Living in your own private Idaho: Egohoods as a new measure of neighborhood

John R. Hipp
Adam Boessen
University of California, Irvine
Departments of Criminology, Law & Society, and Sociology
How to measure a neighborhood?

- Presence of social ties?
- Perceived cohesion?
- Geographic area?
- Discrete units?
- Nested units (Suttles)?
Discrete units

- Tracts
- Block groups
- City-defined “neighborhoods”
- T-communities (Grannis)
- Clustering techniques in Geography (based on similarity of residents)
  - What characteristics to use?
  - How large should the units be?
Measuring “neighborhood”

- We distinguish between research focusing on the:
  - 1) perception of the neighborhood
  - 2) social consequences of living within a particular ecological unit
Insight from other research traditions

- Presence of social ties
  - Tie probability decays over distance
- Daily activities literature
  - Where do you spend your time?
- Mental mapping literature
  - Where do you place *yourself* in your neighborhood?
- Travel to crime literature
Center of your world

- We live at the center of our “own” neighborhood (an egohood)
  - Social ties decrease with distance
  - Our daily activities often are centered on our block
  - We perceive ourselves at the center of the neighborhood (Hunter, 1974)

- Block is the center of the egohood
Center of your world

- Public health literature: buffers around persons
- “Neighborhoods” around plants:
- Reardon, Lee, Firebaugh et al in segregation literature
Egohoods

- If everyone is in the center of their own egohood, then we’re also in other persons’ egohoods.
- So, not discrete units.
- Physical boundaries might matter also
  - Rivers, freeways, etc.
- Social boundaries might matter also
  - School districts
  - Shopping areas
  - Churches
Egohoods

- Neighborhoods as waves washing across the surface of the city
Data

- Point crime data for 7 cities in 2000:
  - Buffalo, Cincinnati, Cleveland, Dallas, Los Angeles, Sacramento, Tucson
- Used 3-year averages of crime data
- Counts of crime types
“Neighborhoods”

- Aggregate crime points to:
  - Block groups
  - Tracts
  - 0.25 mile radius egohoods
  - 0.5 mile radius egohoods
  - 0.75 mile radius egohoods

- Census data to egohoods:
  - Aggregated block data when available
  - Otherwise, assign block group data proportionate to population
Average population size of egohoods

<table>
<thead>
<tr>
<th>Radius</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.25 mile</td>
<td>1,100</td>
</tr>
<tr>
<td>0.5 mile</td>
<td>4,131</td>
</tr>
<tr>
<td>0.75 mile</td>
<td>8,809</td>
</tr>
<tr>
<td>1.5 mile</td>
<td>30,866</td>
</tr>
<tr>
<td>2.0 mile</td>
<td>50,931</td>
</tr>
<tr>
<td>3.0 mile</td>
<td>100,886</td>
</tr>
</tbody>
</table>
Predictor variables

- Percent vacant units, owners
- Average household income
- Percent black, Latino
- Percent aged 16 to 29
- Percent living in crowded households
- Inequality (standard deviation of logged income)
- Racial/ethnic heterogeneity

And… spatial lags (distance decay) for block group and tract models
Methodology

- Negative binomial or Poisson regression
- Population as offset

- Egohoods: would need spatial error model

- Collinearity not a problem here
  Increases with larger radii
Assessing fit

- Cannot just use R-square

- We use common units (blocks):
  - Get predicted mean for unit of analysis in model
  - Apportion mean to the blocks within the unit (proportionate to block populations)
  - Compute the correlation of this mean with the actual crime count in each block

- A bit more complicated with egohoods:
Figure 2. Average over seven cities: correlation between crime count and expected mean across blocks
Vacancies and owners

- The only two measures with strongest effects when aggregated to $\frac{1}{4}$ mile egohoods (instead of $\frac{1}{2}$ mile)
Vacancies

- Aggregating vacant units to ½ mile radius egohoods instead of the BG’s or tracts:
  - 8% to 31% stronger for aggravated assault
  - about 10% larger for robbery
  - 25% to 68% larger for homicides

- When aggregating vacant units to ¼ mile radius egohoods instead of the BG’s or tracts:
  - Between 26% - 100% larger for 3 violent crime types
  - 60% stronger for burglary
  - 40% stronger for MV theft
  - 40% stronger for larceny
Owners

- Aggregating owners to ½ mile radius egohoods instead of the BG’s or tracts:
  - 12% to 55% stronger for aggravated assault
  - 10% to 20% larger for robbery
  - 20% to 85% larger for homicides

- Even stronger when aggregating to ¼ mile radius egohoods
  - 30 to 50% stronger for aggravated assaults and robberies
  - 50% stronger for burglary
  - 70% stronger for MV theft
  - 30% stronger for larceny
Distribution measures: heterogeneity

- Stronger positive effect when aggregated to tracts rather than block groups
- Even stronger when aggregated to ½ mile radius egohoods
- Aggregating heterogeneity to ½ mile radius egohoods instead of tracts:
  - 11% stronger for aggravated assault
  - 27% larger for robbery
  - 17% larger for homicides
- Relatively inconsistent results for property crimes
Distribution measures: inequality

- Aggregating inequality to ½ mile radius egohoods instead of tracts:
  - 500% stronger for aggravated assault
  - 300% larger for robbery
  - 20% larger for homicides
  - 420% stronger for burglary
  - 320% stronger for MV theft
  - Strong positive effect for larceny (neg for tracts)
Other measures

- Income: consistently negative, regardless of aggregation
- Other measures were inconsistent over cities, regardless of aggregation
Conclusion

- Should not think of “neighborhoods” as discrete units
- We propose overlapping neighborhoods (egohoods)
  - We’re all at the center of our own egohood
  - But we “belong” to many others
  - More effective predictions of crime
- What is the proper radius of egohoods???
- Important differences in the effects of inequality on crime