Community-Based Mapping in South Bend, Indiana Using ArcGIS Collector

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Community Based Research

• Collaboration between academics and community in design and implementation of research

• Goal is more focused on positive social change than traditional research products
Project Partners

• Center for Social Concerns (Notre Dame)
• Center for Digital Scholarship (Notre Dame)
• City of South Bend
• Near Northwest Neighborhood

• Indiana University: South Bend
• South Bend Mutual Homes
South Bend

- ~100,000 residents
- Most industry left before the 1960’s
- Decreasing population until recently
- Many urban renewal projects
Near Northwest Neighborhood

• ~6,000 residents
• Very diverse neighborhood
• Four historic districts
• Community development organization
  – NNN Inc.
Project History

- Initially a collaboration between Center for Social Concerns and NNN Inc.
- When technological questions arose, expanded to include Center for Digital Scholarship
- Included City of South Bend to ensure data compatibility
  - Initially planned to host Phase 2 data
Data Collection

• Record property conditions, vacant properties and landuse across the neighborhood

• Repeat annually to assess impacts of any interventions

• Two stages
  – 2014: Pilot with Notre Dame students
  – 2015-2017: Expansion to include residents
Data Collection: Phase 1

- 1 credit class
- 9 students
- Trained in assessing building and property conditions
Recording Conditions

• ArcGIS Online hosted map
  – Data layers built from City of South Bend’s parcel layer
  – Editable Feature Service
    • Includes prepopulated fields
    • Photographs as attachments

• Using ArcGIS Collector
  – Platform from ESRI
    • Requires institutional site license
  – Allows mobile editing and creation of features using basic templates
  – Offline capabilities
• Data collection via mobile devices
  – iOS or Android
<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Building Condition</td>
<td>Uninhabitable -&gt; Excellent</td>
</tr>
<tr>
<td>Site Condition</td>
<td>Very Poor -&gt; Excellent</td>
</tr>
<tr>
<td>Land Use</td>
<td>Single Family, Multi Family, Commercial, Vacant Lot, etc.</td>
</tr>
<tr>
<td>Occupancy</td>
<td>Occupied/Unoccupied/ Status Unclear</td>
</tr>
<tr>
<td>Comments</td>
<td>Often used for new construction</td>
</tr>
<tr>
<td>Boarding Needed?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Fire Damage?</td>
<td>Yes / No</td>
</tr>
<tr>
<td>Dumping Present?</td>
<td>Yes / No</td>
</tr>
</tbody>
</table>
Results: Phase 1

• Documented approximately 50% of the neighborhood
  – Focused on more variable areas
• Photographic documentation works well despite variable conditions
• Students became more adept at software and assessment protocols
• Data made available to community partners and Notre Dame researchers

• Problems
  – Frequent difficulty syncing
  – iPad version easy to delete features or move vertices
Data Collection: Phase 2

- Class postponed until Spring 2016
- Expanded to include residents
  - Problem with licensed software (ArcGIS)
  - Partially solved by using web-enabled layer
- Split layer into property and structure conditions
  - Request from community partners
  - Slight increase in recording time
  - More useful for visualization and for data of particular interest to stakeholders
Phase 2: Lincoln Park Data collection

- Expansion to the neighborhood directly south of the NNN
- Identical data collection protocol
- Joint project between IUSB, South Bend Mutual Homes and ND
Conclusions

- Feedback from initial Phase 1 led to methodological improvements in Phase 2
  - Better training of students in assessment
  - Pairing of students and community members
- Data can be used by city planners and code enforcement
- Yields data for community development corporation to show improvement or priority areas
- Gives students a better tie to the community
Future Directions

- Continue annually in NNN and Lincoln Park

- Using property condition data into lead risk assessments

- Integration of photographs and records into Building South Bend project
  - [http://buildingsouthbend.nd.edu/](http://buildingsouthbend.nd.edu/)