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Associations Between Living On The Texas-Mexico Border, Drug Use, And Sexual Behaviors Among Sexual Minority Men During The First Shelter-In-Place Order Of The Coronavirus Pandemic

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AND SEXUAL BEHAVIORS AMONG SEXUAL MINORITY MEN DURING THE FIRST

SHELTER-IN-PLACE ORDER OF THE CORONAVIRUS PANDEMIC

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DEDICATION

This thesis is dedicated to Sibusisiwe Myeni, and my aunt Zimise Nzama. Thank you for your endless support and sacrifices.

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by

NQOBILE NZAMA, BSS

THESIS

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ABSTRACT

Background: There have been changes in drug use and sexual behaviors among sexual minority men since the coronavirus pandemic. At this time, there is not adequate literature focusing on the state of Texas.

Aims and Objective: The aims of this secondary data analysis and exploratory study are to determine associations between sociodemographic characteristics and living on the Texas-Mexico border, drug use, sexual behaviors, and use of dating/hook-up apps among sexual minority men who completed the *COVID-19 & You Survey* conducted between May 1, 2020 to July 31, 2020, during the first shelter-in-place order of the Coronavirus pandemic.

Hypotheses: The hypotheses of this study were be repeated for each of the analytical outcomes including living in a border county; increased use of alcohol since shelter-in-place; increased use of any illicit drugs since shelter-in-place; started/continued hooking-up via apps since shelter-in-place; and decreased use of condoms since shelter-in-place. It was predicted that, as compared to those without the analytical outcome, those with the outcome will have a change in odds for ever attending a sex party where drugs were used; drinking alcohol or using recreational drugs due to COVID-19; finding alcohol, smoking pot, or other drug use helpful for coping since the beginning of COVID-19; hook-up and dating apps use; meeting up with people from hook-up and dating apps; being in a relationship or dating; being in an open or polygamous relationship; engaging in sex or sexual activity for money or working in the sex industry; and condom use.

Methods: Descriptive statistics (n, frequency, and percent) were determined for all measures and their bivariate associations with each analytical outcome using Chi-Square tests. Adjusted associations were determined using logistic regression adjusting for age, race and

ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status. Tests results were determined to be significant if the p-value < 0.05. Odds ratio and 95% confidence intervals are reported.

Results: A total of 560 sexual minority men completed the survey. The majority were white (61.5%) and were either lesbian/gay/same-gender-loving (90.0%). For the analytical outcomes, 16.8% were living in a border county, 56.5% increased their use of alcohol since shelter-in-place, 27.8% increased their use of any illicit drug since shelter-in-place, 36.2% started or continued their use of hook-up apps since shelter-in-place, and 16.9% decreased their condom use since shelter-in-place.

The following are the significant adjusted results for each analytical outcome based on an overall significant association with the outcome and/or decrease/increased odds of the outcome. Living in a Border County: Race and ethnicity, education level, and relationship status. Increased Use of Alcohol Since Shelter-in-Place: Race and ethnicity, finding it helpful to use alcohol/drugs since shelter-in-place, relationship, last sexual intercourse. Increased Use of Any Illicit Drug Since Shelter-in-Place: Age, race and ethnicity, ever engaging in sex or sexual work, and since shelter-in-place, increased use of recreational drugs, finding it helpful to use alcohol/drugs, and use of hookup or dating apps. Continued or Started Hooking-Up via Apps Since Shelter-in-Place: Age, relationship status, relationship type, last sexual intercourse, ever engaged in sex work, and since shelter-in-place, condoms use and sexual activity frequency. Decreased Condom Use Since Shelter-in-Place: Race and ethnicity, sexual orientation, relationship status, condoms use prior to shelter-in-place, and sexual activity frequency since shelter-in-place.

Conclusions: There are limited studies conducted at a state or national level that explore the factors that impact or changes of drug use and sexual behavior among sexual minority men during the first COVID-19 shelter-in-place order. This study may serve as a reference for future studies which may include border counties.

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INTRODUCTION

Men who have sex with men continue to be disproportionally affected by HIV in the United States. In 2018, gay and bisexual people comprised 69% of the 37,968 new HIV diagnoses in the United States (Centers for Disease Control and Prevention (CDC), 2020). A similar trend was observed at the state level. In 2016 Texas HIV infection prevalence in men who have sex with men was 8,358 per 100,000, which was higher than the general population (311 per 100,000) (Texas Department of State Health Services, n.d). According to the Texas Department of State Health Services (Texas Department of State Health Services, 2020), the Texas-Mexico border had a lower number of people living with HIV (133.9 per 100,000) compared to the rest of Texas (184.0 per 100,000). However, men who have sex with men were still the group disproportionally affected by HIV on the Texas-Mexico Border with 78% new diagnoses among MSM in 2017 (Texas Department of State Health Services, 2020). Some studies have explored the impact of the COVID-19 pandemic within the LGBTQ+ populations such as the behaviors of men who have sex with men and changes in their drug and alcohol use (Sanchez, Zlotorzynska, Rai, & Baral, 2020; Stephenson, Chavanduka, Rosso et al., 2021). This study aims to add to the existing literature by assessing living in Texas-Mexico border and changes in drug use and sexual behaviors since shelter-in-place among cisgender minority men in Texas.

BACKGROUND AND SIGNIFICANCE

COVID-19 Pandemic

The first positive case of coronavirus (SARS-CoV-2), the virus that causes COVID-19, was traced back to Wuhan in China in December 2019 and the World Health Organization (WHO) declared COVID-19 as a pandemic on March 11, 2020 (Habas, Nganwuchu, Shahzad et al., 2020). The United States reported its first case of COVID-19 on January 20, 2020 (Holshue, DeBolt, Lindquist et al., 2021). The first case of COVID-19 in Texas was recorded on March 04, 2020 (Ojinnaka, Adepoju, Burgess, & Woodard, 2020). The COVID-19 disease at that moment was managed through treatment to prevent respiratory failure and supportive therapy (Habas et al., 2020). Countries then implemented various measures to contain the. The virus continues to affect all populations but minority groups carry the highest burden of disease with Blacks a spread of COVID-19 including shelter-in-place or stay-at-home regulations, masks mandates, social distancing, and refraining from large gatherings to contain the spread of the virus (Centers for Disease Control and Prevention (CDC), 2021) and Hispanics experiencing higher death rates compared to non-Hispanic Whites in the U.S. (Bassett, Chen, & Krieger, 2020; Gold, Rossen, Ahmad et al., 2020).

HISPANIC HEALTH DISPARITIES IN COVID-19 IN THE U.S.

The COVID-19 pandemic has disproportionally affected Hispanics of different age groups in other regions of the United States and thus face a more significant burden of disease. In regards to age groups, a cross-sectional study using national publicly available data collected between February 1, 2020 to July 22, 2020, showed that COVID-19 related deaths were higher among Hispanics across different age groups 25-34 years (RR: 7.0; 95% CI: 5.8, 8.4), 35-44 years (RR: 8.8; 95% CI: 7.8, 9.9), and 45-54 years (RR: 7.0; 95% CI: 6.6, 7.5) compared to non-

Hispanics White (Bassett et al., 2020). In terms of race/ethnicity, a report generated using data from the National Vital Statistics System in the United States for 114,411 people who died due to COVID-19 from May 1, 2020 to August 31, 2020, found that Hispanics were the only ethnic/racial group that had an increase in the death rate of 10.1% (from 16.3% to 26.4%) while death rate decreased for Whites by 5.4% and Blacks by 2.9% (Gold et al., 2020). This pattern was consistent for the Southern and Western States (Gold et al., 2020).

RATES OF COVID-19 IN TEXAS

The cases of COVID-19 were on the rise since the first case was reported and Texas was not in a unique state either. Halfway through the data collection period, Texas approximately had 55, 971 cases (Texas Tribune, 2020). Texas had 68,271 cases by June 3, 2020 (Cook, 2020). Texas had 252,884 new cases by the end of July which cumulated the state's cases to 420,946 in July making it the third state with the highest number of cases after California and Florida (Costa, 2020). Although Texas was amongst the states with the highest number of cases, it remained a leading state with individuals who have recovered from COVID-19 with 260,542 recoveries, followed by Massachusetts (97,595 recoveries) and New York (72,973 recoveries) (Halsey, 2020).

COVID-19 MORTALITY RATE IN TEXAS

The state of Texas as of May 23, 2020 had 1,527 deaths (Texas Tribune, 2020). The state continued to experience a rise in fatalities throughout the data collection period; as of June 3, 2020 had 1,734 deaths due to COVID-19 (Cook, 2020). A retrospective study used publicly available Texas COVID-19 county-level cases and mortality from the Texas Department of State Health Services Center for Health Statistics with a county ranking report from 2020 Robert Wood Johnson Foundation between March 4, 2020 (the first time a case was reported in the

state) to August 1, 2020 found a significant increase in COVID-19 deaths per 100,000 population with every 1% increase in the proportion of Hispanics ($p=.03$) and African Americans ($p =.04$) (Ojinnaka et al., 2020). When assessing an underlying condition, the study found that among adults with obesity there was a significant decreased in COVID-19 deaths per 100,000 with every 1% increase in the proportion of adults with obesity ($\beta = 0.71$; 95% CI: 0.12, 1.30) (Ojinnaka et al., 2020). In the context of sociodemographic characteristics, the study findings indicate an increase of 5.21 COVID-19 deaths per 100,000 with every 1% increase in the proportion for unemployed people ($\beta = 5.21$; 95% CI: 2.22, 8.20) (Ojinnaka et al., 2020).

U.S.- Mexico Border Region

The U.S.-Mexico Border differs from the rest of Texas in terms of its demographics and healthcare access. The United States-Mexico Border is defined as a 62.5 miles land from north to the south of both countries. The region starts about 2000 miles from Texas to California north. There are four U.S. (Arizona, California, New Mexico, and Texas) that border with Mexico. The border region is estimated to have 150 million inhabitants which are expected to double by 2025 (United States-Mexico Border Health Commission, 2015). The population growth in the U.S.-Mexico border between 2010 to 2019 has been higher than the national rate (6.9% compared to 6.3%) (Rural Health Information Hub, 2019). There are 44 counties situated within the border region and the Office of Management and Budget classify 33 of those counties as nonmetropolitan (e.g., noncore or micropolitan) (Rural Health Information Hub, 2019). Most counties in the border region fall within medically underserved areas or health professional shortage areas (Rural Health Information Hub, 2019). The border region is also facing multiple public health issues such as lack of health insurance, language, and lack of infrastructure (e.g., housing, clean water supply, and sewage systems), high rates of poverty, and low-wage jobs

(Rural Health Information Hub, 2019). Other healthcare barriers include immigration status such as having undocumented immigrants who cannot access health care and other social services due to lack of legal documentation (Rural Health Information Hub, 2019).

Hispanic Population in Texas

The Texas-Mexico border region makes up almost half of the U.S.-Mexico border (Office of Border Public Health, 2019) and it is considered the busiest border crossing in the U.S. (Rural Health Information Hub, 2019). The counties with the highest rates of Hispanic populations are in the U.S.-Mexico border region (Rural Health Information Hub, 2019). The Texas-Mexico border region has a higher rate of the Hispanic population (88.4% vs 35.5%), individuals living below the poverty threshold (29.3% vs 15.9%), adults from 18-64 years without health insurance (46.1% vs 28.3%), people who not speak English very well (31.7% vs 12.2%), and individuals aged 25 and more without a high school diploma (32.8% vs 16.5%) compared to people living in a non-border region (Office of Border Public Health, 2019).

Cultural and Gender Norms

When research is conducted by the dominant culture (individuals who identify as heterosexual form the majority sexual orientation and their identity is accepted as the norm or standard behavior), sexual and gender minorities often experience discrimination due to heteronormativity – where they are seen as challenging the norms set by the dominant sexual orientation (Kite & Bryant-Lees, 2016). Heterosexual individuals do not have to live in fear of having their sexual orientation questioned or fear to reveal it due to the potential discrimination - this is referred to as heterosexual privilege (Kite & Bryant-Lees, 2016). Heteronormativity can influence how some individuals chose to identify, a cross-sectional study conducted among 142 Latino bisexual men in the United States between August 2009 to September 2011 found that

there is a relationship between practicing Christianity and masculinity which leads to Christian men choosing to identify as sexual beings rather than bisexual (Severson, Munoz-Laboy, & Kaufman, 2014). The authors further found that bisexual men practicing Christianity often experience internal conflicts between their religion and their sexuality since it is labeled immoral (Severson et al., 2014). The approaches used by researchers to influence or increase acceptance of sexual and gender minorities can mistakenly raise stigmatization and discrimination. For instance, in cases of encouraging the acceptance of children to be raised by same-sex couples researches usually bring to light that the children can be heterosexual (Mink, Lindley, & Weinstein, 2014). This approach may unintentionally portray homosexuality as an undesirable or poor developmental outcome (Mink et al., 2014).

Risk Factors for HIV

The lack of health insurance increases the risk of late diagnoses for HIV among high-risk individuals and there are lower rates for HIV prevention measures and some barriers are specific to the immigrant population or sexual and gender minority men. When participants were assessed for health insurance coverage in an HIV testing intervention among 10,348 individuals who inject drugs in 2015 found that 6.8% were living HIV and those without health insurance had lower rates for HIV testing in the past 12 months (41% vs 61%), participating in HIV behavioral interventions (15% vs 28%), and ever testing for HCV infection (70% vs 85%) (Burnett, Broz, Spiller, Wejnert, & Paz-Bailey, 2018). Gaps exist in access to care and treatment for the Hispanic population. In addition, for every 100 Hispanic individuals living with HIV 60 % received some care, 40% were retained in care, and 51% were virally suppressed in 2016 (Centers for Disease Control and Prevention (CDC), 2019). In terms of HIV prevention, Black (19%) and Hispanic (21%) gay and bisexual men have lower rates of taking Pre-exposure

prophylaxis (PrEP) compared to White (31%) gay and bisexual men (Centers for Disease Control and Prevention (CDC), 2020). In terms of additional barriers to HIV and care, immigration status, language barriers, and low education level, also limit Hispanic populations from accessing care (Centers for Disease Control and Prevention (CDC), 2019). Lower-income levels and higher rates of incarceration limit gay and bisexual men from accessing care (Centers for Disease Control and Prevention (CDC), 2020). Correctional centers lack prevention services which could reduce the HIV burden in men who have sex with men. For instance, a qualitative study was conducted between September 2016 to October 2017 among 26 men who have sex with men who were incarcerated at the Rhode Island Department of Correction found that participants had limited knowledge on PrEP and the department did not a program for PrEP (Brinkley-Rubinstein, Peterson, Arnold et al., 2018). Furthermore, men stated that taking PrEP after their release would be difficult due to multiple challenges (e.g., housing, cost, transportation) they face as they re-enter their communities (Brinkley-Rubinstein et al., 2018).

HIV testing among sexual and gender minorities

The sexual and gender minority populations continue to be at the highest risk for HIV both at a national and state level. In regards to national data, a study used national data to estimate the number of men who have sex with men and HIV prevalence in 2012 and 2013 found that the U.S. had an estimate of 15.0% of MSM living were living with HIV infection (both diagnosed and undiagnosed) and 11.1% were living with an HIV diagnosis in 2012 (Rosenberg, Grey, Sanchez, & Sullivan, 2016). The same trends are observed in the state of Texas, most (70.3%) of the HIV cases in Texas for the year 2018 were among men who have sex with men (Texas Department of State Health Services HIV/STD Program, 2019).

Rates of HIV testing are affected by the belief of being at low risk, fear of testing positive, and lack of LGBTQ+ services in minority racial/ethnic neighborhoods. In terms of one's beliefs and fear, data drawn from The National HIV Behavioral Surveillance among 8,175 adult men who have sex with men in metropolitan statistical areas between June to December 2008 found that 38% of participants had not been tested for HIV during the past 12 months and the most common reasons were perceiving they were at low risk for HIV infection (42%) and fearing getting a positive test result (24%) (Finlayson, Le, Smith et al., 2011). In addition to HIV testing disparities, there are ethnic disparities in access. For example, a geospatial distribution analysis among 193 LGBTQ+ non-profit social services and community programs in Chicago found these were unevenly distributed, with non-Hispanic Whites neighborhoods having more sites (71.0%) compared to Black/African American (9.8%) and Hispanic (6.2%) neighborhoods (Rosentel, VandeVusse, & Hill, 2020).

Multiple Sex Partners and Relationships among Men who have with Men

The literature among MSM includes sex with casual and/or non-casual partners, however, there are differences in rates of condomless sex among individuals who know their HIV status, partner's sex, relationship type, and COVID-19 pandemic. In regards to individuals' HIV status, a report used data from The National HIV Behavioral Surveillance was collected among 8,175 adult men who have sex with men residing in metropolitan statistical areas in the United States between June to December 2008 found that individuals who did not know their HIV status were common among men whose recent sex was with a casual partner (53%) compared to those whose recent sex was with a non-casual partner (19%) (Finlayson et al., 2011). When assessing partner's sex, the study indicated that among 1,109 participants who reported having anal, vaginal, or oral sex with a female partner and of men who had sex with both male and female

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partners, unprotected sex (vaginal or anal) was higher with female partners (63%) compared to unprotected anal sex with their male partners (54%) (Finlayson et al., 2011). There have been some indications for changes due to the COVID-19, a cross-sectional study "The Love and Sex in the Times of COVID-19" was conducted among 518 adults gay and bisexual men who have sex with men in the United States between April to May 2020 found that, on a scale of 1 to 5 where 5 indicates a lack of willingness, men reported their willingness to reduce the number of sex partners at 1.8 (Stephenson et al., 2021). Furthermore, men reported an average increase of 2.3 sex partners sex partners and 2.1 anal sex partners months before COVID-19 compared to the COVID-19 lockdown period (Stephenson et al., 2021). Another COVID-19 study indicates contradictory results, a survey was conducted among 1051 men who have sex with men between April 2 - 13, 2020 in the United States found that men were having fewer sex partners (51.3%) due to COVID-19 (Sanchez et al., 2020).

