

## Distribution Agreement

In presenting this thesis or dissertation as a partial fulfillment of the requirements for an advanced degree from Emory University, I hereby grant to Emory University and its agents the non-exclusive license to archive, make accessible, and display my thesis or dissertation in whole or in part in all forms of media, now or hereafter known, including display on the world wide web. I understand that I may select some access restrictions as part of the online submission of this thesis or dissertation. I retain all ownership rights to the copyright of the thesis or dissertation. I also retain the right to use in future works (such as articles or books) all or part of this thesis or dissertation.

Signature:

---

Nicole Doucet

---

Date

The Impact of COVID-19 on Homelessness Among Men Who Have Sex with Men

By

Nicole Doucet

MPH

Epidemiology

---

Jodie L. Guest, PhD, MPH

Committee Chair

The Impact of COVID-19 on Homelessness Among Men Who Have Sex with Men

By

Nicole Doucet

B.S, Molecular, Cellular, and Developmental Biology  
University of Michigan  
2021

Thesis Committee Chair: Jodie L. Guest, PhD, MPH

An abstract of  
A thesis submitted to the Faculty of the  
Rollins School of Public Health of Emory University  
in partial fulfillment of the requirements for the degree of  
Master of Public Health  
in Epidemiology  
2023

## **Abstract**

The Impact of COVID-19 on Homelessness Among Men Who Have Sex with Men

By Nicole Doucet

The COVID-19 pandemic has led to several negative economic and housing impacts, including increasing unemployment and rates of homelessness. LGBTQ+ individuals in the United States may experience even greater impacts due to existing disparities. Using data from the American Men's Internet Survey, this thesis investigates homelessness and unstable housing among men who have sex with men (MSM) in the United States, comparing pre-pandemic years (2018-2019) to pandemic years (2020-2021) via a Generalized Estimating Equations (GEE) trends analysis and Estimated Annual Percent Change (EAPC) calculations. Overall, the findings of this study suggest that MSM experienced an increase in homelessness during the COVID-19 pandemic. After stratifying by race, age, and education levels, in both pre-pandemic years and pandemic years, Black MSM, young adults, and participants with less than a high school education experienced the highest levels of homelessness and unstable housing. To address these disparities, policies centered around housing as healthcare must be implemented.

The Impact of COVID-19 on Homelessness Among Men Who Have Sex with Men

By

Nicole Doucet

B.S, Molecular, Cellular, and Developmental Biology  
University of Michigan  
2021

Thesis Committee Chair: Jodie L. Guest, PhD, MPH

A thesis submitted to the Faculty of the  
Rollins School of Public Health of Emory University  
in partial fulfillment of the requirements for the degree of  
Master of Public Health  
in Epidemiology  
2023

## Introduction

Many people in the United States have experienced negative economic and housing impacts during the COVID-19 pandemic. It is estimated that the unemployment rate in the United States in 2020 was greater than three times the unemployment rate in 2019<sup>1</sup>. Additionally, it is estimated that homelessness increased from 2019 to 2020 by 2.2% in the United States.<sup>2</sup>

Lesbian, gay, bisexual, transgender, queer, and other identities (LGBTQ+) individuals may experience even greater impacts due to existing economic and housing disparities. Compared to cisgender heterosexual individuals, LGBTQ+ individuals have a higher rate of poverty (21.6% compared to 15.7%), according to an analysis of Behavioral Risk Factor Surveillance System (BRFSS) data<sup>3</sup>. Likewise, a study conducted by Chai et al. (2019) reported that gay and bisexual men were less likely to have indicated that their family income that was above average, compared to heterosexual men<sup>4</sup>. Moreover, the Williams Institute of the UCLA School of Law reported that LGBTQ+ individuals were more likely to report homelessness in the last 12 months than non-LGBTQ+ individuals (about 8% among transgender individuals and 3% among sexual minority individuals vs. about 1% among non-LGBTQ+ individuals).<sup>5</sup>

There are limited studies exploring the economic and housing impacts experienced by LGBTQ+ individuals during the COVID-19 pandemic. One study found that LGBTQ+ individuals were more likely to report becoming unemployed during the pandemic and have difficulty making rental payments than cisgender heterosexual individuals and that this difference was more pronounced among LGBTQ+ people of color.<sup>6</sup> Sanchez et al. (2020) examined the impact of COVID-19 on men who have sex with men (MSM) at the beginning of the pandemic and found that MSM experienced unemployment and difficulty in rental payment through April 2020 and found 19.1% of participants had become unemployed due to COVID, and 17.3% experienced increased difficulty in being able to afford rental payments.<sup>7</sup> This analysis compares pre-pandemic data to data from 2020 and 2021 to consider differences in time during the pandemic.

