

6-21-1993

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Recommended Citation

Hudson, Christopher G. (1993) "The Homeless of Massachusetts: An Analysis of the 1990 U.S. Census S-Night Data," *New England Journal of Public Policy*: Vol. 9: Iss. 1, Article 8.
Available at: <http://scholarworks.umb.edu/nejpp/vol9/iss1/8>

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The Homeless of Massachusetts

An Analysis of the 1990 U.S. Census S-Night Data

Christopher G. Hudson, Ph.D.

This article, which examines epidemiological and policy correlates of homeless populations in 351 Massachusetts towns and cities, is based on an analysis of data from the 1990 U.S. census. It reviews the reliability of the most recent census data, reports findings on the distribution and characteristics of homeless persons in Massachusetts, and presents preliminary correlational findings on the impact of key demographic conditions and policies.

The report includes a meta-analysis of several studies that monitored the Census Bureau's street counts. It is estimated that 42.6 percent of the homeless on the streets in selected urban areas were counted by the census. This finding, as well as the results of a regression model that accounted for 68 percent of the variation in street rates in twenty Massachusetts cities with populations of more than 50,000, was used to compute adjusted rates for the remaining towns and cities. Overall adjusted rates for Massachusetts, Boston, and selected areas compared well with independent estimates and counts. The study suggests that at least 10,155 Massachusetts residents were homeless in 1990.

The persistence and growth of homelessness since the early 1980s is not only symptomatic of the fragmentation of American society, but also of an inability to understand and respond to the many kinds of anguish that homeless persons experience. Central to this inability to understand is an ambivalence about who should be considered homeless: those living on the streets? in institutions? in shelters? doubled up with friends? Social liberals, who, as well as many others, usually prefer to define the homeless broadly to include those precariously housed, focus on structural and policy issues in their conceptualization of causes and preferred policies. In contrast, conservatives, who have sought to delimit the definition to those literally living on the streets and in homeless shelters, focus on individual deficits and an emergency short-term response. Whom we consider to be homeless depends on how we define the home, whether as a secure haven in a supportive community or merely a physical domicile.

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The U.S. Bureau of the Census in 1990 pursued the second option in its plan to enumerate individuals living on the streets and in shelters for the homeless — essentially only the most visible of the homeless.¹ The data generated from this massive operation — the largest attempt to date in the United States to measure the dimensions of homelessness — which can represent only the tip of the iceberg, has been beset with major questions about its reliability.²

This article, therefore, reviews currently available research and data pertinent to the reliability of the 1990 census and tests possible corrections of these data based on known sources of systematic error. The research represents a preliminary analysis of the Massachusetts data to test procedures that may be replicated with the national data. Furthermore, the project examines the degree to which the sizes of homeless populations vary according to a range of conditions hypothesized in the literature to be associated with homelessness, such as urbanization, unfavorable economic conditions, housing unaffordability, social fragmentation, deinstitutionalization, and inadequate social services. The adjustments to the Massachusetts census data generated in this research are supported by independent estimates and studies. Both indicate that the 1990 U.S. census managed to enumerate only two thirds (67.7%) of slightly more than 10,000 of the most visible homeless in Massachusetts who meet the restrictive definition of being perceived in street locations or resident in homeless shelters.

Background

During the 1980s, homelessness grew dramatically despite a sustained period of economic growth. Throughout this period, there have been numerous attempts to “count” the homeless, resulting in wildly divergent estimates. In the early 1980s the Community for Creative Non-Violence pegged the level at one percent of the population,³ whereas in 1984 the Department of Housing and Urban Development estimated it at about 0.1 percent, or the 250,000 to 350,000 level.⁴ Both estimates were widely discounted because of their methodological flaws, most commonly involving an attempt to aggregate local guesstimates.

In one of the very few national studies, the Urban Institute in 1987 utilized random sampling methods in twenty cities throughout the United States and extrapolated from these data that more than 0.2 percent of the population, or between 500,000 and 600,000 persons, was homeless.⁵ These data indicated that a disproportionate number of the homeless were single males (73%) and that findings that families make up a third to a half of the homeless are exaggerated, as such data usually originate in shelters, where families are more likely to be found as compared with the streets. It has been suggested that this estimate may be comparable with the earlier HUD figures; if so, it would represent a 22 percent annual increase in homelessness during the mid-1980s.⁶

One of the most extensive national studies of the dimensions of homelessness was completed by Martha Burt of the Urban Institute. In a multivariate analysis of shelter bed rates in 1981, 1983, 1986, and 1989 in 147 cities of more than 100,000 population, Burt was able to identify several different constellations of forces that contribute to people’s losing their homes in high-growth versus low-growth cities. In high-growth cities, the traditional income maintenance programs, though providing higher benefits, could not overcome the impact of the high cost of living, housing

unaffordability, and encroaching gentrification. The study offers much evidence to indicate that deindustrialization, the shift of jobs from the manufacturing to the service sectors, has contributed to homelessness, especially in low-growth cities.⁷ Caution should be exercised, however, in overgeneralizing the findings of this study. Burt's suggestion that the shelter bed rates can be used as a proxy measure of homelessness is unconvincing, especially in light of the data analysis to be presented here.

Advocates for the homeless have often argued that any attempt to count the homeless is futile and represents an obfuscation of the problem. Yet one of the first steps in understanding any social problem is determining who are experiencing it and their personal characteristics and social environments. Enumeration is an inescapable part of understanding, though it should be only a preliminary step. Without baseline data on numbers and characteristics of homeless in various localities, it is not possible to develop and test models about the interaction of multiple causal factors and determine the most efficacious ways of altering them.

The U.S. Census S-Night Operations

During the evening of March 20 and early morning hours of March 21, 1990, the U.S. Bureau of the Census attempted to include homeless persons as part of the 1990 census. This effort included counts of persons in emergency shelters, on the streets, in hotels and motels used for the homeless, and at the exits of abandoned buildings. Other components of the homeless populations, such as doubled-up families, were enumerated as part of the regular census.⁸ In all, close to 20,000 locations throughout the country were reported to have been canvassed. In preparation for this count, the bureau surveyed local government officials in the 39,000 jurisdictions in the United States, requesting information about shelter, street, and other locations where the homeless are likely to be found. Because of a very low response of only 14,200 (36.4%), the bureau was reported to have made systematic attempts to enumerate the homeless on the streets only in areas with a population of more than 50,000, and only occasional attempts in smaller areas.⁹ The effort to enumerate the homeless in shelters, however, was not limited to the larger cities.