Condomless Sex

Rates of condomless sex differ by sexual identity, partner's sex, HIV status, ethnicity, and border city. In terms of identity, a study conducted in Chicago among 763 cisgender men and adolescents who had sex with men in the past year between February 2015 and August 2017 indicated that those who identify as bisexual were 2 times more likely than those who identified as gay to experience insertive condomless anal sex (CAS) with casual partners (Incident Rate Ratio (IRR): 2.07; $p=.001$) but were half as likely for receptive CAS with a serious partner (IRR: .49; $p=.001$) (Feinstein, Moran, Newcomb, & Mustanski, 2019). There were no differences in rate for insertive CAS with a serious partner (IRR: .65; $p=.07$) and receptive CAS with casual partners (IRR: .99; $p=.97$) (Feinstein et al., 2019). When assessing partner's sex, the study indicated that bisexual men were having condomless sex at a higher rate with female

partners compared to male partners (IRR: 1.74; *p*=.008) (Feinstein et al., 2019). In terms of differences in HIV status, a short survey was conducted among adult gay or bisexual men attending one of two weekend party events in the Southside and Northside of the U.S., men living with HIV reported 4.5 times higher rates for receptive CAS (68.8% vs. 22.2%) and insertive CAS (64.3% vs 34.1%) compared to those not living with HIV (OR: 4.5; *p*=.001) (Fisher, Ramchand, Bana, & Iguchi, 2013). The rates differ by ethnicity for individuals who use drugs. For example, in a cross-sectional behavioral survey among 10,348 persons who inject drugs and participated in an intervention for HIV testing in 2015, condomless vaginal (75% vs 62%) and anal sex (25% vs 17%) was higher among Whites than Blacks (Burnett et al., 2018). In terms of the border city, a cross-sectional was conducted among 66 sexually active HIV-seropositive Latino men who have sex with men between December 2009 and August 2011 in El Paso, Texas, lying in the Texas-Mexico border, found that 19.7% of participants reported condomless sex in the past 6 months and the encounters were higher for casual (n=10) compared to a main sexual partner (n=5) (Kutner, Nelson, Simoni, Sauceda, & Wiebe, 2017). They further found that the average number of condomless sex encounters was higher with main sexual partners (mean: 3.1; SD: 11.6) compared to casual partners (mean: 1.3; SD: 4.6) (Kutner et al., 2017). Lastly, they found that sexual risk behaviors among MSM in the past 6 months were higher among younger men (means 33.5 years vs. 45.3; t = 3.56; *p*=.001) and those who were recently diagnosed with HIV (means 5.6 years vs. 10.5; t = 2.63; *p*=.011) (Kutner et al., 2017).

Engaging in Sex Work

Rates of male sex workers differ in the United States by countries, sociodemographic, relationship duration, and COVID-19 pandemic onset. In terms of countries, a review was conducted among adult men who frequently sell sex to men or transgender women using data

reported by different countries from UNAIDS and through a literature review of peer and non-peer-reviewed articles published between 2000 to 2012 found that North American male sex workers had a high rate of HIV (ranging from 5% to 13%) compared to those who did not sell sex (Baral, Friedman, Geibel et al., 2015). In terms of sociodemographic, a cohort study was conducted among 511 adult men who have sex with men in Los Angeles, California for men who were enrolled in the study between August 2014 and December 2017 found that men living with HIV who reported unstable housing had increased odds of receiving money, drugs, or shelter in exchange for anal sex (Adjusted Odds Ratio (AOR): 2.5; 95% CI: 1.4, 4.5), concurrent sexual relationships (AOR: 2.9; 95% CI: 1.8, 4.8), and engaging in reciprocal sex work events AOR: 17.7; 95% CI: 8.3, 37.5) compared to those who did not report unstable housing (Javanbakht, Ragsdale, Shoptaw, & Gorbach, 2019). Similar patterns were observed for men not living with HIV who reported unstable housing, receiving money, drugs, or shelter in exchange for anal sex (AOR: 2.5; 95% CI: 1.4, 4.5), concurrent sexual relationships (AOR: 2.3; 95% CI: 1.4, 4.0), and engaging in reciprocal sex work events (AOR: 22.8; 95% CI: 9.5, 54.6) (Javanbakht et al., 2019). In the context of men's relationship duration, the study further found that men who reported a new sex partner in the past 6 months were 2.6 (AOR: 2.6; 95% CI: 1.3, 5.3) likely to report sex work compared to those who did not report a new sex partner (Javanbakht et al., 2019). When assessing the impact of the COVID-19, a cross-sectional study conducted between April to May 2020 among 518 adults gay and bisexual men who have sex with men in the United States found that men reported increased engagement in sex work for the first time (1.4%) since the COVID-19 lockdown period (Stephenson et al., 2021).

Alcohol and Drug Use During Sex

Drug use during sex among MSM differs across cities and HIV status. When assessing

site differences, a study conducted in two cities, California and San Francisco among 18 years or

older Latino gay and bisexual men, and transgender individuals found that alcohol use during sex

prevalence in the past 12 months was higher in Chicago (OR: 0.556; 95% CI: 0.494, 0.624) than

in San Francisco (OR: 0.417; 95% CI: 0.356, 0.479) and the same trend was observed the

prevalence of drug use during sex (OR: 0.265; 95% CI: 0.209, 0.326 vs. OR: 0.186; 95% CI:

0.136, 0.239) in the past 12 months (Ramirez-Valles, Garcia, Campbell, Diaz, & Heckathorn,

2008). In regards to HIV status differences, a retrospective case review was conducted among

1840 gay, bisexual and other men who have sex with men attending two sexual health clinics in

London between June 2014 and 31 July 2015 found that 16.5% reported using drugs during sex

and they were more likely to be newly diagnosed with HIV (Adjusted Odds Ratio (AOR): 5.06;

95% CI 2.56, 10.02; $p<.001$) compared to those who did not use drugs during sex (Pakianathan,

Whittaker, Lee et al., 2018). The study further found that gay, bisexual and other men who have

sex with living with HIV were more likely to drug use during sex participation (AOR: 2.55; 95%

CI: 1.89, 3.44; $p<.001$) compared to those not living with HIV (Pakianathan et al., 2018).

Hook-Up and Dating Apps

Using hook-up and dating apps is associated with increased rates of engagement in HIV

risk behaviors such as having casual sexual partners, drinking alcohol, or using recreational

drugs. There were changes in the behavior due to the COVID-19 pandemic. A cross-sectional

study was conducted among 3,015 adult sexual and gender minority males who reside in the U.S.

or Puerto Rico the survey between December 2014 and March 2015 found that participants who

frequently used dating websites and apps were more likely to have casual partners only (66.7%)

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compared to those who never used dating websites and apps (16.0%) (*p*<.001) and also were more likely to engage in inconsistent condom use with their casual partners (64.9%) compared to those who never use dating websites and apps (56.4%) (*p*=.014) (Badal, Stryker, DeLuca, & Purcell, 2018). In terms of drinking or using recreational drugs, a randomized self-report survey was conducted among 295 adults gay, bisexual, and men who sleep with men and used Geosocial networking applications (GSN) in Los Angeles, California in two data collection waves between August 8, 2011 and January 3, 2012 found that GSN use increases the likelihood of using alcohol (AOR: 3.81; 95% CI: 1.86, 7.80), illicit drugs (AOR: 6.45; 95% CI: 3.26, 12.79), and smoking marijuana (AOR: 4.12; 95%: CI 2.22, 7.64) because it helps locates people nearby who engage in the same behavior (Holloway, 2015). There is some indication that app user behavior changed during the COVID-19 pandemic. For example, a rapid survey was conducted among 1051 men who have sex with men between April 2 to April 13, 2020 in the United States found that the majority of men reported no changes in the use of dating and hook-up apps to connect with men (49.7%) in contrast majority reported decrease use of apps with the intent to meet in person (48.8%) due to COVID-19 (Sanchez et al., 2020).

Drug Use among Men who have Sex with Men

Drug use among men who have sex with men differs by race/ethnicity, locations where they live, and whether or not they participate in social gatherings. The use of alcohol and recreational drugs changed at the onset of the COVID-19 pandemic.

Alcohol

Rates of alcohol use in the U.S. differ by location, city, and pandemic onset. In terms of location, a study was conducted in two cities, Chicago and San Francisco among 18 years or older Latino gay and bisexual men, and transgender individuals found that heavy alcohol use

over the past 6 months was more frequent in Chicago (OR: 0.15; 95% CI: 0.12, 0.19) than in San

Francisco (OR: 0.37; 95% CI: 0.31, 0.43) (Ramirez-Valles et al., 2008). When assessing the

changes due to the COVID-19 pandemic, a survey was conducted among 1051 men who have

sex with other men between April 2 to April 13, 2020 in the United States and one-quarter (25%)

of the participants had increased their alcohol consumption since the COVID-19 pandemic

(Sanchez et al., 2020). The same trend was observed for binge drinking (29.5%) in a cross-

sectional study entitled "The Love and Sex in the Times of COVID-19" and conducted between

April and May 2020 among 518 gay and bisexual men who have sex with men in the U.S.

(Stephenson et al., 2021).

Recreational Drugs

Recreational drugs are sometimes used for non-medical purposes, and there are

differences in use by race/ethnicity, event attendance, location/cities. There have been changes in

rates of recreational drug use related to the COVID-19 pandemic and it is associated with

additional HIV risk behaviors. In terms of injecting drugs, data drawn from The National HIV

Behavioral Surveillance among 8,175 adult men who have sex with men in metropolitan

statistical areas between June to December 2008 found that 2% of the men reported injecting

drugs for nonmedical purposes in the past 12 months (Finlayson et al., 2011). In terms of racial

and ethnic differences, a cross-sectional study conducted among 10,348 individuals who inject

drugs participating in an HIV intervention in 2015 found that receptive syringe sharing was

higher among non-Hispanic whites (39%) compared to Hispanics (24%) and Blacks (17%)

(Burnett et al., 2018). Furthermore, there were notable additional risks among individuals

injecting drugs, with some sharing injection equipment was higher among non-Hispanic whites

(61%) compared to Hispanics (45%) and Blacks (41%) (Burnett et al., 2018). When assessing by

events attendance, a survey was used to recruit 21 years or older gay or bisexual men attending party events in the Southside and Northside of the U.S. among 489 participants at baseline, compared to those who were HIV negative, participants living with HIV (n=83) were highly likely to have an interest in using crystal methamphetamine (13.3% compared to 5.7%), recreational erectile dysfunction drugs (36.1% compared to 18.7%), and poppers (25.3% compared to 16.2%) (Fisher et al., 2013). Lastly, the study found that the 47% of participants who completed the follow-up assessment over 65% used one or more drugs excluding alcohol, over 95% reported any drug use or alcohol, more than 40% of participants reported using ecstasy over the weekend participants living with HIV reported a higher rate for using poppers (24.3%) than HIV-negative men (10.7%) (Fisher et al., 2013).

In terms of city location differences, a report data drawn from The National HIV Behavioral Surveillance was collected among 8,175 adult men who have sex with men residing in metropolitan statistical areas in the United States between June to December 2008 found that 46% of participants reported non-injection drug use in the past 12 months and marijuana was the most common drug used (38%), followed by cocaine (18%), poppers (13%), and 11% ecstasy (Finlayson et al., 2011). Another study comparing two cities was conducted among 18 years or older Latino gay and bisexual men and transgender individuals in Chicago and San Francisco found increased odds of marijuana use (OR: 0.269; 95% CI: 0.212, 0.329 in Chicago vs. OR: 0.330; 95% CI: 0.267, 0.393 in San Francisco) and cocaine use were higher in Chicago (OR: 0.193; 95% CI: 0.141, 0.240) compared to San Francisco (OR: 0.090; 95% CI: 0.064, 0.135) in past 6 months (Ramirez-Valles et al., 2008). However, the reverse was reported for speed use over the past 6 months San Francisco (OR: 0.192; 95% CI: 0.144, 0.241) than in Chicago (OR: 0.093; 95% CI: 0.056, 0.138) (Ramirez-Valles et al., 2008).

In terms of changes due to the COVID-19 pandemic, a survey was conducted among 1051 men who have sex with men between April 2 to April 13, 2020 in the United States found that 10% of the participants had increased use of recreational drugs since the COVID-19 pandemic (Sanchez et al., 2020). Similar findings were reported in "The Love and Sex in the Times of COVID-19" indicating that men had a 20.5% increase of substance use (Stephenson et al., 2021).

PURPOSE OF THE STUDY

The purpose of this secondary data analysis and exploratory study is to assess the impact of living in the Texas-Mexico border region, drug use, and sexual behaviors among sexual minority cisgender men who and completed the COVID-19 & You Survey study during the first shelter-in-place order for the Coronavirus pandemic in 2020.

STUDY AIMS AND HYPOTHESES

The study aims are to determine associations between sociodemographic characteristics including living on the Texas-Mexico border, drug use, sexual behaviors, and use of dating/hook-up apps among sexual minority cisgender men.

The hypotheses of this study will be repeated for each of the analytical outcome also known as variables of interest (living in a border county, increased use of alcohol since shelter-in-place, increased use of any illicit drugs since shelter-in-place, started/continued hooking-up via apps since shelter-in-place, and decreased use of condoms since shelter-in-place) among sexual minority men in Texas who participated in the COVID-19 & You Survey study.

DRUG USE

Compared to those without the analytical outcome, those with the outcome will have a change in odds for:

1. ever attended a sex party where drugs were used.

2. drinking alcohol or using recreational drugs due to COVID-19.

3. Finding alcohol, smoking pot, or other drug use helpful for coping since the beginning of COVID-19.

HOOK-UP AND DATING APPS

Compared to those without the analytical outcome, those with the outcome will have a change in odds for:

1. hook-up and dating apps use.

2. meeting up with people from hook-up and dating apps.

SEXUAL BEHAVIORS

Compared to those without the analytical outcome, those with the outcome will have a change in odds for:

1. being in a relationship or dating.

2. being in an open or polygamous relationship.

3. engaging in sex or sexual activity for money or working in the sex industry.

4. condom use.

METHODS AND MATERIALS

Parent Study

COVID-19 & You Survey study is a cross-sectional study that focused on collecting the experiences of sexual and gender diverse (SGD) Texans during the coronavirus pandemic. In addition, it was designed to contribute to existing statewide data through community-based organizations and assess the impact of the coronavirus pandemic on SGD population (Schnarrs, Loza, Ciszek et al., 2021).

Study Participants

LGBTQ+ community members and allies living in Texas who are 18 years old or older.

Sample Size

A total of 1,662 people responded to the COVID-19 & You Survey study. Of those 1,639 gave consent to participate and 1,661 started the survey. Overall, 1,302 respondents identified as LGBTQ+, 165 identified as an LGBTQ+ ally, and 28 did not identify as LGBTQ+ or as an ally. Of those, 1,227 individuals identified as LGBTQ+ or as an LGBTQ+ ally and identified their sexual orientation as something other than heterosexual and completed the survey.

Study Design

This was a cross-sectional study.

Data Collection

Data were collected between May 1, 2020 and July 31, 2020 using an online survey, (Schnarrs et al., 2021). Participants were recruited through community partners, participant pools from former studies and respondent-driven sampling to reach hidden populations. The study was approved by the Institutional Review Board (IRB) at The University of Texas at Austin.

Participants were asked at the end of the survey if they were interested to enter a raffle to win one of sixteen $50 gift cards.

Measures for the parent study included demographic characteristics; COVID-19 testing, positivity rates, beliefs; housing, shelter-in-place, and violence in the home; physical health and access to medical care; mental health, behavioral health, and access to services; and sexual behaviors and health.

Thesis Study

The COVID-19 & You Survey study dataset included adult LGBTQ+ people and allies in Texas who completed the survey. This secondary data analyses and exploratory study is based on cisgender adult men who identified as sexual minority and completed the survey.

Measures

The following measures for sociodemographic characteristics, health-related measures, drug use, sexual behaviors, and use of hook-up and dating apps were included in this secondary data analysis.

SOCIODEMOGRAPHIC CHARACTERISTICS

Sociodemographic characteristics will include age category (18-24, 25-34, 35-44, 45-54, 55+), Race and ethnicity (White only, Latinx/Hispanic, Other people of color (POC). Other POC includes people who identified as (Black, Japanese, Samoan, Fairy queen, Guamanian, Lebanese, Middle Eastern, Middle Eastern not White, Persian/Puerto Rican, Saami/Southeast Asian (Schnarrs et al., 2021). Education level (high school (HS) diploma/equivalent or less, some college/bachelor's degree, masters/doctorate degree), Citizenship/Immigration Status (U.S. citizen by birth, Naturalized U.S. citizen/Permanent Resident/Visa Holder, Other (DACA, undocumented, not mentioned above, refused to answer) (Schnarrs et al., 2021). Participants

were also asked about their sexual orientation based on dominant groups (lesbian/gay/same-gender-loving, bisexual/pansexual/heteroflexible, asexual/queer/heterosexual), and living in a border county (yes, no), also analytical outcome.

HEALTH-RELATED MEASURES

Health-related measures include insurance status (yes, no) and HIV positive status (yes, no, unsure).

