COVID-19 Impact Survey of Adult Oregonians

Gambling, Gaming, Alcohol Use, and Cannabis Use

RESEARCH SUMMARY REPORT

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This paper resulted from a collaborative effort between the Oregon Health Authority (OHA), Health Systems Division, Problem Gambling Services, and the Oregon Council on Problem Gambling (OCPG). The project vision was conceived by Greta Coe, the OHA Problem Gambling Services Manager and Julie Hynes, the Executive Director of the OCPG. Research support was provided by Problem Gambling Solutions, Inc. and data collection was conducted by AmeriSpeak, a service of the National Opinion Research Center (NORC) at the University of Chicago.

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OVERVIEW

The COVID-19 pandemic has significantly impacted the lives of Oregonians and has created many adverse effects, including increased unemployment rates, household and occupational stress, social isolation, and disruptions to day-to-day activities. To gain insight into how individuals responded to these challenges by changing behaviors with known addiction risks, we surveyed over 1,000 individuals aged 18+ from across Oregon during April and May 2021. Specifically, we wanted to learn how COVID-19 had impacted gambling, gaming, alcohol use, and cannabis use behaviors and what factors related to an increased risk of harmful usage. Findings from the study will help to inform the development and implementation of policies and practices to reduce harms related to adult usage of gambling, gaming, alcohol, and cannabis in Oregon.

The current report is one of several documents providing survey findings. This report was designed to provide a high-level summary of the research and its findings; Whereas other project documents were produced either for those interested in taking a more detailed look at the data or presenting the data through slide decks. A list of project documents and data sources are as follows:[1]

- **Research Summary Report**: A report elaborating on topline findings with a detailed discussion of results
- **Research Summary Slide Deck**: Slides summarizing topline results in a user-friendly format
- **Technical Report**: A comprehensive description of survey methodology, questions, screening tools used, and statistical tests applied
- **Segmented Analysis and Findings Deck**: Slides providing a more comprehensive analysis of the results
- **Banner Tables**: An EXCEL file containing frequency tables and cross-tabulations for selected survey variables

[1] For inquiries about these documents, please visit oregoncpg.org

HOW WE DESIGNED THE RESEARCH

The research utilized a survey to retrospectively compare gambling, gaming, alcohol, and cannabis (collectively referred to as GGAC) behaviors during the pre-COVID-19 and COVID-19 periods. The pre-COVID-19 period was defined as the 12 months before March 2020 and the COVID-19 period was defined as the 12 months before the survey completion date for each participant. The survey collected information on GGAC activity levels and behaviors, COVID-19 coping mechanisms, motives for GGAC activity changes, stress measures, and demographic and socioeconomic variables. NORC-AmeriSpeak, a survey research company associated with the University of Chicago, was commissioned to field the survey. Survey participants, limited to English-speaking individuals aged 18 years or over and living in Oregon, were recruited through AmeriSpeak's probability-based panel and several non-probability panels. The survey was constructed to take about 15 minutes to complete and collected via the web (1,040 participants) and phone calls (17 participants). AmeriSpeak utilized its TrueNorth calibration services to weigh the participant responses so that the survey was representative of the adult Oregon population. See the Technical Report for a more in-depth description of the methodology and survey instrument.

FIVE KEY FINDINGS

1. The impact of COVID-19 on gambling, gaming, alcohol use, and cannabis use varied among individuals

- Our survey found 33% of individuals who gambled changed their gambling frequency, with the number of people who decreased their gambling being 1.6 times greater than the number that increased their gambling
- 30% of alcohol drinkers changed their drinking frequency, with the number of people who increased their alcohol use being 1.2 times greater than the number that decreased their use.
- 30% of cannabis users changed their usage frequency, with the number of people who increased their cannabis use being 2.2 times greater than the number that decreased their use.

2. COVID-19 appears to be related to increased rates of addiction
   - 32.8% of adults scored positively on a hazardous drinking screen
   - 8.8% of adults scored positively on a cannabis abuse screen
   - 9.0% of adults scored positively on a gaming disorder screen
   - 8.3% of adults scored positively on a problem gambling screen
   - There are high rates of co-occurring problems among those scoring positively on the screens

3. Workplace productivity during COVID-19 may be impacted by gambling, gaming, alcohol use, and cannabis use
   - 34% reported they played games more when they should have been working
   - 26% reported they used cannabis more while working
   - 17% reported they gambled more when they should have been working
   - 8% reported they drank more alcoholic beverages while working

4. High levels of COVID-19 related stress may persist and have lasting impacts on addiction rates

5. Young adults and individuals identifying as Hispanic were particularly at-risk for developing or exacerbating problem GGAC behavior during the COVID-19 emergency

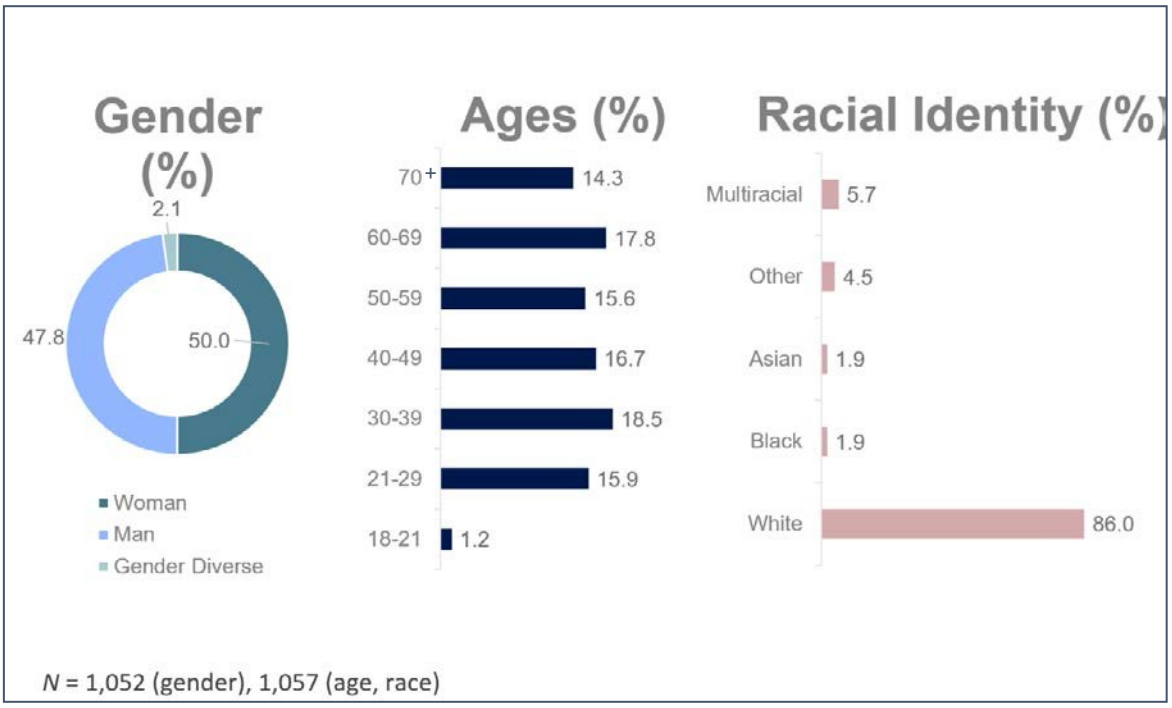
PRACTICE AND POLICY IMPLICATIONS

- Implement strategies aimed at helping people adaptively cope with stress related to living during the COVID-19 era.
- During times of high environmental stress, it is important to screen clients, patients, communities, and individuals for addiction disorders.
- It is recommended that workplace health includes policies and procedures to address workplace gambling, gaming, alcohol use, and cannabis use.
- Culturally informed interventions are recommended to address health disparities among persons at-risk for addiction disorders.

SAMPLE PROFILE

Figure 1 depicts the sample demographic profile, in terms of gender, age, and racial identity. The sample has been weighted (as described in the Overview section and Technical Report) so that it is representative of the adult Oregon population.[2]

Figure 1

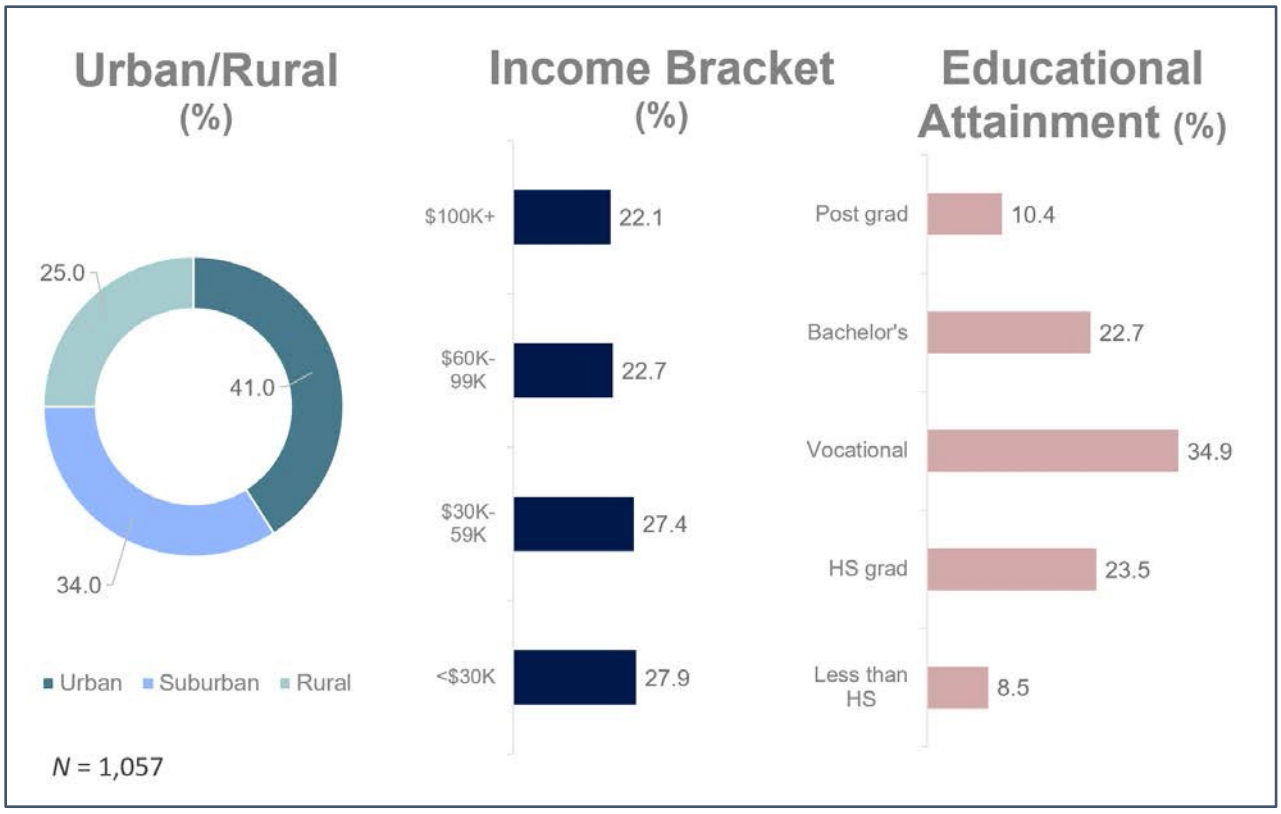


The sample is made up of 50% woman, 48% men, and 2% gender diverse individuals. Except for the 18-21 age bracket, the age groupings are roughly of comparable sizes. In terms of racial identity, White individuals have the largest representation (86%) and Multiracial individuals (6%) make up the second largest category. The remaining 8% includes individuals who racially identified as Other, Asian, or Black.

