Using Alcohol to Cope with the COVID-19 Pandemic:

Differentials According to Sexual and Gender Identities

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Pandemic related stressors have taken a toll on people's social and emotional health. A recent poll conducted by Gallup indicates that in mid-April 2020, U.S. life satisfaction fell to a 12-year low alongside significant increases in daily stress (up 14%) and worry (up 21%) compared to 2019 (Witters & Harter, 2020). A nationally representative survey of U.S. adults conducted in the summer of 2020 showed increases in anxiety and depressive symptoms and suicidality compared to pre-pandemic levels (Czeisler et al., 2021). One way to manage these elevated stressors is through alcohol. Anxiety, depression, social isolation, and COVID-19-specific stress, worries, and fears have been shown to be associated with increased drinking (Biddle et al., 2022; Buckner et al., 2021; Capasso et al., 2021; de Goeij et al., 2015; Devoto et al., 2022; Lechner et al., 2021; Lee et al., 2020; Stewart, 2021; Tsai et al., 2021), and numerous studies have reported a significant increase in alcohol consumption since the pandemic (Alpers et al., 2021; Avery et al., 2020; Biddle et al., 2022; Calina et al., 2021; Capasso et al., 2021; Czeisler et al., 2021; Graupensperger et al., 2021; Lechner et al., 2021; Pollard et al., 2020; Stewart, 2021; Zipursky et al., 2021).

Alcohol use had already been on the rise prior to COVID-19. In 2019, the average number of drinks consumed by Americans in the past week was 4.0, compared to 2.8 in 1996, a 43% increase (Gallup, 2022). Alcohol overuse is the third leading preventable cause of death in the United States (National Institute of Alcohol Abuse and Alcoholism, 2017; White et al., 2020). The use of alcohol increases the risk of cancer, liver disease, dementia, depression, and suicide and the Global Burden of Disease suggests that no amount of alcohol is healthy (Boden & Fergusson, 2011; Connor, 2017; Ridley et al., 2013; Tapper & Parikh, 2018). Over a third (36%) of Americans agreed that drinking has "ever been a cause of trouble in the family" (Gallup, 2022). Along with suicide and drug overdoses, alcohol-related deaths are responsible for the

notable 2015 reversion in U.S. life expectancy. These "deaths of despair" are expected to increase further as a result of the pandemic (Acciai & Firebaugh, 2017; Case & Deaton, 2015; Petterson et al., 2020).

Marginalized individuals, specifically those identifying as sexual and gender minorities, who have faced high levels of COVID-19 stress (Akré et al., 2021; Fish et al., 2021; Manning & Kamp Dush, 2022) have been excluded from most studies of alcohol use during the pandemic. This is an important oversight because prior to the pandemic LGBTQ+ people had higher levels of alcohol use and misuse than cisgender heterosexuals (Hughes et al., 2020; Lewis et al., 2021; McCabe et al., 2010; Schuler et al., 2020; Zeeman et al., 2022) and higher levels of psychological distress, depression, and anxiety (Cochran et al., 2003; Hatzenbuehler, 2009; Hatzenbuehler et al., 2010). These results are consistent with minority stress theory (Meyer 1995; 2003). Minority stress theory is often used to assess the well-being of sexual minority people, positing that those with stigmatized identities face unique, stigma-related stressors that others without sexual minority identities do not. Given the additive stress associated with a sexual minority identity, as well as the increased stress during the COVID-19 pandemic, we expect that individuals who identify as LGBTQ+ will experience higher levels of alcohol use and more often rely on alcohol to cope with the pandemic (Lehavot & Simoni, 2011; Mongelli et al., 2019).

A handful of studies conducted since the onset of the pandemic show significant variation in alcohol consumption and use of alcohol to cope according to sexual and gender identities. Based on a non-probability survey of 3,245 adults in five major metropolitan areas conducted between May and July of 2020, including 489 sexual minority individuals, Akré et al. (2021) found cisgender gay men and lesbian women, bisexual people, and cisgender men who have sex

with men/women who have sex with women (MSM/WSW) were more likely to report "more than usual" drinking since the pandemic (but not transgender people), and cisgender gay men and lesbian women, and cisgender MSM/WSW, were more likely to report problem drinking than cisgender heterosexual people. Other studies have found significant variation in alcohol use by sexual and gender identity. Based on a non-probability sample of 2,996 adults, with 541 sexual minority individuals, conducted in April and May of 2020, Fish et al. (2021) reported bisexual men were more likely to have increased their drinking since the pandemic compared to gay and heterosexual men, and men with some other sexual identity. In contrast, heterosexual and lesbian women increased their alcohol use, but bisexual women and women with some other identity did not (these differences were explained by respondent's sociodemographic characteristics however).

