Published in final edited form as:

Child Youth Serv Rev. 2020 February ; 109: . doi:10.1016/j.childyouth.2019.104692.

Prevalence of homelessness and co-occurring problems: A comparison of young adults in Victoria, Australia and Washington State, United States.

Jessica A. Heerde, PhD¹, Jennifer A. Bailey, PhD², John W. Toumbourou, PhD³, Bosco Rowland, PhD⁴, Richard F. Catalano, PhD⁵

¹Department of Paediatrics, Melbourne Medical School, The University of Melbourne; Murdoch Children's Research Institute, Australia

²Social Development Research Group, School of Social Work, University of Washington, USA

³Centre for Social and Early Emotional Development, School of Psychology, Deakin University; Centre for Adolescent Health, Murdoch Children's Research Institute, Australia

⁴School of Psychology, Deakin University

⁵Social Development Research Group, School of Social Work, University of Washington

Abstract

Homelessness is associated with various co-occurring health and social problems yet; few contemporary international studies have examined these problems in young adulthood. This descriptive study presents cross-state comparison of the prevalence of young adult homelessness in Washington State, USA and Victoria, Australia using state representative samples from the International Youth Development Study (IYDS; $n = 1,945$, 53% female). Associations between young adult homelessness and a range of co-occurring problems were examined using a modified version of the Communities That Care youth survey. Results showed significantly higher rates of past year homelessness were reported by young adults in Washington State (5.24% vs. 3.25% in Victoria). Cross-state differences were evident in levels of friends' drug use, antisocial behavior, weekly income and support from peers. Unemployment (Adjusted Odds Ratio [AOR] = 2.67), antisocial behavior (AOR = 3.54) and victimization (AOR = 3.37) were more likely among young adults reporting homelessness in both states. Young adults with higher weekly income were less likely to report homelessness (AOR = .69) in both states. No significant association between

Corresponding Author: Dr Jessica Heerde, Senior Research Fellow, Department of Paediatrics, Melbourne Medical School, The University of Melbourne, Royal Children's Hospital Campus, Level 2 West, 50 Flemington Road, Parkville Victoria 3052. Phone: +61 407 339 319. jessica.heerde@unimelb.edu.au.

Author statement

JH, JB, and JT contributed to the conception and design of the study. JH performed the statistical analysis and wrote the first draft of the manuscript. JB assisted with the statistical analysis. All authors (JH, JB, JT, BR, RC) contributed to manuscript revision, read and approved the submitted version.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Declaration of Interest Statement

The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

mental health problem symptoms, substance use, family conflict or interaction with antisocial peers and homelessness were found in either state. Rates of violent behavior were more strongly related to young adult homelessness in Washington State than Victoria. The current findings suggest that programs that enable young adults to pursue income and employment, reduce antisocial behavior and include services for those who have been victimized, may help to mitigate harm among young adults experiencing homelessness.

Keywords

Homelessness; Young adults; International study; Co-occurring problems

1. Introduction

Homelessness is a multifaceted and significant social problem internationally. The incidence of homelessness tends to rise in adolescence and young adulthood, and such developmentally early homelessness makes young people vulnerable for entering pathways to long-term health problems, chronic homelessness and hardship (Coates & McKenzie-Mohr, 2010; Goodman, Saxe, & Harvey, 1991). Recent national prevalence estimates in the United States (USA) suggest 15.6% of young adults 18–25 years of age experienced homelessness in the past year (Morton et al., 2018). In Australia it is estimated 15% of young adults 19–24 years of age reported experiencing homelessness in 2017 (Fildes, Perrens, & Plummer, 2018).

Literature on early adolescent experiences of homeless young adults suggests a broad range of cross-sectional correlates. Family of origin factors such as having received inadequate family care, childhood abuse, family conflict and low attachment to parents are known to amplify risk for homelessness (Bearsley-Smith, Bond, Littlefield, & Thomas, 2008; Heerde & Hemphill, 2018; Shelton, Taylor, Bonner, & van den Bree, 2009; van den Bree et al., 2009). Having trouble with friends, peers' engagement in antisocial behavior and substance use are commonly reported by young people experiencing homelessness (Bearsley-Smith et al., 2008; Heerde & Hemphill, 2018; Shelton et al., 2009). At the community level, experiencing homelessness has been associated with having lower levels of attachment to one's neighborhood and higher levels of community-based poverty (Embleton, Lee, Gunn, Ayuku, & Braitstein, 2016; Shelton et al., 2009; van den Bree et al., 2009).

Experiencing homelessness is associated with many negative health and social outcomes, including exposure to violence both as perpetrators and as victims, substance misuse and addiction, mental health problems and contact with the justice system (Goodman et al., 1991; Greenberg & Rosenheck, 2008; Heerde & Hemphill, 2017, 2018; Wong, Clark, & Marlotte, 2016). Homelessness during late adolescence and early adulthood in particular is likely to lead to long-term negative consequences because it can interfere with the completion of education, successful transition into the workplace, and adoption of adult roles that set the stage for later economic, emotional, physical health, and social well-being (Bachman et al., 2002). Symptoms of mental health problems, engagement in antisocial behaviors, substance use and victimization have consistently been identified as health and

social problems which co-occur with homelessness in prior studies analyzing population-based data from adolescents and young adults (Bearsley-Smith et al., 2008; Fildes et al., 2018; Heerde, Bailey, Toumbourou, Rowland, & Catalano, 2019; Morton et al., 2018; Shelton et al., 2009; van den Bree et al., 2009). Finding effective ways to reduce young adult homelessness and associated problems is essential for homelessness prevention, and for lessening co-occurring health and social problems.

It is of interest to consider possible differences and similarities in homelessness and co-occurring problems across international settings, yet few contemporary cross-national studies have examined young adult homelessness using data from population-based samples of non-homeless young adults with a comparison group of homeless young adults. These cross-national studies can make valuable contributions to knowledge about differences in rates of homelessness, co-occurring health and social problems among homeless persons, and problems and/or outcomes that often result from homelessness. These studies (1) permit testing of the role of macro-level policy and other contextual differences in homelessness and co-occurring problems and (2) promote understanding of the implications for feasible policy and prevention options. Differences in government policies related to crisis housing, welfare stipends and social services may influence cross-state variation in rates homelessness; the influence of these differences can be examined through cross-state studies of homelessness (Toro, 2007). When observed cross-state differences in as few as two countries are predicted on the basis of theory (Jessor, 2008; Segall, Lonner, & Berry, 1998), empirical findings become highly interpretable.

Victoria and Washington State adopt similar definitions of homelessness. In Victoria, individuals are described as homeless where their living arrangement is in an inadequate dwelling (e.g. unsheltered); or has no tenure (or the tenure is short and cannot be extended; e.g. temporary accommodation); or the dwelling does not allow for social interaction (Australian Bureau of Statistics, 2016). In Washington State, individuals who do not have access to fixed or adequate nighttime accommodation (either unsheltered or temporarily sheltered), are defined as experiencing homelessness (National Alliance to End Homelessness, 2016). However, efforts to reduce homelessness are underpinned by different federal and state government youth policy orientations and programs (Minnery & Greenhalgh, 2007) aimed at reducing problematic health and social behaviors (e.g. substance use, violence) and/or addressing harms that commonly accompany these behaviors.

