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The Impact of Shelter Use and Housing Placement on Mortality Hazard for Unaccompanied Adults and Adults in Family Households Entering New York City Shelters: 1990–2002

Stephen Metraux, Nicholas Eng, Jay Bainbridge, and Dennis P. Culhane

ABSTRACT *This study examines mortality among New York City (NYC) homeless shelter users, assessing the relationships between mortality hazard and time in shelter, patterns of homelessness, and subsequent housing exits for both adults in families and single adults. Administrative records from the NYC shelter system were matched with death records from the Social Security Administration for 160,525 persons. Crude mortality rates and life tables were calculated, and survival analyses were undertaken using these data. Life expectancy was 64.2 and 68.6 years for single adult males and single adult females, respectively, and among adults in families, life expectancy was 67.2 and 70.1 years for males and females, respectively. For both groups, exits to stable housing (subsidized or non-subsidized) were associated with reduced mortality hazard. And while mortality hazard was substantially reduced for the time adults were in shelters, extended shelter use patterns were associated with increased mortality hazard. Differences between single homelessness and family homelessness extend to disparities in mortality rates. Although causal links cannot be established here, results suggest that, for both subgroups of the homeless population, prompt resolution of homelessness and availability of housing interventions may contribute to reduced mortality.*

KEYWORDS *Homelessness, Housing, Mortality*

INTRODUCTION

A modest body of literature now exists which finds mortality rates among single adult homeless populations to be anywhere from two to ten times higher than that of the general population.[1–9] However, it is unclear from these studies how much homelessness actually contributes to increased mortality, as homeless populations also have a range of other characteristics that are associated with elevated mortality rates. US homeless populations, for example, are universally impoverished and disproportionately African-American, characteristics that are both independently associated with elevated mortality hazard.[10] In New York City (NYC), this overlap

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takes on spatial dimensions, as research identifies Harlem both as a neighborhood that disproportionately generates homelessness,[11] and has elevated mortality rates[12] to the point where, according to one study, men in Bangladesh had better prospects of reaching age 65 than African-American men in Harlem.[13] The homeless population also features other characteristics that are associated with increased mortality hazard, including poorer overall health;[14] mental illness;[15–17] substance abuse;[18–21] incarceration;[22–24] and adverse childhood experiences.[25,26] Pointing to the overrepresentation of these conditions, however, must also come with the acknowledgment that these conditions are invariably found only among minorities of the homeless population.

With the exception of one study, the research on mortality in homeless populations does not address how much mortality occurs in direct conjunction with being homeless, as compared with how much occurs during the risk period where the group being followed is not homeless. Most people who are homeless make lasting exits from homelessness after only a relatively short time, so studies that follow a homeless population for an extended risk period will quickly reach a point where most in the study group are no longer homeless.[27,28] When this heterogeneity gets overlooked, homelessness inadvertently becomes an enduring "trait" associated with study group members, rather than a time-limited "state" of extreme poverty.[29,30]

The one study which differentiates mortality hazard between time spent in shelters and time outside of shelters found that homelessness was associated with a substantially increased mortality hazard. Here, Hwang followed a year-long prevalence cohort of 8,700 shelter users in Toronto and found that the mortality hazard over a 3-year period was substantially higher (hazard ratio of 1.84) during the months when the persons were in shelters.[31] Results of Hwang's study also find no significant associations between duration of homelessness and mortality risk. This latter finding compares to two other studies: one which found longer periods of homelessness to be associated with increased mortality hazard,[32] and another which did not find a clear relationship between these two outcomes.[33]

Availability of housing could be a key element in mitigating mortality hazard among homeless persons, but no study has yet assessed this relationship. Reviews of recent housing research suggest, somewhat tentatively, that availability of adequate and affordable housing, under various arrangements, among low-income populations is associated with health benefits, in addition to its inherent benefits.[34–36] Among persons with AIDS, research has demonstrated positive effects of housing on health[37] and access to healthcare.[38] One study found that, among persons with AIDS, a higher mortality hazard associated with homelessness was mitigated through placement in supportive housing.[39] Based on this, moves from homelessness to affordable housing arrangements among a more general homeless population should be associated with reduced mortality hazard as well.