Bochicchio et al.'s (2021) interviews with 16 sexual and gender minority women in Chili (lesbian, bisexual, queer) and Cerezo et al.'s (2021) focus groups with 28 sexual and gender minority college women (bisexual, queer, lesbian, pansexual, non-binary, woman/nonbinary) suggest that women used alcohol to cope with social isolation and boredom related to the pandemic. Poteat et al. (2021), based on a sample of 5,776 LGBTQ+ youth ages 13 to 17 from the LGBTQ National Teen Survey, found several differences in alcohol use and heavy episodic drinking by sexual and gender identity. In a survey of 509 sexual minority college students by Salerno et al. (2021), 32% had increased their alcohol use since the start of COVID-19. Among 502 LGBTQ+ individuals from a nationally-representative survey of Canadians, 24.5% had increased their alcohol consumption. Increased alcohol use was also associated with twice the odds of poor coping compared to no increase, controlling for sociodemographic variables (age, race/ethnicity, income, and pre-existing mental health conditions; Goodyear et al., 2021). In

another study of 320 Canadian drinkers, Wardell et al., 2020 found that, regardless of sexual or gender identity, drinking to cope, as opposed to other motives, was associated with greater alcohol consumption during COVID-19.

While this body of work lays the groundwork and is suggestive of differential impacts of the pandemic on LGBTQ+ people's alcohol consumption, this research is for the most part based on small and/or non-representative samples, excludes minority stress measures, does not include the full array of sexual and gender identities, has limited measures of alcohol consumption, does not specifically examine the use of alcohol to cope with the pandemic, and findings regarding differences between sexual and identities have been quite mixed. Although this work took place during the pandemic, most researchers did not assess the effect of specific pandemic-based stressors on alcohol use. Specifically, the use of alcohol to cope may be amplified for people who identify as LGBTQ+, who during the pandemic had worse mental health and who were more socially isolated (Barrientos et al. 2021; Drabble & Eliason, 2021; Fish et al., 2021; Kneale & Bécares, 2021; Peterson et al., 2020; Perone et al., 2020). Petruzzella et al. (2020) found that discrimination and internalized homonegativity exacerbated general life stressors which in turn was positively associated with greater fluctuations in alcohol use. Sérráno and Wiswell (2018) reported that LGBTQ+ people who experience discrimination based on sexual orientation were four times more likely to have a substance use disorder than those who had not and Lewis et al. (2021) determined that sexual minority stressors were associated with increased drinking among sexual minority women. LGBTQ+ people who experienced discrimination or harassment have reported greater depressive symptoms and stress than those who did not (Kneale & Becares, 2021).

The current study relies on data that are uniquely positioned to assess health behaviors among LGBTQ+ adults with inclusive measurement of gender and sexual identity, oversamples of LGBTQ+ individuals, indicators of stress and discrimination, and alcohol use (Kamp Dush & Manning, 2022). Utilizing data from The National Couples' Health and Time Study (NCHAT), conducted between September 2020 and April 2021, this study has two goals. First, we examine variation in patterns of alcohol consumption (frequency of use, using alcohol to cope) among people who identify as LGBTQ+ in relation to people who identify as cisgender heterosexual focusing on specific sexual and gender identities. Second, we examine whether differentials according to sexual and gender identity persist once we account for sociodemographic measures including age, race and ethnicity, education, relationship status, and employment status as well as COVID-related measures (stress and life disruption) and minority stress (experiences of aggression).

Data and Methods

Data

We draw on the National Couples' Health and Time Study (NCHAT). These data are a nationally representative sample of 3,642 partnered respondents with oversamples of individuals with sexual minority identities. Respondents' ages ranged from 20-60 years old and was based on respondents who reported being married or living with a cohabiting partner. The respondents were part of the Gallup Panel and data were collected on-line from September 2020 to April 2021. The procedures to collect the data along with informed consent were approved by the Ohio State University Institutional Review Board. Given the oversampling it was important that Gallup generated sample weights based on national estimates, and person-level weights were

applied to all analyses. These data are publicly available for download at the ICPSR (https://www.icpsr.umich.edu/web/DSDR/studies/38417, Kamp Dush & Manning, 2022).

The analytic sample was limited to those with valid responses to using alcohol to cope (n=3,624). We excluded those without valid responses to the other items in the analysis including education, COVID disruption, and employment, for a final sample size of 3,613. Several respondents were also missing information on regularity of alcohol use and therefore that analysis is limited to 3,606.

Measures

Alcohol use was measured in two ways. Respondents were first asked, "Now, thinking back over the last 30 days, about how regularly did you drink alcoholic beverages such as wine, beer, or liquor? Would you say that it was: (1) Once in the last month; (2) 2 to 3 times a month; (3) 1 or 2 days a week; (4) 3 or 4 days a week; (5) 5 or 6 days a week; (6) Once a day; (7) More than once a day?" Respondents who did not drink were coded as 0, indicating that they did not drink in the last month. The use of alcohol to cope was measured with the question, "What are you doing to cope with the coronavirus pandemic?" Respondents who selected "drinking alcohol" were coded as 1, and those who did not select this option were coded as 0.

