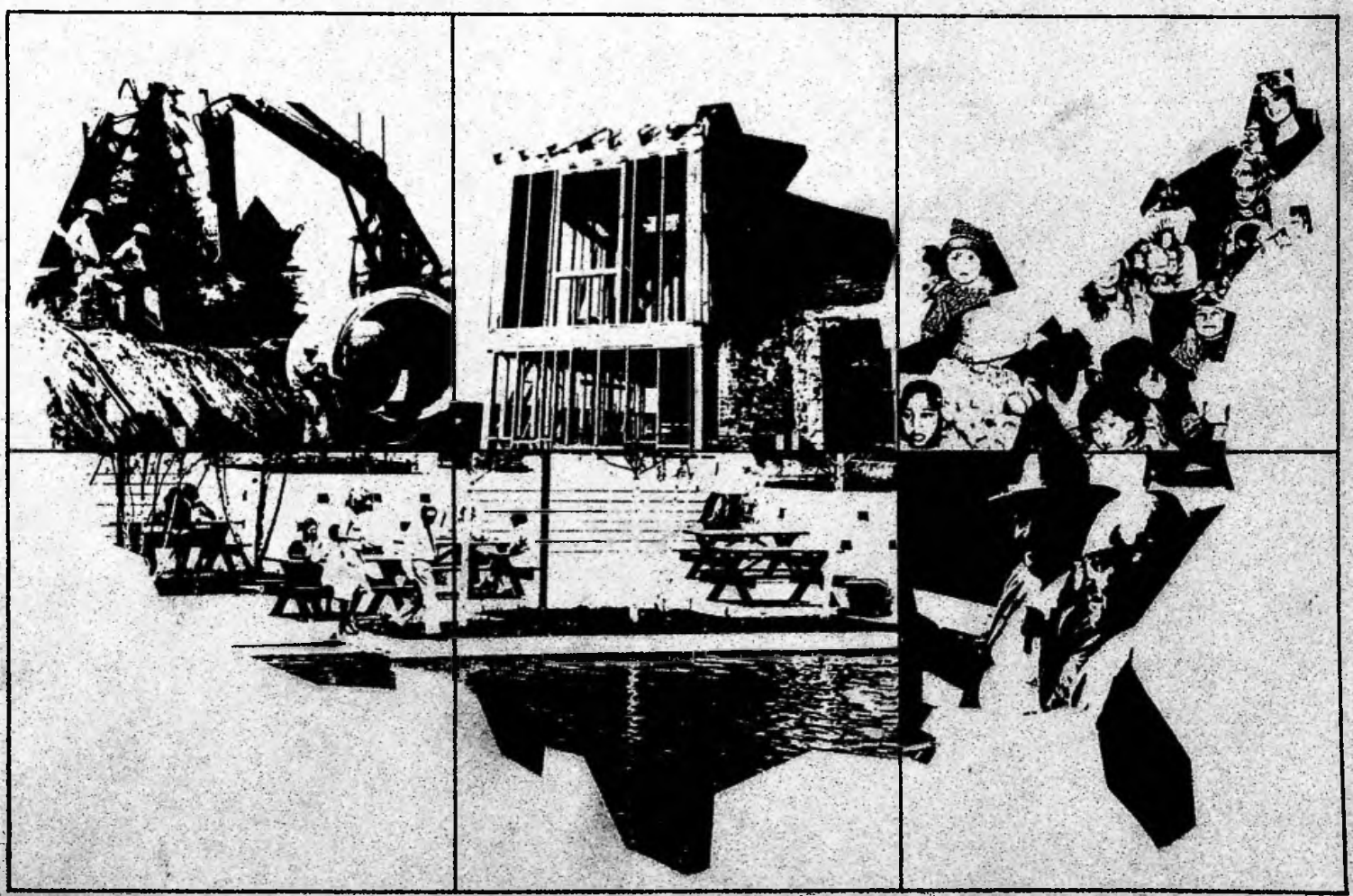
U.S. Department of Housing and Urban Development
Office of Policy Development and Research

Effects of the 1980 Census on Community Development Funding



U.S. Department of Housing and Urban Development
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Community Development and Fair Housing Analysis Division

EFFECTS OF THE 1980 CENSUS ON COMMUNITY DEVELOPMENT FUNDING

by

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The research forming the basis for this report was conducted by the Community Development and Fair Housing Analysis Division in the Office of Policy Development and Research, U.S. Department of Housing and Urban Development (HUD).

FOREWORD

Through the Community Development Block Grant Program, HUD assists local governments to accomplish programs of their own choosing which provide for housing rehabilitation, economic development, public infrastructure, services, and related needs. Initiated in 1974, the program combined seven categorical grant programs begun in the 1950's and 1960's. The CDBG Program has provided an unprecedented degree of discretion and flexibility to local governments.

The great success of the program has resulted, among other factors, from the perceived equity of the distribution system. Refinement of the formula has been facilitated by a series of Congressionally-requested HUD reports. This third report responds to Congressional concern about the effects of 1980 Census data on the allocation of CDBG funds. Its preparation was mandated in the Housing and Community Development Act of 1980 and carried out by our Office of Policy Development and Research.

I am pleased to commend this report to your attention. It should be of great value to Congress and others in considering how CDBG funds are allocated.

Samuel R. Pierce, Jr.
Secretary

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EXECUTIVE SUMMARY

Purpose of the Report

In Section 113 of the Housing and Community Development Act of 1980, Congress directed that:

> "The Secretary of Housing and Urban Development shall, not later than January 1, 1983, report to the Congress with respect to the adequacy, effectiveness, and equity of the formula used for allocations of funds under Title I of the Housing and Community Development Act of 1974, with specific analysis and recommendations concerning the manner in which such formula is or could be affected by the data derived from the 1980 decennial census."

Given the Congressional mandate, the central issue of this Report will be the effects of the 1980 Census data on Community Development Block Grant (CDBG) allocations to cities, urban counties, and States.

The 1980 Census data have two important implications for the CDBG program: first, the substitution of 1980 data for the 1970 Census data would produce redistributions of funds among program recipients; second, the new data show how community development problems and their relative severity have changed since 1970. Both questions are analyzed in this Report as a means of answering the fundamental question whether the CDBG allocation system will continue in the 1980's to distribute program funds in an equitable manner, i.e., so that the most needy jurisdictions receive proportionately more funds.

Current Dual Formula System for Entitlement Jurisdictions

There are two components to the Community Development Block Grant program: an entitlement component, which distributes approximately $2.4 billion by formula among urban jurisdictions, and a nonentitlement component which distributes approximately $1.0 billion (also by formula) among States for competitive allocation among small cities and counties. The entitlement formula system is analyzed in Chapters 1 to 6 of this Report, and the nonentitlement formula system, in Chapter 7.

In the entitlement component in FY '83, 442 central cities of Standard Metropolitan Statistical Areas (SMSA's), 195 suburban cities with populations over 50,000, and 98 urban counties meeting certain population and powers tests are "entitled" to receive funds on an annual basis. Simplifying somewhat, this entitlement equals the greater of two formula amounts:

First formula: Grant = (.50 (Poverty) + .25 (Population) + .25 (Overcrowding))($2.4 billion)

Second formula: Grant = (.50 (Pre-1940 Housing Units) + .30 (Poverty) + .20 (Growth lag))($2.4 billion)

The poverty variable is the number of persons whose incomes are below the poverty level as published by the U.S. Bureau of the Census. The population variable measures the total resident population. The overcrowding variable is the number of housing units with more than 1.01 persons per room. The "growth lag" variable measures decline or slow growth in population since 1960. Finally, the pre-1940 housing units variable is the number of existing year-round housing units constructed in 1939 or earlier.

Since the start of the CDBG program in 1974, HUD has had to rely on 1970 Census data for poverty, pre-1940 housing, and overcrowded housing. Population and growth lag have been continually updated based on estimates from the Bureau of the Census. Congress, recognizing that introduction of the new 1980 Census data could result in substantial shifts in CDBG funding which may or may not reflect changes in underlying city conditions, allowed HUD to include the new poverty data along with the regularly updated population and growth lag data in its Fiscal Year 1983 allocations but decided to wait until the 1980 data could be fully analyzed before making further changes.

Structure of this Report

To examine how the introduction of the 1980 poverty data in FY '83 and the possible introduction of the 1980 overcrowding and age of housing data in FY '84 would affect the operation of the CDBG entitlement cities formula, this Report follows a five step strategy. First, the Report uses the 1980 Census data to show how the conditions which originally led to the enactment of the CDBG program are continuing. Second, the Report constructs indexes for ranking cities relative to each other on community development need. Third, the effects of the 1980 Census data on the distribution of funds among entitlement jurisdictions are described. Fourth, the Report uses the need indexes as criteria for assessing how well the CDBG formula with the 1980 data continues to fund cities proportional to their need. Finally, the continued ability of the individual formula variables to represent need for community development assistance is examined.

After an introductory discussion, the Report treats each of these topics in successive Chapters. In addition, a final Chapter addresses many of these same topics with respect to the nonentitlement formula. The remainder of this Executive Summary will follow this organization.

Conditions of CDBG Cities

The newly available 1980 Census data provide the first comprehensive information since the 1970 Census on the types of problems for which the Community Development Block Grant Program was designed to give assistance. This Report analyzes this information carefully in order to understand the problems to which the CDBG program will be directed in the 1980's and to provide a first step in developing standards for evaluating the equity of funding redistributions. The principal findings are:

-- Of the 627 CDBG entitlement cities, 295 lost population between 1970 and 1980; the 1970-80 average rate of growth of 0.6 percent was less than their 1960-70 average growth rate of 11 percent, when only 171 of the 627 cities lost population.

-- Population growth rates vary substantially, depending on central city status, regional location, and city size. Central cities declined in population by 0.7 percent between 1970 and 1980, compared to a 7.5 percent rate of growth in suburban cities with more than 50,000 population. Cities in the Northeast and North Central regions lost, on average, over 8 percent of their 1970 population, compared to gains of 9 percent for Southern cities and 16 percent for Western cities. Within regions, large (over 200,000) central cities are either declining faster or growing more slowly than smaller central cities.

-- On average, CDBG entitlement cities experienced increases in their rates of poverty and unemployment during the 1970's and exhibited slower rates of growth in income and employment than the United States as a whole.

-- Between 1970 and 1980, problems of poverty, low income, unemployment, and job loss increased most in cities that were losing population;

-- In addition, metropolitan growth had a strong influence on changes in city conditions during the 1970's; problems tended to be greater for cities located in declining and slow-growing metropolitan areas.

Underlying these trends is a substantial diversity among cities that must be recognized when measures are developed to compare their needs. For instance, growing cities experiencing reductions in poverty may continue to have relatively high poverty rates, just as declining cities suffering increases in poverty may continue to have relatively low poverty rates. Cities may appear distressed on one variable but not on another. Furthermore, relationships among the various indicators of city problems vary according to city size. For instance, population loss is more closely associated with distressful conditions such as unemployment, low income, and job loss in larger cities than in smaller cities.

To develop believable measures of city needs one must choose an analytical approach that is sensitive to the many exceptions to average trends and must avoid overrelying on a single indicator of city conditions.

Although most of the data available for this Report were not in a format that allowed for analysis of the problems of urban counties, it was possible to examine some aspects of their problems. Once again, conditions range from good to poor but, on average, urban counties appear to have less serious problems than most entitlement jurisdictions. In general, their conditions resemble those of suburban cities.

Measuring Need for Community Development Assistance

As in HUD's two previous formula studies, this study develops standards of need for analyzing the distribution of CDBG funds among cities. This study measures relative differences among cities in their per capita needs for community development funds through analysis of 18 indicators of community need (e.g., job loss, low income, aged housing, crime, poverty, unemployment). These indicators are proxies for the conditions that the CDBG program is intended to address, such as inadequate housing, blighted neighborhoods, and economic decline. An analysis of the relationships among the various need indicators showed that poverty is now much more closely associated with other indicators of community development need than it was in 1970. In addition, of the need indicators examined, poverty showed the highest correlations with conditions such as dilapidated housing and blighted neighborhoods in large central cities.

Because of possible redundancy and the complex relationships among the various need indicators, a technique called factor analysis is used to reduce the 18 indicators to 3 separate groups of intercorrelated variables. As in HUD's 1979 formula study, the three types of community development problems are those associated with city age and decline (e.g., loss of jobs and aged housing), poverty (e.g., low income and persons with less education), and density (e.g., overcrowding and crime). The Report derives indexes that measure the relative severity of these problems across cities.

A composite index of city need is obtained by combining scores on city age and decline, poverty, and density. The main advantages of the composite needs index are that it recognizes the concentrations of problems in certain cities and averages out inconsistencies that result when a single index is used. The reliability of the composite index is tested by showing that scores on the index are closely related to housing and neighborhood problems as reported in HUD's Annual Housing Survey. In addition, large declining central cities in declining and slow-growing SMSA's -- a group which Chapter 2 shows has a concentration of problems -- exhibit the highest scores on the composite needs index. It should be emphasized that the composite needs index developed in this Report is not being suggested as an alternative to the current dual formula. The purpose of the needs index -- which is based on many indicators of community development problems -- is to provide a standard for assessing allocations under the the dual formula. The dual formula, for practical reasons, must be based on only a few variables.

There may be disagreement concerning the relative importance of particular urban problems and methods for analyzing them. Therefore, as in previous reports, this Report analyzes several indicators of city need and provides numerous supporting tables that test the sensitivity of the results to different assumptions. Such an approach is necessary given the substantial diversity among CDBG cities. However, the study's main findings concerning changes in targeting according to city needs hold up under a range of assumptions about the relative importance of different urban problems.

Redistribution Effects Among Entitlement Jurisdictions

Assuming (1) no changes in the structure of the CDBG formula, (2) no additions or deletions of entitlement jurisdictions, and (3) no changes in total program funds, a switch from 1970 Census data to 1980 Census data on poverty, overcrowded housing, and aged housing would cause the following redistributions:

-- Approximately 40 percent of all CDBG recipients would experience gains or losses in excess of 10 percent of the allocation they received using 1970 Census data. Since the FY '83 allocations are based on 1980 poverty data, many of these changes have already taken place. Switching to 1980 data for aged and overcrowded housing would cause approximately 20 percent to experience such gains or losses between FY '83 and FY '84.

-- On balance, central cities would lose 1.6 percent, large suburban cities would gain 6.4 percent, and urban counties would gain 3.5 percent. However, within these groups, there is much variation in percentage gains and losses.

-- Regional shares of total funds would be little changed; the shares of only two regions would change by more than one percentage point. The percentage change in funding dollars varies across regions. The Pacific region would increase its funding by 17 percent, while the West North Central and East South Central regions would decrease by more than 10 percent; the New England, Middle Atlantic, South Atlantic, and West South Central regions would experience changes under 2 percent.

-- These redistributions would lead to some convergence in per capita allocations, that is, regions and cities with high per capita amounts would tend to lose funds, while regions and cities with low per capita allocations would tend to gain funds.

Since the dual formula allocates funds on the basis of share of the SMSA total for each of the formula variables, these redistributions are largely explained by regional shifts in shares. Poverty and overcrowded housing explain most redistributions. Although the number of overcrowded units has fallen by almost 19 percent in entitlement jurisdictions, the regional distribution of overcrowding has altered substantially. In particular, the Pacific region actually had a larger number of overcrowded units in 1980 than in 1970 and thus a larger share of total overcrowded units.

The poverty population in entitlement jurisdictions increased by almost 10 percent over the decade. Regional differences led to a lower concentration of poor persons in the South and a higher concentration in the West. As a result, the South lost funds and the West gained.

The redistributions reported here and in Chapter 4 are based on the assumption that no changes take place between FY '82 and FY '84 other than the switch from 1970 to 1980 Census data. In reality there are always changes from one fiscal year to another such as the addition or deletion of entitlement cities or urban counties or changes in jurisdiction or SMSA boundaries. Therefore there will be minor differences between the patterns reported here and those which would actually occur. For individual cities the differences could be substantial if, for example, there were a change in city boundaries or a significant change in estimated population.

As noted, the redistributions discussed here and in Chapter 4 are already underway because the 1980 Census data on poverty were used in the FY '83 allocations. In many cases the FY '82 to FY '83 change accounts for a large proportion of the FY '82 to FY '84 change. In other cases the FY '82 to FY '83 change is in the opposite direction of the FY '82 to FY '84 change. No easy summary of the relation between the two changes is possible.

The key issue is whether these funding redistributions increase or decrease the overall responsiveness of the CDBG funding system to city needs. The next section examines the extent to which more funds in the entitlement program are targeted to the more needy jurisdictions.

Redistribution According to City Need

According to the House Committee Report (H.R. Rep. No. 96-979, at 17), Congress is primarily interested in whether funding shifts increase or decrease the overall responsiveness of the dual formula to city need. On the basis of the analysis of city conditions and the methodology summarized above, this Report reaches the following conclusions:

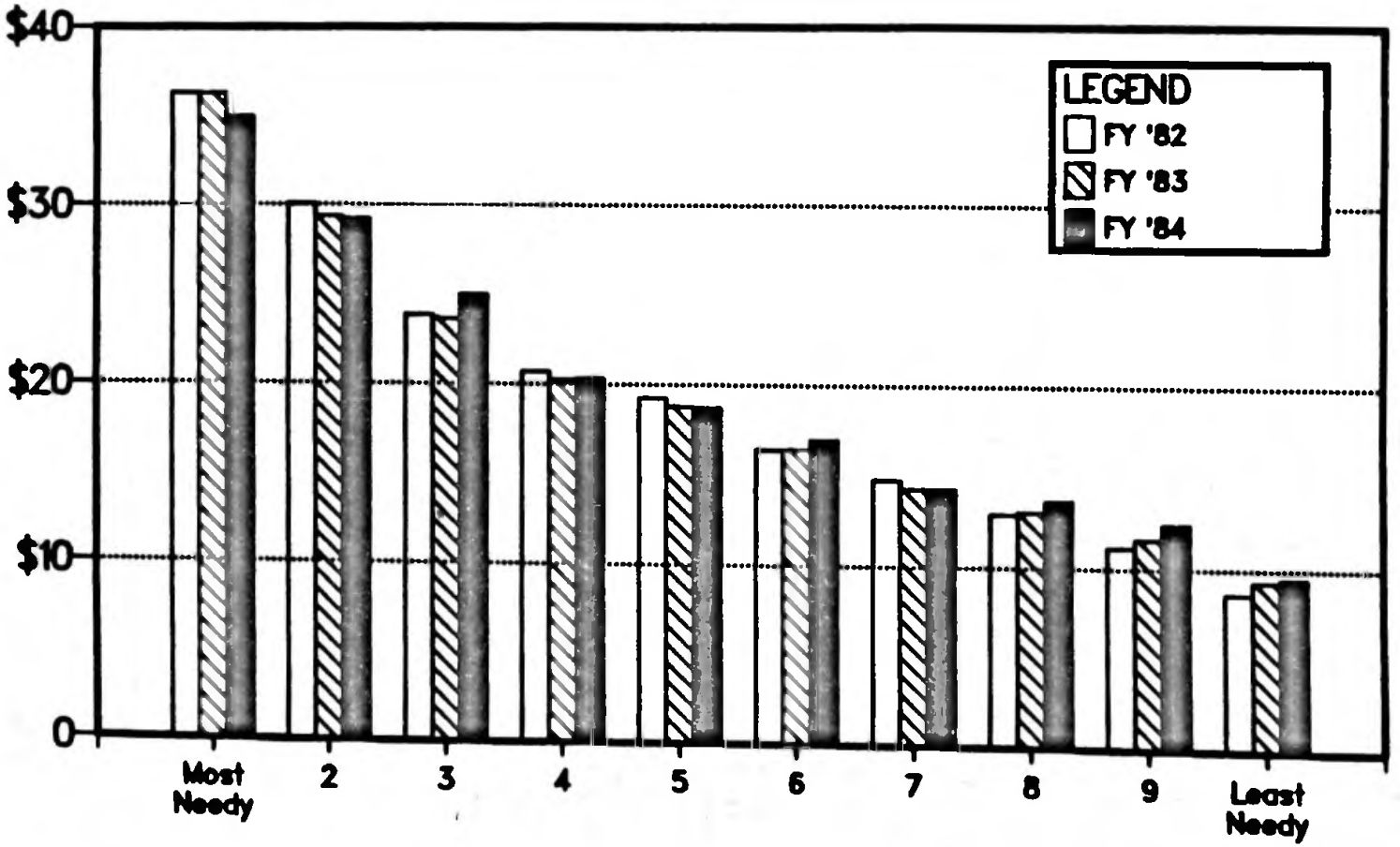
- The dual formula continues to successfully target funds to jurisdictions with higher needs. In FY '84, the most needy 10 percent of cities are projected to receive 3.7 times more in per capita funding than the least needy 10 percent.

- However, the extent of targeting has decreased slightly relative to FY '82 when 1970 Census data were used to distribute CDBG funds.

For almost all the need indicators examined, the dual formula targets more funds to those most in need. As shown in Figure A, this pattern also holds for the composite needs index that combines 18 indicators of community development problems. As also shown in Figure A, the most needy cities would receive less funds in FY '84 while the least needy cities would receive more funds when 1980 Census data on poverty, overcrowded housing, and aged housing are substituted for 1970 data. The per capita funding average declines for the most needy 10 percent of cities from $36.30 to $34.96 but increases from $8.65 to $9.51 for the least needy 10 percent.

Figure A

ENTITLEMENT CITIES: PROJECTED PER CAPITA GRANTS FY '82, FY '83, AND FY '84 BY NEED DECILES



The most needy cities lose funds primarily from the age of housing variable. Declining cities such as Cleveland and St. Louis have eliminated a substantial proportion of their pre-1940 housing, a major reason for their funding loses. Growing cities, on the other hand, have increased their share of such housing because their growing populations dictate that more old housing remain in use. Increases in funds in less needy cities have come predominantly from the poverty and overcrowded housing variables.

The dual formula also responds differently to different community needs when 1980 Census data on poverty, overcrowded housing, and aged housing are substituted for 1970 data. The responsiveness of funding to problems associated with poverty or city age and population or employment loss would decrease, while responsiveness to density-related problems would increase. The lessened response to poverty, and city age and decline would occur because jurisdictions with higher rates of poverty and aged housing have experienced decreases in their shares of these variables. Increased responsiveness to density-related problems would occur because shifts in the relative concentration of overcrowding give that formula variable more importance in allocating funds.

Characteristics of Individual Formula Variables

An issue central to the successful operation of the CDBG formula with 1980 Census data is whether formula variables continue to be reliable indicators of community development problems. For instance, is pre-1940 housing still a good proxy for housing inadequacy and neighborhood blight? Data on housing and neighborhood conditions from HUD's Annual Housing Survey were used to answer such questions. The main findings for each variable are given below.

Pre-1940 Housing

-- Many of the declining cities such as Cleveland and St. Louis eliminated substantial proportions of their old housing during the 1970's and thereby reduced their funding from the aged housing variable.

-- As a general rule, the rate of pre-1940 housing in central cities is closely associated with such problems as housing inadequacy and neighborhood abandonment; association between housing and neighborhood problems is particularly high when an aged unit is occupied by a renter or a low income-family.

-- Owner-occupied aged units, particularly those in the suburbs, have much lower rates of housing and neighborhood problems than renter-occupied aged units and units occupied by low-income families.

Overcrowding

-- Overcrowding diminished during the 1970's by 40 percent in all SMSA's and by 19 percent in entitlement cities and urban counties. In 1980 overcrowding accounted for only 5 percent of the occupied housing stock in entitlement cities and counties.

-- Despite the reduction in overcrowded housing, the overcrowding factor would receive a larger implicit formula weight in FY '84 than FY '82 (0.28 vs. 0.25). The SMSA overcrowding variable has become relatively more concentrated in entitlement jurisdictions using the first formula, than have the other first-formula variables (population and poverty).

-- As noted above, the relative importance of a formula variable can change with the introduction of new data. This is possible under the current formula because, except for growth lag, individual city shares on the formula variables are computed relative to the totals for SMSA's, rather than to the totals for entitlement jurisdictions. Under such a system, if a formula variable becomes more concentrated in entitlement jurisdictions -- as was the case with 1980 overcrowded housing -- then that variable receives a higher implicit weight in the formula, even though its nominal weight has not changed.

-- Overcrowded housing units in metropolitan areas exhibit an above average rate of housing inadequacy; however, they account for only a small percentage of inadequate units. Housing units built before 1940 and units occupied by low-income families are much broader indicators of housing inadequacy.

-- Overcrowding is not a consistent predictor of housing and neighborhood problems because there are demographic groups and cities that have housing and neighborhood problems but not high rates of overcrowding, and vice versa.

Poverty

-- Recent shifts in poverty toward older, declining cities have made it a much better proxy for many indicators (e.g., unemployment, job loss, housing abandonment) of community development problems.

-- According to data from HUD's Annual Housing Survey, low income is one of the most reliable predictors of such community development problems as inadequate housing and neighborhood blight.

Growth Lag

-- The growth lag factor is considerably more important in allocating funds than its .20 weight would suggest. About a third of funds allocated by the second formula are distributed by the growth lag factor.

-- Growth lag has a greater funding impact than its .20 weight would suggest because growth lag is the only one of the formula variables that is defined consistently, in the sense that the individual city shares of growth lag are computed relative to the total for all entitlement cities. As noted earlier, individual city shares for each of the other formula variables are computed relative to the total for all SMSA's. Essentially, these different computation methods have caused the relative importance of the formula variables to deviate from their nominal weights.

-- The growth lag factor is responsible for much variation in CDBG funding because cities with above-average population growth do not obtain any funds from growth lag.

-- Because of the association of population loss with economic decline and other need indicators, the growth lag variable is a major reason that the current dual formula system targets funds as well as it does. However, not all cities losing population are extremely needy and this can result in divergences between funding and need.

-- Many older, declining cities receive high levels of per capita funding from the pre-1940 and growth lag variables in the second formula. However, these cities do not always exhibit high levels of need, measured by such variables as poverty and unemployment. These cities, many of which are suburban, frequently receive more funds than other cities with equal or greater needs, but with less aged housing and population loss.

-- One problem that has occurred with the operation of the growth lag variable in the CDBG formula has been the sometimes significant changes in yearly funding for certain cities caused by fluctuations in annual population estimates. It is unlikely that these yearly changes in funding are associated with changes in a city's underlying need for CDBG funding.

Analysis of Nonentitlement Grants

In FY '83, $1.02 billion was distributed under the nonentitlement component of the CDBG program to the fifty States and Puerto Rico. The dual formula used to distribute nonentitlement funds is the same as the entitlement dual formula except that growth lag is replaced by total population. In addition, the nonentitlement dual formula does not fund individual cities and counties directly, but rather, funds State governments based on the aggregate demography of their nonentitlement areas. The nonentitlement area of a State is that State's nonmetropolitan area plus those portions of that State's metropolitan areas that are not included in the entitlement component of the program. Chapter 7 of the Report repeats for nonentitlement grants much of the analysis that was done for entitlement grants.

The shift to 1980 Census data will cause some redistributions of funds among States. The new data for poverty, age of housing, and overcrowded housing will decrease funding by more than 10 percent in 8 States and increase funding by a similar amount in 13 States. The funding changes would have only marginal effect on the share of total nonentitlement funds received by each region. The percentage change in funding varies across regions. The Pacific and Mountain regions would increase their funding by 17 and 19 percent, respectively, while the New England and Middle Atlantic regions would increase their funding by 8 and 6 percent, respectively. Except for the East North Central which remains constant, the other regions experience losses of 5 percent or greater.

In contrast to entitlement funds, nonentitlement funds are distributed quite evenly on a per capita basis. In the entitlement formula, the combination of aged housing and growth lag -- supplemented by high poverty levels in certain larger declining cities -- result in high per capita amounts for several cities using the second formula. In the nonentitlement second formula, on the other hand, funds are spread more evenly because States do not tend to have high incidences of both aged housing and poverty and because total population is included as the third formula variable.

Measuring need for community development funds in nonentitlement areas is not the same as measuring it in entitlement communities. Certain indicators of need such as population loss, which make sense for jurisdictions with circumscribed boundaries and well-defined economic and fiscal responsibilities, are more difficult to interpret for a "nonentitled" aggregation of small suburbs, small nonmetropolitan cities, and rural areas. Furthermore, certain data (e.g., job loss, crime rates) are not available for the nonentitlement areas of States. For these reasons, this Report does not construct a needs index to evaluate the equity of the nonentitlement formula. Instead the assessment is based on simple correspondences between formula allocations and the incidence of a few indicators of housing and community development problems.

Nonentitlement funds are more highly targeted to poverty than to overcrowding, and show no targeting to age of housing and the unemployment rate (as defined in early 1980). The association of per capita funding with poverty is appropriate because Annual Housing Survey data (discussed below) show that poverty more accurately reflects housing and neighborhood problems in nonentitlement areas than either aged or overcrowded housing. Poverty is also correlated with other need indicators, such as the minority population, which is a subgroup exhibiting relatively high levels of housing and neighborhood problems. Because nonentitlement funds tend to be spread evenly across States, the targeting to poverty is not nearly as great as it is in the entitlement program.

Because it was not possible to analyze targeting relative to an overall needs index, the analysis of individual formula variables is more important than it is for the entitlement analysis. The main findings from that analysis were as follows:

-- Overall, nonentitlement areas experienced an 8 percent decrease in poor persons in the 1970's, with the poverty rate falling from 17.0 to 13.1 percent. According to Annual Housing Survey data, the percentage of households in poverty is higher among inadequate units and units experiencing most of the other housing, neighborhood, and infrastructure problems which were examined in nonmetropolitan areas, than among units without such problems. In general, poverty is a better indicator of these problems than aged and overcrowded housing.

-- Between 1970 and 1980, overcrowded units decreased by 36 percent in nonentitlement areas. The rate of overcrowding fell from 9.3 to 4.4 percent of occupied units over the period. Overcrowding rates are associated with the incidence of all five of the housing and public infrastructure problems studied, and with the overall ratings by households of their housing and neighborhoods in nonmetropolitan areas. However, overcrowding accounts for a small proportion of the problems studied and tends to overrepresent problems among black and Hispanic households and among households in the South and West, and underrepresent problems among the elderly.

-- During the 1970's, the number of aged housing units fell by 17 percent in nonentitlement areas. Annual Housing Survey data show that pre-1940 and 1940-49 housing units have greater incidences of housing and neighborhood problems than post-1950 units in nonmetropolitan areas. However, pre-1940 housing somewhat overrepresents housing problems of white households and underrepresents housing problems among blacks and households in the South, that is, these groups have relatively high inadequacy rates but average percentages of pre-1940 units. Although the percentage of poverty households is similarly unrepresentative of housing inadequacy for black, Hispanic, and Southern households, the differences are not as great as for pre-1940 housing.

-- In nonentitlement areas, aged housing shows either low correlations, or inverse correlations, with variables such as poverty, income, minority population, overcrowding, and unemployment (as defined in early 1980). However, aged housing is more commonly found in small cities with a combination of high unemployment and population loss, suggesting that aged housing is proxying conditions of economic decline.

Conclusions

The conclusions of this Report with respect to the entitlement formula can be summarized simply:

-- Even when the 1980 Census data are used for poverty, overcrowding, and age of housing, the entitlement formula continues to be very responsive to community development need.

-- The degree of responsiveness to need does decline somewhat.

This responsiveness to need is seen in the much higher per capita amounts which would be allocated to the more needy cities. The per capita grants for the most needy 10 percent of cities is 3.7 times the per capita grant for the least needy 10 percent of cities. The change in the degree of responsiveness is seen in the decline in this ratio from 4.2 to 3.7. As explained in the text, there is no objective basis for determining what the "optimum" ratio should be.

When 1980 data are introduced into the nonentitlement formula, the responsiveness of funding to various indicators of need does not change very much. As explained in the text, nonentitlement funds are spread rather evenly across States, that is, the nonentitlement formula does not respond very much to differences in poverty, unemployment, or other indicators of need.

CHAPTER 1

INTRODUCTION AND BACKGROUND

This Report to Congress fulfills the obligations imposed upon the Department of Housing and Urban Development (HUD) by Section 113 of the Housing and Community Development Act of 1980. Its primary objective is to examine how new data available from the 1980 Census affect the method for allocating funds in the Community Development Block Grant (CDBG) program. The 1980 Census data have two important implications for the CDBG program: first, the substitution of 1980 data for 1970 Census data would produce some redistributions of funds among program recipients; second, the new data show how community development problems and their relative severity in different jurisdictions have changed since 1970. Both questions are analyzed in this Report as a means of answering the fundamental issue: Whether the CDBG allocation system will continue in the 1980's to distribute program funds in an equitable manner so that the most needy jurisdictions receive proportionately more funds.

This Chapter presents some important background information about the CDBG formula; the remainder of the Report is outlined in the last section of the Chapter.

I. BASIC FACTS ABOUT THE CDBG PROGRAM

The Community Development Block Grant program was authorized by the Housing and Community Development Act of 1974. It replaced eight categorical programs -- urban renewal, the neighborhood development program, model cities, water and sewer grants, open space land grants, neighborhood facilities grants, rehabilitation loans, and public facilities loans -- with flexible grants which jurisdictions can use in a variety of ways. The legislation established the primary objective of the Act to be "the development of viable urban communities, by providing decent housing and a suitable living environment and expanding economic opportunities, principally for persons of low and moderate income." In developing individual CDBG programs, jurisdictions must certify that "the projected use of funds has been developed so as to give maximum feasible priority to activities which will benefit low- and moderate-income families or aid in the prevention of slums or blight; the projected use of funds may also include activities which the grantee certifies are designed to meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to the health or welfare of the community where other financial resources are not available to meet such needs."

There are two components to the Community Development Block Grant program: an entitlement component, which distributes funds by formula among urban jurisdictions, and a nonentitlement component, which distributes funds (also by formula) among States for competitive allocation among small cities and counties. In FY '82 36 States and Puerto Rico chose to administer the competition for the nonentitlement funds allocated to them; for the remaining 14 States HUD is administering the competition among small cities and counties. In FY '83 all but two States have indicated their intention to administer the nonentitlement component.

In the entitlement component central cities of Standard Metropolitan Statistical Areas (SMSA's), suburban cities with populations over 50,000, and urban counties meeting certain population and powers tests are "entitled" to receive funds on an annual basis. The powers tests relate to a county's authority to carry out community development and housing assistance activities in its unincorporated areas and in those incorporated areas which sign co-operating agreements with the county for the purposes of the program. In FY '83 the Community Development Block Grant entitlement formula allocated $2.379 billion to 735 jurisdictions (see Table 1.1). These included 442 central cities, 195 suburban cities, and 98 urban counties; Table 1.1 shows how these jurisdictions differ by size and region.*

An example of the entitlement dual formula system will be helpful for the introductory discussion that follows. (Chapter 4 contains a full description of the dual formula.) Under the dual formula system, a city's grant is based upon the greater of two formula amounts. The first formula uses data on poverty (with a weight of 50 percent), population (25 percent), and overcrowded housing (25 percent); the second formula uses data on housing built before 1940 (with a weight of 50 percent), poverty (30 percent) and a measure, called growth lag, of decline or slow growth in population (20 percent). A city with 500,000 persons, 65,000 persons in poverty, 10,000 overcrowded units, 80,000 pre-1940 units, and a growth lag of 70,000 persons would receive the higher of the two following amounts:

First formula:

$$.50\ \frac{65{,}000}{19{,}786{,}028} + .25\ \frac{500{,}000}{171{,}346{,}007} + .25\ \frac{10{,}000}{3{,}852{,}325} \times \$2.379 \text{ billion} = \$7{,}187{,}078$$

Second formula:

$$.50\ \frac{80{,}000}{19{,}140{,}057} + .30\ \frac{65{,}000}{19{,}786{,}028} + .20\ \frac{70{,}000}{12{,}921{,}787} \times \$2.379 \text{ billion} = \$9{,}893{,}888$$

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*The number of entitlement jurisdictions changes from year to year as new jurisdictions qualify and other jurisdictions become ineligible. Table 1.1 provides information for the current program year (FY '83). Throughout the Report, the jurisdictions eligible in FY '82 are used to study the effect of switching from 1970 to 1980 Census data. Accordingly, the numbers of jurisdictions in these analyses will differ from the numbers reported in Table 1.1. Furthermore, the data reported differ slightly from those used in HUD's FY '84 budget, which assumed 444 central cities and 96 urban counties.

Table 1.1 Distribution of Central and Satellite Cities and Urban Counties in FY '83 According to Population Size and Regional Location

	Entitlement Cities			Urban Counties
	All Cities	Central Cities	Satellite Cities[a]	
Total Number	637	442	195	98
Number by City Size				
Over 1,000,000	6	6	0	4
200,000-1,000,000	69	66	3	94
100,000-200,000	168	137	31	0
50,000-100,000	226	75	151	0
Under 50,000	168	158	10	0
Number by Region				
Northeast	154	94	60	35
Over 100,000	30	23	7	35
Under 100,000	124	71	53	0
North Central	155	109	46	22
Over 100,000	40	35	5	22
Under 100,000	115	74	41	0
South	176	158	18	19
Over 100,000	59	52	7	19
Under 100,000	117	106	11	0
West	142	76	66	22
Over 100,000	47	34	13	22
Under 100,000	95	42	53	0
Puerto Rico	10	5	5	0

a. As a rule satellite cities are suburban cities with over 50,000 population that are entitled to receive CDBG funds by formula. The 10 satellite cities under 50,000 were at one time over 50,000 and have been allowed under the law to continue receiving funds through 1983.

The numbers in the denominators are SMSA totals (except for 12,921,787 which is the entitlement city total for growth lag). In the above example the second formula would provide a larger initial allocation ($9,893,888) to this hypothetical city. Since each city receives the amount most advantageous to it, the sum of initial allocations may be larger than the appropriated funds. Therefore, the formula amounts are pro rated to ensure that total entitlement funding equals the $2.379 billion appropriated by Congress. For example, if the sum of all initial allocations were $2.5 billion, each allocation would be multiplied by $2.379 billion/$2.500 billion. In the example, this would reduce the city's second-formula allocation to $9,415,024, a pro rata reduction of 4.8 percent. In essence, under the current dual formula, a city's entitlement is based on its weighted share of the formula variables. The formula variables, of course, are intended to reflect variations in community development need across cities. Most discussions of the formula are concerned about the extent to which this is actually the case.

II. THE CONGRESSIONAL MANDATE

In Section 113 of the Housing and Community Development Act of 1980, Congress mandated the following study:

> The Secretary of Housing and Urban Development shall, not later than January 1, 1983, report to the Congress with respect to the adequacy, effectiveness, and equity of the formula used for allocations of funds under Title I of the Housing and Community Development Act of 1974, with specific analysis and recommendations concerning the manner in which such formula is or could be affected by the data derived from the 1980 decennial census.

Given the Congressional mandate, one of the primary issues addressed in this study will be the effects of the 1980 Census data on CDBG allocations to cities, urban counties, and States.

Since the start of the CDBG program in 1974, HUD has had to rely on 1970 Census data for poverty, age of housing, and overcrowded housing. Population and growth lag have been continually updated, based on estimates from the Bureau of the Census. Congress, recognizing that introduction of the 1980 Census data could result in substantial shifts in CDBG funding which may or may not reflect changes in underlying city conditions, allowed HUD to include the poverty data from the 1980 Census in its FY '83 allocations but decided to wait until the 1980 data could be fully analyzed before making further changes. The 1980 data for population and growth lag were included in the formula in FY '82.

Congress was particularly interested in the extent to which the CDBG formula continues to fund cities in proportion to their community development needs. The House Committee Report (H.R. Rep. No. 96-979, at 17) states:

> The success of the CDBG program can at least in part be traced back to the method of allocation of the funds. The allocation formula has been carefully crafted over the past six years to a point where most agree that it equitably distributes Federal resources to communities in proportion to their community

development need indices with generally available Census data. The reliability of the formula, however, depends upon how closely that data correlates with the need indices. The Committee is concerned that these correlations may well be altered by the new data derived from the 1980 decennial Census and as a result the formula will be less reliable. The Committee has, therefore, required the Secretary to study the effects that the 1980 Census data would have on the adequacy, effectiveness and equity of the existing dual formula and to report back to the Congress prior to the reauthorization of the program in 1983.

Therefore, this Report will analyze the need for community development funds and show how the responsiveness of the CDBG formula to need will change with the introduction of the 1980 data.

III. BRIEF HISTORY OF THE CDBG FORMULA

Under the Housing and Community Development Act of 1974 which established the CDBG program, there was only one entitlement formula, the first formula cited in the previous example. There were, however, considerable questions about the equity of this approach. In considering the 1974 Act, the Senate argued for a "hold-harmless" funding system that would have given each jurisdiction the same proportion of CDBG funds as the proportion of funds it had received from the categorical programs which CDBG replaced. When the Congress adopted the formula approach favored by the House, it required the Department of Housing and Urban Development to study the equity of this approach and report back to the Congress prior to the 1977 hearings on the continuation of funding for the program. However, Congress did allow the existence of the hold-harmless formula which was phased out but only after three full years of funding while HUD studied the equity of the formula approach.

In preparation for the 1977 hearings, studies at HUD and the Brookings Institution revealed certain inequities in the 1974 formula. That formula was highly responsive to the poverty aspects of community development need, but unresponsive to nonpoverty aspects such as city age and decline, which were the problems that most of the categorical programs consolidated in 1974 were designed to overcome. Furthermore, HUD showed that, on average, cities losing population exhibited far higher levels of need and fiscal strain than fast-growing cities. Essentially, a major flaw of the 1974 formula was its unresponsiveness to the physical, social, and fiscal problems of older, declining metropolitan cities.

How block grant funds should be allocated was the most significant question in the 1977 hearings. At HUD's recommendation the Congress approved the current dual formula system, which added the second formula in the previous example. This formula, based on aged housing, growth lag, and poverty, was devised to respond to the special needs of older, declining cities.

This history highlights one of the major controversies in the allocation of Federal funds to cities: the relative importance of low-income and poverty needs compared to city age and decline needs. Funding under the 1974 formula increased the proportion of CDBG funds going to the low-income

but growing cities in the South while decreasing the proportion going to the declining cities in the Northeast and North Central regions. In 1977, HUD argued that the age of housing and growth-lag variables were needed to guarantee funding to cities experiencing severe social and economic problems because the key factor in the first formula, poverty, was not closely associated with these cities' problems. An important issue in examining the 1980 Census data is the extent to which poverty has shifted more toward declining than growing areas.

Despite the problems with the 1974 formula, the CDBG allocation system has been highly successful. The 1977 HUD study clearly showed that allocations under the 1974 formula were more equitable than under the categorical system. The formula was much more successful in ensuring that cities with equal needs received approximately equal funding. The creation of the dual formula system in 1977 successfully repaired the only serious flaw in the 1974 formula, and since 1977 there has been little controversy about the CDBG system.

IV. TECHNIQUES OF FORMULA ANALYSIS AND THEIR LIMITATIONS

During the past 10 years, particularly with the advent of Federal aid formulas, academic and government researchers have produced numerous reports analyzing the geographic distribution of Federal aid among States, counties, and cities.* In most cases, analyses have focused on the responsiveness of Federal grants to differences in city need and distress.** The first step in these studies has been to develop a measure of city need that could be used to evaluate the geographic distribution of Federal aid. Frequently, this involved combining several Census-type indicators such as unemployment, low income, aged housing, and job loss into a composite index. Census-type variables, available for most cities, are selected as need indicators if they are good proxies for problems that the aid program is attempting to solve. For example, in CDBG, housing built before 1940 is used as an indicator of city need because it is associated with such neighborhood problems as abandonment and the costs of maintaining an aged infrastructure.

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* Over the past 6 years, HUD has completed two Congressionally mandated studies of the responsiveness of the CDBG formula to city problems; see Harold Bunce, An Evaluation of the Community Development Block Grant Formula (1977) and Harold Bunce and Robert Goldberg, City Need and Community Development Funding (1979). Similar studies have been conducted of the geographic distribution of General Revenue Sharing, CETA, local public works, and anti-recession assistance -- all recent Federal programs that allocated aid directly to cities. For examples of these studies, see the Congressional Budget Office (1978), Nathan, et al. (1977), Barro (1975), and Dommel (1980). See also Robert Benjamin, "Geographic Targeting of Economic Development Aid," for a study of economic need indices and the allocation of economic development funds.

** The regional distribution of urban aid is another topic that is frequently addressed in these studies, as well as the effects of Federal aid on the budget of fiscally distressed cities -- that is, how dependent city governments are on Federal aid for financing their services. For discussion of the latter, see John Ross, "The Impacts of Urban Aid" (1980).

The next step in these formula studies has been to use statistical techniques such as correlation and regression analyses to measure the degree to which funds are targeted to needy cities. If funds are not targeted properly, a change in the allocation method is usually called for. The third step usually has involved adding (or increasing the formula weight of) Census-type variables considered to be the best proxies for problems that the current formula is not addressing. As noted earlier, growth lag and pre-1940 housing were added to the CDBG formula in 1977 to increase that formula's responsiveness to problems associated with city decline.

Unfortunately, there are several difficulties in the three-step process. Perhaps the most controversial is the method used to determine city need. First, there is little direct information on city problems. For example, data on the level of neighborhood blight are not available for all entitlement cities; therefore, proxies must be used. Second, in this study comparisons among cities are further complicated by the substantial range in city sizes. It is questionable whether Census-type variables "proxy" the same conditions in Benton Harbor, Michigan, with a population of 14,707, as they do in New York City, with a population of 7,071,639. Third, urban problems are not always highly correlated. In the CDBG experience some cities are growing but have high poverty rates; others are declining but have high per capita incomes. Since poverty and decline are both considered problems, some method must be found for comparing relative needs of cities with these different types of problems. Finally, even if it were possible to measure needs precisely, there is no method to translate needs into an appropriate level of funding. In other words, it may be readily agreed that more needy cities should receive more funding than less needy cities, but how much more is a matter of policy judgment.

Given such considerations, one has to be extremely careful when analyzing variations in city needs. First, a good understanding of trends in city conditions along several dimensions is required. This is particularly important for this study because it represents an initial analysis of the 1980 Census data. Second, an approach to data analysis that recognizes, to the extent possible, the diversity of city conditions is also called for. Third, analysis based on a single indicator will present a distorted view of what is happening in cities. Efforts will be made in this study to test the reliability (or unreliability) of various indicators of city need and to point out problems. Following this approach will introduce some length and complexity into the analysis, but it is necessary if an adequate basis for evaluating shifts in funding is to be developed.

V. STRUCTURE OF THIS REPORT

The remainder of this Report is divided into six Chapters and numerous Appendices.

-- Chapter 2 uses 1980 Census data to provide up-to-date information on the condition of cities and to show how these conditions have changed since 1970. A framework is developed for relating population decline to urban problems, highlighting the diversity among cities.

-- Chapter 3 uses factor analysis to examine the different dimensions of urban need and to create relative need indexes for ranking cities. This approach is identical to that used in the two previous HUD reports to Congress on the CDBG formula.

-- Chapter 4 explains the entitlement formula in greater detail. It then describes funding redistributions that occur among cities and regions from using 1980 Census data. The Chapter shows how funding changes are related to changes in the poverty, overcrowding, and age of housing data.

-- Chapter 5 uses the need indexes developed in Chapter 3 to test the correspondence between CDBG funding and community development need.

-- Chapter 6 contains an analysis of how well the poverty, overcrowding, pre-1940 housing, and growth lag variables continue to proxy for community development problems. It also examines some little understood features of how the entitlement formula operates.

-- Chapter 7 performs analyses similar to those presented in Chapters 2 through 6 for the dual formula used to distribute the nonentitlement funds among States.

The Appendices contain additional data, provide technical detail, explore special issues, and examine the sensitivity of the results presented in the Chapters.

CHAPTER 2

TRENDS IN CITY CONDITIONS DURING THE 1970'S

The major issue examined in this Report is the extent to which community development funds are targeted to cities with the greatest needs. To address this issue requires measures of city need for community development assistance against which the actual distribution of CDBG funds can be compared. Before developing standards of need, however, one must understand the nature of recent trends in city conditions. This is particularly important because, as this Chapter will show, the socioeconomic characteristics of cities receiving CDBG funds are quite complex. Therefore, this Chapter examines the socioeconomic condition of cities, focusing on how cities changed during the 1970's. The availability of 1980 Census data provides more up-to-date answers to these questions than previous research has been able to give. Following this, Chapter 3 will develop standards of need for analyzing the distribution of CDBG funds across cities.

This Chapter employs simple descriptive techniques and, to keep the discussion as brief as possible, limits city hardship measures to those most frequently cited in the literature and most important for the CDBG program. The emphasis is on examining changes that have occurred in population, employment and unemployment, income, poverty, and crime among entitlement cities. Using this background, the next Chapter provides a comprehensive analysis of city needs for community development funds.

The principal findings of this Chapter are:

-- Of the 627 CDBG entitlement cities, 295 lost population between 1970 and 1980; the 1970-80 average rate of growth of .6 percent was less than their 1960-70 average growth rate of 11 percent, when 171 of the 627 cities lost population.

-- Population growth rates vary substantially, depending on central city status, regional location, and city size. Central cities declined in population by .7 percent between 1970 and 1980, compared to a 7.5 percent rate of growth in suburban cities with more than 50,000 population. Cities in the Northeast and North Central regions lost, on average, over 8 percent of their 1970 population, compared to gains of 9 percent for Southern cities and 16 percent for Western cities. Within regions, large (over 200,000) central cities are either declining faster or growing more slowly than smaller central cities.

-- On average, CDBG entitlement cities experienced increases in rates of poverty and unemployment during the 1970's and slower rates of growth in income and employment than the United States as a whole.

-- Between 1970 and 1980, problems of poverty, low income, unemployment, and job loss increased most in the cities that were losing population.

-- Metropolitan growth had a strong influence on changes in city conditions during the 1970's; increases in problems tended to be greater for cities located in declining and slow-growing metropolitan areas.

-- Cities receiving CDBG funds exhibit a substantial amount of diversity in terms of size, regional location, type (central city vs. suburban), population growth, and problems. For instance, there are some declining and aged cities -- primarily suburban cities over 50,000 population -- that have relatively low levels of poverty, just as there are some growing cities that have relatively high levels of poverty. Essentially, conditions in cities receiving CDBG funds are too complex to be characterized by a single variable.

-- Despite the diverse nature of city conditions in 1980, problems of poverty, low income, unemployment, and job loss are concentrated in certain cities; in general, the greatest concentrations occur in larger, declining central cities located in declining and slow growing SMSA's.

As noted, understanding recent trends in city conditions is necessary before evaluating the distribution of CDBG funds. As will be evident, this is all the more important, given the diversity of cities receiving CDBG funds.* Essentially, to develop believable measures of city need for community development assistance, the analytical approach must be sensitive to the many exceptions to trends and to problems associated with particular indicators of city conditions.

This Chapter is divided into four subsections. The first describes the sample to be analyzed. The second presents information on population changes during the 1970's and constructs a framework for comparing cities based on the interaction between their population trends and the population trends of their metropolitan areas. The third section describes changes in the socioeconomic conditions of cities during the 1970's and relates these changes to the population framework developed in the previous section. The final section contains a simplified analysis of the extent to which problems are concentrated in certain cities.

I. THE SAMPLE TO BE ANALYZED

The data in this analysis cover those U.S. cities -- called "entitlement cities" -- that receive CDBG formula funds. As explained in the previous Chapter, CDBG funds are allocated by formula to central cities of metropolitan areas and to suburban cities with at least 50,000 population. In 1982, there were 437 central cities and 190 large suburban cities. (Large suburban cities will frequently be called "satellite cities" throughout the Report and in the various tables.) The sample represents a major portion of urban America, as it accounts for approximately 50 percent of the total metropolitan population.**

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* The conclusion to this Chapter discusses more fully the implications of the Chapter's findings for the analysis of community development needs in Chapter 3.

** As discussed in Appendix A, the sample size was less than 627 for some of the variables because of missing data. The tables in the text will indicate where the number of cities deviates significantly from 627.

While from one point of view including a large portion of urban areas in an analysis is desirable, from another it can be problematic. This is because of the wide diversity of CDBG cities. The population of central cities ranges from 7,071,639 for New York City to 14,707 for Benton Harbor, Michigan. Six central cities have populations over 1,000,000 while 158 have populations below 50,000. Many (61) smaller central cities are located in the South. While most satellite cities are concentrated in the 50,000 to 100,000 population category, these cities exhibit a pronounced regional pattern. There are only 18 in the South, compared to 60 in the Northeast, 46 in the North Central region, and 66 in the West. Later discussion will show that there are extreme variations in city conditions among suburban cities. For example, these cities range from distressed cities such as East St. Louis, Illinois, and Compton, California, to high-income cities such as Kettering, Ohio, and Richardson, Texas. Similar variations exist among the central cities (e.g., Newark vs. Houston). As will be evident in this and the following Chapter, this diversity in size, location, and city type leads to a diversity in community development problems.

Because the CDBG program funds the various entitlement cities from a "single pot," and because the main purpose here is to develop a framework for evaluating the distribution of CDBG funds across cities, large, small, central, and suburban cities must necessarily be included in a single analysis. Small cities compete with large cities for funds, so they must be compared in terms of relative need. In the discussion below, efforts will be made to distinguish among different types of cities. Tables will be organized by population size and central city-suburban status; the text will highlight substantial differences within the categories. However, even this analysis may still remain too aggregative to identify all relevant differences and patterns across this group of cities.

The 96 urban counties are not included in this analysis (or in the development of need indices in Chapter 3) because data on important variables for urban counties, such as crime and changes in employment, are not available. For purposes of the CDBG program, an urban county is geographically different in many cases from a county's legal jurisdiction. In computing funding the CDBG program eliminates all entitlement jurisdictions and all noncooperating jurisdictions from the geography of a county. As a result, the map of a CDBG urban county has a "Swiss cheese" appearance. This complicates the collection of data on conditions within urban counties. Using available data, socio-economic characteristics of urban counties and cities are compared in Chapter 5.

In certain instances, the presentation of results in this Chapter focuses on a four-region Census division of the United States. This is for two reasons. First, it simplifies an already complex presentation of data; second, the number of entitlement jurisdictions in some subregions would be too small for many of the comparisons in this Chapter. The subregions are used in Chapter 4. (See Figure 2.1.) Puerto Rico is not included in this analysis.

Figure 2.1


Regions and Subregions of the United States
West
Mountain
Pacific
West North Central
North Central
East North Central
West South Central
South
East South Central
South Atlantic
Northeast
New England
Middle Atlantic
Legend:
Region
Subregion

II. POPULATION CHANGE DURING THE 1970's

A. Population Decline as an Indicator of City Problems

Population change is currently the most widely used indicator of urban conditions.* As an indicator of urban problems, population change has a recent history. While small towns in rural areas had suffered population decline for some time, it was not until the 1960's that loss of population was recognized as a significant problem for large cities. Even then, many saw the problem of large cities as too much density and overcrowding. However, by 1965, most cities losing population had already been relieved of severe overcrowding (Bradbury et al., p.26).

Population growth lag was included in the CDBG formula when studies at HUD showed a high correlation between population decline and several indicators of city distress, such as loss of jobs, decline in tax base, housing abandonment, and rundown neighborhood conditions. Essentially, population decline was included in the formula as a proxy for several distressful conditions for which reliable data were not available for a large number of cities. Recent population trends and the association of population decline with city distress therefore need to be examined.**

B. Overall Population Trends

Of the 627 CDBG entitlement cities, 295 lost population between 1970 and 1980; this resulted in a net increase of .6 percent for all 627 cities, compared to an 11.5 percent growth rate for the United States as a whole (see Table 2.1 and Figure 2.2). The 1970-80 growth rate for cities was also less than their 1960-70 average rate of 11 percent, when 171 of the 627 lost population. While cities experienced practically no gain in population during the 1970's, they did show a 14 percent gain in households, reflecting a decreasing average size of households during this period.

Table 2.1 shows that population growth rates vary substantially, depending on central city status, location, and size. Central cities declined by .7 percent between 1970 and 1980, compared to a 7.5 percent rate of growth for suburban cities. However, what seems surprising is that the proportion of suburban cities declining -- 46 percent, or 88 of 190 -- was about the same as central cities -- 47 percent, or 207 of 437.

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* Studies that have related population change to urban conditions include Peterson (1976), Muller (1975), Bunce and Goldberg (1979), Benjamin (1981) and Bradbury et al. (1982).

** Bradbury et al. (1982, pp. 24-27) discuss the main negative effects of population loss on city governments and the welfare of city residents. These include, for example, reductions in local retailing, which reduce employment opportunities for lower skilled workers, the isolation of the poor in central cities, and the deterioration of city neighborhoods. Although declining cities are not overcrowded, Bradbury et al. conclude that population loss creates a net loss of welfare for city residents.

Table 2.1 Overall Population Trends

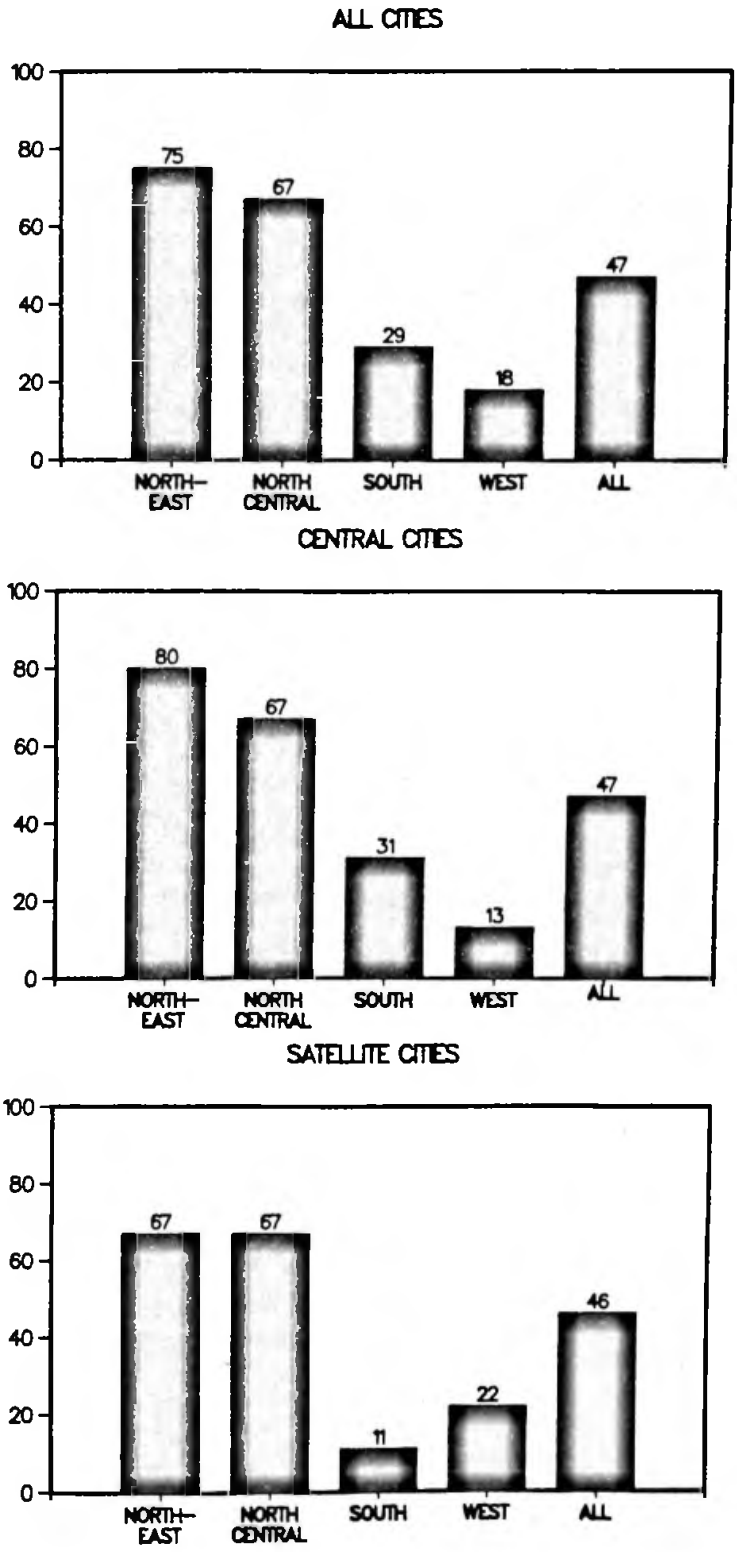
	All Cities	Central Cities	Satellite Cities
Number of Cities	627	437	190
Percent Change in Population:			
1970-1980	.6%	-.7%	7.5%
1960-1980	12.8%	8.4%	39.5%
Percent Change in Households, 1970 - 1980	14.0	12.1	24.0
Regional Data			
Percent Change in Population 1970 - 1980:[a]			
Northeast	-9.2%	-10.7%	-3.0%
Over 100,000		-12.0	1.3
Under 100,000		-5.4	-4.5
North Central	-8.2	-9.2	-3.0
Over 100,000		-11.4	.8
Under 100,000		-1.2	-3.9
South	9.1	7.8	28.1
Over 100,000		6.8	33.2
Under 100,000		11.0	22.3
West	16.0	14.2	21.2
Over 100,000		12.5	27.6
Under 100,000		26.0	18.6
Percentage of Cities Losing Population, 1970 - 1980:[a]			
Northeast	75%	80%	67%
North Central	67	67	67
South	29	31	11
West	18	13	22
All	47	47	46

Source: HUD analysis of 1980 Census Data.

a. Total numbers of central and satellite cities in each region are given in Table D.1 of Appendix D.

Figure 2.2

PERCENT OF CITIES LOSING POPULATION 1970 – 1980 BY REGION



The most significant population changes are due to regional location. Cities in both the Northeast and North Central regions lost over 8 percent of their 1970 population, compared to gains of 9 percent for Southern cities and 16 percent for Western cities. In these two Northern regions, 148 of the 203 central cities and 71 of the 106 satellite cities lost population between 1970 and 1980. Suburban as well as central city decline is concentrated in these regions of the country.* Suburban cities in the South and West, on the other hand, exhibited rapid rates of increase (28 and 21 percent).

Within regions, large central cities are either declining faster or growing more slowly than smaller central cities. In the Northeast and North Central regions, central cities over 100,000 population declined at rates of 12 and 11 percent, compared to rates of decline of 5 and 1 percent for central cities under 100,000. In the South and West, larger central cities are growing at slower rates than smaller central cities. Curiously, larger satellite cities tended to grow at a faster rate than smaller satellite cities.

C. Metropolitan Population Trends

The basic economic area in which central city residents and businesses operate is the central city's metropolitan area (i.e., its SMSA). What happens in a city's metropolitan area strongly influences that city. Essentially, declining cities in growing SMSA's may be less distressed than declining cities in declining SMSA's.** Data on city conditions can be more meaningfully interpreted if cities and SMSA's are grouped according to SMSA decline and growth. After presenting data on recent changes in SMSA population, this Report provides such a classification as a framework for analyzing city conditions.

Data on SMSA population changes are presented in Table 2.2. Between 1970 and 1980, 29 of the 318 metropolitan areas lost population. Notable among the decliners were some of the larger SMSA's such as New York (-8.6 percent), Cleveland (-8.0 percent), Pittsburgh (-5.7 percent), Boston (-4.7 percent), Philadelphia (-2.2 percent), and Detroit (-1.8 percent). Of these, Pittsburgh was the only SMSA to lose population during the 1960's.

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* Throughout this Report, "decline" and "population loss" are used interchangeably.

** In examining the causes of recent population, employment, and income changes in large central cities, Bradbury, et al. (1982) attempted to separate influences occurring at the SMSA level from those related to the relative position of each city within its SMSA -- that is, the amount of suburbanization. For instance, in their analysis of the causes of changes in central city population, they estimated the influence of changes in SMSA employment, as well as of various suburbanization factors such as central-city-suburban differences in tax rates, minority concentration, and aged housing. Their results showed that SMSA employment and income changes were the major factors explaining central city population and income changes. Their analysis also showed that the level of distress of a declining city was influenced by whether it was located in a declining or growing metropolitan area.

Table 2.2 Distribution of Standard Metropolitan Statistical Areas (SMSA's) by Change in Population, 1970-80

		Change in SMSA Population 1970-80		
	Total SMSA's	Declining	Slow Growth (0 to 10 percent)	Fast Growth (Greater than 11 percent)
Region				
Northeast	66	18	38	10
New England	29	8	15	6
Middle Atlantic	37	10	23	4
North Central	82	9	51	22
East North Central	58	8	38	12
West North Central	24	1	13	10
South	118	1	28	89
South Atlantic	57	1	16	40
East South Central	20	0	7	13
West South Central	41	0	5	36
West	52	1	3	48
Mountain	17	1	1	15
Pacific	35	0	2	33
SMSA Size				
Over 1,000,000	38	10	11	17
500-1,000,000	41	5	18	18
250-500,000	71	4	26	41
Under 250,000	168	10	65	93
All SMSA's	318	29	120	169

Source: HUD analysis of 1970 and 1980 Census Data.

Twenty seven of the declining SMSA's are located in the New England, Middle Atlantic, and North Central regions. Slow-growing SMSA's -- those that grew 10 percent or less -- are also concentrated in these regions. However, 16 of the 57 metropolitan areas in the South Atlantic region also exhibited relatively slow growth between 1970 and 1980.

D. Classification Based on City and SMSA Decline

Cities were first divided into three groups, depending on their rate of population change between 1970 and 1980: cities losing more than 10 percent (severe decliners); cities losing between 0 and 10 percent (moderate decliners); and cities gaining population (growth cities). These groups were further subdivided, depending on their location in declining SMSA's; moderately growing SMSA's (from 0 to 10 percent); and fast-growing SMSA's (greater than 11 percent). This leads to nine groups of cities. Because of expected differences in their overall conditions, these groups were further subdivided into large central cities (over 100,000 population), small central cities (under 100,000), and noncentral cities ("satellite cities"). Satellite cities were not subdivided by population because most fall into the 50,000-100,000 range.

Table 2.3 gives the number of cities and selected characteristics for each of the resulting city clusters.* A few comments at this point about major differences across the clusters will provide a useful context for discussion of recent trends in socioeconomic conditions. Many of the largest cities are severely declining cities in declining and slow-growing SMSA's. These clusters have the highest average populations, relatively small land areas, and high percentages of aged housing. They include many of the more notable declining central cities, located primarily in the North -- New York, Detroit, Philadelphia, Boston, St. Louis, and Newark in declining SMSA's; Chicago, Baltimore, and Cincinnati in slow-growing SMSA's.** These two groups of cities not only lost population at a rate of more than 13 percent during the 1970's, but they also suffered declines of 4.4 and 2.7 percent, respectively, in their number of households. The loss of households is probably depressing property values in these cities, adding to their fiscal problems. On the other hand, the corresponding cluster of severely declining, large central cities -- Atlanta, Columbia (South Carolina), and Richmond -- in fast-growing SMSA's exhibited a 2.1 percent increase in the number of households.

Moderately declining central cities, particularly those in slow- and fast-growing SMSA's, include cities from the South and West, as well as from the two Northern regions. Examples include Birmingham, Memphis, and Oakland from slow-growing SMSA's and Tampa, Fort Worth, and Denver from fast-growing SMSA's. Growing central cities in growing SMSA's tend to be newer, less dense cities in the Southwest and West; examples include Dallas, Houston, Phoenix, and Miami.

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* The reader should be aware that a few categories in Table 2.3 include rather small numbers of cities. While these categories will be included for completeness, some care should be taken when interpreting their averages.

** Table D.1 in Appendix D gives the regional distribution of cities within each cluster.

Table 2.3 Characteristics of Cities in Growing and Declining SMSA's

		Number of Cities	Percent Change in Population 1960–1980	Percent Change in Population 1970–1980	Percent Change in Households 1970–1980	Percentage of Pre-40 Housing Units, 1980	Percentage Share of 1980 Population in 627 cities
In Declining SMSA's							
Severe Decline	Large CC's	14	-17.5%	-14.1%	-4.4%	52%	16.8%
	Small CC's	10	-16.4	-13.2	.7	52	.6
	Satellites	25	-8.3	-14.0	1.6	31	2.1
Moderate Decline	Large CC's	4	-5.6	-6.7	1.5	45	.6
	Small CC's	9	0	-6.3	7.1	41	.6
	Satellites	28	1.1	-5.9	8.0	42	2.3
Growth	Satellites	16	62.5	18.2	37.0	15	1.2
In Slow Growing SMSA's							
Severe Decline	Large CC's	18	-16.2	-13.0	-2.7	47	9.6
	Small CC's	32	-20.8	-13.5	-2.3	55	1.8
	Satellites	7	-3.2	-10.8	5.1	37	.5
Moderate Decline	Large CC's	22	4.5	-4.8	7.7	35	6.3
	Small CC's	49	-2.4	-5.2	8.2	46	3.0
	Satellites	26	16.6	-5.1	9.7	21	2.6
Growth	Large CC's	12	27.3	6.3	16.6	21	6.0
	Small CC's	27	24.2	5.2	21.6	29	1.6
	Satellites	39	55.9	8.3	20.7	14	3.9
In Fast Growing SMSA's							
Severe Decline	Large CC's	3	-7.3	-13.1	2.1	24	.9
	Small CC's	4	-19.6	-13.9	-1.1	47	.2
Moderate Decline	Large CC's	12	0	-4.5	10.2	32	4.1
	Small CC's	30	4.5	-4.0	12.4	31	1.3
	Satellites	2	20.7	-5.1	11.3	16	.2
Growth	Large CC's	59	62.2	18.0	36.4	11	20.6
	Small CC's	132	57.2	21.5	40.6	15	8.0
	Satellites	47	167.8	42.8	68.3	4	4.8
All Cities		627	12.8%	.6%	14.0%	30%	100.0%

Source: HUD analysis of data from the City and County Data Book (1972 and 1977) and from the 1980 Census.

Based on these examples, it would appear that the large central city clusters will follow the now familar pattern of city population loss associated with high levels of hardship. This is not, however, the case with the suburban (satellite) cities. While a few declining suburbs (e.g., East St. Louis and Camden) stand out because of their known levels of distress, many appear to be relatively high income. Examples of severely declining suburbs in declining and slow-growing SMSA's include Warren and Roseville, Michigan; Kettering, Ohio; and Berwyn, Oak Park, and Skokie, Illinois; none of which conveys a strong sense of distress compared to declining central cities. Whether or not this is actually the case will be examined below.

III. CHANGES IN THE SOCIOECONOMIC CONDITIONS OF CITIES

A. Introduction and Overall Trends

This section discusses recent trends in city conditions. To keep the analysis manageable, only a few indicators are examined; these include income, poverty, job loss, unemployment, aged housing, and crime, which are commonly accepted measures of city hardship, and therefore should provide a good sense of what happened to cities during the 1970's. However, it should be recognized that because there are many disagreements concerning how city hardship should be measured, findings from this analysis should be treated carefully. A wider range of distress variables will be used in Chapter 3 in developing measures of community development need.

Table 2.4 and Figure 2.3 report average levels of indicators in central and satellite cities. The average poverty rate in central cities was 15.8 percent in 1980, which was much higher than the rate of poverty (7.9 percent) in satellite cities and slightly higher than the rate (12.1 percent) for the United States as a whole. As a group central cities experienced a 1.4 percentage point increase (from 14.4 percent to 15.8 percent) in their poverty rate between 1970 and 1980, compared to a .9 percentage point increase for satellite cities and a decline of 1.2 percentage points for the United States. The central city share of poverty increased from 36.6 percent in 1970 to 39.6 percent in 1980. Similar trends were evident for per capita income. As shown in Table 2.4, central cities experienced a net increase of $393 in real per capita income between 1969 and 1979, compared with increases of $544 for satellite cities and $576 for the United States as a whole.

The relatively slow growth rate in employment may explain the high incidence of poverty in central cities. Manufacturing and wholesale jobs declined in central cities between 1967 and 1977. While retail and selected service jobs increased enough to offset these declines, the average rates of growth for central cities in retail and service industries were still substantially less than for satellite cities and the United States as a whole. The average unemployment rate for central cities was 7.9 percent in 1981, which was slightly above the national rate of 7.6 percent and 1.5 percentage points above the average rate for satellite cities.

In 1980 central cities reported much higher rates of violent crime than either satellite cities or the Nation as a whole. It is interesting that crime and loss of manufacturing jobs were the only indicators on which

Table 2.4 Aggregate Trends in Distress Measures

	All Cities	Central Cities	Satellite Cities	U.S.
Number of Cities	627	437	190	
Poverty Rate				
1980	14.4%	15.8%	7.9%	12.1%
1970	13.2	14.4	7.0	13.3
Change	+1.2	+1.4	+.9	-1.2
Share of U.S. Poverty				
1980	44.0	39.6%	4.3%	100%
1970	40.2	36.6	3.5	100
Change	+3.8	+3.0	+.8	
Real Per Capita Income (1969)				
1979	$3755	$3631	$4327	$3695
1969	3329	3238	3783	3119
Change	+426	+393	+544	+576
Percent Change in Employment, 1967-77:				
Manufacturing	-12.1%	-13.8%	-1.3%	1.4%
Retail Trade	18.3	14.9	42.0	39.0
Wholesale Trade	0	- 3.5	40.6	24.9
Selected Services	46.8	41.4	100.5	64.9
Nonmanufacturing (2-4)	20.3	16.3	54.2	42.0
Unemployment Rate				
1981	7.6%	7.9%	6.4%	7.6
1970	4.6	4.7	4.3	4.9
Change, 70-81	+3.0	+3.2	+2.1	+2.7
Change, 79-81	+1.6	+1.7	+.7	+1.8
Violent Crime (per 100,000 persons)				
1980	1030	1125	590	580
1976	823	897	439	459
Change, 76-80	+207	+228	+151	+121
Percent of 1980 Housing Units Built before 1940	30.1%	32.3%	19.1%	26.1%

Source: See Tables 2.5 through 2.10 for sources of individual variables and sample sizes for the employment change, unemployment and crime variables. All of the averages presented in Tables in this section are weighted averages.

Figure 2.3

AGGREGATE TRENDS IN DISTRESS MEASURES

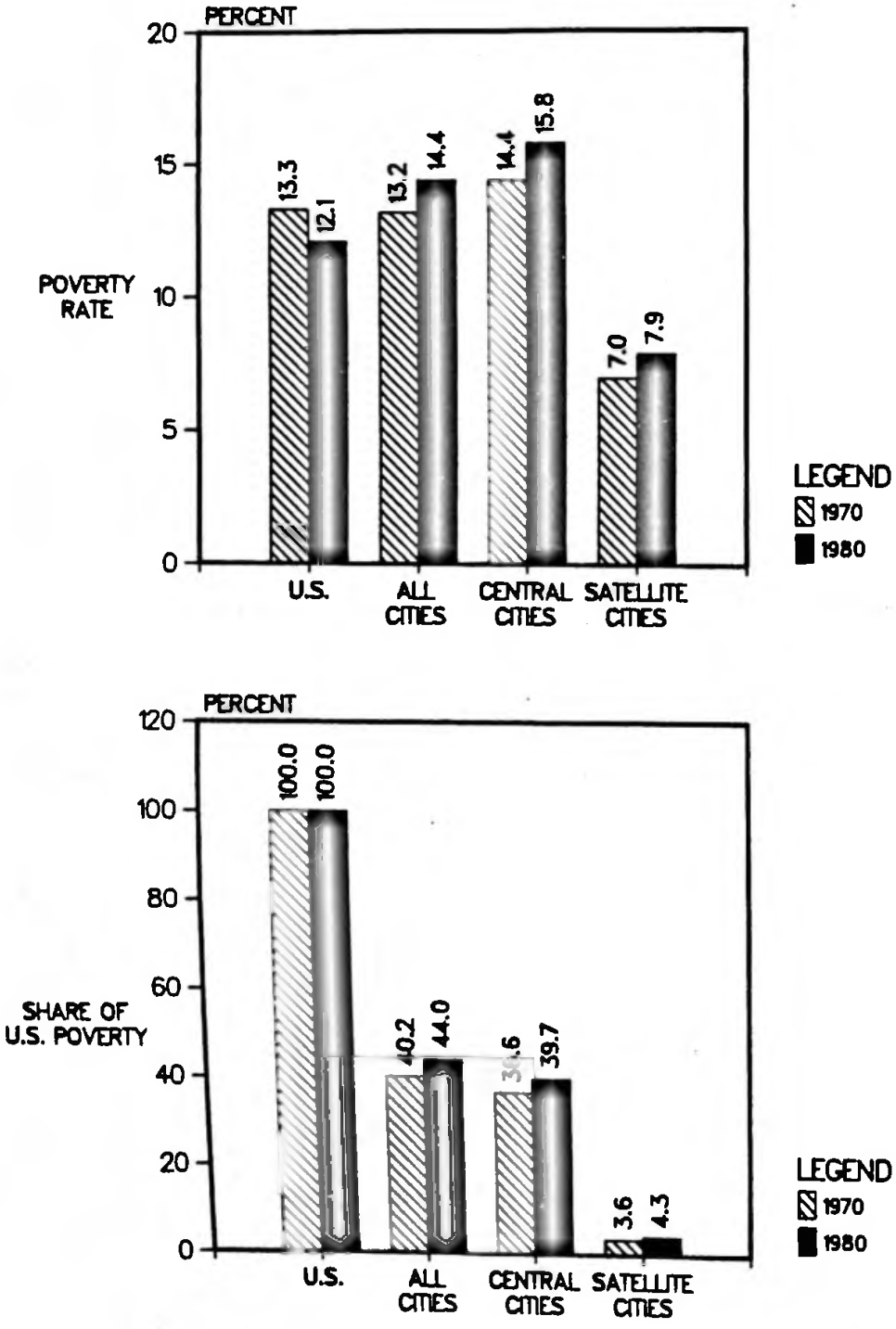
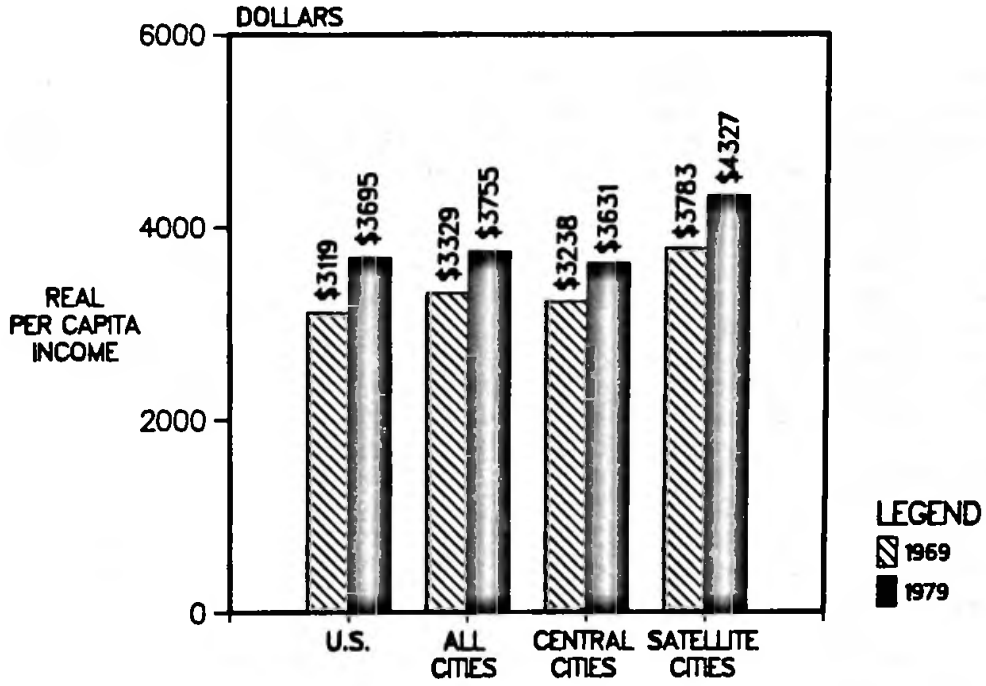
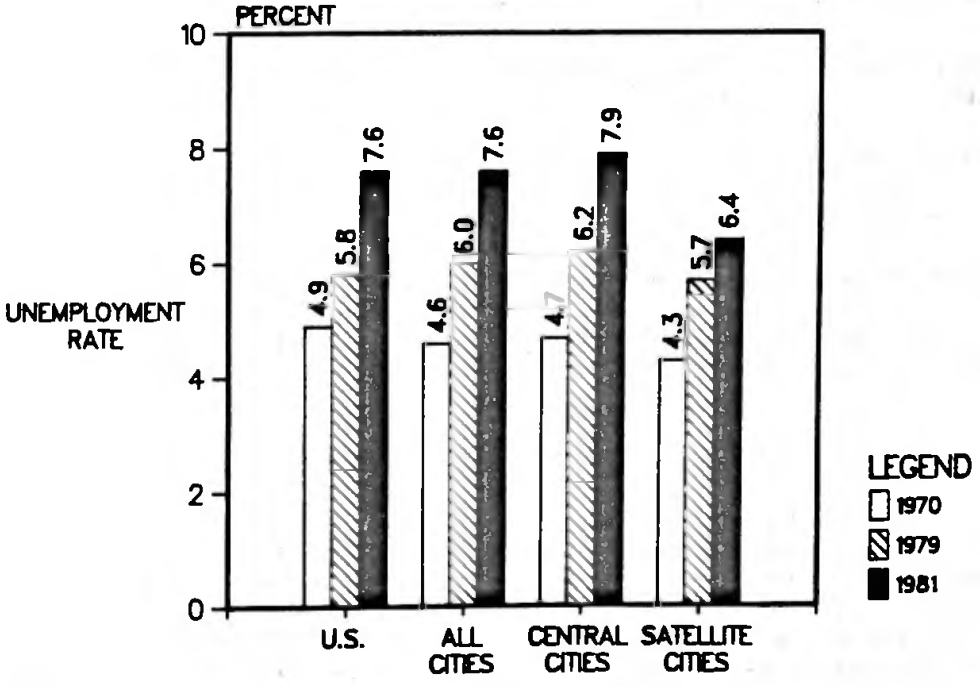


Figure 2.3 (cont.)

AGGREGATE TRENDS IN DISTRESS MEASURES





satellite cities exhibited a degree of distress as high as the national average. Of course, satellite cities exhibited a much lower degree of distress than central cities on all indicators.

B. City Diversity

While these averages are useful for indicating the relative distress of central versus suburban cities and the overall increase in hardship in central cities, they conceal substantial diversity among individual central and suburban cities. Identifying and understanding differences in city hardship are, of course, necessary for development of appropriate funding policies. As a first step in this direction, Tables 2.5 to 2.11 disaggregate data for the various indicators according to the city-SMSA scheme developed in Section II.D. With this format, the effects of city size, changes in city and SMSA population, and central city status on the level and change in city hardship can be examined. Tables showing variation in city hardship across regions are provided in Appendix D. Because many declining and slow-growing areas are located in the North, regional analyses would closely follow the city-SMSA analysis.

B.1 Poverty*

Poverty is one of the main variables in the CDBG formula. The following are the main findings from Table 2.5 and Figure 2.4 concerning the distribution of poverty across cities:

-- Between 1970 and 1980 the rate of poverty increased most in declining cities -- particularly large central cities exhibiting severe decline -- in declining and slow-growing SMSA's.

-- While certain declining suburban cities suffered increases in poverty, their rates of poverty in 1980 remained low.

-- While poverty shifted away from many high-growth central cities in the South, several continue to have relatively high rates of poverty.

Central city and SMSA decline are closely associated with increases in the rate of poverty. The poverty rate for large, severely declining central cities in declining SMSA's increased from 14.9 to 19.8 percent between 1970 and 1980. The poverty rate for severely declining cities in slow-growing

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* Poverty is defined as the number of unrelated individuals and persons in families whose incomes are below poverty levels, based on data compiled by the Bureau of the Census for 1980 and pursuant to criteria from the Office of Management and Budget. The poverty rates shown in this report are derived by dividing the estimated number of persons in poverty by the total population count. This poverty rate may differ slightly from the poverty rates published by the Census Bureau since the population figure used by the Bureau as a denominator is drawn from the sample questionnaire (long-form) and excludes certain institutional groups living in, for example, prisons and dormitories.

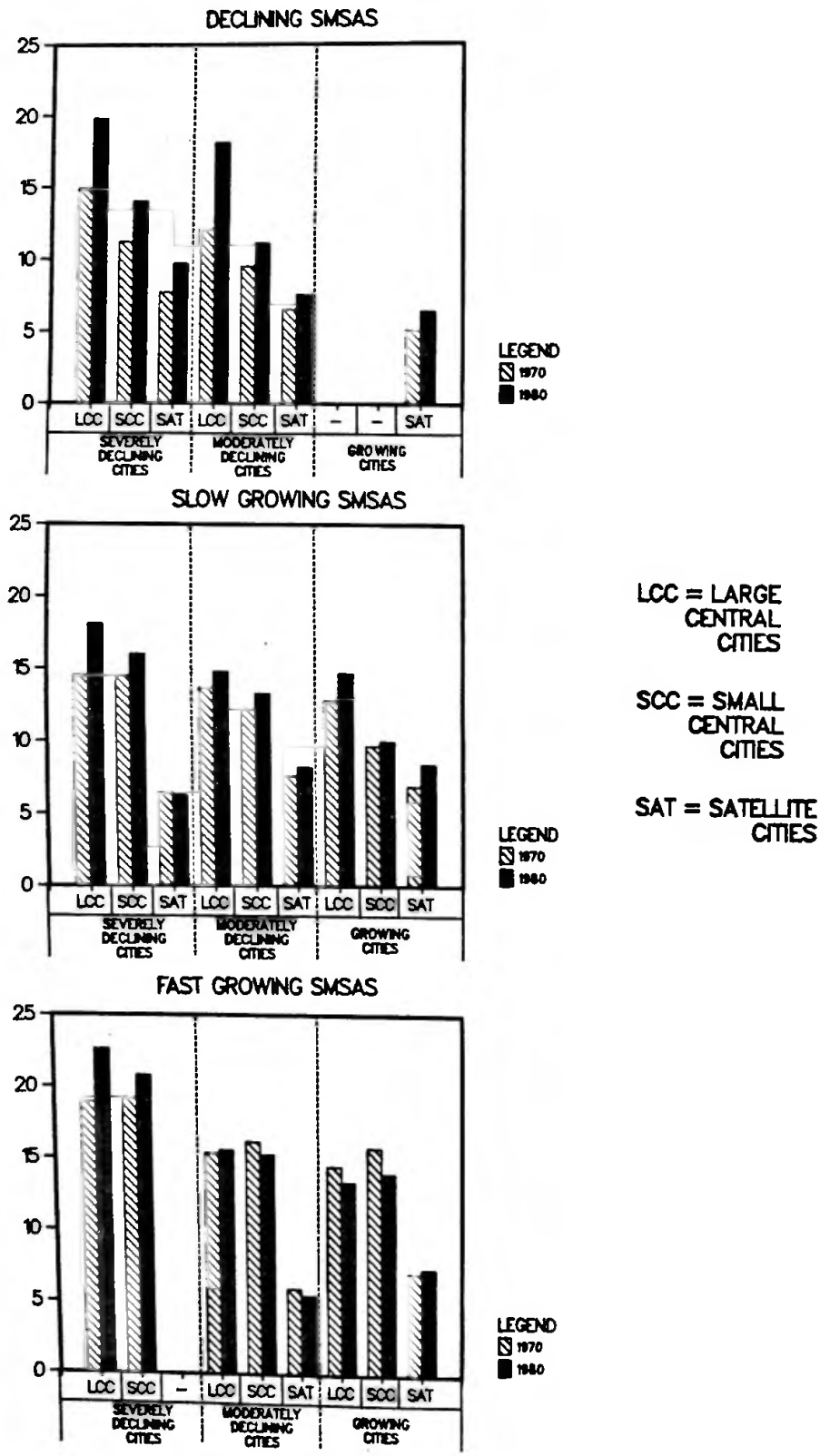
Table 2.5 Distribution of Poverty in Growing and Declining Urban Areas

		Rate of Poverty			Share of U.S. Poverty		
		Rate of Poverty 1980	1970	Change, 1970-80	1980	Change, 1970-80	Percent Change in Poverty, 1970-80
In Declining SMSA's							
Severe Decline	Large CC's	19.8%	14.9%	4.9%	10.14%	1.10%	14.7%
	Small CC's	14.0	11.2	2.8	.28	.02	8.3
	Satellites	9.7	7.7	2.2	.63	.58	9.3
Moderate Decline	Large CC's	18.1	12.1	6.0	.35	.10	39.0
	Small CC's	11.1	9.5	1.6	.19	.17	12.5
	Satellites	7.5	6.5	1.0	.54	.05	10.4
Growth	Satellites	6.4	5.1	.7	.24	.17	51.0
In Slow Growing SMSA's							
Severe Decline	Large CC's	18.1	14.5	3.6	5.29	.35	8.9
	Small CC's	16.0	14.5	1.5	.92	-.06	- 3.1
	Satellites	6.3	6.4	-.1	.09	-.02	-10.7
Moderate Decline	Large CC's	14.8	13.7	1.1	2.86	.06	4.1
	Small CC's	13.3	12.2	1.1	1.24	.03	4.4
	Satellites	8.2	7.6	.6	.66	.03	6.1
Growth	Large CC's	14.7	12.8	1.9	2.72	.45	21.8
	Small CC's	10.0	9.7	.3	.49	.04	11.8
	Satellites	8.4	6.9	1.5	1.01	.23	33.4
In Fast Growing SMSA's							
Severe Decline	Large CC's	22.6	18.9	3.7	.61	.01	3.7
	Small CC's	20.8	19.2	1.6	.12	-.01	- 6.6
Moderate Decline	Large CC's	15.6	15.4	.2	1.97	-.11	- 3.6
	Small CC's	15.3	16.2	-.9	.63	-.08	- 8.2
	Satellites	5.5	6.0	-.5	.03	-.00	- .8
Growth	Large CC's	13.4	14.5	-1.1	8.38	.76	11.8
	Small CC's	14.0	15.8	-1.8	3.43	.28	11.1
	Satellites	7.4	7.1	.3	1.10	.34	46.4
All 627 Cities		14.4	13.2	1.2	43.97	3.75	11.3
U.S.		12.1	13.3	-1.2			1.7

Source: HUD analysis of 1970 and 1980 Census data.

Figure 2.4

RATE OF POVERTY IN GROWING AND DECLINING URBAN AREAS



SMSA's increased from 14.5 to 18.1 percent, and in fast-growing SMSA's, from 18.9 to 22.6 percent. A better sense of the magnitude of these increases can be gained by examining individual city data:

	Poverty Rate		
	1970	1980	Change
Newark, N.J.	22.7%	32.5%	10.3%
Detroit, Mich.	14.6	21.5	6.9
Atlanta, Ga.	20.0	26.5	6.5
Chicago, Ill.	14.3	20.0	5.7
Buffalo, N.Y.	14.8	20.2	5.4
Philadelphia, Pa.	15.0	20.1	5.1
New York, N.Y.	14.6	19.7	5.1
Cleveland, Ohio	17.1	21.8	4.7
Gary, Ind.	15.8	20.2	4.4
Baltimore, Md.	18.0	22.4	4.4

There are also a few highly distressed suburban cities that experienced similar increases in poverty rates:

	Poverty Rate		
	1970	1980	Change
Camden, N.J.	20.9%	36.5%	15.6%
East St. Louis, Ill.	33.6	43.1	9.5
Compton, Calif.	18.8	26.1	7.3
Chester, Pa.	19.9	25.0	5.1

The high rates of poverty in large declining cities reflect the high concentrations of minorities and female-headed households in these areas. As shown in Table 2.6, over 44 percent of the persons in large, severely declining central cities with declining SMSA's were either black or Hispanic; over 18 percent of families in these cities were headed by females with children under 18. The concentration of blacks in these cities increased substantially between 1960 and 1980. Except for cities in the West that have experienced recent increases in their Hispanic populations, the growing central cities and satellite cities exhibit much lower concentrations of these high-poverty groups.

While the greatest increase in poverty rates occurred in severely declining cities in the North, there were several large cities in the Sunbelt that, while not experiencing substantial increases, continued to have relatively high rates of poverty. Examples include New Orleans, a moderately declining city in a fast-growing SMSA, which had no change from its 1970 poverty rate of 26 percent; Memphis, a moderately declining city in a slow-growing SMSA, which had only a slight increase from 21.0 to 21.5 percent; and El Paso, a fast-growing city in a fast-growing SMSA, which had an increase from 20.5 to 21.0 percent. Such cases explain why the average poverty rate for large central cities in growing SMSA's continues to be above the national average of 12.1 percent.

Table 2.6 Distribution of High-Poverty Groups in Growing and Declining Urban Areas

		Percent Black			Percent Hispanic	Percent Black and Hispanic	Percent Female-Headed Families with Children under 18
		1980	Change, 1970-80[a]	Change, 1960-80[a]			
In Declining SMSA's							
Severe Decline	Large CC's	32.2%	5.7%	13.7%	12.1%	44.3%	18.5%
	Small CC's	8.2	1.3		3.2	11.4	11.8
	Satellites	10.2	2.5		2.4	12.6	10.2
Moderate Decline	Large CC's	21.9	4.8	11.9	16.1	38.0	18.3
	Small CC's	6.6	.8		5.4	12.0	9.9
	Satellites	7.6	2.5		5.6	13.2	8.1
Growth	Satellites	10.4	5.0		1.8	12.2	8.8
In Slow-Growing SMSA's							
Severe Decline	Large CC's	36.8	6.0	14.5	6.8	43.6	18.6
	Small CC's	18.4	3.4		4.5	22.9	14.1
	Satellites	3.4	2.2		4.5	7.9	8.0
Moderate Decline	Large CC's	24.0	4.9	7.8	4.6	28.6	14.1
	Small CC's	10.2	2.1		3.9	14.1	11.8
	Satellites	9.0	1.8		10.3	19.3	9.2
Growth	Large CC's	18.1	.9	3.3	18.1	36.2	13.2
	Small CC's	7.2	2.4		3.7	10.9	9.8
	Satellites	9.4	3.5		15.3	24.7	9.6
In Fast-Growing SMSA's							
Severe Decline	Large CC's	58.5	12.7	20.3	1.3	59.8	22.9
	Small CC's	29.1	3.0		3.3	32.4	17.6
Moderate Decline	Large CC's	21.7	4.2	7.2	7.1	28.8	14.0
	Small CC's	20.2	2.2		2.3	22.5	12.9
	Satellites	1.2	a		1.5	2.7	7.1
Growth	Large CC's	15.2	1.5	1.4	15.5	30.7	11.9
	Small CC's	10.6	.5		10.3	20.9	10.4
	Satellites	2.8	1.8		11.1	13.9	8.6
All 627 Cities		19.6	2.2		10.5	30.1	13.4

Source: HUD analysis of 1970 and 1980 Census data.

a. Missing data prevented computing average change for several smaller cities (see Appendix A). Missing data on HUD's computer files for Hispanics in 1960 also prevented computing trend data for that variable. As shown in Appendix G, the percent black variable is more closely associated with housing and neighborhood problems across large central cities than the percent Hispanic variable.

There are also several small, fast growing central cities, particularly in Texas, that experienced substantial declines in their poverty rates during the 1970's but continue to exhibit some of the highest rates of in the Nation. For example, while the rate of poverty declined by approximately 16 percentage points in Brownsville, Texas, its 1980 poverty rate was a very high 33 percent. Other examples include:

	Poverty Rate		
	1970	1980	Change
Pharr, Tex.	50.7%	37.5%	-13.2%
Alexandria, La.	35.1	23.8	-11.3
Laredo, Tex.	44.7	34.2	-10.5
Jackson, Miss.	25.7	18.0	- 7.7
Shreveport, La.	24.6	17.5	- 7.1

Cases such as these explain why the average rate (14 percent) for growing small central cities in fast-growing SMSA's was as high or higher than corresponding rates for small central cities in declining and slow-growing SMSA's.

Another group consisted of large central cities in growing SMSA's that had average or below average poverty rates in 1970 and also experienced either declines or only small increases in their poverty rates during the 1970's. As the examples below indicate, these include some of the least distressed large cities:

	Poverty Rate		
	1970	1980	Change
Dallas, Tex.	13.5%	14.0%	.5%
San Diego, Calif.	11.0	11.5	.5
San Francisco, Calif.	13.5	13.4	- .1
Denver, Colo.	13.3	13.2	- .1
San Jose, Calif.	8.3	8.0	- .3
Houston, Tex.	14.5	12.5	-2.0

As Table 2.5 indicates, average poverty rates of satellite cities were relatively low whether the city or SMSA was declining or growing. For instance, of the 25 severely declining satellite cities in declining SMSA's, only four had poverty rates above the average for all CDBG cities; these were East St. Louis, Pontiac, Camden, and Chester (Pennsylvania), all recognized as relatively distressed cities. Most of the others were high-income suburban cities such as Redford, Dearborn, and St. Clair, Michigan; Euclid and Kettering, Ohio; and Tonawanda, New York. At the other end of the scale, only 2 of the 33 growing satellite cities in fast-growing SMSA's had above-average poverty rates. This group included some of the highest income suburbs -- e.g., Scottsdale, Arizona; Irvine and Thousand Oaks, California; Arvada, Colorado; and Mesquite and Richardson, Texas.

However, many declining suburban cities in the North, as well as growing suburban cities in California, experienced significant increases in poverty during the 1970's. As the examples below indicate, these include a mixture of both high- and low-poverty cities.

	Poverty Rate		
	1970	1980	Change
Inglewood, Calif.	7.7%	15.1%	7.4%
El Monte, Calif.	13.3	19.4	6.1
South Gate, Calif.	9.2	14.0	4.8
Pomona, Calif.	12.4	16.6	4.2
Pontiac, Mich.	12.8	16.9	4.1
Monterey, Calif.	6.1	9.9	3.8
Taylor, Mich.	4.9	8.4	3.5
Joliet, Mich.	8.4	11.5	3.1
Cicero, Ill.	6.3	8.9	2.6
Yonkers, N.Y.	7.1	9.6	2.5
Aurora, Ill.	6.0	8.5	2.5
Somerville, Mass.	9.5	12.0	2.5
East Hartford, Conn.	4.3	6.2	1.9
Euclid, Ohio	4.2	6.0	1.8
Warren, Mich.	3.2	4.8	1.6

Only selected examples of suburbs experiencing increases in their poverty rates are given here. The California cities listed above experienced increases in their Hispanic populations during the 1970's. The two growing North Central cities -- Taylor and Aurora -- suffered from above-average rates of unemployment in 1981, as did many declining suburbs in the North Central region. Pontiac, a severely declining suburban city, had an unemployment rate of 24 percent in 1981. The causes of suburban problems are too complex to be fully analyzed within the scope of this study.

The above discussion suggests that changes in poverty are more closely associated with population decline than is the overall level of poverty (i.e., the poverty rate). With respect to the level of poverty, many growing cities --particularly small central cities in Texas -- have above-average rates of poverty; many declining suburban cities in the North have below-average rates. For these cities, the 1970's brought some convergence in poverty rates, as many high-poverty, growing Southern cities experienced decreases, and many low-poverty, declining Northern cities experienced increases. In addition, many large, declining central cities suffered increases in their poverty rates during this period.*

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* Correlation analysis confirms these findings. Population change exhibited a -0.33 correlation with change in the poverty rate, compared to a -0.18 correlation with the poverty rate. The correlation between the poverty rate and population change is much higher if smaller central and satellite cities are excluded from the analysis. When the sample was limited to cities over 200,000, population change exhibited a -0.65 correlation with change in poverty and a -0.50 correlation with the poverty rate. The corresponding correlations for cities under 200,000 were -0.28 and -0.14, respectively. The correlations reported in this Chapter are Spearman correlations that show the extent to which city rankings on variables are related.

A final comment concerns the relationship among the rate (or incidence) of poverty, share of poverty; and percent change in numbers of poor persons. As shown in Table 2.5, declining central cities exhibited much smaller percentage increases in numbers of poor persons than growing central and satellite cities. In fact, satellite cities -- not central cities -- showed the largest percent increases in numbers of poor persons during the 1970's. The number of poor persons is important for determining a city's CDBG formula amount, but it can be misleading as a measure of city problems because it does not consider what has happened to the city's population. A city may experience an increase in number and share of poor persons but its total population may rise even more, thus reducing its incidence of poverty. This happened during the 1970's in many growing cities. On the other hand, the combination of relatively small increases in numbers of poor persons but large losses of total population resulted in substantially higher poverty rates in many declining central cities. It is a concentration of poverty that leads to city hardship.

B.2 Income*

As shown in Table 2.7, the patterns for per capita income are similar to those discussed above for poverty; they will only be summarized here. The main points are as follows:

-- Between 1970 and 1980, large central cities in declining SMSA's experienced practically no increase in real per capita income. The result was that the income of these cities shifted from above average to below average during the decade (see Table 2.7).

-- The largest increases in real per capita income were in satellite cities and in large central cities located in growing SMSA's.

-- Many smaller central cities that had extremely low incomes in 1970 experienced above-average income growth during the decade; however, they continued to exhibit relatively low income levels.

-- Satellite cities continued to exhibit the highest income levels of all cities. Although there were exceptions, even declining satellite cities were relatively high-income cities.

Cities located in fast-growing SMSA's experienced the largest increases in real income during the 1970's. As shown in Table 2.7, average income growth in these cities was over 20 percent, compared to approximately 13 percent for all 627 CDBG cities and 19 percent for the United States as a whole. On the other hand, income in large central cities of declining SMSA's grew by less than one percent and, as shown in Table 2.8, Newark, Detroit,

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* Per capita income estimates for 1979 are subject to a slight overstatement in some cases due to a Census Bureau coding error. While the error occurred in 400 of the approximately 3,100 counties nationally, it was not significant for the larger cities and counties in this report. Even with this slight error the 1979 per capita income estimates are considered by the Bureau to be highly reliable.

Table 2.7 Per Capita Real Income in Growing and Declining Urban Areas[a]

		1979	1969	Net Change	Percent Change
In Declining SMSA's					
Severe Decline	Large CC's	$3395	$3361	$ 34	1.0%
	Small CC's	3226	3012	214	7.1
	Satellites	3947	3499	448	12.8
Moderate Decline	Large CC's	3350	3341	9	.3
	Small CC's	3745	3354	391	11.6
	Satellites	4605	4253	353	8.3
Growth	Satellites	4535	3965	570	14.4
In Slow-Growing SMSA's					
Severe Decline	Large CC's	3541	3298	243	7.4
	Small CC's	3274	2907	367	12.6
	Satellites	4635	4139	496	12.0
Moderate Decline	Large CC's	3766	3368	398	11.8
	Small CC's	3333	2985	348	11.7
	Satellites	4348	3746	602	16.1
Growth	Large CC's	4046	3613	433	12.0
	Small CC's	3661	3159	502	15.9
	Satellites	4153	3694	459	12.4
In Fast-Growing SMSA's					
Severe Decline	Large CC's	3363	3083	280	9.1
	Small CC's	3015	2832	183	6.5
Moderate Decline	Large CC's	3858	3299	599	18.1
	Small CC's	3298	2820	478	17.0
	Satellites	4550	3882	668	17.2
Growth	Large CC's	3834	3164	670	21.1
	Small CC's	3566	2906	660	22.7
	Satellites	4371	3593	778	21.6
All 627 Cities		$3755	$3329	$426	12.8%
U.S.		$3695	$3119	$576	18.5%

Source: HUD analysis of 1980 Census data.

a. The consumer price index was used to convert 1979 income figures to a 1969 base.

