

# INVESTIGATING RISK FACTORS ASSOCIATED WITH ONLINE, OFFLINE, AND MIXED-MODE GAMBLING

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## INTRODUCTION

- Comparisons of online and offline gamblers have typically been done in a binary fashion. Consistently, those who are identified as online gamblers have shown an increased risk for experiencing gambling problems<sup>1,2</sup>.
- Given that most people who are characterized as online gamblers also gamble offline, to some degree<sup>3</sup>, several studies that have compared online and offline gamblers in a binary fashion are better characterized as comparisons of exclusively offline gamblers and mixed-mode gamblers.
- In some recent studies, people who gamble online have been separated into exclusively online gamblers (ONGs) and mixed-mode gamblers (MMGs) and compared to exclusively offline gamblers (OFGs). Consistently, it is MMGs who have shown the greatest risk for experiencing gambling-related harm<sup>4,5</sup>.

## OBJECTIVES

- Identify risk factors that may account for MMGs' heightened risk of experiencing gambling problems by:
  - 1) Comparing a sample of ONGs', OFGs', and MMGs' problem gambling severity, range of gambling games played, and alcohol use while gambling to determine whether past research findings could be replicated.
  - 2) Conducting exploratory analyses to examine if ONGs, OFGs, and MMGs differ based on their preferred game type, and use of tobacco or cannabis while gambling.

## METHODS

- **Recruitment**
  - A total of  $N = 396$  moderate-risk and problem gamblers were recruited using the online crowdsourcing platform CloudResearch and identified as ONGs ( $n = 133$ ), OFGs ( $n = 135$ ), or MMGs ( $n = 128$ ).
- **Measures**
  - Problem Gambling Severity Index (PGSI).
  - Number of gambling activities played.
  - Preferred game type (i.e., chance-based vs. skill-based).
  - Frequency of alcohol, tobacco, and cannabis use immediately before or while gambling.
- **Statistical Analyses**
  - One-way, between subjects ANOVAs.
  - Chi-square tests.

## SAMPLE CHARACTERISTICS

- **Mean age:**  $36.5 \pm 11.4$  years.
- **Gender distribution:** 47.5% female, 51.8% male, 0.8% transgender or non-binary.

