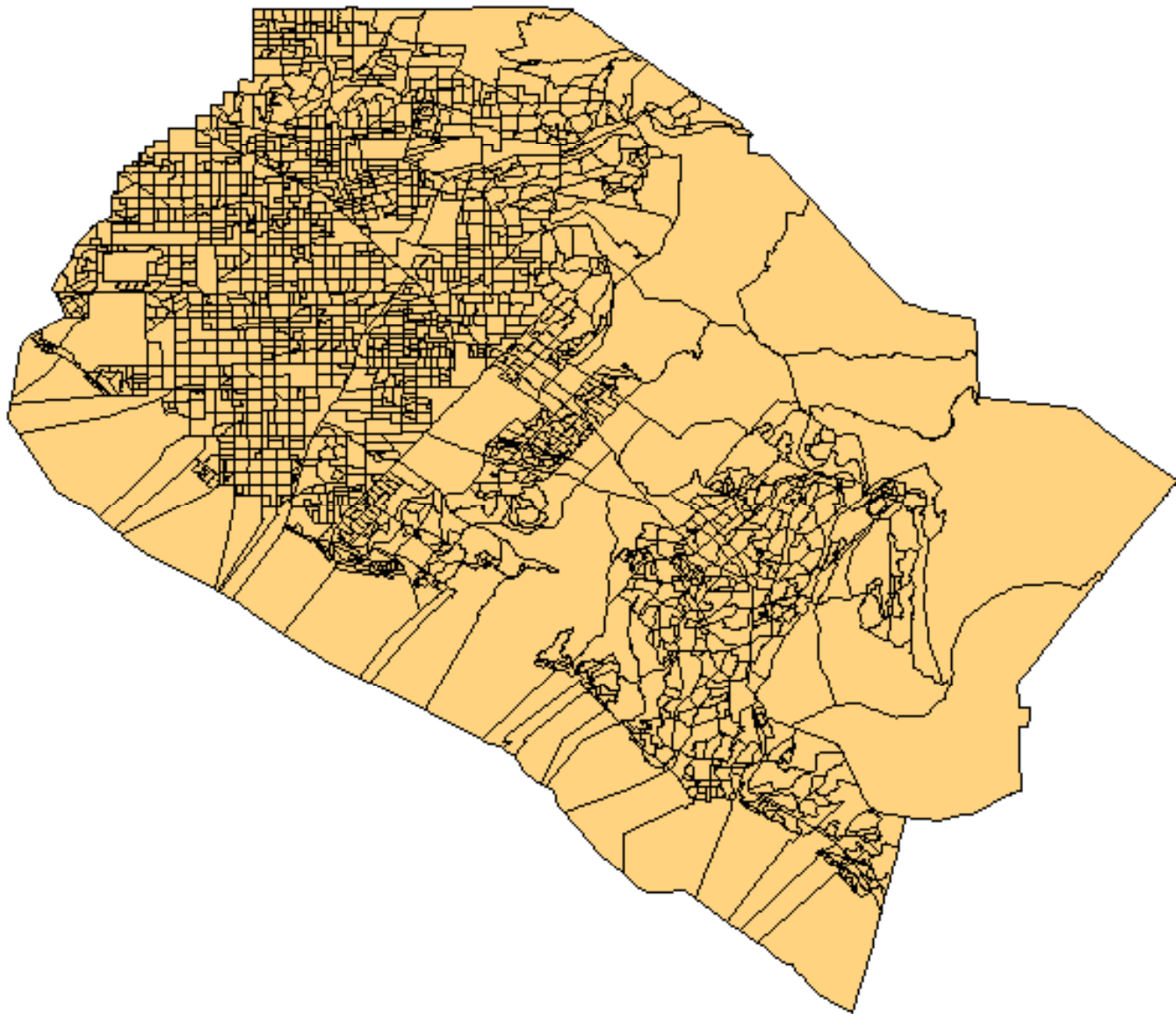
Environmental Resources

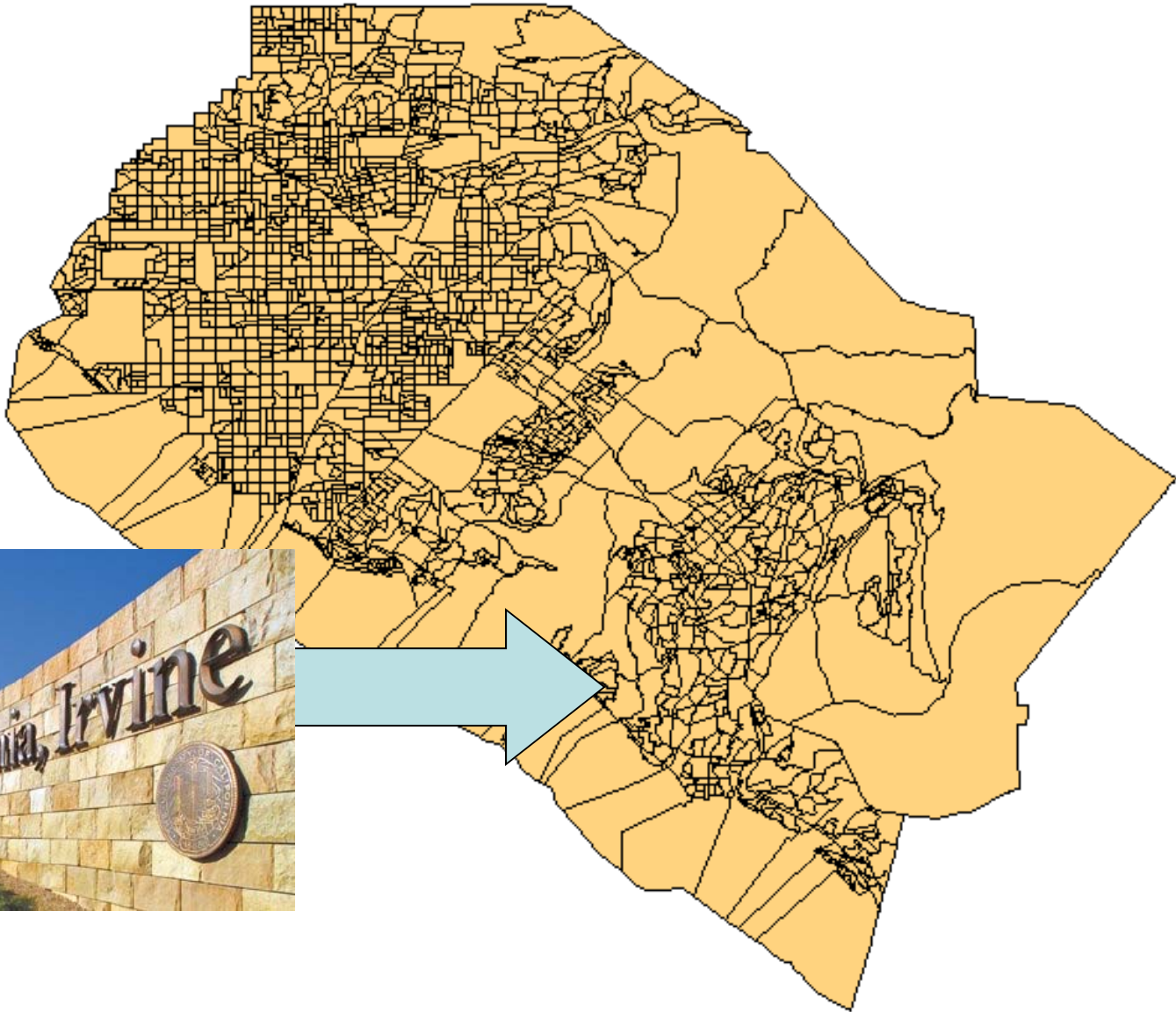


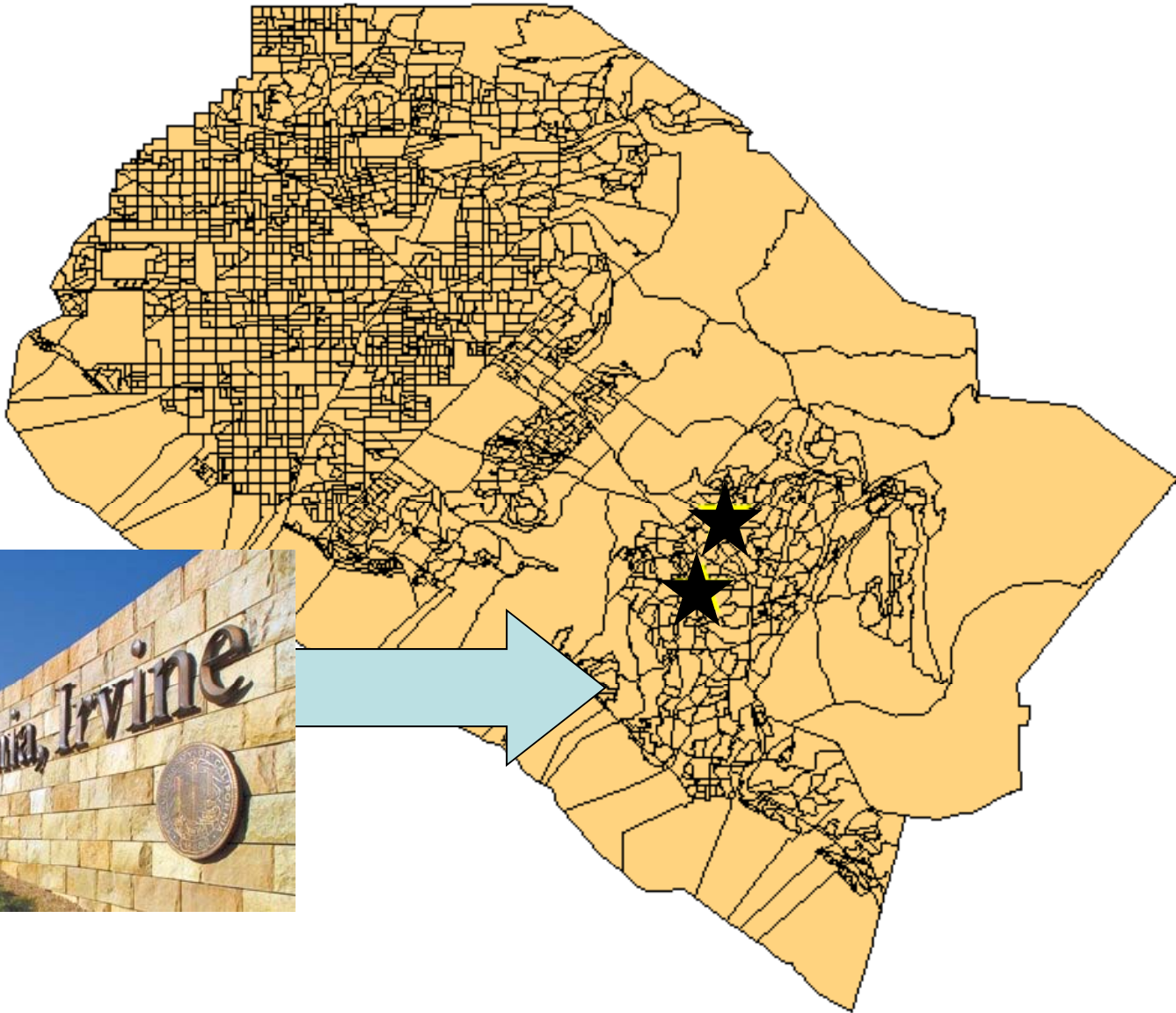
- Geographic Information System (GIS)
- Composite variable:
 - 1 point for each resource (school, gym, trail, park, field) within .5 mile of home
 - Range: 0 – 6
 - Mean: 2.2 (1.4 s.d.)

