

**Trends in the Size of the Nation's Homeless Population
during the 1980s: A Surprising Result**

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Revised June 1995

Financial support for this research was provided by the John L. Weinberg Goldman/Sachs Visiting Professorship at Woodrow Wilson School of Public and International Affairs, Princeton University, and the Institute for Research on Poverty.

Abstract

There are good national estimates of the number of homeless people in shelters in 1984, 1988, and 1990, but only in 1987 is there a reliable estimate of the number of people sleeping in streets. The large increase in the sheltered homeless population between 1984 and 1987–88 could reflect a shift of the homeless from street to shelters rather than a growth in total homelessness.

Data from a number of local studies of homeless populations in U.S. cities in the 1980s have made it possible to estimate the ratio of the number of homeless on the street to the number of homeless in shelters and thereby to estimate the size of the national homeless population over this period with some degree of accuracy.

Our estimates indicate that the expansion of shelters over the decade did have the effect of reducing the proportion of the homeless living on the street. Still, when we combine the estimated ratios with the estimates of the shelter population in 1984, 1987, 1988, and 1990, we find that homelessness about doubled between 1984 and 1987. We also find that homelessness declined between 1987 and 1990. At its peak, the number of people literally homeless on any given night was less than 400,000.

Finally, our results also provide evidence that pure enumerations or censuses of the homeless population lead to undercounts. Both sample censuses and retrospective interview studies provide more complete counts.

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I. INTRODUCTION

The last episode of mass homelessness in the United States coincided with the Great Depression. Homelessness faded only with the economic recovery brought on by preparation for World War II. In a similar manner, the current episode of "mass" homelessness became recognized during the back-to-back recessions of the early 1980s. But, while unemployment rates declined from 7.4 percent to 6.0 percent between 1984 and 1987, according to two well-known and respected scholarly studies, homelessness doubled (Burt and Cohen 1989; Jencks 1994). That homelessness increased rather than decreased during an "economic recovery" is puzzling.

Indeed, Christopher Jencks, author of one of the studies, interprets this disjunction between the timing of labor market deterioration and the growth of homelessness as evidence that the crack epidemic and the homelessness induced by the provision of public shelter are more important causes of homelessness than a weak labor market.

This paper addresses one possible solution to the puzzle: homelessness did not really grow during the economic recovery. Previous estimates of growth may be wrong. In particular, we examine the hypothesis that homelessness among single individuals did not grow during the economic recovery. The evidence is clear that homelessness among families with children grew. But even by 1987 homeless single men and single women outnumbered the homeless in families by more than three to one—77 percent vs. 23 percent.¹ Even more important, because virtually all homeless families are headed by impoverished single mothers dependent on welfare and because the real value of welfare benefit levels continued to shrink throughout the 1980s, the increase in homelessness among families is less puzzling than the increase among single individuals.

The first section of the paper shows that there is good evidence that the number of single homeless people sleeping in public shelters doubled between 1984 and 1988, and that the national studies of the number of homeless people sleeping in the streets are too dissimilar with respect to the definition of homelessness and measurement methods to permit rejection of the hypothesis that, rather than measuring growth in total homelessness, growth in the numbers of single people sleeping in shelters reflects a shift in where the homeless slept—from streets to shelters.

In the second section we conduct a metaregression analysis of a number of local studies of homeless populations in U.S. cities conducted at different times between 1983 and 1993 in order to estimate a time trend in the ratio of homeless people sleeping in the streets to homeless people sleeping in shelters. By combining this street/shelter ratio with national estimates of the number of homeless sleeping in shelters in 1984, 1987, 1988, and 1990, we develop estimates of the time trend of homelessness between 1984 and 1990.²

We find strong support for two hypotheses: (1) much of the growth in the shelter population is due to a shift in where the homeless slept and (2), the preceding notwithstanding, homelessness among singles grew substantially even as unemployment subsided. Our results also provide evidence on the efficacy of alternative methods of estimating the homeless population and on the total size of the homeless population.

In the concluding section, we summarize our findings and briefly discuss future research that might resolve the puzzle of why homelessness among the single population grew rather than shrank in the face of economic recovery.

II. NATIONAL STUDIES OF THE HOMELESS

Four studies designed to estimate the national number of homeless people were conducted in 1984, 1987, 1988, and 1990. We discuss them in chronological order.

The First HUD Study (U.S. HUD 1984)

The 1984 HUD estimate of the nation's homeless population residing in shelters was based on a survey of a stratified random sample of shelter managers in sixty metropolitan areas containing more than 50,000 people. Based on counts provided by shelter operators, HUD estimated that on the average night in January 1984, a total of 69,000 homeless people spent the night in a shelter for the homeless.³ Of this total, 15,000 individuals were in families and the remainder were single individuals.

HUD used much cruder methods to estimate the number of street homeless people. Of the four alternative methods used, we describe only the two with the most scientific reliability.⁴ The first relied upon a 1980 Census "casual count" of homeless persons at bus and train stations, welfare offices, pool halls, and street corners. The count was carried out in large cities representing 12 percent of the U.S. population. In order to obtain a count of street homeless in other, smaller U.S. cities, HUD employed "guesstimates" by shelter managers in the sixty metropolitan areas. The average of these guesses suggested that the homeless rate in the smaller communities was 11/13 of that found in large cities.⁵ The product of the Census count and the manager-based count produced an estimate of 141,000 street homeless in 1980. HUD then assumed (again, based on the reports of shelter managers) that by 1984 homelessness had grown by 40 percent, leading to an estimate of 197,400 street homeless in 1984.

The second HUD method of estimating the number of street homeless was to multiply its estimate of the sheltered homeless population by ratios of the homeless street population to the shelter population taken from local studies. HUD utilized three studies to obtain this ratio. The studies undertaken in Phoenix, Pittsburgh, and Boston during the spring, summer, and fall of 1983 produced street-to-shelter ratios respectively of 2.73, 1.30, and 1.29. HUD multiplied the average street-to-shelter ratio—1.78—times the 69,000 estimate of the sheltered homeless to arrive at an estimate of the street homeless of 123,000. Thus, depending on the approach taken, HUD estimated the total homeless in 1984 to be either 192,000 or 267,000.

Although the adjustment for nonmetropolitan areas can be easily questioned, the 69,000 estimate of the number of sheltered homeless in January 1984 is a reasonably reliable point estimate. Clearly, the estimates of the street homeless are less reliable. There is no published documentation of the 1980 Census casual count. The General Accounting Office (GAO) reported in 1991 that the Census Bureau "is not certain in how many cities the count was done, and its estimates of the number of persons added to the 1980 census by the casual count vary from 13,000 to 23,000" (U.S. GAO 1991, p. 5). Even if one accepts the original HUD report of the 1980 Census count, the extrapolations to the rest of the nation and to 1984 are based on guesses of local shelter operators.

There are also serious problems with HUD's utilization of ratios of street-to-sheltered homeless to estimate the street population. Since the studies upon which the ratios were based were conducted in mild weather, they are almost certainly too high to combine with a January estimate of the sheltered homeless. Common sense, confirmed by empirical findings reported below, suggests that the homeless are more likely to sleep in shelters when it is cold. Moreover, reliance on only three studies leads to an estimate with a large standard error.

