

Disparities in Park Availability, Features, and Characteristics by Social Determinants of Health within a U.S.-Mexico Border Urban Area



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Background

- Parks are key settings for promoting physical activity (Bedimo-Rung et al., 2005; Kaczynski & Henderson, 2007)
- Studies have also established that the features of parks are important for promoting physical activity (Kaczynski et al., 2008; Giles-Corti et al., 2005; Sugiyama et al., 2010)
- Parks are especially important in low-income areas where access to resources may be less feasible and where poorer health behaviors and outcomes are more prevalent (August & Sorkin, 2011; Godbey et al., 2005; Zhang & Wang, 2004)
- However, several studies highlight that park availability, features, and quality may not be equally-distributed across socioeconomically-deprived and racially/ethnically diverse neighborhoods in the U.S. (Estabrooks, et al., 2003; Gordon-Larsen et al., 2006; Moore et al., 2008; Vaughan et al., 2013; Wolch et al., 2005).



Background

- Persons from Hispanic backgrounds are one of the fastest growing minority groups in the United States (United States Census Bureau, 2013)
- In some cities, such as El Paso, Texas, Hispanics represent over 80% of the population (United States Census Bureau, 2013)
- This dynamic population structure and shift, combined with traditionally poorer health among lower-income and minority populations, presents an important challenge for parks and recreation, planning, and public health professionals aiming to create salutogenic neighborhood environments (Bopp et al., 2012; Day, 2006)
- To date, little research on environmental disparities has been conducted in minority-heavy areas along the U.S.-Mexico border where health concerns are a prominent issue



