2020

Adolescent homelessness and associated features: Prevalence and risk across eight states

J. J. Cutuli, *Rutgers University - Camden*
Dan Treglia, *University of Pennsylvania*
Janette E. Herbers, *Villanova University*

Adolescent homelessness and associated features: Prevalence and risk across eight states

J. J. Cutuli[a], Dan Treglia[b], Janette E. Herbers[c]

[a] Department of Psychology, Rutgers University – Camden, Camden, NJ

[b] School of Social Policy and Practice, University of Pennsylvania, Philadelphia, PA

[c] Department of Psychological and Brain Sciences, Villanova University, Villanova, PA

Corresponding author information:
J. J. Cutuli, PhD
Rutgers University - Camden
311 N Fifth Street, Rm 308
Camden, NJ 08243
Email: JCutuli@gmail.com
Phone: None
Fax: None

Authors' Note

Abstract

This study utilizes data from the Youth Risk Behavior Survey to estimate the prevalence of

adolescent homelessness and relations to five indicators of poor functioning among students

attending public high school in eight states. About 3.27% of students experienced homelessness,

and nearly 7% of teens who identified as lesbian, gay, or bisexual (LGB) experienced

homelessness. Homelessness was related to higher rates of sexual/dating violence as well as

having been bullied and feeling unsafe at school. Homelessness and LGB identification predicted

higher rates of more-severe problems with alcohol, hard drug use, poor grades, suicidality, and

risky sexual behavior, controlling for other factors. There was no interaction effect between

homelessness and LGB status, suggesting that these risks are additive.

Keywords: Adolescent and Youth Homelessness; Sexual Minority; Alcohol problem;

Substance Use; Suicidality

Adolescent homelessness and associated features: Prevalence and risk across eight states

This study establishes a more inclusive estimate of homelessness among students attending high school in eight states and tests for associations between homelessness and five factors reflecting poor functioning that warrant intervention. We hypothesize that homelessness will relate to worse functioning, and that students who experience homelessness and identify as lesbian, gay, or bisexual will evidence particularly high risk.

Youth homelessness is a risk factor for both experiencing other adversities and manifesting negative outcomes. Findings based on convenience samples and sub-populations of homeless adolescents known to mainstream services link homelessness with higher rates of depression and suicidality, higher likelihood of alcohol and substance use problems, worse academic outcomes, more sexual risk taking and sexually transmitted infections, and both past and concurrent victimization [1-7].

Efforts to intercede have been hindered by a lack of consensus over both the scope of adolescent homelessness and whether adolescent homelessness or its associated contexts predict various risks and outcomes. The U. S. Department of Housing and Urban Development (HUD) produces two estimates of U.S. homelessness: a point-in-time count estimate of single-night prevalence of sheltered or unsheltered persons in "places not meant for human habitation" like subways or streets as well as annual counts of shelter utilization [8]. Previous work suggests that methodological constraints of both approaches produce underestimates of true prevalence [9-11]. A recent and growing body of research suggests that estimating the extent of homelessness for adolescents and young adults under 25 is even more difficult. This group, more than older homeless adults, are more likely to resist being found and more likely to refuse homeless

services, are less likely to identify as homeless when asked, and seek to be indistinguishable from their non-homeless peers [12-15].

The annual shelter estimate excludes anyone who experienced homelessness but did not access an emergency housing facility that receives funding from HUD [16]. This excludes those doubled-up, those experiencing only unsheltered homelessness, or those exclusively using privately-funded shelters. The Point-in-Time count adds back people experiencing unsheltered homelessness but depending on the locality is limited to those who are (a) visible to enumerators canvassing public spaces or (b) access a social service where homelessness on the night of the count can be recorded. Shinn and Hopper (2008) estimated that up to 41% of people experiencing homelessness are not visible to counters and are thus excluded from single-night prevalence estimates. While HUD and local communities have improved and standardized methods in the more than 10 years since that study, full coverage remains unlikely.

Reported rates of child and youth homelessness are low when considering the routine methods that HUD uses to identify this population. These methods likely under-identify adolescents experiencing homelessness. As an illustrative example, consider rates for Delaware, a state with a poverty rate of about 11% (vs. a national rate of 12.7%) and a racial composition that is 70% white (vs. 77% nationally). In Delaware, 224 children under the age of 18 were identified by the HUD point in time count as using shelter (a rate of about 0.1% given a child population of 203,688), and none were unsheltered [17]. The validity of such low rates can be questioned.

Another source of information on the scope and characteristics of youth homelessness is from the education system. Public school districts in the U.S. are mandated to identify students experiencing homelessness and extend to them certain services and guarantees. The Department

of Education definition of homelessness is much more inclusive than the HUD definition. It emphasizes the categories highlighted in the HUD definition and also students living "doubled-up" or "couch surfing" with other families or individuals. Again using Delaware as an example, 3,091 students were identified by public schools, a rate of about 2.3% given an enrollment of 134,932 in the 2014-15 school year [18]. These school counts involve all children under the age of 18 or all students enrolled in public schools, respectively. They identify a great number more students than those considered homeless and identified by HUD methods.

A recent large, phone-based survey representative of the United States established a 12-month homeless prevalence rate of 4.3% considering households with at least one 13 to 17 year old [13]. This survey focused primarily on unaccompanied homelessness, including youth who had run away, left home because of being asked to leave, or couch surfed, in addition to having "been homeless" in the past 12 months. While there are differences in homelessness definitions relative to either HUD or the Department of Education, this larger rate underscores that routinely collected estimates are under-representations.

