RESEARCH

PREVALENCE OF TREATED BEHAVIORAL DISORDERS AMONG ADULT SHELTER USERS: A Longitudinal Study

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Of 27,638 homeless adults admitted to Philadelphia public shelters in the years 1990 through 1992, 20.1% received treatment for a mental health disorder, and 25.3% for a substance use disorder in the years 1985 through 1993. An additional 20.7% were identified as having untreated substance use problems. Overall, a total of 65.5% of adult shelter users were identified as ever having had a mental health or substance use problem, treated or untreated.

Based on diagnostic interviews conducted during single encounters with samples of homeless adults (usually without accompanying children), previous research has found significantly higher rates of mental health and substance use disorders among homeless adults than among the general population. This article reports the results of a study of 27,638 homeless adults (with and without accompanying children) who used public shelters in Philadelphia over a three-year period, 1990–1992, and of their use of publicly reimbursed mental health and substance abuse services over a nine-year period, 1985–1993.

REVIEW OF THE LITERATURE
Homelessness and Mental Disorders

Research on homelessness in the early 1980s produced widely inconsistent estimates—ranging from 15% to 91%—of the rate of current psychiatric disorders in the homeless population *(Fischer & Breakey,*

1986, 1991; Lehman & Cordray, 1993; Robertson, 1986, 1992; Ropers, 1988; Susser, Conover, & Struening, 1989; Tessler & Dennis, 1989). Robertson *(1986)* and Ropers *(1988)* attributed divergent estimates to noncomparable methods and study samples, and observed that major methodological limitations prohibited generalizations from these studies to the larger homeless population.

Several investigators subsequently applied more rigorous and comparable methods, including the use of standardized diagnostic instruments, multiple sampling sites, probability samples, and larger sample sizes. Studies of homeless samples in Los Angeles *(Koegel, Burnam, & Farr, 1988),* California *(Vernez, Burnam, McGlynn, Trude, & Mittman, 1988),* Baltimore *(Fischer, Shapiro, Breakey, Anthony, & Kramer, 1986)* and Buffalo *(Toro & Wall, 1989)* used the Diagnostic Interview Schedule (DIS), and found lifetime rates of schizophrenia ranging from 1.4% in a sample of 76 to 13.1%

in one of 328 *(Koegel et al., 1988)*. As Fischer and Breakey *(1991)* observed, the range narrows to between 11% in a sample of 315 *(Vernez et al., 1988)* and 13.1% in one of 328 *(Koegel et al., 1988)* if one includes only those studies with sample sizes greater than 300. These rates are also consistent with those of a study of 203 homeless people in Baltimore *(Breakey et al., 1989)*, which found a 10.5% rate of schizophrenia, based on clinical interviews. The results from the studies with large samples also converged regarding the lifetime prevalence rates for other disorders *(Fischer & Breakey, 1991)*: 21%–29% had affective disorders, 2%–3% were "demented," and 14%–20% had antisocial personality disorder *(Breakey et al., 1989; Koegel et al., 1988; Vernez et al., 1988)*.

In an empirical review of the literature, Lehman and Cordray *(1993)* applied meta-analytical techniques to epidemiological studies reviewed by Fischer *(1991)* to produce estimated ranges for mental health and substance use disorders among the homeless. They calculated weighted averages by diagnostic group based on study sample sizes and the relative precision of estimates, reporting that 47% of the homeless appeared to have a current mental health problem of some type, including 18%–23% with a severe, and 19%–23% with a severe and persistent Axis I *(American Psychiatric Association [APA], 1987)* mental disorder.

Substance Use Disorders

Researchers have consistently found higher rates of substance abuse than mental disorders among the homeless population. Fischer and Breakey's review *(1991)* cited seven studies of single adults that found lifetime prevalence rates for alcohol use disorders ranging from 28%–68%, with rates lower among women than among men. Five of the studies found rates of substance abuse in excess of 50%. Lehman and Cordray's *(1993)* meta-analysis calculated weighted averages of 47%–51% for any Axis I substance use disorder (lifetime), 43%–52%

for Axis I alcohol use disorders, and 30%–37% for Axis I drug use disorders.

