Catalyst or circuit-breaker? A prospective study to assess COVID-19's effects on relationships between gambling availability, gambling and harmful gambling, and social, psychological and financial wellbeing.

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Catalyst or circuit-breaker? A prospective study to assess COVID-19's effects on relationships between gambling availability, gambling and harmful gambling, and social, psychological and financial wellbeing

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Aims and background

The COVID-19 pandemic and the associated restrictions provided a natural experiment by which to assess gambling and harmful gambling in Australia following changes in the availability of gambling. The pandemic also provided a window to the effects of externally imposed psychological, social and financial stressors on gambling behaviours. The study aimed to:

1. Examine how the changed availability of gambling products and modes has impacted on gambling behaviour and harmful gambling.

2. Determine the characteristics of gamblers that are associated with different transitions in gambling behaviour.

3. Identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling.

4. Identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing.

Before the national COVID lockdown from late-March 2020 to late-May 2020, all major gambling forms were widely accessible in Australia. Electronic gaming machines (EGMs) and casino games were legally provided only in land-based venues, while gambling on races, sports, esports, fantasy sports and lotteries could be conducted online and in land-based outlets. During lockdown, land-based EGM and casino venues were closed, sports betting was curtailed, and race betting was confined to online modes. Many lottery venues closed or had severely restricted traffic as people stayed at home, although tickets could be purchased online. At the same time, psychosocial stressors such as loneliness, stress, health anxiety and financial hardship were heightened in the community. One and two years after the national lockdown when most COVID restrictions had eased, land-based gambling venues had reopened, sporting events had resumed, and race betting, lotteries and novel gambling forms (esports betting, fantasy sports betting, skin gambling, purchasing loot boxes) continued. Victoria and parts of New South Wales (NSW) had additional lockdowns after the national lockdown, but these did not occur during any of the study's assessment periods.

Approach and terminology used

In alignment with a public health perspective, this report mainly uses the term "harmful gambling". In this study, it refers to scores of 1+ on the Problem Gambling Severity Index (Ferris & Wynne, 2001). This approach is used in recognition that harm from gambling is not confined to those who meet criteria for problem gambling or gambling disorder, and that most harm from gambling, in aggregate, arises from "low risk" gambling (Browne et al., 2016). This terminology also aligns with its increasing use by researchers, regulators and public health organisations, instead of terms such as "problem gambling" and "disordered gambling", which pathologise harmful gambling and narrow the focus of harm reduction to only those people with a clinically-significant condition.

Methods

A prospective longitudinal cohort study of participants who gambled prior to lockdown was conducted over three survey waves in late-May 2020, late-May 2021, and late-May 2022. Because both retrospective and current measures were included in Wave 1, the surveys spanned four time periods. These were before the national lockdown (Time 1; N = 2125), during lockdown (Time 2; N = 2125), one year after lockdown (Time 3; N = 649), and two years after lockdown

(Time 4; N = 458). For consistency with the two-month duration of the national lockdown assessed at Time 2, assessments at Time 3 and Time 4 also covered the preceding two months. Respondents were recruited from an institutional research panel maintained by the Experimental Gambling Research Laboratory at CQUniversity and from the online panel aggregator, Qualtrics. Eligibility criteria at Time 1 included being aged 18 years or above, living in Australia, and having gambled at least once in the past 12 months. The responses came from a convenience sample of past-year gamblers and, therefore, may not be representative of all gamblers in Australia. The longitudinal sampling also means that the samples for Times 2-4 are not representative.

Measures included gambling participation and frequency for 13 commercial gambling forms and for purchasing loot boxes; the Problem Gambling Severity Index (PGSI); demographics; and a range of psychosocial measures (perceived stress, psychological distress, loneliness, health anxiety about COVID, financial hardship, stressful life events due to COVID, unhealthy behaviours, and healthy behaviours). Transitions in gambling behaviour were examined between time points. These included four categories: those who *sustained* their gambling (gambled at both time points), those who *commenced* gambling (did not gamble at the first time point, but gambled at the second time point), those who *ceased* gambling (gambled at the first time point but not at the second time point), and those who *abstained* from gambling (did not gamble at either time point). These transitions were examined for overall gambling (i.e., any form), gambling on each of the major forms (considered separately), online gambling, and harmful gambling (i.e., changes in reporting any PGSI symptoms as well as changes in PGSI score). Results were very similar between the full sample at each time point and the results restricted to respondents who completed all four survey waves. They indicate minimal impact of attrition on key results including overall gambling participation, participation on each main gambling form, and problem gambling severity. The results summarised below are consequently for the full sample.

Results for Aim 1: Examine how the changed availability of gambling products and modes has impacted on gambling behaviour and harmful gambling

- During lockdown, almost one-quarter of the sample ceased gambling entirely, but most had recommenced gambling within one to two years. While 100 per cent of Time 1 respondents gambled (as required by recruitment criteria), this decreased to 75.8 per cent among Time 2 respondents, but subsequently rebounded to 85.2 per cent among Time 3 respondents and 86.9 per cent among Time 4 respondents.

- During lockdown, the sample reported decreased participation in EGMs (from 46.0 per cent to 10.4 per cent), sports betting (from 38.4per cent to 17.4 per cent), race betting (from 48.3 per cent to 30.2 per cent) and lotteries (from 83.8per cent to 61.5 per cent), compared to pre-lockdown. Participation bounced back within one year after lockdown, albeit at lower levels than pre-lockdown.

- The sample also reported decreased participation in casino games (from 23.4 per cent to 9.3 per cent) and novel gambling forms (from 13.2 per cent to 10.1 per cent) during lockdown, and even lower participation one and two years later.

- Online gambling increased at each time point. During lockdown, nearly half (46.5 per cent) of online gamblers increased their frequency of online gambling and very few decreased (5.7 per cent). However, only 4.8 per cent of the sample transitioned from land-based only gambling to online gambling during lockdown. One year after lockdown, over one-third (38.0 per cent) of online gamblers reported gambling online less frequently, which may reflect a return to land-based venues.

- The lockdown initiated a longer-term circuit-breaker for some respondents' gambling. Specifically, the following proportions of respondents who were retained at Time 4, and who

had reported engaging in a gambling form in an earlier survey, reported not gambling on it two years after lockdown: 13.1 per cent of former gamblers, 18.1 per cent of former EGM gamblers, 15.2 per cent of former sports bettors, 9.9 per cent of former race bettors, 7.5 per cent of former lottery gamblers, 18.8 per cent of former gamblers on novel forms, and 10.0per cent of former online gamblers. Although some of the decrease may be due to natural attrition in usage (i.e., all habits change over time), the size of the exodus suggests a circuit-breaker operated for some.

- The lockdown acted as a temporary circuit-breaker that negated all symptoms of problem gambling for about one-sixth (15.0 per cent) of respondents, and lessened problem gambling severity for one-quarter (25.0 per cent) of respondents by Time 2. However, these effects were reversed once land-based venues reopened and sports events resumed by Time 3. Specifically, the proportion of the sample who reported symptoms of problem gambling (PGSI 1+) declined from 36.8 per cent at Time 1 to 23.0 per cent at Time 2, but rebounded to 33.4 per cent and 31.4 per cent at Times 3 and 4, respectively.

Results for Aim 2: Determine the characteristics of gamblers that are associated with different transitions in gambling behaviour

- During lockdown, some respondents continued to gamble on products that were not available in land-based venues (EGMs, casino games) or were severely restricted (sports betting). These respondents (compared to those who ceased) tended to have higher pre-lockdown PGSI scores, and to be younger, employed and report more unhealthy behaviours, loneliness, perceived stress, psychological distress, financial hardship and stressful life events due to COVID during lockdown.

- During lockdown, respondents who increased the frequency of their gambling on EGMs, casino games, sports betting, race betting and lotteries tended to have higher pre-lockdown PGSI scores, to be younger (except those playing casino games), and to report more perceived stress, psychological distress, loneliness, financial hardship and stressful life events due to COVID during lockdown. Those who increased their frequency of gambling on forms that were usually only available in land-based venues (EGMs, casinos) presumably gambled on illegal offshore gambling sites.

- Respondents who newly commenced online gambling during lockdown, compared to those who gambled online both before and during lockdown, were more likely to have lower pre-lockdown PGSI scores and to be older and female. However, one year after lockdown, males were more likely than females to continue rather than cease online gambling.

- At Time 3, when venues and sports events had recommenced, respondents tended to have resumed or increased their gambling, although participation was below pre-pandemic levels. There were few significant differences in the characteristics of those who (re)commenced, sustained, or ceased gambling on each form.

- Some transitions in gambling behaviour were reported at Time 4, but it is difficult to attribute them directly to the effects of the pandemic, given that accessibility to gambling had largely returned to pre-COVID conditions by Time 3.

- Overall, people with higher problem gambling severity, younger people, and those with psychosocial and financial vulnerabilities were more likely to increase their gambling and gamble on illegal forms during lockdown, and to recommence or increase some of their gambling activity post-lockdown.

Results for Aim 3: Identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling

- The severity of gambling problems (PGSI scores) tended to decrease from Time 1 to Time 2. This decrease was greatest among respondents living in metropolitan areas, not in a relationship, and who reported lower perceived stress, psychological distress, loneliness, health anxiety about COVID and financial hardship during lockdown.

- Similarly, respondents whose prior symptoms of harmful gambling (PGSI 1+) ceased during lockdown tended to be older, female, not employed, and lower in perceived stress, psychological distress, loneliness, financial hardship and stressful life events.

- Conversely, respondents whose symptoms of harmful gambling (PGSI 1+) started during lockdown, as measured at Time 2 in relation to the preceding two months, tended to be younger, employed, engaged in fewer healthy behaviours, and higher in stress, psychological distress and stressful life events.

- During lockdown, significant decreases in problem gambling severity were found for respondents who: decreased the frequency of gambling on EGMs, casino games, sports betting, or race betting; respondents whose sports betting or race betting occurred at the same frequency; and for those who engaged in online gambling.

- The severity of gambling problems (PGSI score) tended to increase from Time 2 to 3 as gambling availability largely returned to pre-pandemic conditions. This increase was greatest among respondents with higher levels of perceived stress, psychological distress, health anxiety about COVID, financial hardship and stressful life events.

- Respondents whose symptoms of harmful gambling (PGSI 1+) ceased at Time 3 were significantly more likely to be female.

- Conversely, respondents who reported that their symptoms of harmful gambling (PGSI 1+) (re)commenced at Time 3 tended to be experiencing higher perceived stress, psychological distress and loneliness.

- Significant increases in problem gambling severity were found for respondents who bet more frequently on EGMs, casino games, sports betting, or race betting at Time 3, and those who decreased or increased their frequency of online gambling.

- Transitions in harmful gambling continued to occur from Time 3 to Time 4, but it is difficult to attribute them to the effects of the pandemic, given that accessibility to gambling had largely returned to pre-COVID conditions by Time 3.

- Overall, the findings indicate that harmful gambling fluctuated with the availability of gambling, and that respondents with psychosocial vulnerabilities were relatively more likely to experience harmful gambling both during and after lockdown compared to others at those times. Perhaps unsurprisingly, decreased gambling frequency on EGMs, casino games, sports betting, or race betting during lockdown was associated with declines in PGSI scores, while increased frequency of gambling on these forms was associated with increased PGSI scores one year after lockdown.

Results for Aim 4: Identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing

- During lockdown, most respondents ceased gambling on products that were not available in land-based venues (EGMs, casino games) or were severely restricted (sports betting). Those who ceased gambling on these products (compared to those who continued) tended to have

lower pre-lockdown PGSI scores, and be older, less lonely and report less perceived stress, psychological distress, financial hardship and stressful life events during lockdown.

- During lockdown, respondents who ceased race betting were more likely to report lower pre-lockdown PGSI scores, be female, more educated and report less financial hardship. Those who ceased lotteries also tended to report lower pre-lockdown PGSI scores and be female, more educated, younger and employed. Those who ceased gambling on novel forms tended to have lower pre-lockdown PGSI scores and be older, unemployed, living in a metropolitan area, engaged in fewer unhealthy behaviours, and report less loneliness, financial hardship and stressful life events.

- Few respondents reported they had ceased each gambling form between Time 2 and Time 3. Where there were sufficient numbers for comparisons, those who ceased each form were more likely to be female and more educated.

- Overall, respondents with lower PGSI scores, females, older respondents, those with higher educational attainment and those with lower levels of psychosocial vulnerability were more likely to cease gambling on various activities during and after lockdown.

- Sizeable minorities of respondents (21per cent-47 per cent) endorsed that ceasing gambling during lockdown had benefited several aspects of their wellbeing. These included: enjoying the break from gambling, experiencing less gambling harm from their own or others' gambling, relief about not being able to gamble as usual, and improvements in their finances, mental health, physical health, relationships and work/study. Further, less than 5per cent had felt distressed or frustrated about not being able to gamble as usual, which indicates that few found the imposed break to be onerous.

- Respondents with higher pre-lockdown PGSI scores were more likely to report feeling distressed or frustrated about not being able to gamble as usual during lockdown. Despite this, they were also more likely to report all the positive effects from not being able to gamble as usual that were assessed in the survey.

Conclusions

- While the national COVID lockdown in Australia heightened known psychosocial risk factors for gambling and gambling problems in the community, gambling participation and harmful gambling decreased. Changes in psychosocial risk factors, therefore, cannot explain changes in gambling and gambling problems in the population.

- Instead, what changed during lockdown was gambling availability. The closure of EGM and casino venues, the curtailment of sports betting, and the restriction of race betting to online modes immediately resulted in a marked decline in gambling participation and gambling problems.

- While individuals who reported more psychosocial stressors were more likely to sustain or increase their gambling and report increases in harmful gambling, there was a net drop in gambling and gambling problems during lockdown.

- Further, once gambling availability returned to (near) pre-pandemic levels, gambling participation and gambling problems also returned to (near) former levels, despite an easing of COVID restrictions and their accompanying financial, psychological and social stress.

- Changes in gambling behaviour observed in this and all other COVID-gambling studies indicate that people reduce their gambling when supply is reduced, and that this directly reduces gambling problems and harm.

Limitations and strengths of the study

Purposive sampling was used to obtain large numbers of respondents in subgroups of interest to enable analyses of different gambling transitions, and characteristics of these subgroups. The results should not be interpreted as representative prevalence figures. The self-report data may be subject to recall and social desirability biases.

The Wave 1 survey was conducted prior to receiving a VRGF grant to conduct follow-up surveys. This meant that participants were not aware that they were potentially signing up to a longitudinal study. To contain the length of the survey, the broader social context that impacted on individuals during the pandemic and all potential risk factors could not be assessed. For example, quality of housing, equity, ethnicity, employment type, family violence, alcohol use, drug use and impulsivity were not assessed.

Victoria and NSW had subsequent COVID lockdowns after the national lockdown. These lockdowns did not occur during the assessment periods for Times 3 and 4, and gambling availability at these times was therefore similar to pre-pandemic conditions. Nonetheless, these lockdowns may have impacted relatively more on the psychosocial and financial wellbeing of respondents from these jurisdictions.

Attrition did not affect the Time 1 and Time 2 data, as these were collected in the same survey. However, substantial attrition occurred over Times 3 and 4. Importantly, there was minimal difference between the data for the full sample at each time point and for the subsample who completed all survey waves. One exception was that those scoring PGSI 8+ at Times 1 and 2 were less likely to complete the subsequent surveys. This may have resulted in an underestimation of problem gambling severity at Times 3 and 4. In addition, respondents at Times 3 and 4 were more likely to be male, older and to not live in Victoria. Nonetheless, the pattern of changes in overall gambling, gambling on each form, online gambling and harmful gambling, were consistent between the full sample and the subsample who completed all surveys. This consistency indicates that attrition had minimal impact on the results. This enabled the analyses to draw on the larger samples who responded to each survey, instead of being constrained to the 458 respondents who completed all surveys. Even so, some subgroups were too small in later surveys for comparisons due to the natural patterns of gambling behaviour (e.g., few respondents gambled on EGMs at Time 2 during lockdown and then ceased EGM gambling at Time 3 when venues had reopened). Therefore, most findings are based on Time 1 and Time 2 as measured in the first survey that assessed current and retrospective gambling.

The study's main strength is that it extends on previous COVID-gambling studies in Australia. First, it provides more detailed analyses of different gambling transitions, such as those who sustained, ceased or commenced gambling on the various forms and those who reported increases or decreases in harmful gambling. Second, it included a wider range of psychosocial measures than previous studies and, therefore, provides more detailed insights into risk and protective factors associated with different gambling transitions. Third, the study's timeframe extended to two years after lockdown, which enabled longer-term assessment of the effects of COVID-19 on gambling in Australia. While subject to the limitations described above, the study provides the most detailed assessment to date of how changes in gambling availability interacted with the heightened psychosocial stressors during the COVID-19 pandemic to impact on gambling and harmful gambling in Australia.

Implications: Critical take-away

The study shows that gambling problems and harm are tightly linked to the supply of gambling products. Restrictions in supply result in a decrease in negative consequences. Relatively few people reported being disturbed or highly inconvenienced by their inability to gamble during

pandemic restrictions. As a natural experiment, the pandemic-imposed gambling restrictions demonstrated that supply reductions can reduce gambling problems and harm in the community. It may also suggest that targeted supply restrictions, such as limiting available venues for gambling, can improve public health. There was no strong evidence that people simply switched their gambling habits to online forms from their preferred or typical in-venue gambling.

A mature consideration focused on increasing public welfare, therefore, should conclude that targeted supply reduction will likely yield benefits to the population. The most meaningful initiative would be a reduction in the supply of high-risk gambling products, which this study, and previous COVID-gambling studies, have now shown to be the most impactful potential change that would be likely to reduce harmful gambling in the community.

Chapter 1. Background

Key findings

- The COVID-19 pandemic had major impacts on gambling, particularly during the first waves of infection when governments around the world implemented strict restrictions, such as lockdowns and border closures.

- The closure of land-based gambling venues and the cancellation of most sporting events had a severe impact on the supply of gambling products, as gambling opportunities were reduced almost overnight. Most online gambling products remained available, however, and many were heavily marketed during lockdowns. The pandemic also affected demand for gambling products in ways still to be clearly delineated.

- The pandemic's impacts on people's social, psychological and financial wellbeing generally magnified known risk factors for gambling participation and harmful gambling. Other factors may have had a protective effect for some people, particularly the reduced availability of high-risk land-based gambling products during lockdowns.

- Australian and international studies identified a migration to online gambling and overall decreases in gambling and harmful gambling during lockdowns, but longer-term trends have yet to be clarified.

- Several risk factors have been associated with increased gambling since the pandemic began. Socio-demographic risk factors include male gender, younger age, lower educational attainment, lower socio-economic status, and financial stress. Psychological risk factors include gambling problems, substance use, mental health issues, and impulsivity. Social risk factors include boredom and social isolation. Lastly, gambling-related risk factors include increased time and money spent on gambling, gambling on high-risk activities, and gambling for a source of income.

- The studies reviewed support the notion that pandemic-related stressors have impacted peoples' ability to cope. Consequently, some people will rely on maladaptive strategies, like excessive gambling, to reduce negative mood states and to relieve other stressors.

- Conversely, some protective factors, particularly the reduced availability of electronic gaming machines (EGMs) and other high-risk gambling products, as well as increased time at home to devote to family and enjoyable pastimes, may have helped to reduce gambling and harmful gambling for some people.

Introduction

This chapter presents a narrative literature review to provide background to the study and then outlines the study's aims and objectives. The review is structured into the following main sections:

- The emergence of COVID-19: Immediate impacts on gambling availability and potential demand for gambling.

- The impact of the pandemic on social, psychological and financial wellbeing.

- Social, psychological, and financial risk and protective factors for gambling and gambling-related problems.

- The effects of gambling availability and accessibility on gambling behaviour and harmful gambling.

- Research on the impacts of the pandemic on gambling behaviour.

Methods

A comprehensive literature search was conducted to optimise the capture of peer reviewed and grey literature, along with statistical, industry and other trend data. It was conducted in early 2022 and updated in October 2022. Searches were conducted on major online bibliographic databases (e.g., PsychInfo, Google Scholar), government websites and clearinghouses, university gambling research centre websites, statistical and consultant websites, and through consultation with our networks of researchers and other gambling experts. These searches used relevant keywords (e.g., COVID-19, COVID-19 lockdown, pandemic, problem gambling, gambling behaviour, gambling disorder, gambling availability, gambling harm). This chapter provides a narrative review and does not aim to be a systematic review or meta-analysis. It reports only on those studies that best help to provide useful context for the study. It therefore does not include each and every study published on gambling and COVID-19 around the world.

The emergence of COVID-19: Immediate impacts on gambling availability and potential demand

In December 2019, COVID-19 emerged and quickly spread throughout the world (Liu et al., 2020), fundamentally changing how people live, work and play. The immediate impact on gambling availability was profound, as land-based gambling venues closed during lockdowns in most countries, and professional sporting events were cancelled or postponed worldwide. The opportunities to gamble were reduced overnight for those who gambled in venues or on sporting events (Sachdeva et al., 2021; Stark & Robinson, 2021).

In Australia, the pandemic control measures implemented during 2020 effectively closed land-based gambling venues, and suspended most major sporting events, simultaneously and for extended periods. The availability of venue-based gambling was immediate and included betting shops, casinos, clubs, and hotels (Main, 2020). This put a halt to consumer access to a range of products, such as electronic gaming machines (EGMs), bingo, keno and casino games, and betting in-person at on- and off-course betting outlets; products which are normally easily accessible to the public. The remaining gambling options were limited to predominately lottery tickets and instant scratch tickets, and online wagering on horse and greyhound races, as well as on novel forms including esports betting and fantasy sports betting. In Australia, it is illegal for gambling operators to offer online gaming services (such as EGMs, scratchies and casino-style games), as well as in-play betting on sporting events (ACMA, 2021). However, these products remain available, illegally, on offshore gambling platforms.

Nearly all professional sports events around the world were cancelled or postponed (Anon, 2020b, 2020c), and the 2020 Summer Olympics in Tokyo was rescheduled to the following year (Macnaughtan, 2020). In Australia, sports competitions were affected temporarily with suspensions of most competitions in Australia, except for minor sporting competitions, racing, and esports (Anon, 2020a). Horse, greyhound, and harness racing were allowed to continue in all jurisdictions, apart from a suspension in Tasmania for 4 weeks during April-May 2020 (Reynolds, 2020). The first national lockdown took place at the same time as the beginning of the National Rugby League (NRL) and the Australian Football League (AFL) seasons. This caused major disruption for wagering operators as these are two of the most popular sports for sports bettors.

While the availability of land-based gambling decreased dramatically because of pandemic restrictions, online gambling sites continued to operate. Many online gambling operators expanded their range of products once the pandemic began to appeal to a wider variety of customers and compensate for the suspension of sports betting. These expansions included adding new games, lines of business, and betting options. For example, Australian wagering operators increased their marketing for race betting and products they did not usually promote, including on esports, Russian table tennis and novelty bets (Russell & Hing, 2020).

As well as changes to the availability of gambling, the pandemic affected demand for gambling products in ways that are not well understood. For example, a range of well-known risk factors for harmful gambling were intensified by the pandemic itself and related restrictions. These factors include loneliness (John et al., 2019; McQuade & Gill, 2012; Wang et al., 2018) and boredom (Hing et al., 2016; Mercer & Eastwood, 2010; Wood & Griffiths, 2007), as well as psychological distress, depression, and anxiety (Barnes et al., 2015; Barrault & Varescon, 2013; Oksanen et al., 2018). The attraction of gambling as a coping mechanism for negative mood states, social isolation, and loneliness may have increased during the pandemic, particularly during lockdowns and border closures. The pandemic also led to increased substance abuse among vulnerable sub-populations (Knopf, 2022; Sohi et al., 2022; B.W. Turner et al., 2022), which can increase risky gambling behaviours while under their influence (Barnes et al., 2015; Edgerton et al., 2019; Martin et al., 2014; Price, 2020; Yu, 2014). The financial stress due to pandemic restrictions may have also led some individuals to view gambling as a potential source of income (Dwihayuni & Fauzi, 2021; Olason et al., 2017; Paterson et al., 2020).

The impact of the pandemic on social, psychological and financial wellbeing

A systematic review and meta-analysis of the global prevalence of mental health issues among the general population during the pandemic (Nochaiwong et al., 2021) included data from 398,771 individuals and 32 countries. There was wide variation across countries and regions in the pooled prevalence of mental health issues, but estimates were higher than reported prior to the pandemic. The global prevalence estimates were 36.5 per cent for stress, 50.0per cent for psychological distress, 26.9 per cent for anxiety, 28.0 per cent for depression, 24.1 per cent for post-traumatic stress symptoms, and 27.6 per cent for sleep issues. Another global systematic review and meta-analysis (N = 189,159) found the pooled prevalence estimates were 16.0 per cent for depression, 15.2 per cent for anxiety, 23.9 per cent for insomnia, 21.9per cent for post-traumatic stress disorder, and 13.3 per cent for psychological distress (Cénat et al., 2021). These estimates are significantly higher than estimates prior to the pandemic in general populations. The authors concluded that the short-term psychological health effects of the pandemic were equally high across countries and by gender. A systematic review and meta-analysis of studies (Dettmann et al., 2022) on the prevalence of clinical levels of anxiety and depression during the first lockdown in the UK (N = 46,158) revealed significant increases from pre-pandemic levels. The prevalence of anxiety was 32.0 per cent compared with 4.7 per cent pre-pandemic levels, and the prevalence of depression was 32.0 per cent compared with 4.1 per cent pre-pandemic. This represents an approximate seven to eight-fold increase in anxiety and depression. Nonetheless, estimates among the meta-analyses described here show variability, most likely due to sample selection.

In contrast, a meta-analysis of natural experiments and longitudinal studies (Prati & Mancini, 2021) found that the psychological effects of lockdowns were highly heterogeneous, small in magnitude, and not consistently detrimental to mental health. Their meta-analyses revealed relatively small effect sizes for anxiety and depression, while those for social support, loneliness, general distress, negative affect, and suicide risk were not significant. They concluded that many people appeared to be psychologically resilient to the effects of lockdowns. Other studies have shown that suicide rates in most countries, including Australia, US, Canada, New Zealand, Peru, Sweden, and Norway, have not risen, and in some cases have decreased, during the pandemic (Appleby, 2021).

The pandemic, and in particular the associated lockdowns, have also had significant financial impacts on individuals, families, businesses, and industries. Border closures, lockdowns and stay-at-home orders led to the cessation of work across non-essential industries, and the suspension of whole industries, such as tourism. Some countries, including Australia, introduced financial support to individuals and small businesses, such as wage subsidies to assist in the retention of staff, and increased welfare and business payments, particularly during the initial stages of the pandemic. A prospective longitudinal study of 898 working-age Australians in Victoria investigated the health impacts of that state's highly restrictive, 4-month lockdown (Griffiths et al., 2022). It found increased psychological distress at this time of social isolation and loss of work. However, after the lockdown, there was no evidence of significant long-lasting effects on work, social interactions, and mental health, in comparison to the rest of the country (note, only Victoria was in lockdown at this time). This study revealed that financial stress peaked during the early stages of the pandemic, but decreased over time throughout Australia. It is likely that the provision of business payments and wage subsidies reduced financial stress for people during lockdown, and subsequently reduced further deteriorations in post-lockdown mental health issues.

An Australian study (Swanton et al., 2021) examined the impact of financial wellbeing on gambling behaviour during the initial lockdown period (May 2020) among a convenience sample (N = 764, 85per cent men) of adults. A quarter (25per cent) of the sample said that COVID-19 had made their financial situation worse, 24per cent said it made it better, and 50per cent said it did not affect their financial situation. Most participants reported they reduced their gambling by about 50per cent during the lockdown compared to pre-lockdown. There was no relationship found between financial wellbeing and changes in gambling participation (gambling frequency), either prior to or during lockdown. However, lower financial wellbeing was associated with higher risk of problem gambling. Higher financial wellbeing was associated with lower levels of psychological distress. This study demonstrates a link between financial wellbeing and lower risk of gambling problems, but has limitations associated with sample representativeness, size and attrition.

Summary

The pandemic has variously impacted people on a range the social, psychological and financial indices. These effects are heterogenous, with some individuals and groups experiencing greater stressors and associated mental health issues than other groups. The effects have also changed depending on the stage of the pandemic and whether government-imposed controls remained active. Overall, many people have shown resilience in uncertain times, with increased anxiety and depressive symptoms during lockdowns, but a quick recovery of mental health post-lockdowns. However, some groups such as those with socio-economic disadvantage prior to the pandemic, health-care workers, people with mental and physical health conditions and comorbidities, COVID-19 patients, and people in quarantine, have been exposed to greater stress, which has resulted in more negative psychological outcomes. Individuals experiencing stressors from the

pandemic may be more likely to engage in unhealthy or potentially addictive behaviours, including excessive gambling (Avena et al., 2021).

Social, psychological and financial risk and protective factors for harmful gambling

The pandemic and associated restrictions have created an unprecedented exposure for large segments of the population to social, psychological, and financial risk factors for potentially addictive behaviours, including gambling (Maraz et al., 2021). This section provides an overview of the main psychosocial risk factors for gambling and harmful gambling, as well as protective factors. However, it is important to note that online gambling and continuous-play gambling products have been identified as stronger risk factors for gambling problems than psychosocial factors, based on a meta-analysis of 104 studies (Allami et al., 2021).

A systematic review and meta-analysis (Dowling et al., 2017) of early risk and protective factors in childhood, adolescence, and young adulthood, was conducted to assess those factors associated longitudinally with the development of gambling problems in later life. This review was the first to use replicable, robust, and reliable procedures in which to select and synthesise available longitudinal evidence (on studies published between 1990 and 2015). Thirteen individual risk factors were identified: alcohol-use frequency; anti-social behaviours; depression; cannabis use; illicit-drug use; tobacco use; impulsivity; number of gambling activities; problem gambling severity; sensation seeking; violence; under-controlled temperament; peer anti-social behaviours; and poor academic performance. The strongest risk factors were gambling severity, male gender, and poor school performance. Although fewer protective factors were identified, these included high socio-economic status, parental supervision, and social problems. On average, the effect sizes were small to medium.

A study by Browne et al. (2019) identified factors providing the largest and most unique explanatory power for gambling-related harm out of 25 known risk factors. A convenience sample of regular gamblers (*N* = 1174, 39.7per cent males) were surveyed. The most important distal risk factor, by a significant degree, was trait impulsivity, followed by childhood exposure to gambling. Key proximal risks of harm included excessive gambling, less use of safe gambling practices, and greater belief in gambling fallacies. Other well-known risk factors, such as low educational attainment and being younger, were not significant after controlling for the other variables.

Summary

Studies have identified key psychosocial risk factors for harmful gambling, as well as a smaller number of protective factors. Many of these factors, such as substance use, depression, comorbid physical and mental health conditions, poverty, reduced social connectedness, and experience of trauma, have the potential to be exacerbated directly because of the pandemic and associated restrictions. Other potential protective factors which could reduce gambling participation and harmful gambling, include the reduced availability of continuous forms of gambling (particularly EGMs), increased family oversight due to lockdown, and government financial payments.

The effects of gambling availability and accessibility on gambling participation and harmful gambling

Changes in gambling availability are known to change the way people gamble, but the precise relationship between gambling availability, gambling participation, and harmful gambling, remains unclear (St-Pierre et al., 2014; Vasiliadis et al., 2013; Zoglauer et al., 2021). The past four decades have seen an unprecedented increase in the availability and accessibility of gambling in many countries, where most forms of gambling are now legal, regulated, licensed, and available to adults (St-Pierre et al., 2014). The emergence of online and mobile gambling has also expanded accessibility.

A recent systematic review (Zoglauer et al., 2021) examined the relationship between physical availability of gambling and gambling participation, with a focus on gambling disorder (GD). This review of quality-weighted evidence found there was a high proportion of evidence for 1) a positive relationship between gambling availability and gambling participation, including GD, and 2) a plateau or decrease in the gambling participation and GD over time even as availability increased. The authors noted that firm conclusions are impeded by several methodological and conceptual problems, and that theoretical frameworks and high-quality longitudinal studies are required to gain further clarity.

A systematic review (Vasiliadis et al., 2013) of the physical accessibility (proximity and density) of EGMs and rates of gambling involvement, problem gambling, and gambling-related treatment seeking, included studies conducted between January 1990 to June 2011. It revealed that the relationship is complex, with many questions and methodological challenges left unaddressed. There does appear to be a relationship between high within-region EGM density (EGMs per head of population) and higher rates of gambling participation and expenditure and other risk indicators. But the results were limited for associations with rates of problem gambling. The evidence suggests that, where only destination EGMs are available, both density and proximity are associated with higher rates of gambling and problem gambling. However, where gambling opportunity is diffuse (i.e., gambling is available at many venues), proximity may have a greater association with higher rates of problem gambling than density, but nevertheless both factors are related to gambling involvement.

Analyses examining the spatial distribution of EGMs within jurisdictions (Young et al. 2012a, 2012b) have also found that residential proximity to EGM venues is independently associated with problem gambling. Further, in these studies, EGM venues in accessible locations and venues with more EGMs were most closely associated with gambling harm, even when controlling for socio-demographic characteristics. More compelling evidence is presented by a natural experiment in Norway ($N = 1293$), where a prospective study showed that gambling problems amongst EGM gamblers were reduced after a ban on EGMs, with little indication of product substitution (Lund, 2009).

Summary

Due to the widespread expansion of the gambling industry in the past few decades, the nature of the relationships between gambling availability, gambling participation and harmful gambling is becoming clearer. The reduction in gambling availability following the closure of land-based

venues, and the cessation of professional sporting events due to the pandemic, provide a natural experiment by which to further assess these relationships.

Research on the impacts of the pandemic on gambling behaviour: Cross-sectional studies

The pandemic has impacted gambling in diverse ways, not just because of the changed availability of gambling products, but also because of increased social, psychological, health, and financial stressors that can affect gambling behaviours. These influences have varied greatly, depending on, for example, the location, types of restrictions, period, the prevalence of infections in the community, how governments have intervened, and the characteristics of gamblers.

Cross-sectional surveys

At the beginning of the pandemic, with the closure of most land-based gambling venues, overall participation in gambling decreased substantially (Marionneau et al., 2022; Stark & Robinson, 2021). Several international reviews have highlighted trends observed in the early stages of the pandemic when land-based venues were closed (Barbato et al., 2021; Brodeur et al., 2021; Hodgins & Stevens, 2021). These reviews observed an overall reduction in gambling frequency and expenditure in all the included studies, and a greater decrease in land-based gambling compared to online gambling. Exceptionally, those who increased their gambling during lockdown tended to be younger, male, and with higher problem gambling severity. In addition, those who were particularly vulnerable to higher problem gambling severity during lockdown were more likely to be male, younger, and with a range of financial and psychological problems, including addictions.

Several studies were conducted in Australia and focused on the early stages of the pandemic including the national lockdown. Arguably, the most rigorous was an Australian cross-sectional analysis (Biddle, 2020) based on data collected from the May (N = 3219) and November (N = 3,029) 2020 *Life in Australia* panels (Dove, 2022; Biddle & Gray, 2021). Samples were weighted to Australian population distributions across key variables. The study estimated that approximately 2.6 million fewer Australians gambled in the 12 months prior to May 2020 (52.9per cent) than prior to April 2019 (65.9per cent). In November 2020, the rate rebounded to 58.7per cent, but this was still substantially lower than in April 2019. Declines were similar for males and females, but largest in the 35-45 age group. In April 2019, 13.6per cent of Australian adults were estimated to be at risk of problem gambling, and this dropped to 10.3per cent in November 2020, a statistically significant decrease over time. The decline was still evident when the analysis included only past-year gamblers; therefore, at-risk gambling declined even among those who continued to gamble.

Three Australian studies recruited convenience samples between April and July 2020. In a survey of past-year gamblers (N = 764), about three-quarters reported gambling less frequently during lockdown, and most did not report increased frequency of online gambling (Gainsbury & Blaszczynski, 2020; Gainsbury et al., 2021). Those reporting increased gambling frequency tended to report higher problem gambling severity. Nonetheless, most participants who reported gambling problems in the previous year said these decreased during the shutdown. Another survey of gamblers (N = 2019) also found a significant decrease in land-based gambling during restrictions (Jenkinson et al., 2020). However, one in 20 gamblers started to gamble online, and

almost one-third established a new online betting account and reported gambling more often. The group most at-risk of harmful gambling were young men (aged 18-34). A third convenience study (*N* = 1000) also found participation in online gambling was greatest among those who were aged under 30, male, and employed full-time (Brown & Hickman, 2020).

Several studies were conducted in the UK during the first half of 2020. A convenience survey of 631 adult gamers and/or gamblers revealed negligible overall changes in gambling participation and problem gambling (Close et al., 2022). Increases in online gambling were offset by decreases in sports betting and offline gambling. Path analysis revealed moderate associations between reduced wellbeing during lockdown and increased gambling and problem gambling scores. In a convenience sample of people experiencing social exclusion (*N* = 1,028), gambling frequency and expenditure decreased during the first month of lockdown, but the most engaged gamblers (who gambled at least twice weekly, pre-lockdown) maintained their gambling at pre-pandemic levels (Sharman et al., 2021). Those who reported that the lockdown had negatively impacted their finances were more likely to report increased gambling. A third study focused on regular sports bettors (*N* = 3866), recruited from YouGov (Wardle, et al., 2021). Overall, 33.4per cent of female and 29.8per cent of male sports bettors stopped betting altogether during the first lockdown period. This was countered by 16.5per cent of females and 17.3per cent of males beginning a new form of gambling during lockdown. Among men, problem gambling was higher among those who began a new gambling form. For women, moderate risk and problem gambling was higher for those who increased their gambling frequency (on any activity), and those in self-imposed isolation for health reasons. Both men and women gambling at problematic levels had poorer wellbeing. Another study of regular sports bettors (*N* = 240), in Poland, found that the majority stopped or substantially reduced their betting and did not migrate to other forms of gambling, despite the betting industry promoting virtual and esports (Nosal & Lopez-Gonzalez, 2021).

In the USA, all licensed casinos were closed in March and April 2020 due to COVID-19. An online panel study of adults who had gambled in the preceding three months (Xuereb et al., 2021) investigated potential substitution behaviours during these casino closures. The results showed an overall decrease in online gambling, but increased alcohol, tobacco, and cannabis use. Fifteen percent of the sample who reported no online gambling prior to the pandemic migrated to online gambling, and this group had lower incomes and higher problem gambling severity than those who did not migrate. Overall, only a minority of respondents substituted casino gambling with online gambling, but this group was particularly vulnerable to harmful gambling.

Two studies were conducted in Italy which was one of the first countries to go into lockdown. A representative survey (*N* = 6003) found that gambling participation dropped from 16.3per cent prior to lockdown to 9.7per cent during lockdown, but gamblers reported increased time spent gambling (Lugo et al., 2021). Four percent of respondents reported a worsening of their gambling activities during lockdown. Increased gambling during lockdown was associated with hazardous alcohol consumption, substance use, and low quality of life, low quantity of sleep, anxiety and depressive symptomatology, and younger age. A convenience survey (Salerno & Pallanti, 2021) found that those who took up gambling during lockdown, as well as chronic gamblers, scored higher than non-gamblers on anxiety, depression, perceived stress, somatization, distress and hostility, and lower on wellbeing. This could indicate that gambling was used to cope with negative emotions associated with the pandemic and lockdown.

A convenience survey of 1,530 Finnish adults (Savolainen et al., 2022) was the first study to specifically examine the impact of pandemic-related anxiety on mental health problems, plus their relationship with gaming and gambling, using structural equation modelling. Pandemic-related

anxiety was associated with increased mental health problems, which in turn predicted increased gaming and gambling problems, with social motives a significant mediator for both problems. The findings suggest that mental health problems brought on by the pandemic, and the social properties of many games, may impact on problems with gaming and gambling. Also in Finland, a qualitative study of past-year gamblers (Marionneau & Järvinen-Tassopoulos, 2021a) examined experiences associated with the closure and reopening of EGMs venues during the first year of the pandemic. Most respondents reported being relieved with the closure of EGMs, which had improved their general welfare, and lowered the time and money they spent gambling.

Several studies were conducted in Sweden during 2020 and 2021, drawing on convenience samples. In summary, these found decreases in online gambling during lockdown (Håkansson, 2020a), and that increased gambling was associated with higher problem gambling severity, increased alcohol consumption and increased psychological distress (Claesdotter-Knutsson & Håkansson, 2021; Håkansson, 2020b; Håkansson & Widinghoff, 2021).

Finally, in Germany, Kalke et al. (2022) collected panel data from gamblers (*N* = 612) who had participated exclusively offline in at least one higher-risk form of gambling prior to the first lockdown (slot machines, casino games, sports betting). Results revealed that 64.1per cent of casino gamblers and 37.1per cent of sports bettors completely stopped gambling on higher-risk forms after lockdown ended. Only 7.7per cent of slot machine players and 10.9per cent of sports bettors migrated to online gambling. The study did not support the notion that the closure of land-based venues would result in a migration to online gambling; instead, the lockdown acted as a circuit-breaker for some gamblers.

Customer account studies

The preceding studies are limited by convenience sampling, and self-report data that can be subject to social desirability, recall and self-selection biases (Goldstein et al., 2017; Johnson & Fendrich, 2005). Data from licensing authorities, customer accounts and taxation records may provide more accurate information (Shaffer et al., 2010).

Some jurisdictions saw increases in online gambling expenditure in the very early stages of the pandemic. In Australia, online gambling grew by 140per cent (Johal, 2020). In the first trimester of 2020, the total volume of betting on online games and sports betting in Portugal was 350 million Euros more than in the same period in 2019 (Machado et al., 2021). The UK Gambling Commission reported a migration to online gambling in April 2020, with 42per cent gambling online compared to 26per cent in the previous year, and an increase in gamblers expanding the types of gambling products they used for the first time (Snook, 2020). Esports betting also attracted increased revenue and new customers, as some sports bettors transitioned to esports betting when professional sporting events were suspended (EveryMatrix, 2020; Gambling Commission, 2020).

One study in northern Europe (Auer et al., 2020) examined gambling in the initial stages of the pandemic using online account information from one operator for regular sports bettors from Sweden, Finland, Germany and Norway *(N* = 5396), between 1 January to 7 March 2020. The data showed a significant decrease over time in both sports betting expenditure and gambling on online casino games, indicating little substitution of online casino gambling to compensate for restricted sports betting opportunities. In another account-based study of 133,286 online casino gamblers in Sweden (Auer & Griffiths, 2021), there was a decrease in high-intensity players' involvement (based on the amount of money wagered) and an increase in low-intensity players' involvement over a five-month period.

Another Swedish study (Håkansson et al., 2020c) analysed revenue-based taxation of land-based and online gambling operators during the first months of the pandemic (February 2020) through to June 2020, when the sports market had restarted after lockdown. The gambling market decreased significantly during February 2020, but mainly recovered by June 2020. However, subsections of the market were impacted in several different ways. The state-owned operator with a large stake in sports betting had a steep drop in revenue in the early months, with a slow recovery by June 2020. But revenue from online race betting increased dramatically. The combined sports betting and online casino operators showed only a minimal decrease in revenue, even though sports competitions had ceased prior to June. The authors concluded that sports betting was probably replaced in the short-term by race betting, as horse racing continued throughout the pandemic.

Studies of gamblers seeking treatment

The reduced availability of land-based gambling venues during restrictions appeared to have a positive impact on people seeking treatment. In a qualitative interview study of 135 Italian gamblers in treatment for gambling disorder (Donati et al., 2021), most reported less gambling and less severe symptoms, including less craving and a significant improvement in quality of life. There was no reported migration to online gambling and limited shift to other excessive or addictive behaviours. However, a study of Spanish patients receiving outpatient treatment for gambling disorder prior to pandemic restrictions found that confinement during restrictions increased the risk of treatment dropout (Baenas et al., 2021). A Canadian study (N.E. Turner et al., 2022) of gambling-related crisis calls in Ontario found a dramatic reduction in call volume with the onset of the pandemic, which could indicate fewer people experiencing acute gambling problems. There was a more pronounced decrease in calls relating to EGMs than for gambling on sports and card games. The proportion of calls from younger adults increased, which may reflect the popularity of land-based gambling among older adults.

An online convenience survey of gamblers and concerned significant others (CSOs) in Finland (Marionneau & Järvinen-Tassopoulos, 2021b) during spring of 2020 (*N* = 688 gamblers, 97 CSOs, 62 both) revealed that the closure of land-based gambling resulted in reduced consumption across most products, but an increase in online gambling. There appeared to be a reduced need for treatment and help services, and some gamblers who experienced problems prior to lockdown expressed relief or welcomed the closure of EGM venues. Nevertheless, a study of treatment uptake at a specialised gambling disorder clinic in Sweden (Håkansson et al., 2021) during the first ten months of the pandemic, found no significant differences in comparison with 2018 and 2019. There was, however, a sharp increase in digital treatment or distance contacts from an almost non-existent base prior to the pandemic.

Summary

The short-term effects of the pandemic on gambling behaviour were mixed, depending on environmental, social, and personal factors. During the initial stages of the pandemic when restrictions were heightened, overall participation in gambling decreased substantially in most jurisdictions (Biddle, 2020; Brown & Hickman, 2020; Emond et al., 2021; Gainsbury & Blaszczynski, 2020; Håkansson et al., 2020b; Hodgins & Stevens, 2021; Jenkinson et al., 2020; Marionneau et al., 2022; Shaw et al., 2021; Stark & Robinson, 2021). There was, however, a significant migration to online gambling (Masaeli & Farhadi, 2021). Younger age, male gender, pandemic-induced financial problems, and psychological distress, alcohol consumption, and having prior gambling problems were associated with increased gambling (Gainsbury & Blaszczynski, 2020; Håkansson, 2020b; Jenkinson et al., 2020). Behavioural tracking studies

(Auer et al., 2020; Auer & Griffiths, 2021) showed decreases in most gambling metrics during the restrictions. Reduced availability of land-based gambling provided the opportunity for people with a gambling problem to reduce their gambling, particularly on EGMs, with accompanying improvements in symptomatology and quality of life (Donati et al., 2021; Marionneau et al., 2022; B. W. Turner et al., 2022).

Research on the impacts of the pandemic on gambling behaviour: Prospective studies

This section summarises the evidence from prospective longitudinal studies that have assessed the impact of the pandemic on gambling participation and harmful gambling. Appendix A summarises the parameters of the studies and the key results. Most studies used convenience samples of gamblers recruited from social media, existing networks, panels, and gambling venues. These studies are potentially biased towards participants who are more likely to gamble online, but the benefits include access to large numbers of gamblers, including those with a gambling problem. One exception to convenience samples was the Avon study (Emond et al., 2021), which focused on a sample of young people at age 24 and age 27 who gambled at both time periods. Although the New Zealand National Gambling Study (Bellringer & Garrett, 2021) initially studied a representative sample of adults in NZ, the 2021 sample was not representative as it included only higher-risk gamblers.

Impacts of the pandemic on gambling behaviour

The available prospective studies indicate that a key impact of the pandemic on gambling was increased online gambling. The cross-sectional data from the Ontario study (Responsible Gambling Council, 2022) showed a massive rise in gamblers engaging in online gambling from pre-COVID (9.7per cent) to wave 3 which was conducted in the first half of December 2020 (86.6%). In addition, high-risk gamblers were particularly more likely to gamble online. However, this was not reflected in the subset of within-person longitudinal data, where there were no changes in high-risk online gambling (potentially because of an under-representation of young people in the study who have a greater propensity to gamble online; Hing et al., 2021). The Canadian AGRI project (Shaw et al., 2021) showed that the only gambling engagement metric to increase was related to gambling platform, with seven per cent of the gambling sample migrating to online gambling during restrictions. The Avon longitudinal cohort study (Emond et al., 2021) revealed that online gambling was more frequent than three years prior. In the NZ study (Bellringer & Garrett, 2021), among the minority (5per cent) who reported engaging in overseas online gambling, one-third increased their online overseas gambling during lockdown. The two Swedish studies were exceptions and showed no significant migration to online gambling (Lischer et al., 2021; Månsson et al., 2021).

Several studies showed decreases in gambling involvement during lockdowns. The Canadian AGRI project (Shaw et al., 2021) revealed decreases in all gambling metrics, apart from gambling online. It found that 28.5per cent of the sample stopped gambling during lockdown, and those who continued gambling did so with significantly decreased expenditure, frequency, time, and number of games played. Problem gambling decreased from pre-lockdown (seven per cent) to during lockdown (4.6per cent). The Avon study (Emond et al., 2021) showed gambling frequency reduced for both females and males during lockdown, and with a more restricted range of gambling activities. The UCL COVID study (Fluharty et al., 2022) showed that 11.4per cent of the

sample decreased their gambling during lockdown, and 79.4per cent reported no changes in their gambling behaviour. Of those who increased their gambling during lockdown, nearly half reportedly ceased gambling altogether post-lockdown. An Australian study (Black et al., 2021) found that gambling frequency was significantly reduced in both wave 2 (August 2020) and wave 3 (November 2020), compared to pre-restriction levels. However, there was no change in problem gambling over the same period. A NZ study (Bellringer & Garrett, 2021) showed a marked drop in the percentage of risky gamblers from 2020/21 (25.6per cent) compared with 2015 (43.5per cent) and 2012 (36.2per cent). Fifty percent reported decreased gambling on NZ-operated online sports betting, race betting (45per cent), and keno (29per cent) while in lockdown, compared with those who gambled more (8per cent, 14per cent, and 13per cent, respectively). There was little change for those who bet on online lotto and scratch cards. Månsson et al.'s (2021) Swedish study revealed nearly 70per cent of the sample reported a decrease (24.6per cent) or no change (43.5per cent) in gambling expenditures at wave 1 (February 2020). A similar decrease or no change, compared to wave 1, was found in wave 2 (May-October 2020).

Predictors of gambling engagement and high-risk gambling

Overall, the main predictors of gambling engagement and high-risk gambling identified in the prospective studies aligned with key risk factors previously linked to gambling. Predictors identified in the prospective studies include male gender, younger age, prior and current gambling problems, substance use, mental health issues (e.g., anxiety, depression), gambling on high-risk activities, gambling intensity, increased time and money gambling, high-risk tendencies/impulsiveness, lower educational attainment, lower socio-economic status/poverty, boredom, reduced social connectedness/social isolation, prior and current financial stressors, and gambling as a source of income. Only the Ontario study (Responsible Gambling Council, 2022) identified an ethnicity predictor; Ontarians of South Asian and East Asian descent were at most risk of gambling harm.

Some studies had converse results. For example, the UCL COVID-19 study (Fluharty et al., 2022) found that older age predicted gambling during lockdown. In the Canadian AGRI National Project (Shaw et al., 2021), respondents with lower problem gambling severity scores and who engaged in a variety of gambling activities were more likely to increase gambling during lockdown. The Avon study (Emond et al., 2021) found no association found between anxiety, depression or wellbeing scores, and gambling; despite high levels of anxiety and depression symptoms reported during lockdown. The NZ study (Bellringer & Garrett, 2021) found that higher educational attainment predicted increased online gambling during lockdown. In a Swedish Study (Lischer et al., 2021), higher income and being in a relationship predicted gambling in lockdown. However, these anomalous findings may reflect sampling and methodological differences between the studies.

An Australian study (Black et al., 2021) drew on controlled elements (lockdowns in Victoria vs no lockdowns in the rest of Australia), to assess whether reduced availability predicted a reduction in gambling problems. It found that problem gambling levels did not differ significantly as a function of land-based gambling restrictions. However, only half the sample regularly used land-based gambling prior to the pandemic, reducing analytical power to measure potential effects, especially given the small samples at Waves 2 (August 2020) and 3 (November 2020).

Summary

Prospective studies have shown that a key impact of pandemic-related restrictions was a migration to online gambling, which is unsurprising given the closure of land-based venues during

lockdowns. These studies mostly showed decreases in gambling and gambling problems during lockdowns, which likely reflect the protective effect of the unavailability of EGMs and sports betting. The main predictors of gambling engagement and high-risk gambling identified align with key risk factors linked to high-risk gambling, prior to the pandemic. Many of these risk factors (e.g., anxiety/depression, financial stress, social isolation, boredom) have been exacerbated by pandemic-related restrictions.

Chapter conclusion

The pandemic has caused stress and anxiety for many people, which has led to some people engaging in unhealthy behaviours. However, many people have shown resilience and recovered quickly after lockdowns. During the pandemic, several risk factors likely led to increased gambling participation and harmful gambling. These include factors such as substance abuse, depression, and reduced social connectedness. However, there are also some protective factors that likely reduced gambling participation and harmful gambling. These include increased family time and the provision of government financial assistance.

The gambling industry has expanded rapidly in recent decades, and the relationships between gambling availability, gambling participation and harmful gambling are becoming clearer. The closure of land-based gambling venues and the cessation of sporting events due to the pandemic provide a natural experiment by which to further assess these relationships. The closure of EGMs resulted in some people breaking free from long-standing gambling habits. However, a minority of people shifted to online gambling, which resulted in even more gambling and greater gambling-related harm.

The short-term effects of the pandemic on gambling behaviour were mixed, depending on a range of environmental, social, and personal factors. Overall participation in gambling decreased substantially in most jurisdictions during the initial stages of the pandemic when restrictions were heightened. However, there was a trend towards migration to online gambling. Younger age, male gender, pandemic-induced financial problems, psychological distress, alcohol consumption, and having prior gambling problems were associated with increases in gambling during the pandemic.

The main predictors of gambling engagement and high-risk gambling identified in recent research aligned with key risk factors linked to high-risk gambling before the pandemic. Many of these risk factors (e.g., anxiety/depression, substance use, financial stress, social isolation, boredom) have been exacerbated by pandemic-related restrictions. In sum, behaviour during this pandemic was characterised by the countervailing pull of decreased gambling availability and the push of increased gambling-risk vulnerabilities.

Aims of the study

The COVID-19 pandemic and its related restrictions provide an opportunity to assess gambling and harmful gambling following changes in the availability of gambling and in psychological, social and financial stressors in the community. These conditions provide the circumstances for a

natural experiment by which to assess the following aims in this study and to extend on the timeframe of previous research beyond the early stage of the pandemic. The study aims to:

1. Examine how the changed availability of gambling products and modes has impacted on gambling behaviour and harmful gambling.

2. Determine the characteristics of gamblers that are associated with different transitions in gambling behaviour.

3. Identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling.

4. Identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing.

Chapter 2. Approach

Introduction

This chapter details the methods used for this study, including the research design, survey waves, sampling and recruitment, sample sizes, participants, measures, and analytical approaches. Ethics approval for this study was granted by CQU Human Research Ethics Committee (#22418 and #23008).

Research design

The research design comprised a prospective longitudinal cohort study using repeated measures to collect data from the same people across three survey waves. Because both retrospective and current measures were included in Wave 1, the analysis spans four time periods; including before the COVID-19 national lockdown in Australia (Time 1), during lockdown (Time 2), one year after lockdown (Time 3), and two years after lockdown (Time 4). While dates varied slightly by jurisdiction by a few days, the national lockdown was nevertheless defined to respondents as the 2-month period from 23 March 2020 to 23 May 2020. Victoria and parts of NSW had additional lockdown periods after the national lockdown. However, the assessment periods at Time 2 and Time 3 in this study covered only non-lockdown periods. Nonetheless, these extended lockdown periods may have impacted relatively more on the psychosocial and financial wellbeing of respondents from these jurisdictions.