DRUG USE

Participants were asked about their change in alcohol and drug use since shelter-in-place guidelines (I have never used this, this is the first time I have used this, decreased, my use has stayed the same, increased); drugs included methamphetamine (e.g., meth, crystal); cocaine (e.g., coke) or crack cocaine; cannabis (e.g., marijuana, pot, weed); synthetic/party drugs [including MDMA (e.g., ecstasy, molly); Ketamine (e.g., Special K); and GHB], prescription opioids (e.g., pain pills, Vicodin, Percocet, OxyContin); heroin, hallucinogens (e.g., LSD, PCP, Peyote); and other drugs. Participants were asked whether drinking alcohol has been helpful since the COVD-19 crisis (helpful, unhelpful). Lastly, participants reported whether COVID-19 led to use of alcohol and recreational drugs more than they normally would (disagree, agree).

SEXUAL BEHAVIORS

Sexual behaviors measures will include relationship status (married, relationship and they live together, relationship and they do not live together, dating, not in a relationship), relationship type (monogamous, open but only have sex with others together, open but have sex with others separately and together, open but only have sex with others separately, polyamorous), and Last sexual intercourse (during the past 30 days, more than 30 days, but less than 3 months ago, during the past 3 months, but less than 6 months ago, 6 months to 1 year ago, more than a year

ago). Participants were asked if they ever attended a sex party where drugs were used (never, yes but more than a year ago, yes within the past year, yes within the past 6 months, yes within the past 3 months, yes within the past month, yes with in the past two weeks, yes less than two weeks ago) or ever engaged in sex or sexual activity for money or worked in the sex industry (no, they have not; yes, they have; prefer not to respond). Participants were asked the frequency of condom use before and after March 1, 2020 (never, a little bit, sometimes, often, almost always, always, prefer not to answer, not applicable). Lastly, sexual behaviors included the frequency of sexual activity since COVID-19 shelter-in-place guidelines with a relationship partner they live with, someone they live with, a relationship partner they do not live with, a regular sex partner they do not live with, someone they know, but do not live with, a person they just met using a hook-up app, a person they just met not using a hook-up app (never, daily, almost daily, weekly, a few days out of the month, once).

HOOK-UP AND DATING APPS

Participants were asked about their use of hook-up or dating apps before and since March 1, 2020 (yes, no). They were also asked the frequency of meeting up with people from hook-up or dating apps before and since March 1, 2020 (never, rarely, sometimes, often, very often).

STATISTICAL ANALYSIS PLAN

All database management and statistical analyses was performed using SPSS Version 27.0.1 (International Business Machines (IBM), 2012).

Database Management

SUBSET

The parent study included adult LGBTQ+ people and allies in Texas. This secondary data analysis and exploratory study was limited to men who were 18 years or older, identified as LGBTQ+, assigned male at birth, did not identify as transgender or gender diverse and completed to the parent study.

Another characteristic includes sex assigned at birth (male, female, prefer not to answer). Participants were asked about their LGBTQ+ Identity or Ally (Yes, I identify as LGBTQ+; Yes, I Identify as an LGBTQ+ ally, I do not identify as LGBTQ+ or as an LGBTQ+ all). Participants were also asked if they were transgender, gender non-conforming, or gender now different than your sex assigned at birth (yes, no, unsure, prefer, not to answer) and sexual orientation based on dominant group (lesbian/gay/same-gender-loving, bisexual/pansexual/heteroflexible, asexual/queer/heterosexual).

CREATED VARIABLES

Age (years) was collected as a continuous variable and was recoded into age groups (18-24, 25-34, 35-44, 45-54, 55+). Education was created from (some high school, currently attending high school, high school diploma or GED, some college or associate's degree, currently enrolled in college, 4-year college degree, master's degree, doctorate degree) to (high school diploma/equivalent or less, some college or bachelor's degree, masters or doctorate degree). To create the variable for transgender and gender diverse (yes, no) we coded into 'yes'

anyone who indicated they identified with any of the following gender identities: transgender, gender non-conforming, gender different sex assigned at birth, genderqueer, agender, non-binary, two-spirit; everyone else was coded as 'no'. Change levels for since the beginning of shelter-in-place guidelines, changes in drugs and alcohol use options were recoded from (I have never used this, this is the first time I have used this, extremely decreased, somewhat decreased, decreased a little, my use has stayed the same, increased a little, somewhat increased, extremely increased, I prefer not to answer) to (I have never used this, this is the first time I have used this, decreased, my use has stayed the same, increased). The COVID-19 pandemic has caused them to increase drink alcohol and use recreational drugs more than normal was recorded from (strongly agree, agree, somewhat agree, somewhat disagree, disagree, strongly disagree) to (disagree, agree). Since the beginning of the COVID-19 drinking alcohol, smoking pot, or using other drugs has been helpful was recoded from (extremely helpful, helpful, slightly helpful, slightly unhelpful, unhelpful, extremely unhelpful) to (helpful, unhelpful). In addition to these measures, we created the following analytical outcomes (1) living in a border county; (2) increased use of alcohol since shelter-in-place, (3) increased use of any illicit drug since shelter-in-place, (4) continued/started hooking-up via apps since shelter-in-place and (5) decreased condom use since shelter-in-place.

Texas counties (n=254) were recoded based on whether they were classified as being on the border or not according to the Office of Border Public Health (2021) to yield living in a border county (yes, no). Increased in alcohol use since shelter-in-place (yes, no) was created; those who never used, first use, extremely decreased, somewhat decreased, decreased a little, use stayed the same were coded as "no" and those who increased a little, somewhat increased, extreme increase were coded as "yes". Increase in any illicit drug use since shelter-in-place (yes,

no) was created for cocaine/crack cocaine, cannabis, synthetic/party drugs, heroin, and hallucinogens; for each drug those who never used, first use, extremely decreased, somewhat decreased, decreased a little, use stayed the same were assigned a no and those who increased a little, somewhat increased, extreme increase became a yes. Frequency of meeting up with people from hook-up or dating apps prior to and since March 1, 2020 (never, rarely, sometimes, often, very often) were used to create continued or started hooking-up via apps since shelter-in-place (yes, no). Condom use prior to and since shelter-in-place (never used this, first time they have used this, extremely decreased, somewhat decreased, decreased a little, stayed the same, increased a little, somewhat increased, extreme increase) were used to create decreased use of condom use since shelter-in-place (yes, no).

DESCRIPTIVE STATISTICS

All measures included in this secondary analysis and exploratory study are categorical. Sample size (N), frequency (freq), and percentage (%) were assessed for all measures, including the analytical outcomes.

BIVARIATE ASSOCIATIONS

Living on the Texas-Mexico border and, since COVID-19 shelter-in-place, increase in alcohol use, increase in any illicit drug use, decreased in condom use since shelter-in-place and continued or started use of hooking-up apps are the analytical outcomes of this secondary analysis and explanatory study. Sample size (N), frequency (freq), and percent (%) were assessed for each measure by each level of the analytical outcome. Bivariate associations were determined with a Pearson's Chi-Square test or the non-parametric equivalents Likelihood Ratio or Fisher's Exact test, as appropriate. P-values <0.05 were determined to be statistically significant.

MULTIVARIATE ADJUSTED ANALYSES

The analytical outcomes of the study are: (1) living in a border county, (2) increased use of alcohol since shelter-in-place; (3) increased use of any illicit drug since shelter-in-place; (4) continued/started hooking-up via apps since shelter-in-place; and (5) decreased condom use since shelter-in-place. Using logistic regression, we assessed the adjusted association between all measures in the study and each of the analytical outcomes. We controlled for factors associated with the analytical outcomes in the bivariate analysis which are age, race/ethnicity, education level, citizenship/immigration status, sexual orientation based on dominant groups. We also adjust for a known confounder for sexual behaviors, HIV status. P-values <0.05 were determined to be statistically significant. Odds ratio and 95% confidence interval (OR; 95% CI) were be provided for each level of the independent variable versus each analytical outcome.

IRB APPROVAL

Exemption for this secondary analysis and exploratory study was granted by the University of Texas at El Paso IRB on October 27, 2021 (PI: Nqobile Nzama; Protocol Number: 1824931-1) under the title "Association between living on Texas-Mexico Border, Drug Use, and Sexual Behaviors among Men who Identify as LGBTQ+ during the Coronavirus Pandemic". The author has completed the Collaborative Institutional Training Initiative (CITI) IRB Training (Social and Behavioral Responsible Conduct of Research and Human Subjects Research) which expires on October 5th, 2023.

RESULTS

The results of the secondary analysis and exploratory study are presented in this section.

Descriptive Statistics

Descriptive statistics for all measures and the analytical outcomes are presented in Table 1. A total of 560 cisgender males who identified as LGBTQ+ and were 18 years or older completed the COVID-19 & You Survey. For the analytical outcomes, 16.8% were living in a border county, 56.5% increased their use of alcohol since shelter-in-place, 27.8% increased their use of any illicit drug since shelter-in-place, 36.2% started or continued their use of hook-up or dating apps since shelter-in-place, and 16.9% decreased their condom use since shelter-in-place.

SOCIODEMOGRAPHIC CHARACTERISTICS

The majority were white (61.5%), had some college or a bachelor's degree (62.9%), were U.S. citizens by birth (93.2%), and were either lesbian/gay/same-gender-loving (90.0%). Most common age group was 55 years or older (30.9%). Just over a quarter were Latinx/Hispanic (26.8%).

HEALTH-RELATED MEASURES

The majority had health insurance coverage (88.6%) and less than a fifth reported living with HIV (17.1%).

ALCOHOL AND DRUG USE SINCE COVID-19

Close to half reported increased use of alcohol (56.6%) and cannabis (47.3%). The majority had never used methamphetamine (92.8%), cocaine/crack cocaine (88.0%), synthetics/party drugs (88.2%), prescription opioids (90.6%), heroin (98.3%), hallucinogens (92.8%) and other drugs (92.4%). Close to two-thirds (66.1%) found it helpful to drink alcohol, smoke pot, or use other drugs since the COVID-19 crisis. The majority disagreed that the

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COVID-19 pandemic has caused them to drink alcohol (65.1%) and use recreational drugs (85.0%) more than they normally would.

SEXUAL BEHAVIORS

Of those in a relationship (46.3%), most were in a monogamous relationship (59.9%). Close to half had sex during the past 30 days (46.7%) and most had never attended a sex party where drugs were used (84.1%) or engaged in sex or sexual activity for money or worked in the sex industry (87.4%). Twelve percent always used condoms before (12.2%) and since (12.2%) March 1, 2020.

In terms of frequency of sexual activity since COVID-19 shelter-in-place guidelines, the majority had never had sexual activity with a relationship partner they live with (66.3%), someone they live with that is not a relationship partner (97.8%), a relationship partner they do not live with (93.0%), a regular sex partner they do not live with (85.0%), someone they know, but do not live with (89.7%), a person they just met not using a hook-up app (96.0%), and a person they met using a hook-up app (85.4%).

HOOK-UP AND DATING APPS

Over half (55.3%) were using hookup or dating apps before March 1, 2020 and, of those, 43.6% did so sometimes, often, or very often. Just over a third (36.1%) were using hookup or dating apps since March 1, 2020, of those, 12.3% did so sometimes, often, or very often.

Bivariate Associations

Bivariate results for the associations between all measures and the analytical outcomes are presented in Table 1.

LIVING IN A BORDER COUNTY

There was a statistically significant association between living in a border county and age category ($p<.001$), race and ethnicity ($p<.001$), and education level ($p<.001$). Living in a border county was also associated with citizenship/immigration status ($p=.001$), and having health insurance coverage ($p<.003$). There was also a significant association between living in the border county and current relationship status ($p=.007$), current relationship type ($p=.028$), and ever attending a sex party where drugs were used ($p=.027$).

INCREASED USE OF ALCOHOL SINCE SHELTER-IN-PLACE

There was a significant association between increased use of alcohol since shelter-in-place and race and ethnicity ($p=.044$). Increased use of alcohol since shelter-in-place was significantly associated with finding it helpful to drink alcohol, smoke pot, or use other drugs since the beginning of the crisis ($p=.020$) and the COVID-19 pandemic causing them to drink alcohol more than they normal would ($p<.001$). Lastly, there was a significant association between increased use of alcohol since shelter-in-place and current relationship status ($p=0.012$) and last sexual intercourse ($p=.026$).

INCREASED USE OF ANY ILLICIT DRUG SINCE SHELTER-IN-PLACE

There was a significant association between increased use of any illicit drug since shelter-in-place and age category ($p=.001$) and race/ethnicity ($p=.009$). Increased use of any illicit drug since shelter-in-place was significantly associated with a change in use of methamphetamine ($p=.006$), cocaine/crack cocaine ($p=.005$), cannabis ($p<.001$), synthetic/party drugs ($p<.001$), and hallucinogens ($p=.020$) since shelter-in-place. There was a significant association between increased use of any illicit drug since shelter-in-place and finding it helpful to drink alcohol, smoke pot, or use other drugs ($p=.013$) since the beginning of the COVID-19 crisis. There was a

significant association between the use of any illicit drugs since shelter-in-place and increased

use of alcohol (*p*=.018) and recreational drugs (*p*<.001) due to the COVID-19 pandemic.

Increased use of illicit drug use since shelter-in-place was significantly associated with ever

engaging in sex or sexual activity for money or working in the sex industry (*p*=.008) as well as

the use of hookup or dating apps before (*p*=.023) and since (*p*=.005) March 1, 2020.

CONTINUED OR STARTED HOOKING-UP VIA APPS SINCE SHELTER-IN-PLACE

There was a significant association between continued or started hooking-up via apps

since shelter-in-place and age category (*p*<.001), race and ethnicity (*p*=.005), and change in use

of methamphetamine since shelter-in-place (*p*=.011). Continued or started hooking-up via apps

since shelter-in-place was associated with current relationship status (*p*<.001), relationship type

(*p*<.001), last sexual intercourse (*p*<.001), and ever engaged in sex or sexual activity for money

or worked in the sex industry (*p*=.016). There was also a significant association between

continued or started hooking-up via apps since shelter-in-place and frequency of condom use

before (*p*=.020) and since (*p*<.001) March 1, 2020. Another association was found between

continued or started hooking-up via apps since shelter-in-place and frequency of sexual activity

with a relationship partner they lived with (*p*<.001), a regular sex partner they do not live with

(*p*=.005), someone they know, but do not live with (*p*<.001), a person they just met not using

(*p*=.004), using a hook-up app (*p*<.001) since COVID-19 shelter-in-place.

DECREASED CONDOM USE SINCE SHELTER-IN-PLACE

There was a significant association between decreased condom use since shelter-in-place

and sexual orientation (p=.049) and current relationship status (p=.031). There was also a

significant association between decreased condom use since shelter-in-place and frequency of

sexual activity with a relationship partner they do not live with since COVID-19 shelter-in-place.

Multivariate Adjusted Analysis

Multivariate results for the associations between all measures and the analytical outcomes after adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation based on dominant groups, and a known confounder, HIV positive status are presented in Table 2.

LIVING IN A BORDER COUNTY

At most, 560 cisgender sexual minority men are included in the adjusted analysis for living in a border county. After adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status, living in a border county was significantly associated with race and ethnicity ($p<.001$). Compared to White only, other people of color were associated with increased odds for living in a border county (AOR: 10.43; 95% CI: 3.10, 35.14). Education level was not associated with living in a border county ($p=.069$); however, some college or bachelor's degree was associated with increased odds of living in a border county compared to high school diploma/equivalent or less (AOR: 5.74; 95% CI: 1.26, 26.24). Current relationship status was not associated with living in a border county ($p=.113$); however, being in a relationship with someone they don't live with was associated with increased odds of living in a border county compared to those who were married (AOR: 3.00; 95% CI: 1.16, 7.80).

INCREASED USE OF ALCOHOL SINCE SHELTER-IN-PLACE

At most, 234 cisgender adult men who identified as sexual minority are included in the adjusted analysis for increased use of alcohol since shelter-in-place. After adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status, age category was not associated with increased use of alcohol since shelter-in-

place (*p*=.273). However, compared to individuals between the age of 18 to 24, those who were 45 to 54 years were associated with increased odds for increased use of alcohol since shelter-in-place (AOR: 2.51: 95% CI: 1.08; 8.87). Race and ethnicity were not associated with increased use of alcohol since shelter-in-place (*p*=.117); however, compared to white only, other people of color were associated with decreased odds for increased use of alcohol since shelter-in-place (AOR: 0.30; 95% CI: 0.10, 0.94). Finding it helpful to drink alcohol, smoke pot, or using other drugs since the beginning of COVID-19 (AOR: 0.41; 95% CI: 0.19, 0.85; *p*=0.017) and the COVID-19 pandemic has caused me to drink alcohol than I normally would (AOR: 0.02; 95% CI: 0.01, 0.04; *p*<0.001) were associated with decreased odds of increased use of alcohol since shelter-in-place. Current relationship status was associated with increased use of alcohol since shelter-in-place (*p*=0.007). Compared to being married, being in a relationship and living together (AOR: 2.65; 95% CI: 1.28, 5.47), currently being in a relationship and not living together (AOR: 2.83; 95% CI: 1.25, 6.43), and not currently in a relationship (AOR: 14.68; 95% CI: 1.58, 136.46) were associated with increased odds of increased use of alcohol since shelter-in-place. Last sexual intercourse was not associated with increased use of alcohol since shelter-in-place; however, having sexual intercourse more than 30 days, but less than 3 months ago (AOR: 2.73; 95% CI: 1.15, 6.49) and during the past 3 months, but less than 6 months ago (AOR: 3.43; 95% CI: 1.22, 9.67) were associated with increased odds of increased use of alcohol since shelter-in-place compared to having sexual intercourse during the past 30 days.