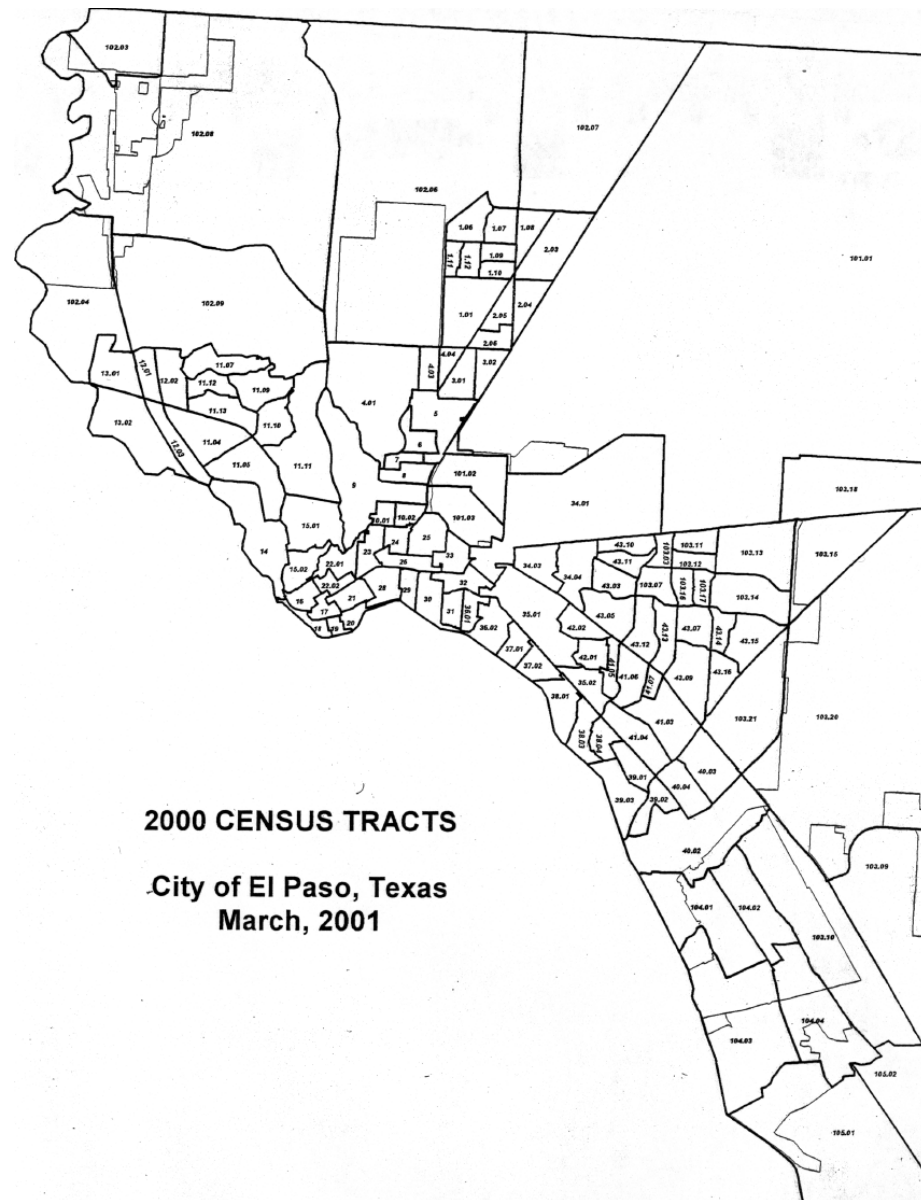
Purpose

- To examine differences in **park availability, features, and characteristics** according to **median household income** and the **percentage of foreign-born** population in a predominately Hispanic border community
- This can lead to environmental and policy interventions that might facilitate increased physical activity and reduced health disparities



Methods

- Cross-sectional study of all City of El Paso, Texas census tracts and municipal parks in 2010-2011
- Data collected from three sources:
 - Geographic information systems (GIS) files
 - Community Park Audit Tool (CPAT) (Kaczynski et al., 2012)
 - 2005-2009 American Community Survey (ACS)



Study Area and Sample

- City of El Paso, Texas – population (2012): 672,538 (19th largest in the U.S.)
 - **80%** of residents are Hispanic or Latino
 - **25.5%** born outside of the U.S
- Sample:
 - 112 census tracts
 - 144 parks



Measures

- 2 Social Determinants of Health (categorized into tertiles)
 - 1. **Median household income**
 - 2. **Percent foreign-born**
- 6 Park Variables



1. **Park availability** (number of parks per census tract)
- Park features:
 2. **Number of facilities** (e.g., playgrounds, basketball courts, trails)
 3. **Number of amenities** (e.g., benches, drinking fountains, picnic tables)
 - Park characteristics:
 4. **Number of aesthetic features** (e.g., landscaping, artistic features, historical/educational monuments)
 5. **Number of park quality/safety concerns** (e.g., evidence of threatening behavior, dangerous spots, vandalism)
 6. **Number of quality/safety concerns in neighborhood visible around park** (e.g., inadequate lighting, graffiti)

Analyses

- **Univariate analyses** conducted on all park variables to assess normality
- **ANOVA F-tests** (for normally-distributed park variables)
- **Kruskal-Wallis χ^2 tests** (for non-normal variables)
- **Post-hoc analyses** used to determine significant ($p < 0.05$) differences in the total number of parks, park features (facilities, amenities), and park characteristics (aesthetic features, park quality/safety concerns, and neighborhood quality/safety concerns) across census tract income and percent foreign-born tertiles (low, medium, high)



Results

- **Characteristics of study area (across all census tracts):**
 - Median average household income = \$46,191
 - Median percentage of foreign-born residents = 28.0%
 - Median number of parks per tract = 1.0 (range = 0-9)



Park Availability (i.e., number of parks per census tract)

- **By income tertiles: Significant difference** ($\chi^2=6.71$, $p=0.04$)
 - The medium tertile had more parks than the high tertile ($p=0.01$).
- **By percent foreign-born tertiles: No significant difference** for park availability across percent foreign-born tertiles ($\chi^2=1.51$, $p=0.47$).