The Urban Institute Study (Burt and Cohen 1989)

In 1987 Martha Burt and Barbara Cohen of the Urban Institute produced what is generally considered to be the best national estimate of the homeless population. The estimate is based on a survey in cities with populations over 100,000. The survey sample had two components. One component consisted of a stratified random sample of 1,704 homeless users of 453 shelter and soup-kitchen facilities within twenty cities. Sample members were classified as homeless (a) if the night prior to their interview they slept at a shelter, in some form of unconventional housing, or in an institutional facility; or (b) if the night prior to their interview they stayed at the home of a relative or friend with whom they did not have a regular arrangement to stay for five or more days a week. The second component of the survey consisted of a nonrandom, "convenience" sample of 999 persons

screened at sites where homeless people were known to congregate in each of the cities. Among the 445 individuals found to be homeless in this sample, 303, or 68 percent, had used either a shelter or a soup-kitchen facility during the week prior to their survey interview.

Estimates of the homeless populations within these communities were obtained by weighting observations in the shelter and soup-kitchen samples by the inverse of the probabilities associated with their being sampled, and supplementing the resulting estimates with two alternative estimates of the proportion of homeless people who failed to use shelters or soup kitchens during the week preceding their interview. The first alternative was essentially the proportion found at sites where the homeless congregated, noted above. The second was 50 percent less.⁶ The sum of these estimates was then extrapolated to the nation to produce an estimate of the homeless population in the United States during a week in March 1987 of between 500,000 and 600,000 individuals.

That the Urban Institute estimate is double that generated by the 1984 HUD study has been cited by some as evidence that homelessness doubled between 1984 and 1987.⁷ Not much confidence can be placed in this claim. First, as noted above, the 1984 HUD estimates of the street homeless are so crude that they could easily be consistent with much larger (or smaller) estimates. Second, the studies differ dramatically with respect to definitions and estimation methods of street homelessness.⁸ While the HUD definition is confined to those whom Rossi has termed the literally homeless—individuals who sleep in shelters or on the street—the Burt and Cohen definition of homelessness includes those who spent the previous night with a friend or relative or in an institution. While HUD counted those homeless for only one night, the Urban Institute counted those who were homeless at *any* time during the past week. Finally, in several instances the Urban Institute estimates consciously erred on the high side. When we adjust the Burt and Cohen estimates to make them conform to the narrower HUD definition of homelessness and make a few other more conservative

assumptions identified by Burt as being reasonable, the Burt and Cohen estimated number of one-week homeless in 1987 drops to 388,000. (See appendix b for a detailed description of our adjustments.)

If, as many advocates and experts allege, the number of homeless singles was underestimated in the 1984 HUD survey and if by 1987, as compared to 1984, single homeless individuals were much more likely to sleep in shelters than on the streets, the 1987 Urban Institute study may be consistent with no growth in homelessness among single individuals between 1984 and 1987.

The Second HUD (Shelter) Study (U.S. HUD 1989)

In 1988 HUD conducted a second survey of a stratified random sample of shelter managers. No attempt was made in the 1988 investigation to estimate the number of street homeless. The data from this national survey indicated that during the period between September 1987 and August 1988, there were shelter facilities across the United States sufficient to serve about 270,000 homeless people and that, on average, 180,000 homeless people utilized the facilities each night. Approximately 70,000 were in families and 110,000 were single individuals. This HUD estimate for 1987–88 of 180,000 is very close to the Urban Institute estimate for 1987 of 194,000, which reinforces confidence in the shelter estimates. Together with the 1984 HUD study, they suggest that during the period from 1984 to 1987–88, the number of homeless people in shelters increased by 110,000. Although the increase for individuals in families and single individuals is identical in absolute terms—55,000 each—in percentage terms the growth in families is much larger—466 percent vs. 200 percent.

How much confidence should be placed in these estimates of growth in the shelter population? Although HUD's 1984 and 1988 studies are quite similar, they are not identical. Unlike the 1984 count, the 1988 counts (and the 1987 Urban Institute count) included numbers reported from a survey of managers of overnight housing voucher programs for the homeless. Unfortunately, we have not been able to obtain an estimate of the proportion of the 180,000 homeless persons served by voucher programs. Thus a simple comparison of the two HUD studies probably overstates the growth in the

sheltered population by some unknown amount. On the other hand, the 1984 estimate represents an average for January, whereas the 1988 estimate reflects the average for an entire year. Because shelter use increases as temperature decreases, a comparison of the two HUD studies almost certainly understates the growth.⁹ The latter survey also included areas with populations as small as 25,000, compared to the 50,000 limit in 1984. In our judgment, none of these differences is serious enough to call into question the conclusion that the number of people sleeping in homeless shelters grew substantially between 1984 and 1988.

The second HUD study reports that a 90 percent confidence interval around the 1988 homeless shelter count of 180,000 has a lower bound of 135,000 and an upper bound of 225,000. While no confidence intervals for the first study are reported, 69,000 is sufficiently smaller than the 135,000 lower bound to suggest that the null hypothesis of no growth in the total shelter population can be rejected.

The Census S Night Study, 1990 (U.S. Bureau of the Census 1991)

On the evening of March 20 and the early morning of March 21, the U.S. Census Bureau conducted a nationwide count of the homeless in shelters and on the street, commonly referred to as S night. Prior to the S night count, local officials helped identify the shelters and street locations where homeless people congregated. For the most part, the specification of shelters was in terms similar to those employed in the HUD surveys, but also included hotels and motels charging less than \$12 per night. The street locations included street corners, parks, bridges, abandoned and boarded-up buildings and noncommercial campsites, railroad stations, airports, bus depots, subway stations, all-night movie theaters and restaurants, and emergency waiting rooms at hospitals. Homeless people in abandoned buildings pre-identified by local officials were to be enumerated if they left these locations between 4 A.M. and 8 A.M. All other street homeless were to be enumerated if they were visible between 2 A.M.

and 4 A.M. in the predesignated space. The S night count identified 179,000 homeless people in shelters and 50,000 homeless people on the street.

The Census Bureau hired researchers in five cities to assess the adequacy of the shelter and street counts. The assessors of the street counts included people disguised as homeless who were to observe if Census enumerators operated as intended in locations that the Census was supposed to enumerate. The observers reported having seen enumerators in only 65 percent of sites (Martin 1992, p. 426, Table 3). These findings, among others, have led most students of homelessness to accept the shelter count but to have little confidence in the street count, the general view being that the street homeless were undercounted (see Wright 1992; U.S. GAO 1991). Indeed, the bureau itself claims only that S night was "developed to count selected components of the homeless population at pre-identified locations" (Clark 1991, p. 62).