Using administrative data, this study follows all adults (with or without families) admitted to NYC's municipal shelter system between 1990 and 2002, approximately 160,000 persons, through 2007. Having data on shelter use and deaths for up to 18 years, this study tracks mortality among this erstwhile homeless population over a longer time period than previous studies were able. And insofar as these NYC data provide information about housing at shelter exit, it is the first study that is able to assess impacts of housing on the mortality of a homeless population.

Finally, this study expands upon previous homeless mortality studies by including adults in families. The one study by Kerker and her colleagues that examines mortality among this major subgroup of the homeless population finds

that factors and outcomes related to mortality were very different for adults who were homeless as part of families, to the point that they should be considered separately from adults who were homeless as single adults. These findings, also based upon a NYC shelter population, found their mortality rates to be comparable to other low-income adults,[40] and lower than that of the single adult population.[14] These differential mortality rates underscore other fundamental differences between adults in homeless families and their single adult counterparts. Adults who are homeless as families are, as a group, younger, predominantly female, and have much lower rates of disabilities, including substance abuse and mental illness.[41–43] Given these differences, adults in families and single adults will be examined separately here.

DATA AND METHODS

The study population is comprised of adults who had a record of first entering a homeless shelter run by the NYC Department of Homeless Services (DHS) from 1990 through 2002, as captured by DHS administrative records, and whose identifying information was validated through records from the Social Security Administration (SSA). Among single adults, all persons meeting these criteria were selected; among families, all adults were selected who were designated by DHS as heads of households. Thus, one adult per family household was selected.

DHS operates or funds separate shelter networks for unaccompanied (i.e., single) adults and families. Combined, these two shelter networks include approximately 85% of all general homeless shelter beds in NYC. As part of administering this system, DHS maintains databases for each of the two shelter networks, which have compiled information on persons staying in DHS shelters, including their shelter utilization, since 1986. While there is broad availability of shelter in NYC, there is a minority of persons who, when homeless, will stay in places not meant for habitation (outdoors, abandoned buildings, etc.). This homelessness cannot be captured with administrative data.[44]

For this study, 175,524 unduplicated DHS records with complete identifying information (name, gender, date of birth, and social security number [SSN]) were submitted to SSA, which was able to validate 160,525 unique records (91%) where identifying information from DHS matched that of SSA records using SSA's standard matching protocol.[45] The unvalidated records were discarded. The unvalidated records do not include an unknown number of records with missing or partial SSNs, which were never included in the original dataset.

Among the unvalidated records, 90% were for single adults, 13% of all records for single adults that were submitted. The single adults' records considered invalid were more likely to be for persons who were male; under age 50; not of Hispanic ethnicity or white race (mutually exclusive groupings); had stayed in shelters less often and for shorter durations; and who first entered shelter earlier in the time period covered by this study (early 1990s). For adults sheltered with families, the rate of invalid records was minimal (2% of all records submitted), with these records being more likely among persons of Hispanic, other, or unknown race/ethnicity, over age 30, and who first entered shelter in the early 1990s.

Records from single adult and family shelters were each grouped into three categories based on shelter use patterns. Total number of days and stays spent in DHS shelters in the 3-year period following initial shelter entry were the criteria for a cluster analysis, which was applied to data in a manner consistent with procedures

previously used on DHS shelter data.[46,47] As a result, each record in this study was assigned to one of three distinct groups by virtue of shelter use patterns, with each of these groups representing different homeless trajectories. These groups included *transitional* users, where persons used shelter for one or two stays and for a limited number of days; *long-term* users, where persons used shelter for a limited number of extended stays; and *episodic* users, where persons tallied multiple shelter stays of relatively brief durations.

Records in the study group were matched (by SSN) to the Social Security Death Index (SSDI). The SSDI has been compared with a national death registry in that it collects records of all deaths in the USA. With a correct SSN, using the SSDI has been determined to be an accurate means by which to identify mortality in research studies.[48] However, SSDI records do not include an undetermined number of decedents who did not have SSNs or whose SSNs were not available for their death records. Upon a match with the SSDI, records for persons in the study group were appended with the appropriate date of death. No other information related to the circumstances of death was available. Data on deaths were current through June 2008.