Australian policy is underpinned by a harm minimization standpoint with the aim to promote health and welfare responses to reduce harms associated with engaging in detrimental health and social behaviors (e.g. substance use and violence) rather than focusing on policing or the justice system (Beyers, Toumbourou, Catalano, Arthur, & Hawkins, 2004). Conversely, Washington State policies are zero tolerance and abstinence oriented where the aim is to abstain from these behaviors (Beyers et al., 2004; McMorris, Hemphill, Toumbourou, Catalano, & Patton, 2007). These different policy orientations may result in differences in the prevalence of homelessness and co-occurring health and social problems among young people. It has been shown that state differences in rates of substance use, violence and arrests reflect the differing state policy orientations for young people in Victoria and Washington State (e.g. Hemphill et al., 2014; McMorris et al., 2007).

Differences in policy orientations provide an opportunity to examine homelessness and co-occurring problems across multiple contexts. Although several studies have examined homelessness among young people using cross-state study designs (e.g. Milburn, Rotheram-Borus, Rice, Mallet, & Rosenthal, 2006; Milburn et al., 2007; Rosenthal, Mallett, Milburn, & Rotheram-Borus, 2008), these are frequently limited by differences in study methodologies (Toro, 2007) and definitions of homelessness (Heerde, Hemphill, & Scholes-Balog, 2014); making it difficult to discern whether methodological variations are the source of similarities and differences in study findings or underlying cross-state differences (Hemphill et al., 2011; Pirkis, Irwin, Brindis, Patton, & Sawyer, 2003). Prior cross-state studies have explored differences in rates of problems known to co-occur with homelessness among young people (e.g. substance use and health risk behaviors; Milburn et al., 2006; Milburn et al., 2007; Rosenthal et al., 2008), with less attention given to a broader set of potential co-occurring problems associated with homelessness (van den Bree et al., 2009). To the knowledge of the authors, prior international studies of homelessness have not compared cross-state differences in problems co-occurring with homelessness for young adults.

The International Youth Development Study (IYDS) is uniquely suited to address questions related to cross-state differences in the prevalence of homelessness and co-occurring problems among young people. The IYDS draws on state-representative samples from Washington State, USA and Victoria, Australia. At the study outset, Washington State and Victorian samples were similar in demographic and economic characteristics including population size, urbanization, educational participation, and prosperity (McMorris et al., 2007). Standardized methodologies (sampling, recruitment, survey consent and administration) were used in both states. Further, standardized measures of homelessness and potential co-occurring problems were used in both states, and these measures were pilot tested to ensure comparability (e.g. Hemphill et al., 2011; McMorris et al., 2007). Thus, differences observed in homelessness or co-occurring problems in the IYDS are likely to reflect real differences between the two states.

The current descriptive study presents a cross-sectional, cross-state comparison of the prevalence of homelessness among young adults, and co-occurring problems. Four research questions were examined: (1) Are there state differences in levels of homelessness and co-occurring problems (e.g., demographic, individual, family, peer, and community factors)? (2) Do levels of these co-occurring problems differ between homeless and non-homeless young adults? (3) To what extent are homelessness and co-occurring problems associated? and (4) Are homelessness and co-occurring problems associated to the same degree in both states?

2. Materials and Methods

2.1 Participants

The current study presents a cross-state comparison of data from participants enrolled in the International Youth Development Study (IYDS), a longitudinal study examining the development of healthy and problem behaviors among young people from Victoria, Australia and Washington State, USA. The study used a two-stage cluster sampling

approach in 2002: (1) public and private schools with Grades 5, 7 and 9 were randomly selected for recruitment into the study using a probability proportionate to grade-level size sampling procedure (Kish, 1965); and (2) one class at each grade level was randomly selected within each school (McMorris et al., 2007) yielding samples of approximately 1,000 students at each grade level in each state. The original sampling and recruitment methods for the IYDS have previously been described (McMorris et al., 2007).

Data used in this study were collected when respondents from the 7th grade cohort were, on average, age 25 years. The present sample included 1,945 young adults (984 in Victoria), ranging in age from 23–27 years (mean = 25.14, standard deviation = .48). Females made up 53% of the sample. About 87% of respondents took part in the age 25 survey in each state.

2.2. Procedure

2.2.1 Ethics approval.—Approval for the study was obtained from The University of Melbourne Human Ethics in Research Committee in Australia and the University of Washington Human Subjects Institutional Review Board in the USA.

2.2.2 Survey administration.—In both states, trained survey staff used a single survey administration protocol. For the age 25 data used here, participants provided informed consent prior to survey administration. The survey was completed online and in some cases by phone or face-to-face. The survey took 50–60 minutes to complete. Recruitment included contact and survey visits to correctional facilities and other services for vulnerable populations where some of the young adults resided. Participants received a \$40 (USD/AUD) voucher as reimbursement for their time.

2.3 Instruments

The IYDS survey was adapted from the Communities That Care youth survey (Arthur, Hawkins, Pollard, Catalano, & Baglioni Jr, 2002; Glaser, Horn, Arthur, Hawkins, & Catalano, 2005; Pollard, Hawkins, & Arthur, 1999). The survey, including demographic variables and measures of co-occurring problems (e.g., individual-level, family, peer group and community problems), has been shown to be valid and reliable for participants in Victoria (Hemphill et al., 2011; Toumbourou et al., 2014) and the USA (Arthur et al., 2002; Glaser et al., 2005; Pollard et al., 1999). Similar versions of the survey have been published elsewhere (Baheiraei et al., 2014; Oesterle et al., 2012). Table 1 presents the descriptive statistics for homelessness and all analyzed co-occurring problems, including Cronbach Alpha for the relevant scales.

2.3.1 Homelessness.—Past year homelessness at age 25 was measured by asking participants, “In the past year, have you been homeless (i.e. not had a regular place to live)?”. Response options were dichotomous, “Yes” (1) and “No” (0).

2.3.2 Demographic measures—Included seven items. Participant reported *age* (date of birth), *gender identity* (male [0] or female [1]), and *state* in which they lived (Washington State [0] or Victoria [1]) were examined. *Weekly income* was measured using the item “What is your usual take-home weekly income from all sources of support (after tax has

been taken out)?” Response options were recoded to reflect: \$0-\$100 (1); \$101-\$200 (2); \$201-\$300 (3); \$301-\$400 (4); \$401-\$500 (5); \$500-\$1000 (6); \$1001-\$2000 (7); and over \$2001 (8). The item “Which best describes your current educational status?” was used to measure *educational status*. Response options were ‘Not currently studying’ (1), ‘Part-time student’ (2), ‘Full-time student’ (3) and ‘Other’ (4). Participants reported their current *employment status* (employed [1] or not employed [2]) in response to the item “Are you currently employed?” Participants described their sexual orientation in response to the item “Please choose the description that best fits how you think about yourself.” Response options included ‘100% heterosexual’ (1), ‘Mostly heterosexual, but somewhat attracted to people of your own sex’ (2), ‘Bisexual, that is, attracted to men and women equally’ (3), ‘Mostly homosexual (gay or lesbian), but somewhat attracted to people of the opposite sex’ (4), ‘100% homosexual (gay or lesbian)’ (5) and ‘Asexual’ (6).

2.3.3 Co-occurring problems.—The analyses examined 12 co-occurring problems across individual-level, family, peer group and community domains. The choice of these co-occurring problems was specified *a priori* based on their suggested association with homelessness (Bearsley-Smith et al., 2008; Embleton et al., 2016; Heerde et al., 2019; Heffron, Skipper, & Lambert, 1995; Shelton et al., 2009).