This study examines the impact of the COVID-19 pandemic on the housing stability among MSM through 2021 using the American Men's Internet Survey (AMIS) from 2018-2021 which includes MSM 15 years of age or older who live in the United States.<sup>8</sup> Social determinants of health, including racism and variables related to socioeconomic status, will also be assessed in conjunction with changes in housing stability.

## **Methods**

### *Study population*

The American Men's Internet Survey was first conducted in 2013 and is administered yearly. Eligible participants are United States residents who were assigned male at birth, have sex with men (including oral or anal sex), are at least 15 years of age, and speak English or Spanish<sup>8</sup>. Survey participants are asked questions on several themes, including sexual health and behaviors, substance use, and mental health and stigma<sup>8</sup>. Methods for AMIS recruitment, enrollment, and administration have been described elsewhere<sup>9</sup>.

### *Outcomes, exposures, and covariates of interest*

For this analysis, the primary outcomes of interest were homelessness in the last year and unstable housing in the past year. These data were collected with the following questions: "In the past 12 months, were you ever homeless? That is, were you living on the street, in a shelter, in a Single Room Occupancy hotel (SRO), or in a car?" and "In the past 12 months, did you double up or stay overnight with friends, relatives, or someone you didn't know well because you didn't have a regular, adequate, and safe place to stay at night?".

We examined differences in the outcomes over time before and during the COVID-19 pandemic. Specifically, the surveys conducted in 2018 and 2019 were examined to determine risk in the outcomes in the pre-pandemic time and the surveys conducted in 2020 and 2021 were available to determine risk during the first two years of the COVID-19 pandemic. Race and ethnicity, age,

education, annual income, urban and rural, experience of verbal harassment, and experience of physical abuse were examined as potential confounders.

### *Statistical analysis*

The study population was restricted to individuals who were 18 years or older and had data available for the outcomes of interest: homelessness and unstable housing in the previous 12 months. Chi-square analysis was conducted for each variable of interest for each survey year (years 2018-2021). Data from 2018 and 2019 were combined to represent the period prior to the COVID-19 pandemic and were compared to the years 2020 and 2021. Data from 2020 and 2021 were considered separately to allow for differences in the outcome at different points in the pandemic. Generalized Estimating Equations (GEE) were used along with a Poisson regression model, conducted in SAS version 9.4. Separate models stratified by race/ethnicity, age, and education were created to conduct GEE analysis. Estimated Annual Percent Change (EAPC) was reported for 2018/2019, 2020, and 2021 for each outcome, stratified by variables of interest.

## **Results**

### *Population characteristics*

A total of 39,443 participants were identified. The AMIS survey in 2020 had the largest participant population (12,801, 32.45%) and 2018 had the smallest (8135, 20.62%). Across all survey years, most participants were White (63.89%), obtained a college degree (48.91%), had an annual income of 75,000 dollars or greater (39.33%), and lived in urban areas (39.73%). Survey participants from 2021 were older and had a greater proportion of participants 40 years of age and older compared to other years. Additionally, most participants in the 2021 survey had obtained a college or graduate degree and had an income of 75,000 dollars or greater. Across all survey years, nearly half of participants reported experiencing verbal harassment because



they have sex with men and close to a third reported experiencing physical harassment (Table 1).

### *Homelessness in the Last 12 Months*

Overall, being homeless in the last 12 months was reported by 3.49% of participants and unstable housing in the last 12 months was reported by 8% of participants. In 2018-2019, 2.99% of MSM experienced homelessness, increasing to 4.02% in 2020, and changing to 3.70% in 2021. In 2018-2019, 8.22% of MSM experienced unstable housing, increasing to 8.73% in 2020, and then decreasing to 6.50% in 2021.

When stratified by race, Black and white participants experienced increases in homelessness from pre-pandemic years to pandemic years although this affected Black participants more. Black participants had the highest proportion of homelessness; 6.30% of Black MSM in 2018 and 2019 had experienced homelessness in the past year (pre-pandemic), and this increased to 8.56% in 2020 and 9.46% in 2021. White MSM had a much lower rate of homelessness in the pre-pandemic years; 1.94% in 2018 and 2019 had experienced homelessness in the past year, increasing to 2.51% in 2020 and 2.34% in 2021 (Table 2).

All age groups saw increases in homelessness of 1-1.25% from pre-pandemic to pandemic years though the difference was significant only in the youngest (18-24 years) and oldest (40 years and older) age groups. Approximately 3% of participants aged 18-24 experienced homelessness in 2018 and 2019, and this increased to 4.48% in 2020 and 4.57% in 2021. (Table 2, Figure 1). Unstable housing was almost four times more common in the 18-24-year-old group than homelessness though there were no changes over time. The rate of unstable housing decreased by age and was not affected by the pandemic but was more common overall than homelessness (Table 3, Figure 2).

