Evaluating Sex Offender Exclusion Laws

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Outline

• Context and issues
• Spatial questions
• Evaluation
  – Data and data quality
  – Assessment
• Informing public policy
  – GIS
  – Equity
• Community impacts
  – Spatio-temporal trends and patterns
• Activity space
Sex Offenders

• Significant public concern and topic of much public debate/discussion

• Federal/State/Local legislation
  – Wetterling Crimes Against Children and Sexually Violent Offenders Registration Act
  – Megan’s Law
  – Walsh Child Protection Act
  – Proposition 83 (CA)
  – House Bill 1877 (FL)
  – Hamilton County (OH)
  – Upper Arlington / Lancaster (OH)

• Aim of this legislation
  – Require public notification of sex offender residency
  – Restrict where sex offenders can reside and work
  – Monitor sex offender movements in space and time

• Recidivism
Spatial Restrictions

- Limits the residential (and in some cases work) locations available to sex offenders
- Many states and localities have enacted restriction zones that prohibit sex offenders from residing within a specified distance (typically 1,000 - 2500 ft.) of a school, park, day care center, school bus stop, etc.
- Aim is to protect children
Spatial Issues of Interest

• What is the landscape of restricted space for sex offenders?
• How can public policy be informed about the implications of proposed laws?
• What are the impacts on areas near those communities were sex offender laws are vigorously imposed and enforced?
• Are children and communities safer as a result of these laws?
Landscape Issues …

- GIS is essential
- Also need associated spatial information
  - Land parcels
  - Schools, parks, daycare centers, libraries, etc.
  - Land use information (residential, industrial, etc.)
- Data quality
  - Geo-coding
  - Consistency
- Policy interpretation
- Assessment of impacts
<table>
<thead>
<tr>
<th>ID</th>
<th>Name</th>
<th>Type</th>
<th>FAddL</th>
<th>TAddL</th>
<th>FAddR</th>
<th>TAddR</th>
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<tbody>
<tr>
<td>3286</td>
<td>Dorset Rd</td>
<td>2401</td>
<td>2549</td>
<td>2400</td>
<td>2550</td>
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</tbody>
</table>

...
Policy Interpretation

Alternative interpretations of spatial restriction zones

(a) School boundary restriction zone (Euclidean distance)

(b) School office (point) restriction zone (Euclidean distance)

(c) School boundary restriction zone (network distance)

(d) School office (point) restriction zone (network distance)
SRZs in Comparison …
Assessment of Impacts

• Collateral consequences
  – Housing availability
    ⇒ Suitability
    ⇒ Affordability

• Need approaches for such assessment
  – Methods (statistical)
  – Additional detailed spatial information
  – Significance

Table 1: Housing Availability by Census Block: Hamilton County, Ohio (2000)

<table>
<thead>
<tr>
<th>Hamilton County</th>
<th>Within SRZ</th>
<th>Outside of SRZ</th>
</tr>
</thead>
<tbody>
<tr>
<td>Census Blocks</td>
<td>9,103</td>
<td>3,357</td>
</tr>
<tr>
<td>Housing Units</td>
<td>373,392</td>
<td>137,051</td>
</tr>
<tr>
<td>Owner Occupied</td>
<td>207,591</td>
<td>62,120</td>
</tr>
<tr>
<td>Renter Occupied</td>
<td>139,199</td>
<td>61,814</td>
</tr>
<tr>
<td>Rental Units Available</td>
<td>11,116</td>
<td>5,533</td>
</tr>
</tbody>
</table>
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Informing Public Policy

- GIS and mapping
  - Many examples in the press

- Equity oriented ordinances
  - Limiting total number of sex offenders residing/working in a local area
  - Restricting a sex offender from residing within a specified distance of other sex offenders

- Both seek some form of equity in the exposure to risk
GIS – Distribution of Offenders

Offender Locations
- 1
- 2 - 3
- 14
- 20
- 55

Subdivisions
County Boundary

[Map showing the distribution of offender locations with various markers for different offence counts.]

[Legend: Offender Locations with different markers, Subdivisions, County Boundary]
GIS – Distribution of Restrictions

- County Boundary
- Subdivisions
- School Parcels
- School Restriction Zone (1000 ft)

Legend:
- School Restriction Zone (1000 ft)
- School Parcels
- Subdivisions
- County Boundary

Scale: 0 1 2 3 4 5 Miles
GIS – Distribution of Restriction Law Violations

[Map showing the distribution of restriction law violations with various locations marked by different symbols and a legend explaining the symbols.]
Equity Issues

- Restricting a sex offender from residing within 1320 ft (¼ mile) of another sex offender (Phoenix, AZ)
- Not entirely different from local laws limiting group homes, treatment centers, etc.
- Dispersion modeling
  - Area of geographic analysis
  - Mathematical models
- Can be used to evaluate such an ordinance and inform policy
  - Spatial information (data)
  - Context interpretation
A Spatial Optimization Model to Support this Analysis ...

Maximize

\[ Z = \sum_{i} x_i \]

Subject to

\[ n_i x_i + \sum_{j \in N_i} x_j \leq n_i \quad \forall i \]

\[ x_i = \{0, 1\} \quad \forall i \]

\[ i = \text{index representing potential residential location sites} \]

\[ d_{ij} = \text{distance from potential residence } i \]

to potential residence } j \]

\[ R = \text{restriction distance requirement} \]

\[ N_i = \{j \mid d_{ij} \leq R \quad \& \quad i \neq j\} \]

\[ n_i = |N_i| - 1 \]

\[ x_i = \begin{cases} 1 & \text{if a residence is allowed at site } i \\ 0 & \text{otherwise} \end{cases} \]

Moon and Chaudhry (1984); Murray and Church (1997)
Policy Evaluation

- Model determines that 43 sex offender residences are possible for the associated scenario (1320 ft minimum)
- Computational complexity issues
- Other supporting models could be considered as well to address this spatial equity issue
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Temporal Dimension of Impacts

• Thinking is that neighboring communities will see increased numbers of sex offenders as residents
  – Particularly less disorganized communities
  – Boundary effects

• Changes in residential and work patterns of sex offenders

• Historical data lacking

• Methods for analysis are needed as well
  – Visual (GIS)
  – Clustering
  – Others
Residential Change Patterns
Current Extensions

• Activity space patterns
• Micro scale …
  – Community
  – Neighborhood
  – Building
• Space-time prisms
• Methods and activity data to support …
Of Particular Interest …
Spatial Issues of Interest

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