

## ORIGINAL PAPER

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# Individual characteristics of the literally homeless, marginally housed, and impoverished in a US substance abuse treatment-seeking sample

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**Abstract** *Background* Many researchers and clinicians believe that understanding substance use problems is key to understanding homelessness. This study's purpose was to test, in a national sample of urban substance abuse treatment seekers, whether (1) income was related to amount of money spent on substances and (2) homeless chronic substance users had more severe psychosocial problems or histories than housed chronic substance users. *Method* Questions assessing homelessness were inserted into the Drug Evaluation Network System—a computer-assisted intake interview (including the Addiction Severity Index) implemented in addiction treatment programs across the U.S. Based on these data, clients were divided into four residential groups: literally homeless ( $n = 654$ ), marginally housed ( $n = 1138$ ), housed poor ( $n = 3119$ ), and housed not poor ( $n = 718$ ). Income, human capital (education level and acquisition of a trade/skill), substance use, mental health, and social support were examined. *Results* The literally homeless was *not* the poorest group, although these clients did spend the most money on

substances. All four groups' incomes were positively related to amount of money spent on drugs, but only the marginally housed's income was related to money spent on alcohol. The literally homeless had the most severe alcohol, mental health, and social support problems. The literally homeless and marginally housed had similar incomes and human capital and the most severe cocaine problems. In general the housed poor and housed not poor fared better than the literally homeless and marginally housed groups. *Discussion* Practitioners should continue to intervene with the homeless and consider working with the marginally housed's social support systems. Future research should examine the marginally housed as an at-risk group for homelessness.

**Key words** homeless – marginally housed – poverty – substance use – risk factors

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## Background

On any given night, in major U.S. cities, somewhere between 0.1 and 2.1% of the population is homeless [47]. Nationwide, approximately 3.1% of the population has been homeless at some point during the past five years [42]. In hopes of developing prevention and intervention efforts, investigators have studied pathways into and exits from homelessness. The literature is clear that substance abuse [9, 11, 36–37, 49–51, 58, 62, 69, 80], mental health [9, 11, 36, 50–52, 58, 69], physical health [9, 11, 15, 19, 31, 33, 64, 72], legal [7, 21, 23], and employment [10, 23, 40] problems are disproportionately high among the homeless. Homeless persons also experience disproportionately low numbers, and perhaps quality, of social supports [26, 28, 38–39, 66, 70–71, 79].

With recent national estimates of lifetime substance use problems at 62% and past-year estimates around 40–45% for the homeless [11], many

researchers and clinicians believe that understanding substance use problems is key to understanding homelessness. Devine and Wright [22] call chronic substance use an equalizer. They maintain that the homeless population is comprised of a heterogeneous group of individuals in terms of income, work experience, and education. For instance, in their study of 670 homeless substance abusers in New Orleans in social detoxification, the sample's average monthly income was \$899 with a majority coming from illegal sources. Additionally, 52% of the sample reported a high school education, and 76% reported having a profession, trade, or skill. These authors contend that the common link among homeless individuals is their inability to *activate* their human capital (i.e., attributes—such as education, training, and skills—that make one valuable in the marketplace) rather than a deficit in human capital—often because they have chronic substance abuse problems. Studies have shown that substance use is linked to job absenteeism [27, 43] and poor job performance [41]. Devine and Wright argue that the addicted homeless spend most of their money on substances; the more money they acquire, the more (or higher quality) substances they purchase, thus sustaining their homelessness.

Based on this proposition—that chronic substance use plays such a major role in homelessness, we wondered whether homeless chronic substance users had more severe psychosocial problems or histories than housed chronic substance users. Because most clients entering substance abuse treatment have residences [76], we thought investigating substance abuse treatment seekers would prove fruitful. Two recent studies have examined psychosocial problems by residential status among substance abuse treatment seekers [34, 54–55].

Kertesz and colleagues [34] studied 274 inpatients in a free-standing, short-term detoxification unit in Boston. They found at intake that the chronically homeless were more likely than the housed to be older, unmarried, and identify alcohol as their substance of choice. This group also reported more severe medical and alcohol problems, more substance use consequences, more depressive symptoms, and less social support than the housed. At follow-up, the chronically homeless reported worse mental (but not physical) health than the transitionally housed and housed.

Orwin and colleagues [54–55] studied 1,143 clients in various modalities of substance abuse treatment in Chicago. They found at intake that the literally homeless and marginally homeless were more likely than the stably housed to be female and pregnant/postpartum and to report crack as their primary substance. They also reported more severe drug, legal, employment, and family problems than the stably housed. Mental health was not a significant factor. Clients who reported having more dependents, higher income, and heroin as their primary substance were

more likely to be stably housed. Orwin and colleagues discovered during follow-ups that clients who were housed and identified crack as their primary substance at any time point were more likely to be homeless at the following time point.

Although these studies are methodologically strong, each is limited to one city and some of the findings are conflicting (substance of choice and mental health). To determine if the findings from these studies hold nationally, we examined intake data from a national database of clients entering inpatient, outpatient, and methadone maintenance substance abuse treatment programs. We tested two hypotheses: (1) income is positively associated with amount of money spent on substances and (2) literally homeless and marginally housed clients have more severe problems in the areas of income, human capital, substance use, mental health, and social support than housed clients.

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## Method

### ■ Dataset

This investigation used data collected between April 2003 and March 2004 by the Drug Evaluation Network System [13]. In 1996, as part of a broader effort to gain scientifically sound information on the problems and activities reported by persons entering substance abuse treatment, the Office of National Drug Control Policy (ONDCP) commissioned a continuing electronic survey of those seeking treatment for substance use disorders in a national U.S. sample of addiction treatment programs in a variety of modalities (inpatient, residential, outpatient, and methadone maintenance). This system—called DENS—is a computer-assisted admission interview designed to collect standard information on all clients entering a sample of addiction treatment programs around the country.