Table 2.8 Real Per Capita Income in Cities with Populations Over 250,000

City	Real Per Capita Income[a] 1969	1979	Change	City	Real Per Capita Income[a] 1969	1979	Change
1. Newark	$2500	$2286	-$213	30. San Antonio	$2426	$2866	$ 440
2. Detroit	3209	3140	-68	31. San Francisco	4232	4682	450
3. New York	3736	3674	-61	32. Fort Worth	3235	3706	471
4. Philadelphia	3017	3058	41	33. St. Paul	3399	3887	488
5. Cleveland	2828	2915	87	34. Memphis	2779	3272	493
6. Baltimore	2876	2969	93	35. Honolulu	3479	3998	519
7. Chicago	3405	3505	100	36. Minneapolis	3485	4012	527
8. Buffalo	2882	2995	113	37. Phoenix	3287	3816	529
9. Atlanta	3163	3309	146	38. Omaha	3273	3804	531
10. Louisville	2958	3173	215	39. Portland	3536	4091	555
11. Boston	3095	3312	217	40. Tampa	2780	3339	559
12. St. Louis	2726	2971	245	41. Jacksonville	2856	3419	563
13. Indianapolis	3592	3857	265	42. San Diego	3462	4056	594
14. Long Beach	3948	4215	267	43. New Orleans	2705	3308	603
15. Oakland	3622	3891	269	44. Seattle	4052	4690	638
16. Miami	2829	3122	293	45. Charlotte	3300	3951	651
17. Norfork	2792	3089	297	46. Austin	2998	3661	663
18. Toledo	3253	3562	309	47. Dallas	3687	4351	664
19. Los Angeles	3939	4255	316	48. Albuquerque	3091	3758	667
20. Cincinnati	3139	3473	334	49. Nashville-Davidson	3153	3829	676
21. El Paso	2390	2748	358	50. Washington	3842	4529	687
22. Pittsburgh	3071	3458	387	51. Denver	3534	4323	789
23. Tucson	2880	3720	390	52. Virginia Beach	3088	3911	823
24. Columbus	3025	3426	401	53. Oklahoma City	3220	4043	823
25. Milwaukee	3184	3588	404	54. San Jose	3398	4233	835
26. Islip Township (N.Y.)	3048	3466	418	55. Wichita	3258	4121	863
27. Kansas City	3348	3779	431	56. Tulsa	3493	4467	974
28. Sacramento	3387	3819	432	57. Baton Rouge	2855	3900	1045
29. Birmingham	2555	2991	436	58. Houston	3289	4444	1155

Source: HUD analysis of 1980 Census data.

a. Per capita income was deflated by the Consumer Price Index with 1969 as the base year.

and New York City experienced declines in real per capita income. The result of these changes was that growing cities such as Houston displaced declining cities such as New York as the highest income large cities. These shifts are shown in Table 2.8.

B.3 Employment and Unemployment

The impacts on central city economies of the decline in national importance of manufacturing and the regional shifts in population and jobs from older industrial areas of the North to rapidly growing areas in the South and West have received much attention since 1970. In addition to employment changes arising from shifts in their underlying economic structure, central cities have been affected by three national recessions (1969-70, 1974-75, and 1980-present). The employment and unemployment data given in Tables 2.9 and 2.10 provide initial information on how city economies were affected during the 1970's. The main points are as follows:

-- Central cities in declining areas suffered losses of manufacturing jobs that in most cases were not offset by increases in nonmanufacturing jobs; the result was a relatively large increase in unemployment in these cities between 1970 and 1979.

-- Central cities in growing areas gained jobs in most major industrial sectors (e.g., retail trade, services, manufacturing) and therefore experienced only marginal increases in unemployment during the 1970's.

-- Between 1979 and 1981, both declining and growing cities suffered increased unemployment from a recessionary economy; however, the unemployment increase was greatest in declining cities.

-- Several satellite cities -- i.e., suburban cities with populations over 50,000 -- in declining SMSA's experienced losses in manufacturing and, consequently, significant increases in unemployment; however, as with respect to poverty and income, most satellite cities -- including many declining ones -- exhibit below-average rates of job loss and unemployment.

The extent to which a central city and its SMSA are declining in population has a major influence on whether the city is experiencing employment problems.* For instance, large, severely declining central cities in declining SMSA's suffered, on average, job losses of 32 percent in manufacturing and 13 percent in nonmanufacturing sectors. This group -- which includes cities such as Detroit, Cleveland, St. Louis, and Newark -- had an average unemployment rate of 9.7 percent in 1981, almost double the 1970 rate of 5.1 percent.

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* The causation, of course, runs in both directions -- jobs follow people and people follow jobs. Statistical studies indicate that the stronger influence is jobs following people.

Table 2.9 Employment Changes in Growing and Declining Urban Areas

		Percent Change in Employment, 1967-77				
		Manufacturing	Nonmanufacturing	Wholesale	Retail	Service
In Declining SMSA's						
Severe Decline	Large CC's	-32%	-13%	-29%	-17%	6%
	Small CC's	-29	1	- 6	- 2	20
	Satellites	-21	25	16	14	61
Moderate Decline	Large CC's	-22	2	- 1	-11	42
	Small CC's	-28	30	29	20	71
	Satellites	-13	19	- 4	12	65
Growth	Satellites	- 4	118	141	65	254
In Slow-Growing SMSA's						
Severe Decline	Large CC's	-26	- 5	-21	-13	25
	Small CC's	-20	0	-11	- 5	27
	Satellites	- 1	7	-11	3	43
Moderate Decline	Large CC's	-10	17	1	9	51
	Small CC's	-13	15	3	13	37
	Satellites	-14	42	20	27	106
Growth	Large CC's	3	28	9	30.	38
	Small CC's	- 5	49	29	55.	58
	Satellites	- 2	47	54	39	66
In Fast-Growing SMSA's						
Severe Decline	Large CC's	-18	2	-22	- 6	47
	Small CC's	- 5	- 8	-15	-17.	19
Moderate Decline	Large CC's	- 6	23	2	14.	65
	Small CC's	9	37	15	36	67
	Satellites	8	47	24	48	56
Growth	Large CC's	27	57	36	51	88
	Small CC's	21	64	44	69	78
	Satellites	63	124	154	110	150
All Cities		-12%	20%	0	18%	46%
U.S.		1%	42%	25%	39%	65%

Source: U.S. Department of Commerce, City and County Data Book (1972, 1977). The data refer to employment by location of employer, not location of resident. The number of cities are as follows: manufacturing (458), nonmanufacturing (569), wholesale (571), retail (575) and service (572). See Appendix A for reasons for missing employment data.

Table 2.10 Unemployment in Growing and Declining Urban Areas

		Unemployment Rates			Employed as a Percentage of Working-Aged Population, 1980	Black Unemployment Rate, 1979
		1981	Change 1970-79	Change 1979-81		
In Declining SMSA's						
Severe Decline	Large CC's	9.7%	3.7%	1.4%	59%	15.4%
	Small CC's	9.1	1.2	2.7	62	19.0
	Satellites	9.8	2.1	3.1	65	17.5
Moderate Decline	Large CC's	8.2	2.6	.9	65	11.2
	Small CC's	8.2	2.4	1.1	67	12.7
	Satellites	5.7	1.8	.6	69	7.9
Growth	Satellites	8.2	1.7	2.5	69	9.8
In Slow-Growing SMSA's						
Severe Decline	Large CC's	8.8	2.1	2.5	63	14.2
	Small CC's	10.1	2.9	2.6	60	16.7
	Satellites	5.5	.5	1.3	70	8.9
Moderate Decline	Large CC's	8.4	1.4	2.2	66	14.0
	Small CC's	9.0	2.1	2.3	65	14.4
	Satellites	6.3	.9	1.1	70	10.5
Growth	Large CC's	7.3	-.2	1.5	66	11.2
	Small CC's	8.1	1.5	2.3	67	14.0
	Satellites	5.8	0	1.0	69	9.0
In Fast-Growing SMSA's						
Severe Decline	Large CC's	6.7	2.1	1.0	60	10.3
	Small CC's	9.1	2.7	1.9	60	15.8
Moderate Decline	Large CC's	7.1	-.1	1.8	67	10.7
	Small CC's	8.3	1.7	1.9	62	12.5
	Satellites	6.0		1.2	70	10.5
Growth	Large CC's	6.1	.6	1.1	67	8.7
	Small CC's	7.2	.8	1.6	64	10.2
	Satellites	5.1	0	.8	71	7.8
All Cities		7.6%	1.4%	1.6%	65%	12.7%
U.S.		7.6%	.9%	1.8%	NA	NA

Source: Unemployment data in the first three columns came from the U.S. Department of Labor. The employment and black unemployment data are from the U.S. Bureau of the Census. The numbers of cities are as follows: 1981 unemployment (611), changes in unemployment (572), employed (620), and black unemployment (582).

One problem with the unemployment rate as a measure of employment conditions is that it does not consider workers who have become discouraged and dropped out of the labor force. To control partially for this, Table 2.10 provides data on resident employment as a percentage of the working-aged population (16 to 64).* In the group of large declining cities mentioned above, 59 percent of the working-aged population was employed; this compares to 68 percent for large, fast-growing central cities such as Houston, Dallas, San Jose, and Phoenix.

While data organized into categories such as those in Tables 2.9 and 2.10 are useful for indicating broad trends, reading too much into them can lead to oversimplifications, especially when the subject is the performance of central city economies. For instance, broad industrial categories may hide growing subsectors on which declining cities plan to rebuild their economies. Since 1967, several service sectors such as health, business, and legal have shown strong growth in many weaker central cities and metropolitan areas (see Appendix E). Declining cities also differ substantially in diversity of their economic bases, and therefore in their potential for future growth. Some observers believe that declining cities such as Boston and New York that have a broad range of economic activities (e.g., finance, high technology industries, health services) face brighter prospects than manufacturing-based cities such as St. Louis and Cleveland. (Noyelle and Standback, 1981)** On the other hand, a recent study by the Rand Corporation concluded that despite an overall decline in manufacturing, many of Cleveland's manufacturing sectors remained strong. (Gurwitz and Kingsley, 1982).***

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* However, it should be pointed out that factors other than discouraged workers can affect the percentage of the working-aged population that is employed. For instance, cities with a higher percentage of single-person households are likely to have higher employment ratios, other things equal.

** For further discussion of recent changes in central city economies, see Garn and Ledebur (1980), Mollenkopf (1980), Sullivan et al. (1981), and Harrison and Hill (1978). Discussion of the potential competitive advantages of urban economies is provided by Reigeluth and Wolman (1981), Perloff (1978), and Richardson (1978).

*** While it would be impossible within the scope of this Report to describe fully what has happended to city economies over the past decade, a more disaggregated and comprehensive examination of 36 of the largest urban areas has been conducted. Because it divides the major industrial sectors into their "2-digit" components -- e.g., manufacturing is divided into 20 subsectors such as primary metals, electrical machinery, and instruments -- this analysis is too detailed and lengthy for discussion here. It is therefore included as Appendix E. When dealing with the economic trends of large central cities, the discussion in Appendix E focuses on the relationship of these central cities to their surrounding metropolitan areas, the types of industries and jobs that the weaker and stronger central cities have been attracting, and the ability of the older industrial cities to encourage investment and remain competitive. Despite the added complexity introduced by a look at the various subsectors, the major findings are similar to those reported in the text.

A closer look at the data also shows that the association between population decline and unemployment is not as strong for individual cities as it appears from the weighted averages given in Tables 2.9 and 2.10. For example, several cities in Texas and California -- the larger ones include San Jose, San Diego, and El Paso -- have above-average rates of unemployment.* Smaller growing cities with significant manufacturing sectors are probably subject to some of the same national trends as the older declining cities.**

B.4 Crime

Crime, which according to most surveys of city residents is the most serious urban problem, is heavily concentrated in urban areas. From the perspective of the CDBG program, crime is an indicator of neighborhood living conditions and the costs of doing business in cities (Bradbury, et al., p. 65). As shown in Appendix G, residents of large central cities with higher crime rates are more likely to perceive their neighborhoods as only fair or poor places to live. Violent crime, instead of total crime, is used in this Report in order to reduce the distortion caused by intercity variations in the reporting of crime. Violent crime consists of murder, manslaughter, forcible rape, aggravated assault, and robbery.***

As shown in Table 2.11, reported rates of violent crime differ substantially among the various types of cities. As a rule large central cities have much higher rates of violent crime than small central cities and satellite cities. Some of the highest rates of violent crime are reported in the large, severely declining cities such as New York, Newark, and Philadelphia; in 1980, this group averaged 182 violent crimes per 10,000 population, compared to a national average of 58. On average, violent crime rates are higher in declining cities, but the association of crime with population loss across cities is not strong. For instance, growing central cities in slow-growing SMSA's had the third highest violent crime rate. Futhermore, about 90 of the 200 cities with the highest rates of violent crime were growing cities, many of which were located in the West. To a certain extent, this probably reflects the increased opportunity for crime and profitability of crime in areas that are experiencing growth in population and income.

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* Above-average unemployment rates in growing cities such as San Jose partially reflect the normal turnover of people and jobs that takes place in a healthy economic environment. As discussed in Chapter 3, information on the duration of unemployment would have increased the reliability of this variable as an indicator of chronic employment problems.

** Several small growing cities in California (e.g., Redding, Stockton, Santa Cruz, Modesto) and Texas (e.g., Pharr, Killeen, McAllen, San Benito, Brownsville) had unemployment rates greater than 10 percent in 1981.

*** Appendix G shows that in large central cities violent crime is much more closely associated with neighborhood problems (as reported in the Annual Housing Survey) than is total crime, which also includes property crimes such as burglary, larceny-theft, motor vehicle theft, and arson. Compared to violent crimes, there is a greater tendency for property crimes to occur in growing and higher income cities.

Table 2.11 Crime Rate in Growing and Declining Urban Areas

		Violent Crimes[a] (per 10,000 persons)		
		1980	1976	Net Change
In Declining SMSA's				
Severe Decline	Large CC's	182	153	29
	Small CC's	33	21	12
	Satellites	82	52	30
Moderate Decline	Large CC's	112	75	37
	Small CC's	60	40	20
	Satellites	44	28	16
Growth	Satellites	46	37	9
In Slow-Growing SMSA's				
Severe Decline	Large CC's	121	104	17
	Small CC's	83	59	24
	Satellites	41	33	8
Moderate Decline	Large CC's	107	83	24
	Small CC's	55	41	14
	Satellites	67	53	14
Growth	Large CC's	129	87	42
	Small CC's	38	25	13
	Satellites	74	57	17
In Fast-Growing SMSA's				
Severe Decline	Large CC's	204	134	70
	Small CC's	59	56	3
Moderate Decline	Large CC's	116	78	38
	Small CC's	74	58	26
	Satellites	37	31	6
Growth	Large CC's	88	59	29
	Small CC's	61	44	17
	Satellites	52	35	17
All Cities		106	82	+24
U.S.		58	46	+12

Source: U.S. Department of Justice, Uniform Crime Reports for the United States (1976, 1980). The number of cities equals 605.

a. Violent crimes consist of murder, manslaughter, forcible rape, aggravated assault, and robbery.

C. City Diversity -- Further Analysis

The above discussion has emphasized that while problems of low income, unemployment, and crime are on average greater in declining than growing areas, there are numerous exceptions. For instance, an examination of city rankings on the distress variables shows that growing areas can experience problems of low income, crime, and unemployment, just as declining areas can be relatively well off. To examine this more closely, the correlation of each distress indicator with population decline was computed. The results, reported in Appendix F, show that population change exhibits only moderate correlations with the distress variables. Not finding particularly high correlations between population change and poverty, income, unemployment, and crime is not surprising, given the discussion in Section III.B.* The correlation results show that the distress variables are more closely associated with population decline in large (over 200,000 population) than in small cities. The low correlations reported in Appendix F for small cities illustrate the difficulty of predicting conditions in small cities with a single indicator such as population decline. The data also show that population change is more closely associated with changes in income, poverty, and unemployment than with levels of these variables. This finding will reappear in Section IV when the tendency of distress indicators to concentrate in particular cities is examined.

A related issue is the extent to which distress indicators are correlated with each other across cities. Obviously, if poverty, job loss, crime, and aged housing occurred in the same places there would not be much disagreement concerning which cities needed community development funds. An analysis of this issue is included in Appendix F. The main finding is that while distress variables are associated with each other in the expected direction -- i.e., there is a tendency for high poverty and unemployment to occur together -- the relationships are frequently not so strong, particularly for smaller cities. This issue will be discussed further in Chapter 5.

The final issue analyzed in Appendix F concerns the 1970 characteristics of those cities whose relative position worsened during the 1970's. The main finding is that the situation of older, declining cities worsened relative to newer cities.

IV. CONCENTRATION OF CITY PROBLEMS -- A SIMPLIFIED ANALYSIS

A. Introduction

The preceding section examined indicators of city hardship on an individual variable basis. This section will look at the extent to which distress indicators "bunch" together in particular cities. That is, are there cities that suffer from concentrations of unemployment, poverty, job loss, crime,

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* The precision of population loss in proxying city distress has also been questioned by Robert Benjamin (1981, pp. 22-38); Chapter 6's discussion of the growth lag measure includes examples where population loss, as well as aged housing, overstate a city's relative need for community development funds.

and aged housing? The analysis in this section will illustrate in a simplified way many of the concepts related to measuring concentrations of urban problems and developing indexes of city distress. This should assist readers in understanding the more complicated measures of city need for CDBG funding that will be developed in the next Chapter. But, more important, the analysis in this section will show that the distress variables can tend to concentrate in particular cities even if across all cities the individual variables are not highly correlated, as discussed in the preceding section. Furthermore, Chapter 3 will show that community development problems, such as deteriorating neighborhoods and inadequate public services, are most severe where distress variables such as poverty and aged housing tend to concentrate together. Thus, not to go beyond the analysis of individual variables would be to omit perhaps the most important aspects of urban problems -- their concentration in particular cities.

The analysis in this section will follow Chapters 2 and 3 in the book by Katherine Bradbury, Anthony Downs, and Kenneth Small, Urban Decline and the Future of American Cities. As noted, many issues that will arise later, related to concentrations of urban problems, can be more easily understood by first examining simple indexes of city problems of the type used by Bradbury, Downs, and Small. Furthermore, repeating their analysis of urban decline using updated 1980 Census data will provide a useful context for the analysis of city need and distress in Chapter 3.

B. Simple Indexes of City Distress

To measure the concentration of problems in cities, two indexes were developed: a static index, measuring the level of city distress, and a trend index, measuring the change in city distress. The components of each index are listed below:

Static Index of City Distress

Poverty rate, 1980*
Unemployment rate, 1981
Violent crime rate, 1980
Percent of 1980 housing built before 1940

Trend Index of City Distress

Change in rate of poverty, 1970-80
Change in rate of unemployment, 1970-81
Change in rate of violent crimes, 1976-80
Change in nonmanufacturing employment, 1967-77**

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* An index with per capita income instead of poverty yielded similar results.

** Manufacturing employment was not included because of missing data for many cities due to Bureau of the Census confidentiality requirements; see Appendix A for further discussion. Nonmanufacturing employment includes service, retail trade, and wholesale trade employment.

While these indicators are frequently used, they still represent only a few of the many factors that contribute to city problems. Distress measures based on such a small number of indicators "should be considered suggestive rather than definitive measures" (Bradbury, et al., p. 48).

The indexes were constructed by ranking cities on each indicator from most distressed to least distressed; that is, from high to low poverty, from increases to decreases in violent crime, etc. These rankings were next divided into deciles (i.e., 10 equal parts); a value of 1 was given to cities in the first (most distressed) decile, and a value of 10 to those in the last (least distressed) decile. For both static and trend indexes, a city's distress score was computed by averaging its decile scores for the component indicators. Under this scheme, the more distressed cities have lower scores, with a distress score of 1 indicates that a city is in the top 10 percent on all component indicators.

An examination of the distribution of distress scores on the static index showed that problems do tend to be concentrated in certain cities. For instance, 10 percent of the cities had average decile scores of less than 3. If problems were not concentrated, and component indicators were completely independent of each other, only 5 percent of the cities would have been expected to exhibit average scores of less than 3. There was a similar concentration at the least distressed end of the scale -- about 11 percent of the cities had average decile scores greater than 8, which is higher than the expected 5 percent assuming that component indicators are randomly distributed.* As indicated by Table 2.12, the "least distressed" and "most distressed" large cities are the same as those that have appeared in other studies.**

C. Urban Distress and Urban Decline

An important question from the point of view of the CDBG program concerns the relationship between urban distress and urban decline. Is population decline a good predictor of concentrations of city problems?*** Table 2.13

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* Several cities that ranked high on the static index also ranked high on the trend index. Overall, the Spearman correlation between the static and trend indexes was 0.73; however, the correlation (0.88) was higher for cities over 200,000 population. As shown in Table 2.12, cities such as Newark, Cleveland, Detroit, and St. Louis are not only distressed but are becoming worse off relative to less distressed cities such as Houston, Phoenix, and San Jose. The lower correlation (0.70) between the static and trend indexes for smaller cities again reflects the recent increase in distress for many smaller, relatively well-off cities in the North, as well as the continued high levels of poverty in many growing cities in the South.

** Burchell et al. (1980) compare the urban distress indexes developed at Brookings, HUD, Treasury, and the Congressional Budget Office, and provide a list (their Exhibit 19) of the most and least distressed cities under each.

*** This question is important because the growth lag variable in the second formula causes much of the variation in funding among cities; Chapter 6 will discuss this further.

Table 2.12 Most Distressed and Least Distressed Large Cities on Static and Trend Indexes

	Static Index of City Distress[a] (Average Decile Score)	Index of Change in City Distress[b] (Average Decile Score)
Most Distressed		
Newark	1.25	1.25
Cleveland	1.50	1.00
Baltimore	1.50	1.50
Buffalo	1.50	1.75
Detroit	1.50	3.25
St. Louis	1.75	3.00
New York	2.00	2.00
Washington	2.25	2.00
Cincinnati	2.25	3.25
Birmingham	2.25	4.00
Philadelphia	2.50	2.25
Boston	2.50	2.50
Chicago	2.50	3.50
Oakland	2.50	4.00
Louisville	3.00	3.50
Atlanta	3.25	2.25
Toledo	3.25	3.00
Miami	3.50	2.75
Least Distressed		
Jacksonville	5.25	7.75
Dallas	5.50	4.75
Nashville	6.25	6.75
Houston	6.25	7.00
Charlotte	6.25	6.50
Oklahoma City	6.50	7.00
Phoenix	6.50	6.50
Tulsa	7.00	7.50
Austin	7.00	8.00
San Jose	7.00	7.25

a. Average decile scores on poverty, unemployment, crime, and aged housing. The first (tenth) decile is the most (least) distressed.

b. Average decile score for changes in the rates of poverty, unemployment, and crime and percent decline in nonmanufacturing employment. The first (tenth) decile is the most (least) distressed.

Table 2.13 Indexes of Static Distress and Change in Distress

		Static Index of City Distress[a]	Index of Change in City Distress[a]
In Declining SMSA's			
Severe Decline	Large CC's	2.1	2.4
	Small CC's	4.3	4.2
	Satellites	5.7	4.5
Moderate Decline	Large CC's	3.3	3.0
	Small CC's	4.9	4.6
	Satellites	6.6	4.7
Growth	Satellites	7.7	4.8
In Slow-Growing SMSA's			
Severe Decline	Large CC's	3.2	3.3
	Small CC's	3.4	3.8
	Satellites	6.8	5.6
Moderate Decline	Large CC's	4.0	4.3
	Small CC's	4.3	4.3
	Satellites	6.5	5.6
Growth	Large CC's	5.3	5.3
	Small CC's	5.7	5.5
	Satellites	6.8	5.6
In Fast-Growing SMSA's			
Severe Decline	Large CC's	3.7	3.6
	Small CC's	3.0	4.1
Moderate Decline	Large CC's	4.1	5.1
	Small CC's	4.5	5.5
	Satellites	7.6	7.7
Growth	Large CC's	5.6	6.3
	Small CC's	5.8	6.6
	Satellites	7.9	7.3

a. Lower (higher) scores indicate more (less) distress; the lowest (highest) possible score is 1 (10). The static index is an average decile score for poverty, unemployment, crime, and aged housing. The trend index is an average decile score for changes in the rates of poverty, unemployment, and crime and percent decline in employment. The static index was available for 600 of the 627 CDBG entitlement cities, and the trend index, 528 cities. See text for further discussion.

provides data on this issue. For the group of large central cities, the main conclusions are similar to those reached by Bradbury, Downs, and Small:

-- On average, city decline is associated with both high levels of distress and increases in distress, but more so with the latter.

-- Declining cities in growing metropolitan areas show less overall distress and smaller increases in distress than declining cities in declining metropolitan areas.

Severely declining large central cities in declining SMSA's averaged 2.1 on the static index and 2.4 on the trend index, both scores indicating a relatively high concentration of problems when compared to growing cities in fast-growing SMSA's, which showed average scores of 5.6 and 6.3, respectively. In addition, these cities showed a greater degree of hardship than similarly declining cities in growing metropolitan areas, which averaged over 3 on each index. Essentially, a severely declining city is better off if it is located in a growing rather than declining metropolitan area.

Metropolitan growth seems to have a greater influence on changes in distress than on levels of distress. For example, the average score on the trend index for large, moderately declining cities varies from 3.0 to 4.3 to 5.1 as one moves from declining to slow-growing to fast-growing SMSA's; on the other hand, the static index varies from only 3.3 to 4.1. Moderately declining cities such as Denver, Tampa, Seattle, and Salt Lake City located in fast-growing SMSA's may face a brighter future than similarly declining cities such as Bridgeport, located in a declining SMSA, and Birmingham, Allentown, and Savannah, located in slow-growing SMSA's.

The average index scores for satellite cities were much higher (indicating lower distress) than those for central cities. Declining satellite cities in declining SMSA's had the lowest average scores -- 5.7 on the static index and 4.5 on the trend index -- while growing satellite cities in fast-growing SMSA's had the highest -- 7.9 on the static index and 7.2 on the trend index. There was, therefore, some variation across these cities. Still, most declining satellite cities averaged over 6.5 on the static index, which indicates low levels of distress. In general, their trend scores were lower, which indicates that several larger suburban cities are beginning to experience some problems.*

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* As expected, deleting age of housing from the static distress index reduced that index's correlation with the trend index. Without age of housing, the static index showed the following correlations with the trend index: all cities (0.62), cities over 200,000 population (0.79), and cities under 200,000 (0.59). This reflects, of course, the tendency of older cities to become relatively worse off during the 1970's (see Appendix F).

V. CONCLUSIONS*

Identifying and understanding the nature of recent changes in city conditions is necessary for developing an appropriate standard for evaluating recent shifts in CDBG funds. This is particularly important because, as this Chapter has shown, the socioeconomic characteristics of cities receiving CDBG funds are quite complex. Growing cities experiencing reductions in poverty may continue to have relatively high poverty rates, just as declining cities suffering increases in poverty may continue to have relatively low poverty rates. Cities may appear distressed on one variable but not on another. Furthermore, relationships among the various indicators of city problems vary according to city size. For instance, population loss is more closely associated with distressful conditions such as unemployment, low income, and job loss in larger cities than in smaller cities. For the analysis of city need in Chapter 3, these findings show the necessity of using multiple indicators to measure need and of analyzing variations in need across different city types. The diversity in city conditions identified in this Chapter shows the importance of an analytical approach that recognizes exceptions to trends and that tests the reliability of indicators chosen to measure city need.

The analysis in this Chapter also shows that although low income, unemployment, job and population loss, aged housing, and crime do not always occur together, many of these problems tend to concentrate in certain cities. (For the most part, cities with high concentrations of problems are declining central cities, as opposed to growing cities.) To recognize concentrations of problems, the analysis in Chapter 3 will have to develop a composite measure of city need, in addition to examining individual indicators of need.

During the 1970's, older, declining cities -- particularly those located in declining and slow-growing SMSA's -- experienced the largest increases in problems such as poverty, unemployment, and job loss. Poverty, in particular, shifted toward the declining cities. The worsening condition of many declining cities shows the importance of including a measure of decline (e.g., growth lag) in the CDBG formula. However, as has been emphasized throughout, not all declining cities are extremely distressed. Chapter 6 will discuss these "exceptions" further in the context of the operation of the CDBG formula.

** A list of specific findings is provided in this Chapter's introductory section. This conclusion focuses on major findings and their implications for Chapter 3's analysis of city need for community development funds.

CHAPTER 3

MEASURING CITY NEED FOR COMMUNITY DEVELOPMENT FUNDS

In two previous formula studies, HUD developed standards of need for analyzing the distribution of CDBG funds across cities. The variables and need indexes examined in this Chapter will closely follow those in previous reports. The main difference is that this study focuses on the implications of 1980 Census data for measuring city need for community development funds.

There may be disagreement concerning the relative importance of particular urban problems and methods for analyzing them. Therefore, as in previous reports, several variables are analyzed and supporting tables are frequently provided to test the results against different assumptions. To emphasize the limitations of this type of analysis, methodological issues are discussed throughout the text and in footnotes and appendices.

It should be emphasized that the composite needs index developed in this chapter is not being suggested as an alternative to the current dual formula. The purpose of the needs index -- which is based on several indicators of community development problems -- is to provide a standard for assessing allocations under the dual formula -- which, for practical reasons, must be based on only a few variables.

The Chapter is organized into three sections. First, several Census-type variables that have reliable intercity data sources and conform to the overall objectives of the CDBG program are selected as indicators of community development need across cities. Second, a technique called factor analysis reduces the need indicators to a smaller set of factors, each defined by a different group of highly correlated variables that indicate particular dimensions of need for community development assistance. Third, in order to recognize concentrations of problems and test the CDBG formula by a single standard, the three dimensions of need -- age and decline, poverty, and density -- are combined into a single measure of relative community development need. Chapter 5 will test the distribution of CDBG funds across cities using both the summary index and individual variables.

The main findings in this chapter are as follows:

-- In 1980 poverty is a much broader indicator of urban problems than in 1970; increases in poverty rates between 1970 and 1980 were highest in older, declining cities, which means that poverty is now more closely associated with problems such as job loss, unemployment, and housing abandonment.

-- Relative differences among cities in their per capita needs for community development funds can be measured from an analysis of 18 indicators of community development need (e.g., job loss, low income, aged housing, crime, unemployment). As in the previous study, the 18 indicators reflect community development problems associated with city age and decline, poverty, and density. However, in contrast to the previous study, which

relied heavily on 1970 Census data, the 1980 poverty variable tends to be more closely associated with a broad variety of problems, such as job loss and crime.

-- A composite index of city need was obtained by combining scores on city age and decline, poverty, and density. The main advantages of the composite needs index are that it recognizes concentrations of problems in certain cities and averages out inconsistencies in need rankings that result when a single indicator such as population decline or aged housing is used.

-- Based on the composite needs index, the highest levels of need exist in large, declining central cities located in the Northeast, North Central, and South Atlantic regions. Central cities in the Southwest and West and satellite cities in all regions exhibit below-average levels of per capita need.

-- The most significant shifts in city need rankings from those reported in the previous study took place for the North Central region, which became more needy, particularly with respect to poverty; and the South, which became less needy with respect to poverty.

I. INDICATORS OF COMMUNITY DEVELOPMENT NEED

A. Proxies of Community Development Problems*

The first step in an analysis of community development problems is to select indicators of need. A need indicator, such as the rate of poverty or job loss, is a variable whose greater degree in a city, other things being equal, implies greater need. (Need indicators are also frequently called "distress" indicators.)

The community development need indicators chosen should conform to the types of need written into community development legislation. That is, they must reflect the Congressional intent that block grants assist development of viable urban communities by providing decent housing, a suitable living environment, and expanding economic opportunities, principally for low- and moderate-income families. Consistent with this objective, Federal aid is to be provided for support of community development activities directed toward specific objectives, including:**

(1) the elimination of slums and blight and the prevention of blighting influences and the deterioration of property and neighborhood and community facilities of importance to the welfare of the community, principally persons of low and moderate income;

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* The material in this section draws heavily from the 1979 report, City Need and Community Development Funding. The reader is referred to pages 33-37 and 47-61 of that report for a fuller discussion of need indicators.

** Public Law 93-383, 88 Stat. 633; 42 U.S.C. 5301; Section 101(c).

(2) the elimination of conditions which are detrimental to health, safety, and public welfare, through code enforcement, demolition, interim rehabilitation assistance, and related activities;

(3) the conservation and expansion of the Nation's housing stock in order to provide a decent home and a suitable living environment for all persons, but principally those of low and moderate income;

(4) the expansion and improvement of the quantity and quality of community services, principally for persons of low and moderate income, which are essential for sound community development and for the development of viable urban communities;

(5) a more rational utilization of land and other natural resources and the better arrangement of residential, commercial, industrial, recreational, and other needed activity centers;

(6) the reduction of the isolation of income groups within communities and geographical areas and the promotion of an increase in the diversity and vitality of neighborhoods through the spatial deconcentration of housing opportunities for persons of lower income and the revitalization of deteriorating or deteriorated neighborhoods to attract persons of higher income;

(7) the restoration and preservation of properties of special value for historic, architectural, or esthetic reasons;

(8) the alleviation of physical and economic distress through the stimulation of private investment and community revitalization in areas with population outmigration or a stagnating or declining tax base; and

(9) the conservation of the Nation's scarce energy resources, improvement of energy efficiency, and the provision of alternative and renewable energy sources of supply.

These objectives suggest that, ideally, indicators selected should include measures of slum, blight, and detrimental living conditions; neighborhood instability; the level of public services for low-income persons; and the rate of economic and population decline. However, except for population decline, reliable intercity data on these conditions are not readily available.* This has necessitated reliance on indirect surrogates or proxies,

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* For example, Census Bureau data on substandard housing fail to recognize many housing code deficiencies, including interior rooms, inadequate room size, certain fire hazards, and insufficient light and air. These data also ignore environmental deficiencies impairing the livability of a neighborhood. A person's housing situation depends as much on the location of the house relative to other houses, community services, job opportunities, and environmental amenities as on the soundness of the dwelling. Also, data are not available for all cities on such conditions as the relative extent of garbage-littered streets (due to poor sanitation services), cracked and broken sidewalks, unpaved or broken streets, missing or ineffective street lights, inadequate sewage and drainage facilities, and the danger of assault, mugging, and robbery (Marcuse 1974, pp. 199, 209).

that is, socioeconomic variables that are correlated with neighborhood blight and detrimental living conditions. Before studying specific variables, one should understand their per capita and relative nature.

Per Capita Need. Each variable will be expressed in either percentage or per capita terms in order to characterize the "average" person in a city with respect to the variable being considered. For example, the average person in City A is considered worse off than the average person in City B if the percentage of poor persons in City A is higher than in City B. Trend variables will be treated in a similar manner. A lower or negative rate of change in employment or population, for example, will serve as a proxy for a higher level of "average" or per capita distress. It should also be kept in mind that, in contrast to most of the nontrend variables in the analysis, trend variables -- e.g., percentage changes in population and employment -- are usually inverse indicators of need; a lower rate of change typically indicates a higher level of need.

Relative Need. Need indicators measure only relative differences in need among entitlement cities. Consider the following illustration from the last Report:* For each entitlement city, the percentage of the population that is poor is known. It is also known that a poverty population is related to community development need; the greater the percentage of poor persons, the greater the per capita need. However, the exact relationship between a poor population and community development need is unknown. Is there a minimum threshold? For example, if the poor population is less than 5 percent of the total, is there any community development need? Does a city with 20 percent of its population below the poverty level have over twice the need of a city with only 10 percent poor? Since the precise answer to such questions is not known, need for a given variable will be defined relative to the average need (e.g., average poverty rate) in all cities.

B. Need Indicators Selected

The 18 need indicators selected for this analysis consist of direct indicators of community development need, socioeconomic variables associated with urban blight and substandard housing, and measures of economic and population loss; they are defined in Table 3.1.** Table 3.1 also contains short names for each variable, such as CPOVERTY for "change in percentage of poor persons, 1970-80." These short names are intended to simplify presentation in some tables and occasionally in the text. Appendix A gives data sources for the variables and discusses missing data problems. An overview of the reasons for including each indicator is given below.

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* As noted in that Report, an absolute measure of community development need is obviously unobtainable, since its construction would require costing out minimum standards (however determined) for public services and environmental conditions in each city.

** This list is basically the same as used in the previous study. The text and Appendix K point out the main differences.

Table 3.1 Variable Definitions[a]

I. Income Variables	
POVERTY*	percent of population with incomes below the poverty level, 1980
CPOVERTY	change in percentage of poor persons, 1970-80
INCOME*[b]	real per capita income, 1979 (1969 as a base)
CINCOME[b]	net change in real per capita income, 1969-79
II. Social and Demographic Variables	
FEMALEH*	percent of families with a female head with children under 18, 1980
POPAGE65*	percent of population over 65, 1980
MINORITY*	percent of population black and of Hispanic origin, 1980
BLACK	percent of population black, 1980
CHPBLACK*	change in percentage black, 1970-80
SPANISH	percent of population of Spanish origin, 1980
WOHSED*	percent of population between 25 and 65 with less than a high school education, 1980
III. Economic	
CEMPLOY*[b]	percent change in retail, wholesale, and service employment, 1967-77
CMFGEMPL[b]	percent change in manufacturing employment, 1967-77
CRSALES*[b]	percent change in retail sales, 1967-77
UNEMRATE*	unemployment rate, 1981
CUR7081	net change in unemployment rate, 1970-81
EMPLRATE*	employment rate, i.e., percent of population between 16 and 64 that is employed, 1980

Table 3.1 (Con't)

IV.	Housing	
	P40HOUSE*	percent of 1980 housing units built before 1940
	P40RENT	percent of 1980 renter-occupied housing units built before 1940
	P400WN	percent of 1980 owner-occupied housing units built before 1940
	POVINP40	percent of total occupied housing units that are both built before 1940 and occupied by a poor family
	PPROBLEM*	percent of 1980 renter-occupied housing units characterized by at least one of the following conditions: (1) overcrowding; (2) without complete plumbing; (3) without complete kitchen facilities; and (4) occupants pay more than 30 percent of their income as rent.
	OVERCRWD	percent of housing units with more than 1.01 persons per room (i.e., overcrowding), 1980
V.	Population Trends	
	CPOP6080*[b]	percent change in population, 1960-80
	CPOP7080*[b]	percent change in population, 1970-1980, using 1980 boundaries
	CHOUSE*[b]	percent change in households, 1970-80, using 1980 boundaries
VI.	Other	
	CRIME*	number of violent crimes per 10,000 persons, 1980
	CHCRIME	net change in number of violent crimes per 10,000 persons, 1976-80
	DENSITY*	population per square mile (using 1980 population and 1975 land areas)

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* Variables included in this Report's initial analysis of community development need.

a. Appendix A gives the data sources for each variable and discusses any missing data problems.

b. These variables are inverse indicators of need and distress. This means that a higher (lower) percentage indicates lower (higher) per capita need.

Two approaches were followed to select these indicators. The first approach is based on the assumption that decline or stagnation of certain economic and population variables indicates a greater degree of distress or need than does more rapid growth. To take account of problems associated with decline, this study relied extensively on population and economic change measures. Changes in population and households are inverse indicators of need, since they frequently reflect middle-class flight from central cities and the problems associated with a declining tax base and a decrease in the demand for inner city housing. As demonstrated in Chapter 2, measures of distress tend to be concentrated to a much greater degree in cities losing population than in growing cities.*

Changes in employment and retail sales volume are indicators of economic performance. In 1977, economic development activities under the CDBG program were clarified and greatly expanded by legislation that added a new objective: "the alleviation of physical and economic distress through the stimulation of private investment and community revitalization in areas with population outmigration or a stagnating or declining tax base." Thus, economic decline variables not only serve as proxies for lack of economic opportunity and detrimental living conditions but also reflect objectives written directly into the CDBG legislation.

The second approach to selecting need indicators involved a search for socioeconomic variables correlated with detrimental living conditions and neighborhood instability.** In this method, environmental conditions are measured by indirect surrogates rather than by direct measures of urban blight. Studies of housing abandonment and data on neighborhood problems from HUD's Annual Housing Survey were the main basis for selecting these indicators.*** As shown in Table 3.2, Annual Housing Survey data show a

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* It should be mentioned, however, that most research on the relationship between population loss and city problems has been conducted for large rather than small cities. (For example, Chapter 6 of the 1979 report City Need and Community Development Funding showed a close association between population loss and fiscal problems in 83 of the largest central cities.) As noted in Chapter 2, population loss, like other indicators of urban conditions, may not always be closely associated with high levels of city problems, particularly in small cities.

** Following these two approaches in searching available data for need indicators does not imply that no overlap exists between conditions of decline and socioeconomic variables that reflect detrimental conditions. In fact, as indicated in Tables 2.4 to 2.10 of Chapter 2, the opposite is true. Compared to growing cities, declining cities show a higher incidence of female-headed households, poor persons, minority populations, per capita crime, and unemployment.

*** Housing abandonment studies are reviewed on pages 52-54 of City Need and Community Development Funding. These studies conclude that neighborhood instability and blight are associated with conditions such as concentration of low-income families, old and substandard housing, rental properties suffering from deferred maintenance, and a declining rate of home ownership.

Table 3.2 Housing and Neighborhood Problems for Several Subgroups of the Population and Pre-1940 Housing in Central Cities[a]

	Central City Averages	Black Households	Female-Headed Households	Low-Income Households[b]	Welfare Households	Pre-1940 Renter Units[c]	Pre-1940 Owner Units[c]
I. Housing Problems[d]							
1. Percent with selected housing deficiencies[e]	5.7%	10.3%	7.3%	9.3%	16.6%	13.2%	3.2%
2. Percent rating their house as only a poor or fair place to live (as opposed to good or excellent)	24.0	40.4	28.9	34.1	49.9	42.8	15.1
II. Neighborhood Problems							
1. Percent living near abandoned buildings	11.1	25.8	13.1	18.1	28.6	21.6	12.7
2. Percent living in neighborhoods with rundown housing	15.3	22.7	16.2	19.6	27.9	22.7	17.3
3. Percent rating their neighborhoods as only a poor or fair place to live	29.2	48.2	33.1	38.5	54.5	43.8	27.4
4. Crime is so bothersome that resident wishes to move	9.1	13.2	10.0	10.9	18.9	13.5	8.0

a. This Table is based on Tables F.2, F.18 to F.21, and F.23 from City Need and Community Development Funding. As explained on pages 337-338 of that report, it was not possible to distinguish on the data file between the central city and the noncentral city portions of medium-sized SMSA's (SMSA's greater than 250,000 with a central city less than 250,000 or a non-central city portion less than 250,000). The households in these SMSA's accounted for approximately 15 percent of all households and 20 percent of all households in SMSA's. The percentages of housing and neighborhood problems for these SMSA's tended to be equal to, or slightly below, those for the aggregate of SMSA's. For further discussion of the accuracy and reliability of the estimates, see Appendix B, Annual Housing Survey: 1976 General Housing Characteristics (U.S. Bureau of the Census 1976).

b. Low income is defined as households with less than $5,000 in income in 1976.

c. See Chapter 6 below and pages 108-116 of the 1979 report for additional data on pre-1940 housing.

d. The data in the Table were gathered in 1976. It is unlikely that relationships among the various categories have changed much since then.

e. A more comprehensive measure of housing deficiencies is analyzed in Chapter 6. The measure used in this table includes units with at least two of four problems: electrical, heating, broken plaster, and roofs (see Table G.1 in Appendix G for a more complete definition).

higher than average incidence of housing and neighborhood problems for female-headed households, black households, and low-income households. For instance, abandoned buildings in the neighborhood were observed for 25.8 percent of black households, compared with 11.1 percent for all central city households. About 38 percent of low income households rated their neighborhoods as only a fair or poor place to live, compared with 29 percent for all central city residents.

Pre-1940 housing is a proxy for housing and neighborhood problems and a measure of the costs of maintaining or rehabilitating an aging public infrastructure.* The 1979 study found a systematic association between pre-1940 housing, rundown housing, and neighborhood blight. These associations held across regions, income classes, renter-owner subgroups, and disadvantaged population groups (for example, female-headed households).

For central cities, pre-1940 units held by renters typically have twice the rate of problems of pre-1940 units held by homeowners (see Table 3.2). For instance, 42.8 percent of households living in pre-1940 rental units considered their housing only poor or fair, as compared with 15.1 percent of owners of pre-1940 units. For this reason, renter and owner units will frequently be analyzed separately. Because of their low incidence, units without plumbing and overcrowded units are combined with two other indicators of rental problems -- inadequate kitchen facilities and rent representing more than 30 percent of household income.**

The number of persons without a high school education and the number of unemployed are measures of economic problems and low income.*** Along with aged persons, these groups rely on city governments for housing, health

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* Chapter 6 provides a complete discussion of pre-1940 housing, overcrowded housing, and poverty as indicators of housing and neighborhood problems.

** In central cities, owner-occupied overcrowded units represented approximately one-third of all overcrowded units in 1976. Such units exhibit a much lower incidence of problems than renter-occupied overcrowded units (see Table F.17 in City Need and Community Development Funding). For example, whereas 53 percent of renters in overcrowded units rated their house poor or fair, only 17 percent of owners did so, which is below the average of 24 percent for central city households (See note a of Table 3.2 for qualifications to these estimates).

*** Two unemployment-related measures are included. The 1981 unemployment rate reflects problems in older industrial cities that are especially suffering from the current recession. However, given shifts in our economy from manufacturing, this variable is probably reflecting these cities' basic loss of competitive position, in addition to recessionary impact. The number of employed in early 1980 as a percentage of the working-aged population -- an inverse indicator -- measures opportunities for work during a period of relatively high employment. Neither measure considers the duration of unemployment. Consequently, unemployment need may be understated for areas suffering chronic unemployment or underemployment, and it may be considerably overstated for growing areas where brief periods of unemployment are a normal part of labor attraction and turnover.

care, recreational services, job training, and other public services. The higher the density, the more intensive the use of waste and sanitation facilities. As a general rule, adverse externality effects increase with population and housing density. Furthermore, city expenditure studies indicate that density has a significant positive effect on per capita city expenditures (Weicher 1970 and Fredland 1974).

Appendix G uses city level data from HUD's Annual Housing Survey to test the validity of indicators used for CDBG purposes. Results indicate a pattern of correspondence between the variables and housing and community development problems reported in the Annual Housing Survey.*

C. Data Problems

A few data problems should be mentioned before the analysis. First, despite the availability of the 1980 Census, certain of the indicators are becoming increasingly out-of-date. Employment and sales value data are collected at 5-year intervals, and the most recently published Census Bureau survey was conducted in 1977. These data, therefore, do not reflect the impact of the ongoing recession on cities.

Second, the 1980 Census did not consider cost-of-living differences among cities in defining poverty. Current poverty figures understate actual poverty in cities with above-average costs. Unfortunately, there is no overall cost-of-living index for a significant number of SMSA's, much less for all entitlement cities in the CDBG program. Even the intercity cost-of-living index published by the Bureau of Labor Statistics (BLS) is restricted to 40 SMSA's.**

A third problem is the undercounting of poor persons (especially minorities) in some cities. This affects the unemployment estimates as well as poverty and income data.

A fourth problem is that, in computing rates of change for trend variables with a base year before 1970, this study did not adjust for cities whose boundaries have expanded through annexation or consolidation. For

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* Because it includes direct measures of housing and neighborhood problems and also reflects the views of citizens about their neighborhoods, the Annual Housing Survey will be used to supplement those analyses based on more quantitative, Census-type variables. This will provide a better "feel" for what the quantitative variables are measuring. See Appendix G for further discussion of the usefulness of the Annual Housing Survey data for formula analysis.

** It should be noted that section 102(a)(9) of Public Law 93-383 specifically directs the Secretary to follow criteria provided by the Department of Commerce, but "taking into account and making adjustments, if feasible and appropriate and in the sole discretion of the Secretary, for regional and area variations in income and cost of living." The fact that the Census does not consider intercity cost of living differences in defining poverty explains why such adjustments are not made.

example, in computing the change in population from 1960 to 1980 for a city that increased its area during this period, an adjustment of the city's 1960 population to include the 1960 population of the annexed area was not computed. The resulting percentage change is thus higher than if calculations had been made assuming a fixed boundary. Such cities thus appear less needy. It is likely that this lack of adjustment does not significantly distort the analysis, since the annexed areas generally have fewer problems than the original core areas (Cuciti 1978, p. 21) and the demographics of the overall city (which are fixed at a point in time) are the standard of comparison for most need variables.

D. Need Indicator Correlations

Appendix H contains the intercity correlations among need indicators.* It shows that not all variables are highly correlated, which suggests that community development problems are multidimensional. However, compared with results from the previous reports based on analysis of 1970 Census data, the correlations in Appendix H suggest that need indicators are more closely related in 1980 than in 1970. Poverty is now much more highly correlated, not only with most static indicators -- e.g., the unemployment rate, low education, female-headed households, nonwhite population, and aged housing -- but with trend indicators such as change in population and retail sales. Poverty is now a much broader indicator of community development problems than in 1970. What happened, of course, is that during the 1970's the poverty rate fell in many growth areas and increased in many older declining areas; now it is a better proxy for problems such as unemployment and slow growth in retail sales.

Poverty information was not updated during the 1970's, which meant that HUD necessarily used 1970 data to proxy conditions in the late 1970's and early 1980's. Appendix H shows the disadvantages of being unable to update a variable such as poverty to reflect current conditions. The 1970 poverty rate exhibits rather low correlations with most 1980 indicators. Current poverty data during the late 1970's would have provided HUD with a direct measure of the poor population and a better proxy for several other indicators of community development problems.

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* So that community development needs as a whole may be more accurately reflected, a weighting system is used in the correlation and factor analysis that assesses the importance of a particular city on the basis of its total population. This weighting system "blows up" the number of cases so that it equals the total population in the 593 entitlement cities. (Because of missing data, the number of cities was reduced from 627 to 593.) Of course, each person in a particular city "receives" that city's percentages and per capita amounts for the various need variables. This weighting procedure appears preferable to assigning an equal weight to the per capita and percentage quantities for each city, which would occur if unweighted analysis were conducted for the 593 cases. A 20 percent deviation between a per capita need score and a per capita formula amount is much more important in the case of New York City than Utica, simply because of New York's much larger population. Appendix J presents correlation and factor results obtained by analyzing the 593 cases without weighting, that is, giving each case (city) a weight of 1.

Another indication of the increased "proxy" value of poverty is its high correlations with direct indicators of housing and neighborhood problems in large central cities (see Appendix G). No matter which problem is considered -- abandoned houses, rundown neighborhoods, poor opinion of dwelling units, inadequate public services -- 1980 poverty is much more closely associated with the problem than 1970 poverty and, overall, is a better predictor of problems than aged housing.

II. COMMUNITY DEVELOPMENT NEEDS INDEXES

A. Dimensions of Community Development Need

As the discussion in Chapter 2 illustrates, conducting needs analysis in terms of each separate variable would result in a complicated, cumbersome analysis. In addition, separate analyses would not reveal the relationships among the need variables. Therefore, as in previous reports, factor analysis is used to reduce the indicators to a smaller number of factors, each of which delineates a separate group of intercorrelated variables. The three factors, referred to as dimensions of community development need, have the same interpretation as those in the 1979 report -- city age and decline, poverty, and density.

Factor analysis is a technique frequently used by statisticians to simplify and clarify analysis involving many highly correlated variables. Its use is appropriate in this Report if one assumes that urban problems in different cities have common bases and that these bases can be isolated for analysis. Factor analysis specifies sets of variables that seem to vary in similar ways. On an intuitive level, what factor analysis attempts to do is to identify underlying problems that may not be directly observable but have effects on observable variables. The observable variables are used to describe and measure the underlying problems. Examination of the factor results in this Report indicated that several poverty-related variables -- low income, minority population, poverty, female-headed households, low employment rates, low education -- were critical to the definition of one of the factors, thereby establishing it as the "poverty" factor or poverty dimension of community development need. In other words, as their high correlations with this factor showed, these poverty-related variables tend to "move together" as a group, separate from variables (e.g., aged housing) that define the remaining factors.* Table 3.3 defines each factor in terms of need indicators with high correlations with the factor. An intuitive idea of what each dimension represents can be gained by carefully examining the variables in Table 3.3 that define each factor.

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* As discussed above and in Appendix H, the need variables are now more highly correlated among themselves than in 1970. The implication of this for the factor analysis is that separate factors are not as clearly defined as when 1970 data were used. This issue is discussed in more detail below and in Appendix K.

Table 3.3 Dimensions of Community Development Need

Factor	Dimension Name	Variables Defining Dimension[a]
1	Age and Decline	(1) Change in households, 1970-80 (inverse relationship)
		(2) Change in population, 1970-80 (inverse)
		(3) Change in population, 1960-80 (inverse)
		(4) Pre-1940 housing
		(5) Change in retail sales, 1967-77 (inverse)
		(6) Change in employment (retail, wholesale, and service), 1967-77 (inverse)
2	Poverty	(1) Poor persons
		(2) Per capita income (inverse)
		(3) Persons without high school education
		(4) Female-headed families
		(5) Employment rate (inverse)
		(6) Minority population
3	Density	(1) Renter problems
		(2) Violent crimes
		(3) Population density
		(4) Minority population
		(5) Poor persons
		(6) Female-headed families

a. Variables are listed in the order of their factor loadings. Although all variables with a loading greater than .45 are listed, the reader should refer to Appendix K to identify variables with very high (e.g., .70 or .80) loadings. It should be emphasized that association between variables at the intercity level does not necessarily imply cause and effect.

Factor analysis simplifies discussion in this Report by reducing the analysis from 18 variables to 3 factors. This simplification does not involve a high cost in terms of lost information because the technique isolates the key differences among the variables and builds those key differences into the definition of the factors. The factors themselves are defined statistically; the role of judgment is limited to specifying what variables are included in the factor analysis and to determining which factors appear to be meaningful for the problem being studied. Appendix I further explains the factor analysis technique and shows how it was used to reduce the 18 variables to 3 hypothetical dimensions of need. Appendix K also discusses other factor analyses run to test the sensitivity of the results when particular indicators are included or excluded.* The purpose here is simply to provide an intuitive discussion of the factor results, what they represent, and how they can be used to evaluate CDBG funding patterns across cities.

B. Interpreting the Factor Results

For each of the three dimensions of need, the factor analysis provides an index score for each city that can be used to measure the relative variation in per capita need among cities.** For instance, factor analysis transforms a city's percentages on several poverty-related variables into a single composite score that indicates the city's position relative to other entitlement cities on the poverty dimension. In general, a city will have a high score on a particular factor (dimension) if it has a high percentage for each of the variables important in defining the factor. A city characterized by high percentages of pre-1940 housing, population loss, and job loss receives a high index score on the age and decline factor. Similarly, a city characterized by high population density, crime, and renter problems receives a high score on the density dimension. Pittsburgh, for example, has a high score on the age and decline dimension (1.53), Atlanta on the poverty dimension (1.74), and Newark on the density dimension (2.23). (See Table 3.4 for examples of cities ranking high and low on the three factors.) Some cities have high scores on all three dimensions; these, of course, are the more distressed cities.

For each dimension, the average score for the population of all cities is zero.*** Positive scores indicate above-average per capita need for that factor; negative scores indicate below-average need. Need scores measure

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* For example, factor analyses were conducted without the two population change variables, without per capita income, with overcrowded housing replacing the renter problem variable, with aged housing divided into its renter and owner components, and with black and Hispanic populations considered separately.

** The number of cities was reduced from 627 to 593 because of missing data (see Appendix A).

*** Since the factor analysis weighted each city by population, an average score of zero will result for a particular factor only if its weighted average is computed. That is, the average score for the cities will not necessarily equal zero. The reasons for weighting the cities according to population were given in the footnote on page 57; briefly, the goal was to reflect need across populations rather than across cities. However, Appendix J provides the factor results obtained when the analysis was repeated using 593 equally weighted cases.

No - it's so NYC counts for more than Moss Point, Ms.

60 think they weighted to reflect the 34 missing cases (627-593)

Table 3.4 Examples of High-Need and Low-Need Cities on Three Dimensions of Community Development Need

Dimension	High Need	Score[a]	Low Need	Score
(1) Age and Decline	Oak Park, Ill.	1.91	San Antonio, Tex.	- .97
	Utica, N.Y.	1.65	San Diego, Calif.	-1.06
	Johnstown, Pa.	1.60	Phoenix, Ariz.	-1.27
	Pittsburgh, Pa.	1.53	Houston, Tex.	-1.55
	Lynn, Mass.	1.50	San Jose, Calif.	-1.60
	Minneapolis, Minn.	1.49	Arvada, Colo.	-1.61
	Buffalo, N.Y.	1.44	Las Vegas, Nev.	-1.71
	St. Louis, Mo.	1.40	Austin, Tex.	-1.84
	Wheeling, W.V.	1.39	Mesa, Ariz.	-2.02
	St. Paul, Minn.	1.39	Pharr, Tex.	-2.89
(2) Poverty	East St. Louis, Ill.	5.03	Redford, Mich.	- .45
	Camden, N.J.	3.88	San Jose, Calif.	- .57
	Laredo, Tex.	3.36	Wichita, Kans.	- .72
	Compton, Calif.	2.63	Denver, Colo.	- .73
	Newark, N.J.	2.62	Portland, Oreg.	- .90
	Detroit, Mich.	2.05	Minneapolis, Minn.	-1.04
	Albany, Ga.	1.84	Scottsdale, Ariz.	-1.49
	Atlanta, Ga.	1.74	Richardson, Tex.	-1.77
	Baltimore, Md.	1.57	Oak Park, Ill.	-2.20
	Cleveland, Ohio	1.11	Greenwich, Conn.	-3.12
(3) Density	Miami, Fla.	2.47	San Antonio, Tex.	- .51
	Newark, N.J.	2.23	Peoria, IL, Ill.	- .56
	East Orange, N.J.	1.89	St. Paul, Minn.	- .61
	New York, N.Y.	1.72	Knoxville, Tenn.	- .67
	Compton, Calif.	1.39	Tacoma, Wash.	- .69
	East St. Louis, Ill.	1.28	Louisville, Ky.	- .75
	Patterson, N.J.	1.25	Indianapolis, Ind.	- .95
	Boston, Mass.	1.20	Bristol, Tenn.	-1.53
	Oakland, Calif.	1.08	St. Joseph, Mo.	-1.72
	Jersey City, N.J.	.72	Redford, Mich.	-2.05

a. On each factor, the average score for the population of the 593 cities included in the analysis equals zero. The cities listed are not the top and bottom 10 cities on each factor but are examples of the most and least needy cities.

Lists are scores on the Dimension (not overall) - Given this why not show most + least needy? I guess they wanted to get big cities in there + the stats were small city dominated

relative, not absolute, need; that is, they compare need among the entitlement cities. A negative score does not mean that a city is without need, and a positive score does not mean that a city is highly needy. However, a city with a negative score does have less per capita need than a city with a positive score.*

C. Results Are More Complicated in 1980

At first glance, the factor results appear to be similar to those in the 1979 formula report. In that report, which was based heavily on 1970 Census data, need indicators also reduced to three dimensions, interpreted as age and decline, poverty, and density. That report emphasized that the factor results highlighted a fundamental tradeoff in allocating CDBG funds among cities -- some cities experienced problems associated with low income, while others experienced problems of economic decline and density. In addition, this tradeoff exhibited a definite regional character. Poverty was concentrated in the South, whereas aged housing, economic decline, and density were concentrated in the Northeast and North Central regions. The original 1974 formula for allocating funds exhibited a strong correlation with the poverty dimension of need but very low correlations with the nonpoverty dimensions. This clearly demonstrated the major problem with the 1974 formula: its lack of response to the severe physical, social, and economic problems in older, deteriorating central cities. The factor results showed that aged housing and population decline -- not intercity poverty as measured in 1970 -- were highly correlated with economic decline and other conditions associated with urban blight.

The 1980 data, on the other hand, present a more complicated picture. As noted earlier, poverty is much more correlated with other indicators now than in 1970. This shows up in this study's results as higher loadings on the poverty dimension for employment and population decline, unemployment, low education, female-headed households, and increase in black population. (See Appendix I.) It is also reflected in the "splitting" of the poverty variable over two dimensions; poverty's loading on the density factor reflects its moderate correlations with crime and rental housing problems.** Below it

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* In the factor analysis solution, all variables are expressed as deviations around the mean for the variable. This approach assumes, for example, that any poor population represents a need and that the severity of the need is measured by the deviation of the percentage of poor persons in a city from the weighted average for the cities. Such an assumption raises the additional question of the "cardinal" and "ordinal" properties of the need variables and need indexes developed in this study. The evaluation of the current dual formula in chapter 5 is based on actual need index scores rather than simply on the city rankings resulting from the indexes. Although the analysis thus assumes that the indexes provide more than merely ordinal information (rankings), it is emphasized that the cardinal properties in this study relate only to the indexes and not to any absolute measures of need.

** In factor analysis, a variable that "splits" (i.e., receives moderate loadings on more than one factor) would be only an average proxy for the variables defining a particular dimension, but would likely be a good proxy for a composite index that combines the various dimensions. (This assumes, of course, that the variable is a reliable indicator of urban problems, such as poverty.) Female-headed households with children is another variable that "splits" across the various factors and therefore tends to be a good indicator of overall distress.

will be shown that the poverty factor can be further split into two dimensions, one emphasizing social problems and the other low-income problems.

An examination of city rankings for the various factors provided additional information on what each represents, its reliability as an indicator of urban problems, and how it is influenced by including or excluding particular variables in the analysis. Therefore, each factor is discussed in more detail below. When it is helpful, scores and city rankings are examined in terms of other variables, such as tax effort and direct measures of housing and neighborhood problems. This should provide a sense of the relative importance of each factor as an indicator of urban problems.

D. Age and Decline

Table 3.5 reports average scores for the three factors by region, population size, and city type (central city versus suburban). Urban problems associated with aged housing and economic and population decline are concentrated in the Northeastern and North Central cities. These regions exhibited above-average scores and accounted for 106 of the 118 cities in the top quintile of need on this dimension.* The negative average scores for the South and West reflect, of course, the high rates of population and economic growth and the low percentages of aged housing in these regions. Pittsburgh, Detroit, Buffalo, Cleveland, and St. Louis all fall into the most needy category; the growing cities of San Jose, Austin, Houston, Phoenix, and San Diego are in the least needy category.

Reflecting their recent population decline, suburban cities in the Northeast and North Central regions received above-average scores on the age and decline factor. As noted earlier, these cities are frequently high-income cities that began to experience problems such as unemployment and job loss during the 1970's. More analysis of the types and intensity of problems in these declining suburban cities is needed before their relative distress can be determined.** It should be noted that many high scores of declining suburban cities for the age and decline factor were balanced by low scores for the poverty and density factors. Compare, for instance, the age and decline and poverty scores for Oak Park, Illinois, in Table 3.4.

The relationship of age and decline to housing and neighborhood problems is examined in Table 3.6 for large central cities. Somewhat surprisingly, the correlations are rather low, particularly when compared to those for the poverty factor. For example, the correlation of age and decline with percent

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* Quintile analysis will be used in the remainder of this Chapter to describe the distribution of factor scores. In quintile analysis, cities are ranked from the most needy (those with high scores) to the least needy (those with low scores) on a particular factor. Quintiles are then formed by dividing the ranked cities into five equal parts. The first quintile therefore includes the top or most needy 20 percent of cities for a particular factor; the fifth quintile includes the bottom or least needy 20 percent.

** This statement does not refer to severely distressed suburban cities such as Compton, East St. Louis, and Camden; their need for community development funds is quite evident.

Table 3.5 Average Factor Scores by Region and City Type[a]

	Dimensions of Need			Separate Poverty Factors[b]	
	Age and Decline	Poverty	Density	Low Income	Social
Northeast	.77	.06	.46	.13	-.07
Large CC's	.74	.37	1.00	.31	.27
Small CC's	.87	-.09	-.67	.48	-1.04
Satellites	.80	-1.01	-.53	-.88	-.49
North Central	.54	.15	-.51	.03	.21
Large CC's	.65	.47	-.21	.20	.61
Small CC's	.38	-.07	-1.00	.23	-.60
Satellites	.24	-.76	-1.06	-.83	-.36
South	-.72	.39	-.19	.31	.22
Large CC's	-.68	.42	-.07	.23	.45
Small CC's	-.61	.62	-.54	.78	-.24
Satellites	-1.29	-.59	-.13	-.33	-.57
West	-.55	-.59	.29	-.48	-.32
Large CC's	-.42	-.52	.45	-.38	-.35
Small CC's	-.94	-.24	-.30	.04	-.56
Satellites	-.73	-.87	.11	-.90	-.14
All 593 Cities	0.00	0.00	0.00	0.00	0.00

a. The distribution of the composite needs score across regions and city types is given in Table 3.7.

b. The average scores for separate poverty-related factors were obtained when the minority population was divided into its black and Hispanic components. See Appendix K and the text for further explanation.

Table 3.6 Dimensions of Community Development Need Correlated With Housing and Neighborhood Problems in 38 Large Central Cities

	Dimensions of Need			Separate Poverty Dimensions		
	Age and Decline	Density[a]	Poverty	Social	Low Income	Composite Needs Index[b]
I. Housing Problems						
A. Housing condition is rated as only fair or poor	-.06	.64 (.49)	.72	.62	.56	.78
B. Specific Housing Deficiencies						
1. Electric deficiencies	.46	.09 (.03)	.13	.24	.02	.39
2. Broken plaster	.47	.54 (.46)	.57	.47	.47	.82
3. Cracks and holes	.07	.49 (.36)	.60	.59	.42	.67
4. Mice or rats	.16	.34 (.22)	.56	.51	.43	.47
C. Housing Inadequacy Index[c]	-.07	.59 (.45)	.36	.42	.22	.42
II. Neighborhood Problems						
A. Neighborhood as a place to live is rated as only poor or fair	.21	.56 (.43)	.75	.57	.65	.85
B. Presence of undesirable conditions and services						
1. Abandoned buildings	.36	.16 (.07)	.72	.45	.69	.77
2. Deteriorating housing	.55	-.01 (.02)	.15	-.05	.23	.40
3. Litter	.37	.45 (.36)	.47	.40	.38	.68
4. Crime	.24	.33 (.33)	-.03	-.01	-.03	.21
5. Inadequate police	.14	.49 (.49)	.42	.24	.42	.55
6. Inadequate schools	.36	.25 (.16)	.37	.32	.29	.54
III. Occupant is Bothered by Undesirable Conditions						
1. Abandoned buildings	.40	.14 (.12)	.63	.33	.63	.75
2. Deteriorating housing	.47	.10 (.13)	.35	.08	.41	.56
3. Litter	.34	.31 (.26)	.48	.37	.39	.66
4. Crime	.15	.44 (.51)	.19	-.02	.27	.40
IV. Occupant Wishes to Move Because of Undesirable Conditions						
1. Housing deficiencies	.16	.60 (.50)	.67	.54	.57	.78
2. Abandoned buildings	.32	.21 (.18)	.66	.38	.64	.76
3. Deteriorating housing	.35	.21 (.20)	.60	.31	.59	.72
4. Litter	.22	.35 (.31)	.67	.43	.61	.76
5. Crime	.22	.43 (.44)	.55	.27	.59	.70
6. Inadequate public services	.10	.50 (.48)	.54	.33	.52	.66

Source: Annual Housing Survey (see Table G.1 in Appendix G for definitions of AHS variables).

a. Correlations in parentheses are for index scores on the density dimension from the factor analysis that separates the minority population into its black and Hispanic components (see Appendix K). All correlations are unweighted Pearson correlation coefficients.

b. Composite needs index is equal to .40 (POVERTY) + .35 (AGE AND DECLINE) + .25 (DENSITY). See text for further discussion.

c. The housing inadequacy index is defined in Appendix L.

of abandoned houses equals 0.35, compared with a correlation of 0.71 for the poverty factor. An examination of individual city data showed that certain declining cities such as Minneapolis and Seattle have a relatively low incidence of housing and neighborhood problems. Furthermore, some of the most severe housing and neighborhood problems show up in cities that are characterized not so much by their population decline as by their large percentages of high-poverty groups.* Hence, the correlations with the age and decline factor are not as high as one would expect.**

A final note on this factor is that it no longer serves as the main proxy for several indicators that were not so highly correlated with 1970 poverty. Low education, female-headed households, and unemployment are now much more closely associated with the poverty dimension.

E. Poverty

Poverty scores are highest in central cities in the South and large central cities in the North Central regions. They are particularly high in large declining central cities, such as Detroit, Atlanta, New Orleans, and Newark, and small central cities in the South. The South accounted for almost one half of the 236 cities in the top 2 quintiles of poverty need. Suburban cities in all regions and central cities in the West exhibited the lowest average poverty scores. Only 9 of the 129 Western cities were in the top quintile of need on this dimension. Examples of the least needy cities include San Jose, Denver, Portland, and Minneapolis.

As noted earlier, recent shifts in poverty have made it a much broader indicator of urban problems. This is reflected in the relatively high correlations reported in Table 3.6 between poverty scores and indicators of housing and neighborhood problems.***

An examination of individual city data suggests that different types of problems are included within the poverty factor as currently defined. For instance, there are cities with above-average poverty rates that also have relatively high per capita income levels (e.g., San Francisco, Denver, Dallas, and Washington, D.C.). Many smaller cities appear more distressed with respect to income than poverty. Furthermore, many high-poverty cities seem to have large concentrations of blacks. The percentage of black population is much more highly correlated with housing and neighborhood problems

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* Between 1960 and 1980, Newark and New York did not decline as much as cities such as Cleveland and St. Louis, partially because of the increase in their minority populations, particularly during the 1960-1970 period.

** The reliability of age of housing as an indicator of housing and neighborhood problems is discussed in Chapter 6. HUD's 1979 report showed that aged renter units were more highly associated with problems than aged owner units.

*** The remainder of this section disaggregates the poverty dimension into a low income dimension and a social dimension of need. Readers not interested in this more technical discussion should turn to page 68 for the discussion of the density dimension.

than the percentage of persons of Hispanic origin. The Hispanic population, on the other hand, shows a higher correlation with renter problems (particularly overcrowding) and crime, which is reflected in the density dimension (see Appendix H).

To examine these issues more closely and provide a better understanding of different types of poverty problems in urban areas, the factor analysis was reestimated with percent black and Hispanic as separate variables.* As a result, the poverty factor split into two separate factors. The first emphasizes low income; it is defined by low education, low employment rate, poverty, and low per capita income. Smaller cities, located primarily in the South, and large Southern cities such as El Paso and San Antonio scored high on this poverty factor, which will be called the income factor. On the other hand, San Francisco, Denver, Los Angeles, Oakland, Washington, Dallas, and Minneapolis exhibited lower scores, obviously because their residents have above average incomes. The second poverty factor was defined by the existence of high-poverty groups such as black and female-headed households. Needy cities on this poverty factor included Detroit, Newark, Atlanta, Washington, Oakland, and Baltimore, all large cities with high percentages of minorities.

This second poverty factor -- which will be called the social factor -- is heavily concentrated in large, declining cities of the Northeast and North Central regions (see Table 3.5). While these cities are also needy on the income factor, their major problems appear to be associated with a great incidence of high-poverty groups that demand a considerable level of public support.

The income factor, on the other hand, focuses more on problems in small central cities. As shown in Table 3.5, the average score for small central cities was higher than for large central cities in each of the four Census regions. Even small central cities in growing areas scored high on this factor. As noted above, higher income central cities such as San Francisco appear relatively nonneedy on this factor. As on the single poverty dimension, suburban cities tend to be nonneedy on both factors.

Which poverty factor is the best indicator of urban problems? With the information at hand, it is difficult to tell. While one might think that the social factor, concentrated in large Northern central cities, better represents urban problems, this did not appear to be the case when the two sets of factor scores were correlated with measures of housing and neighborhood problems (see Table 3.5) in large central cities. Therefore, this Report will focus on the single poverty dimension in the remainder of the analysis. However, one should keep in mind the different patterns of urban problems subsumed within this factor.

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* Aged housing was also divided into renter and owner units because of the higher incidence of problems in aged renter units.

F. Density

As an indicator of urban problems, density is the most difficult factor to interpret. It is associated with renter problems (e.g., overcrowding, high rent burden), crime, and minority population; in addition, poverty and female-headed households exhibit moderate correlations with this factor.

Above-average scores on the density dimension of need are concentrated in the Northeast and West; below-average scores are concentrated in the South and North Central regions (see Table 3.5). This was the only dimension of need on which the Western cities did not exhibit a negative, or below-average, score.

The density dimension is concentrated in large cities. As shown in Table 3.5, in each region large central cities exhibited higher average scores than smaller cities. New York, Boston, Miami, Newark, and Oakland are examples of needy cities, while San Antonio, Knoxville, St. Paul and Indianapolis are relatively nonneedy on this factor. Reflecting its large-city focus, the density dimension exhibited a 0.62 correlation with tax effort (defined as noneducation taxes in 1980 as a percentage of income in 1979). The results are consistent with city expenditure studies indicating that density has a significant, positive effect on per capita city expenditures.

The density dimension also reflected problems of overcrowding in cities with high percentages of Hispanic population. The fact that many of these cities, located primarily in Texas and California, exhibited above-average levels of poverty explains the moderate loading of poverty on this dimension. However, several California cities that scored high on this dimension are relatively well off, tending to complicate the interpretation of this factor.

III. A SINGLE INDEX OF COMMUNITY DEVELOPMENT NEED

A. Construction of the Single Index

A single index that ranks cities in terms of overall community development need can be derived by combining the three sets of factor scores discussed above. However, to do this requires assigning weights to the different factors. One method would be to assign each dimension an equal weight. A more acceptable method is to assign greater weights to those dimensions that most closely reflect the goals of the legislation. For instance, an economic development or Urban Development Action Grant (UDAG) approach would most likely emphasize the age and decline dimension. A judgment has to be made about the relative importance of urban problems identified on each dimension. This involves, for example, comparing the need of suburban areas that have begun to experience problems with growing areas in the South that continue to exhibit high poverty rates.

Given the lack of agreement about the relative importance of various problems, much of the analysis in this study will be conducted in terms of the separate indicators and dimensions of need. Following this procedure will provide readers with the necessary information to reach their own decisions about the relative equity of different funding patterns. However,

as illustrated by the previous study, an analysis using a single index can neatly summarize the responsiveness of the CDBG formula to variations in city need; furthermore, a composite index recognizes concentrations of urban problems. For these reasons, weights are assigned to the separate dimensions to calculate a composite needs score for each city. The sensitivity of the findings to different weighting schemes can be easily presented. In fact, a sensitivity analysis reported in Appendix K shows that the estimated change in the responsiveness of the CDBG formula to city need brought about by introducing the new Census data is similar under alternative measures of need. The sensitivity of the analysis to including and excluding particular variables (e.g., per capita income, overcrowded housing) in the definition of need is also discussed in Appendix K.

The previous study derived an overall index of need by assigning the following weights to the three factors:

NEED = .40 (POVERTY) + .35 (AGE AND DECLINE) + .25 (DENSITY)

The weight assigned to each dimension was based on a perception of the relevance of the variables defining that dimension to the goals of the CDBG program and on a judgment concerning the indicators forming each dimension -- their informativeness, currency, and statistical reliability. The highest weight (.40) was given to poverty because of the legislative emphasis on directing funds to areas with high concentrations of low-income persons. The next highest weight (.35) was given to the age and decline factor because it reflects the economic and physical dimensions of community development need. Age of housing is a variable associated with lower housing quality and abandonment in older, declining cities, as well as an indirect measure of the cost of maintaining an aging public infrastructure. Furthermore, the population and economic decline variables that define the age and decline dimension are not only proxies for urban blight but also are directly related to an objective of the CDBG program -- alleviating physical and economic distress in areas with population outmigration or a stagnating or declining tax base. The density dimension -- which served as a proxy for neighborhood externalities in slum and blighted areas of larger cities and as an indicator of crowding -- received a .25 weight.

The weights from the previous study will continue to be used in this study.* Included, however, in some of the analyses is a second definition of need that increases the weight of poverty from .40 to .50 and reduces the weights of each of the other two dimensions by .05, thus defining need as follows:

NEED (poverty emphasis) = .50 (POVERTY) + .30 (AGE AND DECLINE) + .20 (DENSITY)

* As mentioned above, the factors in this study are similar but not identical to those in the previous study. The implications of this for defining need are discussed below.

The weight of the poverty factor is increased because it is now a much broader indicator of urban problems than in 1970. As discussed earlier, the poverty factor is an indicator of low-income problems and a good proxy for housing and neighborhood problems such as abandonment and inadequate public services.

B. Recognizing Combinations of Problems

In spite of the need for caution in reading too much into a composite index of city need and distress, one should recall its main advantage: recognition of combinations of problems. The most distressed cities are those where age and decline, poverty, density, and crime occur together. A composite index also tends to balance out problems with individual variables or component indexes. For instance, certain reservations were noted concerning the consistency of the age and decline and density dimensions as need indicators. When the three dimensions of need are combined into a single index many of these inconsistencies are muted.*

The effects of recognizing combinations of problems can be seen by comparing the correlations of the component and composite indexes with more direct measures of housing and neighborhood problems (see Table 3.6). The composite index exhibits a higher correlation than the component indexes with practically all of the problem indicators.** In fact, the following correlations provide some support for the composite needs index as an indicator of community development problems, at least for large cities:***

Broad Indicators of Housing and Neighborhood Problems	Correlations with Needs Index
(1) Percentage of households that rate their houses as only poor or fair	.78

* Of course, if a city's need is overstated on a particular dimension, this overstatement will be included in that city's composite score. However, the composite index will rank the city much lower because of its assumed low scores on the other dimensions.

** Similarly, the composite index is more closely related to problems than individual indicators input into the factor analysis (see Appendix K).

*** There have been other tests of the needs methodology used in this report. Burchell, et al. (1980) compare the needs index from HUD's 1979 formula report with urban distress indexes developed by Nathan et al. (1976), Congressional Budget Office (1978), Department of the Treasury (1978), and Schmid et al. (1975) at the Institute for the Future. They find that the distress indexes yield similar rankings when applied to a common set of large cities. On the other hand, a study of suburban cities in the Detroit SMSA by the U.S. Bureau of the Census (1977) found that compared to a distress index developed by Nathan and Adams (1976), the HUD needs index was more highly correlated with city distress ratings from a panel of local experts. (See pages 77-81 of City Need and Community Development Funding for discussion of the latter study.)

(2)	Percentage of occupied houses in neighborhoods with abandoned buildings (as observed by interviewer)	.77
(3)	Percentage of households that rate their neighborhoods as only a poor or fair place to live	.85
(4)	Percentage of households that wish to move because of:	
	(a) housing deficiencies	.70
	(b) rundown housing in neighborhood	.72
	(c) crime	.70
	(d) inadequate public services	.66

Correlations of the needs index with more specific indicators of community development problems are given in Appendix G.

In Chapter 5, the composite needs index and each of the three component indexes will be used as criteria for assessing how well the formula distributes funds in proportion to community development needs. Neither the composite index nor its components are suggested as alternatives to the current dual formula. Because of the manner in which they are constructed, it would be impossible to use them for distributing funds. First, a formula should be simple and easily understood by recipients. The manner in which factor analysis combines 18 variables into 3 factors does not satisfy this criterion. Second, it would be difficult to include the urban counties in the factor analysis because of the difficulty of constructing the necessary variables. Third, the necessary data for the factor analysis were not available for all entitlement jurisdictions and a few had to be eliminated from the indexes.

C. Distribution of Need Across Cities -- Regional Analysis

Examination of the need scores by region and city type (Table 3.7) shows that the highest levels of per capita need exist in large central cities located in the following subregions: Middle Atlantic (a .68 average score), New England (.48), East North Central (.47), East South Central (.05), and South Atlantic (.02). Large central cities in the other regions -- particularly the Southwest, Mountain, and Pacific regions -- exhibited below-average levels of per capita need. Satellite cities in all regions exhibited below-average need. In all, approximately 55 percent of the Northeastern cities are in the top two quintiles of need, as against 46 percent for the South, 37 percent for the North Central region, and only 18 percent for the West.* Approximately 36 percent of the Western cities are concentrated in the lowest need quintile, compared to 12 percent of the Northeastern cities, 15 percent of the Southern cities, and 19 percent of the North Central cities.

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* See footnote ** on page 63 for an explanation of quintile analysis.

Table 3.7 Distribution of Need Scores Across Census Regions and City Types

	Number of Cities	Number in Top Two Quintiles of Need	Percent in Top Two Quintiles of Need	Average Need Score[a]			
				All Cities	Large Central Cities	Small Central Cities	Satellite Cities
Northeast	**143**	**79**	**55%**	**.41**	**.66**	**.10**	**-.25**
New England	60	25	42%	.02	.48	-.11	-.35
Mid-Atlantic	83	54	65%	.52	.68	.31	-.19
North Central	**153**	**56**	**37%**	**.12**	**.36**	**-.15**	**-.49**
East North Central	117	50	43%	.20	.47	-.04	-.47
West North Central	36	6	17%	-.15	-.09	-.41	-.54
South	168	78	46%	-.13	-.08	-.10	-.72
South Atlantic	74	41	55%	-.03	.02	-.03	-.46
East South Central	27	15	55%	.04	.05	-.07	b/
West South Central	67	22	33%	-.27	-.22	-.16	-.94
West	**129**	**23**	**18%**	**-.36**	**-.24**	**-.50**	**-.58**
Mountain	27	2	7%	-.61	-.50	-.50	-1.06
Pacific	102	21	21%	-.28	-.17	-.50	-.49
All Cities	593	236	40%	0.00			

a. Need is a weighted combination of the three sets of factor scores: .40 (POVERTY) + .35 (AGE AND DECLINE) + .25 (DENSITY).

b. Data are not presented because there is only one city in this category.

As in the 1979 study, the most striking results are the relatively high average score (.41) for the Northeast and the relatively low average score for the West (-.46). That the Northeast would have a high score was predictable from the earlier analysis, in which the Northeast had above average scores on each dimension of need (see Table 3.5). The most significant shifts in rankings from those reported in the previous study, however, took place for the North Central region, which became more needy (particularly on the poverty dimension), and the South, which became less needy (also on the poverty dimension). For the earlier study, 54 percent of Southern cities were in the top two quintiles of need, compared with 46 percent in this study. The corresponding percentages for the North Central region are 25 and 37 percent.

If the weight of the poverty dimension had been increased in defining total need, the average score for central cities in the South and large central cities in the Northeast and North Central regions would have increased at the expense of suburban cities in all regions and central cities in the West. Increasing the weight of the age and decline dimension would have increased the scores for most cities in the Northeast and North Central regions at the expense of the South and West. It would be practically impossible, however, to increase the total need score for the West, except by disproportionately weighting the density dimension.

D. Distribution of Need Across Cities -- City and SMSA Decline

While the regional data are interesting, a more relevant analysis from the perspective of the CDBG program is the relationship of population decline to city need. In Table 3.8 and Figure 3.1, average scores on the separate dimensions of need and the composite index are presented according to changes in city and SMSA population. The main findings follow closely those derived in Chapter 2 based on analysis of individual variables and simpler indexes of city distress:

-- As indicated by their above-average scores on the separate dimensions of need, large, severely declining cities tend to experience problems of all types, which results in their exhibiting the highest levels of overall need; on the other hand, large, growing central cities in growing SMSA's exhibit below-average scores on all dimensions.

-- The overall need of large central cities experiencing similar levels of population change decreases from declining to slow-growing to fast-growing SMSA's.

-- Declining satellite cities exhibit greater levels of per capita need than growing satellite cities (particularly those in growing SMSA's); however, except for severely declining satellite cities in declining SMSA's, their need is significantly below average for all CDBG cities.

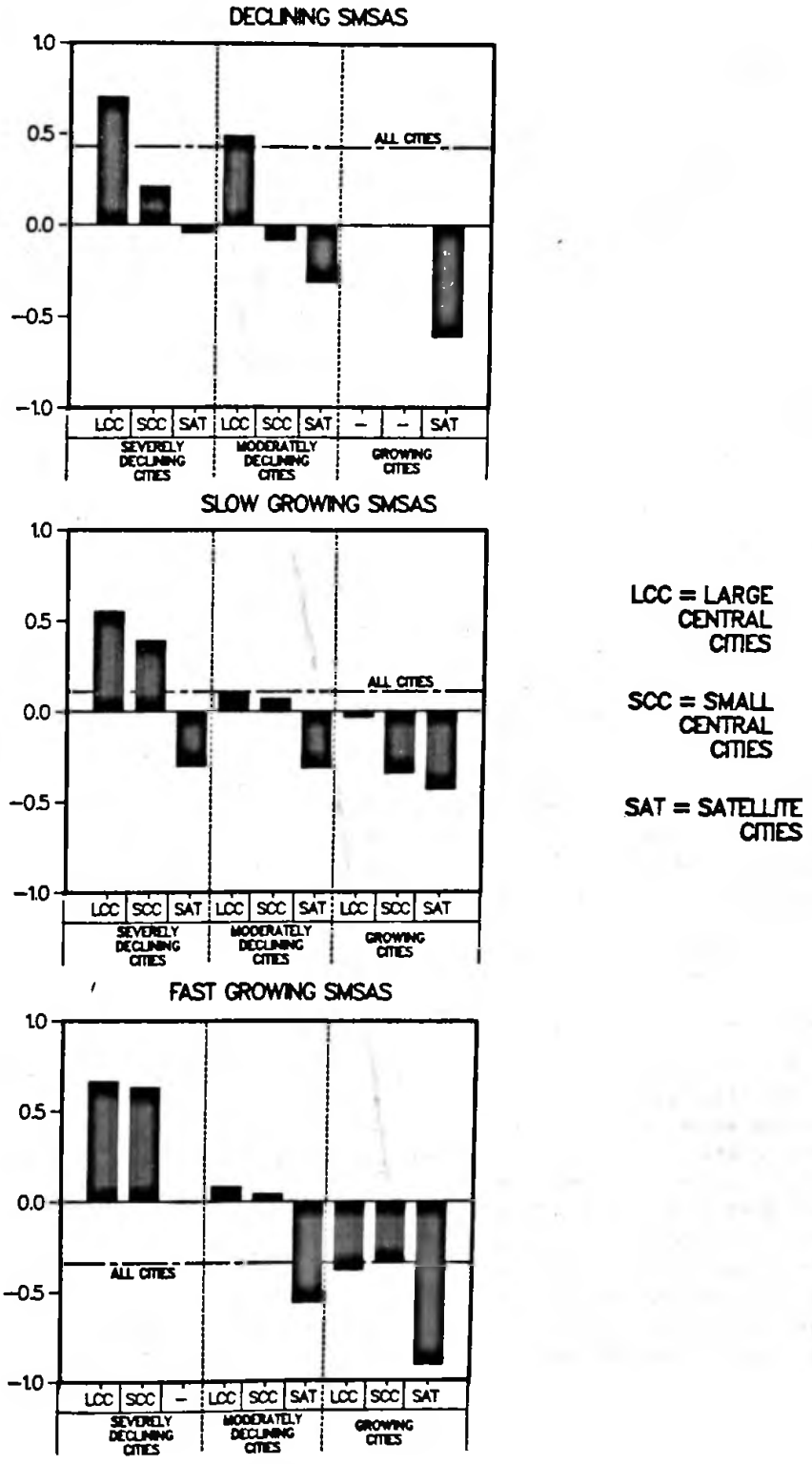
Table 3.8 The Distribution of Average Need Scores by City and SMSA Decline

	Dimensions of Need			
	Age and Decline	Poverty	Density	Composite Needs Index[a]
In Declining SMSA's	.75	.18	.41	.43
Severe Decline				
Large CC's	.78	.52	.87	.70
Small CC's	1.24	.08	-1.00	.21
Satellites	.87	-.24	-1.01	-.04
Moderate Decline				
Large CC's	.59	.51	.33	.49
Small CC's	.79	-.44	-.74	-.08
Satellites	.95	-1.35	-.43	-.31
Growth				
Satellites	-.40	-.77	-.64	-.61
In Slow-Growing SMSA's	.39	.00	-.09	.11
Severe Decline				
Large CC's	.77	.57	.20	.55
Small CC's	1.13	.51	-.85	.39
Satellites	1.18	-1.30	-.70	-.30
Moderate Decline				
Large CC's	.40	.07	-.19	.11
Small CC's	.77	.05	-.87	.07
Satellites	.42	-.90	-.40	-.31
Growth				
Large CC's	-.19	-.28	.56	-.03
Small CC's	.09	-.30	-1.01	-.34
Satellites	-.36	-.66	-.14	-.43
In Fast-Growing SMSA's	-.81	-.07	-.10	-.34
Severe Decline				
Large CC's	.05	1.23	.61	.66
Small CC's	.84	1.09	-.37	.63
Moderate Decline				
Large CC's	.39	-.09	-.04	.08
Small CC's	.17	.47	-.84	.04
Satellites	.95	-2.19	-.07	-.56
Growth				
Large CC's	-1.00	-.06	.01	-.38
Small CC's	-.87	.14	.37	-.34
Satellites	-1.54	-.92	.04	-.91
All 593 Cities	0.00	0.00	0.00	0.00

a. See note a to Table 3.7 for a definition of composite needs index.

Figure 3.1

COMPOSITE NEEDS INDEX IN GROWING AND DECLINING URBAN AREAS



As shown in Table 3.7, the average score for larger cities tends to be higher than the average for smaller cities. Table 3.9 ranks cities with population over 250,000 in terms of the composite needs score. Examples of large cities with high levels of per capita need include Newark, Detroit, St. Louis, and Buffalo; cities with low levels of need include Houston, Phoenix, and San Jose.*

IV. CONCLUSIONS

Using the same methodology as in the two previous formula reports, this Chapter developed a standard against which the distribution of CDBG funds can be evaluated (see Chapter 5). This standard shows relative differences among cities in their per capita need for community development funds. The standard is based on 18 individual need indicators that are socioeconomic variables associated with urban blight, substandard housing, and population or employment loss.

Because of the interrelations among several need indicators, a technique called factor analysis was used to reduce the 18 need variables to three groups of variables that are closely associated. These groups -- called factors or dimensions of community development need -- were interpreted as city age and decline, poverty, and density. The composite needs index was a weighted combination (.35, .40, and .25, respectively) of city scores on the separate factors. The main advantage of the composite index is that it recognizes concentrations of problems. However, because there is no consensus on the relative importance of different types of urban problems, Chapter 5 will examine the distribution of CDBG funds across cities in terms of individual need variables and factors, as well as the composite needs index.

There were several empirical findings in this Chapter. Perhaps the most significant from the perspective of the CDBG program is that 1980 poverty is a much broader indicator of community development problems than was 1970 poverty. For instance, data from HUD's Annual Housing Survey show that poverty is now a better proxy than pre-1940 housing for many housing and neighborhood problems in large central cities (see Chapter 6). These findings support the important role given to poverty in the CDBG formula system.

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* As noted by Bradbury et al. (p. 50), analyses such as this study, based on readily available, Census-type data, can lead to city rankings that are inconsistent with the "popular image" of particular cities (and possibly inconsistent with more accurate, reliable indicators). Frequent examples of "revitalized" cities whose need is said to be overstated by Census-type data are Boston (number 13 in Table 3.9) and San Francisco (number 24). While such considerations as this show the importance of continuing to test various distress indicators, it is unlikely that variables such as poverty and loss of jobs are presenting an overly distorted picture of relative hardship in large central cities. As pointed out earlier, the indicators are probably less reliable for smaller cities.

Table 3.9 Need Scores and Need Rankings for Cities with Populations over 250,000[a]

Rank	City	Need Score	Rank	City	Need Score
1	Newark	1.60	29	San Antonio	.19
2	Detroit	1.06	30	Long Beach	.06
3	Cleveland	.91	31	Fort Worth	.01
4	St. Louis	.91	32	El Paso	-.03
5	Atlanta	.90	33	Sacramento	-.03
6	Baltimore	.90	34	Columbus	-.05
7	Buffalo	.80	35	Portland	-.05
8	Chicago	.69	36	St. Paul	-.06
9	New Orleans	.69	37	Denver	-.10
10	Philadelphia	.68	38	Omaha	-.13
11	New York	.65	39	Seattle	-.13
12	Washington	.62	40	Indianapolis	-.20
13	Boston	.55	41	Dallas	-.21
14	Birmingham	.55	42	Charlotte	-.26
15	Miami	.54	43	Jacksonville	-.32
16	Cincinnati	.54	44	Baton Rouge	-.34
17	Louisville	.53	45	Nashville-Davidson	-.36
18	Oakland	.48			
19	Norfolk	.43	46	Wichita	-.37
20	Pittsburgh	.42	47	Oklahoma City	-.38
21	Memphis	.27	48	Tucson	-.47
22	Milwaukee	.24	49	San Diego	-.52
23	Tampa	.16	50	Tulsa	-.52
24	San Francisco	.15	51	Albuquerque	-.60
25	Toledo	.14	52	Houston	-.61
26	Kansas City	.14	53	Austin	-.61
27	Los Angeles	.13	54	Honolulu	-.64
28	Minneapolis	.10	55	Phoenix	-.66
			56	San Jose	-.76

a. The average need score for the population of the 593 metropolitan cities included in the needs analysis is zero. Large cities as a group are somewhat needier than average.

Many of this Chapter's findings concern the distribution of different types of need for community development funds across cities of different sizes, types, and regional locations. The data showed that problems associated with aged housing and economic and population decline -- the age and decline factor -- were concentrated in Northeastern and North Central cities. Poverty problems were highest in central cities of the South and large central cities (over 100,000 populaton) in the Northeast and North Central regions. Poverty scores were particularly high in the largest declining cities such as Detroit, Atlanta, New Orleans, and Newark, and small central cities in the South. On the other hand, suburban cities in all regions and central cities in the West had the lowest average poverty scores. The density factor is associated with crime, population density, minority populations, and renter problems (e.g., crowding). The highest scores on this factor were in the largest cities, particularly those in the Northeast and West.

As noted earlier, the composite needs index measures the extent to which different types of community development problems are concentrated in particular cities. According to that index, the highest levels of need for community development funds exist in large, declining central cities located in the Northeast, North Central, and South Atlantic regions. Consistent with the findings of Chapter 2, large declining central cities located in declining and slow-growing SMSA's had particularly high levels of overall need. On the other hand, central cities in the Southwest and West and satellite cities in all regions exhibited the lowest average levels of per capita need.

The next Chapter examines how the 1980 Census data would affect the distribution of CDBG funds. Then Chapter 5 uses the indexes developed in this Chapter to answer the crucial question of whether the CDBG formula would continue to allocate more funds to the more needy jurisdictions.

CHAPTER 4

EFFECTS OF THE 1980 DATA ON THE DISTRIBUTION OF FUNDS AMONG ENTITLEMENT JURISDICTIONS

The dual formula was designed so that funds would be distributed as equitably as possible on the basis of community need. However, the structure of community needs may have altered, so that when 1980 Census data are used for formula allocation, the formula may not distribute funds relative to needs. Thus, it is important to examine not only (1) the kinds of funding reallocations that occur when 1970 Census data are replaced by 1980 data and (2) the reasons for reallocations, but also (3) the degree to which funding shifts correlate with shifts in relative community needs. This Chapter focuses on the first two issues. Chapter 5 provides an elaborate treatment of the relationship between needs and funding, using the framework for analyzing urban need which was developed in Chapters 2 and 3.

The funding changes observed in this Chapter are due entirely to changes between 1970 and 1980 in the Census variables used in the dual formula. The redistributions assume a constant level of total funding and no change in the current dual formula which was enacted in 1977. Thus, the changes that occur are explained by a shift in the distribution of the formula variables across entitlement jurisdictions, and not by any explicit change in policy.

This Chapter projects FY '84 funding on the assumption that 1980 Census data are used for all the formula factors. It then compares these projected allocations with the FY '82 allocations, when 1980 Census data were used for the population and growth lag factors only. Because data for the population and growth lag factors have been updated continuously, the Chapter focuses on the effects of introducing 1980 Census data for the poverty, overcrowding, and pre-1940 housing factors only, which through FY '82 used 1970 Census data.

The principal findings of this Chapter are:

-- Use of 1980 Census data would cause approximately 40 percent of all CDBG recipients to experience gains or losses in excess of 10 percent of the allocations they received using 1970 Census data.

-- The level of funding of central cities would decrease by 1.6 percent while the level of funding of suburban cities would increase by 6.4 percent. Urban counties would experience an increase of 3.5 percent. Changes for individual cities and counties are often much different from these averages.

-- Regional shares of total CDBG entitlement funding would be little changed by the funding redistributions, since only two regions would experience a change of more than one percentage point. When viewed from the perspective of the funds received by a region, some of the regions studied experience more than modest changes. The Pacific region would increase its level of funding by 17 percent while the level of funding for the West North Central and East South Central regions would decrease by over 10 percent. The New England, Middle Atlantic, South Atlantic, and West South Central regions would experience changes under 2 percent.

-- Redistributions would lead to some convergence in per capita allocations, whereby regions and cities with high per capita amounts would tend to lose funds while those with low per capita allocations would tend to gain funds.

-- Regional redistributions are explained primarily by changes in the overcrowding and poverty data; changes in age of housing data have little effect on funding except in the North Central region.

-- While overcrowding has diminished among all entitlement jurisdictions by almost 19 percent, there is substantial variation among regions; the number of overcrowded units in the Pacific region has actually increased by almost 20 percent.

-- As a group, entitlement jurisdictions experienced an increase in the poverty population of almost 10 percent between the two Censuses; again, there is substantial variation among the regions.

The analysis in this Chapter is divided into three parts. The first explains in detail how the CDBG formula works. The second describes funding redistributions when 1980 Census data are used for poverty, overcrowding, and age of housing. The final part explores how regional redistributions are related to shifts in Census data for these three variables between 1970 and 1980.

I. THE CURRENT DUAL FORMULA

Allocation of CDBG funds, which totaled $3.456 billion in FY '83, is a multistep procedure.* First, after deducting $56.5 million for a special Secretary's fund (used to support special activities such as grants to Indian tribes and technical assistance), HUD allocates 70 percent of the remaining funds to entitlement communities and 30 percent to nonentitlement communities. Entitlement communities, which receive an annual formula grant, include central cities of metropolitan areas, any suburban city with at least 50,000 population and located in a metropolitan area, and urban counties with populations of more than 200,000 that have authority to perform community development and housing assistance activities. Nonentitlement funds are allocated among States for distribution to smaller communities.** The remainder of this section focuses on entitlement recipients, which received $2.380 billion in FY '83. Chapter 7 discusses the formula system for allocating nonentitlement funds.

In FY '83, there were 442 central cities, 195 suburban cities with at least 50,000 population, and 98 urban counties. Under the dual formula system, each of these entitlement recipients receives the greater of two amounts computed under the following equations:

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* The total amounts of CDBG funds allocated in recent years are as follows: $3.456 billion in FY '82, $3.694 billion in FY '81, and $3.800 billion in FY '80.

** Each state determines the method -- e.g., project or discretionary, formula -- for distributing CDBG funds among its smaller communities.

(1) First Formula*

$$\left(.25\ \frac{POP_j}{POP_{SMSA}} + .50\ \frac{POV_j}{POV_{SMSA}} + .25\ \frac{OCRWD_j}{OCRWD_{SMSA}}\right) \times \$2.380 \text{ billion}$$

(2) Second Formula*

$$\left(.20\ \frac{GLAG_j}{GLAG_{MC}} + .30\ \frac{POV_j}{POV_{SMSA}} + .50\ \frac{AGE_j}{AGE_{SMSA}}\right) \times \$2.380 \text{ billion}$$

Where

j = indicates the metropolitan city or urban county
SMSA = indicates that the variable is defined for all SMSA's
MC = indicates that the variable is defined for all metropolitan cities**

2.380 billion = total CDBG dollar allocation to all entitlement recipients
POP = total resident population
POV = extent of poverty -- number of persons whose income is below the poverty level as defined by criteria from the Office of Management and Budget
OCRWD = overcrowded housing -- number of housing units with 1.01 or more persons per room
AGE = age of housing -- number of existing year-round housing units constructed in 1939 or earlier
GLAG = extent of growth lag -- the difference between (1) the population a city or urban county would have had if its population growth rate between 1960 and the date of the most recent population count (1980) had been equal to the growth rate of all metropolitan cities during the same period; and (2) the current population of the city or urban county. The growth rate for all metropolitan cities between 1960 and 1980 was 14.13 percent. (If a city grew at a higher rate than 14.13 percent, it receives a zero on this variable.)

In computing the formula amounts for FY '83, the population and poverty counts were based on 1980 Census data, and pre-1940 and overcrowded housing counts were based on 1970 Census data. FY '83 is the first year in which 1980 Census poverty data are used in the CDBG formula. Previous formula allocations were based on 1970 Census data for poverty. FY '82 was the first year in which 1980 population counts were used for the population

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* The "First Formula" is the same as the 1974 formula and is frequently referred to in that way. The "Second Formula" is frequently referred to as the "Growth Lag Formula."

** For urban counties, the growth lag denominator is defined as the total growth lag of metropolitan cities and urban counties, using the average population growth of metropolitan cities as the standard.

and growth lag variables; however, these two variables had been continually updated based on Census estimates. If no changes are made in the statute and the current dual formula system, FY '84 will be the first year in which 1980 data are used for overcrowding and age of housing.

Because cities receive the greater of two formula amounts, a pro rata reduction is applied to all grants to ensure that the amount allocated does not exceed the amount appropriated. In FY '83, the pro rata reduction is 2.6 percent.*

As is obvious from the relative weights of the formula variables, the first formula emphasizes poverty while the second emphasizes age and decline. Cities with high concentrations of either set of conditions receive high levels of per capita funding. For example, Laredo, Texas, which has an extremely high poverty rate, receives $33.05 per capita under the first formula; Harrisburg, Pennsylvania, which has suffered much decline, receives $56.58 per capita under the second formula. Laredo would have received only $16.40 per capita under the second formula, and Harrisburg, $19.37 under the first formula. Because of their extreme values on variables emphasized in one of the two formulas, these cities receive much higher per capita amounts than the average received by all cities and urban counties ($18.99 per capita). In other cities, allocations are not that different between the two formulas. Charleston, South Carolina, receives $20.94 per capita under the first formula but $19.73 under the second formula.**

II. REDISTRIBUTION EFFECTS AMONG ENTITLEMENT JURISDICTIONS DUE TO 1980 CENSUS DATA

A. Description of Redistribution Analysis

An analysis of the impact of substituting the 1980 Census data into the CDBG entitlement formula is complicated by the fact (noted earlier) that 1980 data are being phased in over several years. Analysis of redistributive

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* The pro rata reduction would be much larger if the denominators of the formula variables -- POP_{SMSA}, POV_{SMSA}, $OCRWD_{SMSA}$, and AGE_{SMSA} -- were defined consistently, that is, as equal to the sum of their respective numerators -- POP_j, POV_j, $OCRWD_j$, and AGE_j. Instead, the denominators of all variables except growth lag are SMSA totals, which are in each case greater than the sum of the data for central cities, large suburban cities, and urban counties. (Smaller cities in metropolitan areas left out of the entitlement portion of the program are included in the nonentitlement portion.) This means that neither the first nor second formula, considered separately, allocates the full $2.380 billion. Although it has never happened, it is possible that allocations based on the larger of the two formula amounts would be less than the appropriated amount; and there would then have to be a pro rata increase of each allocation. The Department currently has a pending legislative proposal to authorize such increases.

** Because it tends to have problems of all types, Charleston would likely benefit from a formula system that is not as "polarized" as the current system. This issue will be discussed in Chapter 6.

effects will focus on a comparison of FY '82 allocations (based on 1970 data for poverty, age of housing, and overcrowded housing) with projected FY '84 amounts (using 1980 data for poverty, age of housing, and overcrowded housing).* Since 1980 population is used in both FY '82 and FY '84, this comparison ignores the effect of population on redistribution. This is appropriate, since the continual updating of population and growth lag makes examination of these variables fundamentally different from the others, which experience a sharp, one time shift.

Table 4.1 shows that when 1980 Census data on poverty, overcrowding, and age of housing are used to allocate CDBG entitlement funds, 22 percent of jurisdictions lose more than 10 percent of their FY '82 funds, while 19 percent gain more than 10 percent. Thirty-five percent of the jurisdictions would experience changes in funding of less than 5 percent.

The redistribution analysis will categorize the 732 entitlement jurisdictions (eligible as of FY '82) in various ways in order to characterize more fully the types of funding redistributions caused by the 1980 Census data. The jurisdictions will first be categorized by jurisdiction type and then by region.