Limitations of Previous Research

Despite geographic and other sampling differences, improved methods have resulted in convergent estimates of the rate of behavioral disorders in the homeless population. However, reviewers of this literature have also noted some limitations. Despite their larger size, samples are not always representative of the homeless population. With a few exceptions *(Bassuk, Rubin, Lauriat, 1986; Bassuk & Rosenberg, 1988)*, research subjects have been adults without accompanying children, and mostly male, thus excluding adults in homeless families, who are mostly female *(Fischer & Breakey, 1991)*. These studies have also relied on self-report for symptom identification and psychiatric history (i.e. hospitalizations), and on single-encounter interviews using diagnostic instruments that, like the DIS, were developed for domiciled populations *(Koegel et al., 1988; Ropers, 1988; Susser, Struening, & Conover, 1989)*. Also, studies have typically failed to seek validation of diagnosis or treatment history via treatment records *(Snow, Baker, & Anderson, 1986)*, even though research has found that the DIS alone may overestimate the prevalence rate of serious mental illness *(Anthony et al., 1985)*, particularly lifetime rates *(Warner & de Girolamo, 1995)*. Reviewers have also observed that samples were obtained and measured cross-sectionally, and, therefore, probably over-represented the number of long-term homeless people and people with disabilities relative to their proportion of the population over time *(Culhane, Dejowski, Ibanez, Needham, & Macchia, 1994; Fischer & Breakey, 1991; Susser, Conover, & Struening, 1989; Tessler & Dennis, 1992)*.

PHILADELPHIA STUDY

Because the city of Philadelphia maintains an automated registry of public-shelter users and has a high degree of automation for the

tracking of publicly reimbursed mental health and substance abuse services, it is possible to integrate these longitudinal data to develop treatment rates for the homeless population using a large study sample. The present study was designed to explore the potential utility of these administrative data for the purposes of case identification and measuring the prevalence of behavioral health problems among the homeless.

The following hypotheses were explored: *1)* The rate of treatment for a serious mental illness would approach Lehman and Cordray's *(1993)* estimated lower boundary (18%) for a severe Axis I disorder, but would not reach it because the present study includes the treated population only. *2)* Based on the limited literature *(Bassuk et al., 1986; Smith & North, 1994)*, homeless adults with accompanying children would be less likely to have major mental illness and substance abuse problems than would adults unaccompanied by children. *3)* Consistent with previous research, substance abuse would be a more prevalent problem than mental health disorders, and approximately half the population with serious mental illness would have co-occurring substance abuse problems. Other questions, while not the subject of specific hypotheses, were also explored.

METHOD
Data Sources

For this study, individuals were categorized as homeless if they were on record at the Office of Services to the Homeless Adults (OSHA) Client Registry System. Mental health and substance use disorders were identified by treatment records in databases that track publicly reimbursed mental health and substance abuse (SA) services in Philadelphia: the Medicaid Management Information System (MMIS), the Drug and Alcohol Medicaid Management Information System (D&AMMIS), the HealthPASS Paid Claims File (HPC) for Medicaid clients in a health insurance organization, the Community Reporting System (CRS) for community mental health services, the Medicare Provider Analysis and Review File (MEDPAR), and the Patient Census Information System for Pennsylvania state hospitals (PCIS). These datasets have been integrated in the Penn Longitudinal Database on Mental Health Services *(Rothbard, Schinnar, Hadley, & Rovi, 1990; Culhane, Averyt, & Hadley, 1995)*. These data sources do not include Medicaid-reimbursed, ambulatory SA services or SA services obtained at agencies funded by the City of Philadelphia on a facility (not a client) basis, and thus produce an undercount of users of publicly funded outpatient SA services.