A series of analyses provided multiple perspectives by which to view mortality among this homeless population. Due to differences in the family and single adult shelter populations, separate analyses were performed and reported on each of these subgroups. Approximately 10% to 15% of households in the family shelters were childless couples and pregnant unaccompanied women. These "adult families" were more likely to be older, white, and, on average, stayed in shelter longer.[49] Other unpublished DHS analyses have found that adult families were more likely to enter shelter self-reporting physical health problems, substance abuse disorders, and a history of incarceration. According to personal communication with Joanna Weissman of DHS (March 2011), adult families were also more likely to have received mental health treatment prior to shelter entry.

Deaths were summarized by calculating mortality rates for persons by sex and age groupings. These mortality rates were expressed per 100,000 person-years of observation. Person-years were derived from the time period between the date of each individual's initial shelter entry to either the date of the individual's death or the last date of the study period (June 30, 2008). These values for sheltered single adults were compared with the mortality rates for sheltered adults in families through age-adjusted and sex-adjusted standardized mortality ratios (SMR). Ninety-five percent confidence intervals were also calculated for each SMR.[50] In addition to mortality rates, life tables were computed to estimate life expectancy at a given age for each sex and shelter type, based on age at initial shelter entry. As it was not possible to calculate life expectancy from age 0 for the sheltered population, an alternate estimate of life expectancy was calculated based on a weighted average of age at shelter entry.

Finally, Cox regression analysis was used to assess the associations of various factors on the hazard of death. Of particular interest is whether time actually spent in a homeless shelter, shelter use pattern (long-term, episodic, or transitional), and placement from shelter to housing had lasting associations with the hazard of dying. The measure used for housing here indicates whether or not the person was known to have exited shelter to a stable housing arrangement. No further specifics about these housing arrangements, such as whether or not they were subsidized or whether they had accompanying support services, were available. Models were fitted from two time points: one in which the risk period began at point of shelter entry, and the other model at point of last shelter exit in the database.

Using the former start point allowed for a prospective look at mortality from the point of initial shelter entry. Here, the measures of shelter status (in shelter or out of shelter) and shelter exit type (to housing or to other living arrangement) were considered time-dependent covariates, as each person was in shelter for only part of the risk period and everyone would have spent time in the risk period before exiting to housing (and many would not exit shelter to housing at all). This model precluded shelter use pattern from being in the model, as this measure could only have been determined retrospectively at the point of shelter exit. In its use of a Cox regression model where shelter status was a time-dependent covariate, this model resembled the method used by Hwang in the previously mentioned shelter study.[31] The second model, using shelter exit as the start point, precluded having a measure for shelter status in the model, given that the time spent in shelters was no longer part of the risk period. Exit to housing and shelter use pattern were included in this model as fixed covariates. Persons who did not have a record of death before July 1, 2008 were considered censored observations.[51]

RESULTS

Table 1 shows descriptive data for 94,250 single adults and the 66,275 adults with families who entered a NYC shelter for the first time between 1990 and 2002, illustrating substantial differences between these two groups. Demographically, the single adults were predominantly male, older, and with a lower proportion Hispanic (of any race) and a higher proportion white (non-Hispanic). Adults in families tended to have longer shelter stays, with about half exhibiting either long-term (47%) or episodic (3%) shelter stay patterns and with much higher proportions (62%) recorded as moving from shelter to stable housing arrangements. Finally, 15.2% of single adults died during the study period, compared with 4.2% of adults in families. For those who died, the median age of death was 48 years for single adults and 42 years for adults with families. Only relatively small percentages of those who died did so within 90 days of their last recorded shelter exit, and the median time of death from shelter exit (for those who died) was 4.4 years and 6.1 years for single adults and adults in families, respectively.

