

# Posthumously Assessing a Homeless Population: Services Use and Characteristics

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**Objective:** Data on services use, characteristics, and geographic distribution of homeless individuals who died in Philadelphia from 2009 to 2011 provided perspective on assessments of the homeless population that rely on conventional counts and surveys.

**Methods:** Data from the City of Philadelphia Medical Examiner's Office were used to parse homeless decedents into three groups on the basis of use of homelessness services (known users, occasional users, and nonusers), and differences among the groups were assessed by using descriptive and multivariate methods.

**Results:** Of 141 adult decedents, 49% made substantial use of the homelessness services system (known users), 27% made occasional use of these services (occasional users),

and 24% had no record of use of homelessness services (nonusers). Compared with known users, nonusers and occasional users were less likely to have had a severe mental illness diagnosis or to have received either disability benefits or Medicaid coverage and were more likely to be white. Nonusers and occasional users were also more likely than known users to have died in outlying parts of the city.

**Conclusions:** More conventional homeless surveys and enumerations miss a substantial portion of the homeless population. Including these "hidden homeless" persons would alter perceptions about the composition of Philadelphia's homeless population, lowering estimates of the incidence of psychiatric disability and increasing estimates of racial diversity.

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Efforts to count and characterize the homeless population have a long and contentious history (1,2). Subsequently, more systematic surveys and estimates of the homeless population have produced less polemic results (3,4), and the U.S. Department of Housing and Urban Development's (HUD) Annual Homelessness Assessment Report (5) has become the authoritative estimate on homeless population size, both on a given night (point in time [PIT]) and over a year (annual prevalence). However, tension persists between policy makers, who rely on enumerations and surveys to gauge the extent of homelessness, and advocates for the homeless, who maintain that conventional enumeration and survey approaches minimize and misinform measures to address homelessness (6,7).

Evidence supports the advocates' contention. Problems with defining, sampling, and finding homeless persons are inherent in current enumeration and survey methods, especially if the goal is to include homeless persons who eschew the use of shelter and homelessness services (8–10). A general population sampling approach conducted in Los Angeles found that adding the unsheltered homeless persons who were missed in a PIT enumeration increased the estimated size of the total population by over 20% (11). Ethnographic studies of the homeless population provide rich

accounts as to why the homeless population is impervious to being systematically counted (12–14). Taken together, there is a general acknowledgment that a segment of the homeless population is invariably missed in even the most comprehensive studies (15).

However, the extent to which the uncounted homeless population differs in composition from homeless persons who are more accessible is less clear (16). Some studies have concluded that differences between the two groups are not great enough to warrant the additional resources needed to include more individuals who do not use services for homeless persons (17,18), whereas other studies have found substantial differences between the two groups (19–27). The body of literature in the latter category is small, and the findings of the studies vary, precluding systematically describing how "hidden homelessness" differs from its more visible (and counted) counterpart. Alternately, differences between these two groups may not be systematic, instead varying on the basis of local geography, services configuration, and other factors (16).

In this study, we examined differences in a population of homeless persons on the basis of the likelihood of being included in a conventional, services-based survey. We used a unique data set of decedents identified as homeless at their

point of death to assess differences in characteristics, service use patterns, and geographic distribution based on the extent of the decedents' use of services. This comparison provided a basis for determining a more comprehensive understanding of a local homeless population and how this information would affect perceptions of the composition and needs of this population.

## METHODS

### Data

Data on homeless decedents were collected by the City of Philadelphia Medical Examiner's Office (MEO) under the auspices of its Homeless Death Review Team (HDRT). The HDRT, one of three fatality review programs administered by the MEO, started in 2009 and reviews the cause of death of all Philadelphia residents who were homeless at the time of death (28). The HDRT determines a decedent to be homeless if his or her living situation immediately prior to death met HUD's criteria for literal homelessness (29). On a quarterly basis, representatives from homelessness services providers, hospitals, behavioral health providers, municipal social services and criminal justice agencies, universities, and other agencies meet to individually review all identified deaths (usually between 12 and 15 per quarter), and each agency's involvement with each decedent. These data on services involvement augment data on decedent circumstances that were collected by the MEO. Ultimately, the HDRT seeks to use this review process as a means to prevent future premature deaths and help improve homelessness services in Philadelphia.

