

Using GIS to assess preservation legislation in New York

CHAPTER: Supporting policies with GIS

ORGANIZATION: Preservation League of New York State

LOCATION: Albany, New York

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PROJECT: Support preservation legislation

SOFTWARE: ArcExplorer, ArcGIS

ROI: Increased efficiency, accuracy, and productivity; improved access to information

By Daniel Mackay and John J. Knoerl

GIS technology is most often thought of as a tool for managing geographical resources at the state and local levels. Business, real estate, health-services, education, and natural- and cultural-resource management applications are commonplace and are being used to good effect. The use of GIS as a tool in the arena of public policy and legislation, however, is not as widespread as these more traditional applications. Legislators, their staff, advocates, and opponents rarely use GIS to analyze the impact of preservation legislation. Yet many parts of preservation laws are replete with spatial provisions. If GIS were used to evaluate or predict the intended—as well as the unintended—effects of such proposed laws, then the legislative process would be well served, and possibly better legislation and preservation would result.

In support of a continuing campaign to secure a New York state income tax credit for rehabilitation of historic residential structures, the Preservation League of New York State (PLNYS) launched a GIS-based initiative to quantitatively assess the impacts of two tax credit proposals before the New York State Legislature. A systematic comparison of the impacts of these legislative proposals was required to focus attention and generate additional legislative support for the program. With partial funding secured from the National Trust for Historic Preservation, the league employed the services of KEI Maps to create and manage the GIS database at the core of this work.

Such a comparison would have been impossible using anecdotal data. However, by employing GIS as a tool, quantitative data about who would benefit from each proposal was clearly determined and brought into the debate. GIS analyses elevated the discussion from the realm of anecdotes and speculation to the quantitative. In turn, this quantitative analysis provided critical information daily that informed the legislative outreach conducted by the league.

PLNYS has long been involved with advocating governmental policy that is sensitive to and supportive of historic preservation. Through advocacy, technical assistance, grants, and support, the PLNYS has successfully changed governmental behavior at both the statewide and local levels.

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Increasingly, the league has come to realize that to be successful in its advocacy role, it must develop a strategy that relies on the use of comprehensive data as opposed to anecdotal data to support its policy agenda. The critical importance of the proposed New York State Neighborhood Reinvestment Act provided an excellent opportunity to begin to develop a comprehensive database of information about historic properties in New York

State that could be used to argue for passage of the legislation.

As it was, the governor had an alternative version of the bill he had introduced to the New York State Assembly. The comprehensive database was immediately put to use to draw comparisons between the two versions of the bill. This facilitated discussions that were more detailed and meaningful. Both advocates, and legislators and the governor's staff were able to refer to the same set of information. Tables and maps were generated in what may be best described as real time given the fast-paced setting of the legislative process.

Building the database

The project was organized into four phases: data acquisition, data preparation, data analysis, and reportage.

1. Data acquisition—Data acquisition involved establishing the objectives of the analyses, identifying the data needed to conduct the analyses, identifying the sources for acquiring the data, and acquiring the data itself.

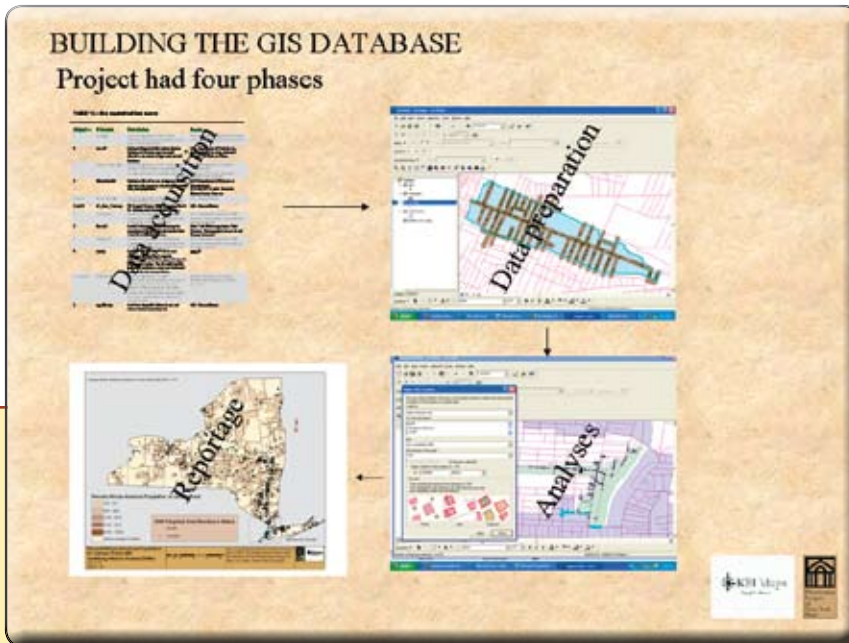


Figure 7.16 The Preservation League of New York State used four phases to create a GIS database of homes in the state's historic districts.