Programs participating in DENS ( $n = 158$ ) used the Addiction Severity Index (ASI) [46] as part of their intake/admission process. The ASI is a structured interview that assesses problem severity in seven domains of a client's life: medical, employment, alcohol, drug, legal, family/social, and psychiatric. Composite scores—reliable and valid summary estimates representing current (i.e., past 30 day) problem severity for each domain—are calculated using algorithms that sum several items in each domain. These scores range from 0.00 to 1.00 with higher scores indicating greater problem severity. The instrument has been shown to be reliable and valid for individuals (including homeless persons) entering substance abuse treatment facilities [4, 46, 81].

DENS also includes the capacity to insert additional questions of current interest at any given point in time electronically. In an effort to further explore homelessness in a substance-abusing, treatment-seeking population, three questions on homelessness were added to the DENS version of the ASI in April 2003. These questions asked how many nights in the past month (i.e., 30 days) clients spent (1) on the streets, (2) in shelters, and (3) with acquaintances, friends, or family members because they had nowhere else to stay. These questions were approved by the Treatment Research Institute's Institutional Review Board in March 2003 for inclusion in the DENS ASI.

### ■ Selection of cases

Although DENS has been implemented nationwide in the U.S., it has not been implemented in a systematic representative sample of treatment programs across the country. In an attempt to ensure that geographic differences (urban versus rural) would not over-

whelm this investigation's residential comparisons, only cases from programs located in urban areas were included in these analyses. Areas were considered urban if they were listed in the Department of Commerce's Bureau of the Census' *Federal Register of Qualifying Urban Areas for Census 2000* [20]. In the DENS sample, treatment programs were located in 13 urban areas: Akron, OH, Chicago, IL, Dover, DE, Fairfield, CA, Houston, TX, Los Angeles/Long Beach, CA, Miami, FL, New York City, NY (Brooklyn, Bronx, Manhattan, and Staten Island), Oakland, CA, Philadelphia, PA, Port Arthur, TX, Salem, OR, and Wichita, KS. Most clients in the study entered facilities in the Midwest (57%); others entered in the South (16%) and on the East (14%) and West (13%) coasts.

DENS collected data from substance abuse treatment programs in all rehabilitation modalities: inpatient/residential, outpatient, and methadone maintenance programs. The small number of individuals ( $n = 49$ ) presenting for treatment whom the intake counselor deemed as not needing treatment—usually due to severity of other problems that superseded the need for substance abuse treatment—were excluded from these analyses. Cases were also excluded if the client reported spending all 30 days prior to treatment admission in a controlled environment (e.g., jail, inpatient psychiatric unit, etc.) ( $n = 657$ ) or did not answer this question ( $n = 51$ ) because they did not have the opportunity to be homeless. Thus, the total number of cases used in these analyses was 5,629.

## ■ Independent variable

The concept of homelessness has been operationalized many ways in the literature. It has been defined most commonly by either a request for [14, 18] or a stay at [16, 53] an overnight shelter. "Literal homelessness" expands this definition by including individuals sleeping on the streets, in cars, abandoned buildings, tunnels, bus stations, parks, and similar places [12, 50, 73–74]. Many investigations classify people as homeless if they report spending at least one night either in a shelter or on the streets [5, 10, 35, 40, 62, 64] although some investigations require more nights [6, 50]. Primarily because of methodological challenges, fewer investigators examine people who are "doubled-up"—those staying in others' homes because they have nowhere else to stay [54–55].

For this study, a residential status variable, comprised of four mutually exclusive and exhaustive groups, was created: (1) literally homeless, (2) marginally housed (or doubled up), (3) housed poor, and (4) housed not poor. To remain consistent with the aforementioned literature, clients reporting at least one night of living on the streets or in shelters during the prior 30 days were considered literally homeless. Those reporting at least one night of living with others because they had nowhere else to stay were considered marginally housed. Clients reporting both literal homelessness and doubling-up were coded as literally homeless because it is a more severe and debilitating situation.

We used gross approximations to classify housed clients as poor or not poor. First, we totaled each client's monthly income from all legal sources and multiplied it by 12 to reach an annual estimate. We did not include illegal income in our calculations because only nine percent of the sample reported any illegal income, and we are unaware of any reliable way to annualize these figures [24]. Although clients' annual legal income is an imperfect variable because it does not necessarily reflect all of the household income available to the client, it is the best indicator in the dataset. We then used the 2003 U.S. Department of Health and Human Services poverty guidelines to classify housed clients as poor or not poor. Accordingly, clients with no dependents who reported annual incomes below \$8,981 were classified as poor. Clients with one or more dependents who reported annual incomes below \$12,121 were classified as "poor". Others were classified as "not poor." We chose to dichotomize the number of dependents clients reported because over three-quarters (76%) of the clients reported zero or one dependent.

Most of the literature on homelessness focuses exclusively on individuals who are literally homeless [2, 18, 58, 69, 73]. Some studies use welfare recipients as comparison groups [14, 78]. Although this choice is not optimal, it is often the best comparison

group available to investigators. This study has the advantage that both the primary group of interest (i.e., literally homeless individuals) and the comparison groups (i.e., marginally housed, housed poor, and housed not poor individuals) originate from the same population—individuals admitted to substance abuse treatment programs. Thus, this study is one of the few larger-scale studies examining correlates of homelessness among substance abusers—an important group in which homelessness occurs.

## ■ Dependent variables

### Income

Income was operationalized using two variables. The first is the client's total income from all legal sources (including employment, unemployment, welfare, pension/social security, and "other" legitimate sources) in the 30 days prior to treatment admission. Other legitimate sources include, but are not limited to, money from family and friends (e.g., monetary gifts and child support) and windfalls (e.g., tax returns and lottery winnings). The second variable is the client's total income from all illegal activities in the past month.

### Human capital

Human capital can be defined as a set of attributes a person has that makes him/her valuable in the marketplace. This concept was operationalized using two variables that have been used in other studies [17, 22, 57, 65, 77]. The first was total years of formal education (e.g., HS degree/GED = 12 years, undergraduate degree = 16 years). The second was whether the client had a profession, trade, or skill—usually acquired through some kind of specialized training or education. Common examples include barber/beautician, cashier, clerical worker, cook, data enterer, mechanic, medical technician, painter, security worker, and waiter/waitress.