The longitudinal mental health services databases used for this study have undergone reliability and validity auditing *(Hadley, 1994)*. Because redundancy in information exists across several of the databases, editing routines were developed to identify inconsistencies in patient and service information, and a reporting framework used to identify problems *(Culhane et al., 1995)*.

Sample and Procedure

Data integration. The study sample included all shelter admissions in the registry data set of OSHA between January 1, 1990, and December 31, 1992. The data were clarified to create a single first shelter admission record per adult ($N=27,638$), and to identify the presence or absence of accompanying children. Cases were then assigned randomly generated identification numbers. The final records showed that 20,984 individuals entered the system unaccompanied by children, while 6,654 were accompanied by one or more children.

The OSHA registry was merged with the behavioral health files, using social security numbers and unique identifiers created from a combination of parts of first names, last names, dates of birth, and gender. A match on either identifier was considered a sound one. To insure confidentiality, all first and last names were then removed.

Only observations from the identifier files that had a counterpart in the OSHA registry were kept. The resulting matches were then merged with the service files from the respective databases to obtain information on service use and diagnoses. Data integration procedures are detailed elsewhere *(Culhane et al., 1995)*, as are integration procedures using Philadelphia's longitudinal mental health services files *(Rothbard et al., 1990)*.

Diagnostic distribution. Diagnoses in the behavioral health data were reported as either primary or secondary, regardless of *DSM (APA, 1987)* Axis coding, so as to include personality and developmental disorders. Most-frequent and most recent diagnosis were determined for each case. Cross-tabulations were conducted on the most-frequently occurring diagnosis variable by gender and household type, by age group, and by veteran status (since veteran status was determined at intake and intake interviews can be avoided, veterans were compared to nonveteran intake, not to the entire shelter population).

Case inclusion criteria. Subclassifications of mental health and SA disorders were created to facilitate comparisons of prevalence estimates by varying case inclusion criteria. Diagnoses were grouped as serious mental illnesses (SMIs), other mental health (OMH) disorders, and substance use disorders. SMI was defined by the *DSM-III-R* codes 293 (transient organic psychotic condition), 294 (other organic psychotic condition, chronic), 295 (schizophrenia), 296 (affective psychoses), 297 (paranoid state), 298 (other nonorganic psychoses), and 311 (depressive disorder). A substance use disorder was defined by *DSM-III-R* codes 291 (alcohol psychoses), 292 (drug psychoses), 303 (alcohol dependence), 304 (drug dependence), and 305 (nondependent drug abuse). The category of other mental disorders was defined as all other mental health diagnoses, excluding diagnoses of childhood, 313 and 314 (further information on this exclusion can, be obtained from the first author).

Dichotomous variables were created denoting the presence or absence of an SMI, other mental illness, and substance use disorder, by most-frequently occurring diagnosis and by the presence of any such diagnosis as determined by searching all primary and secondary diagnoses ("ever"). The ever groupings included duplicate cases, since one person could have received each type of diagnosis. The concurrence of diagnostic types was cross-tabulated, allowing for estimates of co-occurrence of disorders, such as the extent to which persons with a most-frequently occurring diagnosis for an SMI had ever received a diagnosis of substance use disorder.

Untreated disorders. During the intake and assessment interview prior to shelter admission, case workers can indicate whether the client has a mental health or SA problem (referred to hereafter as an "indicator"). Indicators may be flagged on the basis of a self-report by the client or the determination of the case worker. For participants who had undergone an intake interview, indicator information was analyzed to identify those who were shown to have received no prior mental health or SA treatment, but might have some presenting mental health or substance use condition at the time of the interview *(Culhane et al., 1995)*. The percentage of OSHA clients receiving positive SA and mental health indicators by diagnostic group was calculated, and a cross-tabulation was performed on the presence or absence of a mental health or SA indicator or treatment record.

RESULTS

Database merges. Of the shelter sample (*N*=27,638), 12,584 clients were identified as having used behavioral health services. OSHA files matched with 7,490 cases in the D&AMMIS file, 7,232 in the MMIS files, 6,278 in the CRS files, 1,645 in HPC and 242 in the PCIS files. Relatively few (67) matched cases were identified through the database merge with the Medicare service files.