Results

Park Facilities (e.g., playgrounds, basketball courts, trails)

- **By income tertiles: Significant difference** ($F=10.21$, $p<0.01$)
 - The medium income tertile had significantly more facilities than the low ($p<0.01$) or high ($p=0.02$) income tertiles.
- **By percent foreign-born tertiles: No significant difference** for park facilities across percent foreign-born tertiles ($F=2.10$, $p=0.13$)



Results

Park Amenities (e.g., benches, drinking fountains, picnic tables)

- **By income tertiles: Significant difference** ($F=3.77$, $p=0.03$)
 - However, post-hoc pairwise comparisons showed no significant differences in number of amenities between the three income groups
- **By percent foreign-born tertiles: No significant difference** for park facilities across percent foreign-born tertiles ($F=1.64$, $p=0.20$)



Results

Aesthetic Features (e.g., landscaping, artistic features, historical/educational monuments)

- **By income tertiles: No significant difference** for park aesthetic features across income tertiles ($F=0.29$, $p=0.75$)
- **By percent foreign-born tertiles: No significant difference** for park facilities across percent foreign-born tertiles ($F=0.09$, $p=0.91$)



Results

Number of park quality/safety concerns (e.g., evidence of threatening behavior, dangerous spots, vandalism)

- **By income tertiles: Significant difference** ($\chi^2=26.21$, $p<0.01$)
 - The low and medium income tertiles had significantly more park quality/safety concerns than the high income tertile (both $p<0.01$).
- **By percent foreign-born tertiles: Significant difference** ($\chi^2=30.40$, $p=0.13$)
 - The high and medium foreign-born tertiles had significantly more park quality/safety concerns than the low foreign-born tertile (both $p<0.01$).



Results

Number of quality/safety concerns in the neighborhood visible around the park (e.g., inadequate lighting, graffiti)

- **By income tertiles: Significant difference** ($\chi^2=39.95$, $p<0.01$)
 - The low income tertile had more neighborhood quality/safety concerns than the medium or high income tertiles (both $p<0.01$)
- **By percent foreign-born tertiles: Significant difference** ($\chi^2=42.69$, $p<0.01$)
 - The high foreign-born tertile had significantly more neighborhood quality/safety concerns than the low or medium foreign-born tertiles (both $p<0.01$)



Discussion

- Further evidence that publically-available recreational facilities, and their features and characteristics, **are often not equally-distributed** across neighborhoods by income or cultural attributes (Crawford et al., 2008; Estabrooks et al., 2003; Gordon-Larsen et al., 2006; Moore et al., 2008; Powell et al., 2006; Vaughan et al., 2013; Wolch et al., 2005)
- The present study was unique in that it highlighted these issues within a **predominately Hispanic community**
- Border regions are some of the **poorest areas in the U.S.** with respect to both income and health (United States-Mexico Border Health Commission, 2010; Warner, 1991)
- **Barrio advantage** – paradoxical situation in which certain sociocultural benefits of living in high-density Mexican American neighborhoods (e.g., intact family structures, community institutions, increased shelter from negative aspects of American culture) outweigh the disadvantages of high rates of poverty in those neighborhoods (Aranda, Ray, Snih, Ottenbacher, & Markides, 2011; Eschbach, Ostir, Patel, Markides, & Goodwin, 2004)
- It is important that lower income and immigrant-heavy areas **also possess quality environmental resources, including parks**, that do not attenuate, and preferably augment, positive health behaviors and outcomes among this vulnerable population group (Fields et al., 2013; Mota et al., 2005).

Discussion

• Limitations

- Only looked at two socio-demographic variables
- Results from this primarily Hispanic community may not be generalizable to other U.S. or border communities
- Excluded park-related facilities that were not designated for public use, such as school playgrounds, state or national parks, and other pay-for-use resources
- Examined census tracts as the unit of analysis – other geographic or culturally-defined areas may produce different results
- Additional physical activity or health data would be valuable to make the link between environmental and health disparities



Conclusion

- More international, multi-national, and cultural-specific studies such as this one can shed light on unique dynamics of the “deprivation amplification” phenomenon (Macintyre et al., 2008)
- Using tools like the CPAT, especially in traditionally under-empowered and under-resourced communities, can assist citizens, health researchers, and policy makers in evaluating community environments to facilitate partnerships and collaborative efforts to make parks and other recreational facilities more accessible, attractive, and safe to facilitate physical activity and health for all (DeBate et al., 2011; Hoehner et al., 2007)



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