B. Nature of Funding Shifts Among Jurisdiction Types

Three types of jurisdictions receive CDBG entitlement funds -- central cities, satellite cities, and urban counties.** The way in which these funds are distributed among these jurisdiction types, and changes caused by 1980 Census data, are shown in Table 4.2. Central cities receive the bulk of CDBG entitlement funds -- 72 percent in FY '83 compared to 10 percent for satellite cities and 18 percent for urban counties. (See Row (1) of Table 4.2.) Use of 1980 Census data results in a 1.6 percent reduction in funds to central cities between FY '82 and FY '84, compared to a 6.4 percent gain in satellite cities and a 3.5 percent gain in urban counties. (See Row (9) of Table 4.2.) Nevertheless, these changes have only marginal effects on the share of funds received by each type of jurisdiction.

Central cities do not receive the bulk of funds simply because they represent 441 of the 732 entitlement jurisdictions. As can be seen in Row (7) of Table 4.2, central cities also receive higher per capita amounts than either satellite cities or urban counties. In FY '83, central cities receive $24.66 compared to $15.03 for satellite cities and $10.62 for urban counties.

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* The FY '84 grants are described as "projected" because, to isolate the effect of introducing the 1980 Census data, other factors that would have changed between FY '82 and FY '84, such as the list of new entitlement cities, have been held constant, as they were in FY '82. Therefore, the "projected" FY '84 grants for particular cities are not exactly equal to what they will receive in FY '84. These projections also assume that CDBG appropriations will remain at $3.456 billion.

** In this Report, other metropolitan cities (noncentral cities) over 50,000 are called either suburban cities or satellite cities.

Table 4.1 Percent of Jurisdictions Gaining and Losing Funds from FY '82 to FY '84 Due to 1980 Census Data

		Percent of Jurisdictions
Losers		
Greater than 10 percent		22%
5-10 percent		15%
Small Change		
Under 5 percent		35%
Gainers		
5-10%		9%
Greater than 10 percent		19%
Total Number of Entitlement Jurisdictions[a]	732	

a. Analysis is based on FY '82 Entitlement Jurisdictions

Table 4.2 Distribution of Entitlement Funds by Recipient Type and Population Size

		441 Central Cities[a]			195 Satellite Cities[a]			96 Urban Counties[a]		
		FY '82	FY '83	FY '84	FY '82	FY '83	FY '84	FY '82	FY '83	FY '84
(1)	Percentage Share of All Entitlement Funds	73.2%	72.4%	72.0%	9.4%	9.8%	10.0%	17.4%	17.8%	18.0%
	Per Capita Grants by Population Size									
(2)	GT 1,000,000	$29.36	$29.79	$29.93	-	-	-	$11.35	$11.99	$13.46
(3)	250,000-999,999	25.30	24.78	24.52	$8.99	$9.88	$9.38	9.83	10.02	9.92
(4)	100,000-249,999	21.71	21.39	21.05	12.43	13.49	13.68	12.51	12.41	12.13
(5)	50,000-99,999	21.57	21.14	21.17	15.03	15.46	15.97	-	-	-
(6)	LT 50,000	22.30	21.67	21.25	23.90	23.13	23.13	-	-	-
(7)	Averages	$24.90	$24.66	$24.52	$14.44	$15.03	$15.40	$10.39	$10.62	$10.73
		FY '82-'83	FY '83-'84	FY '82-'84	FY '82-'83	FY '83-'84	FY '82-'84	FY '82-'83	FY '83-'84	FY '82-'84
(8)	Percent Change In Grants	-1.1	-.6	-1.6	4.3	2.1	6.4	2.3	1.1	3.5

a. Analysis is based on the number of entitlement jurisdictions in FY '82.

In FY '84 central cities would receive $24.52 compared to $15.40 for satellite cities and $10.73 for urban counties. Consequently, the funding shifts among jurisdiction types represent a convergence in funding among the jurisdiction types.

For central cities, per capita amounts increase with city size, with the exception that central cities with populations below 50,000 receive slightly larger per capita amounts than those with populations between 50,000 and 250,000. By contrast, per capita amounts have an inverse relationship with satellite city size. That is, smaller satellite cities receive larger per capita grants than larger satellite cities. Urban counties with populations between 250,000 and 999,999 receive lower per capita amounts than either larger or smaller urban counties.

Table 4.3 shows the percent of jurisdictions of each type that gain and lose funds. The pattern does differ across jurisdiction types, although approximately one-third of each type remains relatively stable. Among central cities, losers outnumber gainers by 2 to 1 (44 percent vs. 22 percent). The pattern is reversed for satellite cities, in which gainers outnumber losers (39 percent vs. 24 percent). Among urban counties, the percentages of gainers and losers are approximately even (32 percent vs. 36 percent).

Of the 57 central cities with populations greater than 250,000, 10 gain more than 10 percent while 10 lose that much. Thirty percent of larger cities experience less than a 5 percent change in funds while another 32 percent lose between 5 and 10 percent. With the exception of one large city in the South Atlantic, all that gain more than 10 percent are in the Pacific, Mountain, and West South Central regions. While the New England, Middle Atlantic, East North Central, and Pacific regions have above-average stability in large central cities (100 percent, 57 percent, 38 percent, and 40 percent respectively), the remaining large cities in these regions show losses in the North and gains in the Pacific (although a single large Pacific city does lose between 5 and 10 percent).

C. Nature of Funding Shifts Among Regions

The regional analysis performed in Chapters 2 and 3 focused on the four major Census regions (Northeast, North Central, South, and West). The regional analysis performed here and in Chapter 5 will be based on a finer breakdown into the nine subregions plus Puerto Rico. These subregions can be seen in Figure 2.1. The relationship between the Census regions and subregions is as follows: The Northeast includes the New England and Middle Atlantic subregions; the North Central includes the East North Central and West North Central subregions; the South includes the South Atlantic, East South Central, and West South Central subregions; and the West includes the Mountain and Pacific subregions. (For simplicity, the subregions are referred to as "regions" in the text.)

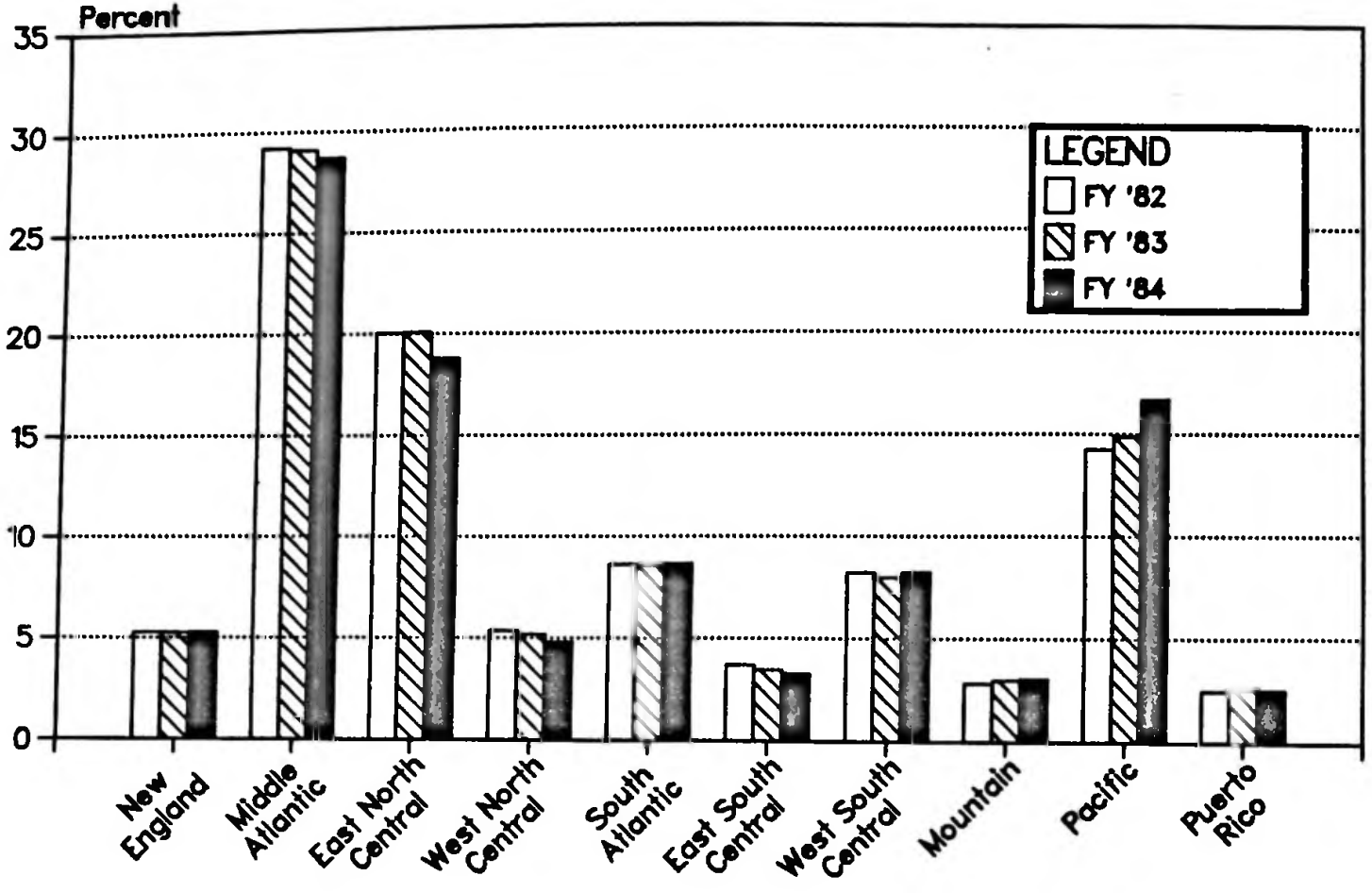
As can be seen in Figure 4.1, the share of funds received by each region is little changed by use of 1980 Census data. Only the East North Central and Pacific regions show shifts of more than one percentage point when 1980 Census data are used.

Table 4.3 Percent of Jurisdictions Gaining and Losing Funds From FY '82 to FY '84 Due to 1980 Census Data By Type

	Central Cities	Satellite Cities	Urban Counties
Losers			
Greater than 10%	26%	15%	21%
5-10%	18%	9%	15%
Small Change			
Less than 5%	34%	37%	33%
Gainers			
5-10%	7%	9%	16%
Greater than 10%	15%	30%	16%
Total Number of Jurisdictions	441	195	96

Figure 4.1

PROJECTED SHARE OF TOTAL ENTITLEMENT FUNDS BY REGION FY '82, FY '83, AND FY '84



Examination of the percentage change in funds in each region shows that the New England, South Atlantic, and West South Central regions experience less than a 1 percent change in funds between FY '82 and FY '84 due to 1980 Census data. Within these regions, funds are shifted slightly from central cities to satellite cities and urban counties (see Table 4.4). The stability in the West South Central occurs because a 3.1 percent loss in FY '83 is balanced by a 3.1 percent gain in FY '84. The Mountain and Pacific regions and Puerto Rico gain funds (8 percent, 17 percent, and 2 percent, respectively), while the Middle Atlantic, East and West North Central, and East South Central lose funds (-1.7 percent, -6.2 percent, -10.3 percent, and -11.4 percent, respectively). Those regions losing funds tend to lose in all types of jurisdictions, and those gaining tend to gain in all types. Aside from the three regions with stable funding from FY '82 to FY '84, the direction of change tends to be the same between FY '82 and FY '83 as between FY '83 and FY '84.

The funding shifts represent a convergence in funding levels across regions. Examination of the per capita grants across regions (in Figure 4.2 and Table 4.5) shows that except for Puerto Rico, regions gaining funds had the lowest per capita grants in FY '82. Conversely, regions losing funds had the highest per capita grants in FY '82. Thus, the effect of redistribution is to spread funds slightly more evenly than before.* Since estimates hold population constant between FY '82 and FY '84, the percentage changes in per capita grants are identical to the percentage changes in total funding reported in Table 4.4.

D. Number of Gainers and Losers By Region

The net changes in funding within regions obscure changes occurring for individual cities and urban counties. In all, 139 jurisdictions gain more than 10 percent and 163 lose more than 10 percent between FY '82 and FY '84. Appendix M contains a listing of all 732 jurisdictions entitled in FY '82 and provides information on their per capita funding levels in FY '82, FY '83, and FY '84 and the percentage change in per capita (and total) funding between FY '82 and FY '84. (As noted earlier, these are projected FY '84 estimates, which will not exactly equal the actual FY '84 funding because of the inclusion of new entitlement jurisdictions and other changes. In addition, the FY '83 amounts differ slightly from the actual allocations for the same reason.)

Table 4.6 shows the distribution of funding shifts that combine to alter total regional funds. For example, the stability of funding in New England is shared by the majority of jurisdictions: 70 percent of central cities and 59 percent of satellite cities have less than a 5 percent change in funds. Middle Atlantic jurisdictions also have a high degree of stability, although 24 percent of satellite cities lose at least 10 percent of their funds when FY '82 and FY '84 grants are compared. The net loss of funds in this region is explained by widespread small losses.

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* Chapter 6 provides a fuller discussion of how the shift to 1980 Census data tends to produce a more even distribution of funds.

Table 4.4 Percent Change in Funds Caused by 1980 Census Data by Region

	Percent Change '82-'84				Percent Change '82-'83				Percent Change '83-'84			
	Total	CC[1]	SC[2]	UC[3]	Total	CC[1]	SC[2]	UC[3]	Total	CC[1]	SC[2]	UC[3]
New England	- .1	- .9	2.8	*	- .6	- .3	-1.4	*	.5	- .5	4.3	*
Mid Atlantic	-1.7	-2.2	-2.1	.1	- .4	- .2	1.2	-1.5	-1.4	-2.1	-3.3	1.6
E.N. Central	-6.2	-5.5	-5.1	-10.9	.2	0	- .4	1.5	-6.4	-5.5	-4.7	-12.2
W.N. Central	-10.3	-8.9	-18.0	-17.5	-3.6	-4.0	-5.6	0	-7.3	-5.6	-13.2	-17.5
S. Atlantic	.3	-6.6	18.3	14.5	- .8	-4.5	2.4	8.0	1.1	-2.2	15.7	6.1
E.S. Central	-11.4	-11.2	-4.8	-15.5	-6.5	-6.8	-3.1	-4.4	-5.3	-4.7	-1.7	-11.7
W.S. Central	- .1	-1.2	12.9	8.0	-3.1	-4.3	8.9	5.3	3.2	3.2	3.7	2.5
Mountain	8.2	4.1	23.0	19.3	6.1	2.9	19.7	13.0	2.0	1.1	2.8	5.6
Pacific	17.0	18.5	19.7	12.8	4.2	3.8	6.3	3.8	12.3	14.2	12.5	8.6
Puerto Rico	2.1	-6.5	22.8	*	2.6	-4.8	20.5	*	- .5	-1.8	2.0	*
Total		-1.6	6.4	3.5		-1.1	4.3	2.3		- .6	2.1	-1.1

[1]CC = Central cities

[2]SC = Satellite cities

[3]UC = Urban counties

* There are no urban counties in New England or Puerto Rico.

Figure 4.2

PROJECTED AVERAGE PER CAPITA GRANTS BY REGION FY '82, FY '83, AND FY '84

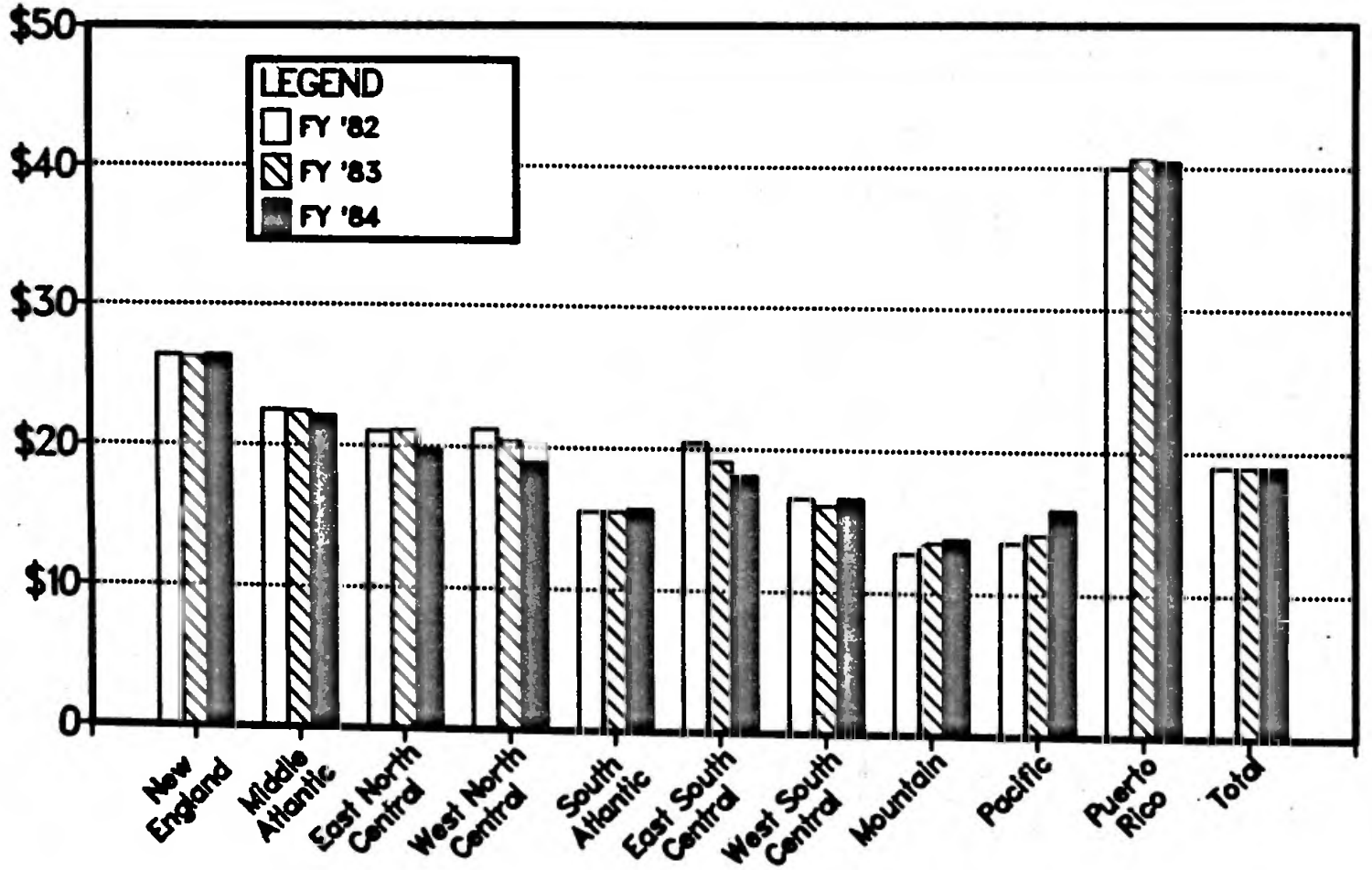

Table 4.5 Projected Average Per Capita Grants by Region

	FY '82				FY '84			
	Total	CC[1]	SC[2]	UC[3]	Total	CC[1]	SC[2]	UC[3]
New England	26.36	28.86	20.15	*	26.34	28.62	20.71	*
Middle Atlantic	22.49	34.82	16.05	11.04	22.11	34.06	15.73	11.05
East North Central	21.04	29.49	15.08	8.99	19.75	27.90	14.31	8.01
West North Central	21.25	27.16	12.64	8.80	18.93	24.45	10.37	7.29
South Atlantic	15.53	19.76	13.94	10.32	15.70	18.59	17.03	11.86
East South Central	20.47	21.91	41.02	11.55	18.12	19.45	39.06	9.76
West South Central	16.59	18.40	9.00	9.24	16.59	18.18	10.17	9.98
Mountain	12.79	14.94	7.55	10.31	13.82	15.55	9.26	12.24
Pacific	13.61	16.44	11.72	10.97	15.92	19.47	14.03	12.36
Puerto Rico	39.99	45.36	30.28	*	40.43	42.44	37.19	*
Averages	18.99	22.28	14.87	10.57	18.99	21.60	15.72	10.60

[1]CC = Central Cities

[2]SC = Satellite cities

[3]UC = Urban counties

* There are no urban counties in New England or Puerto Rico

Table 4.6 Percent of Jurisdictions Gaining and Losing Funds from FY '82 to FY '84 Due to Census Data by Region By Type

	Losers			Gainers		
	Greater Than 10%	5-10%	Small Change (Less Than 5%)	5-10%	Greater Than 10%	Number of Jurisdictions
New England						
central cities	3%	10%	70%	13%	5%	40
satellite cities	5	5	59	18	14	22
urban counties	*	*	*	*	*	*
Middle Atlantic						
central cities	4	17	69	6	6	54
satellite cities	24	18	47	8	3	38
urban counties	12	9	50	29	0	34
East North Central						
central cities	15	27	47	6	5	79
satellite cities	30	10	50	10	0	40
urban counties	61	28	11	0	0	18
West North Central						
central cities	40	27	27	3	3	30
satellite cities	67	33	0	0	0	6
urban counties	100	0	0	0	0	3
South Atlantic						
central cities	47	23	14	4	12	74
satellite cities	17	17	34	0	34	6
urban counties	7	7	29	21	36	14
East South Central						
central cities	73	15	12	0	0	26
satellite cities	0	0	100	0	0	1
urban counties	50	50	0	0	0	2
West South Central						
central cities	43	17	19	3	17	58
satellite cities	9	9	27	0	55	11
urban counties	0	0	67	0	33	3
Mountain						
central cities	25	10	15	10	40	20
satellite cities	0	0	20	10	70	10
urban counties	0	0	33	0	67	3
Pacific						
central cities	4	7	23	16	50	56
satellite cities	2	4	21	9	64	56
urban counties	0	21	32	11	37	19
Puerto Rico	10	10	20	20	40	10

* There are no urban counties in New England.

The balance of gainers and losers shifts toward the loss side when the East and West North Central, South Atlantic, and East South Central regions are examined. In these regions, if those in the "Small Change" column are further disaggregated, it is seen that most jurisdictions have small losses. In addition, many jurisdictions in these regions have large losses. In the East North Central, 61 percent of urban counties lose 10 percent or more, while in the West North Central, 67 percent of satellite cities lose that much. Not one jurisdiction in the East South Central gains more than 5 percent, while 73 percent of the central cities in that region lose 10 percent or more. The South Atlantic region shows more disparity between central cities as opposed to satellite cities and urban counties than other regions. Forty-seven percent of central cities lose 10 percent or more, while 34 percent of satellite cities gain 10 percent or more, and 36 percent of urban counties gain that much.

The West South Central region experiences changes intermediate between those of the regions discussed above and those of the Pacific and Mountain regions. While 43 percent of the central cities in the West South Central lose more than 10 percent of their funds, 17 percent gain more than 10 percent. Thus, the net loss of 1 percent of central city funding results from the balance of large losses with large gains. A majority of satellite cities have large gains in this region; 55 percent gain more than 10 percent.

Central cities in the Mountain region gain 4 percent in total funds. This shift reflects the fact that 25 percent of central cities lose 10 percent or more, while 40 percent gain 10 percent or more. The increases in satellite cities (23 percent) and urban counties (19 percent) are explained by the fact that most jurisdictions gain 10 percent or more and there are no large losers. In the Pacific region, 50 percent of central cities gain more than 10 percent, while 64 percent of satellite cities and 37 percent of urban counties gain that much.

In summary, the redistribution analysis does show regional shifts, with the Mountain and Pacific regions gaining and the East North Central, West North Central, and East South Central regions losing. There are also shifts among types of jurisdictions, with central cities losing and satellite cities and urban counties gaining. Overall the pattern is one of convergence. Regions with the highest per capita grants are losing, while gaining regions have lower per capita grants. Similarly, cities with high per capita grants are generally losing while gaining cities generally have lower per capita grants.

III. COMPONENTS OF REDISTRIBUTION

After observing the nature and magnitude of funding shifts, the next step is to examine the relative importance of the various formula factors in causing these shifts. This analysis will focus only on regional funding changes. The reason for this is that a jurisdiction's choice of formula (i.e., the formula that gives it the most funds) is much more dependent on region than jurisdiction type.* Therefore, a breakdown of the formula

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* Chapter 6, Section I.B, will examine this issue in greater detail.

variables responsible for funding shifts is more interesting and comprehensive on a regional basis than on a jurisdiction type basis.

The funding that a region receives from a particular variable is a function of the region's share of that variable. Thus, funding shifts should move in the same direction as shifts in share of poverty, share of overcrowded housing units, and share of aged housing units. An increase in relative shares does not necessarily mean an increase in urban problems. For example, if an urban problem is decreasing in importance, such as overcrowding or age of housing, a region can increase its share of the problem while the absolute level of the problem may be diminishing. On the other hand, the number of poor persons has grown, so an increase of share also means an increase in absolute amount.* Table 4.7 shows how regional shares have altered since 1970.

A. Trends in Shares

The number of poor persons in all the nation's SMSA's grew almost 10 percent from 1970 to 1980. Notably, only the West North Central and East South Central regions actually had fewer poor persons in 1980 than in 1970. Other regions' shares of poverty decreased because of a slower than average rate of growth in the number of poor persons. Those with faster than average growth rates (New England, Middle Atlantic, East North Central, Mountain, Pacific, and Puerto Rico) increased their shares of total poverty.

Overcrowded housing units in SMSA's decreased dramatically by 38 percent between 1970 and 1980. The Northeast and North Central regions had the greatest decrease in overcrowded units. By contrast, the number of overcrowded units actually went up by almost 20 percent in the Pacific region. As a result, the Pacific share of overcrowding grew from less than 14 to more than 22 percent. The West South Central and Mountain regions and Puerto Rico also had small increases in share of overcrowding.

Aged housing units were reduced by 22 percent over the decade. Although regional loss rates varied, the variance was not large; shifts in shares were small compared to those for overcrowding. The New England, Middle Atlantic, and Pacific regions had small increases in shares, while the other regions had modest declines.

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* In addition, an increase in absolute number on a variable for a city or region does not necessarily mean an increase in its incidence (the rate of its occurrence within the population). If population grows faster than the variable, incidence will decrease. Alternatively, even if the absolute number decreases, incidence can increase if population decreases more rapidly. Growth or decline of population is, of course, not independent of changes in these variables. Growth in the number of poor persons should be expected in a city that is experiencing population growth. The CDBG formula uses the share for each variable, not its incidence.

Table 4.7 Share and Percent Change in Formula Variables[a]

Region	Poverty			Overcrowding			Age of Housing		
	Share of 1970 SMSA Poverty	Share of 1980 SMSA Poverty	Percent Change In Number of Poor Persons	Share of 1970 SMSA Over-crowding	Share of 1980 SMSA Over-crowding	Percent Change In Number of Over-crowded Units	Share of 1970 SMSA Aged Units	Share Of 1980 SMSA Aged Units	Percent Change In Num-ber of Aged Units
New England	2.91	2.99	13.32	2.74	2.11	-44.09	5.78	6.07	-14.07
Middle Atlantic	18.56	19.13	13.34	19.07	17.35	-34.11	29.10	29.87	-15.90
East North Central	12.40	13.00	15.27	14.23	10.45	-46.83	18.26	17.34	-22.20
West North Central	3.43	3.01	-3.61	3.70	2.16	-57.71	4.98	4.71	-22.50
South Atlantic	8.83	8.79	9.45	7.58	8.58	-18.04	4.20	3.82	-25.45
East South Central	3.93	3.45	-3.39	3.11	2.49	-42.06	2.10	1.88	-26.57
West South Central	8.82	8.39	4.59	8.34	9.92	-13.87	3.74	3.39	-25.80
Mountain	2.47	2.84	26.78	2.56	2.94	-16.97	1.44	1.42	-19.56
Pacific	11.96	13.42	23.41	13.70	22.66	19.73	9.61	9.72	-17.11
Puerto Rico	3.67	3.86	15.58	1.89	2.03	-22.44	.27	.17	-47.32
SMSA Total			9.98			-38.11			-22.04

a. The sums of the regional shares do not equal 100 percent because these three CDBG formula variables are defined over the entire SMSA population for the nation, while CDBG entitlement jurisdictions account for only 73 percent of the SMSA population.

Since shares are used in the CDBG formula to calculate funding, from Table 4.7 one would expect New England to gain CDBG money from poverty and age of housing and to lose money from overcrowded units. The East South Central region would be expected to lose money on all three variables, while the Pacific region would be expected to gain on all three. Analysis of the components of funding change is complicated by the fact that CDBG uses a dual formula system and that jurisdictions can switch formulas if it is advantageous. The analysis is much more straightforward if jurisdictions that switch formulas are analyzed separately.

B. Formula Switches

Most fund reallocations occur as a result of changing values within the separate formulas rather than from switching formulas. Jurisdictions switching formulas account for less than 2.5 percent of total funds. On balance, those switching do so to minimize a loss in funds rather than maximize a gain.

Thirty-six of the 732 jurisdictions would change formulas between FY '82 and FY '84. Of these, 29 would switch from the first to the second formula, and 7 from the second to the first. Most switches from the first to second formula (25 of 29) are in the New England, Middle Atlantic, and and North Central regions. Eleven of those changing formulas in these regions are urban counties. Switches occur primarily because of some combination of a loss in the share of overcrowding with a gain in the share of aged units. On the other hand, five of the seven cities switching from second to first formula are in the Pacific region. These cities find the first formula more advantageous primarily because of a large increase in funding from overcrowding.

C. Net Effect of Formula Variables on Total Regional Funding*

The net effect on funding of an altered share of a particular variable depends upon the relative importance of the variable in the formula in which it appears and on the relative importance of that formula in total funding for a region. By way of illustration, if overcrowded housing accounts for 30 percent of a region's funding in the first formula, and the first formula provides 40 percent of the region's total CDBG funds, then a 10 percent increase in that region's funding for overcrowding will have a net effect of +1.2 percent (.10x.30x.40=.012) on total funding for the region.

A further complication arises in translating a change in share to a change in total funds. Specifically, the pro rata reduction requires a larger reduction for FY '84 grants than for FY '82 grants, by 2.77 percent. That is, a city which maintained a constant share on a formula variable would receive about 2.77 percent less on that variable by using

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* This section disaggregates regional changes in funding into changes due to each formula variable; the discussion is somewhat more technical than the previous discussion. Readers not interested in the technical details will find the main points of this section summarized at the end of the Chapter.

1980 Census data than by 1970 data. (See Appendix B for an explanation of how the pro rata reduction is calculated and how the percentage change in funding from a particular factor is calculated.) In brief, the pro rata reduction depends on what share of the formula variables is accounted for by entitlement jurisdictions. As noted in Table 4.7, regional shares do not add up to 100 percent because the variables are defined for all SMSA's, while entitlement jurisdictions account for only 73 percent of the population of SMSA's. Since entitlement jurisdictions account for a larger share of these variables in 1980 than in the 1970 Census, the pro rata reduction increased between FY '82, when 1970 Census data were used, and FY '84, when 1980 data will be used. As will be seen, loss from pro rata reduction is extremely important in some regions.

Table 4.8 shows how each formula variable contributes to the change in total funding in each region. Column (1) is the percentage change in total funding between FY '82 and FY '84 for entitlement cities that do not change formulas. It differs slightly from the first column of Table 4.4 because of the exclusion of jurisdictions switching formulas. The remaining columns break down the percentage change into the contributions of each formula variable; columns (2) through (7) add up to the change reported in column (1). Net effects include all the components described above -- change in pro rata reduction, importance of each variable in its formula, and importance of each formula. Appendix C explains in detail how these components interrelate to produce the changes reported in columns (2) through (7). Columns (2) and (5) show that funds are universally lost on the population and growth lag factors. Since 1980 population figures are used in both the FY '82 and FY '84 grants, these losses are due entirely to the change in pro rata reduction. The magnitude of loss differs across regions because the importance in total funding of population and growth lag differs.

As predicted, New England gains from poverty and age of housing and loses from overcrowded units, but the net effects are small. Also, the East South Central region loses money from poverty, overcrowding, and age of housing, while the Pacific region gains on all three.

New England's gain from age of housing is more than offset by its loss from growth lag due to the change in pro rata reduction. Forty-five percent (.79/1.77) of the total loss in the Middle Atlantic region is due to the impact of change in pro rata reduction on the growth lag variable. Although the East North Central region has a small net gain from poverty (.61 percent over both formulas), it loses heavily from the overcrowding and age of housing variables. The West North Central region shows losses similar to those of the East North Central from overcrowding and age and additionally loses funds from poverty. The South Atlantic region's gains from overcrowding are counterbalanced by losses from poverty and age of housing. The West South Central region has an increase from overcrowding virtually balanced by decreases from poverty. The Mountain and Pacific regions gain entirely from poverty and overcrowded housing. The relative importance of poverty and overcrowding is reversed in the two regions. In the Mountain region, poverty is almost twice as important as overcrowding, while in the Pacific region, overcrowding is more important by far.

Table 4.8 Net Effect of 1980 Census Data on Total Regional Funding

		Percent Change in Total Funding Due to:					
		First Formula Variables			Second Formula Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	Percent Change In Total Funding FY '82-FY '84	Population Factor	Poverty Factor	Overcrowded Housing Factor	Growth lag Factor	Poverty Factor	Age of Housing Factor
New England	- .08	-.01	.05	-.09	-.87	.03	.82
Middle Atlantic	-1.77	-.09	.25	-.44	-.79	-.05	-.64
East North Central	-6.05	-.21	.62	-2.25	-.80	-.01	-3.41
West North Central	-10.26	-.22	-.42	-2.96	-.79	-2.67	-3.20
South Atlantic	.59	-.68	.56	3.36	-.31	-1.22	-1.13
East South Central	-11.43	-.38	-4.91	-2.88	-.47	-1.64	-1.15
West South Central	.36	-.53	-2.45	4.46	-.12	-.81	-.19
Mountain	8.19	-.60	7.00	3.30	-.23	-1.08	-.20
Pacific	17.09	-.61	4.65	13.44	-.18	-.53	.31
Puerto Rico	2.11	-.24	1.58	.78	0	0	0

universe is cities (probably counties too) that don't change formula

A final observation from Table 4.8 is that, in aggregate, jurisdictions using the second formula have a net loss in all regions. (That is, the sum of the percent change due to the second-formula variables is negative.) These cities are characterized by slow population growth (or population decline) or a great deal of old housing. The pattern among first-formula cities is more diverse across regions. The frostbelt (New England, Middle Atlantic, East North Central and West North Central) loses from the first formula while, except for the East South Central, the sunbelt gains.

With two exceptions, there is a remarkable uniformity of trends within regions. The exceptions are Florida in the South Atlantic region, and Texas in the West South Central region, which behave much more like States in the Pacific region. Texas and Florida gain funds (primarily from overcrowding) while the rest of their regions lose funds. Florida also gains some funds from poverty while other Southern States lose. An obvious link between Florida, Texas, and the Pacific is that a substantial proportion of their populations is Hispanic. Later Chapters will look at the relationship between Hispanic population and overcrowded housing.

IV. CONCLUSIONS

Introduction of 1980 Census data into the entitlement allocation process would cause approximately 40 percent of the jurisdictions to gain or lose 10 percent or more. However, these shifts would tend to be more prevalent among smaller jurisdictions (35 percent of central cities over 250,000 population would change this much).

As a group, central cities would lose funds, while suburban cities and urban counties would gain. However, regional differences are important here. In the North, jurisdictions of all types would tend to lose funds, and urban counties would lose more than central cities in the North Central region. The East South Central region would also lose funds in all types of jurisdictions, while the Mountain and Pacific regions would gain in all types.

Regional shifts in share of total funds would be minor. Only the Pacific and East North Central regions would experience as much as a 2 percentage point change in share. In terms of percent change in funds received by each region, the New England, Middle Atlantic, and South Atlantic would change less than 1 percent. Regions gaining funds include the Mountain (+8 percent), Pacific (+17 percent), and Puerto Rico (+2 percent). Regions losing funds are the Middle Atlantic (-2 percent), East North Central (-6 percent), West North Central (-10 percent), and East South Central (-11 percent).

Reallocations would result in a more even spreading of funds. That is, those cities and regions with high per capita allocations would tend to lose funds, while those with low per capita allocations would gain.

Overcrowding has the most widespread impact on fund reallocations. Only New England, the Middle Atlantic, and Puerto Rico remain relatively unchanged by this variable. The North Central and East South Central

lose funds from overcrowding, while the South Atlantic, West South Central, Mountain, and the Pacific would gain. Poverty is the second most important variable in causing reallocations, but it affects fewer regions than overcrowding. The East and West South Central lose poverty funds, while the Mountain, Pacific, and Puerto Rico gain. Finally, age of housing causes sizable losses only in the North Central region. No region would gain much from the age of housing factor.

Since the dual formula allocates funds on the basis of each jurisdiction's share of SMSA totals for each formula variable, the regional reallocations reflect the extent to which the regional distribution of each variable has altered. In the case of age of housing, the total number of aged units fell by 22 percent in SMSA's between 1970 and 1980. There was little regional difference in the rate of decline; therefore regional shares changed very little. The number of poor persons in SMSA's increased by almost 10 percent between 1970 and 1980, but regional differences in rate of increase were substantial. The West North Central and East South Central regions lost more than 3 percent of their poor persons, while the Mountain region gained almost 27 percent. The number of overcrowded units fell 40 percent during the decade; all regions lost such units except the Pacific region, which had an almost 20 percent increase.

Thus the overcrowding variable, which had the most widespread impact on reallocation, has diminished considerably (by 40 percent) as an urban problem. However, overcrowding has become more concentrated, particularly in the Pacific region. Poverty, on the other hand, has increased as an urban problem and has become less concentrated. The high-poverty Southern regions have decreased in share, while other regions have gained.

This Chapter has described the funding changes that result from using 1980 Census data in the dual formula. The more important issue, however, is the relationship of the resulting funds reallocation to city needs. This relationship will be analyzed in Chapter 5 using the city needs framework developed in Chapters 2 and 3.

CHAPTER 5

ANALYSIS OF THE CURRENT DUAL FORMULA

Chapter 4 described the fund redistributions that result when 1980 Census data are substituted for 1970 data in the dual formula, and the role of the various formula variables in causing these shifts. This Chapter will use the framework developed in Chapters 2 and 3 to analyze the equity of the fund redistributions.

The principal findings of this Chapter concerning the overall targeting of funds to needy cities are as follows:

-- Use of 1980 Census data results in an allocation that remains responsive to relative city needs (i.e., those cities with greater needs, based on the composite needs index, receive higher per capita grants than those with lesser needs). The most needy 10 percent of cities would receive $34.96 per capita in FY '84 compared with only $9.51 per capita for the least needy 10 percent of cities.

-- The dual formula also remains responsive to each of the individual indicators of need (e.g., poverty, job loss, aged housing, crime) that were examined in this Chapter. For instance, the 10 percent of cities with the highest poverty rates would receive $33.17 per capita in FY '84, compared to $8.88 per capita for the 10 percent of cities with the lowest poverty rates.

-- The use of 1980 Census data does result in an allocation that is less responsive to city needs than before. That is, per capita funds increase less steeply with need than when 1970 Census data were used. The decrease in responsiveness to need occurs because less needy cities gain funds while more needy cities lose funds when 1980 Census data are substituted for 1970 data.

-- The neediest 10 percent of cities rely almost entirely on the second formula. As a result, funding losses in the neediest cities come almost entirely from the second formula, and from the aged housing factor in that formula. This occurs because needy cities such as Cleveland and St. Louis eliminated substantial shares of their old housing during the 1970's and thereby reduced their share of total aged housing.

-- The least needy 10 percent of cities rely heavily on the first formula (92 percent in FY '82). Funding increases in the least needy cities come from poverty and overcrowding in the first formula.

-- The dual formula has become more responsive to the density dimension of city need, while becoming less responsive to the poverty and age and decline dimensions. The decrease in responsiveness to poverty and age and decline has occurred because jurisdictions with higher incidences of poverty and aged housing have decreased their shares of these variables.

-- Even with the reduction in responsiveness to need, the CDBG formula still targets funds to needy jurisdictions. As noted, the FY '84 projections show that the most needy 10 percent of entitlement cities receive on average 3.7 times as much per capita as the least needy 10 percent.

The remainder of this Chapter is divided into two major sections. The first examines the responsiveness of the dual formula based on individual need indicators. The second section examines responsiveness based on need indexes. In addition, it compares the need levels of cities that gain and lose funds, and the formula factors responsible for funding changes by need level.

I. A NEEDS ANALYSIS USING INDIVIDUAL INDICATORS

This analysis will begin by looking at the relationship between per capita grants and individual need indicators, and then at the relationship of grants with the need indexes developed in Chapter 3. The statistical techniques used to measure responsiveness to community development need are decile and regression analysis. These techniques will be explained as the discussion develops. First, however, the relative needs of urban counties will be discussed.

A. Urban Counties -- Their Relative Need

Urban counties were not included in the urban conditions analysis of Chapters 2 and 3 because of the unavailability of data on several need variables.* Figure 5.1 compares urban counties to central and satellite cities on selected variables for which data are available. As a group, urban counties resemble large suburban cities and are therefore much less needy than central cities (see Figure 5.1). For instance, the average poverty rate for urban counties is 6.9 percent, compared to 15.8 percent for central cities and 12.8 percent for the United States as a whole. Relative to central cities, urban counties appear less needy on all indicators; for example, unemployment rate (5.4 vs. 7.3 percent), percent of population without high school education (20.1 vs. 28.8 percent), percent black (6.7 vs. 22.2 percent), and aged housing (15.0 vs. 32.3 percent). While most urban counties are relatively well off (e.g., Fairfax, Virginia, and Montgomery, Maryland,) there are a few that exhibit characteristics similar to declining central cities (e.g., Allegheny County, Pennsylvania).

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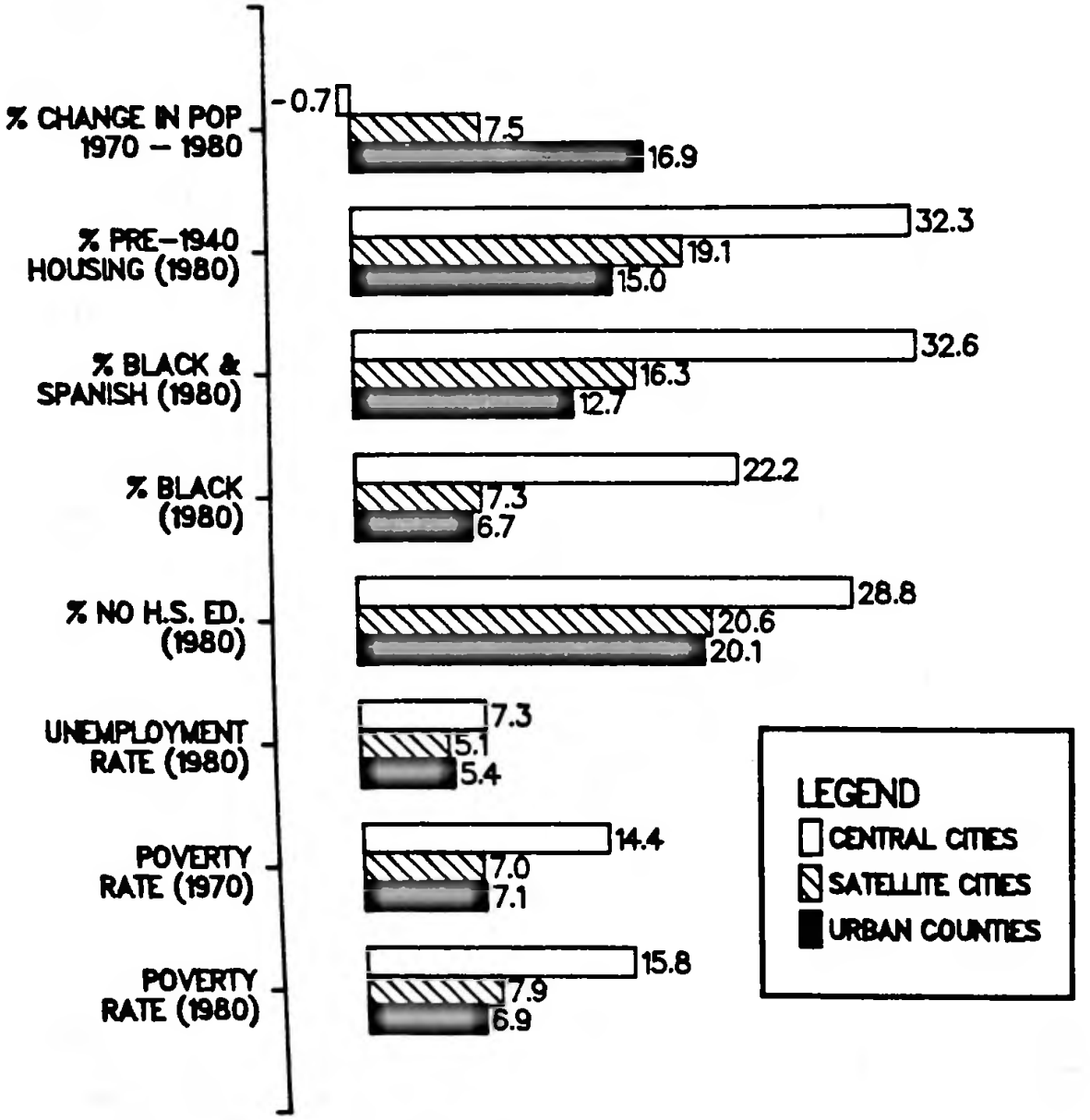
* An "urban county" in the context of the CDBG program is a county located in an SMSA that has a population of 200,000 or more within its unincorporated areas, and those suburban cities that sign cooperation agreements with the county. Because an "urban county" may contain some entitlement cities and some noncooperating cities, the geographical configuration of the county for purposes of the CDBG program will differ from its actual geography, that is, there will be "holes" in the urban county. From a data perspective, working with urban counties is like working with a slice of Swiss cheese.

Figure 5.1

SOCIOECONOMIC CHARACTERISTICS BY JURISDICTION TYPE



The following analysis focuses primarily on entitlement cities, since many indicators are unavailable for urban counties and it is less confusing if comparisons across indicators are based on a common set of jurisdictions. For variables for which urban county data were available, the trends were similar to those for entitlement cities.

B. Individual Need Indicators -- Decile Analysis

There are two aspects to the relationship between needs and funding. The responsiveness to need measures whether jurisdictions with greater needs receive a higher level of funding than those with lesser needs. The degree of responsiveness to need measures the magnitude of difference in funds given to more needy versus less needy jurisdictions. That is, how much more per capita funding do more needy areas such as Newark and Cleveland receive compared with less needy areas such as San Jose and Houston?

Both dimensions will be examined by means of decile analysis for population change, poverty rate, change in poverty rate, change in unemployment rates, change in employment, and other variables. In decile analysis, entitlement cities are arranged in order on some variable (for example, on percentage change in population), from the smallest percentage change to the largest. The list is then divided into 10 equal parts, with the most needy group of cities constituting the first part and the least needy group the last part. The average per capita grant is computed for each part. In this way it is possible to compare how the average per capita grant changes with each indicator of community development problems. If higher per capita grants go to cities in the upper deciles, the formula is said to target funds to needy cities on the variable being considered. It should be noted that the bottom 10 percent of cities on one indicator, such as population change, will likely be different from the bottom 10 percent on another indicator.

C. Population Change

Table 5.1 shows the relationship between per capita funding and population change for entitlement cities. Except for a few aberrations in the middle deciles, per capita funding is higher for cities with population loss and lower for those with rapid population growth. Whether population loss is measured from 1960 to 1980 or from 1970 to 1980, the dual formula would be highly responsive to population loss in FY '84. Cities with the greatest population loss between 1960 and 1980 would receive $42.37 per capita, which is substantially higher than the $12.15 that would be received by cities with the fastest growth. Examples of per capita amounts that would be received by some of the larger declining cities in FY '84 include Detroit ($41), Cleveland ($51), Newark ($38), St. Louis ($58), Atlanta ($27), and Chicago ($34). These amounts are much higher than the per capita amounts received by the following growing cities: San Diego ($14), San Jose ($13), Houston ($16), and Anaheim ($13).

Funding, however, has become less responsive to population decline since FY '82. The ratios of funding for cities with the greatest population loss relative to those with the greatest growth decrease from FY '82 to FY '84.

Table 5.1 Entitlement Cities: Average Per Capita Grants and Percentage Change in Grant From FY '82 to FY '84 by Population Change Deciles

	Percent Change in Population, 1960-1980				Percent Change in Population, 1970-1980			
Decile	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84
Greatest Loss	$45.18	$44.32	$42.37	-6.0%	$39.89	$39.23	$37.60	-5.7%
2	32.64	32.26	31.54	-3.4	31.44	31.37	30.43	-3.2
3	28.88	28.77	28.22	-2.3	24.30	23.78	23.47	-3.4
4	19.68	18.92	18.60	-5.5	23.23	22.61	22.31	-4.0
5	15.18	14.53	14.29	-5.9	17.75	17.04	16.53	-6.9
6	16.14	16.32	18.09	+12.1	15.93	15.76	15.89	-0.3
7	15.71	15.23	15.13	-3.7	14.86	14.98	16.37	+10.2
8	13.87	14.20	14.72	+6.1	15.08	14.70	15.07	-0.1
9	11.71	12.61	13.80	+18.9	13.35	13.85	15.14	+13.4
Fastest Growth	10.59	11.35	12.15	+14.7	10.82	12.05	13.23	+22.3
Ratio (Greatest Loss/ Fastest Growth)	4.3	3.9	3.5		3.7	3.3	2.8	

Funding losses for declining cities are greatest between FY '83 and FY '84, when 1980 Census data for pre-1940 and overcrowded housing are included in the formula simulation. (See Table 5.1.)

D. Poverty

Table 5.2 provides a comparison of the dual formula's responsiveness to poverty rates and change in poverty rates. Again, except for a few minor aberrations, the dual formula responds well to poverty needs. Funding increases from $8.88 per capita for the lowest poverty cities to $33.17 for the highest poverty cities. The ratio of funding of the top and bottom deciles for poverty rate decreases only slightly between FY '82 and FY '84.

Per capita funding is also largest for those that experienced the least improvement in poverty rates during the 1970's, and smallest for those that experienced the most improvement. Furthermore, responsiveness to change in poverty rate increases from FY '82 to FY '84. Jurisdictions with the greatest improvement in poverty rates lose 9.1 percent in average per capita funds, while those with the greatest increase in poverty rates lose 2 percent. Overall, the least needy deciles tend to lose funds, while the neediest gain funds.

E. Change in Employment and Unemployment

Per capita funds rise consistently with loss in employment (see Table 5.3). Cities with the greatest job loss received $35.97 per capita, which is substantially higher than the $10.27 per capita received by cities with fastest job growth. Between FY '82 and FY '84, the least needy deciles gain funds while the most needy lose funds. For instance, the most needy decile on employment loss experiences a 3.5 percent decrease in funding between FY '82 and FY '84, while the least needy experiences a 14.1 percent gain.

The relationship between per capita funding and change in the unemployment rate from 1970 to 1981 is weaker than the relationship observed for the previously discussed indicators (see Table 5.3). Even though jurisdictions with the greatest increase in unemployment rates have higher per capita grants than those with the greatest decrease in rates, the intervening deciles go up and down. Per capita funds fall in all deciles except the least needy two between FY '82 and FY '84.

F. Other Need Variables

Table 5.4 presents in summary fashion the relationship between per capita funding and aged housing, level of unemployment, crime rate, and net change in income. In general, for each variable per capita funding under the current dual formula tends to increase as one moves from less needy to more needy deciles. Cities with the highest percentages of aged housing receive $42.61 per capita, compared to $8.72 per capita for cities with the lowest percentages of aged housing. The corresponding amounts for the other variables in Table 5.4 are: unemployment rate ($29.20 vs. $11.65), violent crime rate ($30.27 vs. $14.43), and net change in per capita income ($32.69 vs. $12.11). With aged housing and the unemployment rate the most needy cities lose funds and the least needy gain funds. As with population decline, funding losses for

Table 5.2 Entitlement Cities: Average Per Capita Grants and Percent Change in Grants From FY '82 to FY '84, by Poverty Rate and Poverty Rate Change Deciles

N: 732

Decile	Poverty Rate 1980				Change in Poverty Rate, 1970-1980			
	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84
Most Needy	$34.55	$34.31	$33.17	-4.0%	$34.26	$34.74	$33.56	-2.0%
2	32.03	31.84	30.95	-3.4	21.80	22.65	24.68	+13.2
3	22.02	22.20	23.79	+8.1	25.07	24.73	23.93	-4.6
4	21.05	20.73	21.12	+0.3	21.25	21.28	21.53	+1.3
5	20.90	20.59	20.83	-0.3	16.89	16.90	17.30	+2.4
6	15.46	15.38	15.32	-0.9	17.89	17.50	17.23	-3.7
7	17.06	17.02	17.44	+2.2	17.19	16.83	17.08	-0.6
8	12.35	12.70	13.29	+7.6	14.51	14.01	13.95	-3.9
9	11.80	11.96	12.04	+2.0	17.41	16.55	16.66	-4.3
Least Needy	9.21	9.20	8.88	-3.6	19.77	17.94	17.98	-9.1
Ratio (Most Needy/ Least Needy)	3.8	3.7	3.7		1.7	1.9	1.9	

Table 5.3 Entitlement Cities: Per Capita Grants and Percent Change in Grants from FY '82 to FY '84, by Change in Unemployment Rate and by Change in Employment Deciles

Decile	Change in Unemployment Rate, 1970-1981				Percent Change in Nonmfg. Employment, 1967-1977[a]			
	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84	FY'82 Per Capita Grant	FY'83 Per Capita Grant	FY'84 Per Capita Grant	Percent Change 82-84
Most Needy	$31.02	$30.72	$28.93	-6.7%	$37.29	$37.28	$35.97	-3.5%
2	33.25	33.16	31.93	-4.0	29.85	29.35	29.08	-2.6
3	27.24	27.26	26.37	-3.2	25.70	25.22	25.38	-1.3
4	26.51	26.25	26.02	-2.2	18.60	18.62	20.35	+9.4
5	22.70	22.42	22.40	-1.3	18.31	17.53	17.64	-3.7
6	22.70	22.16	21.95	-3.3	16.96	6.42	15.82	-6.7
7	24.27	23.37	23.22	-4.3	15.83	15.61	15.94	+0.7
8	15.52	15.66	16.08	-3.6	13.11	13.50	14.41	+9.9
9	14.25	15.17	17.90	+25.6	13.65	13.60	14.11	+3.4
Least Needy	16.73	16.37	16.94	+1.3	9.00	9.96	10.27	+14.1
Ratio (Most Needy/ Least Needy)	1.9	1.8	1.7		4.1	3.7	3.5	

a. Nonmanufacturing employment includes retail, service, and wholesale trade employment. Manufacturing employment was not included because of missing cases due to Census confidentiality requirements.

Table 5.4 Entitlement Cities: Average per Capita Grants and Percent Change in Grants, by Selected Need Indicators

	Pre-1940 Housing			Unemployment Rate, 1981			Violent Crime, 1980		Net Change in Per Capita Income, 1969-79		
	Per Capita $ FY '84	Percent Change 82-83	Percent Change 82-84	Per Capita $ FY '84	Percent Change 82-83	Percent Change 83-84	Per Capita $ FY '84	Percent Change 1982-84	Per Capita $ FY '84	Percent Change 82-83	Percent Change 83-84
Most Needy	$42.61	-1.8%	- .6%	$29.20	0	-5.6	$30.27	- .3%	$32.69	2.4%	-1.1%
2	33.81	.1	-2.3	29.80	-1.2	-2.4	26.50	-3.4	33.80	.2	-2.1
3	30.41	-1.8	-2.4	27.96	.2	-2.7	22.47	- .4	23.56	3.5	10.6
4	19.52	-2.5	-3.0	27.59	-1.5	-2.0	18.60	.8	22.85	1.6	.0
5	16.26	2.0	7.2	22.67	1.0	6.7	18.64	-1.0	20.11	-2.1	-2.0
6	18.04	-3.7	-2.7	22.12	-2.0	.4	15.91	.5	18.34	- .2	3.6
7	15.81	-1.6	.6	17.10	-2.4	1.7	16.29	-2.4	17.71	.2	.0
8	15.26	.6	6.1	15.99	0	.7	15.81	3.2	15.76	-2.8	-1.6
9	12.07	5.2	3.8	14.60	1.6	7.9	15.64	-2.4	12.96	.2	- .6
Least Needy	8.72	13.1	5.8	11.65	-2.4	.3	14.43	- .3	12.11	1.5	1.2

high unemployment cities are greatest between FY '83 and FY '84, when aged and overcrowded housing are added to the formula.*

In summary, the dual formula remains responsive to the various measures of need discussed above. Funds are generally spread more evenly and are less targeted to need when 1980 Census data are substituted for 1970 data on poverty, overcrowding, and aged housing. However, even after the change in data source, the formula continues to show a high degree of targeting on most measures.

G. Decile Analysis for Urban Counties

In Table 5.5 urban counties are compared to entitlement cities by means of the decile analysis developed above. On the basis of the information available on urban counties for a few variables, each urban county is placed in one of the deciles defined for the cities. For example, if an urban county has a poverty rate of 10 percent and the seventh decile for cities contains cities with poverty rates between 9.8 percent and 10.3 percent, then that county is located in the seventh decile. As seen in Table 5.5, only five urban counties had a poverty rate above the median (boundary between deciles 5 and 6) for entitlement cities. In general, urban counties are less needy than entitlement cities.

II. A NEEDS ANALYSIS USING COMPOSITE NEED INDEXES

A. Responsiveness to Need Indexes

Chapter 3 developed a composite need index consisting of three dimensions: density, poverty, and age and decline. This section will examine the dual formula's responsiveness to both the composite index and its individual dimensions.

Table 5.6 shows the FY '84 per capita grants and their percentage change from FY '82 to FY '84 for deciles of the three dimensions. For each dimension of need, cities with the most need receive more than cities with the least need. (This finding, of course, is not unexpected given the results of the individual variable analysis.) Between FY '82 and FY '84, the formula becomes more responsive to the density dimension (i.e., the ratio of per capita funds in the most needy decile to funds in the least needy rises), while responsiveness to the poverty and age and decline dimensions decreases.

The needs dimensions are based on rates while the formula allocates funds on the basis of shares. Thus, many growing cities have an increased share of total poverty and receive more funds, even though their rate of poverty is lower than in more needy cities. Many declining cities have eliminated substantial proportions of their pre-1940 housing because demand has fallen. This decreases their share of aged housing and they lose funds.

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* Appendix H contains information on the correlation between per capita funding and need variables.

Table 5.5 Urban Counties Categorized According to Entitlement City Deciles on Selected Variables[a]

Decile	Poverty Rate, 1980	Percent Pre-1940 Housing	Percent Change in Population 1960-80	Percent Change in Population 1970-80
Most Needy	0	1[b]	0	0
2	0	3	0	1
3	0	2	1	3
4	3	11	7	3
5	2	8	6	6
6	5	13	8	7
7	13	17	20	14
8	12	13	19	21
9	39	14	26	15
Least Needy	22	14	9	26
All Urban Counties	96	96	96	96

a. The deciles are based on data for the 627 entitlement (central and satellite) cities in the U.S. See note b for interpretation of numbers in the table.

b. The number (in this case, one) of urban counties with a rate of pre-1940 housing equal to or greater than the rate of pre-1940 housing that separates the first from the second decile of entitlement cities on this variable.

Table 5.6 Entitlement Cities: FY '84 Per Capita Grants and Percent Change from FY '82 to FY '84, by Need Deciles for Density, Poverty, and Age and Decline Dimensions[a]

	FY '84 Per Capita Grants			Percent Change FY '82-FY '84		
Deciles	Density	Poverty	Age and Decline	Density	Poverty	Age and Decline
Most Needy	$28.91	$31.39	$31.58	+3.4%	-5.6%	-3.1%
2	20.30	30.74	30.98	+4.6	-4.6	-3.1
3	24.70	21.80	30.49	-2.2	-3.6	-4.5
4	22.03	23.35	26.86	-1.3	-0.1	-2.4
5	21.38	25.00	18.05	-3.4	-1.9	-6.6
6	17.53	20.51	19.19	-5.4	+0.6	+6.4
7	19.61	17.54	16.05	-6.2	+17.3	-2.3
8	18.55	16.13	16.04	-6.0	-0.1	-2.9
9	18.74	16.33	14.59	-5.5	+1.1	-10.3
Least Needy	16.38	15.95	14.61	-7.1	+1.0	+17.4
Ratio FY '84 (Most Needy/ Least Needy)	1.8	2.0	2.2			
Ratio FY '82	1.6	2.1	2.6			

a. The Density, Poverty, and Age and Decline dimensions are defined in Chapter 3.

Growing cities, with a higher demand for housing, have eliminated fewer pre-1940 units and thus increased their share. Nevertheless, the incidence of aged housing remains higher in declining cities because fewer new units are built than in growing cities. Essentially, the dual formula has become less responsive to the age and decline and poverty dimensions of need because the share of poverty and aged housing is changing in a different manner than is the incidence of these variables. The increased responsiveness to the density dimension is related to the increased concentration of SMSA overcrowding in entitlement jurisdictions. How this occurs is discussed in Chapter 6.

Figure 5.2 shows the same data for the composite needs index.* The formula is very responsive to need. In FY '84 cities in the top decile of need receive $34.96 per capita, compared to only $9.51 per capita for cities in the bottom decile of need. The most needy cities do lose funds between FY '82 and FY '84, while the least needy gain. For instance, average per capita grants to the most needy decile decrease from $36.30 to $34.96 between FY '82 and FY '84, while grants to the least needy increase from $8.65 to $9.51. (See Figure 5.2 and Table 5.7.) However, in the FY '84 simulation the average per capita grant in the most needy decile was still 3.7 times greater than in the least needy decile.

The dual formula is designed to respond to several dimensions of community development need. To the extent that individual cities have diverse needs, it is not surprising that previous tables showed that per capita funds do not increase smoothly with each indicator and dimension of need. However, when needs are aggregated into a single index, the per capita amounts increase without interruption with need. This is another example of how the composite index smooths over discontinuities that appear where one focuses on individual indicators or single dimensions of need.

B. Regression Analysis for the Individual Needs Dimensions -- Technical Section

Multiple regression analysis was used in the 1977 and 1979 reports to determine the implicit emphasis that the dual formula gives to the various dimensions of need. The general form of the multiple regression equation is:

$$\text{Per Capita \$} = a + b(\text{AGE AND DECLINE}) + c(\text{DENSITY}) + d(\text{POVERTY})$$

where AGE AND DECLINE, DENSITY, and POVERTY represent the per capita need scores. The coefficient b measures the change in per capita dollars for a one-unit change in the age and decline dimension at given levels of density and poverty. The regression coefficients c and d have a similar interpretation. The multiple regression indicates how a formula implictly weights

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* The composite index was derived by weighting the separate indexes as follows: .40 (POVERTY) + .35 (AGE AND DECLINE) + .25 (DENSITY). See Chapter 3 for an analysis of this index.

Figure 5.2

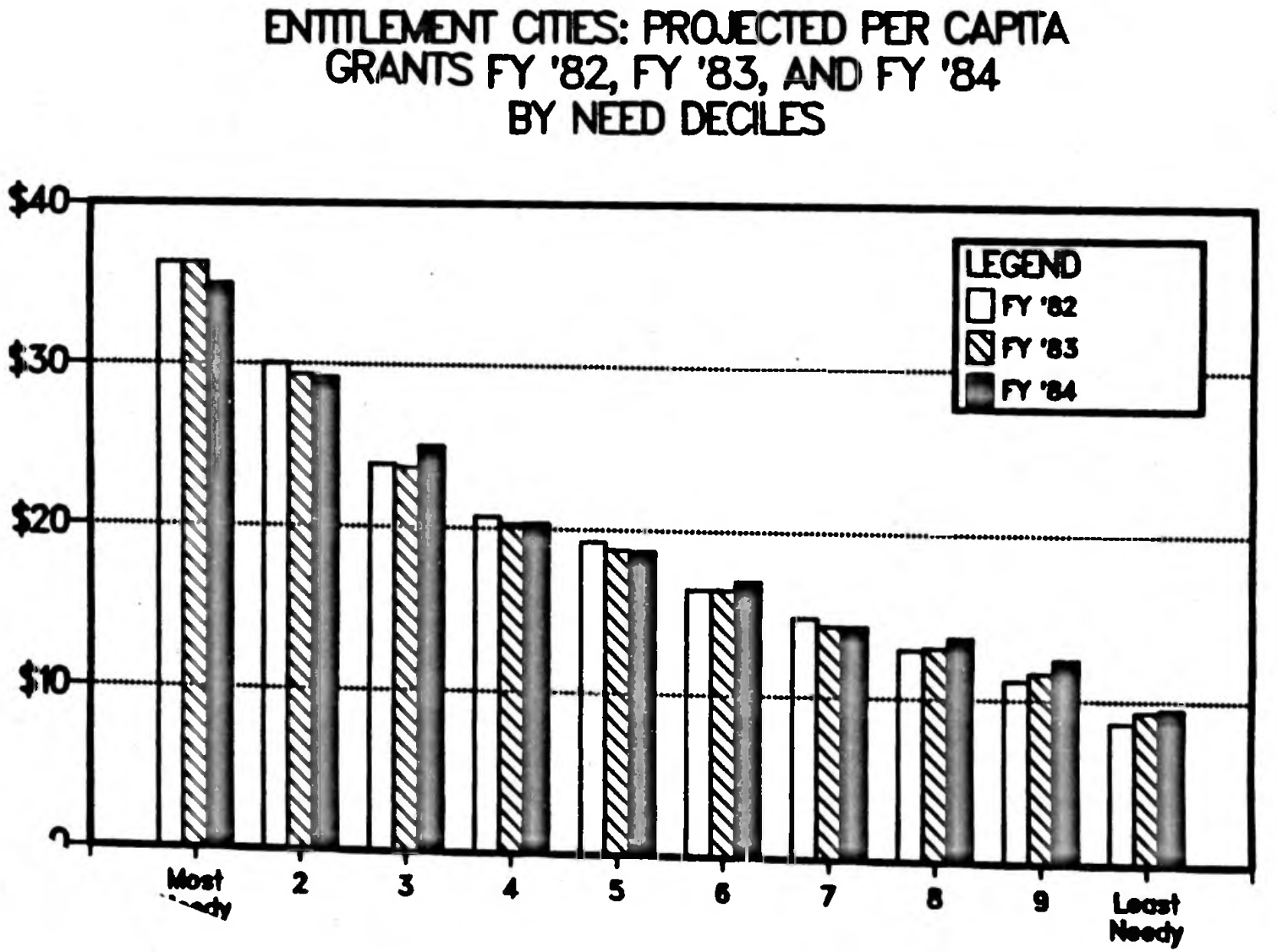
ENTITLEMENT CITIES: PROJECTED PER CAPITA GRANTS FY '82, FY '83, AND FY '84 BY NEED DECILES
$40
$30
$20
$10
LEGEND
FY '82
FY '83
FY '84
Most
2
3
4
5
6
7
8
9
Least
Needy

Table 5.7 Entitlement Cities: Per Capita Grants and Percent Changes in Grants by NEED Deciles

NEED[a] Deciles	Per Capita Grants FY '82	FY '83	FY '84	Percent Change 82-83	83-84	82-84
Most Needy	$36.30	$36.26	$34.96	-.1%	-3.6%	-3.7%
2	30.07	29.36	29.22	-2.4	-.5	-2.8
3	23.86	23.64	24.99	-.9	+5.7	+4.7
4	20.71	20.27	20.31	-2.1	+1.0	-1.9
5	19.27	18.78	18.70	-2.5	-.4	-3.0
6	16.42	16.42	16.96	0.0	+3.3	+3.3
7	14.80	14.32	14.31	-3.2	-.1	-3.3
8	12.97	13.09	13.70	+.9	+4.7	+5.6
9	11.16	11.63	12.44	4.2	7.0	11.5
Least Needy	8.65	9.34	9.51	8.0	1.8	+9.9
Ratio (Most Needy/ Least Needy)	4.2	3.9	3.7			

a. The NEED index used to construct these deciles was derived by weighing the separate need dimensions as follows: NEED=.40 (POVERTY) +.35 (AGE and DECLINE) +.25 (DENSITY). Need scores were available for 593 entitlement cities. See Chapter 3 for further discussion of the needs index.

each dimension. Since the average score on each of the dimensions is zero, the constant term a will equal the average per capita amount. In addition to the multiple regression coefficients, the regression tables also report the multiple coefficient of determination, the standard error of estimate, and the standard deviation of the per capita amounts.* These three measures provide additional insights on how the dual formula operates.

The multiple regression results for the FY '82, FY '83, and FY '84 per capita amounts are presented in Table 5.8. In FY '84, per capita funds increase $6.87 for each unit increase in the age and decline dimension, $3.73 for each unit increase in the density dimension, and $5.19 for each unit increase in the poverty dimension.** Thus the formula is most responsive to a unit increase in age and decline and least responsive to an increase in density. Nevertheless, as was seen from the decile analysis, the responsiveness to density has increased since FY '82, while responsiveness to the other dimensions has decreased. This can be seen in Table 5.8 from the fact that the density slope increases from $2.75 in FY '82 to $3.73 in FY '84, while the other two dimensions show decreases in slopes -- age and decline from $7.95 to $6.87 and poverty from $6.09 to $5.19.

C. Regression Analysis for the Composite Needs Index -- Technical Section

Just as the decile analysis can be applied to separate need indexes or the composite need index, the regression analysis can also be performed for both the individual indexes and the composite index. The advantage of an analysis using only the composite index is that it highlights how the formula targets funds among jurisdictions with varying levels of overall need. The disadvantage of a regression analysis using only the composite need index is that it obscures the tradeoff in responsiveness to the different dimensions of need reported above.

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* The multiple coefficient of determination (R^2) is the proportion of variation in per capita dollars explained by the multiple regression equation, or by the three need indexes. The standard error of estimate measures the "average" disparity between actual per capita amounts and per capita amounts predicted by the multiple regression equation. It is therefore an absolute indication of how well the regression equation, or the estimated per capita amounts, describes the relationship between the actual per capita amounts and the need indexes. If the standard error of estimate equaled zero, the actual and predicted per capita amounts would be identical, indicating an exact relationship between actual formula allocations and the implicit relation between allocations and the indexes. The standard deviation measures the variability, or spread, of the per capita amounts about the average per capita amount.

** A comparison of the Beta coefficients showed the same pattern. Beta coefficients adjust each estimated slope parameter by the ratio of the standard deviation of the independent variable to the standard deviation of the dependent variable. This process eliminates the problem that a "unit" of poverty is not equal to a "unit" of density.

Table 5.8 Multiple Regression of Per Capita Amounts on Per Capita Need Scores[a]

Regression Slopes for Dimensions of CD Need ($)	FY'82	FY'83	FY'84
(1) AGE AND DECLINE	7.95	7.54	6.87
(2) DENSITY	2.75	3.24	3.73
(3) POVERTY	6.09	5.91	5.19
Intercept[b] ($)	22.81	22.70	22.66
Other Statistics			
(4) Coefficient of Multiple Determination (R^2)	.748	.754	.728
(5) Standard Error of Estimate ($)	5.91	5.66	5.61
(6) Standard Deviation of Per Capita Amounts ($)	11.76	11.41	10.76

a. The statistics reported in this table resulted from regressions of the following form: Per Capita $=a + b (AGE AND DECLINE) + c (DENSITY) + d (POVERTY), where a is the intercept and b, c, and d are each a measure of slope, or the change in per capita dollars associated with a unit change in a dimension of need.

b. Since the average score for each need dimension is zero, the intercept equals the average per capita grant for the year being considered for the 593 cities included in the regression.

The previous analysis was based on a linear regression analysis, which assumes that the response to need is constant for all levels of need. Examination of a graphic representation of per capita grants versus need suggests that the relationship to total need is curvilinear rather than linear, i.e., more similar to Figure 5.4 than Figure 5.3. Therefore, to test how the formula responds to composite need, a regression of the following form is used for each of the three Fiscal Years:*

$$\text{Per Capita } \$ = a + b\ \text{NEED} + c\ \text{NEED}^2$$

The nonlinearity is introduced by squaring the need variable.

The regression results for the nonlinear relationship are given in Table 5.9. The regression equations for each year have the shape indicated in Figure 5.4; that is, the response of the formula to need increases with need. This can be seen by examining what happens with changes at different levels of need. For example, in FY '84 a city with a composite score of 1.1 receives approximately $1.92 more per capita than a city with a score of 1.0 if all per capita allocations are determined precisely by the regression equation. At the same time, a city with a composite score of -0.9 receives approximately $1.21 more than a city with a score of -1.0 under the same assumptions. Thus, the extra funding for the difference in scores is greater for cities with higher need. The shift from 1970 to 1980 Census data affects the responsiveness of the regression equation to need differently depending upon which end of the curve one looks at. In the above example, the extra funding is greater in FY '82; that is, the city with a score of 1.1 receives $2.21 more as compared to $1.92 more in FY '84. At the lower end, the extra funding is slightly less in FY '82; that is, the city with a needs score of -0.9 receive $1.20 more as compared to $1.21 in FY '84.

Of course, the allocations are not precisely what the regression equation would predict. Comparing the FY '82 and FY '84 regression results shows that there is little difference in the degree to which actual allocations match those predicted by the regression equations. In both years there is a moderate fit; approximately two-thirds of all per capita allocations are within $5.82 (FY '84) or $6.32 (FY '82) of the amounts predicted by the regression equations (see Standard Error of Estimate in Table 5.9).

A point that may not be obvious from Table 5.8 is that FY '83 is not intermediate between FY '82 and FY '84. The introduction of 1980 poverty data alone makes the regression equation more responsive to need at the higher end,

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* Appendix K analyzes the sensitivity of the findings in this section to different definitions of need (i.e., including and excluding particular variables in the factor analysis) and to different weights applied to the various factors. In general, the findings in Appendix K with respect to changes in targeting are similar to those reported below.

Figure 5.3
Linear Response to Need

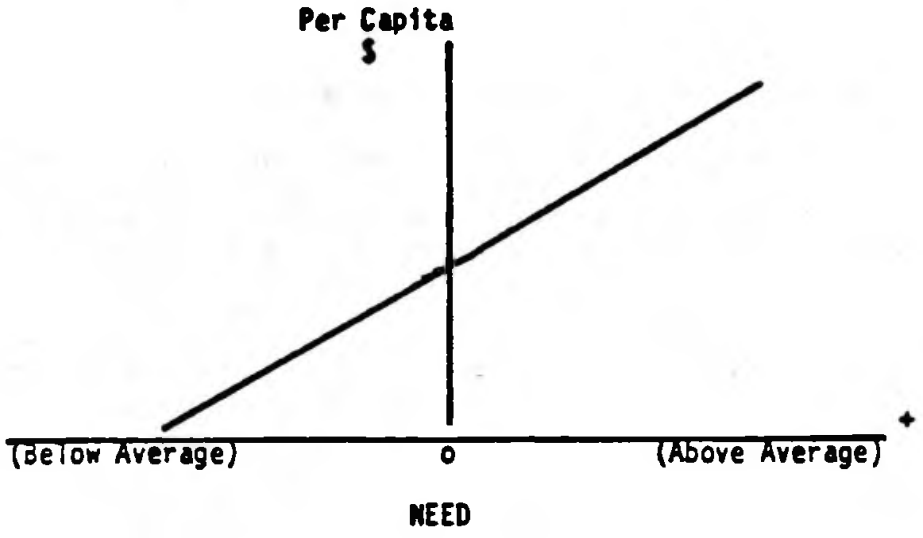

Figure 5.4
Nonlinear Response to Need

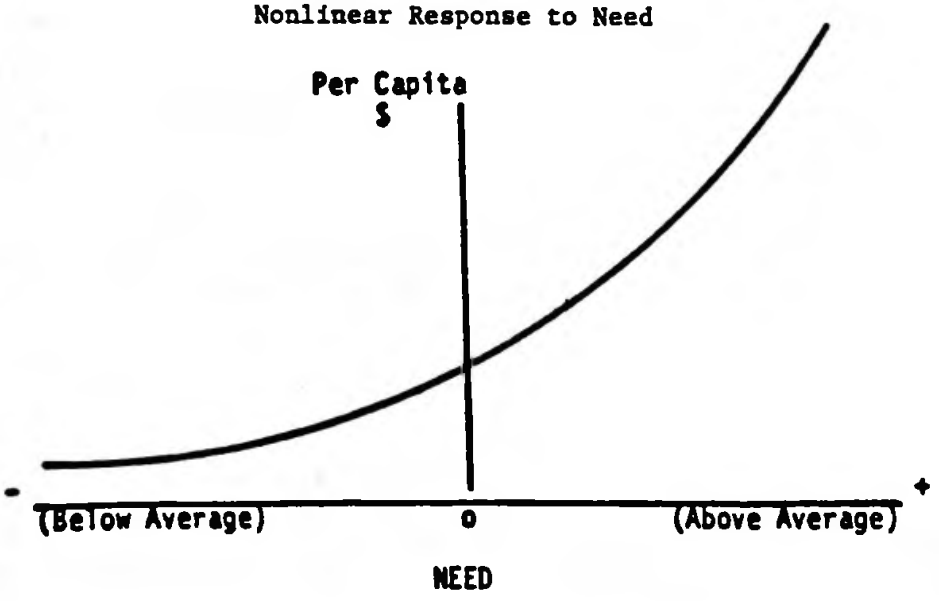

Table 5.9 Nonlinear Regression Results for Composite Need Index for Entitlement Cities[a]

	FY'82	FY'83	FY'84
Regression Coefficient for NEED	$17.06	$16.76	$15.65
Regression Coefficient for $NEED^2$	2.54	3.15	1.79
Intercept	21.95	21.64	22.06
Coefficient of Determination (R^2)	.711	.735	.708
Standard Error of Estimate ($)	6.32	5.87	5.82
Standard Deviation of Per Capita Amounts ($)	11.76	11.41	10.76

a. The statistics reported in this table resulted from regressions of the following form: Per Capita $ = a + b NEED + c $(NEED)^2$. In this case the slope or change in per capita dollars associated with a unit change in NEED is equal to (b + 2c NEED). All coefficient estimates are significant at the .001 level.

whereas the use of 1980 data for overcrowded and aged housing makes it less responsive.*

D. Funding Shifts for Large Cities by Need Score Ranking

Table 5.10 shows funding changes for large cities ranked according to their score on the composite need index. The percentage losses in funding for several cities with the highest need scores (e.g., Newark, Detroit, Cleveland) and corresponding gains for many of the cities with the lowest need scores (e.g., San Diego, Tucson, Houston, Phoenix) illustrate the decrease in targeting found from the regression analysis. There are, however, some exceptions. Miami, a relatively high need score city, receives an 18.8 percent increase between FY '83 and FY '84; New York and Philadelphia, which also have high scores, experience only minor changes in funding (-1.8 percent, +.1 percent respectively); Tulsa and Oklahoma City, two cities with relatively low need scores, suffer losses of 13 percent.

A similar listing relating funding changes to city need scores for cities under 250,000 population was examined. While the relationships were less obvious than for larger cities, the following patterns stood out. First, many small cities with the highest need scores (e.g., East St. Louis, Camden, Paterson, Pontiac) suffer funding losses in the 5-10 percent range between FY '82 and FY '84. In certain instances, funding gains brought about by introducing 1980 Census data on poverty are reversed by larger losses from introducing 1980 data on pre-1940 and overcrowded housing. Second, many Southern cities with above-average scores suffer funding losses in each year because of reductions in their shares of poverty and overcrowded housing. However, several high-poverty Texas cities (e.g., Laredo, Pharr, McAllen) that suffer funding losses between FY '82 and FY '83 because of their lower shares of poverty receive offsetting increases between FY '83 and FY '84 because of their increased shares of overcrowded housing. Third, most cities in California -- whether with high need scores (Compton, El Monte, Pomona) or low need scores (Ventura, Fullerton, Esconido, Orange) -- experience increases in funds in each year. In the case of more needy California cities, funding increases compensate somewhat for their underfunding relative to other cities with similar need scores. Fourth, while several Northern, less needy cities experience large funding losses (Warren and Livonia, Michigan; Kettering, Ohio; Woodbridge, New Jersey), many do not (Berwyn and Oak Park, Illinois; Medford, Arlington, and Newton, Massachusetts; Bloomfield and

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* It should be emphasized that the largest changes in targeting occur between FY '83 and FY '84 when pre-1940 and overcrowded housing are introduced. Although introduction of poverty increased the dual formula's responsiveness to need at the high end, it decreased it at the low end because the total number of poor persons (as opposed to the rate of poverty) increased for many less needy cities. Since a city's share of a formula factor is what determines its formula allocation, this limits the increase in targeting between 1982 and 1983. In fact, the linear regression analysis shows practically no change in targeting between FY '82 and FY '83 (see Appendix K). The slope coefficients for need are $17.17 in FY '82, $16.89 in FY '83, and $15.73 in FY '84.

Table 5.10 Funding Changes in Large Cities Ranked According to Need[a]

Need Ranking	City	FY '82 Per Capita Amount	Percent Change in Funding FY '82-83	FY '83-84	FY '82-84
1	Newark	$41	2.7%	- 9.0%	- 6.6%
2	Detroit	45	- .1	- 8.9	- 9.0
3	Cleveland	56	- 2.9	- 6.5	- 9.2
4	St. Louis	67	- 5.6	- 7.3	-12.4
5	Atlanta	28	.1	- 4.7	- 4.5
6	Baltimore	36	- 1.6	- 1.1	- 2.6
7	Buffalo	57	- 1.7	- 2.6	- 4.2
8	Chicago	35	1.3	- 5.1	- 3.9
9	New Orleans	33	- 6.5	- 1.5	- 7.9
10	Philadelphia	37	- .1	.2	.1
11	New York	31	1.0	- 2.8	- 1.8
12	Washington	33	- 4.6	- 1.2	- 5.8
13	Boston	41	- 1.2	- .2	- 1.4
14	Birmingham	33	- 8.3	- 6.2	-14.1
15	Miami[b]	24	2.2	16.2	18.8
16	Cincinnati	42	- 3.7	- 3.5	- 7.0
17	Louisville	40	- 4.6	- 4.2	- 8.6
18	Oakland	29	- 1.9	- 3.5	- 5.4
19	Norfolk	25	- 6.6	- 5.0	-11.3
20	Pittsburgh	50	- 4.2	- 2.5	- 6.6
21	Memphis	22	- 3.5	- 4.4	- 7.8
22	Milwaukee	30	- 1.7	- 3.8	- 5.4
23	Tampa	20	- 7.1	- 2.4	- 9.4
24	San Francisco	33	- 3.5	2.4	- 1.2
25	Toledo	18	.0	- 2.6	- 2.5
26	Kansas City	27	- 4.7	- 8.2	-12.5
27	Los Angeles	16	8.3	31.0	41.8
28	Minneapolis	42	- 2.7	- .3	- 3.1
29	San Antonio	22	- 1.0	2.4	1.4
30	Long Beach	16	2.3	10.5	13.0
31	Fort Worth	17	- 6.2	- 1.6	- 7.8
32	El Paso	19	10.8	7.6	19.3
33	Sacramento	15	.2	.8	1.0
34	Columbus	15	6.6	- 6.5	- .4
35	Portland	25	- 3.3	3.6	.2
36	St. Paul	31	- 2.4	- 1.9	- 4.2
37	Denver	21	- 4.7	- .2	- 4.9
38	Omaha	19	- 3.9	- 4.6	- 8.4
39	Seattle	28	- 2.5	1.6	- 1.0
40	Indianapolis	14	.5	-12.3	-11.8
41	Dallas	16	- .5	5.3	4.8
42	Charlotte	15	- 4.9	- 3.2	- 8.0
43	Jacksonville	17	- 6.2	- 3.3	- 9.3
44	Baton Rouge	16	- 1.7	- 1.2	- 2.9
45	Nashville-Davidson	15	- 8.2	- 6.2	-13.9
46	Wichita	14	- 9.8	- 5.9	-15.2
47	Oklahoma City	15	- 9.8	- 3.6	-13.0
48	Tucson	15	6.8	2.3	9.3
49	San Diego	12	8.3	12.9	22.3
50	Tulsa	13	- 9.6	- 3.9	-13.2
51	Albuquerque	13	3.6	1.8	5.4
52	Houston	15	- .3	12.2	11.8
53	Austin	14	7.2	6.2	13.9
54	Honolulu	14	5.1	19.9	25.2
55	Phoenix	12	6.0	5.0	11.4
56	San Jose	10	7.1	20.2	28.7

a. Cities with populations over 250,000 are ranked according to the composite need index discussed in Chapter 3.

b. The grant calculations for FY '83 and FY '84 do not include the adjustment for Cuban and Haitian populations required by law. This discrepancy has little effect on funding for most cities in this table. For Miami, however, the increase in funding is considerably understated. Miami actually had a 3.96 percent increase in funds from FY '82 to FY '83, rather than the 2.2 percent shown here.

Clifton, New Jersey). Many of the latter, which benefit from aged housing and growth lag, continue to be overfunded relative to other cities with similar need scores.* Finally, several less needy cities located in the West and Southwest, in addition to the California cities mentioned above, experience funding increases between FY '82 and FY '84 (Richardson, Arlington, and Pasadena, Texas; Mesa, Temple, and Glendale, Arizona; Orem, Utah; Fort Collins, Colorado.) Despite their increases, these cities continue to receive much less funding on a per capita basis than the more needy cities.

E. Characteristics of Gainers and Losers

The previous section examined the targeting and equity characteristics of grants across Fiscal Years. However, it is also useful to examine the relative total need scores of gainers and losers between FY '82 and FY '84. Table 5.11 shows average need scores by percent change in grants for regions and city type. Overall, cities losing between 1 and 10 percent of their total grants have above-average needs. Those with stable grants have about average needs, while those with gains, or losses greater than 10 percent, have below-average needs. Regional patterns are fairly consistent, except that large losers (over 10 percent) in the South Atlantic also have above-average needs.

F. Causes of Funding Shifts

This section repeats the components analysis of Chapter 4, Section III.C, for need deciles. Table 5.12 disaggregates the percentage change in funds for each need decile into the percentage change for each formula variable. Column (1) is the percentage change in total funding between FY '82 and FY '84 for those cities that do not change formulas. It differs slightly from the percent changes by need decile shown in Table 5.7 because of the exclusion of jurisdictions that switch formulas. The remaining columns break down this change into the contributions of each formula variable. Columns (2) through (7) add up to the percentage change reported in column (1). In every need decile, except the least needy and the third less needy, there are losses from the second formula and gains from the first formula. In general, second-formula losses are larger for more needy cities, while first-formula gains are larger for less needy cities. As seen in Appendix C, these differences are in large part due to the fact that needy cities rely more heavily on the second formula (98 percent of funds in the least needy decile come from the second formula in FY '82) while less needy cities rely on the first formula (93 percent of funds in the least needy decile come from the first formula in FY '82).

Funding losses in the neediest decile come primarily from the age of housing factor (3.36 of 4.02 percentage points), because declining cities such as St. Louis and Cleveland have eliminated a substantial proportion of their aged housing stock since 1970 (30 percent and 29 percent, respectively), thereby reducing their share of SMSA aged housing. Growing cities, on the other hand, have a higher demand for housing and have torn down old housing at a slower rate, thereby increasing their share of old housing in SMSA's. However, the

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* Overfunding caused by growth lag and aged housing is discussed further in Chapter 6.

Table 5.11 Average Need Scores for Gainers and Losers From FY '82 to FY '84 (Entitlement Cities)

	Losers				Small Change (Less Than 1%)	Gainers			
	Greater Than 20%	10-20%	5-10%	1-5%		1-5%	5-10%	10-20%	Greater Than 20%
593 Cities[a]	-.33	-.07	.23	.40	.08	-.14	-.46	-.42	-.35
New England	-	-.38	.37	.32	.00	-.06	-.47	-.35	-
Mid Atlantic	-.59	-.27	.54	.65	.52	.02	-.02	.13	-
E.N. Central	-.62	-.16	.55	.37	-.18	-.09	-.42	-.24	-.33
W.N. Central	-.84	.05	-.36	-.06	-	-.45	-.37	-.25	-
S. Atlantic	.26	.11	-.17	.52	-	-.51	-.68	.11	-.55
E.S. Central	-.03	-.03	.19	.02	-	-.11	-	-	-
W.S. Central	-.19	-.24	.06	-.39	-.92	-.10	-.11	-.45	-.89
Mountain	-.56	-.55	-.04	-.26	-1.32	-.78	-.60	-.68	-.87
Pacific	-	-.28	.09	-.07	-.24	-.26	-.59	-.53	-.26
Central Cities	-.12	-.04	.28	.45	.27	-.06	-.43	-.37	-.26
Satelite Cities	-.67	-.38	-.42	-.26	-.54	-.35	-.51	-.59	-.55

a. The average need score for the population in the 593 cities equals zero. Positive (negative) scores indicate above- (below-) average need. Missing data reduced the number of cities from 627 to 593.

Table 5.12 Components of Change by Need Deciles

Decile	(1) Percent change in total funding FY '82 to FY '84	Percent change in funding due to: First Formula Variables (2) Population Factor	(3) Poverty Factor	(4) Over-Crowding Factor	Second Formula Variables (5) Growth Lag Factor	(6) Poverty Factor	(7) Age of Housing Factor
Most Needy	-4.02	-.03	.01	.32	-.98	.02	-3.36
2	-2.66	-.10	- .66	1.43	-.78	-1.37	-1.17
3	4.76[a]	-.21	.34	6.92	-.57	-1.10	- .63
4	-2.52	-.24	-1.13	.57	-.44	-1.04	- .25
5	-2.75	-.27	-1.08	.37	-.48	-1.28	- .01
6	3.03	-.38	.73	3.04	-.32	- .79	.75
7	-3.26	-.48	-2.80	.51	-.31	- .55	.36
8	6.29	-.64	1.09	5.52	-.11	- .20	.63
9	12.43	-.86	4.52	9.02	-.04	- .14	- .06
Least Needy	9.85	-1.04	7.93	2.77	-.09	- .09	.38

a. The increase in funding in this decile is dominated by Los Angeles, which increased in funding by almost 40 percent.

increased share of old housing in least needy cities has had little effect on their total funding because few such cities use the second formula.

Funding increases in less needy cities come from poverty and overcrowded housing. In the least needy decile, poverty is the more important contribution (+7.93 percent vs. +2.77 percent for overcrowded housing). In the next two deciles, however, overcrowded housing is the source of most increases (9.02 of 12.43 percent in the ninth decile and 5.52 of 6.29 percent in the eighth decile). Overcrowding also increased funds in the third neediest decile. Even though this decile gets only 40 percent of its funds from the first formula, those cities using the first formula experienced a 70 percent increase in their share of overcrowded units. The increase in funds in this decile is dominated by Los Angeles, which increased funding by almost 40 percent. Most other cities in this decile lost funds.

III. CONCLUSIONS

The dual formula continues to target more funds to needy cities when 1980 Census data are used to calculate grants. The most needy 10 percent of cities, based on the composite needs index, will receive $34.96 per capita in FY '84, compared to only $9.51 per capita for the least needy 10 percent of cities. This high level of targeting carries over to the individual indicators and dimensions of city need that were examined in this Chapter. For instance, cities with the greatest losses in nonmanufacturing employment will receive $35.97 per capita in FY '84, compared with only $10.27 for cities with the fastest growth in nonmanufacturing employment.

The degree of targeting decreases compared to when 1970 Census data were used. (That is, per capita grants increase less steeply with need than when 1970 Census data were used.) The neediest cities tend to lose funds, while the least needy cities gain funds. Even though cities losing more than 10 percent in funds have below-average needs, those losing 1 to 10 percent have above-average needs, while those gaining funds have below-average needs.

Funding losses in the most needy cities come primarily from age of housing. Declining cities such as Cleveland and St. Louis eliminated a substantial proportion of their pre-1940 housing during the 1970's, thereby reducing their share of aged housing. Less needy cities increased their share of aged housing because their growing population dictated that a larger proportion of the aged housing remain in use. However, these cities derived little increased benefit from this factor because they relied heavily on the first formula. Funding increases in the least needy cities were due to poverty and overcrowding.

The responsiveness of the dual formula to particular dimensions of need is altered when 1980 Census data are used. Responsiveness to the density dimension increases, while responsiveness to the poverty and age and decline dimensions decreases. The increased responsiveness to density is related to the increased concentration of SMSA overcrowding in entitlement jurisdictions using the first formula, which will be explained in Chapter 6. The decreased responsiveness to poverty and age and decline occurs because the share of

poverty and aged housing increased in growing cities between 1970 and 1980, even though their incidence of these problems remained relatively low.

Despite the redistribution of funds to less needy cities when 1980 Census data are used, the dual formula continues to be highly targeted to cities with greater needs. In the projected FY '84 grants, the per capita amount received by the most needy 10 percent of cities is still 3.7 times the per capita amount received by the least needy 10 percent.

CHAPTER 6

RELATIVE IMPORTANCE AND RELIABILITY OF FORMULA VARIABLES

This Chapter will examine in detail how the dual formula functions in terms of the importance each formula factor plays in allocating funds, and the role of each factor in targeting funds. In addition, the individual formula factors are examined to determine how well they reflect relative needs.

The principal findings concerning specific formula variables are given below.

Overcrowding

-- Between 1970 and 1980, overcrowded housing diminished by 40 percent in all SMSA's and by 19 percent in all entitlement cities and urban counties. In 1980 overcrowding accounted for only 5 percent of the occupied housing stock in entitlement cities and counties.

-- A considerable proportion of the funds gained in the West (Mountain and Pacific regions) were due to an increased concentration of overcrowded housing. The Pacific region actually showed a 20 percent increase in overcrowded units, while the Mountain region lost such units at a below-average rate (14 percent).

-- Despite the reduction in overcrowded housing, the overcrowding factor receives a larger implicit formula weight in FY '84 than FY '82 (.28 vs. .25), because SMSA overcrowding has become relatively more concentrated in entitlement jurisdictions using the first formula than have other first-formula variables (population and poverty).

-- The overcrowding variable increases in importance in FY '84 by allocating a higher average per capita amount; it would also concentrate funds in fewer jurisdictions.

-- As noted above, the relative importance of a formula variable can change with the introduction of new data. This is possible under the current formula because, except for growth lag, individual city shares on the formula variables are computed relative to the totals for SMSA's, rather than to the totals for entitlement jurisdictions. Under such a system, if a formula variable becomes more concentrated in entitlement jurisdictions -- as was the case with 1980 overcrowded housing -- then that variable receives a higher implicit weight in the formula, even though its nominal weight has not changed.

-- While overcrowded housing units exhibit an above average incidence of inadequacy, they account for a small percentage of inadequate units in metropolitan areas. Housing units built before 1940 and units occupied by low-income families are much broader indicators of inadequacy.

-- Overcrowding is not a very consistent predictor of housing and neighborhood problems because there are demographic groups and cities that have housing and neighborhood problems but low rates of overcrowding, and others with relatively few problems but high rates of overcrowding.

Pre-1940 Housing

-- Many of the declining cities such as Cleveland and St. Louis eliminated substantial proportions of their old housing during the 1970's and thereby reduced their funding from the aged housing variable.

-- As a general rule, pre-1940 housing in central cities is closely associated with community development problems such as housing inadequacy and neighborhood abandonment; the incidence of housing and neighborhood problems is particularly high when an aged unit is occupied by a renter or a low-income family.

-- Owner-occupied aged units, particularly those in suburbs, exhibit much lower incidences of housing and neighborhood problems than renter-occupied aged units and units occupied by low-income families.

Poverty

-- Chapters 2 and 3 showed that recent shifts in poverty toward older, declining cities make it a much better proxy for many indicators (e.g., unemployment, job loss) of community development problems.

-- According to data from HUD's Annual Housing Survey, poverty is one of the most reliable predictors of community development problems such as inadequate housing and neighborhood blight.

Growth Lag

-- The growth lag factor is considerably more important in allocating funds than its .20 weight would suggest. About a third of funds allocated by the second formula are distributed by growth lag.

-- Growth lag has a greater funding impact than its .20 weight would suggest because growth lag is the only one of the formula variables that is defined consistently, in the sense that the individual city shares of growth lag are computed relative to the total for all entitlement cities. As noted earlier, individual city shares for each of the other formula variables are computed relative to the total for all SMSA's. Essentially, these different computation methods have caused the relative importance of the formula variables to deviate from their nominal weights.

-- Growth lag is responsible for much variation in CDBG funding across cities because cities with above-average population growth do not obtain any funds from growth lag.

-- Because of the association of population loss with economic decline and other socioeconomic indicators of need, growth lag is a major reason that the dual formula system targets funds to needy cities as well as it does. However, not all declining cities are extremely needy; this can result in divergences between funding and city need.

-- Many older, declining cities receive high levels of per capita funding from the pre-1940 housing and growth lag variables in the second formula. However, these cities do not always exhibit high levels of need, measured by variables such as poverty and unemployment. These cities, many of then suburban, are frequently overfunded relative to other cities with equal or greater needs but with less aged housing and population decline.

-- One problem that has occurred with the operation of the growth lag variable in the CDBG formula has been the sometimes significant changes in yearly funding for certain cities caused by fluctuations in annual population estimates. It is unlikely that these yearly changes in funding are associated with changes in a city's underlying need for CDBG funding.

The remainder of this Chapter contains two major sections. The first examines several aspects of how the current dual formula operates. Although this section is somewhat technical, it contains some important explanations of how the dual formula distributes funds and why the relative importance of formula factors cannot be discerned from their weights in the formula. This is important for understanding why redistributions occur. Readers desiring to skip the detailed discussion will find the main points summarized at the end of the Chapter. The second section examines the characteristics and reliability of each factor.

I. THE ROLE OF FORMULA VARIABLES IN ALLOCATING FUNDS

A. Relative Importance of Formula Variables

The weight assigned to each factor in the dual formula implies a judgment on the relative importance of each variable in determining the distribution of funds. As seen in Table 6.1, poverty has twice the weight of population and overcrowded housing in the first formula, while growth lag has the smallest weight in the second formula. The proportion of funds distributed by each variable also depends upon the proportion of funds allocated by the first and second formulas. But for funds distributed by the first formula, the weights imply that poverty should distribute twice as much money as population and overcrowded housing, while for funds distributed by the second formula, growth lag should distribute a smaller share than the other two factors.

Table 6.2 shows the actual percentage of funds distributed by each formula factor in FY '82 and FY '84.* The percentages due to each factor change from FY '82 to FY '84; the first formula accounts for a larger share of total funds and, within the first formula, poverty and overcrowding become more

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* The computation of percentage of funds distributed by each formula factor is described in Appendix B.

Table 6.1 Factor Weights in Current Dual Formula

Factor	Weight
First Formula	
Population	.25
Poverty	.50
Overcrowded housing	.25
Second Formula	
Growth lag	.20
Poverty	.30
Aged housing	.50

Table 6.2 Total Share of Entitlement Funds Distributed by Each Formula Factor

Factor	FY '82	FY '84	FY '92 / FY '93	FY '92 using all 90 DATA
First Formula	40.7	41.5	42.6 / 43.9	44.5
Population	11.0	10.2	11.2	10.6
Poverty	19.4	19.5	19.6	20.6
Overcrowded housing	10.3	11.8	11.7	13.3
Second Formula	59.3	58.6	57.4	55.5 %
Growth lag	20.0	19.5	~~20.7~~ 19.2	18.5 %
Poverty	11.1	11.0	10.5	9.4 %
Aged Housing	28.2	28.1	27.7	~~28.~~ 27.5 %
Total	100.0	100.1[a]		

a. Does not sum to 100 because of rounding.

important relative to population. Two anomalies appear when one observes the data in Table 6.2. First, growth lag accounts for almost twice as many funds as poverty in the second formula, although growth lag has the smaller weight. Second, the relative importance of first-formula factors changes, although factor weights remain the same.

Both inconsistencies can be explained by looking at the way the formula operates. All factors except growth lag distribute funds on the basis of a jurisdiction's share of the SMSA total of that variable. Growth lag distributes funds on the basis of a jurisdiction's share of total growth lag for metropolitan cities and urban counties. (Growth lag is not defined for SMSA's, only for entitlement jurisdictions). Thus, while growth lag has the potential of distributing 100 percent of its share of funds, the other factors cannot distribute 100 percent of their shares because entitlement jurisdictions do not account for all the population, poverty, etc., contained in SMSA's. Furthermore, while virtually all jurisdictions with growth lag choose the second formula and claim their share of growth lag funds, SMSA shares of the other variables are split across formulas. Thus, other factors distribute a smaller proportion of their potential share of funds.

The first two columns of Table 6.3 show the share of each factor accounted for by each formula for FY '82 and FY '84. Second-formula jurisdictions account for over 97 percent of total growth lag in both years, whereas these jurisdictions account for only 37.66 and 38.09 percent of total SMSA poverty. That the formula factors distribute less than 100 percent of their potential and that the share distributed differs across variables cause the formula to have implicit weights (columns 3 and 4) differing from the explicit ones (column 5). (Appendix B explains the mathematics of this relationship.)

The shares of funds distributed by each factor in the first formula do not differ dramatically from the explicit factor weights because the shares of SMSA totals do not differ greatly among the factors. However, growth lag commands an effective weight in the second formula substantially greater than its explicit weight because it is defined consistently (i.e. the numerators would sum to the denominator if all cities with growth lag chose the second formula) and because most entitlement jurisdictions with growth lag choose the second formula. A consistent definition applied to the other factors would reduce the effective weight of growth lag -- directly, by increasing the importance of the other two factors, and indirectly, by inducing some jurisdictions to shift to the first formula because of the shifts in implicit weights for the second-formula factors.

The history of the CDBG formula explains why the other factors are divided by the SMSA total for each variable rather than the total for entitlement jurisdictions only. Originally there was only one formula (the first formula), which simultaneously (1) divided 80 percent of the CDBG funds between entitlement and nonentitlement jurisdictions within metropolitan areas and (2) distributed the share going to entitlement jurisdictions among those jurisdictions. The remaining 20 percent of the funds were reserved for nonentitlement jurisdictions outside metropolitan areas. Each entitlement jurisdiction's share of the 80 percent was based on the weighted sum of its proportion of SMSA totals for the factors of the first formula. Since the sum of entitlement jurisdictions' shares was less than the full 80 percent, the remainder was available for distribution among nonentitlement jurisdictions within

Table 6.3 Share of SMSA Totals Accounted for by Jurisdictions That Use Each Formula and Implicit and Explicit Factor Weights in the Dual Formula

	Share of SMSA Totals Accounted for by Jurisdictions		Factor Weights			
	(1)	(2)	(3)	(4)	(5)	
	FY '82 93	FY '84	Implicit FY '82	Implicit FY '84	Explicit	93
First Formula Jurisdictions						
Population	44.65%	42.44%	.27	.25	.25	.25.3
Poverty	39.32	40.76	.48	.47	.50	48.9
Overcrowded Housing	41.88	49.20	.25	.28	.25	26.4
Second Formula Jurisdictions						
Growth Lag	97.21	97.40	.33	.32	.20	34.1
Poverty	37.66	38.09	.19	.19	.30	16.9
Aged Housing	57.17	58.62	.48	.49	.50	49.0

SMSA's. Subsequent to the adoption of the dual formula, Congress began setting aside specific amounts for nonentitlement jurisdictions. In 1981 the distinction between metropolitan and nonmetropolitan nonentitlement jurisdictions was eliminated, and the share going to the combined groups was set at 30 percent. This meant that 70 percent of the funds were reserved for entitlement jurisdictions.

The inconsistent definition of the other factors permits the implicit weights to shift as the distribution of these variables alters within SMSA's. These shifts occur automatically, without any policy decision as to the changing importance of particular factors. The incidence of overcrowding has decreased dramatically, as seen in Chapter 4, but because the relative concentration of SMSA overcrowding has increased more rapidly in entitlement jurisdictions than the relative concentration of population or poverty, the formula places a larger weight on overcrowding than before (.28 compared to .25). On the other hand, population, a nonneed variable, receives a lower implicit weight in FY '84 than in FY '82 (.25 compared to .27).