Prevalence estimates of adolescent homelessness may be consistent under-representations because HUD and the Department of Education methods of quantifying homelessness do not adequately acknowledge how the phenomenon intersects with adolescence. Normative adolescent developmental tasks involve identity formation, striving for greater autonomy, and increased valuing of social standing, particularly among peers [19, 20]. As such, homelessness in adolescence is more likely to involve running away from abusive contexts or being forced to leave unaccepting family circumstances (e.g., due to LGB identification, pregnancy, poor conduct, or other features of the adolescent's situation) compared to homelessness among younger children when family homelessness is more prevalent. Likely influenced by salient

perceptions of social stigma and a desire for independence, adolescents experiencing homelessness are less likely than other homeless populations to engage social service systems, like shelter, and instead seek informal shelter by doubling-up with peers or other acquaintances [6, 21]. These patterns may also contribute to increased risk for victimization and exploitation as perceived stigma and a desire for autonomy leads some adolescents to more dangerous situations. Adolescents experiencing homelessness are less likely to want to be found as a function of normative developmental characteristics.

The subpopulation of adolescents who identify as lesbian, gay, bisexual, or transgender (LGBT) and experience homelessness may be at even higher risk for adolescent homelessness and poor developmental outcomes. A study in Massachusetts found that about 25% of all lesbian/gay high school students and 15% of bisexual students reported current or recent homelessness, compared to 3% of exclusively heterosexual students [22]. Meanwhile, estimates of the percentage of homeless youth who identify as LGBT vary widely from about 11 to 40%, though these percentages denote an overrepresentation of LGBT youth among the homeless [23-26]. Negative responses by parents to the otherwise adaptive processes of identity formation for sexual minority or gender nonconforming adolescents may contribute to a higher rate of unaccompanied homelessness among these teens [26]. Furthermore, lesbian, gay, bisexual, and transgender adolescents are even less likely to use shelter, more likely to engage in risky sex, and more likely to experience victimization relative to non-LGB youth experiencing homelessness [22, 27]. Rates of mental health, alcohol, and substance use problems are similarly high for this group [26, 28].

An alternative approach to estimating the prevalence of adolescent homelessness and characteristics of youth homelessness is through risk monitoring surveys, such as the Youth Risk

Behavior Survey (YRBS), an anonymous self-report survey capable of estimating population rates for several circumstances among public high school students in a city or state. Anonymity is intended to minimize stigma and perceived risk of unwanted involvement with social service agencies, and a complex sampling design allows the prevalence of homelessness to be estimated relative to the general population of high school students in a given locale. Investigators have documented rates of homelessness using previous administrations of the YRBS, including in Massachusetts (e.g., 7.6% in 1992; [29]), Philadelphia (5.9% in 2011; 4.8% in 2013; [30, 31]), Connecticut (5.4% in 2011), and Delaware (3.9% in 2011; [32]). The prevalence of adolescent homelessness based on the YRBS is greater than other estimates in each of these locales.

The YRBS also allows us to test for associations between homelessness and functioning in key domains. Perlman et al [31] used 2011 YRBS data to document increased risk for depressed mood, suicidality, and self-injurious behavior among homeless adolescents. A later study found increased risk for binge drinking, substance use, and mental health problems associated with homelessness [30]. These data allow researchers not only to estimate the local rate of homelessness, but also to understand the needs of this population with respect to other problems and services.

Most studies using the YRBS have not taken its complex sampling design into account and, therefore, have produced biased estimates of the degree of risk for poor outcomes associated with homelessness. As reviewed by Bell and colleagues [33], it is not rare for published findings of YRBS data to be biased because (a) the YRBS oversamples certain subgroups and participant probabilities of selection are not equal, (b) observations are clustered because of multistage sampling which affects within-cluster variance, and (c) stratification may bias population variance. Analyses attempting to associate homelessness with other factors, but without fully

accounting for the complex sampling design, may have deflated estimates of standard error and biased significance testing [33]. Unfortunately, this problem is more the norm than the exception for studies of homelessness using the YRBS.

The current study has three aims: (1) estimate the prevalence of homelessness among high school students, with particular attention to the subgroup of homeless adolescents identifying as lesbian, gay, or bisexual (LGB); (2) test for positive associations between homelessness and each of five indicators; and (3) test for even-higher risk for poor outcomes among homeless adolescents who identify as LGB. We take a variable-centered approach and exploit the complex sampling design.

Method

We utilize data from the 2015 YRBS from eight states whose surveys included a question about homelessness: Alaska, Connecticut, Delaware, Illinois, Maryland, Massachusetts, North Carolina, and New Mexico. Alaska is excluded from analyses that consider LGB status as its survey did not include sexual orientation. Details of the YRBS methods are available elsewhere [34], though briefly explained below.

Participants

Participants attending public schools in each state were selected using a two-stage cluster sample design. Schools were selected based on enrollment size, and students in a randomly-selected required class period completed the YRBS as an anonymous paper-and-pencil survey in school. This resulted in 77,559 observations relevant to the current analyses, representative of a population of 1,720,861 public high school students when accounting for the complex sampling.

Compliance with Ethical Standards. The study was determined exempt by the Institutional Review Board of Rutgers University. All procedures involving human participants were in

accordance with the ethical standards of the institutional research committee and with the 1964

Helsinki declaration and its later amendments or comparable ethical standards. For this type of

secondary analysis of anonymous data, formal consent is not required.

Variables

Students provided demographic information, including age, race/ethnicity, and sex. They

also reported LGB status, homelessness, victimization, risky behaviors, and functioning in

various domains. Most constructs were indexed dichotomously (absent/present) by any

endorsement of one or more relevant items. Poor outcomes reflected severe behaviors in each

domain that would warrant intervention [35]. While there is a high degree of standardization

across states for most questions, there was some variation in phrasing and construct

measurement, as noted where relevant.

Independent variables.

