

Polarization and Public Housing in the United States

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Abstract

Cities in the United States have become home to an increasing concentration of poor households, disproportionately composed of racial and ethnic minorities. Many European cities have also experienced an increase in concentrated poverty, although to a much smaller degree. In both the United States and Europe, poor and minority populations are overrepresented in social housing, which in the United States is mostly located in central cities. Racial and ethnic minorities in American public housing are, for the most part, composed of native-born households whereas in Europe they are more likely to be foreign-born.

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The impact of concentrated poverty on residents of public housing has been widely documented. In this article, we examine the effect of public housing on neighborhood poverty rates in central cities. We construct a longitudinal database (1950-1990) for four large cities-- Boston, Cleveland, Detroit and Philadelphia-- and using econometric methods examine the relationship between the location of public housing and changes in neighborhood poverty rates. We find that in each city, one or more of the variables relating to the existence of public housing is significantly related to increases in neighborhood poverty rates in succeeding

In recent years, there has been much debate in Europe and the United States about polarization of incomes. Of particular concern are trends in several countries suggesting an increase in the number of households who earn low incomes over long stretches of time. In many instances, racial and ethnic minorities, either native born or immigrants, are overrepresented among the ranks of those who endure persistent poverty (Lawson 1995).

Housing patterns are frequently linked to economic disadvantage. Concentrations of poor households in certain types of housing or neighborhoods may result from market forces as well as from

discriminatory practices or government interventions in the housing market (Schill and Wachter 1995a).

Where one lives may, in turn, affect one's economic opportunities either by influencing educational opportunities or by limiting access to employment.

In several nations, social housing has reflected income polarization and, in some instances, has intensified the disparities between rich and poor. In addition, in a number of European nations social housing has become home to a disproportionate share of racial and ethnic minorities, typically immigrants who have entered as "guest" workers or as citizens of former colonies. Public housing in the United States is also disproportionately composed of racial and ethnic minority households. This population, however, is not by and large composed of immigrants. Instead native born black and Hispanic Americans vastly outnumber immigrants.

In this article, we examine polarization of housing in the United States-- specifically how public housing in large central cities has, over the past forty years, become home to an overwhelmingly poor population composed disproportionately of racial and ethnic minority households. In Part I, we briefly describe the growing spatial stratification of the American urban population by race and income. In Part II, we compare the segregation of housing by race, ethnicity and income in the United States with dynamics in several European countries. In particular, we describe the relatively small concentration of immigrants in American social housing and contrast this with patterns in Europe. Part II also describes the forces that have created enormous concentrations of poverty and high levels of race segregation within public housing.

In Part III, we examine some of the consequences of this concentration of poverty in public housing. In addition to describing the social problems faced by residents of public housing we examine the impact public housing has had on surrounding urban neighborhoods. Our study examines the

dynamics of poverty and racial segregation in four large American cities-- Boston, Cleveland, Detroit and Philadelphia. In addition to describing the general demographic and spatial trends that have affected these cities since 1950, we discuss and use multivariate techniques to test the hypothesis that public housing may have contributed to increased poverty rates for the neighborhoods in which it is located as well as nearby neighborhoods. Our results tend to support this hypothesis, suggesting that public housing creates a negative externality for the neighborhoods in which it is located and contributes to concentrated urban poverty and residential segregation by income in the United States.

### I. Spatial Stratification by Income and Race in American Cities

In recent years, cities in many European and North American nations have experienced intensified levels of residential segregation (Huttman, Blauw and Saltman 1991). In some instances, spatial segmentation of housing markets has primarily been along the lines of income. In other cities, income segregation occurs simultaneously with racial or ethnic segregation.

Increases in spatial segregation by income, race and ethnicity within cities have been linked to increases in the polarization of urban incomes. Sassen (1991) has suggested that increasing urban income inequality is caused by the emergence of "global cities." In these global cities, multinational and transnational corporations have concentrated highly paid control and coordination jobs as well as low paid ancillary clerical and service jobs. These higher and lower paying jobs have typically replaced employment lost due to the decline of the urban manufacturing sector. Some have argued that income

polarization will result in a "dual city" with increased levels of residential segregation by social class (O'Loughlin and Friedrichs 1996). However, the causality between polarization and segregation may be reversed. Income polarization could also be the outcome of spatial isolation which circumscribes access to the metropolitan opportunity structure (Murie and Musterd 1996, Van Kempen 1994).

Regardless of whether polarization of incomes is its root cause, segregated residential patterns that are a relatively recent phenomenon in many European nations, have typified older American cities for decades. Spatial segmentation by income and race can be seen both by comparing population characteristics of municipalities and neighborhoods within metropolitan areas.

According to the Census of Population and Housing, in 1990, roughly two-thirds of all white persons living in metropolitan areas resided in the suburbs compared to only 39% of the non-white population. Disparities were particularly severe for black Americans living in metropolitan areas, with Hispanic and Asian households somewhat more evenly spread out. The most commonly used measure of segregation is the index of dissimilarity which represents the proportion of a metropolitan area's population that would have to move in order to achieve an even distribution of minority group members throughout the metropolitan area. A high index of dissimilarity value is generally thought to be 60. Massey and Denton (1993) report that among the thirty metropolitan areas in the United States with the largest black populations, the average index of dissimilarity in 1990 for the north is 77.8; for the south the value is 66.5. Some large metropolitan areas, particularly those in the northeast and midwest, have staggering levels of segregation such as Chicago (85.8) and Newark (82.5).