INCREASED USE OF ANY ILLICIT DRUG SINCE SHELTER-IN-PLACE

At most, 233 cisgender adult men who identified as sexual minority are included in the adjusted analysis for increased use of any illicit drug since shelter-in-place. After adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and

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HIV positive status, age was significantly associated with increased use of any illicit drug since shelter-in-place (AOR: 0.97; 95% CI: 0.95, 1.00; *p*=0.033). Age category was associated with increased use of any illicit drug since shelter-in-place (*p*=.010). Compared to individuals between the ages of 18 to 24, those who were 25 to 34 years (AOR: 6,47: 95% CI:0.54, 913) and 45 to 54 years (AOR: 2.99: 95% CI: 1.23, 7.29) were associated with increased odds for increased use of any illicit drug since shelter-in-place. Race and ethnicity were not associated with increased use of any illicit drug since shelter-in-place; however, Latinx/Hispanic ethnicity was associated with decreased odds of increased use of any illicit drug since shelter-in-place compared to white only (AOR: 0.38; 95% CI: 0.15, 0.98). Finding it helpful to drink alcohol, smoke pot, or using other drugs since the beginning of COVID-19 was associated with decreased odds of increased use of any illicit drugs since shelter-in-place (AOR: 0.32; 95% CI: 0.12, 0.82; *p*=0.018). Increased use of recreational drugs during the COVID-19 pandemic was associated with decreased odds of increased use of any illicit drug since shelter-in-place (AOR: 0.04; 95% CI: 0.20, 0.11; *p*<0.001). Ever engaging in sex or sexual activity for money or working in the sex industry was associated with increased use of any illicit drugs (AOR: 0.43; 95% CI: 01.19, 0.99; *p*=.046). Use of hookup or dating apps since March 1, 2020 was associated with increased use of any illicit drug since shelter-in-place (AOR: 0.52; 95% CI: 0.28, 0.97; *p*=0.039).

CONTINUED OR STARTED HOOKING-UP VIA APPS SINCE SHELTER-IN-PLACE

At most, 397 cisgender adult men who identified as sexual minority are included in the adjusted analysis for increased use of any illicit drug since shelter-in-place. After adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status, age was significantly associated with decreased odds of continued or started hooking-up via apps since shelter-in-place (*p*<.001); being older was associated with decreased

odds of continued or started hooking-up via apps during shelter-in-place (AOR: 0.97; 95% CI: 0.95, 0.98). Age category was associated with continued or started hooking-up via apps since shelter-in-place ($p<.001$). Compared to individuals ages of 18 to 24, ages 25 to 34 years (AOR: 6,3: 95% CI:2.23, 17.74), 35 to 44 (AOR: 2.69: 95% CI: 1.44, 5.04) and 45-54 (AOR: 2.61: 95% CI: 1.38, 4.94) were associated with increased odds for continued or started hooking-up via apps since shelter-in-place. Current relationship status was associated with continued or started hooking-up via apps since shelter-in-place ($p<.001$). Compared to being married, currently being in a relationship and living together (AOR: 0.27; 95% CI: 0.15, 0.50), being in a relationship and do not live together (AOR: 0.11; 95% CI: 0.05, 0.24), and currently dating (AOR: 0.27; 95% CI: 0.09, 0.80) were associated decreased odds of continued or started hooking-up via apps since shelter-in-place. Relationship type ($p<0.001$) and last sexual intercourse ($p=.003$) were associated with continued or started use of hooking-up via apps since shelter-in-place. Compared to having sexual intercourse during the past 30 days, sexual intercourse more than 30 days, but less than 3 months ago (AOR: 4.06; 95% CI: 1.89, 8.69), during the past 3 months, but less than 6 months ago (AOR: 4.86; 95% CI: 1.96, 12.03), 6 months to 1 year ago (AOR: 4.90; 95% CI: 1.78, 3.48), and more than a year ago (AOR: 4.89; 95% CI: 1.89, 12.64) were associated with increased odds of continued or started hooking-up via apps since shelter-in-place. Ever engaged in sex or sexual activity for money or worked in the sex industry was associated with decreased odds of continued or started hooking-up via apps since shelter-in-place (AOR: 051; 95% CI: 0.27, 0.97; $p=.041$). Condoms use frequency since March 1, 2020 was associated with continued or started hooking-up via apps since shelter-in-place ($p=.015$); sometimes use was associated with increased odds of continued or started use of hook-up or dating apps since shelter-in-place compared to never use of condoms (AOR: 18.54; 95% CI: 2.05, 167.66).

Frequency of sexual activity with a relationship partner they live with since shelter-in-place was associated with continued or started hooking-up via apps shelter-in-place (*p<*.001). Compared to never had sexual activity, daily sexual activity with a relationship partner they live with had increased odds for continued or started hooking-up via apps since shelter-in-place (AOR: 4.09; 95% CI: 1.25, 13.43).

Frequency of sexual activity with a regular sex partner they do not live with (*p=*.005) and with someone they know, but do not live with (*p<*.001) since COVID-19 shelter-in-place guidelines were associated with continued or started hooking-up via apps since shelter-in-place. Compared to never having sexual activity, almost daily sexual activity with someone they know, but do not live with (AOR: 0.10; 95% CI: 0.03, 0.31) was associated with decreased odds for continued or started hooking up via apps. Frequency of sexual activity with someone just met just met not using hooking-up apps was not associated with continued or started hooking-up via apps since shelter-in-place. However, compared to never having sexual activity, almost daily sexual activity with someone they just met not using hook-up apps was associated with decreased odds for continued or started hooking-up via apps (AOR: 0.17; 95% CI: 0.04, 0.68).

DECREASED CONDOM USE SINCE SHELTER-IN-PLACE

At most, 230 cisgender sexual minority men are included in the adjusted analysis for increased use of any illicit drug since shelter-in-place. After adjusting for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status, race and ethnicity *(p=*.023), and sexual orientation *(p=*.012) were associated with decreased condom use since shelter-in-place. Compared lesbian/gay/same-gender-loving identity, bisexual/pansexual/heteroflexible identity (AOR: 0.05; 95% CI: 0.01, 0.37) and asexual/queer/heterosexual identity (AOR: 0.04; 95% CI: 0.00, 0.54) were associated with

decreased odds of decrease in condom use since shelter-in-place. Current relationship status was associated with decreased condom use since shelter-in-place ($p=.015$). Compared to being married, dating (AOR: 6.29; 95% CI: 1.51, 26.24) and not being in a relationship (AOR: 10.53; 95% CI: 1.95, 56.96) were associated with increased odds of decrease in condom use since shelter-in-place. Frequency of sexual activity with someone they live with who is not a relationship partners was associated with decreased condom use since shelter-in-place ($p=.013$). Compared to those who had never had sexual activity had sexual activity with someone they live with who is not a relationship partner, those who had sexual activity a few days out of the month (AOR: 91.04; 95% CI: 1.94, 4276.24) and once (AOR: 42.10; 95% CI: 1.56, 1139.53) were associated with increased odds of decreased condom use since shelter-in-place compared to no sexual activity.

DISCUSSION

Summary of the Results

Age category was associated with increased use of any illicit drug and continued or started hooking-up via apps since shelter-in-place. This may be due to these age groups using illicit drugs as a coping mechanism for COVID-19 related stress. In addition, due to shelter-in-place restrictions, individuals may have started hooking-up via apps because of limited movement or inability to meet in most public spaces.

Finding it helpful to drink alcohol, smoke pot, or using other drugs since the beginning of COVID-19 was associated with decreased odds of increased use of alcohol since shelter-in-place compared to those who did not find it helpful. This suggests drinking levels before and during COVID-19 remained the same. All relationship statuses except dating, were associated with increased use of alcohol since shelter-in-place. One potential reason that could influence the increase in alcohol use could be influenced by their partner's behavior. On the other hand, those who were in a relationship and not living with their partner and individuals who were not in a relationship may be drinking due to loneliness or stress exacerbated by the pandemic.

Current relationship status was not associated with living in a border county. However, those who were in a relationship and did not live together had increased odds of living in a border county compared to those who were married. A potential reason behind cohabiting and not being married could be influenced by one's cultural background; in some cultures, couples move together after getting married. Sexually minority men may face an additional barrier if they come from a place where same-sex relationships are not accepted.

Current relationship status was associated with increased alcohol use since shelter-in-place. Individuals who were married or living together may have used alcohol and have a partner

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who engaged in the same behavior. While those who do not live with their partners or are not in a relationship may have increased their use of alcohol due to pandemic-related stress or loneliness.

Individuals that COVID-19 pandemic had led to increase recreational drugs use had decreased odds for increase in any illicit drug use since shelter-in-place. Individuals may have been using illicit drugs prior to COVID-19 and did not change their use during the pandemic.

The association between ever engaging in sex or sexual activity for money or working in the sex industry and increased use in any illicit drugs since shelter-in-place may have been related to those who started engaging in sex work during the COVID-19 pandemic who may use drugs as a coping mechanism or met with a client who uses illicit drug(s).

Use of hookup or dating apps since March 1, 2020 was associated with increased odds of any illicit drug use since shelter-in-place. These results are consistent with a randomized survey conducted among 295 adults gay, bisexual, and men who sleep with men and used geosocial networking applications had increased odds of using illicit drugs and smoking marijuana because the apps help locate people nearby who engage in the same behavior (Holloway, 2015).

Current relationship status was associated with continued or started hooking-up via apps since shelter-in-place. Men in non-exclusive relationships may have continued or started hook-up via apps. In addition, those who were dating may have chosen to stop using dating apps due to unwillingness to meet up with people, fearing being infected by COVID-19.

Rarely meeting up with people from hook-up or dating apps since March 1, 2020 was associated with decreased odds of started or continued use of hook-up or dating apps since shelter-in-place compared to those who never met up with people from the apps. Individuals may have met someone or stopped using hook-up or dating apps due to COVID-19. These results

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contradicted results from a survey conducted among 1051 men who have sex with men in April 2020 in the United States found that the majority of men reported no changes in the use of dating and hook-up apps to connect with men (49.7%) in contrast majority reported decrease use of apps with the intent to meet in person (48.8%) due to COVID-19 (Sanchez et al., 2020).

Sexual orientation was associated with a decrease in condom use since shelter-in-place $(p=.012)$. Bisexual/pansexual/heteroflexible and asexual/queer/heterosexual identities were associated with decreased odds of decrease in condom use since shelter-in-place compared to lesbian/gay/same-gender-loving identities. These findings are consistent with a study conducted among 763 cisgender men and adolescents who had sex with men which indicated that those who identify as bisexual were two times more likely than those who identified as gay to experience insertive condomless anal sex (CAS) with casual partners (Incident Rate Ratio: 2.07; $p=.001$) (Feinstein et al., 2019).

Current relationship status was associated with a decrease in condom use since shelter-in-place. One of the reasons could be that some men were in exclusive relationships and knew their HIV status. Some men may have opted not to use condoms due to using pre-exposure prophylaxis (PrEP) to prevent HIV. However, we could not draw precise conclusions as we did not assess for use.

Limitations

Limitations of this study include that it was conducted only online, only in English, and limited to individuals connected with community organizations and services. The online survey approach for data collection has shown to be effective for reaching hidden or high-risk populations, such as men who have sex with men (Barros, Dias, & Martins, 2015). However, given that the survey was available only online, the respondents may have been limited to those

with devices with internet access. The survey was only conducted in English and thus may have excluded monolingual Spanish speakers. In 2019, 35.6% of Texas residents used another language at home other than English (United States Census Bureau, 2019). Furthermore, launching the survey in one language may have led to under-sampling individuals who reside in border counties since the Texas-Mexico border region has more Spanish speakers than the rest of Texas. Another limitation was the recruitment strategy which used individuals connecting with the community organizations hence missing individuals who are most vulnerable and disconnected from accessing care services. Lastly, several analytical outcomes were run through SPSS against heroin, However, they did not yield results due to the small count of participants who reported using heroin.

<div align="center">**Strengths**</div>

To the best of my knowledge, this will be the first study looking at the border differences in drug use and sexual risk behaviors during the coronavirus pandemic. This study will be a contribution to the literature conducted on the border region or among individuals living in counties on Texas-Mexico the border region, a medically underserved area (Rural Health Information Hub, 2019). In addition, the available literature in the region does not consider some behaviors or activities men who have sex with men engage in such as the use of hook-up and dating apps. This study will also contribute to the ongoing research conducted during the coronavirus pandemic assessing behaviors among men who have sex with men. Lastly, there are limited studies conducted at a national level that explored the impact and/or changes of behavior among sexual minority men. This secondary analysis and exploratory study may serve as a reference for future studies which may include border counties.

Future Directions

In order to improve the methods of the secondary data analysis and exploratory study, in the future, I would consider narrowing down the measures. In future analysis when assessing changes in alcohol and drug use since the beginning of shelter-in-place guidelines, I would limit the analysis of changes in drug and alcohol use to those who ever used alcohol or drugs. To improve clarity on the measures for relationship status and living situations, I would consider creating a variable to separately and distinctly assess whether the sexual partners (1) live together, (2) are in a relationship, and (3) are monogamous. The relationships are important to note concerning COVID-19 risks. Individuals living together are more likely not to leave the house or meet up with people. Individuals in a relationship and those who are monogamous may have been meeting other people during the shelter-in-place order, therefore, increasing their exposure to the COVID-19 virus.

SYSTEMS THINKING MODELS

There are two theoretical frameworks that relate to this secondary analysis and exploratory study. The first framework identified is the minority stress model, although not all of the measures are directly measured in this study. The model was included because it incorporates unique chronic social stress experienced by the sexual minorities that are associated with the measures collected in the parent study. The model is closely significant to the study due to the participants and the data collection period (first shelter-in-place order) as the world experienced pandemic-related stress. The Minority Stress Model is a theoretical framework that conceptualizes health disparities among the LGBTQ+ population compared to cisgender heterosexual populations. Sexual and gender minorities are subjected to various forms of stressors such as homophobia, discrimination, stigma, structural violence, and negative attitudes towards themselves (Meyer, 2003). Negative health outcomes within the LGBTQ community are also linked to expectations of rejection. For instance, a cohort study conducted among 396 lesbian, gay, and bisexual men and women residing in New York City found that experiencing a health issue in the year between baseline and follow-up was associated with more frequent experiences of everyday discrimination and higher expectations of rejection, and higher rates of internalized homophobia (Frost, Lehavot, & Meyer, 2015). Concealment refers to when some sexual and gender minorities opt not to reveal their sexual orientation or identity for various reasons; it has been identified as another stressor that triggers elevated levels of anxiety and lack of satisfaction in an environment sexual and gender minorities where individuals (Holman, 2018).

There has been a recognition that sexual and gender minorities exist in multiple groups (e.g., race/ethnicity or social class) who experience stressors in a compounded way (Mink et al.,

2014). The Intersectional Ecology Model addresses the impact of stigma experienced by sexual and gender minorities from the dominant culture and other minorities (Mink et al., 2014). The sexual and gender minorities live in an environment that elevates their health outcomes as they have to fulfill the expectations of a heteronormative society (Mink et al., 2014).

STRATEGIC FRAMEWORKS

Organizations are prioritizing the health outcomes related to this study, HIV and drug use, as well as the target population, sexual and gender minorities. In the context of the U.S.-Mexico border, the U.S.-Mexico Border Health Commission has documented their commitment to health promotion and prevention through a binational initiative *Healthy Border 2020*. The initiative targets one of the infectious diseases, HIV/AIDS through the following objectives: (i) reduce the HIV incidence by 1% to 2011 baseline; (ii) screening for HIV diagnosis in patients with pulmonary tuberculosis (PTB) and inversely; (iii) support the detection and reference of returning migrants with HIV/AIDS; (iv) align Border Health Commission's actions with national and state programs aimed at HIV/AIDS and pulmonary tuberculosis prevention and care; and (v) develop a policy proposal focused on HIV/AIDS and pulmonary tuberculosis prevention and care (United States-Mexico Border Health Commission, 2015).

Healthy People 2030 targets several of the health outcomes of this study. Objectives for HIV include reducing the number of new HIV infections, increasing knowledge of HIV status, reducing the number of new HIV diagnoses, increasing linkage to HIV medical care, and increasing the proportion of persons aged 13 years and over living with diagnosed HIV infection who are virally suppressed. In reference to substance use objectives, these include reducing the proportion of persons under 21 years of age engaging in binge drinking of alcoholic beverages during the past 30 days, reducing the proportion of persons aged 21 years and over engaging in binge drinking of alcoholic beverages during the past 30 days, and to reducing the proportion of persons with alcohol use disorder in the past year. Lastly, their framework incorporates the LGBT population and aim to increase the number of nationally representative, population-based surveys that collect data on (or for) lesbian, gay and bisexual populations and to increase the

number of nationally representative, population-based surveys that collect data on (or for) lesbian, gay and bisexual population (Office of Disease Prevention and Health Promotion (ODPHP), n.d.)**.**

MPH COMPETENCIES

MPH Program Fundamental Competencies

A. Evidence-based Approaches to Public Health

1. Apply epidemiological methods to the breadth of settings and situations in public health practice.

   - I read the parent study report and summarized the epidemiological methodology applied.

   - I summarized epidemiological studies on the background and significance.

2. Select quantitative and qualitative data collection methods appropriate for a given public health context.

   - The secondary data analysis and exploratory study was conducted from existing cross-sectional data. The data was prepared and measures were recoded prior to analysis. Also, I subsetted the dataset in SPSS.

3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming, and software, as appropriate.