The figure shows life expectancy through the life course for single sheltered adults and for sheltered adults in families (Figure 1). Overall life expectancy (not shown in figure), estimated from the age at first shelter entry among single adults was 64.2 years for males and 68.6 years for single females. Among adults in families, the life expectancy was several years higher—67.2 and 70.1 years for males and females, respectively.

Crude mortality rates are shown for both subgroups of sheltered adults in Table 2. In just over one million person-years of observation for single adults (mean follow-up period of 11.4 years per person), there were 13,978 deaths. The adults in families logged 715,171 person-years (mean, 10.8 years per person) and 2,762 deaths. As would be expected, these mortality rates increased steadily with increasing age for both groups. Noteworthy among the single adults is how similar rates between sexes were in the age categories below 54 years. Crude mortality rates were much lower across age groups for adults in families. In contrast to the single adults, the rates for the younger female age groups were considerably lower than those of their male counterparts. After adjusting for difference in sex and age distributions, the lowest SMRs were among the younger female age groups, and SMRs were under 0.75 for all age groups in both sexes.

TABLE 1 Characteristics of adults using homeless shelters in NYC for the first time, 1990–2002

	Single adult shelters	Family shelters
Population	94,250	66,275
Age at first shelter entry, years		
18–34	48.1%	79.2%
34–54	45.1%	19.8%
55–74	6.8%	1.0%
Sex		
Male	77.6%	7.7%
Ethnicity		
African-American	55.0%	53.8%
Hispanic	24.5%	30.5%
White non-Hispanic	14.0%	1.9%
Other/unknown	6.5%	13.8%
Cluster (based on shelter use pattern)		
Transitional	75.0%	49.9%
Episodic	12.2%	3.0%
Long-term	12.8%	47.2%
Exit type		
To stable housing	21.1%	62.4%
Year of initial shelter entry		
1990–1992	28.5%	28.5%
1993–1995	22.9%	24.1%
1996–1998	23.2%	17.5%
1999–2002	25.4%	29.9%
Mortality		
Deaths (among population)	15.2%	4.2%
Median age at death	48 years	42 years
Death occurred within 90 days of last day in shelter (% of deaths)	1.0% (6.7%)	0.2% (4.8%)
Median time from shelter exit	4.4 years	6.1 years

The final analyses used to assess death among homeless adults in NYC were Cox regression models that estimated the impacts of a set of covariates on the hazard of death. Table 3 presents results of two models each for single adults and for adults in families: one model which tracked persons from point of initial shelter entry (i.e., entry model) and the second model which tracked people from point of shelter exit (i.e., exit model). The most noteworthy findings pertain to exits to stable housing and shelter dynamics. For both groups of sheltered adults (single and family), exits to housing were associated with significant, modestly lower mortality hazard, regardless of whether this covariate was included as time-dependent (entry model) or fixed value (exit model). The entry model produced the lower coefficient value for both groups of adults; here, exits to housing were associated with 11% and 29% reductions in mortality hazard for single adults and adults in families, respectively. For both groups of adults, the mortality hazard was markedly lower during the time they actually spent in shelter—80% lower for single adults and 73% lower for adults with families. This suggests that mortality hazard was decreased during the time they spent in shelter.