Below we provide an overview of the changing availability of gambling during these four time periods. These circumstances presented a unique natural experiment to assess changes in gambling behaviour and harmful gambling due to fluctuating gambling availability, and analyse how these changes interact with psychosocial and financial wellbeing.

Time 1 (before the national lockdown)

Before the national lockdown on 23 March 2020, all major forms of gambling were widely accessible. In Australia, EGMs can be legally provided only in land-based venues, including clubs, hotels and casinos. These venues collectively operate over 192,000 EGMs which are available in the 4,800 venues located throughout most suburbs and towns (AGC, 2021). Casino games can be legally provided only in Australia's 13 land-based casinos that are in major cities in each state and territory. Australians can also easily access EGMs and casino games online through offshore operators. These offshore operators cannot legally offer these casino-style products to Australian residents, but enforcement is difficult, and it is not illegal for Australians to use these services. Lottery, lotto and instant lottery products are sold in 4,343 retail outlets across Australia, including standalone stores, newsagents and convenience stores, and are also legally available online (AGC, 2021). Race betting, sports betting and lotteries can be legally provided online through 140 licensed operators (AGC, 2021). Race betting and sports betting, however, can also be conducted through the 4,408 retail betting outlets across Australia, as well as through bookmakers and retail outlets at racetracks (AGC, 2021). Novel forms of gambling (e.g., esports, fantasy sports betting and skin gambling) are easily accessible to Australians through licensed and unlicensed operators, but only 0.5per cent to 0.6per cent of Australian adults made novel bets in 2019 (Hing et al., 2021). Purchasing loot boxes in digital games is also considered as a

novel form of gambling in this study, since this activity meets the AGC's definition of gambling as "the placement of a wager or bet on the outcome of a future uncertain event" (2021, p2). However, loot boxes are not currently regulated as gambling in Australia. In 2019, 2.7per cent of Australian adults reported purchasing loot boxes (Hing et al., 2021).

Time 2 (during the lockdown)

During the 2-month national lockdown, from 23 March 2020 to 23 May 2020, people were restricted from leaving home except for essential activities, such as grocery shopping and obtaining medical care. Relatedly, land-based gambling venues were closed, including casinos, hotels, clubs and betting outlets; although lottery products were available through retail outlets accessed during allowable shopping trips. All domestic and nearly all international sporting events were suspended, but horse and greyhound races continued largely unabated, although without public audiences. Gambling was therefore almost exclusively accessible online, on the legal forms of race betting, sports betting, lotteries and novel forms – although there were few sporting events to bet on, apart from esports competitions. As noted above, Australians could also access other forms of online gambling, such as EGMs and casino games, through the illegal provision of offshore gambling sites.

Time 3 (one year after lockdown)

One year after the national lockdown (by the end of May 2021), most land-based gambling venues had reopened, and domestic and international sporting events had resumed. Race betting, lotteries and novel forms continued. While this transition represented a return to "nearly normal", some restrictions were still in place, and others were tightened in some states. These continuing restrictions existed in the lead-in to Australia's third major wave of COVID-19, from late-May 2021 in Victoria and from late-August in parts of NSW. Accordingly, Time 3 captured a period when most land-based venues were open across Australia, although with restrictions in some jurisdictions such as proof-of-vaccination, social distancing and mask-wearing. There was also a high degree of COVID-related stress in the community between Time 2 and Time 3, particularly in Victoria and NSW.

Time 4 (two years after lockdown)

Two years after the national lockdown, and by the end of May 2022, land-based gambling venues were open and sporting events and races continued. Few COVID restrictions remained in place: masks were generally not required, and capacity restrictions had generally been abolished or relaxed. Gambling availability overall had largely reverted to pre-pandemic conditions.

Survey waves

The three surveys were launched in the last week of May in 2020, 2021 and 2022, and stayed open for completion for three-weeks weeks each time. All surveys were hosted online on the Qualtrics survey platform and took respondents about 15-20 minutes to complete.

The Wave 1 survey asked about two time periods: the 12-month period prior to the commencement of the lockdown (Time 1), and the 2-month lockdown period (Time 2). Two subsequent surveys each asked about two-month periods, approximately one and two years after

the national lockdown (Times 3 and 4). Table 2.1 outlines the survey waves and the time periods they assessed.

Table 2.1 Survey waves, time periods and assessment dates

Survey wave	Time	Time period description	Assessment duration	Assessment dates
1	1	Before lockdown	12 months	23 March 2019 to 23 March 2020
1	2	During lockdown	Two months	23 March to 23 May 2020
2	3	One year after lockdown	Two months	Two-month period before the survey, which was launched on 28 May 2021
3	4	Two years after lockdown	Two months	Two-month period before the survey, which was launched on 26 May 2022

Sampling and recruitment

Eligibility criteria for the Wave 1 survey included being aged 18 years or above, living in Australia (any state or territory, with a preference for Victorians), and having gambled at least once in the past 12 months, inclusive of lottery products. Participants were recruited from two sources. The recruitment materials included an email invitation, accompanied by a participant information sheet and informed consent preamble. The first recruitment source was an institutional research panel maintained by the Experimental Gambling Research Laboratory (EGRL) at CQUniversity. This panel comprises respondents to our previous Australian surveys who have consented to be invited into further research studies. Respondents from this panel to the Wave 1 survey could enter a random prize draw to win one of 10 x $100 shopping vouchers. To boost the relevance of the survey to Victoria where the funding agency is based, we recruited an additional sample of those who met the inclusion criteria and lived in Victoria through the panel aggregator, Qualtrics. These participants were compensated based on their panel's points-based rewards systems.

The sample was therefore a convenience sample of past-year gamblers, and may not be representative of this population. Further, panel samples typically have higher rates of gambling participation, gambling problems and mental health problems, compared to the general population (Williams et al., 2013; 2017). However, the current study was mainly interested in relationships between variables (e.g., psychosocial factors and changes in gambling behaviour over time), so a representative sample was not needed for this purpose, and was not affordable in the project budget. Further, recruiting a sample of more involved gamblers enabled the study to examine changes in gambling behaviour and harmful gambling that would not be possible with a representative sample, unless it was very large (and expensive) (Russell et al., 2022). Based on population estimates, a representative sample would contain relatively small subsamples of those affected to enable reliable analyses. Nonetheless, the results should be interpreted with these caveats in mind.

Sample sizes

The Wave 1 survey, where people were asked about gambling prior to and during the national lockdown (i.e., Times 1 and 2), obtained 2,125 eligible responses, comprising 610 responses from the EGRL panel and 1,515 from the Qualtrics panels. Appendix B details recruitment numbers, screening and eligibility exclusions, completion and response rates.

Of the Wave 1 respondents, 1,374 provided email addresses to allow follow-up up in Wave 2. These participants were emailed an invitation to complete the Wave 2 survey in late May 2021. A total of 649 participants from Wave 1 also completed the Wave 2 survey. These respondents were subsequently emailed an invitation to complete the Wave 3 survey in late May 2022. A total of 458 respondents from Wave 2 completed the Wave 3 survey. Respondents in each of Waves 2 and 3 could enter a random prize draw to win one of 10 x $100 shopping vouchers that were offered in each wave.

We used a unique, anonymous identifier across waves. We then used the unique identifier from each person's response in the first wave to personalise survey invitations for subsequent waves. These codes were then captured with their response for subsequent survey waves.

Participants

Table 2.2 shows the socio-demographic characteristics for the respondents to each survey. At Wave 1, respondents were most likely to be married, living in a metropolitan area, living in the state of Victoria, possessing a trade or university education, employed full-time, born in Australia, mainly speaking English at home, and not be of Aboriginal or Torres Strait Islander descent. The mean age of 50.4 years was high, and was even higher at Waves 2 and 3. The proportion of male and female respondents was relatively balanced at Wave 1, but was skewed towards males at Waves 2 and 3. In addition, respondents in Waves 2 and 3 were more likely to be male, older, retired and to not live in Victoria. Those scoring PGSI 8+ at Times 1 and 2 were less likely to complete the subsequent surveys.

Table 2.2 Participant characteristics

Variable	Wave 1 N = 2125 n (%)	Wave 2 N = 649 n (%)	Wave 3 N = 458 n (%)
Mean age	50.39 years (SD = 16.57)	58.59 years (SD = 13.73)	61.27 years (SD = 13.06)
Gender			
Male	1081 (50.9)	396 (61.0)	300 (65.6)
Female	1040 (48.9)	251 (38.7)	157 (34.4)
Other	4 (0.2)	2 (0.3)	-
Residence			
Metropolitan	1458 (68.6)	425 (65.5)	294 (64.2)
Regional	463 (21.8)	160 (24.7)	122 (26.6)
Rural	204 (9.6)	64 (9.9)	42 (9.2)
State			
Victoria	1676 (78.9)	385 (59.3)	257 (56.1)
Not-Victoria	449 (21.1)	264 (40.7)	201 (43.9)

Variable	Wave 1 N = 2125 *n* (%)	Wave 2 N = 649 *n* (%)	Wave 3 N = 458 *n* (%)
Marital status			
Single/never married	421 (19.8)	80 (12.3)	47 (10.3)
Living with partner/de facto	344 (16.2)	94 (14.5)	66 (14.4)
Married	1038 (48.8)	359 (55.3)	261 (57.0)
Divorced or separated	249 (11.7)	85 (13.1)	60 (13.1)
Widowed	73 (3.4)	31 (4.8)	24 (5.2)
Household composition			
Single person	445 (20.9)	138 (21.3)	93 (20.3)
One parent family with children	126 (5.9)	32 (4.9)	22 (4.8)
Couple with children	680 (32.0)	183 (28.2)	107 (23.4)
Couple with no children	639 (30.1)	237 (36.5)	202 (44.1)
Group household	140 (6.6)	26 (4.0)	16 (3.5)
Other	95 (4.5)	33 (5.1)	18 (3.9)
Education			
No schooling	1 (0.1)	1 (0.2)	-
Did not complete primary school	8 (0.4)	1 (0.2)	1 (0.2)
Completed primary school	25 (1.2)	6 (0.9)	6 (1.3)
Year 10 or equivalent	229 (10.8)	87 (13.4)	67 (14.6)
Year 12 or equivalent	368 (17.3)	105 (16.2)	65 (14.2)
A trade, technical certificate or diploma	568 (26.7)	180 (27.7)	140 (30.6)
A university or college degree	617 (29.0)	163 (25.1)	104 (22.7)
Postgraduate qualification	309 (14.5)	106 (16.3)	75 (16.4)
Employment			
Work full-time	754 (35.5)	177 (27.3)	111 (24.2)
Work part-time or casual	361 (17.0)	114 (17.6)	65 (14.2)
Self-employed	139 (6.5)	46 (7.1)	39 (8.5)
Unemployed and looking for work	121 (5.7)	15 (2.3)	9 (2.0)
Full-time student	47 (2.2)	4 (0.6)	4 (0.9)
Full-time home duties	110 (5.2)	25 (3.9)	17 (3.7)
Retired	468 (22.0)	226 (34.8)	183 (40.0)
Sick or disability pension	76 (3.6)	26 (4.0)	19 (4.1)
Other	49 (2.3)	16 (2.5)	11 (2.4)
Received JobKeeper payments			
No	1785 (84.0)	568 (87.5)	401 (87.6)
Yes	340 (16.0)	81 (12.5)	57 (12.4)
Received JobSeeker or other income support payments			
No	1865 (87.8)	590 (90.9)	427 (93.2)
Yes	260 (12.2)	59 (9.1)	31 (6.8)
Received stimulus payment			
No	1275 (60.0)	385 (59.3)	273 (59.6)
Yes	850 (40.0)	264 (40.7)	185 (40.4)
Country of birth			
Australia	1670 (78.6)	513 (79.0)	361 (78.8)
Other	455 (21.4)	136 (21.0)	97 (21.2)
Main language spoken at home			
English	2014 (94.8)	629 (96.9)	445 (97.2)
Language other than English	111 (5.2)	20 (3.1)	13 (2.8)
Aboriginal or Torres Strait Islander status			
No	2077 (97.7)	643 (99.1)	452 (98.7)
Yes, Aboriginal	45 (2.1)	6 (0.9)	6 (1.3)
Yes, Torres Strait islander	-	-	-
Yes, both Aboriginal and Torres Strait islander	3 (0.1)	-	-

Measures

Table 2.3 describes the variables measured across waves. Wave 1 included questions about two time points. The first time point was retrospective and pertained to the period before the national COVID lockdown (Time 1), and the second time point was during the lockdown (23/03/2020 to 23/05/2020; Time 2). Wave 2 questions generally related to the previous two-month period, approximately one year after the lockdown ended (Time 3). Wave 3 questions generally related to the previous two-month period, approximately two years after the lockdown ended (Time 4). These two-month periods were used for consistency with the period of the national lockdown. Throughout the rest of the report, we refer to Time 1, Time 2, Time 3 and Time 4, rather than survey waves, to minimise confusion. Appendix C contains the survey instruments.

Table 2.3 Variables measured in each survey wave

		Time 1	Time 2	Time 3	Time 4
Category	**Variable(s)**	**Wave 1 – Before lockdown**	**Wave 1 – During lockdown**	**Wave 2 – 12 months after lockdown**	**Wave 3 – 2 years after lockdown**
Demographics	Socio-demographics and employment (see Table 2.2 above).	-	✓	✓	✓
Gambling behaviour	Participation in 14 forms: instant scratch tickets, lottery, lotto or pools tickets, EGMs, race betting, sports betting, novelty event betting, esports betting, fantasy sports betting, skin gambling, bingo, keno, poker, other casino games. Purchasing loot boxes was also included, since it has the core characteristics of gambling, but it is not currently regulated as gambling. Expenditure for each form; percentage of expenditure via online, telephone calls, and land-based venues for each form; total gambling expenditure via online, telephone calls, and land-based venues.	✓	✓	✓	✓
Problem gambling severity (PGSI)	Problem gambling status was assessed using the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). The index contains 9 items (e.g., 'did you feel that you might have a problem with gambling') measured on a 4-point scale from 0 (never) to 3 (almost always). Scores are summed with a total score of 0 = non-problem gambler, 1 to 2 = low-risk gambler, 3 to 7 = moderate risk gamblers, and 8 to 27 = problem gambler. At Times 2, 3 and 4, the PGSI was administered only in relation to the previous 2 months. Cronbach's alpha was .95 (Time 1), .96 (Time 2), .93 (Time 3) and .94 (Time 4).	✓	✓	✓	✓
Positive effects of gambling cessation on aspects of wellbeing	For those who had ceased gambling, the positive effects of not gambling were assessed using 9 items (e.g., 'I have enjoyed the break away from gambling') on a 4-point response scale from 'strongly disagree' to 'strongly agree'.	-	✓	✓	✓
Stress (PSS)	Four items adapted from the Perceived Stress Scale (PSS; Cohen et al. 1983) measured symptoms of stress over the past 30 days (e.g., 'how often did you feel that you were unable to control the important things in your life'). Items were measured on a 5-point scale from 'none of the time' to 'all of the time'.	-	✓	✓	✓

Category	Variable(s)	Time 1 Wave 1 – Before lockdown	Time 2 Wave 1 – During lockdown	Time 3 Wave 2 – 12 months after lockdown	Time 4 Wave 3 – 2 years after lockdown
	Two items were positively worded and reverse scored. All items were summed and higher scores were indicative of higher levels of stress.				
Psychological distress (K6)	The Kessler Psychological Distress Scale 6 (K6; Kessler et al. 2002) was used to measure 6 symptoms of psychological distress over the past 30 days (e.g., 'how often did you feel so depressed that nothing could cheer you up'). Each item was measured on a 5-point scale from 'none of the time' to 'all of the time'. Scores were summed and higher scores indicate higher levels of psychological distress.	-	✓	✓	✓
Loneliness and isolation	The 8-item UCLA Loneliness Scale (UCLA-L; Hays & DiMatteo, 1987) was used to measure subjective feelings of loneliness and social isolation (e.g., 'I feel isolation from others'). Four response options from 'never' to 'often' were summed and higher scores indicate higher levels of loneliness.	-	✓	✓	✓
Health anxiety about COVID-19 (SHAI)	The Short Health Anxiety Inventory (SHAI; Salkovskis et al., 2002) was adapted to measure health anxiety specific to COVID-19 using 4 items. Each item had 4 response options and scores were summed, with higher scores reflecting higher levels of health anxiety. This measure was selected before a range of COVID-anxiety measures subsequently became available.	-	✓	✓	✓
Financial hardship	Financial hardship was assessed using 6 indicators (e.g., 'a utility service was disconnected') (Gjertson, 2016), measured as a yes/no response. All items were summed, and higher scores indicate higher levels of financial hardship.	-	✓	✓	✓
Stressful life events due to COVID-19	Stressful life events due to COVID-19 were measured using 14 items adapted from the Social Readjustment Scale (Holmes & Rahe, 1967). Each event (e.g., 'lost a job') was answered in a yes/no format, with all scores being summed and higher scores reflecting higher experiences of stressful events due to COVID-19.	-	✓	✓	✓
Healthy and unhealthy behaviours	Changes in healthy behaviours (e.g., 'a healthy diet') were measured using 5 items on a 5-point scale from 'greatly decreased' to 'greatly increased'. Scores were summed with higher scores indicating increases in healthy behaviours.	-	✓	✓	✓

		Time 1	Time 2	Time 3	Time 4
Category	**Variable(s)**	**Wave 1 – Before lockdown**	**Wave 1 – During lockdown**	**Wave 2 – 12 months after lockdown**	**Wave 3 – 2 years after lockdown**
	Changes in unhealthy behaviours (e.g., 'use of recreational drugs') were measured using 5 items on a 5-point scale from 'greatly decreased' to 'greatly increased'. Scores were summed with higher scores indicating increases in unhealthy behaviours.				

Change metrics and analysis approaches

The analyses in the next chapters focus on transitions between time periods. They considered three separate transitions: Time 1 → Time 2, Time 2 → Time 3, and Time 3 →   Time 4.

Changes in gambling engagement

The analyses considered change between the above time points in two ways. First, we analysed the proportion of people gambled or not at each time point, and the proportion of people who changed for each transition. We considered change both for gambling overall, and for gambling on several specific forms, where enough respondents took part in an activity. This design therefore led to a 2x2 repeated measures design with four possible outcomes, as outlined in Table 2.4 below. For any transition, if people did not gamble at the first time period for that transition, then they could either continue not to gamble at the second time period (abstain), or gamble at the second time period (commence)[1]. If they were gambling at the first time point, then they could continue to gamble (sustain) or stop gambling (cease). These analyses were conducted for overall gambling, for specific forms (EGMs, sports betting, race betting, casino games, lotteries, and the novel forms of esports betting, fantasy sports betting, skin gambling, and loot box purchasing combined), and for combined forms of online gambling.

This design captured only point-in-time behaviour over the preceding two months, and did not assess behaviour over the entire duration between time periods. Thus, it is conceivable that a respondent in the "abstained" group could, for example, have abstained from gambling in the two-month periods assessed at each of Times 2 and 3, but have gambled outside of these assessment periods, for example six months prior to Time 3.

For categorical variables, such as gender, chi-square analyses (i.e., pairwise tests of proportions) were conducted to compare the proportion of each gender in each of the cells. This allowed us to determine if any cell included a higher proportion of any group. For continuous predictors, such as age, one-way ANOVA (with Tukey's HSD tests for pairwise comparisons) were used to compare the mean of that variable in each of the four cells. In most analyses, one or more of the four cells included a small number of respondents (e.g., those commencing gambling). In those situations, we have conducted pairwise comparisons between all four cells, but have not interpreted significant or non-significant differences for comparisons that involve the small cells (i.e., less than 5 observations). Nevertheless, the nature of pairwise comparisons means that these small cells do not impact on the pairwise analyses between two larger cells. In general, we have not discussed analyses between the "abstained" group and other groups, because they do not distinguish the effects of COVID restrictions, but instead indicate the different characteristics of those who do and do not take part in each form of gambling (e.g., sports bettors tend to be young men and not older women).

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[1] An inclusion criterion was that all respondents were people who reported gambling at Time 1. Thus, for overall gambling changes, from Time 1 to Time 2, no respondents could abstain or commence because all respondents were gambling at Time 1. However, for analyses of individual gambling forms from Time 1 to Time 2, it was possible for respondents not to gamble on, say, sports betting at Time 1, but to commence by Time 2. For subsequent transitions (e.g., Time 2 to Time 3), some respondents were not gambling at Time 2, and thus could abstain or (re)commence by Time 3.

Table 2.4 Possible transitions between time points – gambling behaviour

	Did not gamble at second time point	Gambled at second time point
Did not gamble at first time point	Abstained	Commenced
Gambled at first time point	Ceased	Sustained

Changes in gambling frequency

We captured the frequency of gambling on each form and online (combined forms), and therefore could examine change in terms of whether their gambling increased, decreased or stayed the same for each transition. These analyses were only conducted on people who gambled at either time point, or both time points. For example, someone who commenced gambling on a form was deemed to have increased. Someone who ceased gambling on a form was deemed to have decreased. For those who sustained gambling from the first to second time point in any transition, they either increased, decreased or stayed the same based on their frequency response. Example classifications are shown in Table 2.5 below. The analysis approach was identical to that used for changes in gambling engagement: consisting of chi-square tests of independence with tests of proportions for categorical predictors, and one-way ANOVA with Tukey HSD tests for continuous predictors.

Table 2.5 Possible increases, decreases or same amount of gambling between time points

First time point frequency	Second time point frequency	Classification
Not at all	Not at all	NA
Not at all	Once a month	Increased
Once a month	Not at all	Decreased
2-3 times a week	Once a week	Increased
2-3 times a week	Once a month	Decreased
2-3 times a week	2-3 times a week	Stayed the same

Changes in harmful gambling

We also examined changes in harmful gambling between time periods, using the PGSI. Because harmful gambling behaviours may take time to develop into moderate-risk or problem-level gambling, as indicated by the PGSI, and because the aim was to determine if any level of gambling problems developed or subsided during the study, we adopted a low bar to determine change. Respondents were classified either as reporting no problem gambling symptoms (PGSI = 0) or reporting any problem gambling symptoms (PGSI = 1 or more). Please see Table 2.6 below.

In addition, we considered change in raw PGSI scores between time periods, using mixed factorial ANOVA (categorical predictors, e.g., gender) or linear regression (continuous predictors, e.g., age). In the ANOVA, simple main effects examined change for each group (e.g., males, females), while for linear regression, we calculated the slope for those on the mean of each

variable (e.g., the mean of age), and one standard deviation above and below, for interpretation purposes.

Table 2.6 Possible transitions between time points – problem gambling symptoms

	No symptoms at second time point (PGSI = 0)	Symptoms at second time point (PGSI = 1 or more)
No problem gambling symptoms at first time point (PGSI = 0)	No symptoms	Symptoms increased
Problem gambling symptoms at first time point (PGSI = 1 or more)	Symptoms decreased	Sustained symptoms

Variables associated with change between time points

We conducted analyses to determine which variables predict change, both for transitions (Table 2.4), and relative frequency of gambling (Table 2.5). Included variables are listed in Table 2.7 and consisted of PGSI score, demographics and psychosocial factors.

Table 2.7 Variables examined for association with change between time points

- **PGSI score at the <u>first</u> time point**
- **Demographics at the <u>second</u> time point**
    - Age (in years)
    - Gender (male vs female)[2]
    - Residence (metro vs regional/rural)
    - Marital status (single / never married / separated / divorced / widowed vs living with partner / married)
    - Employment (full-time / part-time / casual / self-employed vs unemployed / student / home duties / retired / pension / other)
    - Highest level of education
- **Psychosocial factors at the <u>second</u> time point**
    - Unhealthy behaviours
    - Healthy behaviours
    - Perceived stress
    - Psychological distress
    - Loneliness
    - Health anxiety about COVID-19
    - Financial hardship
    - Stressful life events

2

For each transition (Time 1 → Time 2, Time 2 → Time 3, Time 3 → Time 4), for almost all variables in Table 2.7, we used the **respondent's status at the second (latter) time point of each time period**, with the exception of PGSI scores. This is because a respondent's change in gambling behaviour during a time period is likely to be best explained by their status at the end of that period. For example, if a respondent has experienced financial hardship during lockdown (i.e., at Time 2), this is likely to be a reasonable explanation for changes in gambling behaviour during lockdown.

However, we used **PGSI scores at the first time point in each time period**. This is because we wanted to understand how people who experienced problem symptoms changed their behaviour during each time period; for example, were they more likely to sustain their gambling, or cease during lockdown? If we used PGSI scores at the second time point, the analysis would reflect the outcome of their change of behaviour. For example, if people ceased gambling during lockdown, we would reasonably expect their PGSI score to decrease. An analysis based on PGSI scores at the second time point would reflect the outcome of the change in behaviour, rather than who changed their behaviour.

Bivariate vs multivariate analyses

Typically, bivariate analyses are followed with multivariate analyses because predictors in bivariate analyses may be correlated, and multivariate analyses allow for determination of unique predictors. In the present analyses, the same sets of predictors are used across all analyses, and the lowest tolerance was .38, indicating no issues with multicollinearity. Because of the lack of multicollinearity, and because the same predictors were used in all analyses, we did not conduct multivariate versions of these analyses to avoid redundancy. Further, knowledge of the risk factors associated with the various transitions provides the most useful information to inform prevention and intervention measures, because it identifies subgroups who are at greatest risk of negative gambling outcomes. Appendix D reports the details of the analyses.

Chapter 3. Changes in gambling behaviour and harmful gambling

Key findings

- Australia had a national COVID lockdown from 23 March 2020 to 23 May 2020. Land-based gambling venues were closed and most sporting events were suspended worldwide.

- Gambling was measured at four time points – pre-lockdown (Time 1, $N = 2125$), during lockdown (Time 2, $N = 2125$), one year after lockdown (Time 3, $N = 649$) and two years after lockdown (Time 4, $N = 458$).

- As explained in the chapter, key results were very similar for the full sample at each time point and just for respondents who completed all four survey waves ($N = 458$), indicating minimal impact of attrition. The results below are for the full sample.

- Almost one-quarter of the sample ceased gambling entirely during lockdown (at Time 2), but most had recommenced gambling within one to two years (at Times 3 and 4). While 100per cent of Time 1 respondents gambled (an inclusion criterion), this decreased to 75.8% among Time 2 respondents, 85.2per cent among Time 3 respondents, and 86.9per cent among Time 4 respondents.

- At Time 2, the sample reported decreased participation in EGMs (from 46.0 per cent to 10.4per cent), sports betting (from 38.4per cent to 17.4per cent), race betting (from 48.3per cent to 30.2per cent) and lotteries (from 83.8per cent to 61.5per cent), compared to Time 1. Participation in these forms bounced back within one year after lockdown (Time 3), albeit at somewhat lower levels than pre-lockdown (EGMs: 22.7per cent; sports betting: 27.7per cent; race betting: 35.9per cent; lotteries: 65.6per cent).

- The sample also reported decreased participation in casino games (from 23.4 per cent to 9.3per cent) and novel gambling forms (from 13.2per cent to 10.1per cent) during lockdown (Time 2), and even lower participation one and two years later (casino games: 5.8per cent at Time 3 and 6.3per cent at Time 4; novel forms: 5.0per cent at Time 3 and 5.6per cent at Time 4).

- Engagement in online gambling increased at each time point. During lockdown (Time 2), nearly half (46.5per cent) of online gamblers increased the frequency of their online gambling, while very few decreased (5.7 per cent). However, only 4.8 per cent of the sample had transitioned from land-based only gambling to online gambling by Time 2. One year after lockdown at Time 3, over one-third (38.0per cent) of online gamblers reported gambling online less frequently, which may reflect a return to land-based venues.

- The lockdown initiated a longer-term circuit-breaker for some respondents' gambling. Specifically, the following proportions of respondents who were retained at Time 4, and who had reported engaging in a gambling form in an earlier survey ("former gamblers"), reported not gambling on it two years after lockdown at Time 4: 13.1per cent of former gamblers, 18.1per cent of former EGM gamblers, 15.2per cent of former sports bettors, 9.9per cent of former race bettors, 7.5per cent of former lottery gamblers, 18.8per cent of former gamblers on novel forms, and 10.0per cent of former online gamblers.

- The lockdown acted as a temporary circuit-breaker that was associated with a negation of all symptoms of problem gambling for about one-sixth (15.0per cent) of respondents, and lower problem gambling severity for one-quarter (25.0per cent) of respondents by Time 2. However, these effects were reversed once land-based venues reopened and sports events resumed by Time 3. Specifically, the proportion of respondents who reported any symptoms of problem gambling decreased from 36.8per cent at Time 1 to 23.0per cent at Time 2, but then increased to 33.4per cent at Time 3 and 31.4per cent at Time 4.

- It is important to note that the sample was not population-representative and later survey waves had fewer respondents with small numbers in some subgroups. The results provide insight to temporal changes, but should not be interpreted as population prevalence figures.

Introduction

This chapter presents the survey results that inform the first aim of this study: to examine how the changed availability of gambling products and modes has impacted on gambling behaviour and harmful gambling.

The results relate to four time points – before the national lockdown (Time 1), during the lockdown (Time 2), one year after the lockdown ended (Time 3) and two years after the lockdown ended (Time 4). The first section provides a snapshot of gambling participation and problems at each time point. The chapter then presents results on transitions in gambling behaviour during each time period. It identifies the proportion of respondents who abstained from, commenced, sustained and ceased engagement in different gambling forms, and who increased and decreased their gambling frequency. As explained in Chapter two, the sample was not representative of the population and later survey waves had fewer respondents with small numbers in some subgroups. The results below, therefore, should not be interpreted as population prevalence figures. Please see Appendix D for the detailed analyses.

Gambling engagement and problems at each time point

Figure 3.1 shows the proportion of respondents to each survey wave who reported taking part in any gambling form and in online gambling, as well as the proportion experiencing one or more symptoms of problem gambling, as measured by the PGSI (i.e., a score of 1+). It indicates a drop in overall gambling and problem gambling symptoms from Time 1 to Time 2, and then an increase in both at Time 3, which was sustained at Time 4. That is, gambling problems tracked closely to overall gambling participation over time. In contrast, engagement in online gambling increased at each of the four time points. These results were very similar for both the full sample and those who completed all four survey waves, indicating that attrition over the survey waves did not unduly influence the pattern of results.

Figure 3.1 – Proportion of respondents engaged in gambling and online gambling, and experiencing one or more problem gambling symptoms at each time point, for the full sample at each time point (top panel), and only for those who completed all four waves (bottom panel)
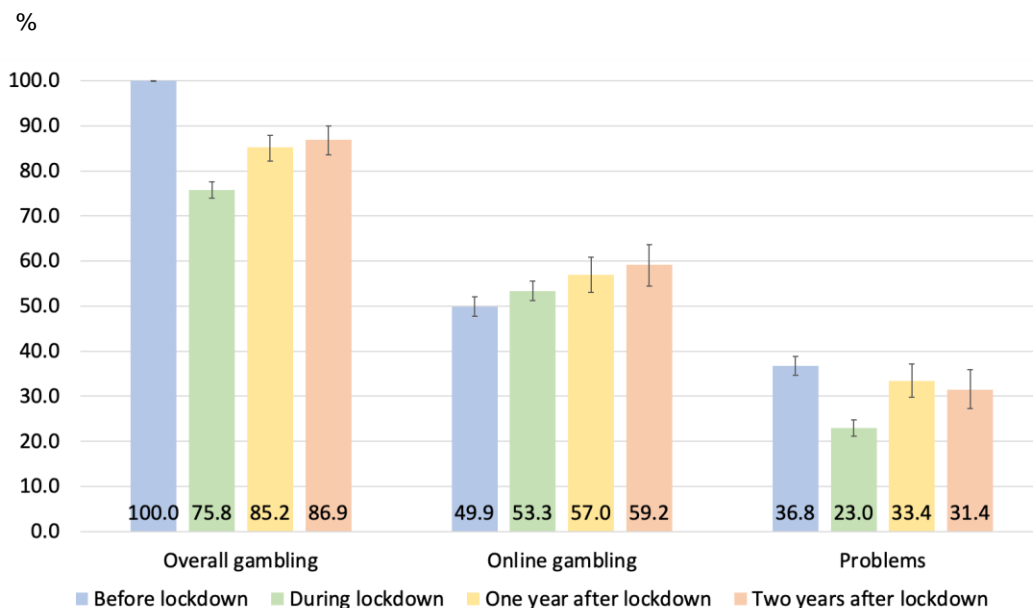
Note: *N* = 2125 (Time 1), *N* = 2125 (Time 2), *N* = 649 (Time 3), *N* = 458 (Time 4). Error bars show 95% confidence intervals.
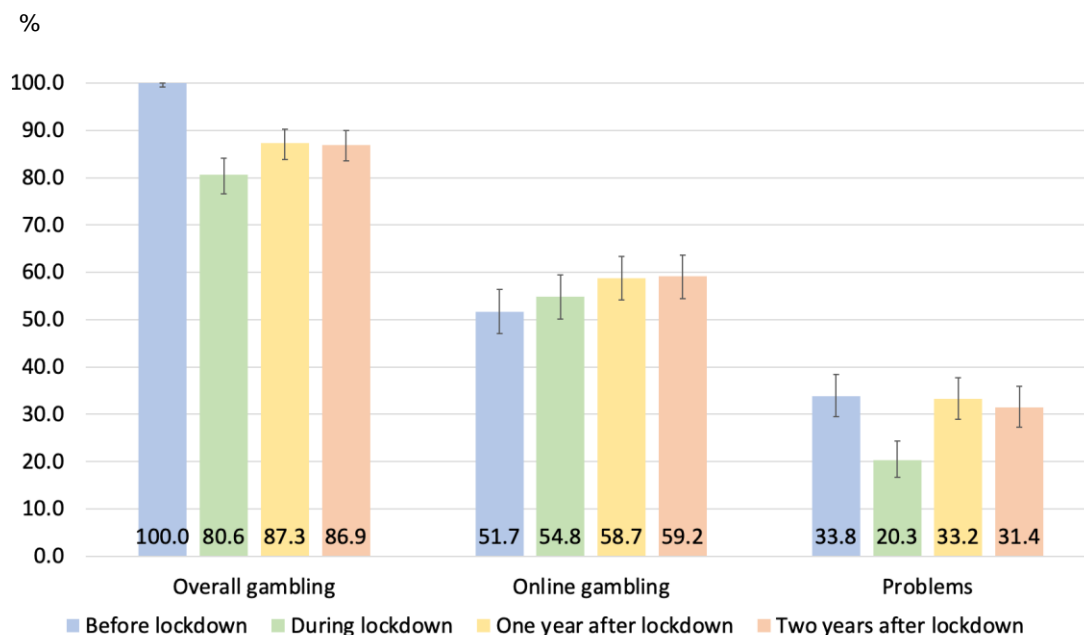
Note: *N* = 458 at each time point. Error bars show 95% confidence intervals.

Figure 3.2 shows the proportion of respondents to each survey wave who reported taking part in each major gambling form. Participation in EGMs, casino games, sports betting, race betting, lotteries and novel gambling forms (esports betting, fantasy sports betting, skin gambling and loot box purchasing combined) decreased during lockdown, most markedly for EGMs. Engagement in EGMs, sports betting, race betting and lotteries increased one year after lockdown (Time 3), and this was largely sustained two years after lockdown (Time 4). In contrast, engagement in gambling on casino games and novel gambling forms decreased during lockdown (Time 2) and had even lower participation one and two years later at Times 3 and 4. However, the Time 3 and 4 results are based on small numbers of gamblers on these forms. Figure 3.2 also shows that the results are largely similar when comparing all respondents who took part in each survey wave, and also just those who took part in all four surveys, indicating that the results are not unduly affected by attrition.

Figure 3.2 – Proportion of respondents engaged in each gambling form at each time point, for the full sample at each time point (top panel), and only for those who completed all four waves (bottom panel)
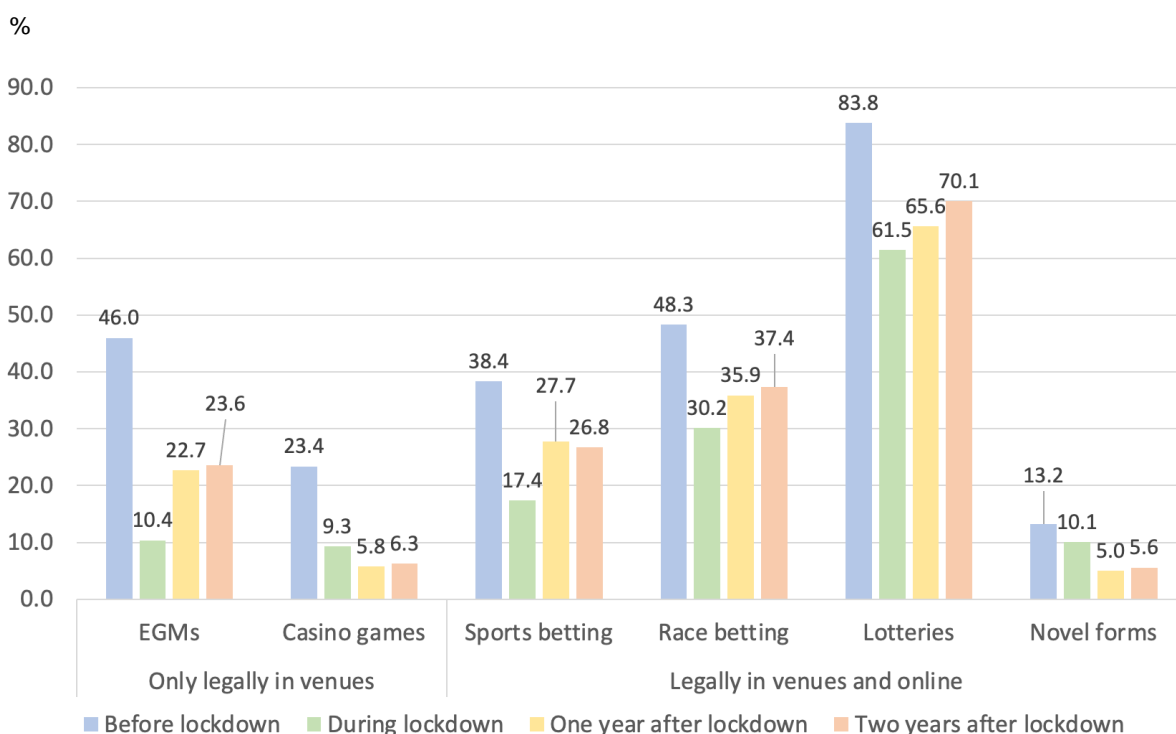
Note: *N* = 2125 (Time 1), *N* = 2125 (Time 2), *N* = 649 (Time 3), *N* = 458 (Time 4).
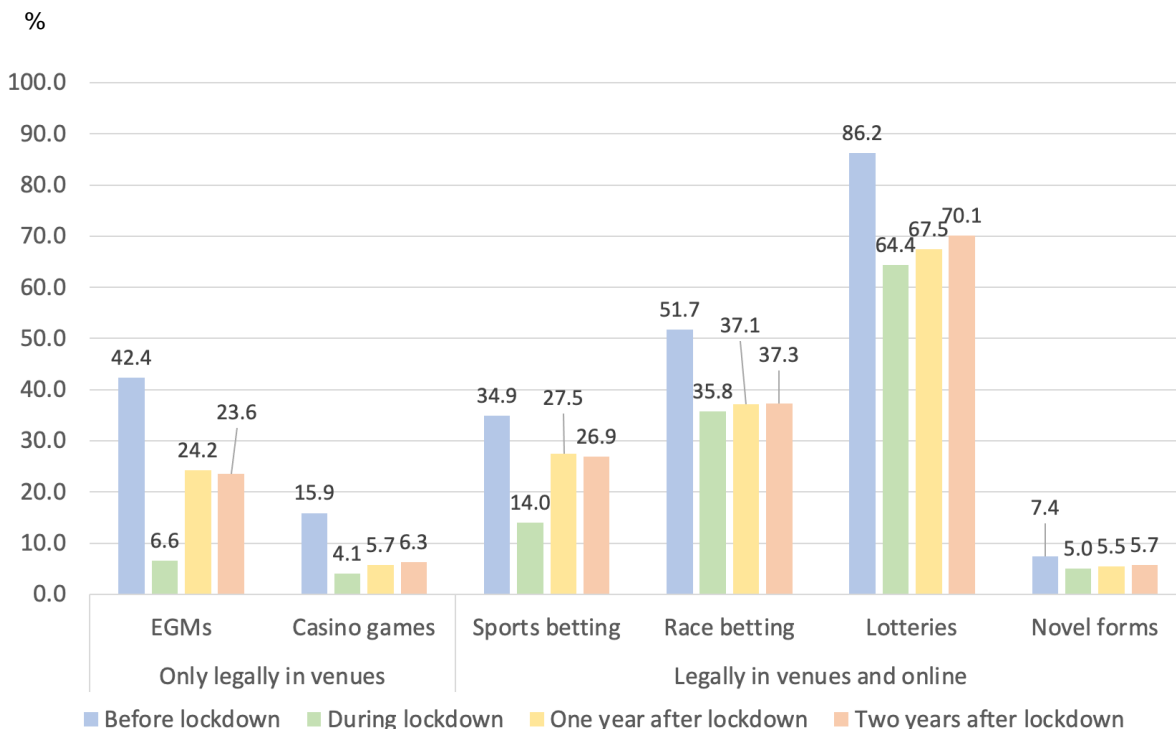
Note: *N* = 458 at each time point.

Figure 3.3 shows the proportion of respondents to each survey wave in each PGSI group. During lockdown at Time 2, the proportion of respondents in each at-risk group decreased. Low-risk and moderate-risk gambling, but not problem gambling, increased by Time 3 in the full sample. However, this result reflects greater attrition amongst those experiencing problem gambling, as indicated by the results for respondents who completed all survey waves, where problem gambling increased by Time 3, with this increase sustained two years after lockdown by Time 4 (bottom panel). With this exception, the figures are largely similar for those who took part in each survey wave compared to those who took part in all four surveys, indicating that attrition had little effect on these results.

Figure 3.3 – Proportion of respondents in each PGSI category at each time point, for the full sample at each time point (top panel), and only for those who completed all four waves (bottom panel)
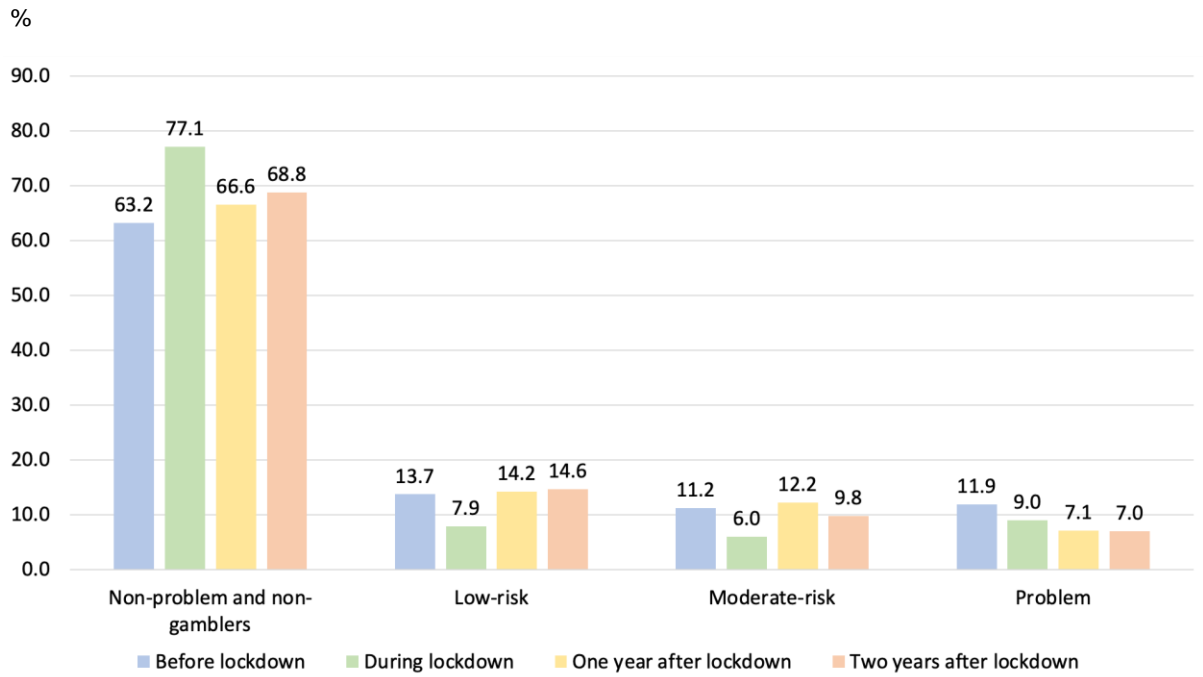
Note: N = 2125 (Time 1), N = 2125 (Time 2), N = 649 (Time 3), N = 458 (Time 4).
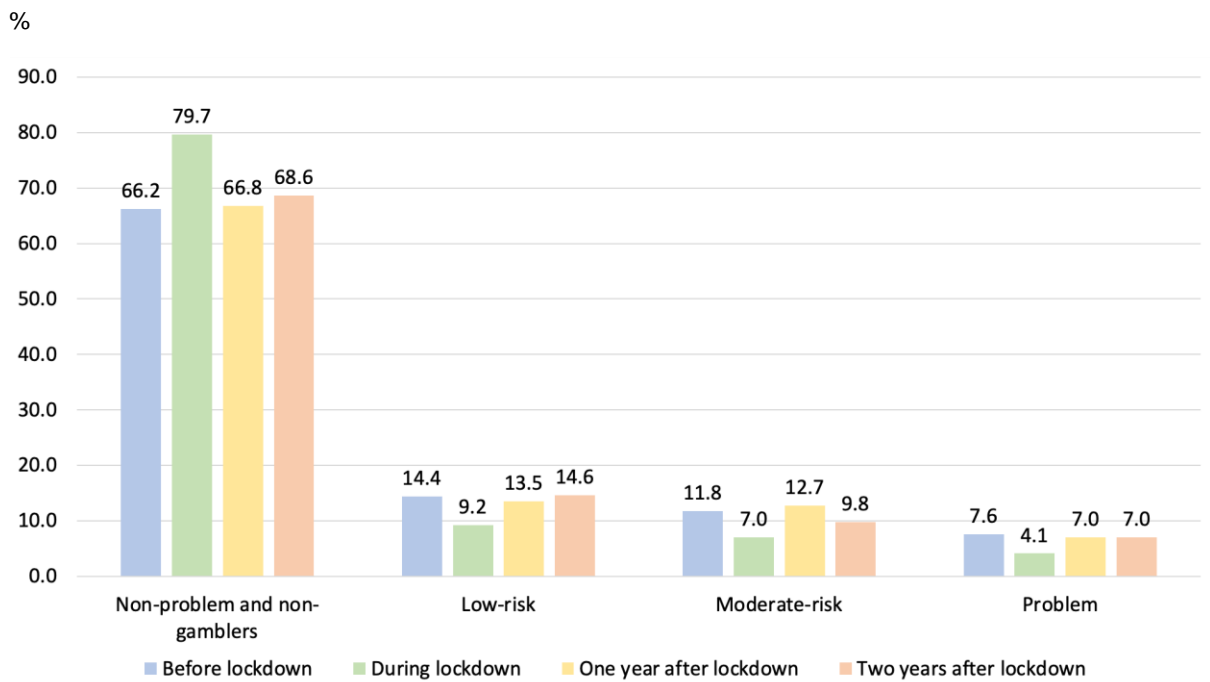
Note: N = 458 at each time point.

Transitions in gambling behaviour across time periods

This section presents results about transitions in gambling behaviour during each time period (Time 1 → Time 2; Time 2 → Time 3; and Time 3 → Time 4). There was respondent attrition between survey waves, from 2,125 respondents at Times 1 and 2, to 649 respondents at Time 3, and 458 respondents at Time 4. Analyses for Time 1 → Time 2 are all based on the full sample, since these data were captured in the same survey. The analyses for Time 2 → Time 3 are based on those who took part in both the Time 2 and 3 surveys. The analyses for Time 3 → Time 4 are based on those who took part in both the Time 3 and 4 survey. The figures and results that follow need to be interpreted with these different base samples in mind. In the figures that follow:

- Abstained = not gambling at either time point.

- Commenced = not gambling at the first time point, but gambling at the second time point.

- Sustained = gambling at both time points.

- Ceased = gambling at the first time point but not at the second time point.

The analyses focus on the major forms of gambling (overall gambling, EGMs, casino games, sports betting, race betting, lotteries, novel forms), online gambling and gambling problems.

Overall gambling

At Time 1, all survey respondents reported gambling in the previous 12 months, since this was an inclusion criterion. About three-quarters (75.8per cent) of respondents continued to gamble on at least one activity during lockdown (at Time 2). Almost one-quarter (24.2per cent) ceased gambling entirely during lockdown, but most (re)commenced gambling within one to two years.

At Time 3 (one year after lockdown), most respondents who had gambled at Time 2 continued to gamble at Time 3 (94.0per cent), and only 6.0per cent had ceased. Around half of those who stopped gambling during lockdown continued to stop, and half recommenced.

The vast majority of those who gambled at Time 3 continued to gamble two years after lockdown at Time 4 (94.3per cent) and only 5.7per cent had ceased. In addition, around one-third of those who did not gamble at Time 3 had recommenced gambling by Time 4.

Overall, 13.1per cent of those who completed all survey waves did not gamble in the last two months of the survey period (two years after lockdown), indicating that the lockdown may have been a longer-term circuit breaker for these respondents' gambling (Figure 3.4).

Figure 3.5 presents these transitions in a flow diagram.

Figure 3.4 – Changes in overall gambling engagement across all time periods
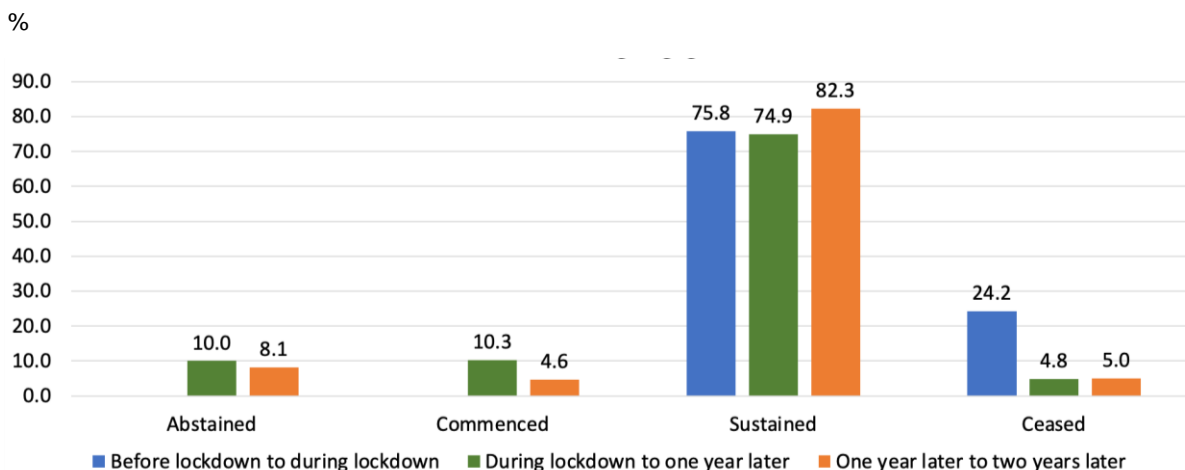
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4). An inclusion criterion for the first survey was having gambled in the past 12 months. Therefore, it was not possible for respondents to have sustained or commenced gambling during Time 1 → Time 2.

Figure 3.5 – Transitions in overall gambling engagement across all time periods
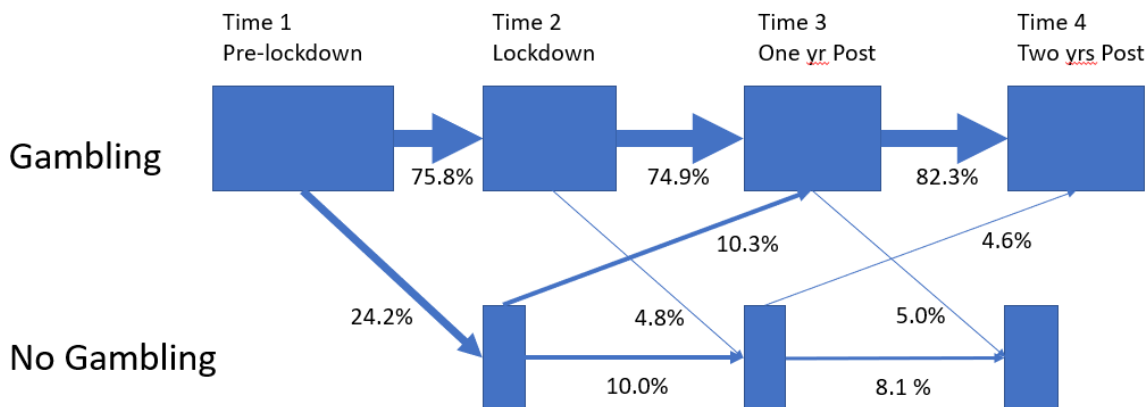
Gambling forms legally provided only in land-based venues

EGMs

Engagement in EGM gambling, and frequency of engagement, largely ceased or decreased among the respondents during lockdown (Time 2), but recommenced within one year by Time 3 (Figures 3.6 and 3.7).

Among respondents who reported EGM gambling at Time 1, 79.1per cent had ceased by Time 2. However, at Time 3 when venues had reopened, a similar proportion of those who gambled on EGMs at either Time 2 or Time 3 (75.1per cent) had (re)commenced gambling on EGMs. EGM engagement remained fairly consistent from Time 3 to Time 4, with similar numbers commencing and ceasing.

Frequency of EGM gambling showed a similar pattern. In total, 82.3per cent of EGM gamblers at Time 1 decreased the frequency of their EGM gambling during lockdown (Time 2). However, one year after lockdown had ended, a similar proportion of Time 3 respondents (79.9per cent) had increased the frequency of their EGM gambling.

Thus, the lockdown provided a short-term circuit breaker for EGM gambling, but this was only temporary for most EGM gamblers until land-based venues reopened. Nonetheless, 18.1per cent of former EGM gamblers reported no EGM gambling at Time 4, indicating that the lockdown had resulted in a longer-term change for these respondents. It is important to note, of course, that there may be some natural attrition from gambling when measured year-to-year; particularly amongst young adults. Nevertheless, this 18.1per cent figure is arguably too high to be accounted for by natural attrition alone.