Diagnostic Distributions

By gender, household, most-frequent diagnosis. Of the 12,584 individuals identified with a mental health or SA service history, 10,349 were not accompanied by children and 2,235 were so accompanied, giving treatment rates of 49.3% and 33.2%, respectively. Among all adults who stayed in a Philadelphia public shelter in 1990 through 1992, 20.1% had a most-frequent diagnosis for a mental disorder and received a behavioral health treatment sometime in the years 1985 through 1993. In the same time periods, 25.3% had a most-frequent diagnosis for SA and received treatment (see TABLE 1).

The overall rate of treatment for SMI was 10.8%. The rate for adults without children (12.3%) was nearly double the rate for those with children (6.2.%). At twice the rate of affective psychoses, schizophrenia was the most commonly identified SMI (and of all mental disorders),. The rate of schizophrenia was lower than the rate of affective psychoses among adults with children, and higher among adults unaccompanied by children. Adjustment reaction disorder was the most commonly treated mental disorder among the

non-SMI group, affecting 4.5% of homeless adults. Women (6.5%) were affected more than twice as often as men (3%), while adults with children (7.2%) were affected twice as often as those without (3.6%).

Gender differences were evident across diagnoses for adults unaccompanied by children; women had nearly double the treatment rates of men. Gender differences were less evident among adults with children. Single women unaccompanied by children had the highest rate of prior mental health treatment (31.1%), 50% higher than the treatment rate for the overall population. Single women also had the highest rate of treatment for SMI (18.8%) among the groups by gender and household type, a rate almost double that of treatment for single men (10.1%). However, when genders were combined across household type, men and women had nearly equal rates of treatment for SMI (10.0% and 11.9%, respectively).

Most-frequently occurring SA diagnoses were more common than mental health diagnoses overall. The SA treatment rate for adults without children (28.7%) was twice the rate of that for adults with children

Table 1

PREVALENCE OF TREATED MENTAL HEALTH AND SUBSTANCE ABUSE DISORDERS AMONG ADULT SHELTER USERS BY MOST-FREQUENTLY OCCURRING DIAGNOSIS, GENDER, AND HOUSEHOLD TYPE

| | TREATMENT RATE (%) | | | | | | | | |
| | SINGLE | | | PARENT | | | TOTAL | | |
DIAGNOSIS	M (15,796)[a]	F (5,188)[a]	TOTAL (20,984)[a]	M (405)[a]	F (6,249)[a]	TOTAL (6,654)[a]	M (16,201)[a]	F (11,437)[a]	TOTAL (27,638)[a]
Serious Mental Illness	10.1	18.8	12.3	6.2	6.2	6.2	10.0	11.9	10.8
Schizophr. disorder	6.7	10.8	7.7	2.5	1.6	1.7	6.6	5.8	6.3
Affective psychos.	2.3	5.5	3.1	2.7	3.3	3.2	2.3	4.3	3.1
Other SMI	1.1	2.5	1.4	1.0	1.3	1.3	1.1	1.8	1.4
Adjustment reaction	2.9	5.7	3.6	7.2	7.2	7.2	3.0	6.5	4.5
Personality/Neurosis	2.7	5 1	3.3	2.7	3.9	3.8	2.7	4.4	3.4
Other MH problems	1.4	1.5	1.4	0.7	1.5	1.4	1.4	1.5	1.4
Total MH problems	17.1	31.1	20.6	16.8	18.8	18.7	17.1	24.4	20.1
Substance Abuse									
Alcohol dep./psychos.	8.1	3.6	7.0	4.4	1.7	1.9	8.0	2.6	5.8
Drug dep./psychos.	20.6	17.9	19.9	10.6	11.6	11.5	20.4	14.4	17.9
Nondep. drug abuse	1.8	1.9	1.8	1.5	1.1	1.1	1.8	1.4	1.6
Total SA	30.5	23.3	28.7	16.5	14.4	14.6	30.2	18.5	25.3
Total MH & SA	47.7	54.5	49.3	33.3	33.2	33.2	47.3	42.8	45.5

[a]Ns for category.