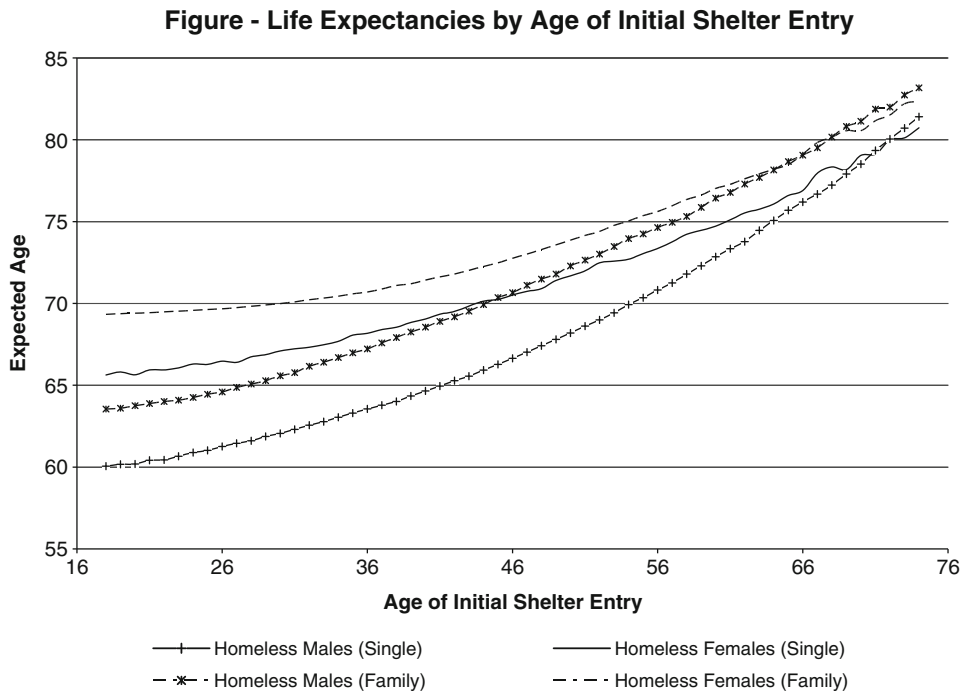

FIGURE 1. Life expectancies by age of initial shelter entry.

Extended patterns of shelter use—either long-term (few, extended shelter stays) or episodic (multiple stays over an extended time period)—were associated with significantly increased mortality hazards (subsequent to exiting shelter) in both models. Among these use patterns, the associated mortality hazard was higher for episodic than for long-term patterns and higher for adults in families than for single adults with corresponding patterns.

The impacts of the other covariates in these models were also noteworthy. The significance levels and coefficient values were similar across the entry and exit models both for single adults and for adults in families. Increased age was associated with increased mortality hazard for both single adults and adults in families. In the singles models, female sex was associated with an increased hazard that attenuated with increasing age, and in the family models, female sex was associated with a decreased mortality hazard that also attenuated as age increased. Among racial/ethnic groupings in the single adult model, being of white race (non-Hispanic) had a significant association with an increased hazard of dying (compared with the reference category, persons of non-Hispanic black race). There was no significant difference between black and white races in the family model, but there was a lower mortality hazard among those of Hispanic ethnicity (regardless of race). In both groups, the later the year of last shelter entry or exit, the less the associated hazard of dying.

DISCUSSION

This study reports levels of mortality in the homeless population that are consistent with levels found in past research. Other findings among single adults, such as elevated mortality rates among younger females and a higher mortality hazard

TABLE 2 Mortality rates and standardized mortality ratios for adults entering NYC shelters for the first time, 1990–2002

	Sheltered single adults			Sheltered adults in families			Standardized mortality ratios (SMR)	
Age, years	No. of observed deaths	Person-years of observation	Mortality rate per 100,000 person-years	No. of observed deaths	Person-years of observation	Mortality rate per 100,000 person-years	SMR (family/single)	95% Confidence interval
Males								
20–24	92	19,878	463	5	2,185	229	0.49	0.18, 1.10
25–34	1,088	161,702	673	59	14,002	421	0.63	0.48, 0.80
35–44	2,887	278,848	1,035	132	19,132	690	0.67	0.56, 0.79
45–54	3,555	197,743	1,798	133	12,196	1,091	0.61	0.51, 0.72
55–64	2,446	78,890	3,101	70	4,043	1,731	0.56	0.44, 0.70
65–74	1,204	22,657	5,314	34	954	3,564	0.67	0.47, 0.93
Total	11,272	759,718	1,484	433	52,512	825	0.56	0.51, 0.61
Females								
20–24	24	8,352	287	62	79,637	78	0.27	0.21, 0.35
25–34	310	50,740	611	466	294,659	158	0.26	0.24, 0.28
35–44	814	75,571	1,077	884	201,791	438	0.41	0.38, 0.43
45–54	818	52,114	1,570	645	70,352	917	0.58	0.54, 0.63
55–64	497	22,585	2,201	211	13,789	1,530	0.70	0.61, 0.79
65–74	243	6,836	3,555	64	2,431	2,633	0.74	0.58, 0.94
Total	2,706	216,198	1,252	2,332	662,659	352	0.28	0.27, 0.29