Similar geographic patterns of disparity are evident with respect to income. Per capita incomes of suburban residents in 1990 greatly exceeded those of central city residents. For example, in large

metropolitan areas of the Northeast, the average income of city dwellers in 1990 was less than three-quarters the income of suburban residents (Frey 1993). This geographic pattern of income disparity has worsened over time. Madden (1996) shows that from 1980 to 1990, the disparity in urban and suburban poverty rates increased, particularly with respect to cities with the highest rates of poverty in 1980. Within central cities, another dynamic has exacerbated spatial patterns of income polarization. Since 1970, most American cities have experienced a marked increase in the number of households living in neighborhoods with high proportions of poor families. In 1970, 5.2% of the population of the nation's one hundred largest cities lived in neighborhoods where over 40% of the residents earned incomes below the federally prescribed poverty level (Kasarda 1993). This proportion doubled to 10.7% in 1990. Income and race interact strongly in these extremely low income neighborhoods; 57.3% of all residents are non-Hispanic blacks and 23.8% are Hispanic.

The spatial segregation by race and income that has become synonymous with American cities is a product of a complex set of historical, economic and social factors (Jackson 1985; Schill and Wachter 1995a). Following World War II, population and jobs, particularly those in the manufacturing and industrial sector, flowed out of central cities to the suburbs. One reason for this steady decentralization of people and employment was that land at the periphery was typically cheaper than land in the urban core, permitting larger homes and plants. Technological changes including the invention of the automobile and innovations in assembly line production made location outside the urban core increasingly desirable.

Preferences for homogeneous neighborhoods and living environments also contributed to economic and racial segregation. Many white households left the urban core of American cities because

they did not want to live in close proximity to non-white households who had migrated to cities during and after World War II. Some households were motivated to move by prejudice, others by a fear that the value of their homes would decline as a result of neighborhood transition. Racial discrimination in the housing market by home sellers and landlords as well as the practice by many real estate agents of steering non-white households to predominantly non-white neighborhoods limited the neighborhoods that were available to minority households and exacerbated patterns of racial segregation (Yinger 1995).

Preferences of middle and upper income Americans for neighborhoods composed of persons of similar socioeconomic status can also partially be explained by the federated structure of American local government. Most metropolitan areas are composed of dozens of separately incorporated municipalities. Under the prevailing law of most states, these municipalities have the power to establish their own land use regulations, tax rates and levels of municipal services. Thus as Tiebout (1956) observed, a strong incentive exists for municipalities to use their fiscal and regulatory powers to maintain income homogeneity and thereby reduce the likelihood of redistribution. Preferences for income homogeneity at both the municipal and neighborhood level may also be explained by the desire for social exclusiveness.

These strong economic and social forces favoring spatial patterns of income and racial segmentation were strengthened by government policy. The federal government implicitly subsidized decentralized living patterns by supporting the development of interstate highways. In addition, support for homeownership through preferential tax treatment and a variety of mortgage insurance programs enabled people to move out of the predominantly multifamily inner city core to locations at the

periphery. Underwriting criteria for these mortgage insurance programs frequently disadvantaged central city location and, in some instances, explicitly excluded areas with high proportions of racial and ethnic minorities (Schill and Wachter 1995b).

In addition to destabilizing inner city communities by the preferential treatment accorded suburban and peripheral development, the federal government enacted housing subsidy programs which would have profound implications for the spatial distribution of low income and minority families in American metropolitan areas. In 1937, the Congress enacted the Public Housing Program, the nation's largest social housing initiative. Over the succeeding half century, approximately 1.4 million units of public housing were built, mostly in central cities. As we will describe in Parts II and III, the structure of this program as well as its implementation by local public housing authorities would have a tremendous impact on America's urban landscape. In Part II, we discuss how the proportions of poor households have increased in social housing in the United States as well as many European nations. In Part III, we show how public housing, the major form of social housing in the United States, has contributed to increased concentrations of poverty in surrounding neighborhoods in four large cities.

## II. Social Housing and the Geographic Concentration of the Poor and Racial/Ethnic Minorities

Social housing has increasingly become home to the most vulnerable segments of the European and American urban populations, households composed of poor, racial or ethnic minorities. In this section, we describe how the proportion of low income households in social housing has grown in both Europe and the United States over the past several decades. In many cities, on both continents, an



increasing share of these low income residents are composed of racial and ethnic minorities. However, a substantial difference exists in the composition of these minority households. In Europe, low income racial and ethnic minority residents of social housing are typically immigrants or the children of immigrants; in the United States, more often than not, they are native-born black and Hispanic households.

