Using Advanced e-Systems for Community-Engaged Research

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The Polis Center at IUPUI

International Symposium on Grids & Clouds
Academia Sinica, Taipei
March 2017
A Community-Focused Agenda

- Building community information systems
- Deriving meaning from data to learn about communities
- Providing decision support – consulting, dashboards, other technology systems
- Building capacity in others to use data for decision making

Our approach includes:
- Collaboration
- Community engagement/citizen participation
Community Information Systems

A range of technologies and methods to organize, manage, and disseminate community data.

Aim is to enhance the capacity of citizens and organizations to participate effectively in decision-making.

Increasingly common in U.S.
CIS Studies and Trends

National Infrastructure for Community Statistics (NICS)
  - Brookings Institution - 2005

Community Indicators Consortium
  - Linking community indicators use and performance measurement

General Accounting Office (GAO)
  - 2004 and 2011 Studies for the United States Senate to assess the state of the knowledge base in comprehensive indicator systems in the U.S. and internationally

National Neighborhood Indicators Partnership (NNIP)
  - A partnership of 35 cities led by the Urban Institute
CIS Cities—U.S.

35 Cities in National Neighborhood Indicators Partnership
SAVI is a CIS for Central Indiana. Established in 1995, it provides organizations and individuals with:

- Reliable data
- Actionable information
- Analysis and visualization tools
- Collaboration and capacity-building strategies
## SAVI Infrastructure

<table>
<thead>
<tr>
<th>Year Range</th>
<th>GIS to geo-enable the data</th>
<th>Database for cleaning, standardizing, masking confidential data, and processing indicators</th>
<th>GUI to publish data for public consumption</th>
<th>GUI application</th>
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<tbody>
<tr>
<td>1995-1996</td>
<td>MS Access</td>
<td>Overhead Transparencies</td>
<td>n/a</td>
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<td>~1997-2000</td>
<td>Arc/Info</td>
<td>Oracle</td>
<td>ArcView Desktop at Community Access Sites</td>
<td>Avenue</td>
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<td>1999-2004</td>
<td>Arc/Info</td>
<td>Oracle</td>
<td>ESRI Map Objects IMS</td>
<td>HTML/asp web applications</td>
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<td>2010+</td>
<td>ArcGIS/Arc Server</td>
<td>Oracle</td>
<td>Google and ESRI ArcMap Server</td>
<td>HTML/ASP .Net 2.0 web application</td>
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<tr>
<td>2014</td>
<td>PostGIS</td>
<td>PostgreSQL</td>
<td>N/A</td>
<td>Flex and Java</td>
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</tbody>
</table>
SAVI Data Processing
Quick Information

This page provides easy access to the most frequently requested SAVI data items. Click on the data item to view the data in a map, chart, and/or table. Click More... if you don’t see the data item of interest.

If logged in as a SAVI registered user, click to leave a comment.

<table>
<thead>
<tr>
<th>Population</th>
<th>Health - Births &amp; Deaths</th>
<th>Poverty/Income</th>
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</thead>
<tbody>
<tr>
<td></td>
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<td>Persons Living in Poverty</td>
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<tr>
<th>Education</th>
<th>Housing</th>
<th>Race/Ethnicity</th>
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Community Profiles

Pie chart showing crime classification:
- Violent Crimes and Simple Assaults for the year: 41.49%
- Property Crimes for the year: 58.51%

Age Pyramid:
- Population Under Age 5
- Population Age 5 to 9
- Population Age 10 to 14
- Population Age 15 to 19
- Population Age 20 to 24
- Population Age 25 to 29
- Population Age 30 to 34
- Population Age 35 to 39
- Population Age 40 to 44
- Population Age 45 to 49
- Population Age 50 to 54
- Population Age 55 to 59
- Population Age 60 to 64
- Population Age 65 to 69
- Population Age 70 to 74
- Population Age 75 to 79
- Population Age 80 to 84
- Population 85 and Over

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### 2009 Population Living in Poverty - as % of Poverty Status Pop by Townships

