Housing Affordability and Land Prices: Is There a Crisis in American Cities?

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In response to sharply rising housing prices in several key urban areas, an increasingly large number of advocates have been pushing a program of housing affordability. While incomes and house prices are relevant to the affordability debate, some advocates argue that increasing shortages of land mean that America is facing a housing crunch. In response, the advocates argue, there should be a strenuous policy of building affordable housing.

This paper attempts to shed some light on the actual costs of housing within the United States. There is no question that there are some places where housing is expensive and scarce. But is this true throughout the U.S.? Is this true throughout even the expensive metropolitan areas? To help answer these questions, this paper examines the actual distribution of housing prices in American cities over the last 20 years. We then document a series of facts about American home prices. Since the cost of housing to affordability programs is the cost of construction, we particularly focus on the number of homes that are priced below construction costs.

To provide insight into these and other issues, this paper examines the distribution of central city and suburban housing prices in over 70 major markets in the United States. The *Integrated Public Use Microsamples* (*IPUM*s) from 1980 and 1990 compiled by the University of Minnesota serve as the primary data source on house prices, although we supplement the analysis with data from the *American Housing Survey* (*AHS*) on a smaller set of areas in 1989 and 1999. This allows for updating of price trends in a select group of areas.

Raw land price data are extremely scarce, so we estimate the distribution of land prices by comparing self-reported house price data (which include the value of the land plus improvements) to construction cost data. The latter are for the improvements alone and do not include land as a component. After adjusting the data in a variety of ways that are described below, our comparison allows us to compute the distribution of home values relative to construction costs. In our reporting, we focus on the percentage of homes for which the underlying land effectively is valueless. By definition, land is free when house value (land plus structure) is less than physical construction costs.

Our most important result is that there is plenty of central city and suburban land that effectively is free--in the sense just described of construction costs for the physical unit exceeding the reported value of the entire home (i.e., land plus improvements). In 1990, we find this to be the case for just over 30 percent of single unit homes in our central cities and 20 percent of single unit homes in suburban areas. That said, there is great heterogeneity across cities and suburbs. Across central cities, the range for the fraction of units with 'free land' runs from as low as 1-2 percent (Honolulu, Anaheim, San Diego) to over 90 percent (Gary, Flint, Detroit). The spread is less extreme across suburbs, but still runs from close to zero (various areas) to over 70 percent (Flint again).

These results confirm that housing prices far exceed construction costs in some cities, but that this is not a nation-wide phenomenon. While it may be important to reduce housing costs in some metropolitan areas through creative government policies, in many metropolitan areas, housing costs are much less than new construction. Building new homes in these places seems quite counter-productive. In particular, these results suggest that perhaps the best means of handling the affordability crisis in one city will be to eliminate barriers that stop the poorer residents of that city from moving to places with stronger labor markets.

A second noteworthy finding is that the distribution of land values in central cities and suburbs of a given metropolitan area is strongly positively correlated. Stated differently, if cheap land is plentiful in the central city portion of an area, it also tends to be so in the suburban portion of the same area. In 1980, the simple correlation between the fraction of central city and suburban land that is 'free' is 0.67; in 1990, the analogous figure is 0.78.

There also is strong persistence in the data. That is, a high fraction of cheap land in one period is likely to be followed by a high fraction of cheap land in the next period. For central cities, the simple correlation for the fraction of free land in 1980 and 1990 is 0.65; for suburban areas, the analogous statistic is 0.59.

Fourth, there is virtually no population growth in areas with plentiful cheap land. For example, in the 1980s, mean population growth among central cities with free land percentages in excess of 50 percent averaged -3 percent per annum. The average growth rate was zero for cities with at least 25 percent of their land being worth zero or less. Moreover, the fraction of low human capital residents in these cities is systematically higher, and other research indicates the relationship is a causal one whereby relatively cheap land and housing attracts the less well-educated.

Fifth, relatively cheap land is more abundant in denser, northeastern areas than it is in the west and southwest. And, while the fraction of free land fell in most markets during the 1980s, the trend did not persist in the 1990s. Both patterns in the data are difficult to square with the hypothesis that land is becoming increasingly scarce. In particular, the strong regional patterns evident in the data are difficult to square with the contention of environmentalists that a fundamental scarcity of land is building. This suggests that future research investigate the extent to which high prices in certain regions are 'man made' in the sense of reflecting the influence of restrictive zoning and other land use controls.