It is possible, however, that the S night count of street homeless was not an undercount. As noted above, Census enumerators were instructed to count as homeless all visible people (except those in uniforms or engaged in money-making activities) in these locations between 2 A.M. and 4 A.M.¹⁰ In his study of the Chicago homeless, Rossi (1989) found that only 9 percent of people on the streets in the middle of night in locations where the homeless were thought to congregate were homeless.¹¹ Thus, although most people believe that the Census undercounted the street homeless, it is possible that they overcounted.

To summarize, the shelter estimates for 1984, 1987, 1988, and 1990 are relatively reliable and comparable, but the street estimates are not comparable to one another and, except for 1987, are of questionable quality. In the next section, we develop another set of estimates of the homeless population in the United States during the 1980s, based on the approach used by the 1984 HUD study. That is, we combine estimates of the number of shelter users with estimates of street-to-shelter ratios. The latter come from a metaregression analysis of a series of studies of homeless people in

communities throughout the United States. The studies vary in regard to year and season undertaken, size of the community studied, and estimation methods. Data from the studies permit us to develop estimates more reliable than previously employed of street-to-shelter homeless over the decade of the 1980s. These in turn ultimately allow us to develop one-night estimates of the nation's total homeless population during that period.

III. USING LOCAL STUDIES TO ESTIMATE THE TREND IN THE STREET-TO-SHELTER RATIO

We have been able to identify forty-five studies in eighteen different localities that provided estimates of street-to-shelter homeless ratios. We included among these the nationwide investigation of Burt and Cohen (1989). Almost all of these studies provided estimates of the homeless population. In addition, we obtained the Census S night counts and ratios for each of seventeen localities. In nine localities two or more estimates were available. In Nashville, thanks to Barret Lee's work (1989), we have sixteen separate estimates including those for winter and summer from 1983 through 1992. The years covered by the observations run from 1983 through 1993. For each jurisdiction, we obtained total population estimates from the 1990 Census, and for each study we obtained the average temperature during the period when the study was conducted.¹²

Like their national counterparts, the local studies providing homeless population estimates differ widely in their estimation procedures. Some estimates were based wholly on enumeration; some by enumeration from samples of places (both shelters and street locations) where the homeless slept; and still others by supplementing enumerations from samples of places where the homeless slept with retrospective data from individuals sampled at places that provided free meals for the homeless and other places where the homeless congregate. A few studies made no attempt to develop estimates of the local homeless population, but provide sufficient information to estimate a street/shelter ratio.

These are similar to the third group in that they collected retrospective information on sleeping arrangements from homeless people interviewed in soup kitchens, shelters, and other places where the homeless were known to congregate. We refer to investigations in the first class of study as censuses, the second as sample censuses, and the third and fourth as retrospective interview studies.

The first two groups of studies count as homeless only people sleeping in public shelters and the streets. Some studies of the third and fourth kind also count individuals who are sleeping temporarily at the home of a relative or friend and individuals who spent the previous night in a jail, detox center, or hospital. The studies also differ with respect to whether they count the number of people who were homeless on a particular night or the number of people who became homeless at some point during a longer period of time, such as a week, month, or year. In order to make the studies as comparable as possible, we adjusted the ratios in each study to obtain counts for a single night only of people sleeping either in public shelters or on the street. The narrower definition of homelessness is chosen because studies with a broader definition provide the data required to derive estimates for the narrower definition, while studies with a narrower definition provide no data on people who did not spend the previous night in a shelter or on the streets. Similarly, it is possible to derive a one-night estimate from studies that estimate homelessness during a week, but not vice versa.

In most cases, calculation of the street/shelter ratio was straightforward. In a few instances, however, alternative estimates could be derived from the same source. In these cases we derived a high, low, and best estimate.¹³

Table 1 presents the list of localities, the year and month the study was done, the average temperature when the study was conducted, the estimated street-to-shelter ratios, and the type of study. For each locality, S night data are given first. The sources from which the entries in Table 1

TABLE 1
Ratio of Homeless Living on the Street to Homeless Using Shelters, 1983–1993

Locality	Type ^a	Date	Av. Temp.	Street-to-Shelter Ratio			Popdv. ^b
				Best	Low	High	
Alameda, Calif.	4	3/90 ^c	53	0.56	0.56	0.56	1.279
	3	10/87	61	1.71	1.63	1.96	1.279
	2	5/91	58	0.92	0.92	0.92	1.279
Birmingham	4	3/90 ^c	54	0.42	0.42	0.42	0.266
	1	2/87	46	0.25	0.21	0.25	0.266
	1	3/93	54	0.04	0.04	0.05	0.266
Boston	4	3/90 ^c	38	0.10	0.10	0.10	0.574
	1	10/83	55	1.24	1.24	1.24	0.574
	1	12/87	34	0.10	0.10	0.10	0.574
	1	12/88	34	0.11	0.11	0.11	0.574
	1	12/89	34	0.08	0.08	0.08	0.574
	1	12/90	34	0.07	0.07	0.07	0.574
	1	12/91	34	0.08	0.08	0.08	0.574
	1	12/92	34	0.09	0.09	0.09	0.574
Chicago	4	3/90 ^c	36	0.31	0.31	0.31	2.784
	3	10/85	54	1.54	0.77	2.34	2.784
	3	3/86	36	0.63	0.37	0.90	2.784
Denver	4	3/90 ^c	38	0.09	0.09	0.09	0.468
	2	4/88	47	0.33	0.33	0.33	0.468
	2	4/90	47	0.19	0.19	0.19	0.468
Los Angeles	4	3/90 ^c	57	0.68	0.68	0.68	3.485
	2	3/86	57	0.65	0.65	0.65	3.485
Minneapolis	4	3/90 ^c	29	0.37	0.37	0.37	0.368
	2	12/85	21	0.40	0.40	0.40	0.368
Nashville	4	3/90 ^c	49	0.12	0.12	0.12	0.488
	1	12/83	37	0.10	0.10	0.10	0.488
	1	6/84	76	0.21	0.21	0.21	0.488
	1	12/85	37	0.18	0.18	0.18	0.488
	1	6/86	76	0.32	0.32	0.32	0.488
	1	12/86	37	0.17	0.17	0.17	0.488
	1	6/87	76	0.44	0.44	0.44	0.488
	1	12/87	37	0.20	0.20	0.20	0.488
	1	6/88	76	0.33	0.33	0.33	0.488

(table continues)

