3

A PLAGUE ON HOUSES
CONTAGIOUS FIRES

FIRE BECOMES A PARASITE

Testifying in 1976 before the New York State Senate Subcommittee on Police and Fire Protection in New York City, newly retired Deputy Chief George Freidel called the fires "a metastasing cancer on the City." In 1970, Neil Hardy, the Assistant Commissioner of Housing, had viewed housing abandonment as a spreading epidemic: "If it isn't stopped, now sound neighborhoods will become ghost towns." In the 1970s, the language of the civil servants charged with housing preservation borrowed words and phrases from disease medicine and epidemiology. By 1980, op-ed writers also cast their fears in disease and epidemiologic metaphors, although germ and cancer cells were not the triggering mechanism. To these writers and civil servants, fires and abandonments had become contagious, facilitating each other as HIV-infection facilitates tuberculosis.

Fires have always been contagious, but, before 1968, an "immunization program" kept epidemics at bay.[1] Fires became virulently epidemic in 1968. Before then, a large fire ushered in a period of lower-than-average fire incidence in that area because fire-prevention activities by municipal agencies focused there. Still, citywide, the number of structural fires per year grew consistently (figure 3-1). After 1968, fire damage failed to trigger targeted agency action. The damage instead marked the area as neglected and negligible, and fire disease infected the area, eroding the housing stock.

This contagion unfolds as follows: A building in which a structural fire "gets out of hand" because of fire-service reductions is often subsequently abandoned, becoming a focus for vandals, psychopathic arsonists, or serving as a "shooting gallery" for addicts. One abandonment on the block may lead directly to others, if only from the spread of fires from vacant to occupied

buildings. More typically, after a nearby burnout, absentee landlords withdraw maintenance in preparation for abandoning their buildings, making them more susceptible to fires. The overcrowding and the age of buildings in poor neighborhoods requires significant attention from municipal agencies and proper maintenance by the landlords to keep fires small in both number and size. In the years after 1968, as fire damage accumulated, fire incidence accelerated accordingly, in a vicious circle.[2]

To epidemiologists, a truly contagious phenomenon, including propagation, occurs when a diseased individual passes the infection, on average, to more than one susceptible. The probability of that happening depends heavily on the density of susceptibles around the diseased. One can easily see how this disease model transfers to neighborhood fires.

The following are characteristics of propagation and epidemics:

1. Epidemics often show an S-shaped pattern of rise in "cases" over time, with a crest and then a precipitous decline.
2. Initial concentration of the phenomenon ("cases") within the areas fostering susceptibility.
3. Clustering of "cases" in time and space at several scales of time and geography (day, week, season, year; building, block, neighborhood, city).
4. The further along in the growth of the epidemic, the less amenable the process to prevention and control.
5. Sociogeographic corridors between areas of high concentration of susceptibles so that one area of high incidence can seed others.
6. Three modes of spread: spatial, hierarchical, and along networks (to be explained below).
7. Increased virulence of "cases" late in the epidemic, during the decline phase. This increased virulence may lead to either hyperendemicity (high but stable incidence) or to a secondary epidemic eventually if prevention and control measures are inadequate.
8. Population-density dependence so that a dense population will have more "cases" per unit population (higher incidence) than a sparse population, and that a critical density of susceptibles is also reached.
9. Large areas with conditions fostering susceptibility, i.e. raising the density of susceptibles.

For professionals and very curious laypersons, details of disease dynamics and of medical geography can be found in several textbooks.[3,4,5]

Let us examine the population characteristics of structural fires in New York City between 1968 and 1990 and compare them with our list of markers for con-

tagion and epidemic spread. We shall concentrate our attention on 1972 to 1978, a period of rising, extremely high, and initial crashing structural-fire incidence.

S-SHAPED INCIDENCE PATTERN

Figure 3-1 displays the number of fires per year from 1959 to 1986.[6] The S-shape of this curve's rise resembles that of many disease epidemics such as measles, pre-Salk-vaccine polio, and Asian flu: slow rise, inflexion point, and rapid rise. The epidemic peak, 1974–1977, coincided with the deepest cuts in firefighting resources, with 1976 as the absolute epidemic crest.

The number of fires does not tell the whole story because the size of the fires may have changed over the course of the epidemic. We developed a damage index which took both number and size of fires into account.[7] This damage index (Figure 3-2) tells a slightly different story. Although the number of fires during the post-1977 period quickly declined, the damage declined more slowly.

Note that the damage index improved with the 1969 opening of the ghetto companies required under the FLAME Committee arbitration and began deterioration immediately following the 1972 company relocations and eliminations. The deep dip in 1964 resulted from a massive prevention program with over a million inspections at its core. *Mirabile dictu*: fire service indeed determines fire damage.

Another way of looking at fire damage trends is to look at insurance losses due to fires. Before the 1975 destaffing, each additional loss of property covered by the FAIR Plan increased the amount lost by an average of only $3,638; after destaffing, this average loss rose to $5,915, a rise of 63%. The number of losses also rose, so that the FAIR Plan suffered an excess annual claim payment of about $20 million. The FAIR Plan was created by legislation to assure access to insurance for owners of ghetto property: Fair Access to Insurance Rates. (One of us, Roderick, worked for the Plan and acquired these data.)

Another index, controllability of the fires, looks at fire size independent of number of fires. Figure 3-3 displays the controllability index for 1968 to 1990. Note the severe erosion toward the late 1980's.[8] This index shows how many alarm assignments were dispatched to control the fires. The anomaly of "better controllability" during the height of the epidemic occurred largely because of system saturation during peak periods. Companies could not be dispatched as needed because of non-availability due to extreme clustering of fires in time, which drained large areas of fire companies during the epidemic crest. A miracle occurred: multiple-alarm fires declined in frequency, as whole neighborhoods burned. The official statistics looked great.

Figures 3-1 and 3-2 indicate that the fire dynamic of the post-1968 era satisfied the condition of S-shaped pattern of build up to a peak and a crash; and Figure 3-3, of increased virulence after the epidemic crest.

CONCENTRATION IN SUSCEPTIBLE AREAS

Mapping social and housing measures such as population density, index of extreme housing overcrowding, percent of the population on public assistance, percent living in poverty, average number of violations per housing unit, age of the housing, and other related measures shows satisfaction of condition number 2. These measures showed concentrations in 1970 in particular neighborhoods, the traditional slums of New York such as Harlem, East Harlem, the Lower East Side, Brownsville, Bedford-Stuyvesant, Williamsburg, and the South Bronx.

Mapping of structural fire alarms, hours of engine worktime, serious fires (fires requiring at least three engines and two ladders for control), relocation time (hours spent by alien units in the neighborhood firehouses to cover for the neighborhood units out working at long, serious fires) and other indices of fire activity reveal the concentration of fires and fire damage in high-population-density neighborhoods of aged housing in 1970, as part of the initial, pre-cut conditions. Indeed, such maps formed the background of Moynihan's "benign neglect" memo. As fires increased after 1972 toward the 1976 crest, this clustering phenomenon intensified.

Shortfall of local service should result in "relocation," the external supply of fire companies from the other neighborhoods. Clustering of relocation consumption indicates how the clustering of fires in an area renders the available local-service supply inadequate. Table 3-1 displays for 1972–76 the mean hours of external worktime and two indices of clustering, dispersion and "patchiness," applied to externally supplied worktime. Lloyd's Index of Patchiness contrasts patches of clusters against the background density.[9] The fall in the Index after 1973 does not mean a decline in clustering of relocation hours but a rise in the background as the epidemic spread from the epicenters. The rise in dispersion shows the continued increase in clustering per se.

Engine dispersion declined in 1976. When we looked more closely at what was happening that year, we found that the Fire Department had strangled the ghettoes and ceased to send relocation service as needed. Thus, local-service shortfall was not being totally compensated for by external service, and necessarily the clustering of fires meant clustering of fire damage and loss of homes.