The data from the HDRT were abstracted into a person-level data set consisting of 143 decedents, with data elements covering decedent characteristics, services use, and circumstances of death. Identifying information was omitted from the data set available for study. Of these 143 fatalities, 43 died in 2009, 47 in 2010, and 53 in 2011.

### Analysis Methods

We parsed the 143 decedents into three groups on the basis of their use of shelters and their contacts with homeless outreach services. Those who had accrued a lifetime total of more than 30 days in homeless shelters administered by the City of Philadelphia's Office of Supportive Housing (OSH) were considered known users of homelessness services. Persons with either a record of staying in city shelters for less than 30 days (but more than one day) or a record of

**TABLE 1. Comparison of characteristics of nonusers and occasional users of homelessness services versus known users of homelessness services**

Characteristic	Nonusers (N=34)		Occasional users (N=38)		Known users (N=69)		Nonusers vs. known users		Occasional users vs. known users	
	N	%	N	%	N	%	AOR <sup>a</sup>	95% CI	AOR <sup>a</sup>	95% CI
Male (reference: female)	27	79	34	90	60	87	.5	.1–2.3	.8	.2–3.9
Age (reference: ≥61)										
18–40	11	32	4	11	7	10	6.8	1.1–45.6	2.8	.4–18.8
41–50	10	29	8	21	21	30	1.5	.3–7.1	1.2	.3–4.8
51–60	7	21	16	42	22	32	2.8	.6–13.8	4.9	1.3–18.5
≥61	6	18	10	26	19	28				
White (reference: nonwhite)	23	68	20	53	14	20	13.2	4.2–41.4	8.6	3.0–24.6
Hispanic (reference: non-Hispanic)	3	8	3	8	0	0	na <sup>b</sup>	—	na <sup>b</sup>	—
Veteran (reference: nonveteran)	2	6	8	21	14	20	.4	.1–2.3	1.1	.3–3.7
Behavioral health morbidity (reference: no morbidity)										
Severe mental illness	15	44	18	47	52	75	.09	.03–.3	.1	.03–.3
Alcohol abuse or dependency	24	71	25	66	46	67	2.7	.9–8.7	1.9	.7–5.5
Illicit drug abuse or dependency	20	59	17	45	43	63	.5	.1–1.6	.3	.1–1.0

<sup>a</sup> Adjusted odds ratios. Model controlled for age, race, ethnicity, gender, and veteran status.

<sup>b</sup> Frequencies were not large enough to yield valid model results.

contacts with outreach services provided by the Outreach Coordination Center, the agency in Philadelphia that coordinates communications and compiles data from the city's street outreach teams, were considered occasional users of homelessness services. Decedents in this category had used homelessness services but at a distinctively low threshold. The third category, nonusers of homelessness services, had no record of either shelter use or outreach contact despite their homelessness. Nonusers of homelessness services, who were unknown to homelessness services providers, would be the least likely individuals in the homeless population to have been covered in any enumeration or survey.

We compared these three groups on individual characteristics, services use, and circumstances of death. Differences in individual characteristics across the groups were determined on the basis of a multinomial logistic regression model that simultaneously controlled for the other individual characteristics, including demographic characteristics (gender, age [four categories], race [white and nonwhite], and ethnicity [Hispanic and non-Hispanic]) and veteran status. We also included basic measures of substance abuse (alcohol abuse or dependency and illicit drug abuse) and severe mental illness (psychoses and affective disorders) among individual characteristics but did not control for these characteristics in assessing differences. These behavioral health comorbidity measures were abstracted from available health care (including behavioral health) records.