[2] It is not possible to perfectly calibrate the sample to population estimates. However, the weighting is designed to approximately reflect the adult Oregon population.

Figure 2 depicts the sample profile in terms of geographical area, income, and educational attainment.

Figure 2



In terms of geographical area, 41% of the participants are from urban areas, 34% from the suburbs, and 25% from rural areas. 'Less than $30K' and '$30K-$59K' are the two largest household income brackets and are of roughly the same size (27%). Similarly, '$60K-99K' and '$100K or greater' are the two smallest brackets and are also roughly the same size (22%). In terms of educational attainment, Vocational is the most common (35%), followed by High School graduates (24%) and bachelor's degrees (23%). 10% of the sample participants have postgraduate degrees and 9% did not complete high school.

GAMBLING

How did people change their gambling frequency?

About half of the participants (48%) reported having gambled at least once during the past 2 years. Then they were asked how often they gambled during each period. They were provided with five response options: never, monthly or less, 2 to 4 times a month, 2 to 3 times a week, or 4 or more times a week. For both periods, gambling monthly or less was the most common frequency, followed by gambling 2 to 4 times per month.

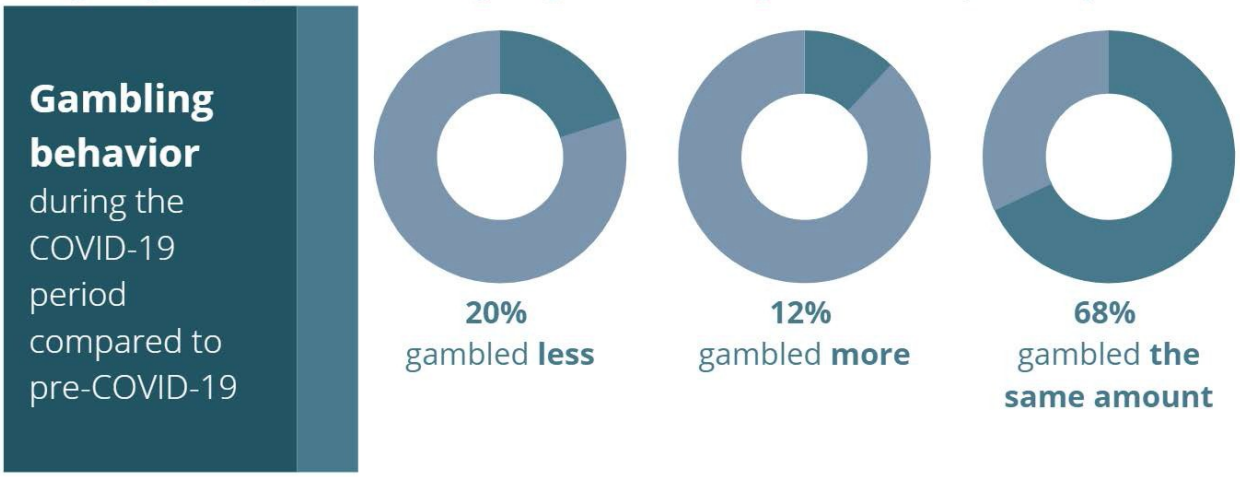
When comparing how gambling behaviors changed between the pre-COVID-19 and COVID-19 periods, about one-third of individuals who gambled reported a change in their gambling frequency. More specifically, 20% reported gambling less frequently, 12% gambling more frequently, and the remaining 68% reported no change in their gambling frequency (see Figure 3).

Participants were asked about their gambling during the pre-COVID-19 and COVID-19 periods.

"Next we'd like to ask you about your gambling behaviors. For these questions, gambling means betting money or possessions on any of the following activities: casino gaming, slot machines, table games, sports betting, bingo, lottery, scratch tickets, video poker, keno, blackjack, internet gambling, fantasy sports, daily fantasy sports (DFS), eSports, stock market trading on a daily basis, or any other types of wagering."

Figure 3

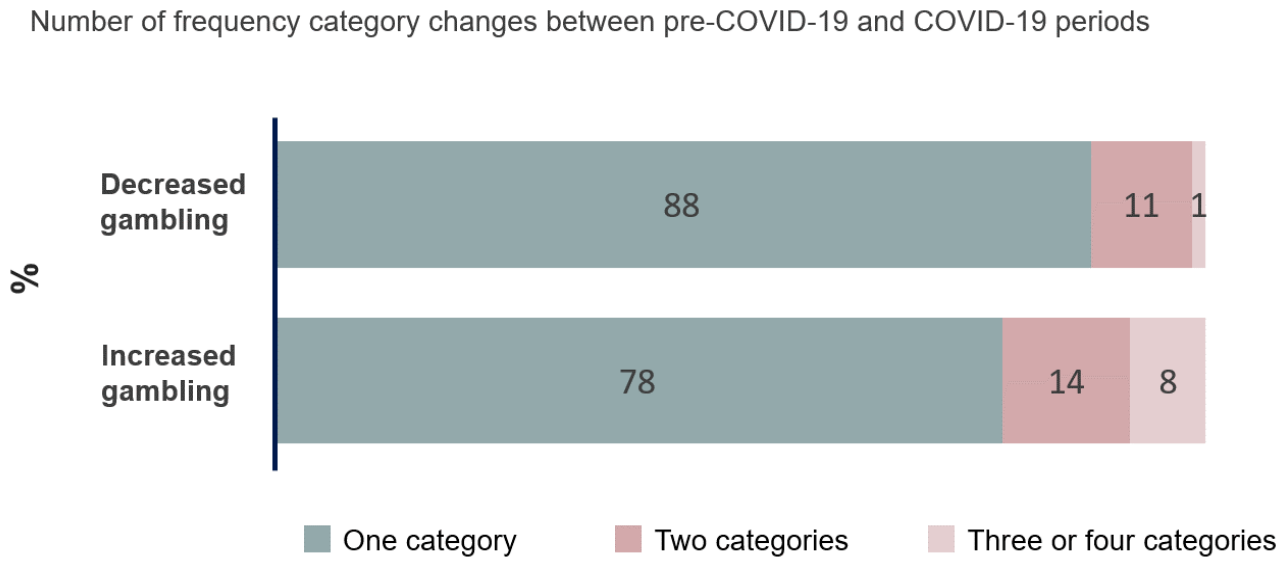
Change in gambling behavior among Oregon adults who gambled in the past two years



Among those that changed their gambling frequency, most shifted over one frequency category suggesting that most individuals who changed their gambling did so moderately. However, among those that increased gambling, about 14% shifted two categories and 8% shifted three or more categories (see Figure 4). When converting these numbers to better represent the full adult Oregon population, approximately 3% of Oregonians experienced dramatic increases in their gambling.

As the COVID-19 pandemic significantly impacted access to land-based gambling venues and Oregonians with gambling problems have a preference to use Video Lottery terminals (VLTs; Moore & Volberg, 2016), the gambling treatment community speculated that the limited access to land-based VLTs could provide an opportunity for persons with a gambling disorder to reevaluate their gambling and make lasting changes, leading to a "natural recovery" surge. Findings from this study may support this speculation; About 1% of Oregonians who decreased their gambling did so by three or four categories.

Figure 4

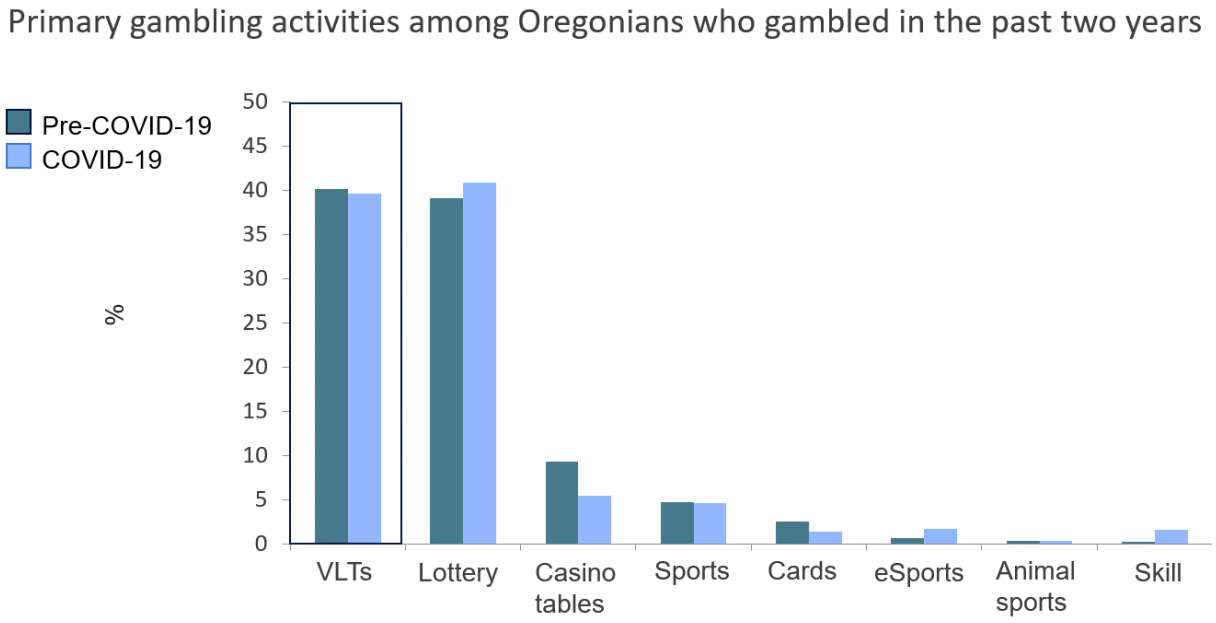


What were Oregonians' primary gambling activities?

