

Concentrated Housing Code Enforcement in St. Louis

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This research employs probit analysis to examine the selection criteria governing nonuniform application of concentrated housing code enforcement in the city of St. Louis. The study has three specific objectives: (1) to identify the goals and geographic selection criteria characteristic of St. Louis' concentrated code enforcement program during the twenty years that it was in effect; (2) to establish whether program goals and selection criteria changed over time and, if so, why; and (3) to provide some judgment on the value of code enforcement as a policy tool to either reverse or slow neighborhood decline. Although fundamentally a case study, the conclusions should be of interest to those concerned with conservation of the housing stock in older cities throughout the country.

INTRODUCTION

Much of the literature on municipal housing code enforcement that has appeared in the past quarter century (e.g., Ackerman [1]; Komesar [16]; and Hartman et al. [14]) has been concerned with assessment of the effects of enforcement in deteriorating inner city neighborhoods, particularly the likelihood of increased rents and operating costs, evictions, and building abandonments. Awareness of these potential effects has produced a widespread and much

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discussed tendency toward nonuniform enforcement of housing codes across city neighborhoods. In the words of the National Commission on Urban Problems (hereafter, the Douglas Commission [22], p. 274), officials responsible for municipal code enforcement have selected target areas by "generally excluding both the worst and the most affluent neighborhoods." While the "standards in use" as opposed to the formal city codes themselves are clearly of considerable moment to both the real estate and urban planning professions, surprisingly little empirical work on this subject has appeared to date. The work described here is intended to address this gap in the literature by applying econometric analysis to concentrated housing code enforcement in the city of St. Louis. Although basically a case study, much of what we report may be applicable to older cities throughout the country.

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This paper is divided into three major parts. The first consists of an historical narrative that describes the emergence and evolution of modern housing codes and, in particular, the development of concentrated housing code enforcement programs in the city of St. Louis. Based on descriptions of this process gathered from interviews, newspaper and library archives, and municipal and federal reports, hypotheses regarding the selection of geographic areas for these programs are introduced. In the second part, the statistical technique of probit analysis is applied to test these hypotheses. In addition, drawing on the present research and some of their earlier work, the authors comment upon the effectiveness of concentrated housing code enforcement programs in different kinds of city neighborhoods. The third part contains the conclusions of the paper and some policy implications.

HISTORICAL NARRATIVE AND HYPOTHESIS DEVELOPMENT

Code Enforcement in Theory and Practice

The modern conception of housing code enforcement has a rich heritage that dates from the days of the tenement house reformers in the late 19th and early 20th centuries. Both the tenement house laws and the modern minimum standards housing ordinances, hereafter referred to as housing codes, share certain basic purposes, yet differ in others. Both the modern housing code and its predecessors were designed for the protection of public health and safety. The New York tenement house law of 1867, the first of its kind, was enacted in the wake of cholera epidemics that ravaged the city's population after the Civil War

(Friedman [13], Ch. 2). In St. Louis and elsewhere, the basic elements of the modern housing code and the tenement house laws were, likewise, very similar; both established standards for minimum facilities and equipment, their maintenance, and conditions of occupancy in the dwelling unit.

The modern housing code, which the Douglas Commission [22] dated from Baltimore's 1941 code revision, differs from the old tenement house legislation in its expanded purposes. The housing code has come to be viewed "[a]s a method for systematically arresting slums and blight, rehabilitating dwellings . . . and conserving residential neighborhoods" (National Association of Housing and Redevelopment Officials [21], p. 1). Indeed, it might be argued that rehabilitation has become the primary code enforcement objective during the post-World War II period. Aside from periodic campaigns in the wake of disaster such as a fire, concentrated code enforcement efforts have been guided, in the main, by the goal of neighborhood preservation or rehabilitation; public health and safety objectives increasingly have been serviced by the mechanism of referral or complaint. This changing emphasis in code enforcement has followed from widespread post-War attention to problems of urban renewal and revitalization.

One other "purpose" of code enforcement is implicit in character and, for this reason, is seldom discussed under this heading—code enforcement in rental housing represents a potential in-kind redistribution to tenants.¹ This redistributive effect may be reduced or eliminated altogether, especially in tight housing markets, if landlords pass along code enforcement costs in higher rents. If landlords cannot recoup some or all of the cost of compliance—a plausible result in a weak rental market where renters have alternatives—then a de facto redistribution in the form of improved housing quality, however short-lived, may occur. A recent study of St. Louis rental housing (Quinn et al. [26]) found evidence of such a welfare transfer during the 1960s, with landlords shifting maintenance effort from their holdings in middle-income white South Side neighborhoods to lower-income black areas in North Side and West End neighborhoods that were undergoing the sharpest declines in profitability.²

In summary, modern housing codes are characterized, in theory, by three different sets of goals or purposes: (1) the safeguarding of basic public health and safety; (2) the preservation or rehabilitation of blighted neighborhoods; (3) and, however unintentionally, potential redistribution to tenants via in-kind transfers. Of the first two explicit objectives, preservation has been the principal focus of concentrated code enforcement since World War II.

In practice, it is widely acknowledged that code enforcement is not applied uniformly in most cities. In its examination of housing code enforcement in American cities, the Douglas Commission ([22], p. 274) put the case this way:

Our most important single finding, however, is that minimum standards, while enforceable, are often unenforced. Although intended to apply city-wide, the inspection of housing and the enforcement of housing codes are

frequently carried out only in limited areas, generally excluding both the worst and the most affluent neighborhoods.

While code enforcement officials typically emphasize administrative problems such as shortage of funds and qualified personnel in explaining the widespread underenforcement of housing codes (e.g., Lieberman [17], p. 45), a more basic reason can be found in the operating norms of code enforcement professionals. The working norms of code enforcement personnel emphasize professional discretion and selectivity in code application. With some exceptions, code enforcement professionals have practiced a kind of "urban triage" (cf. Drucker [11]), devoting little attention to either the best or the worst neighborhoods in favor of "gray areas" characterized by a basically sound housing stock that is beginning to blight.

Despite often highly emotional criticisms that policymakers have ignored the most needy, seriously deteriorated neighborhoods, the triage philosophy has guided most programs of concentrated code enforcement.³ This point was affirmed in a survey of housing code administrators undertaken by the National Association of Housing and Redevelopment Officials (NAHRO) during the mid-1960s. In that survey ([17], pp. 41-43), most code enforcement officials responded that enforcement in the "worst areas of [the] city" would produce no long-term benefit; and, when asked whether there should be regular code inspections in "good areas," "[m]ost . . . were not able to answer the question at first because they had never given any thought to the problem." In comparison, most officials believed "that systematic enforcement programs would produce the greatest benefits in the so-called 'gray' areas."

