Beyond the Ecomap

Why social work needs geovisualization in practice, policy, teaching, and research

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Your Community

- Name your community (city, state, suburb, etc.)
- List one significant social work issue/problem in your community
- Your email address
Learning Objectives

• Conceptualize GIS mapping as an evolution of Ecomapping,

• Examine the current state of GIS mapping in social work,

• Explore reasons why social work has been slow to adopt this methodology, and

• Invigorate social work’s knowledge of and interest in GIS mapping by exploring real life community-level examples.
Ecomaps

• Visual representations of how an individual is reciprocally situated within familial, social, political, spiritual, economic, and physical environments.

• Used in Social Work since the 1970’s (Hartman, 1995).
Ecomaps

- **Positive**
- **Tenuous**
- **Stressful**

Arrows = energy flow
Line thickness = intensity

**Standard Ecomap Symbols**

- **System A**: Positive Relationship
  - System B deriving energy from System A

- **System B**: Stressing each other
  - System G receiving both stress and positive energy from System G

- **System C**: Stressing System H while receiving positive energy from System H

- **System E & F**: Both giving positive energy and stress to each other

- **System F**: Weak or tenuous relationship

- **System G**: Causing stress to System H
Ecomaps

- **Strength:**
  - Include rich and complex information

- **Limitation:**
  - Based largely on qualitative data, self-reports, and pen-and-paper technology

- **Strength:**
  - Diagram the flow or lack of resources from social or environmental systems to the client

- **Limitation:**
  - Unable to quantify the strength or the magnitude of the resource flow
  - Unable to fully examine how the interaction between larger systems may help or hinder client progress
Geographic Information Systems (GIS)

- Field of technology using computer programs to capture, analyze, and present spatial and other types of geographic data
- Employs cutting edge technology to capture and analyze large amounts of data, enabling users to examine and quantify characteristics of individuals and their environments
- Creates visual maps that are easy to interpret and understand across most audiences
  - Unnatural Causes, *Place Matters* clip
GIS and Social Work

- GIS mapping, when conceptualized as an evolution of Ecomaps, can situate individuals in their environment and quantify threats and resources.

- Literature mentioning GIS as an innovative technology for social work practice dates as far back as 1998 (Tompkins & Southward, 1998).

- More recently, Hillier (2007) published comprehensive work lauding the application of and benefits of GIS in social work practice and research, calling for social work to embrace GIS.

- However, nearly a decade later, the applications of GIS in social work still appear rare.
Why should Social Work embrace GIS?

- Strengthen the social survey tradition
- Provides a theoretical framework for understanding human behavior that moves beyond an individual deficit model
- Mapping reveals patterns in disparity across race, income, and geography that are critical for promoting social justice and addressing needs of at-risk populations
- Improve the delivery of social services when used to evaluate programs, locate new facilities, and organize work assignments
- Empower communities and traditionally disenfranchised groups when used to share information and facilitate public planning (Hillier, 2007, p. 206)
Strengthen Social Survey Tradition

- Social Work has a long tradition of creating and disseminating social surveys to document and explore the living conditions of the poor and underserved, and to better understand people in their environments (Hillier, 2007).

- GIS mapping techniques continue to provide invaluable information to researchers and practitioners regarding how place influences the life of marginalized, excluded, and highly stigmatized populations.

- Example:
  - Exploring factors related to health services barriers among a group of substance-abusing women working in the sex industry.
  - Heavy policing and high rates of violence against these women encouraged the avoidance of physical settings where health services, such as HIV services and needle-exchange services were located.
  - The study used mapping to illustrate how environmental interventions were necessary in addition to individual behavior change with this highly stigmatized and marginalized population (Shannon, Rusch, Shoveller, Alexson, Gibson, & Tyndall, 2008).
Shannon, et al. 2008

Avoidance of health/syringe access core due to violence/police harassment

Fig. 1.
Mapping the geographic relationship between avoidance of physical settings due to violence and policing and availability of health services and syringe exchange programs among women engaged in survival sex work.
Beyond Individual Deficits

- Because mapping allows us to actually see representations of people in their environments, GIS is an invaluable tool for moving past individual deficit models of explaining human behavior (Hillier, 2007).

- Example:
  - While reasons for poor nutritional choices vary, a growing body of evidence suggests environmental factors outside of personal volitional control as strong predictors Individuals cannot choose healthy foods if they do not have access to them (Caspi, Sorensen, Subramanian, & Kawachi, 2012; O’Dare, 2011).
  - Florida Food Deserts study identified 200 census tracts in Florida where improving healthy food access could measurably improve diet-related health outcomes. Reducing insufficient food access in the identified areas by just one percentage point would prevent 650 premature deaths over seven years (Florida Department of Agriculture, 2013).
Florida Food Deserts
Examining Patterns and Social Justice

- Mapping has become an invaluable tool in advancing our understanding of the interactions of race, ethnicity, and place in our society.