In a similar manner, differences among the groups in measures of health care benefits and services use, mental health services use, and legal involvement were derived from a series of multinomial logistic regression models that controlled for demographic characteristics and veteran status. Health care benefits and services included coverage under

**TABLE 2. Comparison of services and benefits received by nonusers and occasional users of homelessness services versus known users of homelessness services**

Variable	Nonusers (N=34)		Occasional users (N=38)		Known users (N=69)		Nonusers vs. known users		Occasional users vs. known users	
	N	%	N	%	N	%	AOR <sup>a</sup>	95% CI	AOR <sup>a</sup>	95% CI
General health care services and benefits										
Medicaid	16	47	18	47	50	73	.3	.1–.8	.3	.1–.7
Medicare	4	12	4	11	12	17	.8	.2–3.4	.5	.1–2.0
SSI or SSDI <sup>b</sup>	6	18	11	29	33	48	.3	.09–.8	.4	.2–.9
Hospital ED visit <sup>c</sup>	7	21	16	42	41	59	.1	.04–.4	.4	.2–.9
Mental health services										
Crisis response center stay	8	24	10	26	32	46	.2	.1–.6	.3	.09–.7
Intensive case management	2	6	5	13	21	30	.2	.04–.9	.3	.1–1.1
Legal involvement										
Arrest	21	62	29	76	54	78	.4	.1–1.0	.8	.3–2.2
Incarceration	14	41	17	45	29	42	1.0	.4–2.5	1.3	.5–3.0

<sup>a</sup> Adjusted odds ratios. Model controlled for age, race, gender, and veteran status.

<sup>b</sup> SSI, Supplemental Security Income; SSDI, Social Security Disability Insurance

<sup>c</sup> ED, emergency department

Medicaid and Medicare, disability benefits receipt (Supplemental Security Income [SSI] or Social Security Disability Insurance [SSDI]), and emergency department (ED) use at participating hospitals. Mental health services included receipt of intensive case management (ICM) services or a crisis response center stay. Except for ED use, the presence of these services and benefits were determined on the basis of records from the City of Philadelphia's Department of Behavioral Health and Intellectual disability Services. Arrest and incarceration data were determined on the basis of City of Philadelphia police and jail system records. More information on agencies providing information on these services is available from HDRT's initial annual report (28).

Finally, results from three basic measures of circumstances of death are presented: year, manner, and place of death. The MEO categorized manner of death as accident, homicide, natural, and suicide. Place of death information was limited to the zip code in which the death occurred. Place of death was mapped with geographic information systems (GIS) software to assess geographic differences among the groups.

This study was approved by institutional review boards of the City of Philadelphia, Thomas Jefferson University Hospital, and the University of the Sciences. Statistical analyses were performed in SAS, version 9.3 (30), and GIS analyses were performed by using ArcGIS (31).

## RESULTS

Our final sample consisted of 141 homeless decedents. Two decedents (a two-month-old and a one-year-old) were excluded from analyses because of their young ages at death. Just under half (N=69, 49%) of the decedents were classified as known users, 34 (24%) were classified as nonusers, and 38 (27%) were classified as occasional users.

The majority of decedents among the known users, non-users, and occasional users were male (87%, 79%, and 90%, respectively) (Table 1). The proportion of decedents between the ages of 51 and 60 was higher among the occasional users compared with the known users (42% and 32%, respectively), and the proportion of decedents in the 18–40 age category was higher among nonusers compared with known users (32% and 10%, respectively). Compared with known users, the nonuser and occasional-user groups contained significantly higher proportions of white decedents (20%, 68%,

and 53%, respectively). Virtually all decedents who were not white were black, and in all three groups fewer than 10% of the decedents were of Hispanic ethnicity. There were fewer veterans among the nonuser group (6%) compared with the known (20%) and occasional (21%) users, but this difference was not statistically significant after the analyses controlled for age.

The proportion of decedents with severe mental illness was high among all three groups (Table 1), but it was significantly higher among known users (75%) compared with nonusers (44%) and occasional users (47%). In all three groups, roughly two-thirds had a documented history of alcohol abuse or dependency, and roughly half had a documented history of illicit drug abuse or dependency, with no significant differences across categories for these two substance use fields.

