

Equitable Development Toolkit Community Mapping

Updated April 2002

What Is It?

Those working in community revitalization frequently wrestle with questions such as:

- What is the mix of renters and homeowners in my community? Should my organization focus on creating affordable rental or owner-occupied units?
- Where in the region is job growth occurring? Does my community have access to these jobs?
- Who owns the most slum housing, tax delinquent properties, or properties with code violations in my neighborhood?
- What are the land use implications of new transportation developments like rail lines and freeways on my community?

Community Mapping A Visual Narrative

Community mapping is a vibrant way of telling a neighborhood's story. It can highlight the rich array of neighborhood assets, analyze the relationship between income and the location of services, or document vacant lots and buildings.

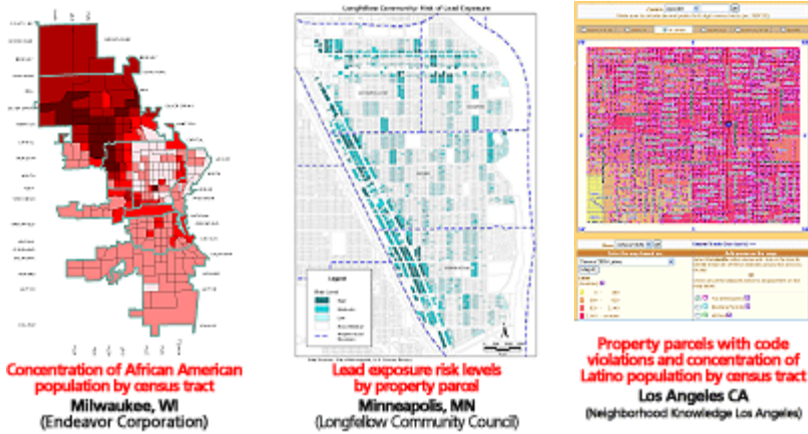
These questions-along with countless others about socio-economic conditions, development opportunities, and neighborhood change-can be answered through the use of community mapping. Mapping is the visual representation of data by geography or location, the linking of information to place. Community mapping does this in order to support social and economic change on a community level. Mapping is a powerful tool in two ways: (1) it makes patterns based on place much easier to identify and analyze and (2) it provides a visual way of communicating those patterns to a broad audience, quickly and dramatically. The central value of a map is that it tells a story about what is happening in our communities. This understanding supports decision-making and consensus-building and translates into improved program design, policy development, organizing, and advocacy.

The products of community mapping can take several forms: *Context maps* represent one or a few variables by a broad unit of geography (e.g., income level by census tract). *Display maps* are more complex, illustrating single or multiple variables by smaller units of geography (e.g., the condition of individual properties at the parcel level.) *Analytical maps* are the most complex, layering and analyzing multiple variables by various levels of geography. An analytical map might combine income at the census tract level and condition of individual properties at the parcel level and highlight how the two variables relate to each other.

Context

Display

Analytical



(Please see the [map gallery](#) for more examples of cutting-edge community mapping applications used to promote equitable development.)

Community maps can be hand drawn or computer generated. Some of the more complex, computer-generated maps are also interactive, allowing users to analyze data and create maps based on the locations and kinds of data that interest them.

Community Mapping and Geographic Information System (GIS)

The terms community mapping and GIS are often used interchangeably.

We define community mapping as the entire spectrum of maps created to support social and economic change at the community level, from low-tech, hand-drawn paper maps to high-tech, database driven, internet maps that are dynamic and interactive.

Geographic Information System (GIS), as defined by US Geological survey, are "computer systems capable of assembling, storing, manipulating, and displaying geographically referenced information data identified according to their locations." GIS not just about making maps or visually displaying data, it is tool for analyzing many layers of data. allowing users to see information in new ways. GIS projects map everything from demographics to natural resources, from transportation networks to community condition. They can illustrate data for a single point in time or show changes over time.

We use the term GIS to describe the type of software used, and "GIS application" to describe the way a particular organization sets up or programs that software in order to analyze and map its own data.

Again, data being displayed by geography is the basis of all GIS. The graphics bellow illustrates various data types and levels of geography that are relevant to community revitalization and can be entered into a GIS application. The resulting computerized map can show several layers of information simultaneously, illustrating the relationship between variable like vacancy rates and crime or hack cashing facilities and household income.

Data x	Geographic	Maps
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	Units =	
Property Ownerships Land Use Housing Characteristics Vacancy Indicator Tax Information Demographic/Census Data Environmental Conditions	Property Parcels Census Tracts Zip Codes Neighborhoods Council/School Districts Cities Countries States	Data/Information analyzed relative to geography and displayed visually.

Increasingly, community practitioners are using computer software such as Geographic Information Systems (GIS) (see sidebar) to carry out community mapping projects. Other technological advances, such as handheld computers and public access to the government's Global Positioning System (GPS), are also transforming the world of community mapping.

This tool is an overview of community mapping, with an emphasis on how mapping is used to support equitable development. It offers general guidelines for engaging in mapping and discusses the benefits, the possible types of analysis, how various approaches work, and the scale and cost of different efforts. It reviews a range of community mapping efforts, from low-tech to high-tech and from communities around the country, with an emphasis on projects using GIS.

WHY USE IT?

Community mapping provides equitable development practitioners with accurate and unique information, effective visual tools, and the ability to understand and share their own experience in the context of their changing environment. Community mapping is powerful because of its capacity to democratize information—both what is recorded and who has access to it. When presented well, maps have the power to convey complicated information and relationships in a straightforward, accessible manner, enabling non-experts to participate meaningfully in community planning and advocacy.

Seeing the Connections

By looking at the map we created, people got a sense why certain areas were targeted to build housing, playgrounds, community gardens. They could see both the big picture and after school programs for their kids

This section contains over 20 examples of successful mapping projects, most with sample maps, to illustrate how communities use mapping to support equitable development. The maps were developed over the past decade, from 1992-2002. These examples are organized into five categories:

[Documenting, Monitoring, and Analyzing Neighborhood Change](#)

[Identifying Development Opportunities](#)

[Expanding Community Support Systems](#)

[Organizing and Advocating for Policy Change](#)

[Tracking Program Success and Sharing Outcomes](#)

Quick Reference Guide: Community Mapping Examples

Purpose	Example
Documenting, Monitoring, and Analyzing Neighborhood Change	
Monitoring property parcel change: early warning systems	Neighborhood Knowledge Los Angeles Chicago NEWS MAP Milwaukee Philadelphia Neighborhood Information System
Targeting resources for maximum impact	Minneapolis Neighborhood Information System
Building a shared understanding of current conditions	Westside Community Collaborative (Buffalo, NY)

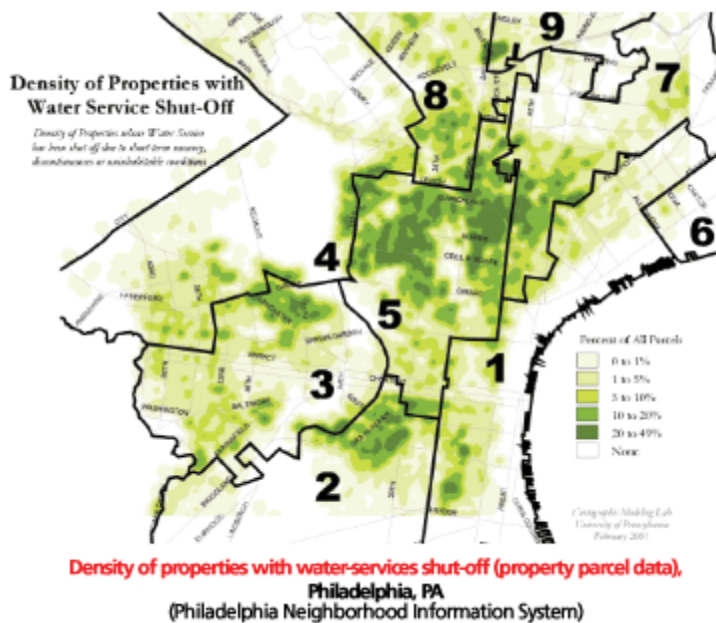
Identifying Development Opportunities	
Identifying and reusing vacant land	New Kensington (Philadelphia, PA) CDC
Preserving existing and creating new affordable housing opportunities	Atlanta Neighborhood Development Partnership
Determining markets for commercial real estate ventures: attracting new development	Endeavor Corporation, Milwaukee, WI
Linking development opportunities to transportation systems	Metropolitan Waterfront Alliance (New York City)
Expanding Community Support Systems	
Catalyzing new community partnerships	Urban Strategies Council (Oakland, CA)
Displaying neighborhood boundaries	Richmond Neighborhood Indicator Project (Richmond, VA)
Obtaining previously unavailable data	St Paul Community GIS Consortium
Organizing and Advocating for Policy Change	
Linking community benefits to development subsidies	Figueroa Corridor Coalition for Economic Justice
Reforming policy around neighborhood instability	The Providence Plan and The Rhode Island Organizing Project
Connecting community organizations and residents to elected officials	NYPIRG Community Mapping Assistance Project
Tracking Program Success and Sharing Outcomes	
Expanding the awareness and reach of equitable development	Kansas City LISC
Displaying project outcomes in a meaningful way	Richmond Neighborhood Indicator Project (Richmond, VA)

Documenting, Monitoring, and Analyzing Neighborhood Change. [back to top](#)

A primary use of community mapping is understanding and communicating detailed information about neighborhood conditions. Several projects monitor property data as indicators of a community's health, watching for high concentrations of tax delinquencies, code violations, and utility shutoffs, which can indicate areas that are in distress. With this knowledge, practitioners can either provide assistance to current owners or acquire troubled properties.

- **Monitoring property parcel change: early warning systems.** *Some of the most advanced analytical community mapping projects use Geographic Information Systems (GIS) to track and display detailed property information at the parcel level.*

Neighborhood Knowledge Los Angeles, Chicago NEWS, MAP Milwaukee, and the Philadelphia Neighborhood Information System are some leading examples of early warning systems that are accessible to the public through the Internet. Built upon massive databases, they allow users to identify properties that are vacant, not code compliant, and/or in danger of foreclosure. This data can provide early warnings about neighborhood decline. These systems compile their databases from city tax records, building departments, the Census, public utilities, and other municipal data sources.



- **Targeting resources for maximum impact.** *Displaying housing and real estate data by geography is a powerful tool for assessing how to target resources to maximize community revitalization.*

In St. Paul, Minnesota, a community mapping application revealed that at-risk properties were not concentrated in a few neighborhoods, but actually dispersed throughout the entire city. Using this information, the local community development corporation chose to focus its housing assistance program on

housing needs throughout the entire city, instead of only on properties in the most impoverished neighborhoods.



- **Building a shared understanding of current conditions.** *Community mapping plays a key role in establishing the baseline understanding of neighborhood conditions that is critical for effective community planning.*

In Buffalo's West Side neighborhood, a resident planning process to build consensus around revitalization priorities used community mapping to provide residents with information on demographics, land-use, and housing conditions. Based on a shared understanding of this information, participants were able to agree about where to focus revitalization efforts and create a comprehensive neighborhood plan.



