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# Lifetime and 1-year prevalence of homelessness in the US population: results from the National Epidemiologic Survey on Alcohol and Related Conditions-III

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## ABSTRACT

**Background** Homelessness remains a major public health problem in the USA but there have been few recent epidemiological studies in the general population.

**Methods** Using data from structured interviews with a nationally representative sample of 36 299 US adults from the 2012–13 Wave 3 of the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC-III), this study examined the lifetime and 1-year prevalence of homelessness, and its correlates.

**Results** Lifetime and 1-year prevalence of homelessness in the US population was found to be 4.2 and 1.5%, respectively. Low income, debt, borderline personality disorder (PD), past-year tobacco use disorder, any history of suicidal attempts and being a victim of crime in the past year were all independently strongly associated with past-year homelessness (all OR > 1.5). Low income, debt, history of incarceration, antisocial PD and any history of suicidal attempts were all independently strongly associated with lifetime homelessness (all OR > 1.5).

**Conclusions** These findings provide an update to the original NESARC, suggesting a possible increase in lifetime homelessness (2.7–4.2%) in the past decade. Along with known economic and behavioral health conditions, special attention should be paid to PDs in efforts to prevent and end homelessness.

**Keywords** mental health, social determinants, socioeconomics factors

## Introduction

Although homelessness is a major public health problem in the USA, the epidemiology of homelessness in the general population is difficult to study. Homeless individuals are hard to identify and enumerate; homelessness is a relatively low base rate event; and large population-based samples are needed to obtain accurate estimates.[1–4] There have been few large-scale epidemiological studies of homelessness, and the large majority of studies on homelessness have focused on studying the small number of high-need individuals who are chronically homeless.[5–7] Most homelessness experienced by the general population is short-term and temporary,[8–10] and more broad examination of homelessness using population-based samples is needed.

The National Epidemiologic Survey on Alcohol and Related Conditions (NESARC) presents a unique opportunity to examine the epidemiology of homelessness.[11] The NESARC represents one of the largest national efforts to assess mental and substance use disorders in the general population; homelessness and psychosocial status were also assessed. Three waves of data collection have been conducted for the NESARC (first Wave in 2001–02; second Wave, which was a follow-up of Wave 1 respondents in

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2004–05; and third Wave, which included a new sample in 2012–13). Two studies of homelessness have been conducted using data from the first two waves of the NESARC (NESARC-I and NESARC-II). The first study used data from NESARC-I and found that the lifetime prevalence of homelessness among US adults was 2.7%. Lifetime diagnoses of mood disorders, substance use disorders, antisocial personality disorder (PD) and psychosis were all strongly associated with lifetime homelessness.[3] The second study used data from NESARC-I and II and found that poverty and substance use disorders each independently increased the prospective risk of first-time homelessness.[12] Reviews of the literature have also reported that substance use disorders and severe mental illness (i.e. schizophrenia and bipolar disorder) are the most consistently identified risk factors for homelessness.[13,14]

There has been no study of homelessness using data from the third wave of the NESARC (NESARC-III), which includes a new, contemporary representative sample of US adults. In the current study, we used the NESARC-III to examine the lifetime and 1-year prevalence of homelessness in the US population. We also examined sociodemographic, clinical and psychosocial characteristics associated with homelessness. The results allow us to observe changes in rates and factors related to homelessness over the past decade since the NESARC-I.

## Methods

The NESARC-III is a cross-sectional survey of a nationally representative sample of the civilian non-institutionalized population of the USA aged 18 years or older. The sample included residents living in a variety of housing settings, but did not include residents in institutions such as prisons, hospitals and shelters. Data for the NESARC-III was collected between April 2012 and June 2013. Multi-stage probability sampling was employed to select respondents randomly at the county, census and household levels. Interviewers conducted in-person structured interviews with respondents. Other details about the methodology of the NESARC-III have been detailed elsewhere.[15] Protocols were approved by the institutional review boards at the National Institutes of Health and Westat; data use was approved by Yale University School of Medicine.