Figure 3.6 – Changes in EGM engagement across all time periods
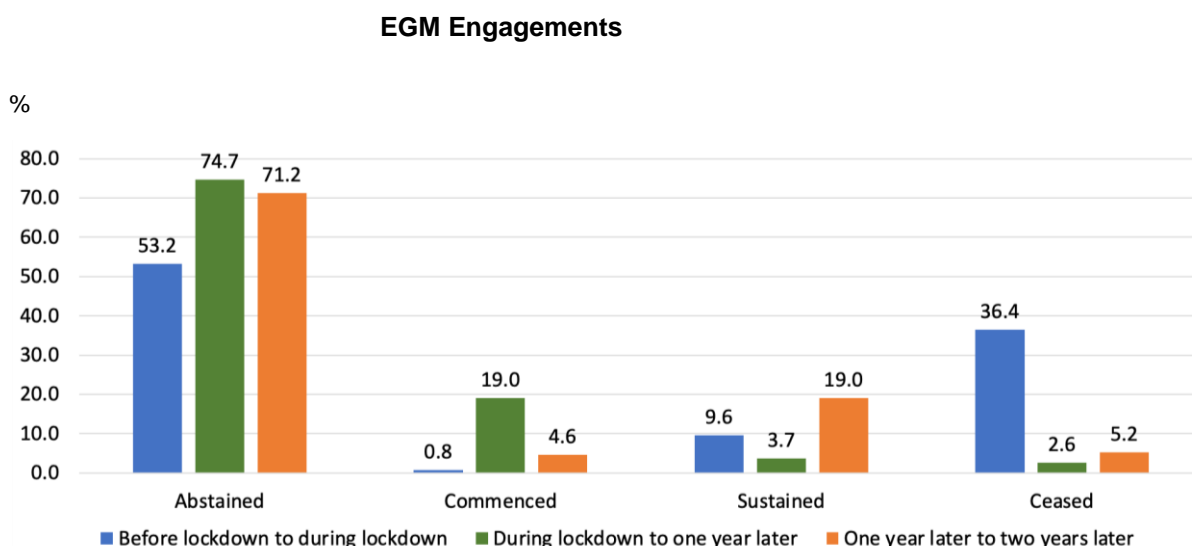
EGM Engagements

Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Figure 3.7 – Changes in EGM frequency across all time periods

EGM Frequency
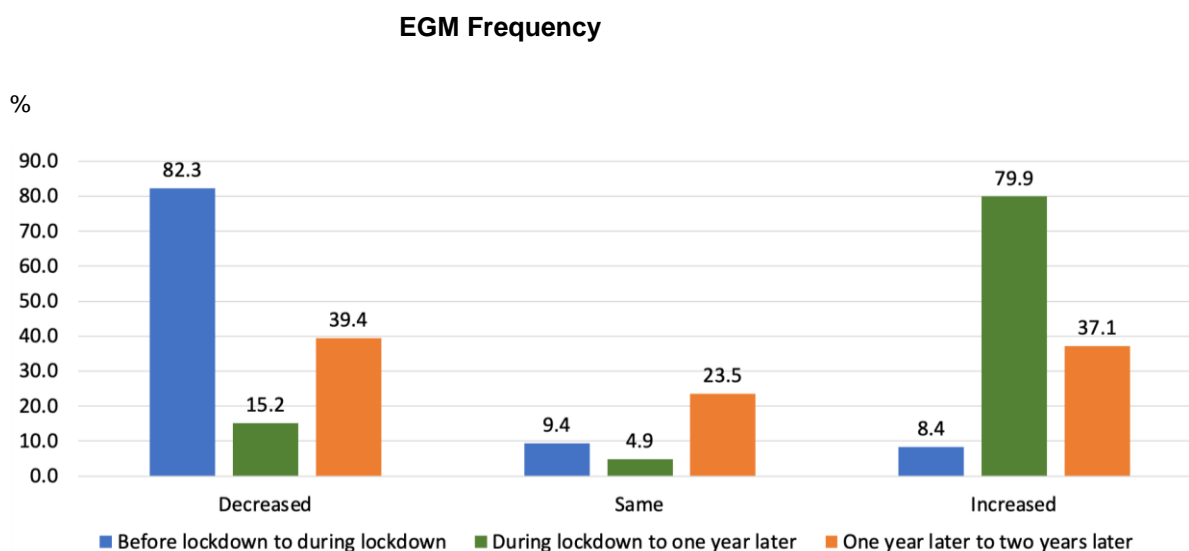
Note: *N* = 994 (Times 1-2), *N* = 164 (Times 2-3), *N* = 132 (Times 3-4).

Casino games

Engagement in casino games typically ceased or decreased during lockdown at Time 2, and remained well below pre-pandemic levels after lockdown ended. While some respondents increased their frequency of gambling on casino games one year later, relatively few who had ceased entirely during lockdown took up this form again at Times 3 or 4 (Figures 3.8 and 3.9). Only 54 respondents reported gambling on casino games at Time 3, and 37 at Time 4, so these results should not be overinterpreted.

Specifically, amongst respondents who reported gambling on casino games at Time 1, 65.6per cent had ceased by Time 2. At Time 3 when casinos had reopened, a smaller proportion of those who gambled on casino games at either Time 2 or Time 3 (48.2per cent) had (re)commenced, although another 30.1% had ceased. At Time 4, only 48.8per cent of respondents who had gambled on casino games at Time 3 continued to do so, and 21.3per cent had ceased. This was partly offset by the 30.0per cent of Time 4 casino gamblers who commenced casino gambling at Time 4.

In a similar pattern, 70.4per cent of casino game gamblers at Time 1 decreased the frequency of their casino gambling during lockdown. However, at Time 3, a smaller proportion of respondents (51.9per cent) had increased the frequency of their casino gambling, and a further 40.7per cent had decreased.

Thus, the lockdown provided a short-term circuit breaker for gambling on casino games. This was only temporary for some casino game gamblers until casinos reopened. Nonetheless, 21.3per cent of former casino game gamblers reported no casino gambling at Time 4, indicating a longer effect after lockdown for these respondents.

Figure 3.8 – Changes in casino game engagement across all time periods

Casino Games Engagement

%
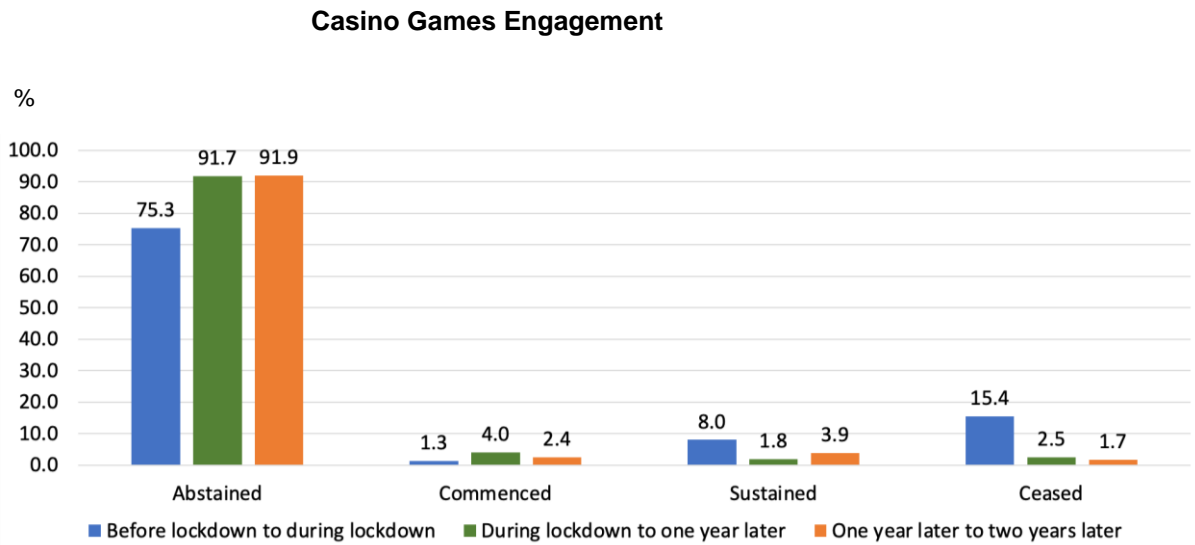
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Figure 3.9 – Changes in casino game frequency across all time periods

Casino Games Frequency

%
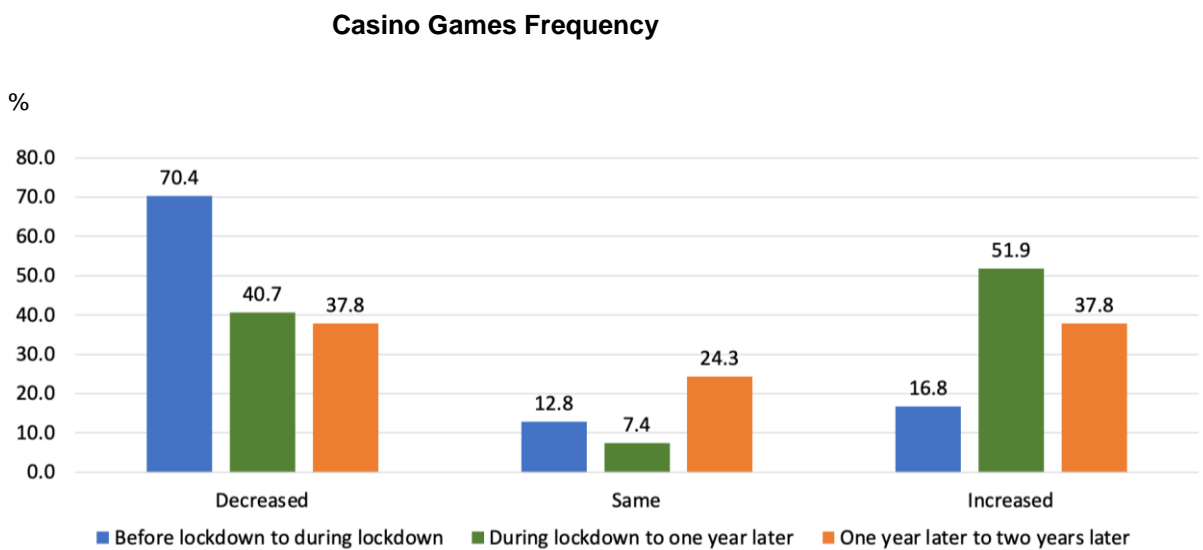
Note: *N* = 524 (Times 1-2), *N* = 54 (Times 2-3), *N* = 37 (Times 3-4).

Gambling forms legally provided in land-based venues and online

Sports betting

More than half (57.0per cent) of the respondents who took part in sports betting at Time 1 ceased during lockdown (Time 2) when most sports events were suspended, with the remainder presumably betting online on the few international fixtures being played, such as Russian table tennis and Belarus soccer. However, by Time 3 when sports events had resumed, a similar proportion of respondents who had bet on sports at either Time 2 or Time 3 (53.5per cent) had (re)commenced sports betting. Changes in sports betting generally balanced out two years after lockdown, with similar proportions commencing and ceasing at Time 4 (Figure 3.10).

In a similar pattern, 72.2per cent of sports bettors at Time 1 decreased the frequency of their sports betting during lockdown (Time 2). However, by Time 3, a higher proportion of respondents (79.4per cent) had increased the frequency of their sports betting (Figure 3.11).

Thus, the lockdown acted as a temporary circuit breaker for sports betting for most bettors, but only until sporting competitions resumed. Nonetheless, 15.2per cent of former sports bettors reported no sports betting at Time 4, reflecting a longer-term break from sports betting following the lockdown.

Figure 3.10 – Changes in sports betting engagement across all time periods

Sports Betting Engagement
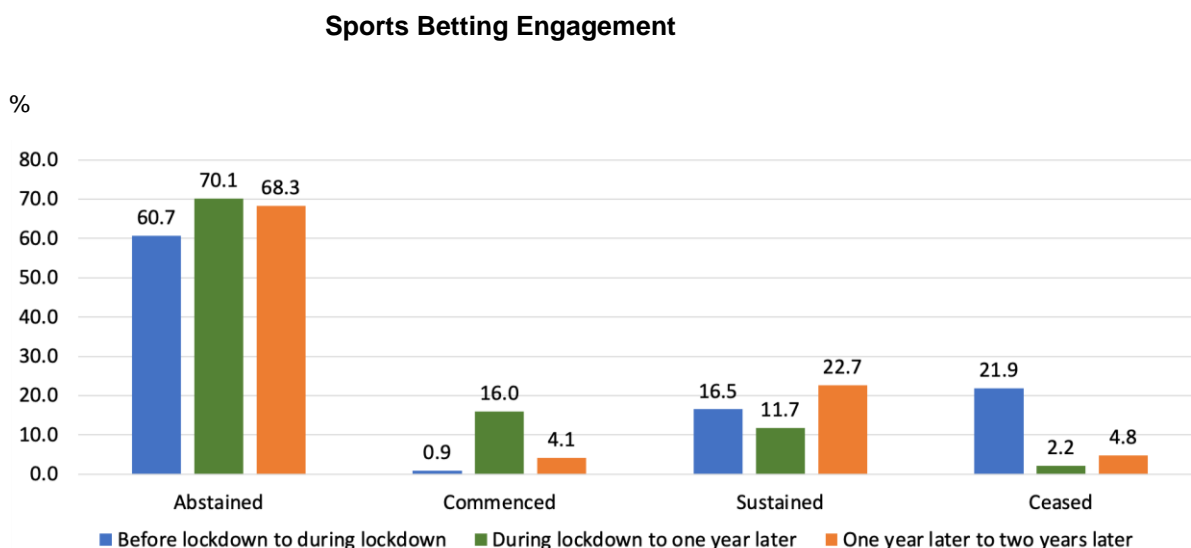
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Figure 3.11 – Changes in sports betting frequency across all time periods

Sports Betting Frequency
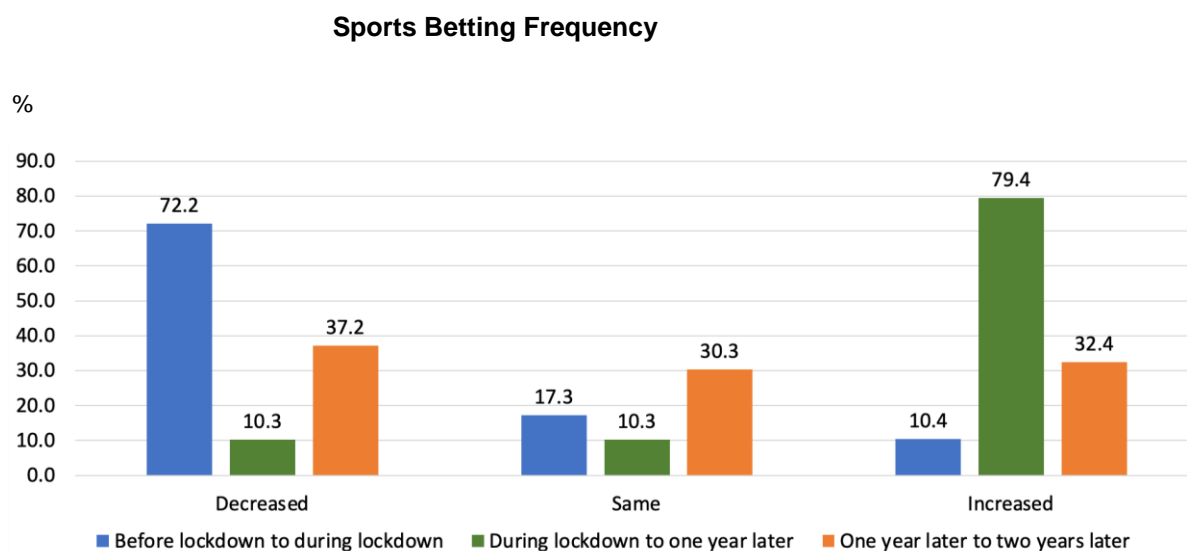
Note: *N* = 836 (Times 1-2), *N* = 194 (Times 2-3), *N* = 145 (Times 3-4).

Race betting

More than half (57.9per cent) of race bettors at Time 1 sustained their engagement in race betting during the lockdown (Time 2), reflecting the continuation of most racing events during this time, although betting was only available online and via telephone calls. Despite this continued availability, 42.1per cent of Time 1 race bettors ceased their race betting during Time 2, with some later recommencing, but others continuing to abstain after ceasing during lockdown (Figure 3.12).

At Time 3, most respondents (76.8per cent) who bet on races during lockdown (Time 2) continued to do so, although 10.5per cent ceased. Of those who did not bet on races during lockdown, 12.7per cent (re)commenced at Time 3. At Time 4, changes in race betting generally balanced each other out, with similar numbers of respondents commencing and ceasing.

In a similar pattern, nearly half (49.1per cent) of race bettors at Time 1 reported decreased frequency of race betting during lockdown (Time 2), while only 16.9per cent increased their race betting frequency. By Time 3, 34.2per cent of race bettor respondents had increased the frequency of their race betting (Figure 3.13). At Time 4, similar proportions of race bettors increased or decreased their race betting frequency.

Thus, the early months of the pandemic provided a temporary circuit breaker for about 4 in 10 race bettors, even though racing events continued largely uninterrupted. However, most resumed their betting after lockdown when race betting also became available in land-based outlets. Nonetheless, 9.9 per cent of former race bettors reported no race betting at Time 4.

Figure 3.12 – Changes in race betting engagement across all time periods

Race Betting Engagement
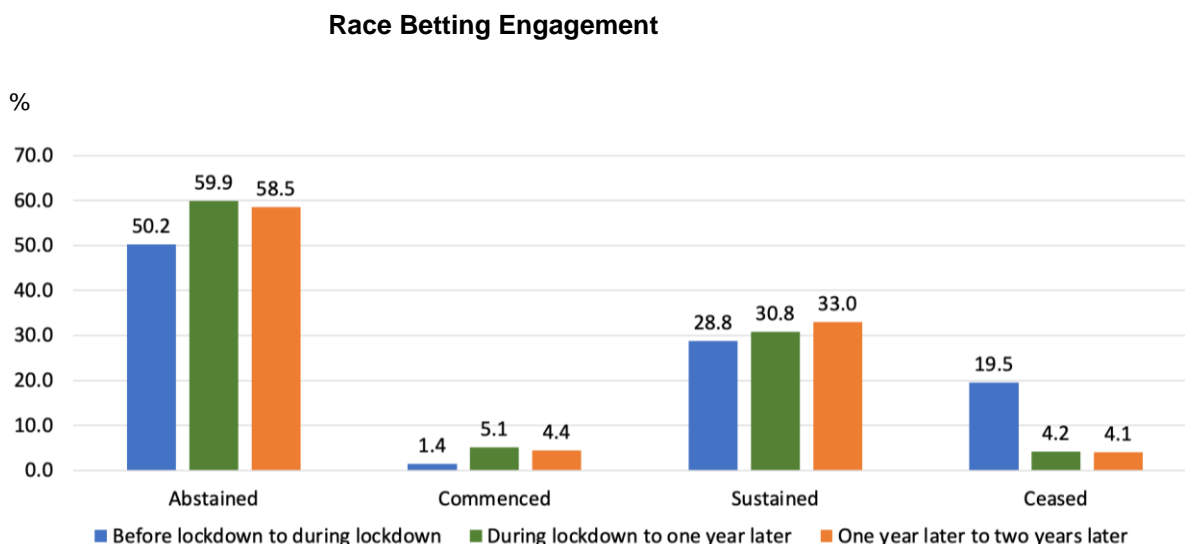
Note: N = 2125 (Times 1-2), N = 649 (Times 2-3), N = 458 (Times 3-4).

Figure 3.13 – Changes in race betting frequency across all time periods

Race Betting Frequency
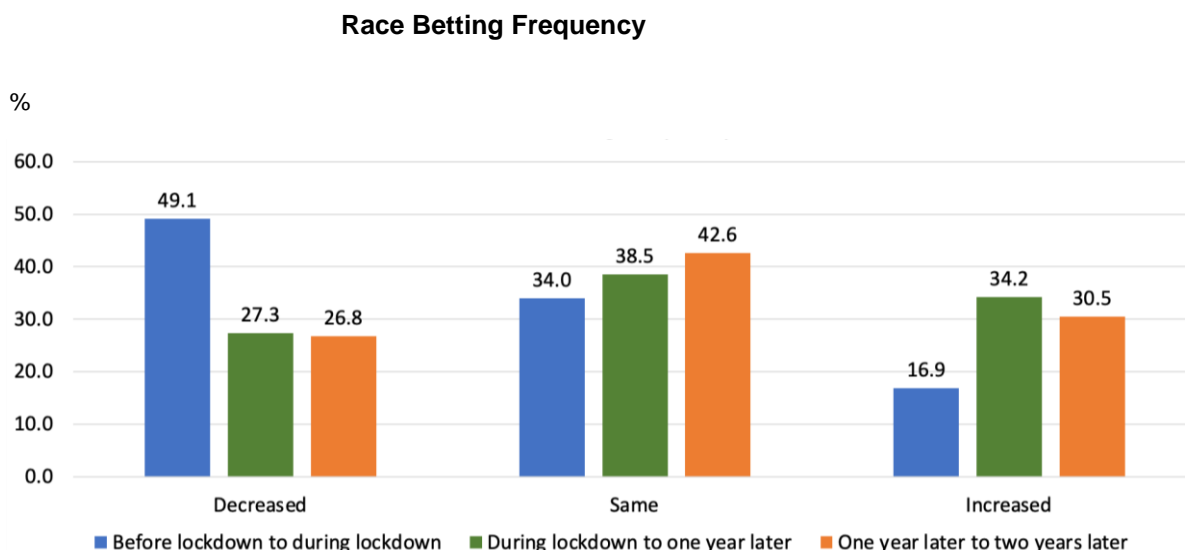
Note: N = 1058 (Times 1-2), N = 260 (Times 2-3), N = 190 (Times 3-4).

Lotteries

These analyses relate to purchasing lottery, lotto and pools tickets. Nearly three-quarters (71.8per cent) of lottery gamblers at Time 1 continued to purchase lottery tickets at Time 2, reflecting their continued availability during the lockdown. Nonetheless, at Time 2, 28.2per cent of Time 1 lottery gamblers had ceased purchasing tickets and 39.7per cent reported decreased frequency of purchases, while only 12.5per cent reported increased frequency. At Times 3 and 4, most of those who engaged in lotteries during lockdown continued to do so, and most reported increased or the same frequency of purchasing tickets. Some of those who had ceased lottery gambling

during lockdown recommenced after lockdown, but others remained stopped (Figures 3.14 and 3.15).

The early months of the pandemic interrupted lottery participation among nearly one-quarter of lottery gamblers, even though lottery tickets were available online and in retail outlets that could be accessed as part of an allowable shopping trip. However, most resumed their lottery purchases after lockdown. Nonetheless, 7.5per cent of former lottery gamblers reported no lottery purchases at Time 4, indicating a longer-term suspension of this activity.

Figure 3.14 – Changes in lotteries engagement across all time periods

Lotteries Engagement
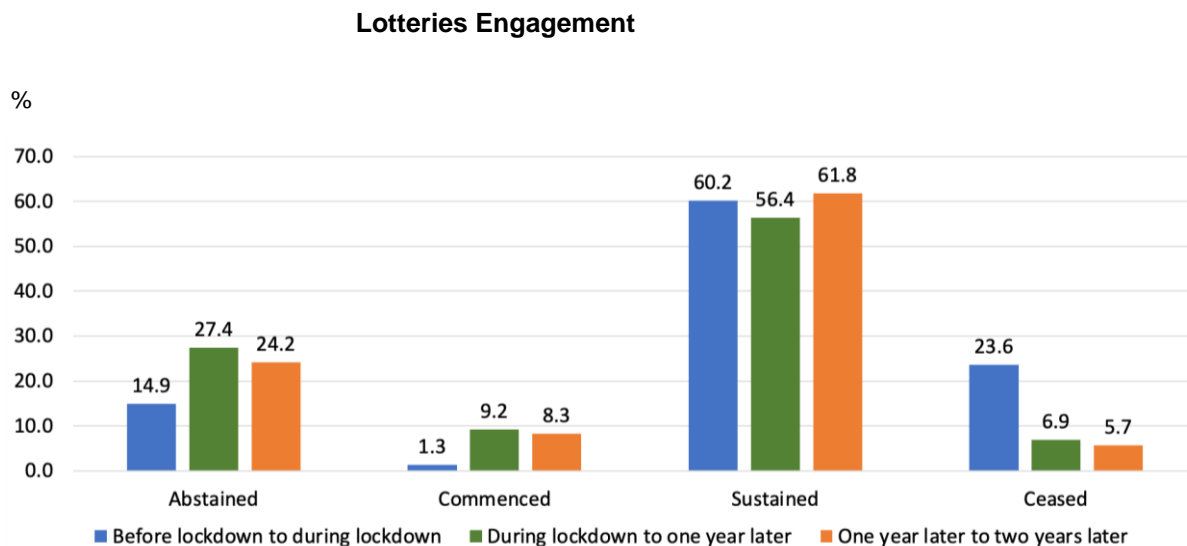
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Figure 3.15 – Changes in lotteries frequency across all time periods

Lotteries Frequency
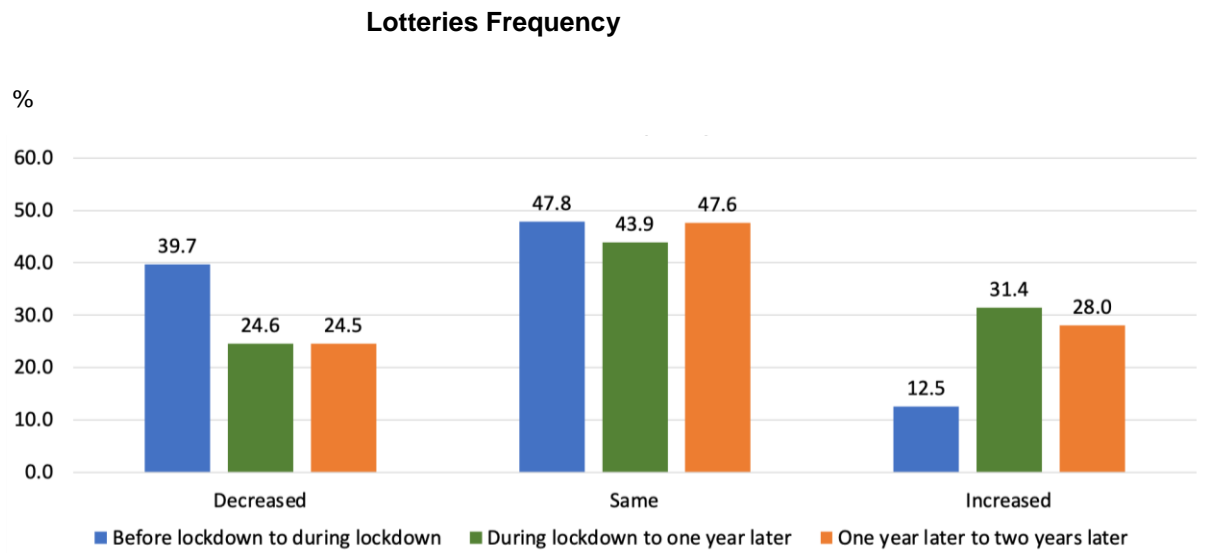
Note: *N* = 1808 (Times 1-2), *N* = 471 (Times 2-3), *N* = 347 (Times 3-4).

Novel gambling forms

For analyses, newer forms of gambling (esports betting, fantasy sports betting, skin gambling and loot box purchasing) were combined into a category of novel gambling forms, due to low numbers of respondents who engaged in each individual form. Of note is that only 45 respondents engaged in novel gambling forms at Time 3, and 32 at Time 4. Results for these time periods should therefore not be over-interpreted.

Among those who gambled on novel forms at Time 1, over two-thirds (68.9per cent) sustained their engagement in these forms during Time 2, reflecting their continued availability online during lockdown. Nonetheless, 31.1per cent of Time 1 gamblers on novel forms ceased gambling on these forms and 50.3per cent reported decreasing the frequency of this gambling at Time 2, although 35.1per cent increased their frequency. However, at Time 3, a similar proportion of respondents who gambled on novel forms (31.4per cent) had (re)commenced gambling on these forms and 46.7per cent had increased the frequency of this gambling, although the same proportion also reported decreased frequency (Figures 3.16 and 3.1). Engagement in novel forms largely remained consistent from Time 3 to Time 4.

Thus, the early months of the pandemic acted as a circuit breaker for about three in 10 gamblers on novel forms, even though these products remained available online. Most resumed this gambling after lockdown. Nonetheless, 18.8per cent of former gamblers on novel forms reported no gambling on these forms at Time 4, reflecting a longer-term break from these gambling activities.

Figure 3.16 – Changes in engagement in novel forms across all time periods

Novel Forms Engagement
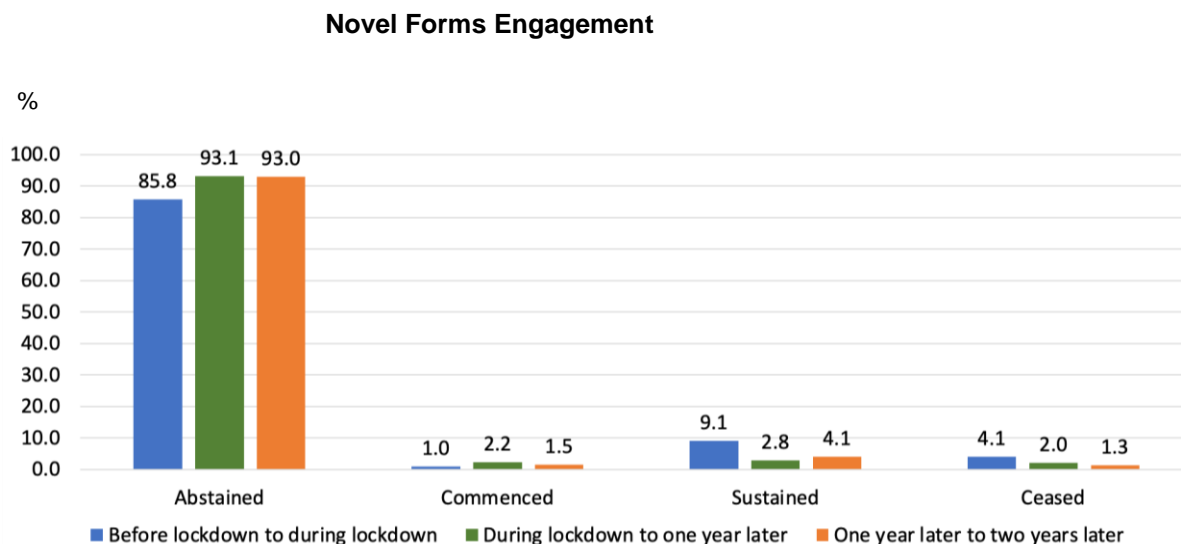
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Figure 3.17 – Changes in frequency of novel forms across all time periods

Novel Forms Frequency
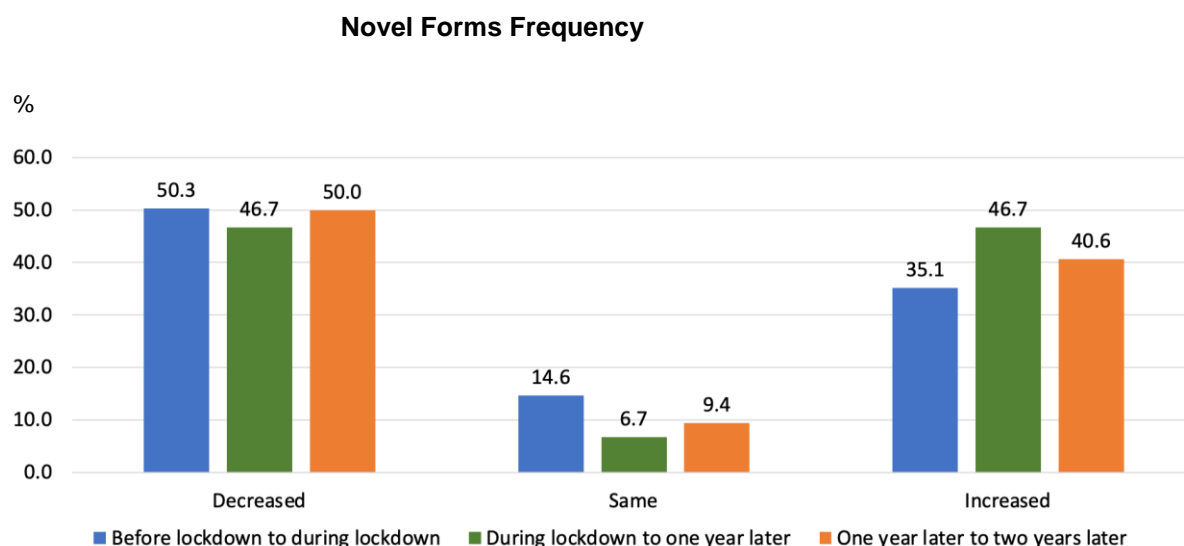
Note: *N* = 302 (Times 1-2), *N* = 45 (Times 2-3), *N* = 32 (Times 3-4).

Online gambling

Figure 3.18 shows that online gambling engagement (on any gambling form) increased marginally at each time point. Amongst respondents who reported online gambling at Time 2, 88.7 per cent had sustained, 8.8 per cent had commenced, and only 2.6 per cent had ceased online gambling during lockdown. At Time 3, 77.2 per cent had sustained, 13.0 per cent had commenced and 9.8 per cent had ceased online gambling. Similar figures were found for Time 4, when 79.3 per cent had sustained, 10.6per cent had commenced and 10.0 per cent had ceased online gambling.

While changes in engagement in online gambling were fairly minimal throughout the study, frequency of engagement shifted markedly (Figure 3.19). During lockdown (Time 2), nearly half of online gamblers (46.5 per cent) increased the frequency of their online gambling, while only 5.7 per cent decreased their online gambling frequency. However, after lockdown at Time 3, over one-third (38.0per cent) of online gamblers decreased their online gambling frequency, which may reflect their increased use of land-based venues that had reopened by then. Ten percent of former online gamblers reported no online gambling at Time 4, suggesting that they had used it as a temporary alternative for gambling while land-based venues were closed.

Figure 3.18 – Changes in online gambling engagement across all time periods

Online Gambling Engagement
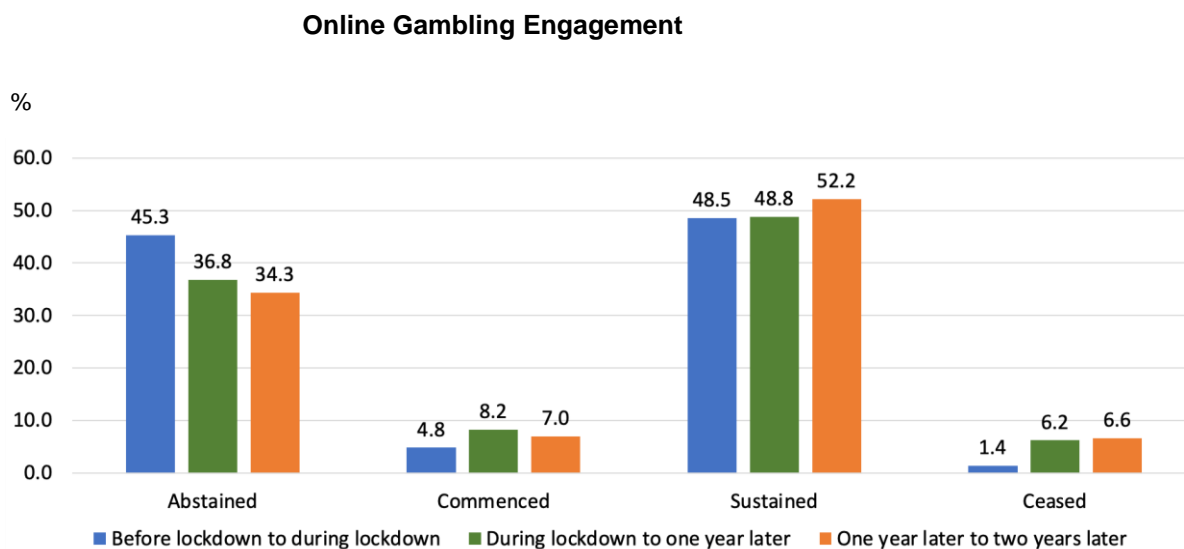
Note: N = 2125 (Times 1-2), N = 649 (Times 2-3), N = 458 (Times 3-4).

Figure 3.19 – Changes in online gambling frequency across all time periods

Online Gambling Frequency
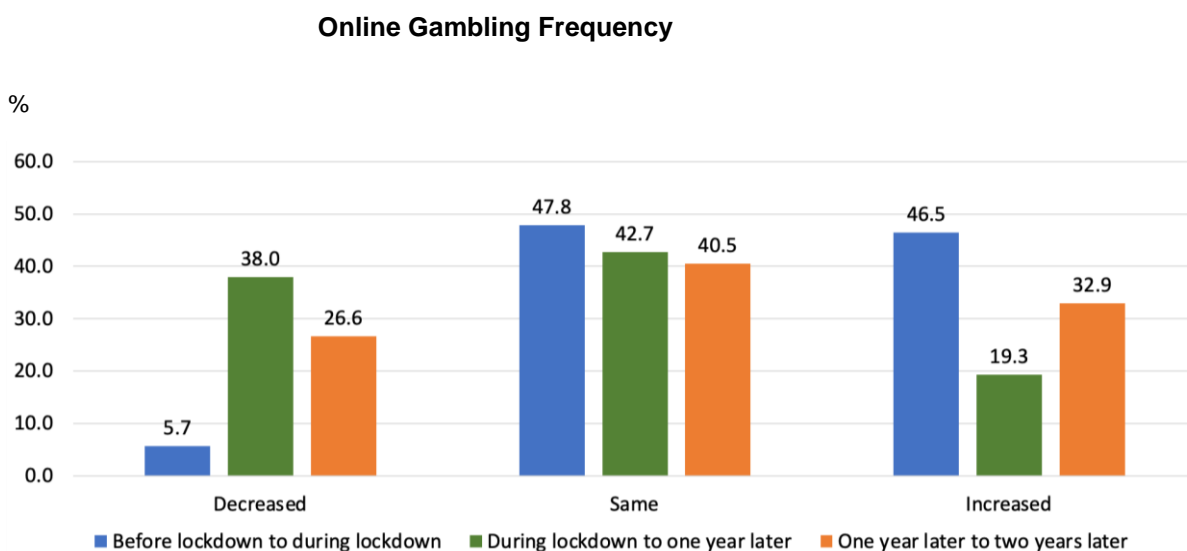
Note: N = 1163 (Times 1-2), N = 410 (Times 2-3), N = 301 (Times 3-4).

Problem gambling symptoms

The reporting of any symptoms of problem gambling was examined at each time point, indicated by a PGSI score of 1+ to capture any level of harmful gambling. As shown in Figure 3.20, the biggest difference across time periods was greater cessation of symptoms during lockdown (Time 2), and symptoms starting in the year after lockdown (Time 3).

Specifically, during lockdown, 15.0 per cent of respondents (representing 40.8 per cent of those with symptoms at Time 1) ceased to have any symptoms at Time 2, and only 1.2 per cent

reported the new onset of any symptoms. This pattern was reversed by one year after lockdown. At Time 3, 16.5 per cent of respondents reported a new onset of one or more symptoms of problem gambling, while only 3.9 per cent reported the cessation of all symptoms. At Time 4, similar numbers of respondents reported the commencement or cessation of any symptoms.

The results suggest that the lockdown acted as a temporary circuit-breaker for problem gambling symptomatology for about one-sixth of respondents, but that this effect was reversed once land-based venues reopened and sports events resumed.

Figure 3.20 – Changes in reporting any problem gambling symptoms across all time periods

Gambling Problems Experienced
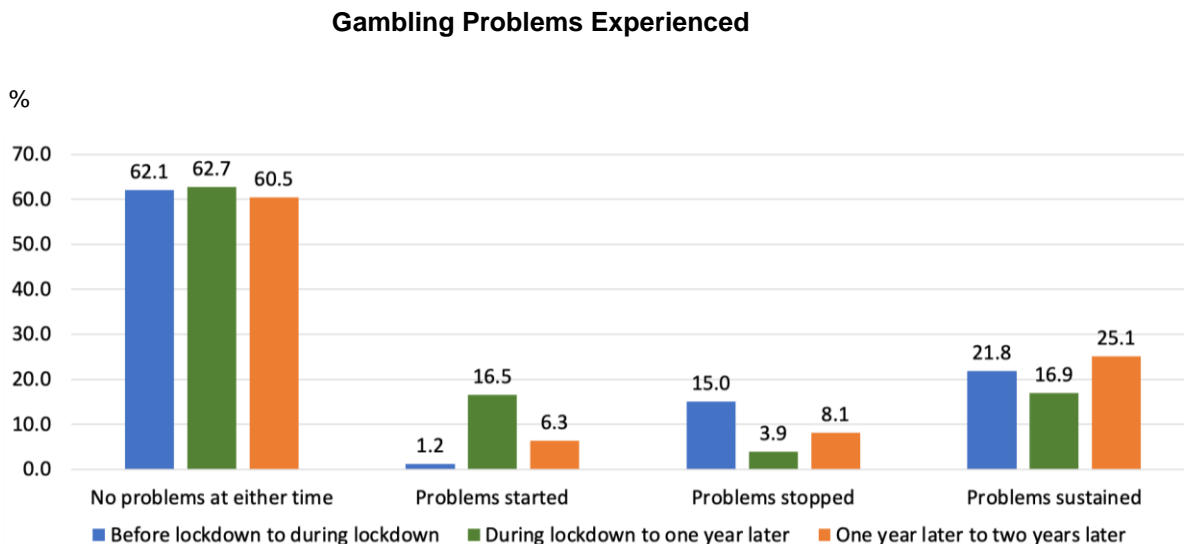
Note: *N* = 2125 (Times 1-2), *N* = 649 (Times 2-3), *N* = 458 (Times 3-4).

Problem gambling severity

Figure 3.21 shows change in raw PGSI score between time periods. Note that, amongst people who have the same PGSI score in each of the two time periods considered for each transition, results have been separated for those who had PGSI scores of 0 at both times, and those who had PGSI scores higher than 0. During lockdown at Time 2, 25.0 per cent reported a decrease in problem gambling severity, and only 6.2 per cent an increase. One year later at Time 3, 10.2 per cent reported a decrease, and 24.0 per cent an increase.

The results suggest that the lockdown acted as a temporary circuit-breaker to lessen problem gambling severity for about one-quarter of respondents, but that this effect was reversed once land-based venues reopened and sports events resumed.

Figure 3.21 – Changes in problem gambling severity across all time periods
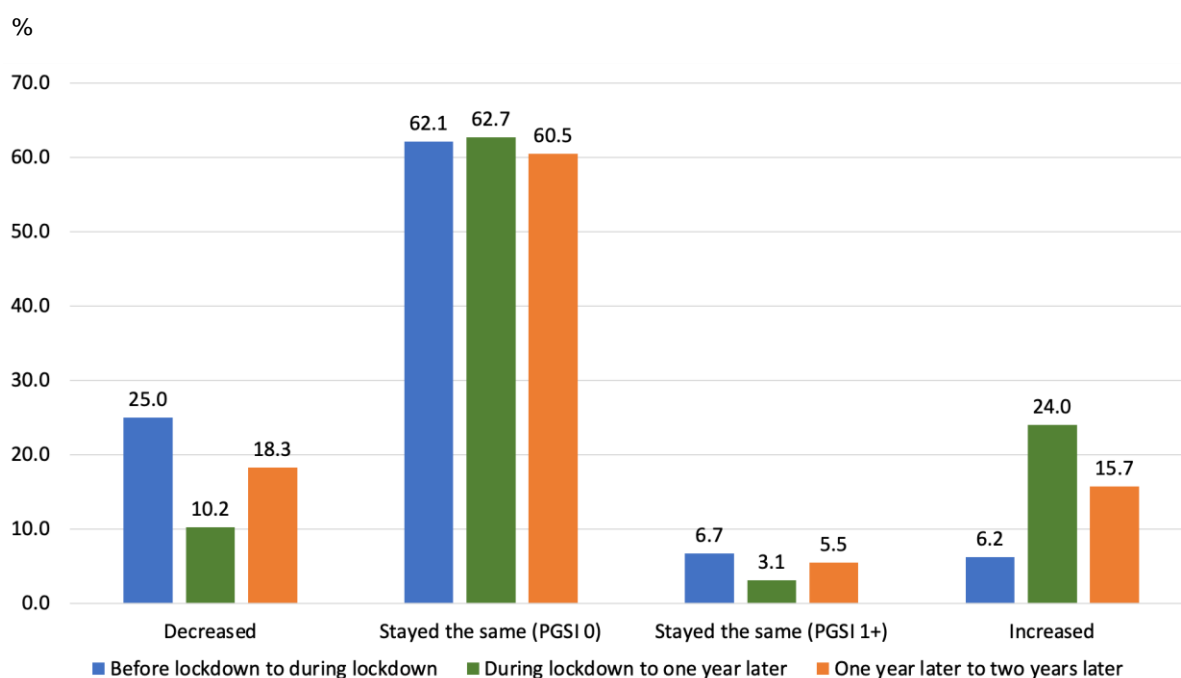
Chapter conclusion

This chapter has presented the results that inform Aim 1 of the study: to examine how the changed availability of gambling products and modes impacted on gambling behaviour and harmful gambling. The chapter summarised gambling participation and problems at each of the four time points when respondents were surveyed. It also presented results on transitions in gambling behaviour during each time period in terms of abstaining from, commencing, sustaining and ceasing engagement in different gambling forms, and increases and decreases in gambling frequency. Please see the key findings at the start of this chapter for a summary of the results.

Chapter 4. Characteristics of gamblers with different gambling transitions

Key findings

- At Time 1 before lockdown, all respondents were past-year gamblers. During lockdown, at Time 2, a minority of respondents continued to gamble on products that were not available in land-based venues (20.9per cent of EGM gamblers, 34.4per cent of casino gamblers) or were severely restricted (43.0per cent of sports bettors). Instead, they gambled on EGMs and casino games through illegal online operators, and on the very few sporting events operating internationally. Those who continued gambling on these products (vs those who ceased) tended to have higher pre-lockdown PGSI scores, and to be younger, employed, and report more unhealthy behaviours, loneliness, perceived stress, psychological distress, financial hardship and stressful life events due to COVID during lockdown.

- During lockdown (Time 2), respondents who increased the *frequency* of their gambling on EGMs, casino games, sports betting, race betting and lotteries tended to have higher pre-lockdown PGSI scores, to be younger (except for those playing casino games) and to report more perceived stress, psychological distress, loneliness, financial hardship and stressful life events due to COVID during lockdown.

- Based on the 2125 respondents to the first survey, those who newly commenced online gambling during lockdown at Time 2, compared to those who gambled online both before and during lockdown, were more likely to have lower pre-lockdown PGSI scores, and to be older and female.

- However, one year after lockdown at Time 3, males were more likely than females to continue rather than cease online gambling, and to have higher PGSI scores than those who commenced online gambling at Time 3.

- At Time 3 when venues and sports events had recommenced, respondents tended to have resumed or increased their gambling, although participation in the sample on all gambling forms was below pre-pandemic levels. There were few significant differences in the characteristics of those who (re)commenced, sustained or ceased gambling on the different forms.

- Some transitions in gambling behaviour were reported at Time 4, but it is difficult to attribute them directly to the effects of the pandemic, given that accessibility to gambling had largely returned to pre-COVID conditions by Time 3.

- Overall, people with higher problem gambling severity, younger people, and those with psychosocial and financial vulnerabilities were more likely to increase their gambling and gamble on illegal forms during lockdown, and to recommence or increase some of their gambling activity post-lockdown.

Introduction

This chapter presents results to inform the second aim of this study: to determine the characteristics of gamblers that are associated with different transitions in gambling behaviour.

The results are presented for three time periods: Time 1 → Time 2, Time 2 → Time 3, and Time 3 → Time 4. Of potential interest were significant differences in the characteristics of respondents who reported the different transitions of having abstained, commenced, sustained and ceased gambling during each time period.

- Abstained = not gambling at either time point during the relevant time period.

- Commenced = not gambling at the first time point, but gambling at the second time point.

- Sustained = gambling at both time points.

- Ceased = gambling at the first time point but not at the second time point.

The characteristics examined included PGSI score, as measured at the **first time point** in each time period. This was included to examine whether respondents with greater or less problem gambling severity tended to report different transitions. The demographic and psychosocial characteristics were based on these measures at the **second time point** in each period. Demographic characteristics included age, gender, metro vs regional/rural residence, marital status, employment, and education. Psychosocial characteristics included perceived stress, distress, loneliness, health anxiety about COVID, financial hardship, stressful life events due to COVID, unhealthy behaviours, and healthy behaviours. Chapter 2 provides a detailed explanation of the methods. Detailed analyses are in Appendix D.

Approach to the description of results

The broader pattern of gambling behaviour during each time period constrained the size of some groups, which in turn limited the comparisons that could be conducted for each time period. In particular, relatively few people commenced gambling on most forms at Time 2 (during lockdown), while few reported ceasing most forms of gambling at Time 3, one year after lockdown.

For Times 1-2, most comparisons of gambling engagement (participation) compared respondents who sustained gambling on a particular form during the lockdown to those who ceased. Comparisons with respondents who abstained at both Times 1 and 2 were not conducted because they do not distinguish any effects of lockdown, but instead indicate the different characteristics of those who do and do not take part in each form of gambling (e.g., sports bettors tend to be young men and not older women). An exception is one comparison with the group who abstained from online gambling during lockdown, since these are people who gambled at Time 1 (as per the inclusion criteria), but who did not take up online gambling when land-based gambling venues were closed. Conversely, because relatively few people commenced gambling on each form at Time 2, comparisons with the commenced group are also generally omitted, again due to the small group size.

For Times 1-2, frequency results are reported for respondents who engaged in each gambling form at Time 1. The frequency of engagement at Time 2 is compared to that at Time 1, and classified into "decreased" (including ceasing), "same", and "increased". Pairwise comparisons of significant differences are reported by first comparing the "increased" group to "decreased" and "same", and then comparing the "decreased" group to "same". Pairwise comparisons are not reported where there were small numbers of respondents in one or more of the comparison groups, since statistical power is poor and leverage is potentially high.

At Times 2-3 and Times 3-4, a similar approach was taken to analyse changes in gambling engagement and frequency. The frequency of engagement at the earlier time point is compared to that at the later time point, and classified into "decreased" (including ceasing), "same", and

"increased" (including commencing). However, fewer respondents completed the surveys at Time 3 and Time 4. Some analyses were therefore based on small numbers of respondents. Specifically, non-significant results should not be over-interpreted, as some results, particularly for frequency of specific forms, were under-powered. However, where groups were large enough, we present all results in the interests of transparency.

At Times 2-3 and Times 3-4, many of the group differences represented differences between those who abstained from a form at both Times 3 and 4, and those who sustained gambling on a form from Times 3 and 4. These differences generally reflect those between people who gamble on each form compared to those who do not, rather than changes in gambling behaviour due to COVID. They are therefore not reported in the chapter, but are included at Appendix D for transparency.

Please see Chapter 3 for the results and graphs that relate to changes in gambling behaviour for each time period. Some results are briefly reiterated in this chapter to provide a context for the comparisons between groups.

Time 1 (before lockdown) to Time 2 (during lockdown)

Overall gambling T1-T2

Of the 2,125 respondents recruited at Time 1, 1,611 (75.8per cent) reported sustaining at least one form of gambling during lockdown at Time 2, while 514 ceased (24.2per cent).

Compared to those who ceased, respondents who sustained their gambling were significantly more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Older
- Male
- Less educated
- Less lonely
- Experiencing more financial hardship

EGMs T1-T2
Engagement

Overall, 79.1per cent of the 978 respondents who gambled on EGMs at Time 1 did not gamble on them at Time 2 (ceased), and only 16 respondents commenced gambling on EGMs from Time 1 to Time 2.

Compared to those who ceased their EGM gambling, those who sustained were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Male
- Employed

- Engaged in more healthy behaviours and unhealthy behaviours (based on composite scores for each, see Chapter 2)
- Higher in perceived stress
- Higher in psychological distress
- More lonely
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Frequency

Among respondents who played EGMs at Time 1, most (82.3per cent) decreased how often they played EGMs by Time 2, including ceasing entirely, while 9.4per cent played at the same frequency, and 8.4per cent increased their frequency.

Compared to those who decreased or reported the same frequency of EGM gambling, respondents who increased their EGM gambling frequency were significantly more likely to have reported higher problem gambling severity at Time 1 (vs both), and at Time 2 to be:

- Younger (vs decreased)
- Male (vs decreased)
- Employed (vs both)
- Engaged in more unhealthy behaviours (vs decreased)
- Higher in perceived stress (vs decreased)
- Higher in psychological distress (vs decreased)
- More lonely (vs decreased)
- Experiencing more financial hardship (vs both)
- Experiencing more stressful life events due to COVID (vs both)

Compared to those who reported decreased frequency of EGM gambling, those who reported the same frequency were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Employed
- Engaged in more healthy behaviours
- Higher in perceived stress
- Higher in psychological distress
- More lonely
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Casino games T1-T2

Engagement

Around two-thirds (65.6per cent) of people who engaged in casino games at Time 1 had ceased at Time 2. Very few (*n* = 27) commenced playing casino games during lockdown.

Compared to respondents who ceased gambling on casino games, those who sustained their casino gambling were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Employed
- Engaged in more unhealthy behaviours
- Higher in perceived stress
- Higher in psychological distress
- More lonely
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Frequency

Amongst respondents who reported gambling on casino games at Time 1, 70.4per cent reported decreased frequency at Time 2, 12.8per cent reported the same frequency, and 16.8per cent reported increased frequency.

Compared to those whose casino gambling decreased or stayed the same, those who increased the frequency of gambling on casino games were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Living in a regional or rural area (vs decreased)
- Employed (vs decreased)
- Higher in perceived stress (vs decreased)
- Higher in psychological distress (vs decreased)
- More lonely (vs decreased)
- Experiencing more financial hardship (vs decreased and same)
- Experiencing more stressful life events due to COVID (vs decreased)

Those whose gambling stayed the same were more likely than those who decreased to be male and to have reported higher problem gambling severity at Time 1.

Sports betting T1-T2

Engagement

More than half (57.0 per cent) of those who bet on sports prior to lockdown stopped betting on sports during lockdown (ceased). Only 20 respondents commenced betting on sports during lockdown.

Compared to those who ceased sports betting, those who sustained their sports betting were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Higher in perceived stress
- Higher in psychological distress
- More lonely
- Higher health anxiety about COVID
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Frequency

Overall, 72.2per cent of people who bet on sports at Time 1 decreased the frequency of their sports betting at Time 2, with 17.3per cent betting at the same frequency, and 10.4per cent reporting increased frequency.

No significant differences were observed between those who increased their sports betting and those who stayed the same, in terms of demographic and psychosocial variables.

Compared to those who decreased, those who increased their sports betting during lockdown were significantly more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Female
- Higher in perceived stress
- Higher in psychological distress
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Compared to those who decreased their sports betting, those who stayed the same were significantly more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Higher in perceived stress
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Race betting T1-T2

Engagement

Of those who bet on races at Time 1, more than half (57.9per cent) continued to do so at Time 2, although a substantial proportion (42.1per cent) had ceased betting on races by Time 2. Very few people commenced betting on races at Time 2.

Compared to those who had ceased race betting, those who sustained their race betting were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Male
- Less educated
- Experiencing more financial hardship

Frequency

Amongst those who engaged in race betting at Time 1, nearly half (49.1per cent) decreased the frequency of their race betting during lockdown, about one-third (34.0per cent) bet on races at the same frequency, while 16.9per cent increased their race betting frequency.