Homelessness. The eight states each asked one of five different questions about students'

housing status. There was no standard wording for housing or homelessness questions

recommended by the CDC for the 2015 YRBS. Stakeholders within each state had to petition

local entities to include the housing question. Some of these stakeholders collaborated with

others in different states or were aware of published work using the YRBS to estimate

homelessness rates, resulting in the use of the same or similar wording. Other states used

idiosyncratic wording for their housing questions. See Table 1 for the exact wording of each

question and responses that indicated homelessness. All asked about where the student sleeps at

night, though they varied on timeframe. Four states asked about the past 30 days, two asked

about the past 12 months, and two asked about where the student "typically" or "usually" sleeps

without an explicit timeframe. Responses that indicated homelessness generally reflected situations that meet the federal Department of Education definition of homelessness.

Lesbian, gay, bisexual status. Seven states asked about LGB status with the same item, "Which of the following best describes you? Heterosexual (straight), Gay or lesbian, Bisexual, Not sure." Students who endorsed "Not sure" were not considered to be LGB or "questioning" because of developmentally appropriate situations wherein some adolescents have not yet established a mature sexual identity. The 2015 YRBS did not ask about gender non-conformance.

Sexual/dating violence. Each state asked the same three items indexing sexual/dating violence, including questions about ever being physically forced to have unwanted sex, being forced by a dating partner to have unwanted sex in the past 12 months, and being physically hurt by a dating partner in the past 12 months.

Bullied/school safety. All states asked whether students had been bullied at school, been electronically bullied, or did not feel safe at school. Seven states (not New Mexico) also asked whether students had been threatened or injured with a weapon at school.

Dependent Variables / Outcomes.

Alcohol problem. Problematic alcohol use involved having driven while using alcohol or having consumed five or more drinks in a row within a couple of hours in the past 30 days.

Hard drug use. The YRBS asked about use or abuse of six drugs in the current analyses: cocaine (all states), ecstasy (not North Carolina), heroin (not North Carolina), inhalants (not New Mexico), methamphetamine (not North Carolina), and prescription drug abuse (not Maryland).

Poor grades. All states asked students to describe their grades in school. We considered students who responded, "Mostly D's" or "Mostly F's," to have poor grades.

Risky sexual behavior. All states asked about the number of lifetime sexual partners and condom use. We considered sexually active students who either had four or more sexual partners or did not use a condom last time they had intercourse to have engaged in risky sexual behavior. This definition combines two standards of risky sexual behavior common in past work: (a) no method to prevent the transmission of sexually transmitted disease during intercourse, or (b) a high frequency of partners [36].

Suicidality. Up to three questions indexed severe suicidality: having made a plan to commit suicide (not Connecticut), having attempted suicide (not Maryland nor North Carolina), and having attempted suicide in a way that resulted in injury (not Connecticut nor Maryland).

Analyses

Our analyses account for the complex sampling design using data combined across states for the same year [37]. We account for stratification, clustering, and unequal selection probabilities through incorporating into analyses variables provided by the CDC reflecting the design (stratum, primary sampling unit, and weight; [38, 39]). We use the CSPLAN ANALYSIS and associated complex samples analysis functions of SPSS to weight estimates and adjust standard errors to account for the complex sample design of the data in all analyses. First, we describe prevalence of homelessness overall and among those who identified as LGB. We present preliminary analyses of the interrelation of several key variables, including chi-square tests of independence, and describe associations using odds ratios. Finally, we test for associations between homelessness and indicators of risky behavior and poor functioning using separate multiple logistic regression models. The first set of five models utilize data from all 8 states to test for associations with homelessness, controlling for age, race/ethnicity, sex, and victimization experiences. Additional models use data from seven states (excluding Alaska) to

test for risk associated with LGB status, and for a moderation effect of LGB status by homelessness. Because of the number of tests conducted, we consider an effect significant if it is below an alpha of .01.

Results

We present rates of individual factors in Table 2, and rates of homelessness combined and by state in Table 3. About 3.27% of students reported experiencing homelessness overall, corresponding to an estimated 56,314 high schoolers across the eight states. Rates of homelessness for individual states ranged from 1.89% (Massachusetts) to 5.95% (Alaska). The highest rates were found in three of the four states that asked about homelessness during the past 30 days: Alaska (5.95%), Connecticut (5.07%), and New Mexico (4.26%). Among LGB students, 6.8% reported experiencing homelessness compared to 2.8% of non-LGB students who experienced homelessness. Put differently, 19.0% of homeless students identified as LGB compared to a base rate of LGB identification of 8.9% among all students.

Bivariate analyses tested whether the following variables were related to homelessness: race/ethnicity (White underrepresented, $\chi^2 = 290.13$, $p < .001$; Odds Ratio (OR) White vs. Black/Af. Am. = 2.01, 95% CI: 1.39 – 2.90; OR White vs. Hispanic/Latino = 1.16; CI: 0.77 – 1.74; OR White vs. Multiple race and Hispanic = 2.09; CI: 1.54 – 2.83; OR White vs. Multiple race and Non-Hispanic = 2.01; CI: 1.29 – 3.11; White vs. Other Race = 1.62; CI: 1.13 – 2.31), sex (males overrepresented, $\chi^2 = 147.75$, $p < .001$, OR = 1.68, 95% CI: 1.29 - 2.19), sexual/dating violence (victimized overrepresented, $\chi^2 = 750.12$, OR = 3.64, 95% CI: 2.77 - 4.78), bullied/unsafe at school (bullied/unsafe overrepresented, $\chi^2 = 521.09$, $p < .001$, OR = 2.55, 95% CI: 1.89 - 3.43), and LGB status (LGB overrepresented, $\chi^2 = 310.25$, $p < .001$, OR = 2.47, 95% CI: 1.93 - 3.17).

Five multiple logistic regressions tested for associations between homelessness and each outcome separately, controlling for age, state/location, sex, race/ethnicity, sexual/dating violence, and having been bullied/unsafe at school. See "Model 1" in Tables 4 and 5. Homelessness significantly predicted each negative outcome beyond the effects of other factors.