I. Data and Computation Strategy

The housing price data used to create the ratio of house price to construction cost come from two different sources. One is decadal census data from the *Integrated Public Use Microdata Series* (*IPUMS*) maintained by the Minnesota Population Center at the University of Minnesota. The other is bi-annual data from the *American Housing Survey* (*AHS*). In each series, we focus exclusively on observations of single unit residences that are owner occupied. Thus, we exclude condominiums and cooperative units in buildings with multiple units even if they are owned.

Construction cost data come from the R.S. Means Company (hereafter, the Means data). R.S. Means presently monitors construction costs in nearly 200 American cities and 10 Canadian cities. It reports local construction costs per square foot of living area. The Means data on construction costs include material costs, labor costs, and equipment costs for four different qualities of single unit residences. No land costs are included.[2]

Because house price will be compared to construction costs, and the latter is reported on a square foot basis, the house price data must be put in similar form. This is straightforward for the *AHS,* which contains the square footage of living area. However,

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[1] See Glaeser and Gyourko (2001).

[2] Two publications are particularly relevant for greater detail on the underlying data: *Residential Cost Data*, 19th annual edition, (2000) and *Square Foot Costs*, 21st annual edition (2000), both published by the R.S. Means Company.

this variable must be imputed for the *IPUMS* census data, and the *AHS* is used for this purpose. Square footage is estimated using the 1985 and 1989 *AHS* employing traits common to both the *AHS* and *IPUMS*. The coefficients from these regressions are then used to impute the square footage for each house in the census data, and a price per square foot is computed. The 1985 *AHS* is used to impute in the 1980 census[3], and the 1989 *AHS* is used to impute in the 1990 census.[4] The appendix provides more details.

The Means data also contain information on four qualities of homes—economy, average, custom, and luxury. The series are broken down further by the size of living area (ranging from 600ft^2 to 3200ft^2), the number of stories in the unit, and a few other differentiators. We developed cost series for a one story, economy house, with an unfinished basement, with the mean cost associated with four possible types of siding and building frame, and that could be of small (<1550ft^2), medium (1550ft^2-1850ft^2), or large (1850ft^2-2500ft^2) size in terms of living area. Generally, our choices reflect low to modest construction costs. This conservative strategy is appropriate given our purposes.

For every single unit, owned dwelling in each central city reported in the 1980 or 1990 *IPUMS* and the Means data, we then compute the ratio of house value to construction costs.[5] From this, we can compute the distribution of homes priced above and below construction costs and are able to do so for 75 cities in both 1980 and 1990.

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[3] A closer year cannot be employed for the 1980 *IPUMS* because square footage is not reported in the *AHS* prior to 1985. However, we have compared other traits that are common across the 1980 and 1985 surveys, and there is no evidence to indicate that the size or nature of single-family housing changed over that time period.

[4] We also performed the analysis using the 1991 *AHS* and the results are virtually unchanged.

[5] The actual computation is more complicated, as adjustments are made to correct for depreciation, inflation, the fact that owners tend to overestimate the value of their homes, and for regional variation in the presence of basements. See the Appendix for the details.

II. Results

Tables 1-4 report those results for each central city and suburban area in 1980 and 1990, grouping the cities by the fraction of homes for which land essentially is free. The data illustrate the extraordinary degree of heterogeneity in land price conditions across American central cities and suburban areas. For central cities (Tables 1 and 3), the unweighted mean across cities is 40 percent in 1980 and 31 percent in 1990. Thus, nearly one-third or more of city houses sat on very cheap land in both decades. For suburban areas (Tables 2 and 4), the analogous means are 31 percent in 1980 and 20 percent in 1990. While it certainly is the case that 'free land' is rarer in the suburbs, by no means is it true that suburban land is expensive throughout the country.

Indeed, the tables highlight how aggregated data masks critical distinctions across cities and metropolitan areas. There are a number of primarily rustbelt cities with more than half of their housing units sitting on land that appears to have negative value. Regional biases also are apparent in the fact that land tends to be quite expensive in western cities.[6] These tables also make clear that the 1980s saw a trend towards more expensive land in cities and suburbs, but especially in suburban areas. The mean and median changes between 1980 and 1990 in the fraction of free land in central cities was –9 percent and –5 percent, respectively. For suburbs, the analogous figures are –11 percent and –9 percent. By 1990, we calculate that only four of the 75 studied suburban areas had more than half their homes valued at less than what it would cost to build their structures anew (see Table 4).