Those who had increased their race betting frequency were more likely to have reported higher problem gambling severity at Time 1 (vs both), and at Time 2 to be:

- Younger (vs both same and decreased)
- More educated (vs same)
- Higher in perceived stress (vs both)
- Higher in psychological distress (vs both)
- More lonely (vs same)
- Experiencing more financial hardship (vs both)
- Experiencing more stressful life events due to COVID (vs both)
- Male (vs decreased)
- Employed (vs same)

Compared to those who decreased their race betting, those who stayed the same were more likely at Time 2 to be:

- Older
- Male
- Less educated
- Lower in psychological distress
- Less lonely
- Experiencing fewer stressful life events due to COVID

Lotteries T1-T2

Engagement

Almost one in three respondents (28.2 per cent) who bought lottery, lotto or pools tickets before lockdown stopped doing so during lockdown (ceased). Only a small number commenced (n = 27).

Those who sustained buying lottery, lotto or pools tickets during lockdown, compared to those who had ceased, were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Older
- Male
- Less educated
- Not employed

Frequency

Of those who bought lottery, lotto or pools tickets before lockdown, around 4 in 10 (39.7per cent) reported decreased frequency of buying these tickets at Time 2, just under half (47.8per cent) maintained the same frequency, and 12.5per cent reported increased frequency.

Compared to those who decreased or stayed the same, those who increased their frequency of purchasing lottery, lotto or pools tickets during lockdown were more likely to have reported higher problem gambling severity at Time 1 (vs both), and at Time 2 to be:

- Younger (vs same only)
- Employed (vs same only)
- Higher in perceived stress (vs both)
- Higher in psychological distress (vs both)
- More lonely (vs both)
- Experiencing more financial hardship (vs both)

- Experiencing more stressful life events due to COVID (vs both)

Compared to those who decreased the frequency of lottery purchasing, those who stayed the same were more likely at Time 2 to be:

- Older
- Male
- Not employed
- Less educated
- Lower in perceived stress
- Lower in psychological distress
- Experiencing fewer stressful life events due to COVID

Novel gambling forms T1-T2

Engagement

Amongst those who took part in betting on novel forms (esports betting, fantasy sports betting, skin gambling, and purchasing loot boxes) before lockdown, about 3 in 10 (31.1per cent) ceased betting on them during lockdown. Very few ($n = 21$) commenced betting on novel forms during lockdown.

Those who sustained betting on novel forms during lockdown, compared to those who ceased, were more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Living in a regional or rural area
- Engaged in more unhealthy behaviours
- More lonely
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Frequency

More than 85per cent of people who bet on novel forms before lockdown changed the frequency of this betting during lockdown, either by increasing (35.1per cent) or decreasing it (50.3per cent).

Compared to those who decreased the frequency of betting on novel forms during lockdown, those who increased were significantly more likely to report more financial hardship at Time 2.

Compared to those who decreased the frequency of betting on novel forms during lockdown, those who bet on novel forms with the same frequency were more likely to be male.

There were no significant differences between respondents who increased the frequency of their betting on novel forms during lockdown, compared to those who maintained the same frequency.

Online gambling T1-T2

Engagement

Amongst respondents who reported online gambling at Time 2, 88.7per cent had continued to gamble online since Time 1, 8.8 per cent ($n = 102$) had commenced online gambling during

lockdown, and only 2.6per cent (*n* = 30) had ceased online gambling during lockdown. Due to these numbers, transitions between Time 1 and Time 2 for online gambling first consider differences between those who commenced, vs those who sustained. The abstained group is also of interest, reflecting people who gambled at Time 1 (as per the inclusion criteria), but who did not take up online gambling when gambling venues were closed during lockdown.

Those who commenced gambling online during lockdown, compared to those who sustained online gambling during lockdown, were more likely to have significantly lower PGSI scores at Time 1, and at Time 2 to be:

- Older
- Female

Those who abstained from online gambling, compared to those who sustained their online gambling, were more likely at Time 2 to be:

- Older
- Female
- Not employed
- Lower in perceived stress
- Experiencing less financial hardship
- Experiencing fewer stressful life events due to COVID

No significant differences were apparent between those who abstained from online gambling and those who had commenced online gambling at Time 2, except that the abstained group had lower PGSI scores at Time 1.

Frequency

Most people who bet online before lockdown continued to do so at the same frequency during lockdown (47.8per cent),or increased their frequency (46.5per cent), with only 5.7per cent betting online less frequently.

Those who increased the frequency of their online betting, compared to those who decreased or stayed the same, were significantly more likely to have reported lower problem gambling severity (vs decreased) at Time 1, and at Time 2 to be:

- Lower in psychological distress (vs decreased)
- More lonely (vs those who stayed the same)
- Experiencing less financial hardship (vs decreased)
- Experiencing fewer stressful life events due to COVID (vs decreased)

Those who decreased their online gambling during lockdown, compared to those who stayed the same, were significantly more likely to have reported higher problem gambling severity at Time 1, and at Time 2 to be:

- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Time 2 (during lockdown) to Time 3 (one year after lockdown)

Overall gambling T2-T3

Most respondents who had gambled at Time 2 continued to gamble at Time 3 (94.0per cent), and only 6.0per cent had ceased. Around half of those who stopped gambling during lockdown continued to not gamble, and half recommenced.

Compared to respondents who commenced or ceased gambling, those who sustained their gambling at Time 3 were significantly more likely to be male (vs both), and to have reported higher problem gambling severity (vs commenced only) at Time 2.

EGMs T2-T3

Engagement

While 79.1 per cent of EGM gamblers in the sample had ceased at Time 2, a similar proportion (75.1 per cent) had recommenced EGM gambling by Time 3 when venues had reopened. Because relatively few people gambled on EGMs at Time 2 due to venue closures, there were too few respondents in the sustained and ceased groups for comparisons.

Frequency

Among respondents who gambled on EGMs at Time 2, 79.9per cent increased the frequency of EGM gambling at Time 3. Because so few were in the decreased ($n = 25$) or same ($n = 8$) frequency groups, group comparisons are not presented here.

Casino games T2-T3

Engagement

Two-thirds (65.6per cent) of casino gamblers in the sample had ceased by Time 2. At Time 3 when casinos had reopened, a smaller proportion of these respondents (48.2per cent) had (re)commenced gambling on casino games, although another 30.1% had ceased. Because there were very small numbers in all groups apart from those who abstained, group comparisons are not reported.

Frequency

Most respondents who reported gambling on casino games during lockdown changed their frequency of doing so by Time 3, either increasing or decreasing. However, these numbers are based on 54 respondents who gambled on casino games during lockdown, reflecting the low availability of casino games. Due to low group numbers, comparisons are not reported.

Sports betting T2-T3

Engagement

More than half (57.0 per cent) of sports bettors in the sample had ceased sports betting during lockdown. At Time 3 when sports events had resumed, a similar proportion (53.5per cent) had (re)commenced, and those who had bet on sports during lockdown generally persisted. Only 14 respondents ceased at Time 3, and are not included in comparisons. Those who sustained sports

betting reported significantly higher problem gambling severity at Time 2 compared to those who commenced. No other statistically significant differences were apparent between the other groups.

Frequency

Amongst those who were betting on sports at Time 2, most had increased the frequency of their sports betting by Time 3 (79.4per cent), and only 10.3per cent decreased. Those whose sports betting stayed the same reported significantly higher problem gambling severity at Time 2 compared to those who decreased or increased. However, no other psychosocial or demographic factors were significantly different between those whose sports betting frequency decreased, increased or stayed the same.

Race betting T2-T3

Engagement

At Time 2, most race bettors in the sample (57.9 per cent) continued to bet on races, and most continued to do so at Time 3. However, one in nine had ceased race betting by Time 3. Of those who did not bet on races at Time 2, 12.7 per cent had (re)commenced by Time 3.

Those who commenced race betting at Time 3 were more likely to report more stressful life events due to COVID compared to those who sustained.

Those who ceased their race betting were more likely to have significantly lower PGSI scores at Time 2 and to be female, compared to those who sustained their race betting one year after lockdown.

Frequency

There were no statistically significant differences between respondents who decreased and those who increased their race betting between Time 2 and Time 3.

Those who increased their race betting frequency by Time 3 were significantly more likely than those who bet at the same frequency to be:

- Younger
- Employed
- Experiencing more financial hardship
- Experiencing more stressful life events due to COVID

Those who had decreased their race betting frequency by Time 3 were significantly more likely than those who bet at the same frequency to be:

- Younger
- Employed

Lotteries T2-T3

Engagement

Most of those who engaged in lotteries at Time 2 continued to do so at Time 3, and similar proportions commenced and ceased. There were no significant differences between the groups in terms of psychosocial or demographic factors.

Frequency

Respondents who decreased and those who increased their lottery frequencies were significantly younger than those who stayed the same, with no significant difference in age between those who increased and decreased. Those who increased their lottery ticket purchasing frequency at Time 3 reported significantly higher problem gambling severity at Time 2 compared to those who stayed the same.

Novel gambling forms T2-T3

Engagement

There was very little change in engagement with novel forms, with most in the sample not taking part in these gambling activities during lockdown or one year later. Because the commenced, sustained and ceased groups comprised 13-18 respondents, group differences are not reported.

Frequency

Amongst those who gambled on novel forms at Time 2, very few engaged at the same frequency at Time 3. Amongst the rest, half decreased and half increased their frequency. No psychosocial or demographic factors were significantly different between those whose frequency of gambling on novel forms decreased, stayed the same or increased.

Online gambling T2-T3

Engagement

More respondents indicated participating in online gambling at Time 3, compared to Time 2, as more people commenced compared to those who ceased.

The only significant differences between groups were that those who sustained online gambling at Time 3 were more likely to be male compared to those who ceased, and those who sustained online gambling reported higher problem gambling severity at Time 2 compared to those who commenced.

Frequency

Those who increased their frequency of online gambling were more likely to have reported lower problem gambling severity (vs same only) at Time 2, and at Time 3 to be:

- Employed (vs same only)
- Experiencing more financial hardship (vs same and decreased).

Time 3 (one year after lockdown) to Time 4 (two years after lockdown)

Overall gambling T3-T4

Engagement

The vast majority of those who gambled at Time 3 continued to gamble two years after lockdown at Time 4 (94.3per cent) and only 5.7per cent had ceased. In addition, around one-third of those who did not gamble at Time 3 had recommenced gambling by Time 4. There were no significant differences between those who sustained, commenced or ceased gambling.

EGMs T3-T4

Engagement

EGM engagement remained fairly consistent from Time 3 to Time 4, with similar numbers commencing and ceasing. Almost 80per cent of those who took part in EGMs at Time 3 continued to do so at Time 4. There were no statistically significant differences between those who sustained, commenced or ceased.

Frequency

Reported frequency of EGM gambling between Time 3 and Time 4 generally evened out, with similar proportions of respondents increasing and decreasing their EGM play.

Those who increased the frequency of EGM gambling were significantly more likely to be male, compared to those who reported the same frequency, with no significant differences on any variables for the decreased group.

Casino games T3-T4

Engagement

At Time 4, only 48.8 per cent of respondents who had gambled on casino games at Time 3 continued to do so, and 21.3 per cent had ceased. This was partly offset by the 30.0 per cent of Time 4 casino gamblers who commenced casino gambling. However, these results are based on 37 respondents, so these transitions should not be over-interpreted. The commenced, sustained and ceased groups included 8-18 respondents, so group comparisons are not reported.

Frequency

Changes in casino frequency are based on 37 respondents, so group comparisons are not reported.

Sports betting T3-T4

Engagement

Changes in sports betting generally balanced out from Time 3 to Time 4, with similar proportions commencing and ceasing. There were no statistically significant differences between those who sustained, commenced or ceased sports betting at Time 4, except that the sustained group was significantly more likely than the ceased group to be male.

Frequency

Changes in frequency generally evened out, with similar numbers of respondents decreasing or increasing their sports betting at Time 4.

Those who decreased their sports betting frequency were more likely to not be in a relationship compared to those who reported the same frequency.

Race betting T3-T4

Engagement

Changes in race betting from Time 3 to Time 4 generally balanced each other out, with similar numbers of respondents commencing and ceasing at Time 4.

Those who commenced race betting were significantly more likely to be younger and to experience more stressful life events due to COVID, compared to those who sustained their race betting during this period.

Frequency

Similar proportions of respondents decreased or increased their race betting frequency from Time 3 to Time 4.

Compared to those who reported the same frequency, those who decreased their race betting frequency were significantly more likely to be female, employed, and to report more psychological distress and stressful life events due to COVID. No other significant differences were apparent.

Lotteries T3-T4

Engagement

Most respondents sustained their engagement with lotteries between Time 3 and Time 4.

Those who ceased their lottery ticket purchasing were more likely to be living in a metropolitan area, compared to those who commenced.

Frequency

Like the other gambling forms, changes in frequency of lottery purchases from Time 3 to Time 4 generally balanced each other out.

Those who decreased their frequency of lottery purchases were significantly younger compared to those who reported the same frequency. Those who increased their frequency were significantly more likely to live in a regional or rural area and be younger, compared to those who reported the same frequency.

Novel gambling forms T3-T4

Engagement

Engagement in novel forms largely remained consistent from Times 3 to 4, with relatively little uptake in general. Due to the small numbers of respondents in the commenced, sustained and ceased groups (6-19 respondents), differences between groups are not reported.

Frequency

Changes in frequency of betting on novel forms from Time 3 to Time 4 are based on 32 respondents. Half of these people decreased their gambling on novel forms, three people stayed the same, and the remainder (13) increased the frequency of their gambling on novel forms. Due to these low numbers, comparisons between groups are not reported.

Online gambling T3-T4

Engagement

Amongst respondents who reported online gambling at Time 4, 79.3per cent had sustained their online gambling since Time 3, 10.0per cent had ceased online gambling since Time 3, and 10.6per cent had commenced online gambling at Time 4.

Those who ceased their online gambling were more likely to have reported higher problem gambling severity at Time 3, to be female, and to report both more severe financial hardship and more stressful life events due to COVID at Time 4 compared to those who sustained their online gambling. No other significant differences were found amongst those who sustained, commenced or ceased online gambling.

Frequency

Those whose frequency of online gambling stayed the same reported lower problem gambling severity at Time 3, and significantly less psychological distress at Time 4, compared to those whose online gambling frequency decreased, with no significant differences compared to those with increased frequency. No other independent variables showed statistically significant associations with changes in frequency of online gambling from Time 3 to Time 4.

Chapter conclusion

This chapter has presented the results that inform Aim 2 of the study: to determine the characteristics of gamblers associated with different transitions in gambling behaviour. The chapter summarised problem gambling severity, psychosocial and demographic characteristics associated with transitions in gambling behaviour between each of the four time points when respondents were surveyed. Of interest were significant differences in the characteristics of respondents who commenced, sustained or ceased gambling during each time period. Please see the key findings at the start of this chapter for a summary of the results.

Chapter 5. Characteristics of gamblers who transitioned in levels of harmful gambling

Key findings

Time 1 (pre-lockdown) to Time 2 (during lockdown):

- The severity of gambling problems (PGSI score) tended to decrease in the 2 months during lockdown (Time 2), compared to the year prior to lockdown (Time 1). This decrease was greatest among respondents who were living in metropolitan areas, not in a relationship, and with lower perceived stress, lower psychological distress, lower loneliness, less health anxiety about COVID, and less financial hardship during lockdown.

- Similarly, respondents whose prior symptoms of harmful gambling (PGSI 1+) ceased during lockdown (Time 2) tended to be older, female, not employed, and lower in perceived stress, psychological distress, loneliness, financial hardship, and stressful life events.

- Conversely, respondents who reported that their symptoms of harmful gambling (PGSI 1+) started during lockdown (Time 2) tended to be younger, employed, engaged in fewer healthy behaviours, and higher in perceived stress, psychological distress and stressful life events.

- Significant decreases in problem gambling severity were found for respondents who decreased the frequency of gambling on EGMs, casino games, sports betting or race betting; respondents whose sports betting or race betting occurred at the same frequency; and those whose online gambling decreased, stayed the same or increased in frequency.

Time 2 (during lockdown) to Time 3 (one year after lockdown):

- The severity of gambling problems (PGSI score) tended to increase from Time 2 to Time 3 as gambling availability largely returned to pre-pandemic conditions. This increase was greatest among respondents with higher levels of perceived stress, psychological distress, health anxiety about COVID, financial hardship, and stressful life events.

- Respondents whose symptoms of harmful gambling (PGSI 1+) ceased at Time 3 were significantly more likely to be female.

- Conversely, respondents who reported that their symptoms of harmful gambling (PGSI 1+) (re)commenced at Time 3 tended to be experiencing higher perceived stress, psychological distress, and loneliness.

- Significant increases in problem gambling severity were found for respondents who bet more frequently on EGMs, casino games, sports betting, or race betting; and those who decreased or increased their frequency of online gambling.

Time 3 (one year after lockdown) to Time 4 (two years after lockdown):

- Transitions in harmful gambling continued to occur from Time 3 to Time 4, but it is difficult to attribute them to the effects of the pandemic, given that accessibility to gambling had largely returned to pre-COVID conditions.

Overall, the findings indicate that harmful gambling fluctuated with the availability of gambling, and that respondents with psychosocial vulnerabilities were relatively more likely to experience harmful gambling during and after lockdown compared to others at those times. Decreased gambling frequency on EGMs, casino games, sports betting, or race betting during lockdown was associated with declines in PGSI scores, while increased frequency of gambling on these forms was associated with increased PGSI scores one year after lockdown.

Introduction

This chapter presents the survey results that inform the third aim of this study: to identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling.

The results are presented for three time periods: Time 1 → Time 2, Time 2 → Time 3, and Time 3 → Time 4. Of interest were significant differences in the demographics, psychosocial characteristics and gambling behaviours of respondents who reported increases or decreases in harmful gambling. Harmful gambling was analysed in two ways: 1) reporting any symptoms of problem gambling (PGSI 1+) or not (PGSI = 0), and 2) changes in total scores on the PGSI. Demographic characteristics included age, gender, metro vs regional/rural residence, marital status, employment, and education. Psychosocial characteristics included perceived stress, distress, loneliness, health anxiety about COVID, financial hardship, stressful life events, unhealthy behaviours, and healthy behaviours. Chapter 2 provides a detailed explanation of the methods. Detailed analyses are presented in Appendix D.

Time 1 (before lockdown) to Time 2 (during lockdown)

Experiencing symptoms of problem gambling

Very few people who reported no symptoms of problem gambling (PGSI = 0) before lockdown (Time 1) developed one or more symptoms (PGSI 1+) during lockdown at Time 2 (n = 25; 1.2per cent). However, approximately 4 in 10 (40.8per cent) of those who reported one or more symptoms prior to lockdown at Time 1 no longer reported any symptoms during lockdown at Time 2.

Amongst those who did not report any problem gambling symptoms at Time 1, those who reported developing one or more symptoms at Time 2 were more likely to be:

- Younger
- Employed
- Engaged in fewer healthy behaviours
- Higher in perceived stress
- Higher in psychological distress
- Experiencing more stressful life events

Amongst respondents who reported one or more problem gambling symptoms before lockdown (Time 1), those whose symptoms ceased during lockdown (Time 2) were significantly more likely to be:

- Older
- Female
- Not employed
- Lower in perceived stress
- Lower in psychological distress

- Less lonely
- Experiencing less financial hardship
- Experiencing fewer stressful life events

Problem gambling severity scores

Comparisons of changes in PGSI scores were conducted using interactions and simple effects in mixed-model ANOVAs (categorical variables), and regression models (change scores as the dependent variables).

- Both men and women tended to experience significant decreases in problem gambling severity during lockdown, with no significant difference between the genders in how much their PGSI score reduced.

- Those in metropolitan areas initially had higher problem gambling severity compared to those in regional/rural areas. Both groups experienced significant decreases in PGSI score during lockdown, but the difference was larger for those in metropolitan areas.

- Those not in a relationship initially had higher problem gambling severity compared to those in a relationship. Both groups experienced reductions during lockdown, but those not in a relationship experienced a significantly greater reduction.

- Those who were employed initially had significantly higher problem gambling severity compared to those who were not employed. Both groups experienced reductions during lockdown, with the amount of reduction not significantly different between the groups.

- Greater reductions in problem gambling severity were also evident for those with lower perceived stress, lower psychological distress, less loneliness, less health anxiety about COVID, and less financial hardship during lockdown.

Relationships between changes in gambling frequency and changes in harmful gambling

From Time 1 (before lockdown) to Time 2 (during lockdown), statistically significant decreases in problem gambling severity were found for:

- respondents who decreased the frequency of their gambling on EGMs, casino games, sports betting, or race betting.

- respondents whose sports betting or race betting occurred at the same frequency.

- respondents who gambled online, regardless of their gambling frequency.

Time 2 (during lockdown) to Time 3 (one year after lockdown)

Experiencing symptoms of problem gambling

While rates of harmful gambling were more likely to decrease than increase between Time 1 and Time 2 (likely, in part, because everyone in Time 1 gambled), the opposite was the case from

Time 2 to Time 3. At Time 3, around half of those who reported any symptoms of problem gambling had not reported symptoms at Time 2. Thus, while the proportion of respondents with symptoms decreased during lockdown, this rose again one year later.

Those who reported symptoms at Time 3, but not at Time 2, were significantly more likely to be:

- Higher in perceived stress
- Experiencing more psychological distress
- More lonely

Those who reported symptoms at Time 2, but not at Time 3, were significantly more likely to be female, compared to those who reported symptoms at both time periods.

Problem gambling severity scores

The severity of gambling problems (PGSI score) was more likely to increase than decrease between Time 2 and Time 3. This was the case for respondents who were:

- either male or female
- residing in a metropolitan area, but not a regional/rural area
- in a relationship, but not for those who were not in a relationship
- employed and not employed
- higher in perceived stress
- higher in psychological distress
- higher in health anxiety about COVID
- experiencing more financial hardship
- experiencing more stressful life events

There were no significant interactions, so any changes in problem gambling severity were not significantly more pronounced for one group over another, e.g., for males compared to females.

Relationships between changes in gambling frequency and changes in harmful gambling

From Time 2 (during lockdown) to Time 3 (one year later), statistically significant increases in problem gambling severity were found for:

- respondents who bet more frequently on EGMs, casino games, sports betting, or race betting.
- respondents who decreased or increased their frequency of online gambling.

Time 3 (one year after lockdown) to Time 4 (two years after lockdown)

Experiencing symptoms of problem gambling

Similar numbers of respondents started and stopped experiencing any symptoms of problem gambling between Time 3 and Time 4. Commencement of symptoms at Time 4 amongst those who did not have symptoms at Time 3 was associated with higher loneliness.

Problem gambling severity scores

Those who increased in problem gambling severity from Time 3 to Time 4 reported experiencing significantly more psychological distress, loneliness, and financial hardship at Time 4.

Relationships between changes in gambling frequency and changes in harmful gambling

From Time 3 to Time 4, no significant changes in problem gambling severity were noted for groups of respondents who increased, decreased or stayed the same in their frequency of gambling on EGMs, casino games, sports betting, race betting or online.

Chapter conclusion

This chapter has presented the results that inform Aim 3 of the study: to identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling. The chapter summarised demographics, psychosocial characteristics and gambling behaviours associated with transitions in levels of harmful gambling between each of the four time points when respondents were surveyed. Of interest were significant differences in the characteristics of respondents who transitioned from reporting no to at least one symptom of problem gambling or vice versa, and those reporting increases or decreases in their PGSI score. Please see the key findings at the start of this chapter for a summary of the results.

Chapter 6. Characteristics of gamblers who ceased gambling from one time period to the next

Key findings

- At Time 1, all respondents were past-year gamblers. During lockdown, by Time 2, most respondents had ceased gambling on products that were not available in land-based venues (EGMs, casino games) or were severely restricted (sports betting). Those who ceased gambling on these products (vs those who continued) tended to have lower pre-lockdown PGSI scores, and be older, less lonely, and report lower levels of perceived stress, psychological distress, financial hardship and stressful life events during lockdown.

- During lockdown (Time 2), respondents who ceased race betting were more likely to report lower pre-lockdown PGSI scores, be female, more educated and report less financial hardship during lockdown. Those who ceased lotteries also tended to report lower pre-lockdown PGSI scores, and be female, more educated, younger and employed. Those who ceased gambling on novel forms also tended to have lower pre-lockdown PGSI scores, and be older, unemployed, living in a metropolitan area, engaged in fewer unhealthy behaviours, and to report less loneliness, financial hardship, and stressful life events due to COVID.

- Few respondents reported they had ceased each gambling form between Time 2 and Time 3. Where there were sufficient numbers for comparisons, those who ceased each form were more likely to be female and more educated.

- Overall, respondents with lower PGSI scores, females, older respondents, those with higher educational attainment, and those with lower levels of psychosocial vulnerability were more likely to cease gambling on various activities during and after lockdown.

- Sizeable minorities of respondents (21per cent-47per cent) endorsed that ceasing gambling during lockdown had benefited various aspects of their wellbeing. These included: enjoying the break from gambling, experiencing less gambling harm from their own or others' gambling, relief about not being able to gamble as usual, and improvements in their finances, mental health, physical health, relationships and work/study. Further, less than 5per cent had felt distressed or frustrated about not being able to gamble as usual, which indicates that few found the imposed break to be onerous for them.

- Respondents with higher pre-lockdown PGSI scores were more likely to report feeling distressed or frustrated about not being able to gamble as usual during lockdown. Despite this, they were also more likely to report all the positive effects from not being able to gamble as usual that were assessed in the survey.

Introduction

This chapter presents the survey results that inform the fourth aim of this study: to identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing.

First, this chapter summarises gambling cessation over the three time periods. Of interest were the demographic and psychosocial characteristics, and changes in PGSI scores, of respondents who reported ceasing gambling both altogether and on each form between the start and the end

of each time period. The demographic and psychosocial characteristics examined were the same as those examined in previous chapters. The chapter then presents descriptive statistics that capture the self-reported effects of ceasing gambling. For reference, Chapter 2 provides a detailed explanation of the methods. Detailed analyses are presented in Appendix D.

Time 1 (before lockdown) to Time 2 (during lockdown)

Overall gambling T1-T2

Of the 2,125 gamblers recruited at Time 1, 24.2 per cent reported they had ceased all gambling during lockdown (Time 2). Compared to those who sustained their gambling, respondents who ceased all gambling were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Female
- More educated
- Lonelier, and
- Experiencing less financial hardship

EGMs T1-T2

Overall, 79.1per cent of the 978 respondents who gambled on EGMs at Time 1 had ceased their EGM gambling by Time 2. Compared to those who sustained their EGM gambling, those who ceased were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Older
- Female
- Not employed
- Engaged in fewer healthy and unhealthy behaviours
- Lower in perceived stress
- Lower in psychological distress
- Less lonely
- Experiencing less financial hardship
- Experiencing less stressful life events

Casino games T1-T2

Around two-thirds (65.6 per cent) of people who engaged in casino games at Time 1 had ceased by Time 2. Compared to respondents who sustained their gambling on casino games, those who ceased were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Older
- Not employed
- Engaged in fewer unhealthy behaviours

- Lower in perceived stress
- Lower in psychological distress
- Less lonely
- Experiencing less financial hardship
- Experiencing less stressful life events

Sports betting T1-T2

More than half (57.0per cent) of those who bet on sports prior to lockdown (Time 1) ceased betting on sports during lockdown (Time 2). Compared to those who sustained their sports betting, those who had ceased were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Older
- Lower in perceived stress
- Lower in psychological distress
- Less lonely
- Lower in health anxiety about COVID
- Experiencing less financial hardship
- Experiencing less stressful life events

Race betting T1-T2

Of those who bet on races at Time 1, 42.1per cent had ceased betting on races by Time 2. Compared to those who sustained their race betting, those who had ceased were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Female
- More educated
- Experiencing less financial hardship

Lotteries T1-T2

Around 3 in 10 (28.2per cent) respondents who bought lottery, lotto or pools tickets before lockdown at Time 1 subsequently ceased during lockdown (Time 2). Compared to those who sustained lotteries purchasing, those who had ceased were significantly more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Younger
- Female
- More educated
- Employed

Novel gambling forms T1-T2

Amongst the small proportion of respondents who took part in betting on novel forms (esports betting, fantasy sports betting, skin gambling, and purchasing loot boxes) before lockdown (Time 1), about three in 10 (31.1 per cent) ceased betting on these forms during lockdown (Time 2). Compared to those who sustained betting on novel gambling forms, those who ceased were more likely to have reported lower problem gambling severity at Time 1, and at Time 2 to be:

- Older

- Living in a metropolitan area
- Unemployed
- Engaged in fewer unhealthy behaviours
- Less lonely
- Experiencing less financial hardship
- Experiencing fewer stressful life events due to COVID

Online gambling T1-T2

Only 30 respondents (1.4per cent) reported they had ceased online gambling during lockdown (Time 2). Group comparisons were not conducted due to the small size of this group.

Time 2 (during lockdown) to Time 3 (one year after lockdown)

Few respondents reported they had ceased their engagement in most of the gambling forms between Time 2 and Time 3, so robust group comparisons could not be performed.

The only exceptions were as follows:

- Amongst respondents who had gambled at Time 2, 6.0 per cent had ceased all gambling by Time 3. They were significantly more likely to be female compared to those who sustained their gambling from Time 2 to Time 3.

- Approximately one in nine race bettors ceased race betting between Time 2 and Time 3. These respondents were more likely to be female compared to those who sustained their race betting at Time 3.

- Most lottery gamblers (77.8 per cent) at Time 2 continued to do so at Time 3, and similar proportions commenced (12.7 per cent) and ceased (9.5 per cent). There were no significant differences in psychosocial or demographic characteristics between any groups.

- More respondents reported participating in online gambling at Time 3 compared to Time 2, as fewer people ceased than commenced. Those who ceased online gambling at Time 3 were more likely to be female compared to those who sustained their online gambling.

Time 3 (one year after lockdown) to Time 4 (two years after lockdown)

Very few respondents ceased their engagement in any gambling and in each of the gambling forms between Time 3 and Time 4, which prevented group comparisons.

The only exception was for online gambling. Amongst all respondents at Time 4, 6.6 per cent had ceased their online gambling since Time 3. These respondents were more likely to have reported

higher problem gambling severity at Time 3, and to be female and report more financial hardship and stressful life events at Time 4, compared to those who sustained their online gambling.

Self-reported effects of ceasing gambling on aspects of wellbeing

Sizable minorities of gamblers who had ceased all gambling during lockdown endorsed various benefits of ceasing at Time 2 (Table 6.1). Nearly one-half (47.1 per cent) agreed or strongly agreed that they had enjoyed the break away from gambling during lockdown. About three in 10 agreed or strongly agreed that their finances had improved because of not being able to gamble as usual (32.3 per cent), that they had experienced less harm from their gambling because of the lockdown (29.0 per cent), and that they had felt relieved about not being able to gamble as usual (27.4 per cent). About one-fifth agreed or strongly agreed that their mental health, physical health, relationships and work/study had improved because of not being able to gamble as usual, and that they had experienced less harm from someone else's gambling because of the lockdown. Further, the vast majority (95.7per cent) disagreed or strongly disagreed that they had felt distressed or frustrated about not being able to gamble as usual. These results are not presented for the other time periods because only 31 Time 3 respondents and 23 Time 4 respondents had ceased all gambling since the previous time period.

Respondents with higher scores on the PGSI prior to the lockdown were more likely to report feeling distressed or frustrated about not being able to gamble as usual during lockdown. Despite this, they were also more likely to report positive effects from not being able to gamble as usual. Specifically, they were more likely to agree with feeling relieved, enjoying the break and experiencing less harm from their own gambling, or from someone else's gambling. They were more likely to agree that their finances, relationships, mental health, physical health and work/study had improved as a result of not being able to gamble as usual (Table 6.1).

Table 6.1 Self-reported effects of ceasing gambling Time 1 to Time 2 (*n* = 514)

Item	Strongly disagree	Disagree	Agree	Strongly agree	Correlation with Time 1 PGSI
	n (%)	*n* (%)	*n* (%)	*n* (%)	*Spearman rho*
I have felt distressed or frustrated about not being able to gamble as usual	457 (88.9)	35 (6.8)	21 (4.1)	1 (0.2)	0.472***
I have felt relieved about not being able to gamble as usual	284 (55.3)	89 (17.3)	86 (16.7)	55 (10.7)	0.302***
I have enjoyed the break away from gambling	194 (37.7)	78 (15.2)	145 (28.2)	97 (18.9)	0.225***
I have experienced less harm from my gambling because of the lockdown	282 (54.9)	83 (16.1)	88 (17.1)	61 (11.9)	0.282***
I have experienced less harm from someone else's gambling because of the lockdown	316 (61.5)	89 (17.3)	64 (12.5)	45 (8.8)	0.189***
My finances have improved because of not being able to gamble as usual	251 (48.8)	97 (18.9)	97 (18.9)	69 (13.4)	0.291***
My relationships have improved because of not being able to gamble as usual	287 (55.8)	118 (23.0)	62 (12.1)	47 (9.1)	0.280***
My mental health has improved because of not being able to gamble as usual	289 (56.2)	113 (22.0)	59 (11.5)	53 (10.3)	0.292***
My physical health has improved because of not being able to gamble as usual	292 (56.8)	112 (21.8)	62 (12.1)	48 (9.3)	0.241***
My work/study has improved because of not being able to gamble as usual	295 (57.4)	110 (21.4)	61 (11.9)	48 (9.3)	0.252***

Note: Correlations between each item and PGSI are Spearman's rho. Positive correlations indicate that an item is significantly more likely to be agreed to by people with higher PGSI scores, while negative correlations indicate that an item is significantly more likely to be agreed to by people with lower PGSI scores. * *p* < .05, ** *p* < .01, *** *p* < .001.

Chapter conclusion

This chapter has presented the results that inform Aim 4 of the study: to identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing. The chapter summarised significant differences in the demographic and psychosocial characteristics, and changes in PGSI scores, of respondents who reported ceasing gambling, and on each form, between the start and the end of each time period. Please see the key findings at the start of this chapter for a summary of the results.

Chapter 7. Discussion

Key findings

- The COVID-19 pandemic provided a natural experiment by which to assess how psychosocial stressors and changes in gambling availability impact on gambling and harmful gambling.

- While the national COVID lockdown in Australia heightened psychosocial stressors in the community that are known risk factors for gambling and gambling problems, gambling participation and harmful gambling decreased. Thus, any upward pressure on these outcomes due to psychosocial pressures appear to be outweighed by restrictions to availability and access.

- The closure of EGM and casino venues, the curtailment of sports betting, and the restriction of race betting to online modes immediately resulted in a marked decline in gambling participation and, relatedly, gambling problems.

- While individuals who reported more psychosocial stressors were more likely to sustain or increase their gambling and report increases in harmful gambling, there was a net drop in gambling and gambling problems during lockdown across all participants.

- Further, once gambling availability returned to (near) pre-pandemic levels, gambling participation and gambling problems also returned to (near) former levels, despite an easing of COVID restrictions and their accompanying financial, psychological and social stress.

- Changes in gambling behaviour observed in this, and all other COVID-gambling studies, indicate that people reduce their gambling when supply is reduced, and that this leads to a reduction in gambling problems and harm. However, when gambling supply is reinstated, gambling and problem gambling behaviour largely bounce back, although a minority of people may continue to refrain from gambling on various forms even after supply is reinstated.

- Therefore, from a public health perspective, the most impactful way to reduce gambling harm is to reduce the supply of high-risk gambling products such as EGMs, casino games, sports betting and race betting, which are known to account for the vast majority of gambling problems. Current evidence suggests that people will not wholly switch to other products in response to a reduction in supply, making such efforts effective.

- The above findings should be read in conjunction with the limitations of the study outlined in the Executive Summary and later in this chapter.

Introduction

This chapter summarises and discusses the study's findings in relation to the four research aims. It then highlights the study's conclusions, implications, limitations and strengths.

Aim 1: Examine how the changed availability of gambling products and modes impacts on gambling behaviour and harmful gambling

Australia had a national COVID lockdown from 23 March 2020 to 23 May 2020. This study recruited past-year gamblers in May 2020 and surveyed them in relation to their gambling at four time points – pre-lockdown (Time 1, $N = 2125$), during lockdown (Time 2, $N = 2125$), one year after lockdown (Time 3, $N = 649$) and two years after lockdown (Time 4, $N = 458$).

Changes in gambling behaviour and harmful gambling from Time 1 (before lockdown) to Time 2 (during lockdown)

During the lockdown, restrictions on leaving home were in place and land-based gambling venues across Australia were closed. EGMs and casino games could, therefore, only be accessed through illegal online operators. Most professional sporting events were suspended worldwide, which severely curtailed sports betting markets to the few sports that continued internationally, such as Russian table tennis. Race betting events continued largely unabated, but bets could only be placed online and via telephone calls, and not in retail betting outlets or at racetracks. Lottery draws (lotteries, lotto and pools) also continued, but ticket purchases were limited to online channels, as well as in venues such as newsagents, convenience stores and petrol stations that remained open and could be accessed during time-limited shopping trips. Access to novel gambling forms (esports betting, fantasy sports betting, skin gambling and loot box purchasing) remained largely unchanged and continued to be provided online during lockdown. The changed availability of many forms of gambling during the national lockdown heralded major changes in gambling and harmful gambling in the sample.

During lockdown, there was a marked decline in gambling on EGMs and casino games. Reflecting the lockdown restrictions and the temporary closure of venues, most respondents who gambled on EGMs and casino games at Time 1 (before lockdown) had ceased or decreased their frequency of gambling on these forms by Time 2 (during lockdown). While EGMs and casino games could still be accessed online through illegal and unlicensed operators, Australians have previously shown a reticence to engage in these products online (Hing et al., 2021). This past reticence may reflect that Australians have normally had easy access to EGMs in a multitude of land-based venues in most suburbs and towns (Rintoul et al., 2013; Rintoul & Deblaquiere, 2019; Thomas et al., 2009), reducing the incentive to gamble with unlicensed operators. It was therefore informative to see how the removal of land-based access might affect gambling on EGMs and casino games to shed light on whether people would continue to gamble on these forms when legal access was curtailed. While 46.0per cent of the Time 1 sample reported gambling on EGMs, this had declined to 10.4per cent at Time 2 during lockdown. At Time 1, 23.4per cent of the sample engaged in casino games, but this proportion declined to 9.3per cent at Time 2. These results indicate that restricted access to land-based EGMs and casino games had a marked effect on reducing participation, indicating that access to legal gambling is a fundamental determinant of gambling behaviour, even when illegal online access is an easy alternative.

Among respondents, most sports betting also ceased or decreased in frequency during lockdown, reflecting the scarcity of sports events on which consumers could bet. Participation in the sample more than halved, from 38.4per cent at Time 1 (before lockdown) to 17.4per cent at Time 2 (during lockdown). Those who continued to bet on sports during lockdown were presumably

betting online on the few international fixtures being played. Despite intensified marketing by wagering operators of potential substitute products, especially race betting and esports betting (Russell & Hing, 2020), during lockdown only 1.4per cent of the sample newly commenced gambling on race betting, and 1.0per cent commenced on novel online forms. Further, there was a net decrease in both participation and frequency for both novel gambling forms and race betting. Thus, there was little evidence that respondents substituted sports betting with alternative betting products when sports betting markets were constrained during lockdown. Other research has proposed that the unique aspects of sports betting, such as the strong relationships, identities and sentiments associated with sports, deterred migration to other forms during lockdown (Nosal & Lopez-Gonzalez, 2021). These findings in the current study again suggest that the availability of gambling products is a key driver of gambling behaviour, and that few individuals migrate to alternative forms (at least in the short term) when a preferred form is unavailable. Novel gambling forms, such as esports betting, fantasy sports betting and skin gambling, have been small markets in Australia, with each having participation rates of around 0.5per cent in 2019 (Hing et al., 2021). Despite the unavailability of alternative land-based gambling products and online sports betting during lockdown, there was only minimal migration to these novel online gambling forms, suggesting their appeal is currently limited to a narrow market, regardless of the availability of other betting alternatives.

There was also a marked decline in gambling participation and frequency for products that remained legally available online during lockdown – race betting and lotteries. This decline, despite continued availability during lockdown, is consistent with the pre-pandemic preference by Australian residents to gamble on these forms in land-based venues. In 2019, two-thirds (65.7per cent) of race bettors in Australia and most (80.9per cent) lottery ticket purchasers bet on these products in land-based outlets, compared to 45.0per cent using internet-connected devices for race betting and 32.2 per cent for lottery purchases (Hing et al., 2021). Overall, very few (4.8 per cent) past-year gamblers in the sample newly commenced online gambling during lockdown, indicating that the unavailability of land-based options did not lead most respondents to migrate to this substitute mode when their preferred mode was curtailed. This suggests that the availability of racing and lottery products from an extensive network of convenient suburban outlets in Australia drives demand for these products amongst gamblers who are resistant to using online gambling modes.

Participation in online gambling (on any gambling form) increased only marginally during lockdown, from 49.9 per cent of the sample at Time 1 to 53.3 per cent by Time 2. This pattern is consistent with the longer-term increase in online gambling in Australia, where its prevalence has doubled over the past eight years (Hing et al., 2014, 2021). Only 4.8 per cent of the sample transitioned from land-based only gambling to take up online gambling during lockdown. Nonetheless, during lockdown, nearly half (46.5 per cent) of online gamblers increased the frequency of their online gambling, while only 5.7 per cent decreased their online gambling frequency. This shift occurred in the context of decreased gambling participation and frequency on all gambling forms, indicating that the relative use of online modes for gambling, unsurprisingly, increased during lockdown. With land-based options unavailable, respondents concentrated their betting and lottery ticket purchasing in online channels.

The overall decrease in gambling across all gambling forms during lockdown was reflected in a marked decline in problem gambling symptoms, indicating that the lockdown was at least a temporary circuit-breaker for many respondents. Around four in 10 respondents who reported one or more symptoms of problem gambling before lockdown at Time 1 no longer reported any symptoms by Time 2. Very few respondents who did not report any symptoms before lockdown reported developing symptoms during lockdown. Further, problem gambling severity (PGSI

scores) decreased for 25 per cent of the sample between Time 1 and Time 2, but increased for only 6.2 per cent of the sample. Thus, the curtailed availability of many gambling products, especially EGMs, casino games and sports betting, had a direct effect in reducing harmful gambling during lockdown, indicating that gambling availability is a direct driver of gambling harm. It is important to note, however, that all participants were gamblers at Time 1 due to the recruitment criteria, and therefore we expected some natural attrition in participation and problems over time. Nevertheless, the scale of the declines suggests that the lockdowns were principally responsible for reductions in gambling participation and problem gambling symptoms.

An alternative explanation to this "availability effect" for reduced gambling and gambling problems during lockdown is that the increased psychosocial and financial vulnerabilities during lockdown may have dampened demand for gambling. That is, demand for gambling products may have decreased as people reduced their gambling due to financial stressors such as loss of employment due to COVID impacts. Conversely, it is possible that lockdowns might increase demand for gambling as a means to cope with psychosocial stressors such as loneliness, stress, psychological distress and stressful life events due to COVID. However, as discussed later in relation to Aim 2 of the study, these vulnerabilities were associated with greater likelihood of increased gambling and gambling on illegal forms during lockdown. This suggests that the "availability effect" is the most likely explanation for decreased gambling and gambling problems during lockdown.

The findings above are consistent with trends found in other Australian studies whose assessments included the national COVID lockdown period. These trends included a sharp decline in overall gambling participation and frequency during lockdown, particularly on land-based forms, a small increase in participation in online gambling, and a decline in at-risk/problem gambling (Biddle, 2020; Brown & Hickman, 2020; Gainsbury & Blaszczynski, 2020; Gainsbury et al., 2021; Jenkinson et al., 2020). Several international reviews have also highlighted trends observed in the early stages of the pandemic when land-based venues were closed (Barbato et al., 2021; Brodeur et al., 2021; Hodgins & Stevens, 2021). Again, an overall reduction in gambling frequency and expenditure, and a greater decrease in land-based gambling compared to online gambling, were found. Previous surveys have also found a decrease in gambling problems during and soon after lockdowns (Bellringer & Garrett, 2021; Gunstone et al., 2020; Shaw et al., 2021). Providing additional evidence for this pattern, some overseas studies observed decreased demand for gambling treatment and help services during lockdowns (N.E. Turner et al., 2022) and evidence of reduced problem gambling symptoms amongst clients (Donati et al., 2021).

Changes in gambling behaviour and harmful gambling from Time 2 (during lockdown) to Time 3 (one year after lockdown)

One year after lockdown at Time 3, most land-based gambling venues had reopened, although some restrictions were still in place in some jurisdictions, such as social distancing, mask-wearing and proof of vaccination. Importantly however, no lockdowns were in place in any Australian jurisdiction during the Time 3 assessment period.

The biggest change for venue-based gambling was that 19.0 per cent of the sample had (re)commenced EGM gambling by Time 3, and a lower proportion (4.0 per cent) had (re)commenced gambling on casino games. Thus, one year after lockdown, EGM participation had increased to 22.7 per cent of respondents, which was about half of the sample's pre-pandemic participation rate (46.0 per cent). However, participation in casino games was slower to recover, with 5.8 per cent of the sample participating at Time 3, which was approximately one-

quarter of pre-pandemic participation (23.4 per cent). Overall, the renewed availability of land-based venues after lockdown resulted in a resurgence in gambling on EGMs.

Sports betting also resumed after lockdown as major sports betting markets became available. One year after lockdown, sports betting participation had increased to 27.7 per cent of respondents, which was nearly three-quarters of the pre-pandemic level (38.4per cent) in the sample. Further, nearly three-quarters (70.4 per cent) of sports bettors reported increased frequency of sports betting at Time 3, compared to Time 2. There were also smaller increases in participation in race betting and lotteries at Time 3 when land-based modes were once again available, rising to about three-quarters of pre-pandemic levels. Gambling on novel forms decreased further at Time 3, but due to low baseline prevalence, this effect was based on a small number of cases.

In contrast, online gambling participation in the sample further increased to 57.0 per cent one year after lockdown, showing a steady increase from 53.3 per cent during lockdown and from 49.9per cent pre-lockdown. As noted earlier, this trend is consistent with the continued growth of online gambling participation in Australia (Hing et al., 2014, 2021) which may account for some of this growth. Between Time 2 and Time 3, slightly more respondents commenced (8.2 per cent) than ceased (6.2 per cent) online gambling, but the proportion of the sample who decreased the frequency of their online gambling (38.0per cent) was nearly double the proportion with increased frequency (19.3 per cent). These results indicate that the relative frequency of using online modes for gambling decreased after lockdown when land-based modes were once again available. That is, while the reduced availability of land-based gambling modes during lockdown was followed by increased frequency of online gambling, this trend was reversed one year after lockdown.

The changes in gambling between Time 2 and Time 3 are consistent with the "availability effect" since the increased availability of the major gambling products by one year after lockdown was accompanied by increased gambling participation and frequency. These changes were also observed for the smaller subset of respondents who completed all four survey waves ($N = 458$), indicating that this pattern was not due to attrition effects (i.e., differences between respondents who did and did not complete all waves). It is difficult to draw comparisons with the trends observed in previous research, due to the few studies reporting on gambling post-lockdowns, and the different lockdown restrictions and their timing in various overseas jurisdictions. In Australia, one study weighted to key population estimates found that gambling rates increased after lockdown ended, but were still lower than pre-pandemic levels (Biddle, 2020), which was also found in the current study. In contrast, another Australian study (Black et al., 2021) observed that gambling participation further decreased after lockdown ended, but this finding was based on only 192 respondents retained in the study's Wave 3 (November 2020). Consistent with the current findings, a small but sustained migration to online gambling after lockdown restrictions were lifted was found in a German study (Kalke et al., 2022). However, this sustained migration was not found in a Canadian study (Responsible Gambling Council, 2022).

In the current study, an important finding at Time 3 was that the marked decline in the proportion of respondents who reported one or more problem gambling symptoms during lockdown was followed by a large increase after lockdown. Approximately one-half of those who reported symptoms one year after lockdown did not report any symptoms during lockdown when gambling availability was curtailed. Once land-based venues reopened and sports events resumed, one-third (33.4per cent) of respondents reported symptoms, which was close to the pre-pandemic level of 36.8per cent, and markedly higher than the 23.0per cent of respondents who reported symptoms during lockdown. Further, while one-quarter (25.0per cent) of respondents reported decreases in PGSI scores during lockdown, nearly the same proportion (24.0per cent) reported

an increase one year later. This pattern was the same for the subset of respondents who completed all four survey waves ($N = 458$). The prevalence of problem gambling (PGSI score 8+) in this subsample was 7.6 per cent before lockdown, but nearly halved to 4.1 per cent during lockdown. However, this prevalence was nearly back to pre-pandemic levels (7.0 per cent) at Time 3.

Thus, any reprieve from harmful gambling during lockdown was short-lived for most respondents and lasted only until gambling availability largely returned to pre-pandemic conditions. This again illustrates the direct link between gambling availability and harmful gambling. A weighted Australian study (Biddle et al., 2020) also found only a marginal reduction in problem gambling symptoms from pre-lockdown to post-lockdown. In April 2019, 13.6 per cent of the weighted sample reported one or more problem gambling symptoms and this declined to 10.3 per cent in November 2020, which is consistent with the reduction in gambling participation also observed at this latter time point.

Changes in gambling behaviour and harmful gambling from Time 3 (one year after lockdown) to Time 4 (two years after lockdown)

Transitions in gambling behaviour from Time 3 (one year after lockdown) to Time 4 (two years after lockdown) were relatively minor compared to the large changes reported during the earlier time periods (however, some comparisons were limited by sample size). While some respondents ceased or commenced gambling on various forms, or reported changes in problem gambling symptoms, increases and decreases generally evened each other out across the sample. These changes may therefore reflect general fluctuations in gambling and harmful gambling over time, more than COVID-related effects.

Nonetheless, overall gambling in the sample had returned by Time 4 to only around 86.9per cent of pre-pandemic participation, although this varied for different gambling forms. By Time 4, recovery was strongest for lotteries (83.7 per cent of pre-lockdown participation), race betting (77.4 per cent) and sports betting (69.8 per cent), and lowest for EGMs (51.3 per cent), novel forms (42.4 per cent) and casino games (26.9per cent). Removing any effects of attrition, a similar pattern was apparent amongst the respondents who completed all four survey waves ($N = 458$). By Time 4, recovery was strongest in this subsample for lotteries (81.3 per cent of pre-lockdown participation), race betting (72.1 per cent), sports betting (77.1 per cent) and novel forms (77.0 per cent), and lowest for EGMs (55.7 per cent), and casino games (36.9 per cent). These lower participation levels, especially for EGMs and casino games that are only legally available in land-based venues in Australia, may reflect a continuing reluctance by some people to attend indoor venues, a general fear of going out, and the COVID requirements that were still in place, including mask-wearing, proof-of-vaccination, and social distancing.

While it is difficult to know whether and to what extent COVID-related effects might account for changes in gambling from Time 3 to Time 4, the return to "near-normal" in gambling availability was largely accompanied by a return to "near-normal" in gambling participation. This was reflected in the rate of problem gambling symptoms, which were nearly back to pre-pandemic levels by Time 4. In the whole sample, 36.8 per cent of respondents reported one or more problem gambling symptoms (PGSI 1+) at Time 1, and 31.4per cent at Time 4, after decreasing to a low of 22.9per cent during lockdown. In the subsample of respondents who completed all four survey waves ($N = 458$), 33.8 per cent reported one or more problem gambling symptoms at Time 1, and 31.4per cent at Time 4, after decreasing to a low of 20.3 per cent during lockdown. Further, the rate of problem gambling (PGSI 8+) in this subsample was 7.6per cent at Time 1,

decreased to a low of 4.1per cent during lockdown, but rose to 7.0per cent at both Time 3 and Time 4 once gambling availability was largely back to pre-pandemic conditions. These findings indicate further support for the "availability effect" on gambling-related harm.

Aim 2: Determine the characteristics of gamblers that are associated with different transitions in gambling behaviour

The study examined four transitions in gambling behaviour between time points: 1) abstained (not gambling at either time point); 2) commenced (not gambling at the first time point, but gambling at the second time point); 3) sustained (gambling at both time points); and 4) ceased (gambling at the first time point but not at the second time point). These transitions were examined for overall gambling (any gambling) and for EGMs, casino games, sports betting, race betting, lottery purchasing, and gambling on novel forms. Both participation and frequency were examined. Of most interest for Aim 2 were those respondents who sustained or increased the frequency of their gambling, including those who commenced. Those who ceased gambling are the focus of Aim 4. The characteristics of respondents who abstained from gambling reflect known characteristics of people who do not tend to gamble on each form (e.g., older women tend not to bet on sports) and were, therefore, of little relevance for addressing Aim 2.

During lockdown, some respondents sustained their gambling on products that were not available in land-based venues (EGMs, casino games) or that were severely restricted (sports betting). Instead, they gambled on EGMs and casino games through illegal online operators, and on the very few sporting events that were operating internationally. Those who continued gambling on these products (vs those who ceased) tended to be respondents who had pre-existing problem gambling symptoms (at Time 1), were younger, and who during lockdown (at Time 2) were employed, engaged in more unhealthy behaviours, more lonely, more stressed, and experiencing higher psychological distress, financial hardship and stressful life events due to COVID. A similar set of characteristics was found for respondents who increased their frequency of gambling during lockdown. Those who increased the frequency of their gambling on EGMs, casino games, sports betting, race betting and lotteries during lockdown tended to have pre-existing problem gambling symptoms at Time 1 and be younger (except for casino games), and to report higher levels of perceived stress, psychological distress, loneliness, financial hardship and stressful life events due to COVID at Time 2. Psychosocial and demographic differences associated with changes in gambling behaviour were less discernible one year after lockdown at Time 3, due to the small size of some groups which reduced power for statistical comparisons. However, where a few significant differences were found, they tended to indicate that pre-existing problem gambling symptoms, younger age, male gender and psychosocial vulnerability were associated with (re)commencing a gambling form or increased frequency. These results are generally consistent with the psychosocial risk factors for frequent and high-risk gambling (Allami et al., 2021; Browne et al., 2019; Dowling et al., 2017; Sharman et al., 2019; Williams et al., 2012).

The results are also largely consistent with the findings of previous COVID-related gambling studies. These studies found that increases in gambling during early lockdowns were associated with younger age, male gender, pandemic-induced financial problems, higher psychological distress, higher alcohol consumption, and having prior gambling problems (Gainsbury & Blaszczynski, 2020; Håkansson, 2020b; Jenkinson et al., 2020). Similarly, prospective studies

have variously found a similar set of risk factors for gambling participation and high-risk gambling during the first year of the pandemic. Demographic risk factors found included male gender, younger age and lower education, while psychosocial factors included prior and current gambling problems, substance use, mental health issues (e.g., anxiety, depression), high-risk tendencies/impulsiveness, social isolation, and prior and current financial stressors (Emond et al., 2021; Fluharty et al., 2022; Månsson et al., 2021; Price et al., 2021; Responsible Gambling Council, 2022; Shaw et al., 2021). Many of these financial and psychosocial risk factors were exacerbated by the pandemic and related restrictions (Cénat et al., 2021; Dettmann et al., 2021; Griffiths et al., 2022; Nochaiwong et al., 2021), adding to the potential vulnerability of certain groups who are more likely to be highly-engaged gamblers, including younger people, males and those with gambling and other mental health problems (Allami et al., 2021; Browne et al., 2019; Dowling et al., 2017; Sharman et al., 2019; Williams et al., 2012). That is, while overall gambling and gambling on each form decreased in the sample during and after lockdown, this effect was not homogenous across the sample. Those with known risk factors were more likely to sustain and/or increase their gambling despite more limited gambling availability.