2.3.3.1 Individual-level problems.: Six scales measured individual-level problems: mental health problem symptoms, antisocial behavior, violent behavior, victimization, deliberate self-harm, and alcohol use. *Mental health*, or symptoms of depression and anxiety in the past month, were assessed using the K-10 (Kessler et al., 2002). “During the past 30 days, how often did you feel hopeless?” is an example item. Response options ranged from ‘None of the time’ (0) through to ‘All of the time’ (4). Scores across the 10-items were averaged to form a total mental health symptoms score (0–40), where higher scores indicated poorer mental health. *Antisocial behavior* was assessed using eight items, such as “How many times in the past year (12 months) have you stolen anything worth more than \$5 but less than \$50?”. *Violent behavior* was measured using three items such as “How many times in the past year (12 months) have you attacked someone with the idea of seriously hurting them?”. For both antisocial and violent behaviors, response options ranged from ‘never’ (1) through to ‘10 or more times’ (5). *Victimization* was assessed using two items about having been physically attacked and threatened with violence. Response options were ‘yes’ (1) and ‘no’ (0). *Deliberate self-harm* was assessed using the item “Have you ever deliberately hurt yourself or done anything that you knew might have harmed you or even killed you?” The item was rated on a scale ranging from ‘no’ (0) through to ‘yes in the past year’ (2) and recoded to reflect ‘no’ (0) and ‘yes’ (1). Participants’ level of past month *alcohol use* was classified using two measures of alcohol use (past year and past month). Response options were recoded to reflect “Not at all” (0) and “one or more occasion” (1) in the past month. Participants who reported no past year alcohol use were included as “not at all” for past month alcohol use.

2.3.3.2 Family problems.: The analyses examined two family problems: *conflict* and *attachment to parent(s)*. The item “We argue about the same things in my family over and over.” was one of three items assessing *family conflict*. The item “Do you feel very close to

your father?” was one of four items used to measure *attachment to parent(s)*. For both measures, response options ranged from ‘definitely no’ (1) through to ‘definitely yes’ (4).

2.3.3.3 Peer group problems: Were assessed through three measures: antisocial peers, friends’ use of drugs and support from peers. The item “In the past year (12 months), how many of your best friends have carried a weapon?” was one of eight items assessing interactions with *antisocial peers*. Four items, such as ‘In the past year (12 months), how many of your best friends have smoked cigarettes?’ were used to examine *friends’ use of drugs*. *Support from peers* was examined using two items of which “In the past year (12 months), how many of your best friends have you shared your thoughts and feelings with?” is an example item. Response options for each scale ranged from ‘none of my friends’ (0) through to ‘4 of my friends’ (4).

2.3.3.4 Community problems.: Participants were asked about *social cohesion and trust* within the neighborhood in which they lived using five items. “People around here are willing to help their neighbors.” is an example item. Response options for all items ranged from ‘strongly agree’ (1) through to ‘strongly disagree’ (4).

2.4 Statistical analysis

Stata IC software for Windows (StataCorp LLC, 2017), version 15.1 was used to conduct all analyses. Comparisons of means and frequencies for co-occurring problems across individual-level, family, peer group, and community domains between the two states, and by homelessness, were performed using *t* tests and chi-square analyses. Second, correlations between homelessness and all potential co-occurring problems were examined to show highly correlated pairs, or sets, of measures that might result in collinearity in the logistic regression analyses.

Next, univariate and multivariate hierarchical logistic regression analyses were conducted to examine associations between past year homelessness and co-occurring problems. To examine if these associations differed by state, the multivariate analyses tested state-interactions for all potential co-occurring problems. To create interaction terms, all co-occurring problem measures were mean centered, and centered variables were then multiplied by state (coded 0 and 1). To conduct the multivariate analyses, potential co-occurring problems were grouped by domain and entered into each analysis hierarchically. Co-occurring problems were grouped from most to least proximal according to their influence on the individual (i.e., individual-level, family, peer group, and community). State-interaction terms were entered into the multivariate model. Only significant state-interaction terms were kept in the final fully adjusted model.

3. Results

3.1 State differences in levels of homelessness and co-occurring problems

Of the whole sample, 4.23% (95% confidence interval [CI] = 3.37, 5.30) reported experiencing homelessness in the past year. State comparisons in means, results for tests of significance, and frequencies of homelessness and co-occurring problems are presented in

Table 1. Results show that, compared to Victorians (3.25%; 95% CI = 2.25, 4.67), young adults in Washington State reported a significantly higher (5.24%; 95% CI 3.92, 6.97) level of homelessness in the past year. Victorian young adults showed significantly higher levels of friends' drug use and engagement in antisocial behavior, compared to young adults in Washington State, and significantly higher average weekly income and higher levels of support from peers.

3.2 Differences in levels of co-occurring problems between homeless and non-homeless young adults

Comparisons in means and frequencies of all potential co-occurring problems for homeless and non-homeless young adults are presented in Table 2. Compared to young adults who were not homeless, those that reported experiencing homelessness in the past year showed lower average weekly income, and higher levels of unemployment, antisocial behavior, violent behavior, victimization, deliberate self-harm and poorer mental health. Higher levels of family conflict, interactions with antisocial peers, and having friends who used drugs were seen among young adults who reported experiencing homelessness in the past year when compared to those who did not report homelessness. Finally, those experiencing homelessness had lower levels of parental attachment and peer support than those who did not report homelessness.

3.3 Associations between homelessness and co-occurring problems

Correlations between the analyzed co-occurring problems ranged from $>-.40$ to $<.47$ and all were in the expected direction. Multicollinearity was not indicated with no correlation approaching .80 (Tabachnick & Fidell, 2013) (refer Appendix A). Table 3 presents the univariate (Model 1) and multivariate (Model 2) logistic regression models investigating associations between homelessness and co-occurring problems. Univariate results showed most of the analyzed individual-level, family, peer group, and community problems were significant in their association with past year homelessness. Specifically, being unemployed (odds ratio [OR] = 8.82), antisocial behavior (OR = 11.87), victimization (OR = 8.38) and deliberate self-harm (OR = 4.22) showed the largest associations with past year homelessness. Associations between homelessness and co-occurring problems of mental health problems, violent behavior, family conflict, friends use of drugs and interaction with antisocial peers were also found. Support from peers (OR = .81), higher weekly income (OR = .61) and attachment to parents (OR = .57) showed protective effects.

For the hierarchical multivariate logistic regression model of past year homelessness and co-occurring problems (Table 3; Model 2), four statistically significant unique associations were evident: Higher weekly income (adjusted odds ratio [AOR] = .69), unemployment (AOR = 2.67), antisocial behavior (AOR = 3.54) and victimization (AOR = 3.37).

3.4 State differences in associations between homelessness and co-occurring problems

Tests of state-interactions showed past year homelessness was less strongly associated with violent behavior in Victoria compared to Washington State (AOR = .13). No other state-interactions were statistically significant.

4. Discussion

This is one of few contemporary cross-national studies with matched methods and common survey measures to compare rates of homelessness and a broad set of co-occurring problems among young adults. The same sampling, data collection, data management and survey methods were used to investigate and compare levels of homelessness by state and test for cross-state differences in associations between homelessness and various co-occurring problems. Data analyzed was from samples of participants in the IYDS which had state-representative samples of young people in Victorian and Washington State at the study outset. Cross-state differences in the prevalence of homelessness were found, with slightly higher rates among Washington State young adults. State differences in levels of co-occurring problems between homeless and non-homeless young adults were found, however, the strength of association with homelessness was similar across both states. Multivariate analyses showed higher weekly income, unemployment, engagement in antisocial behavior and victimization were uniquely associated with homelessness in both states.