Participants with some college experience or a technical degree and participants with college or postgraduate study experienced statistically significant increases in homelessness during the pandemic compared to the pre-pandemic years. However, the baseline rates of unstable housing and homelessness were the lowest in these two education categories at about 4% and 1%, respectively (Table 2, Figure 1). MSM with less than a high school education saw no statistical difference in homelessness across all three time periods but had an almost 4% increase in the first year of the pandemic (14.23%). A similar trend was seen with unstable housing where the those with more education saw the lowest rates of unstable housing and there were no significant differences across all years examined. However, unstable housing was reported in more than 20% of MSM with less than a high school education at baseline and this increased to 25% in 2020 (Table 3, Figure 2).

EAPC values comparing 2018-2019 (pre-pandemic) to 2020 and to 2021, stratified by race, age, and education were calculated. When stratified by race, the proportion of Black MSM who had experienced homelessness in the past 12 months had a +15.19% EAPC, Hispanic MSM had a +15.12% EAPC, White MSM had a +25.01% EAPC, and other MSM had a +11.49% EAPC indicating annual increases in homelessness. Additionally, when stratified by age, the proportion of MSM aged 18-24 years who had experienced homelessness in the past 12 months had a +28.60% EAPC, MSM aged 25-29 had a +7.99% EAPC, MSM aged 30-39 had a +3.94% EAPC, and MSM aged 40+ had a +26.72% EAPC, indicating annual increases in homelessness but striking differences in the increases in those experiencing homelessness by age.

Furthermore, when stratified by education, the proportion of MSM with less than a high school education who had experienced homelessness in the past 12 months had a -6.93% EAPC, MSM with a high school diploma or GED had a +14.60% EAPC, MSM with some college completed or a technical degree had a +19.58% EAPC, and MSM with a college or

postgraduate degree had a +24.20% EAPC, indicating annual increases in homelessness in most education levels except MSM with less than a high school education (Table 4).

#### *Housing Instability in the Last 12 Months*

After stratification by race, age, and education, there were no statistically significant estimated annual percent changes among the levels of each variable for unstable housing in the last 12 months. However, the highest proportions of unstable housing across all survey years included the following groups: Black participants, participants ages 18-24 years, and participants with less than a high school education (Table 3, Figure 2).

### **Discussion**

#### *Summary of findings*

Homelessness increased among MSM in this cohort during the first two years of the pandemic. While rates of unstable housing did not change significantly from pre-pandemic to the first two years of the pandemic, rates of unstable housing were high overall and much higher for Black, young, and less educated MSM. These findings of increases in homelessness during the COVID-19 pandemic among MSM are similar to Sanchez et al. (2020), who found that 1.4 percent of MSM in 2020 reported that they were homeless or living with a friend because of the COVID-19 pandemic, with younger MSM having a greater percentage of homelessness than older MSM<sup>7</sup>. These findings also align with the research of Stepheson et al. (2021), who found through a cross-sectional survey of MSM that homelessness was experienced by 4.1% of participants during the COVID-19 pandemic, though this study did not specifically examine increases in homelessness due to the COVID-19 pandemic<sup>10</sup>. This study corroborates existing literature that indicates an increase in homelessness among MSM due to the COVID-19 pandemic<sup>7</sup> and highlights existing disparities among people experiencing homelessness.<sup>11</sup>

The rate of homelessness increased from pre-pandemic to pandemic rates. In 2018-2019, 2.99% of MSM experienced homelessness, 4.02% in 2020, and 3.70% in 2021. In 2018-2019, 8.22% of MSM experienced unstable housing, 8.73% in 2020, and 6.50% in 2021. These differences were significant for Black and White MSM. There is limited literature examining homelessness among MSM or LGBTQ+ individuals stratified by race, but these findings are similar to previous research that found LGBTQ+ people of color were more likely to have difficulty making rental payments than White LGBTQ+ individuals (though this study did not examine homelessness specifically)<sup>6</sup>. Younger adults experienced more homelessness during the pandemic compared to pre-pandemic years and compared to MSM 40 years and older.

