The coronavirus pandemic (COVID-19) has altered the way we live in fundamental ways: the way we work, interact with others, perform our daily routines, and engage in behaviors related to our health and well-being. Evidence suggests there has been a substantial rise in alcohol consumption among women and men since the pandemic (Alpers et al., 2021; Biddle, Edwards, Gray, & Solis, 2020; Calina et al., 2021; Lechner et al., 2021; Nielson, 2020; Zipursky, Stall, & Silverstein, 2021). For example, analysis of data from the Rand Corporation American Life Panel (ALP) showed a 14% increase in the of number of days alcohol was consumed in the Spring 2020 compared to one year prior (Pollard, Tucker, & Green, 2020). Studies conducted early in the pandemic based on social media users, college students, and other non-representative samples also reported increases on various measures of alcohol consumption (e.g., Avery, Tsang, Seto, & Duncan, 2020; Capasso et al., 2021; Graupensperger et al., 2021; Ianzito, 2020; Stewart, 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, 2019). Meanwhile, so-called "deaths of despair," deaths due to alcohol, suicide, or drugs, are responsible for increased death rates and the notable 2015 reversion in U.S. life expectancy (Acciai & Firebaugh, 2017; Case & Deaton, 2015). Alcohol-related deaths kill roughly 88,000 Americans each year and are the third leading preventable cause of death (NIAAA, 2017; White, Castle, Hingson, & Powell, 2020). 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, Draper, & Withall, 2013; Tapper & Parikh, 2018). Researchers are anticipating an increase in deaths of despair as a result of the coronavirus pandemic (Petterson, Westfall, & Miller, 2020).

Although women drink less alcohol than do men (Esser et al., 2014; Grant et al., 2015; Wilsnack, Vogeltanz, Wilsnack, & Harris, 2000), numerous studies show a convergence of women's and men's alcohol use in terms of prevalence, amount, and frequency, and alcohol-related problems and harms (Grant et al., 2017; Grucza et al., 2018; Jones, 2015; Slade et al., 2016). This convergence is being driven by increases in alcohol use among women as opposed to declines among men (White et al., 2015). An analysis of U.S. death certificates filed between 1999 and 2017 showed an 85% increase in deaths due to alcohol among women compared to an increase of only 35% for men (White et al., 2020). Women are more susceptible to alcohol-related health conditions than are men, as well as infertility, reproductive problems, and breast cancer (Institute of Alcohol Studies, 2017; Milic et al., 2018; Petri et al., 2004). Women have experienced the same plateau in life expectancy as men partly a result of increases in alcohol-related deaths and liver disease (Murphy, Xu, Kochanek, Curtin, & Arias, 2017; Tapper and Parikh, 2018; Tinker, 2017).

Studies suggest that women have experienced greater increases in alcohol consumption than men since COIVD-19. In an online survey of 546 women age 25 and older conducted in June 2020, 64% reported drinking more since the pandemic, with a three-fold increase in daily drinking, more frequent binge drinking, and drinking earlier in the day (Stewart, 2021). In the Pollard et al. (2020) study mentioned previously, women experienced a 17% increase in the number of days alcohol was consumed, compared to only 11% for men. There was also a 41% increase in number of days of heavy drinking and a 39% increase in alcohol-related problems, with no significant increases for men. Biddle et al. (2020) found that the increase in alcohol consumption was 36% higher among women than men. Subsequent waves of the ALP suggest a

stabilization or decline in alcohol use among men but not among women (Tucker, Rodriguez, Green, & Pollard, 2021).

Researchers at the Centers for Disease Control (2020) foresaw an increase in alcohol consumption with the pandemic. Psychological distress is associated with more frequent use of alcohol, higher volumes of alcohol consumed, and increased problem drinking (de Goeij et al., 2015). Potential stressors include adjusting to remote work, reduced hours, unemployment, lost wages, inability to pay bills, and meet daily needs for food and other essential items, and overall economic uncertainty. Other contributing factors are social isolation, inability to exercise or take part in hobbies, changes in work responsibilities, and increased caretaking responsibilities. People with existing substance use and mental health problems were often cut-off from counselors and support services, resulting in increased drinking (Petterson et al., 2020). A nationally representative survey of U.S. adults conducted in the summer of 2020 showed increases in anxiety and depression symptoms, suicidality, and substance use compared to pre-pandemic levels (Czeisler et al., 2021). A poll conducted by Gallup indicates that in mid-April 2020, U.S. life satisfaction plummeted to a 12-year low alongside significant increases in daily stress (up 14%) and worry (up 21%) compared to 2019 (Witters & Harter, 2020).