   - Quantitative data were prepared and analyzed using statistical software (SPSS). This included created variables for the secondary data analysis for some measures (e.g., reducing/collapsing levels for frequency of engaging in sexual risk behaviors and drug use).

4. Interpret results of data analysis for public health research, policy, or practice

   - Results were interpreted for public health research and we have plans to submit findings for publication.

F. Communication

19. Communicate audience-appropriate public health content, both in writing and through oral presentation.

- The results were presented in both written format and oral (thesis defense).

H. Systems Thinking

22. Apply systems thinking tools to a public health issue

- Identified two theoretical frameworks (Minority Stress Theory and Intersectional Ecology Model of LGBTQ Health) related to the study. However, the theories identified do not cover all the aspects of the study as they do not address some behaviors such as the use of hook-up apps. Furthermore, they are not expanded to address time frames or significant events such as the pandemic.

TABLES

Table 1: Descriptive Statistics and Bivariate Associations between Living in a Texas-Mexico Border, Drug Use, and Sexual Behaviors among sexual minority men in Texas (n=560)

	Overall		Living in a Border County				Increased Use of Alcohol Since Shelter-in-Place				Increased Use of Any Illicit Drug Since Shelter-in-Place				Continued/Started Hooking-Up via Apps Since Shelter-in-Place				Decreased Condom Use Since Shelter-in-Place			
				No	Yes			No	Yes			No	Yes			No	Yes			No	Yes	
	N	Freq (%)	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p
Sociodemographic Characteristics																						
Age Category	**560**		**559**			0.000 *	**242**			0.094	**241**			0.001 *	**406**			0.000 *	**236**			0.559
18-24		58 (10.4%)		39 (8.4%)	19 (20.2%)			5 (4.8%)	10 (7.3%)			7 (4%)	8 (11.9%)			10 (3.9%)	15 (10.2%)			10 (5.1%)	4 (10%)	
25-34		132 (23.6%)		92 (19.8%)	40 (42.6%)			24 (22.9%)	37 (27%)			43 (24.7%)	18 (26.9%)			49 (18.9%)	42 (28.6%)			57 (29.1%)	9 (22.5%)	
35-44		104 (18.6%)		85 (18.3%)	19 (20.2%)			15 (14.3%)	32 (23.4%)			26 (16.2%)	20 (29.9%)			42 (16.2%)	35 (23.8%)			42 (21.4%)	6 (15%)	
45-54		93 (16.6%)		84 (18.1%)	9 (9.6%)			18 (17.1%)	23 (16.8%)			37 (21.3%)	5 (7.5%)			49 (18.9%)	20 (13.6%)			30 (15.3%)	8 (20%)	
55+		173 (30.9%)		165 (35.5%)	7 (7.4%)			43 (41%)	35 (25.5%)			61 (35.1%)	16 (23.9%)			109 (42.1%)	35 (23.8%)			57 (29.1%)	13 (32.5%)	
Race and Ethnicity	**553**		**553**			0.000 *	**242**			0.044 *	**241**			0.009 *	**406**			0.005 *	**236**			0.107
White only		340 (61.5%)		329 (71.2%)	11 (12.1%)			72 (68.6%)	83 (60.6%)			119 (68.4%)	36 (53.7%)			186 (71.8%)	83 (56.5%)			124 (63.3%)	32 (80%)	
Latinx/Hispanic		148 (26.8%)		73 (15.8%)	75 (82.4%)			27 (25.7%)	32 (23.4%)			42 (24.1%)	17 (25.4%)			51 (19.7%)	40 (27.2%)			46 (23.5%)	5 (12.5%)	
other POC		65 (11.8%)		60 (13%)	5 (5.5%)			6 (5.7%)	22 (16.1%)			13 (7.5%)	14 (20.9%)			22 (8.5%)	24 (16.3%)			26 (13.3%)	3 (7.5%)	
Education Level	**550**		**550**			0.000 *	**242**			0.740	**241**			0.361	**406**			0.886	**236**			0.067
HS diploma/equivalent or less		30 (5.5%)		16 (3.5%)	14 (15.6%)			5 (4.8%)	4 (2.9%)			7 (4%)	2 (3%)			13 (5%)	6 (4.1%)			3 (1.5%)	3 (7.5%)	
Some College or Bachelor's Degree		346 (62.9%)		282 (61.3%)	64 (71.1%)			66 (62.9%)	86 (62.8%)			105 (60.3%)	47 (70.1%)			154 (59.5%)	90 (61.2%)			113 (57.7%)	26 (65%)	
Masters or Doctorate Degree		174 (31.6%)		162 (35.2%)	12 (13.3%)			34 (32.4%)	47 (34.3%)			62 (35.6%)	18 (26.9%)			92 (35.5%)	51 (34.7%)			80 (40.8%)	11 (27.5%)	
Citizenship/Immigration Status	**544**		**544**			0.001 *	**240**			0.690	**239**			0.260	**403**			0.638	**233**			0.315
U.S. citizen, birth		507 (93.2%)		429 (94.5%)	78 (86.7%)			98 (94.2%)	125 (91.9%)			159 (92.4%)	63 (94%)			241 (94.1%)	138 (93.9%)			181 (93.8%)	36 (90%)	
Naturalized U.S. citizen/Permanent Resident/Visa Holder		27 (5%)		22 (4.8%)	5 (5.6%)			5 (4.8%)	8 (5.9%)			9 (5.2%)	4 (6%)			11 (4.3%)	8 (5.4%)			10 (5.2%)	2 (5%)	
Other		10 (1.8%)		3 (0.7%)	7 (7.8%)			1 (1%)	3 (2.2%)			4 (2.3%)	0 (0%)			4 (1.6%)	1 (0.7%)			2 (1%)	2 (5%)	
Sexual Orientation (based on dominant groups)	**559**		**558**			0.434	**242**			0.103	**241**			0.626	**406**			0.541	**236**			0.049 *
lesbian/gay/same-gender loving		503 (90%)		421 (90.7%)	81 (86.2%)			99 (94.3%)	118 (86.1%)			158 (90.8%)	58 (86.6%)			231 (89.2%)	132 (89.8%)			181 (92.3%)	34 (85%)	
bisexual/pansexual/heteroflexible		39 (7%)		30 (6.5%)	9 (9.6%)			4 (3.8%)	12 (8.8%)			10 (5.7%)	6 (9%)			18 (6.9%)	12 (8.2%)			12 (6.1%)	2 (5%)	
asexual/queer/heterosexual		17 (3%)		13 (2.8%)	4 (4.3%)			2 (1.9%)	7 (5.1%)			6 (3.4%)	3 (4.5%)			10 (3.9%)	3 (2%)			3 (1.5%)	4 (10%)	
Living in the border county	**559**		**0**			NA	**242**			0.525	**241**			0.942	**406**			0.828	**236**			0.634
No		465 (83.2%)		(0%)	(0%)			89 (84.8%)	120 (87.6%)			150 (86.2%)	58 (86.6%)			224 (86.5%)	126 (85.7%)			172 (87.8%)	34 (85%)	
Yes		94 (16.8%)		(0%)	(0%)			16 (15.2%)	17 (12.4%)			24 (13.8%)	9 (13.4%)			35 (13.5%)	21 (14.3%)			24 (12.2%)	6 (15%)	
Health Related Measures																						
Health Insurance Coverage	**413**		**413**			0.003 *	**242**			0.240	**241**			0.470	**406**			0.082	**236**			0.782
No		47 (11.4%)		34 (9.5%)	13 (23.2%)			16 (15.2%)	14 (10.2%)			20 (11.5%)	10 (14.9%)			24 (9.3%)	22 (15%)			21 (10.7%)	5 (12.5%)	
Yes		366 (88.6%)		323 (90.5%)	43 (76.8%)			89 (84.8%)	123 (89.8%)			154 (88.5%)	57 (85.1%)			235 (90.7%)	125 (85%)			175 (89.3%)	35 (87.5%)	
HIV Positive	**403**		**403**			0.585	**236**			0.096	**235**			0.821	**400**			0.751	**233**			0.210
No		334 (82.9%)		287 (82.5%)	47 (85.5%)			82 (81.2%)	120 (88.9%)			144 (85.2%)	57 (86.4%)			213 (82.6%)	119 (83.8%)			165 (84.6%)	29 (76.3%)	
Yes		69 (17.1%)		61 (17.5%)	8 (14.5%)			19 (18.8%)	15 (11.1%)			25 (14.8%)	9 (13.6%)			45 (17.4%)	23 (16.2%)			30 (15.4%)	9 (23.7%)	
Alcohol and Drug Use Since COVID-19																						
Change in Alcohol and Drug Use During Shelter-in-Place																						
alcohol	**242**		**242**			0.677	**242**			NA	**240**			0.357	**240**			0.668	**143**			0.227
Never used		3 (1.2%)		3 (1.4%)	0 (0%)			3 (2.9%)	0 (0%)			3 (1.7%)	0 (0%)			2 (1.4%)	1 (1%)			1 (0.9%)	0 (0%)	
First time use		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			(0%)	(0%)	
Decreased use		29 (12%)		25 (12%)	4 (12.1%)			29 (27.6%)	0 (0%)			21 (12.1%)	8 (11.9%)			16 (11.2%)	13 (13.4%)			13 (11.1%)	1 (3.8%)	
Did not change use		73 (30.2%)		61 (29.2%)	12 (36.4%)			73 (69.5%)	0 (0%)			55 (31.8%)	17 (25.4%)			47 (32.9%)	25 (25.8%)			25 (21.4%)	10 (38.5%)	
Increased use		137 (56.6%)		120 (57.4%)	17 (51.5%)			0 (0%)	137 (100%)			94 (54.3%)	42 (62.7%)			78 (54.5%)	58 (59.8%)			78 (66.7%)	15 (57.7%)	
methamphetamine	**236**		**236**			0.293	**235**			0.798	**236**			0.006 *	**234**			0.011 *	**140**			0.147
Never used		219 (92.8%)		190 (93.6%)	29 (87.9%)			92 (91.1%)	126 (94%)			163 (93.7%)	56 (90.3%)			131 (92.9%)	87 (93.5%)			105 (92.1%)	26 (100%)	
First time use		0 (0%)		0 (0%)	0 (0%)			(0%)	(0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Decreased use		10 (4.2%)		7 (3.4%)	3 (9.1%)			5 (5%)	5 (3.7%)			9 (5.2%)	1 (1.6%)			8 (5.7%)	1 (1.1%)			5 (4.4%)	0 (0%)	
Did not change use		3 (1.3%)		2 (1%)	1 (3%)			2 (2%)	1 (0.7%)			2 (1.1%)	1 (1.6%)			2 (1.4%)	1 (1.1%)			0 (0%)	0 (0%)	
Increased use		4 (1.7%)		4 (2%)	0 (0%)			2 (2%)	2 (1.5%)			0 (0%)	4 (6.5%)			0 (0%)	4 (4.3%)			4 (3.5%)	0 (0%)	
cocaine/crack cocaine	**234**		**234**			0.063	**233**			0.581	**234**			0.005 *	**232**			0.150	**139**			0.085
Never used		206 (88%)		182 (90.1%)	24 (75%)			89 (87.3%)	116 (88.5%)			157 (91.3%)	49 (79%)			125 (89.9%)	80 (86%)			98 (86.7%)	26 (100%)	
First time use		1 (0.4%)		1 (0.5%)	0 (0%)			1 (1%)	0 (0%)			0 (0%)	1 (1.6%)			0 (0%)	1 (1.1%)			0 (0%)	0 (0%)	
Decreased use		13 (5.6%)		8 (4%)	5 (15.6%)			7 (6.9%)	6 (4.6%)			8 (4.7%)	5 (8.1%)			9 (6.5%)	3 (3.2%)			7 (6.2%)	0 (0%)	
Did not change use		10 (4.3%)		7 (3.5%)	3 (9.4%)			4 (3.9%)	6 (4.6%)			7 (4.1%)	3 (4.8%)			4 (2.9%)	6 (6.5%)			5 (4.4%)	0 (0%)	
Increased use		4 (1.7%)		4 (2%)	0 (0%)			1 (1%)	3 (2.3%)			0 (0%)	4 (6.5%)			1 (0.7%)	3 (3.2%)			3 (2.7%)	0 (0%)	
cannabis	**237**		**237**			0.456	**236**			0.709	**237**			0.000 *	**235**			0.177	**141**			0.789
Never used		112 (47.3%)		100 (49%)	12 (36.4%)			51 (49%)	60 (45.5%)			108 (63.5%)	4 (6%)			70 (49.6%)	41 (43.6%)			54 (47%)	12 (46.2%)	
First time use		1 (0.4%)		1 (0.5%)	0 (0%)			1 (1%)	0 (0%)			1 (0.6%)	0 (0%)			0 (0%)	0 (0%)			1 (0.9%)	0 (0%)	
Decreased use		24 (10.1%)		18 (8.8%)	6 (18.2%)			12 (11.5%)	12 (9.1%)			23 (13.5%)	1 (1.5%)			17 (12.1%)	7 (7.4%)			11 (9.6%)	1 (3.8%)	
Did not change use		42 (17.7%)		35 (17.2%)	7 (21.2%)			18 (17.3%)	24 (18.2%)			38 (22.4%)	4 (6%)			26 (18.4%)	16 (17%)			17 (14.8%)	5 (19.2%)	
Increased use		58 (24.5%)		50 (24.5%)	8 (24.2%)			23 (22.1%)	35 (26.5%)			0 (0%)	58 (86.6%)			28 (19.9%)	29 (30.9%)			32 (27.8%)	8 (30.8%)	
synthetic/party drugs	**237**		**237**			0.396	**236**			0.650	**237**			0.000 *	**235**			0.075	**141**			0.480
Never used		209 (88.2%)		183 (89.7%)	26 (78.8%)			90 (87.4%)	118 (88.7%)			160 (93%)	49 (75.4%)			128 (90.8%)	80 (85.1%)			101 (87.8%)	23 (88.5%)	
First time use		1 (0.4%)		1 (0.5%)	0 (0%)			1 (1%)	0 (0%)			1 (0.6%)	1 (1.5%)			0 (0%)	1 (1.1%)			0 (0%)	0 (0%)	
Decreased use		12 (5.1%)		8 (3.9%)	4 (12.1%)			5 (4.9%)	7 (5.3%)			8 (4.7%)	4 (6.2%)			8 (5.7%)	3 (3.2%)			5 (4.3%)	2 (7.7%)	
Did not change use		9 (3.8%)		7 (3.4%)	2 (6.1%)			5 (4.9%)	4 (3%)			4 (2.3%)	5 (7.7%)			4 (2.8%)	5 (5.3%)			4 (3.5%)	1 (3.8%)	
Increased use		6 (2.5%)		5 (2.5%)	1 (3%)			2 (1.9%)	4 (3%)			0 (0%)	6 (9.2%)			1 (0.7%)	5 (5.3%)			5 (4.3%)	0 (0%)	

