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# The effect of incarceration on housing stability among homeless and vulnerably housed individuals in three Canadian cities: A prospective cohort study

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## ABSTRACT

**OBJECTIVES:** The objective of the study is to characterize the associations between a history of incarceration and subsequent housing stability over a two-year follow-up period among a sample of homeless and vulnerably housed individuals.

**METHODS:** The study was a prospective cohort study of homeless and vulnerably housed adults in three Canadian cities. Between 2009 and 2012, data were collected using structured, in-person interviews at baseline and two follow-up interviews. Generalized estimating equations were employed to determine the association between reported incarceration within the past 12 months and being housed during the subsequent year over a two-year follow-up period.

**RESULTS:** Baseline data were available for 1,189 homeless and vulnerably housed adults. Recent incarceration was reported by 337 (29%) individuals at baseline. In adjusted analyses, incarceration in the past 12 months was independently associated with a decreased likelihood of being housed during the subsequent year over the two-year follow-up period (adjusted odds ratio = 0.67, 95% confidence interval: 0.50–0.90).

**CONCLUSION:** Homeless and vulnerably housed individuals reporting recent incarceration were less likely to be housed over a two-year follow-up period. These findings highlight the importance of assisting individuals experiencing incarceration with securing stable housing during discharge and post-release planning.

**KEY WORDS:** Homeless persons; housing; prisons; public health; substance-related disorders

La traduction du résumé se trouve à la fin de l'article.

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Homelessness is a major public health concern in Canada, with recent estimates suggesting that approximately 30,000 Canadians are homeless on any given night.<sup>1,2</sup> Homeless individuals experience high rates of arrests and incarceration.<sup>3,4</sup> In a study of 377 recently homeless individuals admitted to homeless shelters, 59% of participants reported a history of arrest.<sup>4</sup>

Previous research also suggests that experiencing incarceration is a risk factor for homelessness. In a cross-sectional study of 360 prisoners who were within two years of release from prison, 8.4% of participants reported at least one risk factor for homelessness such as experiencing homelessness prior to arrest.<sup>5</sup> Furthermore, in a national American survey of 6,953 jail inmates, recent homelessness was found to be 7.5–11.3 times more common among inmates than in the general population.<sup>6</sup> Compared with other inmates, incarcerated individuals who had experienced homelessness were more likely to report previous involvement with the criminal justice system, and to have mental health and substance use problems.<sup>6</sup> Additionally, a study of 17,565 incarcerated individuals in the United States observed rates of homelessness between 4 to 6 times higher than those in the general population.<sup>7</sup>

Importantly, preliminary research suggests that homelessness may sometimes be the direct result of incarceration. One study of

120 recently homeless adults in Amsterdam found that 6% of participants lost their housing during incarceration and subsequently became homeless following discharge from prison.<sup>8</sup> Research among individuals who received case management services in the US found that those with a history of incarceration for six months or longer reported higher levels of

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**Conflict of Interest:** None to declare.

long-term homelessness compared to those without a history of incarceration.<sup>9</sup> Moreover, formerly incarcerated men are nearly four times more likely to experience homelessness compared to men who were never incarcerated.<sup>10</sup> Previous research has also demonstrated that a history of incarceration has been associated with an increased risk of lifetime homelessness,<sup>11</sup> and arrest history has been identified as a predictor for longer duration of homelessness.<sup>4</sup>

However, while studies have demonstrated an association between homelessness and incarceration in the short term, less is known regarding the longer-term impact of incarceration on housing stability. In Canada, over 250,000 adults are admitted to a correctional facility every year, though data on health and social outcomes among these individuals are limited.<sup>12</sup> In addition, an estimated 30% of Canadians experiencing incarceration do not have homes to go to following discharge.<sup>13</sup> Individuals in federal correctional facilities routinely receive help securing housing during discharge planning, but at provincial and municipal correctional facilities, assistance with housing support varies widely across the country.<sup>13</sup> Given the evidence suggesting an association between incarceration and homelessness, it is important to determine the long-term risk of homelessness among individuals experiencing incarceration in a Canadian context.

This study therefore sought to determine the longitudinal impact of incarceration on housing stability among homeless and vulnerably housed participants enrolled in the Health and Housing in Transition (HHiT) study, a prospective cohort study in three Canadian cities.<sup>14</sup> Specifically, this study sought to characterize the association between reporting a history of incarceration in the past 12 months and subsequently reporting being housed during the two-year study period among homeless and vulnerably housed adults residing in Ottawa, Toronto and Vancouver.