It is widely felt that the pandemic is taking an especially heavy toll on women. As sociologist Jessica Calarco famously wrote on Twitter, “Other countries have social safety nets. The U.S. has women.” Helen Petersen wrote, “I don’t think the pandemic has necessarily created new problems so much as exacerbated, amplified, and highlighted old/chronic ones. How much of what you’re seeing is connected to chronic patriarchy, chronic undervaluing of women’s unpaid work in the home, and chronic inattention to cultivating affordable childcare options?” (Peterson, 2020). Already dealing with chronic stress, the pandemic created a crisis for many women. A

crisis is “a situation in which the usual behavior patterns are ineffective and new ones are called for immediately” (National Ag Safety Database, 1997, p. 1). Family crises are turning points that require some change in the way family members think and act to meet a new situation where “things will never be quite the same again” (Hansen & Hill, 1964; McCubbin & McCubbin, 1991; Patterson, 2002; Pitzer, 1998, p. 1). Since COVID-19, women remain primarily responsible for childcare and domestic tasks, but with the addition of new responsibilities—such as managing their children’s on-line education, even among full-time workers (Mooi-Reci & Risman, 2021). Women are also disproportionately employed in high-stress “essential” occupations and service jobs susceptible to lay-offs (Robertson & Gebeloff, 2020; U.S. Department of Labor Statistics, 2019). An on-line survey of 1,847 respondents from 43 countries showed an increase in anxiety and depression since the pandemic, with significantly greater increases among women than men (Seens et al., 2021).

It has been well-established that stress balancing work and family is associated with alcohol consumption among women (Frone et al., 1994; Frone et al., 1993; Grzywacz & Marks, 2000; Haydon, Obst, & Lews, 2016). Studies have found anxiety, depression, and COVID-19-specific stress, worries, and fears to be associated with increased alcohol consumption during the pandemic (Biddle et al., 2020; Buckner et al., 2021; Capasso et al., 2021; Lechner et al., 2021; Tsai, Elbogen, Huang, North, & Pietrzak, 2021). The relationship between stress and drinking may be stronger for women (and mothers) than for men (and fathers), although studies are lacking. A quick scroll through the mainstream news and social media yields a plethora of opinion pieces, jokes, memes, and testimonials about mothers’ use of alcohol to cope. Nevertheless, few studies have sought to examine the association between COVID-19-related stressors and alcohol consumption specifically among women and mothers. An exception is

Biddle et al. (2020), who found that women reporting their main role during the pandemic was "doing housework and looking after children or other persons" consumed more alcohol than did other women. In an on-line survey of 361 parents (including fathers) conducted in May 2020, those reporting stress over their children's remote learning drank 7 more drinks per month than parents who did not (no gender differences were reported; Sonnenschein & Grossman, 2020). Kracht, Katzmarzyk, and Staiano (2021) conducted a Facebook survey of 1,721 mothers with preschoolers in May 2020. They found household chaos (e.g., disorder, noise, crowding) and stress to be significantly associated with poor health behaviors, namely low physical activity and poor sleep (alcohol consumption was not examined).

Research on stress and alcohol use among mothers had been lacking prior to COVID-19. Most studies focus on alcohol consumption during pregnancy and binge drinking among female adolescents and young adults, neglecting women's alcohol consumption later in the lifecourse. Nor have studies adequately examined the complexity of women's lives. Single mothers account for one-quarter of all families with children under age 18 and are often solely responsible for their care (U.S. Census, 2021). They are more socially isolated than are partnered mothers and are in worse psychological and physical health, all factors associated with greater alcohol consumption (Benton, 2021). Moreover, the individualistic and competitive culture of the United States, combined with poor institutional supports for families, puts enormous pressure on mothers. The bar has also been raised as to what constitutes a "good" parent with the emergence of *intensive mothering* (Hayes, 1996). Intensive mothering involves the close supervision of children, high levels of involvement in children's academics and activities, continuous monitoring of children's achievement, and self-sacrifice, and putting others' needs above one's own. This parenting style has become the desired model of raising children, if not standard, and

has been linked to increased alcohol consumption among mothers. In her article, *How Mommy Drinking Culture Has Normalized Alcoholism for Women in America*, Sarah Cottrell (2021) states, "wine has practically become the must-have accessory for modern motherhood," calling the day-to-day demands placed on mothers "dizzying and never-ending." Mothers may drink as a way to cope with the anxiety of "doing it wrong" and use alcohol just to "get by" (Raine, 2001). As Stewart (forthcoming) argues in her book, *On the Rocks: Straight Talk about Women and Drinking*, drinking is not self-indulgent nor selfish. Drinking allows women, especially mothers, to function in the face of overwhelming demands, not unlike the "little yellow pill" prescribed to millions of disenchanted, anxious, and mildly (or profoundly) depressed women in the 1960s. Although seen as a form of self-care, "the 'wine mom' discourse normalizes an inextricable link between alcohol misuse and expectations of (white, middle-class) motherhood" (Newman & Nelson, 2021).