### Substance use

Substance use was operationalized using eight variables. Two of the variables were the ASI alcohol and drug use composite scores. Two additional variables to represent substance use severity were number of treatment episodes for alcohol use and for drug use. Four variables (each measured by a single item) were used to represent substance use: the number of days in the month prior to treatment admission a client used alcohol, heroin, cocaine, and cannabis. Data gathered for other drugs were not used in these analyses because the prevalence rates were very low (<10%; i.e., methadone 7%, sedatives 5%, opiates 4%, amphetamines 3%, barbiturates <1%, hallucinogens <1%, inhalants 0%). Number of days, rather than quantity estimates, are assessed in the ASI because client recall is more accurate and potency of substances can vary greatly rendering quantity estimates problematic [46]. The remaining two substance use variables used were the total amount of money a client spent on alcohol in the month prior to treatment admission and the total amount of money a client spent on drugs in that time period.

### Mental health problems

We operationalized mental health problems with three variables: whether the client had ever been admitted to an inpatient psychiatric facility for mental health problems, whether the client had ever attended outpatient treatment for mental health problems, and the ASI psychiatric composite score.

## Social support network

Social support was operationalized using four variables: whether the client was currently married, whether the client spent free time alone or with others, the number of categories of family members (i.e., mother, father, sibling, and child) with which the client has had a reciprocal relationship, and whether the client had at least one close friend. We did not use the ASI family/social composite score because it is primarily a measure of conflict, rather than support, in the social network.

### ■ Data analysis

Data analyses were conducted using SAS 9.1 and SPSS 11.5. Percentage rates were calculated for categorical variables; comparisons were conducted using chi-squares. When significant differences were detected, we examined the adjusted residuals to identify which particular groups had either higher- or lower-than-expected percentages of individuals bearing the characteristic being compared [1, 25, 30, 67]. Means and standard deviations were calculated for continuous variables; comparisons were conducted using analyses of variance (ANOVAs). Because we used clients' incomes, in part, to create the housed poor and housed not poor groups, we did not conduct significance tests for differences between the incomes of these two groups. Amount of income spent on alcohol and on drugs were regressed on total income. To help compensate for the numerous statistical tests we conducted, we used  $P \leq 0.001$  as our threshold for statistical significance.

Finally, as part of our analyses, we examined the relationship between residential status and sociodemographic and treatment setting variables. Sociodemographic variables included age (continuous), sex by race (minority women, minority men, Caucasian women, Caucasian men), and sex by ethnicity (Hispanic women, Hispanic men, nonhispanic women, nonhispanic men). Treatment setting is usually determined by the clinician's assessment based on the ASI and other intake data, available "beds" or "treatment slots," and client preference. Treatment setting options included inpatient/residential (generally reserved for the most severe cases), outpatient (generally reserved for mild to moderate cases), and methadone maintenance (generally reserved for opioid addicts with multiple treatment failures). As discussed above, residential status options included literally homeless, marginally housed, housed poor, and housed not poor.

## Results

The sample ( $n = 5,629$ ) was half (53%) male and largely of color/minority (79%: 64% African American, 6% Hispanic, 1% Asian/Pacific Islander, <1% Native American, <1% Alaskan, and 9% other). The average age was  $37 \pm 10$  years. At the conclusion of their assessments, clients were referred to inpatient/residential treatment (47%), outpatient, drug-free treatment (37%), or methadone maintenance programs (16%).

Almost one-third (32%) of the sample reported experiencing at least one night (mean  $\pm$  SD =  $24 \pm 10$ ) of residential instability (i.e., were literally homeless and/or marginally housed) in the past month. Twelve percent of the sample reported spending at least one night (average  $17 \pm 11$  nights) as literally homeless (i.e., on the streets or in shelters). One-fifth of the sample reported no literal homeless-

ness, but reported spending at least one night (average of  $21 \pm 11$ ) as marginally housed (i.e., staying with someone because the client had nowhere else to stay). The majority of clients (55%) were housed and poor; 13% were housed and not poor. Thus, the residential status of the sample could be described as the following: 12% literally homeless individuals, 20% marginally housed individuals, 55% housed poor individuals, and 13% housed not poor individuals.

Demographics by residential group are presented in Table 1. Sex, race, and ethnicity were related to residential status. For instance, minority and non-hispanic men were more likely than expected to be literally homeless, and Caucasian and nonhispanic women were less likely than expected to be literally homeless (race:  $\chi^2 = 189.41$ ,  $df = 9$ ,  $P < 0.0001$ ; ethnicity:  $\chi^2 = 101.35$ ,  $df = 9$ ,  $P < 0.0001$ ). These variables, however, were not related to the marginally housed. Treatment modality was also related to residential status. Inpatient/residential treatment clients were more likely to be literally homeless and marginally housed; whereas, outpatient and methadone maintenance clients were more likely to be housed ( $\chi^2 = 677.70$ ,  $df = 6$ ,  $P < 0.0001$ ). In the South, clients were more likely to be marginally housed than literally homeless; in the Midwest, clients were more likely to be literally homeless than the housed poor; in the West, clients were more likely to be housed than literally homeless or marginally housed ( $\chi^2 = 232.20$ ,  $df = 9$ ,  $P < 0.0001$ ).

### ■ Income and human capital

Data on income and human capital are presented in Table 2. The literally homeless and marginally housed were quite similar, and less fortunate than the housed not poor, in terms of income. More specifically, the housed not poor were more likely than the literally homeless and marginally housed to report income from employment ( $\chi^2 = 736.88$ ,  $df = 3$ ,  $P < 0.0001$ ) and to report any type of legal income ( $\chi^2 = 295.39$ ,  $df = 3$ ,  $P < 0.0001$ ). Conversely, both the literally homeless and marginally housed were more likely than the two housed groups to report illegal income ( $\chi^2 = 183.10$ ,  $df = 3$ ,  $P < 0.0001$ ). The housed not poor reported higher income than the literally homeless and marginally housed in all legal income categories (employment:  $F = 188.54$ ,  $df = 3$ ,  $P < 0.0001$ ; unemployment:  $F = 28.16$ ,  $df = 3$ ,  $P < 0.0001$ ; welfare:  $F = 9.78$ ,  $df = 3$ ,  $P < 0.0001$ ; pension:  $F = 70.04$ ,  $df = 3$ ,  $P < 0.0001$ ; family/friends:  $F = 159.56$ ,  $df = 3$ ,  $P < 0.0001$ ; all legal income:  $F = 799.48$ ,  $df = 3$ ,  $P < 0.0001$ ), and the housed poor reported lower total income than the literally homeless and marginally housed groups ( $F = 429.06$ ,  $df = 3$ ,  $P < 0.0001$ ). The one substantial difference between the literally homeless and marginally housed is that the literally homeless were less likely than expected to receive any