In several European nations and the United States, social housing has increasingly become home to households at the economic margins. In the United States, for example, according to data from the 1989 American Housing Survey (Casey 1989), the median income of public housing tenants was \$6,571, approximately one-third the average income earned by all renters and one-fifth of the average earned by homeowners. Only 35% of public housing households reported receiving any income from wages or salaries and almost one-half were recipients of public assistance. These aggregate numbers mask even bleaker circumstances in individual housing developments, particularly those located in large cities. A sample of thirteen large urban public housing authorities by Vale (1992) shows that only about one quarter of all non-elderly public housing tenants reported receiving wages. Public assistance receipt rates ranging from 75% to 90% were not uncommon. Longitudinal data demonstrate the increasing concentration of poverty in public housing over the past twenty years. In 1974, just over 1% of all households living in nonelderly developments earned less than 10% of the area's median income; this proportion grew to over 19% in 1991.

Although one must be careful in drawing comparisons across countries and cultures, similar, albeit much less dramatic, changes have occurred in several European nations. In the United States, public housing has always been thought of as "housing of last resort." This view of social housing as a

"residual" tenure has only recently taken hold in several European nations. For example, in England, from 1979 to 1988, the proportion of economically inactive households in council housing increased from 41% to 60% (Power 1993, 230). Similar changes of lesser magnitude have occurred in France, Germany and the Netherlands (Emms 1990, Harloe 1995, Power 1993).

Social housing in many European countries is provided by a variety of public, nonprofit and limited profit landlords. In many of these nations, foreign born households were initially not eligible for government supported housing and had to find accommodations in the private sector (Morris & Winn 1990; Van Kempen, Teule and Van Weesep 1992). Nevertheless, since the 1960s, immigrants have increasingly moved into social housing; indeed in several countries they are now over-represented among tenants in the sector. For example, in England, nearly half of all Afro-Caribbean households live in council housing as compared to one-quarter of the overall population (Peach and Byron 1993; Power 1993, 231); in France one in four immigrants live in HLM housing compared with one in eight for the entire country (Blanc 1992; Emms 1990, 93).

In virtually all European nations, certain social housing developments have developed reputations for being "troubled" or "difficult-to-let." These developments typically have higher than average rates of vacancies, apartments in need of repair, families earning extremely low incomes and social problems such as crime and drug abuse. Frequently, although by no means always,<sup>1</sup> these less desirable developments are also disproportionately inhabited by immigrant families (Huttman 1991). In England, for example, a number of inner city council housing estates that are widely recognized as having high levels of distress, such as Moss Side in Manchester or Stockwell Park in London, have relatively high proportions of immigrants or second generation families. Similarly, one in three residents

of the Netherlands' enormous Bijlmermeer complex and France's Les Minguettes were born in other countries (Emms 1990; Musterd and Ostendorf 1996). The over-representation of immigrant families in some of the most distressed European social housing estates is attributable to a number of factors which include increases in immigration that coincided with high project vacancy rates, discrimination in housing allocations, income differences between immigrants and native residents and preferences for intragroup cohesiveness.

The United States has no shortage of distressed public housing developments (Schill 1993). Indeed, in recent years a number of public housing authorities in large cities have been taken over by the federal government (e.g. Chicago, Philadelphia, San Francisco) or forced to cede control to court-appointed receivers (e.g. Boston, Washington, D.C.). Thousands of abandoned or decrepit public housing units have been demolished on the ground that they did not provide decent, safe and sanitary housing. Indeed, popular culture, as reflected in best-selling books such as Alex Kotlowitz's There Are No Children Here and Nicholas Lemann's The Promised Land and films such as Candyman and Menace II Society, typically treat public housing developments as symbols of urban desolation and disorder.

Unlike some of the more troublesome European social housing developments, there has been virtually no discussion nor research suggesting that immigrants are over-represented in distressed public housing in the United States. Indeed, except for an announcement in 1994 that the government would enforce laws denying subsidized housing to illegal immigrants, public housing and America's foreign born population are rarely linked. One reason why immigrants have stayed off the public housing "radar screen" is that, unlike the case in many European nations, their probability of receiving subsidized

housing is not that much higher than that of native-born Americans. The United States Department of Housing and Urban Development (HUD) has not, to date, kept reliable data on the nativity status of recipients of housing assistance. Two surveys, the Current Population Survey (CPS) and the Survey of Income Program Participation (SIPP),<sup>2</sup> however, do inquire about respondents' nativity and whether they live in subsidized housing.<sup>3</sup> According to estimates from the 1994 CPS, reported in Table 1, 6.9% of all immigrant households<sup>4</sup> live in subsidized housing compared to 5.1% of native born Americans. Similar data from SIPP indicates that in 1992, 6.0% of all immigrant households<sup>5</sup> lived in subsidized housing compared to 4.6% of all native born Americans.