Although women with children drink less than women without children (Balan et al., 2014; Chilcoat & Breslau, 1996; Cho & Crittenden, 2006; Laborde & Mair, 2012), alcohol use appears to be increasing among mothers. A study by McKetta & Keyes (2019), examined the drinking patterns of women who were part of the National Health Interview Study and found that although women with children drank less alcohol, binge drinking and heavy drinking increased among mothers and non-mothers alike, while abstinence declined. Alcohol consumption, binge drinking, and alcohol-related liver disease has risen most among women in midlife, the majority of whom have children (Bobo et al., 2013; Breslow, Castle, Chen, & Graubard, 2017, Britton et al., 2015; Grant et al., 2015; Grucza et al., 2018). Moreover, the same forces that transformed women's roles also transformed those held by mothers. Women with children are increasingly college educated, employed, and have higher earnings than in the past, statuses associated with

higher rates of alcohol consumption (Breslow et al., 2017, Britton et al., 2015; Geiger et al., 2021; Glynn, 2020; Jones, 2021; Kerr et al., 2017).

The aim of this study is to assess changes in mothers' alcohol use since the COVID-19 pandemic in relation to their difficulty managing family care and personal well-being. A second goal is to identify individual and family factors associated with mothers' alcohol consumption. For example, a study of Italian mothers during the lockdown found greater distress among mothers with younger children (Babore et al., 2021). Examining these variables is important because in addition to education, employment, and income, women's alcohol use has been found to vary by their age, race and ethnicity, region, relationship status, and religious involvement (Balan et al., 2014; Kerr, Greenfield, Bond, Ye, & Rehm, 2009; Keyes & Miech, 2013; Li, Wilsnack, Wilsnack, & Kristjanson, 2010; Edlund et al., 2010; Holt et al., 2015).

METHODS

This study is based on an on-line survey of 546 women age 25 and older who reported drinking alcohol at least occasionally. Women under the age of 25 were excluded because they demonstrate a temporary upswing in drinking and binge drinking (Krieger, Young, Anthenien, & Neighbors 2018; Siqueira et al., 2015). Participants were recruited primarily through social media (Facebook, Twitter, etc.), email, and listserves. The survey was fielded between June 3 and June 30, 2020. Participants were directed to a website containing a consent form and a Qualtrics survey which they could access through their smartphones, computer, or other electronic device. Participants were encouraged to share the link to the study with others in their social network. Because difficulties and managing family and personal care would be most relevant to mothers whose children are emotionally and financially dependent (including college students who have returned home), the sample was limited to 367 mothers with any children age

0 to 24 residing full or part time in the household at the time of the study. However, results based on the full sample of mothers with children of any age and/or residence were similar (N = 414).

The primary objective of the study survey was to measure changes in women's alcohol consumption patterns pre- and post-COVID-19. Respondents were first asked about their current level of alcohol consumption. *Since COVID-19 and social distancing measures began in your area, about how often do you have any kind of drink containing alcohol? By a drink, we mean half an ounce of absolute alcohol (e.g. a 12-ounce can or glass of beer or cooler, a 5-ounce glass of wine, or a drink containing 1 shot of liquor)?* Responses ranged from 1 (every day) to 10 (less than a few times a year). *About how many alcoholic drinks would you say you have on a typical day when you drink alcohol?* Responses ranged from 1 (one drink) to 7 (12 or more drinks). Respondents were then asked about their frequency of binge drinking. *About how often would you say you have 4 or more drinks containing any kind of alcohol in within a two-hour period? That would be the equivalent of at least 4 - 12-ounce cans or bottles of beer, 4 – 5-ounce glasses of wine, 4 drinks each containing one shot of liquor or spirits.* Responses ranged from 1 (never) to 9 (every day). Respondents were also asked about their typical pattern of alcohol consumption: *On days you drink, when do you usually have your first drink?* Potential responses included before lunchtime, around lunchtime, mid-afternoon, before dinner, with dinner, and after dinner or evening. Then, *On days you drink, what type of drink do you have most often?* Respondents could select from beer, wine, cocktails or mixed drinks, liquor or spirits (straight), and other. Finally, the women were asked, *on days you drink, do you tend to switch from one kind of drink to another?* Response categories were yes, I tend to switch from drinks with less alcohol to drinks with more, such as from beer to wine; yes, I tend to switch from drinks with

more alcohol to drinks with less, such as from wine to beer; and, no, I tend to drink the same kind of drink all day.

Respondents were then asked about their pre-COVID-19 level of drinking. *Before COVID-19 and social distancing measures began in your area*, *would you say you drank quite a bit less than I do now, somewhat less than I do now, the same amount as I do now, somewhat more than I do now, or quite a bit more than I do now*? Respondents who reported drinking "the same amount" were asked, *if you drank the same amount as now, were there ever periods of time during COVID-19 and social distancing measures began in your area when you drank more or less alcohol than you did?* Potential responses were yes, there were times when I drank more; yes, there were times when I drank less; and, no, I've been drinking about the same amount throughout the pandemic. Respondents who reported a change in their alcohol consumption answered the same series of alcohol consumption questions in relation to *before* COVID-19. Due to potential issues with recall, a parallel analyses based on just post-pandemic drinking was conducted, which is contemporaneous with the other variables in the study. This measure ranges on a 5-point scale from once a week or less (1) to every day (5).