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[6] See the tables in the appendix of Glaeser and Gyourko (2001) for more detail on the full price distribution, including data on the fraction of homes sitting on relatively expensive land.

It also is noteworthy that cities with plentiful cheap land do not grow. In both the 1980s and 1990s, cities with more than 50 percent of their land being 'free' had negative growth rates (-3 percent per annum on average in the 1980s and –1 percent per annum on average in the 1990s). While having a lot of relatively expensive land is not a guarantee of growth, having a lot of relatively cheap land is very close to being a guarantee of negative growth.

Finally, Table 5's and Table 6's categorization of cities by the amount of change in free land during the 1980s indicates that there was a widespread recovery in prices in almost all northeastern areas. That said, there is strong persistence in the data. For example, the simple correlation between the fraction of 'free land' in central cities in 1980 and 1990 is 0.65; for suburbs, the correlation is 0.59. Thus, it is likely that plenty of cheap land at the beginning of the decade will be followed by plentiful cheap land at the end of the decade. It also is the case that the fraction of cheap land in the central city and suburban parts of a given metropolitan area are strongly positively correlated. In 1980, the simple correlation was 0.67; in 1990, it was 0.78.

III. Discussion

One key conclusion from these data is that land is not uniformly valuable everywhere. That said, the number of places with plentiful cheap land declined in the 1980s (compare Table 1 with Table 3 and Table 2 with Table 4). It is not yet clear whether this was because of a fundamental increase in scarcity associated with the nation simply running out of land or whether the change was due more to increased zoning and land use regulations, especially in suburban areas.

Analysis of the *American Housing Survey* can shed some light on the issue. For a more limited number of central cities (48) and suburban areas (43), we were able to compute the distribution of land prices in 1989 and 1999, thereby allowing us to see whether the trend continued during the 1990s.[7] These results, which are reported in Tables 7 and 8, indicate that the trend towards more expensive land did not continue through the 1990s. While a few city and suburban areas in places such as Detroit did show marked drops in the percentage of free land, others including some big northeastern centers experienced increases in the fraction of cheap land. Overall, the vast majority of areas saw relatively little change in the distribution of land prices. For both central city and suburban areas, the unweighted mean change over the 1990s was minus two percentage points.

The fact that the 1990s, which was a period of rapid economic growth and reasonable population growth for the country, did not see a continuation of the trend towards materially lower fractions of free land suggests to us that no fundamental scarcity of land is emerging. If America really were running out of land, we would have expected the high economic growth 1990s to have bid up land values so that very little cheap land remained throughout the country. This did not happen, and the AHS data indicate a slight reversal of fortunes in some of the northeastern cities that experienced such dramatic recoveries in land prices in the previous decade.[8] While this certainly does not prove that zoning and land use controls are the primary causes of high land prices, it does suggest that future research should carefully investigate that possibility. Because

[7] The much smaller number of areas covered is due to the often small sample sizes available in the AHS. This is the primary reason we focus on results using decennial census data.

[8] Other research (Glaeser and Gyourko (2001)) also suggests a fairly elastic supply of land. For cities outside of California, very high population growth generally has not been associated with high house price growth.

the policy implications differ so radically depending upon which factor is the most relevant empirically, this clearly is an issue in pressing need of further research.

Another of our results, namely that many rustbelt central cities in particular continue to have significant fractions of their land that are worth very little, has important implications in another policy arena. In other work, Glaeser and Gyourko (2001) build a model in which cities with shrinking populations and plentiful cheap housing (which tends to sit on inexpensive land) are relatively more attractive to low skill, low wage households. They also provide empirical results confirming the model's main implication that cheap housing is driving the strong positive correlation between city population growth and the human capital level of the city.

The policy relevance of this is that cheap housing, however beneficial to the individual household, can have significantly negative consequences for the city as a whole. A negative shock to the productivity of a given city (e.g., the decline of automobile manufacturing in Detroit due to international competition) can send a city into a self-reinforcing downward spiral. More specifically, public policy that increases the amount of affordable housing can make matters worse. Hence, the best urban policy for HUD and various non-profit housing organizations well may be not to build or subsidize additional low cost housing. Such housing already is plentiful in declining cities. More generally, the best urban policy probably involves incentives to deconcentrate the less skilled, poor who are attracted to the low cost housing in shrinking cities.