Identifying Development Opportunities. [back to top](#)

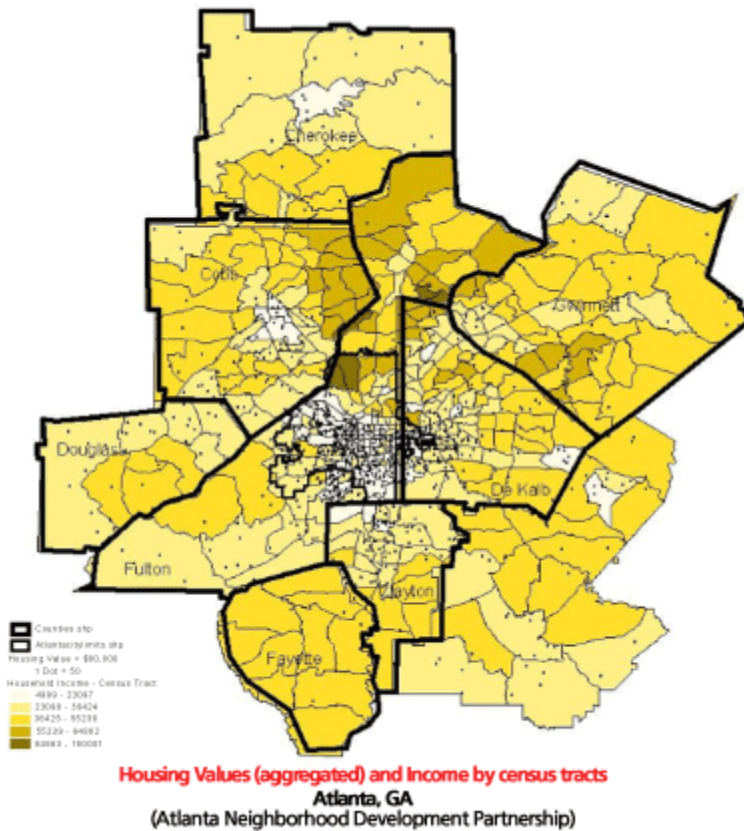
Community mapping is often used to identify development opportunities for affordable housing and commercial real estate. Community mapping can be used to strategically target new development and redevelopment in low-income communities.

- **Identifying and reusing vacant land.** *As infill development and brownfield reuse rise to the top of many equitable development agendas, community mapping will play a key role by identifying vacant properties.*

In Philadelphia, the New Kensington CDC worked in a community with over 1,000 vacant and blighted lots. Using an in-house GIS application (supported by the Philadelphia Association of Community Development Corporations), in addition to a comprehensive citywide system offered by the University of Pennsylvania, the CDC identified and reclaimed 60 percent of those vacant parcels over a five-year period.

- **Preserving existing, and creating new, affordable housing.** *Using community mapping to highlight the jobs/housing imbalance within a city or region is a powerful step toward being able to locate new housing near employment opportunities.*

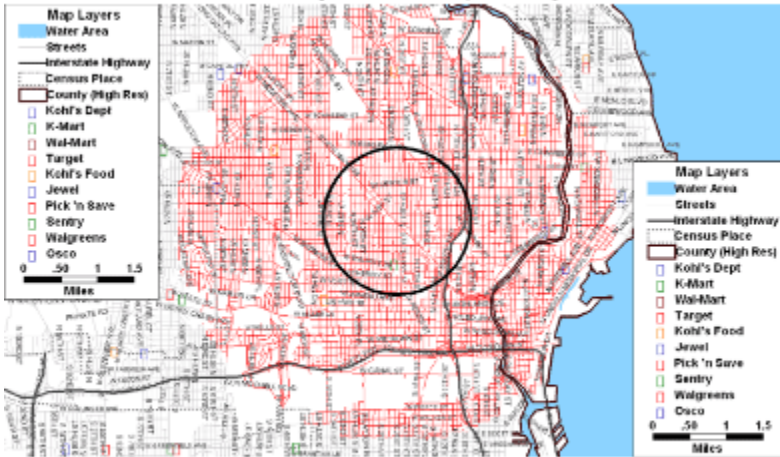
In Atlanta, the Atlanta Neighborhood Development Partnership (ANDP) used GIS to map income and salary data relative to the cost and affordability of housing. The group used the results to advocate with city and county officials for more affordable housing. ANDP's Mixed Income Communities Initiative (MICI) uses community mapping to identify development opportunities for housing, businesses, and social services that will promote a mixed-income neighborhood.



- **Determining markets for commercial real estate ventures: attracting new development**
. Community mapping assists community practitioners in understanding market share and aggregate income by geography.

In Milwaukee, Wisconsin, community groups used community mapping to demonstrate to potential real estate developers the aggregate income within a three-mile radius of a new K-mart the groups were proposing. By displaying aggregate income rather than median family income, they were able to demonstrate the strong buying power of central city neighborhoods. Other groups from Milwaukee used mapping to demonstrate the discrepancies between population density and grocery stores and pharmacies, in an effort to attract more commercial development into previously underserved neighborhoods.

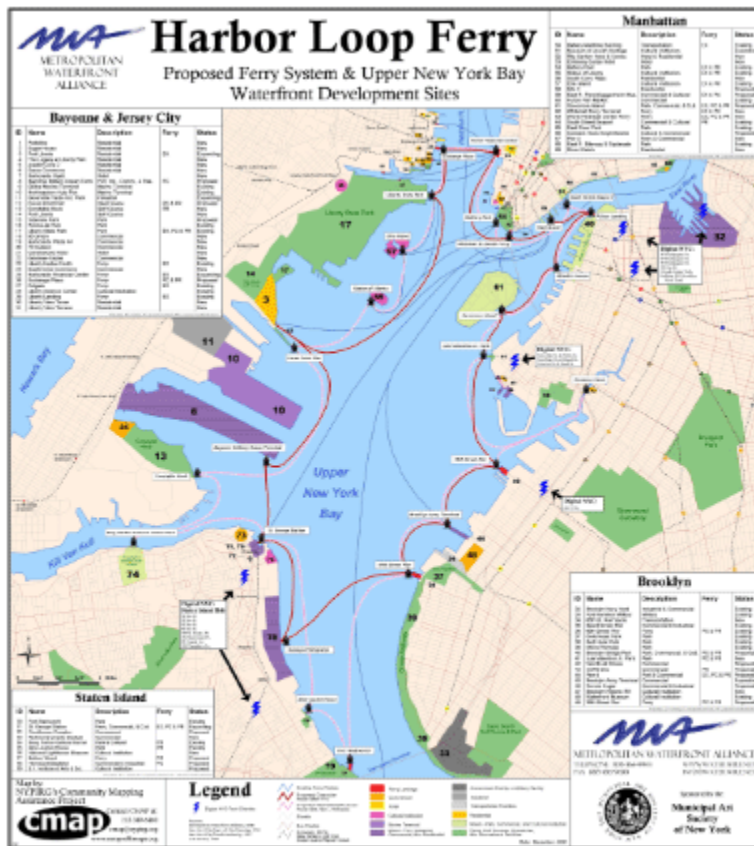
**Retail Market Survey for Fond du Lac Ave. Area
for Discount Department, Grocery and Drug Stores**



**Location of retail amenities by market area
Milwaukee, WI
(Endeavor Corporation)**

- Linking development opportunities to transportation systems. *Community mapping is often used to better integrate community revitalization efforts with transportation planning and development.*

In New York City, the Metropolitan Waterfront Alliance used the Community Mapping Assistance Project (CMAP)-a service of New York Public Interest Research Group (NYPIRG)-to demonstrate the importance of New York City's waterfront for environmental, economic, and political purposes. A series of maps was prepared to illustrate how ferry service routes are connected to economic development and social services.

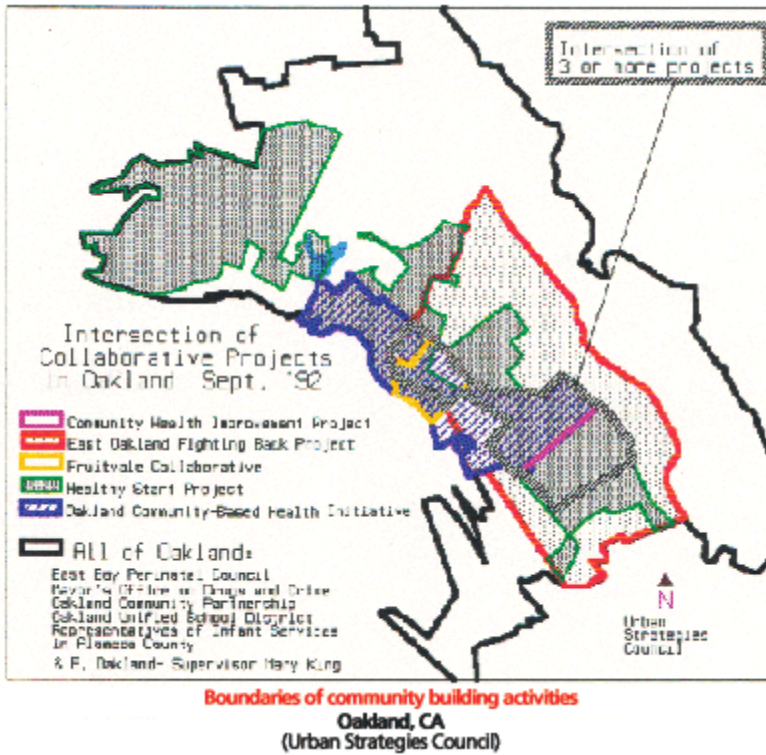


Expanding Community Support Systems. [back to top](#)

In addition to directly supporting equitable development initiatives, community mapping projects have strengthened community support systems by fostering new partnerships, creating new opportunities to acquire data, and clarifying the boundaries of target neighborhoods.

- **Catalyzing new community partnerships .** *Due to the technology and data expertise needed to develop complex community mapping projects, new partnerships have been formed to use and collect data for community development purposes.*

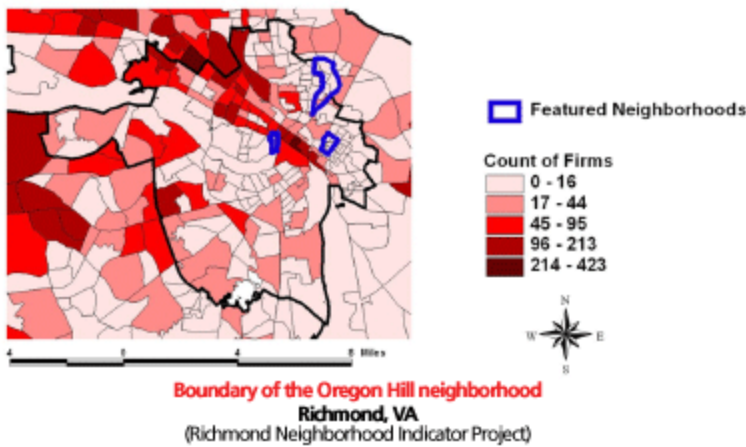
In many cities, including Milwaukee, Oakland, Richmond, and Minneapolis, GIS has influenced the way community organizations track and share data. In Oakland, the GIS application developed by the Urban Strategies Council brought together 19 agencies and set the foundation for integrated approaches around education and health service delivery. This network of organizations with shared values and a vision for change was able to use the data and maps to advocate for children, youth and families.