The question used to identify sexual identity was, "What do you consider yourself to be? Select all that apply," with eleven responses: "heterosexual or straight," "gay or lesbian," "bisexual," "same-gender loving," "queer," "pansexual," "omnisexual," "asexual," "don't know," "questioning," and "something else" with an option to specify. We coded respondents into four mutually exclusive categories: "heterosexual" "gay/lesbian," "bisexual plus pansexual, omnisexual, and queer," and "another/multiple." The question used to identify gender identity was, "Which of the following best describes your gender?" Responses were "man," "woman,"

"trans man," "trans woman," and "do not identify as any of the above." We coded gender into three mutually exclusive categories: "cisgender man," "cisgender woman," and "transgender or another gender identity."

COVID-19 stress was measured by respondents' answers to the question, "How stressed are you about the following?" and summing their responses to four items: "Getting coronavirus," "My spouse or partner getting coronavirus," "My parents, siblings, or other family members getting coronavirus," and "Giving someone the coronavirus." Item responses ranged from 1 (not at all stressed) to 5 (very stressed; alpha = .87). COVID disruption was measured by the following question, "To what extent has your life been affected or disrupted by the coronavirus situation?" with responses ranging on a 4-point scale from "not at all" (1) to "a great deal" (4).

We measure minority stress in terms of experiences with aggressions. Respondents were asked, on a 5-point scale ranging from (1) never to (5) very often, "In your day-to-day life over the past months how often did any of the following things happen to you?" followed by 9 statements: (a) You were treated with less respect than other people, (b) You received poorer service than other people at restaurants or stores, (c) People acted as if they were afraid of you, (d) People acted as if they thought you were dishonest, (e) People acted as if they were better than you, (f) You were called names or insulted, (g) You were threatened or harassed, (h) You were hit, beaten, physically attacked, or assaulted, and (i) You were robbed, or your property was stolen, vandalized, or purposely damaged." The scale is the sum of item responses (alpha = .86). These measures were modeled after measures used by Williams et al. (1997) and the Generations Study Baseline Questionnaire and Measure Sources (Meyer et al. 2016).

The analysis includes the following sociodemographic variables that have been linked to alcohol use: race/ethnicity (non-Hispanic White, nn-Hispanic Black, non-Hispanic Asian,

Hispanic/Latinx, non-Hispanic multi-race, and another); age as a continuous variable; relationships status (married, cohabiting), education level (high school or less, some college, college degree) and employment status (not employed, employed but not working, employed part-time, employed full-time), and month of interview.

We present descriptive findings of using alcohol to cope and frequency of alcohol consumption according to sexual and gender identity. We use logistic regression models to estimate the odds of using alcohol to cope. We estimate four sets of models for each outcome in a stepwise fashion, adding each set of covariates sequentially: (a) sexual and gender identity and month of interview, (b) sociodemographic characteristics of respondents, (c) COVID-19 stress and disruption, and (d) minority stress as measured by aggression. We plan to present similar sets of models for regularity of drinking (and number of drinks). We plan to run this same set of models but limiting our sample to respondents who report having used alcohol in the last 30 days.

Preliminary Findings

Table 1 provides a description of the sample and includes weighted percentages. Over one-quarter of respondents (28%) reported drinking alcohol as a way to cope with the pandemic. Respondents average frequency of drinking was 2.05, which is roughly 2 to 3 times a month. The sexual identity of respondents was predominately exclusively heterosexual (97%) with about 1% each exclusively gay/lesbian, bi+, pan, omni, and queer, and multi or another sexual identity. About 49% of respondents identified as a cisgender man, 51% identified as a cisgender woman, and less than 1% identified as transgender or another sexual identity (results should be interpreted with this in mind). The most prevalent racial and ethnic identity was non-Hispanic White (56%) followed by Hispanic (22%), non-Hispanic Black (7%), non-Hispanic Asian (7%),

another racial or ethnic identity (5%), and non-Hispanic multi-racial (3%). Regarding level of education, 31% of respondents reported having a high school diploma (or GED) or less, 22% had some college, and 47% had a college degree or more education. The mean age of the sample was 43. Most respondents in the sample were married (81%) versus cohabiting (19%). About 65% of respondents were employed full-time, 11% were employed part-time, 3% were employed (but not currently working), and 22% were not employed at the time of the study. Respondents reported an average COVID stress score of 10.5, an average COVID disruption score of 3.0, and a mean aggression score of 13.2.

Table 2 provides information on regularity of drinking in the last 30 days (from not at all [0] to more than once a day [7]) by sexual and gender identity. There was significant variation between groups in how often respondents consumed alcohol. Cisgender gay men drank significantly more often (4.0) than did exclusively heterosexual cisgender men (3.3). Bisexual + pan, omni, and queer cisgender men, and cisgender men with another or multiple identities, drank significantly less often than did exclusively gay cisgender men (3.4 and 3.1, respectively). Among cisgender women, those with exclusively lesbian (3.3) and bisexual + pan, omni, and queer (3.3) identities drank significantly more than those with an exclusively heterosexual (2.8) identity. The frequency in which transgender/another bisexual + pan, omni, and queer respondents drank (3.2) was similar to that of bisexual + pan, omni, and queer cisgender women (3.3), and transgender/another with another or multiple sexual identities drank with a regularity (3.0) between that of exclusively heterosexual cisgender women (2.8) and cisgender men with another/multiple identities (3.1).