Co-occurring problems of antisocial behavior (AOR = 3.54) and victimization (AOR = 3.37) displayed the strongest unique associations with past year homelessness. The cross-sectional and descriptive nature of the current study does not allow for the assertion of causal associations between antisocial behavior or victimization and homelessness. Due to the concurrent nature of the analyses, it is unclear whether participants' antisocial behavior or victimization occurred prior to, during, or following their experience of homelessness. The items measuring antisocial behavior in this study (e.g. stealing an item worth more than \$5 but less than \$50) may reflect survival behaviors engaged in by young adults who are unemployed, have lower incomes, unstable housing or who are experiencing social exclusion and marginalization (Heerde & Pallotta-Chiarolli, 2019; Heerde & Hemphill, 2016; Kipke, Simon, Montgomery, Unger, & Iversen, 1997), rather than a malevolent disregard for the social and cultural norms of acceptability concerning these behaviors.

Young people who experience homelessness report engaging in a range of behaviors which may be considered 'antisocial and violent' under common societal values and social norms (Baron & Hartnagel, 1998; Crawford, Whitbeck, & Hoyt, 2011; Heerde & Pallotta-Chiarolli, 2019; Heerde & Hemphill, 2016; Heerde et al., 2014; Kipke et al., 1997; McCarthy & Hagan, 1991). These young people also report experiencing various forms of victimization as a result of increased vulnerability while experiencing homelessness (Gaetz, 2004; Heerde & Pallotta-Chiarolli, 2019; Kipke et al., 1997; McCarthy, Hagan, & Martin, 2002). Experiencing homelessness may not afford young people the opportunity to adhere to societal values, norms and laws that prohibit an individual's engagement in 'antisocial or violent' behaviors because they may be providing a safeguard against victimization (Heerde & Pallotta-Chiarolli, 2019; Heerde et al., 2014; Gaetz, 2004; Goodman et al., 1991; Hamilton, Poza, & Washington, 2011; Kipke et al., 1997; McCarthy et al., 2002). Rather, engagement in behaviors which may be considered 'antisocial', and being victimized, become social norms within homelessness culture, where such behaviors are often engaged in as a response to perceived vulnerability or being victimized; as a form of self-protection (Heerde & Pallotta-Chiarolli, 2019). Physical victimization is commonly perceived as a normative experience by young people who experience homelessness as one's control over

their daily life and circumstances diminishes (Goodman et al., 1991; Heerde & Pallotta-Chiarolli, 2019). Values and laws governing behavior which underpin mainstream society are often at odds with survival for homeless young people.

Higher weekly income (AOR = .69) and unemployment (AOR = 2.67) maintained associations with homelessness in the multivariate model. These results are important within the structural context of poverty and disadvantage associated with social exclusion and experiencing homelessness. Financial instability limits one's ability to participate in the workforce and both unemployment and financial instability increase barriers to social participation and opportunities to build positive social capital, thus increasing deprivation and marginality (Horsell, 2006). Indeed, these limitations intensify social exclusion among young people by way of further restricting one's ability to obtain and maintain safe and affordable housing and drive income inequality. Further cross-state and longitudinal research examining potential differences in the labor market and structural drivers of young adult homelessness are needed.

Consistent with previous research examining family problems associated with homelessness (e.g. Bearsley-Smith et al., 2008; Coates & McKenzie-Mohr, 2010; Heerde & Hemphill, 2018; van den Bree et al., 2009), family conflict and attachment to parent(s) were examined in their association with homelessness. Although associated at the bivariate level, the multivariate analysis revealed that they were not unique predictors at this developmental stage; other factors were more strongly related. Prospective analyses examining family factors from early to late adolescence in their association with early and later homelessness would help to understand the unique relationship between family of origin factors and homelessness.

We found slightly higher rates of homelessness in Washington State, while levels of co-occurring problems associated with homelessness in the multivariate model showed cross-state similarities with one exception. Rates of violent behavior were more strongly related to young adult homelessness in Washington State than Victoria. This suggests that there may be some effect of differing youth policy orientations in the two states. Prior analyses of IYDS data have shown similar state differences in rates of violence which reflect the differing state policy orientations (McMorris et al., 2007). It may be that policies related to less support for crisis housing and sleeping in public places (Minnery & Greenhalgh, 2007) make it more dangerous to experience homeless in Washington State than in Victoria. Also, the higher rate of young adults experiencing homelessness in Washington State may be the result of income differences between Washington State and Victoria or policy differences. Differences in urban environments across states, as well as variation in social welfare allowances may also intersect with the observed difference in rates of violence behavior. For example, Australian young people between the ages of 15 and 24 years, are eligible for a fortnightly payment, where they live independently from their parent(s) or career(s). The provision of this payment may make the demand to engage in violence as a means of obtain a commodity(ies) (e.g. food, shelter or money) (Heerde, Scholes-Balog, & Hemphill, 2015; Kipke et al., 1997) less likely for Victorian young adults. The findings of the current study call for more in depth and longitudinal study of the processes (predictors) leading to

homelessness and its health and social implications, and a more fine-grained assessment of the influence of cross-state policy differences.

Our findings showed all other relationships between homelessness and co-occurring problems were similar between the two states. There is little comparable empirical work on homelessness with which to liken our findings. However, our findings are consistent with the general pattern of results from the IYDS. Prior studies analyzing IYDS data consistently show that, despite level differences between states in substance use and other co-occurring problems (Heerde et al., 2019; Hemphill et al., 2011; Hemphill, Heerde, Herrenkohl, Toumbourou, & Catalano, 2012; Hemphill et al., 2014; McMorris et al., 2007), the strength of association between co-occurring problems is similar in the two states. For example, poor family management during adolescence was more common in Victoria than Washington State but the strength of the association with later substance use was equivalent in the two states (Hemphill et al., 2011). The extent to which problems associated with homelessness differ across the two states is still unclear; empirical work in this area is warranted in international efforts designed to reduce homelessness.

4.1 Study limitations and strengths

This study presents a descriptive cross-sectional analysis, thus causal associations between homelessness and the co-occurring problems we have examined here cannot be asserted. However, this study has attended to the limitations of prior international studies (Toro, 2007), and is unique in surveying cross-state samples using comprehensive survey measures. Longitudinal studies analyzing data from a general population sample, where data on co-occurring problems has been collected prior to participants experiencing homelessness are warranted (van den Bree et al., 2009). Studies of this nature can provide valuable knowledge with a view to showing temporal associations between homelessness and a range of problems, as well as pathways into homelessness. It is noted that the analyses relied on participant self-report data. The survey measures used in this study have demonstrated adequate reliability and longitudinal validity in large samples from Victoria, Australia (Hemphill et al., 2011; Toumbourou et al., 2014) and the USA (Arthur et al., 2002; Glaser et al., 2005; Pollard et al., 1999). The factor structure of all measures has been validated using confirmatory factor analyses (Glaser et al., 2005). Last, our findings are generalizable only to the states and samples examined here.