The practice of triage by code personnel has been recommended by both professional organizations and the practicalities of daily experience. In one of the most influential pronouncements on housing code enforcement, sponsored in 1945 by the American Public Health Association (APHA) Committee on the Hygiene of Housing, the principle of different treatment for different kinds of neighborhoods was developed in unequivocal terms ([3], pp. 44-45):

When the quality of areas has been measured, the door is open for enforcement agencies to relate their programs to the general character and specific problems of given areas. Inspection energies can thus be concentrated where they will be most effective rather than widely scattered on the usual basis of servicing complaints. In areas scheduled for early demolition ["slums"], enforcement efforts may well be limited to interim control of the most flagrant health and safety hazards. Primary inspection energies can be devoted to areas of substandard grade, but not warranting demolition ["intermediate areas"], where wide enforcement of a fair total standard would be the goal.

In short, where police power agencies make use of such appraisal to flag the areas that must be cleared, and to marshal public opinion in support of the needed rehousing programs, they can begin to taper off the hopeless task of patchwork law enforcement in the slums.

The standard reasons advanced to justify underenforcement in severely deteriorated areas are economic ones that follow from the everyday experiences of building inspectors. The most severely deteriorated structures cannot be brought up to code standards economically. "Experience is that few of them will be, and that if they are the rents will rise beyond the reach of those now living in them" (APHA [3], p. 28). In the most extreme cases, property owners may elect to abandon their buildings, thereby displacing poor people and decreasing the supply of low-cost housing, rather than expend the dollars that would be needed to bring them up to code (cf. Hartman et al. [14], pp. 93-95). In recent years, numerous studies (e.g., Quinn et al. [26]; Stegman [32]; and Sternlieb [33]) have provided substantial evidence that indicates that returns on low-rent inner city properties are marginal at best and that many of these units do not generate enough profit to justify expenditures demanded by rigorous application of housing codes. The basic problem faced by those who would argue for rigorous, systematic enforcement of housing codes in deteriorated low-income areas is stated succinctly by Hartman et al. ([14], p. 92): "...decent housing for poor people is 'uneconomic.'"

Housing Code Enforcement in St. Louis

Despite a lengthy record of concern with substandard housing conditions dating from the early years of the century, St. Louis made little progress in dealing with its housing problems prior to the conclusion of World War II. The war years were instrumental in raising local consciousness of the need for public action because St. Louis' housing inventory, already aging seriously, was placed under considerable stress by a substantial influx of workers and their families seeking employment in the booming defense industries. As rough indicators of the extent of the need, the 1950 Census of Population ([36], p. 49) would later report that 28.5% of the city's more than 250,000 dwelling units were either lacking in private bath facilities, running water, or were dilapidated; 21.2%, with more than one person per room, were overcrowded. In April, 1946, St. Louis Mayor Aloys Kaufmann submitted a proposed housing code to the Board of Aldermen and, at the same time, requested that the City Planning Commission prepare a comprehensive plan to guide the city's development for the next twenty-five years. That plan, completed and transmitted to the mayor the following January, contained the fullest statement of the thinking that was to guide St. Louis' approach to neighborhood rehabilitation and code enforcement during the 1950s and much of the 1960s.

In a section titled "Housing: Three Areas—Three Programs," the plan articulated a three-part strategy for confronting the city's housing problems. In

“obsolete areas,” it called for clearance and reconstruction as soon as feasible of neighborhoods “too far gone” to respond to lesser measures. In “blighted districts,” the plan urged rehabilitation and housing code enforcement as tools with which to avert further deterioration and to restore good residential conditions. To this end, the plan stressed the immediate need for passage of a housing code. In the city’s “new residence areas,” revision of the city’s zoning ordinance and increased vigilance by neighborhood organizations were recommended as measures to preserve good residential quality. Of the city’s obsolete and blighted residential districts—collectively estimated to contain half of its housing—the St. Louis City Plan Commission ([28], plate No. 13) cautioned “[t]his cancerous growth may engulf the entire city if steps are not taken to prevent it.”

In acknowledging that economic considerations would preclude “immediate reconstruction of obsolete areas,” the plan ([28], pp. 29, 32-33) in effect urged a triage strategy that would emphasize the intermediate, “blighted districts.” In the words of the document, passage of housing code to implement this strategy was “[t]he most important single requisite for the improvement of housing in St. Louis.”

The APHA assisted the city in developing the minimum standards housing ordinance that was finally enacted into law in April, 1948. The ordinance would not take effect for two years, during which time the public would be educated with regard to housing code provisions and the city would conduct a survey of housing conditions preliminary to selection of areas where the code would be enforced intensively. Actually, the necessary funds were not appropriated by the Board of Alderman until 1950 and the survey was not completed until 1953, with selection of blighted areas commencing late that year.

The city’s program of concentrated housing code enforcement—also referred to as the St. Louis Neighborhood Rehabilitation Program—was initiated in December, 1953, with the implementation of efforts in two neighborhoods, the Cherokee and Hyde Park areas (cf. Community Development Agency [9]). Working in close cooperation with residents and property owners in the selected areas, systematic door-to-door code enforcement was combined with public improvements to parks, playgrounds, streets, and street lighting in a comprehensive program. Public improvements were financed, in part, with the proceeds from a \$4 million bond issue approved by city voters in 1955, while the costs of code-induced improvements to residential structures were financed by their owners.

The criteria which resulted in selection of the first two areas for the city’s rehabilitation program were basically those of the planning professional. The city had employed a residential conditions survey instrument designed by the APHA [3] to produce a three-fold classification of city neighborhoods. About one-half of the city’s residential area was judged to be in good condition, calling for relatively minor conservation efforts. The remainder was almost equally divided into areas designated for reconstruction and rehabilitation. The application of triage logic was implicit in the classification scheme. As acknowledged by city officials some years later (cited in Angelides [4]),

We had to decide what area was worth saving [i.e., the rehabilitation area]. . . Vigorous enforcement in another 25 per cent of the city regarded as slum [i.e., the reconstruction area] has all but been written off as impossible.

Aside from occasional, disaster-induced campaigns, housing code enforcement in the so-called reconstruction or slum areas was typically done only in response to complaints (cf. Nash [19], p. 97). Likewise, enforcement in the good housing or conservation area was undertaken either on a complaint basis or as a result of occasional spot checking by city inspectors. Concentrated efforts intended to halt the spread of blight were restricted to the rehabilitation districts.

Both the Cherokee and Hyde Park areas had characteristics that placed them squarely within the intermediate category of the triage scheme (cf. U.S. Bureau of the Census [35]). Both neighborhoods had a basically sound housing stock, although blighting was apparent in boundary areas and even within selected blocks. Average contract rentals were approximately three-quarters of the city-wide median and the estimated value of single-family dwellings was even lower at roughly 60 to 65% of the city median. Significantly, neighborhood incomes were at or above the city-wide median—12% above in Cherokee and right at the median in Hyde Park—suggesting that residents might have the ability to afford the improvements necessitated by code enforcement. While the proportion of owner-occupied units was only about 30% in both Cherokee and Hyde Park, owners were present in approximately two-thirds of the buildings, with less than 15% containing five or more units.