Homelessness and unstable housing increased for all education groups with the onset of the pandemic. Participants in all education groups except for MSM with less than a high school education experienced increases in homelessness in 2020 and 2021 compared to pre-pandemic years. While MSM with less than a high school education did not see large differences in homelessness during the pandemic, the rate was already much higher, almost twice as high, in this group than any other education group. Additionally, this group had extremely high baseline rates of unstable housing that increased to 25% in 2020. It bears repeating that a quarter of the MSM in the 2020 cohort with less than a high school education did not have stable housing. Furthermore, for both pre-pandemic and pandemic years, Black MSM, young adults, and participants with less than a high school level of education generally experienced the highest levels of homelessness and unstable housing. This study highlights racial disparities in homelessness and unstable housing, which occur due to factors such as structural racism, including both historical and current discrimination in housing, income and economic inequalities, and racism and discrimination within interventions meant to address homelessness<sup>12</sup>. In this study, it was found that Black, Hispanic, and other race groups had higher proportions of both homelessness and unstable housing than White MSM. This

corroborates existing research that Black and Hispanic individuals are more likely to experience housing issues than White individuals<sup>11</sup> including during the pandemic<sup>13</sup>.

### *Strengths and limitations*

An important strength of this study was the ability to include a large study population across multiple survey years to allow for baseline comparison before the pandemic. Furthermore, this study included surveys from both 2020 and 2021, allowing for the assessment of the early impacts of the pandemic (2020) and later impacts of the pandemic (2021). Additionally, several covariates such as race, age, and education level were considered in this analysis, allowing for adjustment of potential confounders.

However, there were also several limitations of this study. One limitation is that because of the cross-sectional survey design, causation and risk are not able to be assessed from this study. Moreover, although this study evaluated Black, Hispanic, and White MSM, this study was limited to grouping several racial/ethnic groups and multiracial individuals into an “Other” MSM category, and therefore could not assess the differences among the individual groups within that category. Furthermore, the study population was predominately White, older, wealthy, and had a college or post-graduate education, which is not representative of MSM in the United States and contrasts with data from the United States Census as of July 2021, which estimated that 59.3% of the general United States population was White, non-Hispanic. The US Census also estimated that 33.7% of adults 25 years of age or older have at least a college degree, contrasting with the proportion of participants with a college or postgraduate degree within this study<sup>14</sup>. Therefore, it is likely that this study will not truly capture the experiences of MSM in the United States and instead is likely an underestimate of the true rate of homelessness experienced among US MSM. With this backdrop, it is important to note the high rates of homelessness and unstable housing seen in the MSM cohort, particularly among the youngest and among those with less than a high school education.

### *Conclusion*

The findings of this study suggest that more MSM experienced homelessness during the pandemic than in the two years before the pandemic. This study also highlights how the intersections between race and socioeconomic factors contributed to differences in homelessness and unstable housing among MSM, both before the pandemic and that these differences were exacerbated during the pandemic. To address these disparities, housing must be recognized as healthcare, and policies centered around this recognition must be created.

## References

1. Smith SM, Edwards R, Duong HC. Unemployment rises in 2020, as the country battles the COVID-19 pandemic. *Monthly Lab Rev.* 2021;144:1.
2. Henry M, de Sousa T, Roddey C, Gayen S, Bednar T. The 2020 Annual Homeless Assessment Report (AHAR) to Congress. The U.S. Department of Housing and Urban Development Office of Community Planning and Development 2021.
3. Badgett ML, Choi SK, Wilson B. LGBT poverty in the United States. *Los Angeles, CA: The Williams Institute and American Foundation for Suicide.* 2019;
4. Chai L, Maroto M. Economic insecurity among gay and bisexual men: Evidence from the 1991–2016 US General Social Survey. *Sociological Perspectives.* 2020;63(1):50-68.
5. Wilson BD, Choi SK, Harper GW, Lightfoot M, Russell S, Meyer IH. Homelessness among LGBT adults in the US. 2020;
6. Sears B, Conron KJ, Flores AR. The impact of the fall 2020 COVID-19 surge on LGBT adults in the US. 2021;
7. Sanchez TH, Zlotorzynska M, Rai M, Baral SD. Characterizing the impact of COVID-19 on men who have sex with men across the United States in April, 2020. *AIDS and Behavior.* 2020;24:2024-2032.
8. Emory University. American Men's Internet Survey. <https://emoryamis.org/>
9. Wiatrek S, Zlotorzynska M, Rai R, Sullivan P, Sanchez T. The Annual American Men's Internet Survey of behaviors of men who have sex with men in the United States: Key indicators report 2018. *JMIR Public Health and Surveillance.* 2021;7(3):e21812.
10. Stephenson R, Chavanduka TM, Rosso MT, et al. Sex in the time of COVID-19: results of an online survey of gay, bisexual and other men who have sex with men's experience of sex and HIV prevention during the US COVID-19 epidemic. *AIDS and Behavior.* 2021;25:40-48.