## METHODS

### Sampling strategy

The sampling strategy and recruitment procedures of the HHiT study have been described previously in detail.<sup>14</sup> Briefly, homeless and vulnerably housed adults (18 years and older) were recruited in three Canadian cities (Ottawa, Toronto and Vancouver) from January to December 2009.<sup>14</sup> Homelessness was defined as living within the last 7 days at a shelter, public space, vehicle, abandoned building, or someone else's home, and not having a home of one's own. Vulnerably housed was defined as currently living in one's own room or apartment, but having been homeless or had 2 or more moves in the past 12 months. Full-time students and individuals who were visiting recruitment cities for 3 months or less were excluded.

### Recruitment strategy

The targeted sampling procedure was based on the design suggested by Ardilly and Le Blanc.<sup>15</sup> Using this approach, homeless participants were recruited at shelters and meal programs in the three cities and recruitment was weighted so that the proportion of homeless participants not using shelters was

similar to the estimated proportion of homeless persons who did not use shelters in each respective city.<sup>14</sup> Vulnerably housed participants were recruited from randomly selected rooming houses in Ottawa and Toronto and from single room occupancy (SRO) hotels in Vancouver. SROs are single rooms that typically do not include a private kitchen or bathroom, and do not provide tenants with long-term leases.<sup>16</sup> Due to difficulties in gaining access to some of these locations across the three cities, the recruitment strategy for vulnerably housed individuals was modified to include participants who lived in SROs and used meal programs, drop-in centres, and community health centres. All study participants provided written informed consent and received CAD \$20 upon interview completion. This study was approved by the Research Ethics Boards at the University of Ottawa; St. Michael's Hospital, Toronto; and the University of British Columbia, Vancouver.

### Survey instrument

Data were collected from participants from January 2009 to December 2012. Descriptions of all survey instruments used in the study have been reported in full elsewhere.<sup>14</sup> Briefly, data on socio-demographic characteristics (e.g., city, age, gender, ethnicity, and partner status), housing, incarceration history, and injection drug use were collected using structured, in-person interviews conducted at participants' residences, institutions, shelters, meal programs, drop-in centres, and community health centres by research personnel trained in interview administration. Interviews took approximately 60–90 minutes to complete. At baseline, participants reported their ethnic background based on categories adapted from the Statistics Canada Ethnic Diversity Survey.<sup>17</sup> Incarceration history was determined by self-report using the following question: "In the past 12 months, were you incarcerated, whether in preventive detention, prison or a penitentiary?" Injection drug use was determined by asking participants whether they had injected any drugs in the past 3 months.

Participants provided contact information during administration of the baseline survey to facilitate follow-up survey administration approximately one year and two years after the baseline survey date. The follow-up survey included questions of a similar nature to the baseline survey on housing, incarceration and drug use. In this study, we report the findings from baseline and two subsequent follow-up interviews.

### Data analysis

Descriptive statistics were used to summarize all quantitative variables. Comparisons between participants who were homeless and vulnerably housed at baseline were performed using  $\chi^2$  tests for all categorical variables. Comparisons between participants who reported being incarcerated in the past 12 months at baseline were performed using  $\chi^2$  tests for all categorical variables. Statistical tests were two-tailed and a significant association was defined at the  $p < 0.05$  level.

The outcome of interest was whether a participant reported being housed during the interval from the baseline interview to the follow-up 1 interview and during the interval from the follow-up 1 to the follow-up 2 interview. Participants were classified as housed or homeless based on the Residential Time-line Follow-back Inventory classification scheme.<sup>18</sup> Specifically, being housed was

defined as staying in one of the following: one’s own house or apartment; with family or friends and paying rent; rooming house; boarding home; group home; SRO; supportive housing; or other similar forms of housing during each year of follow-up. Participants who stayed at institutions such as hospitals, substance abuse treatment facilities, nursing homes or prisons during the one-year follow-up periods were categorized as being either homeless or housed based on a functional classification using pre-specified procedures.<sup>18</sup> For example, if a participant was housed and experienced a short stay at a hospital, but subsequently returned to being housed, they were classified as being housed.<sup>18</sup> Further details are available from the authors upon request. The primary independent variable of interest was defined as experiencing incarceration in the past 12 months, which we included in the analysis as a lagged variable (i.e., this variable represented reports of being incarcerated at the prior follow-up interview). This was done to avoid reverse causality and to specifically determine the temporal association between incarceration and subsequent housing status. Covariates that were theoretically and clinically relevant (e.g., age group, gender, city, survey period, ethnicity, partner status, and injection drug use) were included in the analysis. Due to the small number of transgender participants, they were grouped with female participants for the analysis in order to ensure sufficient statistical power.