The city's concentrated code enforcement program was piloted in two neighborhoods that were virtually all-white, Cherokee on the South Side and Hyde Park on the North Side. When the program expanded in 1956 into the Gravois and Pontiac areas bordering on the Cherokee neighborhood, these, too, were all-white. It would, however, be inaccurate to suggest that the city's selection practices were designed to avoid blacks. When the program was extended into the West End and Fountain Park areas in 1958 and 1959, city inspectors encountered substantial numbers of blacks (45 and 90%, respectively). One official has suggested that, rather than avoid blacks altogether, the city's strategy was to avoid neighborhoods in the process of racial transition.⁴

Throughout the printed material describing the city's Neighborhood Rehabilitation Program, one other selection criterion was stressed continually—the need for cooperative neighborhood residents. Indeed, as it had done in both Cherokee and Hyde Park, the city often organized residents in an attempt to secure this cooperation. The nature of this process is critical for understanding the selection of areas for the city's program, for it allowed local officials to utilize their own preferred professional norms without experiencing a great deal of outside pressure. In the words of one anonymous observer [30],

the program . . . was not a municipal response to citizen cries of "do something." There were no such cries, largely because it had not occurred to the residents of the blighted areas that there was much use in crying. Instead the rehabilitation program took shape from the experiences and discussions of various city officials concerned with public health, building safety and city planning.⁵

Even allowing for the need to clear area selections with local politicians, the initial impetus and the selection criteria were products of the planners' professional ethos. While some political and neighborhood group pressures were, doubtless, present, they were accommodated within the basic triage scheme developed by the city's planners and code enforcement officials. This was the context within which the federal support for code enforcement was brought to bear in the late 1960s.

Federal Assistance for Code Enforcement

The federal government had been a strong advocate of housing code enforcement in American cities since 1954, when the Housing Act was amended to require cities applying for federal assistance for urban renewal to develop a "Workable Program." Housing codes were singled out as a possible element within such a program. The Housing and Home Finance Agency (HHFA) soon made housing codes a mandatory part of the Workable Program concept; and, in 1964, the Housing Act was, once again, amended to reflect this fact (cf. Friedman [13], pp. 49-50). The 1964 legislation was noteworthy as well because it represented the first time that federal dollars were made available for code enforcement. The procedure set up under this act was cumbersome and, as a result, a revised and expanded code enforcement support program was written into the 1965 Housing Act (cf. NAHRO [21], pp. 6-7).

The Federally Assisted Code Enforcement (FACE) Program authorized by Section 117 of the 1965 legislation reimbursed large cities like St. Louis for two-thirds of the cost of a comprehensive program of concentrated code enforcement and public improvements designed to arrest residential blight in selected neighborhoods. The legislation also authorized the use of federal rehabilitation grants and loans in connection with approved FACE projects. Low-income property owners were eligible for grants up to \$1,500 (later raised to \$3,500) to defray the cost of code-induced improvements. Direct 3% loans were to be available in FACE districts to those applicants "unable to secure the necessary funds from other sources upon reasonable terms and conditions" (cited in NAHRO [21], p. 62). In certain instances, loans could be piggybacked on grants. Federal mortgage insurance and relocation assistance also was authorized under Section 117.

The criteria governing the selection of areas for FACE projects were detailed in the Urban Renewal Administration's Local Public Agency (LPA) Letter No.

345. In essence, federal assistance would be available only in those neighborhoods where concentrated code enforcement and related public improvements were judged adequate "to arrest the decline of the area" (cited in Douglas Commission [22], p. 291). The area did not have to be fundamentally sound to be eligible, but assistance was "not authorized for use in the most depressed slum and blighted areas" (NAHRO [21], p. 37). In theory, the regulations appeared to follow the same sort of triage logic characteristic of St. Louis' own concentrated code enforcement program. In practice, however, the regulations may not have been strictly heeded. Intense political pressures were brought to bear on both the local and federal levels which encouraged permissive interpretation of the federal project eligibility guidelines.

The political life of most older, large American cities had changed in significant ways by the mid-1960s. In the wake of the Civil Rights Movement, low-income residents, especially racial minorities, were becoming increasingly vocal in demanding a wide variety of redistributive public programs designed to improve living conditions in the inner city. After passage of the Economic Opportunity Act in August, 1964, the federal government provided monies through the Community Action Program and the newly created Office of Economic Opportunity (OEO) to promote "maximum feasible participation" by the poor in neighborhood-based organizations that were created to advance the interests of disadvantaged city residents. The volume and intensity of citizen participation in civic affairs, which had been mandated initially by the federal government in the Workable Program concept of the 1954 Housing Act, increased very substantially during the mid-to-late 1960s. NAHRO ([21], p. 17) took note of this trend in a 1966 publication on code enforcement when it observed that

[m]inority groups and the poor are becoming increasingly articulate about their housing needs. The activity of such groups is, more than likely, something new in the experience of most code administrators and probably will be regarded with some doubt. He may be blamed for failing to do just those things which he may have been seeking political support to do. And, if he has made mistakes, these neighborhood groups will be sure to discover them.

Federally Assisted Code Enforcement in St. Louis

The St. Louis experience provides a graphic illustration of these developments. By the mid-1960s, citizen group activity with regard to housing conditions had become strident in selected neighborhoods. This was especially true of the city's West End, formerly a middle-to-upper income white area of large single-family residences and apartment houses that experienced a substantial immigration of poor blacks during the late 1950s and 1960s. In October, 1965, a group of West End property owners "threatened a tax strike unless the city started enforcement of building, zoning, and sanitation codes" (Angelides [5]). In December,

seventy-five persons from the Union-Sarah Gateway Center, one of the city's OEO-funded neighborhood organizations, picketed city hall "in protest against the lack of enforcement of housing laws in their neighborhood" (St. Louis Post-Dispatch [31]). The group presented Building Commissioner Kenneth Brown with petitions containing 3,000 signatures that reiterated the threat of a tax strike unless the city moved quickly to enforce housing standards in the West End. The Post-Dispatch [7] editorialized against the triage philosophy that had guided St. Louis' concentrated code enforcement efforts since their initiation late in 1953:

The city government—and at the moment that is Mayor Cervantes—has its priorities mixed up. The places to assign the city's admittedly undermanned force of building inspectors for continuous methodical search for code violations are the places where such violations are most likely to occur. And these are first and foremost the slum areas where it is profitable for landlords to violate the law at the expense of tenants and the community at large.

