How the Web Was Won: Using Web-based GIS to Advance Health

Outline

November 7, 2008

Outline

1) Brief history of GIS
2) Potential of Web GIS for Advancing Health Equity
3) Case Studies
4) Lessons & Implications

Focus of paper: Web-based GIS (1) for public use, (2) for public interest

- Focus will be on sites that are:
  1) Aimed at the broad public – "Open Circuit"
     - Not Internet or Intranet sites for government or other groups that restrict access
       - E.g., plethora of government-sponsored sites for coordination, internal planning, that are Web-based
       - But, would include sites sponsored by gov that are aimed at public, citizens' use
  2) Intended to support civic engagement, policy change, collective action, especially regarding health issues

1) Evolution of Web-based GIS

- **Download era**: Downloading data, including geographic information, like census data, via the Internet
- **First generation Web GIS**: Display geographic data in maps
  - Text and static maps
- **Exploring interactive Web GIS**: Move to offer interactive access to geographic information
  - Early ancestors of Web-based GIS include:
    - NKLA and NKCA (Neighborhood Knowledge Los Angeles and Neighborhood Knowledge California (developed at UCLA by Neal Richman, one of the foremost evangelists of using GIS for community benefit); and
    - National Neighborhood Indicators Project (NNIP) network of sites
- **Expansion of access to tech and data**:
  - Google
  - Open Source GIS

2) How Web GIS can Advance Health Equity

- Access to increased understanding
  - Statisticians, social scientists can read data tables, don't need the graphics
  - Maps can make data more alive for a wider range of users
  - Access to more and varied data than otherwise, too
- Reveal spatial patterns that otherwise would be hard to grasp, may go unnoticed ("like 3-D goggles")
- Enable citizens, community groups, organizers to case a problem and present arguments with power they would not otherwise have had

What Web GIS enables (cont'd)

- Help diverse and often conflicted groups of stakeholders arrive at a common understanding of a problem, which is an indispensable first step to developing shared solutions.
- Facilitate a conversation
  - In real world, can be a tool for people and groups to work toward agreement
  - In policy and data world, can bring partners together who have related or complementary goals and data (peanut butter, jelly, bread)
  - Can incent people to share their data – they see a reason, benefit in doing so, and also, burdens are shared, reduced

What Web GIS enables (cont'd)

- Countless communities able to access data and map resources in their neighborhoods quickly, easily and at no cost to them.
- Advocates and service providers able to use high-quality, well-designed, reliable platforms, for uploading data of their choosing and mapping that data against a wide range of demographic data, area resources, and other variables.
  - Not least, communities spared countless hours of effort and scarce dollars trying to build such tools from scratch), enabling them to focus more on the important work of finding the right data locally and interacting with people and organizations in their communities.

3) Case Studies to set aspect ratio

- Detailed review of 2-3 Web GIS sites:
  - HealthyCity.org
  - Other sites under consideration
    - E.g., Metro Boston Data Commons, Hartford Info,

Segment by Purposes, Strategies

- To casual observers, mapping sites may seem alike – they all use GIS and are on the Web.
- On closer inspection, though, they are strikingly different.
  - Some are interactive (dynamic), others are not.
  - Some aim to cover a huge area (wide and shallow), while others provide deeper information for more focused areas.
  - Some are better designed to allow users to choose variables, compare more than one variable or geography, and display summary data or deeper information about data points.
  - Some seek only to show pre-selected information to visitors, others aim to gather information from users in the Web 2.0 vein
  - Still others have more detailed offline strategies for reaching people and groups that will actually put the information to use (you can probably guess my biases here).