TABLE 1, continued

Locality	Type ^a	Date	Av. Temp.	Street-to-Shelter Ratio			Popdv. ^b
				Best	Low	High	
Nashville (continued)							
	1	12/88	37	0.20	0.20	0.20	0.488
	1	6/89	76	0.23	0.23	0.23	0.488
	1	12/89	37	0.12	0.12	0.12	0.488
	1	6/90	76	0.24	0.24	0.24	0.488
	1	6/91	76	0.17	0.17	0.17	0.488
	1	12/91	37	0.11	0.11	0.11	0.488
	1	6/92	76	0.11	0.11	0.11	0.488
	1	12/92	37	0.09	0.09	0.09	0.488
New York	4	3/90 ^c	40	0.45	0.45	0.45	7.323
	2	7/85	76	2.23	2.23	2.23	7.323
Ohio	4	3/90 ^c	40	0.04	0.04	0.04	0.100
	2	2/84	62	0.92	0.92	0.59	0.100
Orange, Calif.	4	3/90 ^c	58	0.43	0.43	0.43	2.411
	3	10/87	66	0.82	0.75	0.89	2.411
Phoenix	4	3/90 ^c	61	0.16	0.16	0.16	0.983
	2	3/83	61	1.77	1.77	1.77	0.983
Pittsburgh	4	3/90 ^c	39	0.10	0.10	0.10	0.370
	1	7/83	72	1.83	1.29	6.84	0.370
Washington, D.C.	4	3/90 ^c	46	0.03	0.03	0.03	0.607
	1	7/85	79	1.35	0.39	2.49	0.607
	3	3/91	64	0.29	0.29	0.29	0.607
Md. suburbs	4	3/90 ^c	46	0.15	0.15	0.15	1.789
	3	3/91	64	0.41	0.41	0.41	1.789
Fairfax, Va.	1	3/87	46	0.15	0.07	0.15	0.819
	Va. suburbs	4	3/90 ^c	46	0.15	0.15	0.15
		3	3/91	64	0.04	0.04	0.04
Yolo, Calif.	4	3/90 ^c	53	0.14	0.14	0.14	0.141
	3	10/87	64	10.67	9.00	12.17	0.141
Burt and Cohen	2	87	53	1.00	0.84	1.00	1.487

^aType: 1 = census; 2 = sample; 3 = retrospective interview; 4 = S night.

^bPopdv. = population of the city or county divided by 1,000,000. For Burt and Cohen, population is the weighted mean of the sixteen cities. For Ohio, population is based on an estimate of the size of a city of 100,000.

^cS night data given first for each locality.

are derived, as well as our adjustments and basis for alternative estimates, are described in Appendix A.

Some initial insight into the trends over time in street-to-shelter ratios can be gleaned from Table 1 by examining the nine localities for which there are two or more estimates of the ratio, not counting S night. In this illustrative comparison we ignore the S night observations because of their alleged unreliability.¹⁴ We also discuss only our best estimates. In Alameda, the ratio decreased from 1.7 in 1987 to .9 in 1991; in Birmingham, the ratio decreased from .25 to .04 between 1987 and 1993; in Boston the ratio decreased from 1.2 in 1983 to .09 in 1992; in Chicago the ratio declined from 1.54 in 1985 to .63 in 1986; in Denver there was a decline from .33 in 1988 to .19 in 1990; and in Washington, D.C., the ratio declined from 1.4 in 1985 to .4 in 1991 while in the Virginia suburbs of Washington, the decline was from .15 in 1987 to .04 in 1991. Only in Nashville was there no discernible trend.

Although these comparisons are suggestive, they are hardly conclusive. For example, they fail to account for season and temperature. Rossi (1989), who conducted the Chicago study from which the 1985 and 1986 estimates were taken, interprets the change in the ratio as being predominantly a seasonal effect. Note that the difference between the 1983 and 1992 Boston estimates could reflect temperature as well.

Figures 1 and 2 depict the street-to-shelter homeless ratios over time. The year of observation is measured along the horizontal axis. In Figure 1, the ratios are measured along the vertical axis, whereas in Figure 2, the natural logs of the ratios are measured along this axis.

The data in Table 1 and Figures 1 and 2 reveal two noteworthy relationships. First, the street-to-shelter ratios decline over time. Of the eight ratios over one, six were observed in 1983 and 1985. With the exception of Alameda and Yolo counties in 1987 (see Table 1), all of the ratios after 1985 are equal to or less than one. Second, the decline over time is more evident in the natural log

Figure 1

Figure 2

of the ratios. Not evident in Figures 1 and 2, but shown in the data of Table 1, are the following: summer ratios are higher than winter ratios and Nashville ratios are much lower than ratios in most other cities.

The column entries in Table 2 are parameter estimates from six regressions in which the dependent variable is the natural log of the street-to-shelter ratio. First column entries are based on a regression in which the independent variables are the year of the observation, the average temperature when the count was obtained, the size of the community in which the study was undertaken, and dummy variables indicating the type of study (census, sample, or interview), whether the study was a Nashville investigation, and whether it was an S night observation. Variants of this basic regression include the following, in succession: models 2 through 6: omission of the S night dummy; model 3: inclusion of a quadratic term for the year; model 4: substitution of log-year for year; models 5 and 6: use of low- and high-ratio estimates, successively, where there was doubt.

The linear year coefficients are negative in all regressions and four to five times their standard errors. The null hypothesis that there was no decline in the street-to-shelter ratio is clearly rejected. The year coefficient is somewhat higher when the high ratio estimates are used and somewhat lower when the low estimates are used compared to using the best estimates. Although the adjusted R^2 s and F ratios for the linear specification of the year variable indicate this specification fits the data slightly better than either the quadratic or log-linear functions, the differences, especially in the adjusted R^2 s, are small.

As expected, the temperature and population coefficients are positive and two to three times their standard errors. The Nashville coefficients are negative but, in most cases, less than twice their standard errors.

Both study-type coefficients are positive and, in most regressions, between two to three times their standard errors. This indicates that both sample-census and retrospective-interview type studies

TABLE 2

**Coefficients and Standard Errors from Regression Results
for the Street-to-Shelter Ratio**

	Model 1 ^a	Model 2 ^a	Model 3 ^a	Model 4 ^a	Model 5 ^b	Model 6 ^c
Dep Variable	Bestlog	Bestlog	Bestlog	Bestlog	Lowlog	Highlog
INTERCEP	-1.537 (.472)	-1.482 (.465)	-1.759 (.620)	-0.002 (.716)	-1.625 (.463)	-1.339 (.497)
YEAR1	-0.218 (.042)	-0.207 (0.04)	-0.092 (.174)	—	-0.182 (.039)	-0.235 (0.042)
TEMP	0.025 (.007)	0.024 (.007)	0.025 (.007)	0.024 (.007)	0.022 (.007)	0.027 (.007)
POP	0.130 (.077)	0.147 (.074)	0.141 (.075)	0.155 (.075)	0.150 (.074)	0.144 (.079)
SAMPLE	0.851 (.355)	0.726 (.315)	0.699 (.319)	0.795 (.320)	0.643 (.314)	0.753 (.337)
RETROSPECTIVE INTERVIEW	0.640 (.354)	0.521 (.318)	0.503 (.321)	0.593 (.321)	0.621 (.317)	0.336 (.340)
NASH	-0.339 (.287)	-.444 (.253)	-0.454 (.254)	-0.398 (.256)	-0.333 (.252)	-0.559 (.270)
SNIGHT	0.235 (.304)	—	—	—	—	—
YEARSQ	—	—	-0.010 (.015)	—	—	—
YEARLN	—	—	—	-1.357 (.271)	—	—
MSE	0.558	0.581	0.587	0.602	0.578	0.664
F	12.179	14.212	12.128	13.394	12.102	14.332
F-prob	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Adj R ²	0.5620	0.5651	0.5608	0.5494	0.5220	0.5674

^aBest estimate of log of street-to-shelter ratio.