**Table 1** Demographics by residential group

	Literally homeless ( <i>n</i> = 654) Group A	Marginally housed ( <i>n</i> = 1,138) Group B	Housed poor ( <i>n</i> = 3,119) Group C	Housed not poor ( <i>n</i> = 718) Group D	Total sample ( <i>N</i> = 5,629)
Age (Mean ± SD)	39.31 ± 8.82 <sup>b,c</sup>	36.02 ± 9.34 <sup>a,d</sup>	37.30 ± 10.32 <sup>a</sup>	38.66 ± 10.34 <sup>b</sup>	37.45 ± 10.01
Race and sex					
Minority females (%)	31	37	40 <sup>e</sup>	23 <sup>f</sup>	36
Minority males (%)	51 <sup>e</sup>	41	41	47	43
Caucasian females (%)	6 <sup>f</sup>	13	12	10	11
Caucasian males (%)	12	9	7 <sup>f</sup>	20 <sup>e</sup>	10
Total (%)	100	100	100	100	100
Ethnicity and sex					
Hispanic females (%)	4	5	5	4	5
Hispanic males (%)	9	8	9	13 <sup>e</sup>	9
NonHispanic females (%)	37 <sup>f</sup>	46	47 <sup>e</sup>	29 <sup>f</sup>	43
NonHispanic males (%)	50 <sup>e</sup>	41	39 <sup>f</sup>	54 <sup>e</sup>	43
Total (%)	100	100	100	100	100
Modality of treatment					
Inpatient/residential (%)	74 <sup>e</sup>	71 <sup>e</sup>	39 <sup>f</sup>	23 <sup>f</sup>	47
Outpatient (%)	17 <sup>f</sup>	22 <sup>f</sup>	42 <sup>e</sup>	56 <sup>e</sup>	37
Methadone maintenance (%)	9 <sup>f</sup>	7 <sup>f</sup>	19 <sup>e</sup>	21 <sup>e</sup>	16
Total (%)	100	100	100	100	100

Whenever a chi-square test identified a significant difference between groups, examination of the adjusted residuals specifically identified the particular groups with higher- or lower-than-expected percentages of individuals bearing the characteristic being compared

<sup>a</sup>Significantly different from literal homeless group ( $P \leq 0.001$ )

<sup>b</sup>Significantly different from marginally housed group ( $P \leq 0.001$ )

<sup>c</sup>Significantly different from housed poor group ( $P \leq 0.001$ )

<sup>d</sup>Significantly different from housed not poor group ( $P \leq 0.001$ )

<sup>e</sup>Adjusted residuals greater than 3.3 (critical value for  $P \leq 0.001$ )

<sup>f</sup>Adjusted residuals less than -3.3 (critical value for  $P \leq 0.001$ )

income from family or friends ( $\chi^2 = 30.42$ ,  $df = 3$ ,  $P < 0.0001$ ).

Interestingly, the literally homeless, marginally housed, and housed poor groups looked remarkably similar in terms of human capital. Between 55 and 57% of these three groups reported having a high school diploma or GED, and between 42 and 48% reported having a profession, trade, or skill. The only differences that emerged involved the housed not poor group. The housed not poor were more likely than expected to report having a high school diploma or GED ( $\chi^2 = 65.98$ ,  $df = 3$ ,  $P < 0.0001$ ) and to report having a profession, trade, or skill ( $\chi^2 = 51.86$ ,  $df = 3$ ,  $P < 0.0001$ ).

## ■ Substance use

Data on alcohol and drug use are presented in Table 3. The literally homeless had the most severe alcohol problems followed by the marginally housed followed by the two housed groups. For instance, the literally homeless were more likely than expected to report alcohol use in the past month ( $\chi^2 = 58.26$ ,  $df = 3$ ,  $P < 0.0001$ ) and to have an alcohol composite score greater than zero ( $\chi^2 = 58.59$ ,  $df = 3$ ,  $P < 0.0001$ ). This group also reported the highest composite score followed by the marginally housed followed by the two housed groups ( $F = 52.74$ ,  $df = 3$ ,  $P < 0.0001$ ). The literally homeless and marginally housed were also similar in some ways. Both the literally homeless and

marginally housed reported drinking more days in the past month than the two housed groups ( $F = 23.34$ ,  $df = 3$ ,  $P < 0.0001$ ) and were more likely than expected to report prior alcohol treatment ( $\chi^2 = 132.95$ ,  $df = 3$ ,  $P < 0.0001$ ).

Overall, the literally homeless and marginally housed had the most severe drug problems followed by the two housed groups. For example, the literally homeless reported the highest composite score followed by the marginally housed followed by the housed not poor (with the housed poor in between the marginally housed and housed not poor groups) ( $F = 22.45$ ,  $df = 3$ ,  $P < 0.0001$ ). The literally homeless and marginally housed were quite similar in terms of their cocaine and heroin use. Both the literally homeless and marginally housed reported greater likelihood of cocaine use as well as more days of cocaine use in the past month than the two housed groups (likelihood of cocaine use:  $\chi^2 = 227.73$ ,  $df = 3$ ,  $P < 0.0001$ ; days of cocaine use:  $F = 34.60$ ,  $df = 3$ ,  $P < 0.0001$ ). Conversely, the housed poor reported the highest number of days of heroin use followed by the literally homeless and marginally housed (with the housed not poor in between the housed poor and literally homeless/marginally housed groups) ( $F = 12.46$ ,  $df = 3$ ,  $P < 0.0001$ ).