## RESULTS

\* =  $p < .05$

\*\* =  $p < .01$

\*\*\* =  $p < .001$



Figure 1.  $F(2, 393) = 4.05, p = .018, \omega^2 = 0.02$



Figure 2.  $F(2, 393) = 30.06, p < .001, \omega^2 = 0.13$

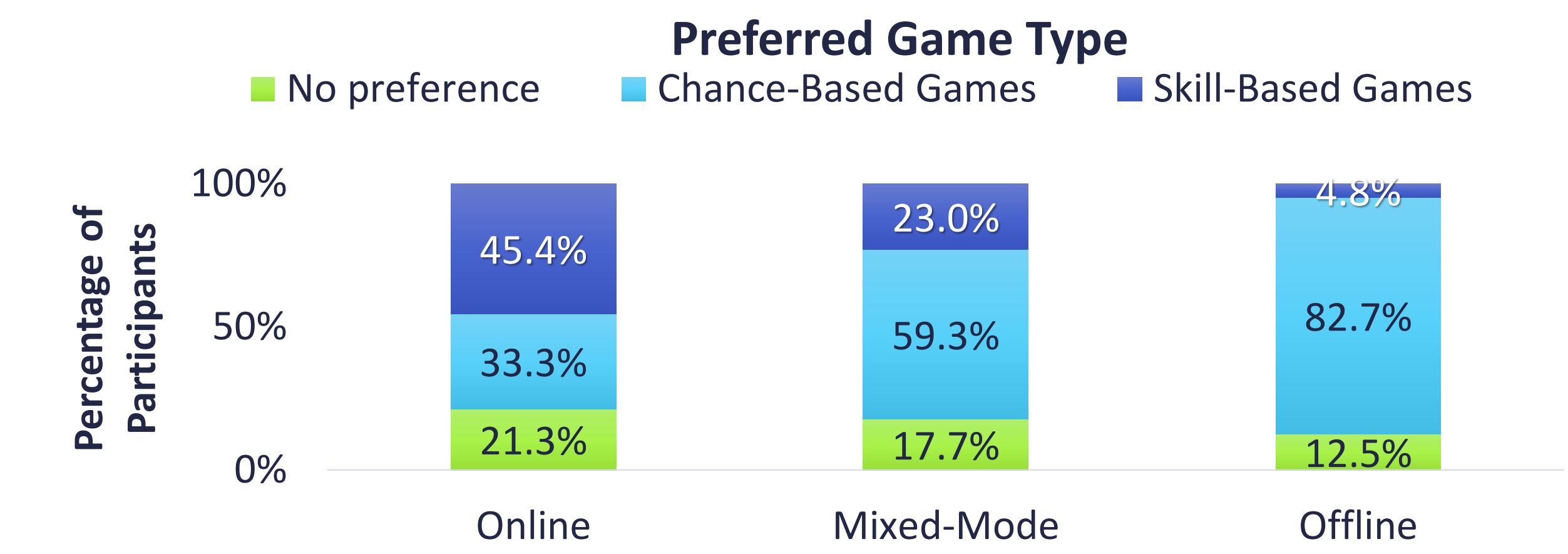


Figure 3.  $\chi^2(4) = 60.23, p < .001, V = 0.30$

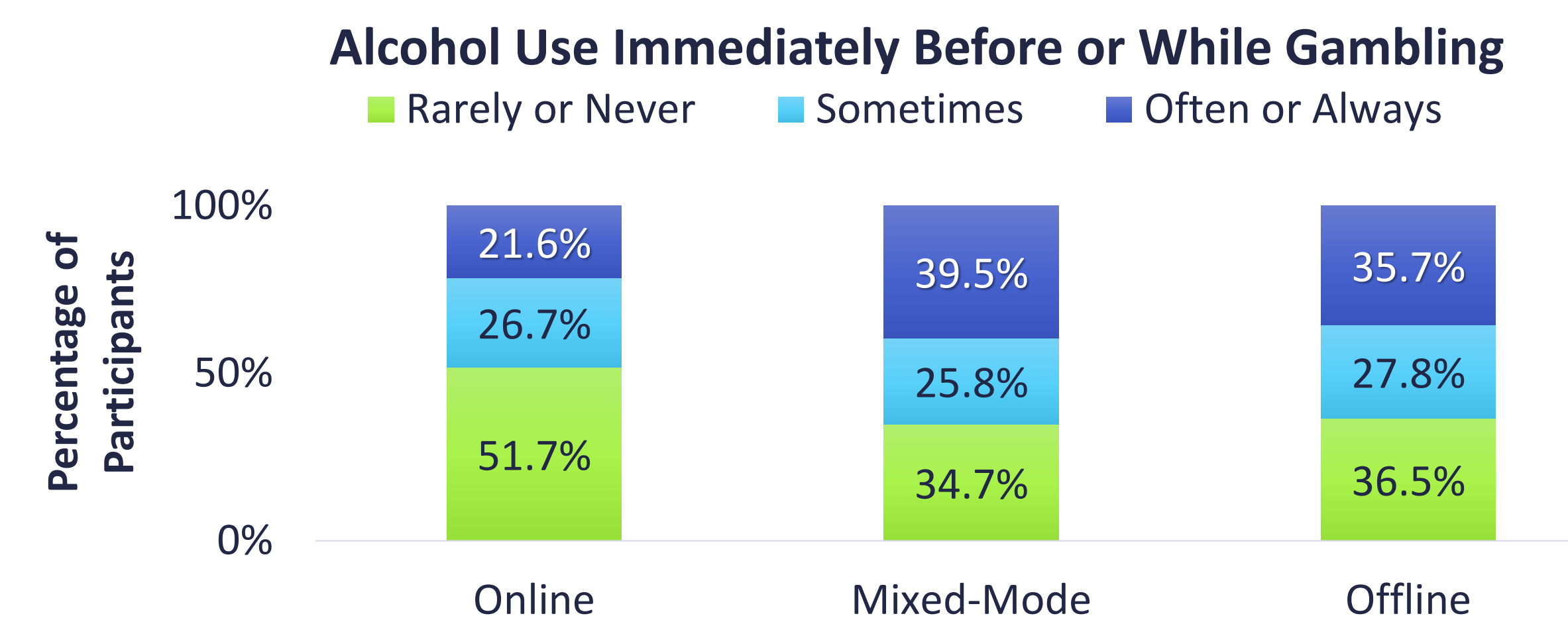


Figure 4.  $\chi^2(4) = 11.76, p = .019, V = 0.13$

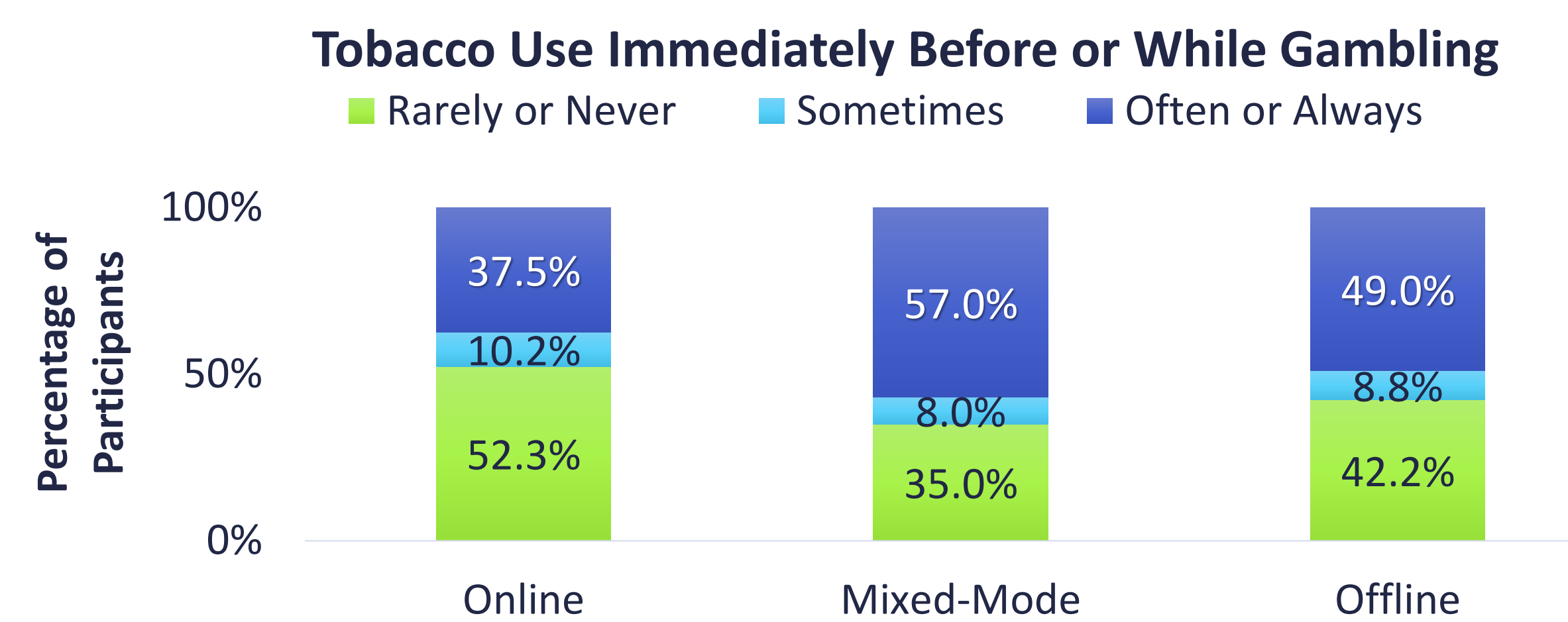


Figure 5.  $\chi^2(4) = 7.25, p = .123, V = 0.11$

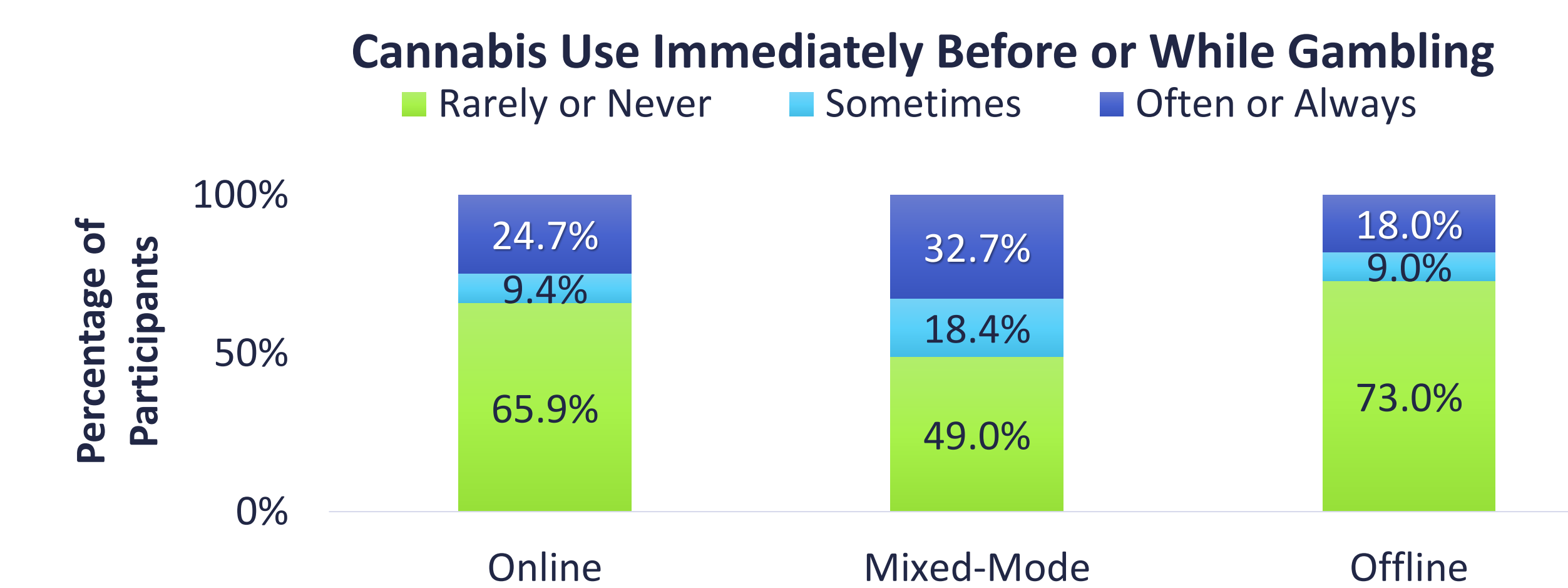


Figure 6.  $\chi^2(4) = 13.40, p = .009, V = 0.15$

## SUMMARY

- **Figures 1 & 2:** In-line with previous findings<sup>4,5</sup>, MMGs reported the worst problem gambling severity scores. Furthermore, MMGs played a wider range of games than ONGs and OFGs. Previous research has shown that participating in more game types is associated an increased risk of problem gambling<sup>6</sup>.
- **Figure 3:** Exploratory analyses revealed that ONGs and MMGs showed a greater preference for skill-based games (e.g., poker, blackjack, sports betting) than OFGs, and OFGs and MMGs showed a greater preference for chance-based games (e.g., lotteries, bingo, electronic gambling machines) than ONGs. Previous research has shown that gamblers who prefer a combination of skill- and chance-based games show greater endorsement of fallacious beliefs about how gambling works<sup>7</sup>, which is linked to an increased risk of engaging in problematic gambling behaviour<sup>8</sup>. Such a relationship could account for MMGs' increased susceptibility to problematic gambling.