4.2 Study implications and future directions

Finding effective ways to reduce homelessness is an international priority. Reducing rates of young adult homelessness is likely to reduce the likelihood of young people entering pathways to long-term chronic homelessness (Coates & McKenzie-Mohr, 2010; Goodman et al., 1991). This study has several implications for homelessness prevention and the development of programs and strategies seeking to reduce homelessness and associated problems. First, our findings suggest that low income, unemployment, antisocial behaviors, and victimization are associated with homelessness. Each of these factors is potentially modifiable and longitudinal analyses are necessary to learn how problems across a range of spheres of influence are associated with homelessness. Programming efforts that support obtaining income and employment for young adults may help in addressing young adult

homelessness. This could include the development and inclusion of programs within community-based services that assist young adults experiencing homelessness to complete their education and/or build the skills needed for seeking, obtaining and successfully maintaining employment. These programs should also include other health and social resources required for obtaining and maintaining employment (e.g., counseling, housing, clothing, financial management skills). Equally, programming efforts and community-based services working to assist young adults experiencing homelessness should include resources for addressing higher rates of problem behaviors (e.g., antisocial behavior), violence prevention (for revictimization) and treatment services for those who have been victimized.

Understanding factors that may contribute to young adults experiencing homelessness requires longitudinal analyses that model a broad range of risk and protective factors. Future studies that can show risk and protective factors which precede homelessness would help in the development of homelessness prevention and intervention programs and strategies. There are few contemporary international studies of homelessness. Cross-national studies, similar to that described here, are vital in contributing information regarding country-level differences in risk and protective factors and the viability of prevention and intervention approaches that can be implemented internationally (Beyers et al., 2004; Pirkis et al., 2003).

Acknowledgements

The authors wish to express their appreciation and thanks to project staff and participants for their valuable contribution to the project.

Funding Acknowledgements

The work of Dr Heerde is supported by funding provided through a Research Fellowship funded by the Westpac Scholars Trust. Early conceptualizations of this article were supported through a Murdoch Children's Research Institute Population Health Theme Funding Grant. The authors are grateful for the financial support of the National Institute on Drug Abuse (R01DA012140), the National Institute on Alcoholism and Alcohol Abuse (R01AA017188), the National Health and Medical Research Council (NHMRC; 491241) and the Australian Research Council (DP109574, DPO663371 and DPO877359) for supporting the IYDS. The content is solely the responsibility of the authors and does not necessarily represent the official views of the sponsors. The funding sources did not have any involvement in the analysis and interpretation of data, the writing of the article or the decision to submit the article for publication.

Appendix

Appendix A.

Correlation matrix for past year homelessness, demographic variables and co-occurring problems for the study sample.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. Homelessness	-	-.04	-.01	-.14	-.24	.04	.05	.05	-.09	-.09	.2	.14	-.05	.1	.24	.2	.2	.0	.0	.09
2. Female		-	-.05	.04	.07	.07	.04	.09	-.07	.03	-.22	-.17	.12	.14	-.1	-.14	-.14	.05	.05	.05
3. Age (years)			-	-.07	-.07	-.05	-.16	-.06	-.01	.01	.12	.01	-.13	.2	.03	.08	.07	.01	-.08	.02
4. Victoria				-	.22	-.02	.04	.03	.04	.02	-.02	.09	.10	-.03	.07	-.02	-.01	.02	-.04	.05

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
5. Higher weekly income (P)					-	-.22	-.40	-.03	.12	.05	-.08	.01	.08	-.20	-.09	-.06	-.09	-.04	-.03	.05
6. Educational status						-	.16	.01	-.04	-.06	-.04	-.01	.05	.05	-.03	-.05	-.03	-.02	.04	.01
7. Employment status							-	.04	-.11	-.07	.11	.00	-.17	.18	.11	.09	.10	.05	.04	.06
8. Sexual orientation								-	-.12	-.09	-.02	.02	-.04	.21	.02	-.03	.04	.10	.04	-.02
9. Family conflict									-	.29	-.18	-.09	.09	.29	-.11	-.12	-.16	-.08	-.05	.03
10. Attachment to parent(s) (P)										-	-.08	-.03	.16	-.19	-.06	-.08	-.12	-.07	-.13	.05
11. Interaction with antisocial peers											-	.47	-.11	.18	.39	.47	.31	.10	.03	.02
12. Friends' use of drugs												-	.20	.15	.29	.17	.22	.10	.04	.16
13. Support from peers (P)													-	-.17	.00	-.05	-.05	-.06	-.03	.13
14. Depressive symptoms														-	.14	.11	.24	.18	.10	-.01
15. Antisocial behavior															-	.32	.16	.11	.10	.01
16. Violent behavior																-	.37	.14	.01	.02
17. Victimization																	-	.12	.03	.00
18. Deliberate self-harm																		-	.04	-.04
19. Social cohesion and trust (P)																			-	-.02
20. Past month alcohol use																				-

Note. N = 1,906. Statistically significant associations in **bold** ($p < .05$), (P) Protective factor. Past year homelessness (coded 0 = no, 1 = yes); Female gender (coded 0 = male, 1 = female); Victoria (coded 0 = Washington State, 1 = Victoria); Employment status (coded 0 = Employed, 1 = Not employed); Victimization (coded 0 = no victimization, 1 = victimization); Past month alcohol use (coded 0 = no use, 1 = recent use). *Point biserial correlations* were performed between dichotomous and continuous variables. *Tetrachoric correlations* were performed between two dichotomous variables. *Pearson correlations* were performed between two continuous variables.

References

- Arthur M, Hawkins J, Pollard J, Catalano R, & Baglioni A Jr (2002). Measuring risk and protective factors for use, delinquency, and other adolescent problem behaviors: The Communities That Care Youth Survey. *Evaluation Review*, 26(6), 575–601. [PubMed: 12465571]