The Difficulty Managing Family and Personal Care Scale, designed by the researcher, provides mothers' perceptions of their difficulty in managing COVID-19-related family and personal care needs. Respondents were asked, *Since the start of the COVID-19 pandemic and social distancing in your area, on a scale from 1 (not at all difficult) to 5 (extremely difficult), how difficult has it been to:* (a) manage or help with children's schoolwork, schedules, and activities, (b) complete tasks for work, school, or care for family members or meet other obligations, (c) find childcare, (d) provide children with educational resources and things to do, (e) cook meals and complete household tasks, (f) get enough sleep, (g) get enough physical

activity or exercise, (h) have "me" time, (i) get along with family members and friends, (j) maintain positive relationships with my child(ren), (k) maintain connections with friends and family outside the household, and (m) maintain a positive relationship with my spouse or partner. The score is the average of these 12 items. Some items, such as finding childcare, do not apply to all women; these respondents reported "not applicable" and their score was calculated based on the remaining items. The scale has a high level of reliability with a Cronbach's alpha of .88. The mothers in the sample exhibited a medium level of difficulty in meeting these needs, with an overall average score of 2.97 (a score of 3.0 indicates "somewhat difficult").

Respondents provided information on their social and economic characteristics. Mothers' ages ranged between 25 and 63. *Age* was recorded in years and is grouped in terms of the following: 25 to 29, 30 to 39, 40 to 49, 50 to 59, and 60 and older and in terms of overall mean age. *Racial and ethnic identity* is coded as White, Black/African American, Hispanic, Asian/Asian Indian, and other or more than one race. Due to small cell sizes, the latter categories were coded as non-White. *Relationship status* was coded as single, cohabiting, and married. Respondents were asked for their total number of children (biological, stepchildren, adopted/foster children) living inside or outside the household. Mothers' *number of children* was coded as one child, two children, and three or more. Mothers' *number of children of each age* were grouped in terms of the following: 0 to 4, 5 to 9, 10 to 14, 15 to 19, and 20 to 24. In multivariate analysis, child's age was coded as whether there were *any* children of that age present. The *children's gender* was coded as all girls, all boys, or a mixture of boys and girls. *Mothers' educational attainment* is a three-category measure: less than a bachelor's degree, bachelor's degree, to graduate or professional degree. Respondents were asked whether and how their *employment situation* has been affected by the pandemic*:* yes, I lost my job or was

furloughed; yes, I work fewer hours; yes, I work more hours; yes, I work from home some or all of the time; and, no, my work life has stayed the same. Respondents reporting having lost their job, having been furloughed, or worked fewer or more hours were combined. Categories of *religious affiliation* included Catholic, Protestant, Jewish, Muslim, other religion, and no affiliation. Respondents recorded the *region* where they live: Northeast, Midwest, South, or West. *Yearly gross household income in 2019* ranged from less than $25,000, $25,000 to $49,999, $50,000 to $74,999, $75,000 to $99,999, $100,000 to $149,000, $150,000 to $199,999, and $200,000 or more. Respondents with household incomes less than $75,000 were combined. The distribution of these variables can be found in Table 1.

RESULTS

Tables 2 and Table 3 provide information on mothers' drinking patterns and Table 4 provides information on the bivariate relationship between mothers' management of family and personal care, personal and family characteristics, and alcohol consumption. Table 5 provides results of the regression of the odds of mothers drinking more since the beginning of the pandemic on these variables. A score test for the proportional odds assumption did not achieve statistical significance, implying that one equation (i.e., a binary logistic regression predicting more drinking since COVID-19 versus the same, or less) is preferred over a three-category ordered or multinomial logit model (DeMaris, 1992). Due to small cell sizes, I reported significance levels of $p < .10$.

Table 2 describes women's perceptions of changes in their alcohol consumption since COVID-19. Results in Panel 1 indicate that mothers' alcohol consumption increased since the beginning of the pandemic. Over two-thirds (69.2%) of mothers reported drinking quite a bit less

(25.3%) or somewhat less (43.9%) before the pandemic than afterward. Only 8.4% of women reported drinking somewhat more or quite a bit more before COVID-19, and 22.3% reported drinking the same amount. Among those who reported drinking the same amount, 30.5% reported there were times since COVID-19 when they drank more, and 8.5% said there were times when they drank less (61.0% of these said they consistently drank the same amount). Panel 3 combines information from these two questions. Compared to pre-COVID-19, 13.6% of women reported ever drinking quite a bit less or somewhat less, 76.0% of women reported ever drinking quite a bit more or somewhat more, and 10.4% of women say they consistently drank the same amount pre- and post-COVID-19. Multivariate analyses are based on the combined measure.