- **Displaying neighborhood boundaries.** *Many cities loosely define neighborhood boundaries, sometimes making it difficult to strategically target resources and programs for revitalization.*

The Oregon Hill neighborhood in Richmond, Virginia, is six blocks by three blocks. Before the Richmond Neighborhood Indicator Project, it was very difficult to access data about this distinct area, as opposed to by census tracts or legislative areas. Community mapping allows organizations to select specific and relevant boundaries to their neighborhoods, at the parcel or block level, and compile data for those areas. This makes it easier to target resources and evaluate the impacts of revitalization efforts.

Richmond Area Employers



- **Obtaining previously unavailable data .** *Community mapping often helps groups get access to data that were previously unavailable by creating a larger market for this data and encouraging collaboration among users.*

In St. Paul, Minnesota, several community based organizations were independently requesting the same data from the county assessors office for their GIS projects. The county was unable to service all of the data requests, and local groups were wasting resources on duplicate efforts. By forming a data-sharing collaborative, the community groups were able to acquire timely, relevant, and affordable data.

Organizing and Advocating for Policy Change. [back to top](#)

Community maps are effective organizing tools because they engage residents in the process of gathering, analyzing, and presenting information about their neighborhoods. Community maps provide a way for stakeholders to get specific about what exists in a community and what they would like to see, and can provide a vehicle for discussions with broader groups. Several groups recalled that after creating and sharing maps, they were taken more seriously and included in processes that were not open to them before. Using maps to communicate with decision makers poses two key advantages: (1) It communicates a large amount of information in a relatively simple and compelling format, and (2) it conveys that the users are savvy about data and technology and have important information about their neighborhood.

- **Linking community benefits to development subsidies.** *By conveying land use and economic information in a simple-to-read map, advocacy coalitions have secured community benefits from large developments.*

The Figueroa Corridor Coalition for Economic Justice needed an effective education and organizing tool to respond to the proposed development of an entertainment, hotel, and retail complex adjacent to the Staples Center in downtown Los Angeles. Organizers created a poster-sized map of the neighborhood surrounding the proposed new project, illustrating ownership patterns and development "hot spots." Using the map, community groups successfully negotiated a landmark community benefits package from the developer which included investments in affordable housing and parks, a local hiring requirement, and even parking provisions for residents, a first for a low-income neighborhood.



Land Ownership and at-risk property
Los Angeles CA
 (Figueroa Corridor Coalition for Economic Justice)

Organizing Residents and Other Stakeholders

We use our map every day. We use it when we talk to residents, community organizations, the Redevelopment Agency, and private developers. We can tell history of our organization, talk about the different neighborhoods that we are organizing in, discuss who owns what, and what's at stake.

Gilda Haas

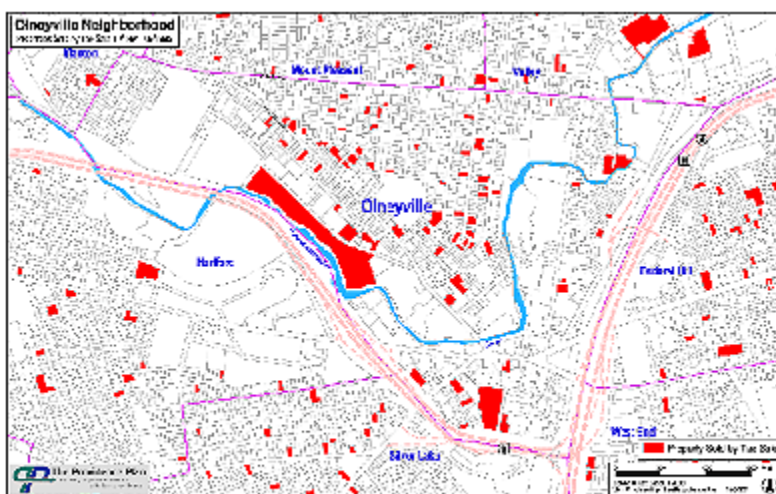
Figuroa Corridor Coalition for Economic Justice

Los Angeles, CA

- **Reforming policies that cause neighborhood instability .** *Maps have helped low-income communities win policy reform around absentee landlords and land banking by speculators.*

In Providence, Rhode Island, The Providence Plan (a planning and community development intermediary with an advanced GIS application) teamed up with Rhode Island Organizing Project (a statewide organizing effort comprised of congregations, labor unions, and community groups) to win legislative changes that promote neighborhood stability. The project team used GIS to map properties-on a parcel level-that were sold through tax sales and to identify properties that had had multiple owners and frequent turnovers. The maps helped community members identify one root cause of instability: speculators were buying tax delinquent properties through auctions and allowing them to remain vacant. By quantifying the problem through maps and data, community groups were able to convince legislators to pass new state legislation that includes the following:

- Municipalities may turn titles over to local CDCs for \$1.
- Individuals owing taxes cannot purchase titles.
- The tax title purchaser is responsible for the condition of property.



Location of tax-sale property by parcel
Providence, RI
(Providence Plan)

- **Connecting community organizations and residents to elected officials.** *Legislative decisions at the local, state, and federal levels affect community building activities. One valuable component of community mapping is the ability to display information and data relative to legislative or administrative districts.*

In 2000, the Community Mapping Assistance Project launched the *Who Represents Me* Webapplication that enables anyone with a New York City address to easily find and contact the public officials who represent them at all levels of government, from city council to state legislature to Congress (as well as borough president, mayor, governor, and president). This site enables community groups, activists, the media, and any concerned citizen to easily find and contact their representatives on issues from transit to good government.

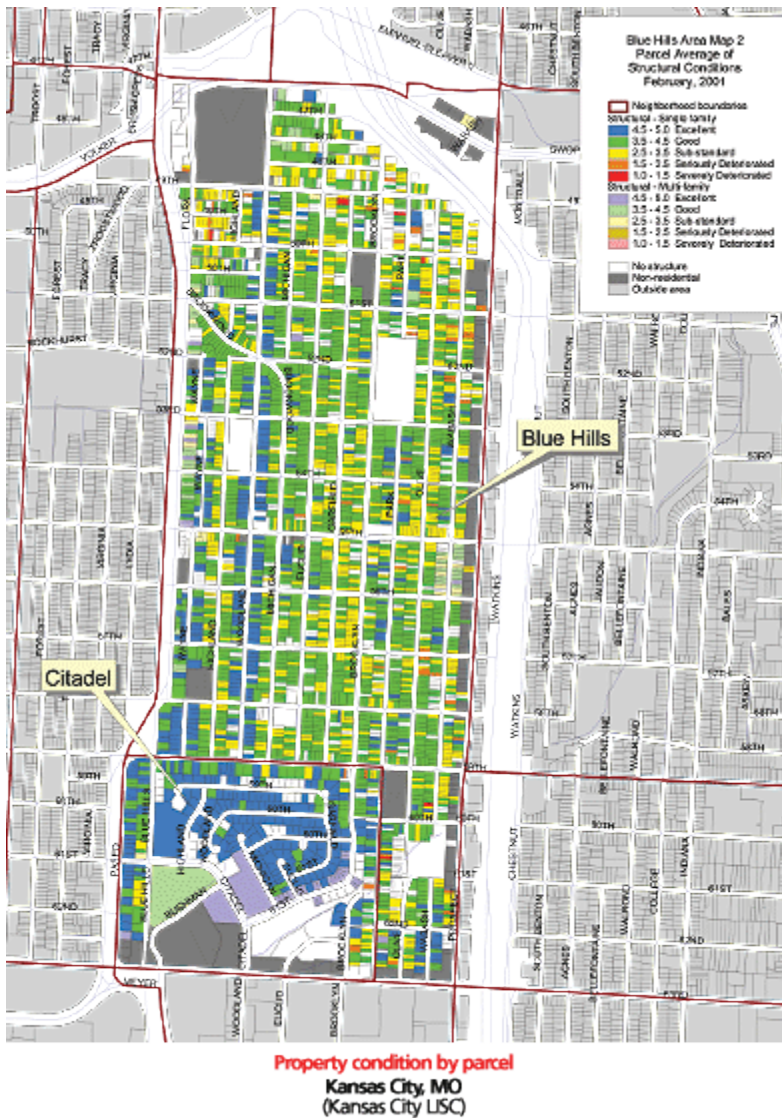
**Location and contact information for all elected officials for a single address
New York, NY
(Community Mapping Assistance Project)**

Tracking Program Success and Sharing Outcomes. [back to top](#)

Mapping can help communities hold themselves and others accountable by comparing predicted outcomes with actual ones and providing mechanisms to monitor development.

- **Expanding the awareness and reach of equitable development .** *Maps have proven useful in helping multiple audiences better understand equitable development.*

In Kansas City, the local LISC affiliate, a community development network of 17 CDCs, and the University of Missouri, Kansas City have partnered through a GIS initiative to build widespread awareness of equitable development issues. As part of this initiative, the partners are conducting an original house-by-house inventory of housing conditions in the core of Kansas City. The primary goal of the initiative is to use maps based on the inventory to strengthen and preserve affordable housing in the low-income communities in Kansas City by building new coalitions, attracting resources, and evaluating current community development programs.



- **Displaying project outcomes in a meaningful way** . *Community maps and accompanying data are useful for monitoring outcomes, improving the perception of the neighborhood, and reporting to funders.*

The Oregon Hill neighborhood in Richmond, Virginia, was facing rapid gentrification, and the local community development organization required an additional \$20,000-\$30,000 subsidy per housing unit to complete a rehabilitation project. Oregon Hill used maps of changing demographics (increasing numbers of residents with college degrees, increase in household income), home prices, and rates of sale to convey to local funders the level of displacement and the need to increase the subsidies.

- **Raising and maintaining funding and resources** . *The ability to display neighborhood data by geography helps to maintain project accountability and track foundation investments.*

In Philadelphia, local funders were evaluating the outcomes and successes of community development activities as part of a strategic planning process to determine future funding. The Philadelphia Association of Community Development Corporations relied on community mapping to display the location of development projects and their impacts. These maps helped secure funding for future community development projects.