Bivariate and multivariate generalized estimating equation (GEE) analyses for binary outcomes were used to characterize associations between reporting incarceration within the past 12 months and being housed during the subsequent year. These methods provide modified standard errors adjusted by multiple observations using an exchangeable correlation structure to account for dependence between participants’ responses across annual interviews during the two-year study period.<sup>19,20</sup> We employed GEE methods given that we sought to determine the temporal association between housing status and incarceration. We undertook an a priori determined two-stage model-building process.<sup>21</sup> First, bivariate associations were generated to determine whether the independent variable of interest (history of incarceration) and each of the covariates were associated with housing stability. In the second step, variables significant at  $p < 0.05$  and those measuring basic socio-demographic factors (e.g., age group, gender and ethnicity) were entered into a final multivariate model. Goodness of fit for the model was assessed using the Quasi Likelihood under Independence Model Criterion (QIC) and the Corrected Quasi Likelihood under Independence Model Criterion (QICC). All statistical analyses were performed using SPSS software version 20 (SPSS, Chicago, IL).

**RESULTS**

Overall, 1,189 homeless and vulnerably housed adults provided data. Baseline characteristics are presented in Table 1. At baseline, 592 (49.8%) participants reported being homeless and 597 (50.2%) reported being vulnerably housed. The median age of participants at baseline was 43 years (interquartile range [IQR]: 35–49). A history of incarceration in the past 12 months was reported at baseline by 337 (29%) homeless and vulnerably housed individuals. Among participants at baseline, the median number of days incarcerated in the past 12 months was 30 (IQR: 4–100).

**Table 1.** Baseline characteristics of homeless and vulnerably housed individuals in three Canadian cities, 2009 (n = 1189)\*

	All participants	Incarceration in past 12 months	
		No n (%)	Yes n (%)
City			
Ottawa	393	270 (32.0)	123 (36.5)
Toronto	399	294 (34.9)	105 (31.1)
Vancouver	388	279 (33.1)	109 (32.3)
Gender			
Male	780	539 (63.9)	241 (71.5)
Female or transgender	400	304 (36.1)	96 (28.5)
Age group (years)			
<30	160	110 (13.1)	50 (14.9)
30–39	292	182 (21.6)	110 (32.7)
40–49	436	304 (36.1)	132 (39.3)
≥50	290	246 (29.2)	44 (13.1)
Ethnicity			
White	760	541 (65.9)	219 (67.2)
Other	387	280 (34.1)	107 (32.8)
Partnered			
Yes	271	181 (21.5)	90 (26.8)
No	888	648 (76.9)	240 (71.4)
Housed in past 12 months			
Yes	588	417 (49.5)	171 (50.7)
No	591	425 (50.5)	166 (49.3)
Injection drug use in past 3 months			
Yes	212	124 (14.8)	88 (26.3)
No	962	715 (85.2)	247 (73.7)

\* Totals do not always add up to 1189 as a result of missing data.

Using  $\chi^2$  tests, we detected no significant differences between homeless and vulnerably housed participants with respect to city of recruitment, age group, ethnicity, partner status, incarceration in the past 12 months, and injection drug use in the past 3 months prior to the baseline interview ( $p > 0.05$ ).

With regards to the primary outcome of being housed, participants from Vancouver had the highest prevalence of reporting being housed (34.7%; 966 responses) compared with Toronto (32.1%; 892) and Ottawa (33.1%; 923) participants across the two-year study period. Male participants were also more likely to report being housed than female and transgender participants (65.8% vs. 34.2%,  $p = 0.671$ ). With respect to age, participants <30 years old reported the fewest instances of being housed (13.5%; 374 reports), compared with participants in the 30–39 year (24.2%; 672 reports), 40–49 year (38.2%; 1,063 reports), and ≥50 year (24.1%; 671) age groups. White participants were more likely to report being housed than participants of other ethnicities (66.1% vs. 33.9%,  $p = 0.674$ ) and non-partnered participants were more likely to report being housed compared to partnered participants (75.8% vs. 24.2%,  $p = 0.064$ ). Participants who reported incarceration in the past 12 months at baseline were less likely to report being housed (24.7%; 420 responses) compared to those who did not report incarceration at baseline (75.3%; 1,282 responses). Participants who reported injection drug use at baseline were less likely to be housed (16.2%; 438 responses) compared to those who did not report injection drug use at baseline (83.8%; 2,267 responses). Participants reported being housed at the time of the baseline interview (35.7%; 992 responses) and at the follow-up 1 (32.8%; 911 responses) and follow-up 2 (31.6%; 878 responses) interview time points.