^bLow estimate of street-to-shelter ratio.

^cHigh estimate of street-to-shelter ratio.

find higher street-to-shelter ratios than pure census studies.¹⁵ In view of the fact that some of the street homeless are difficult to find and therefore difficult to enumerate at night because they sleep in out-of-the-way places, it is not surprising that retrospective interviews capture more of the street homeless than pure enumerations. Why sample censuses should capture more of the street homeless than pure enumerations is somewhat more difficult to explain. One hypothesis is that counting the homeless in only a sample of areas permits a more intensive investigation of the sampled areas compared to trying to count the homeless everywhere.¹⁶

Finally, note that the *S* night coefficient in column 1 is virtually equal to zero. Given that the *S* night counts are pure enumerations—the omitted category of the study type—this is not surprising. Because the *S* night is not different from other enumerations, we drop the *S* night dummy variable from subsequent models and thereby lump *S* night together with other enumerations.

Table 3 presents the street-to-shelter ratios for 1983 through 1992 that are derived from evaluating in two different ways the second through sixth models in Table 2. The numbers in the top panel are derived by evaluating all of the variables other than year at their means, except the Nashville coefficient, which is evaluated at one-sixteenth of its mean. (Otherwise the Nashville coefficient would give Nashville too much weight relative to its proportion of the U.S. population.) The ratios in the bottom panel are derived in similar fashion to those in the top panel except for the treatment of the study-type variable. We assume that the sample census-type study—which leads to higher street-to-shelter ratios than either the retrospective interview or pure census methodology—produces the best estimate. Thus, rather than multiplying the study-type coefficients by their means, the sample study-type coefficient is multiplied by 1 and the other study types are ignored.

One result stands out: the street-to-shelter ratio declines significantly during the 1980s. This result holds regardless of the functional form of the year variable, whether we use the best, the high,

TABLE 3**Predicted Street-to-Shelter Ratios**

	Model 2	Model 3	Model 4	Model 5	Model 6
Assuming all study types are equally accurate					
1983	1.19	1.03	1.45	0.95	1.54
1984	0.97	0.91	0.98	0.80	1.22
1985	0.79	0.79	0.72	0.66	0.96
1986	0.64	0.67	0.57	0.55	0.76
1987	0.52	0.56	0.46	0.46	0.60
1988	0.42	0.46	0.38	0.38	0.48
1989	0.34	0.36	0.33	0.32	0.38
1990	0.28	0.29	0.28	0.27	0.30
1991	0.23	0.22	0.25	0.22	0.24
1992	0.18	0.16	0.22	0.19	0.19
Assuming sample type studies are most accurate					
1983	2.27	1.91	2.90	1.67	2.97
1984	1.86	1.70	1.96	1.39	2.35
1985	1.53	1.48	1.45	1.16	1.86
1986	1.26	1.26	1.13	0.97	1.47
1987	1.03	1.05	0.92	0.81	1.16
1988	0.85	0.86	0.77	0.67	0.92
1989	0.70	0.69	0.65	0.56	0.73
1990	0.57	0.54	0.57	0.47	0.57
1991	0.47	0.41	0.50	0.39	0.45
1992	0.39	0.31	0.44	0.33	0.36

or the low measures of the ratio, and whatever assumptions are made as to which study type produces the best estimate. The 1990 ratios are only one-third to one-fifth the size of the 1983 ratios; the ratios for 1991 and 1992 are even smaller. These results provide clear evidence that as more public shelters were provided during the 1980s and early 1990s, the proportion of the homeless sleeping in the streets decreased substantially.

A second result worth noting is that the street-to-shelter ratios in the second panel—those that give heavier weight to sample census studies—are about twice the size of the corresponding ratios in the first panel. We have already noted some justification for having more confidence in the estimates from sample census and retrospective interview-type studies and, by implication, the second panel of estimates. As it turns out, and a further source of support for the second panel ratios, those for 1987 are more in accord than the corresponding numbers in the first panel with the 1987 street-to-shelter ratio in the Burt and Cohen study, the latter being the only study from which a national street-to-shelter ratio can be computed.

In view of the dramatic decline in the street-to-shelter ratio as more public shelters were provided during the 1980s, the growth in the shelter population does not necessarily indicate that the total homeless population was growing during this period. To ascertain how much total homelessness grew during the 1980s, estimates of street-to-shelter ratios must be combined with the shelter population estimates.

Row one of Table 4 presents the estimated shelter populations from the HUD, Urban Institute, and Census S-night studies for 1984, 1987, 1988, and 1990. The next five rows present estimates of the total homeless population that are derived from combining the estimated ratios in the second panel of Table 3 with the estimated shelter populations in row one.

Several findings in Table 4 stand out. First, all of the estimates indicate that homelessness grew substantially in percentage terms between 1984 and 1987. In absolute terms, the growth ranges

TABLE 4**Predicted Number of Homeless in 1984, 1987, 1988, and 1990**

	1984	1987	1988	1990
Homeless in shelters	69,000	194,000	180,000	179,000
Total homeless ^a				
Linear (Model 2)	198,000	382,000	333,000	282,000
Quadratic (Model 3)	187,000	386,000	335,000	276,000
Log (Model 4)	205,000	361,000	318,000	281,000
Low (Model 5)	166,000	340,000	301,000	263,000
High (Model 6)	232,000	407,000	346,000	282,000

^aThese estimates assume that sample-type studies provide the most accurate estimates of the street homeless.

from 156,000 to 199,000 homeless individuals per night. Subtracting the 55,000 growth among individuals in homeless families from the total growth¹⁷ indicates that between 1984 and 1987 the number of homeless single individuals grew by 101,000 to 144,000. The clear implication here is that homelessness among single individuals substantially increased during the 1983–87 economic recovery.

Note that all of the estimates in Table 4 indicate homelessness peaked in 1987 and declined thereafter. For 1987, the highest estimate of the number of homeless individuals is 407,000 and the lowest is 340,000. The range for our best estimates is somewhat narrower—361,000–386,000. These estimates are quite consistent with our adjusted estimates of the Burt and Cohen data of 388,000.

Adjusting our best estimates to coincide with the broader definition of homelessness used by Burt and Cohen, which includes the homeless who spent the previous night with friends or relatives or in an institution and counts the number homeless during a week rather than on a single night, leads to an estimate of the number homeless during a week in 1987 of between 453,000 and 485,000.¹⁸

By 1990, the number of homeless people per night ranged from 263,000 to 282,000. Thus our results provide evidence that S night did undercount the homeless. If one adheres to the narrow definition of homelessness, the magnitude of the undercount was not very serious. Our estimates are only 15 percent to 23 percent higher than the S night counts. Using the broader definition of homelessness, our estimates suggest a total homeless population of 330,000 to 354,000, which is 44 percent to 55 percent higher than the S night count. In either case, the important point is that between 1987 and 1990 homelessness declined.