The census resulted in a count of 228,372 homeless persons, of whom 178,638 (78%) were located in emergency shelters¹⁰ and 49,734 (22%) at preidentified street locations. This suggests that close to 9 out every 10,000 Americans were homeless in 1990. Nearly half were in California and New York (44%); the overall rate in Massachusetts was only slightly above the national average.¹¹

Most observers believe that the census failed to include the majority of the homeless. There has been extensive criticism of both the conceptualization and implementation of S-night. Preliminary field tests suggested that a daytime count would have been more effective. In addition, excessive caution was exercised in the failure to include a range of groups of homeless, such as those hidden, and in seeking any information other than the most rudimentary demographics. The most critical problems, however, lay in the implementation of the excessively modest goals of the project. Despite a budget of \$2.7 million and the employment of 22,644 enumerators for the count, widespread reports indicate there was poor field training and support. A debriefing survey of the enumerators conducted by the Census Bureau indicated that the respondents were satisfied with the training; however, 64.2 percent of their

suggestions for improvement and 70 percent of the problems encountered were considered too general to be coded.¹² There were also widespread violations of bureau procedures by the enumerators, many of which appear to have arisen out of fear of the homeless. Enumerators sometimes teamed up in groups of four instead of two — thus reducing coverage of the assigned locations — failed to leave their vehicles, or failed to show up at assigned locations. There was an attempt to employ homeless persons as enumerators, but administrative regulations, such as the requirement of several forms of identification, are reported to have diminished this effort.¹³

Reliability of Shelter Counts

Because of the widespread concerns about the possibility of an undercount, several monitoring studies were organized by the bureau and by independent advocates prior to the census. While most of these involved the street count, two involved the implementation of the shelter count. A census-commissioned study by the Center for Survey Methods Research, for instance, found that despite the restrictive definition of shelters used by the bureau, it generated lists with more than twice as many shelters as advocates and local experts could.¹⁴ This finding, although increasing confidence in the shelter counts, does not speak to the issue of how well individuals in those shelters were counted. The other Census Bureau study, unfortunately, did not address this issue either, as it involved a survey of the bureau district office personnel about the degree of cooperation received from shelter providers and other groups.¹⁵

There were, however, two independently conducted surveys of the number of persons in homeless shelters in selected cities at around the time of the census. In 1989, Burt, of the Urban Institute, conducted a systematic telephone survey of shelters in 147 cities.¹⁶ In addition, the U.S. Conference of Mayors in 1990 surveyed each of thirty cities regarding their shelter bed rates.¹⁷ Table 1 summarizes the counts for the twenty-one cities for which all three counts were available and provides a basis for comparison of the bureau's findings with those of the other two studies.¹⁸

The table is based on counts in the form of rates per 10,000 to control for differences in population size and permit intercity comparisons. An examination of the figures for individual cities indicates much variability; however, the means of all three counts fall within the 25 to 28 per 10,000 range. The bureau's rates are not significantly different from either of the two other figures at the .05 level using paired *t*-tests. The Urban Institute's and Census Bureau's counts compare relatively well, with means of 28.4 and 27.3, which are not significantly different and are highly correlated ($r = .81$; $p = .00$). However, the correlation with the mayors' estimate is not important, though in aggregate the levels are not significantly different. The mayors' estimate represented a less systematic effort than Burt's, as it involved city-level estimates on the part of diverse municipal officials.

It is clear that much random error is involved in one or more of these measurements owing to the considerable differences within individual sets of figures. But both these figures and the Nashville study do not provide evidence of systematic error or bias in undercounting homeless persons in shelters that adhere to the bureau's implicit definition.

Table 1

Comparison of 1990 Census and Independent Counts of Shelter Beds in Selected U.S. Cities with More Than 100,000 Population, 1990 (per 10,000)

City ^a	U.S. Census	U.S. Conference of Mayors ^b	Urban Institute ^c
Mean ^d	27.3	25.4	28.4
Standard Deviation ^d	17.1	13.8	19.7
Median	28.0	17.6	23.2

Sources: U.S. census figures computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A; U.S. Conference of Mayors, *A Status Report on Hunger and Homelessness in America's Cities, 1990: A 30-City Report* (Washington, D.C., December 1990), 35; Martha Burt, *Over the Edge: The Growth of Homelessness in the 1980s* (New York: Russell Sage Foundation; Washington, D.C.: Urban Institute Press, 1992).

^aThe cities include Alexandria, Boston, Charlotte, Chicago, Cleveland, Kansas City, Louisville, Minneapolis, Nashville, New Orleans, New York, Norfolk, Phoenix, Portland, Providence, St. Paul, Salt Lake City, San Diego, San Francisco, Seattle, and Washington, D.C. The first two columns below indicate the level of covariation between these ratings, not agreement, and these indicate a correlation between the Census and Urban Institute findings, not with the Mayors' estimates. The last two columns report on paired *t*-tests and reflect the level of agreement, indicating that none of the three pairs represents significantly different levels.

	Pearson <i>r</i>	<i>p</i>	<i>T</i>	<i>p</i>
Census and Mayors	.35	.12	.25	.81
Census and Urban Institute	.81	.00	-.60	.56
Mayors and Urban Institute	.67	.00	-.94	.36

^bFigures represent total shelter beds and family shelter beds converted to population rates per 10,000.

^cFigures from Burt, *Over the Edge*, Appendix A, "1989 Homeless Rate."

^dPhiladelphia and San Antonio, as well as other unlisted cities, are not included in the computation of the various statistics (except median), since data from the Conference of Mayors' estimates are unavailable.

Reliability of the Street Counts

The question of the reliability of the street counts is considerably more problematic than that of the shelter counts. Fortunately, both advocates and the bureau paid greater attention to assessing any systematic bias or possible undercount in designated locations. The bureau contracted with five private research groups to monitor the street count using one or both of two types of methodology. Four of these groups used recapture methods, which involved placing between 57 and 127 volunteers as "plants" at the predefined locations where the Census Bureau would be counting homeless.¹⁹ Each volunteer recorded whether he or she was counted by an enumerator, thus permitting an assessment of the percentage of eligible persons enumerated. The other methodology involved in-person interviews with homeless persons in the few days following the census, also to determine the percentage who said they were interviewed by a census enumerator.²⁰ In addition to the contracted studies, private groups in Tucson and San Francisco independently conducted two of the most significant monitoring efforts, which involved interviews with 300 and 1,008 homeless persons, respectively.²¹

Table 2

**Meta-analysis of Results, Monitoring Studies of 1990
U.S. Census Street Counts in Selected Cities**

City & Investigator	Studies Using Recapture Methods							Follow-up Studies of Homeless							Total
	n	Yes	Prob.	Maybe	Prob. Not	No	% Ctd ^a	n	Yes	Prob.	Maybe	Prob. Not	No	% Ctd ^a	
Chicago (Edin)	—	—	—	—	—	—	—	18	5	—	—	—	13	28	28%
Los Angeles ^b (Cousineau)	63	21	—	11	—	31	40	50	17	11	—	16	6	74	51%
New Orleans (Wright & Devine)	58	38	—	3	—	17	69	10	5	—	1	—	4	56	67%
New York ^c (Hopper)	127	46	15	—	10	56	45	—	—	—	—	—	—	—	45%
Phoenix (Stark)	57	17	—	4	—	36	32	10	2	—	—	—	8	20	30%
San Francisco ^d (HTF & COH)	—	—	—	—	—	—	—	1008	353	—	122	—	533	40	40%
Tucson ^d Primavera	—	—	—	—	—	—	—	300	138	—	—	—	162	46	46%
Aggregate	305	122	15	18	10	140	47	1396	520	11	123	16	726	42	42.6%

Sources: Kathryn Edin, "Assessment of S-Night 1990 in Chicago, IL," North Park College, Chicago, May 1990; M. R. Cousineau and T. W. Ward, "An Evaluation of the 1990 Census of the Homeless in Los Angeles," Los Angeles Homeless Health Care Project, June 8, 1990; J. D. Wright and J. A. Devine, "Assessment of the Street Enumeration Procedures during the Census 'Shelter and Street Night' in New Orleans," Tulane University, n.d.; Kim Hopper, "Final Report: Monitoring and Evaluating the 1990 S-Night Count in New York City," Nathan S. Kline Institute for Psychiatric Research, January 1991; Louisa Stark, "An Evaluation of the 1990 Census of Homeless People in Phoenix," Community Housing Partnership, Phoenix, July 30, 1990; Coalition on Homelessness, *The Newsletter of the Coalition on Homelessness*, "Alternate Homeless Survey Finds Severe Under Count by Census Bureau," San Francisco, April 1990; Primavera Foundation, press release, "Monitoring the U.S. Census Bureau Shelter/Street Count of Tucson: A Survey by the Primavera Foundation," March 28, 1990.