11. Fusaro VA, Levy HG, Shaefer HL. Racial and ethnic disparities in the lifetime prevalence of homelessness in the United States. *Demography*. 2018;55(6):2119-2128.
12. Fowle MZ. Racialized homelessness: A review of historical and contemporary causes of racial disparities in homelessness. *Housing Policy Debate*. 2022;32(6):940-967.
13. Chun Y, Roll S, Miller S, Lee H, Larimore S, Grinstein-Weiss M. Racial and ethnic disparities in housing instability during the COVID-19 pandemic: The role of assets and income shocks. *Journal of Economics, Race, and Policy*. 2022:1-19.
14. United States Census Bureau. Population Estimates, July 1, 2021, (V2021). 2023.

<b>Table 1 – Demographic characteristics among adult MSM AMIS participants, 2018-2021</b>						
	<b>Total</b>	<b>AMIS – 2018</b>	<b>AMIS – 2019</b>	<b>AMIS – 2020</b>	<b>AMIS – 2021</b>	<b>Chi- square p-value</b>
<b>N (%)</b>	39443 (100%)	8135 (20.62%)	9541 (24.19%)	12801 (32.45%)	8966 (22.73%)	
<b>Demographic</b>						
<i>Race/Ethnicity<sup>a</sup></i>						<0.0001
Black	4559 (11.76%)	438 (5.47%)	1466 (15.66%)	1566 (12.48%)	1089 (12.31%)	
Hispanic	6370 (16.43%)	1244 (15.53%)	1408 (15.04%)	2488 (19.83%)	1230 (13.91%)	
White	24764 (63.89%)	5743 (71.68%)	5711 (61.01%)	7529 (60.02%)	5781 (65.37%)	



Other	3068 (7.92%)	587 (7.33%)	776 (8.29%)	962 (7.67%)	743 (8.40%)	
<i>Age<sup>b</sup></i>						<0.0001
18-24	12631 (32.02%)	3099 (38.09%)	3651 (38.27%)	5203 (40.65%)	678 (7.56%)	
25-29	7038 (17.84%)	1161 (14.27%)	1807 (18.94%)	3180 (24.84%)	890 (9.93%)	
30-39	6323 (16.03%)	1297 (15.94%)	1472 (15.43%)	1370 (10.70%)	2184 (24.36%)	
40+	13451 (34.10%)	2578 (31.69%)	2611 (27.37%)	3048 (23.81%)	5214 (58.15%)	
<i>Education<sup>c</sup></i>						<0.0001
Less than high school	719 (1.83%)	179 (2.22%)	186 (1.96%)	246 (1.93%)	108 (1.21%)	
High school diploma/GED	5887 (14.98%)	1232 (15.26%)	1540 (16.20%)	2290 (17.95%)	825 (9.23%)	
Some college, Technical Degree	13465 (34.27%)	2974 (36.83%)	3444 (36.23%)	4620 (36.20%)	2427 (27.14%)	
College, postgraduate	19215 (48.91%)	3690 (45.70%)	4337 (45.62%)	5605 (43.92%)	5583 (62.43%)	
<i>Income (Annual)<sup>d</sup></i>						<0.0001
0-19,9999	4936 (13.63%)	1088 (14.59%)	1351 (15.59%)	1682 (14.46%)	815 (9.63%)	

20,000-39,999	7356 (20.31%)	1551 (20.79%)	1867 (21.54%)	2560 (22.01%)	1378 (16.28%)	
40,000-74,999	9683 (26.73%)	2118 (28.40%)	2498 (28.83%)	3064 (26.34%)	2003 (23.67%)	
75,000+	14244 (39.33%)	2702 (36.22%)	2950 (34.04%)	4325 (37.19%)	4267 (50.42%)	
<i>Health Insurance<sup>e</sup></i>						<0.0001
None	3323 (8.68%)	677 (8.80%)	824 (8.80%)	1261 (10.17%)	561 (6.36%)	
Private Only	26698 (69.74%)	5461 (70.96%)	6726 (71.84%)	8399 (67.74%)	6112 (69.24%)	
Public Only	5760 (15.05%)	902 (11.72%)	1267 (13.53%)	1986 (16.02%)	1605 (18.18%)	
Other/Multiple	2503 (6.54%)	656 (8.52%)	546 (5.83%)	752 (6.07%)	549 (6.22%)	
<i>Urban/Rural<sup>f</sup></i>						<0.0001
Urban	15639 (39.73%)	3026 (37.23%)	3609 (37.88%)	4844 (37.94%)	4160 (46.51%)	
Suburban	8240 (20.93%)	1642 (20.20%)	2058 (21.60%)	2686 (21.04%)	1854 (20.73%)	
Small/Medium Metro	11845 (30.09%)	2674 (32.90%)	2950 (30.96%)	3967 (31.07%)	2254 (25.20%)	
Rural	3643 (9.25%)	786 (9.67%)	911 (9.56%)	1270 (9.95%)	676 (7.56%)	