Rough typology

- **"Have at it!"** :
  - E.g., PolicyMap, KnowledgePlex, DataPlace; Many government and university sites;
- "**The truth is out there**": GeoCommons, 2.0 type sites, like LILA, My Green Map, others
- **"Songs in the Key of __":** Sites that organize data and functionality around a coherent focus
  - E.g., what is relation of health issues to environment, or what is range and distribution of resources intended to serve vulnerable people?
  - Huge value judgment here, obviously

Capabilities, Functionality

- Narrow or broad, deep or shallow
  - Google-based, Web 2.0 stuff can be broad (global) or narrow (focused on a specific locale), yet be shallow
    - Pushpins on maps, not a lot of information layers underneath
  - Sites with a broad scope and lots of data also can be shallow
- How dynamic?:
  - How much can user select variables and geographies, or is there a limited menu of options

Capabilities, Functionality cont'd

- What functions do sites offer to users?
  - Upload own data sets
  - Overlay data points on top of demographic and other data
  - Map and analyze data within a radius around an address, or within a ZIP code, city, legislative districts or other jurisdictions
  - View core demographic and other data for the selected geography in tables and charts
  - View assets
    - such as schools, parks, fire and police stations, on an interactive map, with types of service (identified by icons)
  - Roll over: Identify information about assets or service providers by scrolling over their icons
  - Cut and analyze data by over multiple demographic, health and other indicators
  - Save, share searches
  - Upload notes, comments, videos, photos
  - More . . . .

4) Lessons and Implications

- Questions include:
  - What are the types of purposes of Web-based GIS projects touching on health equity?
  - What kinds of strategies do they follow for driving people to their sites, and for encouraging people to use (and contribute to) the information provided?
  - How will Google influence, for good or ill, their development? (an issue both for those based on Google Maps and those that aren't)
  - What are, or should be, recommended practices regarding openness of programming, geo-coding, and data accessibility?
  - What are the ethics of mapping with goal of influencing policy("How to Lie with Maps")?

Role of sponsor – editing, framing

- Web GIS sites can have high value in translating data
  - Data and information overload
  - Sponsor can choose what is relevant, and what is reliable
- Credibility,Trust, Authority
  - But, “Lying with Maps”, distortions, omissions
  - 2.0 GeoCommons stuff aimed a bit at mitigating that, and also at opposing “official” data with what real people see and contend with

Thoughts on data and how to get it

- "Public" data usually not really public
- Data is held by people, more than organizations
  - Need to get to the person who has the data, or can authorize it to be shared
  - Often they need to see a benefit to their work life in order to part with it
    - People treat their data jealously, like their children
    - Also, people can be embarassed, reluctant to show all the warts, gaps, the things they don't know

Policy power of Web GIS

- Helps community advocates make sophisticated arguments, make powerful statements they may not have been able to make 10-15 years ago
  - Leveling, a bit, against power of well resourced government and other actors
- Can enable participation by citizens, residents – give them something external to look at, help all get beyond own mental maps, come to agreement

Policy issues ***about*** GIS

- Openness – Open GIS, open source
- Common data standards
- Interoperability
- Confidentiality, privacy, security

Tech Environment for Web GIS

- Whence Google?
- NSDI, federal, state and local government initiatives
- Global issues?
- Mobility: handhelds, cell phones,

Mapping (partly) the GIS World

- List, charts, graphs showing a number of recommended or example sites out there
- Just for a few examples:
  - GreenMap.org presents global information on environmental resources and challenges, by supporting creation of local green maps by users (check out their well-designed iconography).
  - HealthyCity.org offers interactive access to demographics and education, health, and human services resource data for Los Angeles County (version 3.0, launching June 18, will enable users to upload and map their own data against the site's huge database, create groups to collaborate and comment on maps, "draw" their own neighborhood boundaries, and more).
  - MapLight.org maps the geography of contributors to political campaigns.
  - MoveSmart.org, a tool for encouraging people in the Chicago region to find housing in diverse neighborhoods to promote fair housing and integration.
  - Rosetta Project maps the location of endangered languages and linguistic groups.
  - Ushahidi maps reports of post-election violence in Kenya (this won first prize).
  - YourMapper.org proposes adaptation of an interactive site offering information on attributes (such as crime) and resources in the Louisville, KY metropolitan region.
  - PolicyMap
  - KnoweldgePlex, Data Place
  - Metro Boston Data Commons