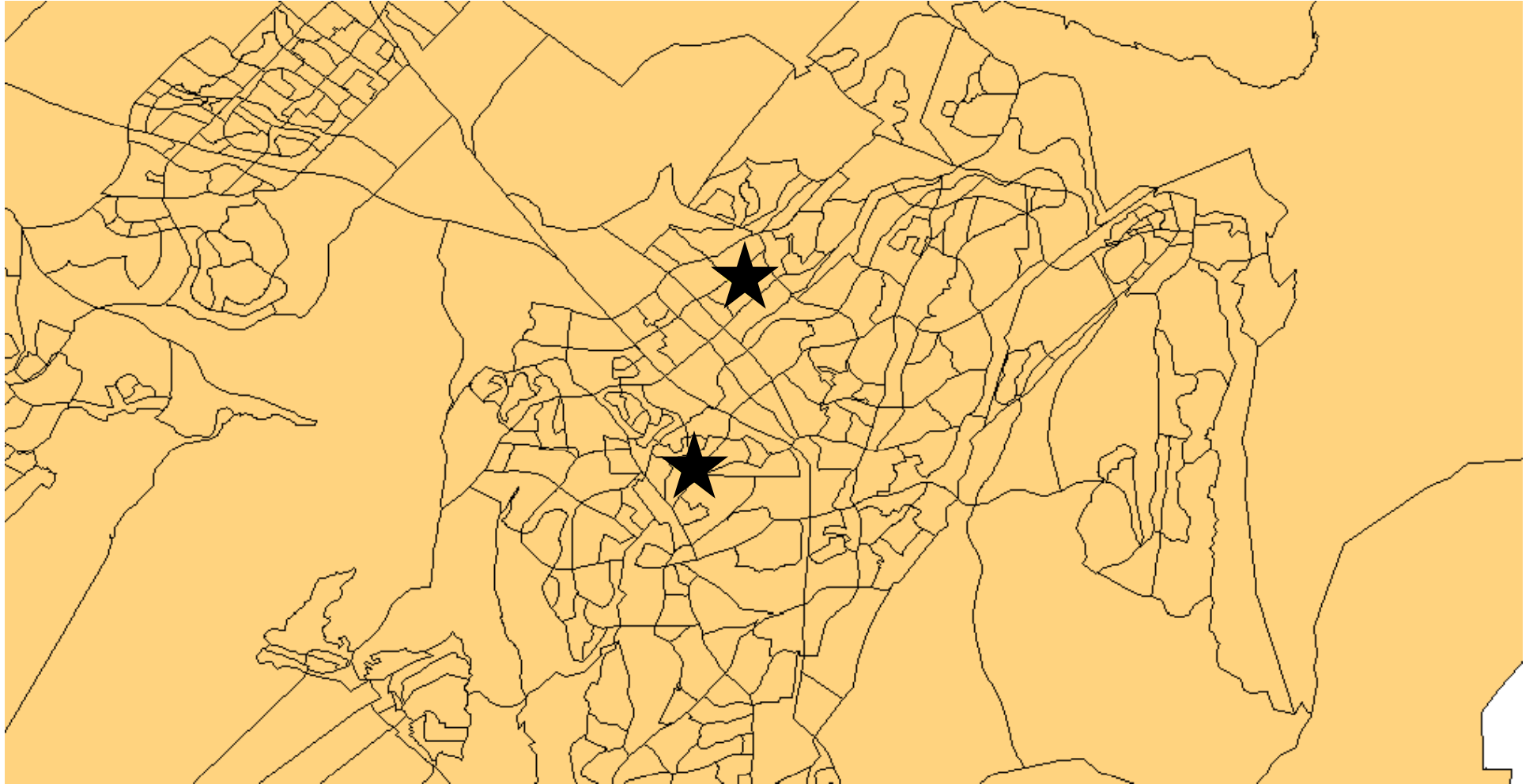


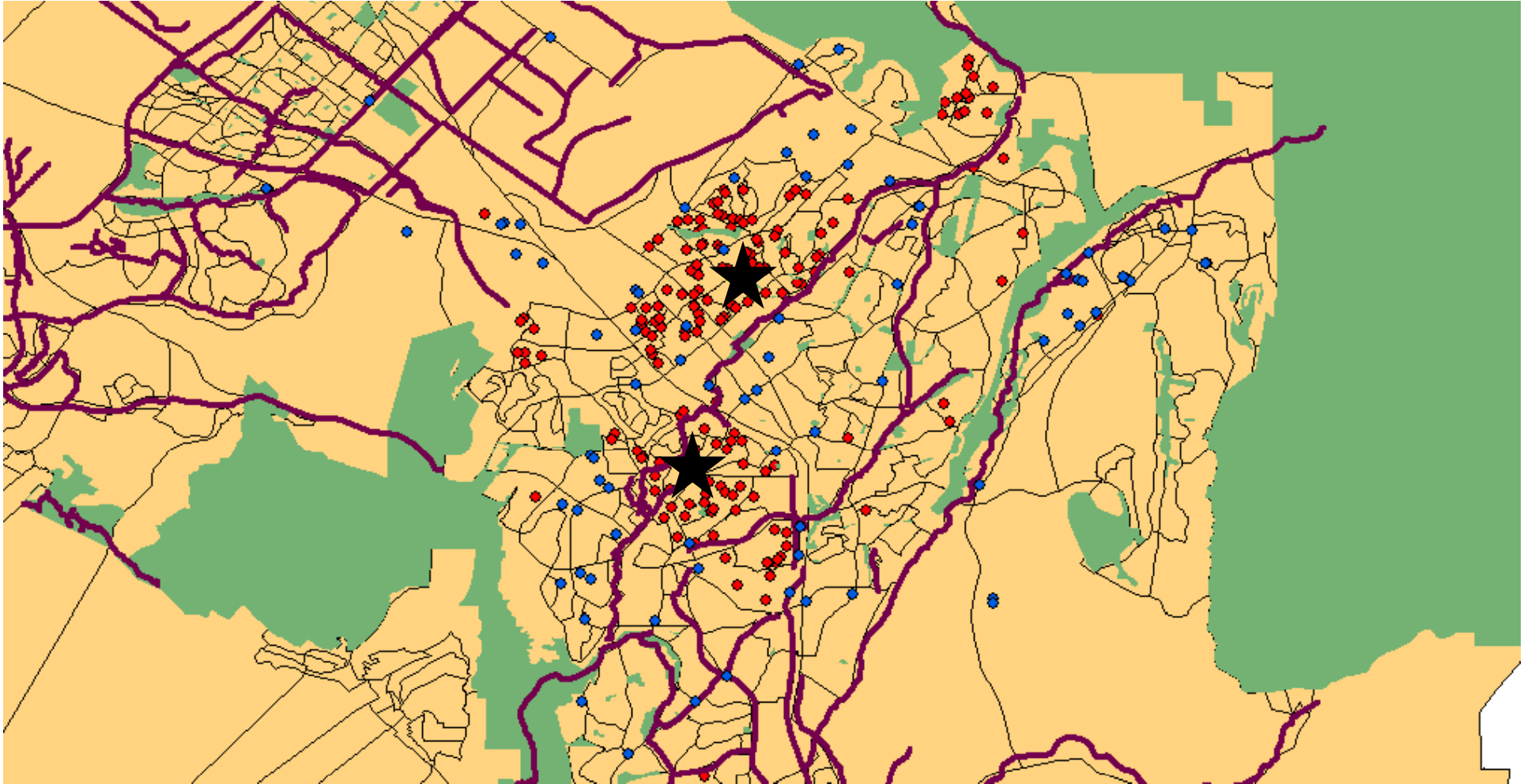


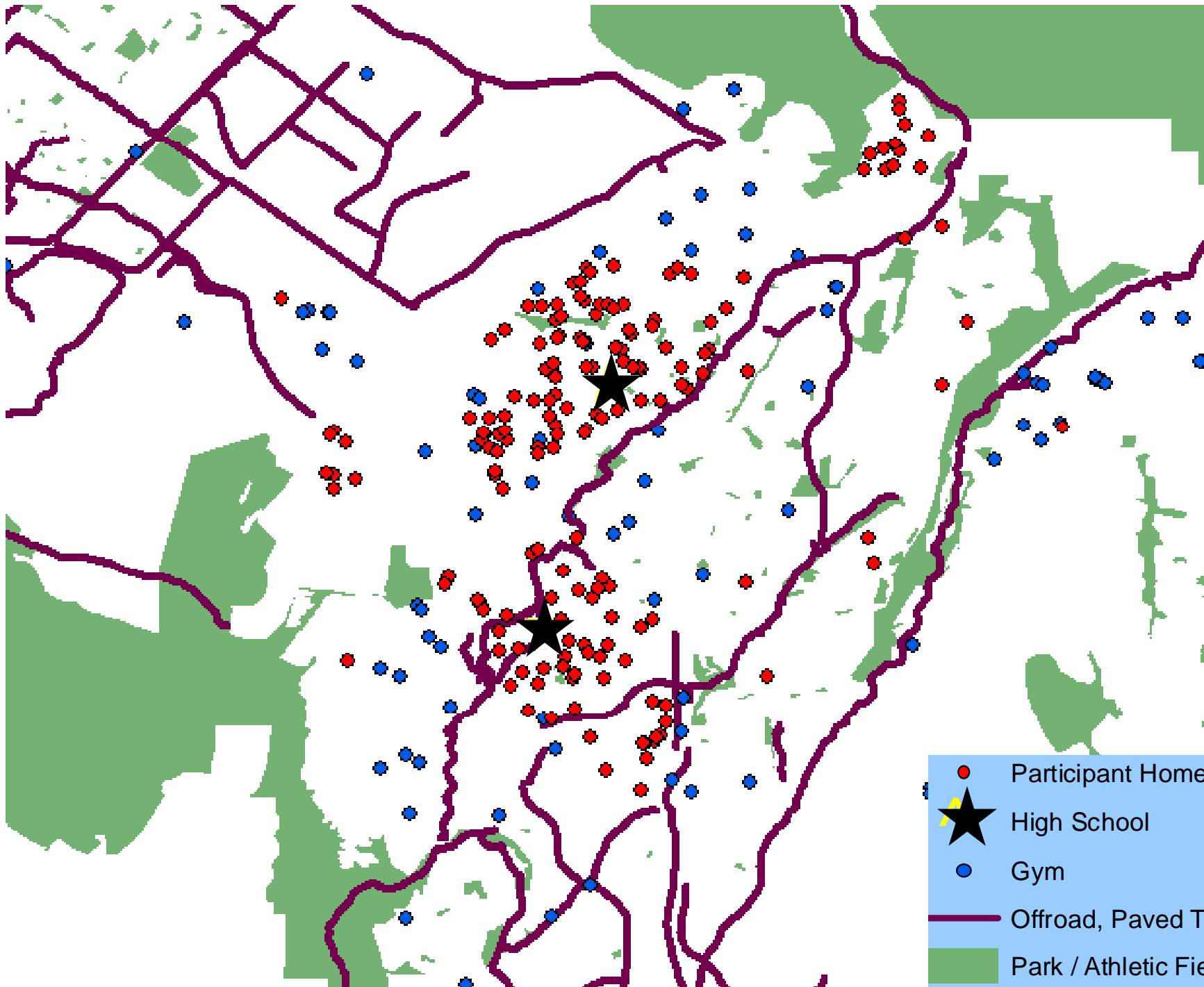