Table 3 shows the bivariate relationship between sexual and gender identity and drinking alcohol to cope with the pandemic. Results indicate that a significantly higher percentage of

people who identify as LGBTQ+ reported drinking to cope, compared to cisgender men and women. There was significant variation between specific sexual and gender identities. For example, a higher percentage of bi-sexual+, pan, omni, and queer cisgender men and women reported drinking to cope (42% and 46%, respectively) than men and women who were exclusively gay or lesbian (both 41%). Whereas exclusively heterosexual and another/multiple sexual identity cisgender men had similar levels of drinking to cope (both 31%), a higher percentage (40%) of cisgender women with another or multiple sexual identities drank alcohol to cope than cisgender females who were exclusively heterosexual (25%).

Table 4 presents the preliminary multivariable results. The first model shows that individuals with LGBTQ+ identities more often used alcohol to cope with the pandemic than cisgender heterosexual respondents. Cisgender women had 23% lower odds of using alcohol to cope than did cisgender men. Cisgender men and those with transgender or another identity shared similar odds of using alcohol to cope. The second model included the sociodemographic characteristics of respondents. Net of these factors, respondents with gay, lesbian, or bisexual + pan, omni, and queer identities had higher odds of using alcohol to cope than did heterosexual individuals. The odds of drinking to cope were lower among individuals with Asian identity than those who identified as non-Hispanic White. Respondents with higher education levels and those who were employed full time more often reported using alcohol to cope. The third models include COVID-related stress and disruption. COVID disruption, but not COVID stress, was associated with drinking to cope. People who identify as exclusively gay or lesbian had almost 50% greater odds of using alcohol to cope than those who identify as exclusively heterosexual, and people who identify as bi-, pan, omni, or queer had twice the odds. Cisgender women had 20% lower odds of drinking to cope compared to cisgender men, who had a similar level of

drinking to cope as those who identify as trans or another identity. The final model includes aggressions faced by sexual and gender minorities, which is not associated with drinking to cope and which do not explain the greater odds that gay, lesbian, and bisexual + pan, omni, and queer respondents use alcohol to cope, nor does it explain cisgender men's greater odds of drinking to cope (compared to cisgender women).

Discussion and Next Steps

Research has consistently shown a decline in people's social and emotional well-being since the onset of the pandemic, and a corresponding increase in alcohol consumption. However, few studies have examined alcohol use among the LGBTQ+ population, a group who has faced high levels of COVID-19 stress, and who drink more alcohol than do cisgender heterosexual people. This small body of work shows differential impacts of the pandemic on LGBTQ+ people's alcohol consumption. However, these studies are limited by small and/or non-representative samples, are restricted to certain sexual and gender identities, lack minority stress measures, do not examine the use of alcohol to cope, and findings regarding differences between sexual and identities are mixed. Our results are consistent with minority stress theory in that individuals with sexual minority identities overall drank alcohol more regularly and more often relied on alcohol to cope with the pandemic than did cisgender heterosexual individuals. We found significant variation in regularity of drinking and drinking to cope between people of different sexual and gender identities. Our analyses of coping indicated that these differences do not appear to be explained or related to experience with aggressions. COVID-related disruption, but not COVID-related stress, were associated with higher odds of drinking to cope. It is notable that we were not able to explain the higher odds of drinking to cope among LGBTQ+ people

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compared to cisgender heterosexual individuals, suggesting other factors may explain their greater odds of using alcohol to cope.

While we will provide new insights into coping behaviors during the pandemic, there are a few limitations. First, the data were cross-sectional collected during early period of the pandemic and provides a snapshot of alcohol use. We are not aware of respondents' behaviors prior to the pandemic or moving through the pandemic. We believe that longitudinal data could provide information about changes in alcohol use during later phases of the pandemic. Second, the data collection is restricted to individuals who were living with their spouse or partner and excludes single individuals. Those who are single may experience the pandemic differently as they do not benefit from partner support but also may benefit in terms of avoiding responsibilities associated with a partner/spouse's needs. Third, the measures of alcohol use are limited to self-reports and are subject to potential recall error and only assess drinking in the last 30 days.

We are in the initial stages of analysis. We plan on exploring potential interactions between gender and sexual identities and estimating multivariable models for all our dependent variables, including number of drinks consumed. For sensitively analyses, we also will restrict models to individuals who have drank alcohol in the last month. Finally, we may broaden our scope of indicators to capture minority stress during the pandemic.

Acciai, F., & Firebaugh, G. (2017). Why did life expectancy decline in the United States in

2015? A gender-specific analysis. *Social Science & Medicine, 190*, 174-180.