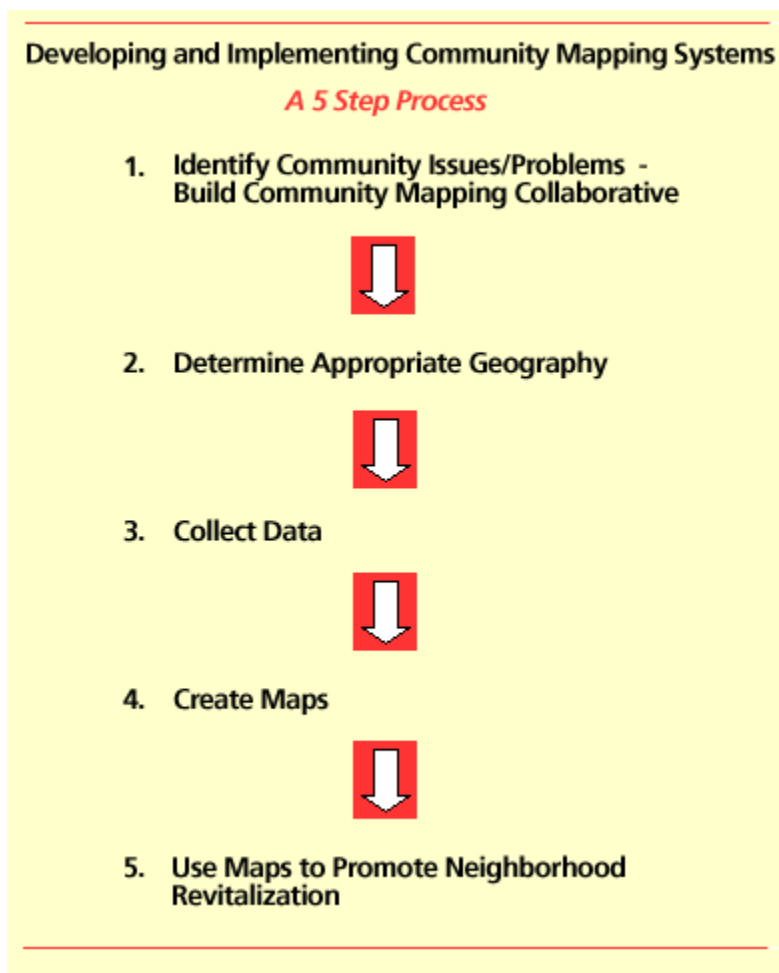


Location of vacant property parcels
Philadelphia, PA
 (Philadelphia Association of Community Development Corporations)

How To Use It

Community mapping involves five broad steps. As illustrated in the graphic below, the process begins and ends with local communities, and each step builds upon the information obtained in a previous step. Although we have defined this approach in a linear fashion, some of the steps can be implemented simultaneously.

The process begins with community groups and residents identifying an issue or problem that can be resolved with the assistance of maps and data. The community must take leadership in framing the mapping effort. This initial step also involves forming a community mapping team. The second step is determining the most appropriate levels of geography (or simply, geographies) for the mapping project. The third step is collecting data. The fourth step is producing maps using the data collected in step three. Finally, the maps are used by community groups and residents to resolve issues and problems identified in step one.



Each of the five steps is described in greater detail below.

Step 1: Identify Community Issues/Problems & Build Community Mapping Collaborative. [back to top](#)
All community mapping efforts start with community based organizations and residents and their in-depth

understanding of community conditions, assets, and problems. Community knowledge is used to identify issues and problems, set benchmarks, goals and outcomes, locate opportunities for revitalization, frame data-gathering efforts, determine the appropriate types of geography and maps, and use maps for community building purposes. By designing and leading the mapping process, community residents and organizations are better positioned to insure that the maps provide community benefit and accurately reflect community needs. Community leadership also promotes community values in the mapping process and better equips community groups to use the resulting maps for advocacy and organizing purposes.

For example, in Providence, Rhode Island, community groups suspected that the sale of tax titles was a major contributor to instability in Olneyville-one of the city's most distressed neighborhoods. The project team used Geographic Information Systems (GIS) to map properties-on a parcel level-that were sold through tax sales and to identify properties that had had multiple owners and frequent turnovers. The maps helped community members identify a specific root cause of instability: speculators were buying tax delinquent properties through auctions and allowing them to remain vacant. The maps turned the problem of instability into an issue that could be acted on-land speculation. New legislation was passed to combat that speculation.

In addition to leading the design process, community groups should establish a community mapping collaborative with three types of expertise: 1) community knowledge, 2) data collection capacity, and 3) mapping capacity. Community knowledge shapes the mapping process from the outset, and community groups are the primary end users of the maps. Working with data from multiple sources requires the ability to make sure those data are accurate and in compatible formats. Finally, organizations with the technological capacity to map data are required to display and analyze the information gathered. Without the participation of each of these key stakeholders, developing community mapping applications is challenging, if not impossible. Should an organization want to develop GIS capacity in-house, all three of these areas of expertise are still vital.

Characterizing Geographic Features

All geographic features on the earth's surface can be characterized and defined as one of three basic types: points, lines or areas

Points data exists when a feature is associated with a single location in space. Examples include a church, library or fire station.

Linear data exists when a feature's location is described by a string of spatial coordinates. Examples include river and roads.

Area data exists when a feature is described by a closed string of spatial coordinates. An area feature is also known as **polygon**. Examples include parcels, census tracts, and zip codes.

Step 2: Determine Appropriate Geography. [back to top](#)

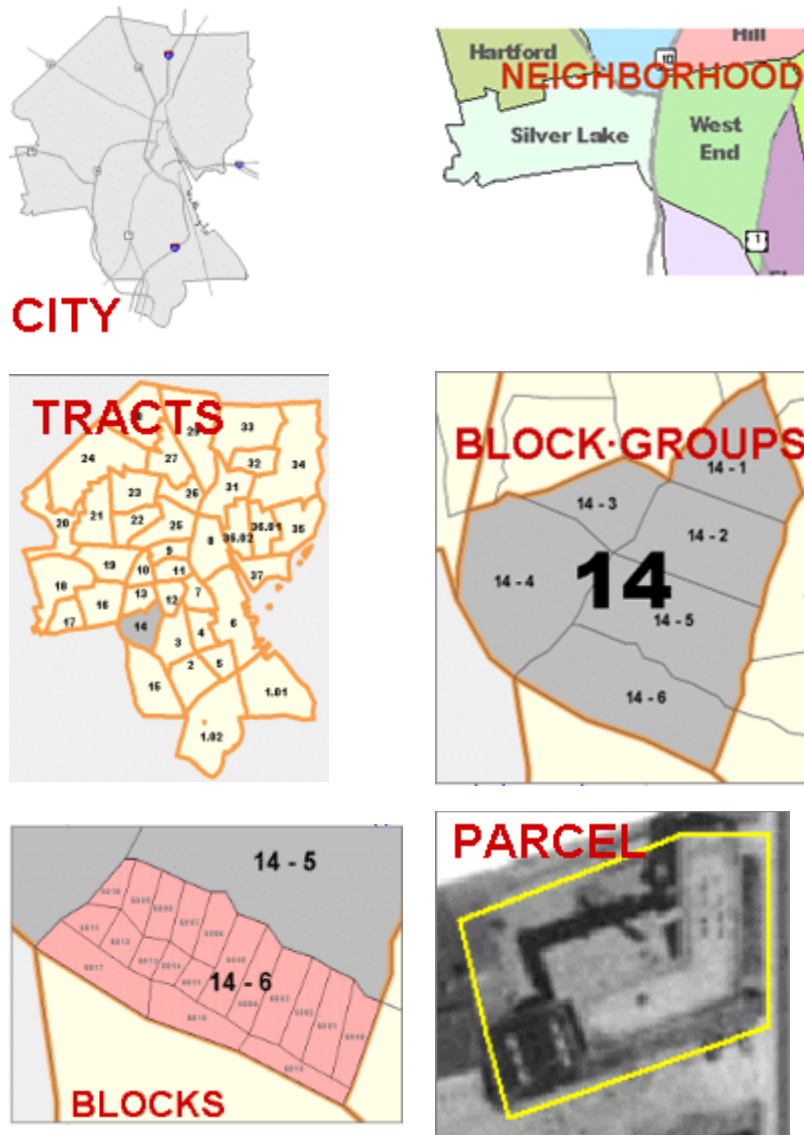
Selecting the appropriate geographies is one of the first decisions to be made in the mapping process. As shown below in the graphic from Providence, Rhode Island, community mapping projects can use a range of geographic units for mapping, ranging from individual parcels to census tracts to entire neighborhoods. Most initiatives will include several different geographies, from parcel to census tract.

The smaller the geography, the more detailed the data, but the more difficult it will be to acquire. Most equitable development mapping initiatives make use of parcel-level maps in addition to other

geographies. Parcel-based maps allow community practitioners to identify and track properties that are available for local development. These maps are unique for all municipalities, and base maps must be acquired from local sources.

For example, in Los Angeles , the Neighborhood Knowledge Los Angeles (NKLA) project uses parcel and census maps to illustrate the distribution of vacant properties compared to the race and ethnicity of the surrounding residents. NKLA obtained vacancy information for individual parcels and race/ethnicity data for census tracts.

Examples of Geographic Units for Community Mapping Providence , Rhode Island



Step 3: Collect Data. [back to top](#)

Community mapping initiatives are only as strong as the data upon which the maps are built. Maps that are most useful in a community context will likely consist of information from many sources. There are four

major data types used in community mapping projects: public statistics, administrative data, survey data, and private data.

- **Public Statistics.** There are many public data sources important for community revitalization, including federal and state information like Census data, data from the Home Mortgage Disclosure Act (HMDA), and statistics from federal agencies such as the Department of Labor and the Department of Commerce. This information is usually available to the public at no cost. Census data is the primary source of public data for neighborhood revitalization efforts and almost every community mapping effort highlighted in this tool uses Census data. It can be categorized in five major groups: demographics, socio-economic characteristics, housing, business/economy, and transportation.

2000 Census

The 2000 Census provides current information about race, ethnicity, income, and education, and an opportunity to track changes in them over time (when compared to previous censuses). Data is being released throughout 2001 and 2002. Using American Factfinder (which is a link from the Census Web site) one can access census data at various levels of geography (state, country, census tract, county group, block).

American Factfinder can also be used to create thematic maps, setting the geographic area and the specific census characteristics to be mapped. Thanks to the internet, Census data is more accessible than ever before, providing an unprecedented opportunity to analyze and share neighborhood information.

United State Census

- **Administrative data.** Administrative data collected by state and local government agencies (e.g., tax assessors, police departments, city agencies, zoning offices, and school districts) are key inputs for community mapping projects. These data are usually available for small levels of geography (smaller than census tracts) and are often available for parcel-level mapping.

Categories of Administrative Data

The Urban Institute has identified seven categories of administrative data for community mapping and GIS applications. These include the following (with selected examples):

- Economy: ES202 (employer reports), Unemployment Insurance, Tax Records
- Education: Public School Records, Head Start Records
- Health: Vital Records, Medical Claims, Hospital Discharge Files
- Social Services: Public Assistance Records, Day Care Licensees, Child Welfare Records
- Safety and Security: Police/Crime Records, 911 Calls, Liquor Licenses
- Community Resources: Voter Records, Community Development Block Grants, Building Permits, Code Enforcement
- Environment: Hazardous Waste, Air Quality, Toxic Sites

- **Original data: Surveys.** Many GIS projects augment public and administrative data with information collected first-hand by community organizations. This type of original data collection is the basis of many asset mapping programs, where community groups and residents map local assets and resources. Data may be collected about assets including social networks, recreation facilities, volunteer opportunities, trees and green space, murals, and community gathering sites. Data can be gathered by volunteers, including youth, students, and residents. For original data collection to be most useful, it is important that the data collectors know why they are collecting this information and how it will be used.