Table 2 shows the extent of services use and receipt of benefits across the three groups. Compared with nonusers and occasional users, known users comprised a significantly higher proportion of individuals covered by Medicaid (47%, 47%, and 73% respectively). Much lower proportions in all three groups had Medicare coverage. Compared with nonusers and occasional users, significantly higher proportions of known users received disability benefits (SSI or SSDI) (18%, 29%, and 48%, respectively) and ED care (21%, 42%, and 59%, respectively).

Table 2 also shows disparities in measures of mental health services. The proportion of decedents with a record of receiving crisis care for a mental health emergency (crisis response center stay) was significantly higher in the known-user group compared with the nonuser and occasional-user groups (46%, 24%, and 26%, respectively). Similarly, a significantly higher percentage of known users received ICM services compared with nonusers and occasional users (30%, 6%, and 13%, respectively).

As for the measures of legal involvement, there were high levels of arrest and jail incarceration among the decedents, with no significant differences across the three user groups (Table 2).

Table 3 presents descriptive statistics of the circumstances of death for decedents, including year, manner, and location of death. The overall annual number of homeless decedents increased modestly over each of the three years of the study period, from 43 in 2009 to 46 in 2010 and 52 in 2011, with the annual number of deaths in each user group fluctuating more haphazardly. The most frequent manner of death was natural death (47%) followed by accidents (43%). Manner of death varied across user groups—half of deaths among nonusers (50%) were considered accidental, and 51% of known users died from natural causes. There were variations across user groups in location of death, with the starkest differences occurring in Center City, the area of greatest services concentration. Fully 35% of known users and 15% of nonusers died there. Conversely, 10% of known users and 27% of nonusers died in the more remote northeast and northwest portions of Philadelphia, areas with low concentration of homelessness services.

Alcohol or substance abuse was identified as either a primary or a secondary cause of death for 29 (21%) deaths in this study (data not shown). These 29 deaths fell into two of the categories for cause of death shown in Table 3: 13 were among the 60 accidental deaths (22%) and 16 were among the 66 natural deaths (24%). The 21% of decedents for whom alcohol and substance abuse contributed to cause of death contrasts with much higher incidence rates of drug abuse—or alcohol abuse—related diagnoses given to the decedents when they were alive. There were no statistically significant differences between decedents whose deaths were drug or alcohol related and other decedents for any demographic factors, diagnosis of severe mental illness, criminal justice measures, history of ICM services, or history of ED visits.

## DISCUSSION

Out of 141 homeless adults who died in Philadelphia between 2009 and 2011, a slight majority either had no contact (24%) or had minimal contact (27%) with the homelessness service system. Based on the results, it appears likely that a substantial proportion of Philadelphia's homeless decedents experienced hidden homelessness. Regardless of the extent to which these decedents are representative of the homeless population, the findings indicate that a substantial proportion of homeless persons are unlikely to be included in homelessness enumerations and surveys, even in a services-rich city. Beyond that, distinct differences emerged post-mortem between decedents who likely would and would not have been included in surveys and enumerations. These differences have implications for the homeless population.

Differences between known users and occasional users and nonusers in the place of death reflect the uneven distribution of homelessness services in Philadelphia, and

**TABLE 3. Circumstances of death among nonusers, occasional users, and known users of homelessness services**

Circumstance	Total (N=141)		Nonusers (N=34)		Occasional users (N=38)		Known users (N=69)	
	N	%	N	%	N	%	N	%
<b>Year</b>								
2009	43	30	12	35	13	34	18	26
2010	46	33	7	21	16	42	23	33
2011	52	37	15	44	9	24	28	41
<b>Manner</b>								
Accident	60	43	17	50	16	42	27	39
Homicide	10	7	3	9	3	8	4	6
Natural	66	47	13	38	18	47	35	51
Suicide	4	3	1	3	1	3	2	3
Undetermined	1	1	0	0	0	0	1	1
<b>Location</b>								
Center City	36	26	5	15	7	18	24	35
North	42	30	12	35	10	26	20	29
South	5	4	1	3	2	5	2	3
West	25	18	4	12	8	21	13	19
Northwest or northeast	26	18	9	27	10	26	7	10
Unknown	7	5	3	9	1	3	3	4

explanations for the inequality of resources are likely to include both unequal access to services and self-selection with regard to use of these services. Most of the areas of the city that have few homeless services were also sparsely canvassed in the unsheltered portion of Philadelphia's PIT count (32). This underscores a more general weakness of local PIT enumerations, which lack the resources to canvass broad areas of local jurisdictions that can contain sparse, but perhaps significant, numbers of homeless persons in well-concealed locations (8,11).