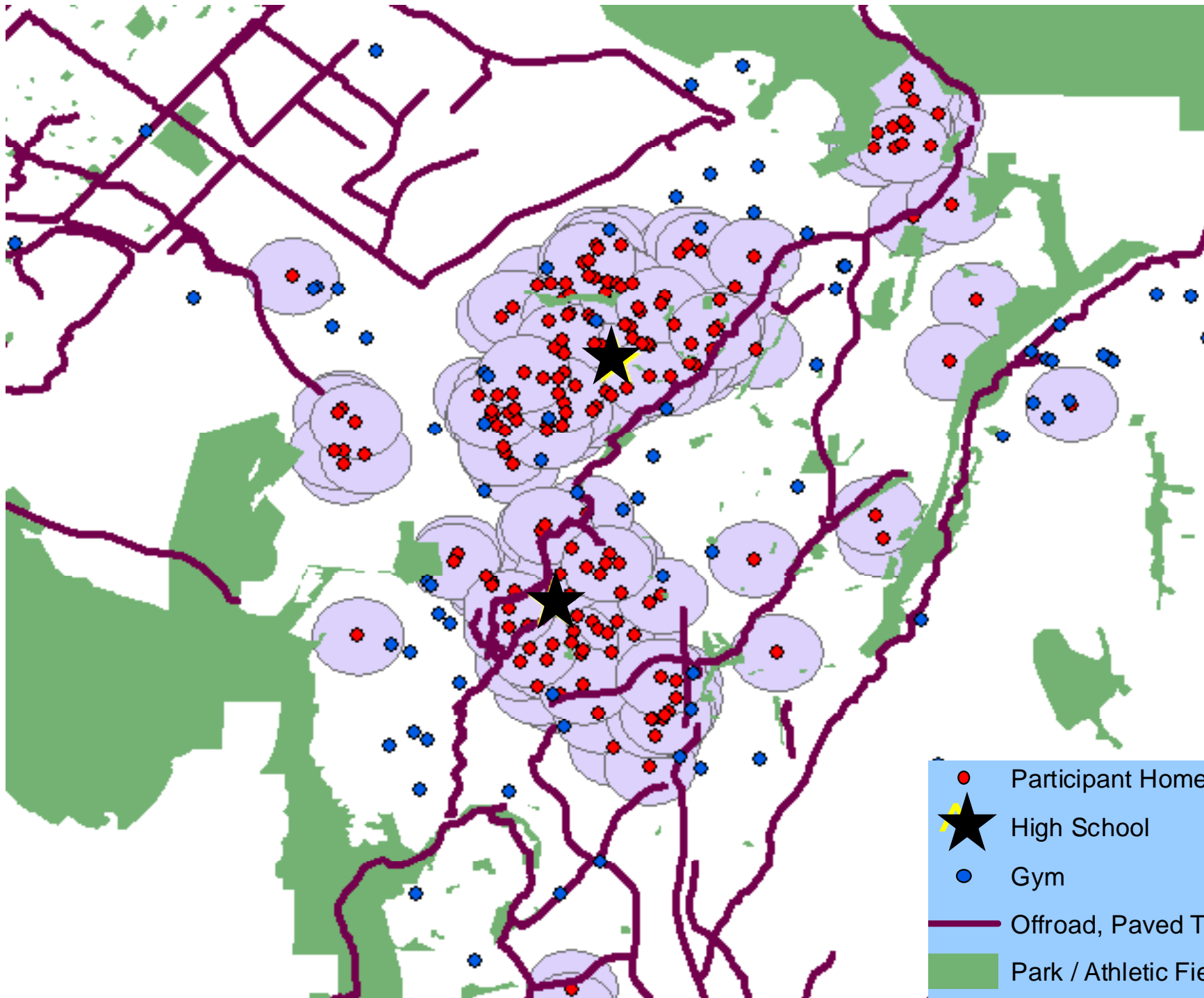




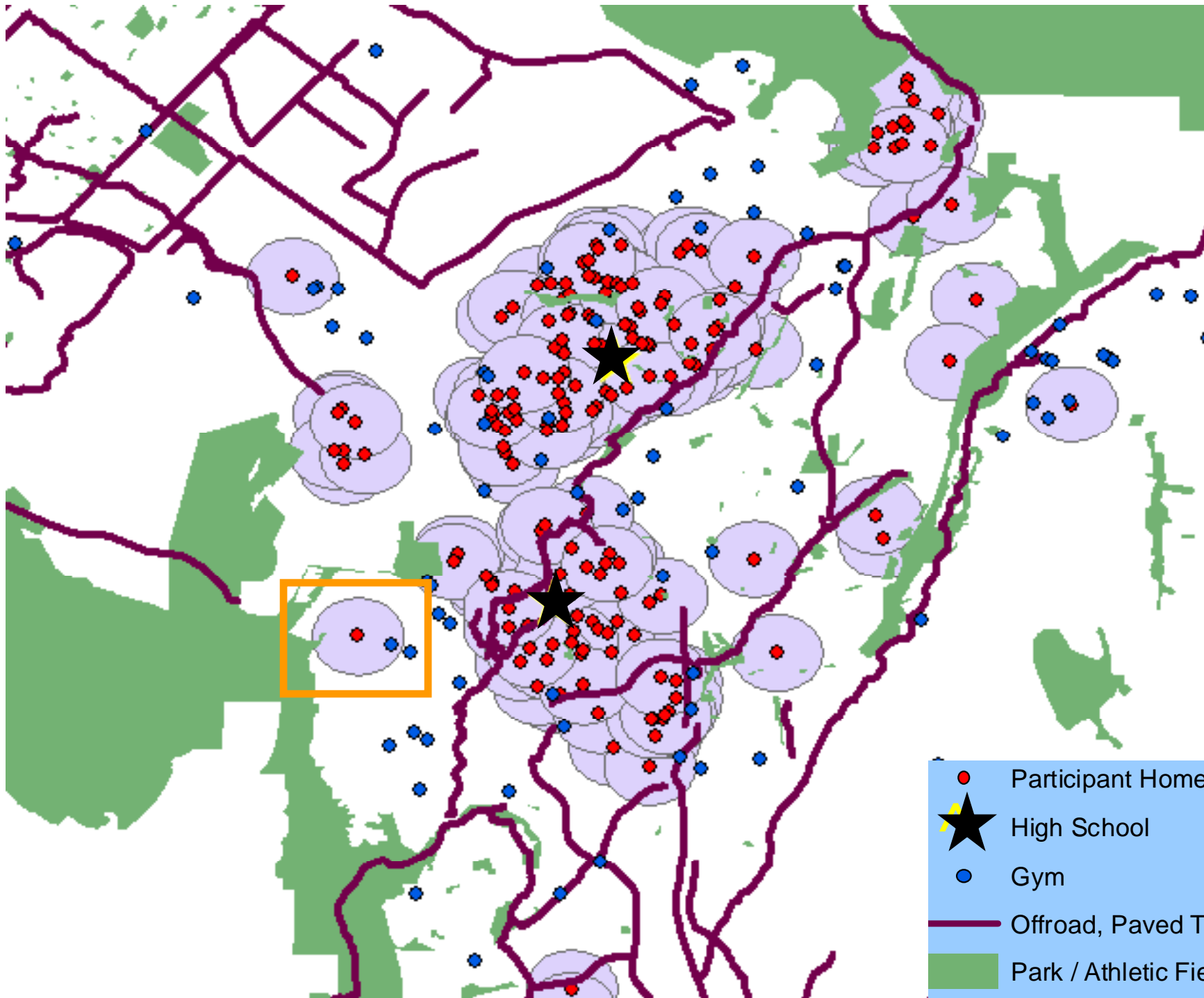