A key reported impact of the COVID lockdowns was an increase in online gambling (Bellringer & Garrett, 2021; Emond et al., 2021; Responsible Gambling Council, 2022; Shaw et al., 2021). The current study also observed increases in online gambling participation across all time points. Respondents who newly commenced online gambling during lockdown, compared to those who gambled online both before and during lockdown, were more likely to be older and female. However, one year after lockdown, men were more likely than women to continue rather than cease online gambling. This may indicate that women and older people were more likely to engage in online gambling as a temporary mode of access to some gambling products during lockdown, for example to purchase lottery tickets that they may have previously purchased offline. In Australia, online gamblers are more likely to be male, younger and have higher gambling involvement (Hing et al., 2021), so many younger male gamblers would have already been engaged in online gambling before the pandemic.

A few differences in gambling transitions were significantly associated with changes in gambling behaviour at Time 4, but are not discussed here since they are more likely to reflect normal fluctuations rather than COVID-related effects.

Aim 3: Identify the characteristics and gambling behaviours of gamblers who transitioned in levels of harmful gambling

The study considered increases and decreases in reports of any problem gambling symptoms (PGSI 1+) and problem gambling severity (PGSI score). Between Time 1 (before lockdown) and Time 2 (during lockdown), problem gambling severity was more likely to decrease than increase. This decrease was greatest among respondents who were living in metropolitan areas, not in a relationship, and with lower reported levels of perceived stress, psychological distress, loneliness, health anxiety about COVID, and financial hardship during lockdown. Similarly, respondents whose prior symptoms of harmful gambling (PGSI 1+) ceased during lockdown tended to report less psychosocial stress (less perceived stress, psychological distress, loneliness, financial hardship, and stressful life events due to COVID), and to be older, female and not employed.

Cessation and decreases in harmful gambling were, therefore, associated with lower levels of self-reported financial and psychosocial risk factors during lockdown.

Conversely, several psychosocial risk factors were associated with increases in problem gambling symptoms during and after lockdown. Respondents who reported that their symptoms of harmful gambling (PGSI 1+) started during lockdown tended to be younger, employed, engaged in fewer healthy behaviours, and higher in perceived stress, psychological distress and stressful life events due to COVID. The severity of gambling problems (PGSI score) was more likely to increase than decrease from Time 2 (during lockdown) to Time 3 (one year after lockdown). This increase was greatest among respondents who reported higher levels of perceived stress, psychological distress, health anxiety about COVID, financial hardship, and stressful life events due to COVID. Prospective studies of gambling during the first year of the pandemic found various predictors of higher problem gambling severity that are largely consistent with these results. These included male gender and higher depression and anxiety (Responsible Gambling Council, 2022), younger age and stress (Shaw et al., 2021), social isolation and worries about mental health (Månsson et al., 2021).

In the current study, harmful gambling was also related to certain gambling behaviours. When gambling availability was curtailed during lockdown, decreased frequency of gambling on EGMs, casino games, sports betting, or race betting (but not lotteries or novel gambling forms) was associated with declines in PGSI scores. Conversely, one year after lockdown when gambling availability had largely returned to pre-pandemic conditions, increased frequency of gambling on EGMs, casino games, sports betting, or race betting (but not lotteries or novel gambling forms) was associated with increased PGSI scores. These results again support the "availability effect" on harmful gambling, specifically for high-risk gambling forms. Research has found that over half of gambling problems in Australia are attributable to EGMs, and approximately 40per cent to casino games, race betting and sports betting combined (Browne et al., 2023).

Prospective studies have also implicated certain gambling behaviours in the first year of the pandemic in increases in harmful gambling. These behaviours include increases in online gambling, total gambling losses, time spent gambling, gambling frequency on all types of gambling, number of types of gambling, gambling on high-risk activities, gambling to earn an income, signing up for new online accounts, and gambling on grey market sites (Bellringer & Garrett, 2021; Månsson et al., 2021; Responsible Gambling Council, 2022; Shaw et al., 2021). Findings from the current study are mainly consistent with these results, whereby increased gambling on high-risk forms was, unsurprisingly, related to increased problem gambling severity. However, unlike these overseas findings, there was no consistent link in the current study between engagement in or frequency of online gambling and gambling problems. The different online gambling products that are legally available in other jurisdictions, including online EGMs and casino games, may explain these different results. Fewer than 1per cent of Australian adults gambled online on illegally provided EGMs and casino games in 2019 (Hing et al., 2021), and few respondents in the current study took up these options during lockdown.

Overall, certain characteristics were associated with transitions to more harmful levels of gambling. These included a range of psychosocial vulnerabilities and increased frequency of gambling on EGMs, casino games, sports betting, or race betting once gambling venues reopened. These findings are generally consistent with known psychosocial risk factors for gambling problems (Allami et al., 2021; Browne et al., 2019; Dowling et al., 2015, 2017; Sharman et al., 2019; Williams et al., 2012), and the elevated risk of gambling problems posed by EGMs, casino games and wagering products, compared to lower-risk lottery products (Binde et al., 2017; Delfabbro et al., 2020; Hing et al., 2022; Mazar et al., 2020). However, while certain psychosocial

risk factors are associated with increased vulnerability to harmful gambling, the reduction in gambling problems when the availability of high-risk gambling products was curtailed during lockdown, even when numerous psychosocial stressors were exacerbated across the community, suggests that gambling availability is a stronger determinant of gambling problems than individual vulnerability. This is discussed in more detail later.

Aim 4: Identify the characteristics of gamblers who ceased gambling and how this impacted aspects of their wellbeing

Respondents who ceased gambling overall, and on the different gambling forms (considered separately), were of interest to identify protective factors against continued gambling and to assess how gambling cessation had impacted on various aspects of their wellbeing.

While all respondents reported past-year gambling at Time 1 (before lockdown), most had ceased gambling by Time 2 (during lockdown) on products that were not available in land-based venues (EGMs, casino games) or that were severely restricted (sports betting). Specifically, 79.1per cent of Time 1 EGM gamblers, 65.6per cent of Time 1 casino game gamblers, and 57.0per cent of Time 1 sports bettors ceased gambling on those forms during lockdown. Respondents who ceased gambling on these products (vs those who sustained their gambling) tended to have lower pre-lockdown PGSI scores, and be older, less lonely, and report lower levels of perceived stress, psychological distress, financial hardship and stressful life events during lockdown. During lockdown, respondents who ceased race betting (42.1per cent of Time 1 race bettors) were more likely to report lower pre-lockdown PGSI scores, be female, more educated and report less financial hardship during lockdown. Those who ceased lotteries (28.2per cent of Time 1 lottery purchasers) also tended to report lower pre-lockdown PGSI scores, and be female, more educated, younger and employed. Respondents who stopped gambling on novel forms (31.1per cent of those who gambled on novel forms at Time 1) also tended to have lower pre-lockdown PGSI scores, and to be older, unemployed, living in a metropolitan area, engaged in fewer unhealthy behaviours, and to report lower levels of loneliness, financial hardship, and stressful life events due to COVID. Few respondents reported they had ceased each gambling form between Time 2 and Time 3 when gambling availability was largely back to pre-pandemic conditions. Where there were adequate numbers for comparisons at Time 3, those who ceased each form were more likely to be female and more educated.

Overall, while there were some variations by gambling form, respondents with lower pre-lockdown PGSI scores, women, older respondents, those with higher educational attainment, and those reporting lower levels of psychosocial risk factors were more likely to cease gambling on various activities during and after lockdown. These protective factors are largely consistent with previous research in that they reflect the absence or opposite of risk factors associated with more engaged and higher-risk gamblers, including younger people, males and those with gambling and other mental health problems (Allami et al., 2021; Browne et al., 2019; Dowling et al., 2017; Sharman et al., 2019; Williams et al., 2012).

Respondents who had ceased all their gambling during lockdown (24.2per cent of the sample) were asked how gambling cessation had influenced various aspects of their wellbeing. Sizable minorities of these respondents endorsed various benefits of ceasing gambling at Time 2. Nearly one-half (47.1per cent) agreed that they had enjoyed the break away from gambling during lockdown. About three in 10 agreed that their finances had improved because of not being able

to gamble as usual (32.3per cent), that they had experienced less harm from their gambling because of the lockdown (29.0per cent), and that they had felt relieved about not being able to gamble as usual (27.4per cent). About one-fifth agreed that their mental health, physical health, relationships and work/study had improved because of not being able to gamble as usual, and that they had experienced less harm from someone else's gambling because of the lockdown. Further, the vast majority (95.7per cent) disagreed that they had felt distressed or frustrated about not being able to gamble as usual. Further, while respondents with higher PGSI scores prior to the lockdown were more likely to report feeling distressed or frustrated about not being able to gamble as usual, they were also more likely to report all benefits from not gambling during lockdown that were assessed in the survey.

The above findings are not surprising, given that numerous studies have observed higher wellbeing with a decrease in harmful gambling and following gambling cessation or recovery from problem gambling (Blackman et al., 2019; Browne et al., 2018; Carlbring et al., 2012; Farrell, 2018; Jonas et al., 2020). However, gambling cessation does not result in the immediate cessation of gambling harm, with most legacy harms across financial, relationship, psychological, health, work/study and other domains having a half-life of approximately four years (Rockloff et al., 2022).

Nonetheless, the current findings provide evidence that substantial proportions of respondents ceased gambling on forms with reduced availability during lockdown, and that even short-term breaks from gambling tend to have substantial benefits across numerous life domains, especially for people experiencing greater problem gambling severity. These findings provide further support for the "availability effect" on gambling participation and gambling-related harm across numerous life domains.

Conclusions

The COVID-19 pandemic and the related restrictions provided a natural experiment by which to assess how the associated psychosocial stressors and changes in gambling availability impacted on gambling behaviour and harmful gambling. The most significant changes in gambling availability Australia-wide occurred during the national lockdown from late-March to late-May 2020, when psychosocial stressors such as loneliness, stress, health anxiety about COVID and financial hardship were also heightened.

During lockdown, pandemic-related stress was exacerbated across the community due to anxiety about the pandemic (particularly in the absence of the widespread availability of effective vaccines), concerns for the health and mortality of self and others, social isolation due to lockdowns, stress from balancing work, childcare and schooling from home, and the financial effects of lost employment and business income. It has long been recognised that heightened psychosocial and financial stressors increase the likelihood of gambling and gambling problems. Yet despite these heightened risk factors, the lockdown resulted in decreased gambling participation, fewer people with symptoms of problem gambling, and declines in problem gambling severity. This pattern has been found in all Australian and international studies that have examined gambling during COVID-19 lockdowns. In total, therefore, these findings indicate that gambling participation and gambling problems cannot be explained by the mere presence or elevation of psychosocial risk factors.

Instead, what changed during lockdown was gambling availability. Land-based EGM and casino venues were closed, sports betting was curtailed, and race betting was confined to online modes. Most land-based lottery venues remained open, but traffic was reduced due to lockdown restrictions, although lottery tickets could still be purchased online. This immediately resulted in a marked decline in gambling participation and gambling problems, as also found in all other COVID-gambling studies. While individuals who reported more psychosocial and financial stressors were more likely to sustain or increase their gambling and experience increases in harmful gambling, and these risk-factors increased overall, there was nevertheless a net drop in gambling and gambling problems during lockdown. These results, therefore, indicate that gambling participation and gambling problems declined in direct response to the curtailed availability of gambling, and clearly indicate that gambling availability is a stronger influence on gambling participation and problems, at the population level, than psychosocial risk factors. This finding is further strengthened by evidence from this and other studies that, once gambling availability returned to (near) pre-pandemic levels, gambling participation and gambling problems also returned to (near) former levels. This occurred despite an easing of COVID restrictions, which lessened the psychosocial risk factors for gambling and harmful gambling after lockdown. That is, gambling and harmful gambling increased once gambling supply resumed after lockdown ended, even though financial and psychosocial stressors declined as stay-at-home and border restrictions were relaxed, effective vaccines became widely available, and schools and businesses reopened.

The dominant problem gambling narrative has long been that "problem gamblers" tend to be people with pre-existing psychosocial problems who gamble, rather than people who experience negative consequences from consuming a harmful product. This pathologising of harmful gambling has assigned blame for harmful gambling to individual vulnerabilities, and called for consumers to "gamble responsibly". But if gambling problems are mainly a product of psychosocial vulnerabilities, we should have seen an increase in gambling problems during lockdown when these stressors were heightened. However, findings from this and all other COVID-gambling studies indicate that we instead saw a decrease in gambling and gambling problems as gambling supply was curtailed. In total, this body of research provides strong evidence that gambling supply matters because it directly drives gambling participation and gambling problems. While individual and psychosocial factors increase the propensity of some people to increase or reduce their gambling, this effect is dwarfed by the effect of overall access to and availability of legalised gambling activities. This study found that gamblers, even those suffering from some degree of gambling problems, show a marked reluctance to switch mode or form of gambling when their preferred form becomes unavailable. This suggests that we should expect to see relatively little switching of demand if the availability of specific gambling forms such as EGMs were restricted. Changes in gambling behaviour observed in this and all other COVID-gambling studies indicate that people reduce their gambling when supply is reduced, and that this directly reduces gambling problems and harm.

Convergent evidence of the importance of gambling availability can be found in the Rockloff et al. (2021) Report to the Perth Casino Royal Commission. The Final Report by the Commission accepted the conclusion that Western Australia's relatively low rates of gambling problems are principally a consequence of EGMs being restricted to the Perth Casino. In their words, "The PCRC accepts the Rockloff Report's conclusion that increased EGM participation rates would ultimately increase the prevalence of gambling-related harm in Western Australia. Consequently, the PCRC acknowledges that there is a causal connection between increased accessibility to gambling opportunities and increased gambling-related harm." Similarly, a natural experiment in

Norway ($N = 1293$), found that gambling problems amongst EGM gamblers were reduced after a ban on EGMs, with little indication of product substitution (Lund, 2009).

Limitations and strengths of the study

The sample was self-selecting and may not have been representative of the population of gamblers in Australia. Unfortunately, obtaining a representative sample was cost-prohibitive. Instead, purposive sampling was used to obtain large numbers of respondents in subgroups of interest to enable analyses of different transitions in gambling and harmful gambling, and the characteristics of these subgroups. The results should not be interpreted as representative prevalence figures. The surveys also elicited self-report data which may be subject to recall and social desirability biases. The Time 1 data may be particularly subject to recall bias since it required retrospective reports of previous gambling behaviour.

The Wave 1 survey that assessed gambling behaviours and gambling severity at Times 1 and 2 was conducted prior to receiving a VRGF grant to conduct follow-up surveys at Times 3 and 4. This meant that participants were not aware they were potentially signing up to a longitudinal study. Because of the nature of the study, the broader social context that impacted on individuals during the pandemic were not examined, such as quality of housing, equity, ethnicity or employment type. To contain the length of the survey, not all potential risk factors could be included. For example, it did not assess family violence, alcohol and other drug use, or impulsivity.

Some Australian states, notably Victoria and New South Wales, had subsequent COVID lockdowns after the national lockdown. These lockdowns did not occur during the assessment periods for Times 3 and 4, and gambling availability at these time points was therefore similar to pre-pandemic conditions. Nonetheless, these extended lockdown periods may have impacted relatively more on the psychosocial and financial wellbeing of respondents from these jurisdictions.

This design captured only point-in-time behaviour over the preceding two months, and did not assess behaviour over the entire duration between time periods. Thus, it is conceivable that a respondent in the "abstained" group could, for example, have abstained from gambling in the two-month periods assessed at each of Times 2 and 3, but have gambled outside of these assessment periods, for example six months prior to Time 3.

Attrition always occurs in longitudinal studies, and is heightened when studies extend over several years. In the current study, attrition did not affect the Time 1 (pre-lockdown) and Time 2 (during lockdown) data as these were collected in the same survey ($N = 2125$). However, substantial attrition occurred over the subsequent survey waves. One year after lockdown, 30.5per cent ($N = 649$) provided data at Time 3, and 21.6per cent ($N = 458$) provided data for Time 4 two years after lockdown. Importantly, however, there was minimal difference between the data for the whole sample at each time point and for the subsample who completed all survey waves ($N = 458$). One exception was that those scoring PGSI 8+ at Times 1 and 2 were less likely to complete the subsequent surveys. In addition, respondents at Time 3 and Time 4 were more likely to be male, older and to not live in Victoria. Nonetheless, the pattern of changes in overall gambling, gambling on each form, online gambling and harmful gambling were consistent between the whole sample and the subsample who completed all four survey waves. This

consistency indicates that attrition had minimal impact on the results. This enabled the analyses of the characteristics of respondents engaging in different gambling transitions to draw on the larger samples who responded to each survey, instead of being constrained to the 458 respondents who completed all four surveys. If constrained to these 458 respondents, there would have been too few respondents in some subgroups of interest for many analyses. Even so, some subgroups were too small in later survey waves for comparisons due to the natural patterns of gambling behaviour observed in the study (e.g., few respondents gambled on EGMs at Time 2 during lockdown and then ceased EGM gambling at Time 3 when venues had reopened). Therefore, most findings are based on Time 1 and Time 2 as measured in the first survey that assessed current and retrospective gambling.

The main strength of the study is that it extends on previous COVID-gambling studies in Australia in several ways. First, it provides more detailed analyses of different gambling transitions, such as those who sustained, ceased or commenced gambling on the various forms and those who increased or decreased harmful gambling. Second, it included a wider range of psychosocial measures than included in previous studies, and therefore provides more detailed insights into risk and protective factors associated with these different gambling transitions. Third, the study's timeframe extended on those of previous studies to two years after lockdown, which enabled longer-term assessment of the effects of COVID on gambling in Australia. While subject to the limitations described above, the study provides the most detailed assessment to date of how changes in gambling availability interacted with the heightened psychosocial stressors during the COVID-19 pandemic to impact on gambling behaviour and harmful gambling in Australia.

Implications: Critical take-away

From a public health perspective, the findings from this and other COVID-gambling studies suggest that the most impactful way to reduce gambling harm is to reduce the supply of legalised gambling products. An argument often used against curtailing legal supply is that most people will instead resort to using illegal gambling products and modes. This study shows that this was not the case, with most respondents stopping gambling on unavailable forms and modes instead of using black market alternatives. This finding therefore indicates that regulatory and other efforts to protect public health would best be directed at reducing gambling supply rather than demand – whereas currently most efforts are aimed at reducing demand rather than supply. Much more could be gained from reducing gambling availability than from urging people to "gamble responsibly" or to use consumer protection tools to self-regulate their gambling. Tools such as limit-setting, self-exclusion and player activity statements should be in place as minimum consumer protection tools, and they undoubtedly help some individual gamblers experiencing gambling harm to reflect on their gambling. However, a population-level reduction in gambling harm requires a population-level initiative. The most meaningful initiative would be a reduction in the supply of high-risk gambling products, which this, and previous COVID-gambling studies, have now shown to be the most impactful potential change likely to reduce harmful gambling in the community.

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Appendix A. Summary of prospective studies

Table A.1 Parameters of prospective studies into the impact of the COVID-19 pandemic on gambling and gambling problems

Authors/Date	Location	Design	Sample	Recruitment method	Subset samples	Matching/ weighting	Assessment Dates	N	% Males	PG Measures
Responsible Gambling Council (2022)	Ontario	3-wave cross-sectional 3-wave longitudinal	Convenience Sample of Ontarian gamblers (18+)	Panel/s	Longitudinal analyses only conducted on W3 sample (n=608)	Matched provincial census data -age/gender	W1: 21-28 Apr 2020 W2: 1-19 Aug 2020 W3: 30 Nov-17 Dec 2020	2,005 2,015 2,000	49.8 51.2 50.1	PGSI
Shaw et al. (2021) *AGRI National Project*	Canada	Longitudinal	Convenience sample of Canadian gamblers (18+)	Panel/s	None	Panel pool was geographically & demographically representative of Canadian adult population	W1: 16 Aug-10 Oct 2018 W2: 20 Aug-30 Nov 2019 W3: 14 May-1 Jun 2020	10,199 4,707 3,449	n/a 50.7 n/a	PGSI
Price et al. (2021)	Ontario	2-wave longitudinal	Adult gamblers in Ontario (gambled at least once in past year)	Online panel (Devinia)	None	None	W1: 21-28 April 2020 W2: 1-19 Aug 2020	940 940	53.2 53.2	PGSI
Emond et al. (2021) *Avon Longitudinal Study of Parents and Children*	UK	Prospective population - based cohort study	Cohort of UK adults surveyed at ages 24 and 27	Recruited pregnant women in Avon with delivery dates of in 1991-92. Initial cohort n=4,701 children	Responses to gambling questions compared at ages 24 and 27	Sub-sample of individuals who gambled at both times (n=1,255)	2016/17 May 2020	4,304 2,632	34.9 29.4	None
Fluharty et al. (2022) *UCL COVID-19 Social Study*	UK	Longitudinal cohort study	Convenience sample of UK adults (18+)	Existing networks plus targeted at lower socio-economic groups	Subset (n=7,026) excluded non-gamblers	Weighted to core population demographics	W1: 28 May-4 Jun 2020 W2: 30 Jul-7 Aug 2020	19,963 17,457	26.3(UW) 51.1 (W)	None

Authors/Date	Location	Design	Sample	Recruitment method	Subset samples	Matching/ weighting	Assessment Dates	N	% Males	PG Measures
Gunstone et al. (2020)	Great Britain (GB)	Longitudinal study	Phase 1 sample - nationally representative of adults in GB	Online panel (via YouGov)	Subset (n = 9,067) recontacted in May 2020 – from phase 1 & 2	Weighted to match age, gender, region, socio-economic group and ethnic group (GB) and PGSI category for W3	W1: 24 Sep-13 Oct 2019 W2: 23 Oct – 12 Nov 2019	12,161 3,001 9,067	49.1(UW) 48.9(W)	PGSI
Black et al. (2021)	Australia	Longitudinal study	Convenience sample of Australian gamblers (18+)	Advertising	Of n=769 in W1, n=462 agreed to be invited to W2 and W3	None	W1: May 2020 W2: Aug 2020 W3: Nov 2020	462 241 193	87.0 n/a n/a	PGSI
Bellringer & Garrett (2021) *National Gambling Study (NGS)*	NZ	Longitudinal cohort study	Original cohort – adults representative of NZ population with permanent accommodation	Random sampling (18+). Plus cohort of at-risk gamblers via gambling venues and ads from 2014-16	Sub-sample of at-risk gamblers invited to participate in 2020/21	None	2012 2015 Oct 2020-9 Mar 2021	6,251 2,770 301	n/a n/a 43.5	PGSI SOGS-R
Månsson et al. (2021)	Sweden	Longitudinal study	Convenience sample of gamblers	Social media and national helpline	W3 sample only for longitudinal analyses (n=139)	None	W1: Feb 2020 W2: 5 May-31Oct 2020 W3: 23 Nov-20 Dec 2020	325 325 139	64.8 64.8 65.7	PGSI + self-rated
Lischer et al. (2021)	Sweden	Longitudinal study	Swiss land-based casino gamblers	Flyers in casino	W2 sample only for longitudinal analyses (n=110)	None	W1: Autumn 2019 W2: 15 Mar 2020	171 110	n/a 77.3	SOGS

Notes: PG = problem gambling, W1 = Wave 1, W2 = Wave 2, W3 = Wave 3, W = weighted, UW = unweighted.

Table A.2 Summary of results of prospective studies into the impact of COVID-19 pandemic on gambling and gambling problems

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
Responsible Gambling Council (2022)	**Cross-sectional:** • Pre-COVID 9.7per cent gamblers - online gambling only. W1 (6 weeks after emergency measures implemented) rates rose to 53.9per cent; W2 67.7per cent; W3 86.6per cent. • About 1/3 of online gamblers in W1 and W2 and 45% in W3 reported gambling online due to restrictions. • W1 - 7.6per cent of gamblers were at high risk for gambling problems; W2 8.6per cent; W3 9.5per cent. They were more likely to gamble online. • Rate of high-risk gambling (among online gamblers) increased from 12per cent in W2 to 24per cent in W3. **Longitudinal:** • However longitudinal results showed no change from W1 to W3, in rates of high-risk gambling (including high-risk online gambling). • Longitudinal data showed that the rate of Ontarians gambling online due to COVID-19 did not significantly change over the course of the pandemic.	**Gambling behaviour:** • Men were more likely to screen as high-risk for gambling problems (in every wave). • Men, younger adults (18-44 years), Ontarians of South Asian and East Asian descent were at most risk of gambling harm. • Severe anxiety/higher depression - reported by online gamblers at higher risk for gambling harm. • High-risk gamblers were 17 x more likely to gamble online 'because it helps when feeling depressed or nervous' (W2), compared to low-risk gamblers. • High-risk gamblers - 5 x more likely to report 'gambling to earn income' compared to lower risk gamblers (W2). • Rates of gambling to earn income increased between W2 (18per cent) and W3 (35per cent); but rates of gambling online 'because it helps when feeling depressed or nervous' remained stable over time (longitudinal data). Predictors of **high-risk gambling online**: • Signing up for new online gambling accounts. • Gambling online on grey market sites. • Increasing money and time spent gambling online. • High levels of depression and anxiety. • Under the influence of alcohol or cannabis while gambling online.	**Financial Impact of COVID:** • 25per cent (W1) and 29per cent (W2) reported their employment was negatively affected by COVID-19, decreasing in W3 (16per cent). • 45per cent in W1 reported their household income had been negatively affected, decreasing in W2 and W3 (38per cent) – cross-sectional data. • Young adults, Ontarians of East Asian and South Asian descent were most affected by changes to employment and household income. **Mental Health and Wellbeing:** • Mental health concerns (moderate to severe) were prevalent among gamblers (cross-sectional). • High levels of anxiety were more prevalent in W1 (26per cent), reducing a small amount in W2 (21per cent) and W3 (21per cent). Depression remained high and stable between W1 (12per cent), W2 (11per cent), and W3 (12per cent) (cross-sectional data). • Longitudinal results showed rates of severe anxiety decreased over time while severe depression increased.	• In 3-wave longitudinal sample, young adults and women were under-represented in comparison to Ontario census data. • Data collected via an online panel might be biased towards participants who are more willing to gamble online.

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
Shaw et al. (2021) *AGRI National Project*	• 28.5per cent stopped gambling during lockdown. 69.4per cent who were gamblers pre-COVID continued to gamble during lockdown. • Those who continued to gamble reported significant decreases in money and time spent on gambling, gambling frequency, and number of game types. • PG decreased significantly - from 7per cent scoring in the PG range pre-lockdown to 4.6per cent during lockdown. • The only gambling engagement metric with an increase was gambling platform - 17per cent of gamblers migrated to online gambling during lock-down.	• Gambling online was a significant predictor for PG during lock-down. • COVID-specific influences on employment, leisure time, health, and social isolation were not independent predictors of changes in gambling engagement during lockdown (though were moderately associated with PG score). • Gamblers who increased frequency during lockdown engaged with a greater range of games but had lower PGSI scores. • Significant predictors of PGSI categories were online gambling, total gambling losses, gambling fallacies, impulsivity, time spent gambling, gambling frequency on all types of gambling, use of tobacco products, younger age, stress, number of types of gambling.	**Mental Health** • Increased gambling frequency was significantly correlated with reports of greater mental health issues in the pandemic period.	• Large and diverse sample of regular gamblers in terms of demographics, geography, and gambling engagement. • Data collected via an online panel might be biased towards participants who are more willing to gamble online.
Price et al. (2021)	Subgroups identified: (1) no online gambling, (2) engagement in a range of gambling games online & change in gambling involvement (some increased/some decreased gambling; (3) predominantly online lottery play with no change in online gambling.	• Those who had more severe symptoms of anxiety and depression between W1 and W1 were more likely to be in Subgroup 2. • Those who experienced negative impacts on household income because of the pandemic, and greater symptoms of problem gambling, were most likely to be found in subgroup 2.	Subgroup 2 were found to have a stronger financially focused self-concept, than the other subgroups.	Only analysed 2 data points over a 3-month period early in the pandemic. Used an online panel but with a large base of over 1 million Canadians.
Emond et al. (2021) *Avon Longitudinal study of parents and children*	• Small minority of weekly gamblers engaged in a wide range (offline and online) of gambling activities during lockdown. • Rates of gambling were lower than the British average during lockdown. • Overall, gambling frequency reduced (for both males and females) during lockdown. • Less range of gambling activities compared to three years prior. • Online gambling more frequent than three years prior. • Analysis of sub-sample who gambled at both times (n=1255) - larger % of males compared to females did not change their frequency of gambling; a larger % of females decreased their gambling frequency during lockdown.	• Gambling at age 24 (3 years prior) strongly predicted whether people gambled or not during lockdown irrespective of gender. • More males than females engaged in weekly gambling during lockdown. • Strong links between heavy alcohol use and weekly gambling during lockdown. Frequency of heavy drinking was associated with gambling more frequently. Those drinking > 6 units on one occasion regularly (weekly or more) were more likely to be male, and more likely to gamble weekly during lockdown. Regular weekly gambling was associated with heavy use of alcohol in both males and females. • Those in the cohort who struggled financially before COVID were more likely to answer yes to any gambling during lockdown.	**Mental Health/Wellbeing** • Anxiety levels during lockdown were high, but no relationship between anxiety and gambling frequency. • Depressive symptoms were experienced by ~15 per cent during lockdown, but depression was not associated with gambling frequency. • Wellbeing scores during lockdown did not vary between non-gamblers, occasional gamblers, and regular gamblers.	• Females over-represented in both samples – may have resulted in underestimation of the number of weekly gamblers. • Of respondents to the gambling survey at age 24 (N= 4,304), 3,872 (90%) were sent the COVID survey and 2,160 (56%) responded – they were more likely to be male, lower IQ, hyperactive,

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
	• Weekly gamblers - private betting, national lottery, and online gambling increased during lockdown compared to 3 years prior. • Occasional gamblers – frequency of most gambling activities remained stable or decreased, apart from online gambling which increased. • Online betting on any event or sport, including e-sports, overall remained at similar rates to when they were 24 years old, despite most UK based sporting events being cancelled during lockdown.			alcohol use disorder, and smoker.
Fluharty et al. (2022) *UCL COVID-19 Social Study*	During strict lockdown: • 14.7per cent had gambled a few times. • 12.9per cent 1–2 times weekly. • 1.3per cent most days. • 0.5per cent gambled daily. Of those who did any gambling at baseline: • 79.4per cent reported no change in gambling frequency during strict lockdown compared to before lockdown. • 11.4per cent reported decreased gambling. • 9.2.per cent reported increased gambling frequency. • 14.1per cent continued or further increased gambling frequency following the easing of restrictions. • At follow-up (30 July to 7 Aug 2020) nearly half of those who had increased gambling ceased gambling altogether.	Stress predictors of being more likely to gamble during lockdown: • Stressed due to boredom. • High frequency of drinking alcohol. • Smoker or former smoker. • High risk-taking tendencies. Socio-demographic variables associated with any gambling during strict lockdown: • Males • Older adults • Being employed • Inactive in the labour market • Lower levels of educational attainment • Living in over-crowded housing Predictors of gambling more often during strict lockdown relative to before lockdown: • Men and current smokers were less likely to increase their gambling. • Those with 10 or more anxiety and depression symptoms gambled more often during lockdown than before lockdown.	• No associations of financial adversities or worries, or isolation status on gambling, and no associations of ethnicity or household income with gambling.	• Large sample. • Longitudinal tracking. • Included a range of measures on psychological and social experiences during the pandemic. • Not nationally representative. • Slightly greater risk of dropout among more frequent gamblers - possible that the sampling was selective towards infrequent or non-gamblers.
Gunstone et al. (2020)	**Significant reduction in gambling activity during pandemic:** • Participating in gambling in last 4 weeks (49 per cent Oct 2019; 39 per cent May 2020;) • All types of gambling dropped, except online casino games, which significantly increased from 1.5 per cent in October 2019 to 2.3per cent in May 2020 • 52 per cent of gamblers said that compared to normal, they gambled about the same amount or	**Gambling motivations:** • Gambling 'to escape boredom or fill my time', increased from 26 per cent in Oct 2019 to 29 per cent in May 2020 • The small number that gambled more during lockdown said this was to relieve boredom or for something to do (52 per cent), or the prospect of winning big money (48 per cent). 26 per cent said it was because they had more disposable income to	• Overall, gamblers with a PGSI score of 1+ in Oct 2019 were no more or less likely to be drinking at higher risk levels, or to be smokers in May 2020. • Gamblers with a PGSI score of 1+ in Oct 2019 were no more likely to be	Note, changes between Oct 2019 and May 2020 can't definitively be linked to lockdown, as natural changes could happen over six months

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
	less (41per cent) during lockdown. Four per cent said they gambled more **Problem Gambling:** • Of those with a previous PGSI score of 1+ over half (54 per cent) decreased their category (including 45 per cent who went down to 0, or stopped gambling), seven per cent increased their category. • 7per cent of gamblers who had previously scored 0 moved into 1+ category. • 14per cent of previous non-gamblers started gambling. • 67per cent of previous 1+ gamblers showed a reduction in score, while 18 per cent had increased their score. Those scoring 8+ were most likely to increase PGSI score (27per cent).	spend as less spending on other categories, plus more time to gamble. • 31per cent of younger problem drinkers were drinking at higher risk levels in May 2020, which is higher than in October 2019 (20per cent). • BAME (black, Asian and minority ethnic) gamblers with a PGSI score of 1+ were more likely to be drinking at higher risk levels in May 2020 (20 per cent) compared to October 2019 (10 per cent).	psychologically distressed in May 2020. • Demand for treatment, advice, or support for gambling problems stayed much the same between Oct 2019 and May 2020. • Respondents were slightly less likely to say that they know and have been affected by someone with a gambling problem in May 2020 (6 per cent) compared to Oct 2019 (7 per cent).	• Large sample broadly representative. • Longitudinal tracking. • Data collected via an online panel might be biased towards participants who are more willing to gamble online.
Black et al. (2021)	**Gambling Engagement:** • Frequency of gambling significantly reduced at both W2 and W3, compared to pre-restriction baseline. **Problem Gambling:** • No significant reduction in PG at W2 compared to pre-restriction baseline levels. • Subsample of MR and PG pre-COVID had no significant reduction in gambling problems at W2 or W3 compared to pre-restriction levels; and no significant reduction in gambling frequency at either W2 or W3, compared to pre-restriction levels.	**Effect of Lockdown:** Cross-sectional comparison of Victorian respondents (with land-based gambling restrictions) with respondents in the rest of Australia (without these restrictions) at W2: • PG levels did not differ significantly as a function of land-based gambling restrictions.		• Pre-registered analyses. • Longitudinal study + controlled element (restrictions vs no restrictions). • Only half the sample regularly used land-based gambling - sample does not represent population who would be most impacted by restrictions.
Bellringer & Garrett (2021) *National Gambling Study (NGS)*	• 2012 - 36.2per cent gambled in a risky manner (LR, MR, PG), compared to 43.5per cent in 2015, and 25.6 per cent in 2020/21. • A much larger % reported decreased NZ-operated online sports (50 per cent) and track betting (45per cent) during lockdown, compared with % who gambled more on those activities (8 per cent and 14 per cent respectively).	Risk factors for increased online gambling during lockdown: • Higher educational level - those with highest educational level had eight times (adjusted) odds of increased online gambling, compared with participants without formal qualifications. • 22.8 per cent of participants with a university degree or higher increased online gambling during lockdown.		• Only participants who had previously scored as risky gamblers were recruited - not population representative.

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
	• A larger % of online keno participants decreased their gambling during lockdown (29 per cent) compared with those who increased their participation (13 per cent). • Most respondents who bet on Online Lotto and scratch card gambling, did so at the same levels as prior to lockdown (60 per cent and 46 per cent respectively). • Only five per cent reported overseas online gambling - of these, 1/3 increased and 1/5 decreased online overseas gambling. • For all online gambling, about 1/4 increased or decreased their online gambling during lockdown.	• Those with hazardous alcohol use in 2015 had 2.8 times (adjusted) odds of increased online gambling in lockdown, compared with participants without hazardous alcohol use (but not 2020/21). 18.8 per cent of those with hazardous alcohol use in 2015 increased online gambling during lockdown. • Being a risky gambler in 2020/21 was associated with increased online gambling, compared with non-gamblers/non-problem gamblers, during lockdown. • Participants who engaged in free-to-play gambling-type activities in 2015 were more likely to increase online gambling during lockdown. 23.7 per cent of those who engaged in free-to-play gambling-type activities in 2015 increased online gambling during lockdown.		
Månsson et al. (2021)	• Online slots were the most common game played pre-covid (33.9 per cent) and at W1 (34.8 per cent), and online odds games were the most common game in W2. • No major migrations observed between game types - distinct and unchanged game preferences over the 3 timepoints. • At W1, 43.5 per cent reported unchanged gambling expenditure, 31.9 per cent increased and 24.6 per cent decreased expenditure compared to pre-pandemic. • At W2, 29.5 per cent reported unchanged expenditure, 31.1 per cent increased and 39.3 per cent decreased expenditure compared to W1.	• Those who increased gambling expenditure during lockdown reported higher mean PGSI scores compared to those who decreased or maintained expenditure. • Gambling on high-risk games was the strongest predictor of gambling problems and increased gambling frequency, in W1 and W2. • Worries about mental health due to the pandemic were associated with increased odds of experiencing past-year gambling problems, increased gambling frequency in W1 and increased risk of gambling problems between W1 and W2. • Social isolation and financial consequences were associated with increased gambling frequency or gambling problems.	**Social Isolation:** • W1, 86.3 per cent reported increased social isolation, with working from home being the most common during both waves. **Financial Consequences** • 37 per cent reported financial consequences - most common - short-term lay-off (14.8 per cent W1, 5.9 per cent W2).	• A strength was the longitudinal design covering two COVID waves of the pandemic. • Small sub-sample at W2.
Lischer et al. (2021)	• SOGS scores at baseline – 36.4 per cent no problems with gambling, 41.8 per cent somewhat problematic gambling, 19.1 per cent probable pathological gambling. • 17 respondents excluded from casino gambling. • 55 per cent gambled during lockdown – of these, gambling intensity decreased significantly (only 15 respondents reported higher gambling intensity during lockdown), but online gambling significantly increased (both frequency and duration). • Significant decrease in the number of land-based gambling activities during lockdown.	• Those who gambled during lockdown more often in relationship and higher incomes, than non-gamblers. No effect for gender, age, linguistic region. • Excluded players were less likely to gamble during lockdown than those not excluded from casinos. • Lockdown gambling participation was not associated with gambling problems Mean SOGS score was lower for respondents who gambled during lockdown – because excluded players less likely to gamble. • Higher gambling intensity at baseline across all gambling and different types of gambling (land-based	**Mental Health** Those who gambled during lockdown reported significantly stronger symptoms of depression and anxiety and significantly lower life satisfaction at baseline.	• Small sample size • Sample may be skewed to high income respondents. • Groups of excluded and non-excluded players disproportionate in size (which only allows for non-parametric tests).

Authors/Date	Impact on Gambling	Predictors of Gambling Engagement and High-Risk Gambling	Other Key Findings	Notes/ Limitations
	• No overall increase in online gambling during lockdown compared to before. • Significant decrease in the relative number of respondents gambling in casinos and gambling abroad during lockdown. Participation in all other types of gambling did not change significantly.	in Switzerland, abroad, online) predicted gambling during lockdown. • Psychological and social motivations for gambling (e.g., being with friends, distraction from boredom and stress) more important for respondents who gambled during lockdown, than those who did not.		

Notes: PG = problem gambling, MR = moderate risk gambling, LR = low risk gambling, W1 = Wave 1, W2 = Wave 2, W3 = Wave 3

Appendix B. Survey recruitment and response rates

Participants were recruited to the Wave 1 survey from 1) a paid market research panel aggregator (Qualtrics), and 2) from a database of participants who have taken part in previous studies by the research team and who have agreed to be contacted for future projects. All participants were required to be Australian, over the age of 18, and to have gambled in the 12 months prior to the initial survey. In addition, for the Qualtrics sample only, participants were required to be from Victoria, the location of the funding body. This requirement was not in place for the participants drawn from our CQU database.

The survey used screening questions to determine eligibility. Demographics and gambling participation information for participants in our CQU database were known from previous surveys, and recruitment was able to be targeted. This information was not known for participants recruited via Qualtrics, and therefore recruitment was broader because factors such as gambling participation were not known prior to them answering screening questions. This means that there were more potential participants who were screened out as ineligible, compared to those from the CQU database. This is the usual practice with online convenience panels and should not be interpreted as a concern about data quality. In addition to screening questions for eligibility, we conducted tests to identify poor quality responses (e.g., inattention, duplicates). Inattention checks included the use of an attention check question, testing for speeding (completing the survey in less than one-third the median response time from a soft launch), straight lining (e.g., selecting answers in the same column of a matrix table throughout the survey), and examination of answers to open-ended questions. These checks were conducted by the research team for all waves, and also independently by Qualtrics for the initial intake from their panel partners.

Qualtrics has agreements with dozens of panel providers in Australia and across the world, some of these panels are quite general (i.e., include a wide demographic spread), while some can be very specific (e.g., panels that include high proportions of a specific demographic). Some panels allow for the collection of contact information during a survey (e.g., email addresses), while most do not. Some have higher response rates for longitudinal research. In this case, we required panels with a broad demographic, which allowed for the collection of contact information so that we could follow up with them, and that generally had high response rates for longitudinal research. Qualtrics does not make us aware which panels are used for a project, but their role is to choose panels that best suit the requirements of the project. In addition, because multiple panels are typically used for a project, it is possible that some participants are members of more than one panel. Deduplication checks are conducted to remove multiple responses from the same participant (see Table B.1).

For Wave 1, 4,136 potential participants recruited via Qualtrics started the survey, and of those, 1,827 were eligible responses after eligibility checks and tests for data quality (Table B.1). Of these 1,827 participants, 312 did not complete the survey, for a total of 1,515 "good completes" (completion rate = 82.9per cent). Of those, 937 gave their contact details for participation in subsequent waves. Participants were included in the data for Wave 1, even if they did not provide their contact details for follow-up.

From our CQU panel, 7,868 potential participants were invited, with 934 starting the survey (response rate = 10.9per cent). Of those, 854 were eligible responses. A total of 244 did not

complete the entire survey (completion rate = 71.4per cent), for a final total of 610 good completes from all over Australia. The total number of responses for analysis from Wave 1 was 2,125.

All respondents from our CQU panel who completed Wave 1, and those who provided their contact details from the Qualtrics panel, were invited to the Wave 2 survey. After excluding email addresses from the Qualtrics panel that were incorrect (e.g., gibberish, typos that could not be corrected, etc), 1,418 were invited. Of those, 733 started the survey (response rate = 48.4per cent), and there were 687 eligible responses. Thirty-eight did not complete (completion rate = 94.5per cent). Because all participants in the Wave 2 survey had completed the Wave 1 survey, all who completed the Wave 2 survey could be included in analyses comparing Time 2 (during lockdown) to Time 3 (one year later).

All participants who were invited to Wave 2 were invited to Wave 3, apart from 30 participants who opted out. Of the 1,388 invited, 670 responded (response rate = 45.7 per cent). There were 634 eligible responses, although 28 did not complete the entire survey (completion rate = 95.6 per cent). However, of the remaining 606, not all completed the Wave 2 survey (Time 3; one year after lockdown), so comparisons from Time 3 to Time 4 are based on the 458 participants who completed surveys for both Time 3 and Time 4.

Table B.1 Recruitment numbers, screening and eligibility exclusions, completion and response rates

	Wave 1 survey		Wave 2 survey	Wave 3 survey
	Times 1 and 2		Time 3	Time 4
	Qualtrics	CQU panel	Combined	Combined
Invited (a)	Unknown	7868	1418	1388
Started	4136	934	733	670
Ineligible - no consent	0	0	2	2
Ineligible - under 18	10	0	0	0
Ineligible - IP address not in Australia	13	26	1	1
Ineligible - not a gambler	531	17	0	0
Ineligible - not Australian	206	11	0	0
Ineligible - not from Victoria (quota)	883	0	0	0
Ineligible - total sample size reached	344	0	0	0
Removed - failed attention check	36	0	0	0
Removed - speeding	92	0	0	0
Removed - duplicates, straightlining, open-ended questions	194	26	43	33
Eligible responses (b)	1827	854	687	634
Did not complete	312	244	38	28
Good completes (c)	1515	610	649	606
Response rate (a)/(b)	NA	10.9%	48.4%	45.7%
Completion rate (c)/(b)	82.9%	71.4%	94.5%	95.6%

Note: Response and completion rates are determined based on eligible responses.

Appendix C. Example information sheet and survey instrument

This appendix includes one of information sheets (for the Qualtrics respondents at Time 1) and survey instruments (for Wave 1) that were used in this study. Those for Waves 2 and 3 are not included as this would add duplication and length.

The most important difference between these materials for each survey wave was that the Wave 1 survey, administered in late May 2020, asked questions in relation to two time periods – before lockdown and after lockdown. For Waves 2 and 3, administered in late-May 2021 and 2022 respectively, survey questions were asked only in relation to "the last 2 months".

For parsimony, the survey instrument in this appendix excludes questions that were included in Wave 1 to inform two other studies for the Victorian Responsible Gambling Foundation (Greer et al., 2020; Russell & Hing, 2020).

WAVE 1 EXAMPLE INFORMATION SHEET (QUALTRICS SAMPLE)

Welcome to the **2020 AUSTRALIAN COVID-19 GAMBLING SURVEY**. We are collecting data to help researchers, policy makers, and other key stakeholders gain a better understanding of how the coronavirus (COVID-19) restrictions may have affected gambling.

On 23 March 2020, new social distancing measures resulted in the closure of hotels, clubs and casinos, as well as AFL, NRL and many other sporting fixtures. This lockdown changed the availability of gambling opportunities. We are wanting to know how this lockdown has affected gambling by Australians.

 The only requirements for you to participate are that you:
• are aged 18 years or over
• live in Australia, and
• have gambled at least once in the past 12 months

The survey asks about any gambling you may have done before and during the lockdown, as well as some questions about you. Your responses are completely anonymous.

The survey will take about 15-20 minutes to complete. Your participation is voluntary and you can stop the survey at any time. You can also continue the survey from where you left off if you use the same device and browser. If you opt out of the survey part way through, we will not use or retain any responses you have provided. However, once survey responses are submitted, participants cannot withdraw their data due to the anonymous nature of the survey.

If you have any questions, please contact the research team at n.hing@cqu.edu.au

CQUniversity ethics approval no: 22418

Would you like to see more details about the study?
• Yes
• I do not wish to see more details and I consent to participating in this study

ADDITIONAL INFORMATION

How your confidentiality will be protected

The survey does not ask for your name, so your responses will be completely anonymous. They will be combined with thousands of other responses so no one will know your individual answers. The anonymous data will be stored securely and indefinitely by CQUniversity.

How you will receive feedback

Information about the results of the research will be made available through CQUniversity's gambling research Facebook page - https://www.facebook.com/cquegrl/

Where you can get further information

If you want further information or have any questions, please contact Professor Nerilee Hing: n.hing@cqu.edu.au. You can also contact the Ethics Coordinator at CQUniversity's Office of Research on: 07 4923 2603 or at: ethics@cqu.edu.au.

If you experience discomfort at any point during the survey, you can contact the **Gambling Helpline on 1800 858 858** or www.gamblinghelponline.org.au or **Lifeline on 13 11 14**. These are free and confidential help services that operate 24 hours a day, 7 days a week.

Project team

The study is being conducted by Professor Nerilee Hing, Dr Alex Russell, and Nancy Greer at CQUniversity.

Participation

To start the survey, please **click the next button to begin**. By doing so you are consenting to participate.

WAVE 1 SURVEY

Screening

Do you live in Australia?

* No
* Yes

How old are you? _____

What is your gender?

* Male
* Female
* Other

What is the postcode of your usual place of residence? _____

Introduction

In this section, we ask about your gambling behaviour **before** and **during** the lockdown. The **lockdown** refers to the 2 months from **23 March to 23 May 2020**.

We will ask about your gambling behaviour, including online, using telephone calls and in land-based venues.

Online gambling refers to gambling using the **Internet**. This could be using a **website or app**, accessed using a computer, smartphone, tablet, gaming console or smart TV.

Gambling using telephone calls refers to gambling by making a **telephone call** from a landline or mobile phone to a gambling or betting operator.

Land-based gambling refers to gambling using facilities in land-based venues, including newsagents, clubs, pubs, hotels, casinos, TAB outlets, racetracks, bingo halls or other venues that offer gambling or betting facilities.

In this survey, **gambling** includes gambling using:

Money (e.g. cash, debit, credit, chips or credits purchased for money)

Cryptocurrency (e.g. Bitcoin, Ethereum, Ripple). If you use cryptocurrency for gambling, please estimate its approximate real money value in the relevant questions.

Gambling with money or cryptocurrency does **not** include playing gambling-like games for fun that just use points (which we refer to as social casino games).

Gambling participation before the lockdown

In the 12 months **before the lockdown commenced on 23 March 2020**, on average how often did you do each of the following? **This includes any gambling you did online, by telephone and at land-based venues – using money or cryptocurrency** (but not just for fun using points).

If you don't know what one of these items refers to, please select "not at all before lockdown" for that item.

	Not at all before lockdown	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	4 or more times a week
Purchased instant scratch tickets							
Purchased lottery, lotto or pools tickets							
Bet on sporting events							
Bet on horse, harness or greyhound races							
Bet on non-sporting events, such as who will win an Academy Award, a political election, or a reality TV show							
Played bingo							
Played keno							
Played poker							
Played casino games, not including poker (e.g. blackjack, roulette)							
Played gaming machines, such as pokies							
Bet on video game competitions, known as esports							
Bet on fantasy sports							
Used skins or skin deposits for gambling							
Purchased loot boxes or loot box keys							

In the 12 months **before the lockdown commenced on 23 March 2020,** did you use the **Internet**, via a computer, smartphone, tablet, smart TV, gaming console or other device, to do any of these activities?

- Yes
- No

This is an attention check: please select the number eight to continue
- 6
- 7
- 8
- 9

Gambling participation during the lockdown

During the lockdown (23 March 2020 to 23 May 2020), on average how often did you do each of the following? **This includes any gambling you did online, by telephone and at land-based venues – using money or cryptocurrency** (but not just for fun using points).

If you don't know what one of these items refers to, please select "not at all during lockdown" for that item.

	Not at all during lockdown	Less than once a month	Once a month	2-3 times a month	Once a week	2-3 times a week	4 or more times a week
Purchased instant scratch tickets							
Purchased lottery, lotto or pools tickets							
Bet on sporting events							
Bet on horse, harness or greyhound races							
Bet on non-sporting events, such as who will win an Academy Award, a political election, or a reality TV show							
Played bingo							
Played keno							
Played poker							
Played casino games, not including poker (e.g. blackjack, roulette)							
Played gaming machines, such as pokies							
Bet on video game competitions, known as esports							
Bet on fantasy sports							
Used skins or skin deposits for gambling							
Purchased loot boxes or loot box keys							

During the lockdown (23 March 2020 to 23 May 2020), did you use the **Internet**, via a computer, smartphone, tablet, smart TV, gaming console or other device, to do any of these activities?

- Yes
- No

Purchasing instant scratch tickets

This section asks about **purchasing instant scratch tickets** with money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend on instant scratch tickets in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on instant scratch tickets was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on instant scratch tickets was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

Purchasing lottery, lotto, pools tickets

This section asks about **purchasing lottery, lotto or pools tickets** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend on lottery, lotto or pools tickets in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on lottery, lotto or pools ticket was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on lottery, lotto or pools ticket was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

Betting on sporting events
This section asks about betting on sporting events for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend betting on sporting events **in a typical month, including online, by telephone and at land-based venues**?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on sports betting was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on sports betting was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and using **telephone calls**?

Online: _____
Using telephone calls: _____

Betting on horse, harness or greyhound races

This section asks about **betting on horse, harness or greyhound races** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend betting on horse, harness or greyhound races in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on betting on horse, harness or greyhound races was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on betting on horse, harness or greyhound races was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and using **telephone calls**?

Online: _____
Using telephone calls: _____

Betting on non-sporting events

This section asks about **betting on non-sporting events** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020), such as who will win an Academy Award, a political election or a reality TV show.

How much money (including cryptocurrency) did you spend betting on non-sporting events in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on betting on non-sporting events was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on betting on non-sporting events was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and using **telephone calls**?

Online: _____
Using telephone calls: _____
Total: _____

Playing bingo

This section asks about **playing bingo** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend on bingo in a typical month, including online and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on bingo was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and at **land-based venues**?

Online: _____
At land-based venues: _____

Playing keno

This section asks about **playing keno** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend on keno in a typical month, including online and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on keno was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and at **land-based venues**?

Online: _____
At land-based venues: _____

Playing poker

This section asks about **playing poker** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend on poker in a typical month, including online and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on poker was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and at **land-based venues**?

Online: _____
At land-based venues: _____

Playing casino games, not including poker

This section asks about **playing casino games** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020), **not including poker.**

How much money (including cryptocurrency) did you spend on casino games in a typical month, including online and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, what percentage of your expenditure on casino games was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and at **land-based venues**?

Online: _____
At land-based venues: _____

Playing gaming machines for money, such as pokies

This section asks about **playing gaming machines, such as pokies** before and during the lockdown (23 March to 23 May 2020). This includes pokies in land-based venues and online.

How much money (including cryptocurrency) did you spend on gaming machines, such as pokies, in a typical month, including online and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, what percentage of your expenditure on gaming machines, such as pokies, was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and at **land-based venues**?

Online: _____
At land-based venues: _____

Betting on video game competitions known as esports

This section asks about **betting on video game competitions known as esports** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend betting on esports in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on betting on esports was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on betting on esports was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and using **telephone calls**?

Online: _____
Using telephone calls: _____
Betting on fantasy sports

This section asks about **betting on fantasy sports** for money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend betting on fantasy sports in a typical month, including online, by telephone and at land-based venues?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

In the 12 months before the lockdown, about what percentage of your expenditure on betting on fantasy sports was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV), and using **telephone calls** and at **land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what percentage of your expenditure on betting on fantasy sports was done **online** (including through a computer, smartphone, tablet, gaming console or smart TV) and using **telephone calls**?

Online: _____
Using telephone calls: _____

Purchasing loot boxes or loot box keys

This section asks about **purchasing loot boxes or loot box keys with** money or cryptocurrency before and during the lockdown (23 March to 23 May 2020).

How much money (including cryptocurrency) did you spend purchasing loot boxes or loot box keys in a typical month?

In the 12 months before the lockdown
($ per month)

During the lockdown (23 March to 23 May 2020)
($ per month)

Online gambling behaviour

This section specifically asks more about your **online gambling** before and during the lockdown. Remember, this includes gambling on a website or app using a computer, smartphone, tablet, gaming console or smart TV.

In the 12 months before the lockdown commenced on 23 March 2020, about what proportion of your **total gambling expenditure** was done **online**, and using **telephone calls** and **at land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

During the lockdown (23 March to 23 May 2020), about what proportion of your **total gambling expenditure** was done **online**, and using **telephone calls** and **at land-based venues**?

Online: _____
Using telephone calls: _____
At land-based venues: _____

Please answer the following questions about your gambling. Remember that this survey is anonymous.