Figure 5 shows the primary gambling activities reported by Oregonians who gambled in the pre-COVID-19 and COVID-19 periods. The most prevalent activities in both periods were video poker, line, and slot machines (labeled as a group "VLTs" in Figure 5), and traditional lottery, which together accounts for about 80% of primary gambling activities. Comparing the pre-COVID-19 and COVID-19 periods, the biggest declines occurred in casino table games and cards, which are

consistent with the commercial lockdowns and social distancing mandates during the COVID-19 period. The biggest increases were in gambling on games of skill such as wagering on who wins a pool game and betting on eSports, defined as wagering on video game competitions.[3]

Figure 5



When comparing the group that decreased their gambling to the group that increased their gambling, it was found that the group that decreased gambling more often reported VLTs/slots as their primary pre-COVID-19 gambling activity (63%) compared to those who increased their gambling (41%). This observation makes sense, as many businesses (such as land-based casinos and bars) offering VLTs were adversely impacted during the pandemic.

[3] For most gambling activities, sample sizes are very small so correspondingly large differences are required to achieve statistical significance. Only casino games showed a statistically significant difference between periods.

How did online gambling change?

Figure 6

Change in online gambling behavior among Oregon adults who gambled in the past two years

Figure 6 shows that approximately one in four adult Oregonians who gambled increased gambling online during the COVID-19 period, relative to the pre-COVID-19 period. This is consistent with adapting to more accessible forms of gambling activities as land-based gambling venues were restricted due to health mandates or considered less desirable due to social distancing or health concerns.

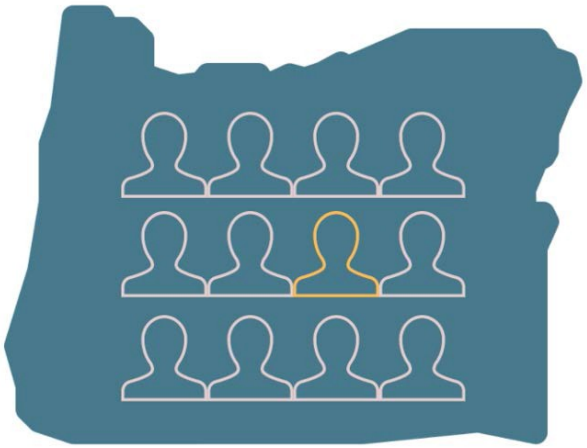
When comparing those who increased their gambling to those that decreased their gambling, those who increased gambling frequency were substantially more likely to increase online gambling (56% versus 12%). This finding suggests that for a subset of individuals, online gambling during the pandemic may have contributed to more gambling rather than simply substituting for the loss of in-person gambling activities.

The higher prevalence of online gambling is a concern and numerous studies have reported higher rates of at-risk, problem, and disordered gambling among online gamblers compared with land-based gamblers (Allami, et al., 2021). For example, in a survey of 12,521 international gamblers, Internet gamblers (15% of the total sample) were 2.24 times more likely to be problem gamblers, and 3.2 times more likely to be moderate-risk gamblers, compared with non-Internet gamblers (Wood & Williams, 2011).

Problem gambling?

Figure 7

1 in 12 Oregon adults showed signs of **problem gambling** during COVID-19



The 3-item Brief Biosocial Gambling Screen (BBGS) was used to assess problems related to gambling in the past year (Gebauer et al., 2010). Positive endorsement of at least one item is indicative of a gambling problem. Developed as a screening measure, those that score positively on the BBGS do not necessarily meet the criteria for a Gambling Disorder, as defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM–5). However, the BBGS has shown good psychometrics in general household samples, with high sensitivity (.96) and specificity (.99) for identifying Gambling Disorder (Gebauer et al., 2010). The Positive Predictive Value of the BBGS is 0.37. This suggests that one in three individuals who screen positive on the BBGS will be identified as having Gambling Disorder after full follow-up.

As depicted in Figure 7, 8.3% of Oregonians scored positively on the BBGS suggesting these individuals were experiencing some level of harm related to gambling. Of those who increased their gambling during the COVID-19 period, 43% scored positively on the BBGS. Additionally, of those who reported increasing online gambling fairly or very often, 70% scored positively on the BBGS.[4]

An exploration of demographic variables related to scoring positively on the BBGS revealed that two characteristics reached statistical significance. Younger adults (i.e., those aged 21-39; $p < .05$) and those who identified with a Hispanic ethnicity ($p < .05$) were significantly more likely to score within the problem gambling range on the BBGS compared to all other age groups and non-Hispanic ethnicities, respectively. Differences among race, geographic area, gender, and income did not reach statistical significance for predicting problem gambling risk.

[4] See Segmented Analysis and Findings Deck for analysis.

ALCOHOL

How did people change their alcohol frequency?

74% reported using alcohol at least once in the past two years. When comparing alcohol use frequency between the pre-COVID-19 period and during the COVID-19 period, we found about 30% of participants changed their alcohol use behavior. To elaborate, of the participants who drank in the past two years, 13% used less alcohol, 16% used more alcohol, and 70% did not change their alcohol consumption between the pre-COVID-19 and COVID-19 periods (see Figure 8).

Among the participants who changed their alcohol use frequency, most increased, or decreased one category (e.g., reported an increase from drinking two to three times per month to two or three times per week), suggesting a moderate change in alcohol use during COVID-19. Conversely, out of those who increased their alcohol use, 19% shifted two categories (e.g., reported an increase from drinking monthly or less to two to three times per week) and 4% shifted four or more categories (e.g., reported an increase from drinking monthly or less to four or more times per week; See Figure 9). To understand this in context, approximately 16% of Oregonians experienced an increase in their alcohol use (see Figure 8).

Participants were asked about their alcohol use during the pre-COVID-19 and COVID-19 periods and to calculate "drinks".

"Next we'd like to ask you about your alcohol use behaviors. We will be referring to drinks as those that contain alcohol. A standard drink is any drink that contains about 0.6 fluid ounces or 14 grams of pure alcohol (also known as an alcoholic drink-equivalent). When asked to estimate the number of drinks you had, calculate based on one drink = 12 oz beer, 4 oz wine, and 1.5 oz distilled spirits. For an example calculation, one mixed drink with 3.0 oz of vodka = 2 drinks."

Figure 8

Change in alcohol use behavior among Oregon adults who drank in the past two years

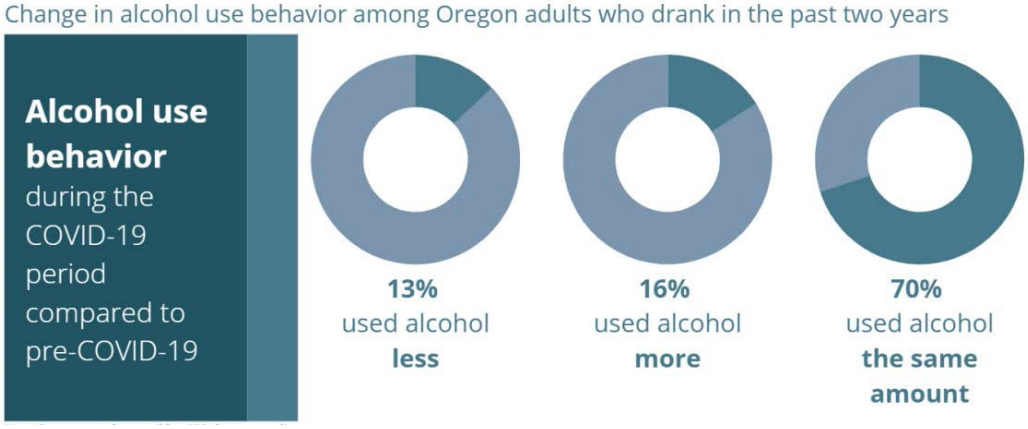
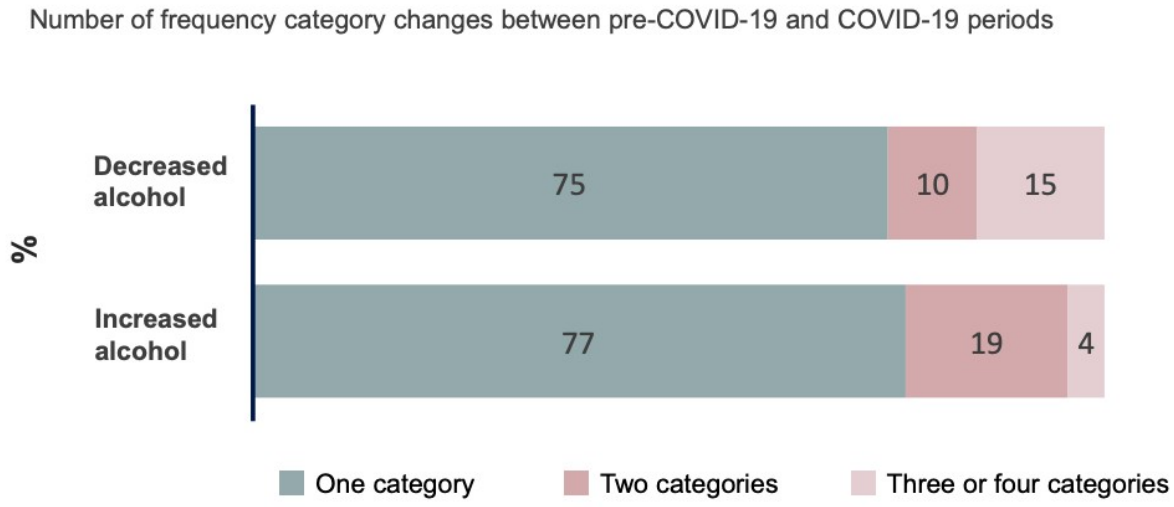