Figure 3-4 maps structural fires on single blocks in Bushwick (Brooklyn) in September and December 1976. We divided Bushwick into Regions I–VI. In

September, the clustering clearly centered in region III, with one block having 13 fires. Region III had 52 fires in September and region IV, 19. By December, the largest block cluster had moved to region IV (8 fires). Region III still had many fires (33) and region IV, a much smaller area, was up to 22 fires, only one of which was a single fire on a block. The clustering and higher numbers had spread from one region to another. In May 1976, region IV had had 6 fires, only 2 of which were on the same block. As with an epidemic, the rising intensity of case clustering went along with the rise in number of cases.

Fire numbers alone don't tell the whole clustering story. Figure 3-5 shows average engine-house annual worktime in hours from 1972 to 1974 graphed against the Index of Extreme Housing Overcrowding for the community districts of the Bronx.[10] By 1974, the concentration of hours in the South Bronx districts (1, 2, 3, 6) had reached saturation, i.e. the companies could give no more time during periods of peak demand. The flattening of the line at high indices of extreme housing overcrowding reflects this saturation. Notice also that high service demand spread to districts 4 and 5, in the West Bronx, adjacent to the original high-demand districts. In 1972, each of these two districts used about 500 hours of engine worktime on average; by 1974, the average engine was working 750–900 hours.

CLUSTERING OF CASES IN TIME AND GEOGRAPHY

These geographically clustered fires which determine the geographically clustered hours of service clump in time as well as by year, by seasons, by day of week, and by time of day. Certain hours of the day account for a larger proportion of the daily total number of fires. A few hours, a few days, or a couple of months of inadequate service can chart a neighborhood's fate. Because of the greater number and size of fires during winter (due to low indoor humidity and to use of space heaters and holiday lights), dwelling loss and fire deaths are inversely correlated with outdoor temperature: the lower the temperature, the worse the fire losses. The increased drain on fire service in winter is reflected in the greater frequency of higher-alarm fires. Extra alarm assignments per month also inversely correlate with outdoor temperature.

Interaction of clustering in time and space means that blocks, individual neighborhoods, contiguous neighborhoods, and whole boroughs experience peak-activity periods. Clustering of fires geographically and temporally implies that large numbers of homes are damaged in a short time, that new epicenters of spread arise rapidly, and that firefighting resources "dry up" during the times and in the places of greatest need.

AS THE EPIDEMIC INCREASES, CONTROL IS THWARTED

As clustering intensified, prevention and control efforts were rendered less and less adequate (condition 8). Because control (keeping fires as small as possible) is the most important component of prevention, given the triggering of contagion by large fires, effective prevention declined as clustering intensification led to gross imbalance between supply of and demand for firefighting resources.

CORRIDORS OF SPREAD

The Bushwick maps show the existence of corridors of spread between the regions of a neighborhood such that simple geographic proximity to an epicenter exposes nearby susceptible areas. However, relocation policies of the FDNY established spread between widely separated ghettoes. The FDNY truncated relocation service so that ghettoes served and competed with each other for firefighting resources. Thus, the saturating of resources because of seasonal and time-of-day peak occurrences of fires was borne largely by the ghettoes via FDNY policies dictating which units relocate to which neighborhoods.[11]

HIERARCHICAL, SPATIAL, AND NETWORK SPREAD

The fire phenomenon would have been limited if the company-relocation policies had been left alone. With the subversion of relocation policies, the FDNY introduced what medical geographers calls "network spread" into the picture. By reducing local firefighting resources to levels below those needed during peak periods and relying on relocation to make up for the shortfall, the FDNY changed the system from one of many independent little neighborhood fire departments to a vast citywide interdependent network.[12] High fire incidence spread across the truncated section of the network and spilled over into "good" neighborhoods whose firefighting resources had to be tapped when those of the ghettoes were so grossly inadequate as to pose risk of spread from building to building. The fire control resources of the "good" areas would thereby stretch thin during peak periods and fires would grow large and damaging even in the "good" areas. Thus, widely separated neighborhoods felt the impact, in much the same way that a harp string reverberates along its entire length when plucked at a single point.

Hierarchical spread is the most difficult of the contagion concepts. Neighborhoods vary in susceptibility and domination according to their total populations, population densities, housing conditions, socioeconomic factors, and historic relationships. Hierarchical spread refers to the cascading effect of high fire incidence from the most densely populated, most susceptible area to somewhat less densely populated, slightly less susceptible areas which may lie at a distance from, but have a socioeconomic relationship with, the primary epicenter.[13] Because of the leap frog mode of high-fire-incidence spread between non-adjoining areas and of the characteristics of the areas which came down with "fire disease" during this period, hierarchical spread appears to have occurred. The primary epicenters seeded noncontiguous secondary epicenters.

The S-shape of the rise in number of fires per year mimics the S-shape of disease cases during an epidemic which changes from one of simple spatial spread from a single epicenter to establishment of secondary epicenters and spatial spread from both the primary and the secondary epicenters.[14] The inflexion point (1968), where the initial slow rise in number of fires per year changes to a rapid rise, marks the point of the establishment of hierarchically spread secondary epicenters from which high fire incidence moves out radially increased violence late in the epidemic. In figure 3-1, we can see that as total structural fires "bottomed out" in the late 1980s and early 1990s, the number of serious fires increased. Continued production of visible fire damage and destruction of housing units ensured that fire contagion continued even though fire numbers declined. Figure 3-3 also shows the increased virulence in loss of controllability.

DEPENDENCE ON POPULATION DENSITY

In understanding the relationship between population density and fire incidence, one has to examine two populations: the housing units and the humans. The density of the human population determines the density of susceptible housing units. Large numbers of people per square mile mean that large numbers of people are crammed into the housing, with more cooking, more smoking, more trash-generation, more use of electricity are going on per unit area. When high population density also results in a high proportion of the housing units being extremely overcrowded, the maintenance and services of the buildings require greater effort and resources to keep fire hazards to a minimum. Even neighborhoods far into the fire-and-abandonment cycle, with large numbers of abandoned buildings, usually suffer from extreme housing overcrowding in the remaining occupied buildings, and feature a dangerous mix of occupied and abandoned building

fires. Humans thus seem to serve as a vector for the fire disease on the housing stock just as mosquitoes are a vector for malaria.

Figure 3-5 illustrated the relationship between average structural-fire-worktime and the index of extreme housing overcrowding. Table 3-2 illustrates the relationship of population density per unit area to structural fires per unit population.[15] The Index of Extreme Housing Overcrowding represents the percent of housing units with 1.51 persons per room or more.

The two measures of people-packing (by area density and by housing overcrowding) both show associations with simple number of fires and with the combination of number and size of fires reflected in structural-fire worktime. However, the Index of Extreme Housing Overcrowding predicts structural-fire worktime much more powerfully. Density of overcrowding determines the density of housing susceptible to frequent fire ignition and to rapid fire spread.

Why is this so? The Threshold Theorem of disease epidemiology dictates that for a given disease, the density of susceptible individuals in a population must rise above a crucial threshold for sustained contagion to take place.[16] Otherwise, the initial seed case may lead to a few other cases but the chain of contagion will not be sustained simply because there aren't enough susceptible individuals around to catch the disease reliably enough for continuous propagation.