Akré, E. R., Anderson, A., Stojanovski, K., Chung, K. W., VanKim, N. A., & Chae, D. H.

(2021). Depression, anxiety, and alcohol use among LGBTQ+ people during the COVID-19

pandemic. *American Journal of Public Health, 111*, 1610-1619.

Alpers, S. E., Skogen, J. C., Mæland, S., Pallesen, S., Rabben, Å. K., Lunde, L. H., & Fadnes, L.

T. (2021). Alcohol consumption during a pandemic lockdown period and change in alcohol

consumption related to worries and pandemic measures. *International Journal of*

Environmental Research and Public Health, *18*, 1220.

Avery, A. R., Tsang, S., Seto, E. Y., & Duncan, G. E. (2020). "Stress, Anxiety, and Change in

Alcohol use During the COVID-19 Pandemic: Findings Among Adult Twin Pairs." *Frontiers*

in Psychiatry, 1030.

Barrientos, J., Guzmán-González, M., Urzúa, A., & Ulloa, F. (2021). Psychosocial impact of

COVID-19 pandemic on LGBT people in Chile. *Sexologies, 30*, e35-e41.

Biddle, N., Edwards, B., Gray, M., & Sollis, K. (2022, September 30). *Alcohol consumption*

during the COVID-19 period: May 2020. https://openresearch-

repository.anu.edu.au/bitstream/1885/213196/1/Alcohol_consumption_during_the_COVID-

19_period.pdf

Bochicchio, L. A., Drabble, L. A., Riggle, E. D., Munroe, C., Wootton, A. R., & Hughes, T. L.

(2021). Understanding alcohol and marijuana use among sexual minority women during the

COVID-19 pandemic: a descriptive phenomenological study. *Journal of*

Homosexuality, 68(4), 631-646.

Boden, J. M., & Fergusson, D. M. (2011). Alcohol and depression. *Addiction, 106*, 906-914.

Buckner, J. D., Lewis, E. M., Abarno, C. N., Morris, P. E., Glover, N. I., & Zvolensky, M. J. (2021). Difficulties with emotion regulation and drinking during the COVID-19 pandemic among undergraduates: the serial mediation of COVID-related distress and drinking to cope with the pandemic. *Cognitive Behaviour Therapy*, *50*(4), 261-275.

Calina, D., Hartung, T., Mardare, I., Mitroi, M., Poulas, K., Tsatsakis, A., ... & Docea, A. O. (2021). COVID-19 pandemic and alcohol consumption: Impacts and interconnections. *Toxicology Reports*, *8*, 529-535.

Capasso, A., Jones, A. M., Ali, S. H., Foreman, J., Tozan, Y., & DiClemente, R. J. (2021). Increased alcohol use during the COVID-19 pandemic: The effect of mental health and age in a cross-sectional sample of social media users in the US. *Preventive Medicine*, *145*, 106422.

Case, Anne, and Angus Deaton. (2015). Rising morbidity and mortality in midlife among white non-Hispanic Americans in the 21st century." *Proceedings of the National Academy of Sciences, 112,* 15078-83.

Cerezo, A., Ramirez, A., O'Shaughnessy, T., Sanchez, A., Mattis, S., & Ross, A. (2021). Understanding the power of social media during COVID-19: forming social norms for drinking among sexual minority gender expansive college women. *Journal of Homosexuality, 68*(4), 560-576.

Cochran, S. D., Sullivan, J. G., & Mays, V. M. (2003). Prevalence of mental disorders, psychological distress, and mental health services use among lesbian, gay, and bisexual adults in the United States. *Journal of Consulting and Clinical Psychology, 71*(1), 53.

Connor, J. (2017). Alcohol consumption as a cause of cancer. *Addiction*, *112*(2), 222-228.

Czeisler, M. É., Lane, R. I., Wiley, J. F., Czeisler, C. A., Howard, M. E., & Rajaratnam, S. M. (2021). Follow-up survey of US adult reports of mental health, substance use, and suicidal ideation during the COVID-19 pandemic, September 2020. *JAMA Network Open*, *4*(2), e2037665-e2037665.

De Goeij, M. C., Suhrcke, M., Toffolutti, V., van de Mheen, D., Schoenmakers, T. M., & Kunst, A. E. (2015). How economic crises affect alcohol consumption and alcohol-related health problems: a realist systematic review. *Social Science & Medicine*, *131*, 131-146.

Devoto, A., Himelein-Wachowiak, M., Liu, T., & Curtis, B. (2022). Women's substance use and mental health during the COVID-19 pandemic. *Women's Health Issues*, *32*(3), 235-240.

Drabble, L. A., & Eliason, M. J. (2021). Introduction to special issue: Impacts of the COVID-19 pandemic on LGBTQ+ health and well-being. *Journal of Homosexuality, 68*(4), 545-559.

