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Quantifying the Risk for Homelessness Among HIV Positive MSM Using the American Men's Internet Survey

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By

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Bachelor's of Science
University of Maryland
2017

Faculty Thesis Advisor: Jodie L. Guest, PhD, MPH

An abstract of
A thesis submitted to the Faculty of the
Rollins School of Public Health of Emory University
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Abstract

Quantifying the Risk for Homelessness Among HIV Positive MSM Using the American Men's Internet Survey

By Shannon Fox

Introduction
The World Health Organization identified housing as a basic determinant of health. Studies have also shown that people with unstable housing are associated with an elevated risk of HIV due to increased risky behavior, and HIV disproportionately affects men who have sex with men (MSM). MSM have been found to be more likely to engage in behaviors such as unprotected sex during periods of heavy substance use. This study aims to quantify the risk of experiencing homelessness among HIV positive MSM through the American Men's Internet Survey (AMIS).

Methods
AMIS is an internet survey directed at men who have sex with men throughout America. Data was pulled from the fourth completed cycle of the survey from February 2017, and univariate and multivariate associations with homelessness were assessed among 857 HIV positive MSM for demographic, behavioral, and social determinant risk factors using logistic regression.

Results
Among the 7,819 MSM included in the study, 481 (6.15%) reported having unstable housing. A univariate analysis showed that MSM with HIV were 1.6 times more likely to be homeless compared to HIV negative MSM. MSM who are black, living below the poverty line, experienced stigma, injection drug users, and exchanged money or drugs for sex were all found to be risk factors. In multivariate analyses, HIV was no longer a statistically significant risk factor for unstable housing. However, black MSM, those with a high school degree or less, those living below the poverty line, weekly injection drug users, men who received money or drugs for sex, and men who felt stigma all remained as independent risk factors for unstable housing.

Discussion
In this analysis, MSM living with HIV were not significantly more likely to have unstable housing after controlling for race, drug use, and other social and behavioral risk factors. Black MSM experienced some of the highest rates of homelessness, as did those who used injection drugs weekly. Further studies are needed to evaluate the association between HIV and homelessness and prevention programs for vulnerable populations like MSM are needed.

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Table of Contents

Introduction

The United States has always had consistent rates of homelessness in both cities and rural areas. Since the foreclosure crisis and recession that occurred in 2007, cities across the country reported a dramatic increase in homelessness in families estimated to be 16%, with the rising occurrence of tent cities as well.(1) As of 2017, the average income of families of 4 living below the poverty line were incomes of $25,000 or less.(2) Studies have found that those living in low-income settings spent more than 50% of their household income on rent, and were at a higher risk of housing instability with poorer access to health care.(3-5) In 1986, the World Health Organization (WHO) identified housing as a basic determinant of health, indicating that there is a strong association between unstable housing and poor health outcomes such as mental illness and substance use diagnoses.(6, 7) There have been multiple studies indicating that HIV prevalence is significantly elevated among individuals who resided in unstable housing.(7) One study determined that unstable housing environments are associated with an elevated risk of HIV due to increased risky behavior that takes place in these environments.(7, 8)

Studies have found that homeless persons with HIV have an increased risk of morbidity and mortality, more hospitalizations, less use of antiretroviral therapy, and worse medication adherence than HIV positive persons who are stably housed.(9) Research states that homophobic victimization is associated with an increased risk of unstable housing, which is defined as the lack of a regular place of residence with a permanent address. According to a nationwide survey of homeless agencies, conducted through the Williams Institute of the University of California, Los Angeles, around 40% of homeless

persons identify as lesbian, gay, bisexual, transgender, or queer (LGBTQ).(10, 11) Of those 40%, more than half of them stated that the primary reason for homelessness was due to homophobic victimization, family rejection, and homophobia.(10) Among the homeless population in the United States people of color are disproportionally represented. According to the U.S. Department of Housing and Urban Development, black persons make up 40.1% of the total homeless population, but only 12.5% of the overall population.(12, 13) This is also represented in the LGBTQ homeless population where 31% identify as black and 14% identifying as Latino, which is again disproportionally represented in comparison to the total population in the United States.(10)