In the 2 months before the lockdown commenced on 23 March 2020, how often:

	Never	Sometimes	Most of the time	Almost always
Did you need to gamble with larger amounts of money to get the same feeling of excitement?				
Did people criticise your betting or told you that you have a gambling problem, regardless of whether or not you thought it was true?				
Did you feel that you might have a problem with gambling?				
When you gambled, did you go back another day to try to win back the money you lost?				
Did gambling cause you any health problems, including stress or anxiety?				
Did you feel guilty about the way you gamble or what happens when you gambled?				
Did your gambling cause any financial problems for you or your household?				
Did you bet more than you could really afford to lose?				
Did you borrow money or sell anything to get money to gamble?				

If gambling is a problem for you or others, please call the Gambling Helpline on 1800 858 858 or go to www.gamblinghelponline.org.au for free, confidential advice, available 24/7. If this questionnaire has raised any other issues for you, please call Lifeline on 13 11 14.

During the lockdown (23 March 2020 to 23 May 2020), how often:

	Never	Sometimes	Most of the time	Almost always
Did you need to gamble with larger amounts of money to get the same feeling of excitement?				
Did people criticise your betting or told you that you have a gambling problem, regardless of whether or not you thought it was true?				
Did you feel that you might have a problem with gambling?				
When you gambled, did you go back another day to try to win back the money you lost?				
Did gambling cause you any health problems, including stress or anxiety?				
Did you feel guilty about the way you gamble or what happens when you gambled?				
Did your gambling cause any financial problems for you or your household?				
Did you bet more than you could really afford to lose?				
Did you borrow money or sell anything to get money to gamble?				

If gambling is a problem for you or others, please call the Gambling Helpline on 1800 858 858 or go to www.gamblinghelponline.org.au for free, confidential advice, available 24/7. If this questionnaire has raised any other issues for you, please call Lifeline on 13 11 14.

You previously indicated that you have not gambled during the lockdown (23 March to 23 May 2020). How much do you agree or disagree with the following statements about not being able to gamble in the usual way (e.g. in land-based venues and on sporting events)?

	Strongly disagree	Disagree	Agree	Strongly agree
I have felt distressed or frustrated about not being able to gamble as usual				
I have felt relieved about not being able to gamble as usual				
I have enjoyed the break away from gambling				
I have experienced less harm from my gambling because of the lockdown				
I have experienced less harm from someone else's gambling because of the lockdown				
My finances have improved because of not being able to gamble as usual				
My relationships have improved because of not being able to gamble as usual				
My mental health has improved because of not being able to gamble as usual				
My physical health has improved because of not being able to gamble as usual				
My work or study has improved because of not being able to gamble as usual				

During the past 30 days, how often did you feel…

	All of the time	Most of the time	Some of the time	A little of the time	None of the time
That you were unable to control the important things in your life					
Confident about your ability to handle your personal problems					
That things were going your way					
That difficulties were piling up so high that you could not overcome them					
Nervous					
Hopeless					
Restless or fidgety					
So depressed that nothing could cheer you up					
That everything was an effort					
Worthless					

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

Please indicate how often each of the statements below has been descriptive of you **during the lockdown (23 March to 23 May 2020)**?

	Never	Rarely	Sometimes	Often
I lack companionship				
There is no one I can turn to				
I am an outgoing person				
I feel left out				
I feel isolation from others				
I can find companionship when I want it				
I am unhappy being so withdrawn				
People are around me but not with me				

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

For the following questions, please think about what it might be like if you had COVID-19. Obviously, you cannot know for sure what it would be like; please give your best estimate of what you think might happen, basing your estimate on what you know about yourself and the illness in general. If you have had the coronavirus, please answer the following questions to indicate what you experienced.

Please select one response for each set of questions.

If I had COVID-19…
- I would still be able to enjoy things in my life quite a lot
- I would still be able to enjoy things in my life a little
- I would be almost completely unable to enjoy things in my life
- I would be completely unable to enjoy life at all

If I had COVID-19…
- There is a good chance that modern medicine would be able to cure me
- There is a moderate chance that modern medicine would be able to cure me
- There is a very small chance that modern medicine would be able to cure me
- There is no chance that modern medicine would be able to cure me

Having COVID-19…
- Would ruin some aspects of my life
- Would ruin many aspects of my life
- Would ruin almost every aspect of my life
- Would ruin every aspect of my life

If I had COVID-19, I would feel that…
- I had not lost my dignity
- I had lost a little of my dignity
- I had lost quite a lot of my dignity
- I had totally lost my dignity

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

During the lockdown (23 March to 23 May 2020), has your household experienced any of the financial hardships listed below?

	No	Yes
You delayed filling a medical prescription because you did not have enough money to cover the cost		
You were unable to pay a mortgage, rent or a utility bill		
You were evicted for non-payment		
A utility service was disconnected		
A phone service was disconnected		
There was a time the household did not have enough money to purchase needed food		

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

Have you experienced any of the following **as a result** of COVID-19 and its effects?

	No	Yes
Personal illness		
Decline in the health of a close family member		
Lost a job		
Stopped working or studying		
Decreased work hours or conditions		
Increased stress while at work		
Increased stress about your job security		
Increased financial stress		
Closure or major readjustment of your own business		
Divorce or separation		
More arguments with spouse		
Children or other family members leaving home		
Changed where you live		
Decline in living conditions		

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

During the lockdown (23 March to 23 May 2020) period, have you increased or decreased any of the following?

	Greatly decreased	Somewhat decreased	About the same	Somewhat increased	Greatly increased
Consumption of alcohol					
Use of cigarettes, or other tobacco products					
Use of recreational drugs					
Exercise					
Hobbies					
Better personal relationships					
A healthy diet					
A healthy sleeping pattern					
Playing video games					
Watching video game competitions, known as esports					

If this survey has raised any issues for you, please call Lifeline on 13 11 14.

Demographics

Do you currently live in a metropolitan, regional, or rural location?
- Metropolitan
- Regional
- Rural

Which of the following best describes your current marital status? (Please select one response)
- Single/never married
- Living with partner/de facto
- Married
- Divorced or separated
- Widowed

Which of the following best describes your household?   (Please select one response)
- Single person
- One parent family with children
- Couple with children
- Couple with no children
- Group household
- Other (please specify) _____

What was your highest educational qualification? (Please select one response)
- No schooling
- Did not complete primary school
- Completed primary school
- Year 10 or equivalent
- Year 12 or equivalent
- A trade, technical certificate or diploma
- A university or college degree
- Postgraduate qualification

Which of the following best describes what you currently do?
- Work full-time
- Work part-time or casual
- Self-employed
- Unemployed and looking for work
- Full-time student
- Full-time home duties
- Retired
- Sick or disability pension
- Other (please specify) _____

Since they became available or were increased due to COVID-19, have you received any of the following payments from the government?

	No	Yes
JobKeeper payments		
JobSeeker or other income support payments (e.g. Youth Allowance, Parenting Payment, Austudy, ABSTUDY, Farm Household Allowance, or Special Benefit)		
A stimulus payment, e.g. $750 economic support payment		

Before COVID-19, what was your fortnightly household income before taxes? Please include all sources of income, e.g. wages, salary, income from investments, JobKeeper, JobSeeker, and any other government benefits.

($ per fortnight)

What is your **current fortnightly household income before taxes**? Please include all sources of income, e.g. wages, salary, income from investments, JobKeeper, JobSeeker, and any other government benefits.

($ per fortnight)

In which country were you born?
- Australia
- Other (please specify) _____

What was the main language that you speak at home? (Please select one response)

- English
- A language other than English (please specify) _____

For statistical purposes, are you of Aboriginal or Torres Strait Island origin?

- No
- Yes, Aboriginal
- Yes, Torres Strait islander
- Yes, both Aboriginal and Torres Strait islander

You can sign up to take part in future research studies, including a follow-up for this study. If you would like to do so, please provide your email address and indicate that you would like to be invited for future studies.

You do not have to take part in all future studies, and can opt out if you change your mind. Your email address will only be used to notify you about future research opportunities and will not be shared with any third parties.

I would like to be invited to take part in future research:

(If you select yes, you will be asked to enter and confirm your email address on the next screen)

- No
- Yes, I would like to take part in future studies

Appendix D. Detailed survey results

The tables below show detailed analysis results that were used to inform the chapters in the main body of the report. All analyses are bivariate unless noted otherwise. Where a table contains a comparison between two groups, bold text is used to indicate a statistically significant higher proportion or mean. If three or more groups are included in a comparison, subscripts are used to indicate statistically significant subscripts. Groups that have any of the same subscripts as another group are not statistically significant from that other group. For example, if Group 1 has the subscript *a*, Group 2 has the subscript *b*, and Group 3 has the subscript *a,b*, then Groups 1 and 2 are statistically significantly different from each other on that variable, but Group 3 is not statistically significantly different to either Groups 1 or 2.

Time 1 & Time 2

Table D.1 Factors associated with transitions in overall gambling participation, T1-2, (N = 2125)

Variable	Sustained n = 1611 (75.8%)	Ceased n = 514 (24.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	
Variables at T1:			
PGSI	**2.81 (5.20)**	0.76 (2.30)	$F_{(1,2123)} = 75.581$, $p < .001$
Variables at T2:			
Age (years)	**51.06 (16.55)**	48.30 (16.45)	$F_{(1,2123)} = 10.849$, $p = .001$
Education	6.07 (1.29)	**6.35 (1.23)**	$F_{(1,2123)} = 18.166$, $p < .001$
Unhealthy behaviours	13.88 (3.44)	14.01 (3.21)	$F_{(1,2123)} = 0.573$, $p = .449$
Healthy behaviours	14.98 (3.33)	14.78 (3.37)	$F_{(1,2123)} = 1.310$, $p = .253$
Perceived stress	9.44 (3.21)	9.66 (3.33)	$F_{(1,2123)} = 1.800$, $p = .180$
K6	11.57 (5.81)	12.14 (5.67)	$F_{(1,2123)} = 3.803$, $p = .051$
Loneliness	17.70 (4.84)	**18.44 (4.53)**	$F_{(1,2123)} = 9.356$, $p = .002$
Health anxiety from COVID	7.58 (2.76)	7.66 (2.66)	$F_{(1,2123)} = 0.285$, $p = .593$
Financial hardship	**6.47 (1.16)**	6.31 (1.01)	$F_{(1,2123)} = 8.785$, $p = .003$
Stressful life events	16.11 (2.74)	16.00 (2.21)	$F_{(1,2123)} = 0.670$, $p = .413$
	n (%)	n (%)	
Gender*			
Male	**898 (55.8)**	183 (35.7)	$\chi^2 = 63.334$, $p < .001$
Female	710 (44.2)	**330 (64.3)**	
Residence			
Metropolitan	1102 (68.4)	356 (69.3)	$\chi^2 = 0.133$, $p = .716$
Regional / rural	509 (31.6)	158 (30.7)	
Marital status			
Single / never married / separated / widowed	547 (34.0)	196 (38.1)	$\chi^2 = 2.992$, $p = .084$
Living with partner / married	1064 (66.0)	318 (61.9)	
Employment			
Full Time / part Time / casual / self-employed	939 (58.3)	315 (61.3)	$\chi^2 = 1.447$, $p = .229$
Unemployed / student / home-duties / retired / pension / other	672 (41.7)	199 (38.7)	

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count.
Bold text indicates statistically significant higher percentages in that row.

Table D.2 Factors associated with transitions in EGM participation, T1-2, (N = 2125)

Variable	Abstained n = 1131 (53.2%)	Commenced n = 16 (0.8%)	Sustained n = 204 (9.6%)	Ceased n = 774 (36.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	1.00a (2.90)	7.50b (5.98)	8.98b (7.37)	2.38c (4.46)	F (3,2121) = 221.850, *p* < .001
Variables at T2:					
Age (years)	51.64a (15.89)	40.50b (17.08)	38.56b (15.13)	51.89a (16.61)	F (3,2121) = 43.249, *p* < .001
Education	6.21a (1.29)	5.56a,b (1.75)	6.24a,b (1.30)	6.02b (1.23)	F (3,2121) = 5.274, *p* = .001
Unhealthy behaviours	13.76a (3.32)	15.44a,b (2.48)	14.71b (4.14)	13.89a (3.25)	F (3,2121) = 5.705, *p* < .001
Healthy behaviours	14.95a (3.12)	15.50a,b (3.16)	15.68b (3.97)	14.70a (3.45)	F (3,2121) = 4.808, *p* = .002
Perceived stress	9.32a (3.17)	10.69a,b (2.63)	11.04b (3.10)	9.32a (3.28)	F (3,2121) = 18.486, *p* < .001
K6	11.18a (5.54)	13.94a,b (5.45)	14.68b (6.10)	11.65a (5.80)	F (3,2121) = 22.597, *p* < .001
Loneliness	17.35a (4.75)	19.63a,b,c (4.86)	19.97b (4.88)	18.07c (4.61)	F (3,2121) = 19.129, *p* < .001
Health anxiety from COVID	7.33a (2.62)	8.69a,b (3.36)	8.17b (2.89)	7.81b,c (2.80)	F (3,2121) = 9.045, *p* < .001
Financial hardship	6.28a (0.92)	7.81b (2.04)	7.57b (1.76)	6.34a (0.97)	F (3,2121) = 97.382, *p* < .001
Stressful life events	15.70a (2.26)	19.13b (4.24)	18.28b (3.70)	16.00a (2.39)	F (3,2121) = 69.428, *p* < .001
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	585a,b (51.8)	11a,b (68.8)	115b (56.7)	370a (47.9)	χ² = 7.794, *p* = .050
Female	545a,b (48.2)	5a,b (31.3)	88b (43.3)	402a (52.1)	
Residence					
Metropolitan	762 (67.4)	10 (62.5)	146 (71.6)	540 (69.8)	χ² = 2.390, *p* = .495
Regional / rural	369 (32.6)	6 (37.5)	58 (28.4)	234 (30.2)	
Marital status					
Single / never married /	415 (36.7)	4 (25.0)	72 (35.3)	252 (32.6)	χ² = 4.166, *p* = .244

separated / widowed			
Living with partner / married	716 (63.3)	12 (75.0)	132 (64.7)	522 (67.4)
Employment				
Full Time / part Time / casual / self-employed	664$_a$ (58.7)	15$_b$ (93.8)	155$_b$ (76.0)	420$_a$ (54.3)
Unemployed / student / home-duties / retired / pension / other	467$_a$ (41.3)	1$_b$ (6.3)	49$_b$ (24.0)	354$_a$ (45.7)	$\chi^2 = 39.524$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.3 Factors associated with transitions in sports betting participation, T1-2, (N=2125)

Variable	Abstained n = 1289 (60.7%)	Commenced n = 20 (0.9%)	Sustained n = 351 (16.5%)	Ceased n = 465 (21.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	0.93$_a$ (2.73)	5.15$_b$ (5.58)	7.23$_b$ (7.09)	2.33$_c$ (4.40)	$F_{(3,2121)}$ = 213.251, $p < .001$
Variables at T2:					
Age (years)	54.86$_a$ (15.78)	41.85$_{b,c}$ (17.48)	40.18$_b$ (14.11)	46.09$_c$ (15.70)	$F_{(3,2121)}$ = 100.118, $p < .001$
Education	6.04$_a$ (1.30)	6.20$_{a,b}$ (1.20)	6.25$_b$ (1.29)	6.33$_{b,c}$ (1.18)	$F_{(3,2121)}$ = 6.894, $p < .001$
Unhealthy behaviours	13.65$_a$ (3.36)	13.85$_{a,b}$ (3.94)	14.61$_b$ (3.74)	14.09$_{a,b}$ (3.09)	$F_{(3,2121)}$ = 7.955, $p < .001$
Healthy behaviours	14.85 (3.08)	15.60 (4.37)	15.25 (3.88)	14.87 (3.52)	$F_{(3,2121)}$ = 1.638, $p = .179$
Perceived stress	9.17$_a$ (3.28)	11.65$_b$ (4.12)	10.45$_b$ (2.94)	9.58$_a$ (3.12)	$F_{(3,2121)}$ = 18.087, $p < .001$
K6	11.12$_a$ (5.70)	13.95$_{a,b}$ (8.22)	13.67$_b$ (5.64)	11.77$_a$ (5.63)	$F_{(3,2121)}$ = 19.370, $p < .001$
Loneliness	17.75$_a$ (4.71)	18.60$_{a,b}$ (5.93)	18.79$_b$ (4.96)	17.52$_a$ (4.69)	$F_{(3,2121)}$ = 5.663, $p < .001$
Health anxiety from COVID	7.63$_{a,b}$ (2.75)	7.40$_{a,b}$ (2.62)	7.94$_a$ (2.87)	7.28$_b$ (2.56)	$F_{(3,2121)}$ = 3.995, $p = .008$
Financial hardship	6.26$_a$ (0.88)	6.75$_{a,b}$ (1.37)	7.19$_b$ (1.67)	6.34$_a$ (1.00)	$F_{(3,2121)}$ = 69.731, $p < .001$
Stressful life events	15.67$_a$ (2.23)	17.35$_{b,c}$ (4.21)	17.53$_b$ (3.56)	16.08$_c$ (2.27)	$F_{(3,2121)}$ = 51.123, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	538$_a$ (41.8)	6$_a$ (30.0)	240$_b$ (68.6)	297$_b$ (63.9)	χ^2 = 120.818, $p < .001$
Female	748$_a$ (58.2)	14$_a$ (70.0)	110$_b$ (31.4)	168$_b$ (36.1)	
Residence					
Metropolitan	824$_a$ (63.9)	17$_{a,b}$ (85.0)	264$_b$ (75.2)	353$_b$ (75.9)	χ^2 = 34.225, $p < .001$
Regional / rural	465$_a$ (36.1)	3$_{a,b}$ (15.0)	87$_b$ (24.8)	112$_b$ (24.1)	
Marital status					
Single / never married /	470$_a$ (36.5)	10$_{a,b}$ (50.0)	118$_{a,b}$ (33.6)	145$_b$ (31.2)	χ^2 = 6.464, $p = .091$

separated / widowed				
Living with partner / married	819a (63.5)	10a,b (50.0)	233a,b (66.4)	320b (68.8)
Employment				
Full Time / part Time / casual / self-employed	642a (49.8)	15b (75.0)	268b (76.4)	329b (70.8)
Unemployed / student / home-duties / retired / pension / other	647a (50.2)	5b (25.0)	83b (23.6)	136b (29.2)	χ^2 = 117.416, p < .001

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.4 Factors associated with transitions in race betting participation, T1-2, (N=2125)

Variable	Abstained n = 1067 (50.2%)	Commenced n = 30 (1.4%)	Sustained n = 613 (28.8%)	Ceased n = 415 (19.5%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	0.96$_a$ (2.83)	7.90$_b$ (6.91)	4.56$_c$ (6.27)	2.08$_d$ (4.37)	$F_{(3,2121)}$ = 103.316, $p < .001$
Variables at T2:					
Age (years)	52.47$_a$ (16.55)	33.73$_b$ (114.3)	49.15$_c$ (16.77)	48.11$_c$ (15.47)	$F_{(3,2121)}$ = 19.991, $p < .001$
Education	6.15$_{a,b}$ (1.27)	5.87$_{a,b}$ (1.07)	6.02$_a$ (1.36)	6.31$_b$ (1.17)	$F_{(3,2121)}$ = 4.719, $p = .003$
Unhealthy behaviours	13.61$_a$ (3.42)	13.60$_{a,b}$ (4.70)	14.26$_b$ (3.43)	14.17$_{b,c}$ (3.08)	$F_{(3,2121)}$ = 5.989, $p < .001$
Healthy behaviours	14.90 (3.22)	15.30 (4.26)	15.00 (3.44)	14.86 (3.42)	$F_{(3,2121)}$ = 0.302, $p = .824$
Perceived stress	9.42$_a$ (3.30)	11.63$_b$ (2.95)	9.58$_a$ (3.16)	9.41$_a$ (3.17)	$F_{(3,2121)}$ = 4.792, $p = .002$
K6	11.60$_a$ (5.81)	16.16$_b$ (7.06)	11.60$_a$ (5.66)	11.85$_a$ (5.67)	$F_{(3,2121)}$ = 6.198, $p < .001$
Loneliness	17.76 (4.70)	19.17 (6.02)	17.81 (4.90)	18.19 (4.66)	$F_{(3,2121)}$ = 1.558, $p = .198$
Health anxiety from COVID	7.61 (2.72)	8.47 (2.94)	7.53 (2.77)	7.61 (2.70)	$F_{(3,2121)}$ = 1.151, $p = .327$
Financial hardship	6.29$_a$ (0.94)	7.37$_b$ (1.85)	6.66$_c$ (1.36)	6.40$_a$ (1.06)	$F_{(3,2121)}$ = 21.341, $p < .001$
Stressful life events	15.82$_a$ (2.31)	17.03$_{a,b}$ (3.69)	16.39$_b$ (3.06)	16.25$_{b,c}$ (2.50)	$F_{(3,2121)}$ = 8.571, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	448$_a$ (42.1)	16$_{a,b}$ (53.3)	427$_b$ (69.8)	190$_a$ (45.8)	χ² = 124.558, $p < .001$
Female	616$_a$ (57.9)	14$_{a,b}$ (46.7)	185$_b$ (30.2)	225$_a$ (54.2)	
Residence					
Metropolitan	730 (68.4)	25 (83.3)	410 (66.9)	293 (70.6)	χ² = 4.651, $p = .199$
Regional / rural	337 (31.6)	5 (16.7)	203 (33.1)	122 (29.4)	
Marital status					
Single / never married /	386 (36.2)	13 (43.3)	207 (33.8)	137 (33.0)	χ² = 2.694, $p = .441$

separated / widowed				
Living with partner / married	681 (63.8)	17 (56.7)	406 (66.2)	278 (67.0)
Employment				
Full Time / part Time / casual / self-employed	569$_a$ (53.3)	24$_b$ (80.0)	395$_b$ (64.4)	266$_b$ (64.1)
Unemployed / student / home-duties / retired / pension / other	498$_a$ (46.7)	6$_b$ (20.0)	218$_b$ (35.6)	149$_b$ (35.9)	$\chi^2 = 31.615$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.5 Factors associated with transitions in casino games participation, T1-2, (N=2125)

Variable	Abstained n = 1601 (75.3%)	Commenced n = 27 (1.3%)	Sustained n = 170 (8.0%)	Ceased n = 327 (15.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	1.24$_a$ (3.29)	7.56$_b$ (6.55)	10.28$_c$ (7.16)	3.02$_d$ (4.72)	$F_{(3,2121)}$ = 278.461, $p < .001$
Variables at T2:					
Age (years)	53.89$_a$ (15.53)	40.81$_{b,c}$ (17.05)	34.86$_b$ (12.83)	42.12$_c$ (15.27)	$F_{(3,2121)}$ = 121.544, $p < .001$
Education	6.06$_a$ (1.29)	6.22$_{a,b}$ (1.48)	6.31$_{a,b}$ (1.33)	6.43$_b$ (1.12)	$F_{(3,2121)}$ = 8.918, $p < .001$
Unhealthy behaviours	13.66$_a$ (3.33)	13.78$_{a,b,c}$ (3.94)	15.31$_b$ (3.93)	14.42$_c$ (3.11)	$F_{(3,2121)}$ = 15.411, $p < .001$
Healthy behaviours	14.83$_a$ (3.17)	15.22$_{a,b}$ (3.29)	15.80$_b$ (4.05)	14.97$_{a,b}$ (3.67)	$F_{(3,2121)}$ = 4.471, $p = .004$
Perceived stress	9.20$_a$ (3.21)	11.11$_{b,c}$ (3.47)	11.31$_b$ (2.72)	9.84$_c$ (3.26)	$F_{(3,2121)}$ = 26.498, $p < .001$
K6	11.08$_a$ (5.54)	16.26$_b$ (7.51)	15.38$_b$ (5.60)	12.50$_c$ (5.91)	$F_{(3,2121)}$ = 38.689, $p < .001$
Loneliness	17.51$_a$ (4.69)	19.41$_{a,b,c}$ (6.12)	20.26$_b$ (4.69)	18.35$_c$ (4.69)	$F_{(3,2121)}$ = 19.867, $p < .001$
Health anxiety from COVID	7.52$_a$ (2.70)	7.96$_{a,b}$ (2.99)	8.13$_b$ (2.81)	7.69$_{a,b}$ (2.85)	$F_{(3,2121)}$ = 2.852, $p = .036$
Financial hardship	6.26$_a$ (0.88)	7.26$_b$ (1.61)	7.75$_b$ (1.74)	6.54$_c$ (1.26)	$F_{(3,2121)}$ = 110.729, $p < .001$
Stressful life events	15.64$_a$ (2.21)	17.15$_b$ (3.18)	18.86$_c$ (3.67)	16.72$_b$ (2.74)	$F_{(3,2121)}$ = 98.972, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	777$_a$ (48.6)	16$_{a,b}$ (59.3)	108$_b$ (63.9)	180$_b$ (55.2)	χ^2 = 18.024, $p < .001$
Female	822$_a$ (51.5)	11$_{a,b}$ (39.3)	61$_b$ (36.1)	146$_b$ (44.8)	
Residence					
Metropolitan	1041$_a$ (65.0)	16$_{a,b}$ (59.3)	129$_{b,c}$ (75.9)	272$_c$ (83.2)	χ^2 = 47.077, $p < .001$
Regional / rural	560$_a$ (35.0)	11$_{a,b}$ (40.7)	41$_{b,c}$ (24.1)	55$_c$ (16.8)	
Marital status					
Single / never married /	545 (34.0)	11 (40.7)	59 (34.7)	128 (39.1)	χ^2 = 3.513, $p = .319$

separated / widowed				
Living with partner / married	1056 (66.0)	16 (59.3)	111 (65.3)	199 (60.9)
Employment				
Full Time / part Time / casual / self-employed	860$_a$ (53.7)	21$_{b,c}$ (77.8)	143$_c$ (84.1)	230$_b$ (70.3)
Unemployed / student / home-duties / retired / pension / other	741$_a$ (46.3)	6$_{b,c}$ (22.2)	27$_c$ (15.9)	97$_b$ (29.7)	$\chi^2 = 84.129$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.6 Factors associated with transitions in lotteries participation, T1-2, (N=2125)

Variable	Abstained n = 317 (14.9%)	Commenced n = 27 (1.3%)	Sustained n = 1280 (60.2%)	Ceased n = 501 (23.6%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	1.72$_{a,c}$ (3.52)	4.04$_{a,b}$ (6.77)	2.79$_b$ (5.31)	1.38$_c$ (3.42)	$F_{(3,2121)} = 13.858$, $p < .001$
Variables at T2:					
Age (years)	47.26$_a$ (18.12)	42.16$_a$ (15.71)	52.34$_b$ (16.16)	47.89$_a$ (15.84)	$F_{(3,2121)} = 16.571$, $p < .001$
Education	6.25$_{a,b}$ (1.32)	6.26$_{a,b}$ (1.20)	6.05$_a$ (1.28)	6.29$_b$ (1.24)	$F_{(3,2121)} = 5.200$, $p = .001$
Unhealthy behaviours	13.98 (3.13)	12.89 (4.27)	13.82 (3.51)	14.13 (3.18)	$F_{(3,2121)} = 1.826$, $p = .140$
Healthy behaviours	14.87 (3.46)	13.78 (4.15)	14.97 (3.25)	14.93 (3.45)	$F_{(3,2121)} = 1.171$, $p = .319$
Perceived stress	9.51 (3.17)	10.37 (2.13)	9.43 (3.23)	9.61 (3.35)	$F_{(3,2121)} = 1.035$, $p = .376$
K6	12.09 (6.11)	13.11 (5.34)	11.51 (5.80)	11.91 (5.52)	$F_{(3,2121)} = 1.722$, $p = .160$
Loneliness	17.57 (5.02)	18.41 (4.66)	17.85 (4.78)	18.14 (4.60)	$F_{(3,2121)} = 1.067$, $p = .362$
Health anxiety from COVID	7.55 (2.84)	6.52 (2.33)	7.65 (2.78)	7.55 (2.55)	$F_{(3,2121)} = 1.645$, $p = .177$
Financial hardship	6.31 (0.99)	6.70 (1.41)	6.49 (1.17)	6.36 (1.09)	$F_{(3,2121)} = 3.502$, $p = .015$
Stressful life events	15.63$_a$ (2.10)	17.52$_b$ (3.96)	16.17$_c$ (2.80)	16.07$_{a,c}$ (2.29)	$F_{(3,2121)} = 6.367$, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	167$_a$ (52.7)	13$_{a,b}$ (48.1)	677$_a$ (53.0)	224$_b$ (44.9)	$\chi^2 = 9.892$, $p = .020$
Female	150$_a$ (47.3)	14$_{a,b}$ (51.9)	601$_a$ (47.0)	275$_b$ (55.1)	
Residence					
Metropolitan	238$_a$ (75.1)	18$_{a,b}$ (66.7)	868$_b$ (67.8)	334$_b$ (66.7)	$\chi^2 = 7.463$, $p = .059$
Regional / rural	79$_a$ (24.9)	9$_{a,b}$ (34.3)	412$_b$ (32.2)	167$_b$ (33.3)	
Marital status					
Single / never married /	123$_{a,b}$ (38.8)	14$_b$ (51.9)	429$_a$ (33.5)	177$_{a,b}$ (35.3)	$\chi^2 = 6.649$, $p = .048$

separated / widowed				
Living with partner / married	194[a,b] (61.2)	13[b] (48.1)	851[a] (66.5)	324[a,b] (64.7)
Employment				
Full Time / part Time / casual / self-employed	173[a] (54.6)	20[b,c] (74.1)	741[a,c] (57.9)	320[b] (63.9)
Unemployed / student / home-duties / retired / pension / other	144[a] (45.5)	7[b,c] (25.9)	539[a,c] (42.1)	181[b] (36.1)	$\chi^2 = 10.672$, $p = .014$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.7 Factors associated with transitions in novel gambling forms participation, T1-2, (N=2125)

Variable	Abstained n = 1823 (85.8%)	Commenced n = 21 (1.0%)	Sustained n = 193 (9.1%)	Ceased n = 88 (4.1%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	1.72$_{a,c}$ (3.52)	4.04$_{a,b}$ (6.77)	2.79$_b$ (5.31)	1.38$_c$ (3.42)	F (3,2121) = 312.955, *p* < .001
Variables at T2:					
Age (years)	52.77$_a$ (15.93)	41.76$_{b,c}$ (11.78)	33.60$_b$ (11.72)	40.06$_c$ (13.38)	F (3,2121) = 105.520, *p* < .001
Education	6.10$_a$ (1.27)	6.29$_{a,b}$ (1.15)	6.41$_b$ (1.36)	6.28$_{a,b}$ (1.18)	F (3,2121) = 3.980, *p* = .008
Unhealthy behaviours	13.73$_a$ (3.27)	15.14$_{a,b}$ (3.28)	15.50$_b$ (3.91)	13.72$_a$ (3.70)	F (3,2121) = 17.145, *p* < .001
Healthy behaviours	14.86$_a$ (3.16)	14.81$_{a,b}$ (4.49)	15.70$_b$ (4.33)	14.78$_{a,b}$ (3.92)	F (3,2121) = 3.778, *p* = .010
Perceived stress	9.23$_a$ (3.21)	10.33$_{a,b}$ (3.68)	11.46$_b$ (2.63)	10.55$_{b,c}$ (3.36)	F (3,2121) = 32.693, *p* < .001
K6	11.16$_a$ (5.57)	13.67$_{a,b}$ (6.73)	15.70$_b$ (5.49)	13.89$_{b,c}$ (6.41)	F (3,2121) = 43.683, *p* < .001
Loneliness	17.63$_a$ (4.68)	17.10$_a$ (4.53)	20.12$_b$ (5.00)	18.39$_a$ (5.07)	F (3,2121) = 16.777, *p* < .001
Health anxiety from COVID	7.51$_a$ (2.72)	7.71$_{a,b}$ (3.13)	8.33$_b$ (2.73)	7.91$_{a,b}$ (2.88)	F (3,2121) = 5.670, *p* < .001
Financial hardship	6.26$_a$ (0.88)	7.10$_b$ (1.55)	7.88$_c$ (1.80)	6.70$_b$ (1.32)	F (3,2121) = 148.686, *p* < .001
Stressful life events	15.72$_a$ (2.23)	18.19$_{b,c}$ (3.39)	18.85$_b$ (3.70)	17.08$_c$ (2.98)	F (3,2121) = 106.051, *p* < .001
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	888$_a$ (48.8)	16$_b$ (76.2)	128$_b$ (67.0)	49$_{a,b}$ (55.7)	χ² = 28.349, *p* < .001
Female	933$_a$ (51.2)	5$_b$ (23.8)	63$_b$ (33.0)	39$_{a,b}$ (44.3)	
Residence					
Metropolitan	1219$_a$ (66.9)	15$_{a,b,c}$ (71.4)	147$_c$ (76.2)	77$_b$ (87.5)	χ² = 22.344, *p* < .001
Regional / rural	604$_a$ (33.1)	6$_{a,b,c}$ (28.6)	46$_c$ (23.8)	11$_b$ (12.5)	
Marital status					
Single / never	644 (35.3)	4 (19.0)	62 (32.1)	33 (37.5)	χ² = 3.378, *p* = .337

married / separated / widowed				
Living with partner / married	1179 (64.7)	17 (81.0)	131 (67.9)	55 (62.5)
Employment				
Full Time / part Time / casual / self-employed	1012$_a$ (55.5)	17$_b$ (81.0)	159$_b$ (82.4)	66$_b$ (75.0)
Unemployed / student / home-duties / retired / pension / other	811$_a$ (44.5)	4$_b$ (19.0)	34$_b$ (17.6)	22$_b$ (25.0)	$\chi^2 = 65.291$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.8 Factors associated with transitions in online gambling participation, T1-2, (N=2125)

Variable	Abstained n = 962 (45.3%)	Commenced n = 102 (4.8%)	Sustained n = 1031 (48.5%)	Ceased n = 30 (1.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:					
PGSI	0.85_a (2.66)	2.41_b (4.49)	3.65_b (5.77)	$3.00_{a,b}$ (5.56)	$F_{(3,2121)} = 62.689$, $p < .001$
Variables at T2:					
Age (years)	53.01_a (16.22)	53.10_a (15.39)	47.68_b (16.64)	$50.27_{a,b}$ (15.19)	$F_{(3,2121)} = 18.549$, $p < .001$
Education	6.16 (1.26)	6.08 (1.28)	6.13 (1.29)	6.20 (1.35)	$F_{(3,2121)} = 0.199$, $p = .897$
Unhealthy behaviours	13.81 (3.24)	13.84 (3.46)	14.00 (3.51)	13.77 (3.51)	$F_{(3,2121)} = 0.546$, $p = .615$
Healthy behaviours	14.91 (3.22)	14.27 (3.28)	15.03 (3.46)	14.63 (2.71)	$F_{(3,2121)} = 1.697$, $p = .166$
Perceived stress	9.24_a (3.26)	$9.62_{a,b}$ (3.40)	9.71_b (3.21)	$9.90_{a,b}$ (2.44)	$F_{(3,2121)} = 3.690$, $p = .011$
K6	11.42 (5.63)	11.63 (5.84)	11.97 (5.89)	12.50 (6.04)	$F_{(3,2121)} = 1.672$, $p = .171$
Loneliness	17.95 (4.50)	18.28 (4.82)	17.80 (5.00)	17.20 (5.24)	$F_{(3,2121)} = 0.603$, $p = .613$
Health anxiety from COVID	7.57 (2.72)	7.79 (2.86)	7.62 (2.76)	7.33 (1.86)	$F_{(3,2121)} = 0.335$, $p = .800$
Financial hardship	6.29_a (0.98)	$6.40_{a,b}$ (1.07)	6.57_b (1.25)	$6.57_{a,b}$ (1.07)	$F_{(3,2121)} = 10.437$, $p < .001$
Stressful life events	15.81_a (2.30)	$16.36_{a,b}$ (2.66)	16.30_b (2.86)	$16.60_{a,b}$ (2.80)	$F_{(3,2121)} = 6.682$, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	406_a (42.2)	37_a (36.3)	622_b (60.5)	$16_{a,b}$ (53.3)	$\chi^2 = 75.542$, $p < .001$
Female	555_a (57.8)	65_a (63.7)	406_b (39.5)	$14_{a,b}$ (46.7)	
Residence					
Metropolitan	661 (68.7)	77 (75.5)	701 (68.0)	19 (63.3)	$\chi^2 = 2.817$, $p = .421$
Regional / rural	301 (31.3)	25 (24.5)	330 (32.0)	11 (36.7)	
Marital status					
Single / never	337 (35.0)	35 (34.3)	358 (34.7)	13 (43.3)	$\chi^2 = 0.971$, $p = .808$

married / separated / widowed				
Living with partner / married	625 (65.0)	67 (65.7)	673 (65.3)	17 (56.7)
Employment				
Full Time / part Time / casual / self-employed	524a (54.4)	58a,b (56.9)	659b (63.9)	13a (43.3)
Unemployed / student / home-duties / retired / pension / other	438a (45.5)	44a,b (43.1)	372b (36.1)	17a (56.7)	$\chi^2 = 21.711$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.9 Factors associated with changes in EGM frequency, T1-2, (n = 994)

Variable	Decreased n = 818 (82.3%)	Same n = 93 (9.4%)	Increased n = 83 (8.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:				
PGSI	2.85_a (5.01)	6.66_b (7.63)	10.08_c (6.6)	$F_{(2,991)} = 80.355$, $p < .001$
Variables at T2:				
Age (years)	50.95_a (16.85)	42.57_b (16.48)	36.63_b (14.49)	$F_{(2,991)} = 35.527$, $p < .001$
Education	6.04 (1.23)	6.15 (1.24)	6.11 (1.53)	$F_{(2,991)} = 0.417$, $p = .659$
Unhealthy behaviours	13.91_a (3.30)	$14.38_{a,b}$ (4.21)	15.40_b (3.80)	$F_{(2,991)} = 7.418$, $p < .001$
Healthy behaviours	14.75_a (3.53)	15.70_b (3.66)	$15.64_{a,b}$ (3.81)	$F_{(2,991)} = 4.829$, $p = .008$
Perceived stress	9.45_a (3.31)	10.43_b (3.43)	11.29_b (2.48)	$F_{(2,991)} = 14.607$, $p < .001$
K6	11.91_a (5.91)	14.11_b (6.51)	14.27_b (5.41)	$F_{(2,991)} = 10.667$, $p = < .001$
Loneliness	18.22_a (4.65)	19.48_b (5.19)	19.98_b (4.64)	$F_{(2,991)} = 7.612$, $p < .001$
Health anxiety from COVID	7.86 (2.82)	7.76 (2.76)	8.46 (3.02)	$F_{(2,991)} = 1.802$, $p = .165$
Financial hardship	6.42_a (1.07)	7.27_b (1.84)	7.77_c (1.78)	$F_{(2,991)} = 59.611$, $p < .001$
Stressful life events	16.17_a (2.53)	17.62_b (3.87)	18.78_c (3.75)	$F_{(2,991)} = 40.871$, $p < .001$
	n (%)	n (%)	n (%)	
Gender*				
Male	393_a (48.2)	$53_{a,b}$ (57.6)	50_b (60.2)	$\chi^2 = 6.714$, $p = .035$
Female	423_a (51.8)	$39_{a,b}$ (42.4)	33_b (39.8)	
Residence				
Metropolitan	575 (70.3)	64 (68.8)	57 (68.7)	$\chi^2 = 0.165$, $p = .921$
Regional / rural	243 (29.7)	29 (31.2)	26 (31.3)	
Marital status				
Single / never married / separated / widowed	267 (32.6)	33 (35.5)	28 (33.7)	$\chi^2 = 0.328$, $p = .849$
Living with partner / married	551 (67.4)	60 (64.5)	55 (66.3)	
Employment				
Full Time / part Time / casual / self-employed	457_a (55.9)	64_b (68.8)	70_c (83.3)	$\chi^2 = 27.026$, $p < .001$
Unemployed / student / home-duties / retired / pension / other	361_a (44.1)	29_b (31.2)	14_c (16.7)	

Note. * 3 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.10 Factors associated with changes in sports betting frequency, T1-2, (n = 836)

Variable	Decreased n = 604 (72.2%)	Same n = 145 (17.3%)	Increased n = 87 (10.4%)	Inferential statistic
Variables at T1:	Mean (SD)	Mean (SD)	Mean (SD)	
PGSI	3.27_a (5.2)	6.93_b (7.55)	8.54_b (7.03)	$F_{(2,833)}$ = 46.154, $p < .001$
Variables at T2:				
Age (years)	44.85_a (15.45)	40.92_b (14.74)	38.52_b (14.31)	$F_{(2,833)}$ = 9.145, $p < .001$
Education	6.31 (1.25)	6.14 (1.21)	6.40 (1.07)	$F_{(2,833)}$ = 1.585, $p = .206$
Unhealthy behaviours	14.18 (3.17)	14.75 (3.84)	14.41 (4.12)	$F_{(2,833)}$ = 1.722, $p = .179$
Healthy behaviours	14.94 (3.57)	15.30 (3.85)	15.38 (4.27)	$F_{(2,833)}$ = 0.951, $p = .387$
Perceived stress	9.73_a (3.06)	10.43_b (3.21)	11.17_b (2.93)	$F_{(2,833)}$ = 10.128, $p < .001$
K6	12.10_a (5.54)	$13.28_{a,b}$ (5.96)	15.09_b (6.39)	$F_{(2,833)}$ = 11.614, $p < .001$
Loneliness	17.83 (4.69)	18.66 (5.15)	18.91 (5.47)	$F_{(2,833)}$ = 3.102, $p = .045$
Health anxiety from COVID	7.41 (2.60)	7.95 (2.97)	7.93 (2.93)	$F_{(2,833)}$ = 3.259, $p = .039$
Financial hardship	6.48_a (1.14)	7.17_b (1.76)	7.46_b (1.77)	$F_{(2,833)}$ = 30.932, $p < .001$
Stressful life events	16.37_a (2.59)	17.37_b (3.80)	18.03_b (3.74)	$F_{(2,833)}$ = 16.197, $p < .001$
	n (%)	n (%)	n (%)	
Gender*				
Male	401_a (66.4)	$94_{a,b}$ (65.3)	48_b (55.2)	$χ^2$ = 4.213, $p = .122$
Female	203_a (33.6)	$50_{a,b}$ (34.7)	39_b (44.8)	
Residence				
Metropolitan	459 (76.0)	108 (74.5)	67 (77.0)	$χ^2$ = 0.219, $p = .896$
Regional / rural	145 (24.0)	37 (25.5)	20 (23.0)	
Marital status				
Single / never married / separated / widowed	189 (31.3)	54 (37.2)	30 (34.5)	$χ^2$ = 2.030, $p = .362$
Living with partner / married	415 (68.7)	91 (62.8)	57 (65.5)	
Employment				
Full Time / part Time / casual / self-employed	437 (72.4)	104 (71.7)	71 (81.6)	$χ^2$ = 3.519, $p = .172$
Unemployed / student / home-duties / retired / pension / other	167 (27.6)	41 (28.3)	16 (18.4)	

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.11 Factors associated with changes in race betting frequency, T1-2, (n = 1058)

Variable	Decreased n = 519 (49.1%)	Same n = 360 (34.0%)	Increased n = 179 (16.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:				
PGSI	2.84_a (5.24)	3.35_a (5.39)	6.79_b (6.95)	$F_{(2,1055)} = 33.846$, $p < .001$
Variables at T2:				
Age (years)	47.75_a (15.38)	52.28_b (16.65)	41.91_c (16.18)	$F_{(2,1055)} = 25.844$, $p < .001$
Education	6.27_a (1.20)	5.89_b (1.36)	6.20_a (1.34)	$F_{(2,1055)} = 9.299$, $p < .001$
Unhealthy behaviours	14.17 (3.16)	14.14 (3.28)	14.46 (3.93)	$F_{(2,1055)} = 0.610$, $p = .544$
Healthy behaviours	14.93 (3.49)	15.00 (3.08)	14.94 (4.04)	$F_{(2,1055)} = 0.037$, $p = .964$
Perceived stress	9.49_a (3.13)	9.28_a (3.21)	10.37_b (3.15)	$F_{(2,1055)} = 7.376$, $p < .001$
K6	11.94_a (5.63)	10.91_b (5.57)	13.34_c (6.09)	$F_{(2,1055)} = 11.095$, $p < .001$
Loneliness	18.22_a (4.73)	17.32_b (4.85)	18.74_a (5.05)	$F_{(2,1055)} = 6.167$, $p = .002$
Health anxiety from COVID	7.65 (2.71)	7.37 (2.76)	7.85 (2.85)	$F_{(2,1055)} = 2.095$, $p = .124$
Financial hardship	6.51_a (1.18)	6.46_a (1.22)	7.02_b (1.56)	$F_{(2,1055)} = 13.461$, $p < .001$
Stressful life events	16.42_a (2.69)	15.91_b (2.89)	17.06_c (3.20)	$F_{(2,1055)} = 9.856$, $p < .001$
	n (%)	n (%)	n (%)	
Gender*				
Male	259_a (49.9)	257_b (71.6)	117_b (65.4)	$\chi^2 = 44.227$, $p < .001$
Female	260_a (50.1)	102_b (28.4)	62_b (34.6)	
Residence				
Metropolitan	363 (69.9)	235 (65.3)	130 (72.6)	$\chi^2 = 3.617$, $p = .164$
Regional / rural	156 (30.1)	125 (34.7)	49 (27.4)	
Marital status				
Single / never married / separated / widowed	170 (32.8)	129 (35.8)	58 (32.4)	$\chi^2 = 1.074$, $p = .585$
Living with partner / married	349 (67.2)	231 (64.2)	121 (67.6)	
Employment				
Full Time / part Time / casual / self-employed	$340_{a,b}$ (65.5)	214_b (59.4)	131_a (73.2)	$\chi^2 = 10.150$, $p = .006$
Unemployed / student / home-duties / retired / pension / other	$179_{a,b}$ (34.5)	146_b (40.6)	48_a (26.8)	

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.12 Factors associated with changes in casino games frequency, T1-2, (n = 524)

Variable	Decreased n = 369 (70.4%)	Same n = 67 (12.8%)	Increased n = 88 (16.8%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:				
PGSI	4.04_a (5.84)	7.97_b (7.53)	10.36_b (6.32)	$F_{(2,521)}$ = 43.036, $p < .001$
Variables at T2:				
Age (years)	40.74 (15.13)	38.03 (15.11)	36.59 (13.76)	$F_{(2,521)}$ = 3.226, $p = .041$
Education	6.42 (1.16)	6.28 (1.35)	6.31 (1.29)	$F_{(2,521)}$ = 0.549, $p = .578$
Unhealthy behaviours	14.56 (3.14)	14.67 (3.93)	15.17 (4.28)	$F_{(2,521)}$ = 1.110, $p = .330$
Healthy behaviours	15.12 (3.68)	15.45 (4.14)	15.65 (4.01)	$F_{(2,521)}$ = 0.784, $p = .457$
Perceived stress	10.01_a (3.20)	$10.99_{a,b}$ (3.57)	11.47_b (2.36)	$F_{(2,521)}$ = 9.085, $p < .001$
K6	12.90_a (5.93)	$14.46_{a,b}$ (6.39)	16.02_b (5.77)	$F_{(2,521)}$ = 10.477, $p < .001$
Loneliness	18.59_a (4.73)	$19.85_{a,b}$ (4.66)	20.24_b (5.25)	$F_{(2,521)}$ = 5.33, $p = .005$
Health anxiety from COVID	7.81 (2.88)	7.61 (2.69)	8.16 (2.82)	$F_{(2,521)}$ = 0.788, $p = .455$
Financial hardship	6.73_a (1.41)	7.21_b (1.49)	7.81_c (1.85)	$F_{(2,521)}$ = 19.250, $p < .001$
Stressful life events	17.10_a (3.01)	$17.73_{a,b}$ (3.56)	18.64_b (3.64)	$F_{(2,521)}$ = 8.543, $p < .001$
	n (%)	n (%)	n (%)	
Gender*				
Male	203_a (55.2)	46_b (69.7)	$55_{a,b}$ (62.5)	χ^2 = 5.651, $p = .059$
Female	165_a (44.8)	20_b (30.3)	$33_{a,b}$ (37.5)	
Residence				
Metropolitan	304_a (82.4)	$49_{a,b}$ (73.1)	64_b (72.7)	χ^2 = 6.042, $p = .049$
Regional / rural	65_a (17.6)	$18_{a,b}$ (26.9)	24_b (27.3)	
Marital status				
Single / never married / separated / widowed	141 (38.2)	28 (41.8)	29 (33.0)	χ^2 = 1.359, $p = .507$
Living with partner / married	228 (61.8)	39 (58.2)	59 (67.0)	
Employment				
Full Time / part Time / casual / self-employed	266_a (72.1)	$53_{a,b}$ (79.1)	75_b (85.2)	χ^2 = 7.208, $p = .027$
Unemployed / student / home-duties / retired / pension / other	103_a (27.9)	$14_{a,b}$ (20.9)	13_b (14.8)	

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.13 Factors associated with changes in lotteries frequency, T1-2, (n = 1808)

Variable	Decreased n = 717 (39.7%)	Same n = 865 (47.8%)	Increased n = 226 (12.5%)	Inferential statistic
Variables at T1:	Mean (SD)	Mean (SD)	Mean (SD)	
PGSI	2.24$_a$ (4.65)	1.86$_a$ (4.34)	5.15$_b$ (6.71)	F (2,1805) = 42.611, p < .001
Variables at T2:				
Age (years)	47.46$_a$ (16.12)	54.82$_b$ (15.26)	47.14$_a$ (16.78)	F (2,1805) = 50.049, p < .001
Education	6.27$_a$ (1.24)	5.99$_b$ (1.28)	6.15$_{a,b}$ (1.32)	F (2,1805) = 9.539, p < .001
Unhealthy behaviours	14.07 (3.37)	13.67 (3.44)	14.19 (3.57)	F (2,1805) = 3.544, p = .029
Healthy behaviours	15.00 (3.50)	15.03 (3.00)	14.45 (3.82)	F (2,1805) = 2.843, p = .058
Perceived stress	9.57$_a$ (3.29)	9.18$_b$ (3.23)	10.44$_c$ (3.05)	F (2,1805) = 14.088, p < .001
K6	11.96$_a$ (5.60)	10.94$_b$ (5.58)	13.35$_c$ (6.15)	F (2,1805) = 18.129, p < .001
Loneliness	17.91$_a$ (4.72)	17.61$_a$ (4.69)	19.27$_b$ (4.68)	F (2,1805) = 11.249, p < .001
Health anxiety from COVID	7.59 (2.56)	7.54 (2.80)	7.92 (2.86)	F (2,1805) = 1.741, p = .176
Financial hardship	6.47$_a$ (1.23)	6.35$_a$ (0.97)	6.80$_b$ (1.46)	F (2,1805) = 13.780, p < .001
Stressful life events	16.25$_a$ (2.59)	15.84$_b$ (2.54)	17.14$_c$ (3.29)	F (2,1805) = 22.030, p < .001
Gender*	n (%)	n (%)	n (%)	
Male	325$_a$ (45.5)	471$_b$ (54.6)	118$_{a,b}$ (52.2)	χ² = 13.266, p = .001
Female	390$_a$ (54.5)	392$_b$ (45.4)	108$_{a,b}$ (47.8)	
Residence				
Metropolitan	499 (69.6)	567 (65.5)	154 (68.1)	χ² = 2.977, p = .226
Regional / rural	218 (30.4)	298 (34.5)	72 (31.9)	
Marital status				
Single / never married / separated / widowed	237 (33.1)	301 (34.8)	82 (36.3)	χ² = 0.983, p = .612
Living with partner / married	480 (66.9)	564 (65.2)	144 (63.7)	
Employment				

Full Time / part Time / casual / self-employed	462$_a$ (64.4)	467$_b$ (54.0)	152$_a$ (67.3)	
Unemployed / student / home-duties / retired / pension / other	255$_a$ (35.6)	398$_b$ (46.0)	74$_a$ (32.7)	$\chi^2 = 23.786, p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.14 Factors associated with changes in novel gambling forms frequency, T1-2, (n = 302)

Variable	Decreased n = 152 (50.3)	Same n = 44 (14.6)	Increased n = 106 (35.1)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:				
PGSI	7.66 (7.48)	7.95 (7.48)	9.50 (6.61)	$F_{(2,299)} = 2.129$, $p = .121$
Variables at T2:				
Age (years)	36.52 (12.62)	36.23 (14.03)	35.29 (12.10)	$F_{(2,299)} = 0.299$, $p = .742$
Education	6.30 (1.27)	6.45 (1.27)	6.42 (1.34)	$F_{(2,299)} = 0.393$, $p = .675$
Unhealthy behaviours	14.65 (4.04)	15.34 (3.75)	15.23 (3.69)	$F_{(2,299)} = 0.943$, $p = .391$
Healthy behaviours	15.39 (4.38)	15.95 (4.14)	15.10 (4.07)	$F_{(2,299)} = 0.628$, $p = .535$
Perceived stress	10.97 (3.07)	11.05 (3.50)	11.34 (2.55)	$F_{(2,299)} = 0.488$, $p = .614$
K6	14.77 (6.14)	15.48 (7.10)	15.23 (5.00)	$F_{(2,299)} = 0.330$, $p = .719$
Loneliness	19.23 (5.23)	20.80 (5.00)	19.08 (4.84)	$F_{(2,299)} = 1.964$, $p = .142$
Health anxiety from COVID	8.12 (2.77)	8.61 (2.90)	8.03 (2.81)	$F_{(2,299)} = 0.706$, $p = .494$
Financial hardship	7.25_a (1.61)	$7.39_{a,b}$ (1.83)	7.85_b (1.83)	$F_{(2,299)} = 3.856$, $p = .022$
Stressful life events	17.89 (3.40)	18.11 (3.80)	18.92 (3.63)	$F_{(2,299)} = 2.707$, $p = .068$
	n (%)	n (%)	n (%)	
Gender*				
Male	88_a (58.3)	33_b (76.7)	$72_{a,b}$ (67.9)	$\chi^2 = 5.895$, $p = .052$
Female	63_a (41.7)	10_b (23.3)	$34_{a,b}$ (32.1)	
Residence				
Metropolitan	123 (80.9)	35 (79.5)	81 (76.4)	$\chi^2 = 0.773$, $p = .679$
Regional / rural	29 (19.1)	9 (20.5)	25 (23.6)	
Marital status				
Single / never married / separated / widowed	51 (33.6)	18 (40.9)	30 (28.3)	$\chi^2 = 2.325$, $p = .313$
Living with partner / married	101 (66.4)	26 (59.1)	76 (71.7)	
Employment				
Full Time / part Time / casual / self-employed	117 (77.0)	35 (79.5)	90 (84.9)	$\chi^2 = 2.479$, $p = .290$
Unemployed / student / home-duties / retired / pension / other	35 (23.0)	9 (20.5)	16 (15.1)	

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.15 Factors associated with changes in online gambling frequency, T1-2, (n = 1163)