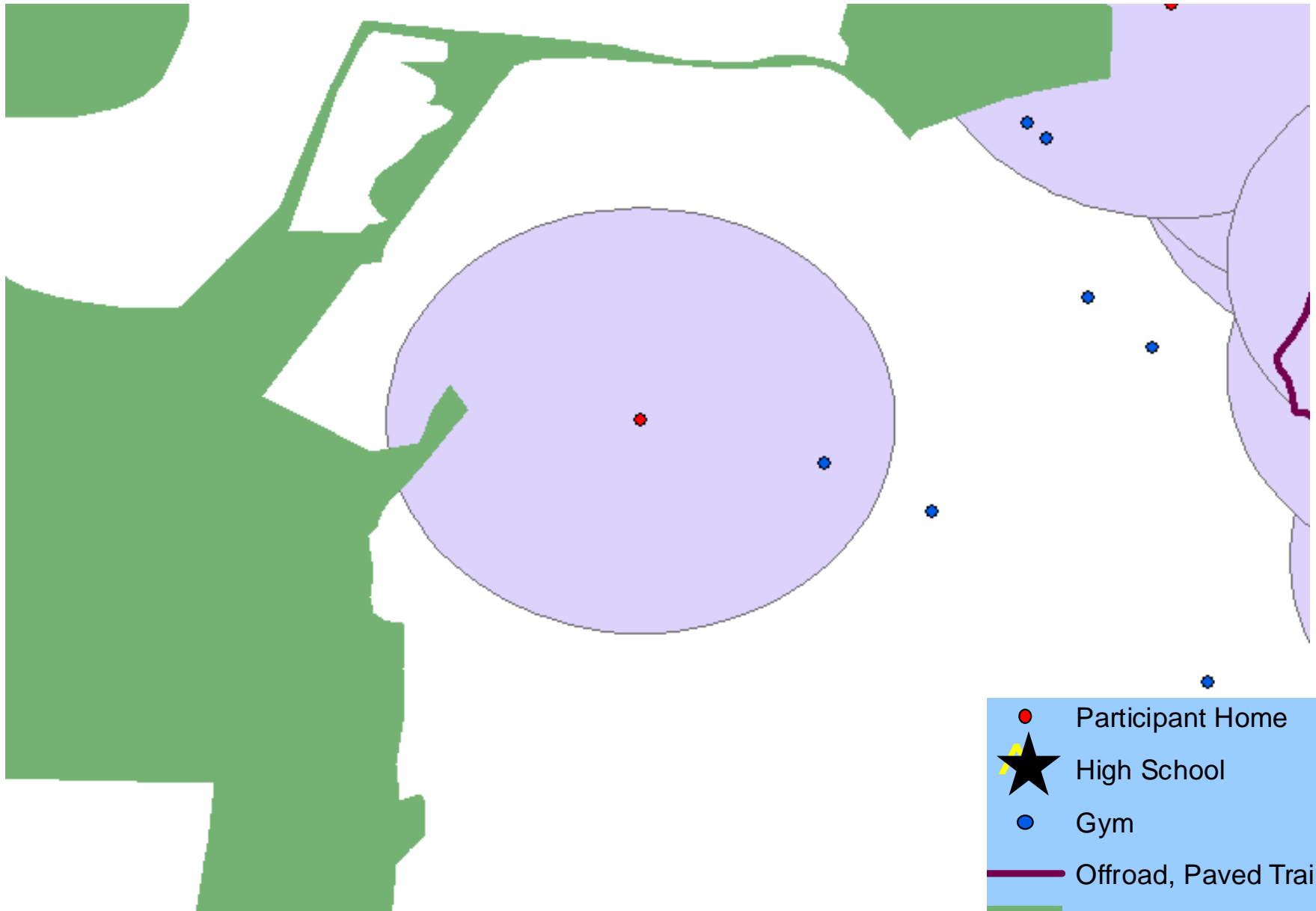
- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field