HIV disproportionately affects men who have sex with men, or MSM, due to MSM being more likely to engage in behaviors that put them at a higher risk of acquiring HIV or a sexually transmitted infection such as unprotected sex during periods of heavy substance use.(14-17) Data also suggest that MSM who reside in urban areas are at a higher risk of partaking in unprotected sexual behavior, as opposed to MSM living in more rural areas of the country.(18) MSM are more likely to reside in or move to urban areas where they encounter stronger social influences, experience larger numbers of potential sex and life partners, more tolerant social policies, and less stigmatizing ideals.(18)

This study aims to examine risk factors for HIV infection among homeless men who have sex with men using the American Men's Internet Survey (AMIS).(19) AMIS is an annual web-based cross-sectional behavioral survey of men who have sex with men, recruiting

from a variety of websites using banner advertisements and email blasts, to monitor trends in HIV risk behavior.(19) Research has shown that people who experience homelessness experience a greater risk of HIV infection.(7, 11) This study aims to quantify the risk of experiencing homelessness among HIV positive MSM to aid in the implementation of more targeted interventions to prevent unstable housing in a vulnerable population.

Methods

Study Population

All adult and adolescent men (aged ≥ 15 years) who have sex with men (MSM) in the United States who took part in the 2017 American Men's Internet Survey (AMIS) were included in this analysis. AMIS is an annual cross-sectional online HIV behavioral survey of MSM in the United States and is an IRB approved study. The survey is conducted in annual cycles, with the data being pulled from the fourth completed cycle, recently completed in February 2017.

Eligibility Criteria

To be eligible for the study, participants had to identify as gay or bisexual, and be male sex at birth. Transgender men were excluded from this study. Known HIV status was also an eligibility requirement. Homelessness or unstable housing was defined as living on the street, in a shelter, in a single room occupancy hotel, in a car, or in the past 12 months doubled up or stayed overnight with friends, relatives, or someone they did not know well because they did not have a regular, adequate, or safe place to stay at night.

Characteristic Variables Considered

Other variables from AMIS were examined in DAGS and confounding assessments in order to determine if these characteristics were significantly associated with unstable housing. Not including the exposure of HIV status, 11 other variables were considered; age, race and ethnicity, education level, annual household income for last year, health insurance status, injection drug use, amount of injection drug use, non-injection drug use,

anal sex without a condom, exchanging money or drugs for sex, and stigma from their family in the past year. All variables were categorical variables except for age (continuous), which was broken into categorical quartiles for analysis. The race and ethnicity of the participants were combined into one singular variable of black, non-Hispanic, white, non-Hispanic, Hispanic, and other or multiple races.

Measures and Analyses

The total population analyzed was 7,819 participants. 481 (6.15%) experienced homelessness in the past 12 months while 7,338 (93.85%) had stable housing. For the initial analysis, differences in all the characteristic variables of those who experienced homelessness and those with stable housing were assessed using the Monte Carlo function of a chi square test for association in order to identify if any participant characteristics significantly differed by housing status. A univariate analysis was conducted in order to determine which variables were significantly associated with unstable housing. A collinearity assessment was conducted in order to determine if any of the predictor variables were highly correlated with other variables in the model. Next, multivariable logistic regression modeling was used to determine significant differences in housing status based on HIV status while controlling for confounders and associated risk factors.

Results

Demographic and behavioral characteristics of the 7,819 MSM included from the 2017 AMIS cohort are presented in Table 1. 6.15% (481/7,819) self-identified as homeless or having unstable housing in the last 12 months; 93.85% (7,338) reported stable housing. MSM with unstable housing were more likely to be living with HIV (15.80%) than those with stable housing (10.64% reported HIV-positivity). All characteristic variables in Table 1 where found to be significant when comparing unstable housing versus stable housing.