Although immigrants are only slightly more likely to be concentrated in subsidized housing, in general, or distressed public housing developments, in particular, the same unfortunately cannot be said about native born racial and ethnic minorities. Although most recent immigrants to the United States are black or Hispanic, the overwhelming majority of black and Hispanic residents in the United States were born in the country. As the CPS data in Table 2 indicates, the probability that native born black households live in subsidized housing (15.7%) is more than four times that of native born whites (3.4%) and more than twice that of immigrants. This higher likelihood of residence is also reflected by the CPS estimates that native born black households comprise 11.2% of all households in the United States, yet constitute 33.3% of all households who live in subsidized housing. Although the CPS does not distinguish among cities, Goering, Kamely and Richardson (1994, 56) have shown that in many large cities, such as Atlanta, Baltimore, Boston, Chicago, Cleveland and Philadelphia, over 85% of public housing tenant households are headed by a black person. Black-headed households also disproportionately reside in distressed public housing housing developments.

Patterns of racial and income concentration in public housing are inextricably intertwined. High levels of racial concentration in American public housing, particularly in large cities, are attributable to several factors (Schill 1993). One reason for the extraordinarily high proportion of nonwhite tenants in large urban public housing developments is that public housing is a means-tested program which, at least until recently, has had extremely low income ceilings. Therefore, because black families, on average, earn much lower incomes than white families (U.S. Bureau of the Census 1990), one would expect them to be over-represented in public housing. In addition, most public housing in the United States is located in large cities, typically those that have lost large proportions of their white populations to the suburbs since the end of World War II. The disproportionate migration of white households to the suburbs is partly attributable to their relatively higher incomes, as well as to patterns of discrimination in the housing market. As the population of cities became increasingly composed of racial and ethnic minorities, applicants for public housing also became disproportionately nonwhite. In addition, during the 1950s and 1960s, slum clearance programs leveled disproportionately minority, inner city neighborhoods, whose residents were then given priority in relocating to public housing. Furthermore, for years, public housing authorities discriminated in their admissions policies by maintaining all white and all black developments. Black developments were frequently built at enormous scale in isolated portions of central cities.

As Massey and Denton (1993) have demonstrated, blacks, as a group, tend to earn lower incomes than the average American. High rates of segregation among American blacks therefore magnify and concentrate poverty in urban neighborhoods. Racial segregation, however, is far from the only reason for the overwhelming concentration of poverty in many large urban public housing

developments. For years, Congress set admission standards that required tenants of public housing to earn extremely low incomes and granted preferential status to particularly needy groups such as the homeless and households displaced by slum clearance. High density was ensured by federal regulations that permitted municipalities, typically those located in the suburbs, to opt out of the program. Therefore, the housing that was built was, for the most part, constructed on expensive urban land and had to be built at high densities. Large scale tower construction, in turn, promoted anonymity, a lack of security and insufficient parental oversight of children.

Inefficient management and systematic under-maintenance also contributed to the concentration of poverty in public housing. In the mid-1960s as rents escalated faster than tenant incomes, Congress passed legislation to limit rents to a set proportion of tenants' incomes. Public housing authorities, faced with rapidly rising operating costs and stagnant rental incomes and federal subsidies, often had no choice but to defer maintenance. In addition, the limited resources that did exist were sometimes squandered by managerial inefficiency and corruption.

Federal court rulings and administrative requirements also contributed to the problems of public housing. Courts restricted the ability of public housing authorities to screen out "undesirable" tenants and also required them to hold administrative hearings prior to bringing eviction proceedings in court. Although these requirements may have promoted fairness and accountability on the part of public housing managers, they also limited their flexibility and therefore their ability to control tenant behavior and activities that were detrimental to the social fabric of public housing developments.

Each of these dynamics promoted the concentration of poverty within public housing, some directly, others indirectly. Racial segregation magnified income disparities in many developments.

Income ceilings essentially placed public housing off limits to working families. High density construction, under-maintenance and the inability or unwillingness of managers to control anti-social tenant behavior caused households who had the resources to move elsewhere, leaving behind an increasingly marginalized and impoverished population.

The increasing concentration and isolation of poor and minority households in American public housing has created an environment that has worsened the quality of life for residents and diminished their opportunities for social and economic mobility. Although only anecdotal accounts exist to demonstrate these effects within public housing developments (Kotlowitz 1991), the impact of concentrated poverty in inner city neighborhoods is well documented in both theoretical and empirical literature. Concentrated inner-city poverty generates problems that are different both in kind and in magnitude from those experienced by poor people in other geographic settings. According to Wilson (1987), geographic isolation of poor people generates behavioral adaptations called "concentration effects." Specifically, children growing up in neighborhoods with few employed role models develop weak attachments to the labor force. Lacking employment opportunities and the appropriate socialization to seek work, youths are more likely to engage in deviant or illegal activities to earn income and gain status, thereby further distancing themselves from middle-class norms. These behaviors are reinforced by peer groups. Wilson's concentration effects hypothesis has received almost universal empirical confirmation. Studies have shown a consistent relationship between social and spatial isolation, on the one hand, and high rates of teenage childbearing, school drop-outs and welfare dependency, on the other (Anderson 1991, Clark 1992, Brooks-Gunn et al. 1993, Crane 1991,

Osterman 1991). In the following part, we examine how public housing has contributed to the concentration and isolation of poor and minority households in American cities.