- Provides clear and compelling visual representation of inequalities that tables or text may fail to convey (Hillier, 2007).

Example:
- Social work educators have demonstrated GIS as an effective means to teach the concept of poverty to social work students (Gjesfjeld & Jung, 2014).
- Through mapping, the authors demonstrated unequal access to grocery stores in predominately Black neighborhoods compared to predominately white neighborhoods.
- Students found GIS methods accessible and easy to understand, and the instructors reported that mapping engaged students in ecological and systems thinking.
Improving Service Delivery and Evaluation

- GIS can be used to plan and locate services by a social work professional on behalf of clients, who themselves may also learn to use mapping to find services independently (Hillier, 2007).
  - Example:
    - Examination of the geographic distance between a pregnant woman’s county of residence and the county she gave birth in (Gjesfjeld & Jung, 2011).
    - Almost 18% of women in the sample lived over 40 miles from the birth hospital. Distance from the hospital was associated with less frequent prenatal appointments, stress related to traveling to find care, and fewer social supports, resulting in higher risks for pre-term birth, lower birth weights and lower Apgar scores for rural women.
    - GIS mapping could be used to plan and implement public health social work based home visitation programs during critical pre- and postnatal periods to improve outcomes.
**TABLE 1** Description of County-Hospital Distance, Total Births, and Proportion of State Birth Total

<table>
<thead>
<tr>
<th>Average distance</th>
<th>Number of counties</th>
<th>Total births</th>
<th>Proportion of state totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 20</td>
<td>6</td>
<td>3,356</td>
<td>38.6%</td>
</tr>
<tr>
<td>21 ≤ 40</td>
<td>17</td>
<td>3,818</td>
<td>43.9%</td>
</tr>
<tr>
<td>41 ≤ 60</td>
<td>18</td>
<td>838</td>
<td>9.6%</td>
</tr>
<tr>
<td>&gt; 60</td>
<td>10</td>
<td>681</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

**FIGURE 1** Average distance between maternal county of residence and hospital facility of birth (color figure available online).
Empowering Disenfranchised Communities

- GIS is a powerful tool when used to include disenfranchised individuals, historically left out of the choices impacting their lives, in important decisions regarding themselves and their communities.

- Neighborhood is often defined and measured by artificial boundaries, such as zip code, census tract, or other type of spatial demarcation.

- These measures do not consider the social, collective, and other informal networks that often cross the arbitrary lines drawn on a map, nor do they consider that poverty may reduce neighborhood connectivity and engagement (Coulton, Jennings, & Chan, 2013).

- Example:
  - Significant differences between resident’s perceived size of their neighborhood when compared to formal census tract, and concluded that artificially drawn neighborhood boundaries may misrepresent the experiences of residents.
  - GIS can be used to include residents in the development of “more authentic neighborhood definitions for research and practice” (Coulton, Jennings, & Chan, 2013, p. 140).
May be perceived as elitist and overly complex, requiring social workers with strong foundations in research methods, measurement, and statistics

- Community agencies and researchers alike may be intimidated by the complexity (both real and perceived) of GIS programs.

May involve new training along with the potential expense of updating computer hardware and software programs.

Incorporating GIS into teaching at schools of social work requires a level of motivation on the part of instructors to learn and adopt new pedagogical methods.

- The demand for GIS coursework may be low, as students (and practitioners alike) may be unaware or not interested in the benefits of mapping for social work.

GIS requires access to and comfort with large, quantitative data sets, frequently unpopular with clinically oriented social work students and practitioners.
Strategies to Increase GIS in SW

- Conceptualizing GIS as an extension of the ecomap
- Application of real-world examples to demystify the technical complexities
- Increased user-friendliness of mapping techniques and reduce the costs associated with learning and implementing the methods
  - Free web-based software and training available
  - Incorporation of GIS coursework at Schools of Social Work (Boston College, 2015; Felke, 2014; University of Michigan, 2013)
Training and Resources

- Environmental Systems Research Institute (ESRI)
  - Popular GIS software ArcGIS

- Quantum Geographic Information Systems (QGIS)
  - Free, open source, self-supported GIS programs for social workers to use at no cost [http://www2.qgis.org/en/site/](http://www2.qgis.org/en/site/)

- National Geographic
Examples from YOUR communities....

- http://uwfsocialwork.maps.arcgis.com/home/webmap/viewer.html?useExisting=1
References


Florida Department of Agriculture. (2014). Examining the impact of food deserts on diet-related deaths in Florida. Tallahassee, FL: Florida Department of Agriculture and Consumer Services.