Variable	Decreased n = 66 (5.7%)	Same n = 556 (47.8%)	Increased n = 541 (46.5%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T1:				
PGSI	6.33_a (7.25)	3.29_b (5.64)	3.42_b (5.4)	$F(2,1160) = 8.771$, $p < .001$
Variables at T2:				
Age (years)	44.48 (17.24)	48.12 (17.17)	48.79 (15.75)	$F(2,1160) = 2.020$, $p = .133$
Education	6.14 (1.38)	6.05 (1.37)	6.20 (1.19)	$F(2,1160) = 1.929$, $p = .146$
Unhealthy behaviours	14.00 (4.14)	13.79 (3.71)	14.18 (3.19)	$F(2,1160) = 1.745$, $p = .175$
Healthy behaviours	15.03 (3.35)	15.13 (3.47)	14.76 (3.41)	$F(2,1160) = 1.562$, $p = .210$
Perceived stress	10.21 (2.63)	9.79 (3.26)	9.55 (3.21)	$F(2,1160) = 1.647$, $p = .193$
K6	13.70_a (5.37)	$11.87_{a,b}$ (6.09)	11.82_b (5.72)	$F(2,1160) = 3.099$, $p = .045$
Loneliness	$18.79_{a,b}$ (4.55)	17.24_a (5.17)	18.31_b (4.78)	$F(2,1160) = 7.728$, $p < .001$
Health anxiety from COVID	8.11 (2.70)	7.53 (2.79)	7.67 (2.72)	$F(2,1160) = 1.369$, $p = .255$
Financial hardship	7.20_a (1.53)	6.58_b (1.31)	6.45_b (1.06)	$F(2,1160) = 11.250$, $p < .001$
Stressful life events	17.68_a (3.76)	16.10_b (2.90)	16.37_b (2.59)	$F(2,1160) = 9.533$, $p < .001$
	n (%)	n (%)	n (%)	
Gender*				
Male	38 (57.6)	326 (58.8)	311 (57.6)	$\chi^2 = 0.187$, $p = .911$
Female	28 (42.4)	228 (41.2)	229 (42.4)	
Residence				
Metropolitan	44 (66.7)	371 (66.7)	382 (70.6)	$\chi^2 = 2.030$, $p = .362$
Regional / rural	22 (33.3)	185 (33.3)	159 (29.4)	
Marital status				
Single / never married / separated / widowed	23 (34.8)	200 (36.0)	183 (33.8)	$\chi^2 = 0.555$, $p = .758$
Living with partner / married	43 (65.2)	356 (64.0)	358 (66.2)	
Employment				
Full Time / part Time / casual / self-employed	39 (59.1)	349 (62.8)	342 (63.2)	$\chi^2 = 0.428$, $p = .807$
Unemployed / student / home-duties / retired / pension / other	27 (40.9)	207 (37.2)	199 (36.8)	

Note. * 3 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.16 Factors associated with changes in harmful gambling, T1-2, (N = 2125)

Variable	0 at both Times (No problems) n = 1319 (62.1%)	1+ to 0 (Problems decreased) n = 318 (15.0%)	1+ at both Times (Sustained problems) n = 463 (21.8%)	0 to 1+ (Problems increased) n = 25 (1.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Age (years)	53.83_a (15.74)	46.87_b (16.68)	43.40_c (16.15)	$43.24_{b,c}$ (13.48)	$F_{(3,2121)}$ = 57.006, $p < .001$
Education	6.11 (1.27)	6.17 (1.25)	6.16 (1.32)	6.68 (1.11)	$F_{(3,2121)}$ = 1.786, $p = .148$
Unhealthy behaviours	13.73_a (3.21)	$13.81_{a,b}$ (3.35)	14.44_b (3.83)	$14.52_{a,b}$ (3.48)	$F_{(3,2121)}$ = 5.431, $p = .001$
Healthy behaviours	15.01_a (2.96)	14.78_a (3.83)	14.93_a (3.88)	12.48_b (4.10)	$F_{(3,2121)}$ = 4.994, $p = .002$
Perceived stress	8.87_a (3.24)	9.95_b (3.04)	10.85_c (2.81)	$11.36_{b,c}$ (3.81)	$F_{(3,2121)}$ = 51.496, $p < .001$
K6	10.53_a (5.49)	12.89_b (5.49)	14.15_c (5.74)	$13.80_{b,c}$ (7.06)	$F_{(3,2121)}$ = 55.380, $p < .001$
Loneliness	17.07_a (4.58)	18.47_b (4.55)	19.81_c (4.84)	$17.64_{a,b,c}$ (5.27)	$F_{(3,2121)}$ = 41.975, $p < .001$
Health anxiety from COVID	7.34_a (2.67)	7.90_b (2.80)	8.11_b (2.79)	$8.36_{a,b}$ (2.77)	$F_{(3,2121)}$ = 11.421, $p < .001$
Financial hardship	6.21_a (0.81)	6.36_a (1.03)	7.13_b (1.61)	6.48_a (1.00)	$F_{(3,2121)}$ = 85.449, $p < .001$
Stressful life events	15.51_a (2.10)	16.28_b (2.45)	17.52_c (3.35)	$17.24_{b,c}$ (3.29)	$F_{(3,2121)}$ = 77.087, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	615_a (46.7)	163_a (51.4)	292_b (63.1)	$11_{a,b}$ (44.0)	χ^2 = 37.079, $p < .001$
Female	701_a (53.3)	154_a (48.6)	171_b (36.9)	$14_{a,b}$ (56.0)	
Residence					
Metropolitan	865_a (65.6)	241_b (75.8)	334_b (72.1)	$18_{a,b}$ (72.0)	χ^2 = 16.037, $p = .001$
Regional / rural	454_a (34.4)	77_b (24.2)	129_b (27.9)	$7_{a,b}$ (28.0)	
Marital status					
Single / never married / separated / widowed	461 (35.0)	110 (34.6)	166 (35.9)	6 (24.0)	χ^2 = 1.502, $p = .682$

Living with partner / married	858 (65.0)	208 (65.4)	297 (64.1)	19 (76.0)
Employment				
Full Time / part Time / casual / self-employed	716a (54.3)	197b (61.9)	322c (69.5)	19b,c (76.0)
Unemployed / student / home-duties / retired / pension / other	603a (45.7)	121b (38.1)	141c (30.5)	6b,c (24.0)	$\chi^2 = 37.552$, $p < .001$

Note. * 4 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.17 Mixed model ANOVAs for PGSI scores and categorical variables, T1-2

	Gender					
	Male			**Female**		
T1 Mean (SD)	T2 Mean (SD)	Simple effect	T1 Mean (SD)	T2 Mean (SD)	Simple effect	Interaction
2.80 (5.21)	2.09 (4.88)	-0.705, $p <$ .001	1.82 (4.17)	1.25 (3.78)	-0.573, $p <$ .001	$F (1,2119) =$ 1.342, $p = .247$

	Location					
	Metropolitan			**Regional / rural**		
T1 Mean (SD)	T2 Mean (SD)	Simple effect	T1 Mean (SD)	T2 Mean (SD)	Simple effect	Interaction
2.46 (4.80)	1.74 (4.46)	-0.719, $p <$ .001	2.00 (4.63)	1.54 (4.24)	-0.465, $p <$ .001	$F (1,2123) =$ 4.340, $p = .037$

	Relationship					
	Single / never married / separated / widowed			**Living with partner / married**		
T1 Mean (SD)	T2 Mean (SD)	Simple effect	T1 Mean (SD)	T2 Mean (SD)	Simple effect	Interaction
2.45 (4.83)	1.65 (4.30)	-0.795, $p <$ .001	2.24 (4.71)	1.69 (4.44)	-0.556, $p <$ .001	$F (1,2123) =$ 4.058, $p = .044$

	Employment					
	Full Time / part Time / casual / self-employed			**Unemployed / student / home-duties / retired / pension / other**		
T1 Mean (SD)	T2 Mean (SD)	Simple effect	T1 Mean (SD)	T2 Mean (SD)	Simple effect	Interaction
2.90 (5.38)	2.26 (5.14)	-0.641, $p <$ .001	1.48 (3.49)	0.84 (2.80)	-0.637, $p <$ .001	$F (1,2123) =$ 0.001, $p = .973$

Table D.18 Linear regressions for PGSI scores and continuous variables, T1-2

Variable	Slope	*p*	μ - 1*SD*	μ	μ + 1*SD*
Age	.005	.177	-0.70	-0.62	-0.54
Education	.068	.128	-0.72	-0.64	-0.55
Unhealthy behaviours	.004	.830	-0.65	-0.63	-0.62
Healthy behaviours	-.026	.120	-0.55	-0.63	-0.72
Perceived stress	-.061	< .001	-0.45	-0.64	-0.84
K6	-.042	< .001	-0.40	-0.64	-0.88
Loneliness	-.032	.007	-0.48	-0.64	-0.79
Health anxiety from COVID	-.050	.015	-0.50	-0.64	-0.77
Financial hardship	-.110	.028	-0.51	-0.64	-0.76
Stressful life events	-.026	.228	-0.57	-0.64	-0.70

Table D.19 Overall gambling participation and changes in PGSI, T1-2, (N = 2125)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Sustained (n = 1611)	**2.81 (5.20)**	2.21 (4.92)	$t(1610) = 8.916$, $p < .001$
Ceased (n = 514)	**0.76 (2.30)**	0.00 (0.00)	$t(513) = 7.456$, $p < .001$

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.20 EGM frequency and changes in PGSI, T1-2, (n = 994)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Decreased (n = 818)	**2.85 (5.00)**	1.68 (4.15)	$t(817) = 10.102$, $p < .001$
Same (n = 93)	6.65 (7.62)	6.53 (7.85)	$t(92) = 0.327$, $p = .744$
Increased (n = 83)	10.08 (6.60)	10.54 (7.02)	$t(82) = -1.172$, $p = .245$

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.21 Sports betting frequency and changes in PGSI, T1-2, (n = 836)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Decreased (n = 604)	**3.26 (5.20)**	2.12 (4.59)	$t(603) = 8.547$, $p < .001$
Same (n = 145)	**6.93 (7.55)**	6.30 (7.63)	$t(144) = 2.353$, $p = .020$
Increased (n = 87)	8.54 (7.02)	8.52 (7.37)	$t(86) = 0.026$, $p = .979$

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.22 Race betting frequency and changes in PGSI, T1-2, (n = 1058)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Decreased (n = 519)	**2.83 (5.24)**	1.62 (4.32)	$t(518) = 8.385$, $p < .001$
Same (n = 360)	**3.35 (5.39)**	2.99 (5.48)	$t(359) = 3.425$, $p < .001$
Increased (n = 179)	6.78 (6.95)	6.34 (7.15)	$t(178) = 1.464$, $p = .145$

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.23 Casino games frequency and changes in PGSI, T1-2, (n = 524)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Decreased (n = 369)	**4.04 (5.84)**	2.74 (5.27)	$t(368) = 7.929$, $p < .001$
Same (n = 67)	7.97 (7.52)	7.65 (7.27)	$t(66) = 0.611$, $p = .543$
Increased (n = 88)	10.36 (6.31)	9.94 (7.08)	$t(87) = 0.789$, $p = .432$

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.24 Online gambling frequency and changes in PGSI, T1-2, (n = 1163)

	T1 PGSI Mean (SD)	T2 PGSI Mean (SD)	Inferential statistic
Decreased (n = 66)	**6.33 (7.25)**	5.50 (7.41)	$t(65) = 2.032$, $p = 0.46$
Same (n = 556)	**3.29 (5.63)**	3.01 (5.76)	$t(555) = 2.926$, $p = .004$
Increased (n = 541)	**3.41 (5.40)**	2.48 (4.82)	$t(540) = 6.367$, $p < .001$

Note. Bold text indicates statistically significant higher percentages in that row.

Time 2 & Time 3

Table D.25 Factors associated with transitions in overall gambling participation, T2-3, (N = 649)

Variable	Abstained n = 65 (10.0%)	Commenced n = 67 (10.3%)	Sustained n = 486 (74.9%)	Ceased n = 31 (4.8%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.00$_a$ (0.00)	0.00$_a$ (0.00)	1.56$_b$ (4.03)	0.29$_{a,b}$ (0.94)	$F_{(3,645)} = 7.561$, $p < .001$
Variables at T3:					
Age (years)	55.23 (14.18)	58.21 (14.27)	59.26 (13.46)	56.00 (15.17)	$F_{(3,645)} = 2.071$, $p = .103$
Education	6.52$_a$ (1.45)	6.25$_{a,b}$ (1.24)	6.02$_b$ (1.31)	6.19$_{a,b}$ (1.17)	$F_{(3,645)} = 3.138$, $p = .025$
Unhealthy behaviours	13.68 (2.92)	13.69 (3.21)	13.09 (3.50)	13.68 (3.09)	$F_{(3,645)} = 1.217$, $p = .303$
Healthy behaviours	14.88 (2.47)	14.12 (2.32)	15.01 (3.03)	15.19 (2.86)	$F_{(3,645)} = 1.941$, $p = .122$
Perceived stress	8.71 (2.77)	9.10 (3.69)	8.91 (3.23)	8.71 (3.23)	$F_{(3,645)} = 0.201$, $p = .896$
K6	10.77 (5.14)	10.99 (5.76)	10.20 (5.21)	11.13 (5.09)	$F_{(3,645)} = 0.805$, $p = .491$
Loneliness	18.20 (4.22)	17.70 (4.65)	17.34 (4.58)	17.58 (4.51)	$F_{(3,645)} = 0.747$, $p = .524$
Health anxiety from COVID	7.26 (2.46)	7.22 (2.78)	6.71 (2.55)	6.97 (2.36)	$F_{(3,645)} = 1.533$, $p = .205$
Financial hardship	6.12 (0.48)	6.21 (0.59)	6.28 (0.89)	6.23 (0.76)	$F_{(3,645)} = 0.775$, $p = .508$
Stressful life events	15.20 (1.81)	15.25 (1.94)	15.47 (2.35)	15.77 (2.83)	$F_{(3,645)} = 0.636$, $p = .592$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	28$_a$ (43.1)	33$_a$ (50.0)	322$_b$ (66.4)	13$_a$ (41.9)	$\chi^2 = 22.829$, $p < .001$
Female	37$_a$ (56.9)	33$_a$ (50.0)	163$_b$ (33.6)	18$_a$ (58.1)	
Residence					
Metropolitan	43 (66.2)	47 (70.1)	311 (64.0)	24 (77.4)	$\chi^2 = 3.091$, $p = .378$
Regional / rural	22 (33.8)	20 (29.9)	175 (36.0)	7 (22.6)	

Marital status					
Single / never married / separated / widowed	16 (24.6)	20 (29.9)	149 (30.7)	11 (35.5)	χ² = 1.425, *p* = .700
Living with partner / married	49 (75.4)	47 (70.1)	337 (69.3)	20 (64.5)	
Employment					
Full Time / part Time / casual / self-employed	40 (61.5)	34 (50.7)	247 (50.8)	16 (51.6)	
Unemployed / student / home-duties / retired / pension / other	25 (38.5)	33 (49.3)	239 (49.2)	15 (48.4)	χ² = 2.681, *p* = .443

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.26 Factors associated with transitions in EGM participation, T2-3, (N = 649)

Variable	Abstained n = 485 (74.7%)	Commenced n = 123 (19.0%)	Sustained n = 24 (3.7%)	Ceased n = 17 (2.6%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.73$_a$ (2.58)	1.26$_a$ (3.52)	8.08$_b$ (7.93)	3.59$_c$ (6.34)	$F_{(3,645)}$ = 42.154, $p < .001$
Variables at T3:					
Age (years)	58.99$_a$ (13.49)	59.78$_a$ (13.41)	44.83$_b$ (14.71)	58.00$_a$ (12.33)	$F_{(3,645)}$ = 8.788, $p < .001$
Education	6.19$_a$ (1.34)	5.79$_b$ (1.21)	6.25$_{a,b}$ (1.19)	5.76$_{a,b}$ (1.30)	$F_{(3,645)}$ = 3.573, $p = .014$
Unhealthy behaviours	13.16 (3.32)	13.04 (3.77)	14.71 (3.13)	14.76 (2.70)	$F_{(3,645)}$ = 2.870, $p = .036$
Healthy behaviours	14.93 (2.84)	14.89 (2.78)	15.25 (4.41)	14.06 (3.34)	$F_{(3,645)}$ = 0.601, $p = .614$
Perceived stress	8.78$_a$ (3.18)	8.72$_a$ (3.02)	11.42$_b$ (3.59)	9.88$_{a,b}$ (4.30)	$F_{(3,645)}$ = 5.834, $p < .001$
K6	9.95$_a$ (4.75)	10.74$_{a,c}$ (5.75)	14.96$_b$ (6.84)	13.76$_{b,c}$ (8.19)	$F_{(3,645)}$ = 10.091, $p < .001$
Loneliness	17.25$_a$ (4.36)	17.53$_a$ (4.87)	20.33$_b$ (5.36)	19.53$_{a,b}$ (4.56)	$F_{(3,645)}$ = 4.803, $p = .003$
Health anxiety from COVID	6.68 (2.48)	7.15 (2.51)	7.63 (3.20)	7.59 (3.78)	$F_{(3,645)}$ = 2.478, $p = .060$
Financial hardship	6.18$_a$ (0.67)	6.32$_{a,c}$ (1.00)	7.00$_b$ (1.59)	6.76$_{b,c}$ (1.35)	$F_{(3,645)}$ = 10.482, $p < .001$
Stressful life events	15.26$_a$ (2.00)	15.46$_a$ (2.37)	18.08$_b$ (4.14)	16.47$_{a,b}$ (3.30)	$F_{(3,645)}$ = 13.576, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	301 (62.3)	74 (60.2)	11 (45.8)	10 (58.8)	χ^2 = 2.738, $p = .434$
Female	182 (37.7)	49 (39.8)	13 (54.2)	7 (41.2)	
Residence					
Metropolitan	321 (66.2)	74 (60.2)	17 (70.8)	13 (76.5)	χ^2 = 2.858, $p = .414$
Regional / rural	164 (33.8)	49 (39.8)	7 (29.2)	4 (23.5)	
Marital status					
Single / never married /	153 (31.5)	31 (25.2)	6 (25.0)	6 (35.3)	χ^2 = 2.391, $p = .495$

separated / widowed				
Living with partner / married	332 (68.5)	92 (74.8)	18 (75.0)	11 (64.7)
Employment				
Full Time / part Time / casual / self-employed	249 (51.3)	61 (49.6)	17 (70.8)	10 (58.8)	
Unemployed / student / home-duties / retired / pension / other	236 (48.7)	62 (50.4)	7 (29.2)	7 (41.2)	$\chi^2 = 4.096$, *p* = .251

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.27 Factors associated with transitions in sports betting participation, T2-3, (N = 649)

Variable	Abstained n = 455 (70.1%)	Commenced n = 104 (16.0%)	Sustained n = 76 (11.7%)	Ceased n = 14 (2.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.50_a (2.16)	1.69_b (4.13)	4.58_c (6.46)	$1.00_{a,b}$ (1.88)	$F_{(3,645)} = 33.987$, $p < .001$
Variables at T3:					
Age (years)	61.00_a (12.83)	52.98_b (14.42)	51.68_b (14.37)	$59.50_{a,b}$ (9.06)	$F_{(3,645)} = 18.207$, $p < .001$
Education	6.03 (1.33)	6.31 (1.30)	6.25 (1.28)	6.29 (1.27)	$F_{(3,645)} = 1.698$, $p = .166$
Unhealthy behaviours	13.14 (3.43)	13.45 (3.29)	13.54 (3.55)	13.43 (2.56)	$F_{(3,645)} = 0.485$, $p = .693$
Healthy behaviours	14.84 (2.77)	15.07 (2.87)	15.14 (3.42)	14.86 (4.54)	$F_{(3,645)} = 0.355$, $p = .785$
Perceived stress	8.84 (3.25)	8.83 (3.08)	9.37 (3.24)	8.71 (4.01)	$F_{(3,645)} = 0.616$, $p = .605$
K6	10.27 (5.27)	10.00 (4.52)	11.38 (5.27)	11.71 (8.85)	$F_{(3,645)} = 1.475$, $p = .220$
Loneliness	17.36 (4.44)	17.22 (5.0)	18.46 (4.35)	17.93 (5.33)	$F_{(3,645)} = 1.449$, $p = .227$
Health anxiety from COVID	6.95 (2.55)	6.57 (2.50)	6.39 (2.48)	7.36 (3.46)	$F_{(3,645)} = 1.616$, $p = .184$
Financial hardship	6.21 (0.74)	6.28 (0.91)	6.46 (1.12)	6.50 (1.02)	$F_{(3,645)} = 2.530$, $p = .056$
Stressful life events	15.29 (2.05)	15.65 (2.61)	15.93 (2.86)	16.00 (3.04)	$F_{(3,645)} = 2.473$, $p = .061$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	232_a (51.2)	90_b (86.5)	64_b (84.2)	$10_{a,b}$ (71.4)	$\chi^2 = 64.710$, $p < .001$
Female	221_a (48.8)	14_b (13.5)	12_b (15.8)	$4_{a,b}$ (28.6)	
Residence					
Metropolitan	286_a (62.9)	$72_{a,b}$ (69.2)	57_b (75.0)	$10_{a,b}$ (71.4)	$\chi^2 = 5.299$, $p = .151$
Regional / rural	169_a (37.1)	$32_{a,b}$ (30.8)	19_b (25.0)	$4_{a,b}$ (28.6)	
Marital status					
Single / never	141 (31.0)	26 (25.0)	25 (32.9)	4 (28.6)	$\chi^2 = 1.748$, $p = .626$

married / separated / widowed				
Living with partner / married	314 (69.0)	78 (75.0)	51 (67.1)	10 (71.4)
Employment				
Full Time / part Time / casual / self-employed	206$_a$ (45.3)	75$_b$ (72.1)	47$_b$ (61.8)	9$_{a,b}$ (64.3)
Unemployed / student / home-duties / retired / pension / other	249$_a$ (54.7)	29$_b$ (27.9)	29$_b$ (38.2)	5$_{a,b}$ (35.7)	$\chi^2 = 28.896$, $p < .001$

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.28 Factors associated with transitions in race betting participation, T2-3, (N = 649)

Variable	Abstained n = 389 (59.9%)	Commenced n = 33 (5.1%)	Sustained n = 200 (30.8%)	Ceased n = 27 (4.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.29$_a$ (1.61)	1.79$_{a,b}$ (4.05)	2.93$_b$ (5.33)	0.33$_a$ (1.04)	$F_{(3,645)}$ = 28.404, $p < .001$
Variables at T3:					
Age (years)	59.43$_a$ (13.51)	52.09$_b$ (15.91)	58.37$_{a,b}$ (13.55)	56.07$_{a,b}$ (13.75)	$F_{(3,645)}$ = 3.303, $p = .020$
Education	6.20 (1.32)	6.27 (0.98)	5.94 (1.34)	5.85 (1.43)	$F_{(3,645)}$ = 2.172, $p = .090$
Unhealthy behaviours	13.07 (3.48)	13.91 (3.43)	13.52 (3.23)	12.74 (3.37)	$F_{(3,645)}$ = 1.405, $p = .240$
Healthy behaviours	14.87 (2.94)	15.24 (3.36)	14.96 (2.77)	14.81 (3.13)	$F_{(3,645)}$ = 0.201, $p = .896$
Perceived stress	8.93 (3.29)	9.55 (3.16)	8.63 (3.07)	9.56 (3.71)	$F_{(3,645)}$ = 1.288, $p = .278$
K6	10.45 (5.31)	11.58 (5.11)	9.90 (4.97)	11.63 (6.45)	$F_{(3,645)}$ = 1.659, $p = .175$
Loneliness	17.38 (4.46)	18.30 (5.05)	17.47 (4.59)	17.93 (4.85)	$F_{(3,645)}$ = 0.509, $p = .676$
Health anxiety from COVID	6.97 (2.64)	6.85 (2.24)	6.60 (2.49)	6.56 (2.26)	$F_{(3,645)}$ = 1.048, $p = .371$
Financial hardship	6.25 (0.82)	6.48 (1.33)	6.23 (0.77)	6.30 (0.67)	$F_{(3,645)}$ = 0.968, $p = .407$
Stressful life events	15.38$_a$ (2.08)	16.61$_b$ (3.52)	15.33$_a$ (2.36)	15.70$_{a,b}$ (2.35)	$F_{(3,645)}$ = 3.287, $p = .020$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	197$_a$ (50.9)	23$_{b,c}$ (69.7)	160$_c$ (80.0)	16$_{a,b}$ (59.3)	χ^2 = 48.093, $p < .001$
Female	190$_a$ (49.1)	10$_{b,c}$ (30.3)	40$_c$ (20.0)	11$_{a,b}$ (40.7)	
Residence					
Metropolitan	256 (65.8)	26 (78.8)	124 (62.0)	19 (70.4)	χ^2 = 3.962, $p = .266$
Regional / rural	133 (34.2)	7 (21.2)	76 (38.0)	8 (29.6)	
Marital status					
Single / never married /	115 (29.6)	10 (30.3)	62 (31.0)	9 (33.3)	χ^2 = 0.262, $p = .967$

separated / widowed				
Living with partner / married	274 (70.4)	23 (69.7)	138 (69.0)	18 (66.7)
Employment				
Full Time / part Time / casual / self-employed	194 (49.9)	22 (66.7)	106 (53.0)	15 (55.6)
Unemployed / student / home-duties / retired / pension / other	195 (50.1)	11 (33.3)	94 (47.0)	12 (44.4)	χ^2 = 3.765, *p* = .288

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.29 Factors associated with transitions in casino games participation, T2-3, (N = 649)

Variable	Abstained n = 595 (91.7%)	Commenced n = 26 (4.0%)	Sustained n = 12 (1.8%)	Ceased n = 16 (2.5%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.82_a (2.75)	2.81_b (5.85)	11.67_c (6.73)	4.06_b (6.89)	$F_{(3,645)}$ = 52.283, $p < .001$
Variables at T3:					
Age (years)	59.52_a (13.25)	49.46_b (15.44)	36.92_c (10.07)	$54.94_{a,b}$ (12.47)	$F_{(3,645)}$ = 16.142, $p < .001$
Education	6.09 (1.33)	6.15 (1.29)	6.92 (0.90)	6.00 (1.26)	$F_{(3,645)}$ = 1.587, $p = .191$
Unhealthy behaviours	13.13 (3.37)	14.23 (3.93)	15.33 (3.34)	14.12 (3.32)	$F_{(3,645)}$ = 2.835, $p = .037$
Healthy behaviours	14.89 (2.83)	15.54 (3.66)	15.17 (4.22)	14.50 (3.52)	$F_{(3,645)}$ = 0.548, $p = .649$
Perceived stress	8.73_a (3.15)	$10.12_{a,b}$ (3.12)	12.58_b (3.09)	$10.38_{a,b}$ (4.41)	$F_{(3,645)}$ = 8.347, $p < .001$
K6	10.05_a (4.94)	$12.31_{a,b}$ (5.88)	16.25_b (5.46)	$15.31_{b,c}$ (9.08)	$F_{(3,645)}$ = 12.226, $p < .001$
Loneliness	17.32_a (4.41)	$18.65_{a,b}$ (6.30)	21.00_b (3.69)	$18.81_{a,b}$ (5.49)	$F_{(3,645)}$ = 3.731, $p = .011$
Health anxiety from COVID	6.80 (2.51)	6.88 (2.67)	7.58 (2.94)	7.38 (3.81)	$F_{(3,645)}$ = 0.621, $p = .602$
Financial hardship	6.18_a (0.68)	$7.00_{b,c}$ (1.57)	7.67_b (1.83)	6.81_c (1.38)	$F_{(3,645)}$ = 25.284, $p < .001$
Stressful life events	15.25_a (2.01)	17.23_b (3.69)	19.67_c (3.96)	$16.12_{a,b}$ (3.24)	$F_{(3,645)}$ = 22.884, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	352_a (59.4)	23_b (88.5)	$8_{a,b}$ (66.7)	$13_{a,b}$ (81.3)	χ^2 = 11.844, $p = .008$
Female	241_a (40.6)	3_b (11.5)	$4_{a,b}$ (33.3)	$3_{a,b}$ (18.8)	
Residence					
Metropolitan	385 (64.7)	18 (69.2)	10 (83.3)	12 (75.0)	χ^2 = 2.653, $p = .448$
Regional / rural	210 (35.3)	8 (30.8)	2 (16.7)	4 (25.0)	
Marital status					
Single / never married /	$182_{a,b}$ (30.6)	$6_{a,b}$ (23.1)	1_b (8.3)	7_a (43.8)	χ^2 = 4.784, $p = .188$

separated / widowed				
Living with partner / married	413a,b (69.4)	20a,b (76.9)	11b (91.7)	9a (56.3)
Employment				
Full Time / part Time / casual / self-employed	295a (49.6)	19b (73.1)	11b (91.7)	12b (75.0)
Unemployed / student / home-duties / retired / pension / other	300a (50.4)	7b (26.9)	1b (8.3)	4b (25.0)	$\chi^2 = 16.976$, $p < .001$

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.30 Factors associated with transitions in lotteries participation, T2-3, (N = 649)

Variable	Abstained n = 178 (27.4%)	Commenced n = 60 (9.2%)	Sustained n = 366 (56.4%)	Ceased n = 45 (6.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.62 (2.05)	1.65 (4.96)	1.37 (3.82)	1.18 (3.58)	F (3,645) = 2.184, p = .089
Variables at T3:					
Age (years)	56.54a (14.43)	55.47a,b (14.89)	60.29b (12.95)	57.02a,b (13.97)	F (3,645) = 4.479, p = .004
Education	6.28 (1.34)	6.18 (1.37)	6.02 (1.28)	6.00 (1.41)	F (3,645) = 1.710, p = .164
Unhealthy behaviours	13.58 (3.11)	13.23 (3.33)	13.14 (3.55)	12.73 (3.41)	F (3,645) = 1.052, p = .369
Healthy behaviours	14.69 (2.80)	14.38 (2.88)	15.10 (2.92)	14.93 (3.25)	F (3,645) = 1.536, p = .204
Perceived stress	8.63 (3.24)	9.42 (3.32)	8.95 (3.21)	8.87 (3.29)	F (3,645) = 0.951, p = .415
K6	10.46 (5.23)	10.90 (4.98)	10.20 (5.30)	10.89 (5.44)	F (3,645) = 0.482, p = .695
Loneliness	17.68 (4.51)	17.92 (4.33)	17.29 (4.57)	17.64 (4.84)	F (3,645) = 0.538, p = .656
Health anxiety from COVID	6.97 (2.50)	7.05 (2.79)	6.74 (2.57)	6.71 (2.46)	F (3,645) = 0.510, p = .676
Financial hardship	6.14 (0.56)	6.32 (0.75)	6.30 (0.95)	6.24 (0.77)	F (3,645) = 1.620, p = .184
Stressful life events	15.33 (2.03)	15.30 (1.99)	15.47 (2.35)	15.78 (3.04)	F (3,645) = 0.552, p = .647
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	109 (61.6)	35 (59.3)	225 (61.5)	27 (60.0)	χ² = 0.137, p = .987
Female	68 (38.4)	24 (40.7)	141 (38.5)	18 (40.0)	
Residence					
Metropolitan	119 (66.9)	41 (68.3)	235 (64.2)	30 (66.7)	χ² = 0.655, p = .884
Regional / rural	59 (33.1)	19 (31.7)	131 (35.8)	15 (33.3)	
Marital status					
Single / never married /	46 (25.8)	20 (33.3)	114 (31.1)	16 (35.6)	χ² = 2.651, p = .449

separated / widowed				
* Living with partner / married*	132 (74.2)	40 (66.7)	252 (68.9)	29 (64.4)
Employment				
* Full Time / part Time / casual / self-employed*	103$_a$ (57.9)	32$_{a,b}$ (53.3)	177$_b$ (48.4)	25$_{a,b}$ (55.6)	
Unemployed / student / home-duties / retired / pension / other	75$_a$ (42.1)	28$_{a,b}$ (46.7)	189$_b$ (51.6)	20$_{a,b}$ (44.4)	χ^2 = 4.664, *p* = .198

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.31 Factors associated with transitions in novel gambling forms participation, T2-3, (N = 649)

Variable	Abstained n = 604 (93.1%)	Commenced n = 14 (2.2%)	Sustained n = 18 (2.8%)	Ceased n = 13 (2.0%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.86_a (2.85)	3.79_b (7.51)	8.17_c (7.16)	3.54_b (6.94)	$F(3,645) = 33.706$, $p < .001$
Variables at T3:					
Age (years)	59.58_a (13.22)	47.21_b (11.65)	39.33_b (14.14)	$51.46_{a,b}$ (12.61)	$F(3,645) = 18.616$, $p < .001$
Education	6.08 (1.32)	6.50 (1.22)	6.78 (1.17)	6.00 (1.22)	$F(3,645) = 2.092$, $p = .100$
Unhealthy behaviours	13.08_a (3.38)	15.64_b (3.61)	$14.67_{a,b}$ (3.38)	16.00_b (1.83)	$F(3,645) = 6.839$, $p < .001$
Healthy behaviours	14.90 (2.86)	14.93 (2.97)	15.67 (3.45)	14.46 (4.33)	$F(3,645) = 0.510$, $p = .675$
Perceived stress	8.80 (3.19)	10.00 (3.44)	10.56 (3.07)	9.77 (4.46)	$F(3,645) = 2.626$, $p = .050$
K6	10.19 (5.11)	13.14 (7.11)	12.50 (4.34)	13.54 (8.32)	$F(3,645) = 4.149$, $p = .006$
Loneliness	17.37 (4.50)	18.64 (5.18)	19.56 (4.29)	18.15 (5.65)	$F(3,645) = 1.768$, $p = .152$
Health anxiety from COVID	6.77_a (2.50)	$6.86_{a,b}$ (2.51)	$6.94_{a,b}$ (2.88)	9.23_b (3.96)	$F(3,645) = 3.967$, $p = .008$
Financial hardship	6.19_a (0.69)	6.93_b (1.82)	7.39_b (1.75)	7.08_b (1.44)	$F(3,645) = 21.853$, $p < .001$
Stressful life events	15.30_a (2.08)	$16.36_{a,b}$ (3.73)	18.17_b (4.09)	$17.00_{b,c}$ (3.32)	$F(3,645) = 12.713$, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	361 (60.0)	11 (78.6)	14 (77.8)	10 (76.9)	$\chi^2 = 5.602$, $p = .133$
Female	241 (40.0)	3 (21.4)	4 (22.2)	3 (23.1)	
Residence					
Metropolitan	386_a (63.9)	13_b (92.9)	$15_{a,b}$ (83.3)	$11_{a,b}$ (84.6)	$\chi^2 = 9.948$, $p = .019$
Regional / rural	218_a (36.1)	1_b (7.1)	$3_{a,b}$ (16.7)	$2_{a,b}$ (15.4)	
Marital status					
Single / never married /	186 (30.8)	4 (28.6)	3 (16.7)	3 (23.1)	$\chi^2 = 1.996$, $p = .573$

separated / widowed				
Living with partner / married	418 (69.2)	10 (71.4)	15 (83.3)	10 (76.9)
Employment				
Full Time / part Time / casual / self-employed	300$_a$ (49.7)	11$_b$ (78.6)	16$_b$ (88.9)	10$_{a,b}$ (76.9)
Unemployed / student / home-duties / retired / pension / other	304$_a$ (50.3)	3$_b$ (21.4)	2$_b$ (11.1)	3$_{a,b}$ (23.1)	χ^2 = 18.320, $p < .001$

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.32 Factors associated with transitions in online gambling participation, T2-3, (N = 649)

Variable	Abstained n = 239 (36.8%)	Commenced n = 53 (8.2%)	Sustained n = 317 (48.8%)	Ceased n = 40 (6.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:					
PGSI	0.13_a (0.95)	0.25_a (1.02)	2.16_b (4.73)	$0.95_{a,b}$ (2.37)	$F_{(3,645)} = 17.500$, $p < .001$
Variables at T3:					
Age (years)	61.41_a (12.61)	54.72_b (15.78)	57.75_b (13.84)	53.47_b (13.31)	$F_{(3,645)} = 7.207$, $p < .001$
Education	6.15 (1.37)	6.28 (1.01)	6.03 (1.35)	6.20 (1.11)	$F_{(3,645)} = 0.769$, $p = .512$
Unhealthy behaviours	13.16 (3.39)	14.26 (2.73)	13.14 (3.51)	13.12 (3.33)	$F_{(3,645)} = 1.749$, $p = .156$
Healthy behaviours	15.03 (2.73)	14.40 (2.71)	14.93 (3.00)	14.75 (3.50)	$F_{(3,645)} = 0.729$, $p = .535$
Perceived stress	8.59 (3.03)	9.70 (3.64)	8.97 (3.21)	9.10 (3.89)	$F_{(3,645)} = 1.914$, $p = .126$
K6	10.21 (5.15)	11.47 (5.66)	10.18 (5.01)	11.63 (6.94)	$F_{(3,645)} = 1.752$, $p = .155$
Loneliness	17.49 (4.40)	18.25 (4.62)	17.32 (4.62)	17.65 (4.76)	$F_{(3,645)} = 0.652$, $p = .582$
Health anxiety from COVID	7.14_a (2.75)	$7.19_{a,b}$ (2.73)	6.53_b (2.30)	$6.93_{a,b}$ (2.89)	$F_{(3,645)} = 3.026$, $p = .029$
Financial hardship	6.19_a (0.76)	6.53_b (1.32)	$6.23_{a,b}$ (0.73)	$6.45_{a,b}$ (1.04)	$F_{(3,645)} = 3.240$, $p = .022$
Stressful life events	15.30_a (2.09)	15.94_a (2.68)	15.36_a (2.27)	16.18_a (2.75)	$F_{(3,645)} = 2.686$, $p = .046$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	109_a (45.6)	$35_{b,c}$ (67.3)	231_c (73.1)	$21_{a,b}$ (52.5)	$\chi^2 = 45.417$, $p < .001$
Female	130_a (54.4)	$17_{b,c}$ (32.7)	85_c (26.9)	$19_{a,b}$ (47.5)	
Residence					
Metropolitan	156 (65.3)	36 (67.9)	203 (64.0)	30 (75.0)	$\chi^2 = 2.040$, $p = .564$
Regional / rural	83 (34.7)	17 (32.1)	114 (36.0)	10 (25.0)	
Marital status					
Single / never	67 (28.0)	18 (34.0)	102 (32.2)	9 (22.5)	$\chi^2 = 2.601$, $p = .457$

married / separated / widowed				
Living with partner / married	172 (72.0)	35 (66.0)	215 (67.8)	31 (77.5)
Employment				
Full Time / part Time / casual / self-employed	110$_a$ (46.0)	35$_b$ (66.0)	168$_{a,b}$ (53.0)	24$_{a,b}$ (60.0)
Unemployed / student / home-duties / retired / pension / other	129$_a$ (54.0)	18$_b$ (34.0)	149$_{a,b}$ (47.0)	16$_{a,b}$ (40.0)	$\chi^2 = 8.752$, $p = .033$

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.33 Factors associated with changes in EGM frequency, T2-3, (n = 164)

Variable	Decreased n = 25 (15.2%)	Same n = 8 (4.9%)	Increased n = 131 (79.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	5.84$_a$ (7.60)	7.37$_a$ (7.78)	1.56$_b$ (4.08)	$F_{(2,161)}$ = 11.811, $p < .001$
Variables at T3:				
Age (years)	54.12$_{a,b}$ (14.33)	41.38$_a$ (15.56)	59.02$_b$ (13.74)	$F_{(2,161)}$ = 6.882, $p = .001$
Education	5.88 (1.27)	6.25 (1.28)	5.82 (1.21)	$F_{(2,161)}$ = 0.463, $p = .630$
Unhealthy behaviours	15.16$_a$ (2.43)	14.38$_{a,b}$ (4.41)	13.08$_b$ (3.71)	$F_{(2,161)}$ = 3.795, $p = .025$
Healthy behaviours	14.40 (4.00)	16.13 (3.76)	14.87 (2.88)	$F_{(2,161)}$ = 0.933, $p = .395$
Perceived stress	9.92$_{a,b}$ (3.91)	12.38$_a$ (4.41)	8.92$_b$ (3.10)	$F_{(2,161)}$ = 4.765, $p = .010$
K6	13.92 (7.88)	15.88 (6.88)	10.98 (5.86)	$F_{(2,161)}$ = 4.218, $p = .016$
Loneliness	19.64 (4.62)	21.88 (5.69)	17.63 (4.91)	$F_{(2,161)}$ = 4.183, $p = .017$
Health anxiety from COVID	7.60 (3.66)	8.63 (3.34)	7.12 (2.51)	$F_{(2,161)}$ = 1.340, $p = .265$
Financial hardship	6.72$_{a,b}$ (1.28)	7.75$_a$ (2.25)	6.34$_b$ (1.00)	$F_{(2,161)}$ = 6.724, $p = .002$
Stressful life events	16.96$_{a,b}$ (3.70)	19.25$_a$ (4.86)	15.56$_b$ (2.43)	$F_{(2,161)}$ = 8.468, $p < .001$
	n (%)	n (%)	n (%)	
Gender				
Male	13 (52.0)	4 (50.0)	78 (59.5)	χ^2 = 0.707, $p = .702$
Female	12 (48.0)	4 (50.0)	53 (40.5)	
Residence				
Metropolitan	19 (76.0)	7 (87.5)	78 (59.5)	χ^2 = 4.554, $p = .103$
Regional / rural	6 (24.0)	1 (12.5)	53 (40.5)	
Marital status				
Single / never married / separated / widowed	8 (32.0)	2 (25.0)	33 (25.2)	χ^2 = 0.510, $p = .775$
Living with partner / married	17 (68.0)	6 (75.0)	98 (74.8)	
Employment				
Full Time / part Time / casual / self-employed	16 (64.0)	5 (62.5)	67 (51.1)	χ^2 = 1.660, $p = .436$
Unemployed / student / home-duties / retired / pension / other	9 (36.0)	3 (37.5)	64 (48.9)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.34 Factors associated with changes in sports betting frequency, T2-3, (n = 194)

Variable	Decreased n = 20 (10.3%)	Same n = 20 (10.3%)	Increased n = 154 (79.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	1.75a (3.29)	6.55b (8.75)	2.42a (4.69)	$F_{(2,191)} = 6.200$, $p = .002$
Variables at T3:				
Age (years)	57.15 (11.06)	52.30 (15.26)	52.48 (14.36)	$F_{(2,191)} = 0.986$, $p = .375$
Education	6.10 (1.29)	6.05 (1.19)	6.34 (1.29)	$F_{(2,191)} = 0.671$, $p = .512$
Unhealthy behaviours	12.85 (3.05)	13.95 (2.98)	13.51 (3.42)	$F_{(2,191)} = 0.558$, $p = .574$
Healthy behaviours	14.65 (4.09)	16.20 (3.22)	14.99 (3.08)	$F_{(2,191)} = 1.455$, $p = .236$
Perceived stress	9.05 (3.62)	9.45 (2.96)	8.97 (3.20)	$F_{(2,191)} = 0.193$, $p = .824$
K6	12.05 (8.17)	11.20 (5.07)	10.42 (4.78)	$F_{(2,191)} = 0.976$, $p = .379$
Loneliness	17.70 (4.52)	17.30 (4.41)	17.82 (4.89)	$F_{(2,191)} = 0.107$, $p = .899$
Health anxiety from COVID	7.15 (3.38)	6.25 (1.83)	6.52 (2.54)	$F_{(2,191)} = 0.690$, $p = .503$
Financial hardship	6.35 (0.88)	6.40 (0.88)	6.36 (1.04)	$F_{(2,191)} = 0.014$, $p = .986$
Stressful life events	15.70 (2.75)	15.75 (2.43)	15.81 (2.78)	$F_{(2,191)} = 0.015$, $p = .985$
	n (%)	n (%)	n (%)	
Gender				
Male	15 (75.0)	18 (90.0)	131 (85.1)	$\chi^2 = 1.881$, $p = .390$
Female	5 (25.0)	2 (10.0)	23 (14.9)	
Residence				
Metropolitan	14 (70.0)	13 (65.0)	112 (72.7)	$\chi^2 = 0.550$, $p = .759$
Regional / rural	6 (30.0)	7 (35.0)	42 (27.3)	
Marital status				
Single / never married / separated / widowed	6 (30.0)	6 (30.0)	43 (27.9)	$\chi^2 = 0.067$, $p = .967$
Living with partner / married	14 (70.0)	14 (70.0)	111 (72.1)	
Employment				
Full Time / part Time / casual / self-employed	12 (60.0)	14 (70.0)	105 (68.2)	$\chi^2 = 0.603$, $p = .740$
Unemployed / student / home-duties / retired / pension / other	8 (40.0)	6 (30.0)	49 (31.8)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.35 Factors associated with changes in race betting frequency, T2-3, (n = 260)

Variable	Decreased n = 71 (27.3%)	Same n = 100 (38.5%)	Increased n = 89 (34.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	2.04 (4.33)	2.69 (5.10)	2.70 (5.32)	$F_{(2,257)} = 0.411$, $p = .644$
Variables at T3:				
Age (years)	56.01a (14.17)	61.57b (12.03)	53.62a (14.76)	$F_{(2,257)} = 8.504$, $p < .001$
Education	5.93 (1.29)	5.83 (1.39)	6.17 (1.23)	$F_{(2,257)} = 1.626$, $p = .199$
Unhealthy behaviours	13.39 (3.12)	13.15 (3.26)	13.96 (3.39)	$F_{(2,257)} = 1.473$, $p = .231$
Healthy behaviours	14.85 (2.98)	14.99 (2.67)	15.08 (3.03)	$F_{(2,257)} = 0.130$, $p = .878$
Perceived stress	9.06 (3.24)	8.59 (3.01)	8.96 (3.28)	$F_{(2,257)} = 0.536$, $p = .586$
K6	10.86 (5.85)	9.44 (4.56)	10.80 (5.21)	$F_{(2,257)} = 2.219$, $p = .111$
Loneliness	17.49 (4.48)	17.60 (4.61)	17.75 (4.92)	$F_{(2,257)} = 0.063$, $p = .939$
Health anxiety from COVID	6.75 (2.53)	6.30 (2.29)	6.89 (2.47)	$F_{(2,257)} = 1.511$, $p = .223$
Financial hardship	6.20a,b (0.65)	6.13a (0.49)	6.47b (1.21)	$F_{(2,257)} = 4.237$, $p = .015$
Stressful life events	15.38a,b (2.25)	14.93a (1.59)	16.31b (3.37)	$F_{(2,257)} = 7.389$, $p < .001$
	n (%)	n (%)	n (%)	
Gender				
Male	54 (76.1)	79 (79.0)	66 (74.2)	$\chi^2 = 0.628$, $p = .731$
Female	17 (23.9)	21 (21.0)	23 (25.8)	
Residence				
Metropolitan	49 (69.0)	61 (61.0)	59 (66.3)	$\chi^2 = 1.271$, $p = .530$
Regional / rural	22 (31.0)	39 (39.0)	30 (33.7)	
Marital status				
Single / never married / separated / widowed	21 (29.6)	37 (37.0)	23 (25.8)	$\chi^2 = 2.846$, $p = .241$
Living with partner / married	50 (70.4)	63 (63.0)	66 (74.2)	
Employment				
Full Time / part Time / casual / self-employed	42a (59.2)	42b (42.0)	59a (66.3)	$\chi^2 = 11.909$, $p = .003$
Unemployed / student / home-duties / retired / pension / other	29a (40.8)	58b (58.0)	30a (33.7)	

Note: Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.36 Factors associated with changes in casino games frequency, T2-3, (n = 54)

Variable	Decreased n = 22 (40.7%)	Same n = 4 (7.4%)	Increased n = 28 (51.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	6.91 (7.76)	5.75 (8.02)	3.68 (6.53)	$F_{(2,51)} = 1.272$, $p = .289$
Variables at T3:				
Age (years)	49.73 (14.19)	43.50 (9.47)	47.86 (16.17)	$F_{(2,51)} = 0.314$, $p = .732$
Education	6.32 (1.25)	6.25 (0.96)	6.25 (1.29)	$F_{(2,51)} = 0.019$, $p = .981$
Unhealthy behaviours	14.27 (3.34)	15.50 (3.11)	14.43 (3.94)	$F_{(2,51)} = 0.191$, $p = .827$
Healthy behaviours	14.95 (3.81)	15.25 (4.27)	15.29 (3.68)	$F_{(2,51)} = 0.049$, $p = .952$
Perceived stress	10.50 (3.92)	13.75 (3.10)	10.50 (3.34)	$F_{(2,51)} = 1.527$, $p = .227$
K6	$14.55_{a,b}$ (7.93)	21.75_a (3.30)	12.61_b (5.89)	$F_{(2,51)} = 3.351$, $p = .043$
Loneliness	19.55 (5.23)	20.75 (3.95)	18.75 (6.10)	$F_{(2,51)} = 0.280$, $p = .757$
Health anxiety from COVID	7.23 (3.53)	9.25 (3.20)	6.86 (2.61)	$F_{(2,51)} = 1.077$, $p = .348$
Financial hardship	6.82 (1.26)	8.50 (2.52)	7.11 (1.62)	$F_{(2,51)} = 1.988$, $p = .147$
Stressful life events	16.82 (3.53)	21.00 (4.69)	17.43 (3.72)	$F_{(2,51)} = 2.156$, $p = .126$
	n (%)	n (%)	n (%)	
Gender				
Male	$17_{a,b}$ (77.3)	2_b (50.0)	25_a (89.3)	$\chi^2 = 4.016$, $p = .134$
Female	$5_{a,b}$ (22.7)	2_b (50.0)	3_a (10.7)	
Residence				
Metropolitan	17 (77.3)	3 (75.0)	20 (71.4)	$\chi^2 = 0.221$, $p = .895$
Regional / rural	5 (22.7)	1 (25.0)	8 (28.6)	
Marital status				
Single / never married / separated / widowed	7 (31.8)	0 (0.0)	7 (25.0)	$\chi^2 = 1.810$, $p = .404$
Living with partner / married	15 (68.2)	4 (100.0)	21 (75.0)	
Employment				
Full Time / part Time / casual / self-employed	18 (81.8)	3 (75.0)	21 (75.0)	$\chi^2 = 0.351$, $p = .839$
Unemployed / student / home-duties / retired / pension / other	4 (18.2)	1 (25.0)	7 (25.0)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.37 Factors associated with changes in lotteries frequency, T2-3, (n = 471)

Variable	Decreased n = 116 (24.6%)	Same n = 207 (43.9%)	Increased n = 148 (31.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	1.85a,b (4.60)	0.80a (2.79)	1.85b (4.65)	$F_{(2,468)} = 4.146$, $p = .016$
Variables at T3:				
Age (years)	57.73a (13.07)	61.90b (13.02)	57.09a (13.64)	$F_{(2,468)} = 6.869$, $p = .001$
Education	6.09 (1.34)	5.93 (1.30)	6.15 (1.28)	$F_{(2,468)} = 1.321$, $p = .268$
Unhealthy behaviours	12.91 (3.63)	13.06 (3.47)	13.34 (3.47)	$F_{(2,468)} = 0.517$, $p = .597$
Healthy behaviours	14.74 (3.31)	15.38 (2.74)	14.66 (2.90)	$F_{(2,468)} = 3.214$, $p = .041$
Perceived stress	9.11 (3.22)	8.75 (3.27)	9.25 (3.16)	$F_{(2,468)} = 1.117$, $p = .328$
K6	11.11 (5.60)	9.71 (5.12)	10.68 (5.15)	$F_{(2,468)} = 3.080$, $p = .047$
Loneliness	17.72 (4.77)	17.06 (4.48)	17.63 (4.50)	$F_{(2,468)} = 1.030$, $p = .358$
Health anxiety from COVID	6.91 (2.77)	6.56 (2.52)	6.99 (2.53)	$F_{(2,468)} = 1.389$, $p = .250$
Financial hardship	6.31 (0.91)	6.22 (0.82)	6.39 (1.01)	$F_{(2,468)} = 1.531$, $p = .218$
Stressful life events	15.49 (2.56)	15.24 (2.00)	15.79 (2.68)	$F_{(2,468)} = 2.318$, $p = .100$
	n (%)	n (%)	n (%)	
Gender*				
Male	68 (58.6)	132 (63.8)	87 (59.2)	$\chi^2 = 1.146$, $p = .564$
Female	48 (41.4)	75 (36.2)	60 (40.8)	
Residence				
Metropolitan	74 (63.8)	129 (62.3)	103 (69.6)	$\chi^2 = 2.101$, $p = .350$
Regional / rural	42 (36.2)	78 (37.7)	45 (30.4)	
Marital status				
Single / never married / separated / widowed	40 (34.5)	59 (28.5)	51 (34.5)	$\chi^2 = 1.904$, $p = .386$
Living with partner / married	76 (65.5)	148 (71.5)	97 (65.5)	
Employment				
Full Time / part Time / casual / self-employed	59 (50.9)	96 (46.4)	79 (53.4)	$\chi^2 = 1.778$, $p = .411$
Unemployed / student / home-duties / retired / pension / other	57 (49.1)	111 (53.6)	69 (46.6)	

Note. * 1 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.38 Factors associated with changes in novel gambling forms frequency, T2-3, (n = 45)

Variable	Decreased n = 21 (46.7%)	Same n = 3 (6.7%)	Increased n = 21 (46.7%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	6.05 (7.77)	7.33 (8.74)	4.62 (7.09)	F (2,42) = 0.290, *p* = .750
Variables at T3:				
Age (years)	43.62 (14.87)	45.00 (19.08)	47.00 (12.22)	F (2,42) = 0.311, *p* = .735
Education	6.38 (1.24)	6.00 (1.00)	6.62 (1.24)	F (2,42) = 0.426, *p* = .656
Unhealthy behaviours	15.67 (2.46)	16.67 (2.89)	14.86 (3.66)	F (2,42) = 0.642, *p* = .531
Healthy behaviours	15.48 (4.01)	16.33 (3.21)	14.52 (3.14)	F (2,42) = 0.565, *p* = .573
Perceived stress	10.05 (3.92)	9.33 (2.89)	10.38 (3.40)	F (2,42) = 0.126, *p* = .882
K6	12.62 (6.81)	13.33 (5.03)	13.33 (6.46)	F (2,42) = 0.066, *p* = .936
Loneliness	18.43 (5.04)	20.67 (7.57)	19.05 (4.61)	F (2,42) = 0.290, *p* = .750
Health anxiety from COVID	7.95 (3.75)	7.00 (4.36)	7.29 (2.61)	F (2,42) = 0.265, *p* = .769
Financial hardship	7.00 (1.41)	8.00 (3.46)	7.19 (1.66)	F (2,42) = 0.471, *p* = .628
Stressful life events	17.00 (3.52)	18.67 (8.08)	17.33 (3.45)	F (2,42) = 0.254, *p* = .777
	n (%)	n (%)	n (%)	
Gender				
Male	17 (81.0)	2 (66.7)	16 (76.2)	χ² = 0.367, *p* = .832
Female	4 (19.0)	1 (33.3)	5 (23.8)	
Residence				
Metropolitan	18 (85.7)	3 (100.0)	18 (85.7)	χ² = 0.495, *p* = .781
Regional / rural	3 (14.3)	0 (0.0)	3 (14.3)	
Marital status				
Single / never married / separated / widowed	5 (23.8)	1 (33.3)	4 (19.0)	χ² = 0.367, *p* = .832
Living with partner / married	16 (76.2)	2 (66.7)	17 (81.0)	
Employment				
Full Time / part Time / casual / self-employed	18 (85.7)	2 (66.7)	17 (81.0)	χ² = 0.695, *p* = .706
Unemployed / student / home-duties / retired / pension / other	3 (14.3)	1 (33.3)	4 (19.0)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.39 Factors associated with changes in online gambling frequency, T2-3, (n = 410)