We completed a series of post-hoc analyses as robustness checks of the above results, testing whether the differences in timeframe (past 30-days versus otherwise) in different states' YRBS homelessness questions related to counts of homelessness and their relation to outcomes. First, we computed an odds ratio between question timeframe and homelessness. The timeframe of the question did not meaningfully relate to endorsement of homelessness (OR = 1.09; 95% CI = 0.83 – 1.43). Second, we repeated the above logistic regressions, but added an interaction term to test for moderation of homelessness by the timeframe of the question. These terms were all non-significant (all p's > .10).

Additional separate logistic regressions added effects of LGB identification, and then a moderation effect of homelessness-by-LGB identification, again controlling for the aforementioned variables. LGB identification was associated with higher likelihood of each negative outcome except for alcohol problem, and homelessness remained a significant predictor for each negative outcome. See "Model 2" in Tables 4 and 5. The moderation effect was not significant for any of the five outcomes (coefficients not reported; all p's > .05). In addition, we estimated a series of post-hoc models identical to those that included the moderation term but without effects of either form of victimization (sexual/dating violence or bullied/school safety) to ensure that victimization was not masking any otherwise unique effect of homelessness and LGB status. The moderation terms in each of these models were not significant (coefficients not reported).

Discussion

More high school students experience homelessness than are recognized by mainstream methods of identifying homeless youth. When students are asked about their experiences via anonymous survey, estimates of homelessness climb to about 56,314 students across eight states, 3.27% of all public high school students. These rates account for complex sampling methods that represent the entire general population of students in eight states, and are more representative than efforts that considered individual cities or states [29-32]. This rate also roughly approximates the 4.3% 12-month household prevalence estimate from a recent large national survey of households with a 13 – 17 year old [13].

The YRBS uncovered higher rates of homelessness than the procedures mandated by McKinney-Vento legislation requiring all education authorities to identify and ensure access to an equitable education for students experiencing homelessness during the 2014-15 school year (see Table 3). In total, the YRBS produced rates that were 45.97% higher than rates determined by the education authorities; at least 17,736 more high school students experienced homelessness outside the knowledge of the education system and, as a result, did not have access to mandated privileges and services. The YRBS identified higher rates of homelessness in seven out of the eight locations.

The current findings cannot determine what accounts for these higher rates. Nevertheless, this pattern is consistent with the view that many high school students avoid detection, perhaps because they perceive an intense social stigma associated with homelessness and negative aspects of becoming involved with social service systems (e.g., child protective services) or doubt that they need or could receive help. Developmentally normative features of adolescence likely contribute to these perceptions and behaviors, such as a drive for greater autonomy in the

service of identity formation [21, 30]. The anonymous nature of the YRBS may have reduced this bias against disclosure, resulting in higher rates of detection.

Homelessness is a risk factor for every negative outcome considered in the current study, even when controlling for risks associated with victimization. Students who experienced homelessness were 196% more likely than non-homeless students to have a problem with alcohol, 275% more likely to have used hard drugs, 115% more likely to report suicidality, 95% more likely to engage in risky sex, and 107% more likely to have poor grades. While adolescent homelessness has long been identified as a risk factor in many domains [6], the current study affirms that these associations extend beyond historical or co-occurring experiences of different sorts of victimization in broadly representative data.

Lesbian, gay, and bisexual youth experiencing homelessness

Nearly 7% of all LGB youths reported experiencing homelessness. LGB youths were 143% more likely to experience homelessness than heterosexual youth. Nearly one out of five students (19% who experienced homelessness identified as lesbian, gay, or bisexual. This is perhaps the most broadly representative estimate of LGB disproportionality in adolescent homelessness, as past studies have relied on convenience samples of youth, perceptions of homeless service providers, smaller samples, or more circumscribed geographies to produce estimates ranging from 11% to 40% of homeless youth identify as LGB [23-25, 40]. Meanwhile, past findings in Massachusetts determined that 18% of LGB youth experienced homelessness [22]. This contrasts with the 7% rate in the current finding, perhaps as a function of study differences in location (single-state versus 8-state approach), time (2005 and 2007 versus 2015), and definitions (including "Other" in definition of homelessness versus not).

Students who identified as LGB were at higher risk for most negative outcomes measured. They were 134% more likely to use hard drugs, 166% more likely to report severe suicidality, 54% more likely to engage in sexual risk taking, and 59% more likely to report poor grades; only alcohol use problems were nonsignificant.

The risks associated with LGB identity and with homelessness are additive, meaning that the combination of LGB identity and homelessness did not impart unique risk. This remained the case when victimization was excluded from analyses, ruling out the possibility that increased victimization for LGB youth experiencing homelessness masked the moderation effect.

Sexual minority youth often are challenged to develop their identities in less supportive, or even rejecting, contexts where stigma and the withdrawal or withholding of support constitute stressful experiences and missed opportunities for guidance. They are frequently challenged by peer rejection, bullying, and victimization. These factors appear to increase the likelihood of negative outcomes, including higher rates of depression, suicide, and substance and alcohol abuse [41-43]. While there may be a distinct pathway to homelessness for sexual minority youth who are abandoned or evicted by their families, the risk associated with such a pathway does not seem to be greater than the risks associated with homelessness in general and with LGB identity formation individually.

Possible processes of risk.

There is an active debate regarding how the risk associated with homelessness operates in a developmental context. There are longstanding, chronic risks associated with poverty and disadvantage, as well as acute risks associated with homeless episodes [30, 44]. Children and youth who experience homelessness encounter high rates of potentially traumatic events which likely contribute to the constructs considered in these analyses. Indeed, both sexual/dating

violence and bullied/feeling unsafe at school were associated with experiencing homelessness in the current study (264% and 155% greater risk of victimization for the homeless group, respectively), affirming the cumulative nature of adversities for teens who experience homelessness. However, we cannot disentangle cause from effect, as earlier victimization may contribute to running away and homelessness, may result from a homeless episode, or both [3, 6]. Importantly, unprotected or untreated traumatic experiences can also contribute to the outcomes considered in this study. Future longitudinal research should investigate developmental transactions of these factors among adolescents who experience homelessness.