Observed person-years start with initial day in shelter and ends either at death or on June 30, 2008

TABLE 3 Cox regression model of predictors of mortality for persons entering the NYC shelter system for the first time, 1990–2002

	Adults in singles shelters				Adults in family shelters			
	From first day in shelter		From last day in shelter		From first day in shelter		From last day in shelter	
Variable	Hazard ratio	95% Confidence interval	Hazard ratio	95% Confidence interval	Hazard ratio	95% Confidence interval	Hazard ratio	95% Confidence interval
Age (first shelter entry)	1.06***	1.06, 1.06	1.06***	1.06, 1.06	1.06***	1.06, 1.07	1.06***	1.06, 1.07
Female	1.38***	1.20, 1.60	1.34***	1.16, 1.55	0.35***	0.24, 0.49	0.35***	0.24, 0.50
Female* age	0.99***	0.98, 0.99	0.99***	0.99, 0.99	1.02***	1.01, 1.03	1.02***	1.01, 1.03
White (non-Hispanic)	1.24***	1.19, 1.30	1.23***	1.18, 1.29	1.14	0.94, 1.39	1.14	0.94, 1.39
Hispanic	1.00	0.96, 1.04	0.99	0.95, 1.03	0.81***	0.75, 0.88	0.82***	0.75, 0.89
Other/unknown	0.75***	0.65, 0.87	0.74***	0.64, 0.86	0.46*	0.22, 0.97	0.47*	0.22, 0.98
Year of first shelter entry	0.95***	0.95, 0.96			0.93***	0.92, 0.95		
Year of last shelter exit			0.97***	0.96, 0.97			0.95***	0.94, 0.96
Time in shelter (i.e., before shelter exit [time-dependent])	0.20***	0.19, 0.22			0.27***	0.22, 0.33		
Episodic shelter use pattern			1.40***	1.32, 1.47			2.06***	1.70, 2.49
Long-term shelter use pattern			1.13***	1.07, 1.19			1.21***	1.10, 1.32
Time after exit to permanent housing (time-dependent)	0.89***	0.86, 0.93			0.71***	0.65, 0.76		
Exit to permanent housing			0.81***	0.77, 0.84			0.62***	0.57, 0.68

Deaths determined from Social Security Administration Records from 1990 through June, 2008

Risk period starts upon last day in shelter and ends either at death or on June 30, 2008 (for censored observations)

For race covariates, Black (non-Hispanic) is reference category

For shelter use pattern (episodic and long-term), transitional shelter use pattern is reference category

*$p<0.05$; **$p<0.01$; ***$p<0.001$

associated with white race, are also consistent with the literature, as are the lower overall mortality rates for adults who are homeless with their families. What is novel about the findings reported here among both single adults and adults in families are the links found between housing and reduced mortality hazard and in the more complex relationship found between shelter use and mortality hazard.

The modest decrease in mortality hazard related to housing indicates that there were health benefits associated with ending homelessness. This further underscores the importance of housing to address homelessness, as public health benefits hereby join the significant economic, social, and personal dimensions of stable and quality housing. However, this is an initial finding and must also be interpreted with caution. Beyond this association between housing and reduced mortality, there is little further detail as to the nature of the housing (e.g., whether the housing was accompanied by supportive services or rent subsidies) or particular arrangements surrounding these moves from homelessness to housing. In particular, there is the possibility that those persons who were healthier and less likely to die prematurely were also more likely to secure housing. However, especially among single adults, there is a substantial supply of housing targeted to the most disadvantaged subgroups among the homeless population, which makes it reasonable to posit a direct relationship between exits to stable housing and reduced mortality.[52,53] Nonetheless, the possibility of such a selection effect underscores the need for future research to confirm and further explore the health effects of providing housing to homeless persons.