(14.6%). Across household types, men (30.2%) had nearly double the rate of treatment for SA as women (18.5%). Much of the gender difference in SA treatment rates and the higher observed rate of SA diagnoses are attributable to the high rate of SA treatment among men without accompanying children (30.5%), who represented 70% of the homeless adults with a primary SA diagnosis. Overall, two-thirds of the SA diagnoses were for drug dependence or psychoses (17.9%). Diagnoses of alcohol dependence and psychoses were much less common (5.8%). Because these data exclude outpatient SA services, this is likely to be a significant underestimation of the treatment rate for SA.

By age, most-frequent diagnosis. As can be seen in TABLE 2, prior treatment with a most-frequent mental health diagnosis was more common among homeless adults over age 45 (22.5%) than among those under 45 (19.4%). Adults under age 30 (the largest subgroup) had a 4.3% schizophrenia rate, compared to 6.9% for adults 31–45 and 9% for those over 45. However, 73% of the homeless adults with SMI were under age 45.

Treatment for drug dependence or psychosis was twice as common among adults under 30 (20.1%) and those aged 31–45 (19.7%) than among adults over age 45 (10.5%). In contrast, treatment for alcohol dependence or psychoses increased with age. The rate of treatment was three times as high among older adults (over age 45, 9.8%) as among young adults (under age 30, 3.2%). Of the primary drug abuse diagnoses, 88% occurred in the under-45 age groups, as did 65% of the alcohol abuse cases.

Veteran status. Veterans and nonveterans had roughly comparable rates of treatment for mental health and SA diagnoses (this study did not include Veterans Administration data). Nonveterans had slightly higher rates of treatment for mental health diagnoses, and veterans had slightly higher rates of treatment for SA diagnoses. Veterans accounted for 10.7% of the total sample and for 17.7% of the single men. Most (95.6%) of the homeless veterans were adults without accompanying children.

Case inclusion criteria. TABLE 3 shows the results of the cross-tabulation by most-frequent diagnosis and ever subgroups. While 10.8% of homeless adults had a most-frequent diagnosis of SMI, 16.2% of homeless adults ever received such a diagnosis. Two-thirds of the cases who were ever SMI but not classified by the most-frequent criterion, received a most-frequent diagnosis for SA, and one-third were classified as having an OMH disorder.

Nearly one-third of the homeless adults had ever been treated for substance abuse, compared to 25.3% by the most-frequent criterion. Of those ever receiving an SA treatment diagnosis, 13% were classified as SMI by the most-frequent criterion. Regarding the prevalence of treated dual diagnosis or a co-occurring substance abuse and SMI diagnosis, 39% of the SMI cases (most-frequent) had ever received an SA diagnosis (primary or secondary). Approximately 27% of the OMH group (most frequent) had ever received an SA diagnosis.

Table 2

PREVALENCE OF TREATED
MENTAL HEALTH AND SUBSTANCE USE
DISORDERS AMONG ADULT SHELTER USERS
BY MOST-FREQUENTLY OCCURRING
DIAGNOSIS, AND BY AGE

	AGE (%)		
	<30	31–45	>45
DIAGNOSIS	(11,087)[a]	(10,824)[a]	(5,727)[a]
SMI	8.4	11.1	14.7
Schizophrenic dis.	4.3	6.9	9.0
Affective psychosis	2.8	3.0	3.9
Other SMI	1.3	1.2	1.8
Adjustment reaction	5.9	3.6	3.3
Personality/Neurotic	3.5	3.3	3.5
Other MH	1.9	1.1	1.0
Total MH	19.7	19.2	22.5
Substance Abuse			
Alcohol dep./psychosis	3.2	6.2	9.8
Drug dep./psychosis	20.1	19.7	10.5
Nondep. drug abuse	1.7	1.6	1.6
Total SA	25.0	27.4	21.9
Total MH & SA	44.6	46.7	44.5

[a]Ns for category.