- Australian Bureau of Statistics. (2016). 2049.0 - Census of Population and Housing: Estimating homelessness, 2016. <http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/2049.02016?OpenDocument>
- Bachman J, O'Malley P, Schulenberg J, Johnston L, Bryant A, & Merline A (2002). The decline of substance use in young adulthood: Changes in social activities, roles, and beliefs. Mahwah, NJ: Lawrence Erlbaum Associates.
- Baheiraei A, Soltani F, Ebadi A, Cheraghi MA, Foroushani AR, & Catalano RF (2014). Psychometric properties of the Iranian version of 'Communities That Care Youth Survey'. *Health Promotion International*, 31(1), 59–72. doi: 10.1093/heapro/dau062 [PubMed: 25107919]
- Baron SW, & Hartnagel TF (1998). Street youth and criminal violence. *Journal of Research in Crime and Delinquency*, 35(2), 166–192. doi: 10.1177/0022427898035002003
- Bearsley-Smith CA, Bond LM, Littlefield L, & Thomas LR (2008). The psychosocial profile of adolescent risk of homelessness. *European Child & Adolescent Psychiatry*, 17(4), 226–234. doi: 10.1007/s00787-007-0657-5 [PubMed: 18301942]
- Beyers J, Toumbourou J, Catalano R, Arthur M, & Hawkins J (2004). A cross-national comparison of risk and protective factors for adolescent substance use: The United States and Australia. *Journal of Adolescent Health*, 35(1), 3–16. doi: 10.1016/j.jadohealth.2003.08.015 [PubMed: 15193569]
- Coates J, & McKenzie-Mohr S (2010). Out of the frying pan, into the fire: Trauma in the lives of homeless youth prior to and during homelessness. *Journal of Sociology and Social Welfare*, 37, 65.
- Crawford DM, Whitbeck LB, & Hoyt DR (2011). Propensity for violence among homeless and runaway adolescents: An event history analysis. *Crime and Delinquency*, 57(6), 950–968. doi: 10.1177/0011128709335100 [PubMed: 22865932]
- Embleton L, Lee H, Gunn J, Ayuku D, & Braitstein P (2016). Causes of child and youth homelessness in developed and developing countries: A systematic review and meta-analysis. *JAMA Pediatrics*, 170(5), 435–444. [PubMed: 27043891]
- Fildes J, Perrens B, & Plummer J (2018). Young people's experiences of homelessness: Findings from the Youth Survey 2017. Canberra: Mission Australia
- Gaetz S (2004). Safe streets for whom? Homeless youth, social exclusion, and criminal victimization. *Canadian Journal of Criminology and Criminal Justice*, 46(4), 423–456.
- Glaser R, Horn M, Arthur M, Hawkins J, & Catalano R (2005). Measurement properties of the Communities That Care® Youth Survey across demographic groups. *Journal of Quantitative Criminology*, 21(1), 73–102.
- Goodman L, Saxe L, & Harvey M (1991). Homelessness as psychological trauma: Broadening perspectives. *American Psychologist*, 46(11), 1219. [PubMed: 1772159]
- Greenberg G, & Rosenheck R (2008). Jail incarceration, homelessness, and mental health: A national study. *Psychiatric Services*, 59(2), 170–177. [PubMed: 18245159]
- Hamilton A, Poza I, & Washington D (2011). "Homelessness and trauma go hand-in-hand": Pathways to homelessness among women veterans. *Women's Health Issues*, 21(4), S203–S209. doi: 10.1016/j.whi.2011.04.005 [PubMed: 21724142]
- Heerde J, & Hemphill S (2016). Stealing and being stolen from: Perpetration of property offenses and property victimization among homeless youth—A systematic review. *Youth & Society*, 48(2), 265–300. 10.1177/0044118X13490763.
- Heerde J, & Hemphill S (2017). The role of risk and protective factors in the modification of risk for sexual victimization, sexual risk behaviors, and survival sex among homeless youth: A meta-analysis. *Journal of Investigative Psychology and Offender Profiling*, 14(2), 150–174. 10.1002/jip.1473.
- Heerde J, & Hemphill S (2018). Exploration of associations between family and peer risk and protective factors and exposure to physically violent behavior among homeless youth: A meta-analysis. *Psychology of Violence*, 9(5), 491–503. 10.1037/vio0000181.
- Heerde JA, & Pallotta-Chiarolli M (2019). 'I'd rather injure somebody else than get injured': An introduction to the study of exposure to physical violence among young people experiencing homelessness. *Journal of Youth Studies*. 10.1080/13676261.2019.1610558.

- Heerde J, Hemphill S, & Scholes-Balog K (2014). Fighting' for survival: A systematic review of physically violent behavior perpetrated and experienced by homeless young people. *Aggression and Violent Behavior*, 19(1), 50–66. 10.1016/j.avb.2013.12.002.
- Heerde JA, Scholes-Balog KE, & Hemphill SA (2015). Associations between youth homelessness, sexual offenses, sexual victimization, and sexual risk behaviors: A systematic literature review. *Archives of Sexual Behavior*, 44(1), 181–212. 10.1007/s10508-014-0375-2. [PubMed: 25411128]
- Heerde JA, Bailey J, Toumbourou JW, Rowland B, & Catalano R (2019). Longitudinal associations between early-mid adolescent risk and protective factors and young adult homelessness in Australia and the United States. *Prevention Science*, Accepted 24 Nov 2019.
- Heffron W, Skipper B, & Lambert L (1995). Risk factors for homelessness: a study of families of origin. *Family Medicine*, 27(9), 586–591. [PubMed: 8829984]
- Hemphill S, Heerde J, Herrenkohl T, Patton G, Toumbourou J, & Catalano R (2011). Risk and protective factors for adolescent substance use in Washington State, the United States and Victoria, Australia: A longitudinal study. *Journal of Adolescent Health*, 49(3), 312–320. [PubMed: 21856525]
- Hemphill S, Heerde J, Herrenkohl T, Toumbourou J, & Catalano R (2012). The impact of school suspension on student tobacco use: a longitudinal study in Victoria, Australia, and Washington State, United States. *Health Education & Behavior*, 39(1), 45–56. [PubMed: 21586667]
- Hemphill S, Heerde J, Scholes-Balog K, Smith R, Herrenkohl T, Toumbourou J, & Catalano R (2014). Reassessing the effects of early adolescent alcohol use on later antisocial behavior: A longitudinal study of students in Victoria, Australia, and Washington State, United States. *The Journal of Early Adolescence*, 34(3), 360–386. doi: 10.1177/0272431613491830 [PubMed: 25132702]
- Horsell C (2006). Homelessness and social exclusion: A Foucauldian perspective for social workers. *Australian Social Work*, 59(2), 213–225.
- Jessor R (2008). Description versus explanation in cross-national research on adolescence. *Journal of Adolescent Health*, 43, 527–528. [PubMed: 19027639]
- Kessler R, Andrews G, Colpe L, Hiripi E, Mroczek D, Normand S, ... Zaslavsky A. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959–976. [PubMed: 12214795]
- Kipke M, Simon T, Montgomery S, Unger J, & Iversen E (1997). Homeless youth and their exposure to and involvement in violence while living on the streets. *Journal of Adolescent Health*, 20(5), 360–367. [PubMed: 9168383]
- Kish L (1965). *Survey sampling*. New York: John Wiley & Sons.
- McCarthy B, & Hagan J (1991). Homelessness: A criminogenic situation? *British Journal of Criminology*, 31(4), 393–410.
- McCarthy B, Hagan J, & Martin M (2002). In and out of harm's way: Violent victimization and the social capital of fictive street families. *Criminology*, 40(4), 831–866.
- McMorris B, Hemphill S, Toumbourou J, Catalano R, & Patton G (2007). Prevalence of substance use and delinquent behavior in adolescents from Victoria, Australia and Washington State, United States. *Health Education & Behavior*, 34(4), 634–650. [PubMed: 16740513]
- Milburn N, Rotheram-Borus M, Rice E, Mallet S, & Rosenthal D (2006). Cross-National Variations in Behavioral Profiles Among Homeless Youth. *American Journal of Community Psychology*, 37(1–2), 21–27. [PubMed: 16680534]
- Milburn N, Stein J, Rice E, Rotheram-Borus M, Mallett S, Rosenthal D, & Lightfoot M (2007). AIDS risk behaviors among American and Australian homeless youth. *Journal of Social Issues*, 63(3), 543–565.
- Minnery J, & Greenhalgh E (2007). Approaches to homelessness policy in Europe, the United States, and Australia. *Journal of Social Issues*, 63(3), 641–655.
- Morton M, Dworsky A, Matjasko J, Curry S, Schlueter D, Chávez R, & Farrell A (2018). Prevalence and correlates of youth homelessness in the United States. *Journal of Adolescent Health*, 62(1), 14–21. [PubMed: 29153445]
- National Alliance to End Homelessness. (2016). *The State of Homelessness in America: An examination of trends in homelessness, homeless assistance, and at-risk populations at the national and state levels*. Washington DC: National Alliance to End Homelessness