B. Regional and Jurisdictional Differences in the Importance of Formula Variables

Substantial variation exists across regions and jurisdictions in the share of funds received from particular variables. Figure 6.1 shows the percentage of funds from each formula by region for the FY '82 and FY '84 grants, while Table 6.4 shows the percentage of funds from each variable. The most important regional difference is the use of different formulas. New England relies almost entirely on the second formula (95.7 percent) in FY '82, while reliance on the first formula increases as one moves toward the Southwest, where the West South Central region receives only 12.5 percent of its funds from the second formula in FY '82. This pattern is intensified in the FY '84 grants, where each region relies more heavily on its dominant formula. New England's share of funds from the second formula grows from 95.7 to 99.2 percent, while the Pacific region's share from the first formula grows from 74.8 to 81.2 percent.

New England's increase from the second formula comes from poverty and aged housing; the Middle Atlantic and East North Central regions' increases from the second formula come from all three variables; and the West North Central region loses its share from the second formula from poverty while gaining on the other two variables. The Southern and Western regions' increases from the first formula come entirely from overcrowding. Most notably, the Pacific region's share from overcrowding increases from 20.5 to 29.6 percent.

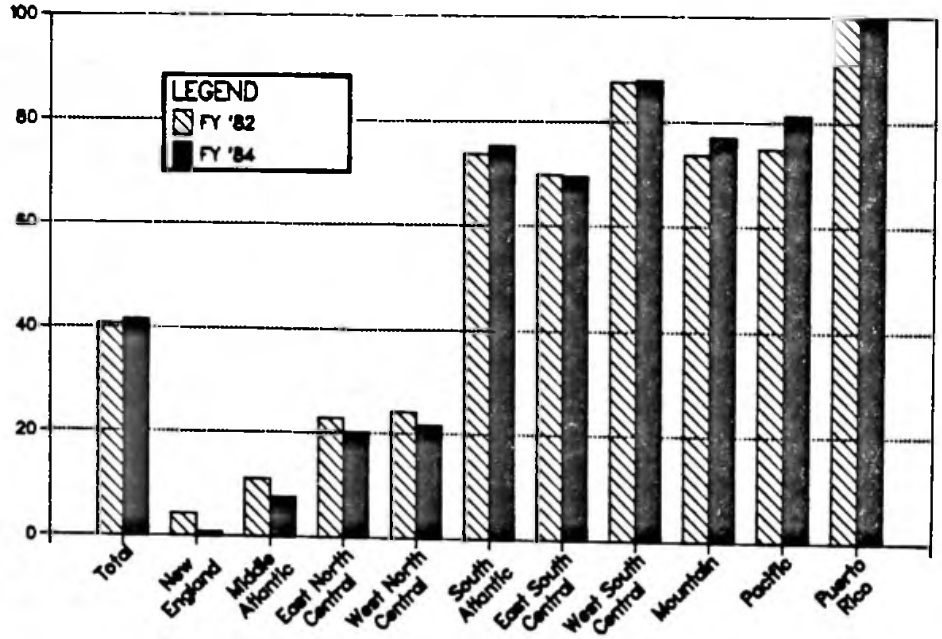
Funding from poverty is most important to the Southern regions and least important to the Northern regions in both years. However, this is partly because the Southern regions make greater use of the first formula, which weights poverty more heavily. Between FY '82 and FY '84, the share of funds from poverty falls in the South and increases in the East North Central region.

Figure 6.2 shows the relative importance of each formula, and Table 6.5 shows the relative importance of each variable by jurisdiction type. As with the regional comparison, the most important differences are due to the relative

Figure 6.1

SHARE OF FUNDS FROM EACH FORMULA BY REGION

FIRST FORMULA



SECOND FORMULA

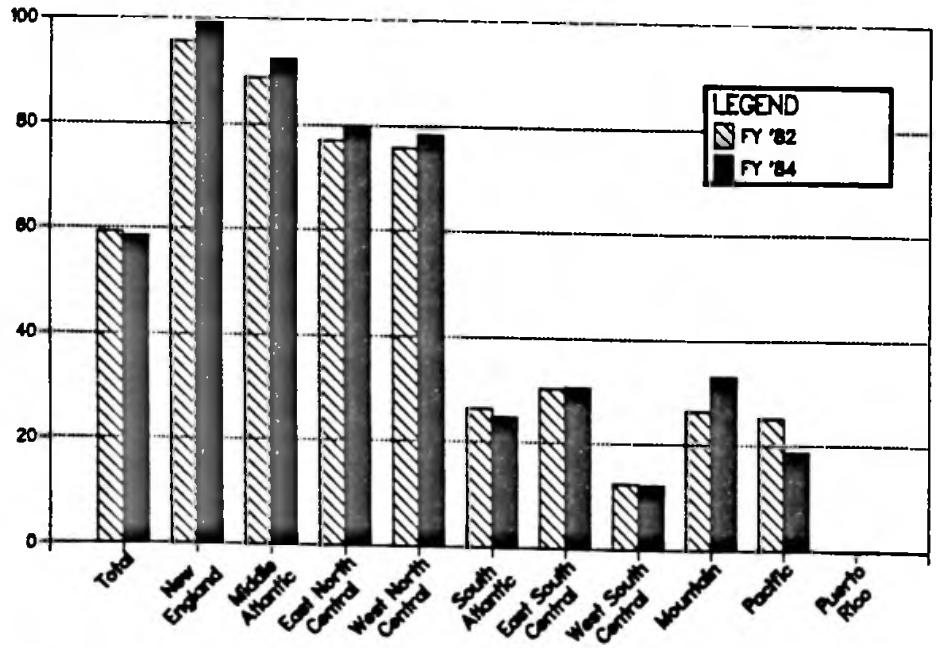
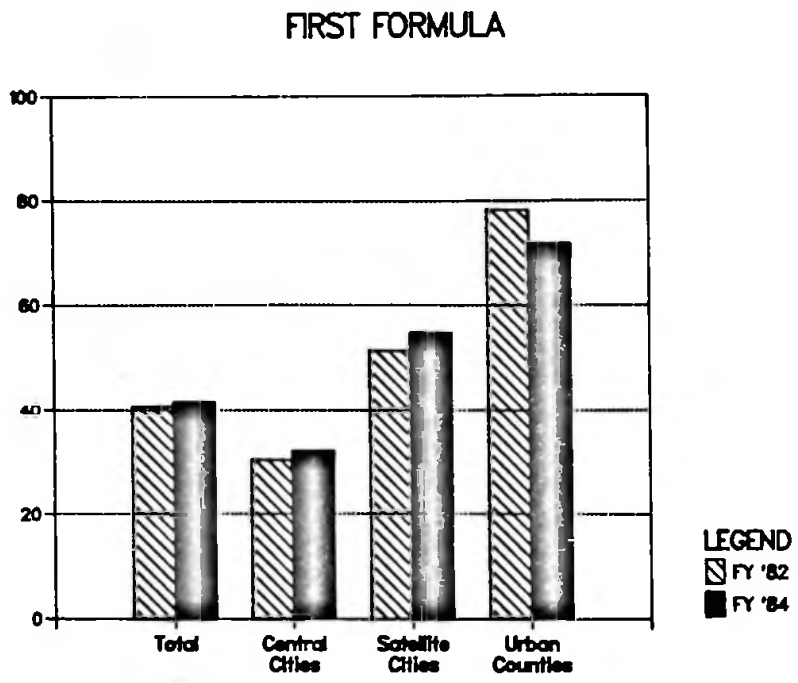


Table 6.4 Percent of Funds from Each Formula and Formula Factor by Region

	Total	New England	Mid-Atlantic	EN Central	WN Central	South Atlantic	ES Central	WS Central	Mountain	Pacific
FY '82										
Jurisdiction Using First Formula	40.7	4.3	11.1	22.9	24.2	73.6	69.7	87.5	73.5	74.8
Population	11.0	1.5	4.4	8.0	7.9	18.6	13.9	19.1	28.8	21.6
Poverty	19.4	1.6	4.1	8.3	9.7	37.8	40.0	46.1	32.5	32.8
Overcrowding	10.3	1.3	2.5	6.7	6.7	17.2	15.8	22.3	18.3	20.5
Jurisdiction Using Second Formula	59.3	95.7	88.9	77.1	75.8	26.4	30.3	12.5	26.4	25.2
Growth Lag	20.0	29.2	28.6	29.2	27.0	9.7	12.7	3.9	7.9	6.6
Poverty	11.1	15.4	16.4	13.4	13.1	7.8	7.4	4.1	6.3	5.1
Aged Housing	28.2	51.1	44.0	39.6	35.7	9.1	10.3	4.5	12.1	13.5
Poverty 1 + Poverty 2	30.5	16.9	20.4	21.6	22.8	45.4	47.4	50.2	38.9	38.0
FY '84										
Jurisdiction Using First Formula	41.5	.8	7.6	20.2	21.7	75.2	69.4	87.8	77.0	81.2
Population	10.2	.3	3.1	7.6	8.0	17.7	15.2	18.5	20.5	18.5
Poverty	19.5	.3	3.1	8.6	9.7	37.4	39.7	43.0	36.5	33.1
Overcrowding	11.8	.1	1.4	4.0	3.9	20.1	14.6	26.4	20.0	29.6
Jurisdiction Using Second Formula	58.5	99.2	92.4	79.8	78.3	24.8	30.6	12.2	23.0	18.8
Growth Lag	19.5	28.4	29.3	30.4	29.3	9.6	13.8	4.2	7.1	5.2
Poverty	11.0	16.2	17.3	14.7	12.0	6.7	6.5	3.5	4.9	3.3
Aged Housing	28.1	54.7	46.8	34.7	37.1	8.4	10.3	4.4	11.0	10.3
Poverty 1 + Poverty 2	30.5	16.5	20.4	23.3	21.7	44.1	46.2	46.5	41.4	36.4

Figure 6.2

SHARE OF FUNDS FROM EACH FORMULA BY JURISDICTION TYPE



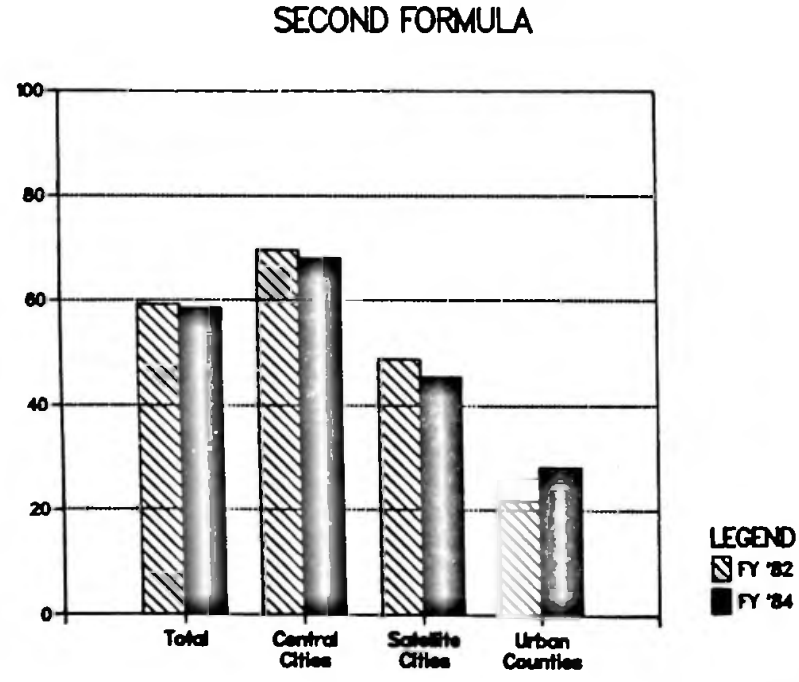


Table 6.5 Percent of Funds from Each Formula and Formula Factor by Jurisdiction Type

	FY '82				FY '84			
	Total	Central Cities	Satellite Cities	Urban Counties	Total	Central Cities	Satellite Cities	Urban Counties
Jurisdiction Using First Formula	40.7	30.4	51.3	78.2	41.5	32.1	54.7	71.8
Population	11.0	6.4	16.3	27.5	10.2	6.2	14.8	23.4
Poverty	19.4	16.6	21.1	30.0	19.5	16.5	24.1	29.2
Overcrowded housing	10.3	7.4	13.8	20.6	11.8	9.4	15.8	19.2
Jurisdiction Using Second Formula	59.3	69.6	48.7	21.8	58.5	67.9	45.3	28.2
Growth Lag	20.0	24.1	16.2	4.6	19.5	23.8	15.0	4.5
Poverty	11.1	13.4	7.3	3.8	11.0	13.1	6.6	4.6
Aged Housing	28.2	32.1	25.2	13.4	28.1	30.9	23.7	19.1
Poverty 1 + Poverty 2	30.5	30.0	28.5	33.8	30.5	29.6	30.7	33.8

use of the two formulas. Central cities are the heaviest users of the second formula (69.6 percent in FY '82) while urban counties are the heaviest users of the first formula (78.2 percent in FY '82). Satellite cities are almost evenly split across the two formulas in FY '82; 51.3 percent of funding is from the first formula and 48.7 percent from the second.

In both years, central and satellite cities get a greater share from the first formula in FY '84 than in FY '82 while urban counties get a larger share from the second formula. For central cities, increased first-formula funding comes from overcrowding, while the increase in satellite cities comes from both poverty and overcrowding. Urban counties' increased second-formula funding comes from aged housing. Although they also have increased second-formula funding from poverty, this is offset by their first-formula loss from poverty.

C. Spreading Versus Concentration of Formula Variables

Another dimension to the role of particular variables in allocating funds is the degree to which they spread funds evenly or unevenly across jurisdictions. Table 6.6 examines this issue by showing the means, standard deviations, and coefficients of variation of per capita grants for each variable. The coefficient of variation is a relative measure of dispersion; it is obtained by dividing the standard deviation by the mean. A small coefficient of variation indicates that the mean is typical of most items studied; a large coefficient of variation indicates that the mean is not typical of most items studied either in sign or in magnitude. In this case the differences are in magnitude, not in sign. The relative mean per capita grants for each variable are consistent with the relative implicit weights observed in Table 6.3.

The concept of concentrating versus spreading of funds is best illustrated by comparing population and overcrowding. In FY '82, population provided a mean per capita grant of $3.42 to cities choosing the first formula, while overcrowding provided $3.21. However, there is considerable difference in how funds are distributed to cities. By definition, per capita population funds are spread evenly, as shown by the zero coefficient of variation. Overcrowding, on the other hand, has a coefficient of variation equal to .46, indicating a fair amount of disparity among per capita funds distributed to different jurisdictions. Poverty spreads funds still more unevenly in the first formula in FY '82, shown by its coefficient of variation of .77. In the second formula, growth lag distributes funds the most unevenly, while age of housing distributes funds the most evenly. The concentration of funds from the growth lag factor is due to its distribution; jurisdictions with above-average growth have zero growth lag, while those with below-average growth have positive values.

Several interesting changes are observed when FY '82 and FY '84 per capita amounts are compared. First, the leveling effect observed in Chapter 4 can be seen in several ways. The average per capita grant for all jurisdictions remains $18.99 in both years (because in our projections neither population nor total funding is changed), but the coefficient of variation drops from .61 to .58, showing a slightly smaller variation in per capita funds across jurisdictions. The mean per capita grant from the first formula

Table 6.6 Mean, Standard Deviation, and Coefficient of Variation in Per Capita Funds from Formula Variables

	FY '82			FY '84		
	Mean Per Capita Grant	Standard Deviation	Coefficient of Variation[a]	Mean Per Capita Grant	Standard Deviation	Coefficient of Variation
First Formula	$12.66	$ 5.86	.46	$13.58	$ 6.45	.47
Population	3.42	0	0	3.33	0	0
Poverty	6.03	4.67	.77	6.39	4.45	.69
Overcrowding housing	3.21	1.49	.46	3.86	2.79	.72
Second Formula	28.90	11.51	.40	26.53	11.35	.43
Growth Lag	9.73	6.39	.66	8.82	6.45	.73
Poverty	5.43	2.22	.41	4.97	2.27	.46
Aged Housing	13.74	4.33	.32	12.74	4.30	.34
All Jurisdictions	18.99	11.63	.61	18.99	10.91	.58

a. The coefficient of variation is defined as (standard deviation)/(mean).

12.66) is much smaller than that from the second formula ($28.90) in FY '82, but the disparity decreases in FY '84, with first-formula jurisdictions rising to $13.58 and second-formula jurisdictions falling to $26.53. Surprisingly, even though aggregate funds are distributed somewhat more evenly, funds within formulas are distributed less evenly. The coefficient of variation rises from .46 to .47 in the first formula and from .40 to .43 in the second formula. The observed leveling is thus the result of reduced disparity between the two formulas rather than lessened targeting within each formula.

The increase in mean per capita grants in the first formula results from an increase in per capita funding from poverty and overcrowding, offset by a small decrease from population because of the larger pro rata reduction required in FY '84 over FY '82. The increase in per capita funding from poverty accompanies more even distribution of poverty funding, seen in the drop of the coefficient of variation from .77 to .69. Overcrowding, on the other hand, causes substantially more concentration of funds in FY '84; the coefficient of variation increases from .46 to .72. In fact, overcrowding is the most unevenly distributed first-formula factor in FY '84.

The second formula shows losses in per capita funds from all three factors. Growth lag losses occur because of the increased pro rata reduction. Even as average per capita growth lag funds fall, they become more concentrated (the coefficient of variation rises from .66 to .73). Since growth lag is the same in both FY '82 and FY '84 grants (both use 1980 data), this increase in concentration is explained by cities that switch from the first to the second formula in FY '84, some of which have nonzero growth lag values. Poverty and age of housing show similar patterns: the average per capita grant falls, and funds become less evenly distributed.

The previous sections have shown that the dual formula behaves in a more complex way in allocating funds than is apparent from an explanation of how individual grant amounts are determined. The relative weights of the formula factors do not accurately represent the importance of each factor in allocating total funds; the importance of each variable changes as the distributions of the variables change within SMSA's. Furthermore, there are regional and jurisdictional differences in the importance of the variables. The variables also differ in the degree to which they target funds to a few jurisdictions or spread funds evenly. Because the relative importance of the variables is altered when 1980 Census data are used, and the degree of targeting of some variables is changed, the question arises as to whether the formula variables are still good proxies for community need. This issue will be examined in the following section.

II. CHARACTERISTICS OF INDIVIDUAL FORMULA VARIABLES

A. Introduction

This section discusses relationships between (1) the variables pre-1940 housing, overcrowding, and poverty and (2) housing and neighborhood problems addressed by the CDBG program. This analysis will test whether these variables continue to be good indicators of community development need. In addition, this section reviews the rationale for including growth lag in the formula and discusses instances of overfunding caused by the combination of aged housing and growth lag in the second formula.

The main data source used in the analys
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Because of recent increased interest in
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their dwellings continually need repair, and
that public outdoor recreation facilities in
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This analysis pertains to metropolitan a
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counties. These areas are not specifically i
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A. Introduction

This section discusses relationships between (1) the variables pre-1940 housing, overcrowding, and poverty and (2) housing and neighborhood problems addressed by the CDBG program. This analysis will test whether these variables continue to be good indicators of community development need. In addition, this section reviews the rationale for including growth lag in the formula and discusses instances of overfunding caused by the combination of aged housing and growth lag in the second formula.

The main data source used in the analyses of pre-1940 housing, overcrowding and poverty is the 1977 Annual Housing Survey (AHS), which provides information on individual housing units and households. The objective is to identify relationships among variables (indicating each unit's age, whether it is overcrowded, the household's income, and problems with the unit itself or in its neighborhood) across a sample of more than 30,000 individual metropolitan housing units. To the extent that variables are directly correlated from unit to unit, formula variables may be presumed to reflect the relative presence of problems from city to city. This line of inference from individual units to city aggregates is useful, because variables for a range of housing and neighborhood problems for a large number of cities are not available.

The section also cites pertinent results from the 1979 report, City Need and Community Development Funding, based on the 1976 Annual Housing Survey. New research with the 1977 Annual Housing Survey was conducted for this Report; since the previous report, HUD has developed comprehensive indicators of housing adequacy based on AHS data. They include the individual housing problems discussed in the 1979 report and other problems. The most recent year for which the AHS included all the variables necessary to construct these indicators is 1977.

Because of recent increased interest in neighborhood public infrastructure, the new work includes analysis of several variables not analyzed in the 1979 report: (1) frequent, serious breakdowns of public sewer or water service, (2) respondents' indications that streets or roads adjacent to their dwellings continually need repair, and (3) respondents' indications that public outdoor recreation facilities in their neighborhoods are unsatisfactory. These variables were selected because sewer and water facilities, streets and roads, and recreation facilities are common uses of CDBG funds by recipient jurisdictions. Since these variables do not reflect problems of nonneighborhood infrastructure -- bridges, major highways, sewage disposal and water treatment facilities, etc. -- they are only partially representative of the full range of urban infrastructure conditions.

This analysis pertains to metropolitan areas, even though the focus of this Chapter is CDBG entitlement areas. The difference is those portions of metropolitan areas located outside of central and satellite cities and urban counties. These areas are not specifically identified in the Annual Housing Survey. Their housing stock represents 25 percent of the metropolitan housing stock. The rate of housing inadequacy is slightly larger than the metropolitan average in the urban portions of these areas and smaller in the rural portions. Therefore, deducting them from the sample, even if it could be done, would have little effect on the proportions analyzed in this section. Appendix L includes some data on housing inadequacy in the rural portions of metropolitan areas and in SMSA balances (outside central cities) of selected metropolitan areas, both of which include nonentitlement areas.

The conclusions are that poverty, construction before 1940, and overcrowding are associated with housing condition and the condition of nearby infrastructure, but more so for poverty and pre-1940 construction than for overcrowding and more so for the housing than the infrastructure variables. These findings are largely reinforced by a study of changes in housing condition between 1974 and 1977 using the AHS. Appendix L reports on this longitudinal analysis.

A.1 Trends in Formula and Problem Variables

Table 6.7 tabulates the formula and problem variables for the years 1974-1981. It includes data for all years in which the AHS instrument included each item in a manner consistent with nearby years, except for certain variables in supplementary sections of the AHS instrument in 1980 and 1981, for which HUD had not received data. The table reveals the following trends in housing, neighborhood conditions, and neighborhood infrastructure problems:

Housing adequacy improved steadily as a proportion of housing stock between 1974 and 1981.* The absolute number of inadequate units remained in the range of 3.1 to 3.3 million units through this period, while the size of the metropolitan housing stock increased from 52 to 61 million units. As a result the proportion of inadequate units decreased by 1 percent over 7 years.

Adjacency to abandoned buildings increased in absolute numbers between 1974 and 1977, and again between 1978 and 1981.** (The years 1977 and 1978 are not comparable due to changes in AHS procedures.) In 1981, 6 percent of units were reported by Census Bureau enumerators as adjacent to abandoned buildings. When the number of units reported by respondents as adjacent to abandoned buildings is added, the proportion increases to about 10 percent.

Adjacency to streets or roads needing repair increased from about 7 million to about 10 million housing units, or from about 15 percent to about 19 percent of the housing stock between 1975 and 1979.***

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* The main indicator used in this study is based on 10 specific housing deficiencies. A unit is considered inadequate if the respondent indicates the presence of one or more of the following conditions: (1) shared or incomplete plumbing facilities; (2) shared or incomplete kitchen facilities; (3) use of unvented fuel-burning space heaters; (4) no electricity; (5) sewage disposal method other than public sewer, septic tank, cesspool, or chemical toilet; (6) frequent, serious toilet breakdowns; (7) frequent, serious heating system breakdowns; (8) lack of a working electric outlet in each room and exposed wiring and frequent fuse blowing or circuit-breaker tripping; (9) presence of at least three out of four specified deficiencies in common areas, if the unit is in a multifamily structure; or (10) existence of at least three out of six specified structural maintenance problems. In some of the analysis, a six-criterion index is used, based on criteria 1-5 and the presence of three specified structural maintenance problems in criterion 10. See Appendix L for further details.

** Either (1) respondent indicates that there are boarded-up or abandoned structures in the neighborhood, or (2) enumerator reports observing any buildings that appear to be abandoned and/or buildings with windows broken or boarded-up on the street.

*** Respondent indicates that there are streets or roads continually in need of repair or open ditches in the neighborhood.

Table 6.7 Incidence of Selected Community Problems, Pre-1940 and 1940-49 Housing, and Overcrowded Housing in Metropolitan Areas, 1974-1981

A. Incidence of Selected Community Problems

	1970[d]	1974	Percent of Units Reporting Problem 1975	1976	1977	1978	1979	1980	1981
Housing inadequacy:									
Based on 10 criteria			9.2	8.8	8.9				
Based on 6 criteria		6.3	6.2	6.0	5.7	6.0	5.7	5.5	5.3
Abandoned buildings in neighborhood:									
Respondent or enumerator report			10.3	10.6	10.3				
Enumerator report		6.5[a]	7.7[a]	7.7[a]	7.6[a]	5.0[a,c]	5.8[b,c]		6.0[b,c]
Streets or roads continually in need of repair			14.7	15.6	16.3		18.9		
Breakdowns of sewer or water service		1.1	1.0	0.9	0.9				
Unsatisfactory outdoor recreation facilities					22.3		25.8		

B. Incidence of Pre-1940, 1940-49 and Overcrowded Housing

			Percent of Units in Indicated Category						
Built before 1940	37.7	34.1	33.0	32.6	32.0	31.4	30.6	29.8	29.6
Built 1940-1949	13.3	10.8	10.4	10.3	10.1	9.8	9.6	9.4	9.2
Overcrowded	7.8	5.0	4.7	4.4	4.1	4.1	3.9	4.1	3.9

Source: Annual Housing Survey, national samples. See Section II.A.1 for definitions of problems. Figures are estimated percentages of year-round housing units in the United States. (Further restrictions apply to the universes for certain items--see Appendix L.)

a. 1974-78: Abandoned buildings, or buildings with windows broken or boarded-up on street.

b. 1979-81: Buildings with windows broken or boarded-up on street.

c. Figures for 1978-81 are not comparable with figures for 1974-77 due to changes in AHS procedures for this item.

d. From U.S. Census of Housing.

Sewer or water problems occurred in a declining number of units between 1974 and 1977 -- from about 473,000 units in 1974 to 411,000 units in 1977 -- about 1 percent of the housing stock.*

Unsatisfactory recreation facilities existed for 11 million households in 1977 and 13 million in 1979, or 22 and 26 percent of the households, respectively.**

In comparison with this pattern of increases and decreases in units reporting problems, pre-1940 housing decreased relative to the total size of the metropolitan housing stock by an average of about .6 percent per year between 1974 and 1981, almost entirely reflecting new construction rather than removal of units built before 1940. The number of overcrowded units decreased by about 28,000 per year between 1974 and 1981, while the size of the housing stock was increasing by about 1 million units per year; thus the proportion of overcrowded units decreased from 5.0 percent to 3.9 percent.

A.2 Demographic and Locational Variation in Formula and Problem Variables

An initial test of the adequacy of formula variables is to compare the intensity of housing and neighborhood problems, across a variety of demographic categories, with the relative concentrations of pre-1940, overcrowded, and low-income housing units across these same categories. Although more refined tests are employed later in the Chapter, this initial analysis is useful in revealing demographic groups, regions of the country, etc., for which levels of pre-1940 housing, overcrowding, or income do not correspond well to relative levels of variables. The main disparities noted are the following: reliance on pre-1940 housing to indicate housing inadequacy would result in underrepresentation of inadequacy among Southern households; reliance on overcrowding would result in underrepresentation among elderly households and overrepresentation among Hispanic and Western households; and reliance on numbers of households in poverty would result in overrepresentation among the elderly. The relevant figures are contained in Tables 6.8-6.10.

A preliminary step is to consider the degree of correspondence among the various problems covered in Tables 6.8 and 6.9. On the whole, there is a high degree of similarity.*** The incidence of all of problems in Table 6.8 is greatest for low-income households and lowest for high-income households.

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* Either (1) use of sewage disposal method other than public sewer, septic tank, or cesspool; (2) three or more breakdowns of public sewer, septic tank, or cesspool, lasting 6 consecutive hours or more, within the last 90 days; (3) no piped water in building; or (4) three or more periods without running water, lasting 6 consecutive hours or more, within the last 90 days.

** Respondent indicates that the neighborhood lacks satisfactory outdoor recreation facilities such as parks, playgrounds, or swimming pools.

*** Because of the similarity of rank orderings across problems, the discussion later in this Chapter focuses exclusively on housing inadequacy.

Table 6.8 Housing and Neighborhood Problems in Metropolitan Areas, 1977

	Percent inadequate housing units	Percent with abandoned buildings in neighborhood	Percent with streets or roads needing repair	Percent with sewer or water break-downs	Percent with unsatis-factory outdoor recreation
Income					
Low	16	17	17	1	25
Moderate	9	11	18	1	24
Middle	6	8	17	1	22
High	3	6	15	0	19
Tenure and Structure Size					
Owner, 1 unit	5	7	17	1	23
2-4	6	13	18	0	20
5+	3	6	13	0	12
Renter, 1 unit	18	16	18	2	27
2-4	12	15	14	0	23
5+	13	13	14	1	20
Race or Ethnicity					
White	6	7	16	1	21
Black	21	29	20	2	30
Hispanic	18	15	16	1	23
Other	8	6	9	0	19
Type of Household					
Female-headed, with Children	14	20	18	1	28
Elderly-headed	9	9	13	1	21
Census Region					
Northeast	9	14	18	1	22
North Central	6	11	16	1	20
South	15	9	19	2	28
West	4	6	11	1	18
Location					
Rural portion of SMSA	10	9	27	4	36
Small SMSA: Central City	10	8	15	0	20
Urban balance	6	6	15	1	18
Medium-sized SMSA	10	10	17	1	25
Large SMSA: Central City	12	17	17	0	23
SMSA balance	5	6	14	1	19
All units	9	10	16	1	22

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

Table 6.9 Overall Housing and Neighborhood Ratings in Metropolitan Areas, 1977 (percentages)

	Rating of house as a place to live		Rating of neighborhood as a place to live	
	Poor	Poor or Fair	Poor	Poor or Fair
Income				
Low	6	29	6	30
Moderate	4	22	3	23
Middle	2	17	2	18
High	1	9	1	10
Tenure and structure size				
Owner, 1 unit	1	10	1	12
2-4	1	10	4	23
5+	0	8	2	15
Renter, 1 unit	7	35	5	27
2-4	5	31	5	30
5+	7	32	6	31
Race or ethnicity				
White	2	14	2	15
Black	8	40	8	43
Hispanic	7	30	6	32
Other	3	22	3	24
Type of household				
Female-headed, with children	8	38	8	38
Elderly-headed	2	15	3	18
Census region				
Northeast	4	19	4	22
North Central	2	16	3	18
South	3	20	3	20
West	3	18	3	19
Location				
Rural portion of SMSA	2	12	2	12
Small SMSA: Central City	3	20	3	20
Urban balance	2	13	2	16
Medium-sized SMSA	2	16	3	17
Large SMSA: Central city	5	26	6	31
SMSA balance	2	14	2	14
All units	3	18	3	20

Source: 1977 Annual Housing Survey, national sample. All figures are estimated percentages of year-round housing units in the United States.

Table 6.10 Age of Housing, Overcrowding, and Poverty in Metropolitan Areas, 1977

	Share of housing stock	Percent pre-1940	Percent 1940-49	Percent overcrowded	Percent in poverty
Income					
Low	26%	46	11	6	48
Moderate	19	35	11	6	0
Middle	22	28	10	4	0
High	33	20	8	2	0
	100%				
Tenure and Structure Size					
Owner, 1 unit	55%	24	11	3	7
2-4	4	67	7	3	8
5+	1	14	5	2	6
Renter, 1 unit	10	41	16	9	23
2-4	12	57	9	5	23
5+	10	30	6	5	20
	100%				
Race or Ethnicity					
White	81%	29	10	2	9
Black	12	44	13	9	30
Hispanic	6	36	12	17	23
Other	2	33	10	10	13
	100%				
Type of Household					
Female-headed, with children	7%	36	10	10	40
Elderly-headed	18%	44	13	1	19
Census Region					
Northeast	25%	51	9	4	13
North Central	25	38	9	3	11
South	27	19	11	5	15
West	22	20	11	5	11
	100%				
Location					
Rural portion of SMSA	14%	24	7	4	11
Small SMSA: Central City	7	34	9	4	17
Urban balance	4	26	13	3	10
Medium-sized SMSA	21	29	10	4	14
Large SMSA: Central City	28	49	11	5	17
SMSA balance	36	21	10	3	8
All units		32	10	4	13

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

Single-family renters have the greatest incidence of all problems; single-family owners the lowest of housing adequacy and neighborhood abandonment; multifamily renters have even lower incidences of neighborhood infrastructure problems than single-family owners. Blacks have the greatest incidence of problems; Hispanics the second greatest. Female-headed households with children present have substantially higher incidences of four of the five problems, while the incidences for elderly households are not appreciably different from the average as a whole. Households in the South have the greatest incidence of all problems except abandonment, which in the South is relatively low. Households in the Northeast have relatively great incidence of all problems; households in the West have the lowest incidence of all problems. In large SMSA's households in central cities have higher incidences of all problems except sewer and water system breakdowns. In small SMSA's, central cities have higher incidences of housing and abandonment problems. Suburban balances have relatively low incidences of most of the problems.

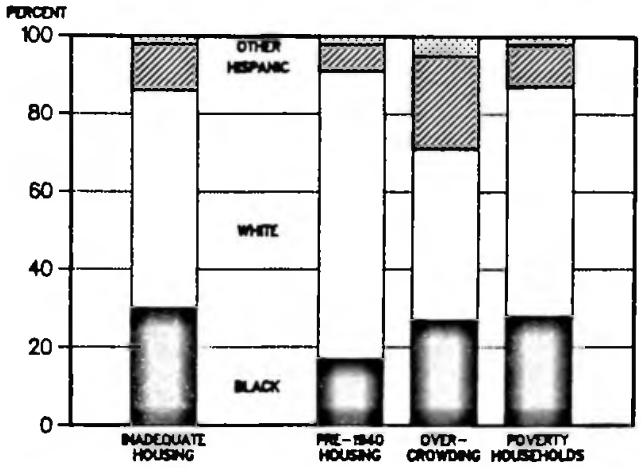
The subjective ratings in Table 6.9 correspond to the more objective ratings in Table 6.8 with three exceptions. First, although single-family renters have substantially greater objective problem scores than multifamily renters in Table 6.8, their respective incidences of poor or fair ratings in Table 6.9 are about the same. Second, although housing inadequacy is substantially more prevalent in the South than elsewhere, the proportion of units rated poor or fair by their occupants is not correspondingly larger than elsewhere. Finally, ratings of rural housing and neighborhoods are relatively low even though some of their specific inadequacy ratings are relatively large.

This review of data suggests that criteria for the formula variables should include whether they are relatively large for (1) low-income households, (2) renters, (3) black and Hispanic households, (4) female-headed households with children, and (5) central cities relative to suburban areas.

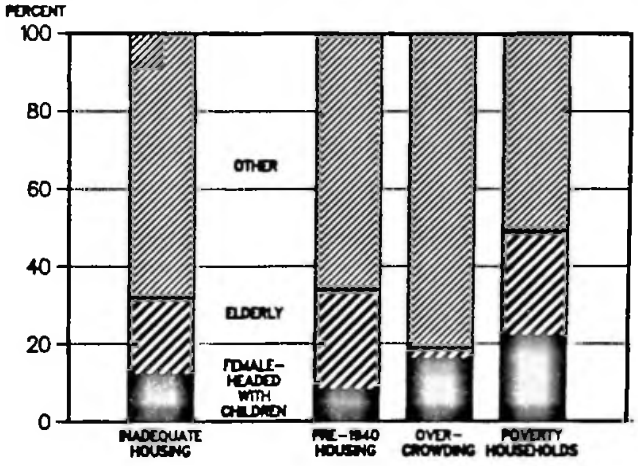
The distributions of urban problems in Tables 6.8 and 6.9 will now be compared with the distributions of the variables in Table 6.10. Figure 6.3 illustrates the approach used. The data relate to the relative concentrations of pre-1940 and overcrowded housing units and poverty households among different social-ethnic groups and household types, and in the four Census Regions. (The Tables include other disaggregations.) These data, presented in full in Table 6.10, are illustrated by the bars on the right side of each chart. These distributions are compared with distributions of housing inadequacy and other problems from Tables 6.8 and 6.9, represented by the left bar in each chart. Each bar represents 100 percent of the inadequate housing in metropolitan areas, or 100 percent of pre-1940 housing, or overcrowded housing, or poverty households. Shadings indicate the portions (shares) of the 100 percent within the various regions and demographic categories. This mode of presentation corresponds closely to that of the CDBG formula itself, in which 100 percent of appropriated funds are allocated according to cities' shares of the poverty population, overcrowded housing units, pre-1940 housing units, etc., in all jurisdictions. Figure 6.3 clearly illustrates the major conclusions stated at the outset of this section: pre-1940 housing underrepresents housing inadequacy in the South (bottom chart); overcrowding underrepresents housing inadequacy among the elderly

Figure 6.3

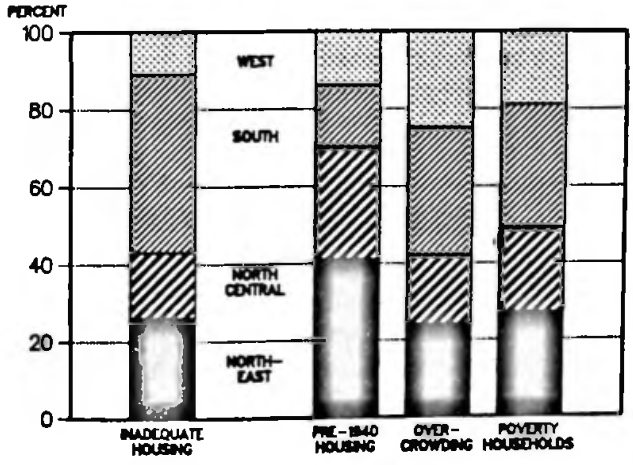
HOUSING DISTRIBUTIONS BY RACE OR ETHNICITY, 1977



HOUSING DISTRIBUTIONS BY TYPE OF HOUSEHOLD, 1977



HOUSING DISTRIBUTIONS BY REGION, 1977



(middle chart) and overrepresents it among Hispanic households (top chart) and in the West (bottom chart); and poverty households overrepresent housing inadequacy among the elderly (middle chart).

The distributions of variables in Table 6.10 will now be examined individually.

Pre-1940 housing: On the whole, the relative intensity of problems corresponds well with the proportion of pre-1940 units in the housing stock, when housing units are distinguished by income of occupant, tenure, and location (central cities or suburbs). In addition to the underrepresentation of Southern housing inadequacy, pre-1940 housing somewhat overrepresents housing inadequacy among elderly households. Figure 6.3 indicates that pre-1940 housing also somewhat underrepresents housing inadequacy among black households. Aside from these specific discrepancies, the distribution of pre-1940 housing units by household type, region, and race corresponds well to the distributions of problems. Adding 1940-49 housing to pre-1940 housing neither helps nor harms correspondence with the variables.

Overcrowded housing. The relative intensity of problems also corresponds well to the proportion of overcrowded units in the housing stock, when such units are distinguished by income, tenure, and location (between central cities or suburbs). As noted, the main disparities involve Westerners, Hispanics, and elderly households. Western and Hispanic households both have a significantly higher incidence of overcrowding. In contrast, Hispanic households have only a somewhat higher incidence of problems, while Western households have a relatively low incidence of problems. This reflects the finding of Chapter 4, Section III.C, that Southern and Western cities with substantial Hispanic populations have relatively large overcrowding rates without commensurately greater needs. Elderly households have an extremely low incidence of overcrowding (1 percent) but an average incidence of problems (for example, nine percent housing inadequacy). These discrepancies between the variables and overcrowding are more severe than the discrepancies for pre-1940 housing.

Poverty. Housing and neighborhood problems have been shown to be related to household income in connection with Tables 6.8 and 6.9. Comparison with Table 6.10 shows that the relative intensity of problems and the proportion of poverty households correspond well when units are distinguished by tenure, race or ethnicity, and location (central cities or suburbs). As noted above, a greater than average proportion of elderly households have low incomes, but an average proportion have housing and neighborhood problems. The incidence of poverty in the South is not quite as great as the incidence of housing inadequacy relative to other regions, even taking account of the relative incidences of poor or fair subjective ratings among regions in Table 6.9. Aside from these discrepancies, the distribution of poverty households corresponds well to the distribution of problems.

Therefore, considering all of the formula variables, percentage of households in poverty corresponds best to the problem distributions; percentage of pre-1940 (or 1950) housing does almost as well; and percentage of overcrowded units corresponds least well. However, there is still a good general correspondence between overcrowding and these housing and neighborhood problems.

As noted above, this initial assessment of the formula variables is followed by a much more thorough analysis. To facilitate reading, some of the remaining sections are identified as "Technical Sections" (in the section heading); readers may wish to pass over them in a first reading. The findings illustrate a principal rationale for basing allocations on a formula involving several variables instead of on a single variable. Where one factor underrepresents the stock of inadequate housing and another overrepresents it, a formula based on both may come closer than either individual variable. Several examples can be seen by inspecting the figures.

A.3 More Precise Tests of Adequacy of Formula Variables

To the extent that one desires to provide proportionately more CDBG funding to cities with greater incidences of housing or neighborhood problems, one chooses a formula variable that, at the level of individual housing units, tends to take one value for units reporting the presence of problems and another value for units reporting the absence of problems. Thus, for example, pre-1940 housing would be a good variable to the extent that:

(a) a relatively large proportion of housing units reporting problems are pre-1940 units and

(b) a relatively small proportion of housing units reporting absence of problems are pre-1940 units.

An equivalent test is whether:

(a) a relatively large proportion of pre-1940 units report the presence of problems, and

(b) a relatively small proportion of post-1940 units report the presence of problems.

In each case, condition (a) ensures that funding based on pre-1940 housing goes to cities with a relatively large incidence of problems. Condition (b) ensures that funding does not also go to cities with a relatively small incidence of problems. Since both formulations are based on the same data -- the numbers of pre- and post-1940, with-problem and without-problem units -- the two sets of conditions are equivalent. Since different insights can be gained from each formulation, both are reported in the tables in the following sections.

Still further evidence on the adequacy of the three variables is provided by a study of changes over time in the adequacy status of housing by year built, crowding, and household income. Such a study was done based on the 1974 and 1977 Annual Housing Survey. The results generally confirm the findings of this chapter. Appendix L gives the details of this analysis.

Variables are discussed one by one in the following sections. In each case (except for growth lag, for which AHS data are inapplicable), a table is presented which gives aggregate percentages of units with and without problems according to conditions stated above. Then conditions are examined for demographic groups and types of locations to determine whether they are satisfied uniformly or only erratically across these groups and locations.

B. Pre-1940 Housing

B.1. Introduction

As explained in Section II.A above, over 28 percent of the allocation of funding is due to the presence of pre-1940 housing in the formula. In 1980, entitlement cities in the Northeast and North Central regions had 74 percent of total pre-1940 housing in all entitlement jurisdictions; cities in these regions therefore rely heavily on pre-1940 housing in the second formula. (See Table 4.5 in Chapter 4 for the regional distribution of pre-1940 housing.)

During the 1970's, approximately 19 percent of pre-1940 housing units in CDBG entitlement jurisdictions were eliminated. As explained in Chapter 4, reductions in pre-1940 housing were spread across all regions and, as a result, regional shares of pre-1940 housing did not change much during the 1970's. For instance, the share of pre-1940 housing accounted for by entitlement jurisdictions in the Northeast and North Central regions was about the same in 1980 as in 1970. Since regional shares for pre-1940 housing did not change much during the 1970's, the introduction of 1980 data for this factor would not result in large regional shifts in funding. (See Table 4.6 in Chapter 4 for shifts in funds among regions due to each factor.) However, as pointed out in Chapter 5, funding losses for the neediest decile of cities were due largely to reductions in their pre-1940 housing stock. Needy cities that lost a large percentage of their old housing during the 1970's include St. Louis (a 30 percent reduction), Cleveland (29 percent), and Newark (34 percent).

Age of housing has always been a controversial variable in the CDBG formula.* The two main arguments for including it have been (1) it is a proxy for housing and neighborhood blight; (2) it is a proxy for aged public infrastructure, which must necessarily receive the preponderance of public funds for rehabilitation and maintenance.** Skeptics question these arguments, pointing to "Georgetowns" within cities and to old but relatively high-income cities that receive "windfalls" from the inclusion of age of housing in the CDBG formula.*** Furthermore, these critics argue that in some regions housing built after 1940

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* For a fuller discussion of pre-1940 housing, see City Need and Community Development Funding, pages 105-116 and Appendix F.

** A third argument is that age of housing is a good proxy for economic and fiscal decline. The 1979 study, City Need and Community Development Funding (pp. 105-108), showed that age of housing in large central cities was highly correlated with measures of economic and fiscal decline such as employment loss and slow growth in property values. The factor analysis results and the correlations reported in Appendices H and J also show that age of housing is associated with loss of employment and retail sales, two measures of economic performance. Since population and employment losses are more direct indicators of economic and fiscal decline than aged housing, this argument will be discussed below in the context of the growth lag variable.

*** For discussion of these arguments, see Dusenbury (1978), Dusenbury and Beyle (1978), and U.S. Department of Housing and Urban Development (1979).

is as deteriorated as housing built before 1940 in other regions. Given this debate, this section examines the evidence for including pre-1940 housing in the formula and points out instances where pre-1940 housing is not closely related to community development problems.

B.2 The Association of Pre-1940 Housing and Indicators of Housing Neighborhood Problems

This section uses data from the 1977 Annual Housing Survey to consider whether pre-1940 housing indicates a higher incidence of problems than post-1940 housing. Table 6.11 shows the percentage of units in metropolitan areas that are inadequate, using the definition based on 10 criteria (see footnote in section A.1); these data are further illustrated in Figure 6.4. The Table shows that units built before 1940 have three to four times the probability of being inadequate or located near abandoned buildings, compared with post-1950 units. Seventeen percent of pre-1940 units are inadequate, compared to 4 percent of post-1950 units. (The findings on 1940-49 housing in this table are discussed later in this Chapter.) The middle panel of Table 6.11 shows that among units reporting housing inadequacy, 59 percent are pre-1940 units, while only 28 percent of adequate units were built before 1940. The corresponding figures for adjacency to abandoned buildings, poor or fair rating of house, and poor or fair rating of neighborhood are essentially the same. Thus, examined at this level, whether a unit was built before 1940 is highly associated with whether it is in inadequate condition or is located near abandoned buildings. Age of housing is much less closely associated with infrastructure problems in metropolitan areas.

B.3 Demographic and Locational Variation in Pre-1940 Housing: Findings for Central Cities from the 1979 Study -- Technical Section

The 1979 study used over 20 indicators of housing and neighborhood problems from the Annual Housing Survey to test the usefulness of pre-1940 housing as a formula variable.* As in the preceding section, the basic test was to determine if pre-1940 housing had a higher incidence of problems than post-1940 housing, where problems were conditions such as "the occupant rating the dwelling unit as only a poor or fair place to live" and "the presence of neighborhood crime is so bothersome that the occupant would like to move."** Table 6.12 gives

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* As will become clearer as the discussion proceeds, the main reason for summarizing the 1979 study is that the AHS data for aged housing were disaggregated according to central city status, tenure, and income, which proved to be very helpful for understanding the age of housing indicators.

** The 1979 study used the national sample from the 1976 Annual Housing Survey (AHS). Central cities, SMSA balances, and nonmetropolitan areas were examined separately for the four Census regions. The data for pre- and post-1940 housing were also disaggregated according to renter-owner status and household income level (low, medium, and high). As explained in note a to Table 3.2, the central city and SMSA balance data could not be separated for medium-sized SMSA's. The implications of these disaggregations are discussed in the text. Complete definitions of AHS variables are given in Appendix G of this Report and Appendix F of the 1979 report. Appendix F of the 1979 report also contains a complete discussion of qualifications to the AHS data. This section summarizes data contained in Tables F.1 to F.22 of the 1979 report.

Table 6.11 Distribution of Housing and Neighborhood Problems in Metropolitan Areas by Age of Unit, 1977

Problem	Percent reporting presence of problem among — Pre-1940 units	1940-49 units	1950+ units	Percent reporting problem built before 1940	Percent without problem built before 1940	Percent reporting problem built 1940-49	Percent without problem built 1940-49
Housing Inadequacy[a]	17	12	4	59	28	13	10
Abandoned buildings in neighborhoods[b]	19	11	6	58	29	10	10
Streets or roads needing repair	17	18	16	32	31	11	10
Sewer or water breakdowns	2	1	1	47	31	14	10
Unsatisfactory outdoor recreation	24	21	23	32	30	9	10
Rating of house--							
poor	5	3	2	54	30	11	10
poor or fair	27	21	13	46	28	12	10
Rating of neighborhood--							
poor	5	3	2	51	30	10	10
poor or fair	28	20	15	44	28	11	10

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

a. Based on 10 specific criteria, as defined in Section II.A.1.

b. Based on occupant or enumerator report.

Figure 6.4

HOUSING ADEQUACY AND AGE, 1977

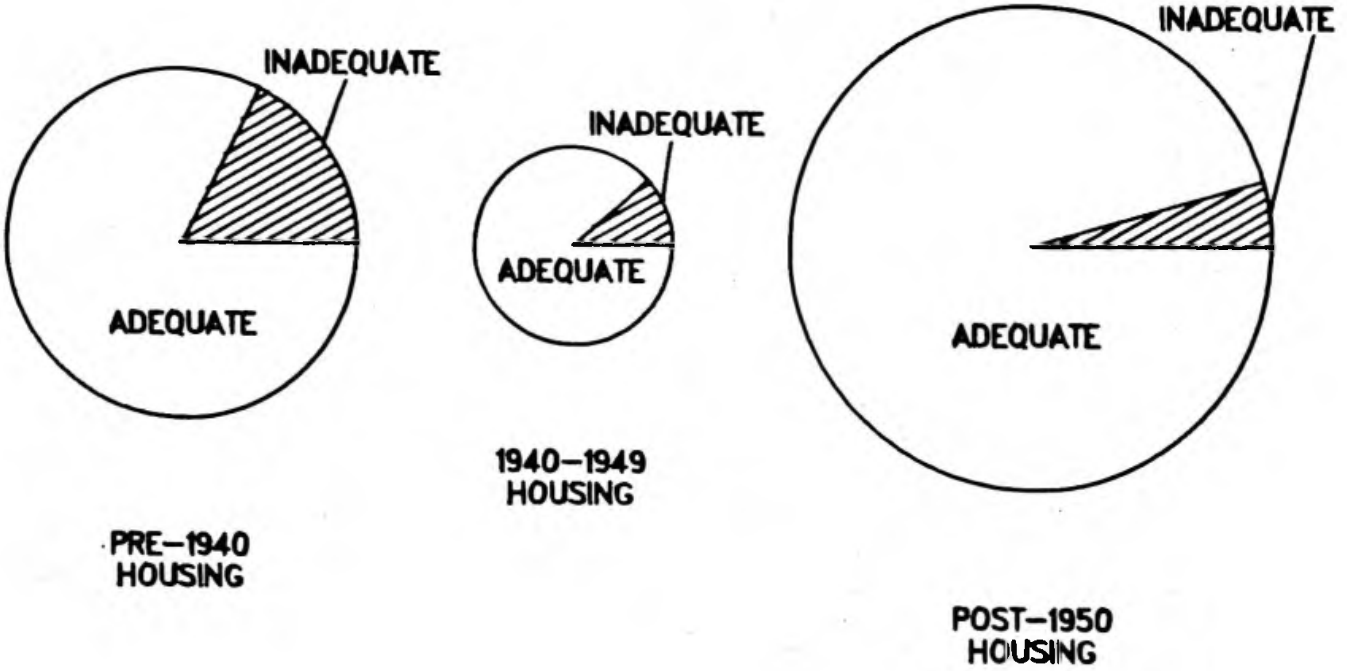

Table 6.12 Housing and Neighborhood Problems in Pre-1940 and Post-1940 Units in Central Cities, by Income and Tenure, 1976[a]

	Pre-1940 Units				Post-1940 Units			
	All	Low Income[b]	Renter	Owner	All	Low Income[b]	Renter	Owner
I. Housing Problems								
1. Electric	5.6%	6.8%	7.4%	3.0%	1.1%	1.4%	1.5%	0.7%
2. Broken Plaster	13.0	16.4	17.9	6.0	4.3	3.9	6.0	2.7
3. Cracks or Holes	12.6	16.7	18.1	4.9	5.1	5.5	8.0	2.4
4. Composite[c]	9.4	13.2	13.8	3.2	2.5	2.6	.38	1.3
5. House is only a Fair or Poor Place to Live	31.4	39.7	42.8	15.1	17.6	19.9	28.5	14.5
II. Neighborhood Problems								
6. Abandoned Units on Street Observed	17.9	24.8	21.6	12.7	5.3	6.7	6.6	4.1
7. Resident Bothered by Abandonment	8.7	9.9	8.9	8.4	3.6	4.7	4.2	3.0
8. Rundown Housing in Neighborhood	20.5	24.3	22.7	17.3	10.8	11.7	12.3	9.4
9. Resident Bothered by Rundown Housing in Neighborhood	12.1	12.8	12.7	11.4	7.2	8.4	7.3	7.0
10. Neighborhood is only a Fair or Poor Place to Live	37.0	42.6	43.8	27.4	22.5	25.1	31.2	14.5
III. Resident Wishes to Move Because of:								
11. Housing deficiencies[d]	5.1	7.5	8.1	0.9	1.5	1.9	2.6	0.4
12. Abandoned Units in Neighborhoods	3.6	5.0	4.3	2.7	1.4	1.9	1.8	1.0
13. Rundown Housing in Neighborhood	5.9	6.5	6.9	4.6	3.0	3.6	3.5	2.5
14. Litter	7.6	8.4	9.1	5.6	4.5	5.0	6.1	3.0
15. Crime	11.2	12.0	13.5	8.0	7.4	7.1	10.3	4.8

a. Data are from the 1976 national sample of the Annual Housing Survey. All variables are defined in Appendix G. As explained in note a of Table 3.2, data for central cities of medium-sized SMSA's are not included in this table.

b. A 1976 household income of $5,000 or less.

c. At least two of the following four housing deficiencies: heating, electric, broken plaster, and cracks or holes. See Appendix G for more specific definitions.

d. One or more of the following conditions are so bothersome that the resident would like to move: basement leaks, open cracks and holes in walls or ceiling, holes in floors, and broken plaster and peeling paint.

some of the most important empirical findings for central cities from the 1979 report. These are the main conclusions:

-- For central cities in the aggregate, problems identified by housing and neighborhood conditions were frequently two to four times as intense (as measured by the ratio of percentages) in pre-1940 housing as in post-1940 housing. For instance, Table 6.12 shows that 31.4 percent of the residents in pre-1940 housing perceive their units as only poor or fair places to live, compared to only 17.6 percent of the residents in post-1940 housing. Abandoned buildings were observed near 17.9 percent of the pre-1940 units, compared to only 5.3 percent of the post-1940 units. These findings correspond closely to the findings reported in the preceding section.

-- The typically higher ratios of problems in pre-1940 as contrasted to post-1940 housing hold when low-income persons in pre-1940 housing are compared to low-income persons in post-1940 housing, and when renters in pre-1940 housing are compared to renters in post-1940 housing, but renters and owners have a substantially different incidence of problems, as do low-income and high-income households. Thus, age of housing and income are independently associated with the presence or absence of problems, as are age of housing and tenure.*

-- Renter-occupied housing has a greater incidence of housing and neighborhood deficiencies than owner-occupied housing, regardless of age of housing. For instance, Table 6.12 shows that 42.8 percent of renters of pre-1940 housing perceive their dwelling units as only a poor or fair place to live, as contrasted to 15.1 of the owners of pre-1940 units.

-- Rental units built before 1940 and occupied by low-income persons have the highest incidence of problems in the categories examined, as shown in the 1979 report. Approximately 48 percent of low-income households living in pre-1940 rental units perceive their dwelling units to be only a poor or fair place to live, as contrasted with 24 percent for all households.

The 1979 study concluded that in central cities pre-1940 housing has a higher incidence of housing and neighborhood deficiencies than post-1940 housing, but more intense problems are found in pre-1940 units occupied by renters and low-income families. Owners of pre-1940 units do not exhibit very high levels of problems.

Chapter 2 showed that many older suburban cities receiving CDBG funds have relatively low rates of poverty. An important question, then, is the extent to which pre-1940 housing in these suburban areas is associated with

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* In support of Table 6.12, Table 3 of Bunce and Goldberg (1979) shows that the aggregate differences between pre-1940 and post-1940 housing in central cities held across the four Census regions.

housing and neighborhood deficiencies. The 1979 study found that central cities have a much higher incidence of housing and neighborhood problems than suburban areas.* This comparison applies to both pre- and post-1940 housing. For example, in the suburbs 16 percent of the residents in pre-1940 housing perceive their neighborhoods as a poor or fair place to live, compared with 37 percent of central city residents in pre-1940 housing. For both housing and neighborhood conditions, disparities between central cities and suburbs were particularly great in the Northeast, which has a high concentration of pre-1940 housing. To summarize, aged housing units in the suburbs do not have as great an incidence of problems as similar units in central cities. This is consistent with earlier findings that many older suburbs are not as highly distressed as central cities in terms of socioeconomic variables such as poverty, minority population, and unemployment.

B.4 Demographic and Locational Variation in Pre-1940 Housing: New Findings -- Technical Section

Tables 6.13 and 6.14 extend the findings of Sections B.2 and B.3 by disaggregating the 1977 housing stock by six demographic and locational dimensions. The main implication of Table 6.13 is that the substantially higher incidence of problems in pre-1940 units is maintained across all of these disaggregations. If a unit was built before 1940, it is more likely to be inadequate than if it was built more recently, for all income, race, geographical, and other categories given in the table. For example, 27 percent of pre-1940 low-income units are inadequate, compared to 10 percent of post-1950 units. But whereas 8 percent of pre-1940 high-income units are inadequate, only 2 percent of post-1950 high-income units are. This finding confirms that age of housing and a variety of demographic and locational characteristics are independently associated with housing inadequacy.

Table 6.14 shows that this result also holds when the direction of reasoning is reversed. (Tables 6.13 and 6.14 correspond to the different formulations of conditions a and b defined in Section A.3.) Table 6.14 shows that if a unit's condition is inadequate, it is more likely to be a pre-1940 unit; this finding, like the findings based on Table 6.13, holds across a variety of demographic and geographical disaggregations. To continue the example in the preceding paragraph, of all inadequate low-income units, 64 percent were built before 1940, compared with only 40 percent of the adequate low-income units; of all inadequate high-income units, 44 percent were built before 1940, compared with only 17 percent of adequate high-income units.

Table 6.14 indicates demographic groups and locations for which the correspondence between housing age and adequacy is relatively good and relatively bad. In the first column of Table 6.14, pre-1940 housing represents a relatively low share of the stock of inadequate housing -- i.e., it is

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* Tables F.2 to F.11 in Appendix F of the 1979 study provide housing and neighborhood data for central cities and SMSA balances by Census region. Table F.23 of that study compares housing and neighborhood problems in central cities with those in suburbs.

Table 6.13 Housing Inadequacy by Age of Unit in Metropolitan Areas, 1977

	Percent inadequate among --		
	Pre-1940 units	1940-49 units	Post-1950 units
Income			
Low	27%	20%	10%
Moderate	16	12	5
Middle	11	8	4
High	8	4	2
Tenure and Structure Size			
Owner, 1 unit	9	8	3
2-4	8	9	3
5+	8	5	3
Renter, 1 unit	25	22	12
2-4	17	9	6
5+	34	12	5
Race or ethnicity			
White	12	7	3
Black	30	25	12
Hispanic	26	23	13
Other	21	4	4
Type of household			
Female-headed, with children	25	16	7
Elderly-headed	14	10	4
Census region			
Northeast	14	4	4
North Central	12	6	2
South	37	26	8
West	13	4	2
Location			
Rural portion of SMSA	22	23	6
Small SMSA:			
Central City	18	19	5
Urban balance	10	10	4
Medium-sized SMSA	19	16	5
Large SMSA:			
Central City	19	11	5
SMSA balance	12	7	3

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting age of unit, housing adequacy, and the relevant demographic or locational classification.

Table 6.14 Pre-1940 and 1940-49 Housing Units by Presence or Absence of Housing Inadequacy in Metropolitan Areas, 1977

	Percent of inadequate units built before 1940	Percent of adequate units built before 1940	Percent of inadequate units built 1940-49	Percent of adequate units built 1940-49
Income				
Low	64	40	12	11
Moderate	58	32	14	11
Middle	47	25	13	10
High	44	17	10	8
Tenure and structure size				
Owner, 1 unit	44	23	17	10
2-4	79	66	9	7
5+	31	12	8	5
Renter, 1 unit	54	37	18	15
2-4	77	53	7	9
5+	72	21	5	6
Race or ethnicity				
White	59	27	11	9
Black	60	38	15	12
Hispanic	48	30	15	12
Other	70	27	4	11
Type of household				
Female-headed, with children	62	30	11	9
Elderly-headed	66	41	14	13
Census region				
Northeast	79	48	4	10
North Central	74	35	8	9
South	46	14	19	10
West	53	17	10	11
Location				
Rural portion of SMSA	-48	22	14	6
Small SMSA: Central City	59	32	17	9
Urban balance	38	24	19	12
Medium-sized SMSA	53	26	16	9
Large SMSA: Central city	74	44	10	11
SMSA balance	49	19	12	9

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting age of unit, housing adequacy, and the relevant demographic or locational classification.

relatively less useful as an indicator of housing inadequacy -- for upper income households, owners of single-family units, owners in structures with five or more units, Hispanic households, households in the South, and suburban households. For Hispanic households, pre-1940 housing also appears less useful as an indicator, based on the figures in the second column of Table 6.14. These demographic groups correspond only partially to the groups noted in Section A.2, for which the distributions of pre-1940 housing and problems did not correspond closely to one another. The unevenness of representation of housing inadequacy by pre-1940 housing constitutes a deficiency relative to another indicator (such as poverty) which has more similar rates of incidence among inadequate units and among adequate units, across demographic groups.

C. 1940-49 Housing

C.1 The Association of 1940-49 Housing and Indicators of Housing and Neighborhood Problems

This section examines how pre-1940 housing compares to housing built during the 1940's. Some critics have argued for generalizing the old-housing component of the formula from pre-1940 to pre-1950 housing, claiming that in some locations housing built during the 1940's is as deteriorated as pre-1940 housing.

The 1979 study showed that in central cities, pre-1940 housing has a higher incidence of housing and neighborhood problems than housing built during the 1940's. For example, the incidence of housing considered poor or fair is 32.1 percent for all pre-1940 housing, compared with 22.1 percent for all 1940-49 housing. The contrast between pre-1940 and 1940's housing holds when controls are made for income and rental status. Pre-1940 housing has a much higher incidence of problems than housing built during the 1940's uniformly across regions -- for instance, 35.9 percent of the residents of pre-1940 units in the South claimed that their housing was only a poor or fair place to live, compared with 25.2 percent of Southern residents of units built during the 1940's.

However, housing built during the 1940's shows a higher incidence of problems than housing built after 1950. For instance, only 14.4 percent of central city occupants of post-1950 houses considered their dwelling units a poor or fair place to live, compared to 32.1 percent for occupants of pre-1940 housing and 22.1 percent for occupants of housing built during the 1940's.

The analysis of 1977 Annual Housing Survey data also includes some findings on 1940-49 housing relative to pre-1940 housing. The incidence of inadequacy among 1940-49 units is less, but not as low as the incidence for post-1950 units (Table 6.11). In 1979, only 4 percent of post-1950 housing in metropolitan areas was considered inadequate, compared to 12 percent built during the 1940's and 17 percent built before 1940.

C.2 Demographic and Locational Variation in 1940-49 Housing -- Technical Section

Table 6.10 shows relative concentrations of 1940-49 units among demographic groups and by location. The percentage of 1940-49 units in the housing stock is mostly between 8 and 11 percent. The biggest variation is by tenure and structure size, where the share falls to 6 percent for owner-occupied units in structures with five or more units (which tend to be mostly post-1940); the share rises to 16 percent for single-family rental structures.

The right panel of Table 6.14 shows an interesting pattern by location: although the percentage of 1940-49 units among inadequate units in the South is about twice their percentage among adequate units, this is reversed in the Northeast, where 10 percent of adequate units were built in the 1940's and only 4 percent of inadequate units were.

The policy question is whether adding 1940-49 housing to pre-1940 housing in the formula would improve the correlation between this variable and housing inadequacy, especially because of the relatively substantial proportions of inadequate 1940-49 units in the South, for minorities, and for single-family renter households. Table 6.13 suggests that such a change would not be an improvement. Outside the South and for other demographic categories, 1940-49 units have relatively low incidences of inadequacy; these units would be added to the factor along with various categories with relatively more inadequate units. Table 6.10 shows that there would be a more or less uniform change in percentage of older units (pre-1940 or pre-1950) in all regions, so that the variation in pre-1940 housing across demographic groups would still have the predominant influence on funding allocations.

D. Overcrowded Housing

D.1 Introduction

Between 1970 and 1980 overcrowded housing units in CDBG entitlement jurisdictions decreased by 19 percent. As a percentage of total housing stock, overcrowded housing fell from 8 percent in 1970 to 5 percent in 1980. However, as discussed in Chapter 4, regional shifts in the share of overcrowded housing were the major cause of funding redistributions among regions. Overcrowded housing has become more concentrated in the Pacific and West South Central regions. Several cities in California and Texas with a high percentage of Hispanic residents had the highest degree of overcrowding.

D.2 The Association of Overcrowding with Indicators of Housing and Neighborhood Problems

The 1979 study examined housing and neighborhood problems associated with overcrowded housing, using the same methodology as used with pre-1940 housing. In the aggregate, based on AHS data, overcrowded housing in central cities is highly associated with housing and neighborhood problems. For example, 40.1 percent of residents of overcrowded units rated their houses poor or fair places to live, compared with 23.9 percent of all central city residents. (See Appendix L for additional results on overcrowding from the 1979 study.)

Table 6.15 uses the more comprehensive measure of housing inadequacy to characterize the incidence of overcrowded housing. Figure 6.5 illustrates the data. They show that 22 percent of overcrowded housing units in metropolitan areas were inadequate in 1979. The corresponding percentages for pre-1940 housing and housing occupied by low-income families are slightly lower (17 and 19 percent, respectively). However, overcrowding accounts for only 11 percent of the inadequate housing in metropolitan areas. The data for poor or fair ratings of house and neighborhood are comparable to those for housing inadequacy. Pre-1940 units, on the other hand, account for 59 percent of inadequate units, and housing occupied by low-income families accounts for 53 percent. These comparisons point out a problem with overcrowding as an indicator of housing deficiencies. While it exhibits an above-average incidence of inadequate housing, it represents such a small percentage of total housing stock that it can only account for a small percentage of inadequate units. Pre-1940 housing and housing occupied by low-income families account for greater shares of inadequate housing.

Table 6.15 provides data for one indicator of neighborhood problems, adjacency to abandoned or boarded-up buildings on the street. The findings are similar to those reported for housing inadequacy. While overcrowding has a high incidence of the problem (18 percent), it accounts for only a small proportion of the problem (8 percent). Pre-1940 housing and housing occupied by low-income families have similar incidences (19 and 18 percent, respectively), but account for much larger proportions (58 and 46 percent, respectively), of units near abandoned buildings.

Table 6.15 also reports on neighborhood infrastructure problems. Crowding is more related to the incidence of these problems than either age of unit or income, especially for breakdowns of sewer or water service, where 4 percent of crowded households report serious breakdowns, compared to only 1 percent of uncrowded households. This is reflected in the right panel of the table, which shows that 18 percent of households reporting sewer or water breakdowns are crowded, compared to only 4 percent of units without such problems. For other problems the percentages are nearly the same between crowded and uncrowded housing; pre-1940, 1940-49, and later housing; and low-income and other housing.

D.3 Demographic and Locational Variation in Overcrowding -- Technical Section

The 1979 study showed that the association of overcrowded units with problems is much stronger when the units are also aged, rented, and occupied by low-income households. In fact, overcrowded units occupied by owners tended to exhibit below-average incidences of housing and neighborhood problems.

These findings are confirmed across most disaggregations reported in Table 6.16. The ratio of inadequacy among overcrowded units to inadequacy among noncrowded units is at least 2 to 1 except for middle-income households, owners in structures with two or more units, blacks, and Hispanics (whose ratio is about 1.5 to 1). For elderly-headed households the percent overcrowded among inadequate units is only 2 percent. For Hispanics the percent crowded among adequate units rises to 15 percent.

Table 6.15 Distribution of Housing and Neighborhood Problems in Metropolitan Areas by Overcrowding, 1977

Problem	Percent reporting presence of problem among-- Overcrowded units	Non-crowded units	Percent reporting problem which are overcrowded	Percent without problem which are overcrowded
Housing inadequacy[a]	22	8	11	3
Abandoned buildings in neighborhood[b]	18	10	8	4
Streets or roads needing repair	21	16	5	4
Sewer or water breakdowns	4	1	18	4
Unsatisfactory outdoor recreation	32	23	6	4
Rating of house--				
poor	10	3	15	4
poor or fair	37	18	8	3
Rating of neighborhood--				
poor	7	3	10	4
poor or fair	36	19	8	3

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

a. Based on 10 specific criteria, as defined in Section II.A.1.

b. Based on occupant or enumerator report.

Figure 6.5

HOUSING ADEQUACY AND CROWDING, 1977

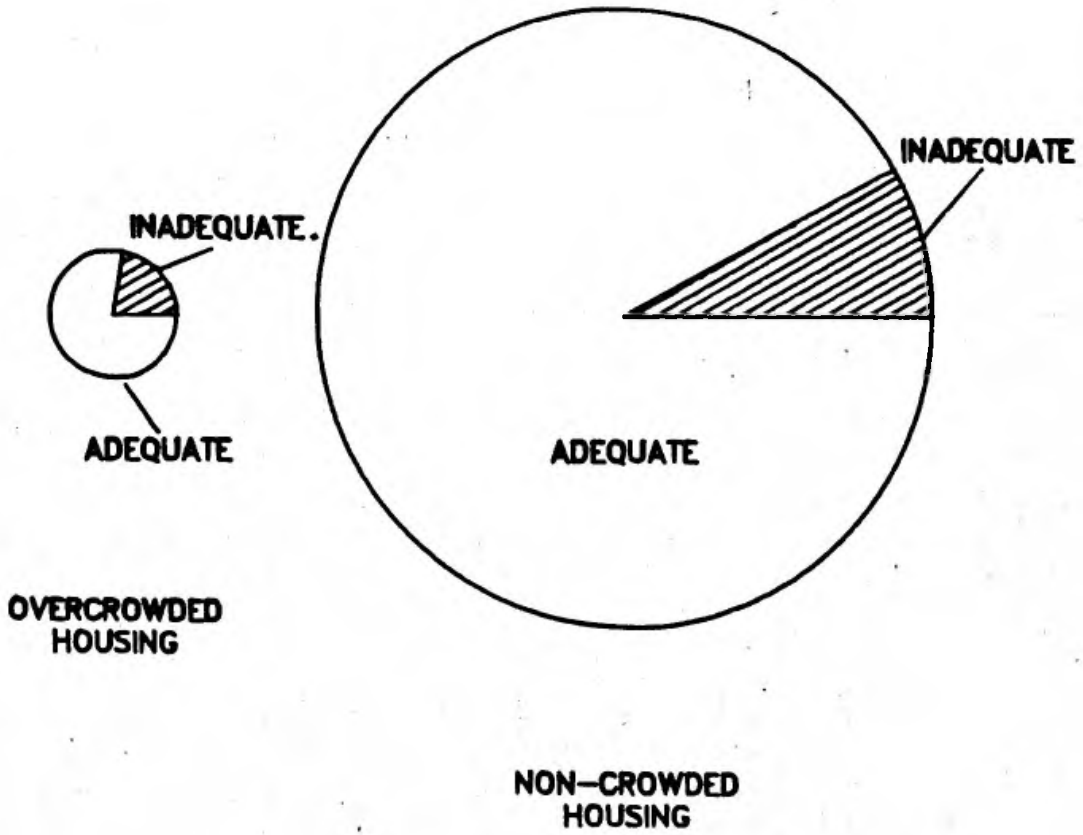

Table 6.16 Housing Inadequacy by Crowding in Metropolitan Areas, 1977

	Percent inadequate among--		Percent of inadequate units which are overcrowded	Percent of adequate units which are overcrowded
	Overcrowded units	Non-crowded units		
Income				
Low	32	18	12	6
Moderate	21	9	14	5
Middle	7	6	4	3
High	11	3	5	1
Tenure and structure size				
Owner, 1 unit	14	5	9	3
2-4	6	6	4	3
5+	0	3	0	2
Renter, 1 unit	40	17	18	6
2-4	23	12	9	4
5+	26	12	8	4
Race or ethnicity				
White	15	6	6	2
Black	33	20	15	8
Hispanic	26	17	23	15
Other	14	8	15	9
Type of household				
Female-headed, with children	30	12	21	8
Elderly-headed	31	9	2	0
Census region				
Northeast	21	8	9	3
North Central	10	5	6	3
South	38	13	13	4
West	10	4	11	4
Location				
Rural portion of SMSA	26	9	12	3
Small SMSA: Central City	24	9	10	3
Urban balance	15	6	8	3
Medium-sized SMSA	27	8	12	3
Large SMSA: Central city	27	12	11	4
SMSA balance	12	5	8	3

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting persons per room, housing adequacy, and the relevant demographic or locational classification.

The data in Table 6.16 shed additional light on the issues raised in Section II.A.2 concerning overcrowding. There it was noted that Hispanics and households in the West have relatively large overcrowding rates. Table 6.16 shows that for these categories, significant proportions of the overcrowded units are adequate rather than inadequate. Conversely, elderly households, which have a 1 percent overcrowding rate, have a relatively high rate of housing inadequacy among noncrowded units. The implication is that there are likely to be cities with relatively large Hispanic populations and relatively high overcrowding rates but with relatively large percentages of adequate housing; and cities with significant housing inadequacy among elderly-headed households but relatively low overcrowding rates.

D.4 Intercity Analysis of Overcrowding

The association of overcrowding with housing and neighborhood problems was further examined using city-level data from the Annual Housing Survey for 38 large central cities. Appendix G provides the results. It shows that overcrowded housing exhibits moderate correlations with several housing indicators but practically no correlation with the various neighborhood indicators reported in the Annual Housing Survey. Poverty exhibited a much closer correlation with housing and neighborhood deficiencies than overcrowded housing.

At first glance, these results seem inconsistent with earlier findings based on AHS data for all metropolitan areas. The aggregate data showed that overcrowding has an above average incidence of housing and neighborhood problems. However, the correlation results in Appendix G show that overcrowding is not a good predictor of neighborhood problems across large central cities and is not nearly as good a predictor of housing problems as poverty. Earlier, inconsistencies between overcrowding and housing problems were noted with respect to elderly-headed households and owner-occupied households. The intercity results provide another illustration of overcrowding not being closely related to housing and neighborhood problems.

Finally, it was noted earlier in this Chapter that including 1980 data for overcrowded housing tended to fund less needy cities at the expense of more needy cities. This is not surprising, given the intercity correlations of overcrowding with various need indicators (see Appendix H). While overcrowding exhibits a high correlation with percent Hispanic (0.78) and moderate correlations with poverty (0.48), percent without a high school education (0.45), and violent crime (0.44), it shows rather low correlations with most other need indicators.

E. Poverty

E.1. Introduction

In FY '83, approximately 31 percent of the allocation of CDBG funds was due to poverty. As an indicator of social need, inadequate housing, and neighborhood conditions, poverty plays an important role in the community development funding system. Furthermore, poverty has a sufficient magnitude to merit inclusion in the funding system. In 1980, approximately 15 percent of persons in entitlement cities were considered poor.

Chapter 2 analyzed in some detail the recent shifts in the incidence of poverty among cities. Between 1970 and 1980, the largest increases in poverty rates occurred in cities that were losing population. In particular, large central cities in declining SMSA's suffered the greatest increases in poverty rates during the 1970's. On average, growing cities in the South experienced decreases in poverty rates during the 1970's. However, despite these reductions, Southern cities continue to exhibit many of the highest poverty rates in the Nation. (For data on regional shifts in poverty, see Table 4.6 in Chapter 4 and Appendix D.)

Chapter 3 discussed the relationship of poverty to other socioeconomic need indicators. The shifts in poverty toward older, declining areas during the 1970's made poverty a much broader indicator of problems than in 1970. That is, poverty is now more closely associated with problems such as job loss, unemployment, housing abandonment, and crime.*

E.2 The Association of Poverty and Indicators of Housing and Neighborhood Problems

This section reviews Annual Housing Survey evidence on the association between poverty, housing adequacy, and neighborhood problems. Annual Housing Survey data in Table 6.17 show a high incidence of housing and neighborhood problems among poverty households. Figure 6.6 illustrates these data. They provide strong support for poverty as an indicator of community development problems. For instance, 24 percent of poverty households in metropolitan areas live in inadequate housing, compared to 7 percent for higher income families; 22 percent live adjacent to abandoned buildings, compared to 9 percent.

The contrast between housing units occupied by poverty- and higher-income families can be seen from Table 6.18, which gives demographic and locational characteristics of inadequate housing units. Table 6.18 shows that the substantial difference in incidence of inadequate housing between poverty-level and higher income groups is maintained across all disaggregations -- e.g., owners and renters, size of housing unit, minority status, Census region, and size of metropolitan area. Housing inadequacy does, however, appear to be more concentrated in certain low-income groups. At least 30 percent of poverty renter households, black and Hispanic households in poverty, and poverty households in the South live in inadequate housing units. The variation across demographic groups in Table 6.18 is less for poverty than for pre-1940 housing and overcrowding in Tables 6.13-14 and 6.16.

While this study's findings support a strong ranking for poverty in the CDBG formula system, Chapter 3 pointed out two problems with the poverty indicator. First, it systematically undercounts poor persons (especially minorities) in some cities. Second, when setting income thresholds for, poverty, the Census Bureau does not make adjustments for differences among cities' costs of living, as intercity cost-of-living indexes are not available. The recent shifts in poverty toward the larger urban areas in the North may

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* Appendices G and H use correlation analysis to show that poverty in 1980 is more closely associated with other need indicators than in 1970.

Table 6.17 Distribution of Housing and Neighborhood Problems in Metropolitan Areas by Poverty Status of Household, 1977

Problem	Percent reporting presence of problem among — Poverty Households	Other Households	Percent reporting problem who are in poverty	Percent without problem who are in poverty
Housing inadequacy[a]	24	7	33	11
Abandoned buildings in neighborhood[b]	22	9	27	12
Streets or roads needing repair	18	16	15	13
Sewer or water breakdowns	3	1	43	12
Unsatisfactory outdoor recreation	29	23	16	12
Rating of house--				
poor	8	3	34	13
poor or fair	35	18	24	11
Rating of neighborhood--				
poor	8	3	31	13
poor or fair	36	18	23	11

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

[a] Based on 10 specific criteria, as defined in Section II.A.1.

[b] Based on occupant or enumerator report.

Figure 6.6

HOUSING ADEQUACY AND HOUSEHOLD INCOME, 1977

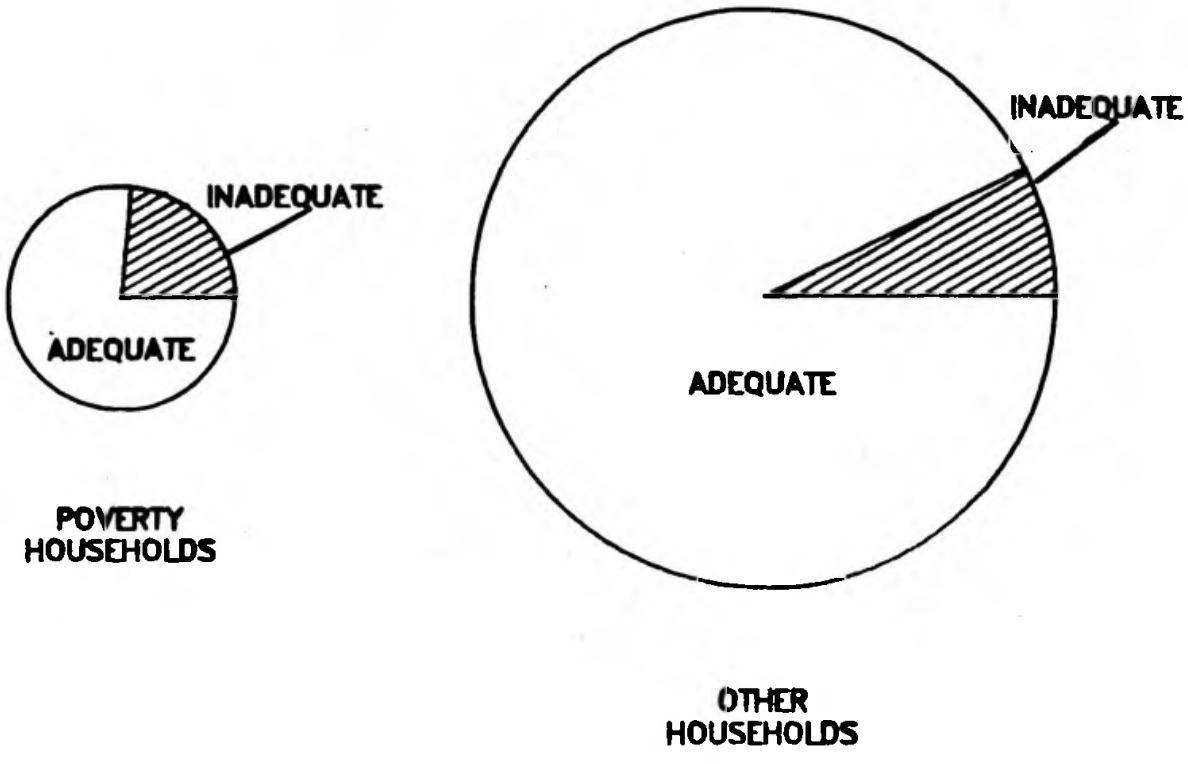

Table 6.18 Housing Inadequacy by Poverty Status of Household in Metropolitan Areas, 1977

	Percent Inadequate Among --		Percent of inadequate units occupied by poverty households	Percent of adequate units occupied by poverty households
	Poverty households	Other households		
Tenure and structure size				
Owner, 1 unit	20%	4%	26%	6%
2-4	15	6	20	8
5+	11	4	11	4
Renter, 1 unit	30	16	37	20
2-4	21	10	38	21
5+	25	11	36	17
Race or ethnicity				
White	17	5	25	8
Black	32	17	46	27
Hispanic	30	16	37	21
Other	34	7	43	10
Type of household				
Female-headed, with children	23	8	67	38
Elderly-headed	25	7	47	17
Census region				
Northeast	23	8	31	12
North Central	16	5	29	9
South	35	12	36	13
West	12	4	30	10
Location				
Rural portion of SMSA	31	8	34	9
Small SMSA: Central City	19	8	35	16
Urban balance	20	7	24	9
Medium-sized SMSA	24	8	34	12
Large SMSA: Central City	28	10	37	15
SMSA balance	16	4	24	7

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting income, housing adequacy, and the relevant demographic or locational classification.

lessen this problem, since available data show that these areas have above-average costs of living, especially when compared to Southern cities.* However, current poverty figures still understate poverty in cities with above-average costs.

F. Growth Lag**

F.1 Relation of Growth Lag to Community Development Problems

As explained in Section I.A above, growth lag accounts for 20 percent of the allocation of CDBG funds to entitlement jurisdictions. Several of the most severely declining cities are particularly dependent on growth lag for their funding. St. Louis, Cleveland, and Detroit receive about 50 percent of their funds from growth lag. Heavy reliance on growth lag funding is not confined entirely to Northern cities; Atlanta (41 percent), Birmingham (44 percent), and Norfolk (47 percent) are large Southern cities that receive major funding from growth lag.

Growth lag was included in the CDBG formula as a proxy for the economic, fiscal, and social problems of declining cities.*** The relationship between population loss and city socioeconomic conditions was discussed in Chapters 2 and 3. However, that discussion focused on changes in population between 1970 and 1980. Therefore, Tables 6.19 and 6.20 relate population change between 1960 and 1980 -- the dates used to define growth lag -- to several indicators of city problems. In Table 6.19, CDBG entitlement cities in the United States are divided into deciles according to their change in population between 1960 and 1980; the first decile includes the 62 entitlement cities (about 10 percent of the 627) with the greatest population loss; the 10th decile includes the 62 cities with the fastest population growth. For each

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* See Table G.1 in Appendix G of City Need and Community Development Funding for cost-of-living indexes published by the Bureau of Labor Statistics for 40 SMSA's.

** See pages 116-126 of the 1979 report City Need and Community Development Funding for a more complete discussion of the growth lag variable and its history, targeting effects, and problems. This section summarizes that material and presents some new data on overfunding.

*** Peterson and Muller (1980, pp.100-110) argue that perhaps the most destabilizing impact of population loss is on the fiscal condition of local governments. They state that "the fiscal dilemma posed by local population loss is that revenues have proved more elastic and more immediately sensitive to population decline than have local expenditures" (p. 100). Their data show that in large central cities the market value of taxable properties, retail sales values, and income -- all important local tax bases -- tend to respond more to population losses than expenditures on such services as police, fire protection, and sanitation. The 1979 report also found population and employment losses to be correlated with decline or slow growth in local tax bases.

decile the average values for several variables -- e.g., percentage of change in per capita income and employment -- are computed.*

As shown in Table 6.19, slow growth or decline in population is closely related to slow growth or decline in employment and retail sales, which are measures of a city's economic performance. One of the main reasons for including population growth lag in the CDBG formula was to serve as a proxy for economic decline.** The 186 cities in the three deciles experiencing the greatest loss in population suffered, on average, a 25 percent reduction in manufacturing jobs between 1967 and 1977, as well as declines in nonmanufacturing jobs. Furthermore, cities losing population or growing more slowly than average experienced lower rates of growth in retail sales and per capita income and larger increases in poverty rates.*** Population growth lag is a major reason the dual formula targets funds to economically declining cities as well as it does.****

Table 6.20 is organized in the same way as Table 6.19, except that it focuses on the relationship of population change to static indicators of city problems, such as poverty and unemployment rates. Compared to growing cities, declining cities tend to have lower levels of per capita income, higher rates of poverty, unemployment, minority population, and female-headed households, and higher scores on the composite need index. Consistent with the results in Chapter 2, these data show that declining cities have, on average, greater need than growing cities. However, also as in Chapter 2, population change is not as closely related to levels of city need as it is to changes in city need.***** For instance, there are declining cities with increasing, but still relatively low poverty rates, just as there are growing cities with decreasing,

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* As noted in Tables 6.19 and 6.20, cities that receive positive counts on growth lag have grown less than 14.1 percent since 1960 and are included in the first five deciles. Cities in deciles 6 through 10 receive zero values on growth lag.

** It was necessary to use a proxy because data on employment are not available for CDBG entitlement cities and counties. See Appendix A for a discussion of problems with the employment data published by the U.S. Bureau of the Census.

*** Chapter 3 and Appendix H use correlation analysis to show that population loss is closely associated with job loss and slow growth in retail sales. The change in population between 1960 and 1980 exhibits a 0.64 correlation with change in manufacturing employment, a 0.78 correlation with change in nonmanufacturing (i.e., retail, service, and wholesale) employment, and a 0.80 correlation with change in retail sales; all three percentage changes are defined between 1967 and 1977.

**** Appendix H shows that per capita amounts under the dual formula are highly correlated with economic change measures: -0.72 for nonmanufacturing employment and -0.75 for retail sales.

***** Section IV.C in Chapter 2 and Appendices F and H show that changes in distress variables (e.g., change in per capita income) are more closely associated with population change than levels of distress variables.

Table 6.19 Selected Measures of Change in City Conditions by Percent Change in Population, 1960-80, for CDBG Entitlement Cities

1960 - 80 Pop. Change Deciles[a]	Percent Change in Pop., 1960-80	Percent Change in Mfg. Employment, 1967-77	Percent Change in Nonmfg. Employment, 1967-77[b]	Percent Change in Retail Sales, 1967-77	Percent Change in Real Per Capita Income, 1969-79	Change in Poverty Rate, 1970-80
Greatest Decline	-26.0%	-27.2%	-12.2%	39.4%	5.0%	3.7%
2	-14.4	-28.3	- 1.4	51.1	7.7	3.3
3	- 7.7	-24.9	- 1.6	82.9	4.3	3.1
4	2.2	-11.4	28.3	91.3	13.7	.5
5[c]	11.8	- 5.1	36.5	123.8	18.1	.3
6	22.8	7.5	32.2	127.5	14.6	1.0
7	36.4	10.8	48.4	129.6	19.0	- .7
8	59.9	27.9	65.2	174.0	20.0	- .2
9	100.6	37.6	87.5	184.3	19.4	+ .4
Fastest Growth	252.2	38.5	105.7	242.5	23.0	- .6

a. To form the deciles, the 627 CDBG entitlement cities were first ranked from the city with the greatest population loss to the city with the fastest growth; the cities were then divided into deciles (i.e., 10 equal parts) and weighted averages of the socioeconomic variables were computed for each decile.

b. Nonmanufacturing employment is service, retail, and wholesale trade employment.

c. Most cities in this decile and all cities in the above deciles have population growth rates below 14.1 percent; therefore, these cities have positive growth lag amounts. Other cities, i.e., those that have grown more than 14.1 percent, receive a zero value for growth lag.

Table 6.20 Selected Socioeconomic Indicators by Percent Change in Population, 1960 to 1980, for CDBG Entitlement Cities

1960 to 1980 Pop. Change Deciles[a]	Real Per Capita Income 1979 (1969 $)	Poverty Rate, 1980	Unemployment Rate, 1981	Percent Black and Hispanic, 1980	Percent Female-headed Households w/child, 1980	Composite Needs Index[b]
Greatest Decline	$3176	19.1%	10.8%	36%	18.6%	.67
2	3506	17.6	9.1	39	17.0	.46
3	3762	16.6	8.8	34	15.1	.39
4	3864	13.3	8.2	25	12.6	-.01
5[c]	3961	11.3	7.8	21	10.6	-.19
6	3884	14.5	7.5	33	12.8	-.05
7	3675	13.6	7.3	28	11.8	-.22
8	3888	12.6	6.4	29	11.4	-.40
9	4100	10.6	6.7	21	9.5	-.64
Fastest Growth	4101	9.0	7.4	15	9.6	-.77

a. To form the deciles, the 627 CDBG entitlement cities were first ranked from the city with the greatest population loss to the city with the fastest growth; the cities were then divided into deciles (i.e., 10 equal parts) and weighted averages of the socioeconomic variables were computed for each decile.

b. See Chapter 3 for derivation of the need index. The average score for the population of all cities is zero; positive (negative) scores indicate above (below) average need.

c. Most cities in this decile and all cities in the above deciles have population growth rates below 14.1 percent; therefore, these cities have positive growth lag amounts. Other cities, i.e., those that have grown more than 14.1 percent, receive a zero value for growth lag.

but still relatively high poverty rates. Appendix H shows that population change is only moderately correlated with many need indicators.* That a city has lost population does not always mean that it has an extremely high incidence of problems (e.g., high poverty rates and unemployment rates). However, because of the presence of growth lag in the second formula, a city that has lost population can receive a high per capita CDBG allocation, regardless of need in terms of other variables. As noted in the 1979 report, growth lag can result in cities with similar levels of need receiving quite different levels of per capita funding. Because aged housing shares this problem with growth lag, the relationship of population change to aged housing, and how they operate in the second formula to the benefit of aged and declining cities, is examined next.

F.2 Interaction Between Growth Lag and Age of Housing

Population change is closely related to age of housing. Cities that have been losing population are in most cases cities with a high percentage of pre-1940 housing.** This means two of the three variables in the second formula are highly correlated. Coupled with the fact that most funding from the second formula is due to pre-1940 housing and growth lag, this high correlation means there is a tendency in the current system to allocate relatively high per capita amounts to certain cities -- those where age of housing and population decline occur together. However, not all aged and declining cities are extremely needy, especially when compared to the high level of funding they receive relative to several other cities that are not aged and declining.

The fact that population decline is not always associated with high levels of distress was discussed above. Similar comments apply for pre-1940 housing. In Section II.B.3, it was noted that aged units occupied by owners had much lower incidences of housing and neighborhood problems than aged units occupied by renters; similarly, aged units located in suburbs are not as closely associated with problems as aged units in central cities. Hence, in suburban cities with high levels of homeownership, aged housing is less likely to be associated with housing and neighborhood problems. In Chapter 2, it was found that many aged and declining suburbs continue to have some of the lowest rates of poverty.***

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* Appendix H shows that population change between 1960 and 1980 exhibits the following correlations with selected need variables: poverty rate, -0.48; per capita income, 0.27; unemployment rate, -0.43; percent of female-headed households, -0.51; percent without high school education, 0.45; percent minority population, -0.29. On the other hand, its correlation with the percent change in nonmanufacturing employment equals 0.78.

** The correlation between change in population, 1960-1980, and pre-1940 housing equals -0.77.

*** As with population loss, the percentage of pre-1940 housing exhibits only moderate correlations with the following need variables: poverty rate, 0.41; unemployment rate, 0.45; percent female-headed households, 0.46; per capita income, -0.30; and percent without a high school education, 0.43. On the other hand, it exhibits a high correlation (-0.76) with percent change in nonmanufacturing employment between 1967 and 1977. (Appendix H gives additional correlations for pre-1940 housing.)

To summarize, a problem with growth lag and aged housing is that their inclusion in the second formula can result in high per capita levels of funding even in circumstances where age and decline are not associated with very high levels of need. To see how this happens in the case of large cities, consider the examples given in Table 6.21. First, compare Minneapolis with Atlanta. Because of its large losses of population since 1960 (23 percent) and its aged housing stock (57 percent), Minneapolis receives a very high per capita amount of $41 from the second formula. It receives 43 percent of its funding from growth lag and 46 percent from aged housing (see the 5th and 6th columns of Table 6.20).* Atlanta, on the other hand, is much more needy than Minneapolis but receives only $28 per capita from the second formula. Atlanta's more intense need is expressed in its higher need score (.90 versus .10), its higher percentage of residents rating their households as only poor or fair places to live (31 percent versus 19 percent), and its higher rate of units on streets with abandoned buildings (16 percent versus 8 percent).** Atlanta would benefit by increasing the role of poverty in the second formula.

There are other examples of funding patterns not corresponding to the pattern of need scores in Table 6.21.*** San Francisco, Portland, St. Paul, and Seattle all receive more funds per capita than cities with high scores

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* The amount of formula funding to the jth entitlement city due to growth lag can be determined from the equation for the second formula given in Chapter 4. It equals

$$(.20 \ \frac{GLAG_j}{GLAG_{MC}}) \times G_{SMSA}$$

Similarly, age of housing funding equals

$$(.50 \ \frac{AGE_j}{AGE_{SMSA}}) \times G_{SMSA}.$$

** Notice that Minneapolis receives about the same per capita amount as Newark, which is the most needy large city and has an abandonment rate of 35 percent, compared to only 8 percent for Minneapolis.

*** Overfunding is defined relative to the composite need index. The estimated regression equation operationalizes the degree of targeting to need inherent in the current formula system. Given each city's need score, a predicted per capita amount can be computed representing the expected amount for cities with that score. If the city receives more (less) than its predicted amount, it is being overfunded (underfunded). Mathematically, overfunding for city j equals:

$$\text{Actual Per Capita Amount}_j - \text{Predicted Per Capita Amount}_j$$

where

$$\text{Predicted Per Capita Amount}_j = \$21.95 + \$17.06\ (NEED_j) + \$2.54\ (NEED_j)^2$$

It should be emphasized that the overfunding findings are rather insensitive to the definition of need chosen, as long as the definition includes variables such as poverty and unemployment that are not so highly correlated with population loss and aged housing.

Table 6.21 Per Capita Funding by Growth Lag, Age of Housing, and Poverty for the 15 Neediest Cities Over 250,000 Population and Selected Other Cities Over 250,000

Need Ranking[a]	City	Need Score[a]	Per Capita Dollars, FY '83	Percent of Funding Due to: Growth Lag[b]	Pre-1940 Housing[b]	Poverty[b]	Housing Rated by Resident as Only Poor or Fair	Neighborhood Rated by Resident as Only Poor or Fair	Abandoned Buildings Observed on Street
1	Newark	1.60	$42	35%	38%	27%	40%	54%	35%
2	Detroit	1.06	45	47	36	17	30	42	24
3	Cleveland	.91	55	49	37	14	33	46	23
4	St.Louis	.91	63	51	37	12	34	38	21
5	Atlanta	.90	28	40	27	34	31	34	16
6	Baltimore	.90	35	37	40	23	31	37	16
7	Buffalo	.80	56	44	43	12	24	31	17
8	Chicago	.69	36	35	45	20	28	35	16
9	New Orleans	.69	30	33	37	30	27	33	11
10	Philadelphia	.68	37	35	46	19	24	32	26
11	New York	.65	32	29	49	22	36	40	16
12	Washington	.62	32	41	39	20	32	34	14
13	Boston	.55	41	36	47	16	26	33	17
14	Birmingham	.55	30	43	32	25	28	30	7
15	Miami	.54	28			50[c]	30	32	7
(Selected examples of other large cities)									
24	San Francisco	.15	32	27	58	15	25	26	4
28	Minneapolis	.10	41	43	46	11	19	23	8
35	Portland	-.05	25	23	58	18	20	23	9
36	St.Paul	-.06	30	38	50	12	NA	NA	NA
39	Seattle	-.13	27	38	48	12	21	19	7

a. The need rankings are for cities over 250,000 population. As explained in Chapter 4, the need score expresses relative need. Absolute need cannot be directly inferred (i.e., Newark is not three times as needy as Miami).

b. The sum of funding due to growth lag, age of housing, and poverty equals 100 percent. The method for computing these percentages is explained in footnote * on the previous page.

c. Miami is the only city in the table funded by the first formula. The remaining 50 percent of Miami's funding comes from overcrowded housing (38 percent) and total population (12 percent).

such as Birmingham, New Orleans, Miami, and New York. As noted in the 1979 report, divergences between need and funding can also occur among the most needy cities. For instance, Cleveland, St. Louis and Buffalo receive much more under growth lag, and thus much higher per capita amounts, than Newark, which has the highest need score.

A list of smaller cities that received more funding than their scores would seem to indicate showed that these cities tended to choose the second formula and also rely heavily on growth lag and pre-1940 housing. Examples of cities that relied heavily on aged housing for funding are given in Table 6.22. Many are aged suburban cities in the North that have high rates of home ownership, low percentages of minority population, and low rates of poverty but during the 1970's began to decline or experience slow growth. Essentially, these cities take advantage of the age and decline emphasis of the second formula to receive higher amounts than their need levels would predict. For instance, primarily because of its aged housing, Oak Park, Illinois, receives $32 per capita, slightly more than the $31 per capita received by Paterson, New Jersey. However, under almost any measure of need other than aged housing, Paterson is substantially more needy than Oak Park -- e.g., Paterson's poverty rate is over four times Oak Park's poverty rate. Numerous other examples are included in Table 6.22. Quincy, Massachusetts -- another city that benefits from aged housing -- receives the same per capita funding as Pontiac, Michigan, but its need score and poverty and unemployment rates are substantially lower. Duluth, Minnesota, receives a higher per capita amount than Gary, Indiana, although Gary is much more needy in terms of unemployment and poverty.*

The reason for mismatches between funding and need is not only inadequacies in certain cases of pre-1940 housing and growth lag as need indicators but also the "polarized" dual formula system. The first formula couples poverty with population and overcrowding, and the second formula emphasizes age and decline. As noted above, a city does not have to be very needy to receive high per capita amounts from the second formula; it only has to have a high percentage of pre-1940 housing and to be experiencing below-average population growth. Cities with these characteristics benefit from the current dual formula system. On the other hand, cities with all types of problems (aged housing, population loss, poverty, etc.) frequently receive lower per capita amounts because of the low weight given to poverty in the second formula, or because of the nonneed variable (total population) in the first formula.**

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* The purpose here is not to say that these cities are not needy, but simply to point out that relative to the needs and funding of other cities, these cities are receiving rather high per capita amounts. In fact, a few cities listed in the bottom half of Table 6.22 had either average or above-average unemployment rates in 1981 (see the last column). The 1982 data, when they become available, will probably show even higher unemployment rates for cities such as Dearborn and Duluth.

** Total population is the only variable that has not been discussed in this Chapter. As noted in the 1979 report, the justification for funding this variable is that each community would be ensured a given per capita amount even if its development needs were minimal and easily met from local revenue sources. In general, cities that suffer most from having a population variable in the formula are those that rely on poverty in the first formula and have one-quarter of that formula allocated to a nonneed variable.

Table 6.22 Per Capita Funding by Growth Lag, Age of Housing and Poverty for Selected Cities Below 250,000 Population

City	Needs Score[a]	Per Capita Dollars, FY '83	Percent of Funding Due to:[b] Growth Lag	Age of Housing	Poverty	Poverty Rate, 1980 (Average=100)[c]	Unemployment Rate, 1981 (Average=100)[d]
Paterson, N.J.	1.13	$31	22%	50%	28%	174	159
Compton, Calif.	1.12	28			55[e]	181	143
Asbury Park, N.J.	.97	30	20	50	30	181	158
Gary, Ind.	.95	29	42	33	25	140	194
Trenton, N.J.	.93	41	36	46	18	143	107
Passaic, N.J.	.86	32	20	26	54	162	160
Saginaw, Mich.	.84	38	42	39	19	142	191
Jersey City, N.J.	.83	42	35	47	18	145	133
Pontiac, Mich.	.79	24	33	42	25	118	315
Union City, N.J.	.77	28	9	66	25	141	189
Flint, Mich.	.69	33	46	35	19	116	222
San Benito, Tex.	.62	30			58[e]	207	155
Anniston, Ala.	.53	29	39	32	29	163	195
Savannah, Ga.	.50	22	33	32	35	151	88
El Monte, Calif.	.46	20			56[e]	135	84
Petersburg, Va.	.43	21			56[e]	137	101
Pomona, Calif.	.30	17			57[e]	116	111
Lynn, Mass.	.25	38	35	52	13	95	90
Middletown, N.Y.	-.04	29	31	53	16	95	93
Duluth, Minn.	-.11	32	35	52	13	81	95
Malden, Mass.	-.12	28	29	59	11	65	75
Haverhill, Mass.	-.14	25	19	67	14	71	102
Medford, Mass.	-.18	29	34	57	9	52	67
Oak Park, Ill.	-.24	32	30	64	6	35	77
Brookline, Mass.	-.25	25	18	69	13	65	53
Berwyn, Ill.	-.25	31	37	57	6	37	93
Cleveland Heights, Ohio	-.26	28	32	58	9	51	74
Lakewood, Ohio	-.28	30	26	66	7	44	82
New Rochelle, N.J.	-.28	23	37	51	11	54	66
White Plains, N.Y.	-.32	23	35	54	11	53	50
Quincy, Mass.	-.33	24	26	62	12	56	78
Bloomfield, N.J.	-.37	25	34	58	7	36	84
Dearborn, Mich.	-.41	26	56	36	8	41	109
Royal Oak, Mich.	-.43	17	61	31	8	30	100
Clifton, N.J.	-.44	21	44	48	7	30	85
Arlington, Mass.	-.46	22	30	61	9	39	58
Newton, Mass.	-.55	25	38	54	8	39	60

a. As explained in Chapter 3, the need score expresses relative need. Absolute need cannot be directly inferred (i.e., Paterson is not twice as needy as Anniston).

b. The sum of funding due to growth lag, age of housing, and poverty equals 100 percent.

c. The average 1980 poverty rate for all CDBG entitlement cities is 14.4 percent.

d. The average 1981 unemployment rate for all CDBG entitlement cities is 7.6 percent.

e. These cities are funded under the first formula; their remaining funds come from overcrowded housing and total population.