Chicken-pox, for example, usually rampages in epidemic every four or five years because that's how long it takes for enough children who have not had the disease before to reach threshold density. The epidemic itself causes its own demise: it eventually visits enough children so that the density of non-immune children who have never had the disease drops below propagating density; i.e., probability of transmission falls below the critical level.[17]

Another important factor in disease propagation is the density of infectious cases in the population. This density determines the probability that susceptible individuals will be exposed to the disease. A situation of high density of susceptibles and rising density of infectives sets the scene for rapid sweep of the disease through the population. This is precisely what occurred when firefighting resources were withdrawn from the neighborhoods with dense stands of susceptible housing. That withdrawal was the fire equivalent of withdrawing measles-immunization programs from areas with high densities of young children. Adequate fire service is in fact the immunization program for the housing stock in old, densely populated, poor neighborhoods. It keeps the *effective* density of both susceptibles *and* infectives below their critical thresholds for epidemic and for hyperendemicity (stable but high incidence). Adequate fire service keeps fires small (i.e. limits "infective" fire-damage density) and keeps families from having to double and triple up (i.e., it limits number and density of "susceptible" housing units).

HOUSING LOSS, MIGRATION, AND HOMELESSNESS

The fire epidemic crested in the 1975–77 period and ebbed because the density of susceptible housing in the path of the fire wave had fallen below critical threshold. What could burn did burn, leaving behind vast stretches of charred hulks and abandoned shells. The estimates of housing loss in the 1970s range greatly, depending on who makes the estimate and the assumptions on which it is based. The Bureau of the Census developed a data base on housing units in 1970 and in 1980 and mapped the loss between the two decadal censuses. In figure 3-6, the blackened areas are those census tracts losing at least 500 housing units during the 1970s. Each contiguous black area contains many census tracts.[18] According to this map, hundreds of thousands of housing units were lost in these areas of concentrated housing loss, housing stock which had been stable and had served NewYorkers since before 1915.

As shown in the Bushwick maps (fig. 3-4), the rapidity of destruction exceeded the rate inferred by the census map, rapid though that was. Sometimes an individual block would be destroyed in only a few months; a neighborhood would be destroyed in 6–12 months, during its epidemic crest.

The different neighborhoods suffered their respective epidemics at slightly different times. Because of very early concentrated reductions in fire service, the South Bronx experienced an early fire wave (1972–74) whereas a neighborhood like Bushwick, which did not itself lose companies but caught the disease from stretching its fire service to cover other stripped neighborhoods, saw its epidemic crest in 1976–77, even later than the City as a whole.[19]

The clustering of fires and building abandonments meant that housing loss also clustered. Thus, specific neighborhoods and areas within neighborhoods suffered intense social destabilization and destruction of a community-based local economy. Indeed, during the later stages of a local housing-loss epidemic, the much anticipated money-motivated arson would in fact arise in the small commercial establishments—grocery stores, car repair shops, and diners. Arson would also arise in partially occupied buildings, vacant buildings, and occupied buildings on blocks with many burned-out or abandoned shells. Sometimes landlords were trying to cut their losses and get a last payment out of their properties. Other times the mentally unstable turned from killing cats to setting fires because fire became dominant in the environment. Revenge seekers changed from direct assault to setting fires because of the Fire Department's inability to control fires and of likely arson success. Still, even in the midst of one of the worst epidemics, that of Bushwick in Brooklyn, half or fewer of monthly building fires were even suspicious, much less proven arson. The brunt of the housing loss and its consequent social and economic unraveling stemmed from accidental fires.[20]

The loss of housing forced a mass migration. Besides keeping track of the housing loss between 1970 and 1980, the US Census Bureau also kept track of the changes in population by race and of the migrations between census tracts. The text table below shows the change in the population between the two decadal censuses by race. Figure 3-7 displays the migration of the black population from the burned out zones to adjacent neighborhoods. Some areas in the Bronx suffered losses up to 80% of their housing and population.

Many other indicators of migration also point to rapid, massive movement during the fire-and-abandonment epidemics. Figure 3-8 shows the old and new areas of high density of people receiving public assistance in the late 1970s. The West Bronx had not been a poverty area in the 1960's but became the area of highest density of welfare recipients by the late 1970s. Figure 3-9 shows the transfer of public school students within and between school districts in 1974–75 at the height of the South Bronx fire epidemic. Note the streaming of students from the South Bronx districts. Indeed, figure 3-10 plots average engine worktime against school transfers for the Bronx districts and shows an extremely close association.

As the text table below shows, the Blacks and Latinos were not the only ones to migrate. The white middle class pulled up stakes and marched away from many of their traditional enclaves, largely the areas into which the poor were forced to move. The middle class fled to the suburbs. The City lost approximately one-and-a-third million whites, some of them replaced by an influx of legal and illegal immigrants. The West Bronx became the "new South Bronx" where former residents of the South Bronx fled. Because of the greater undercount of Blacks and Latinos in the 1980 Census than in 1970, the number and percent of increase of each is even larger than the following text table shows.

CHANGES IN POPULATION BY RACE 1970-1980

	1970	1980	% change
White	4,972,509	3,668,945	-26.2
Black	1,525,745	1,694,127	+11.0
Hispanic	1,278,630	1,406,024	+10.0

For a short time (1975–78), the vacating of large apartments in the West Bronx, Flatbush, East New York, and other transitional zones allowed the poor families migrating from burned out areas to live in less crowded conditions. However, as the fire epidemic transformed into the fire hyperendemic, and the housing stock continued to erode owing to the Fire Department's inability to control individual fires, housing overcrowding rose again after 1978. The poor had to double and triple up because all of the middle class who could move had done so and no more housing was vacated.[21] Homelessness became an urgent problem only after 1980.

The continued but slower housing stock erosion prevailed through the

1980's. Figure 3-11 a, b, and c compare the patterns of the Index of Extreme Housing Overcrowding in the Bronx for 1970, 1980, and 1990. By 1990, the extent and intensity of extreme housing overcrowding exceeded that of 1970, the initial background condition of the fire-and-abandonment epidemics. The citywide number of extremely overcrowded rental housing units in 1990 (143,000) greatly exceeded that in 1970 (74,000).[22]

This overcrowding carries its own risks. Overcrowding of aged housing makes it fire-prone in many ways: higher densities of smokers, overuse of aged electrical wiring, much more cooking per apartment, more children who experiment with matches and stoves, and greater accumulations of trash. Without additional maintenance, overcrowding leads to more fires, more rapid spread of fires, and to rapid deterioration of buildings even in the absence of fires. Thus, a vicious circle arises of housing destruction, movement into adjacent areas, overcrowding of the new areas, and more fire damage and building deterioration.

Figure 3-12 graphically depicts the relationships between waves of housing destruction in time, outmigration of the middle class, growth of the precariously housed population (those living as secondary tenants with family or friends) and the growth of the overtly homeless population. As long as the outmigration continued, the populations of the precariously housed and the overtly homeless remained low. When housing destruction recurred but the population of emigrants froze (perhaps due to lack of affordable homes within commuting distance or to high mortgage rates). Then the pool of the precariously housed grew and, under the pressure of growing numbers, slopped over into the pool of the overtly homeless.[23]

The poor could not flee a great distance, as the maps on migration show. They often ended up in the path of the very forces which uprooted them in the first place. Families were sometimes burned out two or three times in a few years during the epidemic because they could not move far enough from the spreading centers of decay and always ended up in the path of the encroaching high fire incidence. Because of overcrowding, these families would in effect seed a new area and bring high fire incidence to it, through no individual fault of their own. Of course, each expansion of the radius of housing destruction enlarged the area and population contributing to the numbers of precariously housed (the "hidden homeless") and overtly homeless individuals and families.

SOCIAL OUTCOMES

The fallout from this "bombing" of New York City's ghettoes affects the city still. The public policy of targeting and destroying entire neighborhoods with popula-

tions on the order of one-to-two hundred thousand eventually affected the entire metropolitan region with its 24 counties, a radius of more than 50 miles, and a population of 18–20 million people, in round numbers. And the impact of this war on New York City's poor neighborhoods extends far beyond the metropolitan region. Cities closely linked to New York socially and economically have felt the impact by means of secondary contagious phenomena such as infectious diseases, substance abuse, and violence from the New York epicenter.