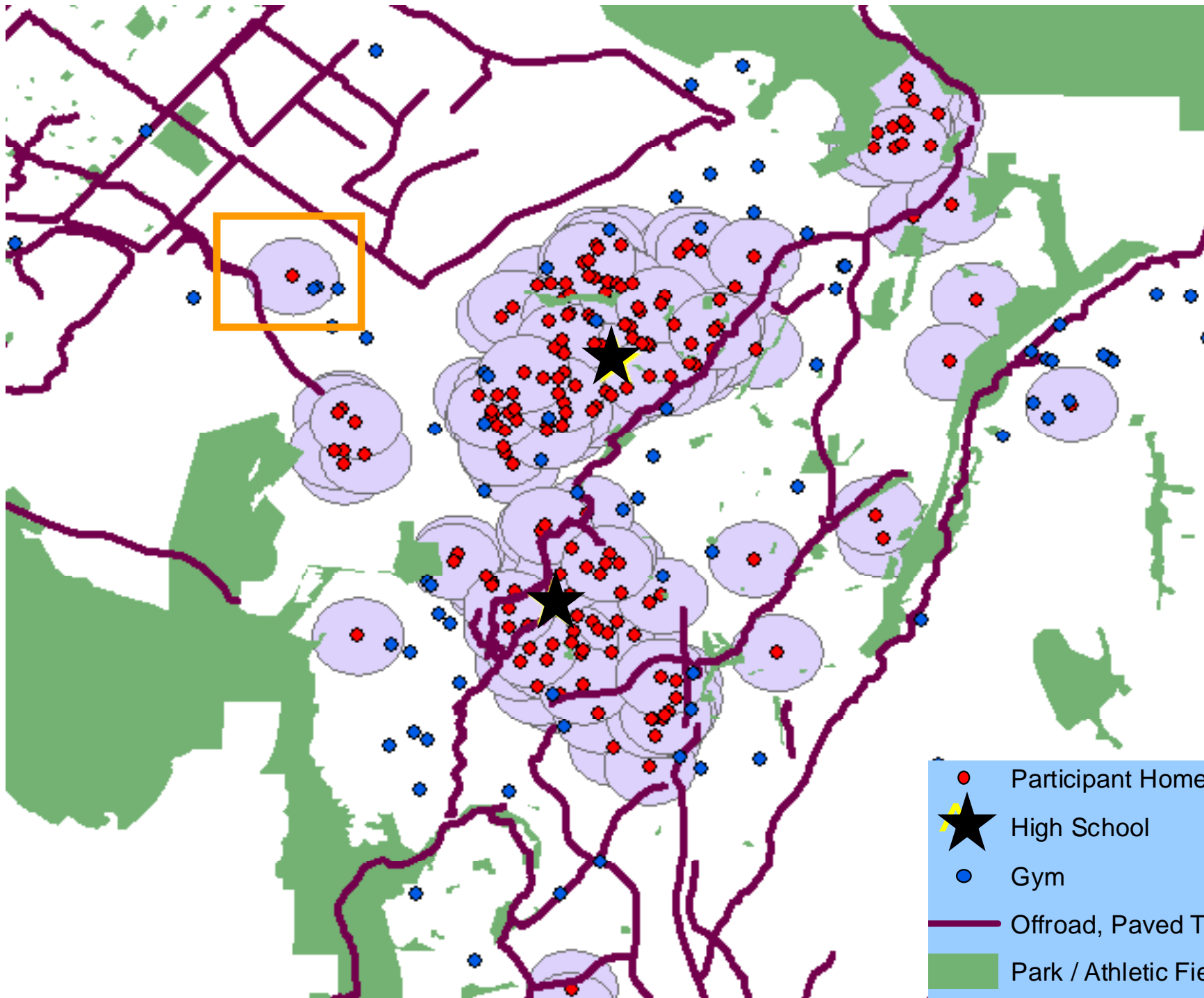
- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field