	Overall		Living in a Border County				Increased Use of Alcohol Since Shelter-in-Place				Increased Use of Any Illicit Drug Since Shelter-in-Place				Continued/Started Hooking-Up via Apps Since Shelter-in-Place				Decreased Condom Use Since Shelter-in-Place			
				No	Yes			No	Yes			No	Yes			No	Yes			No	Yes	
	N	Freq (%)	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p
prescription opioids	235		235			0.666	234			0.557	235			0.315	233			0.218	140			0.522
Never used		213 (90.6%)		184 (91.1%)	29 (87.9%)			95 (93.1%)	117 (88.6%)			158 (91.9%)	55 (87.3%)			122 (87.8%)	89 (94.7%)			106 (93%)	23 (88.5%)	
First time use		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Decreased use		2 (0.9%)		1 (0.5%)	1 (3%)			1 (1%)	1 (0.8%)			2 (1.2%)	0 (0%)			2 (1.4%)	0 (0%)			0 (0%)	0 (0%)	
Did not change use		12 (5.1%)		10 (5%)	2 (6.1%)			3 (2.9%)	9 (6.8%)			8 (4.7%)	4 (6.3%)			9 (6.5%)	3 (3.2%)			5 (4.4%)	1 (3.8%)	
Increased use		8 (3.4%)		7 (3.5%)	1 (3%)			3 (2.9%)	5 (3.8%)			4 (2.3%)	4 (6.3%)			6 (4.3%)	2 (2.1%)			3 (2.6%)	2 (7.7%)	
heroin	238		238			0.093	237			0.407	238			0.709	236			0.578	141			-- --
Never used		234 (98.3%)		203 (99%)	31 (93.9%)			101 (98.1%)	132 (98.5%)			171 (98.3%)	63 (98.4%)			138 (97.9%)	94 (98.9%)			115 (100%)	26 (100%)	
First time use		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Decreased use		1 (0.4%)		0 (0%)	1 (3%)			0 (0%)	1 (0.7%)			1 (0.6%)	0 (0%)			1 (0.7%)	0 (0%)			0 (0%)	0 (0%)	
Did not change use		3 (1.3%)		2 (1%)	1 (3%)			2 (1.9%)	1 (0.7%)			2 (1.1%)	1 (1.6%)			2 (1.4%)	1 (1.1%)			0 (0%)	0 (0%)	
Increased use		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
hallucinogens	237		237			0.616	236			0.177	237			0.020 *	235			0.355	140			0.838
Never used		220 (92.8%)		190 (93.1%)	30 (90.9%)			97 (94.2%)	122 (91.7%)			163 (94.8%)	57 (87.7%)			129 (92.1%)	89 (93.7%)			105 (92.1%)	24 (92.3%)	
First time use		1 (0.4%)		1 (0.5%)	0 (0%)			0 (0%)	1 (0.8%)			1 (0.6%)	0 (0%)			1 (0.7%)	0 (0%)			1 (0.9%)	0 (0%)	
Decreased use		7 (3%)		5 (2.5%)	2 (6.1%)			3 (2.9%)	4 (3%)			5 (2.9%)	2 (3.1%)			5 (3.6%)	2 (2.1%)			3 (2.6%)	1 (3.8%)	
Did not change use		5 (2.1%)		4 (2%)	1 (3%)			3 (2.9%)	2 (1.5%)			3 (1.7%)	2 (3.1%)			4 (2.9%)	1 (1.1%)			2 (1.8%)	0 (0%)	
Increased use		4 (1.7%)		4 (2%)	0 (0%)			0 (0%)	4 (3%)			0 (0%)	4 (6.2%)			1 (0.7%)	3 (3.2%)			3 (2.6%)	1 (3.8%)	
other drug(s)	238		238			0.278	237			0.368	238			0.060	236			0.069	143			0.383
Never used		220 (92.4%)		193 (94.1%)	27 (81.8%)			94 (92.2%)	125 (92.6%)			162 (94.2%)	58 (87.9%)			127 (90.1%)	92 (96.8%)			107 (91.5%)	26 (100%)	
First time use		3 (1.3%)		2 (1%)	1 (3%)			1 (1%)	2 (1.5%)			1 (0.6%)	2 (3%)			2 (1.4%)	1 (1.1%)			3 (2.6%)	0 (0%)	
Decreased use		5 (2.1%)		3 (1.5%)	2 (6.1%)			3 (2.9%)	2 (1.5%)			3 (1.7%)	2 (3%)			4 (2.8%)	0 (0%)			3 (2.6%)	0 (0%)	
Did not change use		4 (1.7%)		3 (1.5%)	1 (3%)			3 (2.9%)	1 (0.7%)			4 (2.3%)	0 (0%)			4 (2.8%)	0 (0%)			1 (0.9%)	0 (0%)	
Increased use		6 (2.5%)		4 (2%)	2 (6.1%)			1 (1%)	5 (3.7%)			2 (1.2%)	4 (6.1%)			4 (2.8%)	2 (2.1%)			3 (2.6%)	0 (0%)	
Since the beginning of the COVID-19, it has been helpful to drink alcohol, smoke pot, or use other drugs	319		319			0.763	217			0.020 *	215			0.013 *	280			0.144	169			0.115
Unhelpful		108 (33.9%)		92 (34.2%)	16 (32%)			23 (26.4%)	18 (13.8%)			35 (23.5%)	6 (9.1%)			63 (37.3%)	32 (28.8%)			42 (30.4%)	14 (45.2%)	
Helpful		211 (66.1%)		177 (65.8%)	34 (68%)			64 (73.6%)	112 (86.2%)			114 (76.5%)	60 (90.9%)			106 (62.7%)	79 (71.2%)			96 (69.6%)	17 (54.8%)	
COVID-19 pandemic has caused me to drink alcohol more than I normally would	481		481			0.628	242			0.000 *	241			0.018 *	404			0.132	236			0.611
Disagree		313 (65.1%)		265 (64.6%)	48 (67.6%)			94 (89.5%)	22 (16.1%)			92 (52.9%)	24 (35.8%)			173 (67.3%)	88 (59.9%)			114 (58.2%)	25 (62.5%)	
Agree		168 (34.9%)		145 (35.4%)	23 (32.4%)			11 (10.5%)	115 (83.9%)			82 (47.1%)	43 (64.2%)			84 (32.7%)	59 (40.1%)			82 (41.8%)	15 (37.5%)	
COVID-19 pandemic has caused me to use recreational drugs more than I normally would	466		466			0.229	235			0.513	234			0.000 *	392			0.108	229			0.703
Disagree		396 (85%)		339 (85.8%)	57 (80.3%)			81 (78.6%)	99 (75%)			153 (91.6%)	26 (38.8%)			217 (87.1%)	116 (81.1%)			156 (82.5%)	32 (80%)	
Agree		70 (15%)		56 (14.2%)	14 (19.7%)			22 (21.4%)	33 (25%)			14 (8.4%)	41 (61.2%)			32 (12.9%)	27 (18.9%)			33 (17.5%)	8 (20%)	
Sexual Behaviors																						
Current relationship status	408		408			0.007 *	241			0.012 *	240			0.558	405			0.000 *	236			0.031 *
married		96 (23.5%)		91 (25.9%)	5 (8.9%)			21 (20.2%)	39 (28.5%)			46 (26.6%)	15 (22.4%)			74 (28.6%)	22 (15.1%)			69 (35.2%)	11 (27.5%)	
relationship and we live together		72 (17.6%)		55 (15.6%)	17 (30.4%)			13 (12.5%)	29 (21.2%)			26 (15%)	16 (23.9%)			63 (24.3%)	9 (6.2%)			45 (23%)	10 (25%)	
relationship and we do not live together		21 (5.1%)		17 (4.8%)	4 (7.1%)			7 (6.7%)	8 (5.8%)			10 (5.8%)	5 (7.5%)			15 (5.8%)	6 (4.1%)			10 (5.1%)	6 (15%)	
currently dating		18 (4.4%)		14 (4%)	4 (7.1%)			2 (1.9%)	9 (6.6%)			8 (4.6%)	3 (4.5%)			5 (1.9%)	12 (8.2%)			7 (3.6%)	5 (12.5%)	
not currently in a relationship		201 (49.3%)		175 (49.7%)	26 (46.4%)			61 (58.7%)	52 (38%)			83 (48%)	28 (41.8%)			102 (39.4%)	97 (66.4%)			65 (33.2%)	8 (20%)	
Relationship type	207		207			0.028	128			0.167	129			0.399	206			0.000 *	163			0.462
monogamous		124 (59.9%)		100 (56.5%)	24 (80%)			25 (58.1%)	51 (60%)			57 (63.3%)	20 (51.3%)			110 (70.1%)	13 (26.5%)			82 (62.6%)	16 (50%)	
open, but only have sex with others together		24 (11.6%)		20 (11.3%)	4 (13.3%)			7 (16.3%)	9 (10.6%)			12 (13.3%)	4 (10.3%)			16 (10.2%)	8 (16.3%)			15 (11.5%)	7 (21.9%)	
open, have sex with others separately and together		24 (11.6%)		23 (13%)	1 (3.3%)			8 (18.6%)	8 (9.4%)			8 (8.9%)	8 (20.5%)			14 (8.9%)	10 (20.4%)			13 (9.9%)	4 (12.5%)	
open, but only have sex with others separately		28 (13.5%)		27 (15.3%)	1 (3.3%)			2 (4.7%)	14 (16.5%)			10 (11.1%)	6 (15.4%)			13 (8.3%)	15 (30.6%)			17 (13%)	3 (9.4%)	
polyamorous		7 (3.4%)		7 (4%)	0 (0%)			1 (2.3%)	3 (3.5%)			3 (3.3%)	1 (2.6%)			4 (2.5%)	3 (6.1%)			4 (3.1%)	2 (6.3%)	
Last sexual intercourse	405		405			0.937	241			0.026 *	240			0.274	402			0.000 *	236			0.406
During the past 30 days		189 (46.7%)		165 (47.3%)	24 (42.9%)			41 (39%)	72 (52.9%)			76 (43.7%)	38 (57.6%)			112 (43.6%)	75 (51.7%)			150 (76.5%)	31 (77.5%)	
More than 30 days, but less than 3 months ago		53 (13.1%)		44 (12.6%)	9 (16.1%)			14 (13.3%)	23 (16.9%)			31 (17.8%)	6 (9.1%)			29 (11.3%)	24 (16.6%)			19 (9.7%)	6 (15%)	
During the past 3 months, but less than 6 months ago		35 (8.6%)		30 (8.6%)	5 (8.9%)			12 (11.4%)	13 (9.6%)			17 (9.8%)	7 (10.6%)			19 (7.4%)	16 (11%)			12 (6.1%)	1 (2.5%)	
6 months to 1 year ago		41 (10.1%)		36 (10.3%)	5 (8.9%)			14 (13.3%)	16 (11.8%)			23 (13.2%)	6 (9.1%)			22 (8.6%)	19 (13.1%)			6 (3.1%)	0 (0%)	
More than a year ago		87 (21.5%)		74 (21.2%)	13 (23.2%)			24 (22.9%)	12 (8.8%)			27 (15.5%)	9 (13.6%)			75 (29.2%)	11 (7.6%)			9 (4.6%)	2 (5%)	

	Overall		Living in a Border County				Increased Use of Alcohol Since Shelter-in-Place				Increased Use of Any Illicit Drug Since Shelter-in-Place				Continued/Started Hooking-Up via Apps Since Shelter-in-Place				Decreased Condom Use Since Shelter-in-Place			
				No	Yes			No	Yes			No	Yes			No	Yes			No	Yes	
	N	Freq (%)	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p
Ever attended a sex party where drugs were used	**409**		**409**			0.027 *	**242**			0.537	**241**			0.260	**406**			0.301	**236**			0.568
Never		344 (84.1%)		293 (83%)	51 (91.1%)			87 (82.9%)	119 (86.9%)			150 (86.2%)	55 (82.1%)			221 (85.3%)	120 (81.6%)			164 (83.7%)	31 (77.5%)	
Yes, but more than a year ago		54 (13.2%)		51 (14.4%)	3 (5.4%)			16 (15.2%)	13 (9.5%)			19 (10.9%)	10 (14.9%)			33 (12.7%)	21 (14.3%)			25 (12.8%)	8 (20%)	
Yes, within the past year		3 (0.7%)		1 (0.3%)	2 (3.6%)			1 (1%)	2 (1.5%)			2 (1.1%)	1 (1.5%)			2 (0.8%)	1 (0.7%)			2 (1%)	0 (0%)	
Yes, within the past 6 months		6 (1.5%)		6 (1.7%)	0 (0%)			1 (1%)	2 (1.5%)			3 (1.7%)	0 (0%)			3 (1.2%)	3 (2%)			3 (1.5%)	1 (2.5%)	
Yes, within the past 3 months		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Yes, within the past month		2 (0.5%)		2 (0.6%)	0 (0%)			0 (0%)	1 (0.7%)			0 (0%)	1 (1.5%)			0 (0%)	2 (1.4%)			2 (1%)	0 (0%)	
Yes, within the past two weeks		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Yes, less than two weeks ago		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	(0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Ever engaged in sex or sexual activity for money or worked in the sex industry	**546**		**546**			0.362	**241**			0.718	**240**			0.008 *	**404**			0.016 *	**234**			0.282
No		477 (87.4%)		401 (87.9%)	76 (84.4%)			92 (87.6%)	117 (86%)			157 (90.2%)	51 (77.3%)			234 (91.1%)	122 (83%)			173 (89.2%)	33 (82.5%)	
Yes		69 (12.6%)		55 (12.1%)	14 (15.6%)			13 (12.4%)	19 (14%)			17 (9.8%)	15 (22.7%)			23 (8.9%)	25 (17%)			21 (10.8%)	7 (17.5%)	
Condoms use frequency before March 1, 2020	**352**		**352**			0.174	**222**			0.533	**221**			0.208	**350**			0.020 *	**236**			NA
Never		155 (44%)		137 (44.9%)	18 (38.3%)			33 (36.3%)	63 (48.1%)			66 (42%)	31 (48.4%)			107 (50.5%)	47 (34.1%)			133 (67.9%)	0 (0%)	
A little bit		44 (12.5%)		39 (12.8%)	5 (10.6%)			14 (15.4%)	16 (12.2%)			18 (11.5%)	11 (17.2%)			20 (9.4%)	24 (17.4%)			11 (5.6%)	16 (40%)	
Sometimes		46 (13.1%)		41 (13.4%)	5 (10.6%)			14 (15.4%)	16 (12.2%)			25 (15.9%)	5 (7.8%)			28 (13.2%)	18 (13%)			9 (4.6%)	15 (37.5%)	
Often		22 (6.3%)		21 (6.9%)	1 (2.1%)			7 (7.7%)	5 (3.8%)			11 (7%)	1 (1.6%)			11 (5.2%)	11 (8%)			8 (4.1%)	3 (7.5%)	
Almost always		42 (11.9%)		35 (11.5%)	7 (14.9%)			12 (13.2%)	17 (13%)			20 (12.7%)	8 (12.5%)			20 (9.4%)	22 (15.9%)			12 (6.1%)	2 (5%)	
Always		43 (12.2%)		32 (10.5%)	11 (23.4%)			11 (12.1%)	14 (10.7%)			17 (10.8%)	8 (12.5%)			26 (12.3%)	16 (11.6%)			23 (11.7%)	4 (10%)	
Condoms use frequency since March 1, 2020	**237**		**237**			0.065	**143**			0.115	**143**			0.673	**235**			0.000 *	**236**			NA
Never		163 (68.8%)		148 (71.5%)	15 (50%)			34 (68%)	68 (73.1%)			69 (72.6%)	34 (70.8%)			111 (77.1%)	50 (54.9%)			128 (65.3%)	35 (87.5%)	
A little bit		15 (6.3%)		10 (4.8%)	5 (16.7%)			0 (0%)	7 (7.5%)			4 (4.2%)	3 (6.3%)			2 (1.4%)	13 (14.3%)			13 (6.6%)	2 (5%)	
Sometimes		8 (3.4%)		8 (3.9%)	0 (0%)			2 (4%)	2 (2.2%)			3 (3.2%)	1 (2.1%)			5 (3.5%)	3 (3.3%)			7 (3.6%)	1 (2.5%)	
Often		6 (2.5%)		5 (2.4%)	1 (3.3%)			2 (4%)	1 (1.1%)			3 (3.2%)	0 (0%)			4 (2.8%)	2 (2.2%)			5 (2.6%)	1 (2.5%)	
Almost always		16 (6.8%)		13 (6.3%)	3 (10%)			5 (10%)	7 (7.5%)			7 (7.4%)	4 (8.3%)			6 (4.2%)	10 (11%)			15 (7.7%)	1 (2.5%)	
Always		29 (12.2%)		23 (11.1%)	6 (20%)			7 (14%)	8 (8.6%)			9 (9.5%)	6 (12.5%)			16 (11.1%)	13 (14.3%)			28 (14.3%)	0 (0%)	
Frequency of sexual activity by partner type since COVID-19 shelter-in-place guidelines with:																						
a relationship partner they live with	**403**		**403**			0.535	**238**			0.448	**237**			0.917	**400**			0.000 *	**234**			0.221
Never		267 (66.3%)		227 (65.4%)	40 (71.4%)			70 (69.3%)	77 (56.2%)			106 (62.4%)	39 (58.2%)			142 (55.7%)	122 (84.1%)			85 (43.6%)	20 (51.3%)	
Daily		9 (2.2%)		7 (2%)	2 (3.6%)			3 (3%)	5 (3.6%)			5 (2.9%)	3 (4.5%)			7 (2.7%)	2 (1.4%)			8 (4.1%)	1 (2.6%)	
Almost daily		12 (3%)		11 (3.2%)	1 (1.8%)			4 (4%)	6 (4.4%)			7 (4.1%)	3 (4.5%)			11 (4.3%)	1 (0.7%)			7 (3.6%)	4 (10.3%)	
Weekly		46 (11.4%)		43 (12.4%)	3 (5.4%)			9 (8.9%)	16 (11.7%)			20 (11.8%)	6 (9%)			39 (15.3%)	7 (4.8%)			39 (20%)	3 (7.7%)	
A few days out of the month		49 (12.2%)		41 (11.8%)	8 (14.3%)			11 (10.9%)	23 (16.8%)			23 (13.5%)	11 (16.4%)			40 (15.7%)	9 (6.2%)			40 (20.5%)	9 (23.1%)	
Once		20 (5%)		18 (5.2%)	2 (3.6%)			4 (4%)	10 (7.3%)			9 (5.3%)	5 (7.5%)			16 (6.3%)	4 (2.8%)			16 (8.2%)	2 (5.1%)	
someone they live with that is not a relationship partner	**400**		**400**			0.854	**237**			0.100	**236**			0.440	**397**			0.199	**232**			0.137
Never		391 (97.8%)		336 (97.7%)	55 (98.2%)			98 (97%)	135 (99.3%)			165 (97.6%)	67 (100%)			249 (98.4%)	139 (96.5%)			187 (96.4%)	36 (94.7%)	
Daily		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Almost daily		1 (0.3%)		1 (0.3%)	0 (0%)			0 (0%)	1 (0.7%)			1 (0.6%)	0 (0%)			1 (0.4%)	0 (0%)			1 (0.5%)	0 (0%)	
Weekly		1 (0.3%)		1 (0.3%)	0 (0%)			1 (1%)	0 (0%)			1 (0.6%)	0 (0%)			1 (0.4%)	0 (0%)			0 (0%)	1 (2.6%)	
A few days out of the month		2 (0.5%)		2 (0.6%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			1 (0.4%)	1 (0.7%)			1 (0.5%)	1 (2.6%)	
Once		5 (1.3%)		4 (1.2%)	1 (1.8%)			2 (2%)	0 (0%)			2 (1.2%)	0 (0%)			1 (0.4%)	4 (2.8%)			5 (2.6%)	0 (0%)	
a relationship partner they do not live with	**398**		**398**			0.646	**235**			0.732	**234**			0.298	**395**			0.212	**231**			0.024 *
Never		370 (93%)		321 (93.6%)	49 (89.1%)			92 (92%)	122 (90.4%)			154 (91.7%)	59 (89.4%)			234 (93.2%)	133 (92.4%)			174 (90.6%)	30 (76.9%)	
Daily		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Almost daily		2 (0.5%)		2 (0.6%)	0 (0%)			0 (0%)	1 (0.7%)			1 (0.6%)	0 (0%)			1 (0.4%)	1 (0.7%)			2 (1%)	0 (0%)	
Weekly		5 (1.3%)		4 (1.2%)	1 (1.8%)			2 (2%)	2 (1.5%)			1 (0.6%)	3 (4.5%)			5 (2%)	0 (0%)			2 (1%)	3 (7.7%)	
A few days out of the month		11 (2.8%)		8 (2.3%)	3 (5.5%)			3 (3%)	3 (2.2%)			5 (3%)	1 (1.5%)			6 (2.4%)	5 (3.5%)			6 (3.1%)	5 (12.8%)	
Once		10 (2.5%)		8 (2.3%)	2 (3.6%)			3 (3%)	7 (5.2%)			7 (4.2%)	3 (4.5%)			5 (2%)	5 (3.5%)			8 (4.2%)	1 (2.6%)	
a regular sex partner they do not live with	**401**		**401**			0.381	**238**			0.149	**237**			0.287	**398**			0.005 *	**232**			0.814
Never		341 (85%)		291 (84.3%)	50 (89.3%)			91 (89.2%)	110 (80.9%)			146 (85.9%)	54 (80.6%)			228 (90.1%)	112 (77.2%)			145 (74.7%)	30 (78.9%)	
Daily		1 (0.2%)		1 (0.3%)	0 (0%)			1 (1%)	0 (0%)			0 (0%)	1 (1.5%)			0 (0%)	0 (0%)			1 (0.5%)	0 (0%)	
Almost daily		2 (0.5%)		2 (0.6%)	0 (0%)			0 (0%)	1 (0.7%)			0 (0%)	1 (1.5%)			0 (0%)	2 (1.4%)			2 (1%)	0 (0%)	
Weekly		9 (2.2%)		9 (2.6%)	0 (0%)			3 (2.9%)	3 (2.2%)			5 (2.9%)	1 (1.5%)			5 (2%)	4 (2.8%)			8 (4.1%)	1 (2.6%)	
A few days out of the month		27 (6.7%)		25 (7.2%)	2 (3.6%)			3 (2.9%)	12 (8.8%)			10 (5.9%)	5 (7.5%)			10 (4%)	16 (11%)			20 (10.3%)	5 (13.2%)	
Once		21 (5.2%)		17 (4.9%)	4 (7.1%)			4 (3.9%)	10 (7.4%)			9 (5.3%)	5 (7.5%)			10 (4%)	11 (7.6%)			18 (9.3%)	2 (5.3%)	
someone they know, but do not live with	**397**		**397**			0.757	**238**			0.694	**236**			0.315	**394**			0.000 *	**226**			0.421
Never		356 (89.7%)		307 (89.8%)	49 (89.1%)			92 (89.3%)	123 (91.1%)			156 (92.3%)	57 (85.1%)			242 (96.4%)	112 (78.3%)			156 (82.1%)	32 (88.9%)	
Daily		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Almost daily		1 (0.3%)		1 (0.3%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	1 (0.7%)			1 (0.5%)	0 (0%)	
Weekly		3 (0.8%)		2 (0.6%)	1 (1.8%)			2 (1.9%)	1 (0.7%)			2 (1.2%)	1 (1.5%)			1 (0.4%)	2 (1.4%)			2 (1.1%)	1 (2.8%)	
A few days out of the month		14 (3.5%)		13 (3.8%)	1 (1.8%)			5 (4.9%)	4 (3%)			4 (2.4%)	5 (7.5%)			4 (1.6%)	9 (6.3%)			10 (5.3%)	2 (5.6%)	
Once		23 (5.8%)		19 (5.6%)	4 (7.3%)			4 (3.9%)	7 (5.2%)			7 (4.1%)	4 (6%)			4 (1.6%)	19 (13.3%)			21 (11.1%)	1 (2.8%)	