The effect of the burnout can only be understood by looking at how families and individuals depend on their communities for necessary resources, emotional support, and information in direct proportion to their poverty, lack of education, and ethnic difference from the American majority. Such urban anthropologists as Carol Stack (author of *All Our Kin*)[24] and Ida Susser (author of *Norman Street*)[25] have documented the day-to-day lives of poor families in large cities. Although these families moved frequently, they rarely moved far, remaining within their communities, within walking distance of their extended families and of long-time friends. They often maintained friendships for a lifetime.

These geographically focused social networks in very poor areas form partly through intergenerational links and may or may not be familial. As Stack describes them: "Expectations are so elastic that when one person fails to meet another's needs, disappointment is cushioned. Flexible expectations and the extension of kin relations to non-kin allow for the creation of mutual-aid networks which are not bounded by genealogical distance or genealogical criteria. Much more important for the creation and recruitment to personal networks are the practical requirements that kin and friends live near one another."[26] A young woman may have children by different men and maintain ties with the men's mothers and sisters who are related to her children. Similar strategies of survival are practiced in very poor sectors of Africa, Asia, Latin America and Southern Europe. When one member needs "tiding over" in an emergency, the network pitches in with loans, used clothing, referrals, a temporary place to stay, or whatever else is needed. This is especially important in cities like New York which churn the welfare rolls—periodically cutting families off their benefits and forcing them to re-apply, a process which may leave them without any income for several weeks. The social network (family, friends and "in-laws") may make the difference between retaining an apartment or being evicted during the incomeless period. This also holds true for the working poor who find themselves without jobs for several weeks and whose unemployment benefits do not cover their families' necessities. The buffer, the poor person's equivalent of savings in the bank for a rainy day, is the community network. Thus, social capital compensates for lack of purely economic capital.

Besides actual material resources, vital information is shared along these net-

works: how to get the children immunized, how to get a job at the local supermarket, where to apply for English as a Second Language adult education, and where to get free contraceptives. Research on the networks of new immigrants has shown how vital this informational function can be to families in particularly vulnerable, isolated communities.[27]

And these networks and the weaker connections within a community enforce societal norms and acceptable behavior. Parents in stable communities rely on the extended relationships to reinforce their socialization of their young. When not at home, the children receive supervision from their parents' neighbors, the members of the local church, the local merchants, and their cousins, uncles, and aunts. Children who misbehave are reprimanded, and word gets back to the parents.

This social control keeps adults in line as well. A church member who beats his wife gets a visit from the elders. Someone seen buying from a drug dealer feels pressure on many fronts. Stable communities keep law and order far more efficiently than the police.

Besides the strong, major links of the network, the typical stable community contains many minor links which add to its strength and elasticity: people who stand at the same bus stop every workday and chat, the patrons of the local newsstand who see each other everyday, people who meet only when they go to the laundromat. In small ways, these anonymous meeters and greeters keep tabs on each other. If someone "turns up missing," the others find out what happened and even help out if the missing person has troubles.

The picture of strong community networks, especially in the poor communities, painted by urban anthropologists and scholars of new immigrants departs radically from Roger Starr's notion that community does not exist—his apologia for community destruction. The mass migrations that arose from the intense housing burnouts destroyed all this. The snowballing migrations resulted in mixing of populations, destruction of the social networks in both poor and middle class areas, and changes in both the geographic pattern of extreme housing overcrowding and the proportion of households living in extremely overcrowded conditions. These changes marked major deteriorations in public health, public order, and the social, political, and economic functioning of individual neighborhoods and the City as a whole.

THE SLOW DISASTER

A disaster is different from a major event in an individual's life. Disaster victims do suffer the same emotional upheavals as those who are shaken by such major events as death of a loved one, loss of a job, eviction, or divorce; they also have

additional stresses and pressures as part of a traumatized community.[28]

The forced migrations caused by and affecting subsequent development of the fire-and-abandonment epidemic of the 1970s were of such a magnitude (as was the urban burnout itself) that they constituted a disaster, "a situation of massive collective stress in which the distress and behavioral disturbance of an individual cannot be understood or managed unless analyzed as elements in the disruption of the equilibrium social system."[29]

Disasters typically produce grief, anxiety, anger, hostility, resentment, marital and family discord, increased substance abuse, and loss of interest in school by children. Such a combination seems particularly fertile for an outbreak of deadly violence which may feed back into further community decay. Loss of interest in school and lack of responsibility by children seem potential precursors, along with family turmoil, of serious delinquency which furthers community decay.[30]

Disaster affects physical health. Long research into contagious diseases from tuberculosis down to the common cold have noted that people under emotional stress come down with these diseases at higher rates. More recent research has revealed mechanisms of connection between the immune system and mental health: stress takes its toll, and alcohol and drugs weaken the activity of both white blood cells and antibodies.

Most importantly, the disorganization from concentrated housing destruction in a disaster yanks away many of the buffers which families and individuals would ordinarily use to recover from a domestic or personal crisis. Several natural and man-made disasters have been studied by community-mental-health researchers like the scientists at the Disaster Bureau of the National Institute of Mental Health. These range from the Buffalo Creek disaster (dam collapse and massive flood) to Love Canal (removal of a community because of toxic chemical contamination). Because the usual community institutions are themselves under stress and are composed of people under stress, the buffering is greatly weakened. Outside help is needed in these cases. Otherwise, the physical and mental sequelae of the disaster are very slow to lift, indeed may never do so, as we have seen in the Bhopal, India chemical-release disaster.

In the previous chapter, we quoted from a 1977 report by the Centers for Disease Control (*The Effect of the Man-Made Environment on Health and Behavior*):

> The importance of the social milieu is such that the dislocation and disruptions of social relations that are produced when one moves a family from a dilapidated dwelling to a modern apartment may have adverse effects upon health and behavior that are not off-set by the clean, comfortable, and convenient new dwelling. . . . Simple efforts to improve human health and well-being by improving the physical characteristics of the environment or the neighborhood are unlikely to succeed, unless the social and psychological implications of rehousing, removal, or relocation . . . are taken into consideration.

How much worse is the outcome when public policy aims for acceleration of urban decay and deterioration of the physical environment!

The resources of the community determine the course of recovery, or non-recovery. In the wake of the Love Canal disaster, the Love Canal Home Owners Association, mostly white and middle class, managed to create organizations devoted to preventing future "Love Canals" and to obtain reparations for Love Canal families. Outside help enabled this transformation from helplessness to exercise of power, although on a personal level many of the families and individuals never transcended their victim status. For the Love Canal Renters Association, mainly African-American and blue-collar-to-poor in economic class, many of the benefits to which they were entitled never materialized. These families were scattered and largely ignored, and they never became an organized power. If the failure of the aided home-owners to overcome their sense of victimization is true of the renters as well, then the renters suffered doubly: they neither transcended victim status personally nor transcended victim status as a community.

Other populations which contributed to our knowledge of post-disaster physical and mental health include Holocaust survivors, communities in Africa battered by famine-forced migrations to relief camps, and civilian populations caught in wars. The picture which emerges from overcrowding, forced migration, and loss of community and of control over family life is unrelievedly bleak: infectious disease, mental illness, breakdown of family ties, substance abuse, and violence.

The New York burnout disaster was caused not by a society and its elite overburdening natural resources but by a society feeding on itself. The New York City government, HUD, and Rand viewed the lowest classes as separate from the mainstream and, thus, easily sacrificed. But residential and vocational segregation implies a middle-class immunity which, as we shall see, did not hold up in reality. As the condition and behavior of the segregated sectors worsen under the continuing disaster, the alarmed middle and upper classes proceed to distance themselves further and chug the disaster up another notch. This distancing often results in punitive actions and disruptive curtailments of rights and benefits targeting the poor, which accelerate the effects of the previous withdrawals of basic municipal services and social programs.