<table>
<thead>
<tr>
<th>County</th>
<th>Township</th>
<th>Township ID</th>
<th>2009 Population Living in Poverty as % of Poverty Status Pop</th>
<th>Margin Of Error - 2009 Population Living in Poverty as % of Poverty status Pop</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marion County</td>
<td>Center Township</td>
<td>18097115112</td>
<td>31%</td>
<td>+/- 1.41</td>
</tr>
<tr>
<td>Johnson County</td>
<td>Nineveh Township</td>
<td>1808154000</td>
<td>22.1%</td>
<td>+/- 1.51</td>
</tr>
<tr>
<td>Johnson County</td>
<td>Blue River Township</td>
<td>1808106094</td>
<td>21.9%</td>
<td>+/- 9.90</td>
</tr>
<tr>
<td>Boone County</td>
<td>Clinton Township</td>
<td>1801113672</td>
<td>21.5%</td>
<td>+/- 13.9</td>
</tr>
<tr>
<td>Madison County</td>
<td>Anderson Township</td>
<td>1809501486</td>
<td>18.7%</td>
<td>+/- 1.67</td>
</tr>
<tr>
<td>Marion County</td>
<td>Wayne Township</td>
<td>1809781800</td>
<td>17.7%</td>
<td>+/- 1.21</td>
</tr>
<tr>
<td>Marion County</td>
<td>Warren Township</td>
<td>1809780144</td>
<td>16.9%</td>
<td>+/- 1.00</td>
</tr>
<tr>
<td>Madison County</td>
<td>Van Buren Township</td>
<td>1809570524</td>
<td>16.7%</td>
<td>+/- 1.00</td>
</tr>
<tr>
<td>Shelby County</td>
<td>Noble Township</td>
<td>1814024144</td>
<td>16.7%</td>
<td>+/- 11.4</td>
</tr>
<tr>
<td>Shelby County</td>
<td>Addison Township</td>
<td>1814500660</td>
<td>14.6%</td>
<td>+/- 3.29</td>
</tr>
<tr>
<td>Brown County</td>
<td>Washington Township</td>
<td>1801330396</td>
<td>14%</td>
<td>+/- 5.48</td>
</tr>
<tr>
<td>Putnam County</td>
<td>Clinton Township</td>
<td>1813313762</td>
<td>14%</td>
<td>+/- 10.0</td>
</tr>
<tr>
<td>Putnam County</td>
<td>Cloverdale Township</td>
<td>1813313870</td>
<td>13.8%</td>
<td>+/- 5.28</td>
</tr>
<tr>
<td>Knox County</td>
<td>Knox Township</td>
<td>1801330060</td>
<td>12.9%</td>
<td>+/- 11.6</td>
</tr>
</tbody>
</table>

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Interactive Mapping

Data Items
- 2008 Public High School Graduation Rate Percent Reported by School Corporations
  - 0
  - 0% or fewer
  - 66% - 77%
  - 77% - 87%
  - 87% - 97%
  - No Data

Sites, Programs, & Agencies
- 2010 Adult Continuing Education

Boundaries
Reference Layers

www.sav
Custom Charts

**2007 Education - Public Enrollment by Race/Ethnicity**

(Johnson County, Marion County)

- 53.0% Public Enrollment, All American
- 13.1% Public Enrollment, Hispanic
- 8.2% Public Enrollment, Asian
- 32.8% Public Enrollment, Indian
- 1.9% Public Enrollment, Caucasian
- 0.2% Public Enrollment, Multiracial

**Vacant Addresses**

(as % of all addresses)

- 2006: 3547.00
- 2007: 3465.00
- 2008: 3547.00
- 2009: 3547.00

**2007 Education - Public Enrollment by Race/Ethnicity**

(Johnson County, Marion County)
Map Your Own Data

- Allows you to...
  - Upload and map your own address locations
  - Add detailed information to your points
  - View your data on a map
**All Part I Crimes by Type**

Looking at the types of crimes in more detail reveals the specific nature and location of the criminal activity in the Near Eastside.

**Interpreting the Data:**

The pie chart shows:

- The majority of the crimes reported in the Near Eastside are assaults* (32%), followed closely by larcenies (29%).
- Although the number of assaults is high, the number of more severe crimes against persons (rape, attempted rape, and homicide) is low (2%).
- Of the crimes committed in the Near Eastside, 16% are residential burglaries and 2% are business burglaries.
- The proportion of vehicle thefts is high relative to other areas in the county. Five of the 12 census tracts in the Near Eastside are in the top 15% of all census tracts in the county for highest percent of vehicle thefts.

The map focuses on the highest crime category, assaults. The red hot spots show where the crime density is greatest, with each dot representing the location of an assault.