Table 3

PREVALENCE OF TREATED MENTAL HEALTH AND SUBSTANCE ABUSE DIAGNOSIS
OF ADULT SHELTER USERS BY VARYING CASE INCLUSION DATA

DIAGNOSIS	UNDUPLICATED N		MOST FREQUENT DIAGNOSIS					
			SMI		OMH		SA	
	N	%	N	%	N	%	N	%
Ever[a]								
Undupl. N			2,980	10.8	2,585	9.4	6,997	25.3
SMI	4,474	16.2	2,980	10.8	503	1.8	991	3.6
OMH	5,378	19.5	1,243	4.5	2,585	9.4	1,550	5.6
SA	8,822	31.9	1,137	4 1	688	2.5	6,997	25.3
Most Recent								
Undupl. N			2,980	10 6	2,585	9.4	6,997	25.3
SMI	2,934	10 6	2,603	9.4	136	0.5	195	0.7
OMH	2,553	9.2	128	0.5	2,212	8.0	213	0.8
SA	7,077	25.6	249	0.9	237	0.9	6,591	23.8

Note. Rates are over a total three years for a sheltered population of 27,638; total treated population over same period is 12,497
[a]Columns not additive; individuals may have more than one diagnosis.

Untreated disorders. Relatively few additional cases (N=270) of people with mental health problems were identified through the inclusion of the indicator information. In contrast, the indicator information for SA problems was both much more consistent with the treatment databases, and identified a significant number of untreated cases. Of the most-frequent SA group, 75% received a positive indicator, as did 71% of those ever receiving an SA diagnosis. Among those never receiving an SA diagnosis, 31% were given a positive SA indicator. This would increase the rate of identified SA problems among homeless adults by 41%, or 20.7 percentage points, for a rate of 55.4%.

A cross-tabulation combined all sources of information on behavioral health status, including both the treatment databases and the indicator information from shelter intake and admittance forms. When the indicator was added to service treatment data, 65.5% of homeless adults admitted to Philadelphia shelters in the years 1990 through 1992 were identified as having some mental health and/or SA problem in the years 1985 through 1993. More than half (55.4%) were identified as having a substance use disorder or problem, and nearly one-third (29.7%) as having a mental health disorder or problem. Approxi-

mately one in five (19.7%) were identified as having both a mental health and an SA problem.

DISCUSSION

Although it relied solely on administrative data, this study's findings could be construed as broadly consistent with the extant literature. The prevalence rate for treated SMI disorders found here ranged from 11%–16%, approaching the range for severe Axis I disorders (16%–21%) calculated by Lehman and Cordray's *(1993)* meta-analysis. The difference may be attributable to the fact that this was a study of the prevalence of treated behavioral health disorders, and did not capture either the untreated population or those receiving treatment outside the publicly funded system in Philadelphia. The databases employed in this study were inadequate for estimating the magnitude of the untreated population with mental disorders. Recent research *(Koegel, Sullivan, Burnam, Morton, & Wenzel, 1997)* has found that 38% of homeless persons in Los Angeles who were identified (using the DIS) as SMI in face-to-face interviews had no prior lifetime treatment for mental illness. If that estimate were extrapolated to the present study population, it would yield an overall prevalence range for SMI of 14.7%–22.1%, nearly identical

to the range reported by Lehman and Cordray. However, it should be noted that the accuracy of the diagnosis in the administrative data from Philadelphia was not assessed in this study; thus its comparability with estimates based on the DIS is unknown.