Table 3 provides a more specific look at changes in mothers' drinking. Overall, there was a shift toward drinking more days per week. The most dramatic change was in daily drinking, which showed a five-fold increase, from 2.5% pre-COVID-19 to 14.4% post-COVID-19. The volume of alcohol consumed on a typical day increased as well, especially in the case of drinking more than four drinks (from 7.6% to 12.0%). Mothers' frequency of binge drinking (drinking 4 or more drinks within a two-hour period) showed an interesting pattern with an increase in never (from 38.2% to 44.4%) and an increase in weekly (12.5% and 21.3%). There was also a shift in drinking from later in the day to earlier in the day. For instance, pre-COVID-19, 4.3% of women reported having their first drink by mid-afternoon compared to 16.4% post-COVID-19. The type of alcohol consumed remained relatively consistent, with a slight increase in drinking cocktails, liquor, and beverages other than beer and wine. At both time points, the vast majority of women drank beverages with the same amount of alcohol throughout the day (91.6% and 90.5%) as

opposed to switching from one kind of drink to another. The most common type of alcohol consumed at both time points was wine.

Table 4 describes the bivariate relationship between difficulty with managing family and personal care, mothers' individual and family characteristics, and changes in alcohol consumption since COVID-19. Significant differences across categories are noted. First, women who reported drinking more after the pandemic reported a significantly greater difficulty in managing family and personal care (3.1) than did women who reported drinking the same amount or less (2.7). Mothers who reported drinking more since the pandemic were also significantly younger (38.4 versus 40.9 years). Mothers' level of education was associated with changes in drinking. Mothers with bachelor's degrees reported greater change in drinking, with 46.2% drinking more compared to 32.6% of mothers with graduate or professional degrees and 21.2% of women with less than a bachelor's degree. Change in mothers' drinking was related to their children's age—a higher proportion of mothers with younger children reported drinking more since the pandemic than mothers with older children. For example, nearly half (48.4%) of mothers with any small children ages 0 to 4 reported drinking more compared to only 12.2% of mothers with any children age 20 to 24. A significantly lower percentage of Catholic women reported drinking more (15.1%) since the pandemic than women of other religious affiliations. There were no significant differences by race and ethnicity, employment status, changes in employment, relationship status, number or gender of children, region, or income.

The first model in Table 5 provides the results of a logistic regression, in the form of odds ratios, that assesses the independent effects of mothers' difficulty managing family and personal care and individual and family characteristics on changes in alcohol consumption pre- and post-COVID-19. Mothers reporting greater difficulty in managing family and personal care had

significantly higher odds increasing their drinking since the pandemic. Every one-unit increase in difficulty was associated with over two times (2.284) the odds of drinking more after the pandemic as opposed to the same amount or less. Compared to mothers with less than a bachelor's degree, women with advanced degrees had 51% lower odds of increasing their alcohol consumption than women with less than a bachelor's degree and significantly lower odds compared to women with a bachelor's degree. Cohabiting women exhibited higher odds of increased drinking compared to married women, with no difference between single mothers and cohabiting or married mothers. Women with children ages 10 to 14 exhibited 68% higher odds of drinking more since COVID-19 than women with children age 0 to 4, and higher odds than mothers with children age 15 to 19. Catholic mothers had 71% lower odds of increased alcohol use compared to Protestant women and were also significantly lower than women with no religious affiliation. Although the other relationships were in the expected direction, they did not achieve statistical significance. This includes race and ethnicity, changes in work responsibilities, number and gender of children, region, and household income.

The second model examines the relationship between these variables and mothers' reports of alcohol consumption post-COVID-19 using OLS regression. Similar to change in drinking, women reporting greater difficulty managing family and personal care exhibited higher levels of drinking during the pandemic. Every one-point increase on the difficulty in managing family and personal care scale was associated with a 0.228 increase in drinking frequency. Results also indicated significantly higher levels of drinking among women with children ages 10 to 14 (compared to children age 0 to 4) and higher levels of drinking among women with greater household income. Drinking at the time of the survey was not significantly associated with educational attainment, change in employment situation, religious affiliation, relationship

status, or religious affiliation (employment and religious affiliation were significant at the bivariate level).

Several other variables did not show a significant association with alcohol consumption and were omitted from the final models. These include frequency of church attendance, whether or not respondents considered themselves a spiritual person, and employment status (full-time, part-time, or other [student, retired, stay-at-home parent, not working). The potential impact of the limiting the sample to women with children under age 19 and opening the sample up to women with children of any age or residence was also examined. Results were largely similar whichever sample was used. Finally, the survey included simple 5-point measures of changes in parenting stress and closeness to children since the pandemic. Mothers were asked: *Compared to before the COVID-19 pandemic and the start of social distancing, I find being a parent much less stressful, somewhat less stressful, neither more nor less stressful, somewhat more stressful, and much more stressful.* Next, they were asked: *Compared to before the COVID-19 pandemic and the start of social distancing, I find my relationship with my children is much less close, somewhat less close, neither more nor less close, somewhat closer, and much closer*. Neither measure was significantly associated with alcohol consumption—nor did they moderate the effect of difficulty managing family and personal care. Additional analyses will investigate potential linkages between various measures of mothers' alcohol consumption (see Table 3), COVID19-related anxiety, depression, stress, self-efficacy, and life satisfaction.