Table 1 presents the variables by housing status. Younger MSM were more likely to experience unstable housing compared to the other age groups (122/1,173 MSM who were 15-23 years old had unstable housing). Black, non-Hispanic MSM experienced a higher percentage of unstable housing compared to other races and ethnicities who were homeless (60/481 MSM). Other groups at a high risk for unstable housing were MSM with lower education, specifically those with some high school or less, those who live below the poverty line (annual income ≤ $40,000), those with no health insurance, injection drug users, non-injection drug users, those who had unprotected anal sex, those who exchanged both money and drugs for sex and vice versa, and those who encountered family stigma in the last 6 months.

Table 2 presents a univariate association with housing status. MSM living with HIV were 1.6 times more likely to have unstable housing compared to MSM who were HIV negative (odds ratio (OR) 1.575, 95% confidence interval (CI) 1.220-2.035, p-value

0.0005). Black, non-Hispanic MSM were 2.5 times more likely to have unstable housing compared to white, non-Hispanic MSM (OR 2.553, 95% CI 1.889-3.432, p-value <0.0001). MSM with an annual income of ≥ $75,000 were significantly less likely to experience unstable housing compared to those with an annual income of between $40,000 and $75,000 (OR 0.391, CI 0.273-0.560, p-value <0.0001). Those who experienced stigma in the last 6 months were 4 times more likely to experience unstable housing compared to those who did not experience any stigma (OR 4.048, 95% CI 3.190-5.137, p-value <0.0001). Exchanging money or drugs for sex in the past year, particularly those who both gave and received money/drugs for sex, and those who were injection drug users had increased odds of experiencing homelessness in the last 12 months versus those who did not engage in these behaviors.

When a multivariate model was created to control for relevant potential confounders, HIV was no longer a statistically significant risk factor for unstable housing (aOR 0.914, 95% CI 0.666-1.256, p-value 0.5796). However, black, non-Hispanic MSM, MSM with only a high school degree or less, MSM with an annual income below the poverty line, MSM who used injection drugs at least once a week, MSM who received money or drugs for sex, and MSM who felt stigma from family members were all associated with an increased risk of unstable housing after adjusting for confounders. Black MSM were 2.2 times more likely to be homeless than white MSM (aOR 2.224, 95% CI 1.604-3.083, p-value <0.0001). MSM with only some high school education or less were 6.5 times more likely to be homeless compared to those who graduated college (aOR 6.515, 95% CI 3.892-10.905, p-value <0.0001), and those who did acquire a high school diploma or

GED were 2 times more likely to experience homelessness compared to those with a college, post graduate, or professional school degree (aOR 2.039, 95% CI 1.480-2.811, p-value <0.0001). MSM who made between $0 and $20,000 annually were 3.7 times more likely to experience homelessness compared to those who made between $40,000 and $75,00 annually (aOR 3.669, 95% CI 2.695-4.996, p-value <0.0001), and MSM who had an annual income of ≥ $75,000 were found to be 2.2 times less likely to experience homelessness compared to those who made between $40,000 and $75,000 annually (aOR 0.448, 95% CI 0.309-0.651, p-value <0.0001). MSM who injected once a week or more were found to be 12.2 times more likely to experience homelessness than those who did not use injection drugs (aOR 12.214, 95% CI 4.535-31.893, p-value <0.0001), and those who received drugs and money for sex were 2.5 times more likely to experience homelessness than those who did not (aOR 2.503, 95% CI 1.677-3.736, p-value <0.0001). MSM who experienced stigma in the last 6 months were 3.3 times more likely to experience homelessness (aOR 3.285, 95% CI 2.533-4.260, p-value <0.0001), which is an increase from those who encountered stigma prior to the last 6 months who were found to be 1.9 times more likely to experience homelessness than those who did not experience stigma (aOR 1.885, 95% CI 2.533-4.260, p-value <0.0001).

Discussion

While living with HIV was significantly associated with unstable housing in a univariate analysis, a multivariate analysis did not find a significant association between living with HIV and unstable housing in the past 12 months after controlling for other risk factors among MSM who were ≥ 15 years of age. While controlling for HIV and other associated risk factors, risky behavioral traits were determined to be statistically significant in increasing the odds of unstable housing. The data also suggest that MSM who are black, non-Hispanic have the largest odds of experiencing unstable housing, and those who are older (52 years and older) have reduced odds, which supports previous studies concluding that young people and minorities have an increased risk of experiencing unstable housing.(10, 12) Finally, it is important to note that this study also revealed that those who experienced stigma from family members because of the participants' sexual preferences had an increased odds in experiencing unstable housing.