Top priority on inspections now goes to the so-called "rehabilitation areas" as designated by the City Plan Commission—areas the city commendably is trying to prevent from slipping into slums. If the city has to make a choice, should not its police powers be used in the first instance to upgrade living conditions for those in the worst shape? In such a case the 'complaint' principle could be operative in the rehabilitation areas.

The lengthy editorial went on to point out what it perceived as a possible solution to the code enforcement problem:

Nor is a shoestring operation of inspection services necessary, judging by the comments of Daniel R. Mandelker, Washington University's professor of housing law. He said the Federal Housing Act of 1965 provides up to two thirds the total cost of concentrated code enforcement.

Prof. Mandelker thinks St. Louis' slums could be eliminated in 10 to 15 years with proper use of the applicable federal tools. It is a vision the city's political leadership surely must attempt to make real.

Mayor A. J. Cervantes was a colorful, populist-style politician who encouraged neighborhood activism and citizen participation. Improvement of local housing conditions was one of the priorities of his administration and, in response to growing protests, the mayor decided to intensify the city's efforts to enforce its housing code. Additional inspectors were hired, a special night housing court was created within the municipal courts structure to expedite the prosecution of code violations, and, in March, 1966, the administration applied for a federal grant under the FACE program. In February, 1967, the city's application was

approved; the nearly \$2 million grant was to be expended for concentrated code enforcement and supporting public improvements in three target areas in the Academy and O'Fallon neighborhoods.

With a four-month extension, the St. Louis FACE program experience lasted a total of forty months, through June, 1970. From the outset, the program was vexed by numerous problems, including weak administration, improperly documented or unallowable expenditures, favoritism in selection of repair contractors, failure to advertise for bids on contracts in excess of \$10,000, shoddy and over-priced repair work, and red tape in the processing of property owner grant and loan requests (St. Louis Post-Dispatch [8, 15]; and St. Louis Globe-Democrat [23]). Alleged irregularities in FACE program administration caused the U.S. Department of Housing and Urban Development (HUD) to suspend operation of the city's program for four months late in 1969, during which time the city substantially altered the administrative structure responsible for project implementation.

Beyond the allegations already mentioned, HUD auditors charged that the entire St. Louis program was fundamentally flawed. Jack Harrington, Assistant HUD Administrator with the Ft. Worth office, concluded that the three areas selected for the St. Louis FACE program were "inappropriate for code enforcement program work because they were too far blighted to start out" (cited in Thornton [34]). This charge was reinforced by an evaluation of the FACE program conducted in twenty-nine cities, including St. Louis, by the General Accounting Office (GAO) in 1972. GAO auditors found that code enforcement had achieved only 71% compliance in the three targeted areas instead of the goal of full compliance. In the words of the report (cited in O'Brien [25]),

City officials told us that had they realized the seriousness of deterioration in the area, they would not have selected it for a special code enforcement project.

Such information was available. All that was needed was an adequate inspection of the area.

But the city did not do this before it submitted its application, and HUD did not request that it be done.

In responding to the GAO, Albert Nerviani, the St. Louis official in charge of the FACE program in 1970, declared that neither local nor HUD officials were familiar with the HUD criteria on area selection; yet, at the same time, he admitted candidly that the city would not have selected the areas in question for its own, locally financed code enforcement program. "[A]lthough the area was down the list for [the city's] neighborhood rehabilitation [program], they (the city) thought this was a chance to get assistance from federal grants to bring up deteriorated neighborhoods" (cited in O'Brien [24]).

It appears that city code enforcement officials compromised their long-held preference for triage selection criteria during the late 1960s and early 1970s by going into areas that, if not slums, were decidedly more risky than earlier practice would have allowed. Further, the city appeared to break out of this pattern, returning to the status quo ante of triage selection norms only after the release of the critical GAO report in mid-1972—perhaps, an indication of learning through experience. These hypotheses are examined systematically in following sections.

ECONOMETRIC EVIDENCE

Two hypotheses stand out from the author's review of descriptive newspaper accounts, city and federal reports, and interviews with local officials summarized in the previous section. The first hypothesis, strongly supported by the historical narrative, is that selection of St. Louis code enforcement districts followed a triage strategy by avoiding both the worst and best residential neighborhoods. The second hypothesis, somewhat more tentative than the first, is that the selection criterion used by local program administrators changed over time in response to local political activism, the availability of federal funding, and, perhaps, learning through experience. In this part of the paper, these hypotheses are examined using the statistical technique of probit analysis. The probit analysis reconstructs the decision-maker's criterion as a weighted index of neighborhood characteristics that, on the basis of revealed preference, guided city officials in targeting code enforcement efforts. Other attributes of the neighborhoods selected—most notably, crime rates—also are investigated in an attempt to gain some understanding of those aspects of the environment that might have caused code enforcement to fail as a preservation technique during the late 1960s and early 1970s.

Model Development

The narrative presented in previous sections suggests that the selection of areas for concentrated code enforcement in St. Louis depended, in part, on housing quality, household income, racial composition, the degree of owner occupancy, and the types of structures in the neighborhoods. Assume that the criterion used by the public decision-makers to evaluate neighborhoods for selection can be written as a weighted index Z of these neighborhood characteristics:

$$Z_{it} = \sum_{k=1}^K \beta_{kt} X_{kit}. \quad (1)$$

The weights (β_k) of the index reflect decision-makers' preferences regarding the attributes desired of neighborhoods to be included in the program. Neighborhood i would have been selected in time period t if its desired attributes

resulted in an index value Z_{it} exceeding some minimum threshold z_t required for selection; that is, neighborhood i would have been included in the program in period t if:

$$Z_{it} > z_t. \quad (2)$$

Because the decision-makers did not apply explicitly any such formal quantitative index, the selection threshold, z_t , will be viewed as stochastic. To test the hypotheses developed in the historical narrative, we must draw inferences about the specifications of Z_t and its weights from data descriptive of the characteristics of both the neighborhoods selected as well as those not selected.

Let Y_{it} be a dichotomous indicator equalling 1 if neighborhood i was selected in period t or 0 if neighborhood i was not selected. Assume, furthermore, that z_t is distributed normally. The conditional probability that neighborhood i was selected in period t given its vector of measured characteristics X_{it} then can be written as:⁶

$$P(Y_{it} = 1 | X_{it}) = P(z_{it} < Z_{it}) = \int_{-\infty}^{Z_{it}} \frac{e^{-\frac{s^2}{2}}}{\sigma} ds. \quad (3)$$

The implicit weights applied to the neighborhood characteristics by the decision-makers are the coefficients of Z and can be estimated by the probit technique:⁷

$$\text{probit}(Y_{it}) = F^{-1} [P(Y_{it})] = Z_{it} = \sum_{k=1}^K \beta_{kt} X_{kit}. \quad (4)$$

where F^{-1} is the inverse of the cumulative normal distribution function.