Fish, J. N., Salerno, J., Williams, N. D., Rinderknecht, R. G., Drotning, K. J., Sayer, L., & Doan, L. (2021). Sexual minority disparities in health and well-being as a consequence of the COVID-19 pandemic differ by sexual identity. *LGBT health, 8*(4), 263-272.

Gallup. (2022, September 28). Alcohol and drinking. https://news.gallup.com/poll/1582/alcohol-drinking.aspx

Goodyear, T., Slemon, A., Richardson, C., Gadermann, A., Salway, T., Dhari, S., ... & Jenkins, E. (2021). Increases in alcohol and cannabis use associated with deteriorating mental health among LGBTQ2+ adults in the context of COVID-19: A repeated cross-sectional study in Canada, 2020–2021. *International Journal of Environmental Research and Public Health, 18*(22), 12155.

Graupensperger, S., Fleming, C. B., Jaffe, A. E., Rhew, I. C., Patrick, M. E., & Lee, C. M. (2021). Changes in young adults' alcohol and marijuana use, norms, and motives from before to during the COVID-19 pandemic. *Journal of Adolescent Health*, *68*(4), 658-665.

Hatzenbuehler, M. L. (2009). How does sexual minority stigma "get under the skin"? A psychological mediation framework. *Psychological Bulletin, 135*(5), 707.

Hatzenbuehler, M. L., McLaughlin, K. A., Keyes, K. M., & Hasin, D. S. (2010). The impact of institutional discrimination on psychiatric disorders in lesbian, gay, and bisexual populations: A prospective study. *American Journal of Public Health, 100*(3), 452-459.

Hughes, T. L., Veldhuis, C. B., Drabble, L. A., & Wilsnack, S. C. (2020). Research on alcohol and other drug (AOD) use among sexual minority women: A global scoping review. *PLoS One, 15*(3), e0229869.

Kamp Dush, C. M., & Manning, W. D. (2022). National Couples' Health and Time Study (NCHAT), United States, 2020-2021. Inter-university Consortium for Political and Social Research [distributor], 2022-07-14. https://doi.org/10.3886/ICPSR38417.v1

Kneale, D., & Becares, L. (2021). The mental health and experiences of discrimination of LGBTQ+ people during the COVID-19 pandemic: Initial findings from the Queerantine study. *BMJ Open.* https://doi.org/10.1136/bmjopen-2021-049405

Lechner, W. V., Sidhu, N. K., Jin, J. T., Kittaneh, A. A., Laurene, K. R., & Kenne, D. R. (2021). Increases in risky drinking during the COVID-19 pandemic assessed via longitudinal cohort design: Associations with racial tensions, financial distress, psychological distress and virus-related fears. *Alcohol and Alcoholism*, *56*(6), 702-707.

Lee, B. P., Dodge, J. L., Leventhal, A., & Terrault, N. A. (2021). Retail alcohol and tobacco sales during COVID-19. *Annals of internal medicine*, *174*(7), 1027-1029.

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Lehavot, K., & Simoni, J. M. (2011). The impact of minority stress on mental health and

    substance use among sexual minority women. *Journal of Consulting and Clinical*

    Psychology, 79(2), 159.

Lewis, R. J., Romano, K. A., Ehlke, S. J., Lau-Barraco, C., Sandoval, C. M., Glenn, D. J., &

    Heron, K. E. (2021). Minority stress and alcohol use in sexual minority women's daily

    lives. *Experimental and Clinical Psychopharmacology, 29*(5), 501.

Manning, W. D., & Kamp Dush, C. M. (2022). COVID-19 stress and sexual

    identities. *Socius*, *8*. https://doi.org/10.1177/23780231221105376

McCabe, S. E., Bostwick, W. B., Hughes, T. L., West, B. T., & Boyd, C. J. (2010). The

    relationship between discrimination and substance use disorders among lesbian, gay, and

    bisexual adults in the United States. *American Journal of Public Health, 100*(10), 1946-1952.

Meyer I.H., Frost, D.M., Hammack, P.L., Lightfoot, M., Russell, S.T., & Wilson, B.D.M. (2016).

    Generations study baseline questionnaire and measure sources 2016.

    http://www.generations-study.com/methods

Meyer, I. H. (1995). Minority stress and mental health in gay men. *Journal of Health and Social*

    Behavior, 36, 38-56.

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual

    populations: Conceptual issues and research evidence. *Psychological Bulletin, 129*(5), 674.

Mongelli, F., Perrone, D., Balducci, J., Sacchetti, A., Ferrari, S., Mattei, G., & Galeazzi, G. M.

    (2019). Minority stress and mental health among LGBT populations: An update on the

    evidence. *Minerva Psichiatrica, 60*(1), 27-50.

National Institute of Alcohol Abuse and Alcoholism (2022, June 4). Alcohol facts and statistics.

    https://www.niaaa.nih.gov/publications/brochures-and-fact-sheets/alcohol-facts-and-statistics

Perone, A. K., Ingersoll-Dayton, B., & Watkins-Dukhie, K. (2020). Social isolation loneliness among LGBT older adults: Lessons learned from a pilot friendly caller program. *Clinical Social Work Journal, 48*(1), 126-139.

