

Mapping Historic Preservation Legislation

Historic Homeownership Assistance Act

Each year, millions visit Chicago to experience life in this dynamic city set against a backdrop of magnificent architecture. The towering creations of Louis Sullivan and William LeBaron Jenney began to punctuate the skyline in the late 1800s. In 1909, Daniel Burnham laid out the unique and visionary “Plan for Chicago.” The city’s residents continue to enjoy Burnham’s plan, which prohibited construction along Lake Michigan’s shore, thereby preserving that land for recreational uses. His firm, D.H. Burnham and Co., designed several of Chicago’s landmark structures, including the Wrigley building, Union Station, the Civic Opera House, and the Museum of Science and Industry (Peters 2000). Other architectural masterminds found a setting for their designs in Chicago’s residential neighborhoods. New York’s Solon S. Beman designed the nation’s first planned company town for the employees of George Pullman’s railroad car manufacturing business. The Far South Side neighborhood of Pullman is now a registered historic district. Frank Lloyd Wright established his studio in the Chicago area in 1893. He went on to design homes in several Chicago neighborhoods, including Rogers Park, Hyde Park, and Beverly. His revolutionary Prairie style is marked by geometric-patterned windows, wide, overhanging roofs, and floor plans that “flow” from one room to the next (Peters 2000). Chicago’s other distinct styles of residential architecture include the Worker’s Cottage of Lincoln Park and the Lower West Side, the Craftsman of Albany Park and West Lawn, the Tudor revival, and the Eastlake styles (Figure 1).

As the population grew, middle- and upper-class families moved out from the city’s core to the suburbs. Many historic houses fell into ruin and eventual abandonment when

their poorer inhabitants could not maintain them. Such is the case with most historic homes in cities across America (El Nasser 2000). The city of Chicago is proud of its rich archi-

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Figure 1. Some representative architectural styles of Chicago houses. Clockwise from upper left: Stick style (Emory B. Moore House); French Chateau Style (William W. Kimball House, 1890); Worker's Cottages (Old Town Historic District); Frank Lloyd Wright's Prairie style (Frederick Robie House, 1909).

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tectural history, and several groups have organized to push for its preservation. Local groups such as the Chicago Landmarks Commission, Historic Pullman Foundation, and the Frank Lloyd Wright Preservation Trust are joined in the effort by the State of Illinois Historic Preservation Agency.

Prior to 1976, tax law encouraged destruction of older buildings and provided incentives for constructing new buildings in their place. Instead of restoring or rehabilitating aging structures, developers took advantage of the tax deductions related to demolition. Change began with the Tax Reform Act of 1976, which eliminated these deductions as well as some of the incentives for new construction. The notion of promoting rehabilitation through an income tax credit was first introduced in the Revenue Act of 1978, and expanded in the Economic Reform Tax Act of 1981 (National Park Service 2001b).

Under the Tax Reform Act of 1986, Congress eliminated many existing tax incentives across the board. The Rehabilitation Credit, however, survived. In its current form, it provides a credit equal to 20% of the expenditures for rehabilitation of qualified structures used for commercial purposes. It applies to National Register of Historic Places listings or structures in Registered Historic Districts.

This legislation has been suc-

cessful in achieving its goal. Since its passage, preservationists have rehabilitated more than 27,000 schools, factories, churches, stores, hotels, and offices (National Park Service 2001a). The 1992 fiscal year report of the National Park Service (NPS) indicated that "the use of Federal Tax incentives to encourage private investment in historic rehabilitation has been one of the most effective Federal programs to promote both urban and rural revitalization.... [T]he completed projects have brought renewed life to deteriorated businesses and residential districts, created new jobs and new housing units, increased local and state revenues, and helped ensure the long-term preservation of irreplaceable cultural resources" (U.S. Department of the Treasury 1994).

Congress is presently considering the Historic Homeownership Assistance Act (HHAA), which is modeled after the Historic Rehabilitation Tax Credit and seeks to extend its incentives beyond commercial properties to the owners of historic homes. Legislators first introduced HHAA in the 104th Congress and each session thereafter. Its purpose, in the words of the bill itself, is "to amend the Internal Revenue Code of 1986 to provide a credit against income tax to individuals who rehabilitate historic homes or who are the first purchasers of rehabilitated historic homes for use as a principal residence" (U.S. House 2001). The

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HHAAs would give eligible homeowners a federal tax credit of 20% of their rehabilitation expenses. The credit cannot exceed \$40,000, and at least 5% of the expenditures must go toward rehabilitation of the exterior of the home.