With an overall response rate of 60.1%, the total original sample included 36 309 adults. This study focused on the 36 299 adults (99.9% of original sample) who responded to a question about past-year homelessness and the 36 155 (99.6% of original sample) who responded to a question about lifetime homelessness. The data were weighted through poststratification analyses to represent the US civilian population based on the 2012 American Community Survey.[16]

### Measures

Personal background information about respondents were collected in various domains, including demographic characteristics, finances, geographic region, military history, immigration status, incarceration history, public benefits and health insurance.

Homelessness was assessed with two questions. Past-year homelessness was assessed with one question that asked respondents: 'Have you at any time been homeless in the last 12 months?' Lifetime homelessness was assessed with one question that asked: 'Since you were 15, did you have a time that lasted at least 1 month when you had no regular place to live-like living on the street or in a car?' So the question assessing lifetime homelessness required a duration of being homeless for at least 1 month, but the question assessing past-year homelessness did not require any specific duration. Lifetime homelessness assessed in NESARC-III was the same question used in NESARC-I[3] allowing for direct comparison; however, NESARC-I did not assess past-year homelessness which the NESARC-III did.

Physical and mental healths of respondents were assessed with several measures. Respondents were asked whether they had any of 30 medical conditions in the past 12 months, including HIV/AIDS, cirrhosis, heart disease, cancer, stroke, arthritis, diabetes and tuberculosis. The number of medical conditions for each respondent was summed for a total score.

The Alcohol Use Disorder and Associated Disabilities Interview Schedule (AUDADIS-5) is a structured diagnostic interview developed by the National Institute of Alcohol Abuse and Alcoholism. The AUDADIS-5 was used to assess alcohol use disorder, specific drug use disorders, nicotine use disorder, and selected mood, anxiety, trauma-related and PDs according to criteria as outlined in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5).[17] The AUDADIS-5 has been extensively tested and shown to have good validity and reliability.[18–20] In this study, we examined lifetime and past-year mental health and substance use disorder diagnoses.

The Short-Form 12-item health survey, version 2 (SF-12v2)[21] is a widely used measure used to assess health-related quality of life, which generates physical and mental component summary (PCS and MCS) scores. These component summary scores are normed to range from 0 to 100 with a score of 50 representing the average level of functioning in the general population with each 10-point interval

representing one standard deviation. Higher scores reflect greater health-related quality of life and the SF-12 has been validated as an outcome measure in various populations.[22–24]

In addition to these health measures, several additional questions were used to assess psychosocial characteristics. The Interpersonal Support Evaluation List (ISEL) shortened 12-item version was used to measure social support.[25] Respondents were asked to rate a series of statements about emotional support (e.g. feel that there is no one to share worries and fears with) and instrumental support (e.g. would be able to find someone to help with chores if sick) on a 4-point scale from 1 (Definitely false) to 4 (Definitely true). The mean rating of these items was calculated for a social support score.

Respondents were asked to rate the extent to which they engaged in positive behaviors (e.g. plan for the future and save money regularly) on a 5-point scale from 1 (Not at all) to 5 (Very much). Respondents were asked how often they currently attend religious services, the importance of their religious or spiritual beliefs on a 4-point scale from 1 (Not important at all) to 4 (Very important), and whether they were currently involved in any regular volunteer work. Respondents were also asked whether they experienced any of several adverse events in the past 12 months (e.g. victim of theft and death of loved one).

### Data analysis

Descriptive analyses were conducted to examine the prevalence of lifetime and past-year homelessness in the total sample. Then, two sets of similar analyses were conducted to compare respondents who reported past-year homelessness and lifetime homelessness versus their domiciled counterparts.