IV. Summary and Conclusion

Very little is known about the value of urban land even though it has important implications for a host of urban policy issues. We indirectly estimate the distribution of city and suburban land value by comparing house price data (which includes the value of land plus structure) with construction cost data pertaining solely to the improvements. A significant fraction of both city and suburban land is found to have little or no financial worth. There is substantial heterogeneity in this regard across metropolitan areas. In some rustbelt central cities, 50 percent or more of the single unit homes are sitting on land with little or even negative implicit value. This is rarely the case in western cities, where high land prices are the norm.

Further analysis showed that, on average, the fraction of free or cheap land dropped substantially during the 1980s. However, data for the 1990s suggests this trend did not continue in the most recent decade. Hence, cheap land still is plentiful in a number of city and suburban areas in the United States, most prominently in the rustbelt areas of the midwest and mid-Atlantic region.

This suggests to us that no fundamental scarcity of land is emerging in the United States. And, other recent research showing that cheap land in declining cities attracts relatively low human capital households implies that HUD and non-profit housing groups should rethink their policies of trying to provide yet more affordable housing in shrinking cities.

References

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Goodman, John L. and John B. Ittner. 1992. The Accuracy of Home Owners' Estimates of House Values. *Journal of Housing Economics* 2: 339-357.

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Appendix 1: Construction of the House Value/Construction Cost Ratio

A number of adjustments are made to the underlying house price data in the comparison of prices to construction costs. These include imputation of the square footage of living area for observations from the *IPUMS* for the 1980 and 1990 census years. Following that, we make three adjustments to the house price data to account for the depreciation that occurs on older homes, to account for general inflation when comparing across years, and to account for the fact that research shows owners tend to overestimate the value of their homes. Finally, we make an adjustment to construction costs in order to account for the wide regional variation in the presence of basements. The remainder of this Appendix provides the details.

First, the square footage of living area must be imputed for each observation in 1980 and 1990 from the *IPUMS.* Because the *AHS* contains square footage information, we begin by estimating square footage in that data set, using housing traits that are common to the *AHS* and *IPUMS* data. This set includes the age of the building (AGE and its square), whether there is a full kitchen (KITFULL), the number of bedrooms (BEDROOMS), the number of bathrooms (BATHROOMS), the number of other rooms (OTHROOMS), a dummy variable for the presence of central air conditioning (AIRCON), controls for the type of home heating system (HEAT, with controls for the following types: gas, oil, electric, no heat), a dummy variable for detached housing unit status (DETACHED), dummy variables for each metropolitan area (MSA), and dummy variables for the U.S. census regions (REGION).

Thus, the linear specification estimated is of the following form:

$$\text{SQUARE FOOTAGE}_i = f\{\text{AGE}_i, \text{AGE}^2{}_i, \text{BEDROOMS}_i, \text{BATHROOMS}_i, \text{KITFULL}_i, \text{OTHROOMS}_i, \text{AIRCON}_i, \text{HEAT}_i, \text{DETACHED}_i, \text{MSA}_i, \text{REGION}_i\}^9,$$

[9] Data frequently was missing for the presence of air conditioning (AIRCON) and the number of other rooms (OTHROOMS). So as not to substantially reduce the number of available observations, we coded in the mean for these variables when the true value was missing. Special dummies were included in the specification estimated to provide separate effects of the true versus assigned data.

The subscript i indexes the house observations and separate regressions are run using the 1985 and 1989 *AHS* data. Our samples include only single unit, owned residences in central cities (which can be attached or detached).[10] The overall fits are reasonably good, with the adjusted R-squares being .391 in the 1985 data and .306 in the 1989 data.

The 1985 coefficients are then used to impute the square footage of the observations from the 1980 *IPUMS*, and the 1989 coefficients are used analogously for the 1990 *IPUMS* sample. Once house value is put into price per square foot form, it can be compared to the construction cost per square foot data from the R.S. Means Company.

However, we make other adjustments before actually making that comparison. One adjustment takes into account the fact that research shows owners tend to overestimate the value of their homes. Following the survey and recent estimation by Goodman and Ittner (1992) we presume that owners typically overvalue their homes by 6 percent.[11]

A second, and empirically more important, adjustment takes into account the fact that the vast majority of our homes are not new and have experienced real depreciation. Depreciation factors are estimated using the *AHS* and then applied to the *IPUMS* data. More specifically, we regress house value per square foot (scaled down by the Goodman and Ittner (1992) correction) in the relevant year (1985 or 1989) on a series of age controls and metropolitan area dummies. The age data is in interval form so that we can tell if a house is from 0-5 years old, from 6-10 years old, from 11-25 years old, from 25-36 years old, and more than 45 years old.[12] The coefficients on the age controls are each negative as expected and represent the extent to which houses of different ages have depreciated in value on a per square foot basis.