- Oesterle S, Hawkins JD, Steketee M, Jonkman H, Brown EC, Moll M, & Haggerty KP (2012). A cross-national comparison of risk and protective factors for adolescent drug use and delinquency in the United States and the Netherlands. *Journal of Drug Issues*, 42(4), 337–357. doi: 10.1177/2F0022042612461769 [PubMed: 26166843]
- Pirkis J, Irwin C, Brindis C, Patton G, & Sawyer M (2003). Adolescent substance use: beware of international comparisons. *Journal of Adolescent Health*, 33(4), 279–286. [PubMed: 14519570]
- Pollard J, Hawkins J, & Arthur M (1999). Risk and protection: Are both necessary to understand diverse behavioral outcomes in adolescence? *Social Work Research*, 23(3), 145–158.
- Rosenthal D, Mallett S, Milburn N, & Rotheram-Borus M (2008). Drug use among homeless young people in Los Angeles and Melbourne. *Journal of Adolescent Health*, 43(3), 296–305. [PubMed: 18710685]
- Segall M, Lonner W, & Berry J (1998). Cross-cultural psychology as a scholarly discipline: On the flowering of culture in behavioral research. *American Psychologist*, 53(10), 1101.
- Shelton K, Taylor P, Bonner A, & van den Bree M (2009). Risk factors for homelessness: evidence from a population-based study. *Psychiatric Services*, 60(4), 465–472. [PubMed: 19339321]
- StataCorp LLC. (2017). *Stata: Statistics/data analysis (Version 15:1 IC edition)*. College Station, TX: StataCorp LLC.
- Tabachnick BG, & Fidell LS (2013). *Using multivariate statistics (6th ed.)*. Boston, United States of America: Pearson Education Inc.
- Toro P (2007). Toward an international understanding of homelessness. *Journal of Social Issues*, 63(3), 461–481.
- Toumbourou J, Evans- Whipp T, Smith R, Hemphill S, Herrenkohl T, & Catalano R (2014). Adolescent predictors and environmental correlates of young adult alcohol use problems. *Addiction*, 109(3), 417–424. [PubMed: 24321051]
- van den Bree M, Shelton K, Bonner A, Moss S, Thomas H, & Taylor P (2009). A longitudinal population-based study of factors in adolescence predicting homelessness in young adulthood. *Journal of Adolescent Health*, 45(6), 571–578. [PubMed: 19931829]
- Wong C, Clark L, & Marlotte L (2016). The impact of specific and complex trauma on the mental health of homeless youth. *Journal of Interpersonal Violence*, 31(5), 831–854. [PubMed: 25392379]

Highlights

- Few contemporary cross-national studies have examined young adult homelessness
- We found a similar profile of co-occurring problems in Victoria and Washington State
- Unemployment, antisocial behavior and victimization co-occurred with homelessness
- Young adults with higher weekly income were less likely to report homelessness
- Understanding longitudinal and modifiable predictors of homelessness are warranted

Table 1.

Summary statistics for study participants in Victoria and Washington State across the analyzed variables.

	HOMELESSNESS, DEMOGRAPHICS, CO-OCCURRING PROBLEMS		COMBINED SAMPLE (N=1,945)		VICTORIAN SAMPLE (n=984)		WASHINGTON STATE SAMPLE (n=961)	
	Mean (SD)/Frequency (%)	α	Mean (SD)/Frequency (%)	α	Mean (SD)/Frequency (%)	α	Mean (SD)/Frequency (%)	t/χ^2 p
Age (years)	25.14 (.48)	n/a	25.04 (.47)	n/a	25.24 *** (.47)	n/a	n/a	<.0001
Gender (% , F)	53.26	n/a	52.83	n/a	53.69	n/a	n/a	.723
HOMELESSNESS								
Past year homelessness (referent: no homelessness)	4.23%	n/a	3.25%	n/a	5.24% *	n/a	4.18	.041
DEMOGRAPHIC VARIABLES								
Higher weekly income (P)	5.03 (1.82)	n/a	5.42 *** (1.63)	n/a	4.62 (1.92)	n/a	-9.23	<.0001
Educational status	1.46 (.86)	n/a	1.45 (.82)	n/a	1.47 (.90)	n/a	.62	.534
Unemployment status (referent: employed)	17.16%	n/a	15.55%	n/a	18.81%	n/a	3.19	.074
Sexual orientation	1.31 (.77)	n/a	1.33 (.85)	n/a	1.29 (.69)	n/a	-1.03	.305
CO-OCCURRING PROBLEMS								
<i>Individual-level problems</i>								
Mental health problem symptoms	1.94 (.71)	.92	1.92 (.71)	.92	1.97 (.76)	.92	1.24	.215
Antisocial behavior	1.06 (.19)	.67	1.07 ** (.21)	.67	1.04 (.17)	.67	-3.03	.003
Violent behavior	1.06 (.27)	.85	1.06 (.26)	.86	.07 (.28)	.83	.70	.482
Victimization (referent: no victimization)	1.15 (.32)	.74	1.15 (.31)	.74	1.16 (.32)	.75	.60	.500
Deliberate self-harm	.03 (.17)	n/a	.03 (.17)	n/a	.03 (.16)	n/a	-.77	.441
<i>Family problems</i>								
Family conflict	2.86 (.82)	.86	2.90 (.81)	.87	2.83 (.83)	.86	-1.67	.094
Attachment to parent(s) (P)	3.04 (.72)	.78	3.06 (.70)	.78	3.01 (.74)	.78	-1.15	.250
<i>Peer group problems</i>								
Interaction with antisocial peers	1.26 (.52)	.82	1.25 (.52)	.84	1.28 (.51)	.80	1.01	.315
Friends' use of drugs	2.65 (.90)	.83	2.73 *** (.90)	.83	2.57 (.92)	.84	-3.61	.0003
Support from peers (P)	3.65 (1.17)	.78	3.77 *** (1.13)	.77	3.54 (1.19)	.78	-3.95	.0001
<i>Community problems</i>								
Social cohesion and trust	2.56 (.45)	.79	2.55 (.43)	.77	2.58 (.47)	.81	1.79	.074
Substance use								

Author Manuscript

	COMBINED SAMPLE (N=1,945)	VICTORIAN SAMPLE (n=984)	WASHINGTON STATE SAMPLE (n=961)
	Mean (SD)/Frequency (%)	α	Mean (SD)/Frequency (%)
	α		t/χ^2
	p		
Past month alcohol use (referent: no use)	86.09 n/a	84.60 n/a	87.44 n/a
			.108

Note. α = Cronbach's alpha. n/a refers to scales with one item and therefore a Cronbach's alpha could not be calculated. % = percent. (P) Protective. χ^2 = chi-square. t = t -statistic. Female gender (coded 0 = male, 1 = female); Employment status (coded 0 = Employed, 1 = Not employed); Victimization (coded 0 = no victimization, 1 = victimization); Past month alcohol use (coded 0 = no use, 1 = recent use). Statistically significant state differences for continuous variables calculated using independent t -tests. Statistically significant state differences for dichotomous variables calculated using chi-square tests. Statistically significant state differences indicated with asterisks attached to the significantly higher value;

* $p < .05$,
** $p < .01$,
*** $p < .001$

Table 2.

Levels of co-occurring problems for homeless and non-homeless young adults.