### III. The Concentration of Poverty in Public Housing and Its Impact On Surrounding Neighborhoods

Concentrations of poverty in public housing developments may generate negative externalities for the neighborhoods in which they are located. In the first section of this part we summarize the existing literature on the impact of public housing on surrounding neighborhoods. We then examine the relationship between public housing and neighborhood poverty rates in four large American cities using a longitudinal database. In the second section, we begin by providing selected demographic characteristics that describe how the racial and ethnic composition of the four cities changed over the study period (1950-1990) as well as data on changes in poverty. In the third and concluding section we present the econometric model used to examine the impact of public housing on neighborhood poverty rates and describe the results obtained.

#### A. A Review of the Literature on the Impact of Public Housing on Neighborhoods

Although concentrations of poverty within public housing have been well documented, little research has been done to examine the effect of public housing developments on their surrounding neighborhoods. To the extent that public housing generates negative externalities, one would expect it to affect property values and the social composition of the neighborhoods in which it is located. The



few studies that have examined the impact of public housing on neighboring property values, however, fail to find a negative effect (Nourse 1963, Rabiaga 1984).

Similarly, three studies which examine the effect of public housing on neighborhood racial or socioeconomic composition reach somewhat contradictory results. Each of these studies test multiple regression models with longitudinal census data for one large city. Goldstein and Yancey (1986) specify two equations in which the proportions of blacks in Philadelphia census tracts in 1970 and 1980 are regressed over several independent variables, including their distance from the city center, the number of industrial jobs within one mile of the tract, the median housing value in 1934, the proportion of blacks in 1950, and whether the tracts contain public housing. The variable representing the existence of conventional public housing in a tract consistently fails to reach accepted levels of statistical significance.

Galster and Keeney (1993) also examine the effect of subsidized housing on neighborhood racial change in Yonkers, New York from 1970 to 1980. Their model includes variables measuring the racial composition of census tracts and adjacent tracts, as well as variables measuring the proportion of the population that is over the age of sixty-four, college graduates, and homeowners. Unlike Goldstein and Yancey, Galster and Keeney find a significant relationship between the number of units of subsidized housing and increases in the proportion of black residents. Nevertheless, they report that the magnitude of this relationship is small.

The third study by Massey and Kanaiaupuni (1994) examines Chicago census tracts to determine whether the existence of public housing constructed between 1950 and 1970 is related to the proportion of families with incomes below the poverty line in 1980. In addition to the public housing variable, their model includes the proportion of blacks and families living in poverty in 1970, the distance

of each tract from a public housing project, and the net migration rate from the tract. Massey and Kanaiaupuni find a positive, statistically significant relationship between the existence of public housing in a census tract and the proportion of families in poverty in 1980.

The studies by Goldstein and Yancey and Massey and Kanaiaupuni on the impact of public housing on neighborhood social and racial composition share a common methodological weakness. The independent variable of interest, the existence of public housing in the tract, is a dummy variable taking on the value of "1" if public housing exists and "0" otherwise. Theory would predict, however, that the size of a public housing development should be important in explaining its impact on the neighborhood in which it is located. If public housing generates negative externalities, extremely small developments are unlikely to exert as much of an effect on their neighborhoods as do large developments. In the concluding section of this part, we therefore specify a model in which the quantity of public housing units in a census tract is hypothesized to affect the proportion of poor households in that tract and surrounding neighborhoods. We also test our model in four large American cities--Boston, Cleveland, Detroit and Philadelphia.

#### B. Changes in Race, Ethnicity and Poverty in Boston, Cleveland, Detroit and Philadelphia

As Table 3 indicates, Boston, Cleveland, Detroit and Philadelphia have been influenced by similar demographic and economic trends. Each is a relatively old (by American standards) city located in the northeast or midwest portion of the nation. Since World War II, the population of each of these cities has steadily declined. Boston and Philadelphia lost 28.3% and 23.5% of their respective populations between 1950 and 1990; Cleveland and Detroit had even more precipitous declines--44.7% and 44.4%. Although the populations of each of these cities fell over the past two decades, the

numbers of people below the official poverty line increased even in absolute terms. In 1990, almost one out of every three residents of Detroit was poor. The lowest poverty rate among the four cities was in Boston where 18.7% of the population earned incomes below the poverty line.

Although each of the four cities experienced growth in poverty population, patterns differed among the cities. Because census statistics on families earning incomes below the federally prescribed poverty level are unavailable for years prior to 1970, we use an alternative definition of poverty. A family is classified as poor if its total income is less than one-half of the median income of its metropolitan area.<sup>6</sup> Among the cities we studied, poverty, as a proportion of total population, increased most in Detroit, followed (in order) by Cleveland, Philadelphia and Boston. Spatial comparisons of poverty concentrations in Boston and Cleveland, depicted in Figures 1 and 2, illustrate that the cities also differ in where their poverty growth occurred. In Cleveland, poverty tended to grow in and adjacent to areas that were already relatively poor. In Boston, however, some center city areas that were relatively poor in earlier periods became increasingly poor over time, others experienced declining poverty rates probably as a result of gentrification (Schill and Nathan 1983) and certain peripheral census tracts that initially had relatively low poverty rates experienced increases in poverty over time.