There are distinct pathways to homelessness and unique aspects of each homelessness experience, representing typologies of risk and assets [45, 46]. For example, the current study did not disentangle family homelessness from unaccompanied homelessness. These situations differ in the degree of risk for mental health outcomes, with family homelessness associated with relatively greater risk for suicidality and unaccompanied homelessness with greater risk for non-suicidal self-injury [31].

Finally, resilience is common and the product of assets and protective factors not measured by the YRBS [44]. Future research should account for differences in the processes of risk associated with homelessness, and, perhaps more importantly, take greater strides in understanding resilience. Assets and protective factors in the form of good self-regulation, positive self-esteem, and positive relationships with parents, peers, and mentors are all likely to be important factors in both predicting outcomes and the clinical application of findings, given findings in the resilience literature [47]. The YRBS does not routinely measure assets or protective factors that may offset or prevent the negative consequences of homelessness and

victimization. Considering adaptive resources will likely improve prediction of both resilience and failure while also testing promising new avenues for intervention.

Limitations

Our findings must be interpreted in light of several limitations. The YRBS data is cross-sectional and analyses were correlational, hindering our ability to test causal processes. Second, we took a variable-centered approach to test links between homelessness and outcomes in particular domains. Yet, problems co-occur to some degree, and individuals may show poor functioning in one domain while seeming resilient in others. A person-centered approach would account for interdependence in outcomes and better characterize subgroups of students at risk.

Finally, the current analyses were limited to already-collected data on the YRBS. This included non-standard questions about homelessness which differed in timeframe and other characteristics. The states with questions involving shorter timeframes (past 30 days) had the highest rates of homelessness, assuaging concerns about deflation while underscoring the need for additional research regarding how the questions are interpreted. Robustness checks suggested no differences between questions with different timeframes. Standardizing the question across state-YRBS forms also would increase comparability and including the standardized question in more states would further generalizability. Meanwhile, the questions on the YRBS do not permit a satisfying answer for why some local education agencies under-identify adolescent homelessness, nor why Illinois in the current study identified more high school students experiencing homelessness than the YRBS. Additional analyses that consider macroeconomic and other broad social factors are warranted, as are detailed studies of differences between identification practices in distinct locales.

Summary.

About 46% more high school students reported experiencing homelessness on the anonymous, self-report YRBS than were identified by education officials mandated to find and serve them. There was an overall homelessness rate of 3.27% estimated across eight states, and homelessness represented a high level of risk for each of five negative outcomes that warrant intervention. Ethnic/racial minority status, LGB identification, male sex, and each of two forms of victimization were overrepresented among homeless students. In particular, nearly 7% of all LGB students experienced homelessness, about 20% of students who experienced homelessness identified as LGB, and LGB identification was associated with additional higher risk independent of homelessness.

These findings underscore the importance of innovating new ways to identify and serve students who experience homelessness, a task challenged by otherwise normative features of adolescence that may lead many to avoid detection. Anonymous surveys like the YRBS help us understand the scope of the problem and its related features, but the current findings cannot inform whether a non-anonymous survey would help identify students. There is clearly room for improvement in this regard. Furthermore, if education authorities succeed in identifying more students, they will need more resources to meet their needs. As a group, these students show higher rates of problems, including alcohol problems, hard drug use, suicidality, risky sexual behavior, and academic underachievement. Stakeholders must be prepared with effective responses to best serve these youth.

References

1.   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. J. Soc. & Soc. Welfare, 37: 65.

2.   Edidin JP, Ganim Z, Hunter SJ, Karnik NS (2012). The mental and physical health of

        homeless youth: a literature review. Child Psychiatry Hum Dev, 43(3): 354-375.

3.   Kim MJ, Tajima EA, Herrenkohl TI, Huang B (2009). Early child maltreatment, runaway

        youths, and risk of delinquency and victimization in adolescence: A mediational model.

        Soc Work Res, 33(1): 19-28.

4.   Medlow S, Klineberg E, Steinbeck K (2014). The health diagnoses of homeless

        adolescents: a systematic review of the literature. J Adolesc, 37(5): 531-542.

5.   Moskowitz A, Stein JA, Lightfoot M (2013). The mediating roles of stress and

        maladaptive behaviors on self-harm and suicide attempts among runaway and homeless

        youth. J Youth Adolesc: 1-13.

6.   Toro PA, Dworsky A, Fowler PJ, (2007). *Homeless youth in the United States: Recent

        research findings and intervention approaches*, in *Paper developed for the National

        Symposium on Homelessness Research*. 2007: Washington, DC.

7.   Tyler KA, Melander LA (2015). Child abuse, street victimization, and substance use

        among homeless young adults. Youth & Society, 47(4): 502-519.

8.   Henry M, Shivji A, de Sousa T, Cohen R (2015). The 2015 Annual Homeless

        Assessment Report (AHAR) to Congress.

9.   Culhane DP, Dejowski EF, Ibanez J, Needham E, Macchia I (1994). Public shelter

        admission rates in Philadelphia and New York City: The implications of turnover for

        sheltered population counts.

10.   Hopper K, Shinn M, Laska E, Meisner M, Wanderling J (2008). Estimating numbers of unsheltered homeless people through plant-capture and postcount survey methods. Am J Public Health, 98(8): 1438-1442.

11.   Link BG, Susser E, Stueve A, Phelan J, Moore RE, Struening E (1994). Lifetime and five-year prevalence of homelessness in the United States. Am J Public Health, 84(12): 1907-1912.

12.   Morton MH, Dworsky AS, Gina M. (2017). Missed opportunities: Youth homelessness in America. National estimates. Chapin Hall at the University of Chicago: Chicago, IL.