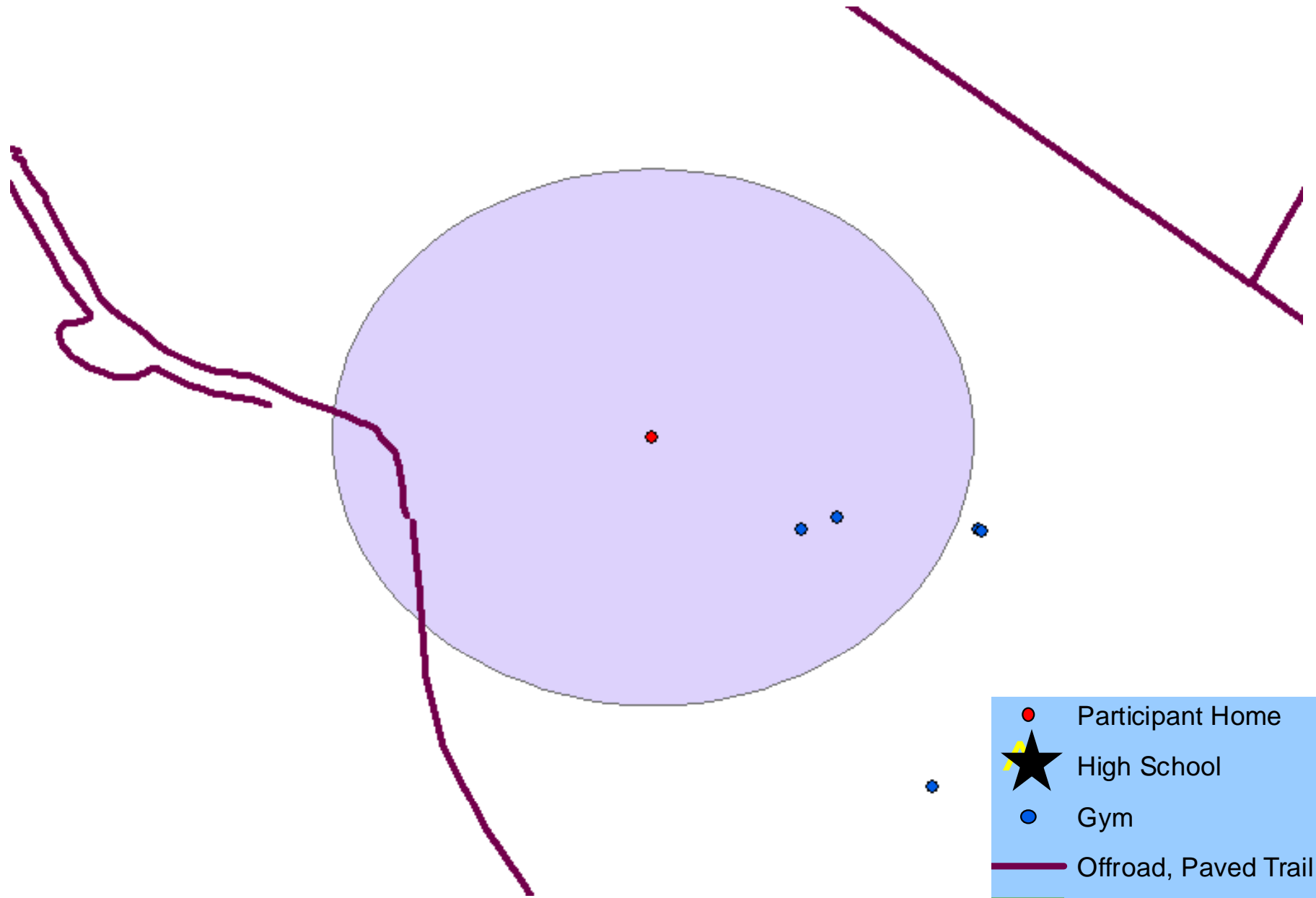
- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field



- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field



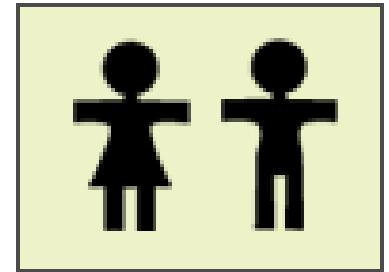
- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field



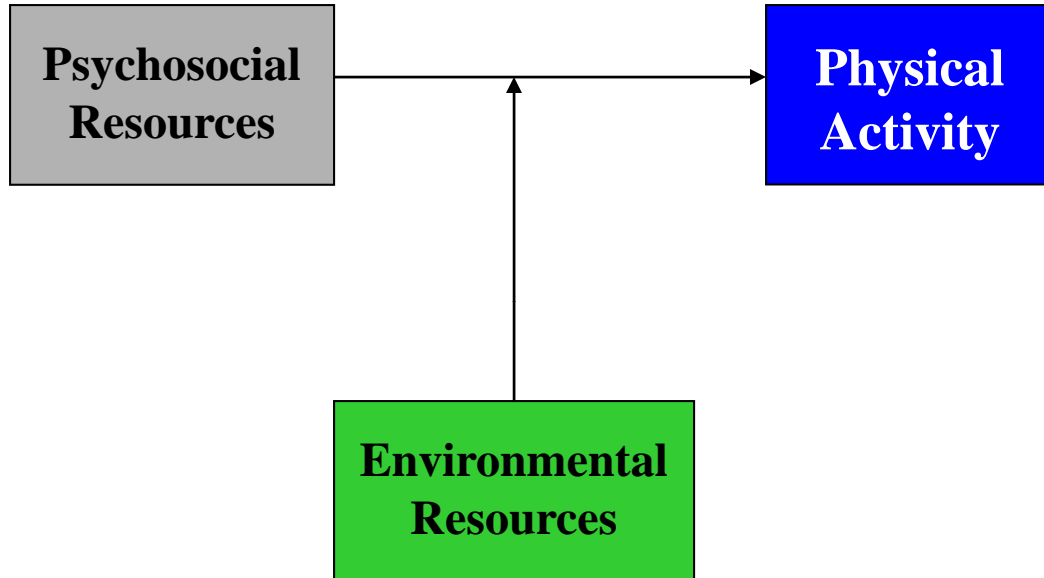
- Participant Home
- ★ High School
- Gym
- Offroad, Paved Trail
- Park / Athletic Field