DEMOGRAPHICS, CO-OCCURRING PROBLEMS		NON-HOMELESS YOUNG ADULTS (n= 1,629)		HOMELESS YOUNG ADULTS (n = 72)				
		Mean (SD)/Frequency (%)		α	Mean (SD)/Frequency (%)	α	t/χ ²	p
Age (years)		25.13 (.48)		n/a	25.24 (.48)	n/a		.063
Gender (% , F)		53.41		n/a	50.00	n/a		.571
DEMOGRAPHIC VARIABLES								
Higher weekly income (P)		5.12 *** (1.75)		n/a	3.00 (2.01)	n/a	9.96	<.0001
Educational status		1.61 (1.09)		n/a	1.45 (.85)	n/a	-1.51	.132
Unemployment status (referent: employed)		15.13%		n/a	61.11% ***	n/a	103.03	<.0001
Sexual orientation		1.48 (.81)		n/a	1.30 (.77)	n/a	-1.94	.053
CO-OCCURRING PROBLEMS								
<i>Individual-level problems</i>								
Mental health problem symptoms		1.92 (.71)		.92	2.52 *** (.96)	.94	-6.87	<.0001
Antisocial behavior		1.05 (.17)		.67	1.28 *** (.43)	.60	-10.19	<.0001
Violent behavior		1.05 (.22)		.86	1.31 *** (.73)	.82	-8.36	<.0001
Victimization (referent: no victimization)		1.14 (.30)		.74	1.46 *** (.44)	.73	-8.75	<.0001
Deliberate self-harm		.03 (.16)		n/a	.10 *** (.30)	n/a	-3.66	.0003
<i>Family problems</i>								
Family conflict		2.53 (.81)		.86	2.88 *** (.81)	.81	3.59	.0003
Attachment to parent(s) (P)		3.04 ** (.71)		.78	2.74 (.83)	.81	3.53	.0004
<i>Peer group problems</i>								
Interaction with antisocial peers		1.24 (.46)		.80	1.87 *** (1.01)	.88	-10.50	<.0001
Friends' use of drugs		2.62 (.90)		.82	3.27 *** (1.02)	.85	-5.89	<.0001
Support from peers (P)		3.67* (1.16)		.77	3.37 (1.32)	.85	2.08	.038
<i>Community problems</i>								
Social cohesion and trust		2.56 (.44)		.80	2.61 (.53)	.76	-83	.409
Substance use								
Past month alcohol use (referent: no use)		86.23%		n/a	82.54%	n/a	.68	.408

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

Note. α = Cronbach's alpha. n/a refers to scales with one item and therefore a Cronbach's alpha could not be calculated. % = percent. (P) Protective factor. χ^2 = chi-square. t = statistic. Female gender (coded 0 = male, 1 = female); Employment status (coded 0 = Employed, 1 = Not employed); Victimization (coded 0 = no victimization, 1 = victimization); Past month alcohol use (coded 0 = no use, 1 = recent use). Statistically significant differences for continuous variables calculated using independent t-tests. Statistically significant differences for dichotomous variables calculated using chi-square tests. Statistically significant differences indicated with asterisks attached to the significantly higher value;

* $p < .05$,
** $p < .01$,
*** $p < .001$

Table 3.

Univariate and multivariate logistic regression models investigating associations between past year homelessness and co-occurring problems.

	UNIVARIATE (MODEL 1)			MULTIVARIATE (MODEL 2)		
	OR (SE)	95% CI	p-value	AOR (SE)	95% CI	p-value
DEMOGRAPHICS, CO-OCCURRING PROBLEMS						
(n = 1,609)						
Age	1.54 (.36)	[.98, 2.44]	.063	1.19 (.37)	[.64, 2.20]	.576
Female (referent: male)	.87 (.21)	[.54, 1.40]	.571	1.25 (.41)	[.66, 2.36]	.501
DEMOGRAPHIC VARIABLES						
Victoria (referent: Washington State)	.61* (.15)	[.37, .98]	.043	.77 (.25)	[.41, 1.46]	.427
Higher weekly income (P)	.61*** (.03)	[.55, .68]	<.0001	.69*** (.06)	[.59, .81]	<.0001
Educational status	1.21 (.15)	[.94, 1.54]	.134	1.00 (.15)	[.74, 1.35]	.999
Unemployment status (referent: employed)	8.82*** (2.22)	[5.39, 14.44]	<.0001	2.67** (.94)	[1.34, 5.32]	.005
Sexual orientation	1.26 (.15)	[.99, 1.60]	.057	1.32 (.22)	[.95, 1.82]	.098
CO-OCCURRING PROBLEMS						
<i>Individual-level problems</i>						
Mental health problem symptoms	2.41*** (.33)	[1.84, 3.14]	<.0001	1.19 (.25)	[.80, 1.80]	.384
Antisocial behavior	11.87*** (3.88)	[6.26, 22.53]	<.0001	3.54* (1.74)	[1.35, 9.26]	.010
Violent behavior	3.86*** (.97)	[2.36, 6.33]	<.0001	1.14 (.44)	[.53, 2.43]	.744
Victimization	8.38*** (2.33)	[4.86, 14.45]	<.0001	3.37** (1.31)	[1.57, 7.20]	.002
Deliberate self-harm	4.22** (1.81)	[1.82, 9.77]	.001	1.35 (.78)	[.44, 4.18]	.601
Past month alcohol use (referent: no use)	.76 (.26)	[.39, 1.47]	.409	1.02 (.43)	[.44, 2.35]	.973
Family problems						
Family conflict	.61*** (.08)	[.46, .80]	<.0001	.97 (.18)	[.67, 1.41]	.879
Attachment to parent(s) (P)	.57** (.09)	[.42, .78]	.001	.74 (.15)	[.49, 1.11]	.148
Peer group problems						
Friends' use of drugs	2.09*** (.27)	[1.62, 2.70]	<.0001	1.46 (.30)	[.98, 2.18]	.061
Interaction with antisocial peers	2.88*** (.37)	[2.23, 3.71]	<.0001	1.15 (.32)	[.66, 1.99]	.621
Support from peers (P)	.81* (.08)	[.67, .99]	.039	1.02 (.15)	[.77, 1.35]	.908
Community problems						

DEMOGRAPHICS, CO-OCCURRING PROBLEMS	UNIVARIATE (MODEL 1) (n = 1,609)	MULTIVARIATE (MODEL 2) (n = 1,522)
Social cohesion and trust (P)	1.26 (.34)	.408 [.73, 2.15]
State-interactions		
Victoria*Violent behavior ^a	-	.13* (.13) [.02, .92]
Pseudo R ²	-	.301
Adjusted R ²	-	.219

Note. The fully adjusted analyses (Model 2) control for gender, age, state, and all variables in the table. The final logistic regression model is presented here (contact lead author for further details about other stages of the hierarchical modeling, including state-interactions). (P) = Protective factor. OR = odds ratio; AOR = adjusted odds ratio; SE = robust standard error; CI = confidence interval.

Female gender (coded 0 = male, 1 = female); Victoria (coded 0 = Washington State, 1 = Victoria); Employment status (coded 0 = Employed, 1 = Not employed); Victimization (coded 0 = no victimization, 1 = victimization); Past month alcohol use (coded 0 = no use, 1 = recent use). Pseudo R² = McFadden's R²; Adjusted R² = McFadden's Adjusted R². Statistically significant results shown with asterisks

* $p < .05$,

** $p < .01$,

*** $p < .001$.

^aVictoria*Violent behavior: OR corresponds to the state-interaction between the dichotomous state variable (coded "0" for Washington State and "1" for Victoria) and the continuous variable for violent behavior.