- A consequence of MMGs' engagement in a wider variety of gambling activities and preference for chance-based games may be an increased likelihood for them to play games that are known to be associated with a heightened risk of experiencing gambling problems. For example, a recent study showed that MMGs who were identified as moderate-risk and problem gamblers were more likely to report offline forms of gambling, and more specifically, electronic gambling machines, as their most harmful form of gambling<sup>4</sup>.
- **Figures 4, 5, & 6:** In support of previous findings<sup>9</sup>, MMGs and OFGs were more likely to use alcohol while gambling. Exploratory analyses showed no difference between groups regarding simultaneous tobacco use and gambling, and that MMGs were less likely than OFGs to report rarely or never using cannabis while gambling. Simultaneous drinking and gambling has been identified as a risk factor for problem gambling<sup>10</sup>, and more time spent gambling, participation in a wider variety of gambling activities, and worse problem gambling severity have been associated with an increased likelihood of cannabis use<sup>11</sup>.
- Overall, the results of the present study indicate that taking a more nuanced view of preferred gambling mode by identifying MMGs and comparing them to ONGs and OFGs is warranted, as doing so provides a more detailed assessment of the level of risk associated with different modes of gambling. More specifically, these results suggest that on its own, gambling online may not be a clear indicator of potential risk. Instead, in order to create a clearer understanding of the potential dangers associated with online gambling, and to avoid potentially overstating the level of risk, other gambling-related behaviours players are likely to engage in, such as preferred game type and simultaneous substance use, should be taken into consideration.

## REFERENCES

1. Griffiths, M., & Barnes, A. (2008). Internet gambling: An online empirical study among student gamblers. *International Journal of Mental Health and Addiction*, 6(2), 194-204.
2. Wood, R. T., & Williams, R. J. (2011). A comparative profile of the Internet gambler: Demographic characteristics, game-play patterns, and problem gambling status. *New Media & Society*, 13(7), 1123-1141.
3. Wardle, H., Moody, A., Griffiths, M., Orford, J., & Volberg, R. (2011). Defining the online gambler and patterns of behaviour integration: Evidence from the British Gambling Prevalence Survey 2010. *International Gambling Studies*, 11(3), 339-356.
4. Hing, N., Russell, A. M., Black, A., Rockloff, M., Browne, M., Rawat, V., ... & Woo, L. (2022). Gambling prevalence and gambling problems amongst land-based-only, online-only and mixed-mode gamblers in Australia: A national study. *Computers in Human Behavior*, 132, 107269.