13.   Morton MH, et al. (2018). Prevalence and correlates of youth homelessness in the United States. J Adolesc Health, 62: 14 - 21.

14.   Narendorf SC, Santa Maria DM, Ha Y, Cooper J, Schieszler C (2016). Counting and Surveying Homeless Youth: Recommendations from YouthCount 2.0!, a Community-Academic Partnership. J Community Health, 41(6): 1234-1241.

15.   Pergamit M, Cunningham M, Burt M, Lee P, Howell B, Bertumen K (2013). Youth Count! Process Study.

16.   Buron L, McCall T, Solari CD (2017). The 2016 Annual Homeless Assessment Report (AHAR) to Congress, Part 2: Estimates of homelessness in the United States data collection and analysis methodology.

17.   U.S. Department of Housing and Urban Development (2015). HUD 2015 Continuum of Care Homeless Assistance Programs Homeless Populations and Subpopulation.

18.   State of Delaware. *Annual Snapshot*. 2015 [cited 2017 June 1]; Available from: http://profiles.doe.k12.de.us/SchoolProfiles/State/.

19. Côté JE, (2009). *Identity Formation and Self‐Development in Adolescence*, in *Handbook of adolescent psychology, 3rd edition*, R.M. Lerner and L.D. Steinberg, Editors. 2009, John Wiley & Sons, Inc: Hoboken, NJ. p. 266-304.

20. Smetana JG, Villalobos M (2009). Social cognitive development in adolescence. Handbook of adolescent psychology.

21. Kidd SA (2007). Youth homelessness and social stigma. J Youth Adolesc, 36(3): 291-299.

22. Corliss HL, Goodenow CS, Nichols L, Austin SB (2011). High burden of homelessness among sexual-minority adolescents: findings from a representative Massachusetts high school sample. Am J Public Health, 101(9): 1683-1689.

23. Cochran BN, Stewart AJ, Ginzler JA, Cauce AM (2002). Challenges faced by homeless sexual minorities: Comparison of gay, lesbian, bisexual, and transgender homeless adolescents with their heterosexual counterparts. Am J Public Health, 92(5): 773-777.

24. Kidd SA, Carroll MR (2007). Coping and suicidality among homeless youth. J Adolesc, 30(2): 283-296.

25. Milburn NG, Ayala G, Rice E, Batterham P, Rotheram-Borus MJ (2006). Discrimination and exiting homelessness among homeless adolescents. Cultural Diversity and Ethnic Minority Psychology, 12(4): 658.

26. Rosario M, Schrimshaw EW, Hunter J (2012). Homelessness among lesbian, gay, and bisexual youth: Implications for subsequent internalizing and externalizing symptoms. J Youth Adolesc, 41(5): 544-560.

27. Rice E, et al. (2013). Homelessness experiences, sexual orientation, and sexual risk taking among high school students in Los Angeles. J Adolesc Health, 52(6): 773-778.

28.   D'Augelli AR, Grossman AH, Salter NP, Vasey JJ, Starks MT, Sinclair KO (2005).

        Predicting the suicide attempts of lesbian, gay, and bisexual youth. Suicide Life Threat

        Behav, 35(6): 646-660.

29.   Ringwalt CL, Greene JM, Robertson M, McPheeters M (1998). The prevalence of

        homelessness among adolescents in the United States. Am J Public Health, 88(9): 1325-

        1329.

30.   Authors (in press).

31.   Perlman S, Willard J, Herbers JE, Cutuli JJ, Eyrich-Garg KM (2014). Youth

        homelessness: Prevalence and mental health correlates. Journal for the Society for Social

        Work and Research, 5(3): 361 - 377.

32.   Cutuli JJ, Steinway C, Perlman S, Herbers JE, Eyrich-Garg KM, Willard J (2015). Youth

        homelessness: Prevalence and associations with weight in three regions. Health Soc

        Work, 40(4): 316-24.

33.   Bell BA, Onwuegbuzie AJ, Ferron JM, Jiao QG, Hibbard ST, Kromrey JD (2012). Use of

        design effects and sample weights in complex health survey data: a review of published

        articles using data from 3 commonly used adolescent health surveys. Am J Public Health,

        102(7): 1399-1405.

34.   National Center for HIV/AIDS VH, STD, and TB Prevention, (2016). 2015 YRBS Data

        User's Guide. Centers for Disease Control and Prevention.

35.   Costello EJ, Angold A, (2016). *Developmental epidemiology*, in *Developmental

        Psychopathology, Third Edition*, D. Cicchetti, Editor. 2016, John Wiley and Sons, Inc:

        Hoboken, NJ. p. 94-128.

36. Silverman JG, Raj A, Mucci LA, Hathaway JE (2001). Dating violence against adolescent girls and associated substance use, unhealthy weight control, sexual risk behavior, pregnancy, and suicidality. J Am Med Assoc, 286: 572-579.

37. (CDC) CfDCaP (2018). Combining YRBS data across years and sites.

38. Centers for Disease Control and Prevention (CDC) (2013). Methodology of the Youth Risk Behavior Surveillance System - 2013. MMWR, 62(1): p. 1 - 18.

39. (CDC) CfDCaP (2014). Software for analysis of YRBS data.

40. Rosario M, Schrimshaw EW, Hunter J (2012). Risk factors for homelessness among lesbian, gay, and bisexual youths: A developmental milestone approach. Children and youth services review, 34(1): 186-193.

41. Birkett M, Newcomb ME, Mustanski B (2015). Does it get better? A longitudinal analysis of psychological distress and victimization in lesbian, gay, bisexual, transgender, and questioning youth. J Adolesc Health, 56(3): 280-285.

42. Goldbach JT, Tanner-Smith EE, Bagwell M, Dunlap S (2014). Minority stress and substance use in sexual minority adolescents: a meta-analysis. Prevention Science, 15(3): 350.