Representative Clay Shaw of Florida, along with 145 co-sponsors, introduced the Historic Homeownership Assistance Act (H.R. 1172), to the House of Representatives in the 107th Congress on March 22, 2001. Shaw pointed out that abandonment leads to the loss of many housing units. During the 1980s for example, Chicago lost 41,000 units. More than just the structures are at stake. We are also harming "the sense of our past, the vitality of our communities, and the shared values of those precious places." Through passage of this legislation, Clay explained, homeowners would be able to play an active role in stimulating economic development, revitalizing their own decaying resources, and restoring "a sense of purpose and community" to their neighborhoods (Shaw 2001). The House Ways and Means Committee will consider further legislative action although none has occurred so far.

Senator John Breaux of Louisiana, along with 10 co-sponsors, introduced the identical Senate version of the bill (S. 920) on May 21, 2001. He lauded the bill as being an effective antidote to urban sprawl, as it encourages rehabilitation of existing

homes over construction of new ones. Breaux also referred to Section 25B(g)(1) of the bill, which states that buyers of newly rehabilitated historic homes, rather than the sellers, are the recipients of the tax credit. This makes some housing more affordable for lower-income buyers, while increasing the tax base of economically distressed urban areas (Breaux 2001). The Senate Committee on Finance will consider further legislative action on S. 920. The committee has 21 members, including Breaux and co-sponsors Bob Graham (Fla.), James Jeffords (Vt.), and Robert Torricelli (N.J.).

The National Trust for Historic Preservation, the National Conference of State Historic Preservation Officers, and the Washington-based organization Preservation Action are pushing to get this bill back to the floor of Congress in 2002. They urge each concerned constituent to contact his or her senator and representative and ask them to co-sponsor this bill. They believe it is important to make members of Congress aware of the ways the Historic Rehabilitation Tax Credit has been successful in their state or district's commercial areas, and how the HHAAs could similarly improve the residential neighborhoods. Preservation Action believes that there are far-reaching economic, social, and cultural benefits of rehabilitating of our cities' historic homes (Gray 2000). Increased property values will attract

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investment to formerly depressed areas. This will provide jobs, and lead to more property tax and income tax revenues for state and local governments. It will create affordable housing and save culturally important structures (National Park Service 2001a).

Opponents of HHAA argue that the legislation may not necessarily help low-income residents. Instead, they fear, the historic areas will undergo gentrification and the poorer residents will be displaced (El Nasser 2000). NPS does not support the bill in its current form. First, it applies to too many structures. NPS argues that its scope should be narrowed to only buildings in Enterprise Communities and Empowerment Zones. Second, it does not provide enough benefit to the public. HHAA only demands that 5% of the expenditures be spent on the exterior of the structure. NPS argues that it should be raised to 25%. Third, Section 25B(d)(3) of HHAA gives state historic preservation officers (SHPOs) and certified local governments (CLGs) authority to approve projects. This dispersal of authority is too confusing, and will breed inconsistency in the review process. It is fair to taxpayers only if the secretary of the interior has authority (Park 2000). Lastly, NPS has used the secretary of the interior's standards for rehabilitation for over 25 years. Under these guidelines, all changes to a structure, including repairs, new additions, and

chemical and physical treatments, must preserve the historic character of the property. This includes retention of all "distinctive materials, features, finishes, and construction techniques (National Park Service 2001a)." Taxpayers had to meet these guidelines in their rehabilitation work in order to benefit from the Historic Rehabilitation Tax Credit. These standards maintain consistency while providing flexibility to reviewers. Section 25B(d)(2) of HHAA would implement a separate set of review standards for residences located in target areas, enterprise communities, empowerment zones, or renewal communities. NPS feels that adding a new set of standards would destroy the credibility of the existing ones (Park 2000).

The Role of Geographic Information Systems

Both supporters and opponents of the HHAA rely on data to support their position. For example, Preservation Action pointed out that they could lobby Congress more effectively if they knew how many historic buildings would qualify under the bill (Gray 2001). Opponents might argue that too many buildings would be qualified relative to the number of older buildings in the country.

Data can also include spatial data. For example, the HHAA defines a "certified historic structure" as a building that is individually listed on the National Register or a contribut-

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ing building in a registered historic district. In the latter case, only contributing buildings within a “qualifying census tract” (QCT) are eligible. A QCT is one in which the median family income is less than twice the statewide median family income. Consequently, we see that the location of a historic district in relation to a QCT is an important element in determining the eligibility of a contributing building (HHAA 2001).