Considerations for Conducting Surveys

- **Well-developed survey instrument.** Careful development of the tool that will be used to gather and record information will help ensure that the information collected is usable and in an appropriate format. This is a step where calling on someone with data expertise is important.
- **Management and leadership development.** This is an opportunity for residents and youth to get involved with community planning. Building in time for training and discussion with data collectors will help them feel connected and provide insight into the findings.
- **Training.** Provide data collectors context for why they are collecting information and how it will be used, and show them how to gather and record information. Use role plays and other interactive tools to train collectors in talking to community members to ensure that the data gathering process engages residents and builds community.
- **Compensation.** It is helpful to provide stipends, an hourly wage, or school credit for data collectors.
- **Supplies.** Data collectors look and feel professional if they have T-shirts, clipboards, and flyers about the project. A new innovation is having data collection take place directly into PDAs (handheld computers) that can be synchronized with GIS programs.
- **Commercial data.** Data is available for sale from companies like DataQuick and Dun and Bradstreet, which is often used by real estate brokers and others seeking current data on available properties. This information is expensive, and only a few community mapping efforts make use of this resource.

Step 4: Create Maps. [back to top](#)

Most mapping projects require a significant technology investment. All but one of the community mapping projects reviewed in the [Why Use It](#) section were GIS-generated projects and many were Internet based, such

as Neighborhood Knowledge Los Angeles and Philadelphia's Neighborhood Information System. Here are five components necessary to use GIS:

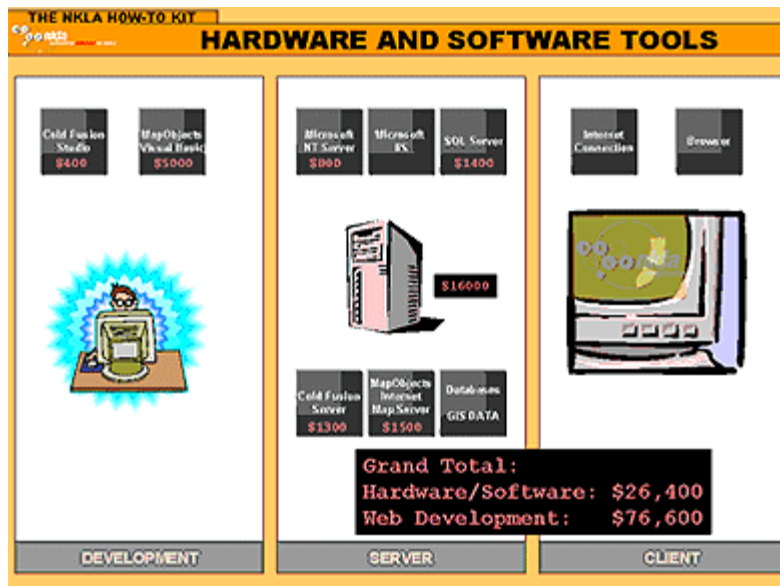
- **Hardware.** Hardware is the physical computer on which GIS operates. GIS software runs on a wide range of hardware types, from centralized computer servers to desktop computers. You do not have to buy a special kind of computer to run GIS. However, because GIS requires a very large amount of memory, it is often a good idea to dedicate a computer to the project.
- **Software.** GIS software provides the functions and tools needed to store, analyze, and display geographic information. Most mapping projects reviewed in this tool used ArcGIS (www.esri.com) or MapInfo (www.mapinfo.com) software packages. See www.geoplan.ufl.edu/software.html for a comprehensive review of GIS software packages.
- **Data.** Data is the most important ingredient of GIS projects. GIS transforms tabular databases into layered geographic information or maps. (See the above review of various data types.)
- **People.** GIS technology is of limited value without people who have the capacity to manage it and develop plans for applying it to real world problems.
- **Methods.** A successful GIS project operates according to a well-designed working collaborative and implementation plan.

As noted above, mapping community data requires not only investments in hardware and software, but also staff support. For most community groups, developing the technological capacity in-house is too expensive. Parcel-based mapping systems, powered by massive databases, require significant investments and on-going maintenance. Therefore, many community organizations partner with technology or mapping intermediaries, such as universities, to maintain the GIS technology.

Tools and Costs for Developing a Web-Based GIS Application: Neighborhood Knowledge Los Angeles

The following example from the NKLA Web site highlights the cost of developing and maintaining a parcel-based GIS application. See NKLA's Web site for more documentation of the NKLA mapping application.

The figure below provides a general overview of the tools used to develop NKLA, as well as their associated costs. Overall, the estimated cost for hardware and software needed to develop and maintain the site is \$26,400. The estimated cost for Web development (i.e. staff time in building the database and developing the Web site) is \$76,600, based on three persons working full-time on the project for four months. It should be kept in mind that the budget for similar projects will vary greatly according to existing infrastructure, geographical scope, and quality of existing data.



Hardware and software tools

As community mapping projects increasingly make use of computers and the Internet, we are also seeing a need to strengthen technology infrastructure in low-income/low-wealth communities. Even though community groups are not expected to build and maintain GIS applications, they must have the technological capacity to be informed partners and users of these systems. Building organizational and community capacity to use technology is a challenging endeavor. In the **Resources** section there is information with links to help organizations navigate hardware and software purchases and training.

Step 5: Use Maps to Promote Neighborhood Revitalization. [back to top](#)

The ultimate purpose of community mapping is to improve programs, policy, advocacy, and research. Effective community groups will use GIS outputs and maps as a foundation for campaigns to promote equitable development. In this step of the mapping process community organizations transform data and spatial analysis into action. In the Resources section are links to the organizations and campaigns profiled in the [Why Use It](#) section. These projects illustrate the powerful connection between data and information and community change.

Key Players

Residents. Some of the most successful community mapping projects engage residents in the process of gathering, analyzing, and presenting information. Residents have an intimate knowledge of their community that cannot be found in public and administrative data sets. Engaging residents is also an effective community building tool that can support local leadership development.

A Collaborative Process

We learned that when you are setting up a GIS project, a participatory process is extremely important. When you are trying to trust, having partners at the table is critical. The whole process takes time.

Greta Harris
LISC
Richmond, VA

Community Based Organizations. Community organizations comprise the core of mapping collaborations. It may be helpful to engage a range of community partners in a mapping project. Some may have access to data sets, others strong relationships with residents, and still others may have internal GIS capacity. Community partnerships across program or subject area build local ownership of data and capacity to manage information within the community, including staff, residents, and youth. However, unless a community organization already has GIS up and running, there will be significant start-up and training time.

Colleges and Universities can be strong partners for community organizations interested in mapping with GIS. Faculty and students in urban planning, geography, and related disciplines are often eager to use their technology skills to support community revitalization initiatives. Institutions of higher education often have centers that focus on social issues, neighborhood issues, and/or community-university partnerships that serve as links to faculty and students who are interested in doing GIS mapping. Universities are strong players in Neighborhood Knowledge Los Angeles and Philadelphia Neighborhood Information Systems.

Advantages of a university partnership include:

- access to professors and graduate students who are highly skilled at data analysis and have a GIS infrastructure in place; and
- access to funding sources that support community-university partnerships (e.g., HUD's Community Outreach Partnership Center Program).

Limitations include:

- possibility of being directed by the university's vision (or the vision of a specific professor, research center, or student) rather than the community's;
- not necessarily increasing community capacity to manage data and maps, especially if doing so is not an explicitly stated goal; and
- project may ebb and flow based on student and faculty interests, schedules, and other commitments.

Local Intermediaries. Some nonprofit and for-profit organizations serve as data and mapping intermediaries that specialize in GIS mapping, data analysis, and technology capacity building. They can also be helpful

partners. Some intermediaries build long-term partnerships with community organizations, while others play a consultant role and create specific maps.

Advantages to working with data and mapping intermediaries include:

- capacity to produce high-quality maps quickly;
- experience in data collection and analysis; and
- needs fewer initial resources than building complete internal capacity.

Limitations include:

- community capacity to manage data and use GIS is not developed; and
- community groups will need to rely on the data or mapping intermediary to update maps.

Building Community Information Systems:

The National Neighborhood Indicators Partnership

The National Neighborhood Indicators Partnership (NNIP) is a collaborative effort of the Urban Institute and local partners to further the development and use of neighborhood-level information system in local policymaking and community building. All local partners have built locally self-sustaining information system with integrated and regularly updated information on neighborhood conditions in their cities. Local government and community leaders use information from these systems to improve distressed neighborhoods.

Original NNIP Sites and Lead Partners

- Atlanta, GA: The Atlanta Project (TAP)
- Boston, MA: Boston Community Building Network
- Cleveland, OH: Case Western Reserve University
- Denver, CO: The Piton Foundation
- Oakland, CA: The Urban Strategies Council
- Providence, RI : The Providence Plan

New NNIP Sites and Lead Partners

- Baltimore, MD : Baltimore Neighborhood Indicators Alliance
- Miami, FL : Florida Department of Children and Families
- Milwaukee, WI : Nonprofit Center of Milwaukee Neighbourhood data Center
- Philadelphia, PA : The Reinvestmant Fund
- Indianapolis, IN : United Way Community Service Council

National Neighborhood Indicators Partnership

[The Urban Institute](#)

Government Agencies. Good working relationships with public agencies are helpful. Housing authorities, and departments of economic development, housing, community development, redevelopment, public safety, etc. at the city, county, and state level can be useful sources of data. In fact, a few local public agencies (e.g., planning departments) partner with community organizations that manage and map data for them.

Challenges

Keeping Technology in Its Place. The most common pitfall of using Geographic Information Systems (GIS) for mapping is that technology may overwhelm the effort and consume more time, money, and energy than planned. The principal key to success is to ensure that GIS technology is used as a tool for neighborhood revitalization, rather than letting it drive the effort.

Balancing Costs and Benefits. Since GIS is expensive and time consuming, community practitioners must be prepared to conduct up-front cost-benefit analyses of using it. When, as is often the case, the costs for nonprofit community groups to develop and maintain their own GIS applications outweigh the benefits, partnering with a technology intermediary might be a better fit.

Getting Access to Data. While public data such as census and employment statistics are easy to acquire, detailed property information at the parcel level is more difficult to obtain. Since parcel-level data is a key ingredient for equitable development, building relationships with city agencies and departments, which have this information, is necessary. In most cases, multiple relationships have to be established to get access to a variety of data sources for a given project. "Cleaning" multiple data sets so that they are compatible can also be challenging. Coalitions and alliances may be helpful in this process.