The three objectives of the analyses were

- To determine the number of potentially qualifying historic homes (QHH) for each version of the New York State Neighborhood Reinvestment Act of 2003
- To determine where these potential QHH were located with respect to targeted area residences, state empire zones, zones of equivalent areas, qualified census tracts, urban areas, New York State Assembly districts, New York State Senate districts, New York State U.S. congressional districts, New York State Democratic Assembly districts, and New York State Republican Assembly districts
- To develop a profile of the neighborhoods within which these potential QHH are located by using Census 2000 housing variables of percentage of home ownership, racial and ethnic diversity, average median value of housing units, average median monthly owner costs of housing units, and median family income

2. Data preparation—The raw data received from the various sources was examined, projected into Universal Transverse Mercator (UTM) Zone 18 using North American Datum 1983, merged with stand-alone database tables, and in certain instances, manipulated to achieve the appropriate data categories for each analysis.

There were two parameters used in creating the QHH.shp layer:

- Estimating the number of contributing residential properties in historic districts
- Locating the contributing residential properties within their historic districts

The map layer of historic properties provided by the New York State Historic Preservation Office did not include the number of contributing

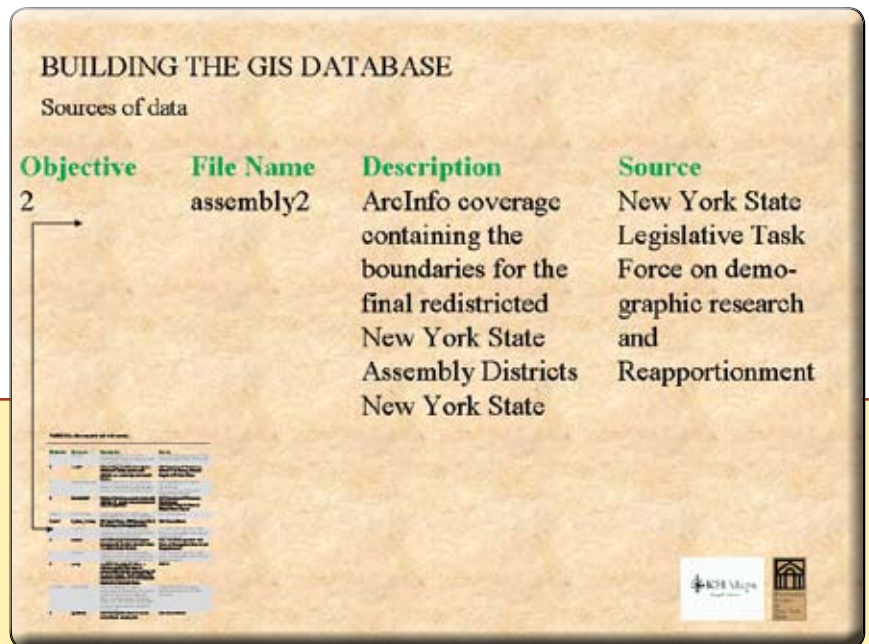


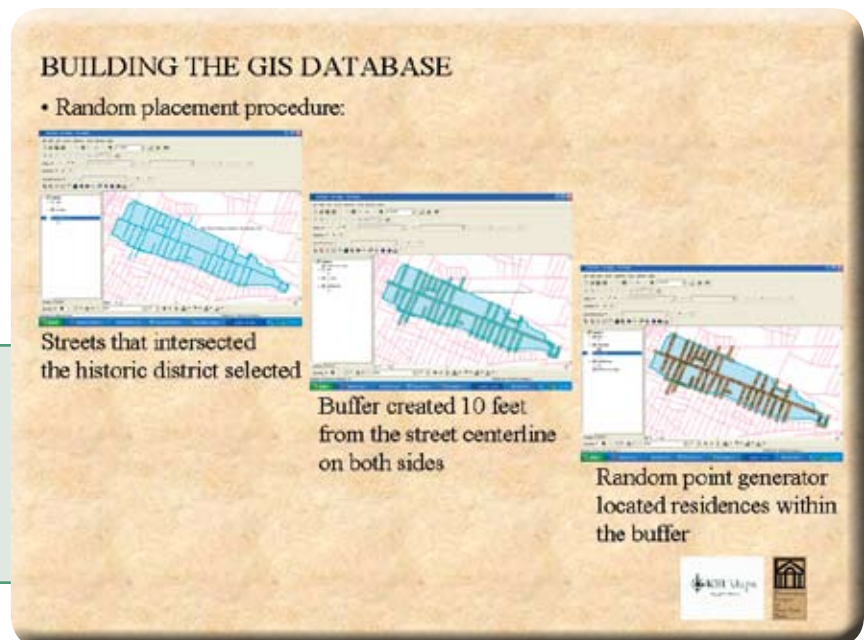
Figure 7.17 The league had to first set objectives for building its GIS database.

properties within each historic district. By joining the layer to an Access database of properties listed on the National Register of Historic Places, the number was obtained, but it was not broken down by building type—residential, commercial, or industrial. To estimate the number of residential buildings in historic districts, a statistically valid random sample of eighteen historic districts in New York State was drawn from a population of 488 historic districts coded as residential. An average of 76 percent of contributing properties in the sample districts was residential. The remaining properties were churches, schools, and some commercial structures. The total number of contributing properties in a district was multiplied by 0.76 to get the number of residential properties in each historic district.

The locations of contributing properties within a historic district were not always mapped. However, it was important to make an estimate of where the contributing properties were located to determine if they were in a targeted district residence. Two procedures were used for this estimate:

- Randomly place each contributing property within the district but constrained to a buffer within 10 feet of a street in the district
 - Use address matching or geocoding if the addresses were listed in the record of the historic district