Given HHAA’s complex rules, analysts might find it difficult to manually estimate the number of eligible historic buildings. One would need to plot the census tracts onto a map and color-code each according to its median family income. Next, the boundaries of the historic districts would have to be plotted onto the same map. Then one would need to determine the number of contributing buildings in each district that were within a QCT. For those districts that partially overlapped a QCT, one would need to split the district to determine the number of contributing buildings falling into the tract.

Geographic information systems (GIS) can automate this process, saving time and creating new analytical possibilities. For example, GIS could easily include additional geographic areas in the analysis. It can also change the value of parameters and quickly rerun the analyses. Consequently, GIS can estimate the number of potential certified historic

structures. GIS can also provide new insights on the viability of alternative modifications to the legislation such as those suggested by NPS.

The Park Service has argued that the number of potential certified historic structures will be too large, resulting in an unacceptable loss of revenue to the federal treasury. By NPS’s estimate, approximately 971,000 buildings would meet the criteria for certified historic structures (Park 2000). This figure represents 3.5% of the nation’s housing stock that was built before 1950, or 17,286,463 housing units (U.S. Census Bureau 2001). As an alternative to the QCT concept, NPS proposed that the credits apply only to historic buildings located in two existing tax-advantaged designations: enterprise communities and empowerment zones.

The Park Service also fears that the legislation might lead to gentrification (Park 2000). Gentrification occurs when historic buildings in a neighborhood are rehabilitated and the property values increase. The effect is to displace lower-income residents who cannot afford to pay the higher property taxes. HHAA discourages gentrification by giving the tax credit to homeowners instead of developers. But is there anything more that the legislation can do to target these benefits to lower- and middle-income neighborhoods?

Using Chicago as a study area and GIS as an analytical tool, we posed

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three questions. First, under current HHAA provisions, how many certified historic structures would there be in Chicago, and how many nationwide? Second, how many would there be under the NPS proposal of limiting certifications to empowerment zones and enterprise communities? Finally, how many would there be if we were to change the median family income level for QCTs?

GIS Analysis

To answer these questions we developed a “cartographic model” (Berry and Tomlin 1985) of the HHAA for Chicago. The cartographic model represents a selected portion of the real world, i.e., a simplified version of reality. By simplifying reality, we isolate and focus on those elements that we believe are necessary to predict or determine how things work: in our case, how the HHAA would work if enacted. The model identifies the data, the map operations, and the “solution map” needed to answer our questions (Knoerl 1991). The cartographic model is rigorous in the clarity it provides in showing how the data is manipulated to produce the solution map. Consequently, it provides a means by which others can recreate the analysis and evaluate for themselves the value of the model and its results (ESRI 2000).

There are five phases in this cartographic model. The first phase se-

lects National Register properties and census tracts that are within the city of Chicago. The second phase further limits the National Register properties to those that are currently used as residences. It also flags a census tract as a QCT if its median family income is less than twice that of Illinois (i.e., \$77,328). The third phase deals with those historic districts that are partially within a QCT. In these cases, we split the historic district into QCT and non-QCT portions. Figure 2 shows a typical split. Only contributing buildings in the QCT portion of the historic district can be considered for status as certified historic structures. The fourth phase estimates the number of contributing buildings in the QCT portion of the historic district by calculating the proportion of QCT area in the district and multiplying this percentage against the total number of buildings in the district. For example, 30% of the historic district in Figure 2 lies within the QCT area. There are 469 contributing historic structures in the entire district. By multiplying 469 by 0.30, we estimate that there are 141 contributing historic structures in the QCT portion of the district. In the final phase of the analysis, the number of contributing historic structures for individually listed National Register properties are added to the estimate derived above to arrive at the total number of contributing historic structures.

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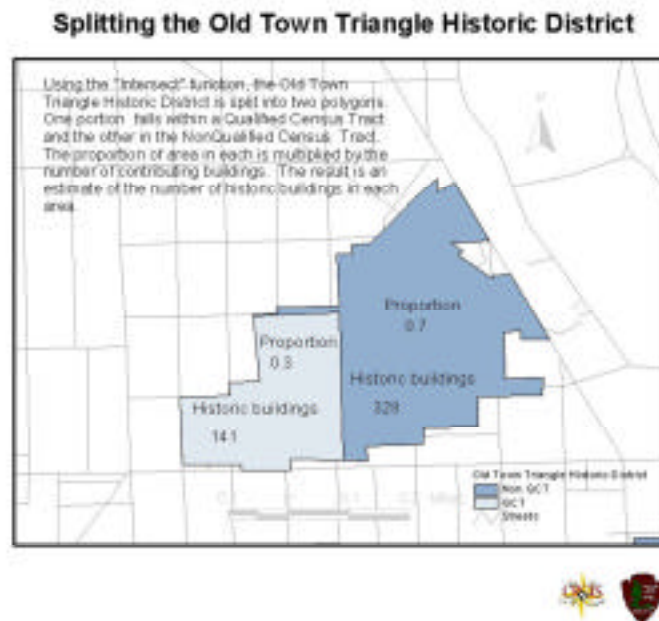


Figure 2. Splitting a historic district into QCT and non-QCT portions.