Building and Maintaining Technical Capacity. Given the few resources available, acquiring even basic technology skills can be a challenge for many community based organizations. Establishing the capacity to manage data and use mapping software requires an even greater sophistication, which can be time and resource intensive to acquire. Maintaining in-house capacity and/or partnering may make sense for long-term mapping projects, while outsourcing to a data or mapping intermediary may be advisable for shorter-term projects.

Maintaining Privacy. As data becomes more widely available and accessible (via the Internet and other electronic formats), privacy issues are emerging. Mapmakers should use discretion around which data to display at the parcel, block, block group, census tract or neighborhood level. The smaller the level of geography, the greater the privacy concerns will be. Mapping efforts have resolved these issues in different ways, including requiring a password for parcel-level data on the Internet, making some data available only via CDs or at a centralized location, and only sharing summary data. Although privacy is an issue, it is also important to remember that most community mapping projects use data that is already publicly available.

Securing Ample Funding. Community mapping-particularly when using GIS-can require a substantial investment at the front end to purchase equipment and train staff. If the effort includes collecting data from city agencies or through neighborhood surveys, and/or includes building a collaborative to collect or use the findings, the time required before maps are produced may be significant (six or more months). Funders may need to be educated about the level of resources and the time that may be required.

Success Factors

Ingredients for Success

Determine the Type of Maps Best Suited for Project. There are basically three types of community maps: context, display, and analytical. Analytical maps that layer and analyze multiple variables by small and broad geographies are the most advanced form of community mapping and will require Geographic Information Systems (GIS). This analytical capacity can be a powerful tool in supporting equitable development work. However, such capacity may not be necessary in all situations. More simple context or display maps may better fit the needs of a project. Use only the types of maps that fit a project's needs without going overboard.

Invest in High Quality Data Up-Front. Successful community mapping efforts typically use several types of data from different sources, including administrative data collected by city agencies and other public departments. It is important to allow ample time for building alliances with government agencies, gaining access to and cleaning data, and thinking strategically about how the data will be maintained. Investing time and resources in high-quality data up-front will make a huge difference down the line.

Invest in Human Infrastructure and Training. Regardless of the complexity of a community mapping project, some technology training for staff is usually necessary. More intensive mapping projects using GIS may require significant staff time and energy for both development and maintenance. GIS projects should be planned so that there is always one person who is capable of understanding the technology.

Use Collaboration and Partnerships. Mapping requires a range of skills and assets, and the most successful initiatives are created through collaboratives that bring together diverse stakeholders. (See Key Players, below.) Collaborative mapping projects are most effective when they build on the existing strengths of each partner: organizing residents, technology skills, data collection and analysis, policy, or advocacy.

Financing

The scale, and therefore cost, of community mapping projects ranges considerably. Projects with a limited number of static maps can be relatively inexpensive, while dynamic, searchable maps that are made publicly available can be much more costly. A community organization can contract with a mapping intermediary to create five static maps for less than \$1,000. Creating a searchable online system like Neighborhood Knowledge Los Angeles or the Philadelphia Neighborhood Information System (discussed in the [Why Use It](#) section) will cost more than \$100,000 to start up and approximately \$50,000 per year to maintain.

When developing a financing strategy to fund community mapping, it is useful to think about a range of funding sources. In fact, most of the community mapping efforts we profile use a mix of public, private, and philanthropic dollars. For example Neighborhood Knowledge Los Angeles (NKLA) is supported through funding from [The National Telecommunication Information Administration \(NTIA\)](#), Fannie Mae Foundation, [Los Angeles Housing Department](#), and [Microsoft Corporation](#). NKLA was developed and is maintained by the [UCLA Advanced Policy Institute](#) so the project receives additional resources from the university.

Possible Sources for Funding

- **Public Agencies.** Several public agencies support community mapping, particularly the use of Geographic Information Systems (GIS). On the federal level, two programs of note include the [Technology Opportunities Program](#) (National Telecommunication Information Administration) and [The Community Outreach Partnership Center Program](#) (Department of Housing and Urban Development). The Technology Opportunities Program provides funding to support community technology endeavors from GIS projects to community technology centers to social service distribution tools. The Community Outreach Partnership Center Program supports partnerships between institutions of higher education and community based organizations. This program has supported many community mapping projects by funding universities to be local mapping intermediaries. (Click [here](#) and select COPC from pull down menu for a list.) City agencies often support community mapping efforts through the use of Community Development Block Grant (CDBG) funds and other local community and economic development dollars.
- **Foundations.** Philanthropic organizations are also an important source of funding. Foundations interested in community building, civic engagement, community development, and economic development may support mapping projects when it's clear how the mapping project supports an organization's other goals. Foundations interested in technology are also potential supporters of community mapping efforts that use GIS and other technology. Visit TechSoup's [Resource List](#) for a list of technology-friendly funders.
- **Private Sector.** The private sector is another source of funding and support for community mapping efforts. In addition to grants, some corporations offer donations of GIS software, as well as in-kind contributions of employees' time.

Possible Budget Items for Community Mapping Projects

Data Collection

- Local data on the internet
- Working with city agencies to obtain data
- Cleaning data (getting it in the correct format to input)
- Purchasing data
- Geocoding data (If you are using GIS)
- Stipends/resources for data collectors

Creating GIS Maps

- Dedicated computers
- Color printer
- Software
- Training

Distribution

- Color reproduction for hard copy distribution
- An IT person and/or web designer (for presenting maps via the internet, especially interactive sites where users create their own maps)
- Projector and laptop for making presentations (rental or purchase)

Staying Current

- Ongoing data management
- Distributing updated maps
- Advocacy and organizing based on information illustrated via mapping

Policy

Public policy initiatives to support local community mapping efforts are required on two fronts. First, policy and regulatory changes are needed to help community practitioners to acquire and build comprehensive data sets. Second, resources are needed to build the capacity of community groups to use mapping systems. In support of these two goals, we offer policy principles for local/regional, state, and federal government.

Local/Regional

Improve Access to Local Data. One of the most time consuming and challenging aspects of community mapping projects is getting timely access to parcel-level data sets from municipal agencies, county governments, and regional entities, such as the tax assessor's office or building permit department. Local and regional governing bodies should facilitate and expedite access to local and regional data for community groups. Additionally, greater collaboration across public agencies to promote consistent data collection methods and file formats is vital.

Create and Support Data and Mapping Collaboratives. Most successful community mapping projects include broad partnerships of residents, community groups, technology intermediaries, and municipal governments. Such collaboratives allow community organizations to leverage a wealth of data about their locality that would be challenging to collect on their own. Local governments need to encourage the formation of these partnerships and, when possible, participate in them.

State

Establish Statewide Data Distribution Systems. State agencies track employment, health, crime, and education data that are key to local mapping efforts. States should be required to share ES202 files (aggregated employer payroll records), unemployment insurance statistics, education attainment records, and health indicators with local data and mapping collaboratives.

Support Statewide Mapping Projects. Statewide Geographic Information Systems (GIS) mapping projects bolster local ones by creating new opportunities to evaluate local mapping efforts and compare data across regions. In California, the Neighborhood Knowledge California project has constructed a statewide GIS application to track and compare housing and finance information for local communities throughout the state. This system will allow local groups to publish local data so they can be used for regional and statewide analysis and evaluation, and makes statewide data available to those local groups.

Federal

Improve Access to Federal Data and Encourage Compatibility. Public data sets generated by federal agencies are some of the most important data sources for community mapping efforts. Data from the Census Bureau and other Department of Commerce agencies, the Department of Health and Human Services, the Department of Housing and Urban Development, the Department of Labor, and the Department of Education are used in some form by almost every community mapping project. However, these data sets are all maintained in separate locations, and often in incompatible formats. To reduce the time and cost spent on acquiring these public statistics and making them usable, federal agencies should

create a community data clearinghouse for publicly accessible data and encourage more compatibility of formats across agencies.

Increase Organizations' Technological Capacity. The field of community mapping is increasingly reliant on GIS mapping software and the Internet, but community organizations face tremendous resource and capacity challenges in making use of them. Policies and programs that build the capacity of nonprofit organizations to use technology will support and advance the mission of equitable development. To this end, digital divide policy and grant programs through the Department of Commerce, the Department of Housing and Urban Development, and the Department of Education must support technology capacity building for nonprofit organizations.

Case Studies

Richmond Neighborhood Indicators Project (RNIP) - Richmond, VA

In 1998, Dan McCormick, a program officer at Richmond Local Initiatives Support Corporation (LISC), had an "ah-ha!" moment; he had just read an article on GIS, and saw what it might do for community development. Knowing little about GIS himself, but excited by its promise, he brought together a group of stakeholders, including community development corporations (CDCs), Virginia Commonwealth University (VCU), and the City of Richmond to explore the possibility of bringing GIS to Richmond's community development industry.

The group not only explored, but went on to create the Richmond Neighborhood Indicators Project (RNIP), which collects data on the health of Richmond's neighborhoods, and allows users to map them in customized way. RNIP has flourished thanks to a collaborative spirit among the CDCs, the willingness of the City of Richmond to share data, a high-level of expertise in GIS and neighborhood indicators at VCU, and a strong financial and institutional commitment from Richmond LISC, and it is now a highly valued asset to Greater Richmond's community development industry.

Laying a Strong Foundation

"Your maps are only as good as your data," is a common mantra at RNIP. It's not surprising then, that RNIP has focused so much energy on identifying indicators that provide a broad-based picture of neighborhood health. The RNIP team wanted to develop indicators that would be useful to all the partners in the project, rather than focusing them narrowly on a particular issue. And they succeeded; GIS maps of RNIP indicators now help CDCs plan and market their work, city officials evaluate the strength of current programs, and Richmond LISC inform public policy decisions and increase understanding of community development. The original list of indicators used in RNIP was developed by an advisory committee of neighborhood-based CDCs, city staff, Richmond LISC, and VCU personnel. While the project currently tracks over 100 specific pieces of data on economic and social well-being in neighborhoods, VCU staff also condensed the initial list using factor analysis down to 14 key indicators to be used as a standard for gauging neighborhood health. These 14 are viewed as a starting point, and will be modified over time. More research is needed to determine which indicators are the most sensitive measures of neighborhood change, which ones are most closely tied to change factors, and which ones best reflect the objectives of neighborhood improvement programs. Dr. Robert Rugg, one of the drivers of RNIP at VCU explains, "Ultimately, we want to be able to measure factors that cause change. We want to be able to predict: if you do this kind of improvement in a particular neighborhood, here's how it is likely to impact the neighborhood's health."

RNIP's Indicator

1. Percentage of population aged 25 and over with less than high school education.
2. number of housing units build
3. Percentage of population with some education beyond high school
4. percentage of persons living in families
5. percentage of householders who are single parents with children

6. percentage of population aged 45 to 64
7. per capital income
8. percentage of population aged 65 and over
9. average assessed value of land and improvements by parcel
10. number of medical recipients per block
11. percentage of change in assessed value per acre
12. number of employers per block
13. number of demolition permits per block
14. number of new construction permits per block

In the meantime, the indicators are already being used. In addition to providing CDCs access to the GIS system in her office for their own work, Greta Harris, senior program director at Richmond LISC, develops GIS maps to help current and potential funders understand how Richmond LISC targets its investments. Harris explains, "many of our donors are not familiar with the geography of the neighborhoods where we work. They just can't picture where their money is going. Once they see our map which highlights targeted neighborhoods, total dollar investments, and projects developed, it's like a light bulb clicks on. It's so important for us to communicate the focused nature of our efforts, and GIS enables us to do that." (See sidebars for other ways RNIP is used.)