**Table 2.** Factors associated with housing stability in generalized estimating equation analyses among homeless and vulnerably housed individuals in Ottawa, Toronto and Vancouver, 2009–2012 (*n* = 1189)

Characteristic	Unadjusted OR (95% CI)	Adjusted OR (95% CI)	<i>p</i> value*
City			
Ottawa	0.73 (0.54–1.01)	0.53 (0.34–0.82)	0.004
Toronto	0.57 (0.42–0.77)	0.43 (0.28–0.68)	0.000
Vancouver†	1	1	–
Gender			
Male vs. female or transgender	0.95 (0.73–1.23)	1.01 (0.71–1.44)	0.969
Age group (years)			
≥50	0.67 (0.44–1.02)	0.64 (0.36–1.12)	0.116
40–49	0.83 (0.55–1.24)	0.85 (0.49–1.46)	0.545
30–39	0.62 (0.41–0.95)	0.81 (0.46–1.43)	0.469
<30†	1	1	–
Ethnicity			
White vs. other	1.06 (0.81–1.38)	1.00 (0.70–1.44)	0.983
Partnered			
Yes vs. no	1.32 (0.98–1.78)	–	–
Incarceration in past 12 months			
Yes vs. no	0.66 (0.50–0.88)	0.67 (0.50–0.90)	0.008
Injection drug use in past 3 months			
Yes vs. no	0.92 (0.68–1.23)	–	–
Interview period			
Year 2	1.85 (1.45–2.37)	1.52 (1.22–1.89)	0.000
Year 1	1.22 (1.00–1.48)	1	–
Baseline†	1	–	–

Note: OR = odds ratio; CI = confidence interval.

\* *p* value for adjusted odds ratio.

† Reference category.

Retention was high, with one-year follow-up data available for 1,058 participants (89%) and two-year follow-up data available for 969 (81%) participants. Table 2 presents bivariate and multivariate odds ratios and 95% confidence interval (CI). After adjustment, a history of incarceration in the past 12 months was independently associated with a decreased likelihood of being housed over the subsequent year of follow-up over 2 years (adjusted odds ratio [AOR] = 0.67, 95% CI: 0.50–0.90). Compared to participants living in Vancouver, participants living in Ottawa (AOR = 0.53, 95% CI: 0.34–0.82) and Toronto (AOR = 0.43, 95% CI: 0.28–0.68) were significantly less likely to be housed in the subsequent year during the two-year follow-up period. Participants were also significantly more likely to be housed during the second year of follow-up (AOR = 1.52, 95% CI: 1.22–1.89).

## DISCUSSION

Among a three-city cohort of homeless and vulnerably housed individuals, those participants reporting a history of incarceration in the past 12 months were less likely to be housed during the subsequent year over a two-year follow-up period despite adjustment for potential confounders such as city, gender, age group, ethnicity, partner status, and injection drug use. It is noteworthy that we observed this association by measuring incarceration in the past 12 months at each follow-up interview, suggesting a longer-term impact of incarceration on housing stability.

These findings suggest that having an incarceration history may affect both short- and long-term housing stability, a finding consistent with previous research on homelessness.<sup>9,11</sup> Lack of

stable housing after discharge from prison may be due to loss of housing during incarceration, inadequate discharge and post-release planning related to housing, and reluctance of housing providers to accept tenants with a history of involvement with the criminal justice system.<sup>8</sup> Mental health concerns, substance use, and challenges in securing income and employment may also have led to difficulties in obtaining stable housing.<sup>7,22</sup> Additionally, individuals living in Toronto and Ottawa were less likely to be housed compared to individuals living in Vancouver during the two-year follow-up period. The reasons for this observation are unclear, but these findings may reflect inherent differences among participants from each study site that we were unable to capture in our data, housing markets and the availability of housing and social services across the three cities, or protocols in place in Vancouver to connect individuals with housing post-release.

Given that an estimated 30% of Canadians experiencing incarceration have no housing following discharge and the societal burden of both homelessness and incarceration,<sup>13</sup> our results have important public health implications, suggesting that targeted efforts to assist individuals experiencing incarceration with obtaining or retaining housing as well as discharge and post-release planning may help to improve health and social outcomes related to housing instability. Discharge and post-release planning services at the federal, provincial and municipal levels should assist individuals experiencing incarceration with securing short- and long-term stable housing. Partnerships between correctional facilities and local organizations such as the John Howard Society and the Canadian Association of Elizabeth Fry Societies that offer support with housing and social services could also be strengthened to ensure that the needs of this population are being met. For example, discharge workers in Ontario provincial corrections facilities often refer individuals to reintegration programs that provide counselling related to housing and employment.<sup>23</sup> Connecting individuals experiencing incarceration with transitional supports may help them achieve longer-term housing stability.