Overall, this study found that HIV status is significantly associated with housing status when not accounting for other potential confounders, but after adjustment, there was no longer a statistically significant association. This is an interesting find since other sources of literature found that homeless MSM had an increased risk of HIV infection, particularly those who were also injection drug users.(7) The lack of significance in the adjusted model may be attributed to small sample size of those living with HIV in this cohort.

One population with some of the largest odds of experiencing homelessness were black, non-Hispanic MSM (aOR 2.224, 95% CI 1.604-3.083, p-value <0.0001). This is consistent with previous literature. In the US Census Bureau News, 2007, approximately 21% of Hispanics and 24% of blacks were living in poverty, and of those in poverty who identified as homeless, around 45% were black.(20) In addition, the average age of homelessness in America has always been the mid-twenties (24 years of age), which is consistent with this study which found the largest representation of homeless MSM between the ages of 24 and 35 (35.55%).(21) It was also found that those who are 52 years and older were significantly less likely to have unstable housing when adjusting for other risk factors (aOR 0.655, 95% CI 0.469-0.915, p-value 0.0131), which is consistent to the 2008 annual homeless assessment report to Congress which found that those 51 and older made up a small percentage of the homeless population.(22)

Important behavioral factors were also significantly associated with unstable housing while controlling for HIV status. Those who used injection drugs, especially once a week or more, those who reported ever using non-injection drugs, those who reported having anal sex without a condom, those who reported exchanging money, drugs, or both in the past year for sex, and those who felt stigma from family members based on their sexual preferences were all significantly associated with increased odds of having unstable housing when adjusting for other risk factors. This is consistent with previous literature stating that the homeless are at a higher risk for drug use, unprotected sex, and stigma, especially those who are MSM.(10, 11) Also, in previous literature 40% of homeless persons identify as LGBTQ, and of those 40%, more than half reported they were

homeless due to homophobic victimization and family rejection.(10) Countermeasures could be implemented to target the stigma MSM feel through family members and be used to implement interventions to provide support for MSM and potentially reduce the incidence of self-reported unstable housing.

It is important to note a number of limitations in this study. First of all, the data were from the American Men's Internet Survey, which requires access to a computer or the internet. In the city of Long Beach, California, 265 homeless participants were questioned on their computer usage, and the results showed that only 19% of participants had accessed the Internet in the last 30 days.(23) In comparison, studies viewing homeless computer usage in a differing city found that almost half of the homeless sample reported computer use in the last 30 days, indicating that computer usage in homeless populations may vary from city to city.(24) Additionally, the internet survey was conducted through self-reporting, so reliability must be questioned as well.

Based on the findings of the study, it is important to identify MSM who are HIV positive and provide support and prevention programs to counteract homelessness. Outreach programs and support groups for MSM could be implemented throughout cities and towns to ensure that they feel accepted and supported. Local and state health departments could work to implement safer sex initiatives to promote condom use and safe sex education, and perhaps encourage safe needle exchange for drug users. Low-income, high minority settings should be prioritized, and public health education could be

implemented in schools to educate those of different social and behavioral risk factors that have been found to increase the odds of unstable housing and homelessness.

The study aimed to examine risk factors for unstable housing among MSM, particularly those who are HIV positive, in order to identify underlying issues to target intervention and prevention measures. Future studies are needed to support these findings and continue the efforts of examining the association of HIV and unstable housing among MSM further to gain a greater understanding of an underserved population.