We first focused on past-year homelessness because of the more proximal associations (e.g. past-year diagnoses and past-year homelessness). We divided respondents into those who did and did not report past-year homelessness. The two groups were compared on background, health and psychosocial characteristics using bivariate analyses. Given the large sample sizes, even minor differences were found to be statistically significant so effect sizes were focused on. Cohen's $d$ was calculated for continuous variables and the difference in percentages was calculated for categorical variables. Then, multivariable analyses were conducted including only background, health and psychosocial variables that were found to be substantially different ($d > 0.3$ or $\pm \Delta > 10\%$) between groups in the bivariate analyses. A two-block binary logistic regression was conducted in which background characteristics were entered into a first block of independent variables, and health and psychosocial variables were entered into a second block with past-year homelessness as the dependent variable. The Nagelkerke $R^2$ value[26] was computed to approximate the amount of variance explained by each block and adjusts the scale to cover the full range of values from 0 to 1 for interpretation. Odds ratios along with 99% confidence intervals were calculated to provide measures of effect size.

These analyses were repeated with 'lifetime' homelessness (instead of past-year homelessness) and including 'lifetime' mental and substance use disorder diagnoses (instead of past-year diagnoses) along with other background, health and psychosocial characteristics. For analyses, poststratification weights were applied and SPSS version 20.0 was used.

## Results

Of the 36 155 respondents who responded to the question about lifetime homelessness, 1683 (weighted 4.2%) reported not having a regular place to live for at least 1 month sometime in their lifetime. Of the 36 299 respondents who responded to the question about past-year homelessness, 704 (weighted 1.5%) reported being homeless sometime in the past year.

Table 1 shows that respondents with and without past-year homelessness differed substantially ($d > 0.3$ or $\pm \Delta >$ 10%) on several background characteristics. Respondents with past-year homelessness were younger and more likely to be non-white, unmarried, have income <$10 000, have history of incarceration, have received food stamps and to have Medicaid coverage compared to respondents without past-year homelessness. Respondents with past-year homelessness were also less likely to be employed, receiving social security income, and to have private insurance.

Table 2 shows that respondents with past-year homelessness had substantially poorer mental health than those without past-year homelessness. Specifically, respondents with past-year homelessness were more likely to have various mental health and substance use disorders in the past year. Respondents with past-year homelessness were also more likely to report a lifetime suicide attempt and had lower SF-12 MCS scores than those without past-year homelessness. In terms of psychosocial characteristics, respondents with past-year homelessness were more likely to report having experienced adverse events in the past year, including death of a loved one, being a victim of crime and having overwhelming debt. Respondents with past-year homelessness were less likely to report engaging in various positive behaviors, such as planning for the future, saving money and considering consequences. Respondents with past-year homelessness were also less likely to report they currently attend religious services and had lower social support scores.

**Table 1** Background characteristics of a nationally representative sample of adults with and without a 'past-year' history of homelessness