Before running the model, we had to collect and process the data. These tasks posed five challenges:

- First, at the time of the analysis the Census Bureau had not released the 2000 census data on median family income; therefore we used 1990 census data. Future analysis will use the newer data.
- Second, information on most of the historic districts did not include the street addresses of contributing buildings, and therefore we could not determine where each building was located relative to being within or outside of a QCT. Consequently, we used the proportional method described above in estimating the number of contributing historic structures in Chicago's historic districts.
- Third, the National Register data for the Pullman and Ridge historic districts did not indicate how many contributing buildings were in these districts. The Illinois Historic Preservation Agency (the state historic preservation office) and the Historic Pullman Foundation produced an estimate for the Pullman Historic District. We were unable to arrive at an estimate for the Ridge Historic District and therefore could not use it in the analysis.
- Fourth, because accurate bound-

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aries were needed, we digitized each historic district boundary using the original U.S. Geological Survey 7.5-minute topographic map contained in the National Register file.

- Finally, most of the Chicago Landmark Commission historic districts overlapped the National Register historic districts, and therefore were not used. The remaining landmarks were not used because the number of contributing buildings in these districts was not known.

Once these challenges were met, we ran the model. Recall that our

first question was: How many certified historic structures would there be under HHAA as currently written? The solution map appears in the upper left corner of Figure 3 and the numerical data in row 1 of Table 1. The potential number of certified historic structures in Chicago is 5,334, representing 0.8% of the city's houses built before 1950 (682,983). If we were use 0.8% as estimated proportion of the nation's houses built before 1950 (17,286,463), there would be 138,292 certified historic structures nationwide. The NPS estimate was 971,000 (Park

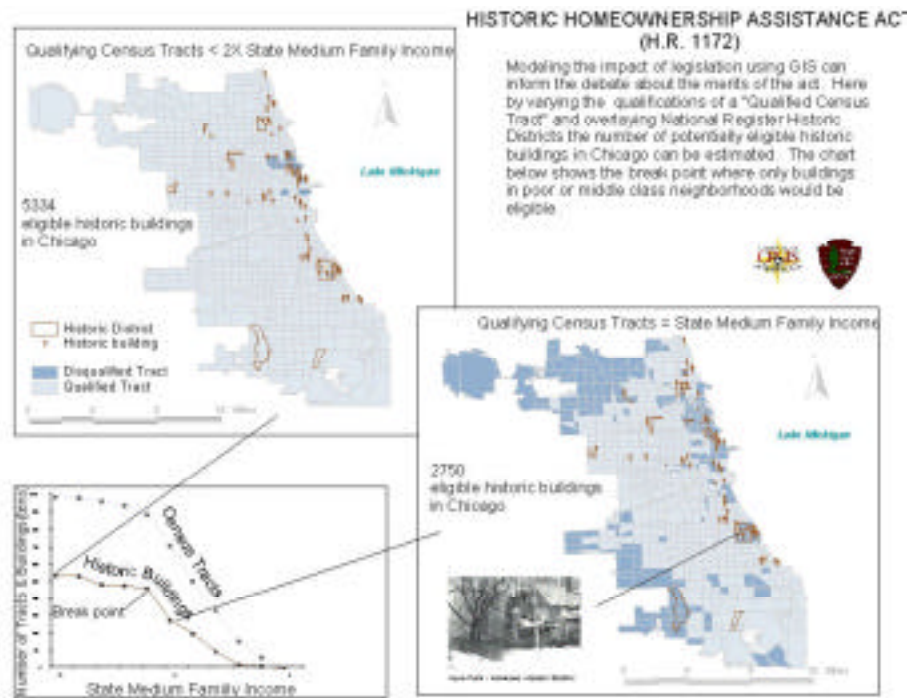


Figure 3. Number of certified historic structures under HHAA as currently written.

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Table 1. Estimated number of potential certified historic structures in Chicago and the nation for each criterion.