F.3 Fluctuations in Annual Funding

One problem that has occurred with the operation of the growth lag variable in the CDBG formula has been the sometimes significant changes in yearly funding for certain cities caused by fluctuations in annual population estimates. It is unlikely that these yearly changes in funding are associated with changes in a city's underlying need for CDBG funding. While these fluctuations affect both first and second formula jurisdictions through the population and growth lag variables, respectively, the effects are larger in second formula jurisdictions because the growth lag variable has a larger implicit weight than the population variable.

Another cause of fluctuation in growth lag funding is that as new entitlement jurisdictions are added (typically with above average growth rates), the average growth rate in entitlement jurisdictions rises. Since cities with below average population growth receive positive growth lag values, a rise in the average growth rate gives growth lag funding to jurisdictions that formerly had none, and reduces the share of total growth lag to other jurisdictions.

For example, Asbury Park lost 8 percent in funds between FY 1980 and FY 1981, of which 5 percent was due to change in its share of growth lag. In addition, that city lost 25 percent between FY 1981 and FY 1982, with 13 percent due to growth lag.* Similarly, Atlanta lost 20 percent between FY 1981 and FY 1982, of which 9 percent was attributable to a change in growth lag. Alameda, California is an example of a city which suddenly had a positive growth lag value. Its funding increased by 15 percent between FY 1981 and FY 1982. However, this represented a 26 percent increase from growth lag which was offset by an 11 percent loss due to reduced total funding and additional entitlement jurisdictions. Brookline, Massachusetts lost 19 percent between FY 1980 and FY 1981 and 9 percent between FY 1981 and FY 1982. However, if there had been no cut in total funding and no new entitlement jurisdictions added, Brookline would have had a 16 percent loss from FY 1980 to FY 1981 and a 2 percent inrease from FY 1981 to FY 1982 due to change in growth lag.

As explained earlier, the growth lag variable was included in the CDBG formula as a proxy for economic decline and other problems found in declining cities. These are chronic problems that are unlikely to show substantial shifts on a year-to-year basis. However, the combination of population updates and the significant weight of growth lag in the formula can cause rather large annual changes in funding for several cities.

III. CONCLUSIONS

This Chapter has examined the relative importance of the formula factors in allocating CDBG funds and the reliability of each factor as an indicator of community development problems. The major conclusions are discussed below.

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* The remaining 12 percent loss was due to reduced overall funding and additional entitlement jurisdictions.

The weights on each formula factor do not accurately represent the importance of each in distributing funds because the factors differ in the degree to which SMSA totals are concentrated in entitlement jurisdictions. In addition, these concentrations have shifted, so that the implicit weights differ when 1980 instead of 1970 Census data are used.

The implicit weight on overcrowding rises from .25 to .28 between FY '82 and FY '84, because SMSA overcrowding has become relatively more concentrated in entitlement jurisdictions using the first formula than have other first-formula factors, population and poverty. This increase in the implicit weight of overcrowding occurs even though the number of overcrowded units fell by 19 percent in entitlement jurisdictions between 1970 and 1980, and its incidence fell from 8 to 5 percent of occupied housing units. Use of 1980 Census data would also increase the average per capita amount distributed by the overcrowding factor and would concentrate these funds in fewer jurisdictions.

An noted above, the relative importance of a formula variable can change with the introduction of new data. This is possible under the current formula because, except for growth lag, individual city shares on the formula variables are computed relative to the totals for SMSA's, rather than to the totals for entitlement jurisdictions. Under such a system, if a formula variable becomes more concentrated in entitlement jurisdictions -- as was the case with 1980 overcrowded housing -- then that variable receives a higher implicit weight in the formula, even though its nominal weight has not changed.

According to data from the Annual Housing Survey, overcrowded housing exhibits a significantly greater incidence of problems such as housing inadequacy and adjacency to abandoned units than non-overcrowded units. However, Hispanics and households in the West have relatively high overcrowding rates, which do not reflect any greater incidence of housing and neighborhood problems in the Annual Housing Survey data for these groups. Elderly households have relatively low overcrowding rates but do not have a disproportionately low incidence of problems. Although such differences also occur for pre-1940 and low-income housing, the differences for overcrowding are more severe. Individual data for 38 large central cities also show that overcrowding is not a very good proxy for neighborhood problems and not nearly as good a proxy as poverty for housing problems.

A major portion of overcrowded units are not inadequate; overcrowding accounts for a small percentage of all inadequate units in metropolitan areas. Pre-1940 housing and housing occupied by low-income families each account for a much larger percentage of inadequate housing units than overcrowding.

According to data from the Annual Housing Survey, pre-1940 housing for central cities is associated with housing deterioration and neighborhood blight, both within and between regions. The age of housing variable is much more strongly associated with poor housing condition and neighborhood blight when associated with renter status or low-income concentrations. Aged units occupied by owners, particularly those in suburbs, exhibit much lower incidences of problems.

Along with age of housing, poverty is the most important funding variable in the current system. Annual Housing Survey data show that housing units occupied by low-income families not only have a high incidence of inadequacy and neighborhood problems such as adjacency to abandoned buildings but also account for a major portion of these problems. Furthermore, Chapter 3 showed that at the intercity level, poverty is now a much better proxy than in 1970 for other need indicators such as job loss and unemployment. Poverty stands out as one of the best predictors of community development problems.

The growth lag factor accounts for much of the variation in CDBG funding, because jurisdictions with higher than average population growth receive no funds at all from this factor. In addition, the fact that growth lag is defined consistently (it allocates funds based on share of total growth lag in all entitlement jurisdictions), while the other factors are defined inconsistently (they allocate funds based on share of totals in all SMSA's), causes growth lag to have an implicit weight of .32 in FY '82 rather than the .20 weight explicit in the second formula. Essentially, these different computation methods have caused the relative importance of the formula variables to deviate from their nominal weights.

In the CDBG formula, growth lag serves as a proxy for the economic, fiscal, and social problems of declining cities. Data presented in this Chapter show that, on average, population loss is highly associated with measures of economic decline such as job loss and slow growth in retail sales. Hence, growth lag is a major reason the current dual formula targets to economically declining cities as well as it does. However, not all cities losing population exhibit high levels of need, as measured by variables such as poverty and unemployment. But because of the presence of growth lag in the second formula, a city that has lost population can receive a high per capita CDBG amount, regardless of its need in terms of other variables.

The Chapter shows that certain cities receive substantially more funds from the current dual formula system than their scores on the composite need index would suggest. This results when age and decline are not associated with severe city problems; this occurred frequently for many older, declining suburban cities in the North, as well for a few large cities such as Minneapolis, St. Paul, Seattle, and San Francisco. Because of their age and decline, these cities receive high per capita amounts under the second formula; however, based on their percentages of need indicators such as poverty and unemployment, these cities are not ranked as needy as other cities receiving lower per capita amounts.

One problem that has occurred with the operation of the growth lag variable in the CDBG formula has been the sometimes significant changes in yearly funding for certain cities caused by fluctuations in annual population estimates. It is unlikely that these yearly changes in funding are associated with changes in a city's underlying need for CDBG funding.

CHAPTER 7

ANALYSIS OF CDBG NONENTITLEMENT GRANTS

This Chapter repeats for nonentitlement grants much of the analysis done in the previous five Chapters for entitlement grants. It describes and analyzes the distribution of nonentitlement funds among the 50 States and Puerto Rico. The data are less available and more difficult to interpret for nonentitlement areas because they are not typical geographic entities -- they are the "leftovers" once entitlement cities and counties are subtracted from State totals. Thus, the data are spatially aggregated, combining a wide diversity of rural locations and small urban communities. For these reasons, the analysis in this Chapter is less complex and more limited than for entitlement grants.

The principal findings of this Chapter fall into three areas: the redistribution of funds brought about by the shift to 1980 Census data, the needs of nonentitlement areas, and the strengths and weaknesses of the individual formula variables.

Redistributions Caused by 1980 Census Data

This Chapter compares funding in FY '82, when 1970 Census data were used, with projected funding in FY '84, when it is assumed that 1980 Census data will be used for all variables. Since the purpose of this report is to isolate the effects of shifting to 1980 Census data, the analysis holds nonentitlement areas constant as defined in FY '83. The list of eligible entitlement jurisdictions may change considerably for FY '84; therefore, funding levels projected in this Chapter may not represent the actual funding States will receive in FY '84.

-- Use of 1980 Census data would cause approximately 40 percent of the States to gain or lose 10 percent or more. Conversely, 40 percent would change less than 5 percent.

-- Funding changes would have only marginal effect on the share of total nonentitlement funds received by each region. However, in general, percent changes in nonentitlement funds on a regional basis are greater than those in entitlement funds. The entitlement and nonentitlement changes are not always in the same direction; with respect to nonentitlement grants the West North Central and Southern regions lose funds, while the other regions gain funds.

-- Changes in poverty, overcrowding, and age of housing all contribute to regional gains and losses, in contrast to the entitlement experience, in which age of housing played only a minor role. In general, changes in poverty caused losses for the Southern regions and changes in overcrowding caused gains for the Western regions. The funding redistributions result in a leveling of funds. Except for Puerto Rico, regions with above average per capita grants lose funds, while those with below average per capita grants gain funds.

-- Nonentitlement funds are distributed more evenly on a per capita basis compared to entitlement grants, primarily because the second formula operates very differently in entitlement and nonentitlement areas. The entitlement second formula generates high per capita amounts for large, declining central cities that have high incidences of all three formula variables -- aged housing, poverty, and growth lag. In the nonentitlement second formula, funds are spread more evenly because States do not tend to have high incidences of both aged housing and poverty and because total population is included as the third variable.

Needs Analysis

Because of data limitations, this Chapter does not construct a needs index to evaluate the equity of the nonentitlement formula. Instead, the assessment is based on simple correspondences between formula allocations and the incidence of a few indicators of housing and community development problems.

-- Nonentitlement funds are more highly targeted to poverty than to overcrowding and are not targeted to age of housing. Per capita funding is higher in States that have a lower proportion of their working-aged population employed; however, per capita funding shows no systematic relationship to the unemployment rate (as defined in early 1980). Although it is not a need variable, per capita funding increases relatively strongly with the proportion of nonmetropolitan population.

Strengths and Weaknesses of Individual Formula Variables

Because it was not possible to analyze targeting relative to an overall needs index, the analysis of individual variables is more important in this Chapter than for the entitlement analysis. For each variable, this Chapter examines how the data changed from 1970 to 1980, whether the variable is associated with housing inadequacy and other community development problems, and whether that association is stable across demographic groups. The Annual Housing Survey is used heavily in this analysis.

-- As in the entitlement formula, the nonentitlement formula has implicit factor weights that differ from the explicit ones. The implicit weights on overcrowding and age of housing are greater than the explicit weights and increase when the 1980 data are used.

-- Between 1970 and 1980, overcrowded units decreased by 36 percent in nonentitlement areas. The rate of overcrowding fell from 9.3 to 4.4 percent of occupied units over the period. However, the overcrowding variable would increase in importance in FY '84; that is, it would allocate a higher proportion of nonentitlement funds than in FY '82. Overcrowding would also distribute funds more evenly among the States with the 1980 data.

-- Overcrowding rates are higher among inadequate units, and units experiencing the other housing and public infrastructure problems examined in the Annual Housing Survey, than among units without such problems. However, overcrowded housing accounts for a small proportion of these problems and rates of overcrowding vary relatively strongly across demographic groups. Hispanic and female-headed households have high overcrowding rates but only moderate incidences of housing inadequacy, while elderly households have very low overcrowding but average inadequacy.

-- The number of pre-1940 units in nonentitlement areas was reduced by 17 percent during the 1970's by demolition and other causes. The incidence of aged units fell from 43 percent to 26 percent.

-- The percentage of pre-1940 housing units is higher among inadequate units, units near abandoned buildings, and units experiencing sewer and water problems; it is lower among units reporting problems with streets and roads and with public recreation facilities. It is relatively weak as an indicator of housing problems among black households, households in the South, and elderly households -- these groups have relatively high inadequacy rates but average percentages of pre-1940 units.

-- In nonentitlement areas, aged housing shows low or inverse correlations with such variables as poverty, income, minority population, overcrowding, and unemployment (as defined in early 1980). However, aged housing in small cities is associated with combinations of high unemployment and slow population growth, suggesting that aged housing is a proxy for economic stagnation.

-- Overall, nonentitlement areas experienced an 8 percent decrease in poor persons in the 1970's; the poverty rate fell from 17.0 to 13.1 percent. This compares to an increase in both numbers of poor persons and poverty rate in entitlement jurisdictions.

-- The percentage of poverty households is higher among inadequate units and units experiencing most of the other housing and infrastructure problems examined through the Annual Housing Survey in nonmetropolitan areas. Poverty slightly underrepresents housing inadequacy among households in the South, blacks, and Hispanics. Despite these problems, it reflects housing inadequacy more accurately than either pre-1940 housing or overcrowding.

Throughout this Chapter, comparisons will be made to the entitlement formula. These comparisons are not intended to imply that the entitlement formula is a standard against which the nonentitlement formula should be evaluated. References to the earlier, more complex entitlement analysis provide insights on the nonentitlement formula which would not be apparent if the nonentitlement analysis were to stand alone.

The first section of this Chapter describes the nonentitlement formula; the second section examines the role of the formula variables in allocating funds. Section III assesses the needs of nonentitlement areas; Section IV describes the funding redistributions when 1980 Census data are substituted for 1970 data; Section V explains why these redistributions occur. In Section VI the extent to which nonentitlement funding is related to selected indicators of community development need is examined. Section VII analyzes the reliability of individual formula variables as indicators of community development problems. Finally, Section VIII presents conclusions.

I. THE CURRENT NONENTITLEMENT DUAL FORMULA

In FY '83, the nonentitlement formula distributed $1.020 billion to the nonentitlement areas of the 50 States plus Puerto Rico. Nonentitlement areas include nonmetropolitan areas plus the balance left in SMSA's once entitlement cities and urban counties are subtracted. Table 7.1 shows how funding to nonentitlement areas has changed relative to entitlement jurisdictions since FY '80. Despite reductions in total CDBG funding, the allocation to nonentitlement areas is higher in FY '83 than in FY '80 because, starting in FY '82, CDBG funds were split between entitlement and nonentitlement recipients at a statutory 70-30 ratio, rather than the effective 75-25 split used previously (see footnote b, Table 7.1). Between FY '80 and FY '83, per capita grants to nonentitlement areas increased from $9 to $10, while per capita grants to entitlement jurisdictions fell from $23 to $19.

These shifts in per capita grants are partially explained by the increase in nonentitlement funding and the decrease in entitlement funds. In addition, jurisdictions once included in the nonentitlement population count have become entitlement jurisdictions. Thus, entitlement population increased from 117 million in FY '80 to 126 million in FY '83 while nonentitlement population increased from 103 million in FY '80 to 104 million in FY '83. The slower growth rate in nonentitlement areas is more attributable to the shift of jurisdictions from nonentitlement to entitlement status, than to slower population growth. In FY '83 there were 735 entitlement jurisdictions, compared to 658 in FY '80.

The nonentitlement allocation to each State is currently computed by a dual formula similar to that used for entitlement cities and urban counties, except that total population replaces the growth lag factor. Mathematically, a State receives an allocation based on the greater of the amounts computed by the following two equations:

(1) First (1974) Formula Amount =

$$\left(.25\ \frac{POP_j}{POP_{NENT}} + .50\ \frac{POV_j}{POV_{NENT}} + .25\ \frac{OCRWD_j}{OCRWD_{NENT}}\right) \times G_{NENT}$$

Table 7.1 Distribution of Funds to Entitlement and Nonentitlement Recipients

	FY '80	FY '81	FY '82	FY '83
Population (in millions)				
Total	220	222	230	230
Entitlement Jurisdictions	117	118	125	126
Nonentitlement Areas	102	103	104	104
Number of Entitlement Jurisdictions	658	669	732	735
Funding (in billions)				
Entitlement Jurisdictions	$2.745	$2.667[a]	$2.380[b]	$2.380
Nonentitlement Areas	.955	.926[a]	1.020[b]	1.020
Per Capita Funds				
Entitlement Jurisdictions	$23	$22	$19	$19
Nonentitlement Areas[c]	9	9	10	10

a. The FY '81 funding for both entitlement and nonentitlement grants decreased relative to FY '80 because of a reduction in total CDBG funding.

b. In addition to a reduction in total CDBG funds between FY '81 and FY '82, funds were split 70-30 between entitlement and nonentitlement recipients beginning in FY '82. Before FY '82, 20 percent of CDBG funds were set aside for nonentitlement areas outside of SMSA's and a special allocation of the remaining 80 percent was set aside for nonentitlement areas within SMSA's. In FY '81, the total available for nonentitlement areas was approximately 25 percent of all CDBG funds.

c. Of course, nonentitlement funds are generally not distributed to all nonentitlement localities within the States. Therefore, the average per capita grant to localities receiving nonentitlement grants is larger than these figures and could be larger than the average to entitlement jurisdictions.

(2) Second (1977) Formula Amount =

$$\left(.20\ \frac{POP_j}{POP_{NENT}} + .30\ \frac{POV_j}{POV_{NENT}} + .50\ \frac{AGE_j}{AGE_{NENT}}\right) \times G_{NENT}$$

where

j = Nonentitlement area of the State.

NENT = National aggregate for all nonentitlement areas.

G_{NENT} = Total amount allocated to all nonentitlement areas.

POP = Total resident population.

POV = Extent of Poverty -- number of persons whose incomes are below the poverty level.

OCRWD = Overcrowded Housing -- number of housing units with 1.01 or more persons per room.

AGE = Age of Housing -- number of existing year-round housing units constructed in 1939 or earlier.

In deriving the "dual formula" amounts, HUD applies a pro rata reduction to all allocations to ensure that the total amount distributed adds up to the amount authorized (G_{NENT}). The funds received by each State are then awarded on a competitive basis to selected small cities and counties.*

In computing the formula amounts for FY '83, population and poverty counts were based on 1980 Census data, and pre-1940 and overcrowded housing counts were based on 1970 Census data. FY '83 is the first year in which 1980 poverty data are used in the CDBG formula. Previously, formula allocations were based on 1970 Census data for poverty. FY '82 was the first year in which 1980 population counts were used for population; however, this variable was continually updated based on Census estimates. If there are no changes made to the dual formula system, FY '84 will be the first year in which 1980 data are used for overcrowding and age of housing. After describing the role of the formula variables in allocating funds (Section II), and the community development needs of nonentitlement areas in (Section III), Section IV will examine the effects of the 1980 Census on nonentitlement funding.

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* Two States are exceptions. In FY '82, Ohio reallocated its funds by formula to its nonentitlement jurisdictions; Hawaii has asked HUD to allocate its nonentitlement funds directly to its 3 eligible nonentitlement jurisdictions.

II. THE ROLE OF THE FORMULA VARIABLES IN ALLOCATING FUNDS

A. Relative Importance of the Formula Variables

Section I.A of Chapter 6 observed that the factor weights in the dual formula do not accurately describe the relative importance of each factor in allocating entitlement funds. The same is true for nonentitlement funds. Table 7.2 shows the factor weights and the percentage of funds distributed by each factor. The most obvious discrepancy between relative factor weights and percent of funds distributed involves the population and overcrowding factors in the first formula. Both have a factor weight of .25, but population distributes less funds (9.9 percent of total funds in FY '82, vs. 12.3 percent by overcrowding). In FY '84, the disparity increases -- population distributes 10.7 percent of funds and overcrowding 14.9 percent. In the second formula, age of housing allocates 30.8 percent of funds compared to the 25 percent that its factor weight would predict.*

Unlike the entitlement formula, the nonentitlement formula is defined consistently, i.e., the sum of numerators across the States would equal the denominator for each factor if all States chose the same formula.** However, the fact that there are two formulas prevents any factor from allocating 100 percent of the funds of which it is capable. Columns (1) and (2) of Table 7.3 show the percent of each variable accounted for by States using each formula. States using the first formula in FY '82 account for 44.7 percent of nonentitlement population, but 56.0 percent of overcrowded units. Thus, overcrowding allocates 56.0 percent of the funds it is capable of allocating, compared to 44.7 percent for population. This enables overcrowding to have an implicit weight equal to or larger than its explicit weight (.25). Population, on the other hand, has an implicit weight (.20) less than its explicit weight (.25). The underweighting of population is balanced in the first formula by an overweighting of poverty (.55 implicit vs. .50 implicit). The difference between the implicit and explicit weights depends on the relative concentrations of each formula factor in States using that formula. The mathematics of this relationship are explained in Appendix B.

The disparity between implicit and explicit weights is even greater in the second formula. In FY '82, age of housing has an implicit weight of .61 compared to its .50 explicit weight. Most of this overweighting comes at the expense of poverty, which has a .20 implicit weight, compared to its explicit weight of .30. In FY '84, the percentage of nonentitlement aged housing in States using the second formula falls slightly, from 69.8 percent

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* Since age of housing has a .50 weight in the second formula and the second formula allocated approximately 50 percent of the nonentitlement funds in FY '82, one would expect age of housing to allocate 25 percent (.5 x 50 percent) of all nonentitlement funds.

** See Chapter 6, Section I.A for an explanation of why the entitlement formula is defined inconsistently.

Table 7.2 Factor Weights and Percent of Total Nonentitlement Funds Distributed by Each Formula Factor

	Factor Weight	Percent of Funds Distributed By Each Factor FY '82	FY '84
First Formula		49.3	53.5
Population	.25	9.9	10.7
Poverty	.50	27.1	27.8
Overcrowding	.25	12.3	14.9
Second Formula		50.7	46.5
Population	.20	9.7	8.5
Poverty	.30	10.2	8.9
Age of Housing	.50	30.8	29.2

Table 7.3 Share of Nonentitlement Factor Totals Accounted For by States That Use Each Formula and Implicit and Explicit Factor Weights in the Nonentitlement Dual Formula

	Percent of Formula Factor Totals Accounted For By Using the Formula		Factor Weights		
			Implicit		Explicit
	FY '82 (1)	FY '84 (2)	FY '82 (3)	FY '84 (4)	(5)
First-Formula States					
Population	44.7%	50.4%	.20	.20	.25
Poverty	61.5	65.3	.55	.52	.50
Overcrowding	56.0	69.8	.25	.28	.25
Second-Formula States					
Population	55.3	49.6	.19	.18	.20
Poverty	38.5	34.7	.20	.19	.30
Age of Housing	69.8	68.5	.61	.63	.50

to 68.5 percent. However, the population and poverty factors experienced an even larger decrease. As a result, the implicit weight of age of housing increases from .61 to .63.

B. Spreading Versus Concentration of Formula Variables

Another dimension on which formula factors differ is the degree to which they spread funds evenly across States. As explained below, this is also a dimension on which the entitlement and nonentitlement formulas differ.

Table 7.4 examines the spreading versus concentration issue by showing the mean, standard deviation, and coefficient of variation of per capita grants accounted for by each variable. The coefficient of variation is a relative measure of dispersion; it is obtained by dividing the standard deviation by the mean. A small coefficient of variation indicates that the mean is typical of most items studied (either in sign or in magnitude), while a large coefficient of variation indicates that the mean is not typical. In this case the differences are in magnitude, not in sign.

The relative size of the mean per capita grants for each variable is consistent with the relative implicit weights observed in Table 7.3. The first and second formulas distribute very similar per capita amounts ($10.85 versus $9.04 in FY '82). In FY '84, the first-formula amount falls to $10.45 and the second-formula amount rises to $9.24. The second formula distributes funds quite evenly across States, based on its low coefficient of variation (.16 in FY '82 and .15 in FY '84). The first formula concentrates funds somewhat more, and the degree of concentration increases when 1980 Census data on poverty, overcrowding, and age of housing are added (the coefficient of variation increases from .36 to .43). The increased concentration of funds in the first formula causes funds as a whole to become more concentrated (the coefficient of variation increases from .30 to .35). However, this effect is dominated by an increase in per capita funds in Puerto Rico from $27.69 to $33.45. The range in funding among the States narrows from $5.34-$13.30 in FY '82, to $6.45-$13.75 in FY '84.

By definition, the population factor distributes the same per capita amount to each State within the same formula. The zero coefficients of variation for population confirm the even distribution. The per capita amount distributed by population in the second formula is lower than in the first formula because the explicit (and implicit) weight is lower in the second formula. The per capita amount falls from FY '82 to FY '84 in both formulas because the pro rata reduction increases.

In both formulas, the poverty factor is the source of the greatest concentration of funds. When 1980 Census data are added, the poverty factor causes more concentration in the first formula (the coefficient of variation rises from .52 to .63), but less concentration in the second formula (the coefficient of variation falls from .32 to .23). The per capita amounts allocated by overcrowding and age of housing increase from FY '82 to

Table 7.4 Mean, Standard Deviation, and Coefficient of Variation in Per Capita Funds From Formula Variables

	FY '82			FY '84		
	Mean Per Capita Grant	Standard Deviation	Coefficient of Variation[a]	Mean Per Capita Grant	Standard Deviation	Coefficient of Variation[a]
First Formula	$10.83	$3.92	.36	$10.45	$4.50	
Population	2.17	0	0	2.10	0	0
Poverty	5.97	3.12	.52	5.44	3.41	.63
Overcrowding	2.71	.85	.31	2.91	1.24	.43
Second Formula	9.06	1.50	.17	9.23	1.35	.15
Population	1.74	0	0	1.68	0	0
Poverty	1.81	.58	.32	1.76	.41	.23
Age of Housing	5.49	1.17	.21	5.79	1.18	.20
All Recipients	9.85	2.98	.30	9.85	3.39	.35

a. The coefficient of variation is defined as (standard deviation)/(mean).

FY '84, but overcrowding funds become more concentrated (the coefficient of variation increases from .31 to .43) while age of housing funds become marginally more evenly spread across States (the coefficient of variation falls from .21 to .20).

C. Differences from the Entitlement Formula

The nonentitlement formula distributes funds much more evenly across recipients than the entitlement formula. This is apparent from comparing the coefficients of variation for total grants (.35 for nonentitlement and .58 for entitlement grants in FY '84). The major reason for this difference seems to be the relative level of funds provided by the first and second formulas. In the entitlement dual formula, the second formula provides substantially larger per capita grants than the first formula ($26.53 vs. $13.58 in FY '84). By contrast, the nonentitlement dual formula provides very similar funds from the first and second formulas ($10.45 vs. $9.23 in FY '84). In the second entitlement formula, cities with growth lag tend to have a high incidence of aged housing. Furthermore, larger declining cities tend to have high poverty rates. As a result, many jurisdictions using the second entitlement formula receive very high per capita amounts. The second nonentitlement formula, on the other hand, includes population, which spreads rather than concentrates funds. Since States with high poverty rates use the first formula, the only measure of need with a high incidence in the second formula is age of housing. Because its variables are not highly correlated -- in fact age of housing and poverty are inversely correlated -- the second formula does not generate the high degree of targeting in the dual formula system that it does in entitlement jurisdictions.

III. COMMUNITY DEVELOPMENT NEED IN NONENTITLEMENT AREAS*

A. Measuring Need in Nonentitlement Areas

Measuring need in nonentitlement areas is not the same as in entitlement communities. The most obvious difference is that entitlement communities are funded directly on the basis of their need characteristics, whereas need characteristics of nonentitlement areas determine a pool of funds that are then distributed competitively by HUD or by State agencies. In many States only a fraction of the subareas making up the nonentitlement areas will receive CDBG funds in a given year. Nevertheless, the demography of all subareas is entered into the nonentitlement formula calculation for each State.

A related, and equally important, difference is that a nonentitlement area is much less a geographic, economic, or political unit than is an entitlement city or even an urban county. Certain need indicators such as population or job growth, which make sense for jurisdictions with circumscribed boundaries and well-defined economic and fiscal responsibilities, make less

* The analysis of nonentitlement need variables in this section was written by Robert Benjamin.

sense for a "nonentitlement" aggregation of college towns, mill towns, bedroom suburbs, farm towns, and farms spread across thousands of square miles. Unlike the State to which they belong, these nonentitlement communities lack geographic or administrative cohesion.

Even a common-sense variable such as poverty is harder to interpret for nonentitlement areas. For instance, the incidence of poverty in many States tends to be higher in rural areas than in more densely settled and populated urban areas outside central cities. All else being equal, a State with a higher rural proportion of nonentitlement population will have a higher rate of poverty than an identical State with a lower rural proportion. Moreover, low income in rural areas might indicate a need for sewer lines and sound housing, whereas low income in urban areas might indicate economic development and neighborhood needs.

Because the rural proportion varies widely among State nonentitlement areas (from less than 28 percent to more than 67 percent), interpreting community development need in nonentitlement areas across States is difficult. Table 7.5 shows how regional shares of nonentitlement need are altered when only more highly populated or densely settled urban areas are considered. For instance, the Northeast has 13 percent of all poor persons and also 13 percent of all households with a low opinion of their housing, when each household in the nonentitlement areas is considered. If only the urban portions of nonentitlement areas are considered, the Northeast share of need on these indicators rises to 16 percent and 17 percent, respectively. On the other hand, North Central and Western needs are not especially altered by an urban emphasis.

Because they exclude central cities and urban counties, nonentitlement areas are only about 47 percent urban in their population, as contrasted to the more than 95 percent in entitlement areas. Thus, an urban perspective of need will diverge considerably from a total perspective (see Table 7.6). For instance, the nonentitlement areas have 46 percent of all poor persons, but an estimated 28 percent of all poor persons in urban areas. Table 7.6 also shows that neighborhood problems (poor opinion of neighborhood, abandonment) tend to be less concentrated in nonentitlement areas.

The needs analysis for nonentitlement areas will be limited to an examination of poverty, overcrowding, age of housing, and unemployment. The other 14 variables considered for entitlement cities were eliminated, for the following reasons. As noted in Chapter 2, urban counties as defined for the CDBG program have boundaries different from their political boundaries. This difference prevented including urban counties in that Chapter's examination of changing community development need. Similarly, some variables, such as employment data, must be eliminated from the analysis of need in nonentitlement areas. Other variables, such as the percentage of female-headed households, were included in the entitlement needs analysis not because they are problems in themselves but because other studies had found associations between these variables and community development problems in urban areas. Similar associations have not been adequately tested for nonentitlement areas. A substantial literature relates population and employment decline to community and economic development problems for cities. Again, similar associations have not been adequately tested for nonentitlement areas. Finally, as noted, the interpretation of some variables is

Table 7.5 Regional Shares of Total and Urban[a] Needs of Nonentitlement Areas[b]

	Total Nonentitlement Need				Urban[a] Nonentitlment Need			
	Northeast Share	North Central Share	South Share	West Share	Northeast Share	North Central Share	South Share	West Share
Formula Variables								
Poverty	13%	22%	53%	12%	16%	24%	48%	12%
Pre-1940 Housing	26	40	26	8	32	37	23	8
Overcrowded Housing	10	19	53	18	10	20	49	21
AHS Measures								
Poor Opinion of Structure	13	18	56	13	17	18	52	14
Poor Opinion of Neighborhood	17	20	47	16	20	20	44	17
Abandonment in Neighborhood	15	26	46	13	18	24	45	13
Total Households	18	29	40	13	23	26	38	13

a. An urban problem is the presence of a factor such as poverty or abandoned housing in an area that meets the population and density requirements for the Census designation "urban". A nonurban area is defined as the residual, and is denoted "rural" by the Census Bureau.

b. The shares of total needs for formula variables are exact proportions based on nonentitlement areas defined as of FY '83. The other shares are reasonable estimates of 1983 entitlement and nonentitlement proportions based upon the Annual Housing Survey of 1977. See Appendix L for estimation procedures.

Table 7.6 Estimated Share of Total and Urban Problems in Entitlement and Nonentitlement Areas: Key Formula Variables and Selected AHS Indicators

	Total Problems		Problems in Urban Areas[a]	
	Entitlement Share[b]	Nonentitlement Share[b]	Entitlement Share[b]	Nonentitlement Share[b]
Formula Variables				
Poverty	54%	46%	72%	28%
Pre-1940 Housing	55	45	72	28
Overcrowded Housing	60	40	76	24
AHS Measures				
Poor Opinion of Structure	59	41	75	25
Poor Opinion of Neighborhood	72	28	82	18
Abandonment in Neighborhood	60	40	79	21
Total Households	55	45	72	28

a. An urban problem is the presence of a factor such as poverty or abandoned housing in an area that meets the population and density requirements for the Census designation "urban." A nonurban area is defined as the residual, and is denoted "rural" by the Census Bureau.

b. The shares of total needs for formula variables are exact proportions based on nonentitlement areas defined as of FY '83. The other shares are reasonable estimates of 1983 entitlement and nonentitlement proportions based upon the Annual Housing Survey of 1977. See Appendix L for estimation procedures.

unclear in nonentitlement settings. The interpretation of neighborhood problems identified in HUD's Annual Housing Survey is less clear in nonentitlement than in entitlement areas. Even some of the variables used in the formula (for example poverty) mean different things in rural and urban portions of nonentitlement areas.

Since three of the four variables chosen are used in the nonentitlement formula, testing the formula allocation against the needs variables has much more limited implications than the analysis in Chapter 5 for entitlement cities. It is important to know how well the formula allocates funds in reference to these needs, but no claim can be made that these variables represent a wider range of community development problems in nonentitlement areas. However, the Annual Housing Survey analysis reported in Section VII does indicate that poverty is a good indicator of community development problems in nonmetropolitan areas.

B. Nonentitlement Area Need Variables

During the 1970's, the number of poor persons fell by 8 percent in nonentitlement areas, compared to a 13 percent increase in entitlement jurisdictions.* The rate of decrease was higher in the South and in the West North Central region. Nevertheless, the South had above average poverty rates in both 1970 and 1980. The Mountain and Pacific regions and Puerto Rico had increases in poor persons during the 1970's. Nevertheless, the rate of poverty remained below average in both the Mountain and Pacific regions.

The rate of overcrowding fell from 9.3 percent to 4.4 percent during the 1970's, due to a 36 percent decrease in overcrowded units. Overcrowding rates were highest in the South, West, and Puerto Rico in both 1970 and 1980. The percentage loss in overcrowded units was also lowest in these areas.

Aged housing units also decreased by 17 percent during the 1970's. The rate of decrease was lowest in the North, where the incidence of aged housing is above average.

Table 7.7 sets out the correlations among poverty, overcrowding, age of housing, and unemployment. Whether the areas studied are all 51 nonentitlement areas, the 12 largest nonentitlement areas, or individual nonmetropolitan cities with 2,500-50,000 persons, three patterns stand out: the rate of poverty and the rate of overcrowding are positively and strongly interrelated;** age of housing is inversely and moderately related to poverty

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* The nonentitlement data discussed in the next three paragraphs are presented in Tables 7.11 - 7.13 below. The trends in regional shares will be repeated in the context of formula redistributions in Section V.A.

** Poverty and overcrowding were also correlated with the minority (blacks and Hispanics) population, which is a subgroup exhibiting a high degree of housing and neighborhood problems (see Section VII below).

Table 7.7. Correlations of Need Variables for Nonentitlement Areas[a]

Level of Comparison	(1) Poverty with Age of Housing	(2) Poverty with Overcrowding	(3) Age of Housing with Overcrowding	(4) Poverty with Unemployment	(5) Age of Housing with Unemployment	(6) Overcrowding with Unemployment
Nonentitlement Balances of 50 States & Puerto Rico	-.49	.73	-.81	.28	-.21	.31
Nonentitlement Balances of States with over 3 Million Persons in Nonentitlement Areas	-.66	.78	-.87	-.25	.18	-.14
Nonmetropolitan Places, 2,500-50,000 Persons	-.34	.66	-.60	.20	.11	.04

a. All data are from the 1980 Census. The correlations are Spearman rank-order correlation coefficients.

and inversely and strongly related to overcrowding;* age of housing, poverty, and overcrowding are weakly and inconsistently related to unemployment.** In short, poverty/overcrowding, age of housing, and unemployment form distinct dimensions of need. These measures currently behave for nonentitlement areas as they behaved for entitlement communities a decade ago, that is, with little association between poverty and the other variables. The geographic distribution is also similar; poverty is high in the South, age of housing in the North, and unemployment in the West (see Table 7.8). Overcrowding, however, tends to be high in Western as well as Southern nonentitlement areas. All need variables are exceptionally high in Puerto Rico, which receives one of the highest absolute dollar amounts from the nonentitlement CDBG program, despite one of the smaller populations. As a result, its per capita funding is far higher than that of any other area.

One further comment should be made with respect to aged housing as an indicator of need. Aged housing is probably more highly correlated with slow growth in jobs among nonentitlement areas than is either poverty or overcrowding. This is because aged housing shows a higher correlation (-0.72) with change in population.*** Therefore, if the unemployment measure were respecified as a combined unemployment and job loss measure, it would be better proxied by aged housing than by poverty or overcrowding.****

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* This relationship merely says that States with above average incidences of aged housing have below average incidences of poverty. It does not indicate the income level of occupants of aged housing. This inverse correlation can be seen on a regional basis by comparing column 4 or 5 of Table 7.11 with the same column of Table 7.13. It should be noted that older nonentitlement areas tend to be more highly urbanized and to have a higher cost of living; a measure of poverty with an urban emphasis and with cost-of-living adjustments might be less negatively associated with age of housing.

** The 1980 Census provides the most recent unemployment data for nonentitlement areas, gathered in early 1980. As shown in Table D.7 of Appendix D, entitlement cities in the North Central region have suffered the largest increases in unemployment during the current recession. Hence, if more recent data were available for nonentitlement areas, they might show a closer association between aged housing and unemployment, since aged housing is relatively high in the North Central region.

*** Data on job changes in nonentitlement areas were not available to test this association directly. But for small central cities with fewer than 50,000 persons, job growth and population growth are highly associated.

**** An unemployment-job loss measure is more precise than a simple unemployment measure; some growing areas have high unemployment because they consistently attract job seekers and encourage present residents to voluntarily search for better jobs. The association of age, poverty, and overcrowding with an unemployment-job loss measure was approximated by testing their incidence in nonmetropolitan places with 2,500 or more persons and relatively high 1980 unemployment and population loss from 1970 to 1980. (Population change was used as a proxy for employment change because data on the latter are not available for smaller cities.)

Table 7.8: The Distribution of 1980 Formula Need Variables and Unemployment in Nonentitlement Areas by Census Region

Census Region	Percent of Areas Much Above Average[a]				Percent of Areas Much Below Average[b]			
	Poverty	Crowding	Age	Unemployment	Poverty	Crowding	Age	Unemployment
Northeast[c]	0%	0%	67%	22%	67%	88%	0%	33%
North Central	8	0	75	15	41	58	0	38
South	75	50	0	25	6	0	56	25
West	15	54	0	58	23	0	48	25
U.S.	30	30	30	30	30	30	30	30

a. "Much above" is a rate in the top 15 (30%) of the 50 States. The respective cutoffs are 14.3% for poverty, 4.9% for overcrowding, 34.2% for age, and 7.7% for unemployment. All variables are from the 1980 Census.

b. "Much below" is a rate in the bottom 15 (30%) of the 50 States. The respective cutoffs are 9.5% for poverty, 4.9% for overcrowding, 17.5% for age, and 5.5% for unemployment.

c. Puerto Rico is not included. Its rates are the highest for poverty, overcrowding, and unemployment, and among the lowest for age of housing.

The next section examines redistributions in nonentitlement funding caused by use of 1980 Census data.

IV. REDISTRIBUTION EFFECTS AMONG NONENTITLEMENT AREAS DUE TO 1980 CENSUS DATA

A. Description of Redistribution Analysis

As with the entitlement formula, analysis of the redistributive effects due to 1980 Census data will focus on a comparison of projected FY '82 allocations (based on 1970 data for poverty, age of housing, and overcrowded housing) with projected FY '84 amounts (using 1980 data for these variables).* Since 1980 population is used in both FY '82 and FY '84, this comparison ignores the effect of population change on redistribution. This is appropriate, since the continual updating of population makes this variable fundamentally different from the others, which experience sharp, one-time shifts.

B. Nature of Funding Shifts

Regional redistributions have very little effect on regional shares of nonentitlement funds (see Figure 7.1.). The greatest change occurs in the East South Central region, where the share falls from 12.4 percent of total funds in FY '82 to 11.2 percent in FY '84.

As shown in Table 7.9, the West North Central and the Southern regions (South Atlantic, East and West South Central) lose funds when 1980 Census data replace 1970 data, while the other regions gain funds. Among the gaining regions, only in the East North Central does funding increase by less than one percentage point. There are differences among the regions in the extent to which total change in funding is based more on the FY '83 change in the poverty data or on the FY '84 change in the overcrowded and age of housing data. Although the New England and the Middle Atlantic regions gain some funds when 1980 Census data on poverty are introduced in FY '83, the bulk of the increase comes from the switch to 1980 data on aged housing and overcrowded housing in FY '84. Among the East and West South Central regions, the bulk of the loss in funds occurs with the switch to 1980 data on poverty in FY '83, while the South Atlantic loses somewhat more with the switch to 1980 data on aged and overcrowded housing. The Mountain and Pacific regions and Puerto Rico gain most of their funds from the switch to 1980 poverty data in FY '83.

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* The FY '82 and FY '84 grants are described as "projected" because, to isolate the effect of introducing the 1980 Census data, other changes that would have taken place between FY '82 and FY '84, such as the designation of new entitlement cities (which are then subtracted out of a State's nonentitlement totals), have been held constant. The grant projections are based on FY '83 nonentitlement areas. Therefore, the "projected" FY '82 grants are not equal to the actual nonentitlement allocation for particular States in FY '82, nor do the projected FY '84 grants equal what they will actually receive in FY '84.

Figure 7.1

PROJECTED SHARE OF TOTAL NONENTITLEMENT FUNDS BY REGION
FY '82, FY '83, AND FY '84

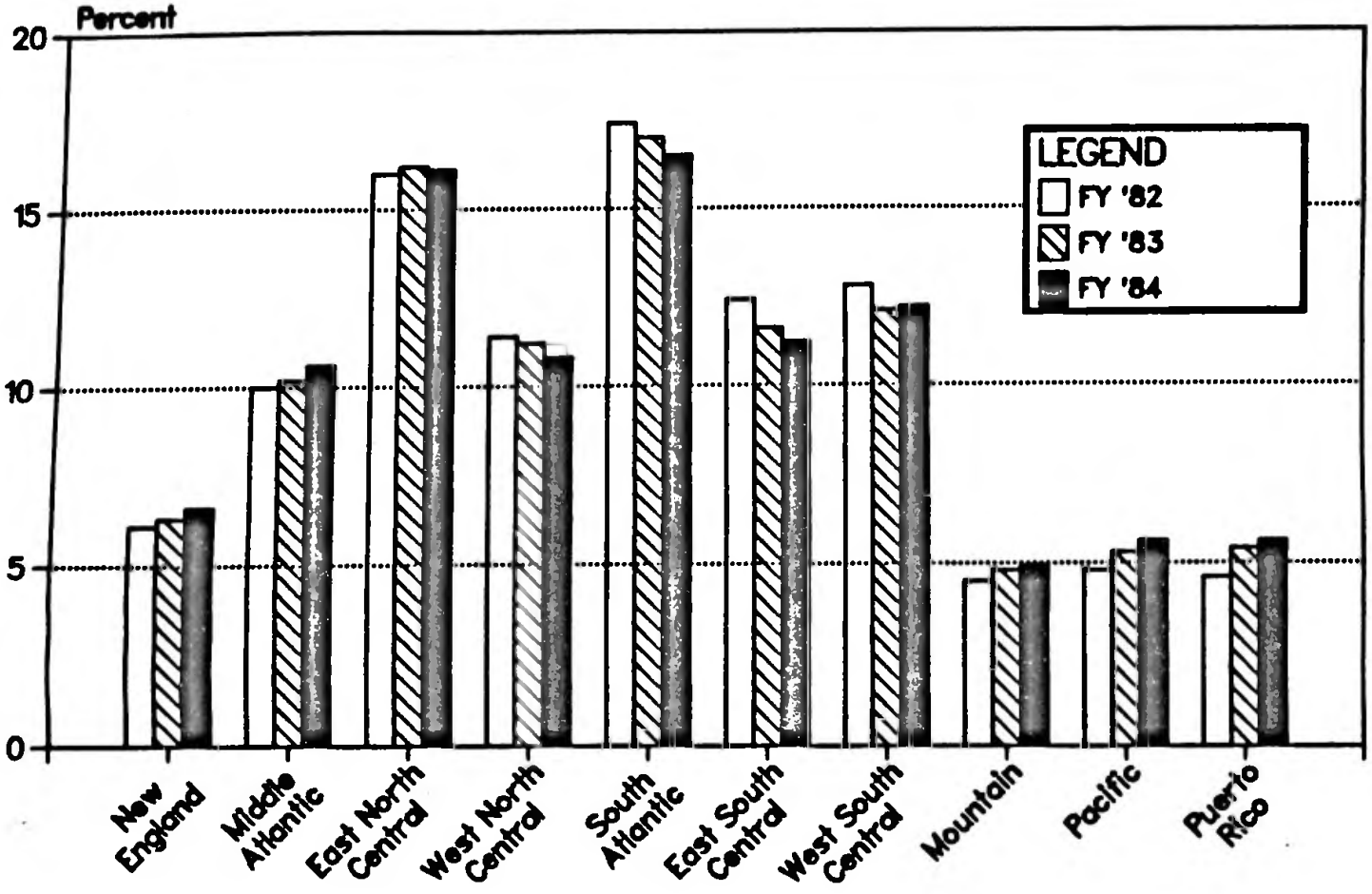

Table 7.9 Percent Change in Nonentitlement Funds Caused by Switch to 1980 Census Data

	Projected FY '82 - '84[a]	Projected FY '82 - '83[a]	Projected FY '83 - '84[a]
New England	+ 8.1	+ 2.9	+5.1
Middle Atlantic	+ 5.6	+ 1.7	+3.9
East North Central	+ .5	+ 1.2	- .7
West North Central	- 4.9	- 1.4	-3.5
South Atlantic	- 5.1	- 2.3	-2.9
East South Central	-10.2	- 6.9	-3.5
West South Central	- 4.8	- 5.1	+ .3
Mountain	+ 9.4	+ 6.5	+2.7
Pacific	+16.9	+ 9.7	+6.5
Puerto Rico	+ 20.6	+16.2	+3.7

a. The percentage changes in these columns do not represent the actual changes in funds across these years. To isolate the effects of 1980 Census data, nonentitlement areas have been held constant at FY '83 definitions in the analysis. As many as 60 new entitlement jurisdictions may be added in FY '84, and an unknown number dropped. Therefore, actual FY '84 funding may be different.

In general, percentage changes in nonentitlement funds by region are greater than changes in entitlement funds. Only the East South Central, Mountain, and Pacific regions show changes in funds from FY '82 to FY '84 comparable in magnitude to those for entitlement funds. There are also other differences between entitlement and nonentitlement changes at the regional level. The Pacific region's entitlement funds increase more from FY '83 to FY '84 than from FY '82 to FY '83, while the region's nonentitlement funds increase more from FY '82 to FY '83. New England's increase in nonentitlement funds contrasts with stable entitlement funds. The Middle Atlantic region's increase contrasts with a small decrease in entitlement funds. The East North Central region has stable nonentitlement funds and a decrease in entitlement funds, while the South Atlantic and West South Central regions have decreasing nonentitlement funds and stable entitlement funds. Puerto Rico experiences a much larger increase in nonentitlement funds (+20.6 percent) than in entitlement funds (+2.1 percent).

An important similarity to the entitlement results is that the redistributions tend to have a leveling effect. With the exception of Puerto Rico, those regions with above average per capita grants experience a decrease, and those with below average grants experience an increase (see Figure 7.2.). Also, with the exception of Puerto Rico, the nonentitlement funds are spread fairly evenly on a per capita basis. Although Puerto Rico would receive $33.45 per capita in FY '84, the other regions range only from $8.42 to $10.99 per capita. The nonentitlement formula thus exhibits very little regional concentration of funds compared to the entitlement formula.

C. Number of Gainers and Losers

Overall, more than 40 percent of the States gain or lose more than 10 percent, while 40 percent change less than 5 percent when projected FY '82 grants are compared to projected FY '84 grants.

Table 7.10 shows the distribution of States gaining and losing funds within each region. In the New England and Pacific regions, funding increases are shared by all States, though the extent of increase varies across States. The East South Central region's losses are experienced by all its States. The overall stability of funds in the East North Central region occurs because three of the five States in this region change less than 1 percent, while one State gains between 1 and 5 percent, and another loses that much. In the West North Central, South Dakota has a small increase in funds, in contrast to the loss in other States. Florida, which gains more than 10 percent, stands out from the other States in the South Atlantic region. Texas also contrasts with its region; funding increases while decreasing in the remainder of the West South Central region. The entitlement jurisdictions of Florida and Texas also gain while the rest of the South loses funds.

V. COMPONENTS OF REDISTRIBUTION

This section examines the relative importance of the various formula factors in causing the funding shifts described in Section IV. As with the entitlement formula, the funding that a region receives from a particular

Figure 7.2

PROJECTED AVERAGE NONENTITLEMENT PER CAPITA GRANTS BY REGION FY '82, FY '83, AND FY '84

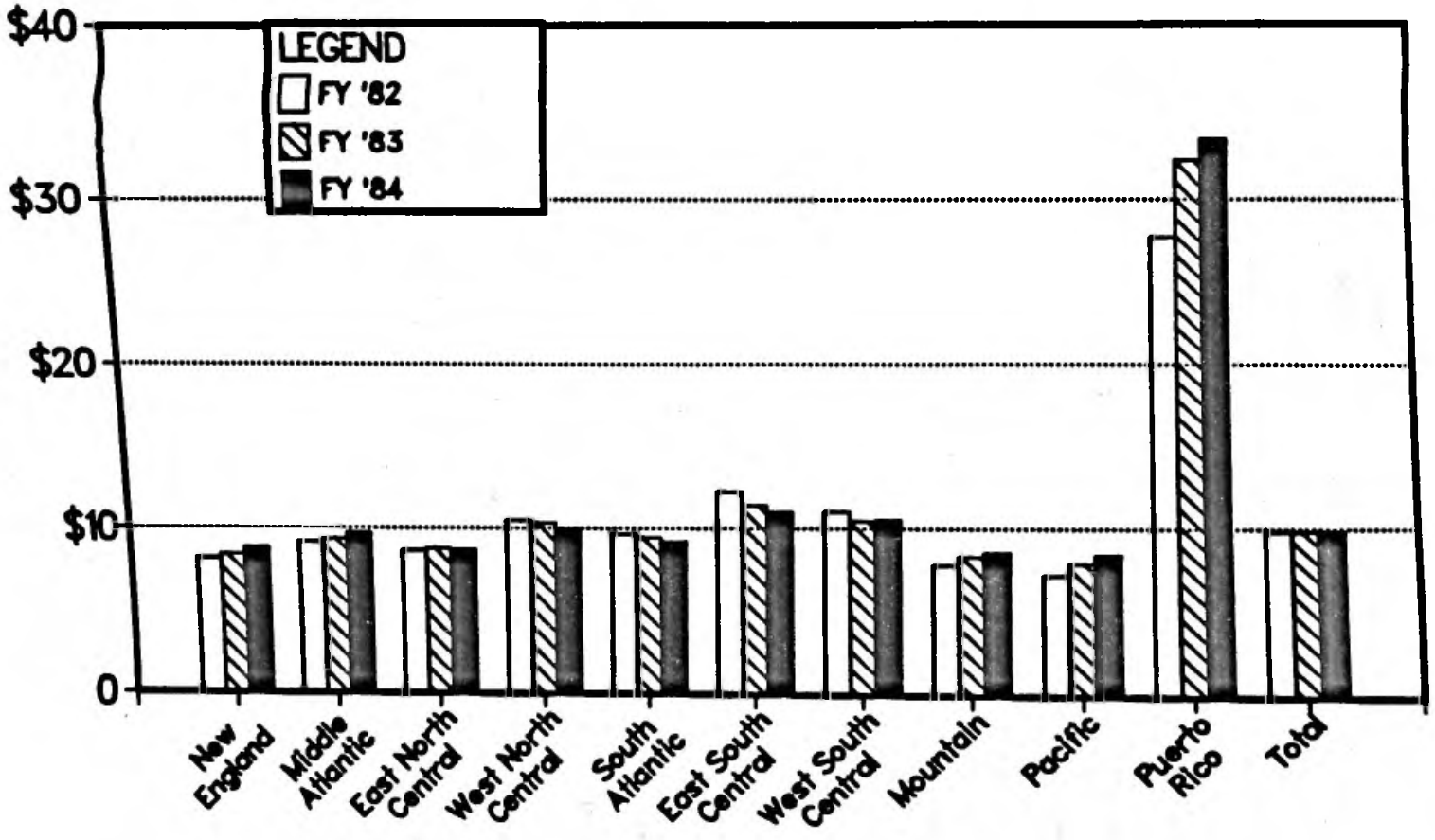

Table 7.10 Number of States Gaining and Losing Funds Due to the Shift to 1980 Census Data by Region[a]

	Losses			Small Change	Gains			
	Greater Than 10%	5-10%	1-5%	(Under 1%)	1-5%	5-10%	Greater Than 10%	Total States In Region
New England					2	2	2	6
MIddle Atlantic			1	1	1	1	1	5
East North Central			1	3	1			5
West North Central		3	3		1			7
South Atlantic	3	1	1				1	6
East South Central	2	2						4
West South Central	3				1			4
Mountain			1	2		1	4	8
Pacific					1		4	5
Puerto Rico							1	1
All Regions	8	6	7	6	7	4	13	51

a. These changes are based on a comparison of projected grants for FY '82 and FY '84, assuming nonentitlement areas defined as of FY '83. Since as many as 60 new entitlement jurisdictions may be added in FY '84, and an unknown number dropped, these numbers do not represent actual gains and losses States will experience between FY '82 and FY '84.

variable is a function of the region's share of that variable. An increase in share of a particular variable would be expected to increase funds for the region.

A. Trends in Shares

Tables 7.11 - 7.13 show how shares of poverty, overcrowding, and age of housing have changed from 1970 to 1980 in nonentitlement areas defined as of FY '83. In addition, these tables show how the numbers of poor persons, overcrowded units, and aged units have changed, and how the incidence of these problems has altered. Table 7.11 shows that the number of poor persons decreased in nonentitlement areas by 7.9 percent over the decade, in contrast to the increase in poor persons in entitlement jurisdictions. The share of poverty has decreased in the South Atlantic and East and West South Central regions because the Southern regions lost poor persons at an above average rate. Nevertheless, the South still had an above average poverty rate in 1980. The Mountain and Pacific regions and Puerto Rico actually experienced an increase in numbers of poor persons as well as in their share of poverty. However, the Pacific and Mountain regions had below average poverty rates in both 1970 and 1980. Columns 4 and 5 of Table 7.11 show that an increase in share is not the same as an increase in incidence. The poverty rate declined from 17 to 13.1 percent in nonentitlement areas during the 1970's. This held true for each region, even those which had an increase in poor persons.

Table 7.12 shows how regional shares and rates of overcrowding in nonentitlement areas have changed from 1970 to 1980. The total number of overcrowded units in nonentitlement areas fell by 36 percent between 1970 and 1980, with overcrowding falling in all regions. Those regions with a smaller rate of decrease (South Atlantic, West South Central, Mountain, Pacific, and Puerto Rico) had above average rates of overcrowding in both 1970 and 1980.

Table 7.13 provides the same information for aged housing units, which decreased by 17.3 percent nationwide in nonentitlement areas during the 1970's, compared to a 19 percent reduction in entitlement jursidictions. The New England, Middle Atlantic, and East North Central regions had below average rates of reduction in aged housing, and increased their share of total aged housing. Aside from a loss in the Southern regions, the other regions maintained a stable share of aged housing units. The rate of aged housing fell in all regions, but regions with above average rates in 1970 (Northeast and North Central) continued to have higher than average rates in 1980.

Considering the patterns across the three variables, the New England, Middle Atlantic, and East North Central regions have an increased share of poverty and aged housing, and a decreased share of overcrowded housing. The West North Central region has a decreased share of poverty and overcrowding, and a stable share of aged housing. The Southern regions have a decreased share of poverty and aged housing, and an increased or stable share of overcrowded units. The Mountain and Pacific regions and Puerto Rico have increased shares of overcrowding and poverty, and stable shares of aged housing.

Table 7.11 Share, Percent Change, and Rates of Poverty by Region

	Share[a]		Percent Change in Poor Persons[b]	Rate[c]	
	1970 (1)	1980 (2)	(3)	1970 (4)	1980 (5)
New England	3.5%	4.1%	8.1%	7.5%	7.2%
Middle Atlantic	6.7	7.3	- .2	9.9	8.9
East North Central	11.2	11.8	- 3.1	9.9	8.5
West North Central	9.6	8.9	-14.0	14.2	11.1
South Atlantic	20.8	19.7	-13.2	21.0	14.5
East South Central	16.6	14.7	-19.1	27.7	19.2
West South Central	15.8	14.2	-17.1	24.6	16.4
Mountain	4.1	4.9	10.0	15.6	12.5
Pacific	4.4	5.6	15.1	12.7	11.2
Puerto Rico	7.3	9.0	12.9	75.8	71.8
All Regions	100.0	100.0	- 7.9	17.0	13.1

a. The number of poor persons in a region divided by the number of poor persons in all nonentitlement areas in the United States.

b. The change in the number of poor persons between 1970 and 1980 divided by the number of poor persons in 1970.

c. The number of poor persons in an area divided by the population of the area.

Table 7.12 Share, Percent Change, and Rates of Overcrowding by Region

	Share[a]		Percent Change in Overcrowded Units[b]	Rate[c]	
	1970 (1)	1980 (2)	(3)	1970 (4)	1980 (5)
New England	5.1%	3.7%	-53.9%	6.1%	2.2%
Middle Atlantic	7.1	5.9	-47.9	5.6	2.3
East North Central	15.2	11.4	-52.8	7.2	2.7
West North Central	9.3	6.6	-54.7	7.2	2.6
South Atlantic	19.5	20.0	-34.6	10.9	4.8
East South Central	13.1	13.1	-36.4	12.1	5.7
West South Central	14.4	17.1	-23.9	11.9	6.5
Mountain	5.8	7.2	-19.2	12.2	6.2
Pacific	6.0	8.7	- 7.4	9.1	5.7
Puerto Rico	4.7	6.5	-11.5	35.2	22.4
All Regions	100.0	100.0	-36.0	9.3	4.4

a. The number of overcrowded units in a region divided by the number of overcrowded units in all nonentitlement areas in the United States.

b. The change in the number of overcrowded units between 1970 and 1980 divided by the number of overcrowded units in 1970.

c. The number of overcrowded units in an area divided by number of housing units in the area.

Table 7.13 Share, Percent Change, and Rates of Aged Housing by Region

	Share[a]		Percent Change In Aged Units[b]	Rate[c]	
	1970 (1)	1980 (2)	(3)	1970 (4)	1980 (5)
New England	8.8%	10.0%	- 5.2%	50.2%	37.0%
Middle Atlantic	14.4	16.2	- 8.0	54.6	39.3
East North Central	22.3	23.3	-13.6	50.7	34.0
West North Central	15.8	15.8	-17.3	56.7	37.3
South Atlantic	12.4	11.3	-24.3	32.5	16.4
East South Central	8.4	7.0	-30.8	36.5	18.7
West South Central	8.8	7.6	-28.1	33.4	17.1
Mountain	4.2	4.2	-17.6	36.5	18.6
Pacific	4.4	4.4	-18.2	30.5	16.6
Puerto Rico	0.1	0.0	-55.6	17.5	N/A
All Regions	100.0	100.0	-17.3	43.1	26.3

a. The number of pre-1940 housing units in a region divided by the number of pre-1940 housing units in the nonentitlement areas of the United States.

b. The change in the number of pre-1940 housing units betwen 1970 and 1980 divided by the number of pre-1940 housing units in 1970.

c. The number of pre-1940 housing units in an area divided by the number of housing units in the area.

B. Formula Switches

As with the entitlement analysis, in order to examine the relative importance of formula variables in reallocating funds, it is necessary to separate out those States that would switch formulas when 1980 Census data are used. Four Western States would switch formulas, all from the second to the first formula. Of these, all but one gain funds, though the percentage increase in the two Pacific States is considerably less than the increase in the Pacific States that do not switch formulas.

C. Net Effect of Formula Variables on Total Funding*

The net effect on total regional funding of an altered share of a particular variable depends upon the relative importance of the variable in the formula in which it appears and the relative importance of that formula in the total funding for a region. The complexities of this relationship are described in Chapter 2, Section II.C, and in Appendix B.

Table 7.14 shows how each variable contributes to the change in funding experienced by each region. Column (1) is the percentage change in total funding between FY '82 and FY '84 for those States that do not change formulas. It differs from Table 7.9 because of the exclusion of States that switch formulas. The remaining columns break this change down into the contributions of each variable. Columns (2) through (7) add up to the percentage change reported in column (1). It can be seen that funds are universally lost on the population factors. Since 1980 population figures are used in both the FY '82 and FY '84 grants, these losses are due entirely to the change in pro rata reduction. The magnitude of loss differs across regions because the importance in total funding of the population factor differs across regions.

The regional bias toward one or the other of the two formulas is even stronger among nonentitlement areas than among entitlement jurisdictions. Only in the South Atlantic and the Mountain regions are both formulas used to allocate funds. Otherwise, the Northern States all use the second formula, while the Southern and Western States all use the first formula. The South Atlantic and Mountain regions also receive the bulk of their funds from the first formula.

The New England, Middle Atlantic, and East North Central regions all experience funding increases from poverty and age of housing in the second formula. Age of housing is the more important source of funding increases in all three regions. In the East North Central region, however, the .7 percent increase from age of housing is balanced by a .6 percent loss from population, because of the increase in pro rata reduction in FY '84 as compared to FY '82.

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* This section disaggregates the regional changes in funding into funding changes due to each variable; the discussion is somewhat technical. Readers not interested in the technical details will find the main points of this section summarized in the introduction to this Chapter.

Table 7.14 Net Effect of 1980 Census Data on Total Regional Nonentitlement Funding (For States that do not Switch Formulas)

	Percent Change in Funds Due to:						
		First-Formula Variables			Second-Formula Variables		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Percent Change In Funding Due to 1980 Census Data	Population Factor	Poverty Factor	Over-crowded Housing Factor	Population Factor	Poverty Factor	Age of Housing Factor
New England	8.1	0	0	0	-.7	2.1	6.7
Middle Atlantic	5.6	0	0	0	-.6	.9	5.3
East North Central	.5	0	0	0	-.6	.4	.7
West North Central	-4.9	0	0	0	-.5	-2.2	-2.1
South Atlantic	-5.1	-.7	-3.4	.1	-.1	- .7	- .4
East South Central	-10.2	-.6	-8.7	-.8	0	0	0
West South Central	- 3.1	-.6	-6.9	4.4	0	0	0
Mountain	8.9	-.7	3.6	6.3	-.2	.4	-.5
Pacific	24.5	-.9	8.3	17.2	0	0	0
Puerto Rico	20.6	-.3	13.2	7.6	0	0	0

The West North Central region's losses are equally divided between the poverty and age of housing factors. The South Atlantic region experiences losses from all factors except overcrowding, which contributes a .1 percent increase; the bulk of losses are from poverty. Losses in the East and West South Central regions are also largely explained by the poverty factor. The loss from poverty in the West South Central region is partially offset, by a 4.4 percent increase due to overcrowding. The Mountain and Pacific regions and Puerto Rico experience increases from both poverty and overcrowding. In Puerto Rico, poverty is the more important source of increase, while in the Western regions overcrowding is more important.

Because regions generally use only one formula, and because overcrowding and age of housing each appear in only one formula, poverty is the only variable which causes certain regions to gain funds at the expense of others. Losses from poverty in the West North Central and Southern regions are absorbed by gains in the Northeastern and Western regions.

The components analysis shows overcrowding to be more important than poverty in explaining funding increases in the Pacific region, while Table 7.9 showed that funding increases more in the Pacific region from FY '82 to FY '83 with the introduction of 1980 poverty data than from FY '83 to FY '84 with the introduction of 1980 overcrowding and age of housing data. This discrepancy is explained by the fact that two States are excluded from the components analysis because they switch formulas. These States gain funds between FY '82 and FY '83 but lose between FY '83 and FY '84. By contrast, the Pacific States which do not switch formulas gain more between FY '83 and FY '84 than between FY '82 and FY '84.

VI. A NEEDS ANALYSIS FOR NONENTITLEMENT GRANTS

The needs analysis for nonentitlement grants is less elaborate than that for entitlement grants. In large part, this limitation is dictated by availability of data. As noted in Section III, fewer indicators for measuring need are available for nonentitlement areas than for entitlement jurisdictions. It was, therefore, impossible to construct need indexes, which were the core of the analysis in Chapter 5 of how well the entitlement dual formula responds to need. This section is limited to an examination of the variation in per capita funding by State with different measures of need in nonentitlement areas; it uses an approach similar to the need deciles in Chapter 5.

A. Correlation Analysis

As a first step, Table 7.15 shows correlation coefficients for a number of need indicators with per capita nonentitlement grants in FY '82, FY '83, and FY '84.* The poverty rate has by far the highest correlation with per

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* The correlation analysis indicates the extent to which above average per capita grants are linearly related to above average values on the various need indicators. Correlation analysis does not, however, indicate the nature of the relationships between per capita grants and the need indicators, that is, it does not indicate how much per capita grants change with changes in need variables. The quintile analysis will provide this information.

Table 7.15 Correlation Coefficients of Need Indicators with Projected Per Capita Grants for FY '82, FY '83, and FY '84

	FY '82[a]	FY '83[b]	FY '84[c]
Poverty Rate 1980	.90	.94	.92
Poverty Rate 1970	.88	.86	.82
Percent Aged Housing 1980	.05	.10	.11
Percent Aged Housing 1970	-.09	-.11	-.13
Percent Overcrowded Housing 1980	.68	.73	.76
Percent Overcrowded Housing 1970	.73	.74	.74
Labor Participation Rate 1980	-.43	-.44	-.42
Employment Rate 1980[d]	-.35	-.38	-.37
Black Unemployment Rate 1980	.30	.32	.29
Unemployment Rate 1980	-.05	.00	.01
Percent Nonmetropolitan Population 1980	.55	.48	.42
Percent Change in Population 1970-1980	-.21	-.14	-.10

a. Grants computed using 1970 Census data for poverty, age of housing, and overcrowding.

b. Grants computed using 1970 Census data for age of housing and overcrowding and 1980 Census data for poverty.

c. Grants computed using 1980 Census data for poverty, age of housing, and overcrowding.

d. Total resident employment as a percentage of the working-aged population.

capita grants, and the correlation of 1980 poverty with per capita grants is even higher than that of the 1970 poverty rate. Using 1980 poverty data to calculate the FY '83 grants increases the correlation of poverty with per capita grants, while introduction of 1980 data on aged housing and overcrowding in FY '84 reduces the correlation. On balance, however, the projected per capita FY '84 grants are still more highly correlated with the 1980 poverty rate than the FY '82 grants.

The incidence of aged housing, measured with either 1970 or 1980 Census data, bears virtually no relationship to per capita grants. Overcrowded housing, on the other hand, has a moderately strong relationship (0.68 for the 1980 overcrowded rate with FY '82 grants), which increases when 1980 data are added to the formula calculation (0.76 for the 1980 overcrowded rate with FY '84 grants).

Nonentitlement per capita grants have no relationship to overall unemployment rates, though the relationship to black unemployment rates is somewhat better. The correlation of per capita grants with black unemployment rises from 0.30 in FY '82 to 0.32 in FY '83, then falls to 0.29 in FY '84. Per capita grants have a slightly stronger negative relationship with labor force participation rates and employment rates. With both measures, the correlation becomes stronger in FY '83, then weaker in FY '84 (from -0.43 to -0.44 to -0.42 for labor force participation, and from -0.35 to -0.38 to -0.37 for employment rate). Nonmetropolitan population was included in Table 7.15, not as a measure of community need in nonentitlement areas but as a test of whether the nonentitlement formula tends to fund States with larger nonmetropolitan populations. The results suggest a tendency in this direction, with the correlation between nonmetropolitan proportion and per capita grants declining from 0.55 to 0.42 with the introduction of the 1980 data. This tendency will be examined further in the quintile analysis.

B. Quintile Analysis

The nonentitlement needs analysis is based on quintiles rather than on the deciles used earlier because there are only 51 nonentitlement recipients, and a decile analysis would allow a single large State to dominate its decile. This analysis uses two sets of variables to study variations among States in per capita funding of nonentitlement areas. First, the formula variables are used to construct need deciles; then need deciles are constructed for two measures of economic activity -- labor force participation and employment rate -- and for the nonmetropolitan proportion of the population. Unemployment rate and percentage change in population were not included in this analysis because of the low correlations reported in Table 7.15.

Table 7.16 shows the average per capita grant in each quintile for the three variables which experience a shift from 1970 to 1980. For poverty and overcrowding, the most needy recipients receive a higher per capita amount than the least needy. For instance, in FY '83, the 10 States with the highest poverty rates received $11.32 per capita, $3.30 more than the $8.02 per capita received by the 10 with the lowest poverty rates. However, there is not an uninterrupted decline in per capita funding across the 5 quintiles from most needy to least needy.

Table 7.16 Nonentitlement Recipients: Per Capita Grants and Percent Change in Grants by Need Quintiles for Formula Variables

	Per Capita Grants			Percent Change in Grants		
	FY '82	FY '83	FY '84	FY '82-'83	FY '83-'84	FY '82-'84
Poverty Rate, 1980						
Highest	$13.23	$12.98	$12.93	-1.9%	- .4%	-2.3%
Highest (without Puerto Rico)	11.98	11.32	11.16	-5.5	-1.4	-6.8
2	9.65	9.50	9.39	-1.6	-1.2	-2.7
3	8.61	8.82	8.80	+2.4	- .2	+2.2
4	9.56	9.67	9.72	+1.2	+ .5	+1.7
Lowest	7.88	8.02	8.13	+1.8	+1.4	+3.2
Aged Housing Rate, 1980[a]						
Highest	$10.17	$10.23	$10.39	+ .6%	+1.6%	+2.2%
2	8.81	8.87	8.72	+ .7	-1.7	-1.0
3	8.55	8.38	8.04	-2.0	-4.1	-6.0
4	10.29	9.86	9.56	-4.2	-3.0	-7.1
Lowest	10.95	11.29	11.72	+3.1	+3.8	+7.0
Overcrowding Rate, 1980						
Highest	$12.33	$12.54	$13.14	+1.7%	+4.8%	+6.6%
Highest (without Puerto Rico)	10.65	10.39	10.92	-2.4	+5.1	+2.5
2	10.63	10.21	9.90	-4.0	-3.0	-6.9
3	8.69	8.76	8.43	+ .8	-3.8	-3.0
4	8.60	8.70	8.58	+1.1	-1.4	-0.2
Lowest	9.42	9.50	9.67	+ .8	+1.8	+2.7

a. Puerto Rico is not included in the aged housing breakdown because of missing data.

Introduction of 1980 data on poverty, overcrowding, and age of housing in FY '84 has the effect of reducing per capita funding for the 40 percent of recipients with the highest poverty rates, and increasing funds for those with lower poverty rates as compared to FY '82 grants. The 20 percent of recipients with the highest rates of overcrowding receive increased funds with the 1980 data, but so do the 20 percent with the lowest overcrowding rates. Those with intermediate rates of overcrowding loss funds.

The degree of targeting to poverty and overcrowding is considerably reduced if Puerto Rico is excluded from the most needy poverty and overcrowding quintiles. In addition, the most needy poverty quintile experiences a greater loss of funds when Puerto Rico is excluded (-6.8 percent versus -2.3 percent). The most needy overcrowding rate quintile experiences only a 2.5 percent increase in funds when Puerto Rico is excluded, compared to a 6.6 percent increase when it is included. The most overcrowded States lose 2.4 percent from introduction of 1980 data on poverty in FY '83, while Puerto Rico gains.

There does not seem to be a consistent relationship between per capita funding and rates of aged housing in nonentitlement areas. Recipients with the lowest rates of pre-1940 housing receive larger per capita grants than those with the highest rates (see Table 7.16).* Recipients with intermediate rates of aged units receive smaller per capita grants than those with extreme rates. Recipients with either very high or very low rates of aged housing gain funds when 1980 data on poverty, overcrowding, and aged housing are used, while those with intermediate levels lose funds.

The only other variables which show even moderately strong correlations with per capita grants are labor participation rate, employment rate, and percent of nonmetropolitan population. Per capita grant amounts for each quintile on these variables are shown in Table 7.17.

Both labor force participation rate and employment rate show the expected inverse relationship with per capita funds. In general, the lower the labor force participation or employment rate, the higher the per capita funding. However, the 20 percent of States with the lowest rates lose funds when 1980 Census data are used, while the 20 percent with the highest rates gain.

The percentage of total nonentitlement population that is nonmetropolitan shows a stronger targeting relationship than any variable previously examined.** In FY '82, the 20 percent of recipients with the highest percent nonmetropolitan received $15.13 per capita, compared to $7.59 per capita for the 20

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* In part, this occurs because States with high inidence of aged housing use the second formula and second formula recipients have slightly lower average per capita grants than first formula recipients. (See discussion in Section II.B.)

** This relationship reflects the fact that poverty is correlated with percent of population that is nonmetropolitan.

Table 7.17 Nonentitlement Recipients: Per Capita Grants and Percent Change in Grants by Quintiles for Labor Participation Rate, Employment Rate, and Percent of Population that is Nonmetropolitan

	Per Capita Grants			Percent Change		
	FY '82	FY '83	FY '84	FY '82-'83	FY '83-'84	FY '82-'84
Labor Force Participation Rate, 1980[a]						
Lowest	$11.40	$10.95	$10.84	-3.9%	-1.0%	-4.9%
2	9.61	9.63	9.89	+0.2	+2.7	+2.9
3	9.21	9.21	9.07	0	-1.5	-1.5
4	8.99	8.88	8.66	-1.2	-2.5	-3.7
Highest	8.86	8.95	9.11	+1.0	+1.7	+2.8
Employment Rate, 1980[a]						
Lowest	$11.50	$11.00	$10.86	-4.3%	-1.3%	-5.6%
2	8.86	9.08	9.20	+2.5	+1.3	+1.3
3	9.60	9.58	9.62	-0.2	+0.4	+0.2
4	9.03	8.88	8.67	-1.7	-2.4	-4.0
Highest	8.76	8.83	8.92	+0.8	+1.0	+1.8
Percentage Non-Metro, 1980						
Highest	$15.13	$15.84	$16.11	+4.7%	+1.7%	+6.5%
Highest (without) Puerto Rico)	11.63	11.29	11.30	-2.9	.0	-2.8
2	11.47	11.04	10.85	-3.7	-1.7	-5.4
3	9.82	9.53	9.13	-3.0	-4.2	-7.0
4	9.49	9.52	9.81	+0.3	+3.0	+3.4
Lowest	7.59	7.94	8.16	+4.6	+2.9	+7.5

a. Labor force participation rate and employment rate breakdowns do not include Puerto Rico.

percent with the lowest. However, when Puerto Rico is excluded, the most nonmetropolitan group has only an $11.63 per capita grant, which demonstrates considerably less targeting. The most nonmetropolitan quintile gains 6.5 percent from FY '82 to FY '84. Excluding Puerto Rico from the group results in a 2.8 percent loss. While Puerto Rico gains when 1980 poverty data are used, other recipients high in nonmetropolitan population lose.

C. Implications of Needs Analysis

Three features stand out from this analysis. First, as noted, for 4 of the 6 variables examined, there are instances in which a quintile receives less than another quintile with less need. Similar instances can be found in the decile analyses in Chapter 5. However, the patterns of funding appear to be smoother across deciles for entitlement grants than across quintiles for nonentitlement grants. That is, entitlement funding on need indicators increases more consistently from low to high values.

Second, the nonentitlement formula exhibits more targeting to poverty than to other variables which measure need (age of housing, overcrowding, unemployment). The association of per capita funding and poverty is appropriate because Annual Housing Survey data show that poverty is a good indicator of housing and neighborhood problems (see Section VII).

Third, the range in per capita funding of nonentitlement grants is significantly less from the most needy to least needy quintiles than the range for entitlement grants from the two most needy deciles to the two least needy deciles. (Looking at the top and bottom two deciles for entitlement grants provides a more precise comparison with the quintile analysis for nonentitlement grants.)* For example, per capita funding in FY '82 based on poverty rates ranges from $33.29 to $10.50 for entitlement cities but only from $13.23 to $7.88 for nonentitlement areas.

This last effect can be partially attributed to the greater aggregation in the data for nonentitlement grants. The unit of comparison is much larger for nonentitlement grants and would not be expected to display the range of variation in need observed for entitlement cities. If all entitlement cities had been grouped into State aggregates, there would be less variation between States than between the cities because a State average would be based on a mix of better-off and worse-off cities. Therefore, one would expect less variation in nonentitlement per capita funding because there is less variation in the underlying measures of need. However, the range in

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* Aggregating the entitlement numbers to the State level and then producing quintiles would be even more precise. However, since aggregation to the subregional level does not eliminate the relatively greater variation in entitlement compared to nonentitlement grants, it is clear that aggregation to the State level would not produce different results.

poverty rates from the top two deciles to the bottom two deciles for entitlement cities is 5 to 21 percent which is similar to the 7 to 19 percent range for the top and bottom quintiles for nonentitlement areas.

The difference in targeting between entitlement and nonentitlement formulas is explained more by differences in relationships among formula variables and by differences in the way the formulas operate. Poverty is a particularly good variable for explaining the differences because it occurs in both the first and the second formulas. In the entitlement program, Southern cities with extremely high poverty rates (i.e., at least twice the average rate) use the first formula and receive high per capita amounts because of their extremely high incidences of poverty. Older declining cities also tend to have above average (though not extremely high) poverty rates. These cities use the second formula, and while they do not receive as much funding from poverty as they would have in the first formula, their growth lag and age of housing values combine with poverty to provide a high per capita amount.

The nonentitlement second formula replaces growth lag, a variable that concentrates funds in a few jurisdictions, with population, a variable that spreads funds. In addition, States which use the second formula have below average poverty rates. The nonentitlement second formula tends to produce funding levels similar to those produced by the first formula. Since the second formula is responsible for much of the targeting in entitlement funding, these differences, in formula definition and distribution of poverty, cause the nonentitlement dual formula to be much less targeted than the entitlement formula.

VII. ANALYSIS OF INDIVIDUAL FORMULA VARIABLES

This section discusses relationships (based on Annual Housing Survey data) among age of housing, overcrowding, incidence of poverty, and the extent of housing and neighborhood problems. The analysis resembles that of Chapter 6, Section II, but in this case focuses on a sample of units outside metropolitan areas. This sample differs from the whole population served by the nonentitlement portion of the CDBG program, in that it excludes parts of metropolitan areas outside central cities, urban counties, and satellite cities. It is impossible to identify these areas in the Annual Housing Survey; one can, however, distinguish units in the rural portions of the metropolitan areas -- many of which are undoubtedly served by the nonentitlement program -- and units outside central cities in the 50 largest and 118 smallest metropolitan areas, of which a smaller but nevertheless sizable number are also covered. Analysis of these two populations is reported at the end of this section, and in Section IV of Appendix L.

A. Trends in Housing and Neighborhood Problems

Table 7.18 corresponds to Table 6.7 and shows trends in problem and formula variables between 1974 and 1981.* It shows that housing adequacy improved in nonmetropolitan areas, as in metropolitan areas; however, the level of inadequacy is two to three times as great as in metropolitan areas, depending on the measure of adequacy used. Adjacency to abandoned buildings, on the other hand, is less serious in nonmetropolitan areas. The proportion of such units has increased slightly since 1978. Both adjacency to streets and roads needing repair, and lack of satisfactory outdoor recreational facilities occur with about one-third greater probability in nonmetropolitan than in metropolitan housing units; the proportion of units reporting each kind of problem increased between 1977 and 1979, the most recent years reported. The final problem indicator is the proportion of units reporting frequent, serious breakdowns of sewer or water service; it is about six times larger in nonmetropolitan than in metropolitan areas. Tables later in this Chapter indicate that this problem is mainly one of rural housing.

Turning to the formula variables, the incidence of pre-1940 housing decreased by almost one percentage point per year, as new housing was constructed in nonmetropolitan areas. This is a slightly larger rate than in metropolitan areas, reflecting the relatively more rapid rate of housing construction outside central cities. The proportion of units built before 1940 is slightly larger in metropolitan than nonmetropolitan areas. The proportion of overcrowded units is slightly larger in nonmetropolitan areas, and decreased from 6 percent to about 4 percent between 1974 and 1981.

B. Distribution of Problem Variables by Demographic Characteristics and Location

Tables 7.19 - 7.21 correspond to Tables 6.8 - 6.10 and show the distributions of the formula and problem variables across a variety of demographic and spatial variables. In Section II.A.2 of Chapter 6, such distributions were compared for metropolitan areas, for initial insights as to the relative effectiveness of the three formula variables in representing urban problems.

The first step is to compare the data among the various indicators. Table 7.19 shows that there is a substantial correspondence. Four of the problems are correlated with income -- all except adjacency to streets and roads needing repair -- and the association is very pronounced for housing inadequacy, adjacency to abandoned buildings, and units experiencing serious sewer or water breakdowns. Renters of single-family structures have relatively frequent incidences of three of the five kinds of problems -- inadequate housing, abandonment, and sewer or water problems. Black households have

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* The variables are defined in footnotes in Chapter 6, Section II.A.1 and in Appendix L, Section I.

Table 7.18 Incidence of Selected Community Problems, Pre-1940 and 1940-49 Housing, and Overcrowded Housing in Nonmetropolitan Areas, 1974-1981

A. Incidence of Selected Community Problems

	Percent of Units Reporting Problem								
	1970[d]	1974	1975	1976	1977	1978	1979	1980	1981
Housing inadequacy:									
Based on 10 criteria			19.0	18.8	18.7				
Based on 6 criteria		18.5	16.7	16.4	16.0	15.3	14.5	14.5	14.1
Abandoned buildings in neighborhood:									
Respondent or enumerator report			8.6	8.6	9.2				
Enumerator report		6.0[a]	5.7[a]	5.7[a]	6.5[a]	3.2[a,c]	4.2[b,c]		4.7[b,c]
Streets or roads continually in need or repair			22.5	21.9	22.9		26.0		
Breakdowns of sewer or water service		8.2	6.9	6.8	6.6				
Unsatisfactory outdoor recreation facilities					30.3		36.7		

B. Incidence of Pre-1940, 1940-49, and Overcrowded Housing

	Percent of Units in Indicated Category								
Built before 1940	46.6	39.1	37.9	37.4	36.0	35.0	33.9	32.9	32.7
Built 1940-1949	12.2	10.5	10.3	10.3	9.8	9.7	9.4	9.2	9.1
Overcrowded	9.2	6.0	5.6	5.3	4.9	4.5	4.3	4.4	4.1

Source: Annual Housing Survey, national samples. See Chapter 6, Section II.A.1 for definitions of problems. Figures are estimated percentages of year-round housing units in the United States. (Further restrictions apply to the universes for certain items--see Appendix L.)

a. 1974-78: Abandoned buildings, or buildings with windows broken or boarded-up on street.

b. 1979-81: Buildings with windows broken or boarded-up on street

c. Figures for 1978-81 are not comparable with figures for 1974-77 due to changes in AHS procedures for this item.

d. From U.S. Census of Housing.

Table 7.19 Housing and Neighborhood Problems in Nonmetropolitan Areas, 1977

	Percent inadequate housing units	Percent with abandoned buildings in neighborhood	Percent with streets or roads needing repair	Percent with sewer or water breakdowns	Percent with unsatisfactory outdoor recreation
Income[a]					
Low	28	12	22	9	32
Moderate	15	11	24	4	31
Middle	10	9	24	1	29
High	6	6	22	1	29
Tenure and Structure Size					
Owner, 1 unit	12	9	25	3	31
2-4	9	6	14	0	22
5+	7	0	2	0	6
Renter, 1 unit	31	14	23	12	33
2-4	15	9	11	1	21
5+	20	6	14	0	18
Race or Ethnicity					
White	12	8	22	3	29
Black	52	22	33	18	47
Hispanic	33	16	22	4	30
Other	19	15	22	2	31
Type of Household					
Female-headed, with children	22	14	25	6	37
Elderly-headed	20	8	18	5	29
Census Region					
Northeast	14	7	18	6	27
North Central	11	8	18	5	19
South	27	11	27	8	40
West	12	10	24	5	27
Location					
Rural farm	25	12	27	11	35
Rural nonfarm	21	10	28	10	39
Urban, by size of place:					
2,500 - 4,999	14	6	16	1	20
5,000 - 19,999	16	9	15	1	16
20,000 - 49,999	12	7	13	1	17
All units	19	9	23	7	30

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

a. See Appendix L, Section I for definitions of income ranges.

Table 7.20 Overall Housing and Neighborhood Ratings in Nonmetropolitan Areas, 1977 (percentages)

	Rating of house as a place to live—		Rating of neighborhood as a place to live—	
	Poor	Poor or Fair	Poor	Poor or Fair
Income				
Low	5	28	3	21
Moderate	3	21	1	16
Middle	2	16	1	13
High	1	10	1	8
Tenure and Structure Size				
Owner, 1 unit	1	13	1	12
2-4	1	9	1	11
5+	0	10	0	12
Renter, 1 unit	8	38	3	22
2-4	5	27	3	22
5+	5	30	3	25
Race or Ethnicity				
White	2	17	1	12
Black	9	39	4	33
Hispanic	7	27	3	26
Other	6	30	3	22
Type of Household				
Female-headed, with children	7	33	3	29
Elderly-headed	2	18	1	12
Census Region				
Northeast	2	14	2	12
North Central	2	15	1	10
South	4	24	2	18
West	3	19	2	17
Location				
Rural	3	20	2	14
Urban, by size of place:				
2,500- 4,999	3	17	2	15
5,000-19,999	2	19	2	16
20,000-49,999	3	19	2	17
All units	3	19	2	15

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

Table 7.21 Aged Housing, Overcrowded and Poverty Households in Nonmetropolitan Areas, 1977

	Share of housing stock	Percent pre-1940	Percent 1940-49	Percent overcrowded	Percent in poverty
Income					
Low	31%	45	12	7	55
Moderate	21	38	10	7	1
Middle	21	33	8	4	0
High	27	24	7	2	0
	100%				
Tenure and Structure Size					
Owner, 1 unit	70%	31	9	4	13
2-4	1	67	7	2	12
5+	0	20	8	2	6
Renter, 1 unit	17	48	14	10	30
2-4	7	53	7	4	27
5+	4	34	6	3	23
	100%				
Race or Ethnicity					
White	89%	36	9	3	15
Black	8	32	15	16	43
Hispanic	3	31	14	24	27
Other	0	21	14	11	24
	100%				
Type of Household					
Female-headed, with children	5%	32	10	13	43
Elderly-headed	24%	47	12	1	28
Census Region					
Northeast	16%	49	7	3	12
North Central	28	49	8	3	15
South	43	26	12	7	21
West	12	27	11	6	13
	100%				
Location					
Rural farm	9	56	10	4	20
Rural nonfarm	54	30	9	6	18
Urban, by size of place:					
2,500 - 4,999	10	38	10	5	15
5,000 - 19,999	16	43	11	4	16
20,000 - 49,999	11	37	11	3	16
	100%				
All units		36	10	5	17

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

the greatest incidence of all problems, and Hispanics have relatively large incidences of housing inadequacy and adjacency to abandoned buildings. The greatest incidences of all problems occur in the South; households in the North Central region have relatively low incidences of all problems. Finally, the table indicates that incidences of these problems are substantially greater in rural than in urban sections of nonmetropolitan areas. (Eighty-six percent of nonmetropolitan housing is nonfarm housing; farm and nonfarm units have about the same percentages for all variables.)

The subjective ratings in Table 7.20 correspond well to the problem incidences in Table 7.19, except that (1) female-headed households with children have an average incidence of physical problems but a substantially greater than average incidence of poor or fair ratings; and (2) rural households have an average proportion of poor or fair ratings but a substantially greater than average incidence of physical problems.

C. A Comparison of the Distributions of Problem and Formula Variables

The next step in the analysis of formula variables involves comparison of the distribution of pre-1940 housing, overcrowding, and poverty (from Table 7.21) with the distribution of problems and perceptions just described (from Tables 7.19 and 7.20). The principal findings are:

Pre-1940 housing: The relative intensity of problems corresponds well with the proportion of pre-1940 housing units disaggregated by income, and also by tenure (focusing on single-family structures, which constitute the preponderance of nonmetropolitan housing). Correspondences for the other variables are not as good. Whites in nonmetropolitan areas have the greatest proportion of pre-1940 housing units but the lowest incidence of all problems. (This difference is somewhat corrected if 1940-49 units are added to pre-1940 units.) Elderly households have an above average proportion of pre-1940 units but average incidences of problems. Households in the South have the greatest incidence of problems but the smallest proportion of pre-1940 housing units.

Overcrowding: The problem variables and percentage of overcrowding correspond relatively well with disaggregations by income, tenure, and region. However, Hispanic households, which have substantially smaller incidences of problems than blacks, have the highest incidence of overcrowding. Elderly households have only 1 percent incidence of overcrowding (compared with an average of 5 percent for all households) but an average incidence of each of the tabulated problems. Female-headed households with children present have average to slightly above average incidences of problems, and a substantially higher than average overcrowding rate.

Income: The distributions of poverty households and urban problems correspond well by race, tenure/structure size, and region. Elderly households have a substantially higher than average proportion of poverty households, corresponding to their proportion of units rated poor or fair rather than their incidence of housing and neighborhood problems.

In summary, the incidence of poverty among various demographic groups corresponds more closely than overcrowding or pre-1940 housing to the incidence of housing inadequacy and other problems of nonmetropolitan infrastructure. The proportions of pre-1940 or overcrowded units by race, age of household head, and region do not reflect corresponding proportions of units with problems.

D. Incidence of Problems By Formula Variables

Tables 7.22 - 7.24 correspond to Tables 6.11, 6.15, and 6.17. They show the incidences of various problems among units of different ages, overcrowded and non-crowded units, and units occupied by households with different income levels. These tables show the following:

Age of housing: The incidences of housing inadequacy, poor or fair rating of house, adjacency to abandoned buildings, and sewer or water problems are substantially greater for pre-1940 and 1940-49 units than for units constructed in 1950 or later (Table 7.22). The incidences of these problems among 1940-49 housing units are virtually the same as among pre-1940 units. This differs from metropolitan housing, where incidences for 1940-49 units were typically midway between those for pre-1940 and post-1950 units. Conversely, more recently constructed units have slightly greater incidences of adjacent streets or roads needing repair or unsatisfactory outdoor recreation facilities than do pre-1940 units. Poor or fair rating of neighborhood is much less clearly associated with pre-1940 housing than poor or fair rating of house.

Overcrowding: Overcrowded units have greater incidences of problems than non-crowded units. The differences are especially great for housing inadequacy and for serious sewer or water system breakdowns. The right-hand panel of Table 7.23 shows that the overall incidence of overcrowding is relatively low among units with and without the various kinds of problems. This does not necessarily suggest that overcrowding is a bad indicator. The incidence of problems among overcrowded and non-crowded units will be examined for different demographic groups and locations to determine how consistent the proportions are across these groups.

Income: Poverty households have greater incidences of housing inadequacy, adjacency to abandoned buildings, and sewer or water system breakdowns than households with moderate or higher incomes (Table 7.24).

Thus all three of the formula variables are significantly associated with housing inadequacy, abandonment, and sewer or water system problems in nonmetropolitan areas. Overcrowding is also associated with streets or roads needing repair and unsatisfactory outdoor recreation, although the relatively low overall incidence of overcrowding suggests that these relationships may not hold for all demographic groups or locations. Pre-1940 housing is slightly negatively associated with streets and roads needing repair and with unsatisfactory outdoor recreation facilities.

Table 7.22 Distribution of Housing and Neighborhood Problems in Nonmetropolitan Areas by Age of Unit, 1977

Problem	Pecent reporting presence of problem among -- Pre-1940 units	1940-49 units	1950+ units	Percent reporting problem built before 1940	Percent without problem built before 1940	Percent reporting problem built 1940-49	Percent without problem built 1940-49
Housing Inadequacy[a]	28	32	12	51	32	16	8
Abandoned buildings in neighborhoods[b]	12	12	8	44	35	12	9
Streets or roads needing repair	21	24	27	31	37	9	9
Sewer or water breakdowns	11	12	5	50	35	16	9
Unsatisfactory outdoor recreation	30	34	35	32	37	9	9
Rating of house-- poor	4	4	2	54	35	14	9
poor or fair	26	27	14	48	32	13	8
Rating of neighborhood-- poor	2	2	1	37	35	14	9
poor or fair	15	17	13	38	35	11	9

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

a. Based on 10 specific criteria, as defined in Section II.A.1. of Chapter 6.

b. Based on occupant or enumerator report.

Table 7.23 Distribution of Housing and Neighborhood Problems in Nonmetropolitan Areas by Overcrowding, 1977

Problem	Percent reporting presence of problem among-- Overcrowded units	Non-crowded units	Percent reporting problem which are overcrowded	Percent without problem which are overcrowded
Housing inadequacy[a]	38	15	12	4
Abandoned buildings in neighborhood[b]	16	10	8	5
Streets or roads needing repair	34	24	7	4
Sewer or water breakdowns	17	4	18	4
Unsatisfactory outdoor recreation	43	33	7	4
Rating of house -- poor	10	2	18	5
poor or fair	41	18	11	4
Rating of neighborhood-- poor	3	2	10	5
poor or fair	28	14	10	4

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

a. Based on 10 specific criteria, as defined in Section II.A.1 of Chapter 6.

b. Based on occupant or enumerator report.

Table 7.24 Distribution of Housing and Neighborhood Problems in Nonmetropolitan Areas by Poverty Status of Household, 1977

Problem	Percent reporting presence of problem among-- Poverty households	Other households	Percent reporting problem which are in poverty	Percent without problem which are not in poverty
Housing inadequacy[a]	39	13	42	14
Abandoned buildings in neighborhood[b]	15	10	27	18
Streets or roads needing repair	26	25	19	18
Sewer or water breakdowns	16	3	55	16
Unsatisfactory outdoor recreation	40	32	21	17
Rating of house poor	7	2	45	18
poor or fair	36	17	32	15
Rating of neighborhood-- poor	3	1	35	18
poor or fair	24	13	29	17

Source: 1977 Annual Housing Survey national sample. All figures are percentages of units in sample reporting the relevant problem and the relevant unit characteristics.

a. Based on 10 specific criteria, as defined in Section II.A.1 of Chapter 6.

b. Based on occupant or enumerator report.

E. Demographic Variations in the Incidence of Problems by Formula Variables

The final set of tables, 7.25 - 7.28, corresponds to tables 6.12-13, 6.15, and 6.17 in the section on metropolitan housing and neighborhood problems and formula variables. These tables contain proportions of housing units with problems tabulated against the formula variables for a variety of demographic groups and locations. The tables imply the following:

Pre-1940 housing: The association between age of housing and housing inadequacy noted in Table 7.22 holds across all disaggregations in Tables 7.25 and 7.26. The intensity of housing inadequacy among pre-1940 and more recently constructed units does vary across some of the tabulations. It is greatest for black households and households in the South. This means that States with disproportionately more households in these groups are likely to have relatively more inadequate housing units not reflected in their proportion of pre-1940 units. These same two groups have relatively large incidences of housing inadequacy in their post-1950 units; this inadequacy will, of course, not be reflected in the age of housing variable. Conversely, the incidence of inadequacy among pre-1940 units is relatively low for elderly-headed households. Finally, Tables 7.25 and 7.26 indicate that the high rate of housing inadequacy among 1940-49 units relative to post-1950 units, noted in Table 7.22, holds across all disaggregations.

Overcrowding: The correspondence between overcrowding and housing inadequacy virtually disappears for elderly households: only 2 percent of inadequate units are overcrowded. It is strongest for low-income households and diminishes as income increases. Otherwise, overcrowding appears to be significantly associated with housing inadequacy for all disaggregations in Table 7.27. The proportions are, however, more variable than for age of housing or income. Blacks and Hispanics, low-income households, renters of single-family units, and households in the South have especially great incidences of inadequacy among overcrowded units (and overcrowding among inadequate units); this means that overcrowding rates underrepresent housing inadequacy among these demographic groups, relative to other households.

Income: The proportion of inadequate units among poverty households is especially high for black and Hispanic units, and for households in the South (Table 7.28). This means that poverty tends to underrepresent housing inadequacy for such households. Except for these categories, the percentage of inadequate units among poverty households is relatively constant from category to category, indicating that poverty correlates relatively well with housing inadequacy.

In summary, the proportion of overcrowded households is relatively highly variable across demographic groups. The proportion of pre-1940 housing units does not reflect relatively high overcrowding rates among black households and households in the South, and overrepresents housing inadequacy among elderly households. Although the percentage of poverty households is similarly unrepresentative of inadequacy for black, Hispanic, and Southern households, the differences are not as great as for pre-1940 housing. Apart from these problems, the distributions of poverty and inadequate housing correspond relatively closely.

Table 7.25 Housing Inadequacy by Age of Unit in Nonmetropolitan Areas, 1977

	Percent inadequate among --		
	Pre-1940 units	1940-49 units	Post-1950 units
Income			
Low	37%	43%	23%
Moderate	20	25	11
Middle	15	20	6
High	14	14	3
Tenure and Structure Size			
Owner, 1 unit	19	24	8
2-4	13	6	0
5+	20	0	4
Renter, 1 unit	40	42	21
2-4	19	28	9
5+	51	11	6
Race or ethnicity			
White	20	22	7
Black	71	70	41
Hispanic	46	48	22
Other	34	32	8
Type of household			
Female-headed, with children	35	38	16
Elderly-headed	26	33	13
Census region			
Northeast	18	17	11
North Central	17	15	5
South	49	46	17
West	20	18	8
Location			
Rural	30	35	14
Urban by size of place:	20	25	7
2,500-4,999	22	25	7
5,000-19,999	20	21	5
20,000-49,999			

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting age of unit, housing adequacy, and the relevant demographic or locational classification.

Table 7.26 Pre-1940 and 1940-49 Housing Units by Presence or Absence of Housing Inadequacy in Nonmetropolitan Areas, 1977

	Percent of inadequate units built before 1940	Percent of adequate units built before 1940	Percent of inadequate units built 1940 - 1949	Percent of adequate units built 1940 - 1949
Income				
Low	52	40	17	10
Moderate	49	36	15	8
Middle	48	31	16	7
High	54	23	14	6
Tenure and structure size				
Owners, 1 unit	45	29	16	8
2-4	96	65	4	7
5+	50	13	0	7
Renters, 1 unit	60	45	17	12
2-4	64	49	12	6
5+	79	20	3	6
Race or ethnicity				
White	56	33	15	8
Black	40	19	19	10
Hispanic	47	28	19	11
Other	43	17	26	12
Type of household				
Female-headed, with children	45	26	15	8
Elderly-headed	58	45	17	10
Census region				
Northeast	58	45	8	6
North Central	71	46	9	7
South	45	19	19	9
West	45	25	16	10
Location				
Rural	49	31	15	8
Urban by size of place:				
2,500-4,999	54	35	20	9
5,000-19,999	62	40	19	10
20,000-49,999	60	34	20	10

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting persons per room, housing adequacy, and the relevant demographic or locational classification.

Table 7.27 Housing Inadequacy by Overcrowding in Nonmetropolitan Areas, 1977

	Percent inadequate among—		Percent of inadequate units which are overcrowded	Percent of adequate units which are overcrowded
	Overcrowded units	Non-crowded units		
Income				
Low	58	29	14	4
Moderate	32	15	14	6
Middle	20	10	9	4
High	12	6	4	2
Tenure and structure size				
Owners, 1 unit	28	12	9	3
2-4	0	9	0	2
5+	0	7	0	4
Renters, 1 unit	59	29	18	6
2-4	17	14	5	4
5+	39	19	7	3
Race or ethnicity				
White	27	12	8	3
Black	66	52	21	13
Hispanic	48	30	32	18
Other	28	16	22	12
Type of household				
Female-headed, with children	54	19	30	8
Elderly-headed	48	22	2	1
Census region				
Northeast	17	8	7	3
North Central	22	8	8	3
South	52	24	14	4
West	15	7	11	5
Location				
Rural	39	16	12	4
Urban by size of place:				
2,500-4,999	32	11	12	3
5,000-19,999	36	13	11	3
20,000-49,999	38	10	11	2

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting persons per room, housing adequacy, and the relevant demographic or locational classification.

Table 7.28 Housing Inadequacy by Poverty Status of Household in Nonmetropolitan Areas, 1977

	Percent Inadequate Among --		Percent of inadequate units occupied by poverty households	Percent of adequate units occupied by poverty households
	Poverty households	Other households		
Tenure and structure size				
Owners, 1 unit	34%	10%	36%	11%
2-4	19	6	25	8
5+	0	13	0	7
Renters, 1 unit	52	23	51	22
2-4	26	11	47	24
5+	30	17	39	24
Race or ethnicity				
White	30	11	35	13
Black	70	43	60	33
Hispanic	59	27	48	19
Other	28	10	50	22
Type of household				
Female-headed, with children	38	13	71	38
Elderly-headed	42	16	57	25
Census region				
Northeast	18	8	23	11
North Central	22	7	37	13
South	52	20	46	16
West	17	7	31	13
Location				
Rural	42	13	43	14
Urban, by size of place:				
2,500-4,999	27	10	36	14
5,000-19,99	32	12	37	15
20,000-49,999	28	9	39	14

Source: 1977 Annual Housing Survey, national sample. All figures are percentages of units in sample reporting income, housing adequacy, and the relevant demographic or locational classification.

Tables in Appendix L repeat these results for a sample of rural units in metropolitan areas and a sample of units mostly in urban portions of large and small SMSA's outside central cities. The proportions of inadequate units are all smaller than in nonmetropolitan areas, although the extent of difference varies from category to category. The most important observation, however, is that the same rank-orderings of percentages described for nonmetropolitan areas hold in these portions of metropolitan areas. This justifies the focus of this section on data for nonmetropolitan areas as representative of nonentitlement areas within and outside metropolitan areas.

VIII. CONCLUSIONS*

The shift to 1980 Census data will cause some redistributions of funds among States. The new data for poverty, age of housing, and overcrowded housing will decrease funding by more than 10 percent in 8 States and increase funding by a similar amount in 13 States. While percentage changes in funding among regions are larger than those for entitlement jurisdictions, the shifts in regional shares of funds remain quite small.

In contrast to entitlement funds, nonentitlement funds are distributed quite evenly on a per capita basis. In the entitlement formula, the combination of aged housing and growth lag -- supplemented by high poverty levels in certain larger declining cities -- result in high per capita amounts for many cities using the second formula. A similar combination of factors -- correlated with each other and exhibiting a wide degree of variation -- does not occur in the nonentitlement formula.

Analysis of the relationship of nonentitlement funding to need is limited to individual indicators because of data limitations and problems of interpretation caused by the statewide level of aggregation in nonentitlement areas. Nonentitlement funding across States varies more with poverty than with overcrowding, and does not vary at all with age of housing. The association of per capita funding with poverty is appropriate because, using the Annual Housing Survey, this Chapter shows that poverty more accurately reflects housing inadequacy and other problems than either aged or overcrowded housing. Poverty is also correlated with other need indicators, such as the minority population, a subgroup exhibiting relatively high levels of housing and neighborhood problems. The targeting to poverty, however, is not nearly as great as in the entitlement program. Total population in the first formula dilutes targeting to poverty, and in contrast to the entitlement component, funding from the second formula does not go to areas with high poverty rates.**

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* For a list of specific findings, see the introductory section of this Chapter.

** Many larger and declining entitlement cities that benefited from age of housing and growth lag in the second formula also had above average poverty rates. In nonentitlement areas, on the other hand, poverty and aged housing are inversely related.

Pre-1940 housing is not as strong an indicator of problems in nonentitlement areas as in entitlement areas. In entitlement areas, the concentration of aged housing in older central cities guarantees its association with community development problems. In nonentitlement areas, on the other hand, aged housing shows either low or inverse correlations with such variables as poverty, income, unemployment, minority population, and overcrowding. A high proportion of aged housing is, however, associated with a low rate of population growth, suggesting that nonentitlement areas with high rates of aged housing are also experiencing the slowest rates of job growth.