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[10] We excluded observations with extreme square footage values, deleting those with less than 500 square feet and more than 5,000 square feet of living area (4,000 square feet in the 1989 survey is the top code).
[11] This effect turns out to be relatively minor in terms of its quantitative impact on the results.
[12] Slightly different intervals are reported in the AHS and IPUMS. We experimented with transformations based on each surveys intervals. The different matching produce very similar results.

Because the regressions use nominal data, we make a further adjustment for the fact that general price inflation occurred between 1980-1985 and 1989-1990. In the case of applying the 1985 results to the 1980 *IPUMS* data, we scale down the implied depreciation factor by the percentage change in the rental cost component of the Consumer Price Index between 1980 and 1985. In the case of applying the 1989 results to the 1990 IPUMS observations, we scale up the implied depreciation factor in an analogous fashion.[13]

Finally, we make an adjustment for the fact that there is substantial regional and cross-metropolitan area variation in the presence of basements. Having a basement adds materially to construction costs according to the Means data. Units with unfinished basements have about 10 percent higher construction costs depending on the size of the unit. Units with finished basements have up to 30 percent higher construction costs, again depending on the size of the unit. Our procedure effectively assumes that units with a basement in the *AHS* have unfinished basements, so that we underestimate construction costs for units with finished basements. Unfortunately, the *IPUMS* data in 1980 and 1990 do not report whether the housing units have a basement. However, using the *AHS* data we can calculate the probability that a housing unit in a specific U.S. census division has a basement. The divisional differences are extremely large, ranging from 1.3 percent in the West South Central census division to 94.9 percent in the Middle Atlantic census division. Thus, in the West South Central census division we assume that each unit has 0.013 basements, and that each unit in the Middle Atlantic division has 0.949 basements. Because of the very large gross differences in the propensity to have basements, this adjustment almost certainly reduces measurement error relative to assuming all units have basements or that none have basements.

After these adjustments, house value is then compared to construction costs to produce the distributions reported in the main text.

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[13] The depreciation factors themselves are relatively large. After making the inflation and Goodman-Ittner correction, the results for 1980 suggest that a house that was 6-11 years old was worth $3.17 per square foot less than a new home. Very old homes (i.e., 46+ years) were estimated to be worth $11.94 per square foot less than a new home that year.

TABLE 1
Free Land in Central Cities, 1980

0%-25% Free Land	*26%-50% Free Land*	*51%-75% Free Land*	*75%+ Free Land*
Honolulu	Austin	Spokane	Philadelphia
Anaheim	Nashville-Davidson	Des Moines	Worcester
San Diego	Oklahoma City	Hartford	Rochester
San Francisco	Lexington-Fayette	Waterbury	Buffalo
Oxnard	Stockton	Toledo	Gary
Las Vegas	Orlando	San Antonio	Flint
Riverside	Jackson	Atlanta	Detroit
Denver	Davenport	Erie	
Los Angeles	Sacramento	Beaumont	
Washington	Houston	Lawrence	
Fort Lauderdale	Albany	Kansas City	
Vallejo	Milwaukee	Louisville	
Bridgeport	Baton Rouge	Newark	
Ann Arbor	New York	Grand Rapids	
New Orleans	Dallas	Allentown	
Fresno	Mobile	Syracuse	
Seattle	Memphis	St. Louis	
Minneapolis	Lorain	Pittsburgh	
Colorado Springs	Chattanooga	Cleveland	
Bakersfield	Chicago	Boston	
Portland	Tampa		
Miami	Fort Wayne		
New Haven	Baltimore		
Tulsa			