## ■ Income and spending on substances

Data on income and spending on substances are presented in Table 3. Overall, the literally homeless

**Table 2** Economic and human capital by residential group

	Literally homeless (n = 654)		Marginally housed (n = 1,138)		Housed poor (n = 3,119)		Housed not poor (n = 718)		Total sample (N = 5,629)	
	Group A		Group B		Group C		Group D			
	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0
Income in past 30 days from										
Employment	17 <sup>f</sup>	549.59 ± 547.69 <sup>b,d</sup>	19 <sup>f</sup>	830.55 ± 1,117.50 <sup>a,c</sup>	19 <sup>f</sup>	398.02 ± 274.90 <sup>b</sup>	65 <sup>e</sup>	1,598.96 ± 1,137.68 <sup>a,b</sup>	24	885.46 ± 985.56
Unemployment benefits	1	464.44 ± 331.55 <sup>d</sup>	2	591.18 ± 318.28 <sup>d</sup>	2	408.12 ± 246.41	7 <sup>e</sup>	1,001.58 ± 455.17 <sup>a,b</sup>	2	639.09 ± 435.82
Welfare	22	244.59 ± 185.20 <sup>d</sup>	20	259.17 ± 190.48 <sup>d</sup>	26 <sup>e</sup>	293.85 ± 195.27	15 <sup>f</sup>	371.04 ± 298.43 <sup>a,b</sup>	23	288.64 ± 206.11
Pension/Soc Sec	20	613.29 ± 290.49 <sup>d</sup>	16	575.29 ± 272.55 <sup>d</sup>	16 <sup>f</sup>	548.80 ± 138.64	26 <sup>e</sup>	910.28 ± 531.85 <sup>a,b</sup>	18	630.95 ± 326.34
Partner/friends	21 <sup>f</sup>	212.10 ± 424.36 <sup>d</sup>	31	253.39 ± 368.42 <sup>d</sup>	30	162.91 ± 166.69	26	773.46 ± 721.86 <sup>a,b</sup>	29	256.24 ± 394.28
All legal sources	66 <sup>f</sup>	489.76 ± 448.99 <sup>c,d</sup>	69 <sup>f</sup>	560.53 ± 731.09 <sup>c,d</sup>	75	393.35 ± 257.51 <sup>a,b</sup>	100 <sup>e</sup>	1,596.46 ± 1,044.46 <sup>a,b</sup>	76	637.31 ± 728.21
Illegal sources	22 <sup>e</sup>	1,206.73 ± 1,337.23	12 <sup>e</sup>	1,011.17 ± 1,222.02	7 <sup>f</sup>	918.03 ± 1,301.27	3 <sup>f</sup>	616.84 ± 519.94	9	1,009.84 ± 1,276.01
Total income in past 30 days	77	762.76 ± 901.03 <sup>c,d</sup>	74 <sup>f</sup>	678.39 ± 921.79 <sup>c,d</sup>	78 <sup>f</sup>	462.53 ± 511.23 <sup>a,b</sup>	100 <sup>e</sup>	1,613.81 ± 1,062.58 <sup>a,b</sup>	80	720.98 ± 857.80
HS Ed/GED	55	—	57	—	56	—	72 <sup>e</sup>	—	58	—
Prof/Trade/Skill	48	—	42	—	44	—	60 <sup>e</sup>	—	46	—

Groups C and D were not compared on legal income because the groups were created, in part, using these variables.

Whenever a chi-square test identified a significant difference between groups, examination of the adjusted residuals specifically identified the particular groups with higher- or lower-than-expected percentages of individuals bearing the characteristic being compared

<sup>a</sup>HS Ed/GED high school education/general equivalency diploma; *Prof/Trade/Skill* profession/trade/skill; % (>0) percent of sample with scores greater than zero

<sup>b</sup>Significantly different from literal homeless group ( $P \leq 0.001$ )

<sup>c</sup>Significantly different from marginally housed group ( $P \leq 0.001$ )

<sup>d</sup>Significantly different from housed poor group ( $P \leq 0.001$ )

<sup>e</sup>Significantly different from housed not poor group ( $P \leq 0.001$ )

<sup>f</sup>Adjusted residuals greater than 3.3 (critical value for  $P \leq 0.001$ )

<sup>g</sup>Adjusted residuals less than -3.3 (critical value for  $P \leq 0.001$ )