Other findings were also broadly consistent with the literature. Single women without accompanying children were twice as likely as single men to have received treatment for SMI or other mental disorder. Single adults were twice as likely as adults in families to have received treatment for SMI. Substance abuse treatment rates were higher than mental disorder rates and affected more than half the adult population (with all diagnostic and indicator information included). Young adults were more likely to be treated for drug dependence and older adults for alcohol problems. Of individuals with SMI, 38% were found to have had prior treatment for an SA disorder, which is close to the prediction of one-half of the SMI based on previous research *(Lehman & Cordray, 1993)*. The primary contribution of the present study is the confirmation of prior findings it offers with the use of a large study population, diagnoses determined by treatment records, and the inclusion of a correspondingly large number of single women and adults with children in the study population.

Some of the other results were less consistent with the literature. For instance, more drug problems than alcohol problems were found. This may be a function of the study's time-frame (shelter use in the years 1990 through 1992), which was several years after the beginning of the "crack" epidemic (1986–1987), whereas most of the existing epidemiological research had been conducted prior to or soon after the emergence of the epidemic. It may also be a function of lower rates of self-reported drug use in face-to-face interviews; or of service-system dynamics in Philadelphia, such as the use of "clean and sober" shelter programs as a form of residential treatment by people with drug problems.

Because this study included the known population of adult public shelter users, it contains information previously unavailable in the literature and may afford a better view of the dynamic nature of homelessness. It seems that nearly 3,000 people with SMI were homeless in Philadelphia over three years, and that 73 per month entered shelters for the first time. This finding suggests that it would be practical for public mental health officials to design an alternative to the shelter system for people with SMI who become homeless, thus avoiding the costly decompensation and hospitalization that can result when such persons are placed in congregate shelters. Planners might consider the utility of targeted crisis intervention programs, including crisis residences and other programs, as places to which to divert people with SMI from shelters.

The findings on homeless women (with and without children), who were present in this sample in numbers proportionate to their representation in the sheltered population could inform the design of appropriate interventions for this population *(Buckner, Bassuk, & Zima, 1993)*.

Also noteworthy is the fact that very few (67) matches were found between the shelter admission population, and the population of persons receiving behavioral health services reimbursed by Medicare. This suggests that Medicare and the income benefits available to Medicare recipients— social security retirement insurance, survivors insurance, and social security disability insurance (SSDI)—offer better social insurance against the risk of homelessness than do Medicaid and the income benefits typically available to Medicaid-eligible persons (general assistance, Aid to Families with Dependent Children, and SSI). Alternatively, it could also be the case that Medicare beneficiaries with severe behavioral health disorders, particularly SSDI recipients, had used up their 90-day lifetime limit of inpatient benefits through Medicare, and were using Medi-

caid for insurance coverage for behavioral health treatment, particularly inpatient care.

Perhaps the most valuable contribution that this methodological approach can offer researchers is its utility for services research. The present study method could be used to examine the temporal proximity of the use of inpatient and emergency services near or at the onset of homelessness, by comparing health and shelter utilization dates *(Culhane et al., 1995)*. A preliminary study based on this data found very high rates of hospitalization among people with SMI and SA disorders (25% and 34% respectively) within 120 days of the onset of their homelessness. These results would seem to suggest that there are potentially high costs associated with patterns of service use by homeless people.

As a demonstration that administrative data, when properly qualified and adjusted, can be used to generate estimates of the behavioral health status of homeless persons that are broadly consistent with survey research approaches, this study has implications for future epidemiological research. The approach offers a cost-effective method for monitoring trends of the co-occurrence of homelessness and serious mental illness over time with large study populations. However, primary data collection is needed to determine the extent to which persons with untreated conditions enter the shelter system and the degree to which shelter databases fail to capture the homeless street population. Primary data are also needed to verify the accuracy of diagnoses for homeless populations in the administrative databases. For example, studies of homeless populations based on primary data have found higher rates of post-traumatic stress disorder and anxiety disorders *(North & Smith, 1992)* than were found here. Since depression disorder was grouped in the present study with affective psychotic disorders, the effect of depression on the homeless population could not be examined.

The study was also limited in that it did not include homeless persons who were not using public shelters, nor did it attempt systematically to identify persons with untreated conditions. Inclusion of both groups would probably increase the rate of behavioral health disorders found among the homeless population.

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