In addition, these findings support the need for innovative housing strategies for individuals who have experienced incarceration. Research suggests that a “Housing First” approach may be effective in housing homeless individuals with a history of involvement with the criminal justice system.<sup>24,25</sup> Pioneered in New York City, the Housing First model provides individuals experiencing both homelessness and mental illness with immediate access to permanent housing in scattered-site independent units through the use of rent subsidies, in conjunction with portable mental health supports, without any requirement that they abstain from substance use or receive psychiatric treatment.<sup>24,25</sup> Studies of Housing First have shown this approach to be effective in successfully housing previously homeless individuals and, in some cases, contributing to a reduction in avoidable emergency department use, hospital admissions, and stays at correctional facilities.<sup>26–29</sup> In one study of 198 homeless individuals with a history of criminal justice involvement in Vancouver, those who were randomized to a Housing First intervention had significantly lower convicted offences compared to control group participants during a two-year follow-up period.<sup>30</sup> These findings suggest that a Housing First approach may be particularly effective in housing homeless

individuals who have experienced incarceration in a Canadian setting and reduce the risk of reoffending in this population.

**Limitations**

This study has several limitations typical of observational research among vulnerable populations. First, the study sample was limited to single adults and for that reason is likely not representative of the entire population of homeless and vulnerably housed individuals in Toronto, Ottawa and Vancouver. Second, since data on demographic characteristics, housing, and experiences of incarceration were collected by self-report, accuracy may have been affected by recall and other sources of reporting bias, particularly with stigmatized behaviours such as drug use and incarceration. Third, while we adjusted for a range of potential factors, the possibility exists that we did not include all factors that may have influenced the association between incarceration and housing stability.

**CONCLUSION**

In summary, we present findings from one of the first studies to investigate the long-term effect of incarceration among homeless and vulnerably housed individuals in Canada, which demonstrate that participants with a history of incarceration were less likely to be housed over a two-year follow-up period. These findings have implications for service providers that interact with homeless and vulnerably housed individuals experiencing incarceration, highlighting the importance of discharge and post-release planning that extends beyond the short term, as well as the need to work with housing providers and secure funding to assist recently incarcerated individuals with transitions to permanent housing. Future studies should examine data from a longer follow-up period to determine whether the long-term effects of incarceration on housing stability extend further than our two-year study period. Interventions that address the needs of homeless and vulnerably housed individuals who have experienced incarceration may potentially reduce involvement with the legal system and associated costs.

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## RÉSUMÉ

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**OBJECTIFS :** Caractériser les associations entre les antécédents d’incarcération et la stabilité ultérieure du logement sur une période de suivi de deux ans au sein d’un échantillon de sans-abri et de personnes vulnérables sur le plan du logement.

**MÉTHODE :** Il s’agissait d’une étude prospective de cohortes d’adultes sans abri ou vulnérables sur le plan du logement dans trois villes canadiennes. Entre 2009 et 2011, nous avons recueilli des données de départ à l’aide d’entretiens directs structurés, puis mené deux entretiens de suivi. Nous avons employé des équations d’estimation généralisées pour déterminer l’association entre la déclaration d’une incarcération au cours des 12 mois antérieurs et le logement durant l’année ultérieure sur une période de suivi de deux ans.

**RÉSULTATS :** Des données de référence étaient disponibles pour 1 189 adultes sans abri ou vulnérables sur le plan du logement. Une

incarcération récente a été déclarée par 337 personnes au départ (29 %). Dans nos analyses ajustées, l’incarcération au cours des 12 mois antérieurs était indépendamment associée à une moindre probabilité d’être logé durant l’année ultérieure au cours de la période de suivi de deux ans (rapport de cotes ajusté = 0,67, intervalle de confiance de 95 % : 0,50–0,90).

**CONCLUSION :** Les personnes sans abri ou vulnérables sur le plan du logement ayant fait état d’une incarcération récente étaient moins susceptibles d’être logées au cours d’une période de suivi de deux ans. Ces constatations soulignent l’importance d’aider les personnes ayant vécu une expérience d’incarcération à obtenir un logement stable durant la planification de leur libération et de la période postlibératoire.

**MOTS CLÉS :** sans-abri; logement; prisons; santé publique; troubles liés à une substance