RNIP in Action Better Housing Coalition

Minming Wu, director of commercial development at the Better Housing Coalition (BHC), used RNIP to design maps that show potential investors the pace of revitalization in a targeted neighborhood. Because much of the investment is not yet visible, the maps help show what the neighborhood is likely to look like over the next several years. "We used a number of indicators, including the number of building permits, rehabilitation and new construction within a one mile radius of the month neighborhood where we are trying to attract investment. It was very clear that this is a neighborhood that is growing."

Partnership is Critical

RNIP in Action: VA Supportive Housing

As housing development director at Virginia Supportive Housing, Candice Streett identifies and develops properties for single room occupancy (SRO), traditional, and home ownership housing. Streett uses GIS to create maps evaluate the level of crime around potential properties and to research the tax delinquency of vacant or "problem" properties. Streett has also used such maps to "sell" community groups on her projects. She explains, "I used one map to help a group understand that the source of crime in their neighborhood was the transient population moving from the hotel we wanted to develop and the local bus station. The map helped me show how converting this property to transitional housing for working folks would decrease, not increase, crime in the area. Without the map, they just wouldn't have been able to see that."

Each member of RNIP brings a unique set of experiences, skills, and resources to the project that has been vital to its success. According to McCormick, "Forming an advisory committee of stakeholders who recognize the importance of indicators and GIS to our community development efforts has been key to the success of this project. We've had a lot of technical challenges to deal with, but without buy-in and commitment from the city, neighborhoods, and CDC practitioners, they would have been non-issues, because we never would have gotten off the ground."

CDCs. CDC staff, defined as the "priority end-users" for RNIP, strongly guided both the development of the indicators and the design of the GIS system to map them. Prior to RNIP, neighborhood boundaries were only generally defined by the city, and information was often unavailable on a neighborhood-specific basis. As part of RNIP, CDCs and community groups helped develop neighborhood boundaries and target areas for the GIS system. Stephanie Gist of the Oregon Hill Home Improvement Council (OHHIC) explains: "Our neighborhood comprises a six-by-three block area. Before the GIS system was developed, we had census data, police, city assessor, and community development information, but none of these resources could give us any information on our specific neighborhood. With a 2.5 person staff, it was impossible for our organization to compile this information alone."

Local Government. As the source of some of the richest available data for the mapping and indicators project, the commitment of the City of Richmond has been vital to its success. The initial willingness of the city to share data, its current effort to develop compliant data management systems, and its recent shift on privacy restrictions (RNIP data was initially limited to block-level aggregations), is indicative of the collaborative nature of the community development industry in Richmond. According to Connie Bawcum, deputy city manager, "We recognized that developing the neighborhood indicators was going to be highly useful to the city. As we went along and saw the potential for our work, we grew more committed. Recently, we have made a 180-degree turn on confidentiality. There was a fear of letting data become public, but we have gotten past that. Aren't we better off just putting all of this out there? People will help us by correcting errors, fighting crimes, and making changes that help the city." The city now plans to make its comprehensive database available to the public via the Internet and has developed a web-based mapping program.

Building on the work in the City of Richmond, the RNIP team is now developing relationships with officials from two neighboring counties so they can include county administrative data in RNIP. The team hopes to develop a unique region-wide mapping program to support the efforts of CDCs working in all three jurisdictions and provide a tool to help officials measure the health of targeted areas that fall on both sides of city/county borders.

LISC and VCU. As a trusted partner to the local community development industry, Richmond LISC has been able to facilitate and maintain the partnership that makes RNIP possible. Richmond LISC has also taken on the responsibility of securing funding for RNIP, dedicating staff time to oversee the project, and creating a GIS center in its office where nonprofits can access the system to create maps. Critical to the success of RNIP has been the technical expertise and ongoing staffing provided by the VCU's Department of Urban Studies and Planning, through a contract with Richmond LISC. Students in the department's graduate program provide back-end support preparing the data to go into the system and customer support helping CDC staff create and analyze maps.

Dedication

Close to \$100,000 has been invested in RNIP to date, including initial seed capital provided by LISC and a grant from the Community Foundation of Richmond. This is a small amount compared to that invested in other indicator and GIS projects across the nation; the progress made on RNIP is a reflection of the commitment and effort of all partners involved, as much as the amount of resources dedicated to it.

Harris explains why Richmond LISC, as well as other project partners, continually dedicate human and financial resources to RNIP. "To be honest, at the outset we had no idea what this project would entail, financially or in terms of staff time. But we always find a way to keep it going and make it better, because it is exactly what our industry needs. We all want to know that the resources invested are realizing our hopes for the region's neighborhoods. RNIP allows everyone-private investors, local government, LISC and CDCs-to see the benefits community development brings, not just to targeted neighborhoods, but to the region overall."

Minneapolis Neighborhood Information Systems (MNIS) - Minneapolis, MN

In 1998 a University of Minnesota student created an early warning system to identify properties at risk of being abandoned. The project caught the attention of a wide range of community development stakeholders: neighborhood associations, the City of Minneapolis, and the Neighborhood Revitalization Program (a program that distributes tax increment financing funds to Minneapolis's low-income neighborhoods), but it was the neighborhood associations who made the first push to turn it into something larger. Excited by the prospect of using data to identify at-risk properties, and believing strongly in the potential of GIS to advance their work more broadly, a group of six neighborhood associations each invested about \$6,000 to begin building a GIS collaborative.

Less than three years later, [Minneapolis Neighborhood Information Systems \(MNIS\)](#) is going strong. Not only are the neighborhood associations that founded it actively using GIS in their work, the collaborative has also received a large, multi-year grant from the Department of Commerce, hired a staff person to maintain GIS applications through the University of Minnesota, and gained access to administrative data by engaging the city as a partner.

Success Factors

Community connection. Neighborhood organizations were strong proponents of GIS, hungry for access to more data, and committed to improving their abilities to use GIS in their work. Barb Jeanetta of the Twin Cities LISC office attributes this enthusiasm for data to NPCR's style of working with communities. "Because of the way NPCR works, neighborhoods identify their own research projects. As groups were working with researchers, they got interested in data and mapping. I think that's why it is so pragmatic and grassroots-GIS has been generated out of what the neighborhoods were already working on."

Supported by the MNIS program staff, neighborhood groups have been innovative and ambitious in their use of GIS. They have created asset maps to attract new residents, investment maps for analyzing how residential properties are affected by proximity to commercial and industrial land use, a lead paint risk assessment, and an evaluation of a targeted home improvement loan program.

University as a partner. Support from the University of Minnesota is extremely strong and consistent with the values of neighborhood organizations. NPCR sees its goal as supporting and building from the work

already happening in neighborhoods. Kris Nelson, program director of NPCR said, "The neighborhoods know what kind of research they are looking for. We leave it to them to guide the university, rather than the other direction." Nelson, NPCR and CURA have demonstrated a commitment over time to let the community lead and to support with fundraising, technical assistance, and research.

MNIS was able to hire a full-time program coordinator in October 2000. The program coordinator is supported by the university and based in the community, building upon neighborhood associations' enthusiasm and providing technical support. The coordinator assists groups in organizing their own data, helps them determine hardware and software needs, and provides one-on-one support to get them up and running. Beyond individual support, the coordinator runs monthly trainings where groups share projects they are working on followed by specific skill-building workshops (e.g. how to make maps with land use data). These trainings provide a learning environment where groups are encouraged by each other's successes.

Funding secured. After two unsuccessful attempts, MNIS received a Technology Opportunities Program (TOP) grant from the US Department of Commerce in Fall 2001. The grant for \$500,000 over three years is shared between the city and the community/university partnership. Along with providing the resources to further develop and support community GIS, this grant has affected MNIS in other ways. For example, it spurred the city to increase its commitment to facilitating neighborhood access to data.

City cooperation. Community enthusiasm for data and the receipt of the TOP grant helped the city make a commitment to creating a neighborhood-friendly data platform. At the outset of MNIS, the City of Minneapolis's administrative data was extremely difficult to access. It was in multiple formats, departments were not sharing information with each other, and there was little incentive to share data with the public. MNIS has helped make data cleaning and sharing a public issue, and the City of Minneapolis has invested significant resources in converting data and creating a central data file that will be made available on the Internet.

The roots of the success of MNIS can be a model for other GIS collaboratives: active participation and collaboration of all parties, and the leadership of the neighborhood organizations.

Resources

- [Sample maps and mapping projects](#)
 - [Related specifically to gentrification](#)
 - [Asset maps](#)
 - [Information on asset mapping](#)
 - [Sharing community data](#)
 - [Monitoring neighborhood change](#)
- [Technical assistance providers](#)
- [Data Sources](#)
 - [Housing Costs/Sale Rates](#)
 - [Demographics](#)
 - [Neighborhood Schools, Safety, and Health](#)
 - [Environmental](#)
 - [Other](#)
 - [Non-federal statistical web sites](#)
 - [Federal information web sites](#)
- [Learning resources](#)
 - [General GIS information](#)
 - [About GIS software](#)
 - [How to use data](#)
- [Online GIS courses](#)

Sample maps and mapping projects:

Examples of mapping relating specifically to equitable development and gentrification:

- **The Urban Institute**, Washington , D.C.
The Urban Institute is a nonprofit policy research organization established in Washington , D.C. , in 1968. The Institute's goals are to sharpen thinking about society's problems and efforts to solve them, improve government decisions and their implementation, and increase citizens' awareness about important public choices
<http://www.urban.org>
A slide show of leading indicators of gentrification in leading neighborhoods in Washington, D.C.
<http://www.urban.org/news/events/DCGentrification/sld001.htm>

Asset Maps:

- **Common Ground Community Mapping Project** Vancouver , BC
Common Ground is a community-based mapping and planning project based in Victoria , BC , which provides mapping and learning resources and opportunities for schools, neighborhoods and communities wishing to undertake sustainable community development and planning projects.
www3.telus.net/cground/index.html
Map in Argentina of soccer fields, community centers, and medicinal plant gardens:
www3.telus.net/cground/map-nuestra.jpg
Map of fruit trees in Victoria Canada that would usually go un-harvested:
www3.telus.net/cground/pics/fruit tree map.jpg
- **Community Youth Mapping (CYM)**
Community Youth Mapping is young people and adults canvassing their neighborhoods in search of places to go and things to do. Simply put, CYM is data collection for young people, children and families, by youth. Community Youth Mapping, a youth development strategy instituted by the AED Center for Youth Development and Policy Research, is ideally coordinated by a local public/private/nonprofit partnership and led by a local community-based institution.
www.communityyouthmapping.org/
- **Green Map System**
www.greenmap.com/home/home.html
- **Mapping Community Assets Workbook**
www.nwrel.org/ruraled/publications/com_mapping.pdf