OPPORTUNISM AND DENIAL

By 1976, most major political players knew that the fire service reductions of 1969–75 devastated poor neighborhoods and destroyed huge numbers of housing units rapidly. The New York State Senate Subcommittee on Fire and Police

Protection in New York City, chaired by John Calandra, held hearings in 1976 and issued a summary booklet, *No False Alarm*. Firefighters, urban scientists, insurance representatives, politicians, and civic association officers testified in detail about the impacts of the fire-service reductions.

At Calandra's hearing, we saw State Senator Carl McCall (now New York State Comptroller), an African-American out of the Harlem machine, take the stand at this hearing against rescinding the cuts for two reasons: home rule by New York City and antipathy to the firefighters' union. And yet McCall's West Harlem district had already begun to burn down.

Mayor Beame ordered a hearing in 1976 specifically on the closing of Engine 212 ("The People's Firehouse") because the largely Polish residents of Greenpoint, Brooklyn held the engine hostage in its firehouse and used an array of political and community-action weapons to force the reopening of the company. Basil Paterson, a prominent black politician also from Harlem, chaired the hearings on behalf of the Institute for Conflict Resolution. One of us (RW) testified before Paterson and later went to see him. He listened intently to the explanation of what the cuts were doing and would do to the minority neighborhoods and believed the explanation. Paterson is a senior black politicians who served as Secretary of State, thus having run for statewide office. What he learns gets into the black inner circle. It seems that the Harlem machine was betting that the emigration of the whites would put them in the driver's seat, even if what they would gain would be power over an ashpile.

We had already, in 1972, seen Manhattan Borough President Percy Sutton, also out of the Harlem machine, praise the change from the reliable electromechanical street fireboxes to the all-electronic voice-contact fireboxes. His explanation that if people describe the fire, the dispatcher can send just enough fire companies to control it, and the coming fire company closings wouldn't be so bad with this greater efficiency, was lifted verbatim from Fire Department propaganda.

From our experience with these and other politicians (Charles Rangel, Robert Abrams, David Dinkins) who represented threatened and destroyed communities and boroughs, we conclude that many banked on certain results of the burning down of whole neighborhoods. Herman Badillo, while still representing the South Bronx in Congress, told Battalion Chief Alfred Benway (who fought fires in the South Bronx) that he wasn't worried about inadequate fire service or service cuts: he'd just get money for new housing.

The BBC and Tass sent reporters to the South Bronx in 1975 to get footage of burned-out buildings, fires, and fire engines whizzing around with lights and sirens on. Numerous political candidates would parade through the South Bronx, Bushwick, Brownsville, and Harlem during the late 1970s to make promises about

rebuilding. The local pols would hold community meetings and talk up tiny grassroots bootstrap efforts as the answer. We remember in particular a community-board meeting in the South Bronx held by Robert Abrams, then Bronx Borough President, who was very enthusiastic about CETA programs and Hostos Community College, but ignored discussion about the closed fire companies and the ERS fireboxes. This meeting was held in 1976, when the South Bronx lay in ruins, and the fires there were becoming larger, eroding away what was left after the epidemic crest had blitzed a high proportion of the housing.

No New York Democrat would step forward and admit that a disaster had begun and progressed. After 1980, very few Republicans concerned themselves because they were betting on gentrification to get them votes. The Democrats had their own bets on how the destabilization and decay would affect voting patterns. They all thought they would end up on top of the ashpile.

Disasters to which responses are inadequate or inappropriate ripple out and amplify, engendering further disaster. A well-known disaster occurred in India when a reservoir was built in an earthquake zone. This triggered a massive quake which the authorities ignored. Their failure to aid the victims and see to sanitation led to an explosion in the rat population and an outbreak of plague. Thousands fled the plague, of whom some were already infected. Before the epidemic was controlled, it had spread across a whole state.[31]

The New York City burnout disaster greatly exceeds this Indian disaster by any measure: time frame, involved population, involved area, number of deaths, number of disease cases, and number of lives derailed. Yet, no one in authority will proclaim it a disaster. Foundations such as the Ford Foundation and the Fund for the City of New York pour money into such misguided programs as neighborhood arson task forces. In the hardest-hit areas, there isn't enough of a community on which to base an effective program, even if it were aimed at the proper target. So the disaster continues its course and draws an ever greater area and population into its meshes as it spreads.

Table 3-1 STATISTICS OF EXTERNAL WORKTIME DISTRIBUTIONS

YEAR	MEAN(HRS)	DISPERSION	PATCHINESS	%>100 HRS	%<5HRS
			Ladders		
1972	13.4	33.6	3.4	0.7	43.1
1973	25.3	83.4	4.3	6.3	31.5
1974	29.4	95.5	4.2	9.8	31.5
1975	39.9	103.1	3.6	12.4	26.3
1976	38.3	111.5	3.9	12.5	20.6
			Engines		
1972	12.7	87.8	3.6	1.8	57.7
1973	25.3	185.6	8.3	6.9	49.1
1974	35.4	242.3	7.8	9.7	48.4
1975	49.1	288.3	6.9	12.4	38.8
1976	46.1	152.7	4.3	12.2	22.0

Table 3-2 BOROUGH POPULATION DENSITIES, PERCENTAGE OF UNITS EXTREMELY OVERCROWDED, AND NUMBER OF FIRES PER UNIT POPULATION

BOROUGH	PD	OC	STRUCTURAL FIRES			RESIDENTIAL FIRES
			Feb	*May*	*Aug*	*1973–1975 mean*
Manhattan	67,808	3.78	8.66	7.57	5.44	7.83
Brooklyn	37,013	3.01	5.84	5.51	3.90	5.68
Bronx	35,721	3.18	6.85	5.92	4.28	8.79
Queens	18,393	1.74	2.36	2.68	2.13	2.49
Staten Island	5,138	1.02	2.53	3.26	2.69	2.93

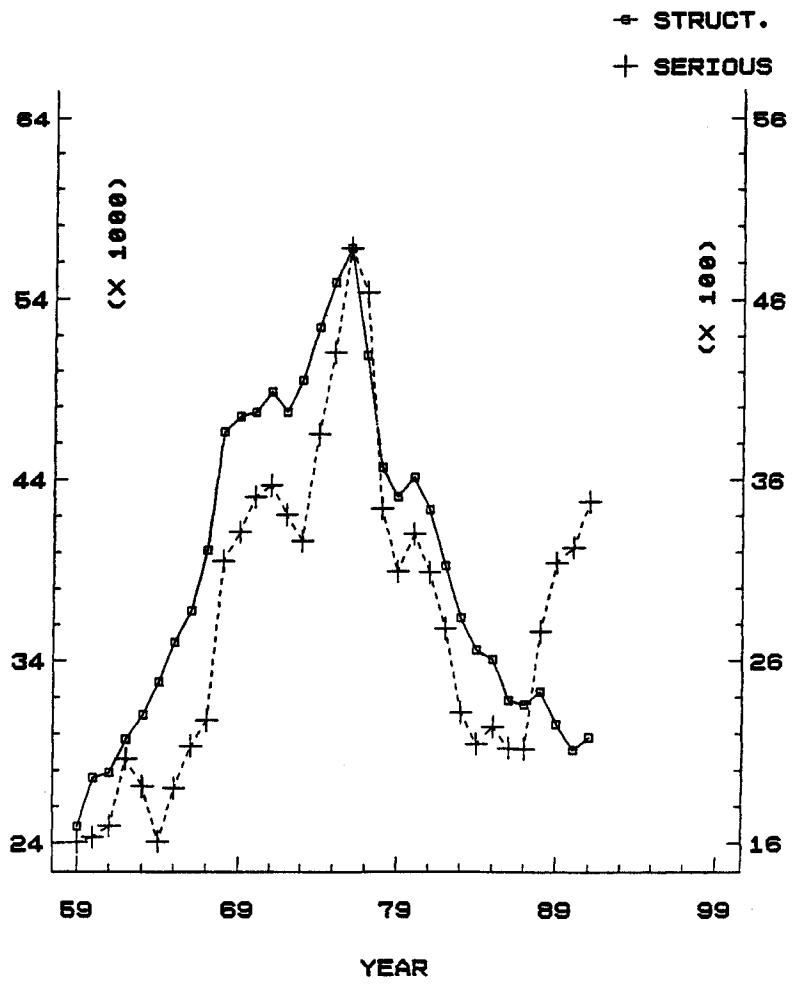
PD=population per square mile.
OC=percent of extremely overcrowded units
Structural fires = number/10,000 people in 1977
Residential fires = number/1,000 people