Given that 68% of nonusers were white (compared with 20% of known users), the racial disparity found in shelter populations may lead to underestimates of the extent to which whites experience homelessness. Blacks are disproportionately represented among users of homelessness services, both generally (33,34) and locally in the shelter system under Philadelphia's OSH (35). Studies in other localities have also found overrepresentations of whites (21,24) and Hispanics (23) among the unsheltered homeless population. Based on this evidence, it appears that shelters disproportionately draw black users, whereas white individuals who are homeless more often choose to stay in outlying areas of the city that are predominately white, where they are less likely to be noticed as homeless. Without further research on the precise mechanisms behind the findings, we can only speculate that the racial segregation that is endemic to housing in the United States (36) also exists among persons without housing.

Another difference between groups concerns age and level of disability. Compared with nonusers and occasional users of homelessness services, known users, as a group, died older. Furthermore, they had higher levels of disability (as measured by receipt of SSI and SSDI), mental health services use, and severe mental illness diagnoses. Finally, a higher



proportion of known users died from natural causes. One way to interpret these findings is to conclude that older and more disabled members of the homeless population are more likely to seek out homelessness and other services. This could create a distorting effect by increasing the visibility of homeless persons with general medical and behavioral health problems, who may not represent a majority of persons experiencing homelessness.

The study had limitations. Not all homeless decedents fall under the jurisdiction of the Philadelphia MEO, and some area hospitals fail to report all homeless deaths to the HDRT coordinators. As a result, the HDRT is likely to miss some deaths of homeless individuals. It is also likely that an unknown number of persons who are homeless die in circumstances that obscure the fact that they were homeless, but even so, it is unlikely to have added many individuals to the study group. Although we found distinct differences among persons who had varying use of homelessness services, these differences may be understated because of the limited number of decedents in the three years for which records were available. Some differences among the groups will be overstated, however, if persons who are less likely to access homeless services will also be less likely to access other services, despite the broader availability of health-related and behavioral health services. Alternately, nonusers of services may access more grassroots providers, such as small, faith-based groups that provide services to people in outlying areas of our city and who don't coordinate services with the larger provider networks. Because decedents were classified as homeless at time of death, formerly homeless decedents were not accounted for in this study. Thus individuals with a history of long-term homelessness who died in places such as skilled nursing facilities would not have been included in this study. Finally, place of death may not be indicative of where a decedent had spent a majority of his or her life, if the decedent had migrated between neighborhoods of the city.

Finally, this was not a mortality study. Despite two provisos, this was a study that used death data to gain insights on the characteristics and composition of Philadelphia's homeless population. First, this group of persons who were homeless at their deaths were not representative of any living homeless population. This caveat precludes directly applying findings from the decedents to homeless populations, especially because many of the decedents appeared unlikely to have been included in any enumeration. Second, Philadelphia's homeless population and homelessness services configurations are different, in many respects, from homeless populations and homelessness services in other jurisdictions. This variety limits our ability to draw general conclusions about homeless populations beyond the general observations we make here.

## CONCLUSIONS

In this study, we were able to identify homeless individuals, albeit posthumously, who were hidden from enumerations

and surveys by virtue of their lack of services use. These hidden homeless comprised a substantial proportion of the decedents and were fundamentally different in terms of geographical distribution, race, and disability from known users of services. The degree to which the decedents were representative of their homeless counterparts is unknown, but these findings indicate that, at least among Philadelphia's homeless population, including the hidden homeless population in enumerations not only would increase the population size—perhaps by as much as one-third—but would also substantially alter perceptions of racial composition and dynamics related to disability among the homeless population. These findings highlight the value of using different enumeration and survey approaches to get a more multifaceted view of the homeless population.

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