<b>Stigma</b>						
<i>Verbal Harassment<sup>g</sup></i>						<0.0001
Yes, in the last 6 months	4703 (13.79%)	1182 (14.93%)	1470 (15.68%)	1272 (14.19%)	779 (9.94%)	
Yes, > 6 months	11561 (33.91%)	2359 (29.79%)	2729 (29.11%)	3289 (36.69%)	3184 (40.62%)	
No	17830 (52.30%)	4377 (55.28%)	5175 (55.21%)	4403 (49.12%)	3875 (49.44%)	
<i>Physical Abuse<sup>h</sup></i>						<0.0001
Yes, in the last 6 months	1624 (4.72%)	388 (4.81%)	527 (5.58%)	451 (5.03%)	258 (3.27%)	
Yes, not in the last 6 months	11069 (32.20%)	2491 (30.91%)	2690 (28.46%)	3220 (35.92%)	2668 (33.78%)	
No	21680 (63.07%)	5180 (64.28%)	6234 (65.96%)	5294 (59.05%)	4972 (62.95%)	
<sup>a</sup> 682 missing <sup>b</sup> 0 missing <sup>c</sup> 157 missing <sup>d</sup> 3224 missing <sup>e</sup> 1159 missing <sup>f</sup> 76 missing <sup>g</sup> 5349 missing and/or excluded due to missing data <sup>h</sup> 5070 missing and/or excluded due to missing data						



<b>Table 2: Homelessness in the last 12 months, stratified by race, age, and education</b>				
	2018-2019	2020	2021	p-value*
	N (%)	N (%)	N (%)	
<b>Race</b>				
Black	120 (6.30%)	134 (8.56%)	103 (9.46%)	0.0387
Hispanic	108 (4.07%)	124 (4.98%)	50 (4.07%)	0.1568
White	222 (1.94%)	189 (2.51%)	135 (2.34%)	0.0002
Other	55 (4.04%)	46 (4.78%)	36 (4.85%)	0.4112
<b>Age</b>				
18-24	226 (3.35%)	233 (4.48%)	31 (4.57%)	0.0046
25-29	104 (3.50%)	138 (4.34%)	42 (4.72%)	0.4141
30-39	105 (3.79%)	60 (4.38%)	105 (4.81%)	0.5977
40+	93 (1.79%)	84 (2.76%)	154 (2.95%)	0.0007
<b>Education</b>				
Less than high school	38 (10.41%)	35 (14.23%)	13 (12.04%)	0.6911
High school diploma/GED	142 (5.12%)	173 (7.55%)	81 (9.82%)	0.0839
Some college, Technical Degree	257 (4.00%)	222 (4.81%)	147 (6.06%)	0.0019
College, postgraduate	89 (1.11%)	83 (1.48%)	89 (1.59%)	0.0069

\*P-values were calculated using GEE modeling. For race, the variables adjusted for included age, education, income, rural vs. urban, verbal harassment, and physical abuse. For age, the variables adjusted for included race, education, income, rural vs. urban, verbal harassment, and physical abuse. For education, the variables adjusted for included age, income, rural vs. urban, verbal harassment, and physical abuse.

<b>Table 3: Unstable housing in the last 12 months, stratified by race, age, and education</b>				
	2018-2019	2020	2021	p-value*
	N (%)	N (%)	N (%)	
<b>Race</b>				
Black	241 (12.66%)	208 (13.28%)	138 (12.67%)	0.1111
Hispanic	269 (10.14%)	260 (10.45%)	114 (9.27%)	0.2926
White	733 (6.40%)	502 (6.67%)	257 (4.45%)	0.2121
Other	160 (11.74%)	99 (10.29%)	67 (9.02%)	0.5188
<b>Age</b>				
18-24	777 (11.51%)	609 (11.70%)	77 (11.36%)	0.6880
25-29	248 (8.36%)	266 (8.36%)	84 (9.44%)	0.5106
30-39	199 (7.19%)	110 (8.03%)	183 (8.38%)	0.6853
40+	229 (4.41%)	133 (4.36%)	239 (4.58%)	0.8607
<b>Education</b>				
Less than high school	75 (20.55%)	62 (25.20%)	22 (20.37%)	0.7133
High school diploma/GED	367 (13.24%)	323 (14.10%)	123 (14.91%)	0.7327
Some college, Technical Degree	665 (10.36%)	478 (10.35%)	239 (9.85%)	0.6392
College, postgraduate	334 (4.16%)	251 (4.48%)	196 (3.51%)	0.5781