IV. SUMMARY AND CONCLUSION

National estimates of the number of homeless people in shelters in 1984, 1988, and 1990 are based on sufficiently strong estimation procedures to inspire some confidence. Except for the 1987 Burt and Cohen study, previous national estimates of the number of people sleeping in the streets are far less reliable.

Nevertheless, a large number of local studies of homeless populations conducted in U.S. cities at various times between 1983 and the early 1990s make it possible to develop estimates of the time trend in the ratio of the number of homeless people sleeping in the streets to the number sleeping in shelters. Our estimations indicate that the ratio declined substantially during the 1980s. That this might have been the case is perfectly plausible. It was, after all, the rationale for providing public shelters!

When we combine the estimated ratios with the estimates of the shelter population in 1984, 1987, 1988, and 1990, we find that homelessness about doubled between 1984 and 1987, and declined between 1987 and 1990. At its peak, the number of people literally homeless on any given night was less than 400,000.

Our results also provide evidence that pure enumerations of the homeless population lead to undercounts. Sample censuses and retrospective interview studies provide more complete counts.

Finally, the continued growth in homelessness among single individuals during the economic recovery provides evidence against a simple labor market explanation of the growth in homelessness. Perhaps a more complicated model incorporating lags between unemployment and homelessness and the effects of the duration of labor market distress on homelessness will rescue the labor market explanation. Future research should explore this possibility as well as other explanations for the rise of homelessness.

Appendix A: Studies Used to Estimate Street/Shelter Ratios

In Birmingham, LaGory et al. (1989) counted the homeless in the 300 square block area of the downtown the night of February 11, 1987. They found 103 persons on the street. They found 495 in shelters, but noted that 84 of these had a home but for various reasons chose at least temporarily not to return home. We use the 103/495 as the low estimate and $103/(495 - 84)$ as the high estimate and the best estimate. LaGory and Ritchey (1993) repeated the count March 1, 1993. They found 938 individuals in shelters and 34 on the street. However, in the 1993 study they did not correct for those in institutions. We use the ratio of those not in institutions in 1987 ($411/495$) to correct the shelter number in 1993 to 779 for a ratio of 0.044.¹⁹

In Boston the Emergency Shelter Commission first counted the homeless in October 1983 (City of Boston 1983) and then each year from 1986 to the present in December (City of Boston 1993). The counts are conducted in one night and include persons in shelters, detox centers, abandoned buildings, parks, sidewalks, doorways, vacant lots, cars, and bus and train stations. Only those for whom there is no doubt that the person is homeless are counted. In 1983, Charlestown and West Roxbury were not included. The City of Boston Emergency Shelter Commission (1993) has since counted the homeless twice in 1986 (although the data for the 1986 counts are not available) and then every year since from 1987 to 1992. The count takes place one night in December and includes persons in adult shelters, family shelters, transitional shelters, women in crisis centers, adolescent programs, hospitals, detox centers, mental health facilities, and persons in the Department of Public Welfare Hotel/Motel. Persons on the street include those in the Pilgrim Theater, an all-night theater. In order to be consistent with the definition of the homeless, we do not include those in the detox centers, hospitals, mental health facilities, or women's crisis centers.

In Chicago, Rossi (1989) used a random sample of census blocks stratified by experts as to the likely concentration of the homeless. The count was conducted at night in both October 1985 and March 1986. The limitation of this study is that only 1 percent of the blocks were actually counted, leading to a very large sampling error. The October count found 1480 individuals on the street with a standard error of 734, and 961 in shelters with a standard error of 13. The March count found 934 individuals on the street with a standard error of 364 and 1492 in shelters with a standard error of 55. We use the point estimates for our best ratio, 1.540 for the October 1985 count and 0.626 for the March 1986. The low estimates subtract the standard errors from the mean $(1480 - 734)/(961 + 13) = 0.766$ for October and $(934 - 364)/(1492 + 55) = 0.368$ for March. The high estimates add the standard errors to the means $(1480 + 734)/(961 - 13) = 2.340$ for October and $(934 + 364)/(1492 - 55) = 0.903$ for March.

In Los Angeles, two studies were completed in 1986. Farr, Koegel, and Burnam (1986) conducted an interview study of mental health on skid row during the day in March. The study did not estimate a population of the homeless. It found 54.6 percent of those surveyed in shelters, 35.7 percent on the street, and 9.7 percent who were neither homeless nor on the street. The ratio therefore is 0.654. Hamilton, Rabinovitz and Alshuler, Inc. (1987) conducted a stratified count of skid-row inhabitants both during the day and at night. One limitation of their study is that they counted only those in skid row and acknowledge that while most of the shelters are in the skid-row neighborhood, many of the street sites are not, and therefore they underestimated the street count. However, they counted 10,239 in shelters. In order to estimate the total homeless, we use the shelter population reported in Hamilton,

Rabinovitz and Alshuler and the ratio of street to shelter in Farr, Koegel, and Burnam for an estimate of 6696 on the street.

In Nashville, Lee (1989) counted the homeless eight times from 1983 through 1988, four times in June and four times in December. The counts, using the same methodology each time, were done at night and counted the downtown section and some of the outlying districts. Lee's 1983–86 counts included paying residents of single-room-occupancy hotels (SROs). We subtracted these individuals from his counts to conform with the definition used in our study. This amounts to a reduction in his shelter sample in December 1983 of 25.9 percent, in June 1984 of 31.9 percent, in December 1984 of 0.7 percent, and in June 1986 of 0.1 percent. The counts were continued up through 1992, and Lee has supplied us with the more recent counts.

In New York City, Hall (Freeman and Hall 1987) conducted an interview study of the homeless in summer of 1985. He surveyed a nonrandom sample of 516 homeless people on the streets, in soup kitchens, and in other public places during daytime hours. Based on questions about the length of homelessness and where the homeless had slept during the last month, he developed an estimate of the ratio of homeless persons on the street to those in shelters on an average night of 2.23.

The Ohio Department of Mental Health conducted an interview study of 602 homeless over a six-month period ending in August 1984 (Roth et al. 1985). Because of the lack of both rural interviewers and homeless persons in rural areas, the study contained few rural interviews. Interviewees were chosen by key respondents to represent all regions of the state. They report 29.4 percent were on the street, 32.1 percent in shelters, and 17.5 percent in cheap hotels. The remainder were neither on the street nor in shelters. Assuming that the 17.5 percent in cheap hotels paid for the hotels themselves, our best estimate is 0.916. Our low estimate of .593 is based on the assumption that the state or local government was paying for those staying in cheap hotels.

In Phoenix, the Phoenix South Community Mental Health Center (1983) conducted a daytime census of the homeless in March 1983.²⁰ The number of people using a shelter at one time was estimated from the profile of shelter usage provided in the study (pp. 6–8). Using the midpoints of the ranges presented, it may be assumed that in March of 1983, 400 persons stayed in the St. Vincent de Paul and Salvation Army shelters, 27 individuals stayed in the Salvation Army Family Shelter, 25 persons were provided vouchers by the Salvation Army (12.5 families multiplied by an average family size of 2), and 72 individuals were provided vouchers by the Transient Aid Center (36 families multiplied by an average family size of 2). This totals 524 persons sheltered.