POPULATION DENSITIES, OVERCROWDING, AND TWO FIRE-SERVICE INDICES: SIX BROOKLYN COMMUNITY DISTRICTS

CD	PD	OC	TOTAL WORKTIME		TOTAL WORKERS	
			engines	*ladders*	*engines*	*ladders*
16	74.2	23.55	3,086.9	3,263.1	1,570	1,259
3	89.0	20.93	2,573.2	4,113.1	360	2,510
4	75.0	18.08	2,319.7	3,681.5	442	2,868
8	91.5	16.91	2,393.3	3,081.5	162	656
9	67.5	10.62	2,080.4	2,541.7	155	196
17	46.5	7.99	1,735.4	1,839.5	96	109

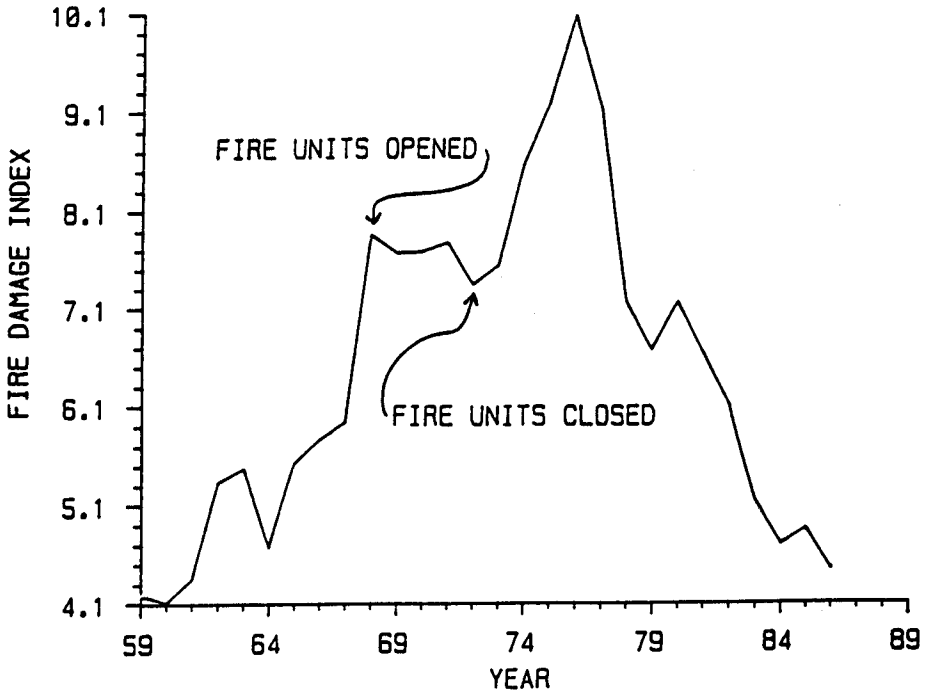
PD=thousands of people/square mile
OC=percentage overcrowded housing units
Worktime=total hours worktime per average unit 1975–1977
Workers=Incidents serviced by relocation, avenue company, 1975–1977

Figure 3-1 STRUCTURAL FIRES AND SERIOUS FIRES BY YEAR, NYC, 1959-1991



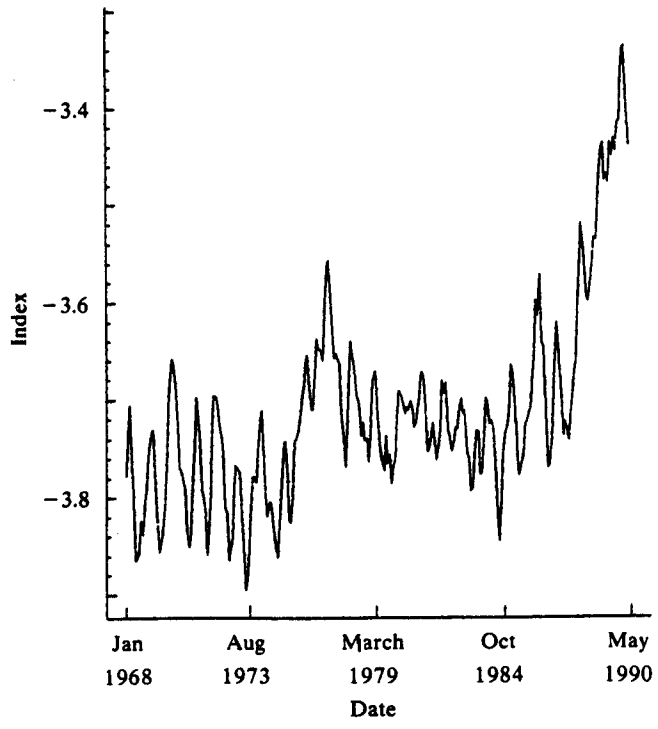
Left vertical axis=structural fires.
Right vertical axis=serious fires.
(Note how the number of serious fires increased after 1987.)

Figure 3-2 FIRE DAMAGE INDEX 1959-1986



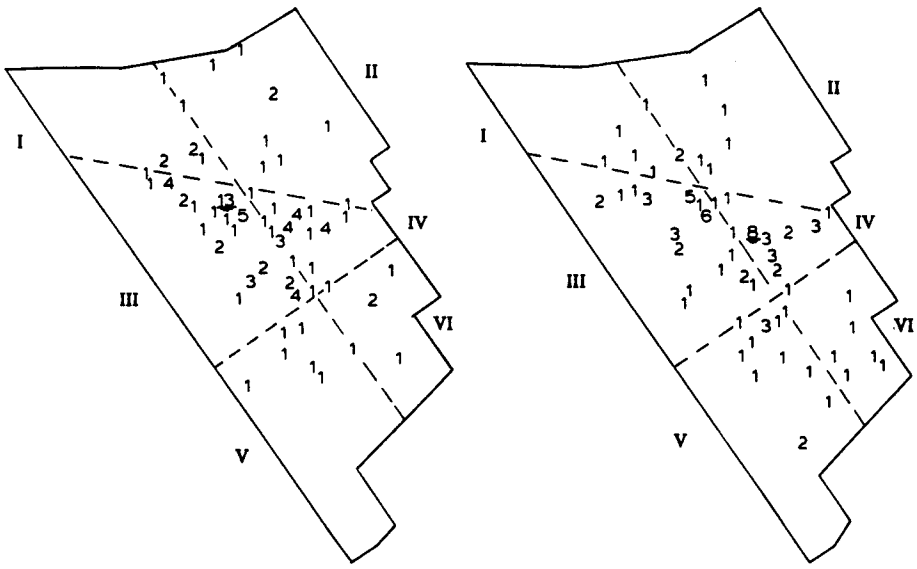
This index is based on hours of firefighting worktime, number of structural fires, and number of serious fires.