This study also found that homeless adults had a substantially reduced mortality hazard while they were in shelter but that those persons who stayed longest in shelters ultimately had an elevated mortality hazard. The former finding is contrary to the only previously published study examining this most direct of relationships between actually being homeless and mortality risk. This discrepancy is difficult to explain. The time-dependent effect of being in a shelter on reducing mortality hazard was a robust finding. Modifying the analyses by shortening the risk period to the 3-year period that was available in Hwang's study[31] did not substantially change the effect of shelter stay. Including a 90-day transition period after shelter exit as time in shelter and including only initial shelter stays (to avoid including the gaps in shelter use among adults with repeated shelter stays) addressed some of the limitations of the data but did not substantially alter the outcomes. Contextual differences may have accounted for the differences between the studies—Hwang studied shelter users in Toronto, and this study focuses on shelter users in NYC. Differences in how persons use shelters in each city; differences in shelter rules and policies; or some other difference in how shelter services are used in each city may account for these differences. Trying to reconcile these differences has affirmed the robustness of our findings.

This finding, where shelter use did not directly increase the hazard of premature death, appears contrary to the finding (also from this study) that extended periods of shelter use were associated with increased mortality hazard. The magnitude of this hazard was much more pronounced among episodic shelter users (i.e., those with multiple, relatively short stays) than among long-term shelter users (i.e., those with few, very long stays). Among the single adults, these two subgroups represent a minority of shelter users (about one-quarter of the whole sample), and, according to research, have higher rates of disabilities and pathologies, including substance abuse and mental illness that are also associated with increased risk of mortality. Thus, a selection effect is likely here, and multiple risk factors likely explain this association.

Among the adults in families, research indicates that there is a similar dynamic among those with episodic shelter use patterns. However, for adults with long-term stay patterns, other research has found little difference in outcomes between such families and their shorter staying counterparts.[46,54] This pattern is not shown here, and the differences in mortality hazard related to shelter stay patterns among families, albeit modest, are less explainable. This highlights a major limitation of this study in the unavailability of more data on personal characteristics—such as health and economic circumstances—which are likely to mitigate the associations between shelter stay patterns and mortality hazard.

Another limitation is that the time spent in shelter is an admittedly imperfect proxy for homelessness. The available administrative data is only able to record persons and stays in NYC's municipally funded shelter system. Thus, periods of homelessness spent outside of shelters or in shelters funded through other sources were missed. With the widespread availability of shelter in NYC, the large majority of persons who experience homelessness would have some contact with the shelter system. Yet, an undetermined number of adults who were homeless without staying in DHS shelters were not included in this study. Furthermore, as was explained in the "Data and Methods" section, only records with SSNs were used, and among these records, a substantial minority was discarded due to incorrect or inconsistent identifying information. These limitations are especially salient for single adults who are much more likely than families to spend time homeless in non-shelter locations and where 13% of the records were discarded due to problematic identifiers. Families are far more likely to spend their bouts of homelessness in shelters and had a much lower proportion of records that were discarded (2%), making these concerns much less of a problem. It is unclear what effect these missed observations had on results for the single adult population.

Some persons who were represented in the datasets used here also would have had time spent homeless in unsheltered locations. Again, this would be more likely among the single adults. This would not impact the overall mortality rates. Furthermore, this is also unlikely to account for the reduced mortality hazard associated with staying in shelters. The latter assertion is based on the previously mentioned robustness of the results in the face of recoding time periods in between and time following shelter stays as "homeless" to simulate time spent either in volatile housing situations or homelessness in non-shelter locations. For those who did die, the median time of death is 4.4 (single adults) and 6.1 (adults with families) years after their last recorded shelter exit, which suggests that mortality in this study group occurs well after their shelter use, and presumably their homelessness, has been resolved.

Taken together, these findings suggest that, while being in shelter does not increase mortality hazard, prompt resolution of homelessness and the availability of housing interventions may both lead to reduced mortality. These findings apply to both single adults and adults in families, even though the mortality patterns in these groups are otherwise very different. Such findings affirm that there may be health benefits related to ending homelessness and underscore the need for further research to map the specific dynamics that link housing, homelessness, and mortality.

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