	Overall		Living in a Border County				Increased Use of Alcohol Since Shelter-in-Place				Increased Use of Any Illicit Drug Since Shelter-in-Place				Continued/Started Hooking-Up via Apps Since Shelter-in-Place				Decreased Condom Use Since Shelter-in-Place			
				No	Yes			No	Yes			No	Yes			No	Yes			No	Yes	
	N	Freq (%)	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p	N	Freq (%)	Freq (%)	p
a person they just met not using a hook-up app	398		398			0.224	238			0.615	237			0.207	395			0.004 *	230			0.657
Never		382 (96%)		328 (95.6%)	54 (98.2%)			99 (97.1%)	129 (94.9%)			164 (96.5%)	63 (94%)			248 (98.4%)	131 (91.6%)			179 (93.2%)	36 (94.7%)	
Daily		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Almost daily		1 (0.3%)		1 (0.3%)	0 (0%)			0 (0%)	1 (0.7%)			1 (0.6%)	0 (0%)			1 (0.4%)	0 (0%)			1 (0.5%)	0 (0%)	
Weekly		2 (0.5%)		1 (0.3%)	1 (1.8%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	2 (1.4%)			1 (0.5%)	1 (2.6%)	
A few days out of the month		2 (0.5%)		2 (0.6%)	0 (0%)			1 (1%)	1 (0.7%)			2 (1.2%)	0 (0%)			0 (0%)	2 (1.4%)			1 (0.5%)	0 (0%)	
Once		11 (2.8%)		11 (3.2%)	0 (0%)			2 (2%)	5 (3.7%)			3 (1.8%)	4 (6%)			3 (1.2%)	8 (5.6%)			10 (5.2%)	1 (2.6%)	
a person they just met using a hook-up app	397		397			0.808	234			0.267	233			0.208	394			0.000 *	230			0.584
Never		339 (85.4%)		290 (84.8%)	49 (89.1%)			85 (85.9%)	113 (83.7%)			144 (86.7%)	53 (79.1%)			246 (97.6%)	90 (63.4%)			146 (76%)	31 (81.6%)	
Daily		0 (0%)		0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)			0 (0%)	0 (0%)	
Almost daily		1 (0.3%)		1 (0.3%)	0 (0%)			0 (0%)	1 (0.7%)			1 (0.6%)	0 (0%)			1 (0.4%)	0 (0%)			1 (0.5%)	0 (0%)	
Weekly		7 (1.8%)		6 (1.8%)	1 (1.8%)			4 (4%)	1 (0.7%)			2 (1.2%)	3 (4.5%)			0 (0%)	7 (4.9%)			5 (2.6%)	2 (5.3%)	
A few days out of the month		13 (3.3%)		11 (3.2%)	2 (3.6%)			3 (3%)	7 (5.2%)			8 (4.8%)	2 (3%)			2 (0.8%)	11 (7.7%)			9 (4.7%)	2 (5.3%)	
Once		37 (9.3%)		34 (9.9%)	3 (5.5%)			7 (7.1%)	13 (9.6%)			11 (6.6%)	9 (13.4%)			3 (1.2%)	34 (23.9%)			31 (16.1%)	3 (7.9%)	
Hook-Up and Dating Apps																						
Use of hookup or dating apps before March 1, 2020	407		407			0.782	241			0.435	240			0.023 *	406			NA	235			0.057
No		182 (44.7%)		156 (44.4%)	26 (46.4%)			43 (41%)	49 (36%)			74 (42.8%)	18 (26.9%)			179 (69.1%)	3 (2%)			98 (50%)	13 (33.3%)	
Yes		225 (55.3%)		195 (55.6%)	30 (53.6%)			62 (59%)	87 (64%)			99 (57.2%)	49 (73.1%)			80 (30.9%)	144 (98%)			98 (50%)	26 (66.7%)	
Frequency of meeting up with people from hookup or dating apps before March 1, 2020	236		236			0.244	153			0.492	152			0.793	235			NA	130			0.432
Never		36 (15.3%)		33 (16%)	3 (10%)			10 (15.6%)	10 (11.2%)			14 (13.6%)	6 (12.2%)			19 (20.7%)	17 (11.9%)			10 (9.7%)	2 (7.4%)	
Rarely		97 (41.1%)		79 (38.3%)	18 (60%)			27 (42.2%)	38 (42.7%)			45 (43.7%)	19 (38.8%)			40 (43.5%)	57 (39.9%)			38 (36.9%)	11 (40.7%)	
Sometimes		72 (30.5%)		66 (32%)	6 (20%)			21 (32.8%)	29 (32.6%)			33 (32%)	17 (34.7%)			22 (23.9%)	49 (34.3%)			34 (33%)	12 (44.4%)	
Often		29 (12.3%)		26 (12.6%)	3 (10%)			5 (7.8%)	12 (13.5%)			10 (9.7%)	7 (14.3%)			10 (10.9%)	19 (13.3%)			19 (18.4%)	2 (7.4%)	
Very Often		2 (0.8%)		2 (1%)	0 (0%)			1 (1.6%)	0 (0%)			1 (1%)	0 (0%)			1 (1.1%)	1 (0.7%)			2 (1.9%)	0 (0%)	
Use of hookup or dating apps since March 1, 2020	407		407			0.817	241			0.448	240			0.005 *	406			NA	235			0.909
No		260 (63.9%)		225 (64.1%)	35 (62.5%)			65 (62.5%)	79 (57.7%)			114 (65.5%)	30 (45.5%)			259 (100%)	0 (0%)			120 (61.5%)	25 (62.5%)	
Yes		147 (36.1%)		126 (35.9%)	21 (37.5%)			39 (37.5%)	58 (42.3%)			60 (34.5%)	36 (54.5%)			0 (0%)	147 (100%)			75 (38.5%)	15 (37.5%)	
Frequency of meeting up with people from hookup or dating apps since March 1, 2020	147		147			0.053	97			0.349	96			0.258	294			NA	90			0.126
Never		81 (55.1%)		68 (54%)	13 (61.9%)			26 (66.7%)	32 (55.2%)			36 (60%)	22 (61.1%)			81 (55.1%)	81 (55.1%)			25 (33.3%)	8 (53.3%)	
Rarely		48 (32.7%)		41 (32.5%)	7 (33.3%)			8 (20.5%)	21 (36.2%)			19 (31.7%)	9 (25%)			48 (32.7%)	48 (32.7%)			35 (46.7%)	5 (33.3%)	
Sometimes		15 (10.2%)		15 (11.9%)	0 (0%)			3 (7.7%)	4 (6.9%)			3 (5%)	4 (11.1%)			15 (10.2%)	15 (10.2%)			13 (17.3%)	1 (6.7%)	
Often		2 (1.4%)		2 (1.6%)	0 (0%)			1 (2.6%)	1 (1.7%)			2 (3.3%)	0 (0%)			2 (1.4%)	2 (1.4%)			2 (2.7%)	0 (0%)	
Very Often		1 (0.7%)		0 (0%)	1 (4.8%)			1 (2.6%)	0 (0%)			0 (0%)	1 (2.8%)			1 (0.7%)	1 (0.7%)			0 (0%)	1 (6.7%)	

* statistically significant p-value < 0.05 noted

Bivariate assocations were determined using Pearson's Chi-Square Test, Fisher's Exact Test, or Likelihood Ratio Test.

NA: p-value not computed given that variable was used to create the analytical outcome

-- analysis did not compute due to low cell counts.

Table 2: Multivariate Adjusted Analysis between Living in a Texas-Mexico Border, Drug Use, and Sexual Behaviors among sexual minority men in Texas

	Living in a Border County			Increased Use of Alcohol Since Shelter-in-Place			Increased Use of Any Illicit Drug Since Shelter-in-Place			Continued/Started Hooking-Up via Apps Since Shelter-in-Place			Decreased Condom Use Since Shelter-in-Place		
	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p
Sociodemographic Characteristics															
Age (years)	400		0.574	234		0.060	233		0.033	397		0.000 *	230		0.510
		0.99 (0.96, 1.02)			0.98 (0.96, 1)			0.97 (0.95, 1)			0.97 (0.95, 0.98)			0.99 (0.96, 1.02)	
Age Category	400		0.291	234		0.273	233		0.010 *	397		0.001 *	230		0.352
18-24		ref			ref			ref			ref			ref	
25-34		1.04 (0.2, 5.43)			2.21 (0.54, 9.13)			6.47 (1.46, 28.75)	*		6.3 (2.23, 17.74)	*		4.54 (0.81, 25.54)	
35-44		3.04 (0.9, 10.23)			1.59 (0.71, 3.53)			1.58 (0.63, 3.95)			2.69 (1.44, 5.04)	*		1 (0.33, 3.02)	
45-54		2.07 (0.59, 7.3)			2.51 (1.08, 5.87)	*		2.99 (1.23, 7.29)	*		2.61 (1.38, 4.94)	*		0.77 (0.22, 2.62)	
55+		1.58 (0.38, 6.59)			1.74 (0.78, 3.9)			0.54 (0.18, 1.65)			1.03 (0.52, 2.04)			1.43 (0.49, 4.2)	
Race and Ethnicity	400		0.000 *	234		0.117	233		0.103 *	397		0.186	230		0.023 *
White only		ref			ref			ref			ref			ref	
Latinx/Hispanic		0.35 (0.09, 1.44)	*		0.4 (0.14, 1.2)			0.38 (0.15, 0.98)	*		0.53 (0.27, 1.05)			3.45 (0.75, 15.82)	
other POC		10.43 (3.1, 35.14)			0.3 (0.1, 0.94)	*		0.37 (0.14, 1.03)			0.67 (0.32, 1.4)			0.63 (0.11, 3.71)	
Education Level	400		0.069	234		0.750	233		0.530	397		0.621	230		0.158
HS diploma/equivalent or less		ref	*		ref			ref	*		ref			ref	
Some College or Bachelor's Degree		5.74 (1.26, 26.24)			0.57 (0.13, 2.52)			1.01 (0.17, 5.92)			0.64 (0.21, 1.94)			8.83 (0.92, 84.79)	
Masters or Doctorate Degree		1.88 (0.8, 4.42)			0.9 (0.5, 1.63)			1.45 (0.74, 2.84)			0.83 (0.52, 1.33)			1.48 (0.64, 3.41)	
Citizenship/Immigration Status	400		0.146	234		0.842	233		0.957	397		0.434	230		0.558
U.S. citizen, birth		ref			ref			ref			ref			ref	
Naturalized U.S. citizen/Permanent Resident/Visa Holder		0.07 (0, 1.2)			0.5 (0.05, 5.43)			#VALUE!			4.45 (0.46, 42.94)			0.25 (0.02, 3.22)	
Other		0.04 (0, 1)			0.55 (0.04, 7.62)			#VALUE!			4.2 (0.37, 47.53)			0.38 (0.02, 7.03)	
Sexual Orientation (based on dominant groups)	400		0.734	234		0.450	233		0.929	397		0.486	230		0.012 *
lesbian/gay/same-gender loving		ref			ref			ref			ref			ref	
bisexual/pansexual/heteroflexible		0.51 (0.09, 2.91)			0.39 (0.07, 2.07)			0.74 (0.15, 3.53)			2.24 (0.57, 8.81)			0.05 (0.01, 0.37)	*
asexual/queer/heterosexual		0.46 (0.06, 3.58)			0.58 (0.08, 4.52)			0.77 (0.11, 5.24)			1.88 (0.4, 8.83)			0.04 (0, 0.54)	*
Living in the border county				234		0.382	233		0.832	397		0.274	230		0.283
No					ref			ref			ref			ref	
Yes					0.65 (0.24, 1.72)			0.89 (0.32, 2.52)			0.66 (0.31, 1.39)			2.35 (0.49, 11.13)	
Health Related Measures															
Health Insurance Coverage	400		0.979	234		0.182	233		0.858	397		0.392	230		0.457
No		ref			ref			ref			ref			ref	
Yes		1.01 (0.37, 2.75)			0.55 (0.22, 1.33)			1.09 (0.43, 2.78)			1.35 (0.68, 2.68)			0.58 (0.14, 2.42)	
HIV Positive	400		0.709	234		0.307	233		0.768	397		0.596	230		0.281
No		ref			ref			ref			ref			ref	
Yes		1.22 (0.43, 3.5)			1.5 (0.69, 3.24)			0.88 (0.37, 2.11)			0.85 (0.47, 1.54)			0.59 (0.22, 1.55)	
Alcohol and Drug Use Since COVID-19															
Increase in Alcohol and Drug Use During Shelter-in-Place															
alcohol	234		0.336				232		0.592	232		0.674	138		0.449
No		ref						ref			ref			ref	
Yes		1.66 (0.59, 4.69)						0.84 (0.45, 1.57)			0.88 (0.5, 1.58)			1.5 (0.53, 4.23)	
methamphetamine	228		0.999	227		0.815	228		0.999	226		0.999	135		0.999
No		ref			ref			ref			ref			ref	
Yes		#VALUE!			0.78 (0.1, 6.03)			#VALUE!			#VALUE!			#VALUE!	
cocaine/crack cocaine	226		0.999	225		0.806	226		0.999	224		0.363	134		0.999
No		ref			ref			ref			ref			ref	
Yes		#VALUE!			0.74 (0.07, 8.3)			#VALUE!			0.34 (0.03, 3.52)			#VALUE!	
cannabis	229		0.437	228		0.948	229		0.994	227		0.179	136		0.651
No		ref			ref			ref			ref			ref	
Yes		1.59 (0.49, 5.11)			0.98 (0.51, 1.88)			#VALUE!			0.64 (0.33, 1.23)			0.77 (0.24, 2.45)	
synthetic/party drugs	229		0.975	228		0.846	229		0.999	227		0.130	136		0.999
No		ref			ref			ref			ref			ref	
Yes		1.04 (0.08, 13.46)			0.84 (0.14, 5.16)			#VALUE!			0.18 (0.02, 1.66)			#VALUE!	
prescription opioids	228		0.689	227		0.754	228		0.159	226		0.420	135		0.066
No		ref			ref			ref			ref			ref	
Yes		1.68 (0.13, 21.22)			0.78 (0.17, 3.63)			0.33 (0.07, 1.54)			1.99 (0.37, 10.65)			0.1 (0.01, 1.16)	