| | *Any past-year homelessness* (n = *704*) *Mean/*N *(SD/weighted%)* | *No past-year homelessness* (n = *35 595*) *Mean/*N *(SD/weighted%)* | *Effect size Cohen's* d *or* Δ |
|---|---|---|---|
| Age | 38.0 (13.5) | 46.7 (17.8) | **−0.55** |
| Sex: male | 330 (50.6%) | 15 527 (48.1%) | 2.5% |
| Race | | | |
| White | 276 (52.7%) | 18 915 (66.4%) | **−13.7%** |
| Black | 250 (23.2%) | 7514 (11.6%) | **11.6%** |
| Asian | 22 (5.3%) | 488 (1.5%) | 3.8% |
| Native/Hawaiian/Pacific Islander | 12 (2.7%) | 1787 (5.8%) | −3.1% |
| American Indian/Alaska Native | 144 (16.1%) | 6891 (14.7%) | 1.4% |
| Sexual orientation | | | |
| Straight | 602 (88.5%) | 34 038 (97.3%) | −8.8% |
| Gay/bisexual | 77 (11.5%) | 1075 (2.7%) | 8.8% |
| Years of education | 8.9 (2.0) | 10.0 (2.4) | −0.50 |
| Marital status | | | |
| Married/live-in partner | 158 (28.8%) | 16 632 (58.3%) | **−29.5%** |
| Divorced/separated | 217 (28.7%) | 6609 (13.6%) | **15.1%** |
| Widowed | 18 (2.5%) | 2576 (5.8%) | −3.3% |
| Never married | 311 (40.0%) | 9778 (22.2%) | **17.8%** |
| Age first married | 23.8 (8.1) | 24.0 (7.0) | −0.03 |
| # of children | 2.0 (2.4) | 2.0 (2.1) | <0.01 |
| Born in the USA | 631 (89.5%) | 29 260 (84.0%) | 5.5% |
| Urbanicity | | | |
| Urban | 636 (84.2%) | 29 548 (78.7%) | 5.5% |
| Rural | 68 (15.8%) | 6047 (21.3%) | −5.5% |
| Region | | | |
| Northeast | 100 (17.3%) | 5079 (18.3%) | −1.0% |
| Midwest | 139 (17.6%) | 7427 (21.5%) | −3.9% |
| South | 269 (37.9%) | 14 258 (37.0%) | 0.9% |
| West | 196 (27.2%) | 8831 (23.2%) | 4.0% |
| Employed full/part-time | 276 (43.3%) | 20 279 (57.6%) | **−14.3%** |
| Ever served in the military | 59 (9.6%) | 3059 (9.6%) | 0.0% |
| Annual personal income | | | |
| $0 | 20 (2.6%) | 1703 (5.3%) | −2.7% |
| $1–9999 | 277 (42.1%) | 6648 (18.2%) | **23.9%** |
| $10 000–29 999 | 332 (43.6%) | 13 559 (34.5%) | 9.1% |
| $30 000–49 999 | 54 (8.1%) | 6954 (19.4%) | **−11.3%** |
| $50 000–79 999 | 16 (3.0%) | 4091 (12.9%) | −9.9% |
| $80 000–99 999 | 2 (0.2%) | 1086 (3.7%) | −3.5% |
| $100 000 or more | 3 (0.4%) | 1554 (6.1%) | −5.7% |
| Declared bankruptcy, past year | 25 (3.6%) | 415 (1.0%) | 2.6% |
| Any lifetime incarceration | 252 (41.2%) | 3878 (10.2%) | **31.0%** |
| Public benefits, past year | | | |
| Social security | 97 (11.7%) | 7538 (22.0%) | **−10.3%** |
| SSI[a] | 105 (12.3%) | 2074 (4.5%) | 7.8% |
| TAFD | 65 (6.9%) | 899 (1.8%) | 5.1% |
| Food stamps | 425 (61.1%) | 6469 (13.3%) | **47.8%** |
| Health insurance, past year | | | |
| Medicare | 118 (15.0%) | 7475 (21.5%) | −6.5% |

*Continued*

**Table 1** Continued

| | *Any past-year homelessness (n = 704)* *Mean/N (SD/weighted%)* | *No past-year homelessness (n = 35 595)* *Mean/N (SD/weighted%)* | *Effect size* *Cohen's d or Δ* |
|---|---|---|---|
| Medicaid | 228 (29.1%) | 4670 (10.0%) | **19.1%** |
| VA/TRICARE/CHAMPUS | 31 (4.1%) | 1653 (4.7%) | −0.6% |
| Private insurance | 147 (22.2%) | 18 673 (58.4%) | **−36.2%** |
| Government/state insurance | 31 (5.5%) | 876 (2.3%) | 3.2% |

Note: Bolded values indicate $d > 0.3$ or $\pm \Delta > 10\%$.

[a]SSI, supplemental security income; TAFD, traditional aid to families with dependent children; VA, veteran affairs; CHAMPUS, Civilian Health and Medical Program of the Uniformed Services; TRICARE, tricare health insurance coverage for military personnel, retirees and their dependents.

A two-block logistic regression analysis was conducted including these background, health and psychosocial characteristics (see Table 3). In the first block, the background characteristics together had a Nagelkerke $R^2 = 0.19$. Respondents with income <$30 000 were more than two times as likely to report past-year homelessness, those that had any lifetime incarceration were more than three times as likely to report past-year homelessness, and those receiving food stamps in the past year were more than five times as likely to report past-year homelessness. In the second block, the health and psychosocial characteristics in addition to the background characteristics together resulted in Nagelkerke $R^2 = 0.29$. Respondents who experienced overwhelming debt in the past year were more than three times as likely to report past-year homelessness. Borderline PD, past-year tobacco use disorder, any lifetime suicide attempt and being a victim of crime in the past year were all also strongly associated with past-year homelessness (OR > 1.5).