To determine the "street" population, it was assumed that the 18 percent of the sample who reported being housed (p. 79) were part of the total census of 1,813 persons. Subtracting this percentage from the total census leaves a subtotal of 1,487 persons. Between 6 percent to 16 percent of the sample who reported a combination of sleeping locations may have also been housed (p. 79), which could be estimated at a midpoint of 11 percent. This would eliminate another 36 persons from the total census (167 persons reporting a combination of locations, multiplied by 11 percent, for a total of 18 persons, or 2 percent of the 881 respondents, which yields a total of 36 persons when the 2 percent is applied to all 1,813 persons in the census). At this point, the subtotal is 1,451. From this number, we subtract the shelter estimate of 524 persons. This leaves a total street population of 927 persons, yielding a street-to-shelter ratio of 1.77.

In Pittsburgh, Winograd (1983) counted the homeless in the summer of 1983. The street count was done by police and was supplemented by information provided by service providers at shelters, hospitals, and emergency medical facilities. The police found 485 street homeless (p. 29) and service providers reported 372 homeless people in shelters (p. 27). These are the numbers that HUD used in their estimate of a Pittsburgh street-to-shelter ratio of 1.3. The report adjusted the street count for duplication and an undercount in one area to arrive at a final figure of 479 (p. 31) street homeless. We use this figure in conjunction with the 372 in shelters for our low estimate of 1.29. The report (p. 27) indicated that 110 of the 372 shelter beds were alcohol rehabilitation slots. People in alcohol rehabilitation programs are not counted in our other studies as being homeless. Our best estimate excludes this group and is equal to $479/262 = 1.83$. Our high estimate eliminates both alcohol rehabilitation and long-term placement beds from the sheltered homeless count (p. 6) and therefore equals $479/70 = 6.84$.

Washington, D.C. has had two major studies of the homeless, Robinson (1985) and the Metropolitan Area Drug Study (MADS) (Bray et al. 1993). The Robinson study was a nighttime count conducted in July 1985. The entire city was divided into sectors and systematically counted, producing 714 individuals on the street. In one sector the count was more intensive, including rooftops, cellars, dumpsters, etc. This method yielded a substantially larger count. In the sector with the intensive count, the enumerators were accompanied by police for safety reasons. The team found many more people not only in out-of-the-way places but also in not-out-of-the-way places. Robinson postulates that this was due to the police protection and estimates that if police protection had been provided in all the sectors and out-of-the-way places had been explored, the total count of street homeless would have been 4606. The problem with this last assessment is that it rules out the possibility that the districts differed in the number of homeless they contained. When Robinson adjusted the estimates in other sectors only for those found in out-of-the-way places, the estimate for the whole city was 2499 individuals on the street. He found 1848 in shelters. The best estimate ($2499/1848$) is 1.352. The high is $4606/1848$, or 2.492, and the low is $714/1848$, or 0.386.

The DC-MADS study (Bray et al. 1993) was conducted by the National Institute of Drug Abuse from February until July 1991. During the daytime 908 interviews were conducted in gathering places of the homeless, who were randomly assigned to a survey day and then were counted (Iachan and Michaels, in press). In Washington, they estimated 4484 homeless in shelters and 1889 on the street for a ratio of 0.29. This study also included counts of suburban Virginia and Maryland. In Virginia 993 were found in shelters and 39 on the street for a ratio of 0.039. In Maryland, 503 were found in shelters and 204 on the street for a ratio of 0.406.

In addition to the DC-MADS count of Northern Virginia, in Fairfax County a census count was conducted at night in March 1987 (Goplerud 1987), which revealed 492 homeless in shelters and 76 on the street, for a ratio of 0.154. The street count, however, included 42 people turned away from shelters and 34 counted in soup kitchens and on the street. Although a lower bound could have been calculated by subtracting out the 42 who were turned away, we did not bother since the ratio was so low in any case.

In September and October 1987, the Rand Corporation enumerated the homeless populations from samples of shelters and street locations in Alameda, Orange, and Yolo counties in California (Vernez et al. 1988). Their estimates of the street and shelter populations for the three counties were respectively, 497–548 and 305; 316–375 and 423; and 54–73 and 6. Our best estimates use the

midpoints of their range for the street sample; the low estimates use the lower bounds and the high estimates use the upper bounds.

In Denver, in April 1988 and 1990, Franklin James (1992) conducted daytime interviews of probability samples of users of soup lines, emergency shelters, day shelters, and a health clinic. At night he interviewed a nonprobability sample of persons on the street in known sleeping places of the homeless. James reported estimates of street and shelter populations of 410 and 1225 in 1988; and 280 and 1490 in 1990 (Table 2). Thus the ratios equaled 0.33 and 0.19 in 1988 and 1990, respectively. We ignore the other category (180 and 215 in 1988 and 1990), which included people sleeping with friends or relatives and those just released from jail and detox centers. We do not use the rural figures because there is no breakdown between the street and other categories.

In Alameda, California, in spring 1991, Robertson and Piliavin surveyed homeless people in soup kitchens and shelters. They found that during the previous night 217 had slept in an abandoned building, a car or truck, or outside on the street, and 234 had slept in a shelter or a publicly paid-for motel room (computer-run by Piliavin). The ratio is therefore 0.93. We ignore the 118 people who slept with a friend, relative, or spouse, in a rented room that they paid for, or in a private dwelling.

In Minneapolis, in December 1985, Piliavin and Sosin (1994) surveyed the homeless in soup kitchens and recreation places where the homeless were known to congregate. Of their total sample of 444, 83 spent the previous night in outside locations and 206 spent the previous night in a shelter, for a ratio of 0.40. We ignore the 155 individuals who spent the night with a friend or relative (131), in an SRO, in their own home, in jail, or in another institution.

Appendix B: Adjusted Burt and Cohen Estimate

In all, we make five adjustments to the Burt and Cohen data.

1. As acknowledged by Burt and Cohen in their original report, as a result of their choice of weights to adjust for sampling interval ratios, their population estimate is "likely . . . biased upwards by [as much as] 15 percent" (Burt and Cohen 1988, p. 22).²¹

2. Eighteen percent of the Burt and Cohen weighted sample of homeless service users were individuals who had not spent the previous night in shelters or at unconventional locations. This group included people who met the Burt and Cohen homeless criterion for residence with relatives or friends (7.7 percent) and those whose previous night's lodging was in some other setting, such as a jail, hospital, or detox facility (10.3 percent). Because this group does not meet the narrow definition of literal homelessness which underlies both the HUD and Census estimates, and our narrow definition of homelessness, we reduce their estimate by another 18 percent.

3. As noted in the text, Burt and Cohen multiplied the total number of homeless adults who used either shelters or soup kitchens by the inverse of the proportion of homeless adults at congregating sites who used either shelters or soup kitchens. This adjustment assumes that the adults at such sites are a random sample of all homeless adults. In view of the fact that these investigators found no adults accompanied by children at the sites, they should not have used this adjustment in their count of adults accompanied by children in their agency-user sample. These account for 10 percent of all adults in the agency-user sample (Burt and Cohen 1988, p. 35, Table 6).