^aThe percentage of homeless persons counted on the streets is calculated in each case by dividing the yeses (counted) by the n for the particular study, excluding any maybes or probabyls. This percentage does not consider the "hidden homeless" or other classes of homeless persons, but only those fitting the U.S. Census criteria for the street count.

^bOnly the figures for street locations selected for the census counted are used here.

^cHopper computed a more specific figure of 53 percent, but to enhance comparability with other studies, the percentage based on the raw data is retained here. This researcher also reports having conversations with twenty-two homeless persons in the weeks after the census, of whom four reported being interviewed. These data, however, are not included owing to their informality.

^dIn contrast to the first two studies, these two studies were conducted by independent advocacy associations, which were under contract with the U.S. Bureau of the Census. While the mean positive count rate for the census studies was 47 percent, in contrast to 41 percent for others, this, as noted below, was not a significant effect.

F tests for main and interaction effects:	F	p
Method (recapture vs. homeless survey)	1.399	.237
Funding (census contracted vs. advocacy study)	3.130	.077
City	4.609	.000
Method X city	3.583	.028

The results of the ten studies conducted, summarized in Table 2, indicate that only 42.6 percent of the combined total of the plants and homeless persons were enumerated, showing a severe undercount in the seven urban areas studied. This percentage is calculated by using the 1,508 of the total 1,701 subjects who were able to

say that they definitely were or were not counted and excluding all who equivocated with a “maybe,” “probably yes,” or “probably not.” An analysis of variance indicated that the results did not significantly differ depending on either the method used (recapture or homeless survey) or auspices (contracted or independent study), but they did vary considerably depending on the city.

An examination of the findings in individual cities indicates that the studies with large samples all had findings in the 40 to 46 percent range, whereas the studies with small samples in Chicago, Los Angeles, New Orleans, and Phoenix almost all varied dramatically from a low of 20 percent to a high of 74 percent. For this reason, the 99 percent confidence interval for the aggregate percentage counted — 39.2 percent to 46 percent — probably represents a fair estimate of the percentage of homeless living in nonhidden street locations who were counted in major urban areas,²² but not in rural areas, where it is undoubtedly considerably greater.

Since contracting for these studies, officials of the Census Bureau have argued that the results cannot be used as a measure of the degree of undercount.²³ The bureau’s own analysis of these studies, however, indicated that the enumerators “may have missed half the street sites in Chicago and Los Angeles, and a third in Phoenix,” and that “substantial departures from standard procedure appear to have occurred to varying degrees in all five cities.” Statistical and probability theory precludes untested generalizations from the monitoring studies. Nonetheless, the cumulative results of the ten studies do present persuasive evidence that, regardless of auspices and method of study, a consistent pattern of undercounting of persons in the identified locations occurred.

Application to Massachusetts

A review of the reliability of the national data may or may not be applicable to Massachusetts. For this reason, it is important that data relevant to the reliability of the Massachusetts data also be considered. The only overall estimate of both street and shelter numbers is that published by the Executive Office of Human Services, whose estimate, based on various administrative records, was 10,000 for 1990, about 45 percent greater than the 6,887 generated by the Census Bureau.²⁴ However, the Boston Shelter Commission’s count of 2,784 homeless on the streets and in shelters in late 1990 is only 13 percent more than the bureau’s count of 2,463 for March of that year.²⁵ The bureau’s street count for Boston was 218, or 29 percent more than the Shelter Commission’s count of 168. Of the four Massachusetts cities with more than 100,000 population, three are included in Burt’s 1989 study of shelter bed rates. The mean rate from the Burt study for Boston, Springfield, and Worcester was 28.7, compared with 30.1 from the Census Bureau, thus supporting the finding of the absence of a systematic undercount in the census’s shelter figures for Massachusetts. The Executive Office of Human Services’ figures, however, provide evidence — not supported by the Boston Shelter Commission results — of an overall undercount, most likely in respect to the nonsheltered homeless, especially in rural areas.

In summary, this review of research and data collection efforts supports the use of the Census Bureau shelter counts in Massachusetts. In addition, a meta-analysis of data from this research provides us with a possible adjustment factor for estimating the actual prevalence of nonhidden homeless in street locations in urban areas of more than 50,000. This study will, therefore, test the possibility of adjusting the

Massachusetts street counts using this factor. In addition, it aims to analyze factors associated with variability of the rates in large areas to test the feasibility of extrapolating the urban figures to rural towns, then assessing the overall accuracy of the estimates for non- or underenumerated rural areas. Finally, an important purpose is to identify some of the ways these rates vary according to demographic, housing, economic, and service conditions throughout the towns and cities of Massachusetts.

Methodology

This study represents a secondary analysis of data from several government statistical sources. Counts of persons in shelters and on the streets, as well as basic demographic and housing data, were obtained from the 1990 U.S. Census. These items were extracted from Summary Tape File 1-A, using CD-ROM technology (see Bureau of the Census, Technical Documentation, Summary Tape File 1). Data on social, health, and educational services were similarly extracted from the 1988 survey of county business patterns. Information on mental health services was obtained from published documents of the Massachusetts Department of Mental Health, and income data from 1987 U.S. census reports.²⁶

The units of analysis were the 351 Massachusetts cities and towns, which represent county subdivisions and are contiguous in their coverage of virtually all the land area of the state. Income data were also on a town level; however, the services and mental health data were available only on the county or mental health area level. These data, therefore, were first converted to rates or percentages, then allocated or assigned to each of the towns that comprised the larger unit; none of these towns were split between counties or areas. This procedure assumes equal service coverage within each county. In some respects, the procedure is advantageous, as many of the institutions, such as mental hospitals, serve these larger areas and not just the towns in which they are located.

Extensive data transformations were involved in collapsing the multiple categories in which many of the census counts are recorded. For instance, the counts for the various age groups were used to compute, through a grouped data formula, the median age for each city or town. The index of dispersion²⁷ was the basis for computation of an index of racial diversity within each town, which had the advantage of capitalizing not only on the overall numbers of minority persons, but also the variation in numbers between racial groups. Any aggregation of the rates, using breakdowns or multiple regressions, utilized a weighting factor based on relative population size to avoid the problem of a city like Boston being given no more consideration than a small affluent suburb. Thus, aggregate means for counties or groups of towns represent means of the combined populations, not a "mean of means."