Peterson, Z. D., Vaughan, E. L., & Carver, D. N. (2021). Sexual identity and psychological reactions to COVID-19. *Traumatology, 27*(1), 6.

Petruzzella, A., Feinstein, B. A., Davila, J., & Lavner, J. A. (2020). Gay-specific and general stressors predict gay men's psychological functioning over time. *Archives of Sexual Behavior, 49*(5), 1755-1767.

Petterson, S., Westfall, J. M., & Miller, B. F. (2020). Projected deaths of despair during the coronavirus recession. *Well Being Trust,* 8.

Pollard, M. S., Tucker, J. S., & Green, H. D. (2020). Changes in adult alcohol use and consequences during the COVID-19 pandemic in the US. *JAMA network open*, *3*(9), e2022942-e2022942

Poteat, V. P., Fish, J. N., & Watson, R. J. (2021). Gender-sexuality alliances as a moderator of the association between victimization, depressive symptoms, and drinking behavior among LGBTQ+ youth. *Drug and Alcohol Dependence, 229*, 109-140.

Ridley, N. J., Draper, B., & Withall, A. (2013). Alcohol-related dementia: An update of the evidence. *Alzheimer's Research & Therapy,* 5, 1-8.

Salerno, J. P., Shrader, C. H., Algarin, A. B., Lee, J. Y., & Fish, J. N. (2021). Changes in alcohol use since the onset of COVID-19 are associated with psychological distress among sexual and gender minority university students in the US. *Drug and Alcohol Dependence, 221*, 108594.

Schuler, M. S., Prince, D. M., Breslau, J., & Collins, R. L. (2020). Substance use disparities at the intersection of sexual identity and race/ethnicity: Results from the 2015–2018 National Survey on Drug Use and Health. *LGBT Health, 7*(6), 283-291.

Sérráno, B. C., & Wiswell, A. S. (2018). Drug and alcohol abuse and addiction in the LGBT community: Factors impacting rates of use and abuse. In C. Stewart (Ed.), *Lesbian, gay, bisexual, and transgender Americans at risk: Problems and solutions: Adults, Generation X, and Generation Y* (pp. 91–112). Praeger/ABC-CLIO.

Stewart, S. D. (2021). COVID-19, coronavirus-related anxiety, and changes in women's alcohol use. *Journal of Gynecology and Women's Health 21*. DOI: 10.19080/JGWH.2021.21.556057.

Tapper, E. B., & Parikh, N. D. (2018). Mortality Due to Cirrhosis and Liver Cancer in The United States, 1999-2016: Observational Study." *bmj* 362. https://doi.org/10.1136/bmj.k2817

Tsai, J., Elbogen, E. B., Huang, M., North, C. S., & Pietrzak, R. H. (2021). Psychological distress and alcohol use disorder during the COVID-19 era among middle-and low-income US adults. *Journal of Affective Disorders*, *288*, 41-49.

Wardell, J. D., Kempe, T., Rapinda, K. K., Single, A., Bilevicius, E., Frohlich, J. R., ... & Keough, M. T. (2020). Drinking to cope during COVID-19 pandemic: The role of external and internal factors in coping motive pathways to alcohol use, solitary drinking, and alcohol problems. Alcoholism: *Clinical and Experimental Research, 44*(10), 2073-2083.

White, A., Castle, I. P., Chen, C. M., Shirley, M., Roach, D., & Hingson, R. (2015). Converging patterns of alcohol use and related outcomes among females and males in the United States, 2002 To 2012. *Alcoholism: Clinical and Experimental Research, 39*, 1712-26.

Williams D. R., Yu, Y., Jackson, J.S., & Anderson, N.B. 1997. Racial differences in physical and mental health: Socioeconomic status, stress, and discrimination. *Journal of Health Psychology, 2*, 335-351.

Witters, D., & Harter, J. (2021). *In the U.S., life ratings plummet to a 12-year low*. https://news.gallup.com/poll/308276/life-ratings-plummet-year-low.aspx

Zeeman, L., Meads, C., Sherriff, N., & Aranda, K. (2022). A systematic scoping review of alcohol use amongst gender and sexual minorities: LGBT+ Drinkaware. https://www.drinkaware.co.uk/research/research-and-evaluation-reports/alcohol-use-among-gender-and-sexual-minorities

Zipursky, J. S., Stall, N. M., Silverstein, W. K., Huang, Q., Chau, J., Hillmer, M. P., & Redelmeier, D. A. (2021). Alcohol sales and alcohol-related emergencies during the COVID-19 pandemic. *Annals of Internal Medicine*, *174*(7), 1029-1032.