These analyses were repeated to compare respondents with and without 'lifetime' homelessness and included lifetime mental and substance use disorder diagnoses instead of past-year diagnoses. As shown in the Supplementary data, Tables, bivariate analyses revealed that respondents with lifetime homelessness were more likely to be male, less educated, unmarried, not employed, earning <$10 000, receiving food stamps, have Medicaid coverage and been incarcerated before than those with no lifetime homelessness. Respondents with lifetime homelessness also reported poorer physical and mental healths, including having a greater number of medical conditions, lower SF-12 PCS and MCS scores, and were more likely to have many lifetime mental health and substance use disorders. Respondents with lifetime homelessness also reported fewer positive behaviors around planning for the future and saving money regularly, were more likely to experience adverse events in the past year and were less likely to attend religious services and had lower social support scores ($d > 0.3$ or $\pm \Delta > 10\%$).

Table 4 shows results of a two-block logistic regression including background characteristics in a first block, which resulted in Nagelkerke $R^2 = 0.17$; and a second block of health and psychosocial characteristics, which resulted in a total Nagelkerke $R^2 = 0.28$. Among background characteristics, respondents with a history of incarceration were six times as likely to report lifetime homelessness, those receiving food stamps were more than two times as likely to report lifetime homelessness. Among health and psychosocial characteristics, respondents with antisocial PD were nearly three times as likely to report lifetime homelessness and those with any lifetime suicide attempts were nearly two times as likely to report lifetime homelessness.

## Discussion

### Main finding of this study

Using a contemporary, nationally representative sample of US adults, we found that the lifetime and past-year prevalence of homelessness in the general population was 4.2% and 1.5%, respectively. Our estimate of lifetime homelessness based on NESARC-III data can be directly compared to that from the 2001 to 2002 NESARC-I,[3] which assessed lifetime homelessness in the same way and the results suggest there has been an increase (2.7–4.2%) in the prevalence of lifetime homelessness in the past decade.

Homelessness was found to be not only an economic problem, but also a psychosocial one. Poverty, reliance on public assistance, incarceration, victimization and poor mental health were all found to be significantly associated with homelessness in the USA. Access to safe and affordable housing may be limited for low-income, formerly incarcerated adults with mental illness and substance use disorders.

### What is already known on this topic

Our prevalence estimate of lifetime homelessness is lower than several previous estimates based on community

**Table 2** Health and psychosocial characteristics of a nationally representative sample of adults with and without a 'past-year' history of homelessness