5. Gainsbury, S. M., Russell, A., Blaszczynski, A., & Hing, N. (2015). The interaction between gambling activities and modes of access: A comparison of internet-only, land-based only, and mixed-mode gamblers. *Addictive Behaviors*, 41, 34-40.
6. Dowling, N. A., Merkouris, S. S., Greenwood, C. J., Oldenhof, E., Toumbourou, J. W., & Youssef, G. J. (2017). Early risk and protective factors for problem gambling: A systematic review and meta-analysis of longitudinal studies. *Clinical Psychology Review*, 51, 109-124.
7. Myrseth, H., Brunborg, G. S., & Eidem, M. (2010). Differences in cognitive distortions between pathological and non-pathological gamblers with preferences for chance or skill games. *Journal of Gambling Studies*, 26(4), 561-569.
8. Goodie, A. S., & Fortune, E. E. (2013). Measuring cognitive distortions in pathological gambling: Review and meta-analyses. *Psychology of Addictive Behaviors*, 27(3), 730-743.
9. Blaszczynski, A., Russell, A., Gainsbury, S., & Hing, N. (2016). Mental health and online, land-based and mixed gamblers. *Journal of Gambling Studies*, 32(1), 261-275.
10. Welte, J. W., Barnes, G. M., Wieczorek, W. F., & Tidwell, M. C. (2004). Simultaneous drinking and gambling: a risk factor for pathological gambling. *Substance Use & Misuse*, 39(9), 1405-1422.
11. McGrath, D. S., Williams, R. J., Rothery, B., Belonger, Y. D., Christensen, D. R., El-Guebaly, N., ... & Stevens, R. M. (2023). Problem gambling severity, gambling behavior, substance use, and mental health in gamblers who do and do not use cannabis: Evidence from a Canadian national sample.