Figure 9

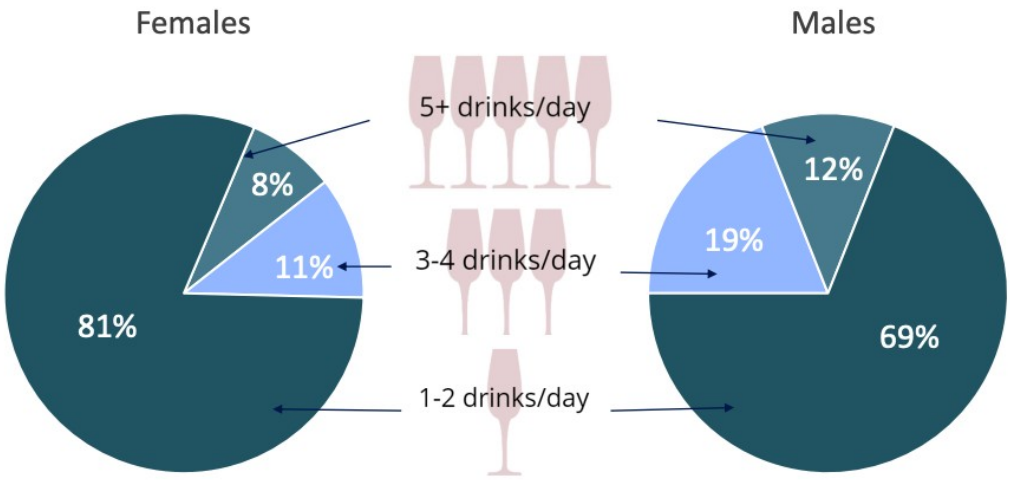


Heavy alcohol use

In addition to participants being asked about the frequency of their alcohol use, they were asked about the number of drinks on a typical day during the COVID-19 period. The CDC defines binge drinking as five or more drinks for males or four or more drinks for females on one occasion (CDC, 2021). Heavy drinking is defined as having 15 or more drinks per week for males and 8 or more drinks per week for females (CDC, 2021). Binge and heavy drinking are both significantly related to alcohol-related problems (CDC, 2021; White & Hingson, 2013). During the COVID-19 period, among females who reported drinking in the last two years, 81% reported drinking 1-2 drinks per day, 11% reported drinking 3-4 drinks per day, and 8% reported drinking 5 or more drinks per day. For males who drank within the last two years, 69% reported drinking 1-2 drinks per day, 19% reported drinking 3-4 drinks per day, and 12% reported drinking five or more drinks per day during the COVID-19 period (see Figure 10). This suggests that of those who drank in the past year, at least 19% of females and at least 31% of males engaged in heavy drinking during COVID-19. Due

to the category limitations of the measure, these numbers could be significantly higher as drinking two drinks a day is considered heavy alcohol use for females.

Figure 10

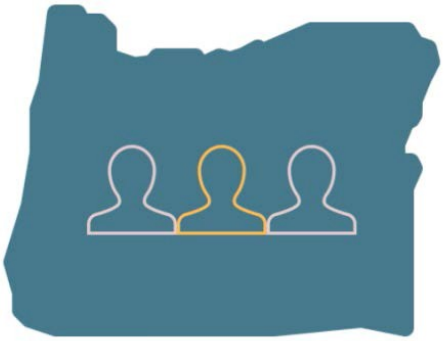


Problem alcohol use?

Hazardous alcohol use was assessed using the Alcohol Use Identification Test- Concise (AUDIT-C; Bush et al., 1998). A score of four or more for men or three or more for women is considered positive for hazardous drinking. Although this tool is not diagnostic, it is widely used as a screener across clinical, research, and primary care settings and has been shown to reliably identify at-risk drinkers.

One in three Oregon adults showed signs of problem alcohol use during COVID-19 (see Figure 11). We found that out of those who reported increases in their alcohol use during COVID-19, 70% of them scored positively on the AUDIT-C, suggesting that the majority of individuals who increased their drinking engaged in problematic drinking.

Figure 11



Through the investigation of individual difference factors, participants more likely to score positive on the AUDIT-C included adults aged 30-39 ($p < .01$) or 40-49 ($p < .05$), adults with higher incomes ($60,000+; $p < .05$), and adults with a four-year college degree as their highest educational attainment ($p < .05$).

CANNABIS

How did people change their cannabis usage frequency?

With this definition of cannabis use, 44% of participants reported using cannabis at least once during the past 2 years. The most prevalent usage frequency was 4 or more times per week, which is the highest usage rate compared to gambling and alcohol consumption[5]. Comparing the pre-COVID-19 and COVID-19 periods, slightly less than a third of cannabis users reported a change in usage frequency: 9% of cannabis users reported decreasing usage while 21% reported increasing their usage (see Figure 12).

Participants were asked about their cannabis usage behavior during the pre-COVID-19 and COVID-19 periods.

"Next we'd like to ask you about your cannabis use, commonly referred to as "marijuana". THC and CBD are the main compounds thought about when discussing cannabis. THC is the component that produces the "high" associated with cannabis use while CBD does not. For the next questions, we will be referring to cannabis usage as only usage of products that contain THC."

Figure 12

Change in cannabis use behavior among Oregon adults who used it in the past two years

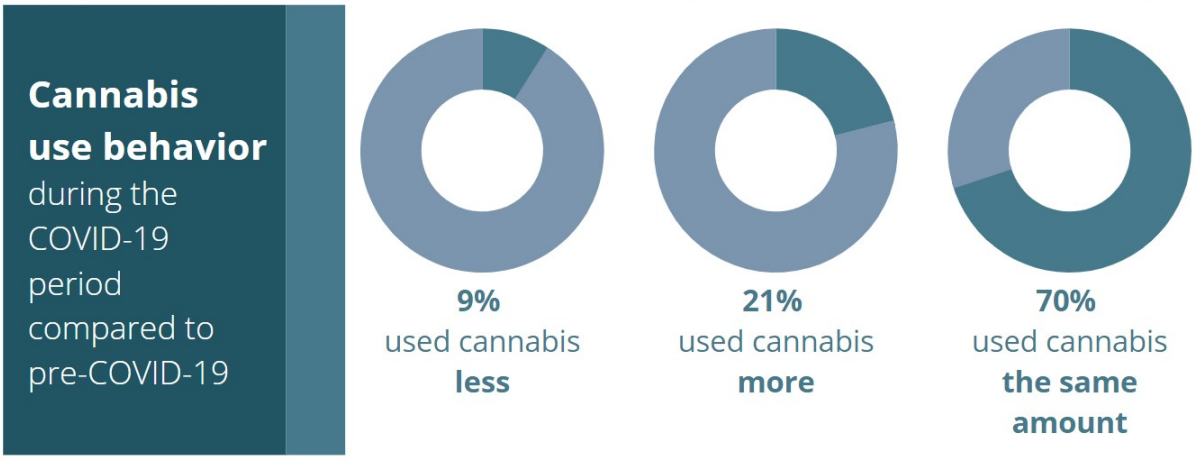


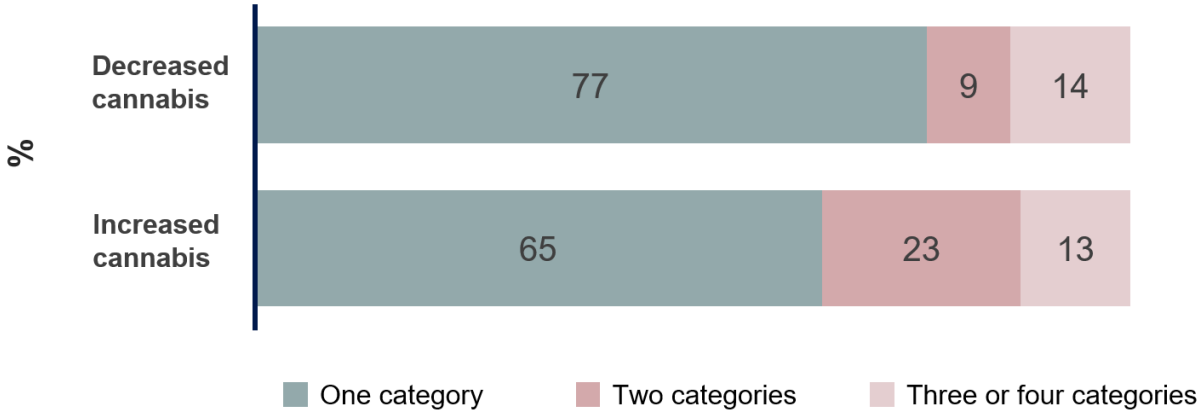
Figure 13 illustrates the magnitude of the changes in cannabis usage. Most changes were limited to one-category shifts - in other words, increases or decreases into the adjacent frequency category. Thus, most changes (77% for those individuals who decreased their cannabis use and 65% for those that increased their use) were relatively moderate. However, about 14% of individuals who used cannabis from each segment experienced substantial changes of 3 to 4

[5] 'Monthly or less' was the most prevalent usage rate for both gambling and alcohol consumption.

frequency categories used cannabis from each segment experienced substantial changes of 3 to 4 frequency categories. The group that significantly increased their cannabis usage may be at a higher risk of developing cannabis use disorder as frequency is positively related to severity. These users fall into the highest risk group on the Cannabis Disorder Screening Test (CAST), discussed later in this section[6].

Figure 13

Number of frequency category changes between pre-COVID-19 and COVID-19 periods



How did people change their cannabis behavior?

Figure 14

Figure 14 shows that during the COVID-19 period, 56% of cannabis users consumed cannabis before midday. While the study cannot establish a causal link between COVID-19 and early-day usage, the pandemic is associated with factors that make such behavior more likely. For example, COVID-19 is associated with increases in stress;[7] As a way to cope with stress, some cannabis

[6] These results are illustrated in the Segmented Analysis and Findings slide deck. For access to this document, please visit oregoncpg.org

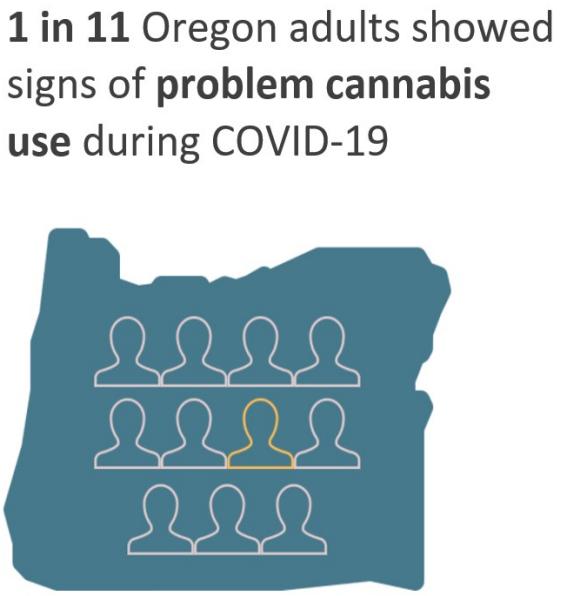
[7] See Stress & Coping section

users report consuming cannabis upon waking up (known as wake-and-bake behavior). Also, COVID-19 is associated with increased unemployment rates and work-from-home protocols, both of which might increase the likelihood of early-day cannabis usage. In any case, consuming cannabis before midday is a risk factor for cannabis use disorder.[8]

Figure 14 also shows that 26% of cannabis users increased cannabis use while working, at least sometimes. This result is consistent with reported increases in the other GGAC activities while working. This behavior might be related to more Oregonians working from home, which makes it easier to consume cannabis and conceal its usage during working hours. Such on-the-job cannabis use is a cause for concern as cannabis intoxication can impair judgment, motor coordination, ability to concentrate, and slow reaction time. Therefore, if a person's work requires these abilities, cannabis use while working can impair work performance and work safety.[9]

Problem cannabis use?