| | *Any past-year homelessness (n = 704)* *Mean/N (SD/weighted%)* | *No past-year homelessness (n = 35 595)* *Mean/N (SD/weighted%)* | *Effect size* *Cohen's d or Δ* |
|---|---|---|---|
| *Health status, past year* | | | |
| Total number of medical conditions | 1.7 (2.3) | 1.4 (1.9) | 0.14 |
| Past-year mental health disorders | | | |
| Major depressive disorder | 183 (25.7%) | 3779 (10.2%) | **15.5%** |
| Bipolar disorder | 54 (8.0%) | 512 (1.4%) | 6.6% |
| Post-traumatic stress disorder | 115 (18.6%) | 1663 (4.4%) | **14.2%** |
| Generalized anxiety disorder | 103 (15.7%) | 1805 (5.1%) | **10.6%** |
| Borderline PD[a] | 269 (45.4%) | 4031 (10.9%) | **34.5%** |
| Schizotypal PD | 162 (27.4%) | 2276 (6.0%) | **21.4%** |
| Antisocial PD | 79 (14.5%) | 856 (2.4%) | **12.1%** |
| Any psychosis | 37 (5.6%) | 300 (0.7%) | 4.9% |
| Any lifetime suicide attempts | 160 (24.3%) | 1835 (4.9%) | **19.4%** |
| Past-year substance use disorders | | | |
| Tobacco | 369 (56.7%) | 6934 (19.5%) | **37.2%** |
| Alcohol | 250 (36.8%) | 4882 (13.5%) | **23.3%** |
| Cannabis | 78 (14.0%) | 894 (2.4%) | **11.6%** |
| Sedatives | 11 (2.8%) | 121 (0.3%) | 2.5% |
| Heroin | 7 (1.1%) | 34 (0.1%) | 1.0% |
| Other opioids | 35 (6.8%) | 295 (0.8%) | 6.0% |
| Cocaine | 18 (2.6%) | 134 (0.3%) | 2.3% |
| Other stimulants | 21 (4.7%) | 91 (0.3%) | 4.4% |
| Club drugs | 6 (0.8%) | 43 (0.1%) | 0.7% |
| Inhalants | 1 (0.8%) | 10 (<0.0%) | 0.8% |
| Hallucinogens | 2 (0.4%) | 17 (<0.0%) | 0.4% |
| SF-12 PCS score | 58.1 (3.1) | 58.5 (2.3) | −0.15 |
| SF-12 MCS score | 45.7 (12.4) | 49.6 (10.6) | **−0.34** |
| *Psychosocial characteristics* | | | |
| Positive behaviors | | | |
| Plan for the future | 3.3 (1.3) | 3.7 (1.2) | **−0.32** |
| Save money regularly | 2.4 (1.3) | 3.2 (1.3) | **−0.62** |
| Learn from mistakes | 3.4 (1.3) | 3.7 (1.2) | −0.24 |
| Consider consequences | 3.4 (1.3) | 3.9 (1.1) | **−0.42** |
| Monitor my own mistakes | 2.9 (1.3) | 3.1 (1.3) | −0.15 |
| Adverse experiences, past year | | | |
| Victim of theft | 228 (31.8%) | 3291 (8.5%) | **23.3%** |
| Victim of property destruction | 182 (26.5%) | 2265 (5.9%) | **20.6%** |
| Death of loved one | 332 (46.2%) | 10 852 (30.1%) | **16.1%** |
| Overwhelming debt | 395 (57.6%) | 4981 (12.3%) | **45.3%** |
| Attend religious services | 86 (38.1%) | 6401 (49.7%) | **−11.6%** |
| Importance of religious or spirituality | 1.8 (1.0) | 1.7 (0.9) | 0.11 |
| Involved in any volunteer work | 86 (13.2%) | 6401 (20.1%) | −6.9% |
| Social support score | 3.2 (0.6) | 3.5 (0.5) | **−0.54** |

Note: Bolded values indicate $d > 0.3$ or $\pm \Delta > 10\%$.

[a]PD, personality disorder.

telephone surveys, which found that 12–15% of adults reported having been homeless sometime in their lives.[2,27–29] This may be because the NESARC assessed lifetime homelessness based on 'not having a regular place to live for at least one month' whereas earlier surveys did not specify a minimum period of homelessness.