The question of how the housing code was enforced can be explored by examining the coefficients of the probit index. Consider two alternative strategies: (a) "worst first" enforcement, targeting neighborhoods with the highest incidence of code violations; and (b) triage enforcement, excluding both the worst and the best neighborhoods. If city officials had intended to address the previously cited policy objectives of minimum public health and safety and, perhaps more arguably, redistribution in kind, then the "worst first" strategy should, logically, have been employed. Furthermore, as argued in the newspaper editorial cited earlier, the "worst first" strategy would have maximized the number of code violations detected by focusing inspectors' efforts on those neighborhoods where the incidence of violations was suspected to be highest. Isolated inspections would have occurred only in response to complaints. The probit analysis would reveal implementation of the "worst first" strategy through the monotonicity of the selection probability with respect to neighborhood characteristics associated with the condition of structures and the economic well-being

of neighborhood residents. For example, the probability of selection under the "worst first" strategy, *ceteris paribus*, would be inversely related to the degree of owner occupancy, rent and household income for the relevant domain of these variables. Thus, empirical evidence from the probit analysis would support the hypothesis that officials employed the "worst first" strategy if the probability of selection was monotonically decreasing with respect to these variables in the non-negative domain.

Triage, rather than "worst first," would have been the logical strategy to select if the primary policy objective had been neighborhood preservation, as opposed to health and safety. Because triage implies the rejection of the best and worst neighborhoods, some neighborhood characteristics must enter the probit index nonlinearly. For example, consider neighborhood characteristic X_K in the following specification:

$$Z = \beta_0 + \beta_1 X_{1t} + \dots + \beta_K (X_K - \alpha_K)^2 \quad (5)$$

where α_K is the decision-makers' preferred or "target" level for the K^{th} attribute under the triage strategy. If the K^{th} attribute for neighborhood i was either above or below α_K and β_K was negative, then the probability that neighborhood i was selected would diminish accordingly.⁸ For example, under triage both high-income areas with good housing quality and low-income areas with poor housing quality would have been assigned low selection priorities. Thus, both the housing quality and income characteristics must enter the probit index nonlinearly. In addition, because neighborhoods in the midst of racial transition might have been viewed as high risk, the racial composition of the area should also enter the probit index nonlinearly:

$$\begin{aligned} Z &= \beta_0 + \beta_1 X_1 + \dots + \beta_K \alpha_K^2 - 2\beta_K \alpha_K X_K + \beta_K X_K^2 \\ &= (\beta_0 + \beta_K \alpha_K^2) + \beta_1 X_1 + \dots - 2(\beta_K \alpha_K) X_K + \beta_K X_K^2 \\ &= \beta'_0 + \beta_1 X_1 + \dots + \beta'_K X_K + \beta_K X_K^2, \end{aligned}$$

or for the general case:

$$Z = \beta'_0 + \sum_{k=1}^K \beta'_k X_k + \sum_{k=1}^K \beta_k X_k^2 \quad (6)$$

This specification is sufficiently general to encompass either the "worst first" or triage strategy. Under the "worst first" strategy, equation (6) would have *no* extrema in the positive quadrant. Under the triage strategy, equation (6) *must* possess an extremum with respect to at least one characteristic in the positive

quadrant. Thus, estimates of the α 's, which designate the extrema, provide insight into the question of whether triage occurred.

For any characteristic such as X_k , the corresponding extremum α_k is estimated by:

$$\hat{\alpha}_k = \frac{\hat{\beta}'_k}{-2\hat{\beta}_k} \quad (7)$$

where $\hat{\beta}'_k$ and $\hat{\beta}_k$ are the probit estimators of β'_k and β_k , respectively, as shown in equation (6). By Slutsky's Proposition, $\hat{\alpha}_k$ is a consistent estimator of α_k (cf. Cramer [10], pp. 254-255). Thus, estimation of equation (6) can provide insight into whether the selection of neighborhoods favored "worst first" enforcement or the triage strategy and, if the latter, estimates of the target levels (α 's) of the neighborhood characteristics used to implement that strategy.

By adding appropriate dummy and slope dummy variables, it is also possible to examine how the target levels (α 's) might have changed over time. Revise equation (6) as follows:

$$Z_t = \beta_0 + \sum_{k=1}^K \beta'_k X_{kt} + \sum_{k=1}^K \beta_k X_{kt}^2 + \gamma_0 \text{DUM}_t + \sum_{k=1}^K \gamma_k \text{DUM}X_{kt} \quad (8)$$

$$\text{where } \text{DUM}_t = \begin{cases} 0 & \text{if } t \leq t^* \\ 1 & \text{if } t > t^* \end{cases}$$

$$\text{DUM}X_t = \begin{cases} 0 & \text{if } t \leq t^* \\ X_{kt} & \text{if } t > t^*, \end{cases}$$

and t^* partitions two time intervals. A consistent estimator of the extremum with respect to X_k for $t > t^*$ is then:

$$\hat{\alpha}'_k = \frac{\hat{\beta}'_k + \hat{\gamma}_k}{-2\hat{\beta}_k} = \hat{\alpha}_k - \frac{\hat{\gamma}_k}{2\hat{\beta}_k} \quad (9)$$

Both $\hat{\alpha}_k$ and $\hat{\alpha}'_k$ are ratios of asymptotically normal random variables; consequently, the distributions of these estimators are extremely complex and cannot be used to test hypotheses directly. We can, however, explore the hypotheses of interest in terms of the $\hat{\beta}$'s and $\hat{\gamma}$'s.

Theoretical Expectations and Empirical Results

The probit model in equation (8) was estimated using pooled cross-section time-series data for St. Louis neighborhoods from 1950 through the mid-1970s. The variables used in the probit analyses are described in Exhibit 1; the results of the probit analysis, in Exhibit 2; and estimates of the target levels in Exhibit 3.

The a priori signs of the coefficients in Exhibits 2 and 3 are conditional upon the strategy implemented. Under the "worst first" strategy, enforcement would have been targeted at heavily deteriorated areas with high concentrations of low-income blacks and apartment houses. Thus, the selection probability function would be monotonically decreasing with respect to OWNER, INC, and RENT in the nonnegative domain and monotonically increasing with respect to RACE and FIVE in the nonnegative domain. Under these conditions, the coefficients of OWNER and FIVE would be negative and positive respectively, and at least one or both of the coefficients in each of the following pairs would be negative: INC and INCSQ; RENT and RENTSQ; at least one or both of the coefficients of RACE and RACESQ would be positive. Furthermore, in Exhibit 3 *none* of the α estimates would be positive. Political and minority activism might have caused even more focused targeting of poor, black areas in the late 1960s and early 1970s, implying a negative coefficient for DUMINC and a positive coefficient for DUMRACE.