Figure 15



The 5-item Cannabis Abuse Screening Test (CAST) was used to assess problems related to cannabis usage over the past year (Legleye et al., 2007). Positive endorsement of 3 or more items suggests problem cannabis usage behavior.

The CAST was designed to screen for problematic use in the general population. As is the case for other screening tools, those that score positively on the CAST do not necessarily meet the criteria of Cannabis Use Disorder, as defined in the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5). Although, the CAST has been shown to have good psychometric properties. For example, it has a positive predicted value of 75%, meaning that 75% of those screening positive on the CAST would be expected to meet the clinical criteria of Cannabis Use Disorder (Legleye,

[8] Consuming cannabis before midday is an item on the Cannabis Abuse Screener Test (CAST). (Legleye et al., 2007)

[9] https://www.samhsa.gov/marijuana

2018). As depicted in Figure 15, about 1 in 11 (8.8%) screened positively on CAST. Thus, we would expect about 6.6% of Oregonians to meet DSM-5 criteria for Cannabis Use Disorder and 2.2% at high risk for developing a Cannabis Use Disorder.

We explored 7 demographic factors (gender, age, race, ethnicity, income, education, and geographic area) to identify at-risk populations. Four of those factors reached statistical significance:

- **Gender:** Male ($p < .10$)
- **Age:** Younger adults, aged 21- 39 years old ($p < .05$)
- **Ethnicity:** Hispanic ($p < .05$)
- **Education:** Less than a high school education ($p < .05$)

Thus, these demographic groups tend to screen positively on CAST at higher rates than corresponding groups; for example, Males have higher positive rates compared to non-Males, Hispanics have higher rates than non-Hispanics, and so on. Identifying these risk factors helps to prioritize or target specific populations for awareness campaigns, prevention and intervention protocols, and other public health programs.

GAMING

How did people change their gaming frequency?

68% reported gaming at least once in the past two years. Of the participants in the sample who gamed in the past 2 years, 33% reported to have increased the amount of time they spent playing games 'often', 20% often increased the amount of time they spent playing multiplayer games, and 13% often increased the amount of time they spent gaming when they should have been working during the COVID-19 period (see Figure 16).

Participants were asked about their gaming behavior during the pre-COVID-19 and COVID-19 periods.

Gaming was defined as "*playing any electronic games, whether played on your computer, smartphone, or other electronic devices, that do not involve the wagering of money or possessions; common examples include playing Halo 2, Battlefield, arcade games, puzzle games, Candy Crush, card games, and casino games.*"

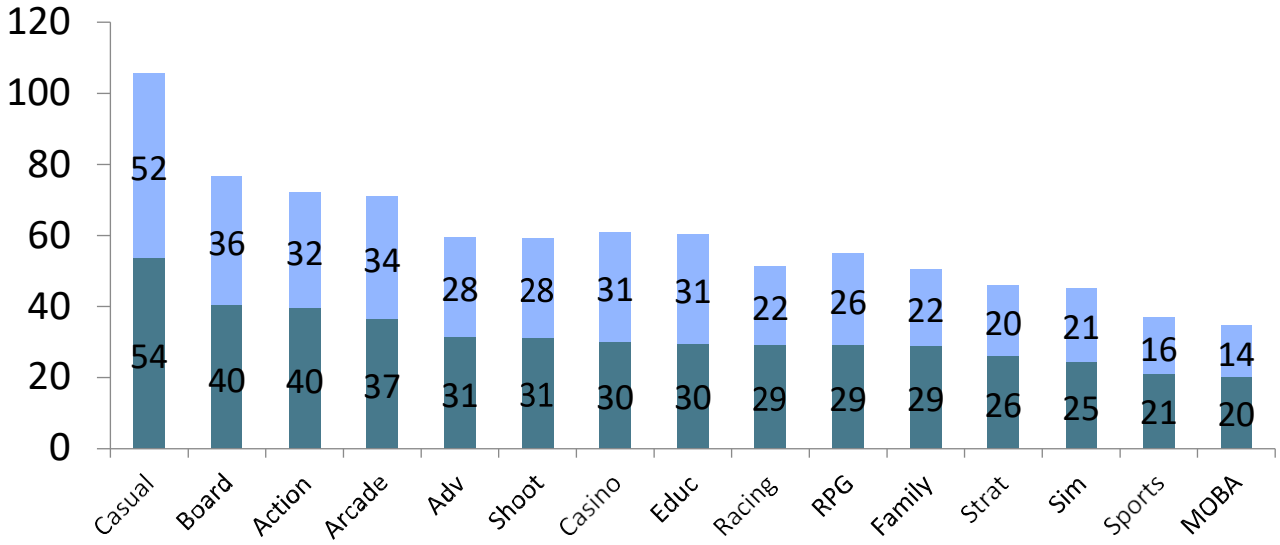
Figure 16

There are numerous categories describing types of games played by participants who reported gaming. In alphabetized order, gaming categories surveyed included:

- Action (e.g., Grand Theft Auto, Super Mario Odyssey, God of War)
- Adventure (e.g., Tomb Raider, Minecraft, Mass Effect)
- Arcade (e.g., Pacman, Bubble Shooter)
- Board (e.g., Monopoly, Chess, Clue)
- Casino (e.g., Big Fish Casino, Zynga Poker, Coin Master)
- Casual (e.g., Candy Crush Saga, Bejeweled, Solitaire)
- Educational (e.g., Duolingo, Memory Games)
- Family (e.g., Super Mario Party, Just Dance, Guitar Hero)
- Multiplayer Online Battle Arena (MOBA) (e.g., League of Legends, Dota)
- Racing (e.g., Forza, Mario Kart)
- Role-Playing Games (RPG) (e.g., Skyrim, World of Warcraft, Fallout)
- Shooter (e.g., Fortnite, Battlefield, Call of Duty)
- Simulation (e.g., The Sims, Hunting Clash)
- Sports (e.g., Madden NFL, NBA2K)
- Strategy (e.g., Civilization, Clash of Clans, Command & Conquer)

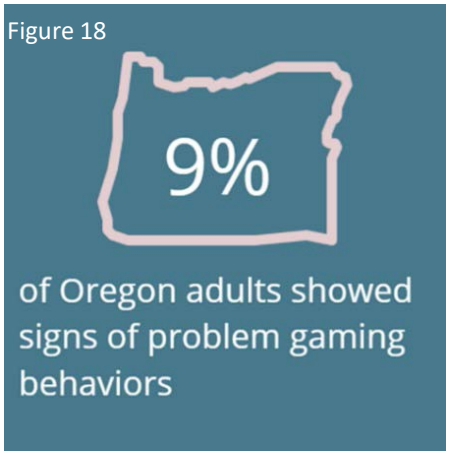
There were subtle differences observed in the frequency of game types played from the pre-COVID-19 period to the COVID-19 period. Overall, the average number of types of games declined from pre-COVID-19 to COVID-19, from 3.3 to 2.9 respectively, or a 12% decrease (see Figure 17).

Figure 17



Problem Gaming Among Oregon Adults

Figure 18



In addition to being asked about the frequency of gaming and types of games played, participants were screened for problem gaming behaviors using the three-item Gaming Disorder Test-Online-Centered (TIGTOC) measure (Jo et al., 2020). The TIGTOC is composed of three items using a four-point Likert scale that is in line with the gaming disorder criteria in the International Classification of Diseases 11th Revision (ICD-11). The diagnostic validity of the TIGTOC for gaming disorder has only been evaluated with adolescent populations; although the TIGTOC's items reflect strong construct validity with the DSM-5 criteria for Internet Gaming Disorder, suggesting the measure would be expected to perform similarly with adults as was observed in adolescent populations where the TIGTOC was evaluated to be a valid, reliable, brief screen of disordered gaming (Jo et al., 2020). Currently, there are no ultra-brief measures assessing the risk of Gaming Disorder that have undergone psychometric testing within a general adult sample, leading to the use of the TIGTOC for the current study. Based on responses in our sample of Oregon adults, 9% of participants showed signs of problem gaming behaviors as measured by the TIGTOC (see Figure 18). Playing games was reportedly a means for coping during the COVID-19 period among 72% of those who increased their gaming frequency 'fairy often' or 'very often'.

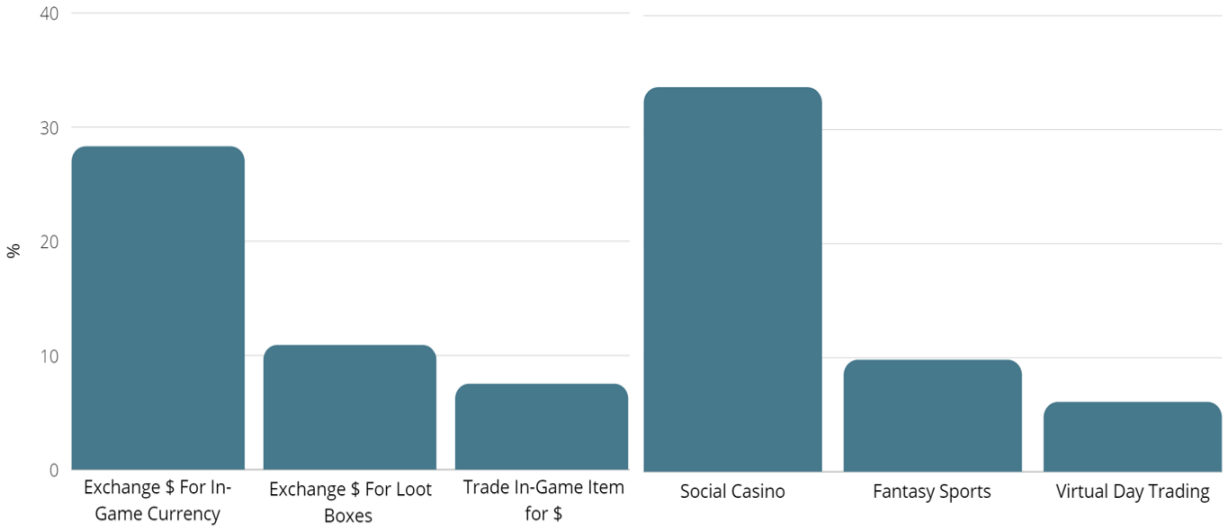
Of those who were at risk for problem gaming behavior (measured by a positive score on the TIGTOC), they were more likely to be aged 30-39 ($p < .05$), Hispanic ($p < .10$), and earn between $60,000-100,000 annually ($p < .10$; see Figure 19).