Boston, Cleveland, Detroit and Philadelphia also experienced increases in the proportions of their populations composed of racial and ethnic minorities. The greatest increase was in Detroit where the proportion of black residents increased from 16.4% in 1950 to 75.7% in 1990; the smallest increases occurred in Boston and Philadelphia. As Figures 3 and 4 illustrate, in 1950, only a small proportion of census tracts in either Boston or Cleveland were composed of a majority of nonwhite residents. In both cities, the growth in nonwhite-majority tracts was concentrated in and adjacent to

areas that already had relatively high proportions of nonwhite populations. Across the forty year period, 1950-1990, the main difference between the two cities is not the pattern, but instead, the magnitude of the change. By 1990, well over half of Cleveland's land area was composed of tracts with a majority of nonwhite residents, whereas in Boston such tracts still are in the minority.

Figures 2 and 4 superimpose the location of project-based public housing developments over poverty and nonwhite concentrations for the City of Cleveland. In 1950, the majority of Cleveland's public housing units were in areas of both relatively high minority concentration and poverty. As time passed, this tendency became more pronounced, as almost all new public housing units added were sited in such areas. With respect to parts of the city with relatively lower concentrations of poverty and nonwhite populations, those with public housing tended to show a greater tendency of increased poverty and racial transition than did similar tracts without public housing. However, neither of these patterns can serve as a basis for inferring anything about the relationship between public housing and poverty rates, independent of other forces that may also be influencing poverty. To analyze the relationship between public housing and changes in neighborhood poverty rates, in the following section we specify and estimate a multivariate model which controls for other possible influences on poverty rates over time.

### C. The Relationship Between Public Housing and Neighborhood Poverty Rates in Four American Cities

To examine whether public housing in Boston, Cleveland, Detroit and Philadelphia is related to increases in neighborhood poverty we construct a data set which merges census tract data from the United States Census of Population and Housing for each decade 1950 to 1990.<sup>7</sup> Size and location

information regarding public housing developments were obtained directly from each city's public housing authority.

The dependent variable in our model, NEWPOV, is the ratio of poor families to all families in a census tract. In our model, we hypothesize that NEWPOV in any year (t) will be affected by a variety of socioeconomic and locational factors that existed ten years earlier (t-10). We are limited in our choice of independent variables by data availability and consistency considerations because our sample period covers five separate decennial census years beginning with 1950. The economic and empirical literature on poverty points to several causal factors in the growth of poverty over time. First is the decline in earning potential due to the loss of jobs, and the compositional shift toward jobs paying lower (often sub-poverty level) wages. Recent research on the causes of increasing poverty in American cities has focused on the role of the decline of the manufacturing sector and the loss of employment opportunities in the wake of industrial restructuring (Wilson 1996). Thus, we include in our model census tract employment rates, overall and for males, as important predictors of poverty. In addition, the ability to respond to structural changes in the economy is importantly mediated by the educational endowments of individuals, as has been highlighted by the broad acceptance among economists of the concept of increasing returns-to-skill--usually measured by educational attainment--as accounting for most of the increase in inequality in the distribution of earnings since 1970 (Wachter and Weicher 1989). Therefore, we include the census tracts' median education levels to capture the effect of these changes on poverty rates.

It has also been asserted that particular neighborhoods are made more vulnerable to external factors which may cause declines in income by low rates of owner occupancy (Rohe and Stewart

1996). The absence of owner occupancy may deprive a neighborhood of stabilizing influences. Inadequate maintenance of housing is more likely when structures are occupied by tenants rather than homeowners. Because of agency costs, homes are more likely to be well maintained when the owner is in possession (Galster 1987). Moreover, owners have an incentive to invest in activities that preserve land values by virtue of the nature and time horizon of their equity status.

Tied to considerations of the geographical aspects of economic restructuring (chiefly, the suburbanization of employment), is the issue of access to employment opportunities. We include the log-distance from the census tract to the central business district as a measure of access to central city job opportunities and, simultaneously, as an inverse measure of access to jobs in the suburbs.<sup>8</sup> A full list of the independent variables contained in our model can be found in Table 4. Sample statistics for each variable are contained in Table 5.<sup>9</sup>

Of particular interest for our study is the effect of five variables relating to the existence of non-elderly project-based public housing in a census tract. The first variable PUBLIC represents the proportion of a tract's total year-round housing units that were project-based public housing units as of the preceding decade ( $t-10$ ). To capture the effect of new public housing introduced into a neighborhood over the ten years, we include the independent variable CHPUBLIC. We also allow for nonlinearity in the effects of these two variables by including the squares of the two variables (PUBLICSQ and CHPUBLICSQ). Finally, we include a variable (DBIGPUBLIC), the log-distance to the nearest public housing development with over 600 apartments, to test the effect of public housing across census tracts in terms of the impact of proximity to particularly large public housing developments. If public housing is related to increased levels of poverty in urban neighborhoods we

would expect the coefficients of PUBLIC and CHPUBLIC to be positive and statistically significant and the coefficient of DBIGPUBLIC to be negative and statistically significant. Simultaneous use of the CHPUBLIC and PUBLIC variables as well as our inclusion of the census tract poverty rate in year t-10 (POV) permit us to isolate the effect new public housing has on changes in neighborhood poverty rates. These variables, however, do not permit us to control for changing proportions of poor people within public housing developments over time. Nevertheless, increasing poverty among public housing residents over time would likely not affect the DBIGPUBLIC variable which typically measures the impact of public housing on poverty rates in other tracts.