Covariates:

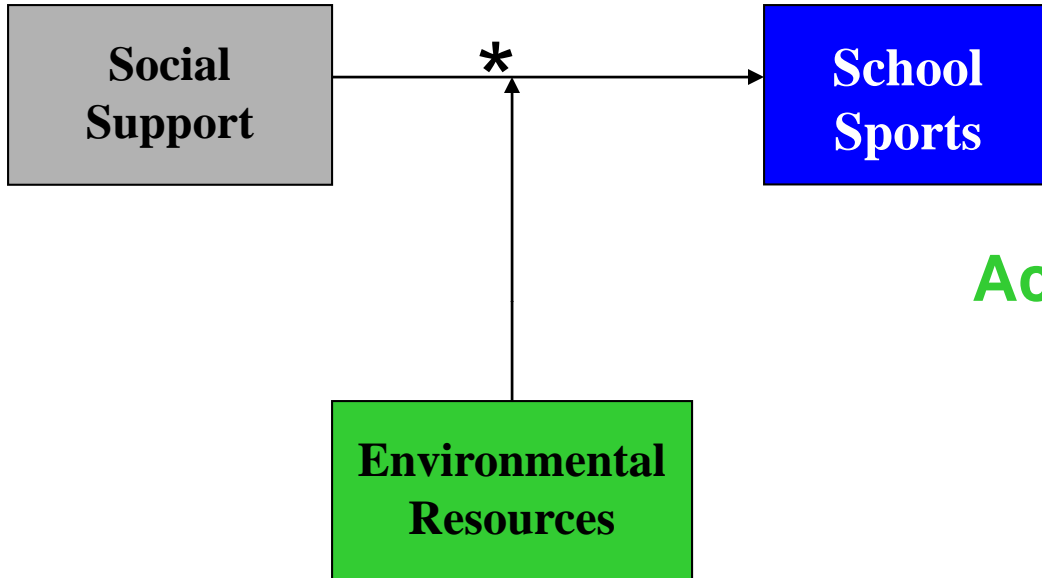
- Age, Ethnicity, SES, Gender, Parent PA, Parent Perceived Benefit of PA



Model Tested:



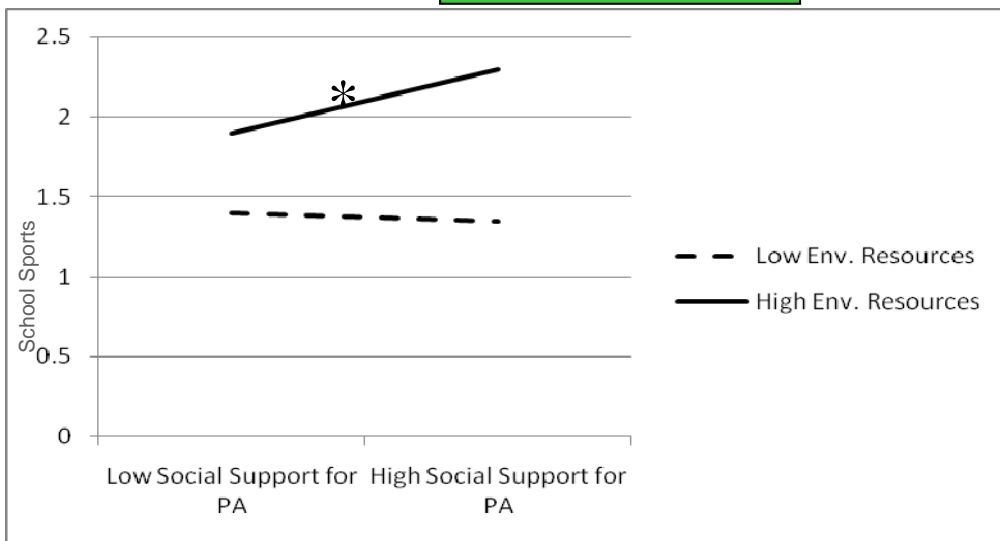
Results:



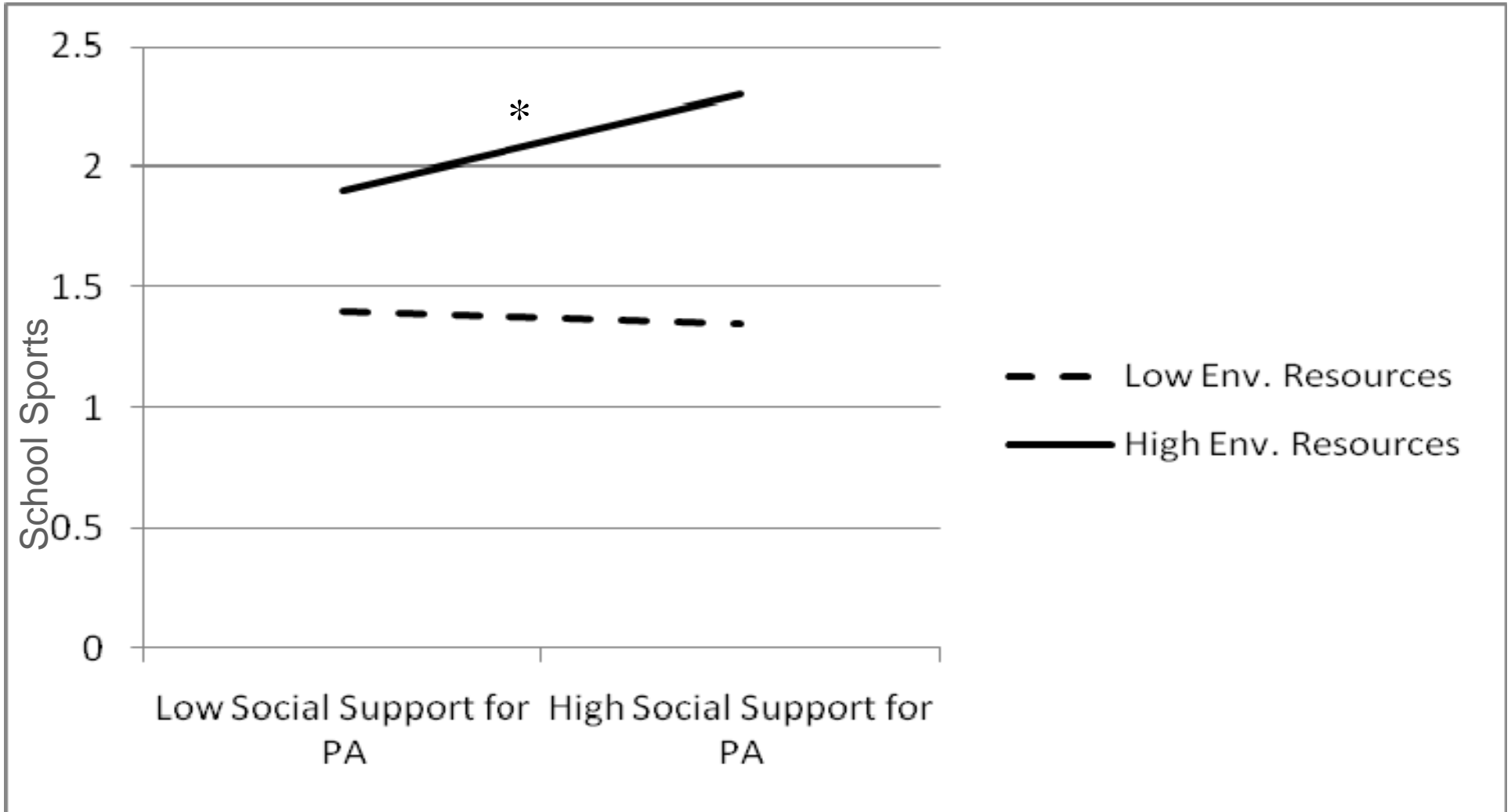
Access to Environmental
PA Resources

Moderates

Social Support for PA →
School Sports Participation



Predicted Levels of School Sports Participation for Adolescents with High vs. Low Social Support by Environmental Resources for PA



Interaction

	Low Environmental Resources	High Environmental Resources
Low Social Support	Low Low	Low High
High Social Support	High Low	High High

Interaction

	Low Environmental Resources	High Environmental Resources
Low Social Support	Low Low	Low High
High Social Support	High Low	Significantly more involved in school sports

Discussion

- Interaction Implication:
 - PA interventions should target **both** psychosocial and environmental variables.

Discussion

- Interaction Implication:
 - PA interventions should target **both** psychosocial and environmental variables.
 - e.g. encourage family/friends to participate



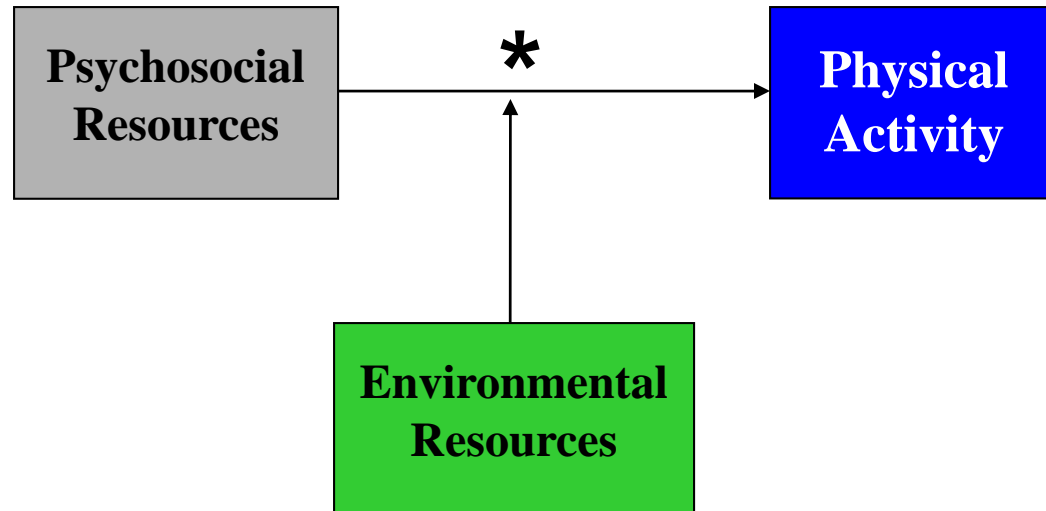
Discussion

- Interaction Implication:
 - PA interventions should target **both** psychosocial and environmental variables.
 - e.g. encourage family/friends to participate AND promote access to facilities



Discussion

- Support for taking a social ecological approach, examining interactions between variables at multiple levels of influence



Future Directions

- Examine additional environment x psychosocial interactions related to PA.

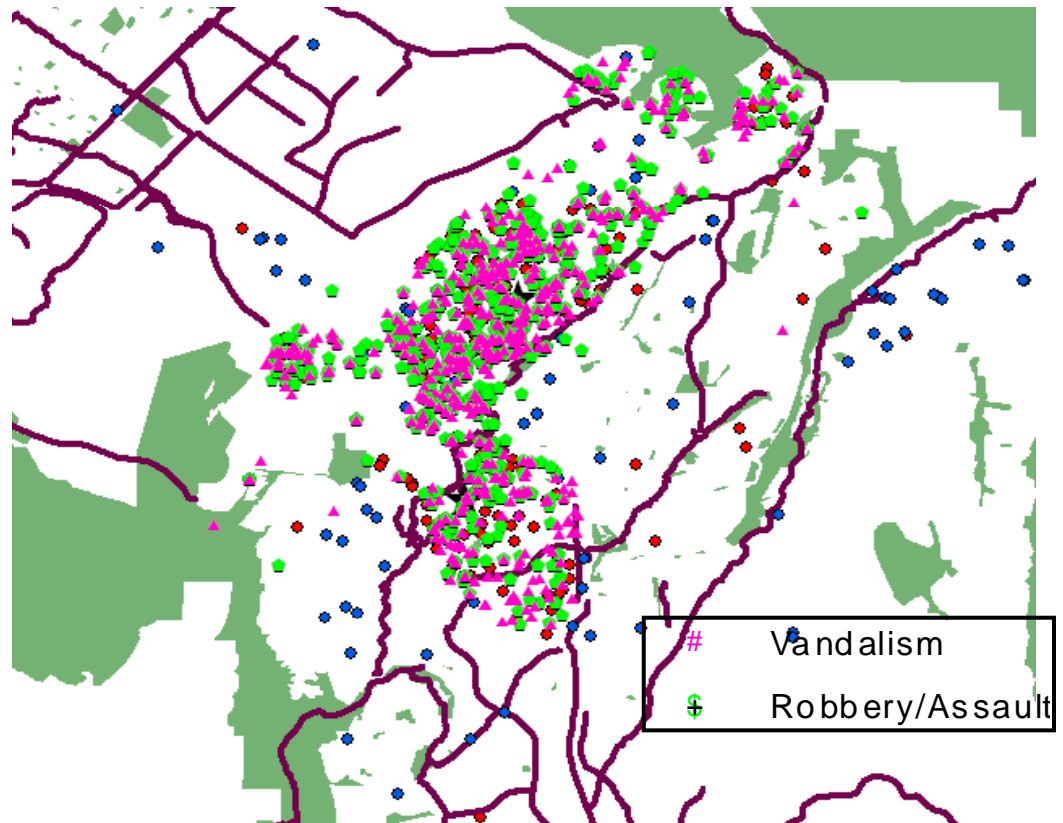
Future Directions

- Examine additional environment x psychosocial interactions related to PA.

– (e.g. safety, perceived access

x

intentions, sensation seeking, family factors)



Thank you!

- All of you, for your thoughts.
- Margaret Schneider
- Sally Dickerson
- JoAnn Prause
- Dan Stokols
- Marlon Boarnet



Contact:

Dan Graham

djgraham@umn.edu