Table 1. Description of the Sample (N = 3,613)	N	Percent or mean
Drinking to cope		
Yes	1,213	28.1
No		71.9
Regularity of drinking (range 0-7)[a]	-	2.0
Sexual identity		
Exclusively heterosexual	2,003	96.6
Exclusively gay/lesbian	727	1.0
Bi + pan, omni, & queer	474	1.2
Multi/another	409	1.3
Gender identity		
Cisgender man	1,763	48.8
Cisgender woman	1,723	50.9
Trans/another	127	0.3
Race/ethnic identity		
Non-Hispanic White	2,135	56.1
Non-Hispanic Black	310	7.4
Non-Hispanic Asian	201	6.7
Hispanic	570	21.5
Non-Hispanic Muti-racial	199	3.4
Another	198	4.9
Education		
High school or less	634	31.3
Some college	702	22.2
College degree	2,277	46.6
Age (mean 20-60)	-	43.1
Relationship status		
Married	2,661	80.8
Cohabiting	952	19.2
Employment status		
Not employed	681	22.2
Employed, not working	108	2.6
Employed part time	366	10.6
Employed full time	2,458	64.6
Covid stress (range 3-20)	-	10.5
Covid disruption (range 1-4)	-	2.9
Aggressions (range 0-41)	-	13.2
Month of interview[b]	-	-
Source: National Couples' Health and Time Use Study		
Note: Unweighted Ns and weighted means.		
[a]N=3,606		
[b]Month of interview is measured as a series of dummy variables for each month.		

Table 2. Regularity of Drinking in Last 30 days by Sexual and Gender Identity (N = 3,606)						
	Cisgender Man		Cisgender Woman		Transgender/Another	
	N	Mean	N	Mean	N	Mean
Exclusively heterosexual	1036	3.28 +	958	2.79 +	NA	NA
Exclusively gay/lesbian	483	4.01 *	235	3.25 *	NA	NA
Bisexual + pan, omni, and queer	117	3.38 +	314	3.27 *	43	3.23
Another/multiple identities	125	3.11 +	212	3.22	71	3.01
Source: National Couples' Health and Time Use Study						
Note: Unweighted Ns and weighted means. NA indicates sample size was <10.						
* indicates significant difference from exclusively heterosexual at the bivariate level						
+ indicates significant difference from exclusively gay/lesbian at the bivariate level						

Table 3. Using Alcohol to Cope by Gender and Sexual Identity (N = 3,613)						
	Cisgender Man		Cisgender Woman		Transgender/Another	
	N	Percent	N	Percent	N	Percent
Exclusively heterosexual						
Yes	304	30.4	247	25.0	NA	NA
No	734	69.6	715	75.0	NA	NA
Exclusively gay/lesbian						
Yes	218	40.7	87	40.7	NA	NA
No	265	59.3	148	59.3	NA	NA
Bisexual + pan, omni, and queer						
Yes	47	41.5	135	45.7	16	36.1
No	70	58.5	179	54.3	27	63.9
Another/multiple sexual identities						
Yes	49	30.5	84	40.0	22	27.2
No	76	69.5	128	60.0	50	72.9
Source: National Couples' Health and Time Use Study						
Note: Unweighted Ns and weighted means. NA indicates sample size was <10.						
* indicates significant difference from exclusively heterosexual at the bivariate level						
+ indicates significant difference from exclusively gay/lesbian at the bivariate level						

Table 4. Log Odds of Using Alcohol to Cope by Sexual and Gender Identity, COVID Stress, Disruption, and Aggressions (N= 3,613)

	Model 1		Model 2		Model 3		Model 4	
Sexual identity (ref. excl. hetero)								
Exclusively gay/lesbian	1.690	***	1.512	**	1.455	*	1.470	*
Bi + pan, omni, & queer	2.219	***	2.127	***	2.003	**	2.011	**
Multi/another	1.555	*	1.446		1.373		1.381	
Gender identity (ref. Cisman)								
Cisgender woman	0.772	*	0.819		0.782	*	0.787	*
Trans/another Identity	0.717		0.742		0.711		0.704	
Race/ethnic identity (ref. NH white)								
Non-Hispanic Black	-		0.787		0.762		0.738	
Non-Hispanic Asian	-		0.570	*	0.544	*	0.538	*
Hispanic	-		0.913		0.889		0.890	
Non-Hispanic Muti-racial	-		0.904		0.845		0.840	
Another	-		0.858		0.851		0.845	
Education (ref. HS or less)								
Some college	-		1.412	*	1.327		1.339	
College degree	-		1.734	***	1.510	**	1.533	**
Age	-		0.997		0.997		0.997	
Married (ref. cohabiting)	-		0.791		0.826		0.838	
Employment Status (ref. not employed)								
Employed, not working	-		0.828		0.780		0.773	
Employed part time	-		1.188		1.208		1.214	
Employed full time	-		1.449	*	1.564	**	1.567	**
Covid stress	-		-		1.014		1.013	
Covid disruption	-		-		1.320	***	1.314	***
Aggressions	-		-		-		1.009	

Source: National Couples' Health and Time Use Study

Note: Month of interview is included in the model, coefficients not reported.

* $p \leq .05$ ** $p \leq .01$ *** $p \leq .001$