Figure 3-3 FIRE CONTROLLABILITY INDEX, 1968-1990



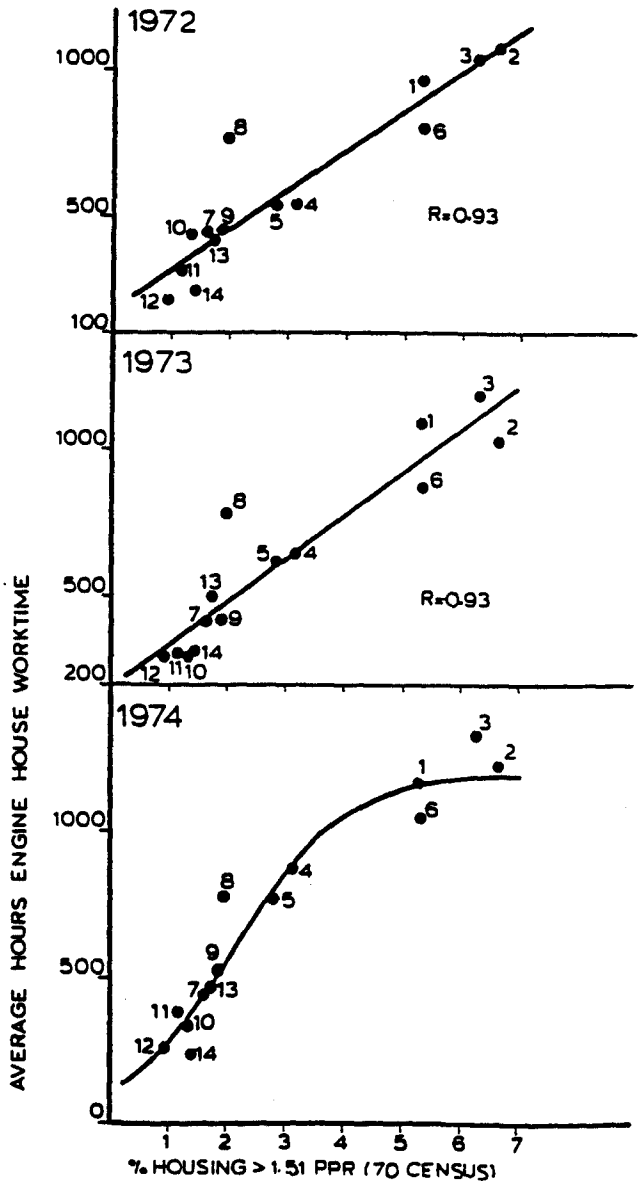
This index is a contrast between number of structural fires and the number of fire companies needed to control them. The less negative the index, the less controllable the fires.

Figure 3-4 STRUCTURAL FIRES BY BLOCK IN BUSHWICK



The left-hand map shows the number of structural fires in Bushwick in September 1976. Note the maximum number of thirteen fires on a single block of region III. The right-hand map shows the same phenomenon for December 1976. Notice the shift of the maximum clump into region IV. In each map, the maximum cluster is underlined.

Figure 3-5 AVERAGE BRONX COMMUNITY DISTRICT ENGINE WORKTIME TOTAL FOR 1972-1974 VS 1970 PERCENTAGE OF EXTREMELY OVERCROWDED HOUSING UNITS

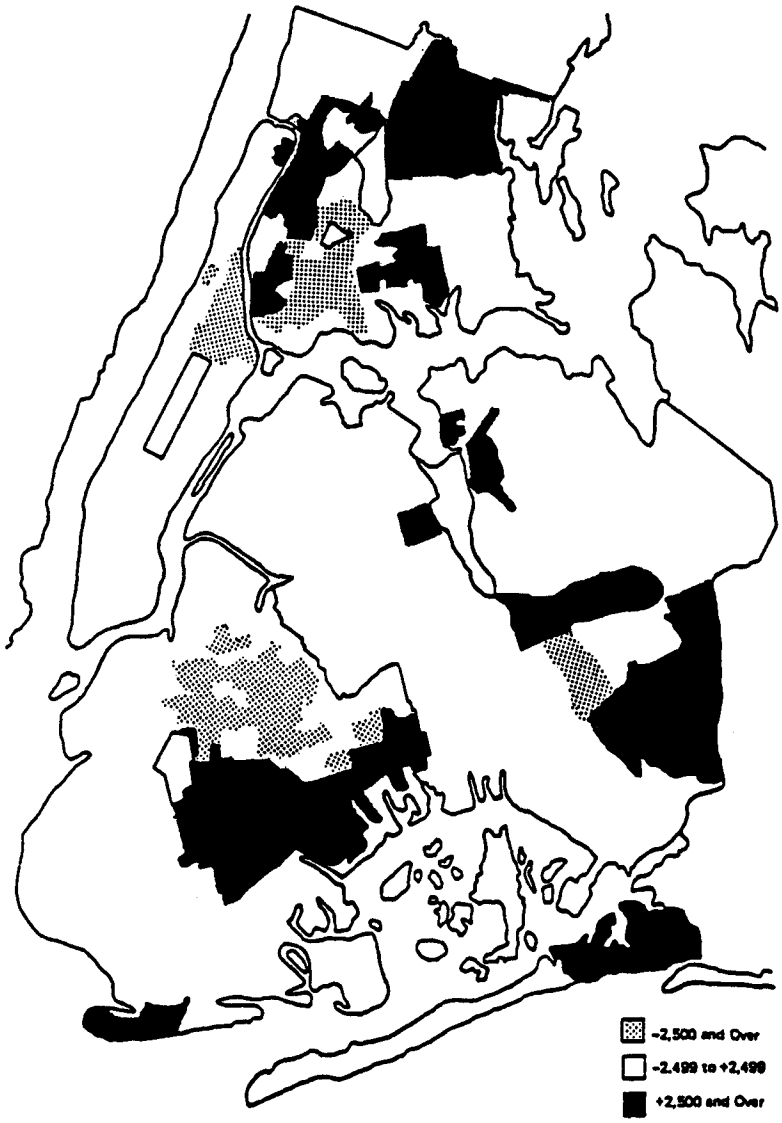


The "topping out" in 1974 represents a resource-limited inability to service total demand, a service shortfall.

Figure 3-6 CENSUS TRACTS WHICH LOST 500 HOUSING UNITS OR MORE, 1970-1980

Each large blackened area is composed of many census tracts.

Figure 3-7 CHANGE IN BLACK POPULATION 1970-1980



The changes of 2500 people refer to census tracts. The stippled and blackened areas are composed of many census tracts.