3. Data analysis—Using the GIS database, which included census-tract data, many important questions were answered. For example, how many historic homes would qualify under the proposed legislation? How many of these homes are located in each assembly, senate, and congressional district? How many structures are located in urban and rural areas? How many qualified homes are owner-occupied? What is the racial and ethnic diversity of neighborhoods with

Figure 7.18 The league used a 10-foot buffer to determine potentially qualifying historic homes.



QHH? What is the average median value of homes in neighborhoods with QHH? What are the median monthly mortgage costs, and what is the median family income for neighborhoods with QHH? Creating this database enabled the league to peer into the demographic heart and soul of New York State's more than 700 National Register Districts for the first time and provided the league with a unique tool to inform and advance preservation policy.

4. Reportage—Twenty-nine tables were generated for the report. These tables were started in ArcMap using the report tool to create the initial format. Ultimately, they were brought into the Word format and then converted into a table for final editing and formatting.

Twenty-four maps were generated for the report. A template was developed and used consistently in the generation of the maps. In numerous instances, an inset map of the New York City area was required in order to display the data in that area. The maps were formatted in ArcMap and exported as a PDF image.

A CD was created containing the following items:

- The New York State Neighborhood Reinvestment Act of 2003: A Geographic Information System Assessment as a Word document
- Map images in PDF
- Tables as rich text files

- Shapefiles: QHH, NY Historic Properties, TAR, SEZ, ZEA, QCT, Assembly, Senate, Congress, urban, tr36_utm00, ALLNR, counties
- DBF files: DIVERSIT, HOUSEINC, HOUSEVAL, MEDFAMIN, OWNER-SHI, OWNERCOS
- ArcExplorer GIS viewer software to view the shapefiles and DBF files

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Improvements and future uses

Given the initial success of the GIS database in the context of the New York State Neighborhood Reinvestment Act what is PLNYS' vision for improving and using it in the future? The immediate improvement is to accurately locate the contributing historic properties, both residential and commercial, within the state's historic districts. One potentially promising approach is to link the locations of contributing historic buildings to the New York State

Office of Real Property's GIS database. The database has a point for every tax parcel for most of the counties in New York State and also contains the street number and name for each tax-parcel point. The latter data can be used to match up the street addresses of the contributing properties. This data is likely to be accurate to the extent that it is based on tax-parcel maps, which are usually drawn to a 1:2400 scale or better.