Under triage, the coefficients of INCSQ and RENTSQ would be negative, reflecting avoidance of the best and worst neighborhoods. The coefficient of RACESQ would be positive, reflecting avoidance of neighborhoods in transition and a preference for stable neighborhoods of either extreme. To yield appropriately signed extrema given the signs of the coefficients of the squared terms, the coefficients of RENT and INC would be positive and RACE, negative.⁹ During the political and racial activism of the late 1960s and 1970s, the narrative hypothesizes that the target level for race rose and that for income fell. Again, given the signs of the coefficients for the squared terms, this requires that the coefficients of both DUMINC and DUMRACE be negative.

The results of Exhibit 2 are unambiguously supportive of the hypotheses developed in the historical narrative. The significance and signs of the coefficients are consistent with those expected from a triage strategy. Furthermore, the coefficients of the slope dummy variables verify a shift in the target levels of the triage strategy during the late 1960s and early 1970s. Evidence of this shift is even more apparent when one compares the α and α' estimates in Exhibit 3. Consistent with the mounting redistributive pressures characteristic of this period, there was a distinct shift toward the selection of lower income neighborhoods (though ones with relatively higher rents) and neighborhoods with a very high percentage of black residents. Unlike earlier selections which, with few exceptions, were almost entirely white, the selections of the late 1960s and early

EXHIBIT 1

VARIABLE DESCRIPTION

Y_{it}	a	1 if area i was selected for period t , 0 if area i was not selected.
$RACE_{it}$	b	decimal fraction of dwelling units occupied by non-whites in area i for period t .
INC_{it}	b	the ratio of area i median income for families and unrelated individuals to St. Louis city median income for families and unrelated individuals for period t .
$RENT_{it}$	b	a proxy for housing quality measured as the ratio of area average contract rent to St. Louis city average contract rent for period t .
$OWNER_{it}$	b	decimal fraction of owner-occupied dwelling units in area i for period t .
$FIVE_{it}$	b	decimal fraction of housing units in structures with five or more units to total housing units in area i for period t .
$RACESQ_{it}$	=	$RACE_{it}^2$
$INCSQ_{it}$	=	INC_{it}^2
$RENTSQ_{it}$	=	$RENT_{it}^2$
DUM_{it}	=	0 if $t \leq 1966$ or $t > 1973$. 1 if $1966 < t \leq 1973$.
$DUMRACE_{it}$	=	$DUM_{it} * RACE_{it}$
$DUMINC_{it}$	=	$DUM_{it} * INC_{it}$
$DUMRENT_{it}$	=	$DUM_{it} * RENT_{it}$

a Source: Annual reports and documents from the city of St. Louis.

b Source: Areas not selected were specified as census tracts and tract-level data were collected from the 1950, 1960, and 1970 U.S. Censuses of Population and Housing; data for areas selected were aggregated from block-level and tract-level statistics from the U.S. Census of Population and Housing closest to the date of selection. Boundaries for the areas selected conform as closely as possible to the actual boundaries of the code enforcement area.

1970s favored heavily black neighborhoods. The increases from α to α' for RACE might be regarded as an increase in the percentage black that defined a neighborhood as "transitional" and, therefore, to be avoided. This interpretation also is consistent with the pattern of increased selections from the heavily black and slightly black areas. This shift in the weights of the selection criterion might be viewed as the result of a political compromise between planning officials and advocates of the "worst first" strategy.

Exhibits 2 and 3 report results for two samples. The first sample excludes neighborhoods which were to start the program after 1973. The second sample pools those four post-1973 selections along with the twenty-two other districts which were selected for the city's concentrated code program from the early

EXHIBIT 2

PROBIT ANALYSIS OF NEIGHBORHOOD SELECTION

Variable	Coefficient estimates (t-statistics in parentheses)	
	Sample: 1950 ≤ t < 1973	Sample: 1950 ≤ t
RACE	-1.0821 ^c (-3.1160)	-1.8588 ^c (-5.1696)
OWNER	-5.5306 ^b (-2.4061)	-3.5251 ^b (-2.0109)
RENT	14.536 ^d (1.8823)	11.426 ^d (1.7077)
FIVE	5.8435 ^a (2.6238)	7.3684 ^a (3.1401)
INC	53.441 ^c (3.0703)	49.638 ^c (3.1132)
INCSQ	-20.451 ^c (-2.7319)	-18.230 ^c (-2.7955)
RACESQ	6.0330 ^e (1.4443)	6.9628 ^e (1.5698)
RENTSQ	-9.4581 ^d (-2.1700)	-7.8018 ^d (-2.1263)
DUM	2.4786 (0.51844)	4.1237 (0.93994)
DUMINC	-7.5987 ^d (-2.0912)	-8.0452 ^c (-2.3973)
DUMRACE	-2.6864 ^d (1.7037)	-2.8319 ^d (-1.8522)
DUMRENT	5.3070 ^d (1.6615)	4.0226 ^e (1.4052)
CONSTANT	-38.459 ^a (-3.6040)	-36.392 ^a (-3.6174)
SAMPLE SIZE	254	258
CHI SQUARE	71.34 ^c	79.79 ^c
(H ₀ : all β _k = 0 except β ₀)	(d.f. = 12)	(d.f. = 12)

a Significant at the .01 level in a two-tailed test.

b Significant at the .05 level in a two-tailed test.

c Significant at the .01 level in a one-tailed test.

d Significant at the .05 level in a one-tailed test.

e Significant at the .10 level in a one-tailed test.

EXHIBIT 3

TARGET LEVELS FOR TRIAGE VARIABLES

Variable	Triage Target (α)			
	Sample: 1950 \leq t \leq 1973		Sample: 1950 \leq t	
	α	α'	α	α'
INC	1.3066	1.1208	1.3614	1.141
RENT	.7684	1.049	.7323	.9901
RACE ^a	.0897	.3123	.1335	.3368

a The α 's for RACE actually represent levels of racial transition to be avoided because the coefficient of RACESQ is positive.

1950s to 1973. Characteristics of the last four neighborhoods selected suggest the return to a more conservative triage strategy reminiscent of the 1950s and early 1960s. For this reason, the dummy and slope dummy variables are defined to include these four observations with the pre-1966 selections in the probit analysis. Cross-column comparisons of the estimates in Exhibit 3 indicate that adding these four selections to the pre-FACE structure results in only slight adjustments in the estimated target levels. Thus, the comparison further supports the contention that the city returned to a more conservative selection criterion after its experiences in the late 1960s and early 1970s.

The change in the selection criterion which typified the late 1960s and early 1970s is probably best depicted as a bending, rather than a break—a bending that was accentuated by selection of districts for both the FACE program in 1967 as well as for the city's own locally funded program in the late 1960s and early 1970s. As disappointing results and federal criticism surfaced, the city reverted to a more conservative selection strategy similar to the selection rule employed in the early years of its rehabilitation program. This bending of the selection criterion is even more rapidly understood if the city is viewed as working its way down a ranking of proposed triage districts. In the early 1950s as the program began, the city selected from the top of the ranking and gained experience and confidence in the process. As political activism mounted during the 1960s, the city moved further down the ranking into more challenging and economically risky areas. Finally, areas too far down the ranking were selected and the program was in jeopardy. In response, the city reverted to the selection of less risky alternatives; it "learned."