	Living in a Border County			Increased Use of Alcohol Since Shelter-in-Place			Increased Use of Any Illicit Drug Since Shelter-in-Place			Continued/Started Hooking-Up via Apps Since Shelter-in-Place			Decreased Condom Use Since Shelter-in-Place		
	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p
heroin	230		–	229		–	230		–	228		–	136		–
No		ref			ref			ref			ref			ref	
Yes		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
hallucinogens	229		0.999	228		0.999	229		0.999	227		0.484	135		0.118
No		ref			ref			ref			ref			ref	
Yes		#VALUE!			#VALUE!			#VALUE!			0.4 (0.03, 5.21)			0.06 (0, 2.08)	
other drug(s)	230		0.702	229		0.204	230		0.062	228		0.696	138		0.999
No		ref			ref			ref			ref			ref	
Yes		0.63 (0.06, 6.81)			0.23 (0.03, 2.21)			0.18 (0.03, 1.09)			1.42 (0.24, 8.34)			#VALUE!	
Since the beginning of the COVID-19, it has been helpful to drink alcohol, smoke pot, or use other	274		0.403	210		0.017 *	208		0.018 *	272		0.370	164		0.091
Unhelpful		ref			ref			ref			ref			ref	
Helpful		1.49 (0.59, 3.79)			0.41 (0.19, 0.85)			0.32 (0.12, 0.82)			0.78 (0.45, 1.35)			2.21 (0.88, 5.54)	
COVID-19 pandemic has caused me to drink alcohol more than I normally would	398		0.133	234		0.000 *	233		0.120	395		0.671	230		0.635
Disagree		ref			ref			ref			ref			ref	
Agree		1.89 (0.82, 4.36)			0.02 (0.01, 0.04)			0.61 (0.32, 1.14)			0.91 (0.57, 1.44)			1.21 (0.55, 2.7)	
COVID-19 pandemic has caused me to use recreational drugs more than I normally would	386		0.513	227		0.759	226		0.000 *	383		0.566	223		0.748
Disagree		ref			ref			ref			ref			ref	
Agree		1.43 (0.49, 4.22)			1.12 (0.56, 2.24)			0.04 (0.02, 0.11)			0.83 (0.44, 1.56)			1.21 (0.38, 3.79)	
Sexual Behaviors															
Current relationship status	399		0.113	233		0.007 *	232		0.514	396		0.000 *	230		0.015 *
married		ref			ref			ref			ref			ref	
relationship and we live together		0.67 (0.2, 2.18)			2.65 (1.28, 5.47)	*		1.3 (0.57, 2.94)			0.27 (0.15, 0.5)	*		1.38 (0.44, 4.29)	
relationship and we do not live together		3 (1.16, 7.8)	*		2.83 (1.25, 6.43)	*		2.1 (0.91, 4.85)	*		0.11 (0.05, 0.24)	*		1.9 (0.59, 6.12)	
currently dating		2.08 (0.43, 9.99)			1.18 (0.37, 3.7)			1.6 (0.47, 5.51)			0.27 (0.09, 0.8)	*		6.29 (1.51, 26.24)	*
not currently in a relationship		0.87 (0.17, 4.38)			14.68 (1.58, 136.46)	*		1.69 (0.33, 8.65)			1.31 (0.39, 4.44)			10.53 (1.95, 56.96)	*
Relationship type	202		0.525	124		0.146	125		0.195	201		0.000 *	159		0.544
monogamous		ref			ref			ref			ref			ref	
open, but only have sex with others together		#VALUE!			0.64 (0.05, 8.32)			0.95 (0.08, 11.43)			0.17 (0.03, 1.08)			1.05 (0.08, 14.25)	
open, have sex with others separately and together		#VALUE!			0.41 (0.03, 6.3)			1.6 (0.1, 24.88)			1.02 (0.14, 7.57)			2.51 (0.17, 37.67)	
open, but only have sex with others separately		#VALUE!			0.33 (0.02, 4.91)			3.25 (0.23, 46.49)			1.89 (0.26, 13.85)			0.92 (0.06, 14.92)	
polyamorous		#VALUE!			3.71 (0.19, 73.11)			4.78 (0.3, 76.11)			4.81 (0.63, 36.92)			0.76 (0.05, 12.63)	
Last sexual intercourse	396		0.201	233		0.091	232		0.190	393		0.003 *	230		0.949
During the past 30 days		ref			ref			ref			ref			ref	
More than 30 days, but less than 3 months ago		0.53 (0.18, 1.54)			2.73 (1.15, 6.49)	*		1.19 (0.46, 3.07)			4.06 (1.89, 8.69)	*		1.3 (0.2, 8.56)	
During the past 3 months, but less than 6 months ago		1.32 (0.36, 4.82)			3.43 (1.22, 9.67)	*		0.34 (0.09, 1.23)			4.86 (1.96, 12.03)	*		1.92 (0.22, 16.59)	
6 months to 1 year ago		0.28 (0.05, 1.64)			1.38 (0.42, 4.59)			0.9 (0.24, 3.36)			4.9 (1.78, 13.48)	*		0.82 (0.05, 13.05)	
More than a year ago		0.31 (0.07, 1.34)			1.98 (0.67, 5.91)			0.57 (0.16, 2.06)			4.89 (1.89, 12.64)	*		#VALUE!	
Ever attended a sex party where drugs were used	400		0.325	234		0.768	233		0.868	397		0.703	230		0.966
Never		ref			ref			ref			ref			ref	
Yes, but more than a year ago		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, within the past year		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, within the past 6 months		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, within the past 3 months		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, within the past month		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, within the past two weeks		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Yes, less than two weeks ago		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	

	Living in a Border County			Increased Use of Alcohol Since Shelter-in-Place			Increased Use of Any Illicit Drug Since Shelter-in-Place			Continued/Started Hooking-Up via Apps Since Shelter-in-Place			Decreased Condom Use Since Shelter-in-Place		
	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p
Ever engaged in sex or sexual activity for money or worked in the sex industry	398		0.689	233		0.757	232		0.046 *	395		0.041 *	228		0.216
No		ref			ref			ref			ref			ref	
Yes		1.23 (0.45, 3.33)			1.14 (0.5, 2.62)			0.43 (0.19, 0.99)			0.51 (0.27, 0.97)			0.52 (0.18, 1.47)	
Condoms use frequency before March 1, 2020	343		0.488	214		0.521	213		0.214	341		0.051			
Never		ref			ref			ref			ref				
A little bit		0.54 (0.16, 1.77)			1.71 (0.64, 4.55)			1.22 (0.43, 3.49)			0.79 (0.37, 1.66)				
Sometimes		0.71 (0.12, 4.06)			1.44 (0.43, 4.86)			1.61 (0.44, 5.9)			2.09 (0.81, 5.35)				
Often		0.3 (0.06, 1.56)			1.08 (0.34, 3.47)			0.45 (0.11, 1.76)			1.09 (0.44, 2.68)				
Almost always		0.13 (0.01, 1.62)			0.53 (0.12, 2.36)			0.14 (0.01, 1.5)			1.65 (0.56, 4.87)				
Always		0.35 (0.08, 1.48)			1.13 (0.36, 3.57)			0.87 (0.24, 3.11)			1.95 (0.79, 4.83)				
Condoms use frequency since March 1, 2020	231		0.428	138		0.478	138		0.872	229		0.015 *			
Never		ref			ref			ref			ref				
A little bit		0.75 (0.18, 3.19)			1.96 (0.57, 6.7)			0.93 (0.25, 3.46)			0.61 (0.26, 1.44)				
Sometimes		6.22 (0.68, 57.02)			#VALUE!			1.19 (0.15, 9.51)			18.54 (2.05, 167.66)	*			
Often		#VALUE!			0.64 (0.05, 8.64)			0.16 (0.01, 3.31)			0.93 (0.17, 5.15)				
Almost always		0.31 (0, 1427.45)			0.16 (0.01, 3.21)			#VALUE!			0.63 (0.08, 4.94)				
Always		1.56 (0.19, 12.52)			1 (0.18, 5.47)			0.64 (0.1, 4.23)			1.92 (0.51, 7.23)				
Frequency of sexual activity by partner type since COVID-19 shelter-in-place guidelines with:															
a relationship partner they live with	394		0.887	230		0.328	229		0.863	391		0.000 *	228		0.171
Never		ref			ref			ref			ref			ref	
Daily		0.71 (0.12, 4.38)			0.37 (0.11, 1.33)			0.6 (0.17, 2.04)			4.09 (1.25, 13.43)	*		1.53 (0.3, 7.85)	
Almost daily		0.4 (0.02, 10.35)			0.69 (0.1, 4.77)			1.3 (0.19, 8.96)			1.05 (0.14, 8)			0.33 (0.02, 6.56)	
Weekly		1.01 (0.05, 21.46)			0.41 (0.06, 2.62)			0.72 (0.11, 4.92)			0.23 (0.02, 2.52)			4.93 (0.62, 39.6)	
A few days out of the month		0.47 (0.05, 4.32)			0.65 (0.15, 2.87)			0.64 (0.14, 2.92)			0.65 (0.16, 2.73)			0.49 (0.07, 3.62)	
Once		1.23 (0.16, 9.38)			0.83 (0.19, 3.59)			0.87 (0.21, 3.59)			0.89 (0.22, 3.58)			1.37 (0.23, 8.26)	
someone they live with that is not a relationship	389		0.863	227		0.725	226		0.640	386		0.941	225		0.013 *
Never		ref			ref			ref			ref			ref	
Daily		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Almost daily		1.55 (0.21, 11.55)			0.46 (0.11, 1.94)			1.01 (0.23, 4.49)			0.54 (0.14, 2.15)			4.78 (0.26, 87.68)	
Weekly		#VALUE!			#VALUE!			#VALUE!			0.5 (0.02, 11.62)			#VALUE!	
A few days out of the month		5.17 (0.17, 160.09)			0.2 (0.02, 2.62)			6.49 (0.38, 111.18)			#VALUE!			91.04 (1.94, 4276.24)	*
Once		2.94 (0.19, 45.82)			0.25 (0.02, 3.01)			0.55 (0.04, 8.74)			0.61 (0.09, 4.18)			42.1 (1.56, 1139.53)	*
a relationship partner they do not live with	391		0.730	229		1.000	228		1.000	388		0.517	226		0.527
Never		ref			ref			ref			ref			ref	
Daily		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Almost daily		0.17 (0.02, 1.94)			#VALUE!			#VALUE!			0.13 (0.01, 1.34)			#VALUE!	
Weekly		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
A few days out of the month		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Once		#VALUE!			#VALUE!			#VALUE!			0.3 (0.01, 13.87)			#VALUE!	
a regular sex partner they do not live with	392		0.794	230		0.344	229		0.743	389		0.005 *	226		0.991
Never		ref			ref			ref			ref			ref	
Daily		1.28 (0.3, 5.35)			0.46 (0.13, 1.62)			0.48 (0.14, 1.64)			#VALUE!			1.58 (0.31, 8.12)	
Almost daily		#VALUE!			#VALUE!			#VALUE!			0.41 (0.16, 1.07)			#VALUE!	
Weekly		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
A few days out of the month		#VALUE!			0.37 (0.05, 2.82)			0.24 (0.02, 2.88)			0.93 (0.18, 4.98)			1.21 (0.09, 17.19)	
Once		0.22 (0.02, 3.04)			1.98 (0.32, 12.34)			0.91 (0.17, 4.9)			1.99 (0.57, 6.98)			1.13 (0.16, 7.97)	
someone they know, but do not live with	388		0.680	230		0.571	228		0.448	385		0.000 *	220		0.591
Never		ref			ref			ref			ref			ref	
Daily		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Almost daily		1.39 (0.36, 5.37)			#VALUE!			#VALUE!			0.1 (0.03, 0.31)	*		5.03 (0.54, 46.6)	
Weekly		#VALUE!			0.7 (0.18, 2.69)			0.79 (0.2, 3.13)			#VALUE!			#VALUE!	
A few days out of the month		4.78 (0.11, 202.1)			0.19 (0.01, 3.12)			0.67 (0.04, 11.28)			0.24 (0.02, 3.47)			15.91 (0.52, 483.92)	
Once		0.3 (0.02, 4.41)			0.39 (0.05, 2.73)			2.59 (0.37, 17.95)			0.61 (0.12, 3.22)			4.12 (0.27, 62.99)	

	Living in a Border County			Increased Use of Alcohol Since Shelter-in-Place			Increased Use of Any Illicit Drug Since Shelter-in-Place			Continued/Started Hooking-Up via Apps Since Shelter-in-Place			Decreased Condom Use Since Shelter-in-Place		
	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p	N	aOR (95% CI)	p
a person they just met not using a hook-up app	389		0.414	230		0.979	229		0.775	386		0.181	224		0.907
Never		ref			ref			ref			ref			ref	
Daily		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Almost daily		#VALUE!			#VALUE!			#VALUE!			0.17 (0.04, 0.68)	*		2.58 (0.28, 24.13)	
Weekly		#VALUE!			0.68 (0.12, 3.93)			#VALUE!			#VALUE!			#VALUE!	
A few days out of the month		#VALUE!			#VALUE!			#VALUE!			#VALUE!			6.16 (0.14, 269.92)	
Once		#VALUE!			#VALUE!			0.42 (0.08, 2.11)			#VALUE!			#VALUE!	
a person they just met using a hook-up app	388		0.431	226		0.619	225		0.585	NA		NA	224		0.631
Never		ref			ref			ref			ref			ref	
Daily		#VALUE!			#VALUE!			#VALUE!			#VALUE!			#VALUE!	
Almost daily		3.67 (0.91, 14.79)			0.75 (0.26, 2.15)			#VALUE!			#VALUE!			2.19 (0.57, 8.38)	
Weekly		#VALUE!			#VALUE!			0.63 (0.22, 1.78)			#VALUE!			#VALUE!	
A few days out of the month		7.11 (0.29, 174.4)			0.13 (0.01, 1.53)			2.55 (0.31, 21.24)			#VALUE!			4.3 (0.5, 36.63)	
Once		1.3 (0.01, 118.15)			#VALUE!			0.64 (0.08, 4.92)			#VALUE!			0.94 (0.08, 11.32)	
Hook-Up and Dating Apps															
Use of hookup or dating apps before March 1, 2020	398		0.091	233		0.315	232		0.060				229		0.112
No		ref			ref			ref						ref	
Yes		1.94 (0.9, 4.2)			0.75 (0.42, 1.32)			0.53 (0.27, 1.03)						0.52 (0.23, 1.17)	
Frequency of meeting up with people from hookup or dating apps before March 1, 2020	231		0.549	148		0.886	147		0.984				127		0.834
Never		ref			ref			ref						ref	
Rarely		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Sometimes		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Often		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Very Often		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Use of hookup or dating apps since March 1, 2020	398		0.254	233		0.673	232		0.039	*			229		0.829
No		ref			ref			ref						ref	
Yes		1.58 (0.72, 3.46)			0.88 (0.5, 1.57)			0.52 (0.28, 0.97)						1.09 (0.49, 2.44)	
Frequency of meeting up with people from hookup or dating apps since March 1, 2020	142		0.974	92		0.226	91		0.850				87		0.660
Never		ref			ref			ref						ref	
Rarely		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Sometimes		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Often		#VALUE!			#VALUE!			#VALUE!						#VALUE!	
Very Often		#VALUE!			#VALUE!			#VALUE!						#VALUE!	

* statistically significant p-value < 0.05 noted

Adjusted Odds Ratio and 95% Confidence Interval (aOR; 95% CI) are adjusted for age, race and ethnicity, education level, citizenship/immigration status, sexual orientation, and HIV positive status using logistic regression.

ref: referent category in logistic regression

#VALUE!: aOR (95% CI) were not computed given that variable was used to create the analytical outcome

-- analysis did not compute due to low cell counts.

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VITA

I am Nqobile Nzama, a Master of Public Health candidate at The University of Texas at El Paso. I obtained a Bachelor's of Social Sciences in April 2019 at the University of KwaZulu-Natal, South Africa, where I majored in Anthropology and Geography. In 2017, I was awarded a certificate of merit for Introduction to Gender Studies.

I worked as a graduate research assistant for the Por Mi Familia Program at The University of Texas at El Paso from October 2019 until December 2021. The job responsibilities included conducting literature reviews, social media content design and management, facilitating focus groups, transcribing, and data entry. Before moving to the U.S., I worked as a program coordinator at Imbeleko Dr. Seni Myeni Foundation. I assisted students with scholarship applications and other college or university preparation activities. I still maintain a good relationship with Imbeleko Foundation. Furthermore, I am currently one of the peer mentors from UTEP who offer their services to Imbeleko's high school learners and first-year students through a Global Health Alliance Partnership.

I have contributed to the following publications: (1) Mangadu, T. et al., (2020) Strategic partnerships to address intersecting mental health, substance use disorder, and HIV/AIDS disparities shaping violence in underserved US-MX border communities [Conference presentation]. American Public Health Association, virtual, and (2) Mangadu, T., et al., (2022) A Model to address substance use disorder in Pregnant/Postpartum Women [Roundtable conference session]. The Society of Public Health Education (SOPHE) 2022 Annual Conference, virtual.

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