Finally, multiple regression equations were computed to control simultaneously for various independent variables and construct a predictive model to be used in further data adjustments. Because prediction and not causal explanation was the foremost purpose of this analysis, stringent criteria were used in that all predictor variables with *t* scores over .05 were eliminated, keeping the independent variables to a parsimonious minimum. In addition, the adjusted R^2 was used to compensate for small sample sizes.

Results

The Census Counts

Slightly more than one in each 1,000 Massachusetts residents were identified by the 1990 census as homeless (10.3 per 10,000). Of these 6,881 people, 6,207, or almost 9 out of 10 (89%), were located in homeless shelters on the night of March 20, 1990. Rates varied dramatically, from zero in both Duke (Martha's Vineyard) and Nantucket counties to 38.2 per 10,000 in Suffolk County, where Boston is located. Barnstable County (Cape Cod) had the second highest rate of 18.1. An examination of selected towns and cities provides a parallel view as do the counties, and these indicate that significant rates are also found in most urban areas, such as Cambridge, Worcester, Springfield, Lowell, and especially Lynn, an impoverished Boston North Shore inner suburb whose rate surpasses that of Boston with one in each 222 residents found to be homeless (45.0). Table 3 summarizes the overall levels for Massachusetts and the city of Boston.

Table 3

Results from the 1990 U.S. Census Enumeration of Homeless on Streets and in Shelters in Massachusetts

	Counts			Rates per 10,000			Percentage of Total in Shelters
	Shelter	Street	Total	Shelter	Street	Total	
Massachusetts	6,207	674	6,881	10.3	1.1	11.4	89
Boston	2,245	218	2,463	39.1	3.8	42.9	91

Source: Computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A.

A cursory examination of the census counts, such as those summarized in Table 4, may lead one to conclude that homelessness is almost entirely an urban phenomenon in Massachusetts. However, such an interpretation would ignore the fact that few efforts were made to enumerate street persons in cities of fewer than 50,000 population. Thus, the variation of rates reflected in Table 4, from 1.3 in towns with fewer than 5,000, to 36.0 in cities with more than 100,000, reflects in part the well-known urban bias of the census. Although the shelter rates are also quite disparate, ranging from 1.3 to 32.5, they vary less dramatically than the street rates, which range from zero to 3.6. The street rates reflect a dramatic drop-off just below the 50,000 mark, which is consistent with what we know about the enumeration procedures. In fact, the almost 70 percent of the 351 towns and cities that had counts of zero were almost entirely in rural areas.

The proportion of homeless served by shelters does not vary significantly based on size of municipality. However, if towns of fewer than 5,000 are excluded (many of these percentages could not be computed because of denominators of zero), a higher proportion of the homeless — about 90 percent — were found to be sheltered in larger areas, compared with about 8 percent in cities of between 5,000 and 14,999 people.

Table 4

Mean Rates of Homelessness by Town or City Population

Population Category	n	Rates per 10,000			Percentage of Homeless in Shelters
		Shelter	Street	Overall	
Fewer than 4,999	119	1.3	0.0	1.3	100.0
5,000–14,999	119	1.6	0.5	1.7	79.8
15,000–49,999	92	4.7	0.2	4.9	87.0
50,000–99,999	17	13.1	2.1	15.2	91.5
More than 100,000	4	32.5	3.6	36.0	89.6

Source: Computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1–A.

Note: The means are weighted by population of municipality. They therefore represent mean rates for the combined populations of the towns or cities in each category.

Bivariate Analysis

The next step in the analysis consisted of testing several hypotheses about the particular contributions of selected demographic, service, and economic conditions to explain variations among homeless rates. This was done by computing zero-order Pearson *r* correlation coefficients between the various predictors and the shelter, street, and overall rates, both for the total sample of 351 cities and for twenty cities with populations of more than 50,000 (see Appendix A). It is important to determine if relations uncovered by the total sample can be replicated with the smaller group of cities in which there is reason to believe that considerably better counts were obtained. If these findings cannot be replicated, the possibility that the relation uncovered represents the differential search efforts becomes more plausible.

Even within the twenty urban areas, population size remains one of the most important predictors, with an overall *r* of .67 ($p < .001$). However, population density ceases to be a significant factor (overall $r = .28$). Other variables correlated with urban size also gain in significance when the twenty cities are examined by themselves. In particular, the greater the racial diversity, the higher the rates of homelessness, especially in cities of more than 50,000 (overall $r = .69$; $p < .001$). Similarly, as median age decreases, rates of homelessness increase, especially in the larger areas ($r = -.52$; $p < .01$). The percentage of those aged sixty-five and older is also negatively correlated with homelessness ($r = -.52$; $p < .01$), but not the percentage of those aged eighteen or under. Homelessness is found to be associated with higher proportions of males, especially with the street rates in the larger urban areas (street $r = .49$; $p < .01$).

The family structure variables all gauge social fragmentation, a phenomenon often associated with urbanization and hypothesized to place individuals at risk of homelessness. In the total sample, it was found that the higher the percentage of persons not living together in families ($r = -.27$; $p < .001$) and more one-person households were both associated with higher homeless rates ($r = -.31$; $p < .001$); however, this relation was minimized within the twenty larger cities. A similar pattern emerged in respect to places with higher percentages of separated, widowed, and divorced adults ($r = .28$; $p < .001$), and similarly, female single-parent households were associated with higher rates of homelessness ($r = .41$; $p < .001$). These predictors are not as

important within the more homogeneous group of twenty larger cities. An important exception, however, was the finding that the more female single-parent families, the more people live on the streets in the larger cities ($r = .48$; $p < .001$).

Unexpectedly, the two most recent indicators of available economic resources — per capita income and per capita income change, 1979–1987 — did not explain any significant level of variation in homeless rates. These are crude measures and do not accurately reflect resources available to families at low-income levels. It should be noted that the higher the mean per capita income of a community, the more it was able to increase its income during 1979 to 1987 ($r = .70$; $p < .0000$).

Indicators of housing availability and affordability present a mixed picture. The most dramatic relationships involve vacancy rates and rental availability, but not affordability. The greater the overall vacancy rate (which includes nonrented houses), the more people are homeless, especially those on the streets in the twenty urban areas ($r = .69$; $p < .001$). In contrast, the more vacant rental rooms (whether in a single room or a large expensive apartment) per homeless person, the smaller the rate of the homeless, especially those in shelters ($r = -.69$; $p < .001$). This measure varies from a low of about 20 in Boston upward of several hundred in some rural areas. When per capita income and median rents were considered together in a housing affordability index, it was found that the more unaffordable the housing, the higher the rates of homelessness in the total sample ($r = .27$; $p < .001$), but this relationship disappeared within the confines of the more homogeneous group of twenty cities.

Virtually none of the indicators of service usage (“service recipients”) was significantly associated with any form of homelessness in either analysis. The one exception involved the percentage of persons in juvenile institutions in the twenty larger cities: the more such recipients, the more homeless, especially those in shelters ($r = .49$; $p < .001$).

In contrast, overall service availability, measured by the percentage of population employed in various types of services, was found to significantly predict homeless rates, but only in the larger cities. The more health, education, and social services, the more homeless, particularly those in shelters. The one exception involved residential services, where the more such services were slightly associated with fewer homeless ($r = -.11$; $p .05$).