Table 3 Substance use by residential group

	Literally homeless ( <i>n</i> = 654)		Marginally housed ( <i>n</i> = 1,138)		Housed poor ( <i>n</i> = 3,119)		Housed not poor ( <i>n</i> = 718)		Total sample ( <i>N</i> = 5,629)	
	Group A		Group B		Group C		Group D			
	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0
<b>Alcohol</b>										
Composite score	69 <sup>e</sup>	0.51 ± 0.28 <sup>b,c,d</sup>	59	0.45 ± 0.29 <sup>b,c,d</sup>	53	0.35 ± 0.28 <sup>b</sup>	58	0.34 ± 0.27 <sup>a,b</sup>	57	0.39 ± 0.29
Days use in past month	65 <sup>e</sup>	14.93 ± 10.17 <sup>c,d</sup>	56	12.78 ± 10.17 <sup>c,d</sup>	49	10.85 ± 10.12 <sup>a,b</sup>	53	10.15 ± 9.57 <sup>a,b</sup>	53	11.76 ± 10.18
No. of previous treatments	54 <sup>e</sup>	2.73 ± 3.16	45 <sup>e</sup>	2.35 ± 2.31	33 <sup>f</sup>	2.43 ± 2.56	33	2.40 ± 2.28	38	2.46 ± 2.59
<b>Drugs</b>										
Composite score	93	0.27 ± 0.11 <sup>b,c,d</sup>	87	0.24 ± 0.12 <sup>a,d</sup>	80	0.23 ± 0.12 <sup>a</sup>	73	0.21 ± 0.12 <sup>a,b</sup>	82	0.24 ± 0.12
Days heroin use in past month	24	18.92 ± 10.14 <sup>c</sup>	20	18.93 ± 10.35 <sup>c</sup>	25	22.84 ± 10.20 <sup>a,b</sup>	19	21.70 ± 10.13	23	21.57 ± 10.35
Days cocaine use in past month	72 <sup>e</sup>	17.91 ± 9.83 <sup>c,d</sup>	59 <sup>e</sup>	15.61 ± 10.24 <sup>c,d</sup>	45 <sup>f</sup>	13.35 ± 10.65 <sup>a,b</sup>	40 <sup>f</sup>	11.21 ± 9.83 <sup>a,b</sup>	50	14.44 ± 10.53
Days cannabis use in past month	35	11.40 ± 10.98	35	11.43 ± 10.74	28	12.19 ± 11.23	25	9.43 ± 9.75	30	11.60 ± 10.95
No. of previous treatments	75 <sup>e</sup>	3.33 ± 3.55 <sup>b,c</sup>	69	2.44 ± 2.30 <sup>a,d</sup>	62	2.64 ± 2.58 <sup>a,d</sup>	52 <sup>f</sup>	3.27 ± 3.25 <sup>b,c</sup>	64	2.76 ± 2.77
<b>Income and substances</b>										
\$ spent on all substances in past month	87 <sup>e</sup>	880 ± 1,079 <sup>b,c,d</sup>	82 <sup>e</sup>	586 ± 861 <sup>a,c</sup>	74 <sup>f</sup>	429 ± 686 <sup>a,b</sup>	75	506 ± 799 <sup>a</sup>	77	531.44 ± 813.57
\$ spent on alcohol in past month	58 <sup>e</sup>	112 ± 158 <sup>c</sup>	49	82 ± 133	42 <sup>f</sup>	61 ± 107 <sup>a</sup>	48	81 ± 141	46	75.80 ± 127.33
\$ spent on drugs in past month	81 <sup>e</sup>	861 ± 1,066 <sup>b,c,d</sup>	73 <sup>e</sup>	600 ± 869 <sup>a,c</sup>	64 <sup>f</sup>	461 ± 711 <sup>a,b</sup>	57 <sup>f</sup>	591 ± 850 <sup>a</sup>	67	563.41 ± 831.73

Whenever a chi-square test identified a significant difference between groups, examination of the adjusted residuals specifically identified the particular groups with higher- or lower-than-expected percentages of individuals bearing the characteristic being compared

% (>0) percent of sample with scores greater than zero

<sup>a</sup>Significantly different from literal homeless group ( $P \leq 0.001$ )

<sup>b</sup>Significantly different from marginally housed group ( $P \leq 0.001$ )

<sup>c</sup>Significantly different from housed poor group ( $P \leq 0.001$ )

<sup>d</sup>Significantly different from housed not poor group ( $P \leq 0.001$ )

<sup>e</sup>Adjusted residuals greater than 3.3 (critical value for  $P \leq 0.001$ )

<sup>f</sup>Adjusted residuals less than -3.3 (critical value for  $P \leq 0.001$ )

spent the most money on substances followed by the marginally housed followed by the housed poor (with the housed not poor in between the marginally housed and housed poor groups) ( $F = 49.59$ ,  $df = 3$ ,  $P < 0.0001$ ). The literally homeless and marginally housed were somewhat similar in terms of their spending on alcohol. Although only the literally homeless were more likely than expected to spend money on alcohol ( $\chi^2 = 65.79$ ,  $df = 3$ ,  $P < 0.0001$ ), the literally homeless spent the highest amount of money and the housed poor spent the least (with the marginally housed and housed not poor spending amounts in between) ( $F = 17.17$ ,  $df = 3$ ,  $P < 0.0001$ ). The literally homeless and marginally housed were rather different in terms of their spending on drugs. Although both the literally homeless and marginally housed were more likely than expected to report spending money on drugs ( $\chi^2 = 124.40$ ,  $df = 3$ ,  $P < 0.0001$ ), the literally homeless spent the most money followed by the marginally housed followed by the housed poor (with the housed not poor in between the marginally housed and housed poor groups) ( $F = 33.88$ ,  $df = 3$ ,  $P < 0.0001$ ).

Total monthly income was related to amount of money spent on substances. For the marginally housed group, amount of money spent on alcohol was positively related to total income ( $F = 19.69$ ,  $\beta = 0.02$ ,  $df = 2$ ,  $P < 0.0001$ ). For all four groups, amount of money spent on drugs was positively related to total income (literally homeless:  $F = 136.54$ ,  $\beta = 0.50$ ,  $df = 1$ ,  $P < 0.0001$ ; marginally housed:  $F = 216.43$ ,  $\beta = 0.37$ ,  $df = 1$ ,  $P < 0.0001$ ; housed poor:  $F = 240.15$ ,  $\beta = 0.33$ ,  $df = 1$ ,  $P < 0.0001$ ; housed not poor:  $F = 12.51$ ,  $\beta = 0.09$ ,  $df = 1$ ,  $P = 0.004$ ).

## ■ Mental health problems

Data on mental health problems are presented in Table 4. The literally homeless clearly had more severe mental health problems than the other groups. More specifically, the literally homeless were more likely than expected to report a prior inpatient psychiatric hospitalization ( $\chi^2 = 67.57$ ,  $df = 3$ ,  $P < 0.0001$ ) and to have a composite score greater than zero ( $\chi^2 = 116.64$ ,  $df = 3$ ,  $P < 0.0001$ ). Interestingly, the housed poor reported fewer mental health problems; they were less likely than expected to have a composite score greater than zero ( $\chi^2 = 116.64$ ,  $df = 3$ ,  $P < 0.0001$ ) and had lower composite scores than the literally homeless and marginally housed ( $F = 9.76$ ,  $df = 3$ ,  $P < 0.0001$ ).

## ■ Social support

Data on social support are also presented in Table 4. The literally homeless had the least support, the housed not poor had the most support, and the marginally housed and housed poor groups were in between. For instance, the literally homeless were less likely than expected to report spending their free time with others ( $\chi^2 = 295.90$ ,  $df = 3$ ,  $P < 0.0001$ ) and to have at least one close friend ( $\chi^2 = 51.86$ ,  $df = 3$ ,  $P < 0.0001$ ). This group also reported having fewer categories of close relationships than the other three groups ( $F = 24.75$ ,  $df = 3$ ,  $P < 0.0001$ ). The housed not poor were more likely than expected to be married ( $\chi^2 = 57.87$ ,  $df = 3$ ,  $P < 0.0001$ ) and to have at least one close friend ( $\chi^2 = 51.86$ ,  $df = 3$ ,  $P < 0.0001$ ).