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Figures

Table 1: Characteristics of MSM Participants by Housing Status

Variables	Total n= 7,819	Homeless or Unstable Housing n= 481 (6.15%)	Stable Housing n= 7,338 (93.85%)	p-value
HIV Status				0.0005
Positive	857 (10.96)	76 (15.80)	781 (10.64)	
Negative	6,962 (89.04)	405 (84.20)	6,557 (89.36)	
Age (years)				<0.0001
15-23	1,173 (15.00)	122 (25.36)	1,051 (14.32)	
24-35	2,189 (28.00)	171 (35.55)	2,018 (27.50)	
36-52	2,158 (27.60)	125 (25.99)	2,033 (27.71)	
52 and older	2,299 (29.40)	63 (13.10)	2,236 (30.47)	
Race and Ethnicity				<0.0001
Black, non-Hispanic	540 (6.91)	60 (12.47)	480 (6.54)	
White, non-Hispanic	5,571 (71.25)	260 (54.05)	5,311 (72.38)	
Hispanic	1,061 (13.57)	96 (19.96)	965 (13.15)	
Other or multiple races	616 (7.88)	56 (11.64)	560 (7.63)	
Unknown	31 (0.40)	9 (1.87)	22 (0.30)	
Highest Level of Education				<0.0001
Never attended school	1 (0.01)	1 (0.21)	0 (0.00)	
Less than high school	2 (0.03)	1 (0.21)	1 (0.01)	
Some high school	99 (1.27)	29 (6.03)	70 (0.95)	
High School diploma or GED	648 (8.29)	79 (16.42)	569 (7.75)	
Some College, Associate's Degree, or Technical Degree	2,306 (29.49)	187 (38.88)	2,119 (28.88)	
College, post graduate or professional school	4,693 (60.02)	178 (37.01)	4,515 (61.53)	
Unknown	70 (0.90)	6 (1.25)	64 (0.87)	
Household income last year (annually)				<0.0001
$0 to $19,999	750 (9.59)	153 (31.81)	597 (8.14)	
$20,000 to $39,000	1,212 (15.50)	102 (21.21)	1,110 (15.13)	
$40,000 to $74,999	1,827 (23.37)	82 (17.05)	1,745 (23.78)	
$75,000 or more	2,717 (34.75)	49 (10.19)	2,668 (36.36)	
Unknown	1,313 (16.79)	95 (19.75)	1,218 (16.60)	
Health Insurance or Health Care Coverage				<0.0001
Private insurance	5,197 (66.47)	158 (32.85)	5,039 (68.67)	
TRICARE (CHAMPUS)	103 (1.32)	2 (0.42)	101 (1.38)	
Veterans Administration coverage	92 (1.18)	13 (2.70)	79 (1.08)	
Medicare or Medicaid	857 (10.96)	114 (23.70)	743 (10.13)	
Other or multiple insurances	801 (10.24)	57 (11.85)	744 (10.14)	
No Coverage	575 (7.35)	113 (23.49)	462 (6.30)	

Unknown	194 (2.48)	24 (4.99)	170 (2.32)	
Ever Used Injection Drugs				<0.0001
No	7,360 (94.13)	398 (82.74)	6,962 (94.88)	
Yes	413 (5.28)	75 (15.59)	338 (4.61)	
Unknown	46 (0.59)	8 (1.66)	38 (0.52)	
In the past 12 months, on average, how often did you inject?				<0.0001
Injected once or more a day	28 (0.36)	15 (3.12)	13 (0.18)	
Once a week or more	36 (0.46)	16 (3.33)	20 (0.27)	
Once a month or more	43 (0.55)	7 (1.46)	36 (0.49)	
Less than once a month	58 (0.74)	13 (2.70)	45 (0.61)	
Never	201 (2.57)	12 (2.49)	189 (2.58)	
Unknown	7,453 (95.32)	418 (86.90)	7,035 (95.87)	
Ever Used Non-Injection Drugs				<0.0001
No	5,041 (64.47)	228 (47.40)	4,813 (65.59)	
Yes	2,699 (34.52)	244 (50.73)	2,455 (33.46)	
Unknown	79 (1.01)	9 (1.87)	70 (0.95)	
In past 12 months did you have anal sex without using a condom				0.0012
No	1,270 (16.24)	67 (13.93)	1,203 (16.39)	
Yes	5,546 (70.93)	374 (77.75)	5,172 (70.48)	
Unknown	1,003 (12.83)	40 (8.32)	963 (13.12)	
Exchanged money or drugs for sex in the past year				<0.0001
No	7,067 (90.38)	379 (78.79)	6,688 (91.14)	
Yes, gave sex partner drugs or money	400 (5.12)	32 (6.65)	368 (5.01)	
Yes, a sex partner gave me drugs or money	197 (2.52)	48 (9.98)	149 (2.03)	
Yes, both	31 (0.40)	9 (1.87)	22 (0.30)	
Unknown	124 (1.59)	13 (2.70)	111 (1.51)	
Ever felt that family members have made discriminatory remarks or gossiped about you because of your sexual preferences?				<0.0001
No	3,553 (45.44)	123 (25.57)	3,430 (46.74)	
Yes, in last 6 months	1,420 (18.16)	180 (37.42)	1,240 (16.90)	
Yes, but not in last 6 months	1,830 (23.40)	116 (24.12)	1,714 (23.36)	
Unknown	1,016 (12.99)	62 (12.89)	954 (13.00)	