**Table 3** Two-block logistic regression analysis identifying correlates of 'past-year' homelessness

| | *Coefficient* | *Odds ratio (99% confidence interval)* |
|---|---|---|
| First block: Background characteristics[a] | | |
| Aged 40 years or older | –0.30 | 0.74 (0.74–0.75) |
| White | –0.17 | 0.84 (0.84–0.85) |
| Never married | 0.40 | 1.49 (1.49–1.50) |
| Employed full/part-time | –0.17 | 0.84 (0.84–0.85) |
| Income <$30 000 | 0.84 | **2.32 (2.31–2.33)** |
| Any lifetime incarceration | 1.36 | **3.91 (3.89–3.92)** |
| Social security benefits | –0.57 | 0.57 (0.57–0.57) |
| Food stamps | 1.67 | **5.33 (5.32–5.35)** |
| Medicaid | 0.01 | 1.01 (1.01–1.02) |
| Second block: Health and psychosocial characteristics | | |
| Past-year major depressive disorder | 0.02 | 1.02 (1.02–1.02) |
| Past-year post-traumatic stress disorder | 0.06 | 1.07 (1.06–1.07) |
| Past-year generalized anxiety disorder | –0.05 | 0.95 (0.94–0.95) |
| Borderline PD | 0.42 | **1.52 (1.51–1.53)** |
| Schizotypal PD | 0.10 | 1.10 (1.10–1.11) |
| Antisocial PD | 0.27 | 1.30 (1.30–1.31) |
| Any suicide attempts | 0.42 | **1.51 (1.51–1.52)** |
| Past-year tobacco use disorder | 0.52 | **1.68 (1.68–1.69)** |
| Past-year alcohol use disorder | 0.20 | 1.22 (1.22–1.23) |
| Past-year cannabis use disorder | 0.16 | 1.18 (1.17–1.18) |
| SF-12 MCS[b] score ≤45 | –0.34 | 0.71 (0.71–0.72) |
| Plan for the future | –0.13 | 0.88 (0.88–0.88) |
| Save money regularly | –0.01 | 0.99 (0.99–1.00) |
| Consider consequences | –0.29 | 0.75 (0.75–0.75) |
| Victim of theft | 0.42 | **1.52 (1.51–1.52)** |
| Victim of property destruction | 0.56 | **1.75 (1.75–1.76)** |
| Death of loved one | 0.15 | 1.16 (1.16–1.17) |
| Overwhelming debt | 1.10 | **3.01 (3.00–3.02)** |
| Attend religious services | –0.04 | 0.96 (0.96–0.97) |
| Social support score ≤3.3 | –0.30 | 0.74 (0.74–0.75) |

Note: Bolded values indicate odds ratios <0.5 or greater than 1.5.

[a]A logistic regression analysis was conducted with two blocks, the first block included only background characteristics and the second block included health and psychosocial characteristics in addition to background characteristics.

[b]SF-12 MCS, Short-Form 12-item MCS.

There have been annual point-in-time (PIT) counts of homeless adults conducted by communities around the country since 2005 and examination of PIT counts from 2005 to 2013 suggests there has been a decline in the raw number of homeless individuals.[30] However, the reliability of PIT counts is unknown and the methodology varies greatly between communities. Even if accurate, there may still have been a slight increase in homelessness within the longer 10-year time frame of our study.

Our finding that various mental health and substance use disorders were found to be associated with past-year and lifetime homelessness was consistent with reviews of the literature on risk factors for homelessness.[13,14] However, few previous studies have included PDs and most studies have focused on severe mental illness (e.g. schizophrenia and bipolar disorder) and substance use disorders as risk factors.

## What this study adds

One historical factor that may explain an apparent increase in lifetime homelessness is the Great Recession in 2007–09,[31] which has been considered the worst global economic recession since World War II.[32] This explanation is