TABLE 2
Free Land in Suburban Areas, 1980

0%-25% Free Land	*26%-50% Free Land*	*51%-75% Free Land*	*75%+ Free Land*
Anaheim	Austin	Ann Arbor	Syracuse
Honolulu	San Antonio	Beaumont	
Oxnard	Cleveland	Allentown	
Washington	Oklahoma City	St. Louis	
San Diego	Dallas	Louisville	
Denver	Waterbury	Mobile	
San Francisco	Baton Rouge	Erie	
Los Angeles	Des Moines	Grand Rapids	
Seattle	Atlanta	Flint	
Fort Lauderdale	Orlando	Worcester	
Baltimore	Nashville-Davidson	Buffalo	
Bridgeport	Spokane	Albany	
New York	Lawrence		
Milwaukee	Davenport		
Newark	Gary		
Portland	Boston		
New Orleans	Tampa		
Sacramento	Stockton		
Riverside	Memphis		
Chicago	Fort Wayne		
Las Vegas	Philadelphia		
Vallejo	Colorado Springs		
Minneapolis	Chattanooga		
Hartford	Rochester		
Miami	Kansas City		
Houston	Lexington-Fayette		
Jackson	Toledo		
New Haven	Detroit		
Fresno	Bakersfield		
Lorain	Pittsburgh		
	Tulsa		

TABLE 3
Free Land in Central Cities, 1990

0%-25% Free Land	*26%-50% Free Land*	*51%-75% Free Land*	*75%+ Free Land*
Oxnard	Tulsa	Fort Wayne	Pittsburgh
Honolulu	Syracuse	Lorain	Cleveland
Anaheim	Memphis	Buffalo	Gary
New Haven	Rochester	Philadelphia	Flint
San Diego	Fresno	St. Louis	Detroit
Los Angeles	Jackson	Beaumont	
Washington	Tampa	Kansas City	
Bridgeport	Allentown	Milwaukee	
Lawrence	Chicago	Erie	
Hartford	San Antonio	Spokane	
San Francisco	Oklahoma City	Des Moines	
Vallejo	Baltimore	Toledo	
Waterbury	Mobile	Davenport	
Boston	Houston		
Riverside	Chattanooga		
Seattle	Grand Rapids		
Albany	Minneapolis		
Ann Arbor	Portland		
Worcester	Louisville		
New York			
Miami			
Fort Lauderdale			
Las Vegas			
Colorado Springs			
Nashville-Davidson			
Sacramento			
Denver			
Newark			
New Orleans			
Lexington-Fayette			
Stockton			
Baton Rouge			
Bakersfield			
Austin			
Orlando			
Dallas			
Atlanta			

TABLE 4
Free Land in Suburban Areas, 1990

0%-25% Free Land	*26%-50% Free Land*	*51%-75% Free Land*	*75%+ Free Land*
Oxnard	Syracuse	Pittsburgh	
Bridgeport	Tampa	Beaumont	
Anaheim	Fort Wayne	Davenport	
Washington	Buffalo	Flint	
San Francisco	Oklahoma City		
New Haven	Cleveland		
Hartford	Minneapolis		
Seattle	Fresno		
Newark	Bakersfield		
San Diego	Gary		
Lawrence	Houston		
Honolulu	Lexington-Fayette		
Boston	Detroit		
New York	Tulsa		
Waterbury	Toledo		
Los Angeles	St. Louis		
Baltimore	Des Moines		
Sacramento	Mobile		
Vallejo	Spokane		
Worcester	Erie		
Fort Lauderdale			
Riverside			
Stockton			
Philadelphia			
Denver			
Chicago			
Miami			
Orlando			
Memphis			
Dallas			
Atlanta			
New Orleans			
Albany			
Nashville-Davidson			
Las Vegas			
Rochester			
Austin			
Kansas City			
Milwaukee			
Colorado Springs			
Allentown			
Chattanooga			
San Antonio			
Ann Arbor			
Louisville			
Grand Rapids			
Jackson			
Portland			
Lorain			
Baton Rouge			

TABLE 5
Changes in Free Land Percentages, Central Cities 1980-1990

-25+ pct point change in free land	*-10 to -25 pct point change change in free land*	*-10 to +10 pct point change in free land*	*10 to 25 pct point change in free land*	*25+ pct point change in free land*
Worcester	Buffalo	Bridgeport	Erie	Minneapolis
Boston	New Haven	Austin	Cleveland	Portland
Lawrence	Grand Rapids	St. Louis	Lorain	Milwaukee
Rochester	Sacramento	Colorado Springs	Toledo	Davenport
Waterbury	Baton Rouge	Washington	Fresno	
Newark	San Antonio	Los Angeles	Spokane	
Hartford	Dallas	Vallejo	Des Moines	
Syracuse	Philadelphia	Ann Arbor		
Atlanta	Stockton	Mobile		
Albany	Nashville-Davidson	Oxnard		
Allentown	Memphis	Chattanooga		
New York	Lexington-Fayette	San Diego		
	Tampa	Riverside		
	Baltimore	Bakersfield		
	Louisville	Jackson		
	Orlando	Anaheim		
	Miami	Honolulu		
	Seattle	San Francisco		
	Chicago	Flint		
		New Orleans		
		Tulsa		
		Detroit		
		Fort Lauderdale		
		Gary		
		Denver		
		Houston		
		Kansas City		
		Beaumont		
		Las Vegas		
		Pittsburgh		
		Fort Wayne		
		Oklahoma City		