Figure 19

$p < .10$*, $p < .05$**

Of interest is the convergence of gaming behavior and gambling behavior. “Convergence” has been referred to as the blurring of lines between gambling and gaming (King & Delfabbro, 2019). Among casino- and money-oriented games, social casino games were the most popular. Most of the sample (57%) who reported gaming reported playing at least one casino or money-oriented game (i.e., exchanging money for in-game currency, exchanging money for loot box, trading in-game items for money, social casino games, fantasy sports, and virtual day trading; see Figure 20).

Figure 20



STRESS & COPING

High-stress levels?

The COVID-19 pandemic is associated with common stress factors, such as loss of job, fear, uncertainty, boredom, and disruptions in day-to-day activities. To quantify stress levels, we utilized the 10-item Perceived Stress Scale, which measures the degree to which situations in one's life were appraised as stressful (Cohen et al., 1994). In particular, it assesses how uncontrollable, unpredictable, and overloaded participants considered their lives to be over the past month.[10] Figure 21 illustrates the results.

Figure 21

Nearly 2 out of 3 Oregonians experienced moderate stress to high stress levels. Higher stress levels tend to be precursors to addictive behaviors, such as GGAC activities. Indeed, compared to Oregonians with low-stress levels, Oregonians with high-stress levels had significantly higher positive rates on the GGAC screening tools used in this study.[11]

To identify groups at higher risk of stress, we explored 7 base demographic factors (gender, age, race, ethnicity, income, education, and geographic area) as well as other socioeconomic factors related to the pandemic (employment status, frontline worker, income change, housing type, and homeownership). A total of 6 factors reached statistical significance.

- **Gender**: Female ($p < .10$) or Non-binary ($p < .01$)
- **Age**: Young adults, aged 21-29 years old ($p < .01$) or Older adults, aged 50-59 ($p < .05$)
- **Employment status**: Unemployed ($p < .01$) or Disabled / Other ($p < .05$)
- **Change in income**: Decrease in household income ($p < .01$)
- **Household type**: Single and living with other adults ($p < .05$)
- **Home ownership**: Renter ($p < .05$)

[10] The past month for most of the participants overlaps with April 2021, more or less.
[11] These results are illustrated in the Segmented Analysis and Findings slide deck. For access to this document, please visit oregoncpg.org

These characteristics are associated with higher stress levels. Half of the characteristics are associated with financial issues (employment status, income change, and homeownership) that have been exacerbated by the pandemic. Two other factors (young adults and single living with other adults) typically relate to people in the midst of establishing themselves professionally and socially, both of which have been significantly disrupted by COVID-19.

Figure 22

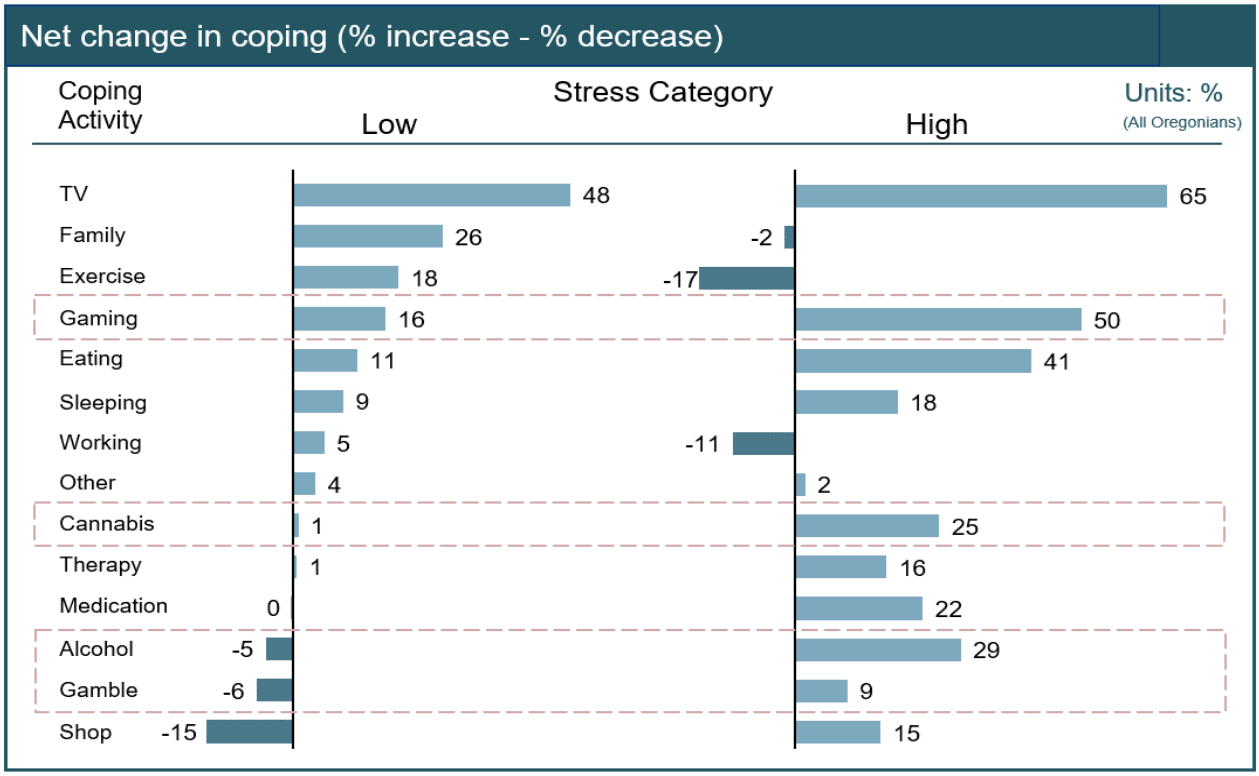
Figure 22 illustrates how stress levels have changed over the last month compared to the previous 11 months, which for most participants largely overlaps with the period May 2020 to March 2021. 75% of Oregonians reported experiencing stress levels that were the same or higher in the past month (April 2021). That is a notable result given where Oregon was in the second half of 2020 (i.e., commercial lockdowns, shelter-in-place mandates, peaked infection rates, and no vaccine) and where Oregon was in April 2021 (i.e., reopened commercial establishments, the passage of several large federal stimulus packages, significantly lower infection rates,[12] and widespread vaccine availability). The result suggests that the negative effects of the pandemic will persist far beyond the end of regulatory health mandates and when the spread of the virus no longer meets the technical definition of a pandemic. Put another way, the adverse effects of the pandemic - the fear of infection, the practice of social distancing, social isolation, etc. - will likely last longer than the epidemiological end of the pandemic. This, in turn, suggests that problematic GGAC activities exacerbated by pandemic related stress will persist beyond epidemic spread levels of the COVID-19 virus.

[12] Based on World Meter, the Oregon COVID-19 infection rate peaked around December 4, 2020 (2,144). On May 4, 2021, there were 734 reported cases.

COVID-19 coping mechanisms

The adverse impacts of COVID-19 have led Oregonians to adopt coping strategies for their internal emotional experiences, from watching TV, shopping, and sleeping to increased time spent engaging in GGAC activities. Figure 23 contrasts the different coping mechanisms that were used by low and high stress Oregonians, based on the Perceived Stress Scale.

Figure 23



Both low-stress and high-stress Oregonians engaged in watching TV as the most popular coping mechanism.[13] That is not surprising given the general popularity of streaming services. Also, both groups increased time spent eating and sleeping; although the high-stress group was much more likely to engage in these activities (41% vs 11% for eating, and 18% vs 9% for sleeping). Where the high and low groups significantly differ is in their reliance on GGAC activities as coping devices. The high-stress group **increased** their alcohol consumption and gambling by 29% and 9% respectively, whereas members of the low-stress group were more likely to **decrease** alcohol consumption and gambling (5% and 6%, respectively).[14]

[13] The chart depicts net coping, which is the percent of the segment that did more of the coping activity minus the percent of the segment that did less of the coping activity.

[14] In other words, 5% more members of the Low stress segment reported decreasing rather than increasing alcohol consumption as a means of coping with COVID-19. Similarly, 6% reported decreasing rather than increasing gambling activity.

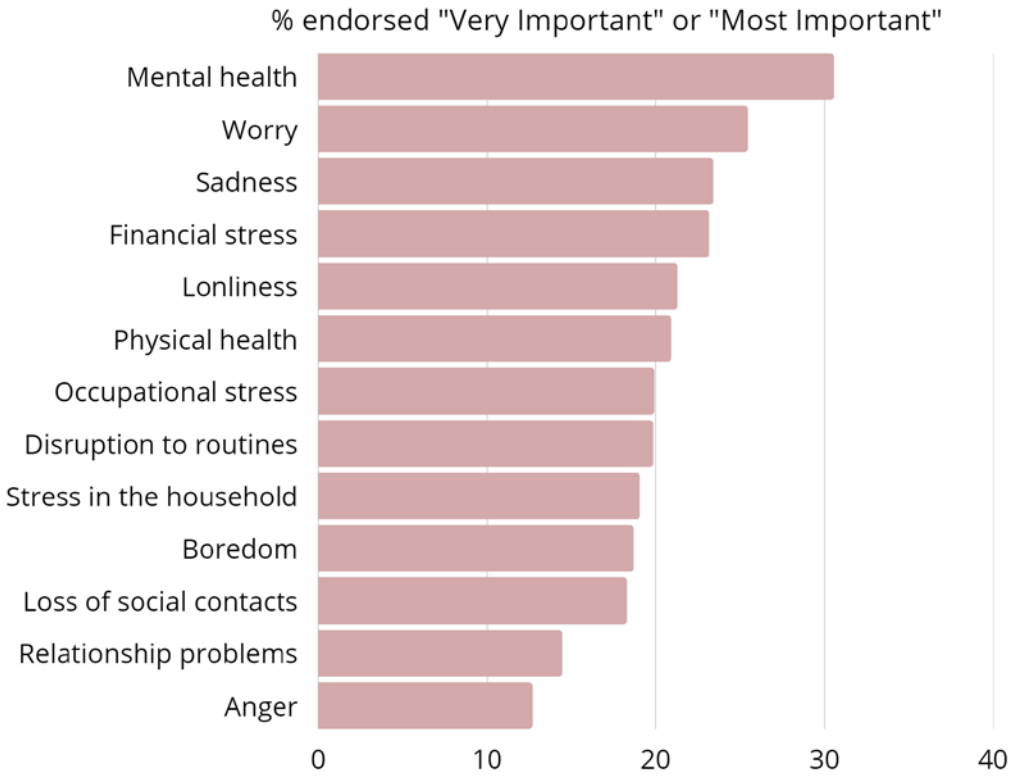
Further, 25% of the high-stress group increased cannabis usage vs 1% of the low-stress group. Similarly, a much higher percentage of the high-stress group increased gaming (50% vs 16%). Across GGAC behaviors, those who reported higher stress reported engaging in GGAC behaviors more than those who reported lower stress.