DISCUSSION

Although women drink less alcohol than do men, numerous studies show a convergence of women's and men's alcohol use and alcohol-related illnesses and death. The U.S. Department of

Health and Human Services estimates there are 5.3 million women in the U.S. who are heavy drinkers or who "drink in a way that threatens their health, safety, and general well-being" (2020, p. 6), and alcohol-related cirrhosis increased 50% in women between 2009 and 2015 (Mellinger et al., 2018). In an analysis of data from the Centers for Disease Control (CDC), nearly a third of women surveyed (23%) reported previous levels of alcohol use consistent with an alcohol use disorder, with 10% showing symptoms of an AUD in the past 12 months (Grant et al. 2015).

The results of this survey show further increases in women's, specifically mothers', alcohol consumption since COVID-19 crisis began. It is widely believed that increased stress associated with the pandemic led to increased drinking, but no previous studies had examined this link empirically. Results indicate that mothers reporting greater difficulty managing family and personal care were more likely to increase their drinking since COVID-19. Changes in alcohol consumption also varied by mothers' educational attainment, relationship status, age of children, religious affiliation, and household income. In contrast to research suggesting a positive association between education and alcohol use among women, mothers with advanced degrees had lower odds of drinking more post-COVID-19 than before the pandemic. This could be because women with advanced degrees had higher baseline levels of alcohol consumption. Pre-COVID-19, 42% of mothers with graduate or professional degrees reported drinking 3 to 7 times a week, compared to 26% of mothers with a bachelor's degree. Cohabiting mothers drank more post-COVID-19 than married mothers, consistent with research on marital status (Li et al., 2010). Regarding ages of the children, mothers with children 10 to 14 had higher levels of post-pandemic drinking and had higher odds of increasing their drinking after the pandemic, compared to mothers with younger children or children age 15 to 19. One could speculate that children of that age were particularly difficult to manage during the COVID-19 lockdown. In

contrast to younger children (who could be put down for naps) and older children (who could work independently), these mothers may have felt pressure to locate and/or design educational activities and monitor their progress or otherwise entertain them. There was less alcohol use among Catholic mothers than mothers of other denominations. In contrast, studies have found higher levels of alcohol consumption among Catholics than among other denominations, but factors such as region were found to moderate this effect in this research (Holt, Miller, Naimi, & Sui 2006). Numerous studies have found religious involvement to be inversely related to alcohol use and alcohol-related problems but the effect of religious service attendance was not significant (Edlund et al., 2010; Holt et al., 2015). Results were consistent with other research that women of higher incomes have higher levels of alcohol consumption than lower income people. Previous studies indicate that alcohol consumption declines with women's age (Kerr et al., 2009; Keyes & Miech, 2013). At the bivariate level, mothers who reported drinking more since COVID-19 were significantly younger, but this relationship did not hold in multivariate models. These findings are consistent with studies indicating an overall increase in drinking among women at midlife and older (Breslow et al., 2017; Grucza et al., 2018).

As is the case with other studies conducted in the early days of the pandemic, this study is not representative of all mothers, and is based on a largely White, college-educated sample of women. However, this group of women has the highest levels of alcohol consumption relative to other women and has experienced the greatest increase in alcohol use in recent years (Jones, 2015; Keating, 2016; Woolf et al., 2018). These findings also rely on retrospective reports of pre-pandemic alcohol consumption. Nevertheless, the degree of change reported is largely consistent with studies based on nationally representative longitudinal data. Findings regarding

difficulties managing family and personal care and increased alcohol use are consistent with studies showing that stress, depression, and anxiety positively impact alcohol consumption.

This study provides important new information on how mothers' ability to manage the needs of their families with their own personal needs may affect their consumption of alcohol. It is also one of the few studies that has investigated the role of mothers' personal and family characteristics during the pandemic. Mothers' increased alcohol use since the pandemic is troubling. There were already many barriers for women getting treatment for alcohol overuse that prolong women's alcohol dependency and health risks. Guilt, shame, being perceived as a "bad mom," lack of childcare, the cost of treatment, and familial opposition, the lack of gender-specific treatment, physicians being slow to recognize AUDs in women, and for single mothers, the potential loss of custody (Beckman, 1994; Finklestein, 1994; Kelly & Hoeppner 2013; van der Walde, Urgenson, Welz, & Hanna, 2002). Since the pandemic, many women have lost access to mental health services, substance use resources, and have been cut off from family and friends (Petterson et al., 2020; Monteiro, Rehm, & Duennbier, 2020). Most are juggling full-time work and childcare responsibilities and may be caring for aging family members who are at high risk of contracting the virus. These findings suggest the importance of continued study of how the pandemic is impacting women's alcohol use, and the effect of drinking on women's social and emotional health and that of their families. Researchers should continue to examine women's alcohol use in different social and historical contexts.