43. La Roi C, Kretschmer T, Dijkstra JK, Veenstra R, Oldehinkel AJ (2016). Disparities in depressive symptoms between heterosexual and lesbian, gay, and bisexual youth in a Dutch cohort: The TRAILS study. J Youth Adolesc, 45: 440.

44. Cutuli JJ, Herbers JE (2014). Promoting resilience for children who experience family homelessness: Opportunities to encourage developmental competence. Cityscape, 16(1): 113 - 139.

45.   Fowler PJ, Toro PA, Miles BW (2009). Pathways to and from homelessness and

       associated psychosocial outcomes among adolescents leaving the foster care system. Am

       J Public Health, 99(8): 1453-1458.

46.   Kidd S, Shahar G (2008). Resilience in homeless youth: the key role of self-esteem. Am J

       Orthopsychiatry, 78(2): 163.

47.   Masten AS, (2014). *Ordinary Magic: Resilience in development*. 2014, New York: The

       Guilford Press.

Tables

Table 1. Homelessness questions included in each state YRBS. Responses that indicate homelessness are bolded.

State(s)	Stem and responses
AK, CT, IL	During the past 30 days, where did you usually sleep?

    - In my parent's or guardian's home
- With friends, family or other people because my parents or I lost our home or cannot afford housing
- In a motel or hotel

- In a shelter or emergency housing

- In a car, park, campground, or other public place

- I moved from place to place

    - Somewhere else

NM	During the past 30 days, where did you usually sleep at night?

    - In my parent's or guardian's home

- In a friend's or relative's home

    - In a foster home or group facility

- In a shelter or emergency housing

- In a hotel or motel

- In a car, park, campground, or other public place

- I moved from place to place

    - Somewhere else

DE	Where do you typically sleep at night?

    - At home with your parents or guardians

- At a friend's or relative's home with your parent(s) or guardian(s)

- At a friend's or relative's home without your parent(s) or guardian(s)
- Somewhere else (shelter, transitional housing, public place, hotel, car) with your parent(s) or guardian(s)
- Somewhere else (shelter, group home, foster care home, public place, car, hotel) without your parent(s) or guardian(s)

MA	Where do you usually sleep?

    - In my parent's or guardian's home
- With friends, family, or other people because my parents or I lost our home or cannot afford housing
- In a motel or hotel

- In a shelter or emergency housing

- In a car, park, campground, or other public place

- I move from place to place

- Somewhere else

MD, NC During the past 12 months, where did you usually sleep at night?
- At home
- In a friend's, relative's, or stranger's home
- In a foster home or group facility
- In a supervised shelter or time-limited housing program
- In a hotel or motel
- In a car, park, campground, or other public place
- Somewhere else

Table 2. Weighted rates of key variables considering data from eight states.

	Homelessness		Total
	No	**Yes**	
Age			
14 or younger	96.7%	3.3%	12.4%
15	97.5%	2.5%	25.6%
16	97.1%	2.9%	25.9%
17	96.7%	3.3%	23.2%
18 or older	94.4%	5.6%	13.0%
Race			
White	97.6%	2.4%	54.3%
Black / African Am.	95.3%	4.7%	18.3%
Hispanic / Latino	97.3%	2.7%	7.5%
Multiple - Hispanic	95.2%	4.8%	11.3%
Multiple - Non-Hispanic	95.4%	4.6%	3.3%
Other	96.2%	3.8%	5.4%
Sex			
Female	97.5%	2.5%	50.0%
Male	95.9%	4.1%	50.0%
LGB	93.2%	6.8%	8.9%
Sexual/dating violence	90.6%	9.4%	8.6%
Bullied/Unsafe at school	94.1%	5.9%	26.2%
Problems			
Alcohol Problem	92.8%	7.2%	15.3%
Hard drug use	90.4%	9.6%	17.0%
Suicidality	93.1%	6.9%	15.8%
Risky sexual behavior	92.8%	7.2%	14.2%
Poor grades	92.1%	7.9%	4.8%

Table 3. Rates of homelessness overall and by state as measured by the YRBS and by official education authority counts.

	YRBS		Annual Edu Counts	Difference
	Rate	Count		
30-day YRBS questions				
Alaska	5.95%	1,699	1,429	270
Connecticut	5.07%	7,238	751	6,487
Illinois	2.66%	13,360	16,879	-3,519
New Mexico	4.26%	3,942	2,511	1,431
"Typically/Usually" questions				
Delaware	3.46%	1,299	784	515
Massachusetts	1.89%	6,739	5,203	1,536
12-month YRBS questions				
Maryland	2.84%	5,210	3,979	1,231
North Carolina	4.16%	16,827	7,042	9,785
Totals				
- Overall	3.27%	56,314	38,578	17,736
- 30-day	3.42%	26,239	--	--
- "Typically/Usually"	2.04%	8,038	--	--
- 12-month	3.75%	22,037	--	--

Note: All Annual Edu Counts refer to 12-month education authority counts for SY 2014-15 for grades 9 - 12, available at: https://www2.ed.gov/admins/lead/account/consolidated/sy14-15part1/index.html

Table 4. Results of logistic regression analyses predicting each outcome. Coefficients are Wald F statistics.