[1]Chi-square test, using Monte Carlo Estimate, for difference in demographic characteristics between housing status and groups

Table 2: Associations between unstable housing and HIV status, demographic, and behavioral characteristics of MSM in the AMIS cohort

	Homelessness or Unstable Housing		
Variables	**OR**	**95% Confidence Interval**	**p-value**
HIV Status			
Positive	1.575	1.220-2.035	0.0005
Negative	REF[a]	-	-
Age (years)			
15-23	1.370	1.073-1.748	0.0114
24-35	REF[a]	-	-
36-52	0.726	0.572-0.921	0.0085
52 and older	0.333	0.248-0.447	<0.0001
Race and Ethnicity			
Black, non-Hispanic	2.553	1.899-3.432	<0.0001
White, non-Hispanic	REF[a]	-	-
Hispanic	2.032	1.592-2.593	<0.0001
Other or multiple races	2.043	1.511-2.762	<0.0001
Unknown	8.356	3.810-18.329	<0.0001
Highest Level of Education			
Some high school or less	11.076	7.079-17.331	<0.0001
High School diploma or GED	3.522	2.664-4.655	<0.0001
Some College, Associate's Degree, or Technical Degree	2.238	1.812-2.766	<0.0001
College, post graduate or professional school	REF[a]	-	-
Unknown	2.378	1.016-5.564	0.0458
Household income last year (annually)			
$0 to $19,999	5.454	4.106-7.244	<0.0001
$20,000 to $39,000	1.956	1.448-2.640	<0.0001
$40,000 to $74,999	REF[a]	-	-
$75,000 or more	0.391	0.273-0.560	<0.0001
Unknown	1.660	1.224-2.250	0.0011
Health Insurance or Health Care Coverage			
Private insurance	REF[a]	-	-
TRICARE (CHAMPUS)	0.632	0.154-2.583	0.5225
Veterans Administration coverage	5.248	2.858-9.636	<0.0001
Medicare or Medicaid	4.893	3.800-6.301	<0.0001
Other or multiple insurances	2.443	1.788-3.340	<0.0001
No Coverage	7.801	6.017-10.113	<0.0001

Unknown	4.502	2.854-7.102	<0.0001
Ever Used Injection Drugs			
No	REF[a]	-	-
Yes	3.882	2.964-5.084	<0.0001
Unknown	3.683	1.707-7.946	0.0009
In the past 12 months, on average, how often did you inject?			
Injected once or more a day	18.161	7.063-46.701	<0.0001
Once a week or more	12.600	5.232-30.347	<0.0001
Once a month or more	3.063	1.129-8.308	0.0279
Less than once a month	4.551	1.946-10.639	0.0005
Never	REF[a]	-	-
Unknown	0.936	0.518-1.691	0.8261
Ever Used Non-Injection Drugs			
No	REF[a]	-	-
Yes	2.098	1.740-2.529	<0.0001
Unknown	2.714	1.339-5.503	0.0056
In past 12 months did you have anal sex without using a condom			
No	REF[a]	-	-
Yes	1.298	0.994-1.697	0.0557
Unknown	0.746	0.500-1.113	0.1514
Exchanged money or drugs for sex in the past year			
No	REF[a]	-	-
Yes, gave sex partner drugs or money	1.534	1.054-2.234	0.0255
Yes, a sex partner gave me drugs or money	5.685	4.041-7.998	<0.0001
Yes, both	7.219	3.301-15.786	<0.0001
Unknown	2.067	1.153-3.705	0.0148
Ever felt that family members have made discriminatory remarks or gossiped about you because of your sexual preferences?			
No	REF[a]	-	-
Yes, in last 6 months	4.048	3.190-5.137	<0.0001
Yes, but not in last 6 months	1.887	1.455-2.448	<0.0001
Unknown	1.812	1.324-2.480	0.0002