Other service indicators showed little predictive power in respect to the homeless rates, especially two measures of mental health institutional and community services computed from a factor analysis of state Department of Mental Health data. Whether deinstitutionalization has significantly contributed to homelessness, as is commonly believed, can be fully tested only by examining interstate data in which there are more noted variations in the history of the depopulation of state and county hospitals.

Multiple Regressions

Whether all 351 cities and towns or only the twenty largest cities are considered, significant patterns in the variation of homelessness between municipalities were identified in this study. Of several regression models tested, the two of greatest interest involve that for shelter rates in the total population and the one for street rates in the largest cities. Betas as well as summary statistics for these two models are summarized in Table 5.

Table 5

Indicators of Homelessness Regressed on Selected Predictors

	Shelter Rate (n = 351)		Street Rate (n = 20) ¹			
	Beta	B	Partial r	Beta	B	Partial r
Persons in families (%)	-.39 ^c	-.0059	-.29	-.32 ^a	-7.46E-04	-.54
Separated, widowed, divorced adults (%)	.43 ^c	.0176	.26			
Family households with aged (%)	.14 ^a	.0029	.13			
Index of racial diversity ²	.55 ^c	.0037	.42			
65 and older (%)	-.22 ^c	-.0087	-.19			
Occupied units rented (%)	-.22 ^c	-.0139	-.14			
Total vacancy rate				.73 ^c	.0074	.79
Rooms for rent/homeless	-.17 ^b	-.0064	-.16			
Correctional facilities	-.11 ^c	-.0135	-.18			
Health care	-.19 ^b	-.0139	-.11			
Education	-.21 ^b	-.0175	-.18			
Social service, individual & family	.22 ^b	.2437	.18			
Mean SS salary	.40 ^c	5.17E-07	.27			
Constant		-.0019			2.38E-04	

Equation Statistics

R ₂	.82	.84
R ₂	.68	.71
R ₂ Adjusted	.67	.68
D.F. — Regression	12.00	2.00
D.F. — Residual	338.00	17.00
F	59.30	21.00
Significance F	.0000	.0000

Sources: Computed from U.S. Bureau of the Census, 1990 Census, Summary File Tape 1-A; U.S. Bureau of the Census, County Business Patterns, 1988.

Notes:

1. See note 1 in Appendix A.
2. See note 2 in Appendix A.

^ap <.05

^bp <.01

^cp <.001

The sheltered homeless are most likely to be found in cities where fewer persons live together in families (beta = -.39; *p* <.001); where there is a high proportion of adults who are separated, widowed, or divorced (beta = .43; *p* <.001); and to a smaller extent, in cities where there are relatively few aged (beta = -.22; *p* <.001) who tend to live in family households (beta = .14; *p* <.05). The single strongest predictor was racial diversity: the more racially diverse a city, the more people

have lost their homes ($\beta = .55; p < .001$). In addition, there are more homeless in shelters in places where a higher proportion of housing units are rented ($\beta = -.22; p < .001$) and where there are few rooms for rent per homeless person ($\beta = -.17; p < .01$). There is a slight tendency toward larger numbers of sheltered homeless in cities where there are fewer correctional ($\beta = -.11; p < .001$), health ($\beta = -.19; p < .01$), and educational facilities ($\beta = -.21; p < .01$). In contrast, more sheltered homeless are found in cities where a high proportion of adults are employed in individual and family-oriented social services ($\beta = .22; p < .01$). The characteristics of the 351 Massachusetts towns and cities collectively account for two thirds of the variation in the rates of sheltered homeless persons (adjusted $R^2 = .67; p < .0000$).

A considerably more parsimonious model, one with only two predictor variables, was computed to account for variations in the levels of the street homeless among the twenty cities with more than 50,000 population. Similar to the sheltered homeless, when fewer persons live together in family units, more homeless live on the streets ($\beta = -.32; p < .05$). The other predictor, rental vacancy rate, tells a similar story: the higher the proportion of vacant rental units, the more people live on the streets ($\beta = .73; p < .001$). Because only two predictors are included in this model, minimal information is provided about the meaning of these relationships and the multiple forces that lead to the fragmentation of families and lack of utilization of existing housing, as well as the various ways they contribute to homelessness. Nevertheless, low proportions of persons in families and high rental vacancy rates account for more than two thirds of the variation in rates of persons living on the streets in the urban areas in Massachusetts (adjusted $R^2 = .68; p < .0000$). Family fragmentation and housing accessibility correspond to the foremost reasons homeless persons give in many surveys for their lack of a home.²⁸

Important patterns have been identified in this series of analyses. Indicators of urbanization, racial diversity, family fragmentation, housing displacement (vacancy rates), and availability of individual and family social services were all found to be associated with high levels of homelessness.

Application of Model

One of the main values for statistically modeling a phenomenon such as homelessness is that it permits the identification of causal relationships and possible avenues of intervention. The data used in this study, however, have permitted only an initial exploration of these relationships, mostly because important policy variables could not be included in an intrastate level analysis.²⁹ Nonetheless, the variables included proved to have substantial predictive power in accounting for variations in the homeless rates. To the extent that the two predictor variables — percentage of persons in families and vacancy rates — used to account for the street rates operate similarly in smaller areas, it is possible to estimate the actual rates of homeless persons on the streets in the remaining 331 underenumerated cities in the commonwealth. However, such projections cannot stand by themselves without being tested through comparisons with independent estimates and counts.³⁰

The model computed for street rates in the urban areas was used (see Table 5), therefore, to compute estimates of the actual numbers of homeless in each of the remaining 331 cities and towns. For each of these municipalities, the unstandardized regression coefficients for the family and vacancy variables were multiplied by the

value for the corresponding predictor variable and totaled, along with the intercept constant, to form a projected rate.³¹

The second stage in adjusting the street counts for known systematic biases involved applying the 42.6 percent undercount figure from the analysis of the monitoring studies (see Table 2) to the projected rates, which involved multiplying the newly adjusted rate for each town by 2.347 (100 divided by 42.6). The resulting rate was then multiplied by the town's population to give a projected actual count of street homelessness in each jurisdiction. If at any stage the rate was a negative number, it was set to zero. While the adjustment for vacancy rates and percentage of persons in families was applied only to the 331 smaller cities, the second adjustment was applied to both the projected urban and rural rates equally. Finally, the adjusted street counts and rates were added to the original, unadjusted shelter counts and rates to provide new overall adjusted levels for each of the 351 towns and cities in the commonwealth. These figures are summarized in Table 6.

Table 6

**Adjusted Levels of Street Homeless and Adjusted Totals,
Based on Proportion of Undercount and
Predicted Levels from Regression Equation**

	Census		Street Only Projected		Street & Shelter Adjusted Totals		Percentage Sheltered
	Count	Rate	Count	Rate	Count	Rate	
Massachusetts	674	1.1	3,947	6.6	10,155	16.9	60
Boston	218	3.8	512	8.9	2,757	48.0	81

Source: Computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A.

Note: Street rates and counts for cities of 50,000 or more were adjusted only on the basis of the reported undercount from prior research (see earlier section). Figures for all other cities were also adjusted on the basis of predicted figures, using the equation from the multiple regression equation in Table 5, column 5.