	Alcohol Problem		Hard Drug Abuse		Suicidality		Sexual Risk Taking		Poor Grades	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age	141.87 ***	134.16 ***	21.75 ***	20.24 ***	1.25	2.28	235.15 ***	230.77 ***	0.12	0.02
State	4.05 ***	2.50 *	28.21 ***	33.04 ***	30.27 ***	36.55 ***	6.92 ***	7.48 ***	2.92 **	2.49 *
Sex	0.06	0.09	11.74 ***	17.96 ***	7.95 **	3.69	2.50	4.22 *	55.31 ***	57.28 ***
Race/ethnicity	20.27 ***	18.79 ***	2.89 *	2.21	6.95 ***	5.79 ***	4.69 ***	4.28 ***	14.70 ***	14.47 ***
Sexual/dating violence	64.61 ***	59.34 ***	128.10 ***	109.87 ***	101.64 ***	82.36 ***	115.46 ***	106.40 ***	18.53 ***	57.28 ***
Bullied/Unsafe at school	9.78 **	7.30 **	111.93 ***	88.40 ***	269.36 ***	232.87 ***	16.96 ***	13.47 ***	36.44 ***	29.83 ***
Homeless	61.52 ***	52.94 ***	62.89 ***	51.42 ***	21.82 ***	15.81 ***	17.04 ***	14.20 ***	14.94 ***	13.08 ***
LGB identification	--	2.03	--	91.84 ***	--	126.70 ***	--	26.66 ***	--	14.24 ***

Note: Model 1 includes data from all 8 states. Models 2 excludes data from Alaska. * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 5. Odds ratios from logistic regression model

	Alcohol Problem		Hard Drug Abuse		Suicidality		Sexual Risk Taking		Poor Grades	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Age										
Continuous	1.50 (1.40 - 1.60)	1.50 (1.40 - 1.61)	1.16 (1.09 - 1.23)	1.16 (1.09 - 1.24)	0.97 (0.91 - 1.03)	0.95 (0.89 - 1.02)	1.66 (1.56 - 1.77)	1.67 (1.56 - 1.78)	0.99 (0.91 - 1.07)	0.99 (0.92 - 1.08)
State	not reported	not reported	not reported	not reported	not reported	not reported	not reported	not reported	not reported	not reported
Sex										
Female vs. Male	1.02 (0.85 - 1.23)	1.03 (0.85 - 1.25)	1.21 (1.08 - 1.32)	1.29 (1.14 - 1.44)	0.78 (0.68 - 0.93)	0.85 (0.72 - 1.00)	1.13 (0.97 - 1.32)	1.18 (1.01 - 1.37)	1.91 (1.61 - 2.27)	1.98 (1.66 - 2.36)
Race/ethnicity										
White	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ	--ᵃ
Black / African Am.	0.39 (0.31 - 0.49)	0.39 (0.31 - 0.49)	0.98 (0.84 - 1.13)	0.89 (0.76 - 1.04)	1.48 (1.23 - 1.78)	1.46 (1.21 - 1.75)	1.46 (1.13 - 1.88)	1.47 (1.14 - 1.90)	1.70 (1.35 - 2.14)	1.78 (1.41 - 2.24)
Hispanic / Latino	0.76 (0.60 - 0.97)	0.77 (0.60 - 0.99)	1.07 (0.85 - 1.35)	1.09 (0.86 - 1.37)	1.39 (1.13 - 1.71)	1.44 (1.16 - 1.78)	1.07 (0.83 - 1.37)	1.08 (0.84 - 1.38)	2.68 (1.98 - 3.63)	2.83 (2.08 - 3.86)
Multiple - Hispanic	0.86 (0.72 - 1.02)	0.85 (0.71 - 1.02)	1.13 (0.95 - 1.36)	1.08 (0.89 - 1.30)	1.63 (1.38 - 1.93)	1.59 (1.32 - 1.92)	1.33 (1.09 - 1.63)	1.31 (1.07 - 1.61)	2.28 (1.76 - 2.96)	2.35 (1.79 - 3.10)
Multiple - Non-Hispanic	0.74 (0.54 - 1.01)	0.72 (0.51 - 1.01)	1.40 (1.07 - 1.83)	1.33 (0.99 - 1.78)	1.22 (0.94 - 1.58)	1.14 (0.87 - 1.51)	1.22 (0.86 - 1.74)	1.17 (0.80 - 1.71)	1.86 (1.28 - 2.70)	1.88 (1.27 - 2.79)
Other	0.49 (0.37 - 0.65)	0.48 (0.36 - 0.63)	0.77 (0.57 - 1.04)	0.75 (0.55 - 1.03)	1.36 (1.06 - 1.73)	1.38 (1.04 - 1.83)	0.69 (0.49 - 0.98)	0.68 (0.47 - 1.00)	0.89 (0.68 - 1.16)	0.78 (0.57 - 1.08)
Sexual/dating violence										
None versus present	2.78 (2.17 - 3.56)	2.74 (2.12 - 3.53)	3.36 (2.73 - 4.15)	3.26 (2.61 - 4.06)	2.82 (2.31 - 3.46)	2.74 (2.21 - 3.41)	3.11 (2.53 - 3.82)	3.06 (2.48 - 3.79)	1.75 (1.36 - 2.26)	1.76 (1.38 - 2.25)
Bullied/Unsafe at school										
None versus present	1.32 (1.11 - 1.58)	1.28 (1.07 - 1.53)	2.10 (1.83 - 2.41)	1.93 (1.68 - 2.22)	2.98 (2.61 - 3.39)	2.78 (2.44 - 3.17)	1.33 (1.16 - 1.52)	1.29 (1.13 - 1.48)	1.69 (1.43 - 2.00)	1.61 (1.36 - 1.92)
Homeless										
None versus present	2.96 (2.26 - 3.89)	2.89 (2.17 - 3.85)	3.75 (2.71 - 5.20)	3.60 (2.54 - 5.11)	2.15 (1.56 - 2.97)	2.05 (1.44 - 2.91)	1.95 (1.42 - 2.67)	1.90 (1.36 - 2.66)	2.07 (1.43 - 3.00)	2.05 (1.39 - 3.02)
LGB										
Not LGB versus LGB	--	1.20 (0.93 - 1.54)	--	2.34 (1.96 - 2.78)	--	2.66 (2.24 - 3.15)	--	1.54 (1.31 - 1.82)	--	1.59 (1.25 - 2.02)

Note: Model 1 includes data from all 8 states. Model 2 excludes data from Alaska. a denotes reference group; * p < .05; ** p < .01; *** p < .001; Odds ratios for state comparisons not provided.