Additional insight into these vicissitudes in the administration of the city's concentrated code enforcement efforts can be gathered from our research into the historical record. We have already recounted in a general way how local groups and selected news media were pressing hard during the mid-to-late 1960s for the city to take action in the more deteriorated neighborhoods that rate low against the planners' triage-based norms. Another bit of pertinent

evidence emerges when one considers the specific locations selected for the FACE program districts. Both of the Academy districts were located in the West End area which, in late 1965, was the site of the threatened tax strike and home turf of the Union-Sarah Gateway Center organization that was urging acceleration of the city's concentrated code enforcement efforts. Furthermore, the Academy districts were located in the 26th ward, where Nat Rivers was alderman and Congressman William Clay was then ward committeeman. Both had been active supporters of A. J. Cervantes in his first successful mayoral campaign in 1964-65 and stood in good favor with the mayor. The other district selected for the FACE program, O'Fallon South, was located in the 21st ward, the home of two powerful North Side politicians—Eugene (“Tink”) Bradley, alderman, and Benjamin Goins, committeeman—who likewise had supported the mayor in his election campaign. In short, strident neighborhood organizations communicating to the mayor through local party influentials apparently played a major role in getting code enforcement administrators to depart from their triage selection norms and go into riskier neighborhoods.¹⁰

But why did HUD acquiesce in the city's selections for the FACE program, choices that it would criticize some years later? Like the local code official quoted earlier, one can argue either that HUD did not comprehend its own area selection guidelines or, perhaps more likely, that neither the city nor HUD realized the problems that they would confront in the districts selected. It also is possible that group pressures exerted at the federal level encouraged HUD to interpret permissively its own guidelines. The civil disorders of the mid-to-late 1960s created intense pressures for HUD to take numerous housing subsidy programs into low-income inner city areas (cf. Boyer [6]). In the instant case, both the Douglas Commission ([22], ch. 4) and NAHRO ([21], pp. 37-38) were urging HUD to take its FACE program “into the slums.” In the words of the Commission ([22], p. 291), to withhold concentrated code enforcement from the worst housing areas with the argument that only full-scale urban renewal would be effective there was tantamount to

abandoning equal protection of the laws and uniform application of the police power. While there may be economic validity to this approach, there is no legal or moral validity. Instances are now arising in which black residents of urban ghettos are demanding code enforcement to improve their housing conditions. The city has no right to withhold such enforcement . . . code enforcement cannot legally or morally be delayed.

Instead of emphasizing “gray areas,” the “fairly good neighborhoods,” the Commission ([22], pp. 304-305) pressed for a systematic program of city-wide code enforcement.

By 1968, these pressures had resulted in the passage by Congress of an Interim Assistance Program to provide for minimum safety code enforcement in

deteriorated neighborhoods programmed for early urban renewal treatment, a program utilized by the city of St. Louis in four deteriorated areas between 1969 and 1971 (cf. Douglas Commission [22], 291; and St. Louis City Plan Commission [29], p. 25). These same pressures might have caused HUD to be permissive in its interpretation of the area selection regulations accompanying the Section 117 program, thereby permitting the selection of FACE districts somewhat more blighted than the legislative planners had originally intended.

The Impact of Crime Rates on St. Louis Code Enforcement

The narrative presented in prior sections indicates that St. Louis' targeted code enforcement ran into serious problems in the late 1960s. In 1972, the housing section administrator in the city's building division pointed out that despite the city's efforts (Nathan [20]):

Statistically . . . the situation has not changed from the early 1950's when . . . 50 per cent of the city's housing was good, 25 per cent was slum, and 25 per cent in the 'in between' category. The in-between category that we worked with has remained the same.

He was forced to admit, moreover, that at least two of the areas selected for the FACE program in 1967 had sunk quickly to "slum status," that the city had underestimated the problems in these two areas, and that enforcement efforts there had been futile.

The literature concerning the St. Louis programs raises many questions regarding both the effects and effectiveness of concentrated housing code enforcement programs. Among these questions are such issues as the impact of code enforcement on property values and rents (cf. Nash [19], pp. 102-103; and Hartman et al. [14], p. 93), whether the programs were responsible for abandonment of properties and displacement of tenants (cf. Hartman et al. [14], pp. 93-95; and Quinn and Mendelson [27]), and the ultimate impact of code enforcement on the owners' housing maintenance and investment decisions (cf. Quinn et al. [26]). The obvious failure of the programs in certain St. Louis sites adds to this list the question of whether such queries have uniform answers across neighborhoods and, if not, why not.

Research previously reported by the authors sheds some light on these last two questions. In that research, we analyzed the determinants of landlord maintenance and investment spending in St. Louis during the 1960s (cf. Elliott et al. [12]). Using a micro-data set for 117 rental properties owned by three major St. Louis landlords, regressions based on an optimal control model were used to explain short-lived, long-lived, and aggregate spending by landlords for maintenance, repair, and improvement of their rental properties. Variables depicting neighborhood characteristics and the presence or absence of concentrated

code enforcement programs were included in the set of explanatory variables. The regressions indicated that the landlords' response to the presence of concentrated code enforcement varied across neighborhoods with variables proxying rates of vandalism and property abuse. The coefficients of the code enforcement variables suggested that the presence of concentrated code enforcement resulted in the substitution of long-term repairs for short-term maintenance spending *except* in those areas with high crime rates. In areas with high crime rates, spending for short-time maintenance was higher and spending for long-term repairs was lower than would otherwise have occurred. The regressions revealed no statistically significant lasting effect of code enforcement programs on the total dollar flows returned to the properties. However, the mix of short-term and long-term dollars spent by landlords was weighted more heavily toward long-lived repairs in neighborhoods previously targeted by code enforcement programs.

These findings might help to explain why the St. Louis program ran into serious problems in the areas selected for concentrated enforcement during the late 1960s and early 1970s. One possible explanation is that the neighborhoods selected during this period had much higher crime rates than those selected previously.¹¹ Data for St. Louis during this period show positive correlations between crime rates and minority populations, the density of large multifamily structures, and low owner occupancy. However, unintentionally, by selecting areas which manifested these characteristics to a substantial degree, the city may have targeted precisely those areas with crime environments inhospitable to permanent improvements in property. If, as the author's previous research indicates, code enforcement in high crime areas merely forces increases in short-term maintenance spending, long-term preservation and revitalization of those areas should not have been expected.