4. The Burt and Cohen extrapolation to non-SMSA areas uses an estimate of the homeless rate per 10,000 people, which is more than twice as high as the number Burt now thinks justified, based on subsequent research (Burt 1991, p. 9). Burt indicates that 4/10,000 is more in line with available studies than the 9/10,000 figure originally used. We use the 4/10,000 figure.

If we modify the Burt and Cohen estimates to account for the above, their data yield a weekly count of those sleeping in public shelters or public places of 388,000.²²

5. A crude conversion to a nightly count leads to a final range of estimates marginally lower than that given above, namely that on any given night during March 1987, the number of homeless in the United States was approximately 376,000. In view of the crudeness and complexity of the estimate and the fact that it is so close to the weekly estimate, we decided to just report the weekly estimate in the text.

Endnotes

¹Burt and Cohen 1989, p. 40.

²HUD 1984 and Jencks 1994 followed the same strategy to develop estimates of the number of homeless in 1984 and the time trend of homelessness during the 1980s. Jencks utilized our metanalysis from an earlier version of this paper to derive his own estimates of the time trend of the ratio and total homelessness.

³The sample consisted of 184 shelters in sixty geographic areas. Larger areas were more likely to be sampled. Based on reports of the number of homeless in the sampled shelters on any given day in January 1984 and the sampling rates, HUD calculated that there were 57,000 sheltered homeless persons in the country's metropolitan areas. HUD assumed that the shelter population rate (the ratio of sheltered homeless to total population) in nonmetropolitan areas was identical to the rate in small metropolitan areas and therefore added another 12,000 to the count, for the total of 69,000 reported in the text.

⁴In addition, HUD reports two other estimates of the homeless: one based on taking all published figures of the homeless population in various cities and the other based on shelter managers' guesses about the number of homeless in their cities. We ignore these because the methodology is so crude and because they do not build upon the scientific estimate of the sheltered homeless.

⁵The information supplied by the shelter managers was indeed nothing more than guesses in that they had no empirical data on which to rely.

⁶Instead of the 32 percent figure for nonusers of shelters and soup kitchens, Burt and Cohen use a slightly higher figure of 33 percent and a dramatically lower figure of 16.5 percent. These imply respectively that for every two service-using homeless adults there is one non-service-using homeless adult and that for every four service-using homeless adults there is one non-service-using homeless adult. In our estimates, we use only the 32 percent estimate, which is closest to the Burt and Cohen

upper bound.

⁷Burt and Cohen 1989, p. 32.

⁸The shelter estimates are more comparable and are discussed below in conjunction with the 1988 HUD shelter survey.

⁹The 1984 study found that the average number of sheltered people represented 70 percent of shelter capacity, whereas the 1988 study found that average utilization was only 65 percent of capacity. One would expect a higher utilization rate in January than over the course of the whole year. But other factors may also account for the difference. Indeed, HUD and others have treated the estimates as if they were the same.

While shelter use for families increases during the summer, in 1984 and 1988 the bulk of the homeless in shelters were singles.

¹⁰Although enumerators were supposed to interview the people if possible to ascertain demographic characteristics—age, sex, marital status, and race and Hispanic status—they were instructed not to ask if the individuals were homeless.

¹¹Burt and Cohen and Bray, Dennis, and Lambert also find that high percentages of people at sites where the homeless congregate during the day are not homeless.

¹²We used the thirty-year mean temperature taken from the 1990 issue of Monthly and Seasonal Weather Outlook (Climate Analysis Center) to control for weather conditions. The population ratio of homeless individuals to the total population is calculated using 1990 Census counts (U.S. Bureau of the Census 1992).

¹³The "best" estimates were usually midpoint estimates, but on occasion reflected idiosyncrasies described in the appendix.

¹⁴We do employ the S night ratios in our regressions, although their use serves to weaken our results.

¹⁵If the Yolo observation is omitted, the sample coefficient drops by about 50 percent so that both the coefficient and level of significance are about the same as the retrospective interview variable.

¹⁶Rossi 1989, pp. 46–72.

¹⁷This growth is based on data reported earlier from the 1984 and 1988 HUD studies.

¹⁸To go from our narrow definition of homelessness—slept in a shelter or on the street in the previous night—to the Burt and Cohen broader definition we divide our estimates by .82 and then multiply them by 1.03. The former adjusts for the 18 percent of Burt and Cohen sample that slept other than on the streets or in shelters, while the latter is the ratio of the seven-day to one-day count that we calculated from the Burt and Cohen data. See appendix B. The remaining difference between our adjusted best estimates and the Burt and Cohen estimate of 500,000 to 600,000 could be attributable to their treatment of the skip interval problem and their extrapolation to areas with small populations. Again see appendix B.

¹⁹In addition, 259 individuals were interviewed in a survey of those using the soup kitchens February 28, 1993. The soup kitchen patrons were asked where they planned to sleep that night. Only eight individuals or $8/120 = 6.7$ percent were sleeping in locations that met the definition of homeless. In order to retain the comparability for the 1988 and 1993 studies, we do not use this adjustment in our ratio.

²⁰This study is the basis for the HUD 1984 estimate of a street-to-shelter ratio in Phoenix of 2.73. The HUD shelter estimate is 664, but there is no explanation of how they arrived at this number and we cannot replicate it from the report. HUD also reports a total of street homeless of 1813, which suggests that they may have misread the report and confused the total homeless with the street homeless count.

²¹They also note there is a downward bias of 0.2 percent because some voucher programs were missed. The 15 percent adjustment for adults is net of that. The adjustment for children is 9.5 percent.

²²The first adjustment for the upward bias of 15 percent for adults and 9.5 percent for children

reduces the adult count of service users from 194,000 to 164,900 and the child count from 35,000 to 31,700. The second adjustment for the 18 percent sleeping in apartments or in jail, detox, or other places further reduces the estimates to 135,218 and 25,994, respectively. The third adjustment reduces the 135,218 by 10 percent, to 121,696, before dividing by 0.68, the Burt and Cohen point estimate of the proportion of homeless who are service users. By subtracting the resulting number from 121,706, we obtain an estimate of 57,269 adults who used neither shelters nor soup kitchens during the week. Given that Burt and Cohen found no children in their sample at sites where the homeless congregated, we add none. (They added 2,900.) Adding 57,269, 135,218, and 25,994, we obtain a total estimate of homeless people in cities over 100,000 of nearly 218,500. Following Burt, we assume that the rate of homelessness in smaller MSAs is one-third that in MSAs with cities over 100,000, and 4.0 in non-MSAs, which produces estimates of 147,000 and 22,500 in each of these areas (see Burt 1991, pp. 9–10). Thus the total is 388,000. Burt (personal communication) reports she now believes that 6.0 is the best estimate for non-MSAs. This would increase the count by 11,000 for a total of 399,000.

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