**Table 4** Mental health problems and social support by residential group

	Literally homeless ( <i>n</i> = 654)		Marginally housed ( <i>n</i> = 1,138)		Housed poor ( <i>n</i> = 3,119)		Housed not poor ( <i>n</i> = 718)		Total sample ( <i>N</i> = 5,629)	
	Group A		Group B		Group C		Group D			
	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0	% (>0)	Mean ± SD for those >0
<b>Psychiatric</b>										
Ever inpatient MH hospitalization (%)	30 <sup>e</sup>	–	23	–	17	–	17	–	20	–
Ever outpatient MH treatment (%)	29	–	27	–	22	–	23	–	24	–
Psychiatric composite score	56 <sup>e</sup>	0.40 ± 0.18 <sup>c</sup>	46	0.39 ± 0.18 <sup>c</sup>	35 <sup>f</sup>	0.35 ± 0.19 <sup>a,b</sup>	36	0.36 ± 0.19	40	0.37 ± 0.19
<b>Social support</b>										
Currently married (%)	22	–	18 <sup>f</sup>	–	23	–	33 <sup>e</sup>	–	23	–
Spend free time with family or friends (vs. alone) (%)	42 <sup>f</sup>	–	69	–	75	–	77	–	70	–
No. of categories of close relationships	90	2.55 ± 1.03 <sup>b,c,d</sup>	93	2.83 ± 1.00 <sup>a</sup>	97	2.97 ± 0.98 <sup>a</sup>	97	2.92 ± 1.02 <sup>a</sup>	96	2.89 ± 1.00
Number of close friends	52 <sup>f</sup>	2.58 ± 2.00	65	2.74 ± 2.04	62	2.70 ± 2.02	73 <sup>e</sup>	2.97 ± 2.12	63	2.73 ± 2.04

Whenever a chi-square test identified a significant difference between groups, examination of the adjusted residuals specifically identified the particular groups with higher- or lower-than-expected percentages of individuals bearing the characteristic being compared

% (>0) percent of sample with scores greater than zero

<sup>a</sup>Significantly different from literal homeless group ( $P \leq 0.001$ )

<sup>b</sup>Significantly different from marginally housed group ( $P \leq 0.001$ )

<sup>c</sup>Significantly different from housed poor group ( $P \leq 0.001$ )

<sup>d</sup>Significantly different from housed not poor group ( $P \leq 0.001$ )

<sup>e</sup>Adjusted residuals greater than 3.3 (critical value for  $P \leq 0.001$ )

<sup>f</sup>Adjusted residuals less than -3.3 (critical value for  $P \leq 0.001$ )



## Discussion

The purpose of this study was to examine individual characteristics of persons with substance use problems in various residential situations. We hypothesized that (1) income is positively associated with money spent on substances and (2) literally homeless and marginally housed clients have more severe income, human capital, substance use, mental health, and social support problems than housed clients.

We found two points of this investigation particularly notable; to our knowledge, this is the only non-Veteran's Administration national sample to highlight these issues. This study emphasizes that homelessness is a sizable problem nationally among urban substance abuse treatment seekers. Almost one-third (32%) of this sample reported experiencing either literal homelessness or marginal housing (i.e., being "doubled up") in the month prior to treatment admission. This creates an added layer of treatment/aftercare complication. Given the strong role environment plays in substance abuse, if clients are discharged to the streets or to homeless shelters (particularly wet shelters) after treatment, they are likely to return to using substances. Generally, substance abuse treatment centers have few resources and already struggle to provide in-house treatment; many substance abuse treatment centers do not have the resources to provide comprehensive discharge planning and aftercare services. This study also confirms that homeless substance abuse treatment seekers have substantial incomes. Two-thirds of the literally homeless clients reported legal income. Of all clients reporting any income, the literally homeless reported income that was \$100–300 *higher* than that of the marginally housed (not statistically significant) and housed poor (statistically significant) groups. This suggests that homelessness is not solely the result of lack of income among literally homeless substance abuse treatment seekers. Although the causality is unclear, the money spending decisions of chronic substance abusers may affect whether they become (and/or remain) homeless. With only 30% of the literally homeless in this sample reporting a prior inpatient mental health hospitalization and 29% reporting prior outpatient mental health treatment (the total is 56%), this argument is bolstered. These mental health rates also suggest that a substantial proportion of this group would not be eligible for traditional Housing First program models [75].

Our first hypothesis was supported. Within the four residential groups, the more money clients obtained, the more they spent on drugs, which is consistent with Devine and Wright's findings [22]. For each additional dollar the clients in this study acquired, the literally homeless spent half of it on drugs. The marginally housed and housed poor spent approximately one-third of it on drugs, and the housed not poor spent only 9 cents of it on drugs. However, only the mar-

ginally housed spent more money on alcohol as their income increased. The literature is inconsistent in this area. One investigation found that money spent on alcohol and drugs increased as income increased for all persons [63]. Another investigation, which was a simulation, found that money spent on heroin and cocaine (but *not* cannabis, alcohol, and valium) increased as income increased [56].

Our second hypothesis was also supported. The literally homeless had the most severe psychosocial problems, accompanied by the marginally housed in some problem areas. Consistent with Devine and Wright's work [22], the literally homeless reported a variety of income amounts from diverse sources. However, unlike Devine and Wright's work, the majority of the income reported in our study was from legal sources. Yet, still the literally homeless and marginally housed were more likely than the two housed groups to report any illegal income. Perhaps the illegal income figures were underreported in our sample because clients did not feel as comfortable disclosing this income to intake counselors as they might have in a research interview. Another inconsistency was the amount of income clients reported. Of the literally homeless reporting any income in the past month, the average was \$763; of all literally homeless persons, the average was \$586. Both of these numbers are considerably lower than Devine and Wright's \$899 figure. Considering that the data in our study were collected a decade after Devine and Wright's, this difference is even more substantial. This could occur for several reasons, including clients not earning as much as they used to and fewer clients receiving Social Security Disability income (because alcohol and drug abuse no longer qualify). Yet, very few differences emerged between the literally homeless and marginally housed on these variables. It is interesting to note that the literally homeless reported spending more money on substances (\$880) than they reported total income from all sources (\$763).