CONCLUSIONS AND POLICY IMPLICATIONS

Given the housing needs of the maturing baby boom and the high cost of expanding the housing stock, there is renewed interest in preserving the existing housing resources of America's urban centers. Are programs of concentrated housing code enforcement an effective tool for achieving this goal? If cities proceed with programs of concentrated housing code enforcement, what criteria should be used to select neighborhoods for these programs? In what areas is targeted code enforcement likely to be most effective? Are there complementary programs of expanded public services which can be used to leverage the target areas' chances for success?

The conclusions of this study, summarized briefly here, provide some tentative answers based on the St. Louis experience:

- In looking at code enforcement as a potential rehabilitation tool, no single uniform approach to the enforcement of housing standards will succeed

in all neighborhoods; and some areas may not be at all suitable for concentrated enforcement efforts.

- Housing code enforcement may produce little long-run improvement when faced with serious problems of neighborhood decline, even if accompanied by a comprehensive program of public improvements, financial assistance to property owners, and active citizen involvement. Externalities such as crime and vandalism may overwhelm code enforcement efforts.
- St. Louis code enforcement officials have, for the most part, been attentive to the preceding points; they typically have selected areas for concentrated code enforcement in accord with the triage strategy, excluding the worst and the best neighborhoods.
- Intense redistributive pressures exerted at both the local and federal levels during the 1960s compelled code enforcement officials to move in the direction of a "worst first" selection strategy by entering rapidly deteriorating lower income areas and attempting to secure their rehabilitation. Generally unfavorable results caused officials to reconsider their selection strategy and, during the early 1970s, the city returned to the 1950s practice of restricting concentrated enforcement to neighborhoods with basically sound housing.

In an era of diminishing federal dollars to local governments, policy effectiveness is more important than ever before. The results of this research show that St. Louis has an important policy history upon which to draw. Whether a new code enforcement program is designed for St. Louis or elsewhere, there is no need to repeat the mistakes of the past.¹² If the St. Louis experience can be generalized, concentrated housing code enforcement is likely to be most effective when targeted at particular types of neighborhoods. An important criterion previously given too little weight in selection procedures is the incidence of crime in neighborhoods. Property abuse and vandalism, in particular, should enter the selection criterion explicitly to maximize the program's chances for success. Ancillary measures such as increased police patrols or efforts to enhance neighborhood pride and identity should bolster chances for success in targeted areas by reducing crimes against property.

The landlord study described earlier provides evidence that the St. Louis code enforcement programs altered owners' investment strategies in low crime areas by causing more resources to be devoted to long-lived repairs and less short-term maintenance. In high crime areas, however, higher short-term (and perhaps more cosmetic) repairs resulted. Given the correlation between crime rates and the demographic characteristics of the unsuccessful St. Louis neighborhoods selected for code enforcement in the late 1960s and early 1970s, these observations support the arguments for triage. Unless contradictory evidence regarding the effects of code enforcement exists in other cities, officials should seek alternative strategies to assist the lower tier of neighborhoods. It would appear that resources

spent on code enforcement in such areas are likely to be ineffective and may even aggravate abandonment and displacement.

Political pressures will attempt to channel code enforcement into heavily deteriorated neighborhoods where violations are most abundant. Triage strategies that focus resources for code enforcement in middle-of-the-road neighborhoods only beginning to experience blight may be decried as inequitable or perhaps even racist. Yet, hasty attempts to target poor minority neighborhoods for code enforcement may well be counterproductive. In short, it may be very difficult to design code enforcement strategies that meet both the political and economic requirements for program viability. Accordingly, concentrated code enforcement for neighborhood preservation is a tool that cities should approach cautiously and implement only after careful planning and evaluation.

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NOTES

1. This point is central to the classic exchange between Ackerman [1] and Komesar [16].

2. Although welfare transfers were effected by this spending pattern, the transfers were transitory; unit quality gradually eroded in the long run.

3. The term "triage" was utilized initially by French surgeons during World War I to refer to the practice of sorting battlefield casualties into three groups by severity of their wounds and assigning top priority to the intermediate group between the lightly and the gravely wounded. In the context of the contemporary American city, the term has come to denote any targeting strategy that favors assigning top priority for spending scarce public resources in so-called intermediate or transitional neighborhoods. Public response to urban triage often is highly charged because it typically assigns a low priority to heavily deteriorated areas that happen to be occupied by high concentrations of poor minority residents. For additional background on urban triage, see Drucker [11].

4. Interview with Albert Nerviani, Chief of Building Inspection, city of St. Louis (Oct. 22, 1981).

5. City officials in St. Louis were actively attempting to encourage citizen organization as early as 1938. Mitchell [18], p. 135.

6. Of course, the mean of z is not identified and an appropriate normalization must be carried out to permit use of the standard normal distribution function.

7. Although somewhat speculative, the actual selection process followed by decision-makers may have been a stepwise procedure. In the first stage, neighborhoods would have been classified on the basis of quality, including some measures of the condition of the housing stock. Using this classification, the best and worst neighborhoods would have been eliminated. In the second stage, other selection criteria would have been applied to narrow the field further. The authors were not able to obtain the data necessary (especially, the index of neighborhood quality) to estimate such a recursive selection model. Accordingly, we were forced to proceed with the single-stage model presented here.

Both probit and logit models were estimated. The conclusions, estimates of the triage targets, and general performance of the models were robust regardless of the estimating technique employed. In the interest of parsimony, only the probit results are presented. See Amemiya [2] for additional discussion of these techniques.

8. It can be demonstrated that under triage, with $\beta_k < 0$, ceteris paribus, the probability that neighborhood i was selected is maximized if $X_{ki} = \alpha_k$. According to equations (3) and (5),

$$\frac{\partial P_i}{\partial X_{ki}} = \frac{\partial P_i}{\partial Z_i} \cdot \frac{\partial Z_i}{\partial X_{ki}} = f(Z_i) \cdot 2\beta_k(X_{ki} - \alpha_k).$$

Setting $\frac{\partial P_i}{\partial X_{ki}} = 0$ and assuming $\beta_k < 0$, P_i is maximized when $X_{ki} = \alpha_k$.

9. For example, consider α_{INC} . Because α_{INC} is a target level for income, it must be positive. By equation (7), if $\beta_{INCSQ} < 0$ and $\alpha_{INC} > 0$, then $\beta_{INC} > 0$.

10. Interviews with Peter Simpson, former alderman, 28th ward, city of St. Louis (Nov. 11, 1981); and A. J. Wilson, former executive assistant to Mayor Cervantes (Dec. 17, 1981).

11. The null hypothesis—that the mean crime rate for areas selected prior to 1966 was equal to the mean crime rate for areas selected after 1966—is rejected at the .01 level of significance. The post-1966 crime rates were significantly higher. Interestingly, however, the four post-1973 selections are again characterized by relatively lower crime rates, providing additional confirmation of learning through experience and the return to a more conservative selection criterion.

12. St. Louis announced a new concentrated code enforcement program as this paper was being completed.

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