Engaging in GGAC activities in and of itself is not problematic. However, Oregonians who increased these activities during the COVID-19 period were significantly more likely to screen positively on GGAC related problem use measures.[15] Moreover, in general, Oregonians who increased GGAC activity during the COVID-19 period, relative to the pre-COVID-19 period, are more likely to increase gambling online, drink at home, and engage in GGAC activities while at work.[6] Thus, some coping mechanisms (such as spending more time with family) might generate fewer negative impacts than others.

What drives behavioral changes?

Participants were asked to rate how important specific emotions and conditions were in driving their GGAC behavioral changes. Figure 24 displays that mental health (31%), worry (26%), and sadness (23%) were the top three drivers of GGAC behaviors whereas loss of social contact (18%), relationship problems (15%), and anger (13%) fell to the bottom.

Figure 24

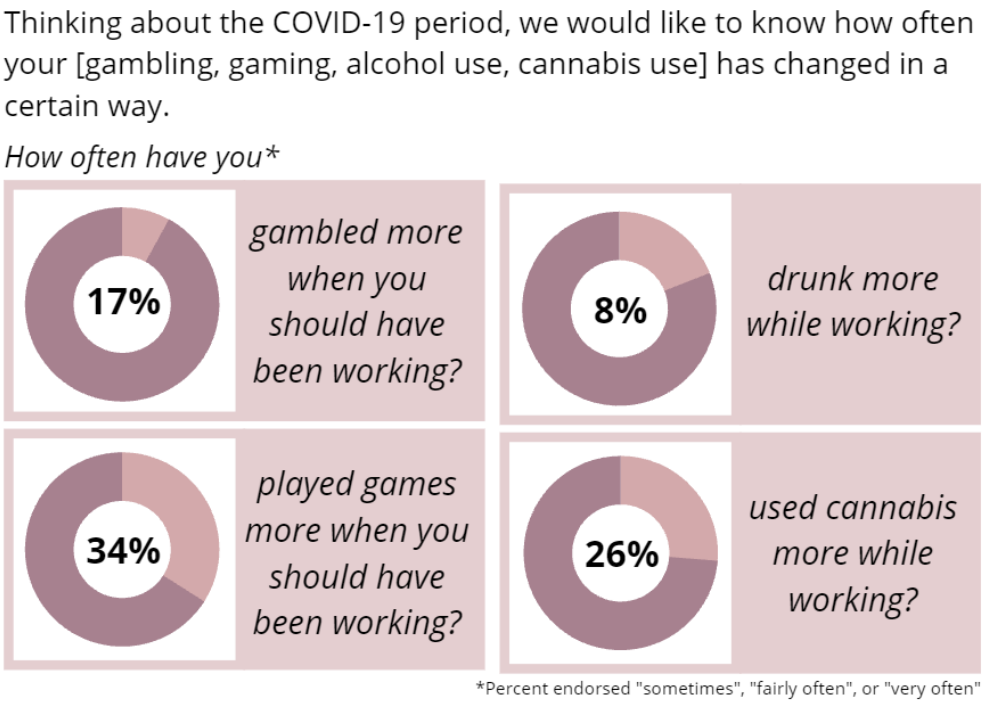


[15] These results are illustrated in the Segmented Analysis and Findings slide deck. For access to this document, please visit oregoncpg.org

GGAC behaviors relating to work

A concerning finding was that Oregonians reported increased GGAC behaviors while at work (see Figure 25).[16] Engaging in behaviors with known addiction risks during work is an indicator that the behavior may have crossed the line from recreational to problematic. If the behavior is creating functional impairment in work, then the individual is at risk for clinically significant addiction-related problems (APA, 2013).

Figure 25



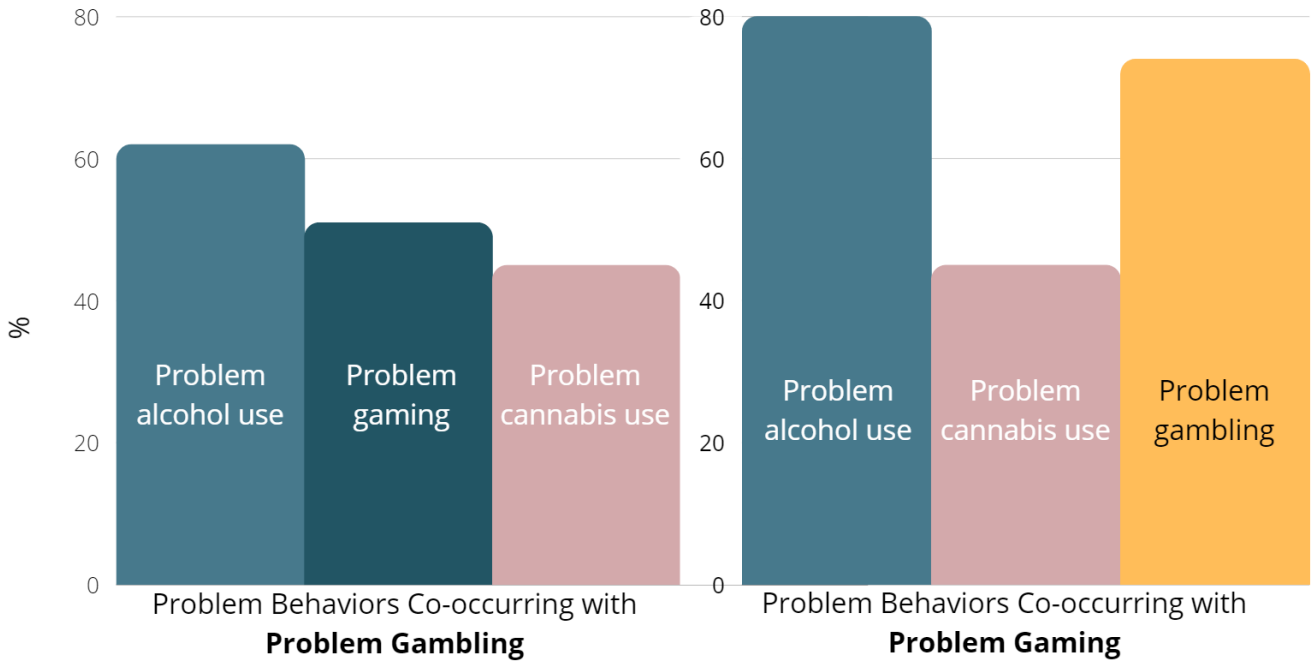
[16] The following rates refer to Oregonians who engaged in the respected GGAC activities during the past 2 years.

CO-OCCURRING PROBLEM BEHAVIORS

It is widely accepted in academic, clinical, and medical settings that addictive behaviors often co-occur. In other words, individuals who engage in one addictive behavior also tend to engage in another. For example, individuals who misuse substances are three to five times more likely to engage in problem gambling (Barnes et al., 2015). When individuals engage in more than one GGAC behavior, there is an increased risk of related problems (Hammond et al., 2020).

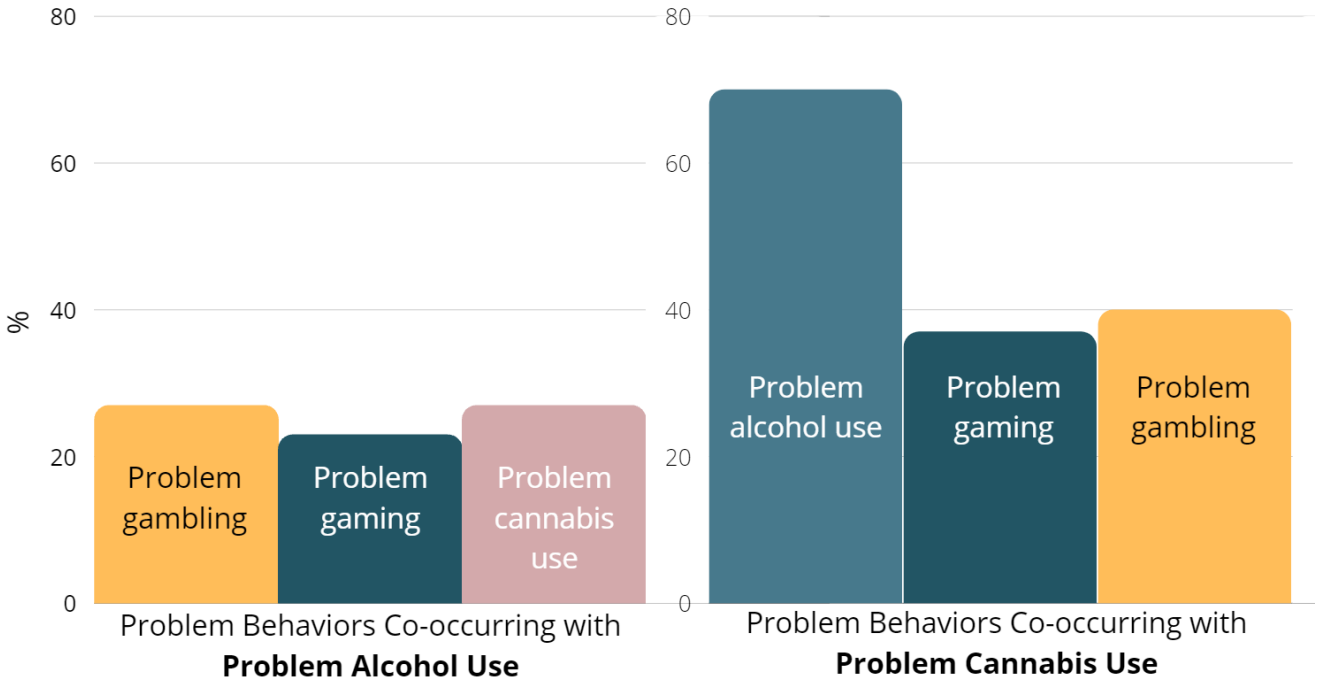
Results from this study similarly found a high rate of co-occurrence across GGAC behaviors. Among Oregonians who reported engaging in problem gambling during COVID-19, 61% reported also engaging in problem alcohol use, 50% reported also engaging in problem gaming, and 45% reported also engaging in problem cannabis use. For Oregonians who reported engaging in problem gaming, 80% also engaged in problem alcohol use, 42% also engaged in problem cannabis use, and 75% also engaged in problem gambling (see Figure 26).