Information on asset mapping:

- <http://www.theinnovationcenter.org/productDesc.asp?ID=1> (Asset mapping toolkit created by the innovation center.)
- www.web.apc.org/~nben/envnews/toolkit/mapping.htm (Another mapping "toolkit" that is online, no purchase necessary, with links)
- ctb.lsi.ukans.edu/ (A tool box for community development, with a whole section on asset mapping.)
- www.nwrel.org/ruraled/mapping.pdf (Workbook for use by CBO's to do asset mapping)
- www.cbr-aimhigh.com (For-profit model of asset mapping, sort of like AED's approach, only not youth-driven)
- www.assetmap.com (Another for-profit site)

Sharing community data:

- **The Piton Foundation** Denver, CO
The Piton Foundation is a private operating foundation that provides opportunities to children and families in Denver move from poverty and dependence to self-reliance. A variety of neighborhood resource maps can be found at the Foundation's web site.
www.piton.org/

- **Boston Foundation** Boston , MA
www.tbf.org/
- **Neighborhood Knowledge Los Angeles (NKLA)**
NKLA is a web site dedicated to helping prevent housing and neighborhood conditions from deteriorating. NKLA provides tools for accessing property and neighborhood data and works with neighborhood residents, community organizations, and policymakers to mobilize support for community improvement in the Los Angeles area. Several informative maps can be found within the NKLA database at their web site:
nkla.spsr.ucla.edu/
- **The Northeast Los Angeles Network (nelanet)**
Nelanet is a project in community web site development by Occidental College . They are part of a growing movement of community or civic computer networks on the Internet that serve to promote local economic development, community memory and culture, electronic literacy, and connectivity among youth, citizens and community organizations throughout our nation. They hope to help bridge the "digital divide" in the educational system and citizenry between those who are beneficiaries of the informational economy and those who are not. Their web site contains comprehensive data maps that show various resource centers for several neighborhoods in northeast Los Angeles.
www.nelanet.org/
- **DANEnet**
DANEnet is a non-profit, community-owned Internet site which focuses on the information needs of the Dane County (Wisconsin) community. Their mission is to help people share information and connect through the use of the Internet. DANEnet provides access to all kinds of community information, and facilitates the online discussion of community issues. Created largely by volunteers, we strive to serve the whole community including the traditionally underserved by providing free, dial-up access to information and community access sites at youth and neighborhood centers.
www.danenet.org/
Neighborhood asset map of the Madison, Wisconsin area:
danenet.danenet.org/tlna/web-data/steering/images/asset.html

Web sites for monitoring change:

- **Philadelphia Neighborhood Information System**
apollo.gsfa.upenn.edu/Projects/NIS.asp
- **Map Milwaukee**
www.gis.ci.mil.wi.us/isa/Map_Milwaukee/

Technical Assistance Providers:

- **Coalition for Low Income Community Development (CLICD)**
The Coalition for Low Income Community Development (CLICD) is a coalition of grassroots and national groups organized to ensure that low income people benefit from community planning and development programs. CLICD's mission is to improve low-income groups' access to funds for community revitalization and to implement model community planning processes. Our special expertise is community-based planning and community mapping using geographic information system (GIS) software.

www.clicd.org/

Map showing area median income and amount of check cashing facilities:

www.clicd.org/map/image13_copy.gif

Map of Maryland showing gap between minimum wage and rental housing costs:

www.clicd.org/map/image15_copy.gif

Map showing Section 8 housing in Boston:

www.clicd.org/map/image14_copy.gif

- **Community Mapping Assistance Project (CMAP)**

The Community Mapping Assistance Project provides customized, affordable computer mapping services to non-profit organizations. CMAP is a project of the New York Public Interest Research Group Fund, Inc. (NYPIRG).

www.cmap.nypirg.org/

CMAP provides various sample maps

<http://www.cmap.nypirg.org/webmapping/default.asp>

- **Metropolitan Area Research Corporation (MARC)**

www.metroresearch.org/

- **Compumentor**

www.compumentor.org/

- **GreenInfo**

The mission of GreenInfo Network is to bring the power of computer based mapping to non-profits, public agencies and other public interest organizations. We enable these groups to more effectively show the relationships between issues, people and places.

www.greeninfo.org/

Map of poverty percentages in San Francisco:

www.greeninfo.org/HTML/gallery/map032000.htm

Map of environmental organization in California:

www.greeninfo.org/HTML/gallery/map052000.htm

Map of Transit in San Mateo County:

www.greeninfo.org/HTML/gallery/map121999.htm

- **Center for Youth Development and Policy Research**

The Center for Youth Development and Policy Research is an organization dedicated to contributing to better the futures of all youth in the United States. It focuses on shifting the public debate and commitment from youth problems to youth development.

www.aed.org/us/cyd/ydmobilization.html

An example of community youth mapping:

www.aed.org/us/cyd/cym/map.html

- **The Urban and Regional Information Systems Association (URISA)**

URISA is a non-profit association of professionals using Geographic Information Systems (GIS) and other information technologies to solve challenges in all state and local government agencies and departments. URISA is considered to be the premier organization for the use and integration of spatial information technology to improve the quality of life in urban and regional environments.

www.urisa.org/

- **National Neighborhood Indicators Partnership (NNIP)**
 NNIP is a collaborative effort by the Urban Institute and local partners to further the development and use of neighborhood-level information systems in local policymaking and community building.
www.urban.org/nnip/index.htm
 A variety of demographic maps made by NNIP can be found at this link:
www.urban.org/nnip/wtwmaps.html

Data Sources:

Housing Costs /Sale Rates

- **Tax Assessor Database**
 Clicking on links to your state, county, city, and then your address, to find property value information.
pubweb.acns.nwu.edu/~cap440/assess.html
- **Building permits by city**
tier2.census.gov/bldgprmt/index.html
- **HMDA**
www.ffiec.gov/webcensus/ffiiccensus.htm
- **FFIEC Census Reports**
 Information from 1997-2001 about census demographic information, either by county, or metropolitan city. Information is separated by census tract number, and income level.
www.ffiec.gov/webcensus/ffiiccensus.htm
- **Yahoo Real Estate**
 Type in your address, city, state or zip code, and get information about the houses that were sold in your area, and how much they sold for.
yahoo.iplace.com/sales_search.asp
- **Realtor.Com**
 Find the houses that are for sale in your area, and how much they are asking for.
www.realtor.com/FindHome/default.asp?source=a2aj7t1t266

Demographics:

- **Census Bureau**
 Tables by county, on Building permits and lots more. Click city- scroll down to Demographic Profile, then New releases and click on either excel or PDF for a table to appear.
tier2.census.gov/usac/index.html-ssi
www.census.gov/Press-Release/www/2001/sumfile1.html
- **Fed Stats**
 Fed Stats homepage, with links to different sources of statistical data.
www.fedstats.gov/
- **Children Now**
 California County Data Book 1999 - Information on all California counties on demographics, family

economics, health, education and safety.

www.childrenow.org/california/RC99/databook-99.pdf

- US census and HUD estimated MSA median family income for the 2001 HMDA reports, compared to incomes in 1997
www.ffiec.gov/hmda/pdf/msa01inc.pdf

Neighborhood Safety, Schools, and Health

- **Neighborhood Place**
By typing in your area code, graphs show, average household size, median age, median household income, total household expenditures, crime risk, and carbon monoxide level, county, state, and the United States. This site also has community reports.
www.neighborhoodplace.com/apps/WebObjects/NPApp
- **Urban Institute**
Reports on at-risk teens, crime in America, Medicare, Social Security, Washington, D.C., Welfare Reform, the Working Poor
www.urban.org/index.htm

Environmental

- **United States Environmental Protection Agency**
Environmental facts- toxic waste, etc.
www.epa.gov/enviro/index_java.html

Other:

- **URISA**
Links to many sources for data.
<http://www.urisa.org/services.htm#Data%20Collection>

Non-Federal Statistical Web Sites:

- **American Statistical Association**
www.amstat.org/
- **Committee on National Statistics , National Academy of Sciences**
www7.nationalacademies.org/cnstat/index.html
- **Council of Professional Associations on Federal Statistics (COPAFS)**
www.copafs.org/
- **Eurostat**
Source for European Union statistics.
www.europa.eu.int/comm/eurostat/Public/datashop/print-catalogue/EN?catalogue=Eurostat
- **International Monetary Fund**
Dissemination Standards Bulletin Board: key information about economic and financial data disseminated by member countries.
dsbb.imf.org/

- **International and National Statistical Agencies**
Active in the Economic Commission for Europe.
www.unece.org/stats/links.htm
- **Joint Program in Survey Methodology (JPSM)**
www.jpsm.umd.edu/index.htm
- **Organization for Economic Cooperation and Development (OECD)**
www.oecd.fr/statistics/
- **Statistical Resources on the Web**, University of Michigan
www.lib.umich.edu/libhome/Documents.center/stats.html
- **United Nations CyberSchoolBus**
www.un.org/Pubs/CyberSchoolBus/menureso.htm
- **The Center for Information Law and Policy: The Federal Web Locator**
www.infoctr.edu/fwl/
- **Federal Gateway**
U.S. Government information clearinghouse
www.fedgate.org
- **GovSpot Information Services**
"The Government Information portal of the Web."
www.govspot.com/
- **Government Information Sharing Project Information Services** : Oregon State University
govinfo.kerr.orst.edu/

Federal Information Web Sites:

- **Federal Information Center**
www.info.gov/
- **Financenet**
Financial Management in Government
www.financenet.gov/
- **FirstGov**
One-stop access to all online U.S. Federal Government resources.
www.firstgov.gov/
- **Historical Data from the National Archives**
http://www.archives.gov/electronic_records_archives/index.html
- **U.S. Business Advisor**
www.business.gov/
- **FedWorld Information Network**
www.fedworld.gov/

- National Technology Transfer Center
www.nttc.edu/gov_res.html
- Government Information Locator Service (GILS)
www.access.gpo.gov/su_docs/gils/index.html
- Child and Family Statistics
Federal Interagency Forum
www.childstats.gov/
- Government Statistical Agencies beyond the U.S.
www.census.gov/main/www/stat_int.html
- Interagency Forum on Aging-Related Statistics
www.agingstats.gov/

Learning Resources:

General GIS information

- GISPortal
Portal for general GIS information.
www.gisportal.com

About GIS software:

- MapInfo Corporation
www.mapinfo.com
- Environmental Systems Research Institute, Inc .
www.esri.com .
- Caliper Corporation
www.caliper.com .
- U.S. Department of Housing and Urban Development
<http://www.hud.gov/offices/cio/c2020/>

How to use data:

- murmur.arch.gatech.edu/~dapa/

Online GIS Courses:

- University of Southern California
www.usc.edu/dept/geography/learn_gis/ .
- Penn State University World Campus
www.worldcampus.psu.edu/pub/programs/gis/index.shtml