Table 6 contains the multivariate linear regression estimates of our model of census tract poverty rates. Most of the independent variables have the expected signs and many are statistically significant. In all four cities, neighborhoods with lower average educational levels tended to become poorer in succeeding decades. In three cities, Boston, Cleveland and Philadelphia, higher rates of employment were significantly related to lower rates of poverty in future decades. Higher rates of owner-occupancy were also inversely related to increases in neighborhood poverty rates in three of the four cities. As expected, in each of the cities neighborhoods with lower proportions of poor families tended to become poorer in succeeding decades.<sup>10</sup> In terms of racial composition, neighborhoods in Boston, Cleveland and Philadelphia with higher proportions of nonwhite residents were more likely to experience increases in poverty in successive decades. This pattern was reversed in Detroit, a city whose current racial composition (over three quarters black) is unlike that of other large cities.

With respect to the impact of public housing on neighborhood poverty rates, at least one of the three variables (PUBLIC, CHPUBLIC and DBIGPUBLIC) is statistically significant and has the

predicted sign in each of the four cities. In Boston and Cleveland, the coefficients of PUBLIC are positive and statistically significant.<sup>11</sup> In Philadelphia, the variable PUBLIC just misses the threshold for being significant at the .10 level. Nevertheless, when the variable is analyzed jointly with its squared value (PUBLICSQ)-- which, in this case, has the same sign-- it is significant at the .05 level. In Detroit, increases in public housing construction over the preceding ten years (CHPUBLIC) were related to increased poverty. Finally, in Cleveland and Philadelphia, as distances increased from census tracts with large public housing developments, poverty rates tended to decline. The linear regression specification of our model generated results that were, for the most part, consistent with the hypothesis that the existence of public housing in a neighborhood is related to increases in neighborhood poverty rates. Estimates from an alternative logit specification of the model also indicate that at least one of the public housing concentration variables had the predicted sign and was statistically significant in each city except Boston.<sup>12</sup>

The results, presented in Table 7, of a simulation analysis of the impact of public housing on neighborhood poverty rates suggest that at least in some of our cities, increasing the share of public housing in a neighborhood will have a dramatic effect. For example, in Cleveland, an average neighborhood with no public housing units would be expected to have a "steady state"<sup>13</sup> poverty rate of 41.3%.<sup>14</sup> The poverty rate would climb to 58.7% if the neighborhood ranked in the fourth quintile of public housing concentration among tracts with any public housing (ie. if 29.7% of its housing units were composed of public housing). For communities in the highest quintile of public housing concentration, the poverty rate would jump to 64.3%. In Philadelphia, as public housing concentration rates increase,



predicted poverty rates also climb substantially from 33.0% to 52.6%. Results for Boston show a more modest 13.8% rise in predicted poverty rates and for Detroit we find an even smaller 8.4% increase.

Our empirical analysis therefore shows that changes in neighborhood poverty rates are significantly related to a number of demographic and social conditions including educational attainment and workforce participation. In addition, the results presented in this article support the hypothesis that public housing developments are associated with negative spillover effects in urban neighborhoods.

### Conclusion

Throughout much of the past three decades, American cities have become home to an increasing concentration of poor households, disproportionately composed of racial and ethnic minorities. Many European cities have also experienced an increase in concentrated inner city poverty. Two differences, however, are immediately apparent. The magnitude of concentrated poverty in European cities is much smaller than in the United States. In addition, whereas in the United States, the majority of the inner city poor are composed of native-born racial and ethnic minorities, in Europe, while not by any means the majority, foreign born households are disproportionately represented among the urban poor.

These concentrations of poor people in central cities are particularly prevalent in each nation's social housing. In this paper, we have described the increasing concentration of poor, and minority households in European social housing as well as in its American counterpart, public housing. We have also investigated the relationship between public housing in several large American cities and the growth

of poverty in surrounding neighborhoods. As hypothesized, the relationship between public housing and changes in neighborhood poverty is positive and, for most of the cities, statistically significant as well as economically meaningful.

In the United States, concentrated inner city poverty and racial segregation go hand in hand. Because poverty is correlated with race, racial segregation frequently translates into higher levels of concentrated poverty than would otherwise exist in an urban environment where people of different races and ethnicities were spread evenly over space. The geographic isolation of poor people has been shown to reduce their life chances. Our study therefore suggests that some public interventions in the housing market, ostensibly designed to help poor people and their communities, may ultimately have the opposite effect.

## Notes

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1For example, two large troubled council housing estates in the United Kingdom-- Easterhouse in Glasgow and Meadowell in Newcastle-upon-Tyne-- have extremely low foreign born populations.

2The March 1994 CPS is a survey of 57,079 households conducted by the Census Bureau each year. The sample is designed to give nationally representative figures. The data used in this paper are from the March 1994 household file available from the Census Bureau. SIPP is a survey of 19,457 households also conducted by the Census Bureau periodically. The data used in this paper are from the 1992 Core and Wave 2 Household files available from the Census Bureau.