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Table 1. Descriptive Information on the Mothers and their Children (N=367)		
	N	Percent or Mean
Difficulty managing family and personal care		3.0
Age		
20-29	35	9.5
30-39	174	47.4
40-49	118	32.2
50-59	38	10.4
60+	2	0.5
Mean age		30.0
Race and ethnicity		
White	344	93.7
African American/Black	4	1.1
Hispanic	6	1.6
Asian/Asian Indian	1	0.3
Other or more than one race/ethnicity	12	3.3
Educational attainment		
Less than bachelor's degree	74	20.2
Bachelor's degree	159	43.3
Graduate or professional degree	134	36.5
Employment status		
Full-time	267	72.8
Part-time	40	10.9
Other (student, retired, stay-at-home parent, not working)	60	16.4
Change in employment due to COVID-19		
Furloughed or work more/less hours	87	23.7
Work from home some of all of the time	178	48.5
Work life has stayed the same	102	27.8
Relationship status		
Single	49	13.4
Cohabiting	28	7.6
Married	290	79.0
Number of children		
One	93	25.3
Two	155	42.2
Three or more	119	32.4
Number of children of each age[a]		
0 to 4	335	37.0
5 to 9	231	25.6
10 to 14	157	17.4
15 to 19	116	12.9
20 to 24	63	7.0
Gender of children		
All girls	119	32.4
All boys	79	21.5
Mixture of boys and girls	169	46.1

Religious affiliation		
Catholic	67	18.3
Protestant	85	23.2
Other	63	17.2
No affilation	152	41.4
Religious service attendance		
Weekly	86	23.4
Monthly or less	116	31.6
Do not attend	165	45.0
Consider yourself a spiritual person		
Yes	247	67.3
No	120	32.7
Region		
Northeast	27	7.4
Midwest	304	82.8
South	18	4.9
West	18	4.9
Household income in 2019		
Less than $49,999	33	9.0
$50,000 to $74,999	58	15.8
$75,000 to $99,999	80	21.8
$100,000 to $149,999	99	27.0
$150,000 or more	97	26.4
Note: Cells may not total to 100% due to rounding.		
[a]Categories are not mutually exclusive and equal the total number of children in the sample (N = 902)		

Table 2. Mothers' Alcohol Use Pre- and Post-COVID-19 (N=367)		
	N	Percent
Before COVID-19 and social distancing began in your area, would you say you drank		
Quite a bit less than I do now	93	25.3
Somewhat less than I do now	161	43.9
The same amount as I do now	82	22.3
Somewhat more than I do now	24	6.5
Quite a bit more than I do now	7	1.9
N	367	100.0
If you drank the same amount then as I do now, were their ever periods of time since COVID-19 when you drank more or less?		
Yes, there were times when I drank more	25	30.5
Yes, there were times when I drank less	7	8.5
No, I've been drinking the same amount throughout the pandemic	50	61.0
N	82	100.0
Alcohol consumption post-COVID-19		
Drank quite a bit less or somewhat less[a]	50	13.6
Consistently drank the same amount as pre-COVID-19	38	10.4
Drank quite a bit more or somewhat more[a]	279	76.0
[a]at any time since COVID-19		

Table 3. Mothers' Alcohol Consumption Pre- and Post-COVID-19 (N=367)		
	Pre-COVID19	Post-COVID-19
	Percent	Percent
About how often do you have any kind of drink containing alcohol?		
Every day	2.5	14.4
5 to 6 days a week	7.6	20.2
3 to 4 days a week	21.0	27.3
Two days a week	19.1	17.2
One day a week	18.8	7.9
2 to 3 days a month	15.5	7.6
One day a month	6.0	1.9
Less than one day a month	9.5	3.5
About how many drinks would you have on a typical day when you drink?		
1 drink	34.1	28.1
2 drinks	37.3	36.8
3 to 4 drinks	21.0	23.2
More than 4 drinks	7.6	12.0
About how often would you say you have 4 or more drinks within a two-hour period?		
Never	38.2	44.4
Less than once a month	30.8	15.0
Monthly	18.5	19.4
Weekly	12.5	21.3
On days you drink, when do you usually have your first drink?		
Before lunchtime	0.0	0.3
Around lunchtime	0.5	3.8
Mid-afternoon	3.8	12.3
Before dinner	21.3	33.8
With dinner	27.8	19.1
After dinner or evening	46.6	30.8
On days you drink, what type of drink do you have most often?		
Beer	26.4	23.7
Wine	43.1	38.2
Cocktails or Mixed drinks	26.4	30.3
Liquor or spirits (straight)	1.6	2.7
Other (e.g., spiked seltzers)	2.5	5.2
On days you drink, do you tend to switch from one kind of drink to another?		
Yes, I tend to switch from drinks with less alcohol to drinks with more, such as from beer to wine	4.9	6.0
Yes, I tend to switch from drinks with more alcohol to drinks with less, such as from wine to beer	3.5	3.5
No, I tend to drink beverages with about the same amount of alcohol	91.6	90.5
Note: Cells may not total to 100% due to rounding.		