Overall, it is projected that Massachusetts in 1990 had 10,155 homeless persons fitting the Census Bureau's implicit definitions, indicating that the U.S. government successfully counted only two thirds of the most visible and hard core of the homeless whom it sought to enumerate in Massachusetts (see Table 6). Out of every 10,000 persons, about 17 were either living in homeless shelters or at visible street locations. Homeless persons in women's shelters, in hidden places, in mental hospitals and other institutions, as well as those doubled up with families and friends are not included in this projection. When the distribution of homeless persons as indicated by the adjusted rates is reexamined according to population of municipality, it becomes clear that rural areas also have significant numbers of homeless, though not to the degree that urban areas do.

Table 7 summarizes this pattern, indicating that at least one in every 250 persons are homeless in the largest urban areas, but only about half that number are homeless in the smaller areas. The unexpectedly high rates in the smallest areas, those with fewer than 5,000 people, are attributable to very high rates in the Cape Cod area: Barnstable, Duke, and Nantucket counties. These may be unrealistically high

projections, since one of the predictors in the model is a housing vacancy rate, and such figures are extraordinarily high for the Cape in March owing to the many vacation homes there. Nonetheless, there are published reports which claim that the Cape has one of the highest rates of homelessness in the commonwealth: "Cape Cod, by far, has the greatest incidence of family homelessness in the state."³² Outside of the Cape and extremely small towns, the rural rates are at the 9 to 10 level, or about one out of each 1,000 persons (for all towns of fewer than 50,000 the rate has a weighted average of 10.2). This adjustment of the rates indicates that of those who are homeless, a much greater proportion are sheltered in urban than in rural areas. While 4 out of 5 (79.3%) of the urban homeless are sheltered, only one in 14 (7.1%) are sheltered in the most rural areas.

Table 7

Mean Adjusted Rates of Homelessness by Town or City Population

Population Category	n	Rates per 10,000			Percentage of Homeless in Shelters
		Shelter	Street	Overall	
Massachusetts Total	351	10.3 ^a	6.6	16.9	59.9
Fewer than 4,999 ^b	119	1.3	18.3	19.6	7.1
5,000–14,999	119	1.6	7.5	9.0	10.9
15,000–49,999	92	4.7	5.0	9.7	47.8
50,000–99,999	17	13.1	4.9	18.0	85.0
More than 100,000	4	32.5	8.4	40.9	79.3

Source: Computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A.

Note: The means are weighted by population of municipality. They therefore represent mean rates for the combined populations of the towns or cities in each category.

^aShelter rates are not adjusted; only street rates are adjusted.

^bAdjusted figures for these extremely small areas probably represent an artifact of the statistical analysis as they are based in part on a multiple regression equation that used vacancy rates as one of the key predictors. The values for this variable for these areas, unlike the variable and areas, is extremely divergent from the twenty cities used in the initial regression. Many of these small towns represent vacation spots on the Cape and Nantucket, which have extremely high vacancy rates at the time of the census, represent conditions too dissimilar from those of the remainder of the state to enable confident projections. Nevertheless, there are some reports that homeless rates in these areas are quite high owing to housing that is unaffordable for many local residents as well as significant transient populations.

Testing the Model

The final stage in the model's application consisted of testing, which was done by obtaining independent and published counts or estimates and comparing them with the adjusted figures. Table 8 summarizes the adjusted and independent counts, as well as the census figures, and indicates that there was a fair level of agreement between the adjusted and independent counts. This is most dramatically the case with the aggregate Massachusetts and Boston figures, for which there was no more than a 1.5 percent disparity in the two sets. There was also a fair degree of agreement for the figures for the Franklin County area, where the actual count was higher than the projected one. However, as a period count, it would be expected to be somewhat higher than the adjusted "point in time" figure used in this study. Although the Cape

Cod and Peabody-Beverly-Salem independent estimates are considerably lower, it should be kept in mind that these were from a period five years earlier, are based on service contacts, and are general estimates. If it is assumed that each of the Cape Cod families has three individuals, this provides a 1985 count of about 700, about half the projected 1,456. If Burt's projection of a 22 percent annual growth in homelessness is accurate, the projected 1,456 would be fewer than the adjusted independent estimate. Thus, while rates for some of the smallest rural areas could be on the high side, on the whole the model predicts levels of homelessness throughout the state in a manner largely consistent with independent counts and estimates.

Table 8

Comparison of Adjusted Counts with Independent Counts and Estimates for Selected Areas

	U.S. Census	Adjusted Counts	Independent Counts/ Estimates	Type	Year
Massachusetts	6,887	10,155	10,000	Estimate	1990
Boston	2,463	2,757	2,784	Count	1990
Barnstable County (Cape Cod)	337	1,456	400-I 100-F	Estimate	1985
Franklin County and Athol Area	29	91	108	Records	1989
Gloucester	45	79	50-75	Estimate	1985
Peabody-Beverly-Salem	204	230	50-I	Estimate	1985

Sources: U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A; Massachusetts: Executive Office of Human Services, Commonwealth of Massachusetts, *Comprehensive Homeless Assistance Plan 3*, 1990, 3; Boston: Emergency Shelter Commission, City of Boston, *State of Homelessness in the City of Boston, Winter 1991-1992*, 20. To maximize comparability of the data, the figures for winter 1990-1991 were used, excluding those for detox, hospitals, mental health facilities, and battered women's and adolescent shelters. These represent types of homelessness not covered by the U.S. special census or these adjustments; Barnstable County, Gloucester, and Peabody-Beverly-Salem: Executive Office of Human Services, Commonwealth of Massachusetts, *Massachusetts Reports on Homelessness, 1985*; Franklin County and Athol area: Executive Office of Human Services, *Homeless Assistance Plan 3*, Appendix 4, 3. The 108 figure, which includes only single men and women, is probably low.

Note: "I" indicates a count of individuals, "F" a count of families of unknown size.

This study provides strong evidence that at least one in every 590 Massachusetts residents are living on the streets or in homeless shelters. It demonstrates that homelessness is not only a severe urban problem, but also that significant numbers are homeless in rural areas, and that emergency shelter services are severely deficient in these localities. It also illustrates that homelessness is not a simple function of housing unavailability, deinstitutionalization, or poverty, but represents a complex interplay between several different sets of conditions. The bivariate analyses showed that significant associations exist with high levels of racial diversity, one-person families, persons not in families, female-headed families, and younger individuals. While there are many ways that these data might be interpreted, probably the most plausible is

that each of these groups — minorities, nonnuclear families, single, and young people — is at risk, and that the higher their numbers, the higher the homeless rates.

Previous surveys of the homeless have clearly established that disproportionate numbers of them are minorities, single, and male and that a fast-growing subgroup is female single-parent families. In contrast, two-parent families, whites, and the aged are underrepresented among the homeless.³³ When detailed data about the characteristics of homeless in various localities become available (from the Census Bureau's STF-2 tape series), it will be possible to test this interpretation by computing differential rates for various demographic subgroups based on age, gender, or race.