[a]Reference category within each variable tested

Table 3: Multivariate analysis of experiencing unstable housing and associated risk factors of MSM in the AMIS cohort

	Homelessness or Unstable Housing		
Variables	**aOR**	**95% Confidence Interval**	**p-value**
HIV Status			
Positive	0.914	0.666-1.256	0.5796
Negative	REF[a]	-	-
Age (years)			
15-23	0.884	0.664-1.178	0.4007
24-35	REF[a]	-	-
36-52	1.054	0.802-1.385	0.7050
52 and older	0.655	0.469-0.915	0.0131
Race and Ethnicity			
Black, non-Hispanic	2.224	1.604-3.083	<0.0001
White, non-Hispanic	REF[a]	-	-
Hispanic	1.528	1.164-2.005	0.0023
Other or multiple races	1.898	1.365-2.640	0.0001
Unknown	7.689	3.081-19.189	<0.0001
Highest Level of Education			
Some high school or less	6.515	3.892-10.905	<0.0001
High School diploma or GED	2.039	1.480-2.811	<0.0001
Some College, Associate's Degree, or Technical Degree	1.413	1.117-1.789	0.0040
College, post graduate or professional school	REF[a]	-	-
Unknown	1.993	0.799-4.970	0.1389
Household income last year (annually)			
$0 to $19,999	3.669	2.695-4.996	<0.0001
$20,000 to $39,000	1.649	1.204-2.260	0.0018
$40,000 to $74,999	REF[a]	-	-
$75,000 or more	0.448	0.309-0.651	<0.0001
Unknown	1.293	0.934-1.788	0.1210
Ever Used Injection Drugs			
No	REF[a]	-	-
Yes	4.628	2.111-10.148	0.0001
Unknown	4.840	2.061-11.366	0.0003
In the past 12 months, on average, how often did you inject?			
Injected once or more a day	8.360	2.974-23.496	<0.0001

Once a week or more	12.214	4.535-32.893	<0.0001
Once a month or more	1.900	0.642-5.622	0.2463
Less than once a month	3.903	1.567-9.721	0.0034
Never	REF[a]	-	-
Unknown	4.628	1.735-12.350	0.0022
Ever Used Non-Injection Drugs			
No	REF[a]	-	-
Yes	1.378	1.113-1.705	0.0032
Unknown	2.762	1.239-6.155	0.0130
In past 12 months did you have anal sex without using a condom			
No	REF[a]	-	-
Yes	1.161	0.866-1.556	0.3181
Unknown	0.854	0.554-1.315	0.4726
Exchanged money or drugs for sex in the past year			
No	REF[a]	-	-
Yes, gave sex partner drugs or money	1.758	1.157-2.671	0.0083
Yes, a sex partner gave me drugs or money	2.503	1.677-3.736	<0.0001
Yes, both	4.242	1.667-10.795	0.0024
Unknown	1.971	1.031-3.768	0.0402
Ever felt that family members have made discriminatory remarks or gossiped about you because of your sexual preferences?			
No	REF[a]	-	-
Yes, in last 6 months	3.285	2.533-4.260	<0.0001
Yes, but not in last 6 months	1.885	1.425-2.495	<0.0001
Unknown	1.512	1.079-2.118	0.0163

[a]Reference category within each variable tested