*Assault: an unlawful attack by one person upon another (source: US Dept of Justice, FBI)
Users identifying affiliation = 761
Users not identifying affiliation = 774
User-Driven Change

• Responsive to the needs of existing and potential users

• **Lesson learned**: work with the user community regularly

• Continual user feedback
### Marion County

**Service area data: United Way of Central Indiana**

#### EXECUTIVE VIEW
- **Population**
  - Total Population: 2009: 2.1%, 2011: 1.8%, 2011: 1st, N/A
  - Median Age: 2009: 0.6%, 2011: 1.1%, 2011: 8th, -7.9%
  - % Minority Population: 2009: 10.6%, 2011: 8.5%, 2011: 2nd, 117.7%

- **Education**
  - 4-year Public High School Graduation Rate: 2009: 17.4%, 2012: 6.9%, 2012: 80th, -4.0%
  - % Pop with High School Diploma or More: 2009: 6.2%, 2011: 1.1%, 2011: 64th, -2.8%
  - % Free/Reduced Lunch Students: 2009: 14.9%, 2013: 17.6%, 2013: 1st, 37.6%

- **Income**
  - Poverty Rate: 2009: 10.5%, 2011: 7.1%, 2011: 8th, 29.6%
  - Median Family Income: 2009: -1.0%, 2011: 2.2%, 2011: 58th, -9.9%
  - Unemployment Rate: 2009: 14.8%, 2011: 16.4%, 2011: 17th, 18.6%
  - % All Households with High Housing Costs: 2009: 3.9%, 2012: 0.5%, 2012: 2nd, 24.7%

- **Health**
  - Adult Smoking Rate: 2008: -2.2%, 2011: -7.1%, 2011: 33rd, 7.5%
  - Adult Obesity Rate: 2009: 5.3%, 2010: 1.6%, 2010: 43rd, 1.7%
  - % Births with First Trimester Prenatal Care: 2009: 2.6%, 2011: 3.0%, 2011: 7th, -8.2%

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* This percent cannot be calculated due to a value of 0 in the baseline year. Click the + for more details to view the data values for this measure.
** Out of 92 Counties or 93 Service Areas.
Client-Level Integrated Data System

Integrated Client Data System

Nonprofit Client Data
- Client data from 91 United Way Agencies

Probabilistic Matching

Unique Ppl Served
- Person A
- Person B
- Person C

People Served by the Resources

Individual & Family Outcomes
- Education
- Health
- Self Sufficiency
- Etc.

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SAVI Community Intelligence System

Decision Support for United Way & Nonprofits

Spatial Decision Support
- Capacity Building
- Place-based Decision Making
- Data Informed Decisions

Government & Local Data
- Education
- Demographics
- Health
- Crime
- Basic Needs
- Helpline Calls
- Demographics & Needs

Assets and Resources
- Integrated Community Asset System
  - Location
  - Capacity
  - Services
  - Programs
  - Categories
- Community Resources that Serve Needs

Nonprofit Client Data
- Integrated Client Data System
  - People Served by the Resources

Integrated Client Data System
- Unique Ppl Served
  - Person A
  - Person B
  - Person C

Qualitative Information
- Place-based Reports
- Policy Analyses
- Histories

Information about Places People Live and Work

Spatial Decision Support
- Return on Investment
- Measure Collective Impact
- Design & evaluate place-based strategies
- Plan & Assess
- Understand social challenges in context of place
- Identify Gaps
- Align Strategies

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Hazard Mitigation

- A platform for getting information about flood hazard risks in Indiana into the hands of the people who “need to know and act upon”.

We want to See out Data Supporting a Broad Range of Users & Applications
Functions

- Gathering data and services from federal, state and local open data sources
- Encompassing a set of visualization, tracking, document management and analytic tools to transform harvested data into standardized information and indicators that are easily interpretable by non-technical users.
Levels of Technology Support

Web-based Geobrowsers

Early warning services

Modeling capabilities

Response management

IFMP Initiative

The Big Picture

IFMP 1.0 Plan

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Platforms, Not Portals

- Portals are for visiting, platforms are for building on
- Platforms offer innumerable ways of interacting with the data
- A platform facilitates interaction and offers a means for its user community to share valued information
- Platforms place the seed for future growth
Lessons

1. Citizens need information more than they need data.

2. Technology makes it easier to collate and disseminate data but often surpasses the ability of citizens to use data effectively.

3. Collaboration required between citizens and experts to determine what type of information will best serve various constituencies.

4. Translating information to action is also necessary. It too requires collaboration.
Thank you