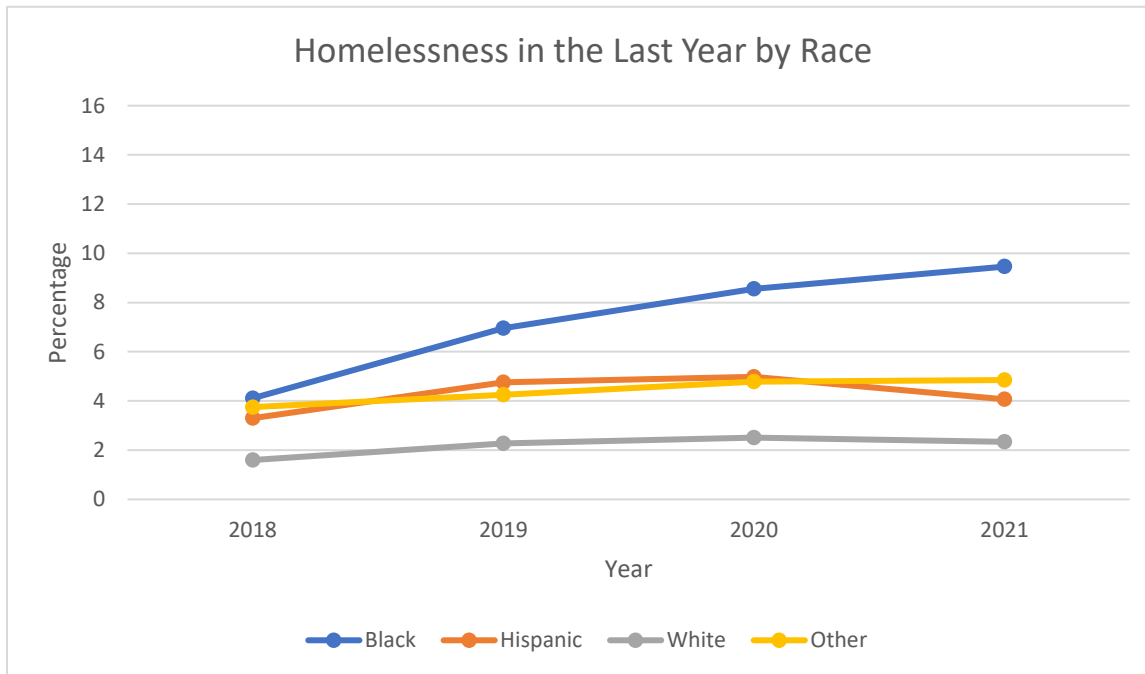
\*P-values were calculated using GEE modeling. For race, the variables adjusted for included age, education, income, rural vs. urban, verbal harassment, and physical abuse. For age, the variables adjusted for included race, education, income, rural vs. urban, verbal harassment, and physical abuse. For education, the variables adjusted for included age, income, rural vs. urban, verbal harassment, and physical abuse.