Table 4. Family and Personal Care, Family Characterstics, and Change in Alcohol Use		
	Drank more since COVID-19	
	Yes	No
	N=279	N=88
Difficulty managing family and personal care*	3.1	2.7
Age		
20-29	10.0	8.0
30-39	50.5	37.5
40-49	31.2	35.2
50-59	7.9	18.2
60+	0.4	1.1
Mean age*	38.4	40.9
Race and ethnicity		
White	93.9	93.2
Non-White	6.1	6.8
Educational attainment*		
Less than bachelor's degree	21.2	17.1
Bachelor's degree	46.2	34.1
Graduate or professional degree	32.6	48.9
Employment status		
Full-time	74.2	68.2
Part-time	10.0	13.6
Other (student, retired, stay-at-home parent, not working)	15.8	18.2
Change in employment due to COVID-19		
Lost job, furloughed, or work more/less hours	24.4	21.6
Yes, I work from home some of all of the time	48.4	48.9
No, my work life has stayed the same	27.2	29.6
Relationship status		
Single	12.2	17.1
Cohabiting	7.5	8.0
Married	80.3	75.0
Child Characteristics		
Number of children		
One	25.3	27.3
Two	42.2	36.4
Three or more	32.4	36.4
Any of children of each age[a]		
0 to 4	48.4	37.5
5 to 9	46.6	44.3
10 to 14	35.5	33.0
15 to 19	21.2	28.4
20 to 24	12.2	17.1
Gender of children		
All girls	32.6	31.8
All boys	20.8	23.9
Mixture of boys and girls	46.6	44.3

Religious affiliation*		
Catholic	15.1	28.4
Protestant	25.1	17.1
Other	19.7	9.1
No affilation	40.1	45.5
Region		
Northeast	7.2	8.0
Midwest	84.2	78.4
South	4.3	6.8
West	4.3	6.8
Household income in 2019		
Less than $49,999	9.7	6.8
$50,000 to $74,999	14.7	19.3
$75,000 to $99,999	21.9	21.6
$100,000 to $149,999	28.3	22.7
$150,000 or more	25.5	29.6
Note: Cells may not total to 100% due to rounding.		
*differences between groups is significant at $p < .05$.		
[a]Categories are not mutually exclusive.		

Table 5. Predictors of mothers' odds of drinking more and frequency of drinking since COVID-19						
	Odds of drinking more versus same or less			Frequency of drinking since COVID-19[a]		
	odds ratio		SE	b		SE
Difficulty managing family and personal care	2.284	***	0.212	0.228	*	0.103
Age	0.996			-0.019		0.013
Race and Ethnicity						
White	1.150		0.060	-0.423		0.301
Nonwhite (ref.)						
Educational Attainment[b]						
Less than bachelor's degree (ref.)						
Bachelor's degree	1.002		0.417	0.324		0.203
Graduate or professional degree	0.486	#	0.430	0.225		0.224
Change in employment due to COVID-19						
Lost job, furloughed, or work more/less hours	1.347		0.382	0.086		0.195
Work from home some of all of the time	1.367		0.336	0.179		0.175
Work life has stayed the same (ref.)						
Relationship status[c]						
Single (ref.)						
Cohabiting	1.217		0.624	0.510		0.329
Married	1.434		0.483	0.075		0.260
Number of children	0.732		0.278	0.170		0.144
Any of children of each age[d]						
0 to 4 (ref.)						
5 to 9	0.980		0.338	-0.300		0.169
10 to 14	1.682		0.335	0.094	#	0.169
15 to 19	1.177		0.399	0.021		0.212
20 to 24	1.800		0.507	-0.158		0.271
Gender of children						
All girls	0.881		0.364	-0.083		0.190
All boys	0.789		0.402	0.790		0.208
Mixture of boys and girls (ref.)						

Religious affiliation[e]						
Catholic	0.293	**	0.426	-0.321		0.221
Protestant (ref.)						
Other	1.216		0.508	0.124		0.222
No affilation	0.517	#	0.389	0.226		0.188
Region						
Northeast	1.475		0.544	0.076		0.292
Midwest (ref.)						
South	0.655		0.623	0.372		0.345
West	0.821		0.611	0.078		0.339
Household income in 2019						
Less than $49,999 (ref.)						
$50,000 to $74,999	0.441		0.610	0.169		0.300
$75,000 to $99,999	0.570		0.645	0.129		0.317
$100,000 to $149,999	0.815		0.656	0.578	#	0.319
$150,000 or more	0.795		0.667	0.605	#	0.334
#p<.10; *p < 05; **p<.01; ***p < .001.						
[a]Frequency of drinking ranges from once a week or less to every day.						
[b]Difference between college degree and graduate degree is significant at p < .05.						
[c]Difference between cohabiting and married is significant at p < .10.						
[d]Difference between age 10 to 14 and age 15 to 19 is significant at p < .05.						
[e]Difference between Catholic and no affiliation is significant at p < .01.						