Annual Housing Survey data show that pre-1940 and 1940-49 housing units have greater incidences of housing and neighborhood abandonment problems than post-1950 units in nonmetropolitan areas. Pre-1940 housing somewhat overrepresents housing problems of white households and underrepresents housing problems among blacks and households in the South. Although the percentage of poverty households is similarly unrepresentative of housing inadequacy for black, Hispanic, and Southern households, the differences are not as great as for pre-1940 housing.

Despite the fact that overcrowding diminished by 36 percent in nonentitlement areas during the 1970's, overcrowding would have more importance in allocating funds in FY '84 than FY '82. Overcrowding rates are associated with the incidence of all five housing and public infrastructure problems studied, and with households' overall ratings of their housing and neighborhoods in nonmetropolitan areas. However, overcrowding accounts for a small proportion of the problems studied and tends to overrepresent problems among black and Hispanic households and among households in the South and West. Housing problems of elderly households are not represented at all by their overcrowding rates. As with aged housing, poverty is a more accurate indicator of these problems than overcrowding.

APPENDICES

LIST OF APPENDICES

APPENDIX A

DATA SOURCES, DATA TRANSFORMATIONS, AND MISSING DATA

I. Data Sources

The variables used in this study and their definitions are given in Table 3.1 in Chapter 3. The data sources for the variables are listed below.

1. Computer tape with 1980 Census Data from the U.S. Bureau of the Census. Total population, poor persons, per capita income, total housing units, pre-1940 housing units, overcrowded housing units, black population, population of Spanish origin, total families, families with a female head with children under 18, working-aged population (16-64), resident employment and unemployment, unemployed black population, persons over 25 without a high school education, persons aged 65 or over, renter housing units with problems (without complete plumbing, without complete kitchen facilities, overcrowded, or with occupants who pay more than 30 percent of their income as rent), owner-occupied total and pre-1940 housing units, renter-occupied total and pre-1940 housing units, and housing units built during the 1940's. Both 1970 and 1980 Census data were obtained for the first six variables; 1980 boundaries were used in aggregating the 1970 data.

2. U.S. Bureau of the Census, City and County Data Book (1972 and 1977), Washington, D.C.: U.S. Department of Commerce (published 1973 and 1978, respectively). 1970 own general revenue; 1970 general expenditures; total crimes in 1970; 1970 data for several Census variables defined in #1 above; 1967 employment (by location of employer) for manufacturing, selected services, retail trade and wholesale trade; and 1967 retail sales.

3. U.S. Bureau of the Census, City Government Finances in 1979-80, Washington, D.C.: U.S. Department of Commerce, 1981. Intergovernmental revenue from the Federal government, general revenue from own sources, total taxes, and general expenditures; these are Fiscal Year 1980 data.

4. U.S. Bureau of the Census, 1977 Census of Retail Trade, Volume III, Parts 1, 2, and 3, Washington, D.C.: U.S. Department of Commerce, 1980. 1977 employment and sales for retail trade.

5. U.S. Bureau of the Census, 1977 Census of Wholesale Trade, Volume II (individual state publications), Washington, D.C.: U.S. Department of Commerce, 1980. 1977 employment for wholesale trade.

6. U.S. Bureau of the Census, 1977 Census of Manufactures, Volume III, Parts 1 and 2, Washington, D.C.: U.S. Department of Commerce, 1981. 1977 employment for manufacturing.

7. U.S. Bureau of the Census, 1977 Census of Service Industries, Volume II, Parts 1, 2, and 3, Washington, D.C.: U.S. Department of Commerce, 1981. 1977 employment for selected services.

8. U.S. Bureau of the Census, 1977 Census of Governments: Taxable Property Values and Assessment/Sales Price Ratios, Washington, D.C.: U.S. Department of Commerce, 1978. 1976 total assessed valuation of locally assessed real property subject to tax, and ratio of assessed valuation to actual market sales price; these two variables are used to estimate the 1976 market value of taxable properties.

9. Data Systems and Statistics Division, Community Planning and Development, U.S. Department of Housing and Urban Development. 1960 population defined in terms of 1960 boundaries; the 1960 population variable is used as the base in the computation of growth lag in the CDBG formula.

10. U.S. Department of Justice, Federal Bureau of Investigation, Uniform Crime Reports for the United States (1976 and 1980 publications), Washington, D.C.: U.S. Department of Justice (1977 and 1981, respectively). 1976 and 1980 violent crimes (murder, manslaughter, forcible rape, aggravated assault, and robbery).

11. U.S. Department of Labor, Bureau of Labor Statistics. Computer file with 1979, 1980, and 1981 resident labor force and unemployment estimates.

12. U.S. Office of Revenue Sharing, General Revenue Sharing State and Local Data Elements: Entitlement Period 13, Washington, D.C.: U.S. Department of the Treasury, 1981. 1980 non-education taxes.

II. Data Transformations

In the factor and correlational analyses discussed in Chapter 3 and Appendices H, I, J, and K, extreme values were capped for the following variables:

(1) percentage change in population, 1960 and 1980: values greater than 150 percent were set equal to 150.

(2) percentage change in population, 1970 to 1980: values greater than 60 percent were set equal to 60.

(3) percentage change in households, 1970 to 1980: values greater than 50 percent were set equal to 50.

(4) percentage change in retail sales, 1967 to 1977: values greater than 300 percent were set equal to 300.

(5) percentage change in nonmanufacturing (i.e., retail trade, selected services, and wholesale trade) employment, 1967 to 1977: values greater than 200 percent were set equal to 200.

(6) percentage of population age 65 or over, 1980: values greater than 20 percent were set equal to 20.

Recalculated values of the variables enter into the calculations of the mean and standard deviations of those variables, the essential statistical ingredients for the standardized scores of the variables. The standard deviation requires the squaring of variations, thereby accentuating the distorting effects of extreme values.

Caps were placed on the rate-of-change variables, such as population and employment change, which have the greatest variability and deviate the most from a normal distribution. The caps have several purposes:

1. To prevent extreme scores for communities on an indicator, when no rationale based on need can be made for such extremes (e.g., the high percentages of aged persons in 12 cities in Florida).

2. To make the standardized scores of both sides of the distribution more symmetrical.

3. To prevent extreme values from distorting the statistical association among the need variables (e.g., the percentage change in population between 1960 and 1980 was over 1,000 percent for eight cities).

The decision to cap or not involves judgement about the quality and statistical distorting effects of extreme values. In the case of the poverty variables, for instance, it was decided not to cap extremely high values for a small number of cities. Nevertheless, by independent examination and statistical testing of extreme cases, there was an attempt to maximize the real significance of each need indicator for individual cities and for the overall analysis.

III. Missing Data

As a rule, data for the 1980 Census variables were available for practically all of the 627 entitlement cities. However, missing data was a problem for the employment variables and for several other trend variables. With respect to employment data (1 through 5 below), the Census Bureau does not publish data for a city where it would be possible to identify (or estimate from the aggregated data), the employment for any individual firm in that city. These confidentiality requirements are most important for small cities that have one or two major employers in a particular industry. With respect to other trend variables (6 through 8 below), the main reasons for missing data were (a) data for earlier years were not readily available in

sources such as the City and County Data Book (e.g., townships and cities under 25,000 in population) and (b) data were not available for earlier years for recently incorporated cities. In addition, for some 1980 Census variables (e.g., black unemployment), the sample size was too small in some cities for the Bureau of the Census to publish reliable estimates. In other instances, time constraints associated with this project prevented researching all published documents.

The major occurrences of missing data are listed below:

(1) The percentage change in manufacturing employment, 1967-77, was available for 458 cities. In (1)-(5), employment data are by location of employer, not by residence of employee. As explained in Chapter 3, no adjustments for boundary changes have been made to the 1967 data.

(2) The percentage change in nonmanufacturing employment, 1967-77, was available for 569 cities. Nonmanufacturing employment is the sum of retail trade, wholesale trade, and selected service employment; see (3)-(5) below. Major nonmanufacturing industries excluded from this category include finance, real estate and insurance (the FIRE sector) and construction. For these industries, city-level data on employment by location of employer are available only for those few cities that are also counties (see Appendix E). In 46 cities where no more than one year's data (either 1967 or 1977) were missing for one of three component industries, an estimate of the employment for that year was made using available data for the intermediate year, 1972. The number of estimates by industry was as follows: retail trade (22), wholesale trade (20), and selected services (4). The procedure followed assumed that the missing industry accounted for the same proportion of nonmanufacturing employment as in the year with complete data. Following this estimation procedure in cases where only 1 of the 6 necessary components was missing took advantage of available nonmanufacturing data and seemed preferable to the method used in the factor analysis procedure for handling missing cases (explained below).

(3) The percentage change in retail trade employment, 1967-77, was available for 575 cities.

(4) The percentage change in wholesale trade employment, 1967-77, was available for 571 cities.

(5) The percentage change in selected service employment, 1967-77, was available for 572 cities.

(6) The percentage change in retail sales, 1967-77, was available for 571 cities.

(7) The 1981 unemployment rate was available for 613 cities and the change in unemployment rate, 1970 to 1981, for 572 cities.

(8) The 1980 violent crime rate was available for 620 cities and the change in violent crime rate, 1976 to 1980, for 605 cities.

(9) While the percentage of black population in 1980 was available for 625 cities, the 1970 percentage was available for only 568 cities. The City and County Data Book, 1977 did not publish data for 1970 black population for cities where the percentage of blacks was less than .05 percent. For 28 cities, it was assumed that their 1970 percentage of black population equaled this value. With this assumption, the change in percent black, 1970 to 1980, was available for 596 cities. Because cities with missing data account for less than 1 percent of the 1980 black population in all entitlement cities, the factor analysis results are unlikely to be affected by the missing data.

(10) The black unemployment rate, 1980, was available for 582 cities.

The factor analysis produced factor scores for 593 of the 627 entitlement cities. This relatively high number was obtained by essentially ignoring variables with missing data when computing scores in cases where three or fewer variables had missing data. The factor scores are based on the weighted product of the nonmissing variables:

$$\text{Factor score} = \left(\frac{18}{\text{number of nonmissing variables}}\right) \sum {}_i F_i z_i$$

where F_i is the factor-score coefficient, z_i is the standardized variable, and the summation is over all nonmissing variables. (Appendix I explains these concepts.) Eighteen is the number of variables in the factor analysis.

Because of intercorrelations among the data and the fact that missing data occurred primarily in small cities, it is highly unlikely that this procedure would affect the results. For instance, population and household change are good proxies for employment change in those instances where employment change is missing. If there were more than three missing variables for a city, that city was treated as a missing case and did not receive a factor score.

APPENDIX B

FORMULA MATHEMATICS

This appendix explains the mathematics of several aspects of the dual formula.

Section I explains the calculation of the percentage of total grants distributed by a formula factor. Section II describes the calculation of the pro rata reduction and the circumstances under which it can change. Finally, Section III derives the components of change in funds comprising the change attributable to each formula factor.

I. Calculation of Percent of Total Grants Distributed by a Formula Factor

As an example, the percentage of funds allocated by population in the first formula is equal to

$$(.25) \times \frac{\text{Sum } (POP_i)}{POP_{SMSA}} \times k \times \frac{\text{Sum } (g_i)}{G_{SMSA}}$$

where

.25	= the factor weight on population
Sum (POP_i)	= the total population in all jurisdictions using the first formula
POP_{SMSA}	= the total population in SMSA's
k	= the pro rata reduction
Sum (g_i)	= the total unprorated funds allocated to jurisdictions using the first formula
G_{SMSA}	= the total funding allocated to entitlement jurisdictions

II. Explanation of How The Pro Rata Reduction Can Change Between Fiscal Years

Each jurisdiction's grant is multiplied by a pro rata reduction constant to assure that the sum of all grants equals the allocation available. The pro rata reduction for entitlement grants is calculated by summing individual grants determined by each jurisdiction choosing the larger of formula 1 or 2, then dividing the total grant allocation by that sum.

$$\text{e.g., } k = \frac{G_{SMSA}}{\text{Sum } (g_i) + \text{Sum } (g_j)}$$

where

Sum (g_i) = total unprorated grants allocated to jurisdictions using the first formula

$$= \left(.25 \frac{\text{Sum } (POP_i)}{POP_{SMSA}} + .50 \frac{\text{Sum } (POV_i)}{POV_{SMSA}} + .25 \frac{\text{Sum } (OCRWD_i)}{OCRWD_{SMSA}} \right) \times G_{SMSA}$$

and Sum (g_j) = total unprorated grants allocated to jurisdictions using the second formula

$$= \left(.20 \frac{\text{Sum } (GLAG_j)}{GLAG_{MC}} + .30 \frac{\text{Sum } (POV_j)}{POV_{SMSA}} + .50 \frac{\text{Sum } (AGE_j)}{AGE_{SMSA}} \right) \times G_{SMSA}$$

where i = a metropolitan city or urban county which uses the first formula,
and j = a metropolitan city or urban county which uses the second formula

The pro rata reduction, k, can change if any of the ratios of $\frac{\text{Sum } (\quad)}{\text{denominator}}$ change. The ratios can change if jurisdictions switch formulas, or if first-formula jurisdictions' share of first-formula variables changes, or second-formula jurisdictions' share of second-formula variables changes. This can occur because not all areas of SMSA's are contained in metropolitan cities or urban counties. In the comparison between FY '82 and FY '84 entitlement grants, entitlement jurisdictions had a larger share of total SMSA poverty and first-formula jurisdictions had a larger share of total SMSA overcrowding in 1980 than in 1970. Thus, the ratios of

$\frac{\text{Sum } (POV_i)}{POV_{SMSA}}$, $\frac{\text{Sum } (POV_j)}{POV_{SMSA}}$ and $\frac{\text{Sum } (OCRWD_i)}{OCRWD_{SMSA}}$, were larger in FY '84 than in FY '82. This caused Sum (g_i) + Sum (g_j) to increase, which in turn caused k to decrease. Since k is less than one, a smaller k results in a greater loss due to pro rata reduction.

III. Derivation of The Components of Change in Funds

The percentage change in funding from a particular factor is composed of the following components:

$$\left(\frac{dSHARE}{SHARE_1} + \frac{dk}{k_1} + \left(\frac{dSHARE}{SHARE_1} \times \frac{dk}{k_1} \right) \right) \times 100$$

where dSHARE = change in share of variable
dk = change in pro rata reduction
$SHARE_1$ = share of variable in base year
k_1 = pro rata reduction in base year.

Deriving this relationship for overcrowded housing:

$OCRWD_1$ = funding from overcrowding in the base year in city i

$$= .25 \times G_{SMSA} \times \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1 \qquad (1)$$

$OCRWD_2$ = funding from overcrowding in the second year in city i

$$= .25 \times G_{SMSA} \times \frac{OCRWD_{i2}}{OCRWD_{SMSA2}} \times k_2 \qquad (2)$$

where k_1 = prorata reduction in base year
k_2 = prorata reduction in second year

$\frac{OCRWD_{i1}}{OCRWD_{SMSA1}}, \frac{OCRWD_{i2}}{OCRWD_{SMSA2}}$ = share of SMSA overcrowding in city i in base year and second year, respectively.

The percentage change in OCRWD funding in city i is then

$$\frac{(OCRWD_2 - OCRWD_1)}{(OCRWD_1)} \times 100 \tag{3}$$

Substituting (1) and (2) into (3) gives

$$\frac{.25 \times G_{SMSA} \times \left(\frac{OCRWD_{i2}}{OCRWD_{SMSA2}} \times k_2 - \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1\right)}{.25 \times G_{SMSA} \times \left(\frac{OCRWD_{i1}}{OCRWD_{SMSA1}}\right) \times k_1} \times 100 \tag{4}$$

which reduces to

$$\frac{\left(\frac{OCRWD_{i2}}{OCRWD_{SMSA2}} \times k_2 - \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1\right)}{\frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1} \times 100 \tag{5}$$

But $$\frac{OCRWD_{i2}}{OCRWD_{SMSA2}} = \left(1 + \frac{dSHARE}{SHARE_1}\right) \times \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \tag{6}$$

where $$\frac{dSHARE}{SHARE_1} = \frac{\left(\frac{OCRWD_{i2}}{OCRWD_{SMSA2}} - \frac{OCRWD_{i1}}{OCRWD_{SMSA1}}\right)}{\frac{OCRWD_{i1}}{OCRWD_{SMSA1}}}$$

and $$k_2 = \left(1 + \frac{dk}{k_1}\right) \times k_1 \tag{7}$$

where $$\frac{dk}{k_1} = \frac{k_2 - k_1}{k_1}$$

Substituting (6) and (7) into (5) results in

$$\frac{\left(\left(1 + \frac{dSHARE}{SHARE_1}\right) \times \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times \left(1 + \frac{dk}{k_1}\right) \times k_1 - \frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1\right)}{\frac{OCRWD_{i1}}{OCRWD_{SMSA1}} \times k_1} \times 100 \tag{8}$$

which reduces to

$$\left(\left(1 + \frac{dSHARE}{SHARE_1}\right) \times \left(1 + \frac{dk}{k_1}\right) - 1\right) \times 100 \tag{9}$$

Expanding (9) yields

$$\left(\frac{dSHARE}{SHARE_1} + \frac{dk}{k_1} + \left(\frac{dSHARE}{SHARE_1} \times \frac{dk}{k_1}\right)\right) \times 100 \tag{10}$$

APPENDIX C

COMPONENTS OF FUNDING CHANGE DUE TO FORMULA FACTORS

This Appendix separates the net change in funds due to particular formula factors into components due to change in share of the variable, change in pro rata reduction, and importance of the factor in allocating funds.

Separate sections are included for regional changes in entitlement funds, changes in entitlement funds by need deciles, and regional changes in nonentitlement funds.

I. Regional Change in Entitlement Funds

Table 4.8 in Chapter 4 shows the net change in each region due to each formula factor. Components which contribute to the net changes are broken out for poverty, overcrowding, and age of housing in Tables C.1 - C.3. The following three subsections explain these tables. This analysis explains how the change in a region's share of a particular variable is translated into change in total funding. The table on the poverty variable shows how gains and losses differ between cities which find it advantageous to use the first formula and cities which use the second formula. Although the other two variables are specific to only one formula, Tables C.2 and C.3 show how the impact of change in a region's share of a particular variable depends upon the importance in regional funding of the formula containing the variable. (Note that the percentage changes in shares in these tables are not equal to those in Table 4.4 because these tables deal with only those cities in a region using a particular formula.)

A. Poverty

Examination of the first three columns of Table C.1 shows the impact that the change in pro rata reduction has on funding due to poverty. Column (3), "Percentage Change in Poverty Factor," is the aggregative effect for all jurisdictions in a region using a particular formula of the change in shares on the poverty component of the formula, after adjustment for the pro rata reduction. (See Table footnote and Appendix B.) Cities with increases in shares experience lower growth, while those with losses of shares experience greater losses. Second-formula cities in the Middle Atlantic region actually lose funds from poverty even though they show a slight increase in share of poverty, because the growth in share is more than offset by the loss due to pro rata reduction.

The trend in poverty shares is decidedly different in first- and second-formula cities. In regions where the poverty share grew in both formulas, the growth was larger in first-formula cities. In the East and West South Central regions, where the poverty share fell in both formulas, the decrease was larger in second formula jurisdictions. Finally, the remaining regions had increases in poverty in first-formula cities and decreases in second-formula cities.

Table C.1 Components of Regional Entitlement Funding Changes Due to Poverty[a]

Region/Formula	(1) Percent Change in Share of Poverty	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Poverty Factor	(4) Share of Poverty Factor in Total Formula (1 or 2) Funding in FY '82	(5) Share of Total Funds from Formula (1 or 2) in FY '82	(6) Net Effect of Change in Poverty Factor on Total Funding
New England						
Formula 1 cities	18.64	- 2.77	15.35	35.51	.87	.05
Formula 2 cities	3.02	- 2.77	.16	16.08	99.13	.03
Middle Atlantic						
Formula 1 cities	11.88	- 2.77	8.78	35.75	8.00	.25
Formula 2 cities	2.53	- 2.77	- .32	18.39	92.00	-.05
East North Central						
Formula 1 cities	11.32	- 2.77	8.24	35.92	21.04	.62
Formula 2 cities	2.80	- 2.77	- .06	17.32	78.96	-.01
West North Central						
Formula 1 cities	-1.8	- 2.77	-4.48	39.74	23.26	-.42
Formula 2 cities	-17.82	- 2.77	-20.10	17.32	76.74	-2.67
South Atlantic						
Formula 1 cities	4.38	- 2.77	1.49	51.18	73.26	.56
Formula 2 cities	-13.45	- 2.77	-15.86	28.70	26.74	-1.22
East South Central						
Formula 1 cities	- 9.77	- 2.77	-12.27	57.48	69.66	-4.91
Formula 2 cities	-19.96	- 2.77	-22.19	24.33	30.34	-1.64
West South Central						
Formula 1 cities	- 2.61	- 2.77	-5.31	52.59	87.65	-2.45
Formula 2 cities	-17.84	- 2.77	-20.12	32.48	12.35	-.81

(Table C.1 continued)

Region/Formula	(1) Percent Change in Share of Poverty	(2) Percent Change in Pro rata Reduction	(3) Percent Change in Poverty Factor	(4) Share of Poverty Factor in Total Formula (1 or 2) Funding in FY '82	(5) Share of Total Funds from Formula (1 or 2) in FY '82	(6) Net Effect of Change in Poverty Factor on Total Funding
Mountain						
Formula 1 cities	24.98	- 2.77	21.52	44.15	73.64	7.00
Formula 2 cities	-14.65	- 2.77	-17.02	24.03	26.36	-1.08
Pacific						
Formula 1 cities	17.03	- 2.77	13.78	43.85	76.99	4.65
Formula 2 cities	- 9.36	- 2.77	-11.87	19.49	23.01	- .53
Puerto Rico						
Formula 1 cities	5.08	- 2.77	2.17	72.61	100.00	1.58

a. If table entries are expressed in decimal terms (i.e. 1 percent = .01), the relationship among the columns is as follows:

$$(3) = (1) + (2) + [(1) \times (2)]$$

$$(6) = (3) \times (4) \times (5)$$

Columns 4 and 5 complete the translation of changes in share into net changes in funding in Column 6. The values in column 6 are the same as those in Table 4.8 for the poverty factor. A sharp contrast can be seen by comparing first-formula cities in New England, which increased their share of poverty by 18.6 percent, and first-formula cities in the Pacific region, which increased their share by 17.03 percent. Poverty is less important in total first-formula funding in New England than in the Pacific region (35.5 percent versus 43.9 percent). More importantly, the first formula accounts for only .87 percent of total funds in New England, compared to 76.99 percent in the Pacific region. These differences mean that the 18.64 percent increase in share of poverty in New England cities causes only a .05 percent increase in funding, while the 17.03 percent increase in the Pacific results in a 4.63 percent increase in funds.

The New England, Middle Atlantic, and East North Central regions benefit very little from their increased share of poverty because the increase occurs predominantly in first-formula cities, which account for very little of the total regional funding. The West North Central region loses a noticeable percentage of funds (2.7) because its heavy loss comes in second-formula cities, which account for the bulk of funds (76.7 percent) despite the fact that poverty is relatively unimportant to the second formula for these cities (17.3 percent). Although both the East and West South Central regions have larger losses in the poverty share in second-formula than in first-formula cities, their loss in funding is considerably greater from the first formula because of the greater importance of poverty in the first formula and their greater reliance on it. The first-formula gains in poverty in the Mountain and Pacific regions have much more impact than the second-formula losses because of overwhelming reliance on the first formula and the greater importance of poverty in the first formula.

B. Overcrowded Housing

The changes in share of overcrowded housing (shown in Table C.2) are sufficiently large that they are not overwhelmed by the loss from pro rata reduction. The importance of overcrowded housing in the first formula (Column (4)) varies little across regions compared to the variation for poverty. Therefore, the net effect on funds of introducing 1980 overcrowding counts is governed primarily by the changes in shares of overcrowding (Column (1)) and by the importance of the first formula in each region's total funding (Column (5)). New England and the Middle Atlantic are barely hurt by their loss of overcrowding because they have very little reliance on the first formula. The North Central regions, though they depend on the first formula for less than 25 percent of their funds, experience measurable losses on overcrowding because their share losses are so high. The Southern and Western regions rely heavily on the first formula; thus shifts in shares of overcrowding have substantial impacts on their funding.

C. Age of Housing

The changes in share of aged housing units (shown in Table C.3) are fairly modest; thus, the loss due to pro rata reduction is very important for the age of housing factor. It turns a gain in share into a loss in

Table C.2 Components of Regional Entitlement Funding Changes Due to Overcrowded Housing[a]

Region	(1) Percent Change in Share of Overcrowded Units in Formula 1 Cities	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Overcrowded Factor	(4) Share of Overcrowded Housing in Total Formula 1 Funding in FY '82	(5) Share of Total Funds from Formula 1 in FY '82	(6) Net Effect of Change in Overcrowded Housing Factor on Total Funding
New England	-37.04	-2.77	-38.79	26.22	.87	- .09
Middle Atlantic	-20.96	-2.77	-23.15	23.82	8.00	- .44
East North Central	-35.33	-2.77	-37.12	28.81	21.04	-2.25
West North Central	-42.82	-2.77	-45.54	27.98	23.26	-2.96
South Atlantic	23.07	-2.77	19.66	23.35	73.26	3.36
East South Central	-15.94	-2.77	-18.28	22.63	69.66	-2.88
West South Central	23.39	-2.77	19.98	25.47	87.65	4.46
Mountain	21.36	-2.77	18.00	24.89	73.64	3.30
Pacific	68.53	-2.77	63.86	27.35	76.99	13.44
Puerto Rico	7.12	-2.77	4.15	18.75	100.00	.78

a. If the table entries are expressed in decimal terms (i.e., 1 percent = .01), the relationship among the columns is as follows:

$$(3) = (1) + (2) + [(1) \times (2)]$$
$$(6) = (3) \times (4) \times (5)$$

Table C.3 Components of Regional Entitlement Funding Changes Due to Age of Housing[a]

Region	(1) Percent Change in Share of Aged Units in Formula 2 Cities	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Aged Housing Factor	(4) Share of Aged Housing Factor in Total Formula 2 Funding in FY '82	(5) Share of Total Funds from Formula 2 in FY' 82	(6) Net Effect of Change in Aged Housing Factor on Total Funding
New England	4.45	-2.77	1.56	53.41	99.13	.82
Middle Atlantic	1.41	-2.77	-1.40	49.47	92.00	- .64
East North Central	-7.07	-2.77	-9.65	44.77	78.96	-3.41
West North Central	-6.26	-2.77	-8.86	47.05	76.74	-3.20
South Atlantic	-9.80	-2.77	-12.30	34.42	26.74	-1.13
East South Central	-8.65	-2.77	-11.18	33.85	30.34	-1.15
West South Central	-1.70	-2.77	-4.65	35.09	12.35	- .19
Mountain	1.15	-2.77	-1.65	45.89	26.36	- .20
Pacific	5.49	-2.77	2.56	52.69	23.01	.31
Puerto Rico	0	-2.77	0	0	0	0

a. If the table entries are expressed in decimal terms (i.e., percent = .01), the relationship among the columns is as follows:

$$(3) = (1) + (2) + [(1) \times (2)]$$
$$(6) = (3) \times (4) \times (5)$$

age of housing funding in the Middle Atlantic and Mountain regions. On balance, the age of housing factor has very little impact on funding shifts except in the North Central, South Atlantic, and East South Central regions. The two North Central regions lose the most. The gains from age of housing are very small: New England gains .79 percent and the Pacific region gains .30 percent.

II. Change in Entitlement Funds by Need Deciles

Table 5.12 shows the net change in funds in each need decile due to each formula factor. Components contributing to these net changes are broken out for poverty, overcrowding, and age of housing in Tables C.4 - C.6.

A. Poverty

Column (1) of Table C.4 shows that the most needy deciles experienced an increased share of poverty regardless of formula. In the three least needy deciles, first-formula jurisdictions had an increased share of poverty while second-formula jurisdictions had a decreased share. However, Column (3) shows that the increased shares in the most needy deciles were mostly offset by the increase in pro rata reduction. As a result, the net effect of change in share of poverty on funding in the most needy decile is virtually zero, as can be seen in Column (6).

In the three least needy deciles, the first-formula increases in share of poverty have much more effect on funding than second-formula losses (Column (6)) because these deciles rely very heavily on the first formula (see Column (5)). The numbers in Column 6 are the same ones that appear under the two poverty columns in Table 5.12.

B. Overcrowding

Table C.5 shows the components of change in the overcrowding factor. Column (1) shows that jurisdictions using the first formula in all deciles had increased shares of overcrowding -- most of the increases were large. The middle deciles had the lowest increase. The major factor influencing the impact of these increases on funding is the degree to which each decile depends on the first formula (Column (5)). Since more needy deciles rely less heavily on the first formula, overcrowding has a smaller impact on their funding than in the least needy deciles. The one exception is in the third neediest decile, where there is a 70 percent increase in funds. This decile is dominated by the increase in Los Angeles.

C. Age of Housing

The changes in share of aged housing are modest compared to those for overcrowding (See Table C.6, Column (1)). The two most needy deciles experience a decreased share of aged housing, while the remaining deciles experience an increase. Nevertheless, the less needy deciles

Table C.4 Components of Funding Changes by Need Deciles Due to Poverty

Need Decile	Formula	(1) Percent Change in Share of Poverty	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Poverty Factor	(4) Share of Poverty Factor in Total Formula (1 or 2) Funding in FY '82	(5) Share of Total Funds From Formula (1 or 2) in FY '82	(6) Net Effect of Change in Poverty Factor on Total Funding
Most Needy	1	3.39	-2.77	.53	52.78	2.07	.01
	2	2.98	-2.77	.12	19.50	97.93	.02
2	1	-2.07	-2.77	-4.78	59.28	23.14	-.66
	2	-7.03	-2.77	-9.60	18.51	76.86	-1.37
3	1	4.47	-2.77	1.58	54.34	39.76	.34
	2	-8.17	-2,77	-10.72	17.03	60.24	-1.10
4	1	-1.75	-2.77	-4.47	56.98	44.14	-1.13
	2	-7.56	-2.77	-10.12	18.45	55.86	-1.04
5	1	-1.67	-2.77	-4.39	54.21	45.19	-1.08
	2	-9.97	-2.77	-12.47	18.74	54.81	-1.28
6	1	5.38	-2.77	2.46	51.71	57.27	.73
	2	-8.96	-2.77	-11.49	16.18	42.73	-.79
7	1	-5.16	-2.77	-7.79	51.54	69.69	-2.80
	2	-8.72	-2.77	-11.25	16.00	30.31	-.55
8	1	5.50	-2.77	2.58	49.13	86.28	1.09
	2	-7.81	-2.77	-10.36	14.08	13.72	-.20
9	1	15.50	-2.77	12.30	40.08	91.68	4.52
	2	-6.07	-2.77	-8.67	19.87	8.32	-.14
Least Needy	1	27.33	-2.77	23.80	36.12	92.28	7.93
	2	-6.81	-2.77	-9.39	12.40	7.72	-.09

Table C.5 Components of Funding Changes by Need Deciles Due to Overcrowded Housing

Need Decile	(1) Percent Change in Share of Overcrowding in First-Formula Cities	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Overcrowding Factor	(4) Share of Overcrowding Factor in First-Formula Funding in FY '82	(5) Share of Total Funds From First-Formula in FY '82	(6) Net Effect of Change in Overcrowding Factor on Total Funding
Most Needy	48.41	-2.77	44.30	34.24	2.07	.32
2	28.28	-2.77	24.72	24.92	23.14	1.43
3	70.04	-2.77	65.33	26.66	39.76	6.92
4	8.47	-2.77	5.47	23.81	44.14	.57
5	6.29	-2.77	3.35	24.25	45.19	.37
6	24.81	-2.77	21.35	24.83	57.27	3.04
7	6.00	-2.77	3.07	23.99	69.69	.51
8	29.88	-2.77	26.28	24.33	86.28	5.52
9	37.22	-2.77	33.42	29.43	91.68	9.02
Least Needy	16.20	-2.77	12.98	23.09	92.28	2.77

Table C.6 Components of Funding Changes by Need Deciles Due to Aged Housing

	(1) Percent Change in Share of Aged Housing	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Age of Housing Factor	(4) Share of Age of Housing Factor in Second-Formula Funding in FY '82	(5) Share of Total Funds From Second-Formula in FY '82	(6) Net Effect of Change in Age of Housing Factor on Total Funding
Most Needy	-5.21	-2.77	-7.83	43.77	97.93	-3.36
2	-.68	-2.77	-3.43	44.54	76.86	-1.17
3	.74	-2.77	-2.05	50.76	60.24	-.63
4	2.01	-2.77	-.82	53.91	55.86	-.25
5	2.82	-2.77	-.02	51.05	54.31	-.01
6	5.94	-2.77	3.00	58.48	42.73	.75
7	5.03	-2.77	2.12	55.64	30.31	.36
8	11.13	-2.77	8.05	57.01	12.72	.63
9	1.70	-2.77	-1.12	63.46	8.32	-.06
Least Needy	13.78	-2.77	10.63	45.96	7.72	.38

derive little benefit from the age of housing factor because the second formula is of such little importance to their funding (see Column (5)). The most needy decile, on the other hand, relies almost exclusively on the second formula; as a result, its 5 percent loss in share of aged housing results in a 3 percent loss in funds.

III. Regional Change in Nonentitlement Funds

Table 7.14 shows the net change in funds in each region due to each formula factor. Components contributing to these net changes are broken out in Tables C.7-C.9.

A. Poverty

The regional changes in share of poor persons are quite clear-cut. The Southern regions (South Atlantic, East and West South Central) and the West North Central region experience a loss in share, while the other regions and Puerto Rico have an increased share. Those regions which use the first formula (the South, West, and Puerto Rico) have substantial changes in funding due to poverty (see Column 6 of Table C.7.) The South loses funds while the West and Puerto Rico gain. On the other hand, regions using the second formula (the North) experience smaller changes in funding due to poverty. The differences occur because poverty has a larger weight in the first formula and thus is responsible for a higher percentage of first-formula than second-formula funding (see Column (4) of Table C.7). The net changes in funds in Column 6 are the same as those shown for poverty in Table 7.14.

B. Overcrowding

Table C.8 shows the components of change due to overcrowding. Since the Northern regions do not use the first formula at all, overcrowding has an impact on funding only in the South, West, and Puerto Rico. Of these, all but the East South Central region increase in share of overcrowded units (see Column (1) of Table C.8). However, the 3.7 percent increase in share in the South Atlantic region is virtually offset by the change in pro rata reduction (-3.3 percent). Substantial increases in funding due to overcrowding occur in the West South Central, Mountain, and Pacific regions and in Puerto Rico.

C. Age of Housing

The components of change due to age of housing are shown in Table C.9. Except for the West North Central region, the Northern regions experience an increase in share of aged housing units (see Column (1) of Table C.9). However, the increase in share in the East North Central region of 4.6 percent is substantially offset by the 3.3 percent loss due to the change in pro rata reduction. As a result, the net effect on funding in the East North Central region is a modest +.7 percent. The increase in total funding is more substantial in New England and the Middle Atlantic region. Although the West North Central region loses only -.2 percent in share of aged housing,

Table C.7 Components of Nonentitlement Regional Funding Changes Due to Poverty

Region	Formula	(1) Percent Change in Share of Poverty	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Poverty Factor	(4) Share of Poverty in Formula (1 or 2) Funding in FY '82	(5) Share of Totalng Funding in Formula (1 or 2) in FY '82	(6) Net Effect of Change in Poverty On Total Funding
New England	1	----*	----	----	----	0	0
	2	17.7	-3.3	13.8	15.1	100.0	2.1
Middle Atlantic	1	----	----	----	----	0	0
	2	8.7	-3.3	5.1	17.7	100.0	.9
E.N. Central	1	----	----	----	----	0	0
	2	5.6	-3.3	2.1	18.4	100.0	.4
W.N. Central	1	----	----	----	----	0	0
	2	-6.9	-3.3	-10.0	22.3	100.0	-2.2
South Atlantic	1	-4.1	-3.3	-7.2	52.3	89.4	-3.4
	2	-17.0	-3.3	-19.7	32.9	10.6	-.7
E.S. Central	1	-11.9	-3.3	-14.8	59.0	100.0	-8.7
	2	----	----	----	----	0	0
W.S. Central	1	-9.6	-3.3	-12.6	55.1	100.0	-6.9
	2	----	----	----	----	0	0
Mountain	1	14.8	-3.3	11.0	42.0	77.2	3.6
	2	12.2	-3.3	8.5	20.7	22.8	.4
Pacific	1	24.5	-3.3	20.4	40.4	100.0	8.3
	2	----	----	----	----	0	0
Puerto Rico	1	22.9	-3.3	18.9	69.8	100.0	13.2
	2	----	----	----	----	0	0

* "----" indicates that no States in this region use this formula in both FY '82 and FY '84.

Table C.8: Components of Nonentitlement Regional Funding Changes Due to Overcrowded Housing

Region	(1) Percent Change in Share of Overcrowding in States Using First Formula	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Over-crowding Factor	(4) Share of Over-crowding in First-Formula Funding in FY '82	(5) Share of Total Funding from the First-Formula in FY' 82	(6) Net Effect of Change in Over-crowding on Total Funding
New England	----*	----	----	----	0	0
Middle Atlantic	----	----	----	----	0	0
E. N. Central	----	----	----	----	0	0
W. N. Central	----	----	----	----	0	0
South Atlantic	3.7	-3.3	.3	24.9	89.4	0.1
E. S. Central	-.4	-3.3	-3.6	23.2	100.0	-.8
W. S. Central	21.3	-3.3	17.3	25.6	100.0	4.4
Mountain	31.8	-3.3	27.5	29.7	77.2	6.3
Pacific	61.0	-3.3	55.8	30.8	100.0	17.2
Puerto Rico	38.6	-3.3	34.0	22.3	100.0	7.6

* "----" indicates that no States in this region use this formula in both FY '82 and FY '84.

Table C.9 Components of Nonentitlement Regional Funding Changes Due to Age of Housing

Region	(1) Percent Change in Share of Aged Housing in States Using The Second Formula	(2) Percent Change in Pro Rata Reduction	(3) Percent Change in Age of Housing Factor	(4) Share of Age of Housing in Second-Formula Funding in FY '82	(5) Share of Total Funding from the Second-Formula in FY '82	(6) Net Effect of Change in Age of Housing on Total Funding
New England	14.2	-3.3	10.5	63.6	100	6.7
Middle Atlantic	12.1	-3.3	8.4	63.4	100	5.3
E. N. Central	4.6	-3.3	1.2	61.6	100	.7
W. N. Central	-.2	-3.3	-3.5	61.2	100	-2.1
South Atlantic	-5.1	-3.3	-8.2	51.3	10.6	-.4
E. S. Central	---*	---	---	---	0	0
W. S. Central	---	---	---	---	0	0
Mountain	-.7	-3.3	-4.0	59.2	22.8	-.5
Pacific	---	---	---	---	0	0
Puerto Rico	---	---	---	---	0	0

* "---" indicates that no States in this region use this formula in both FY '82 and FY '84.

the increase in pro rata reduction causes a 2.1 percent net loss in funding. Only two other regions -- the South Atlantic and Mountain -- receive any funds from the second formula. Change in aged housing has little impact on their funding because only a small proportion comes from the second formula (see Column (5) of Table C.9).

APPENDIX D

SOCIOECONOMIC VARIABLES ANALYZED BY CENSUS REGION AND CITY SIZE

This Appendix contains regional and city size disaggregations of the data presented in Tables 2.3 and Tables 2.5 - 2.11 of Chapter 2.

Table D.1 Characteristics of Cities by Region and City Size

	Number of Cities	Percent Change in Population 1960-80	1970-80	Percent Change in Households, 1970-80	Percentage of Pre-40 Housing Units	Percentage Share of Population in 627 Cities
Northeast	154	- 8.3%	- 9.3%	1.3%	49%	26.6%
Large CC's	23	-13.9	-12.0	- 2.4	52	16.8
Small CC's	71	- 5.4	- 5.5	6.7	54	4.2
Satellites	60	10.8	- 3.1	11.0	35	5.5
North Central	155	- 3.0	- 8.3	5.1	38	23.7
Large CC's	35	-11.4	-11.4	.4	42	15.1
Small CC's	74	9.3	- 1.3	15.1	36	4.6
Satellites	46	25.2	- 3.1	15.3	21	4.0
South	176	35.0	9.1	26.5	15	26.0
Large CC's	52	32.3	6.8	24.2	15	18.0
Small CC's	106	27.9	11.0	28.3	17	6.0
Satellites	18	105.0	28.1	47.0	8	1.9
West	142	49.2	16.1	29.1	18	24.2
Large CC's	34	37.0	12.5	24.0	21	15.2
Small CC's	42	76.1	26.0	44.1	15	2.6
Satellites	66	77.3	21.2	37.1	9	6.5
All cities	627	12.8%	.6%	14.0%	30%	100
U.S.		26.3%	11.5%	26.7%	26%	

Source: HUD analysis of data from the City and County Data Book (1972 and 1977) and from the 1980 Census.

Table D.2 Regional Distribution of Cities in Growing and Declining SMSAs

		Total	North-east	North Central	South	West	Average Population (1,000)	Average Land Area Sq. Miles
In Declining SMSA's		106	66	38	1	1		
Severe Decline	Large CC's	14	7	7	0	0	1004	792
	Small CC's	10	7	3	0	0	53	205
	Satellites	25	9	16	0	0	70	123
Moderate Decline	Large CC's	4	4	0	0	0	1338	235
	Small CC's	9	6	1	1	1	53	221
	Satellites	28	24	4	0	0	70	124
Growth	Satellites	16	9	7	0	0	66	215
In Slow-Growing SMSA's		232	72	83	37	40		
Severe Decline	Large CC's	18	7	9	2	0	445	712
	Small CC's	32	14	11	7	0	49	142
	Satellites	7	1	3	1	2	58	79
Moderate Decline	Large CC's	22	5	9	5	3	241	692
	Small CC's	49	20	21	8	0	52	210
	Satellites	26	5	8	1	12	84	236
Growth	Large CC's	12	0	4	6	2	423	1368
	Small CC's	27	10	11	6	0	49	263
	Satellites	39	10	7	1	21	85	291
In Fast-Growing SMSA's		289	10	34	138	101		
Severe Decline	Large CC's	3	0	0	3	0	248	1001
	Small CC's	4	2	1	1	0	39	110
Moderate Decline	Large CC's	12	0	3	5	4	288	908
	Small CC's	30	3	8	17	2	38	166
	Satellites	2	1	0	0	1	82	252
Growth	Large CC's	59	0	3	31	25	290	1174
	Small CC's	132	9	18	66	39	51	221
	Satellites	47	1	1	15	30	86	319
All Cities		627	154	155	176	142	133	415

Source: HUD analysis of data from the City and County Data Book (1972 and 1977) and from the 1980 Census.

Table D.3 Distribution of Poverty by Region and City Size

	Rate of Poverty			Share of U.S. Poverty		Percent Change in Poverty
	1980	1970	Change, 1970–80	1980	Change, 1970–80	1970–80
Northeast	16.2%	12.9%	3.3%	13.0%	1.5%	15.2%
Large CC's	19.7	14.9	4.8	10.0	1.2	16.1
Small CC's	13.5	11.7	2.8	1.7	.1	9.1
Satellites	7.9	6.8	1.1	1.3	.2	17.3
North Central	13.7	11.5	2.2	9.9	.8	9.8
Large CC's	16.2	13.2	3.0	7.4	.5	9.5
Small CC's	11.9	10.6	1.3	1.7	.2	11.8
Satellites	6.3	5.7	.6	.8	.1	9.1
South	15.9	17.6	-1.7	12.5	0	1.5
Large CC's	16.4	17.6	-1.2	9.0	0	2.2
Small CC's	16.5	19.6	-3.1	3.0	0	-4.0
Satellites	9.2	9.1	.1	.5	-.1	26.6
West	11.6	11.0	.6	8.5	1.5	23.6
Large CC's	12.9	12.1	.8	5.9	.9	20.2
Small CC's	11.7	12.0	- .3	.9	.2	25.7
Satellites	8.6	7.7	.9	1.7	.4	35.9
All cities	14.4%	13.2%	1.2%	43.9%	3.7%	11.3%
U.S.	12.1%	13.3%	-1.2%	100%	—	1.7%

Source: HUD analysis of 1970 and 1980 Census data.

Table D.4 Distribution of High-Poverty Groups by Region and City Size

	Percentage Black			Percent Hispanic, 1980	Percent Black and Hispanic, 1980	Percent Female-Headed Households With Children, 1980
	1980	Change, 1970-80	Change, 1960-80[a]			
Northeast	22.3%	2.9%		9.9%	32.2%	15.2%
Large CC's	30.2	4.3	12.2%	13.0	43.2	18.3
Small CC's	8.4	1.4		4.8	13.2	12.1
Satellites	8.7	2.6		4.4	13.1	8.6
North Central	22.0	3.8		4.1	26.1	13.8
Large CC's	30.2	5.8	11.7	5.0	35.2	16.4
Small CC's	8.4	1.5		2.4	10.8	10.8
Satellites	6.7	2.2		2.7	9.4	8.0
South	24.9	2.4		11.2	36.1	13.2
Large CC's	28.2	3.3	3.9	11.5	39.7	14.1
Small CC's	20.6	1.3		9.6	30.2	11.7
Satellites	7.6	2.6		12.9	20.5	9.1
West	8.5	.8		16.5	25.0	11.2
Large CC's	10.3	.5	2.5	17.6	27.9	11.9
Small CC's	3.2	.6		11.0	14.3	9.9
Satellites	6.3	2.1		16.1	22.4	10.1
All 627 Cities	19.6%	2.2%		10.5%	30.1%	13.4%

Source: HUD analysis of data from the City and County Data Book (1972 and 1977) and from the 1980 Census.

a. Missing data prevented our computing average change for several smaller cities (see Appendix A). Missing data on HUD's computer files for Hispanics in 1960 also prevented computing trend data for that variable.

Table D.5 Real Per Capita Income by Region and City Size[a]

	1979	1969	Net Change	Percent Change
Northeast	$3575	$3440	$135	3.9%
Large CC's	3455	3421	34	1.0
Small CC's	3247	3019	228	7.5
Satellites	4194	3839	355	9.2
North Central	3712	3317	395	11.9
Large CC's	3542	3252	290	8.9
Small CC's	3578	3077	501	16.2
Satellites	4512	3857	655	16.9
South	3623	2969	654	22.0
Large CC's	3644	3001	643	21.4
Small CC's	3419	2747	672	24.5
Satellites	4059	3403	653	19.1
West	4136	3598	538	14.9
Large CC's	4088	3608	480	13.3
Small CC's	3736	3079	657	21.3
Satellites	4407	3772	635	16.8
All 627 Cities	$3755	$3329	$426	12.8%
U.S.	$3695	$3119	$576	18.5%

Source: HUD analysis of 1980 Census data.

a. The consumer price index was used to convert 1979 income figures to a 1969 base.

Table D.6 Employment Changes by Region and City Size

Percent Change in Employment, 1967-77

	Manufacturing	Non-Manufacturing	Wholesale	Retail	Selected Services
Northeast	-28.7%	- 5.3%	-22.0%	-10.1%	19.0%
Large CC's	-31.8	-11.1	-28.0	-17.2	12.3
Small CC's	-23.1	6.4	- 1.9	1.0	33.1
Satellites	-21.3	21.3	3.1	12.2	69.2
North Central	-17.0	12.0	- 7.9	11.6	37.1
Large CC's	-22.5	1.3	-17.0	- 1.5	25.7
Small CC's	- 7.2	31.2	12.8	36.5	54.1
Satellites	4.1	67.3	58.9	46.8	131.1
South	14.1	44.5	24.0	41.8	72.4
Large CC's	11.2	41.5	19.6	36.6	75.1
Small CC's	17.1	50.4	34.5	51.0	63.9
Satellites	65.7	69.6	96.2	75.6	63.2
West	7.9	41.9	21.0	36.9	71.6
Large CC's	8.2	32.8	13.1	27.0	59.4
Small CC's	25.5	65.5	37.9	71.4	94.8
Satellites	5.0	70.2	62.0	54.1	123.3
All Cities	-12.1%	20.3	.5	18.3	46.8
U.S.	1.4%	42.0%	24.9%	39.0%	64.9%

Source: U.S. Department of Commerce, City and County Data Book (1972, 1977). The data refer to employment by location of employer, not location of resident. The number of cities are as follows: manufacturing (458), nonmanufacturing (569), wholesale (571), retail (575), and service (572). See Appendix A for a discussion of missing employment data.

Table D.7 Unemployment By Region and City Size

	Unemployment Rate			Employed as Percent of Working-Aged Population, 1980	Black Unemployment Rate, 1980
	1981	Change, 1970-79	Change, 1979-81		
Northeast	8.1%	3.3%	.7%	62.8%	12.6%
Large CC's	8.8	3.8	.5	60.5	12.9
Small CC's	8.0	2.6	1.2	65.3	13.5
Satellites	6.1	2.1	.5	68.3	9.9
North Central	9.3	1.5	3.3	64.9	17.0
Large CC's	9.4	1.5	3.3	64.0	17.0
Small CC's	9.4	1.3	3.4	64.5	18.9
Satellites	8.7	1.9	3.2	69.0	13.7
South	6.3	1.1	1.3	65.3	10.0
Large CC's	6.1	1.0	1.2	65.7	9.8
Small CC's	7.2	1.4	1.6	62.7	11.0
Satellites	5.2	1.2	.9	70.2	8.1
West	6.8	-.4	1.1	67.1	11.2
Large CC's	7.1	-.4	1.2	66.3	11.8
Small CC's	8.1	-.3	1.5	64.1	12.0
Satellites	5.5	-.6	.9	70.4	9.4
All Cities	7.6%	1.4%	1.6%	65.1%	12.7%
U.S.	7.6%	.9%	1.8%	NA	NA

Source: Unemployment data in the first three columns came from the U.S. Department of Labor. The employment and black unemployment data are from the U.S. Bureau of the Census. The numbers of cities are as follows: 1981 unemployment (611), changes in unemployment (572), employed (620), and black unemployment (582).

Table D.8 The Distribution of Crime by Region and City Size

	Violent Crimes (per 10,000 persons)[a]		
	1980	1976	Net Change
Northeast	140	109	31
Large CC's	179	142	37
Small CC's	54	39	15
Satellites	56	33	13
North Central	88	78	10
Large CC's	107	98	9
Small CC's	49	37	12
Satellites	51	41	10
South	94	64	30
Large CC's	103	69	34
Small CC's	75	54	21
Satellites	57	42	15
West	99	73	16
Large CC's	116	85	31
Small CC's	51	37	14
Satellites	73	54	19
All Cities	106	82	+24
U.S.	58	46	+12

Source: U.S. Department of Justice, Uniform Crime Reports for the United States (1976, 1980). The number of cities equals 605.

a. Violent crimes consist of murder, manslaughter, forcible rape, aggravated assault, and robbery.

APPENDIX E

RECENT EMPLOYMENT TRENDS IN LARGE URBAN AREAS*

Chapters 2 and 3 introduced measures of job growth to help classify entitlement cities by relative economic change and need for CDBG funding. Those Chapters emphasized that cities' economies underwent substantial change during the 1970's. The analysis was based on broad industrial categories such as manufacturing, retail trade, and services. While data organized into such categories may be useful for indicating overall economic trends, they may hide growing subsectors on which declining cities plan to rebuild their economies. For instance, several service sectors, such as health, business, and legal, grew strongly during the 1970's in many weaker central cities and metropolitan areas.

This Appendix provides a more disaggregated and comprehensive examination of recent job changes in urban areas, providing a better understanding of recent structural shifts in urban economies and clarifying a major purpose of the CDBG program, economic development.** This is accomplished by disaggregating the major industrial sectors into "2-digit" components -- e.g., manufacturing is divided into 20 subsectors such as primary metals, electrical machinery, and instruments. Because of differences among subsectors in terms of locational tendencies, technology, and wages a better understanding of urban economic change can be gained by examining employment data at a finer level of detail. As will be evident, the potential for future growth in central cities differs among industries.

In addition to the theme of differences among subsectors of the economy, a second theme is that declining cities differ in the range of their economic bases. Some observers believe that declining cities, such as Boston and New York, that have a broad range of economic activities (e.g., finance, high-technology industries, health services) face brighter

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* This Appendix is based on a research paper, "Economies of Large Urban Areas" (1981), which was edited for inclusion in this study. Robert Benjamin co-authored this work with Harold Bunce and Sue Neal.

** This Appendix and Appendix G use special data to take a more detailed look at cities than allowed by the data used in Chapters 2 and 3. Appendix G relies on Annual Housing Survey data for direct measures of housing and neighborhood conditions in large central cities. This Appendix complements that analysis by focusing on economic objectives of the CDBG program. The major limitation of each of these analyses is the small sample sizes for which data are readily available. However, the analyses in both Appendices cover the largest cities, which receive the major portion of CDBG funding. An additional limitation of the analysis in this Appendix is that data are often available only for the counties in which the cities are located (though many counties are entirely or largely populated by their major central city).

prospects than manufacturing-based cities such as St. Louis and Cleveland - (Noyelle and Standback, 1981.) On the other hand, a recent study by the Rand Corporation concluded that despite an overall decline in manufacturing, many of Cleveland's manufacturing sectors remain strong - (Gurwitz and Kingsley, 1982). Hence, the text will highlight differences in economic performance among weaker cities.

Focusing on subsectors of industries not only increases the complexity of the analysis but also presents some data availability problems (explained later). This initial analysis is based on a sample of 36 large urban areas for which detailed data were available for the late 1960's and 1970's.

The remainder of the Appendix is organized as follows. Section I describes the sample. Section II provides an overview of employment changes during the 1970's for six major industrial categories. Section III compares the recent employment experiences of large central cities and their suburbs. Section IV begins the disaggregated analysis by looking at trends in employment and capital investment in 20 manufacturing industries. Section V focuses on employment changes in various finance and service industries. Section VI presents the conclusions.

I. The Areas Studied

For this Appendix, 36 metropolitan areas were chosen from the Nation's 30 largest central cities and from the largest cities of six States that were not represented on the initial list but had more than one million nonagricultural workers in 1978. Together they include 51 percent of the Nation's central city population and 48 percent of the Nation's metropolitan area population. The 36 central cities are categorized into three groups of 12 according to recent economic performance on measures such as unemployment, income growth, and poverty.* (See Table E.1 for the relative rankings of the cities.) The same criteria were also used to create relative rankings for the metropolitan areas that enclose the 36 cities. A mixture of static and trend data, the criteria emphasized the economic performance of residents of these areas during the 1970's. The index can be viewed as an outcome or standard by which to test other socioeconomic processes that affected these areas during the 1970's. In particular, this Appendix will suggest the extent to which differing economic performance of residents in an area reflected a differing quantity and composition of net job growth in the area.

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* See Robert Benjamin, "The Geographic Targeting of Economic Aid" (A Department of Housing and Urban Development special paper for the FY 1982 Office of Management and Budget Economic Development Crosscut, 1981). That paper fully describes the index of economic well-being and the qualities of the component variables in the index (unemployment, poverty, net and percentage change of income, and job growth), and explains their weighting and combination.

Table E.1

Community Economic Performance Index: The Relative Rankings of Major Cities and their Metropolitan Areas

	Relative Rankings[a]		Manufacturing Job Growth, 1972-77		Retail Job Growth, 1972-77	
	City to City	SMSA to SMSA	City	SMSA	City	SMSA
Newark	1	11	-18%	-6%	-23%	-3%
Detroit	2	13	-15	+2	-23	+11
Baltimore	3	9	-20	-8	-17	+8
Hartford	4	18	-18	---	-23	---
New York	5	1	-19	-16	-13	-8
Philadelphia	6	5	-22	-9	-9	+8
Cleveland	7	19	-8	-2	-11	+10
Atlanta	8	24	-17	-3	-21	+16
New Orleans	9	4	-25	-14	+11	+23
Birmingham	10	6	-10	-7	+5	+12
St. Louis	11	16	-5	-3	-15	+11
Boston	12	10	-14	0	-11	+1
Chicago	13	20	-15	-3	-8	+11
El Paso	14	2	+9	+12	+31	+29
Norfolk	15	12	+6	-3	+1	+18
Washington	16	33	-4	+10	-12	+15
Pittsburgh	17	15	-12	-9	-1	+11
Memphis	18	3	-4	0	+11	+4
San Antonio	19	7	+15	+15	+23	+22
Columbus, OH	20	17	-10	-6	+19	+18
Jacksonville	21	8	+5	+5	+4	+17
Milwaukee	22	28	-14	+2	+7	+17
San Francisco	23	26	-2	+5	+2	+15
Los Angeles	24	14	+12	+6	+6	+10
Kansas City, MO	25	27	-9	-1	+2	+18
Indianapolis	26	21	-3	+1	+18	+18
Charlotte	27	22	+7	-1	+1	+14
Minneapolis	28	34	-10	+9	-6	+17
San Diego	29	25	+19	+22	+24	+30
Dallas	30	30	+5	+17	+10	+17
Denver	31	32	+2	+12	+10	+29
Nashville	32	23	+5	+12	+10	+20
Phoenix	33	29	+11	+18	+26	+37
Seattle	34	31	+11	+21	+16	+27
San Jose	35	35	+25	+35	+34	+33
Houston	36	36	+40	+29	+39	+38

a. The index of resident economic well-being that led to these rankings is described in Benjamin (1981).

A few preliminary comments about the cities in Table E.1 provides a useful context for later discussion. Relative to the economically stronger central cities (ranks 25 to 36), weaker central cities have poverty and unemployment rates that are 50 to 100 percent higher. They averaged a net growth of per capita income that was only two-thirds that of the stronger central cities. To anticipate, Table E.1 also shows that many of the weaker central cities suffered a sharp loss of manufacturing and retail jobs from 1972 to 1977, when many stronger cities had appreciable growth in these jobs.*

The metropolitan areas of the weaker cities tended to have below-average economic performance relative to other metropolitan areas. In absolute terms, the disparities between metropolitan areas are not as great as the disparities between cities.

With cities classified on the basis of economic well-being of their residents, it is possible to examine in more detail the characteristics of their economies that contributed to these outcomes. To take advantage of relatively current annual job data -- Census County Business Patterns data -- the discussion, in many instances, centers on the counties that enclose (and sometimes coincide with) the central cities listed in Table E.1. (These, of course, are not the same as the urban counties in the CDBG program.) These data present information on the distribution and growth of jobs at relatively high points of the business cycle (1967, 1974, and 1979) and during one point of recession (1974-75). They are supplemented by Census of Business data (1967, 1972, 1977), permitting comparison of central cities with their suburbs. The one caution in using the second set of data is that 1977 was a year of only partial economic recovery, and growth figures for 1967-77 (or 1972-77) tend to be lower than for 1967-79 (or 1974-79). Both sets of data describe jobs by location of employer and not by residence of employee. Because the data are not yet available, no analysis is provided of the economic changes due to the current recession. As in Chapter 2, the main purpose is to describe what happened to urban economies during the 1970's.

II. Trends in Urban County Employment, 1967-1979

Between 1967 and 1974 and again from 1974 to 1979, strong counties outperformed weak counties in every major industrial sector. (See Table E.2 for the percentage changes and Table E.3 for the absolute changes.) As a result, total employment increased by 72 percent in counties with strong economies, while it decreased by 5 percent in counties with weak economies.

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* As explained by Benjamin (1981), a retail and manufacturing job growth measure, with a weight of only 15 percent in the index, was used to correct the biases of the other measures -- for instance, the inclusion of voluntary as well as involuntary unemployment in the unemployment measure, or the lack of cost-of-living adjustment in poverty and net income measures. The job growth measure does not affect the index sufficiently to prejudge the issue of the extent and composition of job growth in areas that had different economic performance in the 1970's.

Table E.2

The Percentage Growth and Distribution of Major Sectors of Private Nonagricultural Employment in Large Urban Counties, 1967-1979[a]

Growth of Employment

Employment Sector	Weaker		Moderate		Stronger	
	1967-74	1974-79	1967-74	1974-79	1967-74	1974-79
Total	-5%	0%	12%	13%	36%	27%
Construction	1	-17	32	2	61	20
Manufacturing	-20	- 9	- 4	.2	15	17
Transportation and Utilities	- 3	- 7	17	1	27	16
Wholesale	-18	- 1	4	9	29	28
Retail	- 5	- 2	11	16	42	26
Finance	13	1	23	22	47	27
Services	14	16	27	32	53	46

Percentage Distribution of Employment

	Weaker		Moderate		Stronger	
	1967	1979	1967	1979	1967	1979
Construction	4.2%	3.7%	4.9%	5.2%	6.8%	7.6%
Manufacturing	32.5	25.0	33.4	26.0	30.3	23.6
Transportation and Utilities	8.9	8.4	7.5	7.0	8.2	7.0
Wholesale	9.1	7.7	8.6	7.7	9.1	8.7
Retail	15.0	14.6	17.7	18.0	18.3	19.1
Finance	9.8	11.8	7.5	9.0	7.4	8.1
Services	19.9	27.9	19.7	25.9	18.4	23.8
Total[b] Employment (000)	8,208	7,811	6,593	8,332	3,382	5,827

Source: County Business Patterns (1967, 1974, 1979)

a. These are the counties corresponding to the central cities listed in Table E.1. Data for the Seattle and Milwaukee urban counties were unavailable for this report, thus reducing the number of counties to 34.

b. The above categories contribute 98 to 99.5% of all private nonagricultural employment in the three groups of urban counties.

A. Manufacturing and Construction -- An Overview

The manufacturing sector, which in 1967 provided about one-third of all private jobs in the urban economies, in 1979 provided about one-quarter (see Table E.2). Manufacturing jobs are also important because they typically pay above-average wages (see Table E.3, note a), can provide training for uneducated and less-skilled persons, and often buttress property taxes. The weakest urban areas lost 716,000 manufacturing jobs from 1967 to 1979. New York City lost 300,000 manufacturing jobs, but even when New York is excluded, the remaining 11 still lost over 400,000 jobs, 24 percent of their 1967 manufacturing base. The stronger counties, on the other hand, experienced a 34 percent increase in manufacturing jobs between 1967 and 1979.

Amid this general picture of manufacturing decline, the weaker urban areas had some encouraging signs. First, the annual average loss rate in manufacturing during the more recent period (1974-79) was 1.8 percent, compared to 2.8 percent for the earlier period (1967-74). Moreover, the weaker counties enjoyed a 4 percent increase in manufacturing jobs from 1975 to 1979. Though not enough to offset the 13 percent loss during the recession of 1974-75, this growth forestalled the predictions made in 1975 of a sweeping, accelerating abandonment of the industrial base. Still, counties with weak economies suffered more from the 1974-75 downturn and recovered more slowly than the stronger urban counties, which experienced a lesser (6 percent) manufacturing decline during the recession and had a 23 percent gain in total manufacturing employment during the 1975-79 recovery.*

One of the few growth sectors for the weaker economies from 1967 to 1974, the construction sector never recovered from its losses in the 1974-75 recession. Construction had the highest 1974-79 percentage loss of any sector (18 percent) for the weaker economies and a net loss of jobs (60,000) surpassed only by the much larger manufacturing sector. In the stronger economies, construction jobs grew steadily, especially from 1967 to 1974.

B. Nonmanufacturing - An Overview

During the past decade, employment in nonmanufacturing sectors such as finance and services has been considered an alternative route to job growth for urban areas. Undeniably, this type of employment provided the only job growth that some weaker core counties have enjoyed. And in a few cases,

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* More insight into the dynamics of recession and recovery can be gained by considering a few individual cases. Among economically weak city-counties, the manufacturing centers of Baltimore, Philadelphia, and St. Louis had the severest loss of jobs (10 percent) from the 1974-75 recession and the weakest recovery as of 1979. Several economically strong cities, Denver and San Francisco, however, had moderate job losses of 4-5 percent from 1974 to 1975, followed by an impressive net growth of jobs. Houston's Harris County slowed to a 3 percent increase in jobs from 1974 to 1975, after which it increased to annual rates of more than 10 percent.

Table E.3

The Absolute Growth of Non-Agricultural Employment
in Major Industrial Sectors of Large Urban Counties, 1967-79

Growth of Employment (In Thousands of Jobs)

Industrial Sector[a]	Weaker		Moderate		Stronger	
	1967-74	1974-79	1967-74	1974-79	1967-74	1974-79
Construction	5	-60	103	7	140	73
Manufacturing	-524	-192	-78	47	151	203
Transportation & Utilities	-26	-48	82	5	76	55
Wholesale	-132	-7	22	52	89	112
Retail	-67	-24	132	206	262	231
Finance	108	12	116	135	119	130
Services	237	303	348	519	329	435
Total Growth[b,c]	-391	-6	763	976	1205	1240

a. The average payroll per employee varies considerably across industrial sectors. Using 100 as a base for payroll per worker in metropolitan areas in 1978, the industrial sectors ranked from highest to lowest in this order: Transport (134), Manufacturing (127), Wholesale (125), Construction (111), Finance (105), Services (81), and Retail (60). The three types of urban counties showed a similar ordering. Within industrial sectors, however, there was considerable variation by subsector and occupation.

b. Because some minor sectors are excluded, total growth will not equal the sum of growth of the above sectors.

c. The absolute job base on which growth occurred, was as follows in thousands of jobs:

Weaker urban counties:	8208 (1967), 7817 (1974), 7811 (1979)
Moderate urban counties:	6593 (1967), 7356 (1974), 8332 (1979)
Strong urban counties:	3382 (1967), 4587 (1974), 5827 (1979)

such as Boston and New Orleans, the increase of jobs from 1974-79 in the nonmanufacturing sectors more than compensated for a small loss of manufacturing jobs. On the other hand, in many economically weaker counties, the net growth of jobs in nonmanufacturing sectors was modest or even negative from 1974 to 1979 while their loss in manufacturing and construction was sizeable. Thus, the net number of private jobs in Baltimore, Philadelphia, and St. Louis city-counties was 8-10 percent less in 1979 than in 1974. Moreover, since manufacturing and construction jobs pay 50 to 100 percent more in yearly earnings than most nonproduction jobs, the decline in real earnings per worker was much more pronounced.

The aggregate data for urban counties clearly show that nonmanufacturing sectors did not sufficiently compensate for the loss of manufacturing and construction jobs and payroll in weaker urban areas during the 1970's. In other words, trade, communications, finance, and services did not restore the job and earnings levels of the industrial high point. Indeed, in the weaker economies, wholesale and retail trade as well as transportation and public utilities showed a net loss of employment for 1967-74 and 1974-79, while increasing steadily in stronger counties and in the Nation. The weaker economies could not compete with more spacious, accessible, and safer suburban areas and emerging metropolitan areas. As with manufacturing, the trade sectors in congested urban core areas could not as easily utilize new technologies, such as automatic loading. Moreover, the outmigration of middle-income residents further decreased the competitiveness of distribution and trade in older core areas -- department stores, for instance, showed especially low employment in the retail trade sector of the weaker economies.*

Table E.2 suggests a much slower loss of jobs in wholesale trade in the weaker economies from 1974 to 1979 and a somewhat slower annual rate of loss in retail trade. But these were still deficit employment areas from 1974 to 1979. Moreover, compared to 1967-74 rates, transportation and public utilities showed an increased rate of job loss from 1974 to 1979 in the weaker areas.

In terms of traditional strength or comparative advantage, the finance and service sectors were supposed to lead the post-industrial revival of older urban areas. True enough, Tables E.2 and E.3 reveal employment growth for both sectors in the weaker economies for 1967-74 and 1974-1979. Still, only the services sector showed clear job gains in both periods, growing 14 percent from 1967 to 1974 and 16 percent in the shorter 1974-79 period. Even this growth was greatly overshadowed by the growth of services in the stronger economies (53 percent for 1967-74, 46 percent for 1974-79).

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* For further discussion of the reasons for differential growth in all nonmanufacturing industries, see Richardson (1978), Kasarda (1980), and Perloff (1978). It should be mentioned that there is room for older central cities to develop the trade sector -- e.g., Baltimore's Inner Harber area. Still, it is unlikely that there will be a substantial turnabout because these sectors are tied closely to movements in manufacturing, population, and income.

The finance sector in weaker economies showed a similar disparity in growth to that of the stronger economies and from 1974 to 1979 increased by only 1 percent. Many administrative and auxiliary functions of the finance sector were decentralized to the suburbs or to expanding metropolitan areas with a skilled labor supply, cheaper office space, and shorter commuting requirements. Moreover, advanced communications technology lessened much of the traditional need for centralized face-to-face contact and data processing that had long favored developed urban areas. (The finance and service sectors will be discussed more fully in a later section of the Appendix.)

In terms of the employment distribution of broad industrial sectors, the weaker and stronger economies took divergent roads to similar ends. In both types, finance and service sectors had a rapidly growing share of total private employment (see Table E.2). And the increased share of these sectors came primarily at the expense of manufacturing. But in many weaker economies, the shift toward finance and services occurred by severe cutbacks in manufacturing and appreciable losses in other sectors, not by a dramatic opening up of finance and service employment.* On the other hand, the finance and service sectors in the stronger economies increased their share of employment by growing with exceptional rapidity when manufacturing and many other sectors grew at "only" moderate to high rates.

III. The Metropolitan Context - City and Suburb

The economic problems of weaker central cities (and their core counties) are compounded by the relative weakening of their overall metropolitan area (summarized in Table E.4). Especially in manufacturing, jobs lost in the central city have not been replaced in the suburbs. From 1972 to 1977 the suburban areas of weaker central cities had only a 1 percent gain in manufacturing jobs, and from 1967 to 1972 showed a 2 percent loss. As a result, the overall metropolitan area of the economically weaker cities showed manufacturing losses of 10 percent and 7 percent in the two periods.

In contrast, metropolitan areas of the economically stronger cities have showed manufacturing employment growth in both central cities and suburbs between 1967 and 1977. When a strong central city such as

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* Norton (1980) reached the same conclusion, based on analysis of service and manufacturing job changes over a longer period (1948 to 1972) in 30 large SMSA's. He concluded that industrial areas have not developed a substitute for their declining manufacturing base. Furthermore, the switch from manufacturing to finance and services within the weaker counties has been concentrated more in regional centers such as Boston, New York, Philadelphia, and New Orleans than in manufacturing-based areas such as St. Louis and Wayne County (Detroit). These latter areas not only started with a low percentage of finance and service employment but also seem to have made less progress in shifting their economic structure. For instance, finance and services increased from 26 percent of St. Louis's total employment in 1967 to 32 percent in 1979, and for Wayne County, from 22 to 27 percent. These shifts are considerably lower than those for areas such as Suffolk County (39 to 52 percent) and Philadelphia (27 to 44 percent).

Table E.4

Percent Change in Employment in 36 Central Cities, Suburbs, and Metropolitan Areas, 1967-1977

Weaker Economies

	Central City		Suburbs		Total SMSA	
	1967-72	1972-77[a]	1967-72	1972-77	1967-72	1972-77
Manufacturing	-18%	-17%	- 2%	1%	-10%	-7%
Wholesale Trade	-16	-14	37	20	0	-.3
Retail Trade	- 6	-13	23	18	8	4
Services (Selected)[b]	12	- 4	72	35	28	10

Stronger Economies

	Central City		Suburbs		Total SMSA	
	1967-72	1972-77[a]	1967-72	1972-77	1967-72	1972-77
Manufacturing	-2%	7%	4%	24%	1%	15%
Wholesale Trade	9	9	92	38	25	17
Retail Trade	14	17	69	36	34	26
Services (Selected)[b]	45	28	123	48	64	35

a. The 1972-77 rates for central city employment growth are considerably lower than the 1974-79 rates for urban counties because 1979 was much more a year of recovery than 1977 and because central cities tend to perform more weakly than their partly-suburbanized urban counties (except when central cities coincide with their urban county).

b. Comprising business services, legal and engineering services, personal services, automobile services, and miscellaneous repair services; the selected service categories include only about 40 percent of total service industry employment. See Table E.9 for a more comprehensive listing of service industry sectors at the level of urban counties.

Minneapolis occasionally lost manufacturing jobs, its loss rate was much less drastic than that of the average weak central city, and its metropolitan area showed a net gain. Thus, manufacturing job opportunities were still available to Minneapolis' resident workforce (see Table E.1).

In such important nonmanufacturing sectors as retail trade, wholesale trade, and selected services (primarily business-related), the metropolitan areas of weaker central cities showed only modest growth or no growth at all from 1967 to 1977. Net growth was almost entirely in the suburbs.

Metropolitan stagnation is a relatively recent threat to the economic health of central cities. A much longer trend is decentralization of employment away from central cities to the suburbs. As measured by the gap in city and suburban growth rates, decentralization is proceeding much more rapidly in weaker than in stronger cities (see Table E.4). And from 1967-77, it occurred even more rapidly in the nonmanufacturing than in manufacturing sectors.

While this section and the previous one identified trends in the major categories of employment in the 36 urban areas, a more disaggregated analysis is needed because of the diversity within major sectors such as manufacturing and services. For instance, the service sector includes activities such as business and legal services that have locational tendencies quite different from personal and repair services. As will be noted, diversity in recent employment experiences also exists among cities with weaker economies.

IV. Manufacturing Employment -- A Closer Inspection

A. Introduction

Manufacturing industries are so diverse that useful analysis requires a further breakdown. In practice, manufacturing data is commonly classified into 20 broad subsectors such as "Food and Kindred Products," "Petroleum and Coal Products," and "Electrical Equipment."* Analysis of these components

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* In turn, these so-called "two-digit" classifications can be subdivided into three-digit (and four-digit) subclassifications. For many important questions, this further subdivision is highly desirable. Thus, to specifically analyze "automotive transport" or "aircraft transport," a three-digit category of transport is required. And to analyze an industry such as electronic computers, a four-digit classification is needed. Unfortunately, for many cities and urban counties, data are published only at the two-digit level. Despite this limitation, the two-digit sectors are sufficiently distinct to permit a clarification of aggregate trends in manufacturing. However, even at the two-digit level, there were several instances of missing employment data due to Bureau of the Census confidentiality requirements. In certain cases, estimates were made when the employment data were available for nearby years; in other cases, the city or county was dropped from the analysis. The number of missing and estimated cases for each two-digit sector are available upon request.

will help clarify how broad-based is the growth of the stronger economies and the decline of weaker economies in manufacturing.

Table E.5 organizes the growth and composition of the weaker and stronger urban economies in manufacturing sectors, arranged by their relative degree of technological innovation and occupational skill requirements. Higher technology and skill sectors such as machinery and chemicals might be considered sectors in which the United States relative to the rest of the world and urban areas relative to less developed areas have their likeliest comparative advantage. On the other hand, lower technology and skill sectors (also the lowest-paid) might be expected to perform at a competitive disadvantage in more developed, older areas. The actual performance of the weaker and stronger urban economies in the different sectors will be the major theme of this section and the next.

Before sectoral comparisons are made, one trend stands out in Table E.5 -- compared to the stronger economies, the weaker economies were distinguished by their much lower rate of employment growth on almost every manufacturing category for both 1967 to 1974 and 1974 to 1979. Indeed, at first glance, the relatively large percentage losses for the weaker economies overshadow any specific failure or improvement.

The especially high losses of the weaker economies in the low technology and skill sectors (e.g., textiles) confirm a historical tendency for older industrial centers to lose less skilled, labor-intensive jobs to new areas.* Even the stronger urban economies did less well from 1967 to 1979 in many less-skilled sectors (except for lumber and miscellaneous manufacturing) than in other manufacturing sectors.

B. Location of Industrial Innovation

In the past, older industrial areas were usually able to offset the dispersion of their less skilled industries by spawning new industries. This innovative capacity stemmed in large part from their specialization in high-growth fabricating industries such as metals and machinery, and from the concentration of technical and entrepreneurial know-how in these areas. Essentially, these cities were able to adapt because they became the "industrial seedbed of the economy." But in recent decades, the weaker (often older) urban areas lacked the institutional flexibility, capital innovativeness, and natural resource base to attract innovative electronic and energy-related industries or to emphasize the more advanced sectors of historic growth industries.** Also, weaker urban economies increasingly had an adult labor force with fewer educational skills than the labor force of the new areas -- the skills needed to attract high-technology industries. For instance, in seven of the 12 weak central cities of Table E.1, a majority of adult residents in 1970 had not completed their junior year of high school, whereas a majority in all of the stronger central cities had completed high school and added some advanced training.

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* The classification of a sector as relatively low technology/skill does not deny major capital improvements in subsectors (e.g., textiles).

** The discussion of the influence of technological change and the product cycle on the decline of the older industrial cities is based on Rees (1979) and Norton (1979, 1980).

Table E.5

The Percentage Growth and Distribution of Manufacturing Employment in Weaker and Stronger Urban Counties, By Sectoral Technology and Skill, 1967-79

Low Technology/ Skill Sectors[a]	Weaker Economies % Growth 1967-74	Weaker Economies % Growth 1974-79	Weaker Economies % Share[b] 1979	Stronger Economies % Growth 1967-74	Stronger Economies % Growth 1974-79	Stronger Economies % Share 1979
Textiles[c]	-18%	-35%	1.8%	-22%	- 7%	.4%
Apparel[c]	-29	-15	11.5	- 3	- 2	2.7
Lumber[c]	-19	-13	.5	76	46	1.3
Furniture[c]	-25	-11	1.5	- 1	14	1.0
Leather[c]	-43	-19	1.1	-22	7	.2
Food	-31	-12	6.0	- 4	4	6.3
Miscellaneous[c]	-21	-12	3.4	38	30	1.7
Medium Technology/ Skill Sectors						
Paper	-25	- 8	2.3	18	6	2.3
Stone-Clay	- 5	-15	1.6	17	10	2.3
Primary Metal[d]	-10	- 9	5.9	8	7	2.6
Fabricated Metal	- 4	- 6	9.5	53	14	8.4
Rubber-Plastic	- 5	- 6	1.7	70	33	2.4
Petroleum-Coal[d]	-17	13	.4	13	- 1	.9
Printing-Publishing	-21	3	10.4	18	18	7.9
High Technology/ Skill Sector						
Transport[d]	-21	-11	10.3	31	- 4	8.0
Chemical[d]	-21	- 7	3.8	16	14	4.2
Electric Machinery	-37	- 9	4.7	23	23	16.4
Non-Electric Machinery[d]	-24	- 5	8.5	32	27	16.5
Instruments[d]	-14	-17	1.5	108	40	4.3
Total Manufacturing	-20	- 9	e	15	17	e

Source: County Business Patterns (1967, 1974, 1979)

a. This classification is based on a technological intensity table from Rees (1979) and on occupational classification criteria such as a high percentage with professional or technical skills and a relatively low percentage with operative or labor skills. Sectors usually had similar rankings on the technological and occupational criteria.

b. This is the share of the sector in total manufacturing employment. If New York City is excluded, the share of Apparel falls to 4.8 percent and Printing-Publishing falls to 7.4 percent, but the share of Machinery rises to 11.2 percent, Transport to 14.4 percent, Primary Metals to 7.9 percent, and Fabricated Metals to 11.8 percent.

c. Manufacturing sectors whose average earnings in 1979 were at least 20 percent lower than the U.S. average manufacturing earnings.

d. Manufacturing sectors whose average earnings in 1979 were at least 20 percent higher than U.S. average manufacturing earnings.

e. Because the data do not include all manufacturing sectors and because of some missing data, the above components do not sum to total manufacturing.

The gap in growth rates between weaker and stronger economies tends to be especially large in high-technology and skill industries. That is, high-technology and skill manufacturing sectors proved to be lead sectors in the stronger urban areas for 1967-74 and 1974-79, outpacing other manufacturing sectors in those areas (except for chemicals and transport in 1974-79). But the higher technology and skill sectors in weaker urban areas tended to do worse than average (that is, lost more than 20 percent of employment) for 1967-74 and only about average (a 9 percent loss) for 1974-1979. One result is that stronger economies which in 1967 already had a greater share of total manufacturing employment in high-technology, had over 49 percent of their 1979 manufacturing employment in high technology sectors versus an appreciably lower figure of 29 percent for weaker economies (37 percent if New York City with its apparel concentration is excluded).

Of the high-technology sectors in Table E.5, the three capital-producing sectors of non-electric machinery, electric equipment, and instruments stand out as leading sectors of technological modernization. In 1979, the three sectors formed over 37 percent of manufacturing employment in stronger economies but less than 15 percent (18 percent excluding New York) in weaker economies. Because of their especially high growth in stronger economies, the three sectors created more than 50 percent of the increase of net employment in these areas from 1967 to 1979. But because of an overall loss rate even worse than average for weaker economies, the three sectors accounted for almost 20 percent of the net loss of jobs in these areas from 1967 to 1979. Most of the losses occurred, however, from 1967 to 1975.

In sum, the weaker economies never reestablished their "seedbed" function in high-technology and skill areas, while continuing to suffer heavy losses in less competitive, low-skill sectors. In contrast, stronger economies had impressive gains in the "seedbed" sectors that more than compensated for stagnation in some of their less-skilled manufacturing sectors.

C. Encouraging Signs For Weaker Economies

The one bright spot for the weaker economies during the 1970's was that for most sectors, the annual rate of loss from 1974 to 1979 was less than that from 1967 to 1974, especially in some high-technology sectors. Their improvement was not due solely to overall national growth. For many manufacturing sectors, the annual growth rate for weaker economies was somewhat closer to that of the Nation for 1974-79 as compared to 1967-74.

In terms of magnitude and relative growth, the best sector for weaker economies from 1974 to 1979 was printing and publishing, where net employment actually rose by 3 percent. This sector is distinguished by skilled craft, face-to-face contact, lesser space requirements, and increasing demand from the communications, finance, and service sectors. All these characteristics are strengths of urban centers. Even so, the sheer overall growth of stronger economies was so great that they showed 18 percent growth in this sector from 1974 to 1979 versus 3 percent for weaker economies.

Despite heavy losses in the 1974-75 recession (Table E.6) as well as the 1970-71 recession, some important manufacturing sectors such as primary and fabricated metals, non-electrical machinery, electric equipment, and chemicals stabilized as major employers in weaker areas from 1975 to 1979. In fact, for some sectors, the 1974-1975 recession might be seen as a thinning out that had begun in the late 1960's.* The sectors that survived in weaker economies were probably much more competitive in terms of plant and technology. Thus, the electric equipment sector, which lost 37 percent of its employment from 1967 to 1974 and another 13 percent from 1974 to 1975, might have emerged in 1975 as more of a capital goods, high-technology industry and less of a semiskilled, consumer products industry. Whatever the causes, the electric equipment sector in weaker cities had a 4 percent employment gain from 1975 to 1979 after being halved from 1967 to 1975. It is growth such as this that forestalled the worst predictions of the mid-1970's for the Nation's older manufacturing centers.**

More predictably, during the recession of 1974-75, the stronger economies did not experience the sharp job losses suffered by the weaker economies; with the exceptions of textiles and transportation equipment, stronger economies more than recovered job losses from the recession. In both weaker and stronger areas, the durable goods industries usually experienced more severe losses than non-durables.

D. Net Job Growth of Manufacturing: Growth of Firms, Productivity, and Investment

A growing literature on the behavior of firms has clarified some of the key factors in the very dissimilar growth rates of manufacturing employment in weaker and stronger economies.*** This literature will be summarized and supplemented by data on manufacturing productivity and capital investment.

Net change in employment is the sum of three factors -- the net change due to contraction and expansion of surviving plants, the net change due to the death and birth of plants, and the net change due to the inmigration and outmigration of plants. Data have shown that plant migration is insignificant, despite its publicity. Relatively few plants, in practice, leave one area for another.

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* The 1974 data used here represent employment in March 1974. For a few cities the recession began in November 1973 and continued beyond March 1975. However, the 1974-75 period represents the year with the largest employment decline.

** The weaker economies have not maintained their employment levels since the recession in the automobile and steel industries. (See Table D.1 in Appendix D, which shows that unemployment has increased most in large cities in the North Central region.) In 1979, these economies emphasized the automobile component of transport, the rubber component of rubber and plastics, and the primary metals that went into automobiles.

*** See Allaman and Birch (1975), Birch (1981), Schmenner (1981), and Wolman (1981) for further discussion of the issues raised in this section.

Table E.6

The Impact of Recession and Recovery on Manufacturing Industries in Large Urban Counties, 1974-75 and 1975-79

	Percent Change in Employment							
	1974-75 Recession				1975-79 Recovery			
	Weaker Economies[a]	Moderate Economies	Stronger Economies	U.S.	Weaker Economies	Moderate Economies	Stronger Economies	U.S.
Manufacturing (Total)	-13%	-10%	-6%	-10%	5%	13%	25%	17%
Durable Goods								
Primary Metals	-13	-8	-11	-8	5	2	20	5
Fabricated Metals	-18	-13	-7	-12	14	18	22	23
Non-Electric Machinery	-10	-11	-3	-5	5	8	32	18
Electric Machinery	-13	-16	-17	-16	4	16	48	24
Transport Equipment	-21	-3	-6	-8	12	12	4	26
Lumber	-21	-20	-13	-20	10	39	68	34
Furniture	-15	-19	-13	-20	5	39	31	29
Stone-Glass	-18	-21	-14	-15	4	15	28	14
Instruments	-14	-3	-2	-3	-4	12	43	22
Miscellaneous	-14	-13	-3	-14	3	2	34	12
Non-Durable Goods								
Food	-7	-6	-5	-6	-9	-2	9	6
Textiles	-25	-15	-17	-17	-13	47	13	7
Apparel	-16	-10	-14	-14	1	28	14	13
Printing-Publishing	-4	-6	-4	-3	7	9	23	16
Chemicals	-7	-4	-2	-6	-1	8	16	11
Rubber-Plastics	-18	-20	-15	-16	14	32	56	37
Paper	-17	-13	-9	-9	10	9	17	12
Petroleum-Coal	1	0	-1	-1	11	0	0	9
Leather	-21	-5	-8	-15	3	36	18	6

Source: County Business Patterns (1974, 1975, 1979)

a. Figures without New York City were very similar.

Even more interesting is the finding that the rate of employment loss due to complete closedown (or "death") of plants is not very dissimilar in weaker and stronger cities or across regions. What is more dissimilar is that new plants and new employment are created at a much greater rate in stronger areas. Thus, the relative inability of weaker economies to attract new plants to replace closed plants explains most of their lag on net employment change due to plant births and deaths. Expansion and contraction of existing plants also play an important role in employment changes. On balance, however, the dynamic influences of expansion and birth contributed more to disparities in net employment growth in the 1970's than the restraining influences of contraction and death. There is no single reason why manufacturing employment is expanded and created much more in one area than another. But certain influences have been suggested -- space to expand, lower wages for less skilled industries, nonunionization, educational and labor skills for advanced industries, entreprenuerial and capital innovation, and space and defense contract patterns.

The ability of weaker central cities to retain certain industrial functions and avoid an undue share of plant deaths is suggested by some rough measures of employee productivity -- the value-added per employee and the ratio of value added to wages per employee. Although value-added and wages per employee depend upon the type of industry (e.g., its capital intensity), trends can be revealing. What they show for 1967-77 when city ratios are averaged, is that manufacturing employees in weaker central cities showed a level and growth of value-added and a ratio of value-added to wages comparable to those of workers in their own suburbs and workers in stronger central cities and their suburbs.*

Given a competitive showing on value-added measures, why did the net number of manufacturing workers fall so much in the weaker cities when it increased appreciably in the stronger cities? An important reason is that net job growth is dependent upon growth from births and expansions as well as upon the retention of existing jobs, and weaker central cities and their metropolitan areas had significantly lower volumes of new manufacturing investment per worker than stronger central cities (primarily in the South and West). As shown in Table E.7, the cumulative capital investment per worker between 1967 and 1977 in weaker central cities equaled $9,051, compared to $13,954 in stronger cities. Expressed in real terms (1967 dollars), the weaker economies experienced an annual rate of decline of 1 percent in capital investment between 1972 and 1977, compared to an annual rate of increase of 8 percent in the stronger economies. The relative dearth of new investment in weaker economies resulted in a net loss of manufacturing jobs because of the lack of newly capitalized job growth to replace normal job loss. Moreover, new investment data probably overstate the net increase in the productive capital stock of weaker economies by including their disproportionate replacement of obsolete and depreciated capital equipment.

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* Value-added equals the value of the firm's product when shipped minus the cost of materials, supplies, and energy consumed. The value-added to payroll ratio therefore measures the increase in product value attributable to the firm for each dollar spent on its employees. Between 1967 and 1977 the average of this ratio for the 12 weaker central cities increased from 1.91 to 2.11, which compares favorably with the 1.85 to 1.98 increase for stronger central cities.

Table E.7

Manufacturing Capital Investment in 30 Large Central Cities and Their Metropolitan Areas, 1967-77[a]

		Weaker Economies	Moderate Economies	Stronger Economies
Cumulative Capital Investment Per Worker 1967-1977:[b]				
Central City		$ 9,051	$10,656	$13,954
SMSA		12,119	12,354	19,094
Annual Percent Change in Real Capital Investment:				
Central City	1967-72	-2%	- 6%	-5%
	1972-77	-1	5	8
SMSA	1967-72	-2	- 8	- 6
	1972-77	1	4	15
Percent Change in Real Capital Investment Between 1972 and 1977 in 28 Large Metropolitan Areas:[c]				
Food		15%	- 5%	72%
Textiles		-80	-50	d
Apparel		-20	-38	7
Printing		- 7	-62	- 5
Chemicals		- 5	40	54
Fabricated Metals		-12	- 5	65
Non-Elect. Machinery		- 8	14	214
Elect. Machinery		35	- 1	154
Transportation Equip.		-12	2	47
Instruments		- 1	172	235

a. Of the cities listed in Table E.1, data were not available for Hartford, New Orleans, St. Louis, Norfolk, San Francisco, and Nashville.

b. In this case, dollar figures are undeflated; in the remainder of the table, all investment expenditures are converted to 1967 dollars.

c. Instead of using the central city rankings, these 28 SMSAs were ranked according to the economic weakness of the metropolitan area (see the second column of Table 3.1). Data were not available for the El Paso and San Antonio metropolitan areas.

d. Due to extremely small 1972 figures, a high growth rate was obtained which would be misleading.

Capital investment is also a vehicle for introducing technological advances. Table E.7 shows that stronger metropolitan areas experienced especially rapid rates of increase in real capital investment between 1972 and 1977 in high-technology industries such as chemicals (54 percent), fabricated metals (65 percent), non-electrical machinery (214 percent), electrical machinery (154 percent), transportation equipment (47 percent), and instruments (235 percent). On the other hand, weaker metropolitan areas exhibited declines in real capital investment in five of these six industries. These investment patterns further reinforce the earlier findings on the shift of the seedbed function.*

V. Finance and Services - A Closer Inspection**

The real opportunity for expansion of the older central cities is frequently seen to be office services (finance, data processing, headquarters offices, corporate law), medical services, tourism, and education. Nationally, these services have been growing very rapidly, and many counties under study are already well represented. For example, in 1979 the 34 counties accounted for 43 percent of the Nation's employment in legal services and 37 percent of employment in banking. The high demand for these services means that they can be exported to national markets, as well as used to satisfy local demands. Because of their magnitude and recent rapid growth, they are seen as having the potential to offset employment losses in manufacturing in central cities.

Because of a clustering of potential strengths (institutional identification, centralized interaction, and specialized support services), weaker urban economies were expected to share in the post-industrial leap in financial and service industries. These expectations were half-fulfilled. Although the growth of weaker economies in these sectors was well below national rates and failed to compensate for losses in other sectors, finance and services nevertheless provided the only net job growth these areas enjoyed from 1967 to 1979. Providing over 40 percent of private employment in weaker (and stronger) economies, finance and services merit an inspection below the aggregate level.***

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* See Sullivan et al. (1981) for a regional analysis of capital investment in large central cities.

** The discussion of finance and services draws heavily from Perloff (1978), Richardson (1978), Holland and Leven (1978), Mollenkopf (1980), James (1980) and Hirschorn (1979).

*** Data for most services are presented under two Bureau of the Census categories: Finance, Insurance, and Real Estate, which will be called the "finance sector"; and Services, which includes such services as personal, business, and medical. (One shortcoming of the data is that they do not include administrative employment in manufacturing firms.)

A. The Finance Sector

The finance sector includes banking, credit agencies, broker services, insurance carriers, and real estate agents. This sector provides "white-collar" jobs primarily to professionals, administrators and managers, and sales and clerical workers. Nationally, its employment grew by 61 percent between 1967 and 1979, compared an overall national growth for employment of 42 percent. In 1979, the 34 counties under study accounted for over 41.5 percent of total employment in this sector.

The finance sector in 1979 formed a larger share (12 percent) of total employment in the weaker economies than in stronger economies (8 percent). But among weaker economies, this employment and its growth was much more highly concentrated in regional and international finance centers such as New York, Philadelphia, and Boston than in industrial centers such as St. Louis and Detroit (Wayne County).

Table E.8 presents the major subsectors of the finance sector. Banking, the largest subsector (27 percent) of the finance sector in weaker economies, grew a substantial 38 percent from 1967 to 1979. But it provided much less job growth from 1974-79 (6 percent) than from 1967-74 (30 percent). This decrease in growth rates was also marked in stronger economies, with banking employment from 1974-79 increasing only 14 percent, after a 59 percent increase from 1967 to 1974. Increased automation and decentralization as well as a retrenchment from earlier overexpansion accounted for much of this slowdown.

Almost as important as banking in weaker economies, the insurance carrier sector maintained fairly steady job levels, with no gain from 1974 to 1979 after a mild (3 percent) loss from 1967 to 1974. In stronger economies, insurance maintained its position as the largest financial sector (26 percent) by growing 34 percent from 1967 to 1979 in response to the enlarged population of these areas.

Although stronger economies grew faster than weaker in banking and insurance, the disparity in growth was often less than in other sectors of finance or in other industrial sectors. That is, banking and insurance showed considerable strength in weaker economies, where they were most important. Despite a diminished population, these economies were able to maintain or expand the national or international basis of their banking and insurance sectors.*

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* There has been some caution expressed about the likelihood of the finance sector of older central cities continuing to grow (Richardson, 1978). For instance, clerical workers are increasingly replaced by computers, and communications improvements have lessened the need to locate central offices in downtown locations. This is consistent with the much lower rate of growth for the finance sector in weaker economies over the 1974-79 period.

TABLE E.8

The Growth and Distribution of Employment in Major Finance Industries in Large Urban Counties, 1967-1979

	Weaker Economies		Moderate Economies		Stronger Economies		U.S.
	1979 Distribution of Employment[a]	Percent Change 1967-79	1979 Distribution of Employment[a]	Percent Change 1967-79	1979 Distribution of Employment[a]	Percent Change 1967-79	Percent Change 1967-79
Total Finance[b]	100% (100%)[c]	15% (14%)[c]	100%	51%	100%	87%	61%
Banking	27.4 (23.6)	38 (29)	24.9	62	19.7	81	70
Credit Agencies	6.2 (8.1)	-.2 (-11)	11.0	56	12.7	94	67
Securities Brokers	10.0 (4.2)	13 (4)	4.7	56	3.6	84	40
Insurance Carriers	26.8 (35.2)	-3 (-2)	26.0	29	25.9	34	30
Insurance Agents	6.6 (7.7)	30 (26)	7.8	57	9.4	142	82
Real Estate	16.4 (13.7)	-5 (7)	19.1	37	22.6	139	67

Source: County Business Patterns (1967, 1979)

a. The component sectors will not sum to 100 percent because certain minor categories (e.g., investment companies) are excluded.

b. Frequently referred to as the FIRE sector -- Finance, Insurance, and Real Estate.

c. Parenthesized values exclude New York City.

In the other subsectors making up the finance sector, weaker economies showed a moderate job loss from 1974 to 1979 and performed even worse than average relative to stronger economies. Many of these subsectors serviced only local needs that were undercut by the outmigration of middle-income residents from older core areas. The real estate sector highlights these local economic differences. Though still forming 16 percent of finance employment in weaker economies, this sector showed a 5 percent job loss from 1967 to 1979 (despite considerable growth after the 1974-75 recession). Forming an even greater percentage (23 percent) of employment in the high-construction stronger economies, real estate employment grew 139 percent from 1967 to 1979 (despite a 6 percent loss during the 1974-75 recession). The disparity in real estate growth accords with the disparity in growth of construction in the weaker and stronger economies.

B. Services

As shown in Table E.9, the service category includes a wide variety of services -- legal, business, accounting, hotels, health, repair, and personal -- and therefore provides jobs across several occupations. Some pay high wages (legal services) but many pay low wages and rely heavily on unskilled and semi-skilled labor (amusement, personal, and repair services). Nationally, services have exhibited the highest growth rate (88 percent) since 1967 of any major employment category. This growth has made services an attractive sector on which to base central city development.

Similar to the finance sector, services accounted for a much larger percentage of employment in "regional" cities such as New York, Philadelphia, Boston, and New Orleans than in more industrial cities such as Detroit, Birmingham, St. Louis, and Cleveland. However, as noted earlier, the economies of most cities are becoming more service-oriented.

B.1 Business Services

As with the finance sector, the components of the service sector vary widely with respect to growth rates and locational tendencies. First, consider "office work" services that seem most closely related to the finance sector. Contributing about one-third of service employment, these sectors include legal, business, and miscellaneous (e.g., accountants, bookkeepers) services. In weaker economies, employment in these services increased by 39 percent during the 1967-79 period, somewhat more than the 30 percent increase om the remaining service sectors. In particular, legal and business services exhibited very high growth rates, 82 percent and 41 percent, respectively (see Table E.9).

Business-related services accounted for a much higher share of private employment growth in New York, Boston, and New Orleans than in industrial areas such as Detroit and St. Louis. In fact, from 1972 to 1977 (before the full effects of the 1977-79 recovery could be felt), many older industrial central cities lost jobs in business-related services. The suburbs of these cities, however, often showed a rapid growth in business-related service jobs, suggesting a relocation of business service functions

TABLE E.9

The Growth and Distribution of Major Sectors of Service Employment in Large Urban Counties, 1967-1979[a]

	Weaker Economies		Moderate Economies		Stronger Economies		U.S.
	1979 Distribution of Employment[b]	Percent Change 1967-79[c]	1979 Distribution of Employment[b]	Percent Change 1967-79	1979 Distribution of Employment[b]	Percent Change 1967-79	Percent Change 1967-79
Total Services	100%	33%	100%	67%	100%	123%	88%
Legal	4.1	82	3.6	150	2.7	199	135
Business	22.1	41	21.5	88	25.4	246	128
Miscellaneous (e.g., accounting)	5.8	14	5.3	18	6.9	131	70
Personal	4.2	-42	4.7	-23	5.7	9	-6
Automobile	2.8	16	3.4	52	3.6	78	73
Miscellaneous Repair (e.g., plumbing)	1.5	10	1.7	30	2.1	123	67
Health Services	27.4	65	24.9	100	24.2	127	114
Hotels	3.9	-9	4.8	21	6.3	78	52
Amusement	2.8	11	3.9	89	3.6	105	78
Private Education	9.9	37	8.3	72	5.5	55	60
Non-Profit Organizations	6.4	-22	7.7	15	6.6	37	27

Source: County Business Patterns (1967, 1979)

a. Excluded are the financial job categories of Table E.8. The component categories will not sum to 100 percent because certain minor categories (e.g., motion pictures) are excluded.

b. In 1979, services accounted for 28 percent of total employment in the weaker urban counties, 26 percent in the moderate counties, and 24 percent in the stronger counties.

c. Excluding New York resulted in somewhat higher values for Total Services (41 percent), Legal (100 percent), Business (53 percent), Hotels (16 percent), and Amusement (27 percent), and a lower value for non-profit organizations (-14 percent).

within the metropolitan area (see Table E.10).* Although not as well understood as the decentralization of manufacturing, the critical forces in the decentralization of services seem to be the contracting supply of qualified clerical workers in central cities contrasted with growing labor pools in the suburbs; central city "push" factors such as high corporate and personal taxes, congestion, poor schools, and crime; and the diminished ties of headquarters offices to central business locations due to advances in transportation and communication technologies (Richardson, 1978).

The growth of business-related services in weaker economies was modest compared to stronger economies. Complementing success in the finance sector and in high-technology manufacturing, stronger economies doubled or tripled their business-related service employment from 1967 to 1979.** Such employment also increased in growing cities because they have been highly successful in attracting the headquarters of many new trade and service industries (James, 1980). The declining cities have been much less successful in attracting such establishments.***

B.2 Health Services

Health services were the largest single component of services in weaker economies (27 percent) as well as the second largest (24 percent) in stronger economies. Though outdistanced by growth rates in stronger economies (127 percent) and the Nation (114 percent), health services exhibited impressive growth (65 percent) in weaker economies. Indeed, this growth (230,000 net jobs) was absolutely essential to the partial stabilizing of

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* As shown in Table E.9, legal services show lesser tendency to move to the suburbs than business services (e.g., computer services, advertising, and consulting).

** Mollenkopf (1980) notes that services are not only the most rapidly growing sector in stronger areas, but they also strongly influence industrial production in these areas. For instance, goods produced in the South and West are often not consumed by industry but by service organizations: aircraft for transportation and defense industries, electronics for defense and information processing, and computers for all who process data.

*** Despite the above concerns, older central cities still retain numerous advantages in terms of location and public infrastructure that should assist them in developing service economies. Furthermore, a large proportion of finance and services is already concentrated in the older areas of the North. For instance, in 1979 the counties around large cities located in the Northeast and North Central regions accounted for major portions of the Nation's employment in banking (31 percent), broker services (57 percent), insurance carriers and agents (47 percent), legal services (27 percent), and business services (33 percent).

weaker economies job base from 1967 to 1979. An industry that especially serves the elderly, that can be spatially concentrated, that is technologically advanced but offers some job mobility to the less skilled -- the health industry seems perfectly adapted for the developed central city.

It is unclear whether health services will continue their rapid rate of increase during the 1980's, especially in older cities. An increasingly dispersed population might decrease the number of visits to city health facilities. Cities might face a reduced demand for health services if the middle-income elderly leave the metropolitan area and if the unprecedented growth of public subsidies to health care since 1965 is curtailed by budget constraints.

B.3 Other Services

With respect to the remaining service categories, private employment in weaker economies increased over the 1967-79 period in private education (37 percent), automobile services (16 percent), miscellaneous repairs such as plumbing (10 percent), and amusement (11 percent) and decreased in hotel services (-9 percent), personal services (-42 percent), and non-profit organizations (-22 percent). The large decline in personal services (dry cleaners, beauty shops) as well as the relatively low rates of growth in repair activities are partially explained by the outflow of population and income from central cities.* These services resemble the declining retail trade sector. While hotel and lodging employment decreased over the 1967-79 period, it increased 18 percent during 1974-79, probably reflecting an increase in convention and tourist business (Kasarda, 1980). Indeed, except for private education, the growth rates for this diverse group of services were much higher during 1974-79 than during 1967-74.

B.4 Recession and the Performance of Services

It is often argued that one advantage in emphasizing growth of service employment is its low sensitivity to the business cycle, particularly important because of the large proportion of low-skilled jobs accounted for by services. To address this issue, Table E.11 provides data on the changes in services employment during the 1974-75 recession.

Although there was much variation among individual sectors, most sectors in weaker economies lost jobs, but the rate of loss tended to be much less than the 13 percent loss for manufacturing.

In finance and services, some categories (e.g., business, personal, and repair services) experienced declines of over 7 percent, while others (e.g., health, legal, and social services) showed job gains. The stronger

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* As shown in Table E.10, personal, automobile, and miscellaneous repair services have decentralized to the suburbs, obviously following income and population.