As expected, rates of high school education or GED were similar to Devine and Wright's study [22]; however, rates of having a profession/trade/skill were considerably lower in our study (75% vs. 46%). The U.S. economy is undergoing substantial changes, including (1) the continued shift from a manufacturing to a service economy, (2) a newer shift to the information age, and (3) globalization/offshoring of technical positions [8]. In light of these changes, it makes sense that fewer people in the total sample have acquired what they consider to be trades/skills. We did not find in our study any differentiation between the literally homeless, marginally housed, and housed poor based on education or having a trade or skill. These findings (in combination with the findings about spending money on substances) lend support to a slight variation of Devine and Wright's hypothesis—that chronic drug (*but not alcohol*) use is an equalizer—that chronic drug use problems diminish

the variation in returns individuals receive for the various levels of income and human capital they have.

As is consistent with the literature [34, 50, 54–55], alcohol and cocaine use appear to be the major substance problems. In this sample, alcohol problems differentiated the literally homeless from the other groups, which is consistent with Kertesz and colleagues' work [34]. Consistent with Orwin and colleagues' study, in our sample, cocaine problems differentiated the literally homeless and marginally housed from the two housed groups. We were, however, puzzled by the finding that the housed poor and housed not poor heroin users reported more frequent use than the literally homeless and marginally housed. This is consistent with Orwin and colleagues' finding [54–55]; nevertheless, investigations with more idiosyncratic samples have found more heroin use amongst the homeless [3, 80].

If, as this and other studies have shown, substance abuse is more severe among the homeless, it is logical that homeless clients would have prior treatment episodes. Another possible explanation for the greater number of treatment episodes among the literally homeless is that treatment providers may be more likely to admit homeless individuals to help “get them off the streets” [29]. A final possibility is malingering. Clients might fake substance abuse symptoms serious enough to warrant inpatient or residential treatment in order to temporarily escape undesirable living situations. It is not uncommon for individuals to malingering suicidal and other psychiatric symptoms in hopes of gaining admission to an inpatient unit or for other gain [59–61].

In this study, the literally homeless clearly had the most severe mental health problems, which is consistent with Kertesz and colleagues' work [34] yet contrary to Orwin and colleagues' work [54–55]. Because inpatient mental health hospitalizations tend to be reserved for more severe cases and no differences emerged in our data between the four groups on outpatient care, it is possible we have detected the chronically mentally ill. Another possible explanation is that only three indicators were used to assess mental health, and two of them are part of the algorithm comprising the composite score.

As expected, the literally homeless had less social support, and the housed not poor had more social support. Shinn and colleagues [68] hypothesize that the marginally housed slowly drain and wear out their social support networks, with some eventually becoming homeless. One distinguishing characteristic between the literally homeless and marginally housed groups in this study is the literally homeless were less likely to receive income from family or friends. Additionally, the marginally housed were significantly younger than the literally homeless, adding additional support to Shinn's idea.

In addition to lending support to a variation of Devine and Wright's substance abuse equalizer theory

and to Shinn and colleague's social support theory, this study raises another issue. The scientific literature demonstrates that people of color and men are over-represented among the homeless [32]. In this sample, men of color and nonhispanic men were disproportionately literally homeless. Yet, no differences between the literally homeless and marginally housed emerged in human capital, and only two slight differences emerged in income. (Similar proportions of the literally homeless and marginally housed reported income from employment, but of those reporting such income, the marginally housed reported higher amounts than the literally homeless. Notice that both groups reported similar amounts of income from all legal sources.) Therefore, it is possible that among urban substance abusing treatment seekers, race and sex may play a larger role in predicting homelessness than income or severity of substance use.

The results must be interpreted in the context of several study limitations. The study was cross-sectional; no longitudinal data were collected, so no statements of causality can be made. The sample was a treatment sample; individuals not seeking substance abuse treatment may or may not have the same characteristics. We restricted our sample to programs located in urban settings; programs in rural settings may yield different results. DENS collected information only from individuals receiving substance abuse treatment in specialty care settings; individuals treated in nonspecialty settings may be different. We do know, however, that over 2 million people receive substance abuse treatment in specialty care settings in the U.S. every year, and an unknown number receive treatment from primary care physicians [44]. Although the sample was large and recruited from many treatment centers across the U.S., we do not know how representative the sample is of the national population of clients entering substance abuse treatment programs. Interviews were conducted as part of intakes by professionals at substance abuse treatment programs; however, these clinicians were trained by researchers on the administration of the ASI and its clinical applications. Questions identifying clients as literally homeless and marginally housed were not tested for reliability and validity specifically with this population in this type of interview; yet, similar questions assessing homelessness will be included in the ASI 6 and have been found to be reliable [45]. We also used approximations to classify clients as housed poor and housed not poor.

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## Conclusion

This investigation demonstrates that homelessness is a substantial problem nationally among urban substance abuse treatment seekers and is not solely the result of lack of income for the addicted homeless. This investigation also provides support for the ideas that (1) chronic drug use problems may equalize whatever

income and human capital advantages homeless persons otherwise would have and (2) the marginally housed slowly drain their social support networks before becoming literally homeless. It is clear that the literally homeless have the most severe psychosocial problems, and the marginally housed are more similar than different to them in their alcohol and drug use; this suggests this group is at risk of becoming literally homeless. Therefore, in addition to intervening with homeless persons—assisting them in attaining and maintaining stable housing and socioeconomic well-being, practitioners should consider targeting persons who are marginally housed. It appears they are receiving more inpatient substance abuse treatment than the housed groups, but practitioners should also work to bolster and provide respite for the marginally housed's social support networks because these very networks appear to be what is preventing the marginally housed from becoming literally homeless. Future research should examine the marginally housed as an at-risk group for homelessness.

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