A significant finding is that in Massachusetts vacancy rates are for the most part positively associated with high levels of homelessness. Thus, it appears that homelessness does not reflect housing unavailability, but instead its inaccessibility. People, especially minorities, young people, and female-headed families, are being displaced from existing housing. The lack of significant correlations between the housing affordability index and homelessness is unexpected. While it may simply reflect the fact that the index used was a general measure of the affordability of all rental properties, rather than ones for lower-income groups, it may also suggest that there are other barriers to housing access such as discriminatory zoning and rental policies, as well as financial disincentives for landlords to adjust rents to changing market conditions. However, when a specific index of number of rooms for rent per homeless person is correlated with homeless rates, there are consistently negative zero-order correlations. This suggests that although people are being displaced from the larger stock of housing, some are being reabsorbed in areas where there is a relatively high ratio of vacant rental rooms to the number of homeless persons.

Correlations between services and homelessness can mean many things. Positive associations could mean that services are making people homeless, attracting the homeless from other areas, or responding to the high numbers of homeless. Conversely, negative associations might mean that services are effective in solving the problem of homelessness, that service providers are avoiding the homeless, or that the homeless are avoiding the service providers. However, if it is assumed that services were there first, then the two hypotheses that service providers either follow or flee from the homeless can be rejected, except in the case of those services specifically developed and designed in response to the growth of homelessness. In this study, most of the service indicators correlated positively with rates of homelessness. The most basic interpretation would be that both services and homelessness are associated with urbanization, so that their distributions tend to parallel one another and illustrate an interactive clustering of providers and recipients. This is not the case with residential services, which showed negative zero-order correlations. They suggest either that residential services provide an important safety net, minimizing the prevalence of homelessness, or that these services sometimes tend to be located in less populated residential suburban areas and smaller towns where there are lower rates of homelessness.³⁴

One of the most important findings of this study is that it is feasible to adjust census data using known sources of variation and bias to produce synthetic estimates, which can in turn be confirmed or disconfirmed. Both astronomers and criminologists have been effective in predicting the existence of unobserved but later-to-

be-verified phenomena by using the flimsiest of data, the most disreputable of informants, or the most abstract theoretical conjectures as their starting point. The ability of social scientists to productively use the "fatally flawed" data from the census to study the dimensions of homelessness should not be an insurmountable task. This attempt to do so has met with a moderate degree of success. A similar yet far more accurate and useful adjustment of the data will no doubt be possible by using the national data, not only because of the greater number of jurisdictions (3,241 counties), predictor variables, and sources of data on systematic biases that could be used, but also because there would be a much wider range of independent studies and estimates for fully testing predictions generated from such an empirically based model.

The value of such undertakings as those recommended here is not only the development of an accurate portrayal of who and how many are homeless, where they are located, and what their personal characteristics are; the data are also the foundation for causal modeling efforts that are direly needed to answer questions about the impact of possible alterations in various economic, income maintenance, mental health, and housing policies and the identification of those changes which will mean the greatest reduction in homelessness with a given level of resources. •

Appendix A

Zero-order Correlations of Homeless Rates with Selected Predictor Variables

	Shelter	All Cities (351) Street	Overall	Cities w/Population <50,000 (20) ¹ Shelter	Street	Overall
Indicators of Urbanization						
Population	.45 ^c	.35 ^c	.48 ^c	.65 ^b	.47 ^a	.67 ^c
Population density	.34 ^c	.32 ^c	.37 ^c	.25	.33	.28
Family Structure Variables (%)						
Persons in families	-.27 ^c	-.13 ^a	-.27 ^c	-.32	-.22	-.32
One-person households	.30 ^c	.18 ^c	.31 ^c	.17	.25	.19
Separated, widowed, divorced adults	.26 ^c	.18 ^c	.28 ^c	-.10	.24	-.06
Female single-parent households	.38 ^c	.34 ^c	.41 ^c	.25	.48 ^a	.30
Family households w/aged	-.19 ^c	-.18 ^c	-.21 ^c	-.41	-.49 ^a	-.45
Nonfamily households w/aged	.20 ^c	.17 ^c	.22 ^c	.10	.32	.14
Households w/nonrelatives	.26 ^c	.11 ^a	.26 ^c	.35	.22	.35
Other Demographic Variables						
Index of racial diversity ²	.37 ^c	.37 ^c	.40 ^c	.65 ^b	.63 ^b	.69 ^c
Median age	-.11 ^a	-.14 ^b	-.13 ^b	-.45 ^a	-.68 ^c	-.52 ^b
65 and older (%)	.10 ^b	.03	.10 ^b	-.51 ^b	-.38	-.52 ^b
18 and younger (%)	-.18 ^c	.01	-.17 ^c	.08	.31	.12
Males (%)	-.18 ^c	-.08	-.18 ^c	.37	.49 ^b	.41
Economic Variables						
Estimated 1990 per capita income	-.06	-.08	-.07	.01	-.30	-.04
Per capita income change 1979-1987	-.02	-.07	-.03	.11	-.20	.07
Housing Variables						
Occupied units rented (%)	.33 ^c	.27 ^c	.36 ^c	.24	.53 ^a	.30
Median rent	.09 ^b	-.02	.09	.07	-.26	.02
Median rooms/unit	-.27 ^c	-.18 ^c	-.28 ^c	-.13	-.43	-.18
Median persons/room	.10	.16 ^b	.12 ^a	.18	.52 ^a	.24
Total vacancy rate	.00	-.04	-.00	.33	.69 ^c	.40
Rental vacancy rate	.22 ^c	.20 ^c	.24 ^c	.22	.59 ^b	.29
Rooms for rent /homeless	-.27 ^b	.06	-.27 ^b	-.69 ^c	.30	-.68 ^c
Housing affordability Index ³ (reversed)	.26 ^c	.13 ^b	.27 ^c	-.00	.07	.01
Service Recipients						
(% Persons in:) Correctional facilities	-.03	-.01	-.03	.13	.14	.14
Nursing homes	.06	.06	.07	.19	.19	.20
Mental hospitals	-.00	-.01	-.01	.04	-.01	.03
Juvenile institutions	-.05	-.02	-.05	.49 ^a	.15	.47 ^a
Other	-.03	-.02	-.02	.11	-.04	.09
Service Providers						
(% Population Employed in:)						
Health care	.07	.07	.08	.48 ^a	.30	.49 ^a
Education	.14	.07	.14	.40	.18	.39
Social service	-.04	.01	-.04	.51 ^a	.33	.52 ^a
Individual & family	.12 ^b	.07	.12 ^b	.53 ^a	.32	.54 ^a
Job training	-.07	.00	-.07	.22	.16	.22
Residential	-.10 ^a	-.05	-.11 ^a	-.11	.04	-.10
Other SS	.10	.08	.10	.49 ^a	.29	.49 ^a
Other Service Indicators						
Day care coverage (child./center)	-.10	.00	-.10	-.04	.12	-.02
Employees per SS agency	-.02	.05	-.01	.22	.16	.23
Mean SS salary	.26 ^c	.11 ^a	-.26 ^c	.47 ^a	.28	.47 ^a
Community mental health (factor)	-.06	-.05	-.06	.11	-.01	.10
Institutional mental health (factor)	.11 ^a	.10	.12 ^a	.22	.20	.23

Sources: Computed from U.S. Bureau of the Census, 1990 Census, Summary Tape File 1-A; U.S. Bureau of the Census, County Business Patterns, 1988; Massachusetts Department of Mental Health, "Resource Inventory for Fiscal Year 1991," September 27, 1991.