TABLE E.10

Percentage Change in Selected Services Employment
for 36 Central Cities and Their Suburbs, 1967-72 and 1972-77

	Weaker Economies								Stronger Economies			
	1967-1972				1972-1977				1967-1972		1972-1977	
	Central Cities		Suburbs		Central Cities		Suburbs		Central Cities	Suburbs	Central Cities	Suburbs
Total Services	12%	(19%)[a]	72%	(75%)	-4%	(-6%)	35%	(39%)	45%	123%	28%	48%
Business	11	(21)	118	(147)	0	(-6)	55	(62)	65	183	36	84
Legal[b]	—	—	—	—	3/	(30)	c	(67)			64	60
Engineering[b]	—	—	—	—	-2	(-2)	33	(33)			74	62
Personal	-28	(-27)	4	(7)	-25	(-25)	.8	(2)	-9	55	-5	15
Automobile	7	(15)	48	(49)	-9	(-15)	30	(34)	19	92	24	57
Miscellaneous Repair	-11	(-10)	39	(42)	-3	(-5)	31	(32)	7	89	34	116

a. Parenthesized values excluded New York City.

b. Data not available for 1967.

c. Data not available for New York City.

TABLE E.11

Percentage Change in Nonmanufacturing Employment During the 1974-75 Recession and 1975-79 Recovery in Large Urban Counties

	Weaker Economies				Stronger Economies		U.S.
	1974-75		1975-79		1974-75	1975-79	1974-75
Total Finance	-2%	(26%)[a]	4%	(2%)	-2%	29%	-2%
Banking	-2	(-7)	8	(5)	-2	17	1
Credit Agencies	-3	(-4)	5	(1)	-2	47	-3
Securities Brokers	-15	(-13)	9	(8)	-6	18	-11
Insurance Carriers	4	(5)	-4	(-9)	3	19	-4
Insurance Agents	-8	(-3)	12	(9)	.3	35	-3
Real Estate	-10	(-5)	1	(7)	-6	36	-7
Total Services	-1	(-2)	17	(20)	.1	45	2
Legal	4	(4)	28	(31)	9	51	6
Business	-8	(-9)	23	(17)	-6	77	-4
Miscellaneous	7	(.9)	4	(13)	2	70	3
Personal	-8	(-7)	-6	(-7)	-6	17	-5
Automobile	-3	(-5)	21	(30)	-9	52	-3
Miscellaneous Repair	-7	(-6)	19	(25)	0	54	-1
Health Services	3	(3)	19	(23)	8	30	6
Hotels	-1	(0)	20	(29)	1	38	1
Amusement	-3	(-2)	26	(23)	4	37	1
Private Education	-2	(-4)	18	(28)	3	32	2
Non-Profit Organizations	-.5	(-1)	2	(9)	3	27	2
Social Services	18	(11)	36	(46)	8	56	11
Retail Trade	-5	(-5)	3	(6)	-4	31	-1
Wholesale Trade	-5	(-3)	4	(3)	-2	31	-3
Transportation and Utilities	-3	(-3)	-4	(5)	-2	18	-4
Construction	-19	(-18)	1	(7)	-12	35	-16

Source: County Business Patterns (1974, 1975, 1979)

a. Parenthesized values exclude New York City.

counties suffered declines in several categories, but their declines were generally less than those experienced in the weaker counties. Overall, these results show that while services are not as sensitive as manufacturing to the business cycle, several of them are not totally immune from economic slowdowns, particularly the more business-related services in weaker economies and those that are income-dependent.*

VI. Conclusions

Central cities of large metropolitan areas have often been the most adversely affected by shifts in population and employment. Their traditional basic industry -- manufacturing -- has not shared in national economic growth for several years. Moreover, many industrial cities have lost large portions of their manufacturing sector to increased competition from smaller cities and abroad. This Appendix has discussed many of the employment changes affecting large urban areas during the 1970's. Because their problems have been most severe, the discussion focused on the employment and investment trends of cities and counties with weaker economies, located primarily in the Northeast and North Central regions.

The findings of this Appendix can be summarized as follows:

-- Weaker urban areas never fully recovered from losses of manufacturing jobs in the early and mid-1970's, but their recovery from 1975 to 1979 defied the predictions of continued industrial disinvestment made in the mid-1970's. A major problem of weaker cities during the 1970's was their inability to attract high-growth, high-technology industries that were locating in the South and West.

-- The problems of weaker central cities were compounded by the sluggish growth of their metropolitan areas. Employment growth in several older suburban areas slowed between 1967 and 1977, and in some cases even declined.

-- Since 1967, several finance and service sectors -- health, business, legal -- have shown growth in weaker central cities and their metropolitan areas. However, this growth fell short of national growth rates in these sectors and was not enough to compensate for job loss in manufacturing, construction, wholesale and retail trade, and transportation and utilities.

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* Note also in Table E.11 that retail and wholesale trade, transportation and utilities, and construction -- nonmanufacturing industries tied closely to income and business trends -- experienced decreases in employment during 1974-75 in both weaker and stronger economies.

-- Since 1967, several finance and service sectors -- health, business, legal -- have shown growth in weaker central cities and their metropolitan areas. However, this growth fell short of national rates in these sectors and was not enough to compensate for job loss in manufacturing, construction, wholesale and retail trade, and transportation and utilities.

-- The stronger central cities and their metropolitan areas and counties -- located primarily in the South and West -- have grown rapidly in all major industrial categories, but particularly in business-related services and high-technology manufacturing.

A final point that stands out is the diversity that exists among weaker economies in terms of their recent job changes and their shifts from a manufacturing-based economy to a post-industrial service economy. While in most cases services have not grown enough to offset losses of manufacturing jobs, some weaker economies have maintained or even enlarged many of their roles as national and international service centers.

K.M 2/10/93
Note. This stuff is interesting, but what's it have to do with the CDBG formula? (Appendix E) (Help justify inclusion of job change data in needs index)

APPENDIX F

CORRELATIONS AMONG DISTRESS VARIABLES USED IN CHAPTER 2

This Appendix provides technical support for the analysis of city diversity in Section III.C of Chapter 2. The first section examines the extent to which city rankings on distress variables (e.g., poverty, unemployment) used in Chapter 2 are related to rankings on population change. The second section reports correlations of population change with changes in distress variables. The third section examines the extent to which cities are ranked similarly on the different distress variables. The final section looks at the 1970 characteristics of those cities whose relative position worsened during the 1970's.

I. Population Change and Distress Variables

The analysis of individual distress variables in Chapter 2 showed that problems of low income, unemployment, and crime are on average greater in declining than in growing areas, but there are numerous exceptions. To examine this more closely, the Spearman correlation of each distress indicator with population change was computed.* The results are reported in Table F.1. If cities are ranked on a particular indicator exactly as they are ranked with respect to population change (or in the exact reverse order), the correlation coefficient will equal plus (or minus) one. If the two rankings are completely independent, the correlation coefficient will equal zero.

The correlation coeficients in Table F.1 show that except for age of housing the distress indicators are only moderately associated with population change. Furthermore, the correlations of distress indicators with population change are much higher for large than small cities. For instance, the correlation between population change and poverty equals -0.50 for cities over 200,000 population, but only - 0.14 for cities under 200,000 population. Similar differences in correlation coefficients exist for the unemployment and crime rates.

The lack of a strong correlation between the distress indicators and population change in small cities reflects not only the different stages of development of cities in the sample -- that is, many higher income Northern cities have begun to decline while many lower income Southern

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* To keep the discussion as simple as possible, Spearman rank-order correlations are used in this Appendix and Chapter 2. Spearman correlations focus on the extent to which rankings of cities on two variables are related. Pearson product-moment correlations -- which are based on city values on the different variables instead of only on city rankings -- are used in the analysis of community development need in Chapter 3 and Appendices H and J.

Table F.1 Correlation of Selected Distress Variables with Percent Change in Population, 1970 to 1980

	Large Cities (Over 200,000)	Small Cities (Under 200,000)
Number of Cities	74	554
Level of:		
Poverty Rate, 1980	-.50[a]	-.14
Real Per Capita Income, 1979	.34	.17
Unemployment Rate, 1981	-.51	-.26
Violent Crime Rate, 1980	-.55	-.09
Percent of Pre-1940 Housing Units	-.90	-.68
Change in:		
Poverty Rate, 1970-80	-.65	-.28
Real Per Capita Income, 1969-79	.61	.39
Unemployment Rate, 1970-81	-.55	-.39
Nonmanufacturing Employment, 1967-77	.90	.65
Manufacturing Employment, 1967-77	.82	.56
Violent Crime Rate, 1976-80	-.20	-.03

a. Spearman correlations focus on the extent to which rankings of cities on each variable are related.

cities are growing -- but also the unique circumstances that small cities tend to face. For instance, small cities in the South and West may experience above-average rates of unemployment because their economies are dominated by a single industry that has begun to decline. The poverty rates for relatively well-off "college towns" can be quite high due to low incomes of students. Such considerations make it difficult to predict small-city conditions using a single indicator such as population decline.

II. Population Change and Changes in Distress Variables

Table F.1 also reports correlations of population change with changes in each distress indicator. As the data indicate, population change is more closely associated with changes in distress than with levels of distress. For instance, population change in large cities exhibits a 0.61 correlation with change in income, compared to only a 0.34 correlation with level of income. Similarly, for small cities the correlation of population change with change in income is 0.39, compared to 0.17 with level of income.

III. Correlation Among the Distress Variables

A related issue is the extent to which the distress indicators are correlated across cities. Table F.2 reports correlations among variables that are focused on in Chapter 2. As a rule, poverty, unemployment, job loss, crime, and aged housing are related in the expected direction. For example, poverty is related positively with unemployment, crime, and aged housing and negatively with changes in employment. However, in many cases, the relationships do not appear to be very strong, particularly for cities under 200,000 population. For the small cities, the correlations of aged housing with poverty, unemployment, crime, and nonmanufacturing job changes equalled 0.32, 0.31, 0.03, and -0.69, respectively; the corresponding correlations for cities over 200,000 were 0.45, 0.53, 0.52, and -0.89. Poverty is also more closely associated with other distress indicators in larger than in smaller cities.

The degree to which recent changes in distress indicators are correlated can be seen from Table F.3. Increases in the poverty rate and decreases in per capita income are highly correlated with declines in manufacturing and nonmanufacturing employment, particularly for cities over 200,000 population.

IV. 1970 Conditions and Changes in Conditions During the 1970's

Another issue concerns the 1970 characteristics of cities whose relative position worsened during the 1970's. Preliminary information on this issue is provided by correlations between changes in distress indicators and initial (1970) levels of distress indicators (see Table F.4). For example, changes in the rate of poverty in central cities exhibited a -0.34 correlation with the 1970 poverty rate. Therefore, there was some

Table F.2 Correlations Among Distress Variables[a]

	Poverty Rate	Per Capita Income	Unemployment Rate	Violent Crime	Pre-40 Housing	% Change in Nonmfg. Employment	% Change in Mfg. Employment
Poverty Rate, 1980	1.00						
Per Capita Income, 1979	-.75 (-.79)	1.00					
Unemployment Rate, 1981	.63 (.42)	-.51 (-.46)	1.00				
Violent Crime, 1980	.59 (.55)	-.21 (-.30)	.44 (.26)	1.00			
Pre-40 Housing, 1980	.45 (.32)	-.27 (-.34)	.53 (.31)	.52 (.03)	1.00		
% Change in Nonmfg. Employment, 1967-77	-.58 (-.38)	.35 (.37)	-.58 (-.35)	-.66 (-.25)	-.89 (-.72)		
% Change in Mfg. Employment, 1967-77	-.48 (-.21)	.27 (.27)	-.51 (-.30)	-.55 (-.10)	-.82 (-.62)	.86(.65)	1.00

a. For each pair of variables in the table, the first number is the Spearman correlation for CDBG entitlement cities with populations of at least 200,000, while the number in parenthesis is the Spearman correlation for CDBG entitlement cities with populations below 200,000.

Table F.3 Correlations Among Changes in Distress Variables[a]

Change in	Change in: Poverty Rate 1970-80	Per Capita Income, 1969-79	Unemployment Rate, 1970-81	Violent Crime, 1976-80	Nonmfg. Employment, 1967-77	Mfg. Employment, 1967-77
Poverty Rate, 1970-80	1.00					
Per Capita Income, 1969-79	-.83 (-.59)	1.00				
Unemployment Rate, 1970-81	.42 (.14)	-.52 (-.27)	1.00			
Violent Crime, 1976-80	.17 (.17)	-.16 (-.20)	.04 (.10)	1.00		
Nonmfg. Employment 1967-77	-.70 (-.37)	.70 (.63)	-.49 (-.38)	-.30 (-.16)	1.00	
Mfg. Employment 1967-77	-.72 (-.41)	.63 (.54)	-.51 (-.28)	-.27 (-.09)	.86 (.65)	1.00

a. The first number is the Spearman correlation for CDBG entitlement cities over 200,000; the number in parenthesis is the Spearman correlation for CDBG entitlement cities under 200,000.

Table F.4 Rank Order Correlations Between 1970 Conditions and Changes in Conditions During the 1970's

1970 Conditions	Change in Poverty Rate, 1970-80	Change in Per Capita Income, 1969-79	Percent Change in Non-Mfg Employment, 1972-77	Percent Change in Population, 1970-80	Change in Unemployment Rate, 1970-81	Change in Percent Black, 1970-80
Poverty Rate, 1970						
Central Cities	-.34[a]	-.06	-.07	-.04	-.07	.14
Over 200,000	-.19	-.05	-.17	-.13	.39	.25
Under 200,000	-.37	-.06	-.04	-.02	.05	.10
Satellites	.19	-.45	-.24	.06	-.11	.27
Percent Pre-1940 Housing, 1970						
Central Cities	.42	-.48	-.64	-.72	.33	.13
Over 200,000	.65	-.64	-.82	-.89	.47	.50
Under 200,000	.39	-.46	-.63	-.70	.30	.06
Satellites	.12	-.61	-.61	-.54	.40	.11
Percent Change in Population, 1960-1970						
Central Cities	-.14	.30	.55	.69	-.31	-.10
Over 200,000	-.41	.49	.66	.80	-.44	-.47
Under 200,000	-.08	.26	.52	.67	-.30	-.02
Satellites	-.16	.56	.66	.70	-.36	-.01
Unemployment Rate, 1970						
Central Cities	.09	-.11	-.02	-.01	-.10	.03
Over 200,000	.19	-.23	-.04	-.06	-.10	.03
Under 200,000	.07	-.09	-.01	.00	-.10	.02
Satellites	.26	-.11	.00	.08	-.37	.16

a. The Spearman correlations show the closeness of city rankings on two variables. The -0.34 correlation indicates that there was some tendency for central cities with high 1970 poverty rates to experience declines in poverty rates during the 1970's.

tendency for central cities with high poverty rates in 1970 to experience some decline in poverty rates during the 1970's. This tendency was greater among small central cities, which exhibited a -0.37 correlation, than among large central cities, which exhibited a -0.19 correlation.

The stronger correlations, however, relate to aged housing. Large central cities that had high percentages of older housing in 1970 tended to experience larger increases (or smaller declines) in poverty (a 0.65 correlation) and unemployment (0.47) rates, and declines (or slower growth) in per capita income (-0.64) and nonmanufacturing employment (-0.81). These correlations suggest that the situation of older cities worsened during the 1970's relative to newer cities. While a similar conclusion holds for central cities under 200,000 population, the correlations were slightly smaller, particularly the correlation (0.39) between 1970 aged housing and changes in poverty rates.*

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* For a multivariate analysis that relates poverty, income, population, and employment to initial levels of these and other variables (such as crime, aged housing, and unemployment), see Chapters 4, 5, and 6 of Bradbury, et al., (1982).

APPENDIX G

THE USEFULNESS OF THE ANNUAL HOUSING SURVEY IN CDBG FORMULA RESEARCH--INDIVIDUAL CITY DATA

This Appendix provides technical support for Chapter 3, which examined the distribution of community development need across CDBG entitlement cities. The first section discusses additional insights gained by supplementing data on quantitative indicators (e.g., poverty and aged housing) of city problems with data from the Annual Housing Survey on urban residents' perceptions about their houses and neighborhoods. The second section examines the extent to which the indicators used in developing the need index are correlated with problems, as reported in the Annual Housing Survey. The third section shows that 1980 poverty is a much better proxy than 1970 poverty for housing and neighborhood conditions such as abandoned and rundown housing. The final section shows that respecifying pre-1940 housing to include aged units occupied by either renters or poor persons increases that variable's association with housing and neighborhood problems.

I. Annual Housing Survey Data -- A Supplement to Quantitative Indicators

As discussed in Chapter 3, the main shortcoming of studies such as this is reliance on indirect surrogates, rather than direct measures of urban problems. There will always be questions concerning the extent to which socioeconomic variables are reliable proxies for conditions such as neighborhood blight. A second, related limitation of past studies of city distress has been their reliance on objective indicators of conditions such as those discussed in Chapter 3. This approach has resulted in the neglect of qualitative aspects of city distress; for example, the perceptions or expectations of residents about the adequacy of local public services and their neighborhoods as places to live.

Using subjective indicators is an approach which attempts to measure city distress through "the eyes of the consumer and is thus a more direct measure than is commonly used" (Shin 1977). Whereas the objective approach attempts to connect the objective characteristics of a city and its level of distress, the subjective approach attempts to measure the level of distress as experienced by residents. Although there exists some dissagreement concerning the reliability of verbal reports of satisfaction and dissatisfaction with such things as neighborhood services, Shin (1977, pp. 209-210) states that "it is generally agreed that direct assessments of the perceptions and evaluations of the citizen...are necessary for the proper interpretation of the objective measures." Furthermore, increased citizen satisfaction with their neighborhood and public services is a goal of several Federal aid programs. For instance, the goals of the CDBG program include increasing the level of public services to low-income persons and making urban neighborhoods more viable places to live. Certainly, citizens' evaluations are of importance in achieving these objectives.

For these reasons, the analysis of quantitative variables is supplemented with data from HUD's Annual Housing Survey (AHS) on housing and neighborhood problems in 38 large central cities.* While there has been much aggregative analysis of AHS data, such as that in Chapter 6 and Appendix L of this Report, there has been much less use of individual city-level data from this survey.**

The housing and neighborhood conditions focused on are defined in Table G.1. Most indicators -- rundown housing, cracks and holes in walls, inadequate police services -- were chosen because they particularly affect lower income persons or relate directly to the current uses of CDBG funds.*** On each indicator in Table G.1 a higher percentage shows worse conditions. The incidence, or percentage, of an AHS indicator will be related to the incidence of the quantitative indicators, providing a better "feel" for what the quantitative variables are measuring. Except

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* Sponsored by HUD and conducted annually since 1974 by the U.S. Bureau of the Census, the Annual Housing Survey provides a wealth of information on the size and composition of the housing inventory, the characteristics of its occupants, housing and neighborhood quality, the characteristics of recent movers, and the characteristics of urban and rural housing units. The data for 38 central cities were obtained from the 1976, 1977, and 1978 SMSA samples of the Annual Housing Survey. These surveys were conducted in 55 selected SMSAs divided into three groups (20, 20, and 15). Enumeration for the first group began in April 1975 and continued through March 1976; for the second group covered April 1976 through March 1977; and for the third group covered April 1977 through March 1978. (The number of central cities is less than the number of SMSA's sampled because for some SMSA's confidentiality rules made it impossible to separate central city portions.) While the time lag is longer than one would like, cross-sectional patterns on such variables as abandonment and neighborhood conditions are unlikely to exhibit rapid change.

** See McDougall and Bunce (1983) for an example of how city-level data from the Annual Housing Survey can be used to study issues related to the equity of the distribution of local public services among socioeconomic groups.

*** As noted by Bunce and Goldberg (1979) in their analysis of pre-1940 housing, a variable such as "bothered by public transportation service" is not very informative in this context because higher-income respondents generally expressed greater dissatisfaction than lower- or middle-income residents. Additional reasons for variable selection were magnitude of effect and non-duplication of another condition. For example, "without plumbing" was not selected because it affects less than 1 percent of central city housing units.

Table G.1 Definitions of Housing and Neighborhood Problems from HUD's Annual Housing Survey[a]

I. Housing Problems	
A. Specific Housing Deficiencies	
Electric*	No working electric outlet or exposed wiring.
Broken Plaster*	Broken plaster on the ceiling or inside walls.
Cracks or Holes*	Open cracks or holes in the interior walls or ceiling, or holes in floors.
Rats/Mice*	Signs of rats and mice in last 90 days.
B. Overall Housing Condition	
Poor or Fair	Resident rates the house as only a poor or fair (i.e., not a good or excellent) place to live.
Inadequacy Index	Housing unit is considered inadequate if respondent indicates the presence of one or more of 10 housing conditions such as frequent toilet and heating breakdowns, exposed wiring, etc. (see Appendix L for a complete definition).
II. Neighborhood Conditions and Services	
A. Specific Neighborhood Problems	
Abandonment: Observed by Interviewer	Abandoned and/or boarded-up buildings observed on street.
Rundown Housing: Present*	Occupied housing in the neighborhood is in rundown condition.
Litter	Trash, litter, or junk in streets (roads), in empty lots, or on properties in the neighborhood.
Crime	Presence of neighborhood crime on streets.

Table G.1 (cont'd.)

B. Overall Neighborhood Condition	
Poor or Fair	Resident rates the neighborhood as only a poor or fair (i.e., not a good or excellent) place to live.
III. Inadequate Public Services	
Police	Police protection is considered inadequate.
Schools	Schools are considered inadequate.
Streets	Streets are continually in need of repair.
IV. Bothered By*	The resident is bothered by the presence of the undesirable conditions listed above (the data are provided on an individual problem basis). The "bothered by" responses show more intense conditions than the "presence of" responses in I-III above.
V. Wish to Move Because of	
Housing Deficiencies	The conditions (one or more: basement or roof leaks, open cracks/holes in floors, broken plaster, peeling paint) are so bothersome that resident would like to move.
Specific Problems*	Data are provided separately for those undesirable conditions that are so bothersome that resident would like to move.

a. Data are for 38 large central cities surveyed between 1976 and 1978. For variables marked with an asterisk (*), the sample is reduced to 35 large central cities surveyed between 1974 and 1976. The latter group excludes St. Paul, Oakland, Everett, and Madison, but includes Chicago. Otherwise, the cities are the same.

for one variable, "abandonment," all of the conditions in Table G.1 reflect the views of interviewees. For example, the data presented for items such as "the neighborhood is rated only a poor or fair place to live" are based on the individual respondent's opinion of conditions in the neighborhood. As noted in Table G.1, several problems identified in the AHS are expressed as "being bothersome" and "being so bothersome that the resident would like to move from the neighborhood." These express the existence of a housing or neighborhood problem more intensely than "presence of" the problem. They were typically tied more closely to lower income household status than "presence of."

II. Quantitative Need Indicators and Housing and Neighborhood Problems

As an example of how intercity data from the Annual Housing Survey can be used, consider the correlations in Tables G.2, G.3, and G.4.* These show the extent to which the quantitative need variables are related to selected housing (Table G.2), neighborhood (Table G.3), and public service (Table G.4) problems, as defined by AHS data in 38 large central cities. In comparing two quantitative need indicators, the one with higher correlation is the better proxy for the problem being considered. In general, need variables show rather high correlations with most AHS indicators of housing and neighborhood problems.** For example, residents of cities with high poverty

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* The cities were as follows: (1976 survey) Baltimore, Birmingham, Buffalo, Cleveland, Denver, Honolulu, Houston, Indianapolis, Louisville, New York, Oklahoma City, Sacramento, and St. Louis; (1977 survey) Seattle, Everett, Boston, Dallas, Detroit, Fort Wayne, Los Angeles, Long Beach, Madison, Minneapolis, St. Paul, Newark, Phoenix, Pittsburgh, and Washington; (1978 survey) Atlanta, Cincinnati, Columbus, Kansas City, New Orleans, Philadelphia, Rochester, San Diego, San Francisco, and Oakland.

** Of course, a variable may be justified as a need indicator for reasons other than its correlation with the specific AHS variables in Tables G.2 to G.4. For example, employment decline (CEMPLOY) was included because it is a direct measure of economic problems, not because of its association with neighborhood conditions. Similarly, some AHS indicators are more relevant than others for particular need indicators. For example, residents' perceptions of their neighborhoods and police services are probably more informative than perceptions of their dwelling units for examining the reliability of the crime variable as a proxy for community development problems. Because there is no completely accurate method for identifying which AHS indicators are relevant for which need indicators, the correlations for all quantitative need indicators are included in the tables. The pattern of correlations across the different types of AHS problems and the correlations for some of the broader AHS problems should probably be focused on when examining particular indicators.

Table G.2 Correlations Between Need Indicators and Housing Problems in 38 Large Central Cities

Quantitative Need Indicators	Resident Rates House Only Poor or Fair	Composite Index of Housing Inadequacy	Resident Wishes to Move Because of Housing Deficiencies	Broken Plaster/ Peeling Paint	Cracks and Holes
Percent Poor	.83[a]	.54	.82	.76	.70
Per Capita Income	-.57	-.26	-.61	-.52	-.42
Percent Female-Headed	.82	.51	.83	.78	.77
Percent Minority	.82	.57	.70	.53	.65
Percent Low Education	.76	.37	.74	.60	.59
Percent Pre-1940 Housing	.28	.21	.43	.72	.30
Percent Renter Problems	.55	.50	.55	.64	.43
Percent Overcrowding	.51	.35	.28	.22	.30
Unemployment Rate	.53	.14	.46	.61	.39
Percent over 65	-.06	-.14	-.01	.31	-.12
Population Density	.51	.45	.64	.85	.48
Violent Crime Rate	.86	.56	.79	.71	.60
Total Crime Rate	.37	.17	.27	.04	.16
Change in:					
Percent Poor	.60	.21	.66	.67	.50
Per Capita Income	-.54	-.11	-.57	-.62	-.39
Population, 1970-80	-.41	-.11	-.47	-.66	-.39
Population, 1960-80	-.36	-.23	-.48	-.66	-.39
Households, 1970-80	-.49	-.16	-.52	-.71	-.43
Percent Black, 1970-80	.36	.20	.30	.25	.17
Percent Black, 1960-80	.70	.39	.65	.63	.58
Nonmfg. Employment, 1967-77	-.57	-.23	-.57	-.74	-.48

Source: Annual Housing Survey; see Table 3.1 of Chapter 3 and Table G.1 for definitions of variables.

a. All correlations are unweighted Pearson correlation coefficients.

Table G.3 Correlations Between Need Indicators and Neighborhood Problems in 38 Large Central Cities

Quantitative Need Indicators	Resident Rates Neighborhood As Only Poor or Fair	Abandoned Buildings in Neighborhood	Litter in Neighborhood	Resident Wishes to Move Because of: Rundown Housing in Neighborhood	Resident Wishes to Move Because of: Neighborhood Crime
Percent Poor	.83[a]	.66	.64	.63	.64
Per Capita Income	-.66	-.72	-.44	-.64	-.58
Percent Female-Headed	.85	.74	.64	.66	.65
Percent Minority	.82	.52	.56	.33	.44
Percent Low Education	.81	.75	.59	.60	.57
Percent Pre-1940 Housing	.46	.57	.57	.53	.46
Percent Renter Problems	.53	.17	.37	.29	.53
Percent Overcrowding	.32	-.04	.00	.00	.22
Unemployment Rate	.65	.63	.38	.51	.59
Percent over 65	.05	.15	.29	.05	-.05
Population Density	.62	.53	.63	.44	.65
Violent Crime Rate	.83	.55	.70	.50	.54
Total Crime Rate	.31	.11	.30	.10	.08
Change in					
Percent Poor	.72	.76	.39	.62	.74
Per Capita Income	-.71	-.73	-.45	-.63	-.68
Population, 1970-80	-.52	-.60	-.51	-.58	-.45
Population, 1960-80	-.49	-.51	-.64	-.52	-.42
Households, 1970-80	-.59	-.62	-.56	-.60	-.51
Percent Black, 1970-80	.48	.48	.25	.30	.27
Percent Black, 1960-80	.77	.70	.52	.57	.53
Nonmfg. Employment, 1967-77	-.68	-.66	-.60	-.59	-.57

Source: Annual Housing Survey; see Table 3.1 of Chapter 3 and Table G.1 for definitions of variables.

a. All correlations are unweighted Pearson correlation coefficients.

Table G.4 Correlations Between Need Indicators and Public Service Conditions in 38 Large Central Cities

Quantitative Need Indicators	Police Protection Inadequate	Schools Inadequate	Streets Need Repair	Resident Wishes to Move Because of Inadequate Public Service
Percent Poor	.56[a]	.44	.29	.65
Per Capita Income	-.40	-.36	-.33	-.54
Percent Female-Headed	.52	.48	.21	.71
Percent Minority	.46	.40	.27	.48
Percent Low Education	.50	.36	.42	.55
Percent Pre-1940 Housing	.33	.47	.15	.33
Percent Renter Problems	.50	.22	.02	.54
Percent Overcrowding	.20	.01	.01	.29
Unemployment Rate	.36	.40	.11	.72
Percent Over 65	.04	.19	-.18	-.18
Population Density	.53	.37	.15	.48
Violent Crime Rate	.60	.52	.05	.63
Total Crime Rate	.07	.21	-.17	.19
Change in:				
Percent Poor	.51	.41	.03	.72
Per Capita Income	-.49	-.40	-.06	-.59
Population, 1970-80	-.27	-.43	-.11	-.35
Population, 1960-80	-.35	-.49	-.13	-.33
Households, 1970-80	-.36	-.49	-.08	-.42
Percent Black, 1970-80	.14	.35	.17	.17
Percent Black, 1960-80	.39	.51	.15	.53
Non-Mfg Employment 1967-77	-.44	-.56	-.04	-.49

Source: Annual Housing Survey; see Table 3.1 of Chapter 3 and Table G.1 for definitions of variables.

a. All correlations are unweighted Pearson correlation coefficients.

rates are more apt to consider their houses (a 0.83 correlation) and neighborhoods (also a 0.83 correlation) only poor or fair places to live.

Some variables -- e.g., poverty, female-headed households -- show high correlations with practically all of the housing and neighborhood problems, while others -- overcrowding and percent elderly -- are related to only a few. Overcrowding shows moderate correlations with housing problems but very low correlations with neighborhood and public service problems. Compared to overcrowding, poverty shows higher correlations with all types of problems.

The trend variables -- e.g., change in per capita income -- are also related to urban problems in the expected direction. For example, residents of cities with smaller gains in per capita income are more likely to rate their neighborhoods as only poor or fair places to live (a -0.71 correlation). The reliability of a trend variable as a proxy for urban problems in large central cities can depend on the specific time interval. For example, the change in percent black exhibits higher correlations with the AHS indicators if defined over the period 1960 1980, as compared with 1970-1980.

The correlation of a quantitative need variable with the AHS indicators can also differ depending on how it is aggregated. The violent crime rate shows much higher correlations with the AHS indicators than the total crime rate, which includes property as well as violent crimes. For instance, violent crime shows a 0.60 correlation with inadequate police services, compared to a 0.07 correlation for total crime. The violent crime rate obviously reflects more intense problems than the total crime rate.

Table G.5 shows that correlations for components of the minority population differ substantially. The percent black shows a much closer association with problems than the percent Hispanic. The percent Hispanic exhibits low (in some cases, inverse) correlations with practically all of the housing and neighborhood problems listed in Table G.5.

III. Poverty as a Proxy for Urban Problems

Poverty was not updated during the 1970's, meaning that HUD necessarily used 1970 data to proxy conditions in the late 1970's and early 1980's. As discussed in Chapters 2 and 3 and Appendix H, the recent increases in the incidence of poverty in the older cities have made it a much broader indicator of urban problems. Evidence of the increased "proxy value" of 1980 over 1970 poverty is given in the first two columns of Table G.5, which correlates the two poverty measures with indicators of housing and neighborhod problems in large central cities. For practically all of the problems considered -- e.g., abandoned houses, rundown neighborhoods, poor opinion of dwelling units, inadequate public services -- 1980 poverty is much more closely associated with the problem than 1970 poverty. For instance, the 1980 poverty rate showed a -0.66 correlation with the percentage of abandoned housing units, compared to a -0.36 correlation for 1970 poverty.

Table G.5

Correlations of Poverty, Aged Housing, Urban Ethnic Composition and Composite Needs Index with Direct Indicators of Housing and Neighborhood Problems, 38 Large Central Cities

	Poverty Rate		Pre-1940 Housing				Urban Ethnic Composition		
	1970	1980	Total	Renter-Occupied	Owner-Occupied	Poverty Occupied	Black, 1980	Spanish Origin, 1980	Composite Needs Index
I. Housing Problems									
A. Housing condition is rated as only poor or fair	.68[a]	.83	.28(.33)[b]	.45	.05	.56	.75	.16	.78
B. Housing Inadequacy Index	.56	.54	.22(.24)	.39	.01	.35	.51	.13	.42
C. Specific Housing Deficiencies									
1. Electric	-.03	.14	.50(.50)	.48	.42	.41	.20	-.29	.39
2. Broken plaster	.55	.76	.70(.72)	.78	.46	.78	.59	-.13	.82
3. Open cracks and holes	.57	.70	.29(.31)	.40	.11	.52	.70	-.03	.67
4. Signs of mice and rats	.61	.58	-.05(.00)	.07	-.16	.23	.64	.09	.47
II. Neighborhood Problems									
A. Neighborhood is rated as only a fair or poor place to live	.61	.83	.46(.52)	.58	.24	.71	.72	.14	.85
B. Presence of undesirable conditions									
1. Abandoned buildings	.36	.66	.57(.62)	.53	.48	.77	.58	-.19	.77
2. Rundown housing	.22	.45	.60(.64)	.56	.51	.63	.04	-.11	.60
3. Litter	.58	.64	.57(.59)	.68	.32	.66	.55	.00	.69
4. Crime	.01	.10	.30(.28)	.38	.16	.22	.03	.38	.21

(continued on next page)

Table G.5 (Continued)

Correlations of Poverty, Aged Housing, Urban Ethnic Composition and Composite Needs Index with Direct Indicators of Housing and Neighborhood Problems, 38 Large Central Cities

	Poverty Rate		Pre-1940 Housing				Urban Ethnic Composition		
	1970	1980	Total	Renter-Occupied	Owner-Occupied	Poverty Occupied	Black, 1980	Spanish Origin, 1980	Composite Needs Index
III. Inadequate Public Services									
1. Police	.39	.56	.33(.36)	.50	.09	.49	.36	.28	.55
2. Schools	.29	.44	.47(.50)	.49	.35	.53	.39	.02	.54
3. Streets need repair	.36	.29	.15(.20)	.22	.04	.34	.30	-.07	.21
IV. Occupant is Bothered by Undesirable Conditions									
1. Abandoned buildings	.32	.62	.61(.65)	.59	.48	.83	.51	-.15	.75
2. Rundown housing	.22	.42	.58(.62)	.56	.46	.67	.22	-.20	.56
3. Litter	.43	.57	.52(.56)	.61	.30	.68	.50	-.16	.66
4. Crime	.09	.35	.33(.37)	.48	.09	.40	.07	.32	.40
V. Occupant Wishes to Move Because of Undesirable Conditions									
1. Housing deficiencies	.63	.82	.43	.58	.19	.66	.68	.03	.78
2. Abandoned buildings	.35	.65	.56(.61)	.58	.40	.80	.55	-.12	.76
3. Rundown housing	.39	.62	.53(.59)	.57	.37	.73	.46	-.17	.72
4. Litter	.49	.71	.48(.55)	.60	.24	.73	.60	-.07	.76
5. Crime	.32	.64	.46(.54)	.60	.22	.67	.40	.12	.70
6. Inadequate school services	.20	.41	.35(.39)	.44	.18	.47	.29	.33	.48
7. Inadequate police services	.29	.51	.26(.30)	.45	.03	.44	.29	.33	.52
8. Inadequate public services	.35	.65	.33(.40)	.49	.10	.55	.44	.11	.66

SOURCE: Annual Housing Survey. See Table G.1 and Section I above for variable definitions and discussion of the sample.

a. All correlations are unweighted Pearson correlation coefficients.

b. Correlations in parenthesis are based on 1970 aged housing. The other 4 sets of correlations for pre-1940 housing are based on 1980 aged housing.

The recent shifts in the incidence of poverty mean that its "proxy value" has increased relative to the percentage of aged housing, which has experienced less drastic changes than the poverty rate. To see this, consider the correlations reported in the first four columns of Table G.5. In general, 1970 poverty shows higher correlations with housing problems, and aged housing shows higher correlations with the neighborhood problems.* However, with the 1980 Census data, poverty shows higher correlations than aged housing on most of the housing and neighborhood problems. For example, 1970 aged housing exhibited a 0.62 correlation with abandoned buildings compared with a 0.36 correlation for 1970 poverty. With the 1980 data, the correlation for poverty rises to 0.66, while that for aged housing declines only slightly (0.57). Similar shifts in correlations occur across most of the AHS indicators considered in Table G.5. The following correlations show the differences in 1980 between poverty and aged housing as proxies for housing and neighborhood problems in large cities: only fair or poor housing (0.83 for poverty compared with 0.28 for aged housing); only fair or poor neighborhoods (0.83 versus 0.46); abandoned buildings (0.66 versus 0.57); occupant wishes to move because of inadequate public services (0.65 versus 0.33); and occupant wishes to move because of neighborhood crime (0.64 versus 0.46).

IV. The Components of Pre-1940 Housing Units as Proxies for Urban Problems

Table G.5 presents correlations for the components of pre-1940 housing -- aged units occupied by renters, owners, and poor households. As expected from the 1979 study, summarized in Chapter 6 of this Report, renter-occupied aged units exhibit higher correlations with housing and neighborhood problems than owner-occupied aged units. For instance, renter-occupied aged units exhibited a 0.45 correlation with overall opinion of the neighborhood, compared to a 0.05 correlation for owner-occupied aged units. Similar differences existed on many other AHS indicators. (The most notable exceptions were abandoned buildings and rundown housing in the neighborhood, where the differences in correlations were small.)

The 1979 study and Chapter 6 of this Report emphasize that housing and neighborhood problems are particularly concentrated in aged units occupied by low-income households. This finding, based on aggregate data, shows up in the individual city data as rather high correlations between the AHS indicators and the percentage of pre-1940 units occupied by poor households (see the sixth column in Table G.5). This category has a 0.71 correlation with overall opinion of the neighborhood, which is higher than the correlations for all aged units (0.47), renter-occupied aged

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* There are some exceptions, notably the higher correlation of 1970 poverty with overall opinion of the neighborhood. It should be emphasized that the correlations show how 1970 poverty and aged housing data were proxying housing and neighborhood problems in the late 1970's, not 1970. For purposes of argument, this is the relevant comparison because 1970 data for poverty were used in the CDBG formula through FY '82, and 1970 data for aged housing continued to be used in FY '83. The discussion that follows shows that the "proxy value" of poverty increases relative to aged housing when 1980 data are considered.

units (0.58), and owner-occupied aged units (0.24). Poverty-occupied aged units exhibit particularly high correlations with the "bothered by" and "wish to move" measures; this reflects the intensity of problems among this group of households.

Another example of a quantitative measure of concentrations of problems exhibiting high correlations with the AHS indicators is the composite need index (see last column of Table G.5). Among the quantitative measures considered, the need index is the most closely associated with housing and neighborhood problems. This supports its use as a criterion for assessing the distribution of CDBG funds across large central cities.

The analysis in this Appendix illustrates the usefulness of AHS data for analyzing urban problems at the individual city level. Unfortunately, individual city data exists only for a small sample of large central cities. (However, this sample accounts for a significant percentage -- 40 percent -- of CDBG funds.) It remains a question whether the relationships for smaller central cities and suburban cities are similar to those for large central cities.* Chapter 6 and Appendix L analyze these areas in an aggregate manner.

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* Some of the relationships would probably appear stronger if data on suburban cities were available. Several older suburbs with high rates of homeownership and aged housing have relatively low rates of poverty and housing and neighborhood problems (see Section II.B.3 of Chapter 6). Hence, the relative differences in correlations with the AHS indicators for aged units occupied by owners, renters, and poor households would almost certainly persist if data on individual suburban cities were included in the analysis.

APPENDIX H

CORRELATIONS AMONG NEED VARIABLES

This Appendix focuses on the relationships among need indicators discussed in Chapter 3. The first section briefly discusses the correlation matrix for all need indicators; the second section examines poverty as a proxy for urban problems. A final section shows the correlations of per capita CDBG amounts with need indicators.

I. Need Indicator Correlations

Table H.1 shows intercity correlations among need indicators.* As expected, age of housing (P40HOUSE) exhibits high correlations with all population and economic decline variables (for example, change in employment, -0.75; change in the number of households, -0.76; change in population between 1970 and 1980, -0.73; and change in population between 1960 and 1980, -0.76). The percentage of the population in poverty (POVERTY) is highly correlated with percent minority (0.79), percent female-headed households (0.73), per capita income (-0.68), violent crime rate (0.67), the percent of working-aged population employed (-0.66), and renter housing problems (0.61). It should be noted that poverty exhibited correlations between 0.40 and 0.60 with all other need indicators except percentage of the population over 65. Female-headed households were also either highly or moderately correlated with most of the indicators. Population density was highly correlated with renter problems (0.70) and moderately correlated with crime (0.57), aged housing (0.55), and changes in households (-0.51), employment (-0.50), and retail sales (-0.55).

II. Poverty -- a Broader Indicator of Urban Problems

Table H.1 shows that not all need variables are highly correlated, suggesting that community development problems are multi-dimensional. However, compared with results from previous formula reports based on 1970 Census data, Table H.1 suggests that need indicators are more closely related in 1980 than in 1970. Poverty is much more highly correlated with other indicators than in 1970. The first column of Table H.2 reports correlations of poverty in 1970 with other 1970 indicators of city problems; the third column does the same for poverty in 1980. Poverty in 1980 is not only more highly correlated with most static indicators of need -- e.g., the unemployment rate (0.46 in 1980 versus 0.01 in 1970), low education (0.73 versus 0.54), female-headed households (0.85 versus 0.67), minority population (0.80 versus 0.64), and aged housing (0.45 versus 0.21) -- but also trend indicators such as change in

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* As explained in Chapter 3, each city is weighted by population in the correlation analysis. The correlations are Pearson correlation coefficients.

Table H.1 Weighted Correlations Among Need Variables, CDBG Entitlement Cities[a]

	POVERTY	INCOME	FEMALEH	EMPRATE	UNEMRATE	WOHSED	MINORITY	CRIME	DENSITY	RPROBLEM	POPAGE65	P40HOUSE
POVERTY	1.00											
INCOME	-.67	1.00										
FEMALEH	.84	-.52	1.00									
EMPRATE	-.66	.63	-.56	1.00								
UNEMRATE	.46	-.44	.51	-.58	1.00							
WOHSED	.73	-.69	.66	-.51	.52	1.00						
MINORITY	.79	-.42	.77	-.44	.34	.69	1.00					
CRIME	.67	-.25	.72	-.36	.34	.48	.67	1.00				
DENSITY	.42	-.09	.42	.28	.26	.36	.38	.57	1.00			
RPROBLEM	.61	-.18	.53	-.30	.14	.32	.52	.67	.70	1.00		
POPAGE65	.24	-.12	.17	-.12	.20	.25	-.01	.23	.27	.19	1.00	
P40HOUSE	.45	-.33	.49	-.34	.43	.45	.17	.36	.55	.37	.64	1.00
CHOUSE	-.49	.30	-.58	.40	-.47	-.53	-.35	-.50	-.51	-.34	-.59	-.80
CPOP6080	-.48	.30	-.50	.32	-.40	-.48	-.31	-.40	-.40	-.27	-.59	-.76
CPOP7080	-.40	.24	-.49	.33	-.39	-.45	-.24	-.39	-.39	-.21	-.56	-.73
CRSALES	-.52	.28	-.61	.36	-.47	-.49	-.38	-.55	-.55	-.44	-.55	-.78
CEMPLOY	-.59	.41	-.61	.42	-.49	-.55	-.43	-.52	-.50	-.44	-.55	-.75
CHPBLACK	.41	-.30	.55	-.37	.35	.28	.42	.27	.15	.14	-.01	.21
OVERCRWD	.47	-.23	.30	-.20	.09	.45	.68	.44	.33	.57	-.17	-.09
CPOVERTY	.39	-.21	.53	-.35	.39	.37	.33	.50	.60	.50	-.16	.53
CINCOME	-.59	.56	-.56	.54	-.46	-.58	-.42	-.50	-.60	-.56	-.43	-.65
CUR7081	.36	-.40	.42	-.44	.81	.53	.24	.22	.30	-.00	.24	.46
POVINP40	.72	-.52	.71	-.55	.53	.65	.43	.53	.61	.48	.53	.89
P40RENT	.52	-.29	.54	-.33	.37	.47	.29	.50	.76	.63	.52	.90

a. These variables are defined in Table 3.1 of Chapter 3.

Table H.1 Weighted Correlations (Con't)

	CHOUSE	CPOP-6080	CPOP-7080	CRSALES	CEMPLOY	CHPBLACK	OVERCRWD	CPOVERY	CINCOME	CUR8170	POVINP40	P40RENT
CHOUSE	1.00											
CPOP6080	.85	1.00										
CPOP7080	.92	.84	1.00									
CRSALES	.85	.79	.79	1.00								
CEMPLOY	.81	.78	.75	.92	1.00							
CHPBLACK	-.37	-.27	-.34	-.35	-.35	1.00						
OVERCRWD	-.03	.02	.08	-.11	-.16	.00	1.00					
CPOVERTY	-.59	-.40	-.48	-.59	-.51	.37	.17	1.00				
CINCOME	.67	.53	.54	.69	.71	-.37	-.28	-.70	1.00			
CUR7081	-.48	-.41	-.45	-.43	-.44	.34	-.06	.36	-.44	1.00		
POVINP40	-.79	-.72	-.69	-.76	-.75	.33	.07	.58	-.70	.53	1.00	
P40RENT	-.73	-.66	-.63	-.74	-.70	.19	.10	.58	-.68	.39	.86	1.00

Table H.2 Variations Over Time in Correlations of Poverty and Aged Housing With Selected Need Indicators

Selected Static Indicators	1970 Poverty with 1970 Problems	1970 Poverty with 1980 Problems	1980 Poverty with 1980 Problems	1970 Pre-40 Housing with 1970 Problems	1970 Pre-40 Housing with 1980 Problems	1980 Pre-40 Housing with 1980 Problems
Unemployment	.01[a]	.25	.46	.02	.46	.43
Employment Rate	NA	-.50	-.67	NA	-.36	-.34
Without Education	.54	.55	.73	.58	.47	.45
Female-headed HH's	.67	.57	.85	.59	.52	.49
Minority	.64	.64	.80	.09	.20	.17
Crime[b]	.31	.40	.67	.22	.36	.36
Renter Housing Problems	NA	.34	.62	NA	.38	.38
Overcrowding	.54	.40	.48	-.10	-.08	-.09
Density	.12	.06	.42	.55	.52	.55
Poverty	1.00	.82	1.00	.21	.49	.45
Pre-40 Housing	.21	.19	.45	1.00	.99	1.00
Trend Indicators						
Change in:						
Population (previous decade)	-.18	-.13	-.40	-.31	.72	-.73
Nonmfg. Employment[c]	NA	-.31	-.59	NA	-.76	-.75
Retail Sales[c]	-.26	-.17	-.52	-.56	-.77	-.78
Percent Black (Previous Decade)	.16	.19	.41	.35	.24	.21

a. The Pearson correlation coefficients are weighted by total population. See Table 3.1 in Chapter 3 for definitions of variables.

b. The total crime rate was used instead of the violent crime rate because 1970 data on the latter were not available on HUD's computer file. The violent crime rate was used in all other instances in this report.

c. In the case of "1970 problems," the percent changes in nonmanufacturing employment and retail sales were defined from 1962 to 1967; "1980 problems" were defined from 1972 to 1977.

population (-0.40 versus -0.18) and retail sales (-0.52 versus -0.26). During the 1970's, the poverty rate fell in many growing areas and increased in many older declining areas, with the result that poverty is now a better proxy for problems such as unemployment and slow growth in retail sales.*

Comparison of correlations in the second and third columns of Table H.2 show the disadvantages of being unable to update a variable to reflect current conditions. The 1970 poverty rate exhibits rather low correlations with most indicators of problems in 1980. For example, the 1970 poverty rate -- used in the CDBG formula to proxy conditions in the late 1970's and early 1980's -- exhibited a 0.25 correlation with the 1980 unemployment rate; the 1980 rate, on the other hand, shows a 0.46 correlation. When a variable experiences substantial shifts, and as a result becomes a better proxy for other conditions of need, it is unfortunate that it cannot be continually updated for formula purposes.

As shown in the fifth and sixth columns of Table H.2, the correlations of aged housing with other need indicators remained about the same between 1970 and 1980. For instance, the correlation (0.36) of aged housing with crime did not change between 1970 and 1980. The correlation of poverty with crime, on the other hand, increased from 0.31 in 1970 to 0.67 in 1980. This pattern -- poverty improving as a predictor of other urban problems and age of housing remaining the same -- exists for all indicators listed in Table H.2, with the exception of overcrowded housing.

III. Correlation of CDBG Funding With Need Indicators

Table H.3 shows the correlation between the need indicators and per capita CDBG amounts in FY '82, FY '83 and FY '84. The results are similar to the decile and regression results discussed in Chapter 5. The CDBG formula shows its highest correlations with the age and decline and poverty variables.** For instance, in FY '83 formula amounts exhibit a 0.84 correlation with pre-1940 housing, a -0.72 correlation with change in nonmanufacturing employment, and a 0.70 correlation with poverty. The largest increases in correlations between FY '83 and FY '84 were for renter problems, overcrowded housing, and the Hispanic population.

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* Section III of Appendix G uses Annual Housing Survey data to show that poverty is more highly correlated with housing and neighborhood problems in large central cities than most other need indicators.

** It should be noted that a correlation coefficient shows how closely above-average values on one variable are associated with above-average values on a second variable; however, it does not show the nature of the relationship. On the other hand, the regression and decile analysis in Chapter 5 focused on the magnitude of the relationship -- i.e., slope or degree of responsiveness -- between funding and need indicators.

Table H.3 Correlations of Per Capita CDBG Amounts With Selected Need Indicators

Need Indicators	FY '82	FY '83	FY '84
Percent Poverty, 1980	.68[a]	.70	.70
Per Capita Income, 1979	-.50	-.51	-.50
Percent Female-Headed, 1980	.69	.70	.68
Percent Minority, 1980	.44	.47	.49
Percent Low Education, 1980	.62	.63	.63
Percent Pre-1940 Housing, 1980	.84	.84	.83
Percent Renter Problems, 1980	.39	.44	.48
Percent Overcrowding,1980	.08	.12	.22
Percent Employed, 1980	-.53	-.54	-.52
Unemployment Rate, 1981	.50	.52	.49
Percent over 65, 1980	.54	.52	.51
Violent Crime Rate, 1980	.50	.53	.54
Percent Black, 1980	.57	.56	.52
Percent Spanish, 1980	-.06	-.02	.07
Change in:			
Percent Poverty, 1970-80	.45	.52	.52
Per Capita Income, 1969-79	-.59	-.63	-.64
Population, 1970-80	-.70	-.68	-.64
Population, 1960-80	-.72	-.70	-.68
Households, 1970-80	-.78	-.77	-.75
Percent Black, 1970-80	.36	.37	.32
Nonmfg. Employment, 1967-77	-.72	-.72	-.72
Retail Sales, 1967-77	-.74	-.75	-.75

a. Correlations are weighted Pearson correlation coefficients.

APPENDIX I

FACTOR ANALYSIS RESULTS

I. Theoretical Model

The common factor analysis model assumes that the variability of each original variable can be divided into common and unique components. The unique components of the variables are uncorrelated with each other and with the common components. The intercorrelation among variables is accounted for by a much smaller number of hypothetical variables, which are termed common factors. Assuming that the data are standardized for m variables and n cases (cities), the factor model expressed in matrix notation is:*

$$Z_{nxm} = S_{nxp}\ A_{pxm} + U_{nxm}$$

where Z = standardized variable matrix, S = matrix of factor scores for each case on each of the p common factors, A = matrix of loadings for each variable on each common factor, and U_{nxm} = diagonal matrix of unique components.

To estimate the variance shared by the variables, the squared multiple correlation of each variable with the others was used. In the factor analysis solution process, these estimates of common variance are inserted in place of the unities in the diagonal of the variable correlation matrix. In the factor model, the uniqueness of each variable is estimated by subtracting this common variance estimate from unity.

Common factor analysis determines the matrix of factor loadings, A_{pxm}, and the matrix of factor scores, S_{nxp}. An initital solution computes A_{pxm} by determining the minimum orthogonal dimensions required to reproduce the original data linearly. In this solution, the first factor accounts for the most variance in the data, and successive factors account for decreasing proportions of variance. In this case, the first three factors accounted for 74 percent of the variation. However, these initial factors do not give a clear indication of which variables tend to "move together." To obtain a more meaningful patterning or clustering of variables, it was necessary to rotate the initial factor solution. The varimax matrix was the solution of an R-type factor analysis of the 18 need variables. An orthogonal rotation method was used to obtain simple and meaningful factor patterns. The rotated matrix also accounts for 74 percent of the variation in the data and is given in Table I.1.

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*The following discussion is based on Rummel 1970, pp. 104-113.

Table I.1 Varimax Matrix of Factor Loadings[a]

VARIABLE[b]	FACTOR 1	FACTOR 2	FACTOR 3
POVERTY	.19771	.77922	.49403
CHPBLACK	.16897	.46306	.11652
FEMALEH	.27891	.70734	.49028
CEMPLOY	-.75834	-.38690	-.29964
CHOUSE	-.87350	-.31360	-.22166
UNEMRATE	.33292	.56365	.05013
EMPRATE	-.17564	-.69463	-.14033
WOHSED	.28841	.71991	.23315
DENSITY	.38803	.07922	.65710
CRSALES	-.81216	-.28278	-.34590
CRIME	.24290	.36069	.71355
CPOP6080	-.83369	-.28550	-.14061
CPOP7080	-.85826	-.25609	-.09811
MINORITY	-.00008	.65393	.56108
INCOME	-.12142	-.77925	.01584
P40HOUSE	.82537	.21731	.20501
RPROBLEM	.15295	.14914	.85606
POP065	.68521	-.00178	.06642

a. The factors are interpreted as follows:

FACTOR 1 = Age and Decline
FACTOR 2 = Poverty
FACTOR 3 = Density

b. These variables are defined in Table 3.1 of Chapter 3.

II. An Intuitive Discussion of Factor Analysis Results*

A. Varimax Matrix

The varimax rotated factor matrix in Table I.1 shows three factors, each delineating a separate group of highly intercorrelated variables. The factors are linear combinations of the need variables and reveal relationships that cannot be easily seen from an examination of the variables in their original form. The coefficients in Table I.1 are called "factor loadings" and can be examined to determine which need variables are critical to the definition of a factor.

Factor loadings represent correlation coeficients between factors (presented in the columns) and need variables (presented in the rows). For example, the correlation between FACTOR 1 and percent of pre-1940 housing (P40HOUSE) is .82537. An estimate of the correlation between any pair of need variables can be derived from Table I.1 by multiplying the two variable loadings for each factor and then adding the three results. Using this method, it is easy to see how the high correlation between, for example, CRIME and RPROBLEM is mainly due to FACTOR 3. On the other hand, the correlation between CRIME and P40HOUSE should be relatively small because these two variables do not load highly on the same factor. This correlation interpretation of the factor loadings suggests how different variables can be used to define the different factors. As the discussion will show, the high correlations between age of housing (P40HOUSE), the decline variables (CHOUSE, CPOP6080, etc.), and FACTOR 1 will establish FACTOR 1 as the "age and decline" factor. As evidenced by their high correlations with FACTOR 1, these variables tend to "move together" as a group, separate from those variables (for example, DENSITY, and POVERTY) that define the remaining factors.

Factor loadings in a given row also represent regression coefficients with respect to a given need variable. Under this interpretation, P40HOUSE after standardization would equal

$$(.82357 \times \text{FACTOR 1}) + (.21731 \times \text{FACTOR 2}) + (.20501 \times \text{FACTOR 3})$$

It is obvious that the most important determinant of P40HOUSE is FACTOR 1. The importance of a given factor for a given need variable can also be expressed in terms of the variance in the need variable that can be accounted for by the factor. The variance of P40HOUSE accounted for by

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* The following discussion is based on Norman A. Nie et al., Statistical Package for the Social Sciences (1975, pp. 468-514) and pages 254-261 of City Need and Community Development Funding.

FACTOR 1 is equal to $(.82537)^2$, or .68. The proportion of the variance in P40HOUSE accounted for by all three factors is equal to the sum of the square loadings and is referred to as the communality of the variable.

The coefficients in a given column show the contribution of each need variable to each factor. As shown in Table I.1, the most important determinants of FACTOR 1 are CHOUSE (-.87350), CPOP7080 (-.85826), CPOP6080 (-.83369), P40HOUSE (.82537), CRSALES (-.81216), and CEMPLOY (-.75834). This pattern establishes FACTOR 1 as the "age and decline" dimension of community development need. From the above discussion and from the loadings in Table I.1, it should be obvious to the reader that RPROBLEM, CRIME, and DENSITY are highly correlated with FACTOR 3, that FACTOR 3 is the most important determinant of these variables, and that RPROBLEM, CRIME, and DENSITY are the three most important determinants of FACTOR 3. For simplicity, FACTOR 3 has been labeled the "density" dimension. Because of the high loadings of the poverty-related variables (INCOME, POVERTY, WOHSED, FEMALEH, et cetera), FACTOR 2 is labeled the "poverty" dimension of community development need.

B. Factor Scores

After the rotation matrix is obtained, the factor analysis derives the elements of the S matrix, which are called factor scores. The factor scores for each city are calculated from the factor score coefficients presented in Table I.2. These coefficients are derived from the factor loadings in Table I.1 by a method that eliminates double counting of highly correlated need variables. For example, in Table I.2, POVERTY retains the highest coefficient for FACTOR 2. This means that POVERTY, to a certain extent, is serving as a proxy for the remaining poverty-related variables (INCOME, MINORITY, FEMALEH, WOHSED) that had rather high loadings on FACTOR 2 in Table I.1. The factor score coefficients are a means of clarifying the factors by eliminating repetitive information (Schmid 1975, p. 77).

Computing a factor score for a particular city with respect to FACTOR 1 requires (a) multiplying each of the city's need variables (in standardized form) by the corresponding coefficient in the first column of Table I.2 and (b) adding the 18 results obtained in step (a). In general, a city will receive a high score on a particular factor if it has a high percentage for most need variables that define the particular factor. For example, Pittsburgh receives a high score on the age and decline dimension, New York City on density, and New Orleans on poverty. The factor scores are interpreted as per capita need scores. In other words, each city receives a per capita need score for each of three factors or dimensions of community development need. For each dimension, the average score for the population in the 593 cities in zero; positive scores indicate above-average per capita need for the factor being considered, and negative scores indicate below-average per capita need, or hardship. Clearly, these scores measure relative, not absolute hardship.

Table I.2 Factor Score Matrix[a]

VARIABLE[b]	FACTOR 1	FACTOR 2	FACTOR 3
POVERTY	-.10034	.54151	.03951
CHPBLACK	-.01854	.01281	-.01445
FEMALEH	-.12640	.27811	.04496
CEMPLOY	-.12188	-.10627	.08760
CHOUSE	-.44569	-.10507	.07560
UNEMRATE	-.01925	.11721	-.04951
EMPRATE	.01221	-.10230	.07770
WOHSED	-.00356	.10304	-.03050
DENSITY	-.03611	.01508	.14206
CRSALES	-.21307	.11749	-.14092
CRIME	-.01456	-.12002	.24691
CPOP6080	-.18211	.06086	.07932
CPOP7080	-.05900	.05438	.06037
MINORITY	-.14291	.03158	.18029
INCOME	.03390	-.20832	.16927
P4HOUSE	.19201	-.15668	.00572
RPROBLEM	-.03634	-.33261	.55639
POP065	.04548	-.06479	-.00975

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a. The factors are interpreted as follows:

FACTOR 1 = Age and Decline
FACTOR 2 = Poverty
FACTOR 3 = Density

b. These variables are defined in Table 3.1 of Chapter 3.

C. Combining the Factor Scores

To construct a single index of community development need, it is necessary to weigh each factor by its estimated importance. Ross (1975) determined the importance of the factors statistically, weighing each factor by the proportional variance explained by the factor. The proportion of common variance accounted for by each of the three factors can be easily computed from the coefficients in Table I.1. First, calculate the total amount of common variance accounted for by each factor by adding the square of the coefficients in each column of Table I.1. Doing this for the first factor yields 5.19. Next, divide this amount by the variance accounted for by all common factors. Recall that the total variance of a variable accounted for by the combination of all three factors is equal to the sum of the variable's squared factor loadings; this sum is referred to as the communality of the variable.

To obtain the variance accounted for by all factors, the 18 communalities are added. This is equivalent to summing all the squared loadings in Table I.1; this sum is equal to 14.02. The proportion of common variance explained by the first factor is therefore equal to 42 percent (5.19/12.42). The proportions of explained variance are: FACTOR 1 (42), FACTOR 2 (35), and FACTOR 3 (23). According to this weighing system, age and decline is the most important dimension of community development need.

However, the amount of variance explained by a factor should not be used to determine its importance (Nie et al. 1975, p. 478). The factor solution given by the varimax rotated matrix in Table I.1 was not obtained by extracting factors in order of importance. An initial unrotated factor solution (not presented) extracted orthogonal factors in order of importance. These unrotated factors did not yield a clear indication of which variables tend to "move together." To obtain a more meaningful patterning or clustering of variables, it was necessary to rotate this initial solution. In this case, the varimax rotation method, which assumes a fixed amount of common variance (74 percent) and a fixed number of factors (3), was used to simplify the columns of the factor matrix. In the extreme, a simple factor is defined as one with 1's and 0's in a column (Nie et al. 1975, p. 484).

More importantly, the amount of explained variance should not be used to determine the importance of each factor because the input variables can be selected to overrepresent a certain factor or dimension. The importance of a factor in a rotated solution (Table I.1) often reflects only the number of variables defining a given factor relative to the total number of variables.* For example, if the factor analysis included other variables -- such as changes in wholesale sales and service receipts -- that are highly correlated with the age and decline variables already

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* This paragraph is based on Keeler and Rogers 1973, pp. 48-49.

included in the data, the importance of the first factor, in terms of explained variance, would necessarily increase. This is because the first factor itself is highly correlated with the age and decline variables and therefore would be highly correlated with these added variables. In other words, each additional decline variable, and its variance, can be explained by the age and decline factor, which then increases the apparent importance of this dimension. This, of course, is not a significant discovery (Keeler and Rogers 1973, p. 48).*

With respect to the poverty and density dimensions of need, additional factor runs indicated that including tax effort as an input variable would increase the amount of variance explained by the density factor; including female-headed families in poverty would increase the amount of variance explained by the poverty dimension. Several factor runs were tried using different combinations of variables. In most cases, and especially with respect to the first two factors, the factors and their interpretations were quite similar to those given in Table I.1.

Because the exact number and types of need indicators input into the factor analysis cannot be justified, the importance of each factor will not be determined statistically by weighing according to explained variance. (The method used in this study to combine the factors is discussed in Chapter 3.)

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* Excluding CPOP6080 and CPOP7080 -- two variables closely related to CHOUSE -- did not significantly affect the factor results. In fact, the composite need index computed without these two overlapping variables had a 0.99 Spearman correlation with the composite need index used in Chapter 5. There was also little change in the composite need index when an oblique, rather than an orthogonal, rotation method was used. See Appendix K for other factor analyses that were tried.

APPENDIX J

CORRELATION, FACTOR, AND REGRESSION ANALYSIS RESULTS USING EQUALLY WEIGHTED CASES

In the factor and regression analyses in Chapters 3 and 5, each city's data were weighted by its 1980 population. As explained in Chapter 3, this procedure was followed because it was felt that a discrepancy (or a lack of discrepancy) between a need score and a per capita funding amount should receive more weight if it occurs in a large city, simply because of the greater number of people affected. This Appendix briefly presents the correlation, factor, and regression analysis results obtained when each city or case was given an equal weight of one.

I. Correlation Results

The unweighted correlations among various need indicators are presented in Table J.1. The main difference between the unweighted correlations and the population-weighted correlations (see Table H.1 in Appendix H) is that the unweighted correlations tend to be slightly lower, particularly correlations between the poverty-related variables and age and decline variables. This finding is not unexpected given the results of Chapter 2, which showed that variables such as poverty, crime, unemployment, and population change are more closely related to each other in large than in small cities. Hence, in the unweighted analysis, where small cities are treated as equal to large cities, there is a tendency to obtain lower correlations among variables.

II. Factor Analysis Results

The varimax factor matrix is presented in Table J.2. The three factors -- age and decline, poverty, and density -- have similar interpretations to those discussed in the text and Appendix I, based on a weighted analysis. The unweighted factor loadings on the poverty factor tend to be somewhat lower than the weighted ones (see Table I.2). This reflects the tendency of the variables to show lower correlations when each city receives an equal weight.

III. Regression Results

The multiple regression results obtained by regressing per capita funding in FY '82, FY '83, and FY '84 on the three separate dimensions of need are presented in Table J.3. The results are similar to those discussed in the text (see Table 5.7 in Chapter 5). The formula is most responsive to a unit increase in age and decline, and least to a unit increase in density. Nevertheless, the responsiveness to density has increased since FY '82 while, responsiveness to the other two dimensions has decreased.

Table J.1 Unweighted Correlations Among Need Variables, CDBG Entitlement Cities[a]

	POVERTY	INCOME	FEMALEH	EMPRATE	UNEMRATE	WOHSED	MINORITY	CRIME	DENSITY	RPROBLEM	POPAGE65	P40HOUSE
POVERTY	1.00											
INCOME	-.71	1.00										
FEMALEH	.78	-.52	1.00									
EMPRATE	-.63	.60	-.47	1.00								
UNEMRATE	.40	-.43	.40	-.46	1.00							
WOHSED	.63	-.66	.57	-.37	.47	1.00						
MINORITY	.72	-.44	.71	-.38	.25	.63	1.00					
CRIME	.59	-.31	.75	-.33	.26	.41	.64	1.00				
DENSITY	.14	-.02	.24	.00	.08	.18	.25	.24	1.00			
RPROBLEM	.59	-.31	.51	-.31	.03	.17	.41	.45	.46	1.00		
POPAGE65	.13	-.03	.08	.02	.11	.23	-.08	.06	.09	.06	1.00	
P40HOUSE	.26	-.28	.30	-.14	.28	.33	-.03	.11	.34	.21	.60	1.00
CHOUSE	-.27	.22	-.40	.23	-.27	-.41	-.18	-.31	-.34	-.11	-.48	-.72
CPOP6080	-.29	.25	-.33	.18	-.27	-.40	-.13	-.20	-.20	-.06	-.53	-.71
CPOP7080	-.17	.14	-.29	.18	-.20	-.31	-.05	-.20	-.21	-.01	-.44	-.63
CRSALES	-.30	.21	-.46	.18	-.31	-.36	-.22	-.35	-.39	-.25	-.46	-.68
CEMPLOY	-.41	.38	-.46	.29	-.33	-.45	-.26	-.33	-.29	-.27	-.48	-.66
CHPBLACK	.31	-.21	.39	-.28	.10	.08	.36	.28	.22	.31	-.13	.04
OVERCRWD	.53	-.40	.34	-.24	.17	.53	.77	.38	.23	.37	-.21	-.19
CPOVERTY	.10	-.07	.33	-.11	.12	.05	.04	.29	.41	.33	-.02	.30
CINCOME	-.47	.55	-.45	.40	-.27	-.46	-.33	-.34	-.39	-.47	-.30	-.52
CUR7081	.24	-.29	.25	-.25	.80	.45	.11	.11	.06	-.18	.22	.36
POVINP40	.62	-.53	.60	-.39	.40	.55	.25	.36	.31	.38	.50	.85
P40RENT	.32	-.30	.37	-.13	.21	.35	.04	.18	.47	.41	.51	.92

a. These variables are defined in Table 3.1 of Chapter 3.

Table J.1 Unweighted Correlations (Con't)

	CHOUSE	CPOP-6080	CPOP-7080	CRSALES	CEMPLOY	CHPBLACK	OVERCRWD	CPOVERY	CINCOME	CUR8170	POVINP40	P40RENT
CHOUSE	1.00											
CPOP6080	.82	1.00										
CPOP7080	.89	.82	1.00									
CRSALES	.77	.71	.70	1.00								
CEMPLOY	.71	.71	.64	.88	1.00							
CHPBLACK	-.23	-.09	-.17	-.22	-.23	1.00						
OVERCRWD	.05	.08	.16	-.00	-.06	.15	1.00					
CPOVERTY	-.38	-.18	-.29	-.40	-.28	.27	-.08	1.00				
CINCOME	.53	.40	.39	.58	.60	-.35	-.23	-.53	1.00			
CUR7081	-.36	-.34	-.32	-.33	-.33	.06	-.03	.12	-.27	1.00		
POVINP40	-.66	-.65	-.55	-.64	-.65	.15	.01	.29	-.55	.39	1.00	
P40RENT	-.63	-.61	-.53	-.64	-.61	.06	-.09	.34	-.54	.25	.84	1.00

Table J.2 Varimax Matrix of Factor Loadings[a]

	FACTOR 1	FACTOR 2	FACTOR 3
POVERTY[b]	.09243	.76761	.51766
CPBLACK	.05723	.14258	.44098
FEMALEH	.20495	.56735	.65943
CEMPLOY	-.76718	-.27553	-.27217
CHOUSE	-.88797	-.15818	-.19644
UNEMRATE	.22379	.54185	.03195
EMPRRATE	-.06448	-.64287	-.19989
PWOHSED	.29215	.68824	.19833
DENSITY	.28116	-.11388	.50052
CRSALES	-.82379	-.11160	-.34524
CRIME	.11256	-.36298	.63334
CPOP6080	-.86444	-.22018	-.03841
CPOP7080	-.84527	-.09669	-.06861
MINORITY	-.05831	.52841	.63436
INCOME	-.10849	-.80301	-.13855
P40HOUSE	.80101	.14387	.06636
RPROBLEM	.03467	.16487	.67786
POPAGE65	.60430	.03243	-.06624

a. Factor 1 = Age and Decline

Factor 2 = Poverty

Factor 3 = Density

b. These variables are defined in Table 3.1 of Chapter 3.

Table J.3 Multiple Regression of Per Capita Amounts on Unweighted Per Capita Need Scores

Regression Slopes for Dimensions of CD Need ($)[a]	FY '82	FY '83	FY '84
(1) AGE and DECLINE	7.39	6.88	6.47
(2) DENSITY	2.70	3.15	3.32
(3) POVERTY	5.66	5.25	4.93
Intercept ($)[b]	20.15	19.95	19.91
Other Statistics			
(4) Coefficient of Multiple Determination (R^2)	.66	.64	.61
(5) Standard Error of Estimate ($)	6.66	6.52	6.78
(6) Standard Deviation of Per Capita Amounts ($)	11.37	10.94	10.78

a. The statistics reported in this table resulted from (unweighted) regressions of the following form: Per Capita $ = a + b (AGE and DECLINE) + c (DENSITY) + d (POVERTY), where a is the intercept and b, c, and d are each a measure of slope, or the change in per capita dollars associated with a unit change in a dimension of need.

b. Since the average score for each of the dimensions of need is zero, the intercept equals the (unweighted) average per capita grant for the year being considered for the 593 cities included.

Table J.4 presents the regression results for the composite need index.* Again, the results are similar to those discussed in Chapter 5. In FY '84, the CDBG formula would continue to be responsive to city need, but at a slightly lower rate than in FY '82.

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* As indicated by a Spearman rank-order correlation of 0.97, city rankings on the weighted and unweighted need indexes were essentially the same.

Table J.4 Regression Results for Unweighted Composite Need Index for Entitlement Cities

	FY '82	FY '83	FY '84
Regression Coefficient for NEED	$15.64[a] (16.01)[b]	$14.92 (15.36)	$14.42 (14.71)
Regression Coefficient for $NEED^2$	1.60	1.95	1.18
Intercept	19.68	19.37	19.56
Coefficient of Determination (R^2)	.63	.63	.59
Standard of Error of Estimate ($)	6.94	6.68	6.93
Standard Deviation of Per Capita Amounts ($)	11.37	10.94	10.78

a. The statistics reported in this table resulted from (unweighted) regressions of the following form: Per Capita $ = a + b NEED + c $(NEED)^2$. In this case, the slope or change in per capita dollars associated with a unit change in NEED is equal to (b + 2c NEED).

The number in parenthesis is the regression slope coefficient (b) from a linear regression of the following form: Per Capita $ = a + b NEED. In this case, the change in per capita dollars associated with a unit change in NEED is equal to b.

Appendix K

ALTERNATIVE FACTOR ANALYSES

This Appendix reports results obtained when different sets of variables were included in the factor analysis. The sensitivity of the targeting results to different definitions of need are also shown.

I. Results From Including Different Sets of Need Variables in the Factor Analysis

Alternative factor analysis runs that were considered include the following:

RUN 1 Set of variables discussed in Chapter 3 and Appendix H (for comparison).

RUN 2 The main changes from RUN 1 are (1) pre-1940 housing (P40HOUSE) was subdivided into its renter-occupied (P40RENT) and owner-occupied (P40OWN) components; (2) renter problems (RPROBLEM) and real per capita income (INCOME) were not included. Pre-1940 housing was disaggregated because Annual Housing Survey data show that aged renter units are much more problem-oriented than aged owner units. RPROBLEM and INCOME were not included in the 1979 study.* This set of variables resulted in three factors whose interpretations were similar to those of RUN 1 but more similar to those of the 1979 study. Poverty and density had higher weights on their respective factors than on RUN 1 (see Table K.1). Most importantly, the density factor had more of a "large city" or "urban" interpretation than under RUN 1, and less of an "overcrowding" and "Hispanic" interpretation.

RUN 3 The only change from RUN 2 is that overcrowding (OVERCRWD) is reintroduced. This set of variables is therefore practically the same as in the 1979 study. The main reason for including it is to test the sensitivity of the targeting results to the treatment of the overcrowding variable. As shown in Table K.1, overcrowding, population density, crime, and minority population all have loadings above .60 on the third factor. Compared to RUN 2, the third factor in RUN 3 has more of a "overcrowding" and "Hispanic" interpretation; in addition, poverty has a higher loading on the third factor under RUN 3. The factor loadings for RUN 3 are quite similar to RUN 1 (see Table I.1 in Appendix I).

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* However, overcrowding was included in the 1979 study; dropping RPROBLEM, which includes renter-occupied overcrowded units, means that RUN 2 does not include any measure of overcrowding. RUN 3 will show the effects of reintroducing overcrowding, but as a separate variable.

Table K.1 Varimax Matrices for Alternative Factor Analyses (RUN 2 and RUN 3)[a]

RUN 2

	Age and Decline	Poverty	Density
POVERTY	.25	.80	.34
CHPBLACK	.13	.58	-.13
FEMALEH	.29	.86	.20
MINORITY	-.00	.75	.50
CEMPLOY	-.79	-.40	-.18
UNEMRATE	.34	.57	-.03
EMPLRATE	-.17	-.65	.01
WOHSED	.30	.63	.26
DENSITY	-.09	.04	.89
CRSALES	-.82	-.37	-.18
CRIME	.28	.48	.53
CPOP6080	-.82	-.30	-.02
CPOP7080	-.84	-.35	.08
CHOUSE	-.87	-.39	-.03
P40RENT	.73	.23	.29
P400WN	.78	.13	-.35
POPAGE65	.73	-.05	-.01

RUN 3

	Age and Decline	Poverty	Density
POVERTY	.22	.73	.48
OVERCRWD	-.22	.23	.71
CHPBLACK	.15	.55	.01
FEMALEH	.29	.76	.39
CEMPLOY	-.75	-.40	-.27
CHOUSE	-.85	-.36	-.16
UNEMRATE	.32	.56	.05
EMPLRATE	-.18	-.65	-.14
WOHSED	.28	.61	.38
DENSITY	.45	.05	.63
CRSALES	-.81	-.32	-.27
CRIME	.28	.39	.63
CPOP6080	-.81	-.31	-.09
CPOP7080	-.83	-.31	-.03
MINORITY	-.01	.67	.63
P40RENT	.75	.14	.42
P400WN	.78	.23	-.26
POPAGE65	.71	.00	-.00

a. See Table 3.1 in Chapter 3 for variable definitions and Table I.1 in Appendix I for the varimax matrix for RUN 1.

Table K.2 Varimax Matrix for Alternative Factor Analysis (RUN 4)[a]

	Factor 1	Factor 2	Factor 3	Factor 4
POVERTY	.18	.67	.42	.46
CHPBLACK	.14	.22	.60	-.01
FEMALEH	.25	.45	.71	.37
CEMPLOY	-.73	-.31	-.24	-.30
CHOUSE	-.85	-.19	-.31	-.20
UNEMRATE	.32	.48	.26	.06
EMPRATE	-.17	-.62	-.31	-.14
WOHSED	.28	.70	.21	.27
DENSITY	.36	.04	.09	.72
CRSALES	-.78	-.18	-.28	-.33
CRIME	.21	.20	.44	.63
CPOP6080	-.81	-.21	-.20	
CPOP7080	-.84	-.12	-.31	-.07
BLACK	.17	.31	.87	.15
SPANISH	-.27	.27	-.29	.52
INCOME	-.12	-.86	-.11	-.02
RPROBLEM	.12	.12	.14	.88
P40RENT	.68	.16	.09	.53
P40OWN	.82	.22	.04	-.19
POPAGE65	.70	.05	-.06	.08

a. The factors are interpreted as follows:

Factor 1 = Age and Decline

Factor 2 = Low Income

Factor 3 = Social Conditions

Factor 4 = Density

The interpretation of these factors is discussed in Chapter 3 (in particular, see Table 3.5 for average factor scores by region and city size and Table 3.6 for correlations of factor scores with housing and neighborhood problems in 38 large central cities).

To summarize the discussion to this point, the factors under the different variable sets have somewhat similar interpretations. The main points are: overcrowding loads on the density dimension; including overcrowding tends to increase the loadings of poverty and minority population on the density dimension. This reflects the correlations among poverty, persons of Spanish origin, and overcrowding.

RUN 4 This factor analysis is discussed in detail in Section II.E of Chapter 3. The main changes from RUN 1 are (1) the minority variable is divided into its black and Hispanic components; (2) pre-1940 housing is divided into its renter and owner components. The minority variable was subdivided because blacks and Hispanics exhibit different patterns across cities -- e.g., Hispanics are more concentrated in the West -- but, more importantly, because Annual Housing Survey data show that the black population is a better predictor of housing and neighborhood problems (see Table G.5 in Appendix G). As discussed in Chapter 3, the main changes from RUN 1 are (1) the poverty factor splits into two factors interpreted as reflecting low income and social conditions; and (2) the Hispanic population has its highest loading on the density factor, which is defined primarily by renter problems, population density, and crime (see Table K.2).

In addition to testing the sensitivity of the targeting results to the inclusion and exclusion of particular variables, this Appendix will also examine their sensitivity to the weighting of the three factors in the definition of NEED. For RUNS 1 to 3, NEED will be determined by combining the factor scores as follows: .40 (POVERTY) + .35 (AGE and DECLINE) + .25 (DENSITY). The composite index for RUN 1 is exactly the same as in Chapter 5's analysis of the CDBG formula. As discussed in Section III.A of Chapter 3, one could argue that because poverty is now a much broader indicator of urban problems, the poverty factor should receive more weight. Hence, RUN 5 will be the same as RUN 1 except that NEED will be defined with a greater emphasis on poverty: .50 (POVERTY) + .30 (AGE and DECLINE) + .20 (DENSITY).

II. Targeting Results Under Different Definitions of Need

This section tests whether the targeting results obtained in Chapter 5 hold up under the alternative definitions of need. Table K.3 presents the results obtained by regressing per capita CDBG funding in FY '82, FY '83, and FY '84 on the separate factors for RUNS 1 to 4. Measures of the responsiveness of CDBG funding to the different composite need indexes are given in Table K.4 (a linear analysis) and Table K.5 (a nonlinear analysis). The main findings from the sensitivity analysis are as follows:

Table K.3 Multiple Regression Results Under Alternative Factor Analyses

Different Sets of Variables		Regression Slopes ($)[a] Age and Decline	Poverty	Density
RUN 1:	FY '82	7.95	6.09	2.75
	FY '83	7.54	5.91	3.24
	FY '84	6.87	5.19	3.73
RUN 2:	FY '82	7.98	5.99	2.94
	FY '83	7.52	5.93	3.32
	FY '84	6.81	5.43	3.53
RUN 3:	FY' 82	8.26	5.94	2.27
	FY '83	7.91	5.74	2.70
	FY '84	7.24	4.94	3.30

		Separate Poverty Factors			
		Age and Decline	Low Income	Social	Density
RUN 4:	FY '82	8.21	5.20	3.44	2.84
	FY '83	7.69	5.19	3.19	3.07
	FY '84	7.63	4.90	2.37	3.61

a. The multiple regression slopes reported in this table resulted from regressions of the following form: Per capita $ = a + b (AGE AND DECLINE) + c (POVERTY) + d (DENSITY), where a is the intercept and b, c, and d are each a measure of slope, or the change in per capita dollars associated with a unit change in a need dimension. Of course, for RUN 4, an additional set of factor scores is included in the regression equation. For simplicity, only the regression slope coefficients are presented. The R^2 values and intercept terms were approximately the same as for RUN 1 in Table 5.7 of Chapter 5. The multiple regression slopes for RUN 5 are the same as for RUN 1.

Table K.4 Sensitivity of Targeting Results to Different Definitions of NEED -- Linear Regression Results[a]

Different Definitions of NEED	FY '82	FY '83	FY '84
RUN 1:			
Slope ($)	17.17	16.89	15.73
R^2 Value	.70	.72	.70
RUN 2:			
Slope ($)	17.23	16.95	15.79
R^2 Value	.71	.73	.71
RUN 3:			
Slope ($)	16.90	16.64	15.49
R^2 Value	.69	.70	.69
RUN 5:			
Slope ($)	15.86	15.56	14.35
R^2 Value	.66	.67	.64

a. The statistics reported in this table resulted from regressions of the following form: Per capita $ = a + b NEED. The slope or change in per capita dollars associated with a unit change NEED is equal to b. It therefore measures the degree to which the formula responds to NEED. The intercept term (a) represents the weighted average amount received by the 593 cities included in the analysis. By Fiscal Year, the intercept terms were as follows: $21.95 in FY '82, $21.64 in FY '83, and $22.06 in FY '84. The linear analysis assumes a relationship between CDBG funding and NEED such as that in Figure 5.1 of Chapter 5. A more complicated but perhaps more realistic relationship between CDBG funding and NEED is the nonlinear relationship shown in Figure 5.2 of Chapter 5. Nonlinear regression results are presented in Table K.5.

Table K.5 Sensitivity of Targeting Results to Different Definitions of NEED -- Nonlinear Regression Results[a]

Different Definitions of Need	FY '82	FY '83	FY '84
RUN 1:			
Slope at +1	$22.14[b]	$23.06	$19.23
0	17.06	16.76	15.65
-1	11.98	10.47	12.07
RUN 2:			
Slope at +1	22.09	28.22	19.30
0	17.09	16.75	15.68
-1	12.09	10.30	12.06
RUN 3:			
	20.78	21.84	17.85
Slope at +1	16.76	16.44	15.41
0	12.74	11.04	12.97
-1			
RUN 5:			
Slope at +1	18.36	18.69	15.61
0	15.72	15.39	14.29
-1	13.08	12.09	12.97

a. The statistics reported in this table resulted from a regression of the following form: Per Capita $ = a + b NEED + c $(NEED)^2$. In this case the slope or change in per capita dollars associated with a unit change in NEED is equal to (b + 2c NEED). The slope measures the degree to which fomula funding responds to NEED. For ease of presentation, only the slopes -- computed at 3 different NEED levels (+1, 0, -1) -- are given in the table. The intercept terms (a values) and R^2 values for the various estimated equations are approximately the same as those given for RUN 1 in Table 5.8 of Chapter 5. (RUN 4 was not included in the analysis because the weighting of its four factors would have introduced some inconsistency with the other runs.)

b. The slope, or response to NEED, increases as one moves from cities with low need scores (-1) to cities with high NEED scores (+1). (A linear analysis that assumes a constant slope across different NEED levels is given in Table K.4) The slope does not represent the predicted per capita amount going to cities with different NEED scores. That amount could be obtained by substituting the full set of regression statistics into the equation referenced in note a above. Using the regression statistics for RUN 1 (see Table 5.8 in Chapter 5) the predicted FY '82 and FY '84 per capita funding for cities at different NEED scores are as follows: +1 score ($44.04 in FY '82 and $41.29 in FY '84); 0 score ($21.95 in FY '82 and $22.06 in FY '84); and -1 score ($9.97 in FY '82 and $9.99 in FY '84). Hence the interpretation in the text -- that the formula remains very responsive to NEED, although its responsiveness has decreased somewhat.

(1) The main conclusions are the same as those in Chapter 5: (a) despite a small reduction in responsiveness, funding under the current dual formula would remain responsive to need in FY '84; and (b) between FY '82 and FY '84, the responsiveness of CDBG funding to the density dimension would increase while responsiveness to the poverty and age and decline dimensions would decrease.

(2) A comparison of the regression results in Tables K.3 to K.5 for RUN 2 (which does not include overcrowding) with those for RUN 1 (which includes renter-occupied overcrowded units in the "renter problem" variable) and RUN 3 (which includes overcrowding) shows that the findings concerning the change in responsiveness to need between FY '82 and FY '84 are rather insensitive to the treatment of overcrowding in this study's definition of need. This is rather surprising (but reassuring) given that overcrowding is a major cause of funding redistributions between FY '83 and FY '84. Of course, if one were to substantially increase the weight of either density or overcrowding in this study's definition of need, then the regression analysis would be much less likely to show a decrease in targeting with the introduction of 1980 data for overcrowding and aged housing. (See Chapter 3 for justification of the emphasis on poverty and age and decline in the definition of need. Also, see Chapter 6 and Appendix G for a discussion of some of the disadvantages of overcrowded housing as a proxy for urban conditions.)

(3) Increasing the importance of poverty (as in RUN 5) in the definition of community development need also did not change Chapter 5's findings. The main change from emphasizing poverty in the definition of need is that the overall responsiveness of CDBG funding to need is lower in all years. For instance, the nonlinear analysis reported in Table K.5 shows that the response to need for cities with a + 1 score falls by almost $4.00 for each of the three fiscal years. The reason for this is the emphasis of the dual formula on age and decline. Hence, increasing the weight of poverty at the expense of age and decline will obviously show an overall decrease in the formula's responsiveness.

APPENDIX L

ANNUAL HOUSING SURVEY ANALYSIS

This Appendix amplifies on the analysis of age of housing, overcrowding, and poverty using the 1977 Annual Housing Survey presented in Chapters 6 and 7. The first section defines technical concepts. The second section analyzes changes in housing adequacy, adjacency to abandoned buildings, presence of streets or roads needing repair, and frequent serious breakdowns of water or sewer service between 1974 and 1977. The third section discusses the demographic composition of the nonentitlement portions of metropolitan areas, and the applicability of the metropolitan and nonmetropolitan area analyses of Chapters 6 and 7, respectively, to the entitlement and nonentitlement populations. It also explains the method used in Chapter 7 for estimating the nonentitlement share of Annual Housing Survey problems.*

I. Concepts Used in Analysis

The following definitions are used in the Annual Housing Survey analysis in Chapters 6 and 7:

Large SMSA's are 50 specific, large SMSA's identified by the Bureau of the Census for the Annual Housing Survey. For each one, data are reported separately for the central city portion and the remaining portion.

Medium-sized SMSA's are 75 additional SMSA's, for which data are reported for each SMSA as a whole.

Small SMSA's are the remaining 118 SMSA's defined for the 1970 Census, for which data are not reported individually.

Urban housing units are units within incorporated or unincorporated places of 2,500 persons or more, or elsewhere in urbanized areas as defined by the Bureau of the Census. All other units are classified as rural.

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* The 1977 Annual Housing Survey is described in published reports. See U.S. Bureau of the Census, Current Housing Reports, Series H-150-77, "Annual Housing Survey: 1977" (several volumes), U.S. Government Printing Office, Washington, 1979. See also U.S. Department of Housing and Urban Development, Annual Housing Survey Codebook, Washington, 1983, which contains a detailed discussion of the AHS sample. The tables in Chapters 6 and 7 and this Appendix are based on analysis of unpublished AHS data at the U.S. Department of Housing and Urban Development.

For households in large and medium-sized SMSA's, low income means household income during the 12 months prior to the interview less than either (1) 50 percent of 1977 SMSA median income or (2) 50 percent of the 1977 median income for the whole Census region, whichever is higher. The moderate-income range is 50-80 percent of these medians; the middle-income range is 80-120 percent; and the high-income range is greater than 120 percent. For households with more or fewer than four persons, these limits are adjusted up or down, in accordance with Section 8 Program regulations. These definitions are the same as the Section 8 Program definitions; however, because most interviews were conducted a month or two before the end of the year, this study classifies a few more households as low income than would be so classified by the Section 8 Program.

For households in the small SMSA's, low income means household income less than 50 percent of the median income for metropolitan areas of the Census region, adjusted for household size. The other income categories are defined analogously to the larger SMSA's. This definition differs from the Section 8 Program definition in such a way that more households are classified as low income than would be so classified by the Section 8 Program.

In Chapter 7, low income for households in nonmetropolitan areas means income less than 50 percent of the median income for the whole Census region (including metropolitan areas), adjusted for household size. The other income categories are defined analogously to metropolitan areas. This definition differs from the Section 8 Program definition in such a way that more households are classifed as low income than would be so classified by the Section 8 Program.

Income below the poverty level means that the income of the family (or primary individual) during the 12 months preceding the interview was below the 1977 weighted average poverty level corresponding to the household's size and farm/nonfarm residence.* The poverty data presented in this report are approximate because: (1) this analysis used household size relative to the official poverty limits defined by family size; (2) this analysis used weighted average poverty limits rather than the complete, official definition of poverty, which (in 1977) recognized the sex and age of the family head and the number of related children under 18 years old, as well as total family size and farm/nonfarm residence; (3) since the AHS interviews were conducted in October, 1977 - January, 1978, this analysis typically compared incomes covering most of 1977 and a few months of 1976 with poverty limits pertaining exactly to the calendar year 1977. The first and third approximations result in slight overestimation of the proportion of families in poverty; the effects of the second approximation are unclear. These effects are sufficiently small that the conclusions would not be different if more precise procedures were used.

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* The weighted average poverty limits are tabulated in U.S. Bureau of the Census, Current Population Reports: Consumer Income, Series P-60, No. 119, "Characteristics of the Population Below the Poverty Level: 1977," U.S. Government Printing Office, Washington, D.C., 1979, p. 206.

Race or ethnicity is that of the head of the household. Hispanic means that the head is of any kind of Spanish origin. Non-Hispanic household heads are classified as White, Black, or Other.

Female-headed, with children means that the household includes one or more unmarried children less than 18 years of age.

Elderly-headed means that the head is 65 or older.

Inadequate housing is defined on the basis of criteria listed in Tables L.1, L.2, and L.3.* Two definitions are used -- one based on ten criteria and the other on six. Only the surveys for 1975-77 contain all the necessary data for the ten-criterion definitions. Each definition counts as inadequate any unit having one or more inadequates among its criteria. Criteria 6-9 are ignored in the six-criterion definition; other criteria are ignored for some housing units because of skip patterns in the AHS instrument, as noted in the right-hand columns of Tables L.1, L.2, and L.3.

Each criterion can generate a rating of adequate, inadequate, or don't know. If it is inadequate on one or more criteria, a housing unit is classified as inadequate. If there are no inadequates but one or more don't knows, a unit is classified as "adequacy unknown" and excluded from computations of inadequate units. This results in the inclusion of many units which are vacant, have not been lived in for at least 90 days, or have other conditions requiring that one or more criteria be ignored. Adoption of a more stringent definition -- that to be included a unit should be rated on all ten items (or nine, excluding criterion 9 if the unit is not in a multi-family structure) -- would result in excluding well over half of the housing stock. Four criteria -- plumbing facilities, kitchen facilities, heating equipment, and sewage disposal facilities -- are never ignored.

For the other housing and community problems discussed in Chapters 6 and 7 -- abandonment, condition of adjacent streets and roads, rating of house or neighborhood, etc. -- those units were excluded that were not eligible for the corresponding AHS item or if the item was not answered. For tables (such as Table 6.15) involving a two-way classification, the base for each row of the table consists of units for which the problem and the unit characteristics (for example, adjacent abandonment and the unit's crowding status) were reported. For tables involving a three-way classification (such as Table 6.16), the base consists of those units reporting all three characteristics -- for example, housing adequacy, crowding status, and income.

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* The definition is based on the Physical Inadequacy concept of "Measuring Housing Inadequacy Through the Use of the Annual Housing Survey" by John Simonson (U.S. Department of Housing and Urban Development, Washington, 1981). For this study, Simonson's definition was extended to include explicit criteria for inadequacy, adequacy, and exclusion from the base for each criterion and for the overall inadequacy concept.

Table L.1 Housing Inadequacy Criteria 1-8

Criterion and AHS Item(s)	Classify as Inadequate if —	Classify as Don't Know[a] if —	Ignore Criterion[b] if —
1. Plumbing Facilities: (a) Do you have complete plumbing facilities in this house (bldg); that is, hot & cold water, a flush toilet & a bathtub or shower?	(a) Yes, but also used by another household, or (b) No	Not answered	-------
2. Kitchen Facilities: Do you have complete kitchen facilities in this house (bldg); that is, a kitchen sink with piped water, a refrigerator and a range or cookstove?	(a) Yes, but also used by another household, or (b) No	Not answered	-------
3. Heating Equipment: What type of heating equipment does your house (apt.) have?	Room heaters without flue or vent burning gas, oil, or kerosene	Not answered	-------
4. Presence of electricity: Do you pay for electricity?	No, electricity not used	Not answered	Not applicable: Includes all vacant owner units, occupied owner units in multi-unit structures, condominium and cooperative units, among other categories.
5. Sewage Disposal Facilities (a) Is this house (bldg) connected to a public sewer? If no, ask (b) What means of sewage disposal do you use?	(a) No public sewer and (b)(i) Privy or (ii) Use facilities in another structure or (iii) Other means (but a septic tank, cesspool, or chemical toilet is considered adequate)	-------	-------
6. Toilet breakdowns (a) Do you have piped water in this building? If yes to (a), ask (b) At any time in the last 90 days was there a breakdown in your flush toilet, that is, was it completely unusable? If yes to (b), ask (c) Did any of these breakdowns last 6 hrs or more? If yes to (c), ask (d) How many of these breakdowns were there?	(a) No piped water or (b) Three or more breakdowns in item (d).	Item (b), (c), or (d) applicable, but not answered	Piped water present and item (b) not applicable: Includes all vacant units, units occupied less than 90 days, and units with two or more flush toilets.

Table L.1: Housing Inadequacy Criteria 1-8 (Cont'd)

Criterion and AHS Item(s)	Classify as Inadequate if --	Classify as Don't Know if --	Ignore Criterion if --
7. Heating System Breakdown: (a) At any time during the winter of....(year), was there a breakdown in your heating equipment; that is, was it completely unusable for 6 consecutive hours or more? If yes, ask (b) How many times did that happen?	Three or more breakdowns in Item (b).	Item (a) or (b) applicable but not answered.	Item (a) not applicable Includes all vacant units, units occupied less than 90 days, and units not occupied during the previous winter.
8. Electrical System: (a) Does each room in your house (apt) have a working electric wall outlet (wall plug)? (b) Is all the wiring in this house (apt) concealed in the walls or in metal coverings? Do not count appliance cords, extension cords or chandelier cords. (c) Have any electric fuses or breaker switches blown in your house (apt) in the last 90 days? If yes, ask (d) How many times did this happen?	(a) No, in Item (a) and (b) No, in Item (b) and (c) Three or more in Item (d)	Item (a), (b), (c) or (d) applicable but not answered	Item (c) not applicable Includes all vacant units and units occupie less than 90 days.

a. For the overall housing inadequacy concept, exclude a unit from the base for computing inadequacy rates if it has one or more "don't knows" and no inadequates.

b. Ignore also criteria 6-8 (and 9, in Table L.2) in the 6-criterion inadequacy definition. Ignored criteria do not remove units from the base for computing inadequacy rates.

Table L.2 Housing Inadequacy Criterion 9: Common Area Problems in Multifamily Structures

Items	Classify as Inadequate if —	Classify as Don't Know if —	Ignore Criterion if —
(a) Observation: Do the public halls in this building have light fixtures? If yes, determine (b) Are the light fixtures in working order? (c) Are there loose, broken or missing steps on any common stairways inside this building or attached to this building? If the building has common stairways, determine (d) Are all stair railings firmly attached? Also ask (e) How many stories (floors) are in this house (bldg)? (Exclude basement) If 4 or more, observe (f) Is there a passenger elevator in this building? If in a 2 or more unit structure, observe (g) How many stories are there from the main entrance of the building to the main entrance of the apartment?	Three or more of the following conditions exist: (a) No, in Item (a) or "none in working order" in Item (b). (b) Yes, in Item (c). (c) No, or "no stair railings" in Item (d). (d) Bldg has 4 or more stories; apartment is two or more stories from the main entrance; and building has no passenger elevator.	One or more of the following conditions exist: (a) Item (a) applicable but not answered or item (b) applicable but not answered. (b) Item (c) applicable but not answered (counts as two "don't know" conditions). (c) Item (d) applicable but not answered. (d) Item (e) applicable but not answered, or item (g) applicable but not answered. -- and the number of "don't know" conditions plus the number of "inadequate" conditions is at least 3.	Two or more of the following conditions exist: (a) Item (a) not applicable or building has no public halls. (b) Item (c) not applicable or building has no common stairways. (Counts as two conditions) (c) Building has 1 to 3 stories in Item (e); or item (g) not applicable; or 0 or 1 story in item (g).

Table L.3 Housing Inadequacy Criterion 10: Maintenance Problems

Item	Classify as Insdequate if --	Classify as Don't Know if --	Ignore Criterion if --
(a) Does this house (apt) have open cracks or holes in the interior walls or ceilings? (Do not include hairline cracks) (b) Does this house (apt) have holes in the floors? (c) Is there any area of broken plaster on the ceiling or inside walls which is larger than this piece of paper? (Show closed interviewer information card booklet[b]) (d) Is there any area of peeling paint on the ceiling or inside walls which is larger than this piece of paper? (Show closed interviewer information card booklet[b]) If the house (bldg) has a basement, ask -- (e) Does the basement show any signs of water having leaked from the outside? Ask -- (f) Does the roof of this house (bldg) leak? (g) At any time in the last 90 days have you seen any mice or rats or signs of mice or rats in this house (bldg)?	Three or more of the following conditions exist: [a] (a) Yes, in Item (a) (b) Yes, in Item (b) (c) Yes, in either Item (c) or Item (d) (d) Yes, in Item (e) (e) Yes, in Item (f) (f) Yes, in Item (g)	One or more of the following conditions exist: (a) Item (a) applicable but not answered. (b) Item (b) applicable but not answered. (c) Items (c) and (d) both applicable; neither item answered "yes"; and one or both not answered. (d) Item (e) applicable but not answered. (e) Item (f) applicable but not answered. (f) Item (g) not applicable (household head did not in unit the last 90 days) or not answered. --and the number of "don't know" conditions plus the number of "inadequate" conditions is at least 3.	Item (a) not applicable (includes all vacant units).

a. For the 6-criterion definition of housing inadequacy, the test is whether all three conditions (a), (b), and (c) exist.

b. Area approximately one square foot.

II. Longitudinal Analysis of Housing and Community Problems

A principal method of analysis used with Annual Housing Survey data in Section II of Chapter 6 and Section VII of Chapter 7 is to consider whether pre-1940, overcrowded, and poverty households tend to have greater incidences of housing and community problems than post-1940 and non-crowded housing and higher income households, respectively. This section builds on that analysis by considering whether housing and community problems noted among older or overcrowded housing units or poverty households tend to persist over time relative to the rate at which problems persist among newer or noncrowded units or higher income households. If they do, for categories of housing for which formula variables and problems were found to be correlated in Chapters 6 and 7, then the conclusions from Chapters 6 and 7 will be strengthened. Conversely, if units are found to be free of their problems in a few years regardless of age, overcrowding, or poverty status, then the conclusions would be called into question.

The principal results from Chapter 6 to be examined further are:

-- Poverty, construction before 1940, and overcrowding are all significantly correlated with housing inadequacy and location near abandoned buildings.

-- All three variables are slightly correlated with proximity to streets or roads needing repair and presence of serious breakdowns of sewer or water systems in metropolitan areas. However, the small overall rates of sewer and water problems and overcrowding imply that these correlations disappear entirely for some demographic groups.

Similarly, the findings from Chapter 7 to be examined further are:

-- Households in poverty have a greater tendency to live in inadequate housing, to live near abandoned buildings, and to experience serious sewer or water system breakdowns than higher income households in nonmetropolitan areas.

-- Pre-1940 housing units have a greater tendency than more recently constructed units to be inadequate and to have sewer or water problems; a slightly greater tendency to be located near abandoned buildings; and a slightly smaller tendency to be adjacent to streets and roads needing repair in nonmetropolitan areas.

-- Overcrowding is significantly correlated with all four indicators (inadequate housing, abandonment, street or road problems, and sewer or water problems), considering the overall incidence of overcrowding tabulated against the formula variables (Table 7.23).

-- Considering all of the tests performed with Annual Housing Survey data for nonmetropolitan areas, poverty is a more reliable indicator of housing and infrastructure problems than either age of housing or overcrowding.

In order to evaluate these findings further, analyses were performed on data for those units covered in both the 1974 and 1977 Annual Housing Survey. For example, Table L.4 shows that among pre-1940 units which (1) were inadequate in 1974 and (2) had sufficient data to determine housing adequacy for both 1974 and 1977, 38.9 percent of the units had improved and were adequate in 1977.* In contrast, 50.1 percent of post-1950 units inadequate in 1974 had improved to adequate in 1977. This suggests that housing inadequacy is a more chronic problem among pre-1940 than post-1950 units in metropolitan areas; it extends the finding in Chapter 6 that age of housing is correlated with inadequacy in a cross-sectional analysis. These findings are corroborated even further by the figures in the right-hand column of Table L.4. They show that among pre-1940 units which were adequate in 1974, 4.1 percent had deteriorated and were inadequate in 1977, compared to only 1.3 percent of the post-1950 units during the same period. Tables L.4 through L.7 present similar figures for four housing and infrastructure problems; for age of housing, crowding status, and household income; and for location.

The main implications of these tables for metropolitan areas are as follows:

-- The data for housing inadequacy and location near abandoned buildings are entirely consistent with the findings of Chapter 6. Housing inadequacy, location near abandoned buildings, and sewer or water problems are considerably more chronic among pre-1950 and overcrowded units and low-income households (Tables L.4, L.5, and L.7).

-- Whereas Chapter 6 indicated a weak correlation between the formula indicators and adjacency to streets and roads needing repair in metropolitan areas, no definite association between these variables can be seen in Table L.6. Among units reporting such problems in 1974, 68 percent of pre-1940 units were free of the problems in 1977, as compared with 64 percent of post-1950 units and 58.5 percent of 1940-49 units. Similarly inconclusive results are shown in the right-hand column for units without street or road problems in 1974.

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* The 6-criterion definition of housing inadequacy is used throughout this section.

Table L.4 Changes in Housing Condition, 1974-77, By Year Built, Crowding Status, and Household Income in 1977

	Units Inadequate in 1974: Percent Adequate in 1977	Units Adequate in 1974: Percent Inadequate in 1977
A. In Metropolitan Areas		
Pre-1940	38.9	4.1
1940-49	33.8	3.0
1950+	50.1	1.3
Overcrowded	32.2	6.5
Not crowded	39.1	1.9
Low-income	35.8	4.4
Moderate or higher income	48.0	1.4
B. In Nonmetropolitan Areas		
Pre-1940	27.9	5.7
1940-49	22.4	5.4
1950+	31.7	3.1
Overcrowded	17.2	7.6
Not crowded	27.4	3.0
Low-income	20.7	5.6
Moderate or higher income	39.3	2.4

Source: Annual Housing Surveys, 1974 and 1977. All figures are estimated proportions of housing units in the United States, based on sample units reporting the relevant problem and unit characteristics in both years.