Figure 3-8 CHANGE IN HIGH DENSITY OF POPULATION ON WELFARE 1967-1977

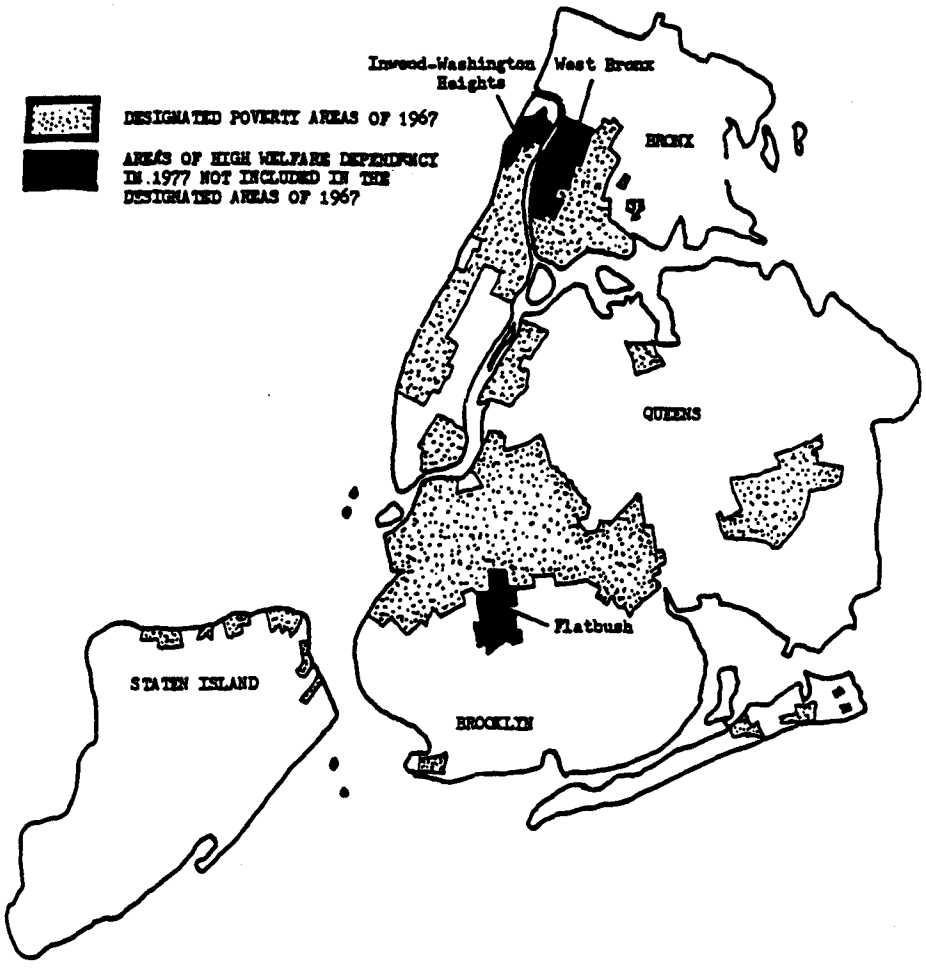
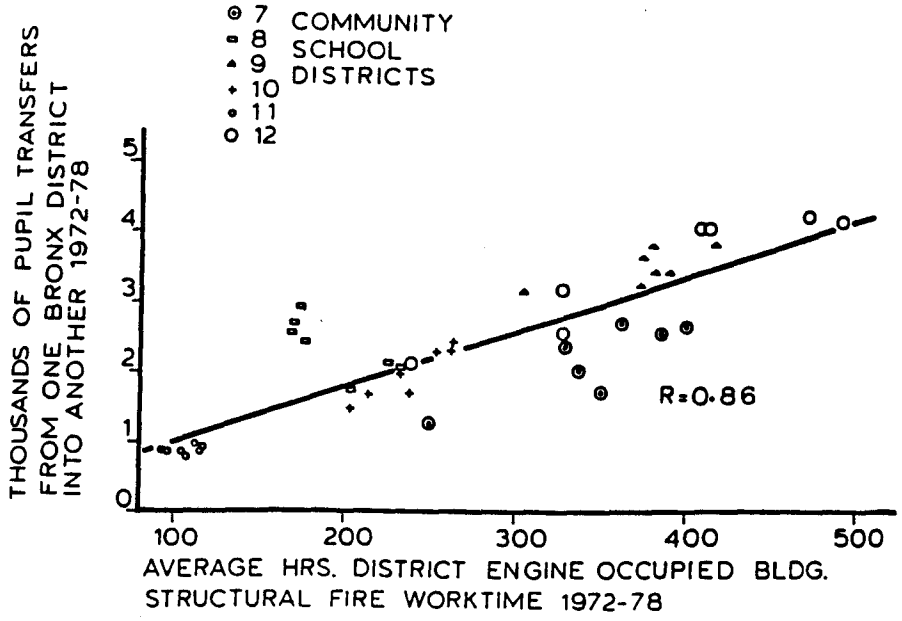


Figure 3-9 PUBLIC SCHOOL STUDENT TRANSFERS IN 1974-1975

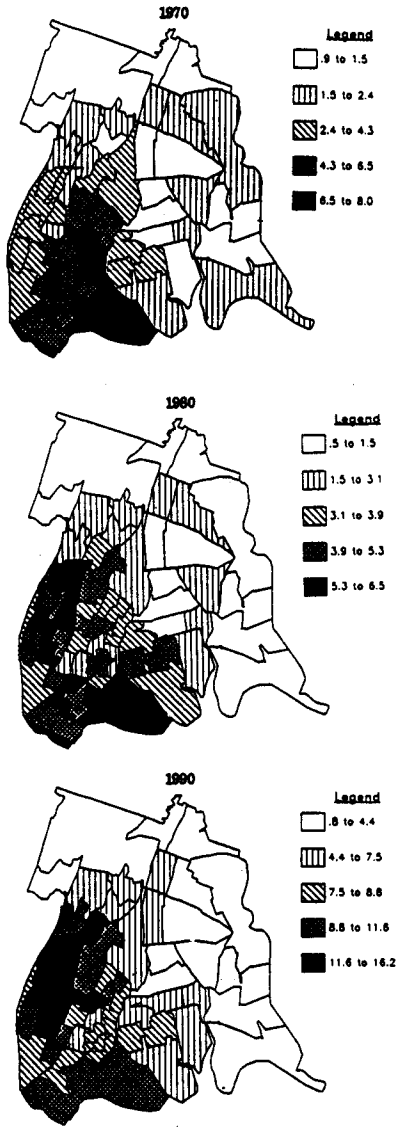
This year was the height of the fire epidemic in the South Bronx. Note the immense shift of students from the South Bronx to the West and Northwest Bronx. Note also the shifts from the Brooklyn fire band which had not yet reached its peak fire activity.

Figure 3-10 ANNUAL PUBLIC SCHOOL TRANSFERS IN THE BRONX VS. AVERAGE HOURS OF DISTRICT ENGINE WORKTIME FOR OCCUPIED STRUCTURAL FIRES: 1972-1978



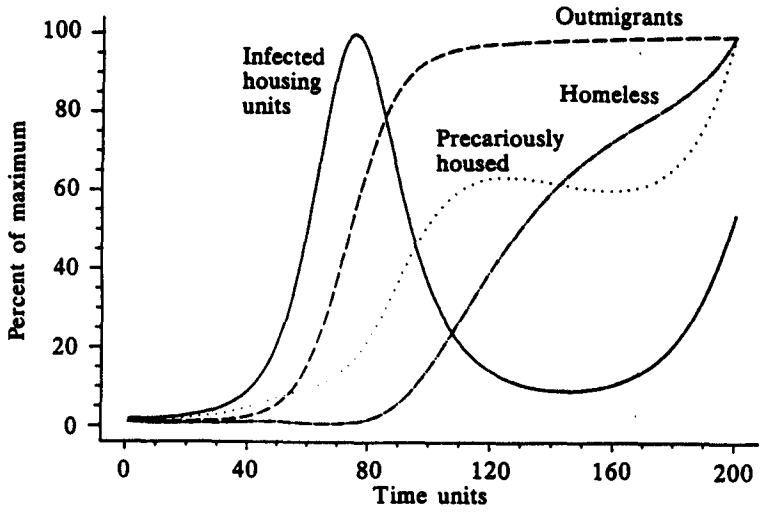
The fires drove the transfers. The statistical correlation was extremely high and the explanatory power of the fires for the transfers extremely high.

Figure 3-11 MAPS OF EXTREMELY OVERCROWDED HOUSING IN THE BRONX HEALTH AREAS: 1970, 1980,AND 1990



Note the shift to the West Bronx in 1980 of the highest percentage of extreme overcrowding and the subsequent increase in concentration of overcrowded housing units there by 1990. In 1970, the area with the most overcrowding had about 8% of the units extremely overcrowded. The area with the most overcrowding in 1990 had 16.2%, double that of 1970.

Figure 3-12 THE SUCCESSIVE WAVES OF HOUSING DESTRUCTION, EMIGRATION, CESSATION OF EMIGRATION, THE PRECARIOUSLY HOUSED, AND OVERT HOMELESSNESS



The coupling of contagious urban decay and homelessness.

As housing is destroyed and community conditions decay, those with resources emigrate. Their homes are freed for occupancy by those whose homes are destroyed. When emigration ceases, doubling up and other unstable arrangements lead to a large number of precariously housed residents. When these people fall out of the social network, they become the overtly homeless.