Public Park Ecology and Neighborhood Crime: Assessing Resident Perceptions of Crime and Park Quality

Darren Ruddell, Susannah Lerman, Genveive Luikart, Paige Warren, and Sharon L Harlan

INTRODUCTION

Phoenix area residents consistently rank public safety among the top three issues that matter most for a good quality of life [1].

- Literature on crime indicates that the physical environment in publicly accessible places has strong effects on neighborhood crime and often increases people's perceptions of danger [2].
- The *Ecology of fear* hypothesis suggests that the types and maintenance of park vegetation and landscaping affect both the incidence of crime and public perceptions of it [2].

Analyses examine the effects of park ecology on reported crime rates obtained from local police departments while incorporating resident perceptions on park quality and neighborhood safety.

Figure 1: Photo of Neighborhood Park

Research Question:
Is there a relationship between vegetation and reported crimes among public parks in the Phoenix metropolitan area?

METHODS

Study Area

This study considers land use land cover (LULC) classifications and various vegetation indices to measure the biophysical environment of 17 parks within a quarter-mile of 14 PASS survey points.

Figure 2: Study Area: Metropolitan Phoenix, AZ

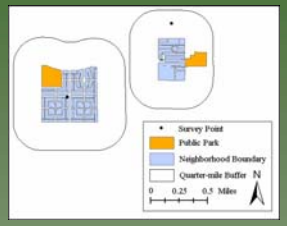


Figure 3: Sample Neighborhood

Data

Census Bureau (2000)
Maricopa County Tax Assessor (2005)
Vegetation
All trees and shrubs were counted within the boundary of each park.

- Vegetation = shrub count + tree count

Table 1: Summary Statistics on Vegetation

Vegetation	Sum	Min	Max	Mean
Shrubs	2725	0	1006	160
Trees	3099	17	873	182
All	5824	17	1137	342

Crime
Reported crime events from 2004-2005 from Chandler, Gilbert, Phoenix, Scottsdale, and Tempe.

- Violent Crime: homicide, robbery, assault;
- Property Crimes: arson, burglary, theft;
- Other Crimes: vandalism, drugs, misdemeanors

Table 2: Summary Statistics on Reported Crimes

Crime	Sum	Min	Max	Mean
Violent	24	0	7	1.4
Property	102	0	26	6
Other	102	0	44	6
All	228	0	72	13.4

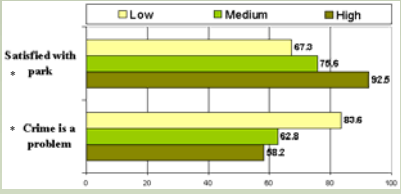
PASS 2006
285 Phoenix area residents surveyed across 14 different neighborhoods.

- Income: Low (<$35K); Medium ($35-$70K); High (>$80K)
- Location: Core (1.5 miles from municipal downtown); Suburban (all others); Fringe (urban growth area, MAG Report)
- Ethnicity: White (≥66%); Latino (≥50%); Mixed (all others)

RESULTS

Table 3: Crime and Vegetation by Income

	Income		
	Low	Medium	High
N Parks	3	8	6
Mean Crimes	15	13.9	12
Mean Vegetation	130	403	369
Mean Area (M²)	20,883	109,978	49,705

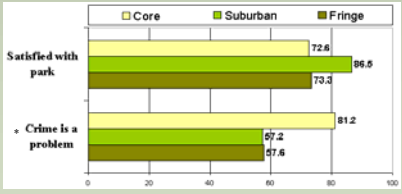


Chi-Square: *p<.01

- Vegetation is significantly lower in low-income neighborhoods;
- High-income respondents indicate strong satisfaction with neighborhood parks while the fewest respondents believe crime is a problem;
- Low-income neighborhoods have relatively fewer public parks.

Table 4: Crime and Vegetation by Location

	Location		
	Core	Suburban	Fringe
N Parks	5	9	3
Mean Crimes	18.4	12.4	8
Mean Vegetation	332	269	580
Mean Area (M²)	102,818	58,764	65,908

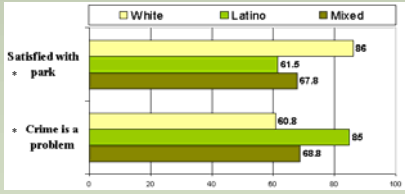


Chi-Square: *p<.01

- Core neighborhood parks have proportionally higher reported crimes with lower vegetation;
- On average, suburban parks are the smallest and report the highest level of satisfaction among respondents;
- Fringe neighborhood parks have significantly higher levels of vegetation, yet the lowest reported crime rates.

Table 5: Crime and Vegetation by Ethnicity

	Ethnicity		
	White	Latino	Mixed
N Parks	12	2	3
Mean Crimes	13.6	10.5	14.6
Mean Vegetation	326	121	556
Mean Area (M²)	66,996	22,385	130,662



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- Respondents in white neighborhoods have significantly more parks, high reported crime rates, and high park satisfaction;
- Latino neighborhood parks are the smallest with the lowest reported crimes, however, respondents indicate that crime is a problem in these parks;
- Ethnically mixed parks are the largest and have the highest vegetation and reported crime rates.

CONCLUSION

- Research Observations:
  - High vegetation is negatively correlated with reported crime rates.
  - Parks are most abundant in suburban neighborhoods where satisfaction is the highest despite the presence of reported crimes.
  - Non-white neighborhoods have significantly fewer parks yet mixed levels of vegetation and reported crime rates.
- Implications on the literature:
  - The *Ecology of Fear* hypothesis does not appear to be present among neighborhood parks in the Phoenix metropolitan area.
  - Perceptions of fear are highest in low-income core neighborhoods where reported crimes are also the highest.
- Future Research:
  - Examining park size which appears to be an important predictor of reported crimes.
  - Investigating resident satisfaction of neighborhood parks in fringe communities.
  - Studying Latino neighborhood parks where reported crimes, vegetation, and park size are the lowest yet perceptions of crime are the greatest.

Acknowledgement

This material is based upon work supported by the National Science Foundation under Grant No. DEB-0423704, Central Arizona-Phoenix Long-Term Ecological Research (CAP LTER). Any opinions, findings and conclusions or recommendation expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation (NSF).

References

[1] Morrison Institute for Public Policy. 2004. *What Matters: The Maturing of Greater Phoenix*. College of Public Programs, ASU.
[2] Brownlow, A. 2005. An archaeology of fear and environmental change in Philadelphia. *Geoforum* 37:227-245