Criterion	Chicago		Nation	
	Potential number of certified historic structures	Percentage of older housing units (n=682,983)	GIS estimated number of certified historic structures	NPS estimated number of certified historic structures
HHAA	5,334	0.800	138,292	971,000
EZ/EC (NPS)	9	0.001	173	?
Low/Middle Income	2,750	0.400	69,146	?

2000). If Chicago is representative of large urban areas, then the NPS estimate is inflated.

The second question was: How many certified historic structures would there be under NPS's proposed modifications to the HHAA? The answer is graphically shown in the solution map appearing in Figure 4, with the numerical data appearing in row 2 of Table 1. Under these conditions, the number of certified historic structures in Chicago would be limited to nine. This represents 0.001% of Chicago's older housing stock. Using this percentage for the nation, only 173 historic buildings would be eligible. Such a number does not seem credible. However, there are about 100 empowerment zones and enterprise communities nationwide, of which seven are in Chicago. Even if one were to take the highest number of certified historic structures in a Chicago empower-

ment zone, six, and multiply that number by 100, the national total would still be a very low number (i.e., 600).

Our final question concerned the issue of targeting low and middle-income neighborhoods. What median family income threshold for a census tract would best target these areas? To find the answer, we reiteratively decreased the QCT median family income threshold and reran the model. We then plotted the number of certified historic structures for each run (see chart in lower right portion of Figure 3). It is only when we set the QCT median family income threshold to less than Illinois' MFI (\$38,664) that the historic districts in the higher-income neighborhoods become ineligible. The map in the lower right portion of Figure 4 shows this visually while, row 3 of Table 1 shows the numerical results. If the HHAA legislation

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Empowerment Zones and Enterprise Communities in Chicago



Figure 4. Number of certified historic structures under NPS's proposed modifications to HHAA.

set the QCT threshold to below Illinois' median family income, then Chicago would have 2,750 certified historic structures. This represents 0.4% of Chicago's older housing stock. If one were to apply this percentage nationwide, the number of potential certified historic structures would be 69,146 of the nation's older housing stock.

Although we encountered problems with the data, and one could reasonably argue that Chicago may not be representative of other urban areas of the country, the analysis has served to give some "ballpark" numbers to reflect on. Having said that,

we believe that the Park Service's estimate of the number of potential certified historic structures to be too high with respect to HHAA's current provisions. We also believe that the use of empowerment zones and enterprise communities as qualifying criteria to be too restrictive and is not likely to encourage meaningful participation in the rehabilitation program. The analysis has shown that by lowering the threshold for QCTs below that of the state's median family income, the act would target lower- and middle-income neighborhoods more effectively.

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Conclusion

The most serious barrier to using GIS in this study was the poor quality of data, not the GIS software or concepts such as the cartographic model. As we pointed out earlier, some historic districts in Chicago did not have basic information, such as the number of contributing buildings in the district or their street addresses. To create accurate map boundaries, we were forced to digitize them because most National Register boundary coordinates define a "circumscribed boundary," not the actual boundary of the district. The circumscribed boundary is often too inclusive of areas that are not part of the district. These problems are not limited to Chicago. There are more than 5 million historic properties listed on state historic preservation office statewide inventories, and there are more than 1 million contributing properties listed on the National Register (Knorl 1998). Only 13% of the state inventories have been entered into a GIS, and none of the National Register contributing properties have been entered into one. If we are serious about using the data in these inventories, we need to be serious about investing more attention and funding to cleaning them up and moving them from paper files to digital files. It may not be glamorous work or the kind that generates instant gratification, but in our view it is an essential prerequisite to con-

ducting the kind of analyses that this paper has highlighted.

Legislators, their staff members, and lobbyists rarely use GIS to analyze pending legislation. Yet many parts of proposed laws are replete with spatial provisions. For example, S. 445, "An Act to Provide for Local Family Information Centers," requires that, to be funded, information centers must serve a geographic area having between 15,000 and 25,000 students. H.R. 4, the "SAFE Act of 2001," calls for a water resource inventory in a geographic area within each state having consistent, emerging water supply needs. S. 1267, "The Conservation Extension and Enhancement Act of 2001", defines "eligible land" as that which is located in an area that has been historically dominated by natural grassland or shrubland and has potential to serve as habitat for animal or plant populations of significant ecological value if the land is restored to natural conditions. If GIS were used to evaluate or predict the intended (as well as unintended) effects of such proposed laws, then the legislative process would be well served. What we have tried to show in this paper is that GIS can be applied to modeling the impact of legislation. We hope those involved in the legislative process come to see how GIS can make their own work more effective, accurate, and visual.

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