TABLE 6
Changes in Free Land Percentages, Suburban Areas 1980-1990

-25+ pct point change in free land	*-10 to -25 pct point change change in free land*	*-10 to +10 pct point change in free land*	*10 to 25 pct point change in free land*	*25+ pct point change in free land*
Worcester	Chattanooga	Toledo	Portland	Davenport
Syracuse	Colorado Springs	Bridgeport	Houston	
Albany	New Haven	New York	Spokane	
Grand Rapids	Orlando	Miami	Minneapolis	
Buffalo	Hartford	Erie		
Boston	Bakersfield	Austin		
Philadelphia	Atlanta	Baltimore		
Lawrence	Nashville-Davidson	Seattle		
Allentown	Vallejo	Riverside		
Louisville	St. Louis	Gary		
Stockton	Dallas	Baton Rouge		
Ann Arbor	Lexington-Fayette	Fort Lauderdale		
Memphis	Fort Wayne	Los Angeles		
Rochester	Detroit	San Antonio		
Waterbury	Mobile	Chicago		
Kansas City	Tulsa	San Francisco		
	Sacramento	Oxnard		
	Newark	Washington		
	Tampa	San Diego		
		Honolulu		
		Anaheim		
		Lorain		
		Jackson		
		New Orleans		
		Oklahoma City		
		Cleveland		
		Beaumont		
		Las Vegas		
		Denver		
		Pittsburgh		
		Fresno		
		Milwaukee		
		Flint		
		Des Moines		

TABLE 7
Changes in Free Land Percentages, Central Cities 1980-1990, American Housing Survey Sample

-25+ pct point change in free land	*-10 to -25 pct point change in free land*	*-10 to +10 pct point change in free land*	*10 to 25 pct point change in free land*	*25+ pct point change in free land*
Detroit	Colorado Springs	Wichita	New York	
Columbus	Salt Lake City	Minneapolis	Baltimore	
	Mobile	Chicago	Fort Worth	
	Fort Lauderdale	Seattle	San Antonio	
	Tacoma	Vallejo		
	Fresno	Austin		
	Milwaukee	San Diego		
	Greensboro	Miami		
	Oklahoma City	Toledo		
		Riverside		
		Tulsa		
		Tampa		
		Indianapolis		
		Las Vegas		
		Raleigh		
		El Paso		
		Anaheim		
		Omaha		
		Albuquerque		
		New Orleans		
		Tucson		
		Denver		
		Los Angeles		
		Memphis		
		Nashville-Davidson		
		Houston		
		Norfolk		
		San Francisco		
		Little Rock		
		Phoenix		
		Jacksonville		
		Kansas City		
		Dallas		

TABLE 8
Changes in Free Land Percentages, Suburban Areas 1980-1990, American Housing Survey Sample

-25+ pct point change in free land	*-10 to -25 pct point change in free land*	*-10 to +10 pct point change in free land*	*10 to 25 pct point change in free land*	*25+ pct point change in free land*
Detroit	Cleveland	Kansas City		
Salt Lake City	Columbus	Minneapolis		
	Houston	Columbia		
		Oklahoma City		
		Miami		
		Albany		
		Phoenix		
		Baltimore		
		Seattle		
		New Orleans		
		Milwaukee		
		Washington		
		Cincinnati		
		Orlando		
		Chicago		
		Riverside		
		Birmingham		
		Fort Worth		
		Anaheim		
		Fort Lauderdale		
		Denver		
		Jersey City		
		Akron		
		San Francisco		
		Los Angeles		
		Sacramento		
		San Diego		
		Boston		
		Dallas		
		Las Vegas		
		St. Louis		
		Pittsburgh		
		Tampa		
		New York		
		Atlanta		
		Newark		
		Oxnard		
		Rochester		