3Both CPS and SIPP ask respondents two questions about subsidized housing-- one about whether they live in public housing and another about whether they receive rent subsidies. Unfortunately, as the Census Bureau recognizes, the ability of individuals to discern between these two types of assistance is quite limited (Nelson 1996). Therefore, as is common practice for the Census Bureau, we combine the two responses into one category for purposes of this paper.

4For purposes of the CPS, an immigrant is defined as a household headed some by someone who was born in a foreign country and both of whose parents were born in a foreign country.

5For purposes of SIPP, an immigrant household is defined as a household headed by a person who was born in a foreign country and whose two parents were not United States citizens.

6This definition of poverty coincides with the definition of "very low income household" under federal housing law. Because it was necessary to estimate median metropolitan family income for 1950, we use an extrapolation based on trends in the ratio of unrelated individuals to families in the city and suburbs as related to trends in relative median incomes.

7For our maps (Figures 1-4) we develop a set of "universal" tracts spanning the entire period 1950-1990. For purposes of our statistical analysis, however, we match census tracts for each successive pair of decades (1950-1960, 1960-1970, 1970-1980 and 1980-1990). Because census tract boundaries in each city were redrawn at various times between 1950-1990, the sizes of the areas compared vary within and across pairs of decades. Therefore, to accommodate these different sample sizes, observations were weighted proportionately to the square root of the number of families in the tract.

8All distance measures used in our statistical analysis were calculated to the census tract's centroids.

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Large public housing developments were deemed to be located at the centroid of their tracts except for Boston where we geocoded the actual street addresses. For Boston, Cleveland and Detroit distance measures are in degrees meridian. For Philadelphia, we used miles.

9The model we estimate in this paper differs in several respects from the model presented in Schill and Wachter (1995b). Instead of a logit model, we use a linear regression specification. In addition, we do not include in our four city model a variable measuring distance from subway lines.

10While the coefficients for poverty in year  $t-10$  are positive, the implied coefficients for the change in poverty are given by the coefficients of  $POV-1$  and these values are all less than zero. This is to be expected because it shows that tracts with lower poverty rates in the preceding census (period  $t-10$ ) than would be predicted on the basis of the other included variables tended to have relatively greater poverty increases that diminished this discrepancy.

11The negative signs of the variable  $PUBSQ$  in these cities indicates a diminishing effect as  $PUBLIC$  increases in value. In fact, in one of our cities, Cleveland, the crossover point (about 0.5) is within the range of the data and so increasing the share of public housing within the top quintile of tracts with public housing would tend to decrease poverty slightly contrary to our expectations. However, very few of Cleveland's census tracts are so affected.

12With respect to the logit results, the coefficients for  $PUBLIC$  and  $CHPUBLIC$  are significant and positive in Detroit and Philadelphia and insignificant in Boston and Cleveland. The coefficients for  $DBIGPUBLIC$  are negative and statistically significant in Cleveland and Philadelphia and insignificant in Boston and Detroit.

13In three of the four cities studied, Boston, Detroit and Philadelphia, the coefficient for  $POVSQ$  was negative and statistically significant. Taken together with the coefficients for  $POV$  being less than one in each of the four cities, this implies that, *ceteris paribus*, neighborhoods with higher poverty rates are less likely to grow poorer in succeeding years. The model thus implies that a tract's poverty rate will gravitate toward a steady state level. We use the estimates in Table 6 to simulate these steady-state poverty levels, for each city, in Table 7. We explore the effect of increased proportions of public housing on these long-run neighborhood poverty rates by selecting various values of  $PUBLIC$ , while holding the other independent variables constant at their sample means.

14The simulations capture the effect of  $PUBLIC$  (the proportion of dwelling units in a tract that are public housing in 1980) on the steady-state poverty rate. Although poverty rates are changing over time, they eventually reach a steady-state equilibrium level. The model's dynamics are such that this must be the case for the three cities with negative coefficients on  $POVSQ$  (Boston, Detroit and Philadelphia). It is also the case for Cleveland for almost the entire range of the independent variables.

Since poverty has been increasing over time in every city, the simulated poverty rates all tend to lie above the current 1990 averages. To simulate 1990 poverty rates, we therefore have subtracted a city-specific constant from each row in Table 7 such that the weighted averages of the adjusted, simulated poverty rates reported match the observed 1990 average poverty rates for each city.

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## Tables and Figures

### Tables

1. Households Receiving Housing Subsidies by Nativity Status
2. Native-Born Households Receiving Housing Subsidies by Race/Ethnicity
3. Population Characteristics of Boston, Cleveland, Detroit and Philadelphia
4. Variable Definitions and Descriptions
5. Samples Statistics For Variables
6. Poverty Ratio Regression Results
7. Simulated Steady State Poverty Rates For Census Tracts

### Figures

1. Poverty Transition in Boston (1950-1990)
2. Poverty Transition in Cleveland (1950-1990)
3. Racial Transition in Boston (1950-1990)
4. Racial Transition in Cleveland (1950-1990)

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