Notes:

1. There are twenty-one cities with more than 50,000 population; Lynn was excluded from these analyses because its extreme outlying values significantly camouflaged relationships in the other twenty cities.
2. The index of dispersion was computed from the population counts for each of the following groups: white, black, Asian, American Indian, other.
3. Housing affordability was computed by dividing median rent by mean household income (computed from estimated per capita income).

^ap <.05

^bp <.01

^cp <.001

Notes

1. National Urban League, *The Geographic Distribution of Homelessness: A Count of Shelter and Street Dwellers* (Washington, D.C., April 1991).
2. National Coalition for the Homeless, *Fatally Flawed: The Census Bureau's Count of Homeless Persons* (Washington, D.C., May 9, 1991).
3. Mary Ellen Hombs and Mitch Snyder, *Homelessness in America: A Forced March to Nowhere* (Washington, D.C.: Community for Creative Non-Violence, 1982).
4. U.S. Department of Housing and Urban Development, Report to the Secretary on the Homeless and Emergency Housing (Washington, D.C., 1984).
5. M. R. Burt and B. E. Cohen, *America's Homeless: Numbers, Characteristics, and the Programs That Serve Them* (Washington, D.C.: Urban Institute Press, 1989).
6. M. R. Burt, *Over the Edge: The Growth of Homelessness in the 1980s* (New York: Russell Sage Foundation; Washington, D.C.: Urban Institute Press, 1992).
7. Ibid.
8. U.S. Department of Commerce, Economics and Statistics Administration, Bureau of the Census, *Conference Proceedings for Enumerating Homeless Persons: Methods and Data Needs*, March 1991. These data, as well as data on the demographic characteristics of the homeless, were not released in time for inclusion in this analysis.
9. National Coalition for the Homeless, *Fatally Flawed*. Census Bureau officials report not making any systematic decision to exclude areas with fewer than 50,000 people, and it is clear, at least in Massachusetts, that there were occasional counts of homeless persons in smaller areas. Yet all available reports, as well as the data themselves, indicate that no efforts were made in areas of fewer than 50,000.
10. This figure does not include shelters for abused women, substance abuse centers, and homes for unwed mothers.
11. National Urban League, *The Geographic Distribution of Homelessness*. The totals in this monograph contain two errors based on an initial flawed press release by the Census Bureau, which this agency has subsequently corrected in personal correspondence as well as later data products. The published total for emergency shelters, 178,828, should be 178,638 (based on an overcount of 190 in the Kentucky data), and the Idaho street count of 78 should be 19, bringing the total street figure to 49,734, not 49,793.
12. J. H. Thompson, Memorandum, "Preliminary Results of the S-Night Enumerator Debriefing Questionnaires for the S-Night 'Assessment' Cities" (Washington, D.C.: Bureau of the Census, May 2, 1991).
13. See National Coalition for the Homeless, *Fatally Flawed*.
14. W. T. Friskics-Warren, "The Independent Compilation of Shelter Lists by Local Experts for the 1990 S-Night Enumeration: Project Design and Recommendations," Council of Community Services, January 31, 1991.
15. U.S. Bureau of the Census, "The Shelter Component of S-Night," March 18-20, 1991.

16. Burt, *Over the Edge*.
17. U.S. Conference of Mayors, *A Status Report on Hunger and Homelessness in America's Cities: 1990: A 30-City Survey* (Washington, D.C., December 1990).
18. Further examination of reliability issues should include comparisons between Burt's total sample and the census count.
19. M. R. Cousineau and T. W. Ward, "An Evaluation of the 1990 Census of the Homeless in Los Angeles," Los Angeles Homeless Health Care Project, June 8, 1990; J. D. Wright and J. A. Devine, "Assessment of the Street Enumeration Procedures during the Census 'Shelter and Street Night' in New Orleans," Tulane University, n.d.; Kim Hopper, "Final Report: Monitoring and Evaluating the 1990 S-Night Count in New York City," Nathan S. Kline Institute for Psychiatric Research, January 1991; Louisa Stark, "An Evaluation of the 1990 Census of Homeless People in Phoenix," Community Housing Partnership, Phoenix, July 30, 1990.
20. See Kathryn Edin, "Assessment of S-Night 1990 in Chicago, IL," North Park College, Chicago, May 1990.
21. Coalition on Homelessness, *The Newsletter of the Coalition on Homelessness*, "Alternate Homeless Survey Finds Severe Under Count by Census Bureau," San Francisco, April 1990, 3; Primavera Foundation, press release, "Monitoring the U.S. Census Bureau Shelter/Street Count of Tucson: A Survey by the Primavera Foundation," March 28, 1990.
22. Since the Census Bureau did not choose these sites randomly, statistical generalization — without empirical testing — cannot be made to the nation or urban areas as a whole. As this study goes beyond mere statistical generalization and investigates the fit of these generalizations and projections with independent observations, the assumption of random selection here and elsewhere is not made.
23. B. E. Bryant, "Report on the 1990 Census S-Night Operations," U.S. Senate and U.S. House of Representatives, May 9, 1991.
24. Massachusetts, Executive Office of Human Services, *Comprehensive Homeless Assistance Plan 3*, submitted by Michael S. Dukakis, governor, and Philip W. Johnston, secretary, Human Services. There is a potential bias in administrative data, as they tend to underestimate homeless persons because they exclude people who do not seek services.
25. City of Boston, Emergency Shelter Commission, *State of Homelessness in the City of Boston, Winter 1991-1992*.
26. U.S. Department of Commerce, *Current Population Reports. Local Population Estimates. Northeast. 1988 Population and 1987 Per Capita Income Estimates for Counties and Incorporated Places* (Series P-26, No. 88-NE-SC), March 1990.
27. H. J. Loether and D. G. McTavish, *Descriptive and Inferential Statistics*, 2d ed. (Boston: Allyn & Bacon, 1980), 154.
28. Richard First and Beverly Toomey, unpublished manuscript on results of survey of rural homeless in Ohio, Ohio State University, 1992.
29. I am conducting a similar study on the national level with an extended range of policy predictors, with additional data to permit adjustments for systematic forms of error.
30. These twenty cities were not randomly selected; furthermore, because of their larger population, it is known that many conditions are different. Thus, it cannot be assumed that these two predictors will operate in a similar fashion outside these parameters, but it also cannot be assumed that they will function differently. It is an empirical question. Projections need to be made, then compared with independent sources of information.
31. The equation is:

$$\text{Street Rate} = (.007377 \times \text{Vacancy Rate}) + (-7.46285\text{E-}04 \times \% \text{ in Families}) + 2.38110\text{E-}04.$$
32. Massachusetts, Executive Office of Human Services, *Massachusetts Homeless Report 1985*, publication #14165-150-500-9-85-CR, 85.

33. Burt, *Over the Edge*.

34. It was not possible to examine a range of hypothesized causal factors in this study because of the lack of sufficient variation in a single state study, such as deinstitutionalization policies or provisions for many kinds of income maintenance. These have to be tested in a follow-up study with the national data.