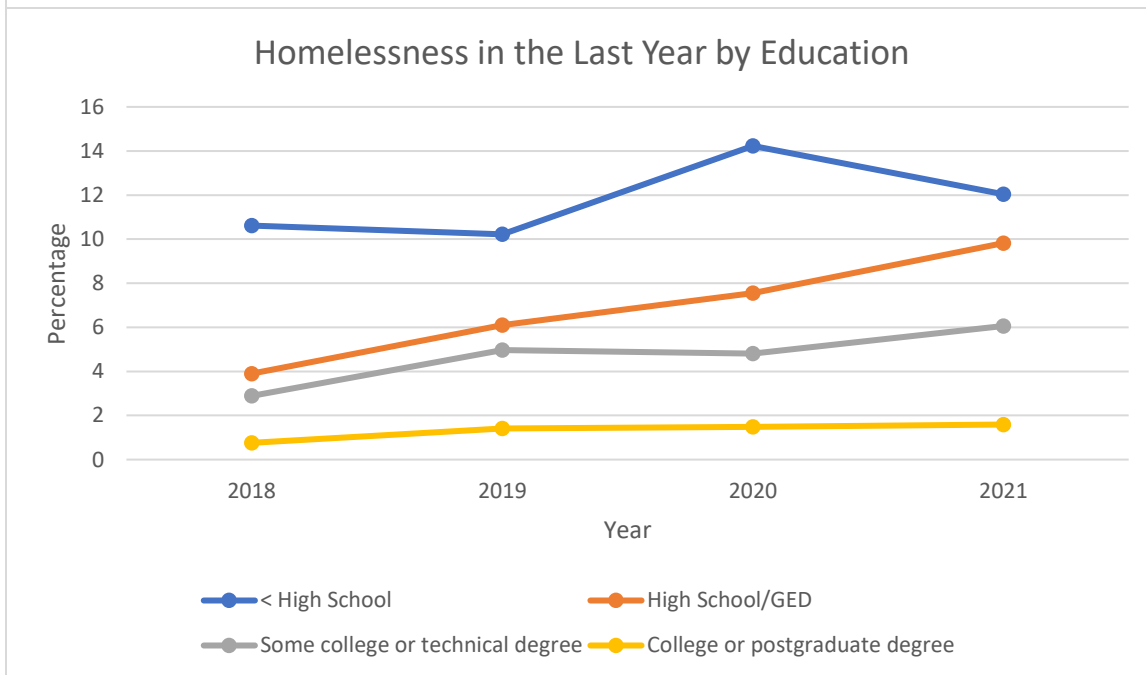
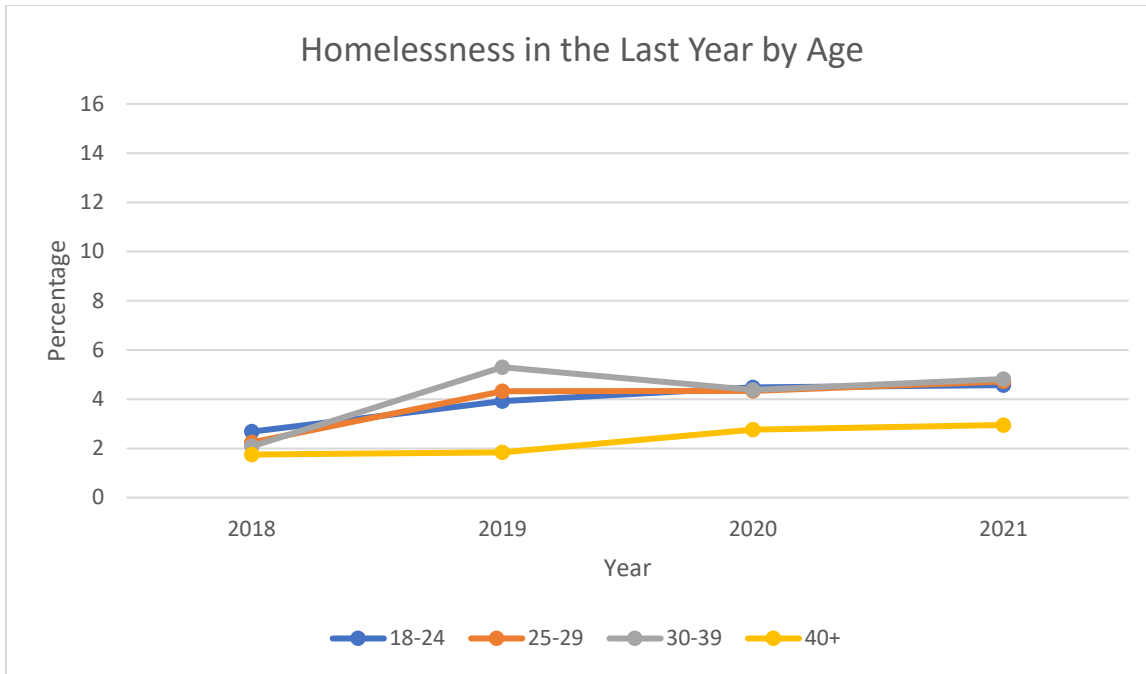


**Table 4: Estimated Annual Percent Change (EAPC) of homelessness and unstable housing, stratified by race, age, and education, 2018-19, 2020, and 2021**

Race				
	Black MSM	Hispanic MSM	White MSM	Other MSM
Homelessness in the last 12 months	15.19 (0.74-31.72)	15.12 (-5.27-39.89)	25.01 (11.12-40.64)	11.49 (-13.99-44.51)
Unstable housing in the last 12 months	-8.80 (-18.58-2.14)	6.96 (-5.64-21.25)	4.88 (-2.68-13.02)	5.56 (-10.44-24.43)
Age				
	Age 18-24	Age 25-29	Age 30-39	Age 40+
Homelessness in the last 12 months	28.60 (8.06-53.04)	7.99 (-10.21-29.89)	3.94 (11.04-19.95)	26.72 (10.45-45.37)
Unstable housing in the last 12 months	2.05 (-7.59-12.70)	-4.26 (-15.88-8.98)	2.20 (-8.03-13.59)	0.88 (-8.57-11.32)
Education				

	Less than High School	High School Diploma/GED	Some college/Technical Degree	College/post-graduate
Homelessness in the last 12 months	-6.93 (-34.69-32.62)	14.60 (-1.81-33.75)	19.58 (6.80-33.88)	24.20 (6.13-45.34)
Unstable housing in the last 12 months	5.22 (-19.81-38.09)	2.03 (-9.08-14.50)	1.95 (-5.96-10.52)	2.72 (-6.55-12.90)

**Figure 1: Homelessness in the last 12 months, stratified by race, age, and education**





**Figure 2: Unstable housing in the last 12 months, stratified by race, age, and education**