Table L.5 Changes in Adjacency to Abandoned Buildings, 1974-77, By Year Built, Crowding Status, and Household Income in 1977

	Units With Problem in 1974: Percent Without Problem in 1977	Units Without Problem in 1974: Percent With Problem in 1977
A. In Metropolitan Areas		
Pre-1940	44.7	19.8
1940-49	57.6	12.9
1950+	69.9	9.1
Overcrowded	46.0	14.1
Not crowded	60.8	7.6
Low-income	51.4	12.3
Moderate or higher income	65.8	6.3
B. In Nonmetropolitan Areas		
Pre-1940	59.0	21.9
1940-49	53.0	23.0
1950+	64.1	16.3
Overcrowded	64.1	13.4
Not crowded	68.0	7.5
Low-income	64.4	10.0
Moderate or higher income	67.6	6.6

Source: Annual Housing Surveys, 1974 and 1977. All figures are estimated proportions of housing units in the United States, based on sample units reporting the relevant problem and unit characteristics in both years.

Table L.6 Changes in Presence of Streets or Roads Continually Needing Repair, 1974-77, By Year Built, Crowding Status, and Household Income in 1977

	Units With Problem in 1974: Percent Without Problem in 1977	Units Without Problem in 1974: Percent With Problem in 1977
A. In Metropolitan Areas		
Pre-1940	67.9	12.8
1940-49	58.5	11.9
1950+	63.9	10.2
Overcrowded	66.3	15.5
Not crowded	62.8	11.6
Low-income	63.2	12.7
Moderate or higher income	62.7	11.8
B. In Nonmetropolitan Areas		
Pre-1940	61.7	12.0
1940-49	60.7	12.5
1950+	55.4	13.8
Overcrowded	52.1	21.7
Not crowded	56.4	14.3
Low-income	57.5	15.4
Moderate or higher income	55.3	14.8

Source: Annual Housing Surveys, 1974 and 1977. All figures are estimated proportions of housing units in the United States, based on sample units reporting the relevant problem and unit characteristics in both years.

Table L.7 Changes in Occurrence of Frequent, Serious Water or Sewer System Breakdowns 1974-77, By Year Built, Crowding Status, and Household Income in 1977

	Units With Problem in 1974: Percent Without Problem in 1977	Units Without Problem in 1974: Percent With Problem in 1977
A. In Metropolitan Areas		
Pre-1940	49.4	0.5
1940-49	39.6	0.6
1950+	62.9	0.3
Overcrowded	36.7	1.4
Not crowded	63.4	0.4
Low-income	50.4	0.6
Moderate or higher income	72.8	0.3
B. In Nonmetropolitan Areas		
Pre-1940	20.4	0.7
1940-49	23.1	1.3
1950+	25.4	0.6
Overcrowded	18.3	2.1
Not crowded	33.6	0.6
Low-income	23.6	1.0
Moderate or higher income	49.2	0.5

Source: Annual Housing Surveys, 1974 and 1977. All figures are estimated proportions of housing units in the United States, based on sample units reporting the relevant problem and unit characteristics in both years.

In analysis of the associations among formula variables and problem variables in Chapter 6 (Section II.B.2, D.2, and E.2), all three variables were found to be significantly correlated with several urban problems. Overcrowding was found to be a less reliable indicator because of its smaller rate of incidence. These results on the stability of problems over time are consistent with 1977 findings.

The main implications of Tables L.4-L.7 for nonmetropolitan areas are as follows:

-- Housing and infrastructure problems of pre-1940 housing are as chronic as in more recently built housing units. Pre-1940 units were slightly more likely to become inadequate than post-1950 units between 1974 and 1977.

-- Housing inadequacy and sewer or water system problems are more chronic among overcrowded than non-crowded units. Overcrowded units were more likely to develop all four kinds of problems than non-crowded units between 1974 and 1977.

-- Housing inadequacy and sewer or water problems are more chronic among low-income units. The distinction between low-income and higher-income units is greater than that between overcrowded and non-crowded units (Tables L.4 and L.7). The likelihood of low-income units becoming inadequate or becoming located near abandoned buildings was greater than among higher-income units between 1974 and 1977.

In Chapter 7, Table 7.19 suggested that age of housing was associated with housing inadequacy, abandonment, and sewer or water breakdowns in nonmetropolitan areas. The left-hand columns of Tables L.4, L.5, and L.7 weaken this result by indicating that these problems are about equally chronic regardless of age of unit. Table 7.20 indicated that all the problems examined were at least somewhat associated with overcrowding. Tables L.4-7 have the same implication, based on the persistence of problems or tendency to develop problems over time. Table 7.21 indicated that more poverty households tended to live in inadequate housing, adjacent to abandoned buildings, and to have sewer or water problems in nonmetropolitan areas. Tables L.4, L.5, and L.7 are consistent with these findings, although the association between household income and adjacency to abandoned buildings is relatively small. The main implication of this analysis for nonmetropolitan areas is to confirm Chapter 7's finding that age of housing is not as reliable as poverty as an indicator of housing and infrastructure problems.

III. Housing Inadequacy In Nonentitlement Portions of Metropolitan Areas

The introduction to Chapter 6, Section II noted that the Annual Housing Survey is used in Chapters 6 and 7 for analysis of metropolitan and nonmetropolitan housing, respectively, and that these spatial concepts differ from the entitlement and nonentitlement populations of interest in this study as a whole. Tables L.8 and L.9 contain AHS data on two populations within metropolitan areas which contain significant nonentitlement areas. Table L.8 relates to a sample of rural metropolitan housing units. Table L.9 covers those portions of large SMSA's outside central cities (i.e., rural plus urban) and those portions of small SMSA's that are both urban and outside central cities. In general, these tables show lower proportions of inadequate units than in the corresponding tables in Chapter 7 (Table 7.22, the left-hand panel of Table 7.24, and the left-hand panel of Table 7.25). An estimate of problem incidence for the nonentitlement population could be obtained by adding to the samples covered in the Chapter 7 tables (1) a relatively large proportion of the units in Table L.8 and (2) a relatively small proportion of the units in Table L.9.* Comparisons suggest that the differences among demographic groups based on the tables in Chapter 7 would not appreciably change if such a procedure were followed. An estimate for the entitlement population would be obtained in similar fashion, by subtracting the data based on Tables L.8 and L.9 from data in Tables 6.14, 6.16, and 6.18. As stated in the introduction to Chapter 6, Section II, this would have little effect on the analysis.

The previous paragraph suggests that 1977 Annual Housing Survey units from middle-sized SMSA's and from suburbs of small and large SMSA's cannot be clearly assigned to HUD's entitled or nonentitled categories; they indicate other barriers to precise estimation of statistics for entitlement and nonentitlement populations based on the Annual Housing Survey. Chapter 7, Section III does, however, require estimates for these populations. The following procedures were therefore used in constructing Tables 7.5 and 7.6.

First, a substantial proportion of AHS units can be assigned to entitled or nonentitled areas with reasonable certainty. The central city units from the 1977 Annual Housing Survey are clearly part of

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* The following barriers would arise in practice: First, the specific proportions cannot be determined. Second, there is some overlap between Tables L.8 and L.9, namely, the rural portions of large SMSA's. Third, the urban balances of medium-sized SMSA's are not covered in either table, but include some nonentitlement areas. Fourth, a small fraction of units treated as nonmetropolitan in the AHS in 1977 (which adhered to 1970 metropolitan area definitions) were actually parts of central cities and urban counties of metropolitan areas created between 1970 and 1977.

Table L.8 Housing Inadequacy in Rural Portions of Metropolitan Areas, 1977

	Over-crowded Units	Non-crowded Units	Percent Inadequate Among — Pre-1940 Units	1940-49 Units	Post-1950 Units	Poverty Households	Other Households
Income							
Low	38	23	33	34	16	31	17
Moderate	22	10	20	19	6	—	11
Middle	—	6	11	—	4	—	6
High	—	3	12	5	2	—	3
Tenure and Structure size							
Owner, 1-Unit	19	7	17	16	4	28	7
2-4	—	—	—	—	—	—	—
5 +	—	—	—	—	—	—	—
Renter, 1-Unit	47	21	27	33	16	46	17
2-4	—	—	17	—	3	—	9
5 +	—	—	—	—	0	—	1
Race or Ethnicity							
White	20	7	17	14	4	26	7
Black	—	32	—	—	24	52	25
Hispanic	—	20	—	—	20	—	17
Other	—	—	—	—	—	—	—
Type of Household							
Female-headed, with children	—	10	—	—	9	21	9
Elderly-headed	—	—	22	24	8	44	11
Census Region							
Northeast	—	5	15	8	4	11	6
North Central	10	5	15	9	3	16	5
South	41	16	46	40	10	47	13
West	—	4	15	17	4	14	4
All Units	26	9	22	23	6	31	8

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

Table L.9 Housing Inadequacy in SMSA Balances of Large Metropolitan Areas or Urban Balances of Small Metropolitan Areas, 1977

	Over-crowded Units	Non-crowded Units	Percent Inadequate Among -- Pre-1940 Units	1940-49 Units	Post-1950 Units	Poverty Households	Other Households
Income							
Low	23	11	19	14	7	16	9
Moderate	14	6	14	9	3	—	6
Middle	4	5	7	5	4	—	5
High	4	2	5	3	2	—	2
Tenure and Structure size							
Owner, 1-Unit	7	3	7	5	2	14	3
2-4	—	5	5	—	2	—	4
5 +	--	4	--	—	3	—	4
Renter, 1-Unit	23	12	20	13	8	21	12
2-4	17	9	13	6	6	17	8
5 +	18	6	29	11	4	15	6
Race or Ethnicity							
White	12	4	10	6	3	13	4
Black	24	14	25	22	8	29	10
Hispanic	9	8	15	7	6	15	7
Other	--	5	--	—	3	—	3
Type of Household							
Female-headed, with children	--	7	11	9	5	16	4
Elderly-headed	15	6	11	9	3	23	5
Census Region							
Northeast	12	5	8	4	3	12	5
North Central	7	3	11	3	2	15	3
South	26	9	35	20	6	28	8
West	8	3	10	4	2	9	2
All Units	13	5	12	7	3	16	5

Source: Annual Housing Survey, 1977. All figures are estimated percentages of year-round housing units in the United States.

entitled areas. And about 95 percent of nonmetropolitan units of the 1977 AHS would still belong to nonentitled areas in the 1980's; either they stayed nonmetropolitan or, if metropolitan, were not in an entitled central city or an urban county. In short, almost 60 percent of the weighted units from the 1977 Annual Housing Survey can with near certainty be assigned an entitled or nonentitled status, by assigning central city units of small and large SMSA's to be entitled, and nonmetropolitan units to be nonentitled.

It then remains to assign the remaining 40 percent by a reasonable estimation procedure. The procedure outlined below is based on subaggregates that minimize error in assignment. Moreover, some numbers that result from this procedure have been calibrated against exact, Census-derived numbers for regional breakdowns by entitled and nonentitled status. (The procedure does not entirely control, however, for overall disparities between 1977 AHS and 1980 Census data based on different sampling, questioning, and timing).

1. Within regions and the United States, the units of medium-sized SMSA's were prorated to central cities or suburban balances according to the 1977 proportions of central city-suburban population in metropolitan areas of 1 million or less (from the Current Population Survey of 1977). This yielded estimates for central cities, urban balance, and rural balance of SMSA's.

2. It then remained to apportion the urban balance and rural balance estimates into entitlement and nonentitlement components. To accomplish this, 1980 Census data were used to derive estimated proportions. The population of all entitled satellite cities was assumed to be urban, entitled. The Census populations of all urban counties were assumed to be completely entitled (even though this is not exactly correct) and apportioned into urban and rural components using Census data. The remaining population was similarly apportioned into nonentitled urban and rural components. The desired proportions could then be easily calculated.

3. The rural and urban proportions of nonmetropolitan areas shown in Tables 7.5 and 7.6 were derived from 1980 urban-rural Census data by State for nonmetropolitan areas.

4. It was assumed that within the suburban balance of any region, entitled rural units would average the same characteristics as nonentitled rural units, and entitled urban units would average the same characteristics as nonentitled urban units. (Note the geographic control for these assumptions.)

5. For each region, steps one to four enabled all AHS units to be designated or prorated to one of these categories:

   A. Central city, entitled and urban
   B. Suburban balance, entitled and urban

C. Suburban balance, entitled and rural
D. Suburban balance, nonentitled and urban
E. Suburban balance, nonentitled and rural
F. Nonmetropolitan, nonentitled and urban
G. Nonmetropolitan, nonentitled and rural

6. Results were then summed for the characteristics and subareas of Tables 7.5 and 7.6.

7. For the measures of poverty, pre-1940 units, and overcrowded units, certain estimates from Step 6 were compared to actual tallies of 1980 Census data applied to HUD entitled and nonentitled geography. The various ratios of actual to estimated statistics were then used to calibrate the statistics that finally appeared in Tables 7.5 and 7.6.

Appendix M

This Appendix contains a listing of the projected per capita grants received by entitlement jurisdictions in FY '82, FY '83, and FY '84, and the percent changes in grants across these years. The reader should be cautioned that the per capita grants for FY '83 and FY '84 (and the percent changes in these years) do not necessarily represent the precise grants that would be received.

In order to isolate the redistributions caused by a change in Census data, the entitlement jurisdictions eligible in FY '82 have been used to calculate grants in FY '83 and FY '84. In reality, three new jurisdictions have become eiligible for FY '83 grants, and additional jurisdictions will become eligible in FY '84. Also, some jurisdictions are expected to lose eligibility in FY '84. A change in the number of recipients would have an effect on the total grant of all recipients.

Another factor which causes the projected grants to differ from actual grants is that the FY '83 and FY '84 calculations do not include the adjustment for Cuban and Haitian population required by law. In aggregate, this omission has negligible effect on estimated grants. The effects are largest in Florida where, for example, Miami's FY '83 grant is underestimated by 1.6 percent.

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
1	ALABAMA	ANNISTON	31.71	28.78	26.99	-10.3	-6.2	-15.9
2	ALABAMA	BIRMINGHAM	33.09	30.09	28.20	-8.3	-6.3	-14.0
3	ALABAMA	FLORENCE	17.06	14.95	13.92	-12.4	-6.9	-18.4
4	ALABAMA	GADSDEN	31.74	28.89	27.76	-9.0	-3.9	-12.6
5	ALABAMA	HUNTSVILLE	12.53	13.14	12.95	4.9	-1.4	3.4
6	ALABAMA	MOBILE	22.52	18.82	17.43	-16.4	-7.4	-22.6
7	ALABAMA	MONTGOMERY	18.61	18.09	18.20	-2.8	1.1	-1.7
8	ALABAMA	TUSCALOOSA	19.42	19.77	19.97	1.8	1.0	2.9
9	ALABAMA	JEFFERSON COUNTY	13.45	11.61	10.55	-13.7	-9.2	-21.6
10	ALASKA	ANCHORAGE	9.97	11.24	10.54	12.7	-6.3	5.6
11	ARIZONA	GLENDALE	8.95	10.67	11.51	19.2	8.0	28.7
12	ARIZONA	MESA	8.64	10.73	11.32	24.2	5.4	31.0
13	ARIZONA	PHOENIX	12.39	13.13	13.79	6.0	5.1	11.4
14	ARIZONA	SCOTTSDALE	7.59	8.24	7.53	8.7	-8.6	-.8
15	ARIZONA	TEMPE	8.76	11.21	11.61	28.2	3.6	32.8
16	ARIZONA	TUCSON	14.71	15.72	16.08	6.8	2.3	9.3
17	ARIZONA	MARICOPA COUNTY	12.90	14.17	15.66	12.1	10.5	24.0
18	ARKANSAS	FAYETTEVILLE	14.22	14.84	14.37	4.3	-3.1	1.1
19	ARKANSAS	FORT SMITH	15.53	14.14	13.60	-9.1	-3.8	-12.6
20	ARKANSAS	LITTLE ROCK	16.06	14.48	14.27	-9.6	-1.4	-10.9
21	ARKANSAS	NORTH LITTLE ROCK	18.20	14.22	13.08	-21.7	-8.0	-28.0
22	ARKANSAS	PINE BLUFF	26.67	22.61	21.63	-15.2	-4.3	-18.9
23	ARKANSAS	SPRINGDALE	11.74	12.69	12.25	8.1	-3.5	4.4
24	ARKANSAS	TEXARKANA	22.60	19.22	17.77	-15.0	-7.6	-21.4
25	CALIFORNIA	ALAMEDA	20.75	18.91	19.96	-8.8	5.5	-3.8
26	CALIFORNIA	ALHAMBRA	12.42	13.41	16.51	7.8	23.1	32.8
27	CALIFORNIA	ANAHEIM	8.75	10.01	12.72	14.5	27.2	45.5
28	CALIFORNIA	BAKERSFIELD	12.25	12.22	13.39	-.2	9.0	8.8
29	CALIFORNIA	BALDIN PARK	16.93	18.47	23.67	9.1	28.1	39.8
30	CALIFORNIA	BELLFLOWER	11.84	12.47	13.96	5.2	12.0	17.9
31	CALIFORNIA	BERKELEY	32.38	30.91	31.90	-4.5	3.2	-1.5
32	CALIFORNIA	BUENA PARK	10.74	11.69	12.47	8.8	8.7	16.1
33	CALIFORNIA	BURBANK	16.40	16.24	16.47	-1.0	1.4	.4
34	CALIFORNIA	CARSON	13.69	13.77	16.10	.6	16.9	17.6
35	CALIFORNIA	CERRITOS	4.64	5.80	8.51	25.1	46.7	83.5
36	CALIFORNIA	CHICO	15.33	18.86	18.92	23.5	.3	23.9
37	CALIFORNIA	CHULA VISTA	11.32	11.13	12.39	-1.7	11.3	9.4
38	CALIFORNIA	COMPTON	24.41	27.73	31.86	13.7	14.9	30.6
39	CALIFORNIA	CONCORD	7.82	8.70	8.37	11.8	-3.8	7.5
40	CALIFORNIA	COSTA MESA	9.90	10.34	12.05	4.5	16.5	21.7
41	CALIFORNIA	DALY	9.46	10.27	14.50	8.4	41.2	53.2
42	CALIFORNIA	DOWNEY	10.25	10.08	11.10	-1.7	10.1	8.2
43	CALIFORNIA	EL CAJON	10.02	12.42	13.24	23.9	6.7	32.1
44	CALIFORNIA	EL MONTE	16.70	20.35	28.74	21.8	41.2	72.1

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
45	CALIFORNIA	ESCONIDO CITY	9.11	11.88	13.35	30.3	12.4	46.5
46	CALIFORNIA	FAIRFIELD	11.12	11.32	11.01	1.8	-2.8	-1.0
47	CALIFORNIA	FOUNTAIN VALLEY	5.86	6.69	7.02	14.2	4.9	19.8
48	CALIFORNIA	FREMONT	8.17	8.51	8.61	4.3	1.1	5.4
49	CALIFORNIA	FRESNO	16.12	15.61	16.77	-3.6	7.4	3.6
50	CALIFORNIA	FULLERTON	8.84	9.79	11.36	10.7	16.0	28.4
51	CALIFORNIA	GARDEN GROVE	10.14	11.26	12.88	11.0	14.4	27.0
52	CALIFORNIA	GLENDALE	12.59	13.03	15.15	3.4	16.3	20.2
53	CALIFORNIA	HAWTHORNE	10.74	12.45	16.32	15.8	31.0	51.7
54	CALIFORNIA	HAYWARD	12.35	12.37	12.61	.3	1.9	2.3
55	CALIFORNIA	HUNTINGTON BEACH	7.22	8.66	9.48	19.9	9.5	31.3
56	CALIFORNIA	INGLEWOOD	11.43	15.45	21.15	35.1	36.9	84.9
57	CALIFORNIA	IRVINE	4.29	5.54	6.50	28.9	17.3	51.3
58	CALIFORNIA	LAKEWOOD	10.04	9.62	9.09	-4.2	-5.5	-9.4
59	CALIFORNIA	LA MESA CITY	8.94	11.00	10.64	23.1	-3.3	19.0
60	CALIFORNIA	LOMPOC	13.27	13.64	14.28	2.8	4.7	7.7
61	CALIFORNIA	LONG BEACH	15.55	15.91	17.57	2.3	10.4	13.0
62	CALIFORNIA	LOS ANGELES	16.08	17.40	22.79	8.2	31.0	41.7
63	CALIFORNIA	MODESTO	9.67	11.16	12.08	15.4	8.2	24.8
64	CALIFORNIA	MONTEBELLO	11.08	13.67	18.52	23.3	35.5	67.1
65	CALIFORNIA	MONTEREY	10.33	9.48	9.48	-8.2	-.0	-8.3
66	CALIFORNIA	MONTEREY PARK	10.71	12.84	16.45	19.9	28.1	53.6
67	CALIFORNIA	MOUNTAIN VIEW	9.83	9.90	11.63	.7	17.5	18.3
68	CALIFORNIA	NAPA CITY	9.69	10.30	10.37	6.4	.6	7.0
69	CALIFORNIA	NEWPORT BEACH	7.93	8.30	8.21	4.7	-1.0	3.6
70	CALIFORNIA	NORWALK	14.93	16.09	17.77	7.3	10.4	18.5
71	CALIFORNIA	OAKLAND	29.37	28.82	27.80	-1.9	-3.5	-5.4
72	CALIFORNIA	OCEANSIDE	10.38	12.78	15.37	23.1	20.2	48.0
73	CALIFORNIA	ONTARIO	12.69	12.88	14.92	1.5	15.8	17.6
74	CALIFORNIA	ORANGE	8.74	9.23	10.32	5.1	11.8	17.6
75	CALIFORNIA	OXNARD	12.87	14.40	20.91	11.9	45.2	62.5
76	CALIFORNIA	PALO ALTO	11.67	10.79	11.48	-7.6	6.5	-1.6
77	CALIFORNIA	PASADENA	19.42	20.04	19.70	2.7	-1.7	.9
78	CALIFORNIA	PICO RIVERA	16.48	17.29	20.22	4.8	17.0	22.6
79	CALIFORNIA	POMONA	15.16	17.20	20.60	13.4	19.8	35.9
80	CALIFORNIA	PORTERVILLE	14.30	14.43	16.54	.9	14.6	15.6
81	CALIFORNIA	RANCHO CUCAMONGA	6.51	7.93	8.68	21.7	9.5	33.2
82	CALIFORNIA	REDDING	11.45	11.57	11.54	1.0	-.2	.8
83	CALIFORNIA	REDONDO BEACH	12.83	12.25	11.09	-4.5	-9.5	-13.6
84	CALIFORNIA	REDWOOD CITY	10.16	10.29	12.13	1.3	17.9	19.4
85	CALIFORNIA	RICHMOND	17.26	17.82	18.19	3.2	2.1	5.4
86	CALIFORNIA	RIVERSIDE	11.59	12.42	13.51	7.0	8.8	16.4
87	CALIFORNIA	SACRAMENTO	15.38	15.41	15.53	.2	.8	.9
88	CALIFORNIA	SALINAS	12.58	14.47	19.48	15.0	34.6	54.9

	ENTITLEMENT JURISDICTION STATE	NAME	PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
89	CALIFORNIA	SAN BERNADINO	16.41	16.32	17.25	.5	5.7	6.2
90	CALIFORNIA	SAN DIEGO	11.79	12.77	14.42	8.3	12.9	22.3
91	CALIFORNIA	SAN FRANCISCO	33.20	32.05	32.81	-3.5	2.4	-1.2
92	CALIFORNIA	SAN JOSE	9.75	10.44	12.55	7.1	20.2	28.7
93	CALIFORNIA	SAN LEANDRO	13.17	12.26	12.68	-6.9	3.4	-3.7
94	CALIFORNIA	SAN MATEO	9.63	8.84	9.85	-8.1	11.4	2.4
95	CALIFORNIA	SANTA ANA	12.60	15.49	22.90	23.1	47.9	82.0
96	CALIFORNIA	SANTA BARBARA	14.71	12.83	14.44	-12.7	12.5	-1.8
97	CALIFORNIA	SANTA CLARA	10.52	9.73	10.10	-7.6	3.8	-4.1
98	CALIFORNIA	SANTA CRUZ	13.58	14.08	15.20	3.7	8.0	11.9
99	CALIFORNIA	SANTA MARIA	13.33	13.97	17.65	4.8	26.4	32.5
100	CALIFORNIA	SANTA MONICA	15.34	14.04	13.87	-8.5	-1.2	-9.6
101	CALIFORNIA	SANTA ROSA	8.86	9.80	10.47	10.5	6.9	18.1
102	CALIFORNIA	SEASIDE	17.19	15.29	15.34	-11.0	.3	-10.8
103	CALIFORNIA	SIMI VALLEY	7.59	8.08	8.27	6.5	2.3	9.0
104	CALIFORNIA	SOUTH GATE	11.81	14.85	24.39	25.5	64.3	106.2
105	CALIFORNIA	STOCKTON	14.54	16.05	17.89	10.4	11.5	23.0
106	CALIFORNIA	SUNNYVALE	8.36	8.36	9.60	.0	14.9	14.9
107	CALIFORNIA	THOUSAND OAKS	5.49	6.69	7.34	22.0	9.6	33.7
108	CALIFORNIA	TORRANCE	8.77	8.71	8.82	-.7	1.3	.6
109	CALIFORNIA	TULARE	17.44	17.94	19.15	2.9	6.8	9.8
110	CALIFORNIA	VALLEJO	12.12	12.21	13.23	.8	8.4	9.2
111	CALIFORNIA	VENTURA	9.09	9.57	10.33	5.2	8.0	13.7
112	CALIFORNIA	VISALIA	10.87	11.92	12.40	9.7	4.0	14.1
113	CALIFORNIA	WALNUT CREEK	6.23	6.47	6.22	3.8	-3.8	-.3
114	CALIFORNIA	WEST COVINA	8.40	8.82	9.53	6.4	8.0	15.0
115	CALIFORNIA	WESTMINSTER	9.85	10.57	11.65	7.4	10.2	18.4
116	CALIFORNIA	WHITTIER	9.76	9.87	11.18	-.6	13.3	12.6
117	CALIFORNIA	YUBA	10.40	12.62	13.38	21.3	6.1	28.6
118	CALIFORNIA	ALAMEDA COUNTY	9.16	9.03	9.29	-1.5	2.9	1.4
119	CALIFORNIA	CONTRA COSTA COUNTY	9.15	9.02	8.70	-1.5	-3.6	-5.0
120	CALIFORNIA	FRESNO COUNTY	16.24	16.05	17.90	-11.6	11.5	-1.4
121	CALIFORNIA	KERN COUNTY	17.55	15.90	17.01	-9.4	7.0	-3.1
122	CALIFORNIA	LOS ANGELES COUNTY	13.36	14.23	17.35	6.4	22.0	29.8
123	CALIFORNIA	MARIN COUNTY	8.98	9.02	8.65	.5	-4.1	-3.6
124	CALIFORNIA	ORANGE COUNTY	7.41	8.08	8.88	9.0	9.8	19.7
125	CALIFORNIA	RIVERSIDE COUNTY	12.48	12.94	14.57	4.0	12.5	17.0
126	CALIFORNIA	SACRAMENTO COUNTY	9.49	10.85	10.57	14.3	-2.6	11.4
127	CALIFORNIA	SAN BERNARDINO COUNT	11.98	12.56	12.82	4.8	2.1	6.8
128	CALIFORNIA	SAN DIEGO COUNTY	9.25	10.88	11.64	18.1	6.9	26.3
129	CALIFORNIA	SAN MATEO COUNTY	9.35	9.37	10.24	.3	9.3	9.6
130	CALIFORNIA	SANTA CLARA COUNTY	10.89	10.28	10.26	-5.8	-.0	-5.9
131	CALIFORNIA	SONOMA COUNTY	12.56	11.62	11.62	-7.5	.0	-7.5
132	COLORADO	ARVADA	5.96	6.71	6.37	12.5	-5.0	6.9

	ENTITLEMENT JURISDICTION STATE	NAME	PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
133	COLORADO	AURORA	6.17	7.55	7.89	22.4	4.5	27.9
134	COLORADO	BOULDER	11.58	13.64	13.34	17.8	-2.2	15.3
135	COLORADO	COLORADO SPRINGS	10.81	11.31	10.97	4.5	-3.1	1.3
136	COLORADO	DENVER	20.65	19.67	19.64	-4.7	-.2	-4.9
137	COLORADO	FORT COLLINS	10.75	12.75	12.66	18.6	-.7	17.8
138	COLORADO	GREELEY	13.10	14.94	15.08	14.1	.9	15.2
139	COLORADO	LAKEWOOD	7.27	7.56	7.05	4.0	-6.7	-2.2
140	COLORADO	PUEBLO	16.55	16.34	14.19	-1.3	-13.2	-14.3
141	COLORADO	WESTMINSTER	5.68	7.74	7.81	36.1	.9	37.4
142	CONNECTICUT	BRIDGEPORT	28.27	30.12	29.12	6.4	-3.3	2.9
143	CONNECTICUT	BRISTOL	10.17	10.51	9.92	3.4	-5.7	-2.5
144	CONNECTICUT	DANBURY	10.03	9.89	10.76	-1.3	8.7	7.3
145	CONNECTICUT	EAST HARTFORD	9.53	10.04	8.53	5.4	-15.1	-10.5
146	CONNECTICUT	FAIRFIELD	7.83	7.42	8.23	-5.2	10.9	5.1
147	CONNECTICUT	GREENWICH	12.44	11.90	13.33	-4.3	12.0	7.1
148	CONNECTICUT	HAMDEN TOWN	8.89	8.83	9.82	-.7	11.2	10.4
149	CONNECTICUT	HARTFORD	37.90	38.60	34.68	1.8	-10.1	-8.5
150	CONNECTICUT	MANCHESTER	9.24	9.03	9.56	-2.2	5.8	3.5
151	CONNECTICUT	MERIDEN	14.24	14.16	14.94	-.6	5.5	4.9
152	CONNECTICUT	MILFORD	9.49	8.54	8.90	-10.1	4.3	-6.2
153	CONNECTICUT	NEW BRITAIN	26.55	26.55	26.49	.0	-.3	-.2
154	CONNECTICUT	NEW HAVEN	37.17	37.31	36.04	.4	-3.4	-3.0
155	CONNECTICUT	NEW LONDON	32.14	31.91	32.15	-.7	.8	.0
156	CONNECTICUT	NORWALK	11.30	10.93	11.24	-3.3	2.8	-.6
157	CONNECTICUT	NORWICH	24.65	24.51	24.50	-.6	-.0	-.6
158	CONNECTICUT	STAMFORD	12.68	12.34	11.38	-2.6	-7.8	-10.3
159	CONNECTICUT	STRATFORD	8.78	9.15	10.04	4.2	9.7	14.3
160	CONNECTICUT	WATERBURY	24.10	24.83	23.70	3.1	-4.6	-1.7
161	CONNECTICUT	WEST HARTFORD	15.73	15.34	15.81	-2.5	3.1	.5
162	CONNECTICUT	WEST HAVEN	11.42	11.75	12.25	2.9	4.3	7.3
163	DELAWARE	WILMINGTON	48.50	47.13	45.75	-2.8	-2.9	-5.7
164	DELAWARE	NEW CASTLE COUNTY	8.48	9.64	8.97	13.7	-6.9	5.8
165	DISTRICT OF COLUMBIA	WASHINGTON	33.31	31.80	31.39	-4.6	-1.3	-5.8
166	FLORIDA	BOCA RATON	7.40	7.75	7.50	4.6	-3.2	1.2
167	FLORIDA	BRADENTON	16.82	14.68	15.11	-12.5	2.9	-10.0
168	FLORIDA	CAPE CORAL	5.88	7.51	7.65	27.7	2.0	30.2
169	FLORIDA	CLEARWATER	9.92	10.09	10.13	1.8	.4	2.2
170	FLORIDA	COCOA	18.98	17.96	18.12	-5.4	.9	-4.5
171	FLORIDA	DAYTONA BEACH	19.30	19.21	20.25	-.5	5.4	4.9
172	FLORIDA	FT LAUDERDALE	14.26	15.27	16.77	6.5	9.8	17.0
173	FLORIDA	FT MYERS	15.95	19.71	21.40	23.6	8.6	34.2
174	FLORIDA	FORT WALTON BEACH	13.12	12.98	12.22	-1.4	-5.8	-7.1
175	FLORIDA	GAINESVILLE	16.12	18.43	18.79	14.4	1.9	16.6
176	FLORIDA	HIALEAH	12.21	16.93	24.95	23.4	47.4	81.8

	ENTITLEMENT JURISDICTION STATE	NAME	PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
177	FLORIDA	HOLLYWOOD	12.06	11.30	11.21	-6.6	-.8	-7.3
178	FLORIDA	JACKSONVILLE	17.25	16.17	15.63	-6.3	-3.3	-9.4
179	FLORIDA	LAKELAND	16.70	14.65	14.86	-12.3	1.5	-11.0
180	FLORIDA	LARGO	6.66	8.47	8.58	27.1	1.0	28.5
181	FLORIDA	MELBOURNE	12.95	12.95	12.37	.0	-4.5	-4.5
182	FLORIDA	MIAMI	24.06	28.36	32.95	2.2	16.2	18.8
183	FLORIDA	MIAMI BEACH	21.07	20.20	23.69	-5.2	17.3	11.1
184	FLORIDA	OCALA	17.98	18.91	19.54	5.2	3.3	8.7
185	FLORIDA	ORLANDO	16.10	15.83	16.78	-1.8	6.0	4.0
186	FLORIDA	PANAMA CITY	21.46	19.18	18.16	-10.6	-5.3	-15.4
187	FLORIDA	PENSACOLA	22.77	19.31	17.54	-15.2	-9.2	-23.0
188	FLORIDA	POMPANO BEACH	12.22	13.19	14.20	7.2	7.7	15.5
189	FLORIDA	ST PETERSBURG	15.32	13.98	14.07	-8.8	.7	-8.2
190	FLORIDA	SARASOTA	15.47	14.50	15.13	-6.4	4.4	-2.2
191	FLORIDA	TALLAHASSEE	16.60	19.02	19.23	14.5	1.1	15.8
192	FLORIDA	TAMPA	19.78	18.46	17.98	-7.1	-2.8	-9.5
193	FLORIDA	TITUSVILLE	10.75	13.66	12.91	27.0	-5.5	20.1
194	FLORIDA	WEST PALM BEACH	17.44	16.69	17.82	-5.1	6.8	1.4
195	FLORIDA	WINTERHAVEN	16.73	16.12	16.39	-3.7	1.7	-2.0
196	FLORIDA	BROWARD COUNTY	8.48	9.86	10.64	16.3	7.8	25.4
197	FLORIDA	DADE COUNTY	12.01	13.64	16.39	11.4	20.1	33.9
198	FLORIDA	HILLSBOROUGH COUNTY	10.10	11.72	12.10	16.0	3.2	19.7
199	FLORIDA	ORANGE COUNTY	11.15	12.38	13.05	11.0	5.4	17.0
200	FLORIDA	PALM BEACH COUNTY	12.30	12.71	13.40	2.9	5.5	8.6
201	FLORIDA	PINELLAS COUNTY	9.92	9.51	9.26	-4.2	-2.6	-6.7
202	FLORIDA	POLK COUNTY	14.86	14.82	14.94	-.3	.8	.5
203	FLORIDA	VOLUSIA COUNTY	11.40	11.90	12.02	4.4	1.1	5.5
204	GEORGIA	ALBANY	25.45	23.70	23.89	-6.4	.8	-5.6
205	GEORGIA	ATHENS	20.60	19.12	18.53	-7.2	-3.0	-10.0
206	GEORGIA	ATLANTA	27.74	27.79	26.50	.2	-4.7	-4.5
207	GEORGIA	AUGUSTA	54.13	49.24	46.25	-9.0	-6.1	-14.5
208	GEORGIA	COLUMBUS	20.30	17.92	16.62	-11.7	-7.3	-18.1
209	GEORGIA	MACON	24.50	21.95	20.42	-10.4	-7.0	-16.7
210	GEORGIA	SAVANNAH	23.85	21.99	20.50	-7.6	-6.8	-13.9
211	GEORGIA	COBB COUNTY	7.57	8.24	7.73	8.9	-6.1	2.2
212	GEORGIA	DE KALB COUNTY	7.44	9.16	9.25	23.2	1.0	24.4
213	GEORGIA	FULTON COUNTY	10.08	11.00	10.66	9.2	-3.1	5.9
214	HAWAII	HONOLULU	14.47	15.21	18.11	5.1	19.1	25.1
215	IDAHO	BOISE	10.73	10.48	9.56	-2.6	-8.7	-11.1
216	ILLINOIS	ARLINGTON HTS	5.90	6.18	5.41	4.7	-12.4	-8.3
217	ILLINOIS	AURORA	12.72	13.44	12.72	5.7	-5.4	.0
218	ILLINOIS	BERWYN	31.79	31.07	32.43	-2.3	4.4	2.0
219	ILLINOIS	BLOOMINGTON	16.38	15.98	16.42	-2.4	2.7	.2
220	ILLINOIS	CHAMPAIGN	13.83	14.63	14.09	6.1	-3.7	2.1

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
221	ILLINOIS	CHICAGO	35.28	35.76	33.94	1.3	-5.1	-3.8
222	ILLINOIS	CICERO	31.19	31.32	33.03	.4	5.5	5.9
223	ILLINOIS	DECATUR	14.38	14.42	14.48	.0	.5	.5
224	ILLINOIS	DES PLAINES	8.09	7.63	6.83	-5.7	-10.4	-15.5
225	ILLINOIS	EAST ST LOUIS	56.13	54.16	47.64	-3.5	-12.0	-15.1
226	ILLINOIS	ELGIN	11.69	12.48	12.84	6.6	2.9	9.8
227	ILLINOIS	EVANSTON	24.92	24.18	25.40	-2.9	5.0	1.9
228	ILLINOIS	JOLIET	14.84	15.46	14.31	4.2	-7.4	-3.6
229	ILLINOIS	KANKAKEE	18.98	20.75	19.01	9.3	-8.4	.1
230	ILLINOIS	MOLINE	17.72	16.19	15.96	-7.5	-1.4	-8.8
231	ILLINOIS	MOUNT PROSPECT	6.15	6.39	5.95	3.9	-6.8	-3.2
232	ILLINOIS	NORMAL	8.63	12.19	11.83	41.2	-3.0	37.0
233	ILLINOIS	OAK LAWN	9.00	8.80	7.14	-2.2	-18.9	-20.7
234	ILLINOIS	OAK PARK	32.68	31.89	32.94	-2.4	3.3	.8
235	ILLINOIS	PEORIA	16.44	15.98	14.72	-2.8	-7.9	-10.5
236	ILLINOIS	RANTOUL	15.68	13.84	13.67	-11.8	-1.2	-12.8
237	ILLINOIS	ROCKFORD	15.08	14.64	13.52	-2.9	-7.6	-10.4
238	ILLINOIS	ROCK ISLAND	27.02	26.59	25.73	-1.6	-3.2	-5.0
239	ILLINOIS	SCHAUMBERG VILLAGE	4.58	5.33	5.59	16.5	4.9	22.2
240	ILLINOIS	SKOKIE	7.36	7.00	6.87	-4.8	-1.9	-6.6
241	ILLINOIS	SPRINGFIELD	15.94	15.62	15.13	-1.6	-3.2	-4.7
242	ILLINOIS	URBANA	13.14	14.05	14.03	6.9	-.2	6.8
243	ILLINOIS	WAUKEGAN	12.87	13.27	13.61	3.1	2.5	5.7
244	ILLINOIS	COOK COUNTY	8.62	8.92	8.19	3.5	-8.2	-5.0
245	ILLINOIS	DU PAGE COUNTY	6.79	7.12	6.34	3.6	-10.9	-7.7
246	ILLINOIS	LAKE COUNTY	8.51	8.38	7.42	-1.6	-11.5	-12.9
247	ILLINOIS	MADISON COUNTY	13.97	13.74	12.74	-1.7	-7.2	-8.8
248	ILLINOIS	ST CLAIR COUNTY	14.65	14.58	12.32	-.4	-15.5	-15.9
249	ILLINOIS	WILL COUNTY	8.24	8.61	7.66	4.5	-11.0	-7.0
250	INDIANA	ANDERSON	15.34	15.37	14.07	.1	-8.4	-8.3
251	INDIANA	BLOOMINGTON	14.26	15.72	15.05	10.2	-4.2	5.5
252	INDIANA	EAST CHICAGO	47.05	46.26	42.68	-1.7	-7.7	-9.3
253	INDIANA	ELKHART	19.74	20.36	20.71	3.1	1.7	4.9
254	INDIANA	EVANSVILLE	25.45	24.38	24.21	-4.2	-.7	-4.9
255	INDIANA	FORT WAYNE	16.97	16.80	16.27	-.9	-3.2	-4.0
256	INDIANA	GARY	29.26	29.00	25.38	-.9	-12.5	-13.3
257	INDIANA	HAMMOND	26.98	27.04	26.17	.2	-3.2	-3.0
258	INDIANA	INDIANAPOLIS	13.98	14.04	12.31	.4	-12.3	-11.9
259	INDIANA	KOKOMO	21.12	20.89	20.16	-1.1	-3.5	-4.6
260	INDIANA	LAFAYETTE	19.30	19.11	18.71	-1.0	-2.1	-3.1
261	INDIANA	MUNCIE	16.12	16.76	15.76	3.9	-5.9	-2.2
262	INDIANA	SOUTH BEND	31.08	30.80	29.29	-.9	-4.9	-5.8
263	INDIANA	TERRE HAUTE	36.36	34.45	34.68	-5.2	.7	-4.6
264	INDIANA	WEST LAFAYETTE	11.99	14.12	14.04	17.8	-.6	17.1

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
265	IOWA	CEDAR FALLS	10.44	9.47	8.52	-9.4	-10.0	-18.4
266	IOWA	CEDAR RAPIDS	12.76	12.23	11.18	-4.1	-8.6	-12.4
267	IOWA	COUNCIL BLUFFS	20.91	19.56	19.22	-6.5	-1.8	-8.1
268	IOWA	DAVENPORT	14.24	13.97	13.59	-1.9	-2.7	-4.6
269	IOWA	DES MOINES	25.82	25.04	23.51	-3.0	-6.1	-9.0
270	IOWA	DUBUQUE	15.70	14.90	15.98	-5.1	7.2	1.8
271	IOWA	IOWA CITY	13.29	16.33	15.09	22.9	-7.6	13.6
272	IOWA	SIOUX CITY	27.67	26.99	26.32	-2.5	-2.5	-4.9
273	IOWA	WATERLOO	17.03	16.35	15.71	-4.0	-3.9	-7.8
274	KANSAS	KANSAS CITY	17.85	16.43	14.55	-7.9	-11.4	-18.4
275	KANSAS	LAWRENCE	13.19	14.54	14.24	10.2	-2.0	7.9
276	KANSAS	OVERLAND PARK	6.00	6.07	5.46	1.3	-10.1	-8.9
277	KANSAS	TOPEKA	20.47	19.26	18.76	-5.9	-2.6	-8.4
278	KANSAS	WICHITA	13.80	12.41	11.67	-9.9	-6.0	-15.3
279	KENTUCKY	ASHLAND	31.54	30.00	28.78	-4.9	-4.1	-8.8
280	KENTUCKY	COVINGTON	41.02	39.75	39.06	-3.1	-1.7	-4.7
281	KENTUCKY	HOPKINSVILLE	20.79	17.97	17.28	-13.6	-3.8	-16.9
282	KENTUCKY	LEXINGTON-FAYETTE UR	13.73	13.73	13.01	-.0	-5.2	-5.2
283	KENTUCKY	LOUISVILLE	40.18	38.34	36.70	-4.5	-4.3	-8.6
284	KENTUCKY	OWENSBORO	15.69	15.17	13.66	-3.3	-10.0	-13.0
285	KENTUCKY	JEFFERSON COUNTY	9.81	10.52	9.02	7.3	-14.2	-8.0
286	LOUISIANA	ALEXANDRIA	27.74	23.06	22.03	-16.9	-4.5	-20.6
287	LOUISIANA	BATON ROUGE	15.99	15.72	15.51	-1.8	-1.3	-3.0
288	LOUISIANA	BOSSIER CITY	13.64	13.39	12.53	-1.8	-6.5	-8.1
289	LOUISIANA	KERNER	9.61	11.95	12.80	24.1	7.1	33.0
290	LOUISIANA	LAFAYETTE	20.42	16.75	16.09	-18.0	-3.9	-21.2
291	LOUISIANA	LAKE CHARLES	23.09	17.45	15.94	-24.4	-8.7	-31.0
292	LOUISIANA	MONROE	27.91	25.06	24.30	-10.2	-3.0	-12.9
293	LOUISIANA	NEW ORLEANS	32.54	30.43	29.97	-6.5	-1.5	-7.9
294	LOUISIANA	SHREVEPORT	22.61	18.59	17.76	-17.8	-4.5	-21.4
295	LOUISIANA	JEFFERSON PARISH	12.50	12.63	12.22	1.0	-3.2	-2.3
296	MAINE	AUBURN	28.29	27.76	28.46	-1.9	2.5	.6
297	MAINE	BANGOR	35.66	34.10	36.86	-4.4	8.1	3.4
298	MAINE	LEWISTON	25.26	24.48	24.19	-3.1	-1.2	-4.2
299	MAINE	PORTLAND	36.95	35.87	37.64	-2.9	4.9	1.9
300	MARYLAND	BALTIMORE	35.54	35.00	34.60	-1.5	-1.1	-2.6
301	MARYLAND	CUMBERLAND	45.68	43.07	43.54	-5.7	1.1	-4.7
302	MARYLAND	HAGERSTOWN	31.46	30.68	31.38	-2.5	2.3	-.2
303	MARYLAND	ANNE ARUNDEL COUNTY	9.38	9.26	8.26	-1.0	-10.9	-11.7
304	MARYLAND	BALTIMORE COUNTY	8.18	8.38	7.48	2.4	-10.7	-8.6
305	MARYLAND	MONTGOMERY COUNTY	7.26	7.26	7.32	.1	.8	.9
306	MARYLAND	PRINCE GEORGES COUNT	10.02	10.20	10.33	1.8	1.3	3.1
307	MASSACHUSETTS	ARLINGTON	22.40	21.78	23.14	-2.8	6.4	3.3
308	MASSACHUSETTS	BOSTON	41.31	40.84	40.76	-1.2	-.2	-1.4

ENTITLEMENT JURISDICTION			PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
309	MASSACHUSETTS	BROCKTON	14.52	15.58	16.20	7.3	4.0	11.5
310	MASSACHUSETTS	BROOKLINE	25.27	24.64	24.92	-2.5	1.1	-1.4
311	MASSACHUSETTS	CAMBRIDGE	35.11	34.13	36.11	-2.8	5.8	2.9
312	MASSACHUSETTS	CHICOPEE	23.87	23.41	23.73	-1.9	1.4	-.6
313	MASSACHUSETTS	FALL RIVER	32.88	32.13	32.90	-2.3	2.4	.1
314	MASSACHUSETTS	FITCHBURG	29.92	29.76	31.19	-.5	4.8	4.2
315	MASSACHUSETTS	FRAMINGHAM	8.47	8.94	8.33	5.6	-6.8	-1.6
316	MASSACHUSETTS	HAVERHILL	25.13	24.95	26.62	-.7	6.7	5.9
317	MASSACHUSETTS	HOLYOKE	38.52	38.42	35.89	-.3	-6.6	-6.8
318	MASSACHUSETTS	LAWRENCE	34.18	35.92	35.42	5.0	-1.4	3.6
319	MASSACHUSETTS	LEOMINSTER	13.87	14.09	14.74	3.1	4.6	7.8
320	MASSACHUSETTS	LOWELL	24.98	24.85	25.58	-.5	2.9	2.4
321	MASSACHUSETTS	LYNN	38.73	38.29	38.58	-1.1	.7	-.4
322	MASSACHUSETTS	MALDEN	28.76	28.42	29.66	-1.2	4.4	3.1
323	MASSACHUSETTS	MEDFORD	29.67	29.31	30.34	-1.2	3.5	2.3
324	MASSACHUSETTS	NEW BEDFORD	31.31	30.52	31.07	-2.5	1.8	-.8
325	MASSACHUSETTS	NEWTON	25.09	24.73	26.20	-1.4	5.9	4.4
326	MASSACHUSETTS	PITTSFIELD	27.84	27.98	29.28	.5	4.6	5.2
327	MASSACHUSETTS	QUINCY	24.17	24.00	25.37	-.7	5.7	4.9
328	MASSACHUSETTS	SOMERVILLE	39.95	39.52	40.84	-1.1	3.4	2.2
329	MASSACHUSETTS	SPRINGFIELD	30.97	31.54	30.42	1.8	-3.6	-1.8
330	MASSACHUSETTS	WALTHAM	16.80	16.45	17.19	-2.1	4.5	2.4
331	MASSACHUSETTS	WEYMOUTH	9.98	10.28	10.98	3.0	6.8	10.1
332	MASSACHUSETTS	WORCESTER	32.22	32.41	32.63	.6	.7	1.3
333	MICHIGAN	ANN ARBOR	11.95	13.15	12.74	10.1	-3.1	6.7
334	MICHIGAN	BATTLE CREEK	38.89	37.99	38.37	-2.3	1.0	-1.3
335	MICHIGAN	BAY CITY	39.79	39.12	38.27	-1.7	-2.2	-3.8
336	MICHIGAN	BENTON HARBOR	46.14	47.96	42.47	4.0	-11.4	-7.9
337	MICHIGAN	CLINTON TWP	7.74	8.54	7.93	10.3	-7.1	2.5
338	MICHIGAN	DEARBORN	26.79	26.14	25.57	-2.4	-2.2	-4.6
339	MICHIGAN	DEARBORN HEIGHTS	15.57	15.18	15.01	-2.5	-1.1	-3.6
340	MICHIGAN	DETROIT	45.05	45.02	41.03	-.1	-8.9	-8.9
341	MICHIGAN	EAST LANSING	11.37	15.07	15.87	32.5	5.3	39.6
342	MICHIGAN	FARMINGTON HILLS	7.18	7.23	6.36	.8	-12.1	-11.4
343	MICHIGAN	FLINT	31.84	31.65	29.88	-.6	-5.6	-6.1
344	MICHIGAN	GRAND RAPIDS	23.48	22.65	22.14	-3.5	-2.2	-5.7
345	MICHIGAN	JACKSON	41.80	41.29	41.44	-1.2	.4	-.9
346	MICHIGAN	KALAMAZOO	23.84	24.31	23.77	2.0	-2.2	-.3
347	MICHIGAN	LANSING	13.78	14.34	13.48	4.1	-6.0	-2.1
348	MICHIGAN	LINCOLN PARK	19.87	19.01	18.96	-4.4	-.2	-4.6
349	MICHIGAN	LIVONIA	8.16	7.91	5.89	-3.1	-25.5	-27.8
350	MICHIGAN	MUSKEGON	32.21	33.08	31.02	2.7	-6.2	-3.7
351	MICHIGAN	MUSKEGON HTS	41.89	41.73	39.20	-.4	-6.1	-6.4
352	MICHIGAN	NORTON SHORES	10.46	9.81	7.42	-6.3	-24.3	-29.1

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
353	MICHIGAN	PONTIAC	23.81	24.01	21.69	.9	-9.7	-8.9
354	MICHIGAN	PORTAGE	7.70	7.78	6.41	1.0	-17.6	-16.8
355	MICHIGAN	REDFORD	17.25	16.62	16.21	-3.7	-2.4	-6.0
356	MICHIGAN	ROSEVILLE	12.90	12.69	9.68	-1.7	-23.7	-25.0
357	MICHIGAN	ROYAL OAK	18.18	17.67	17.60	-2.8	-.4	-3.2
358	MICHIGAN	SAGINAW	37.70	38.17	35.86	1.3	-6.0	-4.9
359	MICHIGAN	ST CLAIR SHORES	10.92	10.43	8.31	-4.6	-20.3	-23.9
360	MICHIGAN	SOUTHFIELD	6.54	6.71	6.53	2.7	-2.8	-.2
361	MICHIGAN	STERLING HEIGHTS	5.85	6.62	6.36	13.2	-3.9	8.8
362	MICHIGAN	TAYLOR	10.81	12.77	10.93	18.1	-14.4	1.1
363	MICHIGAN	TROY CITY	5.93	6.20	5.79	4.5	-6.6	-2.4
364	MICHIGAN	WARREN	10.12	10.53	8.57	4.1	-18.6	-15.3
365	MICHIGAN	WATERFORD	9.47	9.35	7.60	-1.2	-18.8	-19.8
366	MICHIGAN	WESTLAND	13.68	13.87	13.85	1.4	-.2	1.2
367	MICHIGAN	WYOMING	10.63	10.32	8.50	-2,9	-17.7	-20.1
368	MICHIGAN	GENESEE COUNTY	9.76	10.81	9.31	10.8	-13.9	-4.6
369	MICHIGAN	KENT COUNTY	8.27	8.73	7.76	5.5	-11.0	-6.1
370	MICHIGAN	MACOMB COUNTY	9.87	9.49	8.14	-3.8	-14.2	-17.5
371	MICHIGAN	OAKLAND COUNTY	8.52	8.73	7.63	2.5	-12.6	-10.5
372	MICHIGAN	WAYNE COUNTY	9.47	9.68	8.13	2.2	-15.9	-14.1
373	MINNESOTA	BLOOMINGTON	8.30	8.19	5.94	-1.3	-27.5	-28.4
374	MINNESOTA	DULUTH	32.84	31.77	31.59	-3.3	-.6	-3.8
375	MINNESOTA	MINNEAPOLIS	41.75	40.62	40.46	-2.7	-.4	-3.1
376	MINNESOTA	MOORHEAD	13.36	12.88	10.25	-3.6	-20.4	-23.2
377	MINNESOTA	ROCHESTER	10.52	9.51	8.68	-9.5	-8.8	-17.5
378	MINNESOTA	ST CLOUD	13.78	14.71	12.15	6.8	-17.4	-11.8
379	MINNESOTA	ST PAUL	31.11	30.40	29.81	-2.4	-1.9	-4.2
380	MINNESOTA	ANOKA COUNTY	9.20	9.76	7.60	6.1	-22.2	-17.4
381	MINNESOTA	HENNEPIN COUNTY	7.72	7.79	6.34	.9	-18.5	-17.8
382	MISSISSIPPI	BILOXI	17.42	15.44	14.76	-11.4	-4.4	-15.3
383	MISSISSIPPI	GULFPORT	19.87	17.54	15.86	-11.7	-9.6	-20.2
384	MISSISSIPPI	JACKSON	21.34	19.11	18.75	-10.5	-1.9	-12.2
385	MISSISSIPPI	MOSS POINT	22.33	20.17	19.57	-9.7	-3.0	-12.4
386	MISSISSIPPI	PASCAGOULA	15.64	14.63	13.79	-6.5	-5.8	-11.9
387	MISSOURI	COLUMBIA	13.47	13.91	13.06	3.3	-6.1	-3.0
388	MISSOURI	FLORISSANT	10.69	9.69	6.53	-9.3	-32.6	-38.9
389	MISSOURI	INDEPENDENCE	9.97	9.73	8.56	-2.4	-12.1	-14.2
390	MISSOURI	JOPLIN	26.70	25.14	22.62	-5.5	-10.0	-15.0
391	MISSOURI	KANSAS CITY	26.63	25.39	23.31	-4.7	-8.2	-12.5
392	MISSOURI	ST JOSEPH	27.95	26.46	26.13	-5.3	-1.2	-6.5
393	MISSOURI	ST LOUIS	66.70	63.06	58.48	-5.5	-7.3	-12.4
394	MISSOURI	SPRINGFIELD	14.36	13.84	12.93	-3.6	-6.6	-10.0
395	MISSOURI	ST LOUIS COUNTY	9.35	9.22	7.76	-2.0	-15.8	-17.5
396	MONTANA	BILLINGS	13.70	11.99	10.39	-12.5	-13.3	-24.2

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
397	MONTANA	GREAT FALLS	17.35	16.21	15.13	-6.6	-6.7	-12.8
398	NEBRASKA	LINCOLN	11.12	10.94	10.02	-1.7	-8.4	-9.9
399	NEBRASKA	OMAHA	18.58	17.87	17.03	-3.9	-4.7	-8.4
400	NEVADA	LAS VEGAS	11.20	12.58	13.70	12.1	8.9	22.1
401	NEVADA	RENO	9.76	10.15	11.09	4.1	9.2	13.7
402	NEVADA	CLARK COUNTY	8.56	10.76	11.71	25.8	8.8	36.9
403	NEW HAMPSHIRE	DOVER	13.72	14.54	15.43	5.9	6.1	12.4
404	NEW HAMPSHIRE	MANCHESTER	21.45	21.03	22.24	-2.0	5.8	3.7
405	NEW HAMPSHIRE	NASHUA	10.06	10.15	10.52	.9	3.6	4.6
406	NEW HAMPSHIRE	PORSMOUTH	20.65	19.33	20.73	-6.4	7.2	.4
407	NEW HAMPSHIRE	ROCHESTER	13.57	12.77	13.88	-5.9	8.7	2.3
408	NEW JERSEY	ASBURY PARK	30.03	30.14	29.00	.4	-3.8	-3.4
409	NEW JERSEY	ATLANTIC CITY	58.43	55.99	53.62	-4.2	-4.2	-8.2
410	NEW JERSEY	BAYONNE	32.36	31.43	31.72	-2.9	.9	-2.0
411	NEW JERSEY	BLOOMFIELD	25.47	24.90	26.37	-2.2	5.9	3.5
412	NEW JERSEY	BRIDGETON	30.77	32.56	31.85	5.8	-2.2	3.5
413	NEW JERSEY	CAMDEN	48.16	50.70	46.91	5.3	-7.5	-2.6
414	NEW JERSEY	CHERRY HILL	5.78	6.00	5.81	3.8	-3.2	.5
415	NEW JERSEY	CLIFTON	21.52	20.98	22.34	-2.5	6.5	3.8
416	NEW JERSEY	EAST ORANGE	24.76	27.09	23.17	9.6	-14.5	-6.3
417	NEW JERSEY	EDISON	7.24	7.56	6.68	4.4	-11.7	-7.7
418	NEW JERSEY	ELIZABETH	24.59	25.77	24.70	3.7	-4.2	-.6
419	NEW JERSEY	HAMILTON	8.47	7.92	7.65	-6.5	-3.4	-9.7
420	NEW JERSEY	IRVINGTON	22.59	24.17	21.97	7.0	-9.1	-2.8
421	NEW JERSEY	JERSEY CITY	40.88	41.76	39.16	2.1	-6.2	-4.3
422	NEW JERSEY	LONG BRANCH	17.62	19.00	19.13	7.8	.7	8.6
423	NEW JERSEY	MIDDLETOWN	7.82	7.72	6.61	-1.3	-14.4	-15.5
424	NEW JERSEY	MILLVILLE	12.99	13.27	14.42	2.2	8.6	11.0
425	NEW JERSEY	NEWARK	40.80	42.00	38.22	2.7	-9.0	-6.5
426	NEW JERSEY	NEW BRUNSWICK	20.60	22.41	23.25	8.8	3.7	12.8
427	NEW JERSEY	OLD BRIDGE TOWNSHIP	8.31	8.73	7.94	5.0	-9.0	-4.5
428	NEW JERSEY	PARSIPPANY-TROYHILLS	6.91	6.63	6.05	-4.0	-8.8	-12.4
429	NEW JERSEY	PASSAIC	29.69	31.72	30.54	6.5	-3.7	2.6
430	NEW JERSEY	PATERSON	28.94	30.86	29.16	6.5	-5.5	.6
431	NEW JERSEY	PERTH AMBOY	22.87	24.27	24.77	5.7	2.0	7.8
432	NEW JERSEY	SAYREVILLE	8.14	8.00	6.38	-1.7	-20.3	-21.7
433	NEW JERSEY	TRENTON	41.24	40.90	40.22	-.9	-1.7	-2.5
434	NEW JERSEY	UNION CITY	24.53	28.43	27.24	11.7	-4.2	7.0
435	NEW JERSEY	UNION	15.09	14.54	15.41	-3.6	6.0	2.1
436	NEW JERSEY	VINELAND	12.19	14.17	14.39	16.2	1.6	18.1
437	NEW JERSEY	WOODBRIDGE	8.19	7.76	6.54	-5.3	-15.7	-20.1
438	NEW JERSEY	BERGEN COUNTY	12.08	11.73	12.28	-3.0	4.7	1.6
439	NEW JERSEY	BURLINGTON COUNTY	8.79	8.85	8.21	.7	-7.3	-6.7
440	NEW JERSEY	CAMDEN COUNTY	8.82	9.24	9.49	4.7	2.8	7.6

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
441	NEW JERSEY	ESSEX COUNTY	18.39	17.80	18.50	-3.2	3.9	.6
442	NEW JERSEY	HUDSON COUNTY	24.13	25.23	25.78	3.4	2.2	5.7
443	NEW JERSEY	MIDDLESEX COUNTY	8.74	8.31	7.33	-4.9	-11.8	-16.1
444	NEW JERSEY	MONMOUTH COUNTY	9.60	9.18	8.85	-4.4	-3.6	-7.9
445	NEW JERSEY	MORRIS COUNTY	7.52	7.21	7.58	-4.1	5.1	.8
446	NEW JERSEY	UNION COUNTY	15.04	14.88	15.02	-1.1	.9	-.1
447	NEW MEXICO	ALBUQUERQUE	12.98	13.43	13.67	3.6	1.8	5.4
448	NEW MEXICO	LAS CRUCES	18.83	20.10	19.39	6.8	-3.6	3.0
449	NEW YORK	ALBANY	42.16	41.53	42.17	-1.5	1.5	.0
450	NEW YORK	AMHERST	7.20	6.77	6.32	-5.9	-6.6	-12.1
451	NEW YORK	BABYLON TOWN	10.03	10.04	9.28	.1	-7.6	-7.5
452	NEW YORK	BINGHAMTON	46.47	45.92	46.55	-1.2	1.4	.2
453	NEW YORK	BUFFALO	57.27	56.35	54.86	-1.6	-2.6	-4.2
454	NEW YORK	CHEEKTOWAGA	9.32	9.32	7.86	.1	-15.6	-15.6
455	NEW YORK	COLONIE TOWN	8.00	8.16	7.31	2.0	-10.4	-8.6
456	NEW YORK	ELMIRA	45.91	44.21	43.64	-3.7	-1.3	-4.9
457	NEW YORK	GLEN FALLS	37.27	36.33	37.85	-2.5	4.2	1.6
458	NEW YORK	GREECE	6.53	6.89	6.01	5.4	-12.8	-8.0
459	NEW YORK	HUNTINGTON TOWN	7.13	6.67	6.20	-6.5	-7.0	-13.0
460	NEW YORK	IRONDEQUOIT	11.61	11.52	12.18	-.8	5.8	4.9
461	NEW YORK	ISLIP TOWN	8.99	9.87	9.38	9.9	-5.0	4.3
462	NEW YORK	MIDDLETOWN	29.34	29.07	28.71	-.9	-1.2	-2.1
463	NEW YORK	MOUNT VERNON	31.60	32.35	32.75	2.4	1.2	3.6
464	NEW YORK	NEWBURGH	48.34	48.50	46.37	.3	-4.4	-4.1
465	NEW YORK	NEW ROCHELLE	23.84	23.21	24.47	-2.6	5.5	2.7
466	NEW YORK	NEW YORK	31.30	31.66	30.77	1.0	-2.8	-1.8
467	NEW YORK	NIAGARA FALLS	43.55	42.76	42.48	-1.8	-.7	-2.5
468	NEW YORK	POUGHKEEPSIE	42.22	42.50	41.43	.7	-2.5	-1.9
469	NEW YORK	ROCHESTER	45.29	45.04	42.94	-.6	-4.7	-5.2
470	NEW YORK	ROME	27.25	26.86	26.56	-1.4	-1.1	-2.5
471	NEW YORK	SCHENECTADY	39.71	39.71	40.51	.0	2.0	2.0
472	NEW YORK	SYRACUSE	40.76	40.31	40.06	-1.1	-.6	-1.7
473	NEW YORK	TONAWANDA TOWN	19.07	18.72	19.14	-1.9	2.3	.4
474	NEW YORK	TROY	37.90	37.53	38.69	-1.0	3.1	2.1
475	NEW YORK	UNION TOWN	22.93	21.95	22.18	-4.3	1.1	-3.3
476	NEW YORK	UTICA	45.93	44.93	43.60	-2.2	-3.0	-5.1
477	NEW YORK	WEST SENECA	8.59	7.75	6.45	-9.7	-16.8	-24.8
478	NEW YORK	WHITE PLAINS	23.80	23.44	23.26	-1.5	-.8	-2.3
479	NEW YORK	YONKERS	18.40	18.74	18.84	1.8	.5	2.3
480	NEW YORK	ERIE COUNTY	9.85	9.37	10.12	-4.2	8.0	3.4
481	NEW YORK	MONROE COUNTY	6.78	7.43	6.72	9.5	-9.6	-1.0
482	NEW YORK	NASSAU COUNTY	10.93	10.70	11.05	-2.1	3.3	1.1
483	NEW YORK	ONONDAGA COUNTY	8.83	8.31	7.22	-5.6	-13.1	-18.0
484	NEW YORK	ORANGE COUNTY	9.44	9.51	10.22	.7	7.5	8.3

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
485	NEW YORK	ROCKLAND COUNTY	8.51	9.01	9.06	5.9	.6	6.5
486	NEW YORK	SUFFOLK COUNTY	8.03	8.87	8.67	10.6	-2.3	8.1
487	NEW YORK	WESTCHESTER COUNTY	11.23	10.73	11.76	-4.5	9.6	4.7
488	NORTH CAROLINA	ASHEVILLE	30.80	28.42	26.37	-7.7	-7.2	-14.4
489	NORTH CAROLINA	BURLINGTON	13.76	13.89	12.54	1.0	-9.7	-8.9
490	NORTH CAROLINA	CHARLOTTE	14.55	13.82	13.37	-5.0	-3.2	-8.1
491	NORTH CAROLINA	CONCORD	25.21	21.91	21.16	-13.1	-3.4	-16.0
492	NORTH CAROLINA	DURHAM	19.41	17.72	17.11	-9.0	-3.5	-12.1
493	NORTH CAROLINA	FAYETTEVILLE	22.62	20.21	18.43	-10.7	-8.8	-18.5
494	NORTH CAROLINA	GASTONIA	17.35	16.21	14.74	-6.5	-9.1	-15.1
495	NORTH CAROLINA	GREENSBORO	13.58	13.45	12.87	-1.0	-4.3	-5.2
496	NORTH CAROLINA	HICKORY	15.79	15.28	13.12	-3.2	-14.2	-16.9
497	NORTH CAROLINA	HIGH POINT	17.00	16.03	14.43	-5.7	-10.0	-15.1
498	NORTH CAROLINA	JACKSONVILLE	16.87	15.72	14.40	-.2	-8.4	-8.7
499	NORTH CAROLINA	RALEIGH	12.77	12.19	11.89	-4.5	-2.5	-7.0
500	NORTH CAROLINA	SALISBURY	19.12	16.69	16.40	-12.7	-1.7	-14.2
501	NORTH CAROLINA	WILMINGTON	25.01	22.78	21.17	-8.9	-7.0	-15.3
502	NORTH CAROLINA	WINSTON SALEM	18.84	16.48	15.29	-12.6	-7.2	-18.9
503	NORTH DAKOTA	BISMARK	11.27	10.17	8.36	-9.8	-17.8	-25.8
504	NORTH DAKOTA	FARGO	11.38	11.57	10.78	1.7	-6.8	-5.2
505	NORTH DAKOTA	GRAND FORKS	12.18	13.04	10.89	7.0	-16.4	-10.6
506	OHIO	AKRON	33.82	33.39	31.84	-1.3	-4.6	-5.8
507	OHIO	CANTON	35.67	36.38	34.77	.2	-4.4	-4.2
508	OHIO	CINCINNATI	41.80	40.29	38.87	-3.6	-3.5	-7.0
509	OHIO	CLEVELAND	56.40	54.80	51.22	-2.8	-6.5	-9.2
510	OHIO	CLEVELAND HEIGHTS	27.69	27.67	28.26	-.1	2.1	2.1
511	OHIO	COLUMBUS	14.62	15.57	14.55	6.6	-6.6	-.4
512	OHIO	DAYTON	37.05	40.85	39.46	4.9	-3.4	1.3
513	OHIO	ELYRIA	10.85	12.29	11.10	13.3	-9.6	2.4
514	OHIO	EUCLID	13.64	13.64	14.22	.1	4.2	4.2
515	OHIO	HAMILTON CITY	27.85	27.57	27.02	-1.0	-2.0	-3.0
516	OHIO	KETTERING	7.69	7.64	6.48	-.7	-15.2	-15.8
517	OHIO	LAKEWOOD	30.20	29.71	30.98	-1.6	4.2	2.6
518	OHIO	LIMA	28.96	28.56	27.12	-.5	-5.0	-5.5
519	OHIO	LORAIN	14.69	15.62	13.77	6.3	-11.8	-6.2
520	OHIO	MANSFIELD	16.56	16.26	15.54	-1.8	-4.4	-6.1
521	OHIO	MARIETTA	27.70	25.85	26.26	-6.7	1.6	-5.2
522	OHIO	MIDDLETOWN	18.81	18.42	16.24	-2.1	-11.8	-13.7
523	OHIO	NEWARK	24.35	23.01	22.32	-5.5	-3.0	-8.3
524	OHIO	PARMA	8.36	7.44	6.04	-11.1	-18.8	-27.8
525	OHIO	SPRINGFIELD	31.29	31.43	31.10	.5	-1.0	-.6
526	OHIO	STEUBENVILLE	37.10	34.85	32.89	-6.1	-5.6	-11.4
527	OHIO	TOLEDO	18.20	18.20	17.73	-.0	-2.6	-2.6
528	OHIO	WARREN	22.19	22.59	22.64	1.8	.2	2.0

	ENTITLEMENT JURISDICTION STATE	NAME	PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
529	OHIO	YOUNGSTOWN	46.78	46.07	44.25	-1.5	-4.0	-5.4
530	OHIO	CUYAHOGA COUNTY	7.98	8.00	7.14	.3	-10.8	-10.6
531	OHIO	FRANKLIN COUNTY	8.57	8.27	7.09	-3.6	-14.2	-17.3
532	OHIO	HAMILTON COUNTY	9.87	9.45	7.89	-4.3	-16.5	-20.1
533	OHIO	MONTGOMERY COUNTY	8.45	9.34	8.08	12.6	-13.5	-2.7
534	OHIO	STARK COUNTY	9.24	9.14	7.68	-.4	-16.0	-16.4
535	OHIO	SUMMIT COUNTY	9.14	8.80	7.28	-3.6	-17.3	-20.3
536	OKLAHOMA	ENID	14.20	12.24	9.89	-13.8	-19.2	-30.4
537	OKLAHOMA	LAWTON	17.58	15.88	15.72	-9.7	-1.0	-10.6
538	OKLAHOMA	MIDWEST CITY	12.98	11.38	10.32	-12.3	-9.3	-20.5
539	OKLAHOMA	NORMAN	11.45	11.42	11.55	-.3	1.1	.8
540	OKLAHOMA	OKLAHOMA CITY	14.95	13.47	12.98	-9.8	-3.6	-13.1
541	OKLAHOMA	TULSA	13.00	11.75	11.28	-9.6	-4.0	-13.3
542	OREGON	EUGENE	11.18	13.03	12.91	16.6	-.9	15.6
543	OREGON	MEDFORD	10.67	11.97	12.00	12.1	.3	12.5
544	OREGON	PORTLAND	25.47	24.62	25.52	-3.4	3.6	.2
545	OREGON	SALEM	10.45	11.12	11.18	6.5	.5	7.1
546	OREGON	SPRINGFIELD	9.92	14.43	14.27	45.5	-1.1	43.9
547	OREGON	CLACKAMAS COUNTY	8.78	8.57	8.34	-2.5	-2.7	-5.1
548	OREGON	WASHINGTON COUNTY	7.39	8.21	8.20	11.2	-.1	11.1
549	PENNSYLVANIA	ABINGTON	10.80	10.24	10.86	-5.5	6.0	.1
550	PENNSYLVANIA	ALLENTOWN	26.22	26.07	27.36	-.5	4.9	4.4
551	PENNSYLVANIA	ALTOONA	39.77	37.67	38.28	-5.3	1.6	-3.8
552	PENNSYLVANIA	BENSALEM TOWNSHIP	7.48	10.23	9.87	36.7	-3.5	31.9
553	PENNSYLVANIA	BETHLEHEM	23.24	23.18	23.91	-.3	3.2	2.9
554	PENNSYLVANIA	BRISTOL TWP	12.27	12.71	10.20	3.6	-19.8	-16.9
555	PENNSYLVANIA	CHESTER	47.59	46.41	44.21	-2.5	-4.7	-7.1
556	PENNSYLVANIA	EASTON	42.50	40.32	40.00	-5.1	-.8	-5.9
557	PENNSYLVANIA	ERIE	31.20	30.84	31.25	-1.2	1.3	.2
558	PENNSYLVANIA	HARRISBURG	59.36	56.90	53.11	-4.4	-6.6	-10.7
559	PENNSYLVANIA	HAVERFORD	15.85	15.94	17.37	.6	8.9	9.6
560	PENNSYLVANIA	HAZLETON	36.73	35.28	36.37	-3.9	3.1	-1.0
561	PENNSYLVANIA	JOHNSTOWN	56.30	54.52	54.20	-3.1	-.6	-3.7
562	PENNSYLVANIA	LANCASTER	34.21	33.60	35.12	-2.0	4.5	2.5
563	PENNSYLVANIA	LOWER MERION	17.43	16.55	18.31	-5.1	10.7	5.0
564	PENNSYLVANIA	PENN HILLS	8.99	8.62	7.17	-4.1	-16.8	-20.2
565	PENNSYLVANIA	PHILADELPHIA	36.63	36.60	36.68	-.1	.2	.1
566	PENNSYLVANIA	PITTSBURGH	50.38	48.29	47.06	-4.1	-2.5	-6.6
567	PENNSYLVANIA	READING	43.71	43.80	44.78	.2	2.2	2.4
568	PENNSYLVANIA	SCRANTON	43.17	41.94	42.31	-2.8	.9	-2.0
569	PENNSYLVANIA	SHARON	42.70	41.08	40.54	-3.8	-1.3	-5.1
570	PENNSYLVANIA	STATE COLLEGE	19.49	20.19	20.59	3.6	1.9	5.6
571	PENNSYLVANIA	UPPER DARBY	23.31	23.30	24.82	-.1	6.5	6.4
572	PENNSYLVANIA	WILKES-BARRE	42.63	41.13	40.86	-4.0	-.7	-4.6

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
573	PENNSYLVANIA	WILLIAMSPORT	43.68	42.29	42.92	-3.2	1.5	-1.7
574	PENNSYLVANIA	YORK	42.03	41.28	41.85	-1.8	1.4	-.4
575	PENNSYLVANIA	ALLEGHENY COUNTY	17.38	16.55	17.02	-4.8	2.9	-2.1
576	PENNSYLVANIA	BEAVER COUNTY	18.48	17.45	17.64	-5.6	1.1	-4.6
577	PENNSYLVANIA	BERKS COUNTY	11.02	10.72	11.99	-2.7	11.8	8.8
578	PENNSYLVANIA	BUCKS COUNTY	8.16	8.19	7.31	.5	-10.8	-10.3
579	PENNSYLVANIA	CHESTER COUNTY	9.21	8.90	9.23	-3.4	3.8	.3
580	PENNSYLVANIA	DELAWARE COUNTY	9.07	8.80	9.38	-2.9	6.6	3.4
581	PENNSYLVANIA	LANCASTER COUNTY	10.28	10.05	11.17	-2.3	11.1	8.6
582	PENNSYLVANIA	LUZERNE COUNTY	20.03	18.90	20.07	-5.6	6.2	.2
583	PENNSYLVANIA	MONTGOMERY COUNTY	7.66	7.56	8.12	-1.3	7.4	5.9
584	PENNSYLVANIA	WASHINGTON COUNTY	21.48	19.92	20.60	-7.3	3.4	-4.1
585	PENNSYLVANIA	WESTMORELAND COUNTY	11.32	10.80	11.53	-4.6	6.7	1.8
586	PENNSYLVANIA	YORK COUNTY	9.33	9.00	10.06	-3.5	11.7	7.8
587	RHODE ISLAND	CRANSTON	13.66	13.75	14.75	.6	7.3	8.0
588	RHODE ISLAND	EAST PROVIDENCE	12.62	12.17	13.25	-3.5	8.9	5.0
589	RHODE ISLAND	PAWTUCKET	32.22	31.15	31.38	-3.3	.8	-2.6
590	RHODE ISLAND	PROVIDENCE	48.01	46.29	45.30	-3.6	-2.1	-5.6
591	RHODE ISLAND	WARWICK	9.66	9.86	8.88	2.1	-10.0	-8.1
592	SOUTH CAROLINA	ANDERSON	42.38	41.00	38.86	-2.1	-5.2	-7.2
593	SOUTH CAROLINA	CHARLESTON	24.92	20.42	19.85	-18.0	-2.8	-20.3
594	SOUTH CAROLINA	COLUMBIA	20.04	16.03	15.16	-20.0	-5.4	-24.4
595	SOUTH CAROLINA	FLORENCE	20.27	19.63	19.49	-3.8	-.7	-4.6
596	SOUTH CAROLINA	GREENVILLE	26.98	24.92	22.94	-7.6	-7.9	-15.0
597	SOUTH CAROLINA	NORTH CHARLESTON	16.33	15.84	16.03	-3.0	1.2	-1.8
598	SOUTH CAROLINA	ROCK HILL	18.54	16.10	15.26	-13.2	-5.2	-17.7
599	SOUTH CAROLINA	SPARTANBURG	22.48	20.70	18.87	-8.2	-8.8	-16.3
600	SOUTH CAROLINA	GREENVILLE COUNTY	13.16	12.39	11.81	-5.9	-4.7	-10.3
601	SOUTH DAKOTA	SIOUX FALLS	11.57	10.88	9.91	-5.9	-8.9	-14.3
602	TENNESSEE	BRISTOL	17.00	14.10	12.86	-17.1	-8.8	-24.3
603	TENNESSEE	CHATTANOOGA	19.90	17.56	16.69	-11.7	-5.0	-16.1
604	TENNESSEE	CLARKSVILLE	15.42	13.04	12.42	-15.4	-4.8	-19.5
605	TENNESSEE	JOHNSON CITY	19.70	15.75	14.23	-20.0	-9.7	-27.8
606	TENNESSEE	KINGSPORT	16.01	14.34	13.33	-10.5	-7.0	-16.8
607	TENNESSEE	KNOXVILLE	18.65	17.49	16.34	-6.2	-6.6	-12.4
608	TENNESSEE	MEMPHIS	22.25	21.47	20.51	-3.5	-4.5	-7.8
609	TENNESSEE	NASHVILLE-DAVIDSON	14.80	13.57	12.72	-8.3	-6.3	-14.0
610	TEXAS	ABILENE	15.11	13.31	13.22	-11.9	-.6	-12.5
611	TEXAS	AMARILLO	13.06	12.15	12.26	-6.9	.9	-6.1
612	TEXAS	ARLINGTON	6.77	8.20	8.45	21.1	3.1	24.9
613	TEXAS	AUSTIN	14.25	15.26	16.22	7.2	6.2	13.9
614	TEXAS	BAYTOWN CITY	10.23	12.08	14.11	18.1	16.8	37.9
615	TEXAS	BEAUMONT	18.99	17.26	15.76	-9.1	-8.7	-17.0
616	TEXAS	BROWNSVILLE	31.07	30.68	36.76	-1.3	19.9	18.3

ENTITLEMENT JURISDICTION			PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
617	TEXAS	BRYAN	17.52	17.89	18.85	2.1	5.4	7.6
618	TEXAS	COLLEGE STATION	8.48	18.79	20.65	121.6	9.9	143.5
619	TEXAS	CORPUS CHRISTI	20.05	18.05	18.87	-9.9	4.5	-5.8
620	TEXAS	DALLAS	15.90	15.82	16.66	-.5	5.3	4.7
621	TEXAS	DENISON	19.70	17.41	15.90	-11.6	-8.7	-19.3
622	TEXAS	EDINBURG	30.25	27.39	31.18	-9.5	13.9	3.1
623	TEXAS	EL PASO	19.32	21.40	23.03	10.8	7.6	19.2
624	TEXAS	FORT WORTH	17.12	16.04	15.77	-6.3	-1.7	-7.9
625	TEXAS	GALVESTON	27.37	24.57	24.51	-10.2	-.2	-10.5
626	TEXAS	GARLAND	6.93	8.27	8.90	19.4	7.6	28.5
627	TEXAS	GRAND PRAIRIE	10.63	11.93	12.72	12.2	6.6	19.6
628	TEXAS	HARLINGEN	30.60	25.33	28.32	-17.2	11.8	-7.5
629	TEXAS	HOUSTON	14.73	14.68	16.46	-.4	12.2	11.7
630	TEXAS	IRVING	9.77	9.80	9.67	.3	-1.3	-1.0
631	TEXAS	KILLEEN	15.67	17.60	19.63	12.4	11.6	25.3
632	TEXAS	LAREDO	34.28	32.23	37.74	-6.0	17.1	10.1
633	TEXAS	LONGVIEW	13.35	13.10	12.98	-1.9	-.9	-2.7
634	TEXAS	LUBBOCK	16.70	15.57	15.89	-6.7	2.1	-4.8
635	TEXAS	MC ALLEN	24.99	24.76	29.33	-.9	18.5	17.4
636	TEXAS	MARSHALL	23.04	19.08	18.11	-17.2	-5.1	-21.4
637	TEXAS	MESQUITE	8.94	9.42	8.79	5.4	-6.6	-1.6
638	TEXAS	MIDLAND	13.45	11.61	12.63	-13.7	8.8	-6.1
639	TEXAS	ODESSA	15.09	14.51	15.33	-3.8	5.6	1.6
640	TEXAS	ORANGE	22.06	19.87	18.08	-10.0	-9.0	-18.0
641	TEXAS	PASADENA	9.54	10.81	12.59	13.4	16.4	32.0
642	TEXAS	PHARR	37.74	35.09	41.16	-7.0	17.3	9.1
643	TEXAS	PLANO	5.02	6.36	6.68	26.7	5.0	33.0
644	TEXAS	PORT ARTHUR	24.82	23.28	21.12	-6.2	-9.3	-14.9
645	TEXAS	RICHARDSON C	5.15	5.99	5.89	16.3	-1.8	14.2
646	TEXAS	SAN ANGELO	18.02	14.81	15.12	-17.8	2.1	-16.1
647	TEXAS	SAN ANTONIO	21.91	21.67	22.20	-1.1	2.4	1.3
648	TEXAS	SAN BENITO	41.26	30.38	33.94	-26.4	11.7	-17.8
649	TEXAS	SHERMAN	12.57	11.50	10.58	-8.5	-8.0	-15.8
650	TEXAS	TEMPLE	15.65	15.37	15.17	-2.0	-1.3	-3.3
651	TEXAS	TEXARKANA	20.15	19.66	18.88	-2.4	-3.9	-6.3
652	TEXAS	TEXAS CITY	14.33	13.63	12.98	-5.4	-4.8	-9.9
653	TEXAS	TYLER	15.06	14.40	14.27	-4.4	-.9	-5.2
654	TEXAS	VICTORIA	18.92	16.37	17.04	-13.5	4.1	-10.0
655	TEXAS	WACO	19.47	18.67	18.79	-4.1	.6	-3.5
656	TEXAS	WICHITA FALLS	20.15	18.87	17.80	-6.4	-5.7	-11.7
657	TEXAS	HARRIS COUNTY	7.43	8.25	9.23	11.0	11.9	24.2
658	TEXAS	TARRANT COUNTY	8.94	9.20	8.72	2.9	-5.3	-2.5
659	UTAH	OGDEN	24.28	23.37	22.19	-3.8	-5.0	-8.6
660	UTAH	OREM	9.38	12.33	13.58	31.5	10.1	44.7

	ENTITLEMENT JURISDICTION		PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
	STATE	NAME						
661	UTAH	PROVO	14.82	21.04	25.02	42.0	18.9	68.9
662	UTAH	SALT LAKE CITY	30.58	29.32	29.01	-4.1	-1.1	-5.1
663	UTAH	SANDY CITY	5.63	7.89	9.28	44.7	17.6	70.3
664	UTAH	WEST VALLEY	9.48	10.61	11.29	12.0	6.5	19.2
665	UTAH	SALT LAKE COUNTY	9.84	10.28	10.00	4.0	-2.8	1.1
666	VERMONT	BURLINGTON	20.72	20.67	21.51	-.2	4.0	3.8
667	VIRGINIA	ALEXANDRIA	12.40	11.70	11.41	-5.6	-2.5	-8.0
668	VIRGINIA	CHARLOTTESVILLE	16.39	18.12	17.49	10.6	-3.5	6.7
669	VIRGINIA	CHESAPEAKE	13.45	12.86	12.10	-4.4	-6.0	-10.1
670	VIRGINIA	COLONIAL HEIGHTS	8.28	7.47	6.70	-9.9	-10.3	-19.1
671	VIRGINIA	DANVILLE	21.73	20.09	19.46	-7.6	-3.1	-10.4
672	VIRGINIA	HAMPTON	13.26	12.93	11.82	-2.5	-8.6	-10.9
673	VIRGINIA	HOPEWELL	13.72	13.90	12.47	1.3	-10.3	-9.1
674	VIRGINIA	LYNCHBURG	14.59	13.87	12.53	-5.0	-9.6	-14.1
675	VIRGINIA	NEWPORT NEWS	15.17	14.17	13.26	-6.6	-6.4	-12.5
676	VIRGINIA	NORFOLK	25.21	23.55	22.37	-6.6	-5.0	-11.3
677	VIRGINIA	PETERSBURG	22.97	20.62	18.99	-10.3	-7.9	-17.3
678	VIRGINIA	PORTSMOUTH	23.04	21.74	20.45	-5.6	-5.9	-11.2
679	VIRGINIA	RICHMOND	23.94	22.45	21.67	-6.2	-3.5	-9.5
680	VIRGINIA	ROANOKE	20.13	19.97	18.46	-.8	-7.6	-8.3
681	VIRGINIA	VIRGINIA BEACH	9.01	9.83	9.56	9.1	-2.7	6.1
682	VIRGINIA	ARLINGTON COUNTY	15.51	15.45	15.34	-.4	-.7	-1.1
683	VIRGINIA	FAIRFAX COUNTY	6.71	6.87	6.92	2.5	.7	3.2
684	WASHINGTON	BELLEVUE	5.93	6.96	6.90	17.2	-.8	16.3
685	WASHINGTON	BELLINGHAM	16.90	17.61	16.48	4.2	-6.4	-2.5
686	WASHINGTON	BREMERTON	13.08	12.79	12.20	-2.2	-4.6	-6.7
687	WASHINGTON	EVERETT	14.49	14.28	14.26	-1.5	-.1	-1.6
688	WASHINGTON	KENNEWICK	8.08	10.42	10.82	28.9	3.8	33.8
689	WASHINGTON	OLYMPIA	11.75	12.76	12.09	8.6	-5.3	2.9
690	WASHINGTON	PASCO	13.91	15.77	19.90	16.4	26.2	47.0
691	WASHINGTON	RICHLAND	7.98	7.87	7.49	-1.4	-4.8	-6.2
692	WASHINGTON	SEATTLE	27.76	27.06	27.49	-2.5	1.6	-1.0
693	WASHINGTON	SPOKANE	25.24	24.51	24.25	-2.9	-1.0	-3.9
694	WASHINGTON	TACOMA	18.09	18.05	18.31	-.2	1.5	1.2
695	WASHINGTON	YAKIMA	17.02	15.87	15.15	-6.8	-4.6	-11.0
696	WASHINGTON	KING COUNTY	8.05	8.42	7.99	4.7	-5.1	-.8
697	WASHINGTON	PIERCE COUNTY	9.31	10.38	10.40	11.9	.2	12.1
698	WASHINGTON	SNOHOMISH COUNTY	8.68	9.19	8.67	6.2	-5.7	-.2
699	WEST VIRGINIA	CHARLESTON	41.99	38.38	35.22	-8.6	-8.2	-16.1
700	WEST VIRGINIA	HUNTINGTON	44.52	40.75	38.27	-8.5	-6.1	-14.1
701	WEST VIRGINIA	PARKERSBURG	30.28	29.28	28.22	-3.4	-3.6	-6.8
702	WEST VIRGINIA	WEIRTON	21.64	19.28	17.54	-8.7	-9.0	-16.9
703	WEST VIRGINIA	WHEELING	41.24	38.50	38.44	-6.6	-.2	-6.8
704	WISCONSIN	APPLETON	10.54	10.29	10.56	-2.6	2.6	-.0

	ENTITLEMENT JURISDICTION STATE	NAME	PER CAPITA FUNDING FY '82	PER CAPITA FUNDING FY '83	PER CAPITA FUNDING FY '84	PERCENT CHANGE FY '82-FY '83	PERCENT CHANGE FY '83-FY '84	PERCENT CHANGE FY '82-FY '84
705	WISCONSIN	BELOIT	17.55	17.86	17.81	1.7	-.3	1.5
706	WISCONSIN	EAU CLAIRE	13.05	14.34	13.77	9.9	-4.0	5.5
707	WISCONSIN	GREEN BAY	12.50	12.97	11.21	3.8	-13.5	-10.3
708	WISCONSIN	JANESVILLE	9.94	9.81	10.63	-1.3	8.4	7.0
709	WISCONSIN	KENOSHA	13.84	13.33	13.10	-3.7	-1.7	-5.4
710	WISCONSIN	LA CROSSE	23.15	22.54	22.50	-2.7	-.2	-2.9
711	WISCONSIN	MADISON	13.77	13.78	12.03	.0	-12.7	-12.7
712	WISCONSIN	MILWAUKEE	29.96	29.46	28.34	-1.7	-3.8	-5.4
713	WISCONSIN	OSHKOSH	18.68	17.55	18.36	-6.1	4.6	-1.7
714	WISCONSIN	RACINE	23.01	22.26	22.18	-3.3	-.4	-3.6
715	WISCONSIN	SHEBOYGAN	20.03	18.99	19.32	-5.2	1.7	-3.6
716	WISCONSIN	SUPERIOR	33.84	31.48	31.15	-7.0	-1.1	-8.0
717	WISCONSIN	WAUKESHA	9.07	8.81	8.04	-2.8	-8.7	-11.2
718	WISCONSIN	WAUSAU	21.03	20.31	21.18	-3.4	4.3	.7
719	WISCONSIN	WAUWATOSA	20.77	19.59	20.65	-5.7	5.4	-.6
720	WISCONSIN	WEST ALLIS	19.97	19.44	19.94	-2.6	2.6	-.1
721	WISCONSIN	MILWAUKEE COUNTY	8.60	7.91	6.62	-8.1	-16.3	-23.1
722	WYOMING	CASPER	10.39	9.08	8.36	-12.6	-7.9	-19.5
723	PUERTO RICO	TOA BAJA MUNICIPIO	30.76	40.24	42.87	30.8	6.5	39.4
724	PUERTO RICO	ARECIBO MUNICIPIO	50.44	50.36	50.56	-.1	.4	.3
725	PUERTO RICO	BAYAMAON MUNICIPIO	32.45	36.39	35.99	12.2	-1.1	10.9
726	PUERTO RICO	CAGUAS MUNICIPIO	41.49	44.18	43.71	6.5	-1.1	5.4
727	PUERTO RICO	CAROLINA MUNICIPIO	24.89	34.68	35.71	39.3	3.0	43.5
728	PUERTO RICO	GUAYNABO MUNICIPIO	34.11	35.02	35.32	2.7	.8	3.5
729	PUERTO RICO	MAYAGUEZ MUNICIPIO	46.88	44.01	44.51	-6.1	1.1	-5.0
730	PUERTO RICO	PONCE MUNICIPIO	46.34	48.19	48.90	4.0	1.5	5.5
731	PUERTO RICO	SAN JUAN MUNICIPIO	44.64	39.11	37.14	-12.4	-5.0	-16.8
732	PUERTO RICO	TRUJILLO ALTO MUNICI	32.68	38.97	40.62	19.3	4.2	24.4

BIBLIOGRAPHY

Alexis, Marcus, 1978. "The Economically Disadvantaged in the Mature Metropolis," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass.: Lexington Books.

Allaman, Peter M. and Birch, David L., 1975. "Components of Employment Change for Metropolitan and Rural Areas in the United States by Industry Group, 1970-1972." Inter-Area Migration Project, Working Paper No. 8. Cambridge, Mass.: Harvard-MIT Joint Center for Urban Studies.

Alonso, William, 1978. "The Current Halt in the Metropolitan Phenomenon," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass.: Lexington Books.

Advisory Commission on Intergovernmental Relations, 1980. Regional Growth: Historic Perspective. Washington, D.C.: Advisory Commission on Intergovernmental Relations.

Armington, Catherine and Odle, Marjorie, 1982. Sources of Employment Growth 1978-1980. Washington, D.C.: The Brookings Institution.

Barro, Stephen M. 1975. Equalization and Equity in General Revenue Sharing: An Analysis of Alternative Distribution Formulas: Part I; Alternative Interstate Distribution Formulas. Santa Monica, Calif.: The Rand Corporation.

Benjamin, Robert J., 1981. "The Geographic Targeting of Economic Aid." A special HUD paper for the OMB FY '82 Economic Development Crosscut.

Birch, David, 1981. "Choosing a Place to Grow: Business Location Decisions in the 1970's." (An unpublished paper for the Economic Development Agency.)

Bradbury, Katharine L.; Downs, Anthony; and Small, Kenneth A., 1982. Urban Decline and the Future of American Cities. Washington, D.C.: The Brookings Institution.

Browne, Lynn E., 1978. "Regional Industry Mix and the Business Cycle." New England Economic Review (November/December): 35-53.

_____, with Peter Mieszkowski and Richard F. Syron, 1980. "Regional Investment Patterns." New England Economic Review (July/August): 5-26.

Bunce, Harold L., 1976. An Evaluation of the Community Development Block Grant Formula. Washington, D.C.: U.S. Department of Housing and Urban Development.

_____, 1979. "The Community Development Block Grant Formula: An Evaluation." Urban Affairs Quarterly (14): 443-64.

_____, and Glickman, Norman J., 1980. "The Spatial Dimensions of the Community Development Block Grant Program: Targeting and Urban Impacts," in The Urban Impacts of Federal Policies, edited by Norman J. Glickman. Baltimore, Md.: The Johns Hopkins Press.

_____, and Goldberg, Robert J., 1979. City Need and Community Development Funding. Washington, D.C.: U.S. Department of Housing and Urban Development.

_____, 1979. "Age of Housing: A Controversial Indicator of Urban Problems" (unpublished paper).

Burchell, Robert W.; Listokin, David; Sternlieb, George; Hughes, James W.; and Casey, Stephen C. "Measuring Urban Distress: A Summary of the Major Urban Hardship Indices and Resource Allocation Systems," in Cities Under Stress, edited by Robert W. Burchell and David Listokin. Piscataway, N.J.: The Center for Urban Policy Research, Rutgers, The State University of New Jersey.

Cuciti, Peggy L., 1978. City Need and the Responsiveness of Federal Grant Programs. Paper submitted to U.S. House of Representatives, Committee on Banking, Finance, and Urban Affairs, Subcommittee on the City, 95th Congress, 2nd session.

Dusenbury, Gloria, 1978. "Issue Paper #9." Research Triangle Park, N.C.: Southern Growth Policies Board.

_____, and Beyle, Thad L., 1978. Southern Urban Growth Trends 1960-1977. Research Triangle Park, N.C.: Southern Growth Policies Board.

Fredland, John Eric, 1974. Determinants of State and Local Expenditures: An Annotated Bibliography. Washington, D.C.: The Urban Institute.

Garn, Harvey, and Ledebur, Larry, 1980. "The Economic Performance and Prospects of Cities," in The Prospective City, edited by Arthur P. Solomon. Cambridge, Mass.: MIT Press.

Gurwitz, Aaron S., and Kingsley, G. Thomas, 1982. The Cleveland Metropolitan Economy. Prepared for the Cleveland Foundation. Santa Monica, Calif.: The Rand Corporation.

Harrison, Bennett, 1982. Rationalization, Restructuring, and Industrial Reorganization in Older Regions: The Economic Transformation of New England Since World War II. Cambridge, Mass.: Harvard-MIT Joint Center for Urban Studies.

_____, and Hill, Edward, 1978. "The Changing Structure of Jobs in Older and Younger Cities," New England Political Economy Working Paper No. 2. Cambridge, Mass.: Harvard-MIT Joint Center for Urban Studies.

Holland, Robert C., and Leven, Charles L., 1978. "Agenda for the Mature Metropolis," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass.: Lexington Books.

Isserman, Andrew W., and Brown, Marilyn A., 1980. Measuring Suburban Need and Distress. Unpublished report submitted to the U.S. Department of Housing and Urban Development under Grant H-2976.

James, Franklin J., 1980. "Economic Distress in Central Cities," in Cities Under Stress: The Fiscal Crises of Urban America, edited by Robert W. Burchell and David Listokin. Piscataway, N.J.: The Center for Urban Policy Research, Rugters, The State University of New Jersey.

Kasarda, John D., 1980. "The Implications of Contemporary Redistribution Trends for National Urban Policy." Social Science Quarterly (61): 373-400.

Keeler, E., and Rogers, W., 1973. A Classification of Large American Urban Areas. Washington, D.C.: National Science Foundation.

Linton, Mields, and Coston, Inc., 1971. A Study of the Problems of Abandoned Housing. Report submitted to the U.S. Department of Housing and Urban Development.

McDougall, Gerald S. and Bunce, Harold L., 1982. "Distributional Consequences of Local Service Delivery Systems." (forthcoming in The Review of Regional Studies)

_____, 1983. "Urban Service Distributions: Some Answers to Neglected Issues" (submitted).

Macrae, Norman, 1978. "Tommorrow's Agglomeration Economies," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass.: Lexington Books.

Marcuse, Peter, 1971. "Social Indicators and Housing Policy." Urban Affairs Quarterly (December): 193-217.

Mollenkopf, John H., 1980. "Paths Toward the Post Industrial Service City: The Northeast and the Southwest," in Cities Under Stress: The Fiscal Crises of Urban America, edited by Robert W. Burchell and David Listokin. Piscataway, N.J.: The Center for Urban Policy Research, Rutgers, the State University of New Jersey.

Muller, Thomas, 1975. Growing and Declining Urban Areas: A Fiscal Comparison. Washington, D.C.: The Urban Institute.

Nathan, Richard, and Adams, Charles, F., 1976. "Understanding Central City Hardship." Political Science Quarterly (91): 47-62.

Nathan, Richard; Dommel, P.; Liebschutz, S.F.; Morris, M.; and Associates, 1977. Block Grants for Community Development. Washington, D.C.: U.S. Department of Housing and Urban Development.

Nie, Norman H.; Hull, C. Hadlai; Jenkins, Jean G.; Steinbrenner, Karin; and Bent, Dale H., 1975. Statistical Package for the Social Sciences, 2nd ed. New York: McGraw-Hill Book Co.

Norton, R. D., and Rees, J., 1979. "The Product Cycle and the Spatial Decentralization of American Manufacturing." Regional Studies (13): 141-151.

Noyelle, Thierry J., and Stanback, Thomas M., 1981. Economic Transformation in American Cities: A Study of Processes with Implications for Development Policy. New York: Conservation of Human Resources, Columbia University.

Perloff, Harvey, 1978. "The Central City in the Postindustrial Age," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass.: Lexington Books.

Peterson, George E., 1976. "Finance," in The Urban Predicament, edited by William Gorham and Nathan Glazer. Washington, D.C.: The Urban Institute.

_____; Mortimer, Henry L.; Cooper, Brian; Dickson, Elizabeth; and Reigeluth, George A., 1978. Urban Fiscal Monitoring. Washington, D.C.: The Urban Institute.

Rees, John, 1979. "Technological Change and Regional Shifts in American Manufacturing." Professional Geographer (31): 45-54.

Reigeluth, George A. and Wolman, Harold, 1981. The Determinants and Implications of Communities' Changing Competitive Advantages: A Literature Review. Washington, D.C.: The Urban Institute.

Richardson, Harry W., 1978. "Basic Economic Activities in Metropolis," in The Mature Metropolis, edited by Charles L. Leven. Lexington, Mass: Lexington Books.

Ross, John P., 1975. Alternative Formulae for General Revenue Sharing: Population Based Measures of Need. Blacksburg, Va.: The Center for Urban and Regional Studies, Virginia Polytechnic Institute.

_____, 1980. "The Impacts of Urban Aid", in Urban Revitalization, edited by Donald B. Rosenthal. Beverly Hills, Calif.: Sage Publication, Inc.

Rummel, R.J., 1970. Applied Factor Analysis. Evanston, Ill.: Northwestern University Press.

Schmenner, Roger W., 1981. "The Location Decisions of Large, Multiplant Companies: A Summary of Findings." Prepared for U.S. Department of Housing and Urban Development, Office of Policy Development and Research (Grant No. H-2981-RG).

Schmid, G.; Lipinski, H.; and Palmer, M., 1975. An Alternative Approach to General Revenue Sharing: A Needs-Based Allocation Formula. Menlo Park, Calif.: Institute for the Future.

Sherbenou, Edgar, and Flango, Victor E., 1976. "An Empirical Test of Size As a Measure of Urbanism." Urban Affairs Quarterly (12): 3-20.

Smith, David M., 1973. The Geography of Social Well-Being in the United States: An Introduction to Territorial Social Indicators. New York: McGraw-Hill Book Co.

Stanfield, Rochelle L., 1977. "Government Seeks the Right Formula for Community Development Funds." National Journal (February):237-43.

Stanley, David T., 1976. "Cities in Trouble." Columbus, Ohio: Academy for Contemporary Problems.

Sullivan, Michael; Tropper, Peter; and Puryear, David, 1981. "Tax Incentives and Business Investment Patterns: A Survey of Urban and Regional Implications." Washington, D.C.: Northeast-Midwest Institute.

Thompson, Wilbur, 1968. "Internal and External Factors in the Development of Urban Economies," in Issues in Urban Economies, edited by Harvey S. Perloff and Lowdon Wingo, Jr. Baltimore, Md.: The Johns Hopkins Press.

U.S. Bureau of the Census, 1976. Annual Housing Survey: 1976 General Housing Characteristics. Current Housing Reports, Series H-150-76. Washington, D.C: U.S. Bureau of the Census.

_____. Suburban Classification Project: Presentation of Phase I Results. Washington, D.C.: Center for Census Use Studies, U.S. Department of Commerce.

U.S. Congressional Budget Office, 1978. City Need and the Responsiveness of Federal Grant Programs. Written by Peggy L. Cuciti. Published by U.S. Congress, House of Representatives, Committee on Banking, Finance, and Urban Affairs, Subcommittee on the City.

U.S. Department of Commerce, 1980. 1980 U.S. Industrial Outlook for 200 Industries, with Projections for 1984. Washington, D.C.: U.S. Department of Commerce.

U.S. Department of Housing and Urban Development, 1973. Abandoned Housing Research: A Compendium. Washington, D.C.: U.S. Government Printing Office.

_____, 1979. Pockets of Poverty: An Examination of Needs and Options. Washington, D.C.: U.S. Department of Housing and Urban Development.

U.S. Department of the Treasury, Office of State and Local Finance, 1978. Report on the Fiscal Impact of the Economic Stimulus Package on 48 Large Urban Governments. Washington, D.C.: U.S. Department of Commerce.

Vaughan, Roger J., 1977. The Urban Impacts of Federal Policies: Vol. 2, Economic Development. Santa Monica, Calif.: The Rand Corporation.

Weicher, J.C., 1970. "Determinants of Central City Expenditures: Some Overlooked Factors and Problems." National Tax Journal (December): 378-96.

Wolman, Harold, 1981. Components of Change in Local Economies: A Literature Review. Washington, D.C.: The Urban Institute.

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