Figure 26



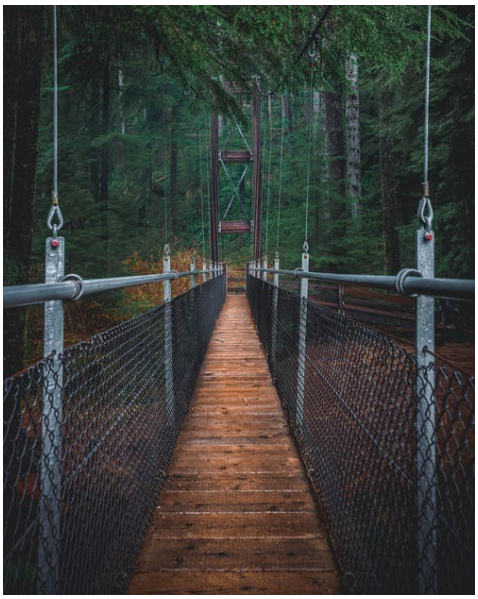
Similarly, Oregonians who engaged in problem alcohol use also engaged in problem gambling (30%), gaming (22%), and cannabis use (30%). Lastly, Oregonians who engaged in problem cannabis use also engaged in problem alcohol use (70%), gaming (38%), and gambling (40%) (see Figure 27).

Figure 27



SUMMARY

COVID-19 impacts on behaviors are diverse



The main aim of this study was to investigate the change in addictive behaviors (i.e., gambling, gaming, alcohol use, and cannabis use) after the onset of the COVID-19 pandemic. Corresponding to previous research findings that investigated changes in gambling (Hodgins & Stevens, 2021), gaming (Oka, et.al.2021), alcohol use (Barbosa, Cowell, & Dowd, 2021), and cannabis use (Miller, Laha-Walsh, Albright, & McDaniel, 2021), we found the impact of the COVID-19 pandemic depends on GGAC behavior and identity-related factors. Our survey found 33% of individuals who gambled changed their gambling frequency, with decreases 1.6 times greater than increases; 30% of alcohol drinkers changed their drinking frequency, with increases 1.2 times greater than decreases; 30% of cannabis users changed their usage frequency, with increases 2.2 times greater than decreases. For gambling and gaming, we explored changes between types of activities. Like other studies (Hodgins and Stevens, 2021), we found many individuals who increased their gambling also reported their online gambling increased (56%). This finding is of concern due to higher rates of disordered gambling that have been found amongst internet gamblers as compared to land- based gamblers (Gainsbury, et.al, 2015). Among individuals who played electronic games during the COVID-19 pandemic, the majority played at least one game with either gambling themes or elements such as exchanging real money for in-game currency or loot boxes.

The blurring of lines between gambling and gaming has been referred to as 'convergence' (King & Delfabbro, 2019). A common argument advanced with convergence has been that certain video games may act as a 'gateway' to gambling activities (Gainsbury et al., 2016) and some evidence has supported this theory, such that problem gambling symptoms appear to be positively and consistently related to loot-box purchases (Kim & King, 2020). Our survey found that among individuals who reported playing video games, approximately 11% reported exchanging real money for loot-boxes, and among this group, 35% scored positively on the survey's problem gambling screen.

COVID-19 appears related to increased rates of addiction

Our findings coincide with others who have found the COVID-19 emergency could be related to an increase in the prevalence of both substance and behavioral addictions (Mallet, Dubertret, & Le Strat, 2021). Our data showed that during the 12-months following the beginning of the COVID-19 emergency, 41% of the sample scored positively on at least one of the four addiction screens included in the survey. More specifically, 1 in 3 adults scored positively on a hazardous drinking screen, 1 in 11 adults scored positively on a cannabis abuse screen, 1 in 11 scored positively on a gaming disorder screen, and 1 in 12 adults scored positively on a problem gambling screen. Further, we found high rates of co-occurring problems among those scoring positively on the screens. The greatest rates of co-occurrence were for individuals scoring positively on the gaming disorder screen; 80% also fell into the problem alcohol use range, 74% also screened positive for problem gambling, and 45% also screened positive for problem cannabis use.

High levels of stress may persist and have lasting impacts on addiction rates

Approximately one year into the COVID-19 public health emergency, three-fourths of survey respondents reported experiencing stress levels that were the same or higher in the past month compared to the rest of the year. This finding suggests stress related to the pandemic may persist long after public health cautionary measures end and may have a lasting impact on addiction rates in Oregon. We were able to link increases in gambling, gaming, alcohol use, and cannabis use to coping with COVID-19 related distress by directly asking survey respondents “what changes have you made in your life to cope with COVID-19”. Our data showed that two in three Oregonians experienced moderate to high levels of stress on the Perceived Stress Scale (PSS) and those with high-stress levels were more likely to rely on playing online games, using alcohol, using cannabis, and gambling to cope with COVID-19 related distress compared to those with low stress. Further, individuals scoring as high stress on the PSS were substantially more likely to score in the positive range on all the addiction screening measures used in this study. For example, of those who scored in the high-stress range, 47% scored positively for problem gambling. In comparison, only 2% of individuals in the low-stress range scored positively for problem gambling.

Young adults and Hispanic populations are particularly at-risk

In addition to high stress as a risk factor for substance and behavioral addictions, other statistically significant associations were found between scoring positively on an addiction screen and demographic variables. In general, younger adults appear at higher risk for developing problem gambling (aged 21-39), alcohol use disorder (aged 30-49), cannabis use disorder (aged 21-39), and gaming disorder (aged 30-39). Also, identifying as Hispanic correlated with a positive score on the problem gambling screen, the cannabis disorder screen, and the gaming disorder screen. Higher education and income were associated with higher rates of hazardous alcohol use while low education was associated with hazardous cannabis use.

Workplace productivity during COVID-19 may be impacted by gaming, gambling, alcohol use, and cannabis use

With the increased number of persons working from home during the COVID-19 emergency, we were interested in exploring the extent to which gambling, gaming, alcohol use, and cannabis use were entering the workplace. When asked about changes in workplace behaviors, 34% of our sample reported they played games more when they should have been working, 26% reported they used cannabis more while working, 17% gambled more when they should have been working, and 8% drank more alcoholic beverages while working. These findings suggest that for some, the COVID-19 emergency may be related to decreased work productivity secondary to employees coping with COVID-19 related distress by using gaming, gambling, alcohol, and cannabis while on the job.

PRACTICE AND POLICY IMPLICATIONS

There is a need to implement strategies aimed at helping people cope with stress related to the COVID-19 era

Survey findings suggest a need to implement strategies aimed at helping people cope with stress related to the COVID-19 environment. This could be accomplished through a variety of actions including media campaigns for health promotion aimed at (i) utilizing positive coping activities and (ii) increasing people's awareness about the risk of developing addictions to legalized activities such as gambling, gaming, alcohol use, and cannabis use in the face of dealing with COVID-19 related distress.

During times of high environmental stress, it is important to screen for addiction disorders

This study highlights the need to screen for addiction disorders, not just those related to substance addictions, within healthcare settings. Strategies should include a systematic assessment of addiction comorbidity and other guidelines for primary caregivers, physicians, and behavioral healthcare workers. Several brief screeners can be used within primary care or medical settings, such as those used within this study.[17]

Workplace health needs to include policies and procedures to address gambling, gaming, alcohol use, and cannabis use

The COVID-19 pandemic has changed the way many people work and many of these changes may extend well beyond the current pandemic. Employers need to address workplace stress during this pandemic by aiding employees to recognize what stress looks like, take steps to build resilience, and know where to go if help is needed. The Oregon Health Authority offers “COVID-19 Coping Resources” on their Public Employee Benefits Board and Oregon Educators Benefit Board. Expansion of these efforts should be considered for other employer groups. This is also the time to review employee policy and practice manuals to ensure expectations and guidelines

[17] See this project’s Technical Report for a description of the screening measures used including instrument questions and references to scoring and interpretation

are clear regarding gambling, gaming, alcohol use, and cannabis use while on the job. Employer recovery support policies should also be reviewed and if necessary revised to address both substance addictions and behavioral addictions.

Culturally informed interventions may help address health disparities

Within our survey we found individuals identifying as Hispanic were significantly more likely to score positively on addiction screens than other ethnic groups. Grants and other programs to address health disparities should utilize culturally appropriate strategies to address disadvantaged groups and attend to behavioral and chemical addictions.

LIMITATIONS

There are several limitations to this study that are important to note. First, this study relied on a probability-based panel designed to be representative of the average Oregon household combined with nonprobability online interviews that were weighted to account for potential bias associated with the nonprobability sample. Although this sampling method has several advantages over other survey methods, there may be some sampling bias. Second, only Oregon residents were eligible to participate in this survey. It is unclear whether the results of this Oregon study generalize to other populations. Lastly, this study was fielded approximately one year after the first COVID-19 stay-at-home orders were issued and at a time shortly following the release of COVID-19 vaccines to the general public. It is unknown if the fielding of the survey at the time influenced responses compared to other time points during the pandemic.

CONCLUSION

The pandemic has seriously impacted people's lives, and some of the changes have exacerbated or introduced problematic coping behaviors. The negative impacts of the COVID-19 emergency on addictive behaviors may persist well beyond the end of the pandemic, suggesting policymakers and public health workers should take action to address high addiction rates and promote community health.

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