Not only will the locations of contributing properties be more accurate, but by linking them to the real-property database, all of the information contained in that database will now also become part of the GIS historic-properties database. Information

such as the assessed value of the property can be used by PLNYS to assess the dynamics of change in historic neighborhoods, for example. Other types of information that can be incorporated in the GIS database include the date the house was built, ownership of the property, property code (e.g., single-family, two-family dwelling), and tax parcel ID.

The second priority for improving the database is to add data on locally designated properties and historic districts. This data is key to developing and advocating preservation policy that is relevant to the local level of historic preservation.

Third, the database can also be used to model the impact of the national Historic Homeowners Assistance Act on historic properties in New York State. The bill was reintroduced in the U.S. Congress. This assessment could prove vital to convincing the New York State congressional delegation to support such legislation. Currently, support is not strong among the New York delegation.

Fourth, each year the PLNYS selects seven historic places to save. The "Seven to

BUILDING THE GIS DATABASE

Data preparation

• Geocoding procedure

- NR nomination reviewed and street addresses entered into a database
- database was matched up against the street layer for New York State
- when a match occurred the street number for the contributing property was interpolated between the address range for the street segment with which it was matched
- a geocoded historic district was used only if 90% of the contributing properties were matched



Jackson Heights HD
1575 contributing properties
were located using geocode



Figure 7.19 Geocoding was one of the methods used to determine where qualifying historic homes were located.

BUILDING THE GIS DATABASE

Analysis

Table	Description	Select by Location	Select by Attribute	Attribute Join	Display Join
TABLE 1-1a	ASSEMBLY BILL A.1134, Qualifying Historic Homes (QHHe) (sorted, descending)	QHHe created into number and then named by rowid.			

TABLE 2-1a.—ASSEMBLY BILL A.1134, Qualifying Historic Homes (QHHe) (sorted, descending)

Historic Property	County	QHHe
Sharon Park Historic District	Kings	31,85
East End Historic District	Orange	1,228
Jackson Heights Historic District	Queens	1,593
Parkside East Historic District	Erie	1,344
Park Slope Historic District	Kings	1,268
Clinton Hill Historic District	Kings	812
Sag Harbor Village Historic District (Boundary Increase)	Suffolk	661
Columbia Historic District	Kings	605
Central Park Historic District	Queens	294
Adelphi Historic District	Erie	337
Madison Historic District	Columbia	593
East Avenue Historic District	Monroe	532
Lefferts Manor Historic District	Kings	514
Charter Oak Institutional Historic District	Chautauque	492
Deatfield Historic District	Schenectady	474
Clinton Avenue Historic District	Albany	422
Silke Historic District	New York	404
South End-Crookedville Historic District	Albany	385
Coopersburg Historic District	Orange	383



Figure 7.20 The GIS database allowed the league to see how many residential homes were in each historic district.

Save” program draws attention to important preservation issues such as abandonment, disinvestment, demolition, and development through the selection of seven properties that reflect these problems. The GIS database could play an important

role in making the selection with an eye toward the geographic distribution of these selected properties. It would also be possible to use the GIS database to extend the concept to saving entire historic neighborhoods. The database could be used to identify

BUILDING THE GIS DATABASE

Analysis:

- GIS analyses generated
 - twenty-four maps
 - twenty-nine tables
- Tables were more important than maps
 - tables gave specific numbers
 - maps gave an aura of technical competence



Figure 7.21 The GIS analysis generated an assortment of relevant maps and tables.

potential candidate neighborhoods using census data that reflects the demographics and housing variables. Census data can be tied to preservation issues such as gentrification, ethnic diversity, accelerated ownership turnover, housing values, and ownership costs. The historic neighborhoods selected to save could be a rallying point for local leaders and residents alike.

Fifth, for the long term, the PLNYS could use this database to set up a monitoring program across the state. Such a program would continually monitor the vital signs or health of historic properties and provide early warning on developments that could be potentially detrimental to the preservation of these properties. Additionally, summary statistics could be generated quickly when needed as well as annually, such as an end-of-year report on the state

of historic properties. The database could be used to establish criteria that would define areas across the state that are conducive or not conducive to preserving historic properties. Such targeted areas could be prioritized for PLNYS intervention, thus making the most of available preservation funds.

In advocating the passage of the New York State Neighborhood Reinvestment Act the PLNYS believed that GIS could be a useful tool in arguing the merits of this legislation. With spatial overlays, quantitative data on who would benefit from the bill's passage was clearly determined and brought into the debate. PLNYS is confident its situation is not unique and that other preservation advocacy groups could benefit from using GIS in similar ways.

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Acknowledgments

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