**Table 4** Two-block logistic regression analysis identifying correlates of 'lifetime' homelessness

| | *Coefficient* | *Odds ratio (99% confidence interval)* |
|---|---|---|
| First block: background characteristics[a] | | |
| Male | 0.40 | 1.49 (1.49–1.50) |
| Years of education | –0.01 | 0.99 (0.99–0.99) |
| Never married | –0.01 | 0.99 (0.99–0.99) |
| Employed full/part-time | –0.08 | 0.92 (0.92–0.92) |
| Income <$30 000 | 0.47 | **1.59 (1.59–1.60)** |
| Any lifetime incarceration | 1.82 | **6.15 (6.13–6.16)** |
| Food stamps | 1.01 | **2.75 (2.74–2.75)** |
| Medicaid | 0.16 | 1.17 (1.17–1.17) |
| Second block: health and psychosocial characteristics | | |
| Lifetime major depressive disorder | 0.12 | 1.13 (1.13–1.13) |
| Lifetime post-traumatic stress disorder | 0.20 | 1.22 (1.22–1.23) |
| Lifetime generalized anxiety disorder | 0.28 | 1.32 (1.32–1.33) |
| Borderline PD | 0.34 | 1.41 (1.41–1.41) |
| Schizotypal PD | 0.19 | 1.21 (1.20–1.21) |
| Antisocial PD | 1.07 | **2.93 (2.92–2.94)** |
| Any suicide attempts | 0.66 | **1.92 (1.92–1.93)** |
| Lifetime tobacco use disorder | 0.56 | **1.76 (1.75–1.76)** |
| Lifetime alcohol use disorder | 0.37 | 1.44 (1.44–1.45) |
| Lifetime cannabis use disorder | 0.26 | 1.29 (1.29–1.30) |
| Lifetime cocaine use disorder | 0.40 | 1.49 (1.48–1.49) |
| SF-12 PCS[b] score ≤45 | –0.30 | 0.74 (0.74–0.74) |
| SF-12 MCS score ≤45 | 0.00 | 1.00 (1.00–1.00) |
| Plan for the future | –0.14 | 0.87 (0.87–0.88) |
| Save money regularly | –0.14 | 0.87 (0.87–0.87) |
| Victim of theft | 0.05 | 1.06 (1.05–1.06) |
| Victim of property destruction | 0.25 | 1.28 (1.27–1.28) |
| Overwhelming debt | 0.47 | **1.61 (1.60–1.61)** |
| Attend religious services | –0.22 | 0.81 (0.80–0.81) |
| Social support score ≤3.3 | –0.37 | 0.69 (0.69–0.69) |

Note: Bolded values indicate odds ratios <0.5 or greater than 1.5.

[a]A logistic regression analysis was conducted with two blocks, the first block included only background characteristics and the second block included health and psychosocial characteristics in addition to background characteristics.

[b]SF-12 PCS and MCS, Short-Form 12-item PCS and MCS Summary.

supported by the strong associations, we found between poverty and homelessness. Adults who reported an annual personal income <$30 000 were more than two times as likely to report past-year homelessness and those who received food stamps in the past year were more than five times as likely to report past-year homelessness. Homelessness can even be understood as an extreme form of poverty. Therefore, it is reasonable to speculate that the recent economic recession contributed to increases in short-term homelessness at a population-level.

We found strong associations between several PDs and homelessness, which has rarely been examined in previous studies. Controlling for sociodemographic and other clinical characteristics, borderline PD was strongly related to past-year homelessness, and antisocial PD was strongly related to lifetime homelessness. The effect of PDs on psychosocial functioning has been well-researched,[33,34] but there have been few studies on their specific effects in terms of housing status. Since PDs are considered enduring conditions, they may represent a continuous risk factor for homelessness that may not easily be amenable to intervention and deserve more attention.

Another unique finding of our study was the consistent association between victimization and homelessness. Adults

who had experienced past-year or lifetime homelessness were more likely to report being a victim of crime. Many studies have discussed the criminal histories of homeless adults and the intersection between incarceration and homelessness,[35–37] but few studies have empirically examined homeless adults as victims of crime. Because of the cross-sectional nature of the data, we cannot determine whether crime victims are at increased risk for homelessness and/or homeless adults are at increased risk for crime. Nonetheless, this issue and how it is linked to poverty needs to be further examined to assist vulnerable populations. Together, these findings suggest the complex problem of homelessness needs to be tackled from multiple fronts using population-based approaches.

### Limitations of this study

The data were cross-sectional so the causality and directionality of associations cannot be inferred. The target population was non-institutionalized adults, so it is likely we underestimated rates of homelessness because we did not include the many adults with homeless histories residing in shelters, hospitals, prisons and other institutions at the time of the survey. Some homeless people are also quite mobile and may not have been captured by the survey.[38] Homelessness was broadly assessed and respondents may have responded differently based on their own definitions of homelessness. These limitations were counterbalanced by the strengths of the study, which include the use of a nationally representative sample, structured diagnostic interviews, examination of homelessness within different time frames, and inclusion of a comprehensive array of sociodemographic, health and psychosocial variables.

## Supplementary data

Supplementary data are available at *Journal of Public Health* online.

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## Conflict of interest

The author reports no conflicts of interest with this work.

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