Variable	Decreased n = 156 (38.0%)	Same n = 175 (42.7%)	Increased n = 79 (19.3%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T2:				
PGSI	$1.51_{a,b}$ (2.80)	2.41_a (5.56)	0.99_b (3.22)	$F_{(2,407)} = 3.600$, $p = .028$
Variables at T3:				
Age (years)	57.16 (13.71)	57.41 (13.81)	55.48 (15.54)	$F_{(2,407)} = 0.538$, $p = .584$
Education	6.13 (1.26)	5.95 (1.41)	6.27 (1.01)	$F_{(2,407)} = 1.806$, $p = .166$
Unhealthy behaviours	13.33 (3.19)	13.05 (3.58)	13.71 (3.45)	$F_{(2,407)} = 1.034$, $p = .356$
Healthy behaviours	14.83 (3.19)	14.92 (2.90)	14.70 (2.91)	$F_{(2,407)} = 0.151$, $p = .860$
Perceived stress	9.10 (3.25)	8.83 (3.28)	9.57 (3.60)	$F_{(2,407)} = 1.328$, $p = .266$
K6	10.62 (5.48)	10.01 (5.03)	11.29 (5.61)	$F_{(2,407)} = 1.649$, $p = .194$
Loneliness	17.42 (4.51)	17.25 (4.72)	18.06 (4.69)	$F_{(2,407)} = 0.861$, $p = .424$
Health anxiety from COVID	6.76 (2.55)	6.41 (2.24)	6.97 (2.57)	$F_{(2,407)} = 1.705$, $p = .183$
Financial hardship	6.25_a (0.72)	6.21_a (0.75)	6.54_b (1.25)	$F_{(2,407)} = 4.367$, $p = .013$
Stressful life events	15.55 (2.31)	15.27 (2.26)	15.99 (2.77)	$F_{(2,407)} = 2.464$, $p = .086$
	n (%)	n (%)	n (%)	
Gender*				
Male	108 (69.2)	127 (73.0)	52 (66.7)	$\chi^2 = 1.182$, $p = .554$
Female	48 (30.8)	47 (27.0)	26 (33.3)	
Residence				
Metropolitan	108 (69.2)	109 (62.3)	52 (65.8)	$\chi^2 = 1.765$, $p = .414$
Regional / rural	48 (30.8)	66 (37.7)	27 (34.2)	
Marital status				
Single / never married / separated / widowed	46 (29.5)	55 (31.4)	28 (35.4)	$\chi^2 = 0.863$, $p = .650$
Living with partner / married	110 (70.5)	120 (68.6)	51 (64.6)	
Employment				
Full Time / part Time / casual / self-employed	$90_{a,b}$ (57.7)	85_b (48.6)	52_a (65.8)	$\chi^2 = 7.106$, $p = .029$
Unemployed / student / home-duties / retired / pension / other	$66_{a,b}$ (42.3)	90_b (51.4)	27_a (34.2)	

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.40 Factors associated with changes in harmful gambling, T2-3, (N = 649)

Variable	0 at both Times (No problems) n = 407 (62.7%)	1+ to 0 (Problems decreased) n = 25 (3.9%)	1+ at both Times (Sustained problems) n = 110 (16.9%)	0 to 1+ (Problems increased) n = 107 (16.5%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Age (years)	60.40_a (13.14)	$53.36_{a,b}$ (13.05)	54.25_b (14.29)	$57.39_{a,b}$ (14.24)	$F_{(3,645)} = 7.712$, $p < .001$
Education	6.15 (1.35)	6.08 (1.26)	6.00 (1.30)	6.04 (1.25)	$F_{(3,645)} = 0.521$, $p = .668$
Unhealthy behaviours	13.23 (3.26)	13.44 (3.10)	13.35 (3.66)	13.13 (3.74)	$F_{(3,645)} = 0.109$, $p = .955$
Healthy behaviours	15.11 (2.69)	15.40 (3.76)	14.40 (3.63)	14.56 (2.60)	$F_{(3,645)} = 2.553$, $p = .055$
Perceived stress	8.39_a (3.14)	$8.72_{a,b}$ (4.14)	10.35_b (2.94)	$9.38_{b,c}$ (3.16)	$F_{(3,645)} = 12.277$, $p < .001$
K6	9.51_a (4.80)	$11.08_{a,b}$ (5.99)	12.66_b (5.78)	$11.20_{b,c}$ (5.39)	$F_{(3,645)} = 12.210$, $p < .001$
Loneliness	16.73_a (4.21)	$18.00_{a,b}$ (4.97)	19.60_b (4.52)	$18.03_{b,c}$ (4.96)	$F_{(3,645)} = 13.016$, $p < .001$
Health anxiety from COVID	6.69 (2.50)	7.40 (2.96)	6.85 (2.57)	7.20 (2.66)	$F_{(3,645)} = 1.538$, $p = .203$
Financial hardship	6.16_a (0.65)	$6.24_{a,b}$ (0.88)	6.56_b (1.17)	$6.28_{a,b}$ (0.93)	$F_{(3,645)} = 6.920$, $p < .001$
Stressful life events	15.14_a (1.88)	$16.16_{a,b}$ (2.94)	16.07_b (2.93)	$15.75_{a,b}$ (2.59)	$F_{(3,645)} = 6.832$, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	232_a (57.1)	13_a (52.0)	85_b (77.3)	66_a (62.3)	$\chi^2 = 15.724$, $p = .001$
Female	174_a (42.9)	12_a (48.0)	25_b (22.7)	40_a (37.7)	
Residence					
Metropolitan	260 (63.9)	18 (72.0)	75 (68.2)	72 (67.3)	$\chi^2 = 1.440$, $p = .696$
Regional / rural	147 (36.1)	7 (28.0)	35 (31.8)	35 (32.7)	
Marital status					
Single / never married / separated / widowed	121 (29.7)	9 (36.0)	36 (32.7)	30 (28.0)	$\chi^2 = 1.012$, $p = .798$

Living with partner / married	286 (70.3)	16 (64.0)	74 (67.3)	77 (72.0)
Employment				
Full Time / part Time / casual / self-employed	199$_a$ (48.9)	15$_{a,b}$ (60.0)	67$_b$ (60.9)	56$_{a,b}$ (52.3)
Unemployed / student / home-duties / retired / pension / other	208$_a$ (51.1)	10$_{a,b}$ (40.0)	43$_b$ (39.1)	51$_{a,b}$ (47.7)

χ² = 5.714, *p* = .126

Note. * 2 participants who reported 'other' were excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.41 Mixed model ANOVAs for PGSI scores and categorical variables, T2-3

	Gender					
	Male			**Female**		
T2 Mean (SD)	**T3 Mean (SD)**	**Simple effect**	**T2 Mean (SD)**	**T3 Mean (SD)**	**Simple effect**	**Interaction**
1.44 (3.87)	1.78 (3.69)	0.343, $p = .006$	0.78 (2.96)	1.39 (3.53)	0.606, $p < .001$	$F (1,645) = 1.709$, $p = .192$

	Location					
	Metropolitan			**Regional / rural**		
T2 Mean (SD)	**T3 Mean (SD)**	**Simple effect**	**T2 Mean (SD)**	**T3 Mean (SD)**	**Simple effect**	**Interaction**
1.20 (3.61)	1.72 (3.76)	0.520, $p < .001$	1.13 (3.44)	1.45 (3.34)	0.313, $p = .060$	$F (1,647) = 1.023$, $p = .312$

	Relationship					
	Single / never married / separated / widowed			**Living with partner / married**		
T2 Mean (SD)	**T3 Mean (SD)**	**Simple effect**	**T2 Mean (SD)**	**T3 Mean (SD)**	**Simple effect**	**Interaction**
1.49 (4.18)	1.83 (4.18)	0.342, $p = .055$	1.05 (3.24)	1.54 (3.36)	0.494, $p < .001$	$F (1,647) = 0.516$, $p = .073$

	Employment					
	Full Time / part Time / casual / self-employed			**Unemployed / student / home-duties / retired / pension / other**		
T2 Mean (SD)	**T3 Mean (SD)**	**Simple effect**	**T2 Mean (SD)**	**T3 Mean (SD)**	**Simple effect**	**Interaction**
1.51 (4.10)	2.07 (4.29)	0.558, $p < .001$	0.82 (2.80)	1.15 (2.65)	0.330, $p = .019$	$F (1,647) = 1.362$, $p = .244$

Table D.42 Linear regressions for PGSI scores and continuous variables, T2-3

Variable	Slope	p	μ - 1SD	μ	μ + 1SD
Age	-.007	.316	0.55	0.46	0.36
Education	.066	.375	0.36	.045	0.54
Unhealthy behaviours	.039	.169	0.31	0.44	0.57
Healthy behaviours	-.049	.140	0.60	0.46	0.31
Perceived stress	.102	< .001	0.12	0.45	0.78
K6	.045	.016	0.22	0.45	0.69
Loneliness	.031	.153	0.31	0.45	0.59
Health anxiety from COVID	.109	.004	0.17	0.45	0.73
Financial hardship	.636	< .001	-0.08	0.45	0.97
Stressful life events	.135	.002	0.14	0.45	0.76

Table D.43 Overall gambling participation and changes in PGSI, T2-3, (N = 649)

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Abstained (n = 65)	0.00 (0.00)	0.00 (0.00)	-
Commenced (n = 67)	0.00 (0.00)	**1.19 (2.51)**	*t*(66) = -3.891, *p* < .001
Sustained (n = 486)	1.56 (4.03)	**2.01 (3.99)**	*t*(485) = -3.720, *p* < .001
Ceased (n = 31)	0.29 (0.94)	0.00 (0.00)	*t*(30) = 1.724, *p* = .095

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.44 EGM frequency and changes in PGSI, T2-3, (n = 164)

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Decreased (n = 25)	5.84 (7.59)	4.40 (5.43)	*t*(24) = 1.565, *p* = .131
Same (n = 8)	7.37 (7.78)	10.87 (9.38)	*t*(7) = -2.198, *p* = .064
Increased (n = 131)	1.56 (4.08)	**3.20 (4.97)**	*t*(130) = -4.901, *p* < .001

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.45 Sports betting frequency and changes in PGSI, T2-3, (n = 194)

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Decreased (n = 20)	1.75 (3.29)	2.60 (4.60)	*t*(19) = -1.004, *p* =.328
Same (n = 20)	6.55 (8.75)	5.35 (5.50)	*t*(19) = 1.017, *p* = .322
Increased (n = 154)	2.41 (4.68)	**3.34 (5.40)**	*t*(153) = -3.443, *p* < .001

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.46 Race betting frequency and changes in PGSI, T2-3, (n = 260)

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Decreased (n = 71)	2.04 (4.33)	2.29 (3.45)	*t*(70) = -0.647, *p* = .520
Same (n = 100)	2.69 (5.09)	2.65 (4.14)	*t*(99) = 0.194, *p* = .846
Increased (n = 89)	2.69 (5.31)	**3.87 (6.27)**	*t*(88) = -2.801, *p* =.006

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.47 Casino games frequency and changes in PGSI, T2-3, (n = 54)

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Decreased (n = 22)	6.90 (7.76)	5.59 (6.37)	*t*(21) = 1.602, *p* = .124
Same (n = 4)	5.75 (8.01)	11.75 (8.73)	*t*(3) = -2.324, *p* = .103
Increased (n = 28)	3.67 (6.52)	**5.96 (7.38)**	*t*(27) = -2.245, *p* = .033

Note. Bold text indicates statistically significant higher percentages in that row.

Table D.48 Online gambling frequency and changes in PGSI, T2-3, Online

	T2 PGSI Mean (SD)	T3 PGSI Mean (SD)	Inferential statistic
Decreased (n = 156)	1.50 (2.80)	**2.19 (3.35)**	$t(155) = -3.234, p = .001$
Same (n = 175)	2.41 (5.55)	2.30 (4.53)	$t(174) = 0.515, p = .607$
Increased (n = 79)	0.98 (3.22)	**2.64 (5.20)**	$t(78) = -3.856, p < .001$

Note. Bold text indicates statistically significant higher percentages in that row.

Time 3 & Time 4

Table D.49 Factors associated with transitions in overall gambling participation, T3-4, (N = 458)

Variable	Abstained n = 37 (8.1%)	Commenced n = 21 (4.6%)	Sustained n = 377 (82.3%)	Ceased n = 23 (5.0%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	0.00$_a$ (0.00)	0.00$_{a,b}$ (0.00)	1.92$_b$ (3.86)	1.00$_{a,b}$ (2.81)	$F_{(3,454)}$ = 5.103, p = .002
Variables at T4:					
Age (years)	59.97 (14.34)	56.00 (13.80)	61.73 (12.81)	60.70 (13.95)	$F_{(3,454)}$ = 1.439, p = .231
Education	6.41 (1.24)	6.57 (1.12)	6.01 (1.35)	6.13 (1.18)	$F_{(3,454)}$ = 2.093, p = .100
Unhealthy behaviours	14.11 (2.53)	13.76 (2.81)	13.15 (3.33)	13.87 (2.40)	$F_{(3,454)}$ = 1.429, p = .234
Healthy behaviours	15.27 (2.28)	14.81 (2.16)	14.73 (2.49)	14.91 (2.31)	$F_{(3,454)}$ = 0.556, p = .644
Perceived stress	8.73 (2.31)	8.52 (3.27)	8.74 (3.12)	8.61 (3.35)	$F_{(3,454)}$ = 0.044, p = .988
K6	9.70 (3.28)	10.62 (4.77)	10.14 (5.28)	11.87 (6.54)	$F_{(3,454)}$ = 0.968, p = .407
Loneliness	17.92 (4.75)	18.52 (4.58)	17.31 (4.50)	17.91 (4.39)	$F_{(3,454)}$ = 0.738, p = .530
Health anxiety from COVID	6.16 (1.68)	5.90 (1.76)	5.84 (1.96)	5.91 (1.90)	$F_{(3,454)}$ = 0.328, p = .805
Financial hardship	6.05 (0.23)	6.38 (0.86)	6.28 (0.94)	6.39 (0.84)	$F_{(3,454)}$ = 0.971, p = .406
Stressful life events	15.30 (1.82)	15.67 (2.22)	15.34 (2.20)	15.35 (2.01)	$F_{(3,454)}$ = 0.157, p = .925
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	17$_a$ (45.9)	14$_{a,b}$ (66.7)	260$_b$ (69.0)	9$_a$ (40.9)	χ^2 = 14.188, p = .003
Female	20$_a$ (54.1)	7$_{a,b}$ (33.3)	117$_b$ (31.0)	13$_a$ (59.1)	
Residence					
Metropolitan	23 (62.2)	15 (71.4)	241 (63.9)	15 (65.2)	χ^2 = 0.567, p = .904
Regional / rural	14 (37.8)	6 (28.6)	136 (36.1)	8 (34.8)	

Variable	Abstained n = 37 (8.1%)	Commenced n = 21 (4.6%)	Sustained n = 377 (82.3%)	Ceased n = 23 (5.0%)	Inferential statistic
Marital status					
Single / never married / separated / widowed	7 (18.9)	6 (28.6)	110 (29.2)	8 (34.8)	$\chi^2 = 2.190$, *p* = .534
Living with partner / married	30 (81.1)	15 (71.4)	267 (70.8)	15 (65.2)	
Employment					
Full Time / part Time / casual / self-employed	17 (45.9)	13 (61.9)	174 (46.2)	11 (47.8)	
Unemployed / student / home-duties / retired / pension / other	20 (54.1)	8 (38.1)	203 (53.8)	12 (52.2)	$\chi^2 = 2.004$, *p* = .572

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count.

Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.50 Factors associated with transitions in EGM participation, T3-4, (N = 458)

Variable	Abstained n = 326 (71.2%)	Commenced n = 21 (4.6%)	Sustained n = 87 (19.0%)	Ceased n = 24 (5.2%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	0.76a (1.97)	3.48b (4.75)	4.10b (5.57)	2.83b (5.51)	$F_{(3,454)}$ = 26.383, $p < .001$
Variables at T4:					
Age (years)	62.01 (12.75)	57.05 (12.72)	59.82 (14.03)	60.25 (13.35)	$F_{(3,454)}$ = 1.497, $p = .215$
Education	6.18 (1.34)	6.00 (1.30)	5.77 (1.24)	5.75 (1.36)	$F_{(3,454)}$ = 2.757, $p = .042$
Unhealthy behaviours	13.33 (3.18)	13.24 (3.69)	12.95 (3.42)	14.13 (2.33)	$F_{(3,454)}$ = 0.873, $p = .455$
Healthy behaviours	14.88 (2.40)	14.76 (2.79)	14.43 (2.50)	14.92 (2.69)	$F_{(3,454)}$ = 0.812, $p = .488$
Perceived stress	8.64 (3.05)	8.57 (2.80)	9.16 (3.25)	8.42 (2.87)	$F_{(3,454)}$ = 0.769, $p = .512$
K6	9.96 (4.90)	9.48 (4.48)	11.34 (6.33)	10.08 (4.92)	$F_{(3,454)}$ = 1.781, $p = .150$
Loneliness	17.38 (4.30)	17.14 (4.50)	17.83 (5.18)	17.13 (4.95)	$F_{(3,454)}$ = 0.301, $p = .825$
Health anxiety from COVID	5.66a (1.76)	5.76a,b (2.05)	6.61b (2.32)	6.17a,b (1.83)	$F_{(3,454)}$ = 6.000, $p < .001$
Financial hardship	6.22 (0.78)	6.14 (0.36)	6.49 (1.31)	6.25 (0.74)	$F_{(3,454)}$ = 2.298, $p = .077$
Stressful life events	15.14a (1.84)	15.67a,b (2.20)	15.97b (2.82)	15.79a,b (2.90)	$F_{(3,454)}$ = 3.931, $p = .009$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	221 (68.0)	12 (57.1)	54 (62.1)	13 (54.2)	χ² = 3.368, $p = .338$
Female	104 (32.0)	9 (42.9)	33 (37.9)	11 (45.8)	
Residence					
Metropolitan	212 (65.0)	12 (57.1)	58 (66.7)	12 (50.0)	χ² = 2.889, $p = .409$
Regional / rural	114 (35.0)	9 (42.9)	29 (33.3)	12 (50.0)	
Marital status					
Single / never married /	100 (30.7)	4 (19.0)	21 (24.1)	6 (25.0)	χ² = 2.626, $p = .453$

Variable	Abstained n = 326 (71.2%)	Commenced n = 21 (4.6%)	Sustained n = 87 (19.0%)	Ceased n = 24 (5.2%)	Inferential statistic
separated / widowed *Living with partner / married*	226 (69.3)	17 (81.0)	66 (75.9)	18 (75.0)	
Employment *Full Time / part Time / casual / self-employed*	150 (46.0)	14 (66.7)	41 (47.1)	10 (41.7)	
Unemployed / student / home-duties / retired / pension / other	176 (54.0)	7 (33.3)	46 (52.9)	14 (58.3)	$\chi^2 = 3.663$, *p* = .300

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.51 Factors associated with transitions in sports betting participation, T3-4, (N = 458)

Variable	Abstained n = 313 (68.3%)	Commenced n = 19 (4.1%)	Sustained n = 104 (22.7%)	Ceased n = 22 (4.8%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	0.88_a (2.38)	$1.74_{a,b}$ (2.73)	3.36_b (4.89)	$4.00_{b,c}$ (6.85)	$F(3,454) = 17.213$, $p < .001$
Variables at T4:					
Age (years)	63.50_a (11.94)	$63.47_{a,b}$ (13.39)	55.80_b (13.70)	$53.59_{b,c}$ (15.07)	$F(3,454) = 12.773$, $p < .001$
Education	6.01 (1.31)	5.79 (1.40)	6.35 (1.33)	5.95 (1.40)	$F(3,454) = 2.094$, $p = .100$
Unhealthy behaviours	13.30 (3.19)	12.16 (4.11)	13.59 (3.19)	12.82 (2.63)	$F(3,454) = 1.242$, $p = .294$
Healthy behaviours	14.74 (2.47)	14.42 (2.34)	15.14 (2.35)	14.18 (2.65)	$F(3,454) = 1.370$, $p = .251$
Perceived stress	8.57 (3.08)	8.68 (2.96)	9.20 (3.07)	8.64 (3.00)	$F(3,454) = 1.104$, $p = .347$
K6	9.93 (5.01)	9.95 (5.66)	10.75 (5.56)	11.91 (5.52)	$F(3,454) = 1.489$, $p = .217$
Loneliness	17.27 (4.41)	18.42 (4.59)	17.51 (4.55)	18.64 (5.59)	$F(3,454) = 0.962$, $p = .410$
Health anxiety from COVID	5.82 (1.85)	5.84 (1.50)	5.88 (2.16)	6.55 (2.15)	$F(3,454) = 0.969$, $p = .407$
Financial hardship	6.25 (0.90)	6.11 (0.32)	6.33 (0.94)	6.50 (0.96)	$F(3,454) = 0.908$, $p = .437$
Stressful life events	15.27 (2.03)	15.32 (1.53)	15.47 (2.41)	16.09 (3.04)	$F(3,454) = 1.123$, $p = .339$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	175_a (56.1)	$16_{b,c}$ (84.2)	94_c (90.4)	$15_{a,b}$ (68.2)	$\chi^2 = 43.823$, $p < .001$
Female	137_a (43.9)	$3_{b,c}$ (15.8)	10_c (9.6)	$7_{a,b}$ (31.8)	
Residence					
Metropolitan	190_a (60.7)	$13_{a,b}$ (68.4)	$72_{a,b}$ (69.2)	19_b (86.4)	$\chi^2 = 7.659$, $p = .054$
Regional / rural	123_a (39.3)	$6_{a,b}$ (31.6)	$32_{a,b}$ (30.8)	3_b (13.6)	
Marital status					
Single / never	87 (27.8)	7 (36.8)	32 (30.8)	5 (22.7)	$\chi^2 = 1.342$, $p = .719$

Variable	Abstained n = 313 (68.3%)	Commenced n = 19 (4.1%)	Sustained n = 104 (22.7%)	Ceased n = 22 (4.8%)	Inferential statistic
married / separated / widowed Living with partner / married	226 (72.2)	12 (63.2)	72 (69.2)	17 (77.3)	
Employment *Full Time / part Time / casual / self-employed*	129_a (41.2)	$7_{a,b}$ (36.8)	$63_{b,c}$ (60.6)	16_c (72.7)	
Unemployed / student / home-duties / retired / pension / other	184_a (58.8)	$12_{a,b}$ (63.2)	$41_{b,c}$ (39.4)	6_c (27.3)	$\chi^2 = 18.537$, $p < .001$

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.52 Factors associated with transitions in race betting participation, T3-4, (N = 458)

Variable	Abstained n = 268 (58.5%)	Commenced n = 20 (4.4%)	Sustained n = 151 (33.0%)	Ceased n = 19 (4.1%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	0.68$_a$ (2.02)	2.50$_{a,b}$ (4.08)	2.87$_b$ (4.60)	4.21$_{b,c}$ (6.53)	$F_{(3,454)}$ = 17.496, p < .001
Variables at T4:					
Age (years)	62.26$_a$ (12.54)	52.20$_b$ (14.66)	61.30$_a$ (12.72)	56.68$_{a,b}$ (17.07)	$F_{(3,454)}$ = 4.626, p = .003
Education	6.14 (1.33)	6.10 (1.25)	5.94 (1.36)	6.16 (1.07)	$F_{(3,454)}$ = 0.745, p = .526
Unhealthy behaviours	13.18 (3.26)	14.20 (3.00)	13.44 (3.22)	12.79 (2.76)	$F_{(3,454)}$ = 0.892, p = .445
Healthy behaviours	14.74 (2.47)	14.30 (2.90)	15.01 (2.35)	14.21 (2.46)	$F_{(3,454)}$ = 1.073, p = .360
Perceived stress	8.71 (3.14)	10.05 (2.74)	8.50 (3.01)	9.21 (2.62)	$F_{(3,454)}$ = 1.672, p = .172
K6	10.29 (5.21)	12.20 (6.44)	9.56 (4.90)	12.16 (5.20)	$F_{(3,454)}$ = 2.715, p = .044
Loneliness	17.35 (4.44)	17.45 (4.88)	17.38 (4.61)	19.16 (4.34)	$F_{(3,454)}$ = 0.959, p = .412
Health anxiety from COVID	5.84 (1.87)	5.85 (2.11)	5.87 (2.00)	6.26 (2.10)	$F_{(3,454)}$ = 0.280, p = .840
Financial hardship	6.25 (0.90)	6.55 (1.10)	6.26 (0.86)	6.37 (0.96)	$F_{(3,454)}$ = 0.787, p = .501
Stressful life events	15.25$_{a,c}$ (1.93)	17.05$_b$ (3.28)	15.17$_a$ (2.09)	16.58$_{b,c}$ (3.19)	$F_{(3,454)}$ = 7.007, p < .001
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	142$_a$ (53.2)	17$_b$ (85.0)	127$_b$ (84.1)	14$_{a,b}$ (73.7)	χ^2 = 45.071, p < .001
Female	125$_a$ (46.8)	3$_b$ (15.0)	24$_b$ (15.9)	5$_{a,b}$ (26.3)	
Residence					
Metropolitan	170 (63.4)	15 (75.0)	94 (62.3)	15 (78.9)	χ^2 = 3.131, p = .372
Regional / rural	98 (36.6)	5 (25.0)	57 (37.7)	4 (21.1)	
Marital status					
Single / never married /	72 (26.9)	4 (20.0)	51 (33.8)	4 (21.1)	χ^2 = 3.629, p = .304

Variable	Abstained n = 268 (58.5%)	Commenced n = 20 (4.4%)	Sustained n = 151 (33.0%)	Ceased n = 19 (4.1%)	Inferential statistic
separated / widowed					
Living with partner / married	196 (73.1)	16 (80.0)	100 (66.2)	15 (78.9)	
Employment					
Full Time / part Time / casual / self-employed	121 (45.1)	13 (65.0)	70 (46.4)	11 (57.9)	
Unemployed / student / home-duties / retired / pension / other	147 (54.9)	7 (35.0)	81 (53.6)	8 (42.1)	$\chi^2 = 3.900$, *p* = .272

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.53 Factors associated with transitions in casino games participation, T3-4, (N = 458)

Variable	Abstained n = 421 (91.9%)	Commenced n = 11 (2.4%)	Sustained n = 18 (3.9%)	Ceased n = 8 (1.7%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	1.19a (2.73)	4.09b (5.22)	6.78b,c (8.00)	9.63c (6.89)	$F_{(3,454)}$ = 35.615, $p < .001$
Variables at T4:					
Age (years)	62.18a (12.55)	55.00a,b (14.11)	46.83b (15.32)	54.63a,b (10.88)	$F_{(3,454)}$ = 10.133, $p < .001$
Education	6.04 (1.33)	6.91 (0.94)	6.33 (1.41)	6.13 (1.25)	$F_{(3,454)}$ = 1.798, $p = .147$
Unhealthy behaviours	13.28a,b (3.21)	13.91a,b (3.39)	14.61a (2.48)	10.37b (3.25)	$F_{(3,454)}$ = 3.399, $p = .018$
Healthy behaviours	14.81 (2.45)	15.09 (1.64)	14.83 (2.01)	13.13 (3.76)	$F_{(3,454)}$ = 1.303, $p = .273$
Perceived stress	8.57a (3.01)	8.55a,b (3.08)	11.11b (3.31)	11.75b,c (2.38)	$F_{(3,454)}$ = 6.850, $p < .001$
K6	9.95a (4.87)	10.27a,b (8.15)	14.50b (7.71)	14.38a,b (5.63)	$F_{(3,454)}$ = 6.383, $p < .001$
Loneliness	17.33 (4.37)	17.45 (5.07)	18.72 (6.52)	20.25 (5.68)	$F_{(3,454)}$ = 1.604, $p = .188$
Health anxiety from COVID	5.79a (1.85)	6.18a,b (2.18)	6.61a,b (2.59)	8.13b (2.70)	$F_{(3,454)}$ = 5.027, $p = .002$
Financial hardship	6.20a (0.77)	6.18a (0.60)	7.61b (2.00)	6.88a,b (1.25)	$F_{(3,454)}$ = 16.999, $p < .001$
Stressful life events	15.18a (1.87)	15.45a,c (2.42)	18.28b (4.38)	17.88b,c (2.90)	$F_{(3,454)}$ = 17.201, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	273 (65.0)	7 (63.6)	15 (83.3)	5 (62.5)	χ^2 = 2.629, $p = .452$
Female	147 (35.0)	4 (36.4)	3 (16.7)	3 (37.5)	
Residence					
Metropolitan	267 (63.4)	9 (81.8)	11 (61.1)	7 (87.5)	χ^2 = 3.561, $p = .313$
Regional / rural	154 (36.6)	2 (18.2)	7 (38.9)	1 (12.5)	
Marital status					
Single / never married / separated / widowed	122 (29.0)	4 (36.4)	5 (27.8)	0 (0.0)	χ^2 = 3.654, $p = .312$

Variable	Abstained n = 421 (91.9%)	Commenced n = 11 (2.4%)	Sustained n = 18 (3.9%)	Ceased n = 8 (1.7%)	Inferential statistic
Living with partner / married	299 (71.0)	7 (63.6)	13 (72.2)	8 (100.0)	
Employment *Full Time / part Time / casual / self-employed*	189$_a$ (44.9)	7$_{a,b}$ (63.6)	15$_b$ (83.3)	4$_{a,b}$ (50.0)	
Unemployed / student / home-duties / retired / pension / other	232$_a$ (55.1)	4$_{a,b}$ (36.4)	3$_b$ (16.7)	4$_{a,b}$ (50.0)	χ^2 = 11.541, p = .009

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.54 Factors associated with transitions in lotteries participation, T3-4, (N = 458)

Variable	Abstained n = 111 (24.2%)	Commenced n = 38 (8.3%)	Sustained n = 283 (61.8%)	Ceased n = 26 (5.7%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	1.20 (2.49)	0.71 (2.00)	1.98 (4.19)	0.96 (1.80)	$F_{(3,454)} = 2.571$, $p = .054$
Variables at T4:					
Age (years)	60.85 (13.91)	57.87 (12.91)	62.11 (12.71)	59.04 (12.82)	$F_{(3,454)} = 1.544$, $p = .202$
Education	6.15 (1.43)	6.47 (1.13)	6.00 (1.30)	5.88 (1.34)	$F_{(3,454)} = 1.731$, $p = .160$
Unhealthy behaviours	13.76 (2.90)	13.55 (3.07)	13.11 (3.34)	12.92 (3.21)	$F_{(3,454)} = 1.266$, $p = .285$
Healthy behaviours	14.60 (2.45)	14.92 (1.98)	14.88 (2.46)	14.42 (2.96)	$F_{(3,454)} = 0.570$, $p = .635$
Perceived stress	8.33 (2.98)	8.24 (2.92)	8.90 (3.13)	9.12 (2.89)	$F_{(3,454)} = 1.389$, $p = .245$
K6	9.94 (5.01)	9.50 (4.63)	10.27 (5.30)	11.81 (5.56)	$F_{(3,454)} = 1.169$, $p = .321$
Loneliness	17.58 (4.74)	17.24 (3.61)	17.35 (4.53)	18.12 (4.66)	$F_{(3,454)} = 0.287$, $p = .835$
Health anxiety from COVID	5.95 (2.02)	5.74 (1.75)	5.87 (1.96)	5.73 (1.48)	$F_{(3,454)} = 0.162$, $p = .922$
Financial hardship	6.11 (0.39)	6.26 (0.72)	6.33 (1.05)	6.38 (0.90)	$F_{(3,454)} = 1.708$, $p = .165$
Stressful life events	15.17 (1.89)	15.21 (1.71)	15.42 (2.32)	15.65 (2.00)	$F_{(3,454)} = 0.576$, $p = .631$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	79$_a$ (71.2)	22$_{a,b}$ (57.9)	187$_{a,b}$ (66.1)	12$_b$ (48.0)	$\chi^2 = 5.990$, $p = .112$
Female	32$_a$ (28.8)	16$_{a,b}$ (42.1)	96$_{a,b}$ (33.9)	13$_b$ (52.0)	
Residence					
Metropolitan	74$_{a,b}$ (66.7)	20$_b$ (52.6)	180$_{a,b}$ (63.6)	20$_a$ (76.9)	$\chi^2 = 4.381$, $p = .223$
Regional / rural	37$_{a,b}$ (33.3)	18$_b$ (47.4)	103$_{a,b}$ (36.4)	6$_a$ (23.1)	
Marital status					
Single / never married /	30 (27.0)	10 (26.3)	82 (29.0)	9 (34.6)	$\chi^2 = 0.712$, $p = .870$

Variable	Abstained n = 111 (24.2%)	Commenced n = 38 (8.3%)	Sustained n = 283 (61.8%)	Ceased n = 26 (5.7%)	Inferential statistic
separated / widowed					
Living with partner / married	81 (73.0)	28 (73.7)	201 (71.0)	17 (65.4)	
Employment					
Full Time / part Time / casual / self-employed	50 (45.0)	22 (57.9)	132 (46.6)	11 (42.3)	
Unemployed / student / home-duties / retired / pension / other	61 (55.0)	16 (42.1)	151 (53.4)	15 (57.7)	χ^2 = 2.225, *p* = .527

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.55 Factors associated with transitions in novel gambling forms participation, T3-4, (N = 458)

Variable	Abstained n = 426 (93.0%)	Commenced n = 7 (1.5%)	Sustained n = 19 (4.1%)	Ceased n = 6 (1.3%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	1.18_a (2.59)	$4.00_{a,c}$ (5.89)	9.26_b (7.19)	$6.83_{b,c}$ (10.63)	$F(3,454) = 46.305$, $p < .001$
Variables at T4:					
Age (years)	62.40_a (12.32)	47.00_b (15.57)	46.53_b (13.44)	44.50_b (13.17)	$F(3,454) = 16.819$, $p < .001$
Education	6.03 (1.33)	6.86 (1.07)	6.63 (1.26)	6.50 (1.05)	$F(3,454) = 2.326$, $p = .074$
Unhealthy behaviours	13.21 (3.25)	13.86 (3.39)	14.63 (2.29)	14.50 (1.05)	$F(3,454) = 1.556$, $p = .199$
Healthy behaviours	14.80 (2.46)	15.57 (2.57)	14.16 (2.32)	15.33 (1.86)	$F(3,454) = 0.757$, $p = .518$
Perceived stress	8.65_a (3.07)	$8.29_{a,b}$ (2.81)	10.68_b (2.65)	$7.83_{a,b}$ (2.86)	$F(3,454) = 2.907$, $p = .034$
K6	10.04_a (5.05)	$10.57_{a,b}$ (6.53)	13.53_b (7.02)	$11.17_{a,b}$ (4.88)	$F(3,454) = 2.840$, $p = .038$
Loneliness	17.35 (4.42)	17.14 (4.38)	19.37 (6.19)	17.83 (5.04)	$F(3,454) = 1.234$, $p = .297$
Health anxiety from COVID	5.82_a (1.86)	$5.43_{a,b}$ (1.51)	7.05_b (2.91)	$6.17_{a,b}$ (2.56)	$F(3,454) = 2.681$, $p = .046$
Financial hardship	6.21_a (0.78)	6.14_a (0.38)	7.47_b (2.01)	$6.67_{a,b}$ (1.21)	$F(3,454) = 13.386$, $p < .001$
Stressful life events	15.23_a (1.92)	$16.14_{a,b}$ (2.54)	17.26_b (3.98)	$17.50_{a,b}$ (5.09)	$F(3,454) = 8.082$, $p < .001$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	275 (64.7)	6 (85.7)	16 (84.2)	3 (50.0)	$\chi^2 = 4.971$, $p = .174$
Female	150 (35.3)	1 (14.3)	3 (15.8)	3 (50.0)	
Residence					
Metropolitan	266_a (62.4)	7_b (100.0)	$16_{a,b}$ (84.2)	$5_{a,b}$ (83.3)	$\chi^2 = 8.742$, $p = .033$
Regional / rural	160_a (37.6)	0_b (0.0)	$3_{a,b}$ (15.8)	$1_{a,b}$ (16.7)	
Marital status					
Single / never married /	127 (29.8)	1 (14.3)	2 (10.5)	1 (16.7)	$\chi^2 = 4.466$, $p = .215$

Variable	Abstained n = 426 (93.0%)	Commenced n = 7 (1.5%)	Sustained n = 19 (4.1%)	Ceased n = 6 (1.3%)	Inferential statistic
separated / widowed Living with partner / married	299 (70.2)	6 (85.7)	17 (89.5)	5 (83.3)	
Employment *Full Time / part Time / casual / self-employed*	187$_a$ (43.9)	7$_b$ (100.0)	15$_b$ (78.9)	6$_b$ (100.0)	
Unemployed / student / home-duties / retired / pension / other	239$_a$ (56.1)	0$_b$ (0.0)	4$_b$ (21.1)	0$_b$ (0.0)	$\chi^2 = 24.094$, $p < .001$

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.56 Factors associated with transitions in online gambling participation, T3-4, (N = 458)

Variable	Abstained n = 157 (34.3%)	Commenced n = 32 (7.0%)	Sustained n = 239 (52.2%)	Ceased n = 30 (6.6%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:					
PGSI	0.57_a (1.82)	$0.88_{a,b}$ (2.55)	2.08_b (3.81)	4.37_c (6.76)	$F_{(3,454)}$ = 12.940, $p < .001$
Variables at T4:					
Age (years)	63.94_a (12.02)	$58.06_{a,b}$ (12.03)	60.36_b (13.04)	$58.07_{a,b}$ (17.04)	$F_{(3,454)}$ = 3.889, $p = .009$
Education	6.15 (1.35)	6.06 (1.29)	5.97 (1.34)	6.50 (1.11)	$F_{(3,454)}$ = 1.678, $p = .171$
Unhealthy behaviours	13.46 (3.01)	12.50 (3.63)	13.33 (3.27)	13.03 (3.37)	$F_{(3,454)}$ = 0.862, $p = .461$
Healthy behaviours	14.90 (2.24)	14.31 (3.12)	14.79 (2.45)	14.70 (2.76)	$F_{(3,454)}$ = 0.531, $p = .661$
Perceived stress	8.46 (3.03)	8.63 (3.16)	8.85 (3.15)	9.20 (2.50)	$F_{(3,454)}$ = 0.775, $p = .509$
K6	9.83 (5.08)	10.00 (4.89)	10.25 (5.33)	12.10 (4.81)	$F_{(3,454)}$ = 1.624, $p = .183$
Loneliness	17.43 (4.47)	17.62 (4.95)	17.30 (4.48)	18.43 (4.67)	$F_{(3,454)}$ = 0.576, $p = .631$
Health anxiety from COVID	5.88 (1.78)	5.47 (1.70)	5.87 (1.98)	6.27 (2.43)	$F_{(3,454)}$ = 0.886, $p = .448$
Financial hardship	$6.27_{a,b}$ (0.95)	$6.38_{a,b}$ (1.21)	6.20_a (0.69)	6.73_b (1.44)	$F_{(3,454)}$ = 3.332, $p = .019$
Stressful life events	$15.39_{a,b}$ (2.15)	$15.37_{a,b}$ (2.04)	15.19_a (1.82)	16.47_b (3.92)	$F_{(3,454)}$ = 3.189, $p = .024$
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	74_a (47.1)	$24_{b,c}$ (75.0)	187_c (78.2)	$15_{a,b}$ (51.7)	χ^2 = 44.408, $p < .001$
Female	83_a (52.9)	$8_{b,c}$ (25.0)	52_c (21.8)	$14_{a,b}$ (48.3)	
Residence					
Metropolitan	103 (65.6)	23 (71.9)	146 (61.1)	22 (73.3)	χ^2 = 3.051, $p = .384$
Regional / rural	54 (34.4)	9 (28.1)	93 (38.9)	8 (26.7)	
Marital status					
Single / never	40 (25.5)	5 (15.6)	76 (31.8)	10 (33.3)	χ^2 = 4.914, $p = .178$

Variable	Abstained n = 157 (34.3%)	Commenced n = 32 (7.0%)	Sustained n = 239 (52.2%)	Ceased n = 30 (6.6%)	Inferential statistic
married / separated / widowed					
Living with partner / married	117 (74.5)	27 (84.4)	163 (68.2)	20 (66.7)	
Employment *Full Time / part Time / casual / self-employed*	63$_a$ (40.1)	19$_b$ (59.4)	114$_{a,b}$ (47.7)	19$_b$ (63.3)	
Unemployed / student / home-duties / retired / pension / other	94$_a$ (59.9)	13$_b$ (40.6)	125$_{a,b}$ (52.3)	11$_b$ (36.7)	χ^2 = 8.205, *p* = .042

Note. * 1 participant who reported 'other' were excluded from this analysis due to small cell count. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.57 Factors associated with changes in EGM frequency, T3-4, (n = 132)

Variable	Decreased n = 52 (39.4%)	Same n = 31 (23.5%)	Increased n = 49 (37.1%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	4.21 (6.63)	3.55 (4.49)	3.45 (4.55)	$F_{(2,129)} = 0.281$, $p = .755$
Variables at T4:				
Age (years)	59.15 (14.58)	60.45 (12.71)	59.14 (13.44)	$F_{(2,129)} = 0.107$, $p = .899$
Education	5.79 (1.33)	5.65 (1.17)	5.92 (1.26)	$F_{(2,129)} = 0.446$, $p = .641$
Unhealthy behaviours	13.75 (2.73)	13.45 (3.29)	12.49 (3.76)	$F_{(2,129)} = 1.976$, $p = .143$
Healthy behaviours	14.96 (2.34)	14.10 (2.56)	14.45 (2.79)	$F_{(2,129)} = 1.185$, $p = .309$
Perceived stress	8.83 (2.96)	9.29 (3.36)	8.82 (3.16)	$F_{(2,129)} = 0.266$, $p = .767$
K6	10.71 (5.65)	11.65 (6.61)	10.41 (5.60)	$F_{(2,129)} = 0.436$, $p = .648$
Loneliness	17.38 (5.28)	18.61 (5.21)	17.16 (4.59)	$F_{(2,129)} = 0.865$, $p = .424$
Health anxiety from COVID	6.21 (1.90)	6.58 (2.06)	6.47 (2.60)	$F_{(2,129)} = 0.313$, $p = .732$
Financial hardship	6.48 (1.36)	6.39 (0.88)	6.31 (0.98)	$F_{(2,129)} = 0.302$, $p = .740$
Stressful life events	16.02 (3.10)	15.81 (2.69)	15.80 (2.36)	$F_{(2,129)} = 0.100$, $p = .905$
	n (%)	n (%)	n (%)	
Gender*				
Male	31$_{a,b}$ (59.6)	14$_b$ (45.2)	34$_a$ (69.4)	$\chi^2 = 4.640$, $p = .098$
Female	21$_{a,b}$ (40.4)	17$_b$ (54.8)	15$_a$ (30.6)	
Residence				
Metropolitan	29 (55.8)	18 (58.1)	35 (71.4)	$\chi^2 = 2.912$, $p = .233$
Regional / rural	23 (44.2)	13 (41.9)	14 (28.6)	
Marital status				
Single / never married / separated / widowed	11 (21.2)	11 (35.5)	9 (18.4)	$\chi^2 = 3.355$, $p = .187$
Living with partner / married	41 (78.8)	20 (64.5)	40 (81.6)	
Employment				
Full Time / part Time / casual / self-employed	26 (50.0)	14 (45.2)	25 (51.0)	$\chi^2 = 0.280$, $p = .869$
Unemployed / student / home-duties / retired / pension / other	26 (50.0)	17 (54.8)	24 (49.0)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.58 Factors associated with changes in sports betting frequency, T3-4, (n = 145)

Variable	Decreased n = 54 (37.2%)	Same n = 44 (30.3%)	Increased n = 47 (32.4%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	4.30 (6.58)	3.02 (4.03)	2.23 (3.43)	F (2,142) = 2.209, *p* = .114
Variables at T4:				
Age (years)	55.15 (13.99)	54.75 (13.69)	59.60 (14.27)	F (2,142) = 1.745, *p* = .178
Education	6.04 (1.40)	6.64 (1.31)	6.02 (1.28)	F (2,142) = 3.166, *p* = .045
Unhealthy behaviours	13.19 (3.16)	14.02 (2.75)	12.70 (3.74)	F (2,142) = 1.919, *p* = .151
Healthy behaviours	14.74 (2.51)	15.05 (2.51)	14.96 (2.23)	F (2,142) = 0.209, *p* = .811
Perceived stress	9.44 (3.06)	9.30 (2.95)	8.36 (3.03)	F (2,142) = 1.832, *p* = .164
K6	11.11 (5.32)	10.98 (5.76)	10.34 (5.72)	F (2,142) = 0.264, *p* = .768
Loneliness	18.74 (5.46)	16.57 (4.01)	17.87 (4.20)	F (2,142) = 2.641, *p* = .075
Health anxiety from COVID	6.26 (2.33)	5.93 (1.98)	5.68 (1.88)	F (2,142) = 0.976, *p* = .379
Financial hardship	6.52 (1.18)	6.14 (0.41)	6.28 (0.80)	F (2,142) = 2.385, *p* = .096
Stressful life events	15.81 (2.96)	15.23 (1.80)	15.53 (2.24)	F (2,142) = 0.712, *p* = .492
	n (%)	n (%)	n (%)	
Gender				
Male	43 (79.6)	39 (88.6)	43 (91.5)	χ² = 3.286, *p* = .193
Female	11 (20.4)	5 (11.4)	4 (8.5)	
Residence				
Metropolitan	35 (64.8)	33 (75.0)	36 (76.6)	χ² = 2.054, *p* = .358
Regional / rural	19 (35.2)	11 (25.0)	11 (23.4)	
Marital status				
Single / never married / separated / widowed	20$_a$ (37.0)	8$_b$ (18.2)	16$_{a,b}$ (34.0)	χ² = 4.528, *p* = .104
Living with partner / married	34$_a$ (63.0)	36$_b$ (81.8)	31$_{a,b}$ (66.0)	
Employment				
Full Time / part Time / casual / self-employed	32 (59.3)	29 (65.9)	25 (53.2)	χ² = 1.523, *p* = .467
Unemployed / student / home-duties / retired / pension / other	22 (40.7)	15 (34.1)	22 (46.8)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.59 Factors associated with changes in race betting frequency, T3-4, (n = 190)

Variable	Decreased n = 51 (26.8%)	Same n = 81 (42.6%)	Increased n = 58 (30.5%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	3.92 (5.98)	2.65 (4.42)	2.57 (3.92)	F (2,187) = 1.407, p = .248
Variables at T4:				
Age (years)	57.75 (14.22)	61.93 (13.22)	58.90 (13.60)	F (2,187) = 1.694, p = .187
Education	6.16 (1.21)	6.04 (1.40)	5.74 (1.29)	F (2,187) = 1.486, p = .229
Unhealthy behaviours	13.22 (2.82)	13.48 (3.12)	13.62 (3.50)	F (2,187) = 0.228, p = .796
Healthy behaviours	14.73 (2.28)	15.16 (2.08)	14.55 (2.94)	F (2,187) = 1.169, p = .313
Perceived stress	9.18 (2.78)	8.40 (2.85)	8.83 (3.28)	F (2,187) = 1.122, p = .328
K6	11.25$_a$ (5.30)	8.93$_b$ (4.38)	10.71$_{a,b}$ (5.83)	F (2,187) = 3.851, p = .023
Loneliness	18.41 (5.23)	17.05 (4.16)	17.53 (4.63)	F (2,187) = 1.369, p = .257
Health anxiety from COVID	6.31 (2.17)	5.65 (2.01)	5.90 (1.85)	F (2,187) = 1.687, p = .188
Financial hardship	6.45 (1.14)	6.23 (0.83)	6.28 (0.74)	F (2,187) = 0.954, p = .387
Stressful life events	16.27$_a$ (3.03)	14.84$_b$ (1.68)	15.76$_{a,b}$ (2.55)	F (2,187) = 6.171, p = .003
	n (%)	n (%)	n (%)	
Gender				
Male	37$_a$ (72.5)	74$_b$ (91.4)	47$_{a,b}$ (81.0)	χ² = 8.174, p = .017
Female	14$_a$ (27.5)	7$_b$ (8.6)	11$_{a,b}$ (19.0)	
Residence				
Metropolitan	33 (64.7)	49 (60.5)	42 (72.4)	χ² = 2.128, p = .345
Regional / rural	18 (35.3)	32 (39.5)	16 (27.6)	
Marital status				
Single / never married / separated / widowed	16 (31.4)	24 (29.6)	19 (32.8)	χ² = 0.158, p = .924
Living with partner / married	35 (68.6)	57 (70.4)	39 (67.2)	
Employment				
Full Time / part Time / casual / self-employed	33$_a$ (64.7)	31$_b$ (38.3)	30$_{a,b}$ (51.7)	χ² = 8.917, p = .012
Unemployed / student / home-duties / retired / pension / other	18$_a$ (35.3)	50$_b$ (61.7)	28$_{a,b}$ (48.3)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.60 Factors associated with changes in casino games frequency, T3-4, (n = 37)

Variable	Decreased n = 14 (37.8%)	Same n = 9 (24.3%)	Increased n = 14 (37.8%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	9.64 (8.81)	5.22 (5.33)	4.43 (5.46)	$F_{(2,34)} = 2.226$, $p = .123$
Variables at T4:				
Age (years)	51.43 (13.39)	50.22 (16.60)	50.93 (14.83)	$F_{(2,34)} = 0.018$, $p = .982$
Education	6.50 (1.16)	5.78 (1.72)	6.86 (0.86)	$F_{(2,34)} = 2.149$, $p = .132$
Unhealthy behaviours	12.29 (3.45)	14.00 (3.16)	14.36 (3.13)	$F_{(2,34)} = 1.557$, $p = .225$
Healthy behaviours	14.00 (3.31)	14.78 (1.79)	14.93 (1.77)	$F_{(2,34)} = 0.547$, $p = .584$
Perceived stress	11.64_a (2.47)	$11.56_{a,b}$ (4.03)	8.64_b (2.71)	$F_{(2,34)} = 4.274$, $p = .022$
K6	15.29 (7.35)	14.78 (7.14)	10.14 (7.38)	$F_{(2,34)} = 2.002$, $p = .151$
Loneliness	19.71 (6.45)	20.11 (5.51)	16.71 (5.34)	$F_{(2,34)} = 1.288$, $p = .289$
Health anxiety from COVID	6.86 (2.66)	7.56 (3.13)	6.29 (2.02)	$F_{(2,34)} = 0.678$, $p = .514$
Financial hardship	7.43 (1.79)	7.56 (2.13)	6.29 (0.73)	$F_{(2,34)} = 2.508$, $p = .096$
Stressful life events	18.14 (4.47)	17.44 (2.65)	16.50 (3.57)	$F_{(2,34)} = 0.671$, $p = .518$
	n (%)	n (%)	n (%)	
Gender				
Male	9 (64.3)	8 (88.9)	10 (71.4)	$\chi^2 = 1.709$, $p = .426$
Female	5 (35.7)	1 (11.1)	4 (28.6)	
Residence				
Metropolitan	11 (78.6)	5 (55.6)	11 (78.6)	$\chi^2 = 1.829$, $p = .401$
Regional / rural	3 (21.4)	4 (44.4)	3 (21.4)	
Marital status				
Single / never married / separated / widowed	3 (21.4)	2 (22.2)	4 (28.6)	$\chi^2 = 0.223$, $p = .895$
Living with partner / married	11 (78.6)	7 (77.8)	10 (71.4)	
Employment				
Full Time / part Time / casual / self-employed	9 (64.3)	7 (77.8)	10 (71.4)	$\chi^2 = 0.492$, $p = .782$
Unemployed / student / home-duties / retired / pension / other	5 (35.7)	2 (22.2)	4 (28.6)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.61 Factors associated with changes in lotteries frequency, T3-4, (n =347)

Variable	Decreased n = 85 (24.5%)	Same n = 165 (47.6%)	Increased n = 97 (28.0%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	1.98 (4.50)	1.37 (3.06)	2.26 (4.51)	$F_{(2,344)} = 1.759$, $p = .174$
Variables at T4:				
Age (years)	59.46_a (13.50)	63.58_b (11.73)	59.43_a (13.40)	$F_{(2,344)} = 4.622$, $p = .010$
Education	6.05 (1.37)	5.98 (1.27)	6.16 (1.26)	$F_{(2,344)} = 0.654$, $p = .521$
Unhealthy behaviours	13.20 (3.21)	13.01 (3.37)	13.33 (3.27)	$F_{(2,344)} = 0.297$, $p = .743$
Healthy behaviours	14.75 (2.65)	14.98 (2.49)	14.71 (2.21)	$F_{(2,344)} = 0.459$, $p = .632$
Perceived stress	9.27 (3.22)	8.53 (3.06)	9.02 (3.00)	$F_{(2,344)} = 1.843$, $p = .160$
K6	11.31 (5.51)	9.65 (5.08)	10.52 (5.23)	$F_{(2,344)} = 2.934$, $p = .054$
Loneliness	17.94 (4.82)	17.05 (4.37)	17.52 (4.21)	$F_{(2,344)} = 1.180$, $p = .308$
Health anxiety from COVID	5.88 (1.82)	5.79 (1.90)	5.91 (2.00)	$F_{(2,344)} = 0.142$, $p = .867$
Financial hardship	6.40 (1.14)	6.28 (0.97)	6.32 (0.94)	$F_{(2,344)} = 0.369$, $p = .692$
Stressful life events	15.75 (2.66)	15.25 (1.96)	15.40 (2.26)	$F_{(2,344)} = 1.432$, $p = .240$
	n (%)	n (%)	n (%)	
Gender*				
Male	52 (61.9)	104 (63.0)	65 (67.0)	$\chi^2 = 0.606$, $p = .739$
Female	32 (38.1)	61 (37.0)	32 (33.0)	
Residence				
Metropolitan	$56_{a,b}$ (65.9)	112_b (67.9)	52_a (53.6)	$\chi^2 = 5.660$, $p = .059$
Regional / rural	$29_{a,b}$ (34.1)	53_b (32.1)	45_a (46.4)	
Marital status				
Single / never married / separated / widowed	27 (31.8)	48 (29.1)	26 (26.8)	$\chi^2 = 0.540$, $p = .763$
Living with partner / married	58 (68.2)	117 (70.9)	71 (73.2)	
Employment				
Full Time / part Time / casual / self-employed	39 (45.9)	75 (45.5)	51 (52.6)	$\chi^2 = 1.368$, $p = .505$
Unemployed / student / home-duties / retired / pension / other	46 (54.1)	90 (54.5)	46 (47.4)	

Note. * 1 participant who reported 'other' was excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.62 Factors associated with changes in novel gambling forms frequency, T3-4, (n = 32)

Variable	Decreased n = 16 (50.0%)	Same n = 3 (9.4%)	Increased n = 13 (40.6%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	9.44 (9.36)	9.00 (4.58)	5.15 (5.46)	F (2,29) = 1.164, *p* = .326
Variables at T4:				
Age (years)	47.06 (12.90)	37.67 (4.73)	47.23 (15.31)	F (2,29) = 0.661, *p* = .524
Education	6.62 (1.20)	5.67 (0.58)	6.92 (1.12)	F (2,29) = 1.506, *p* = .239
Unhealthy behaviours	13.94 (2.14)	15.33 (0.58)	14.85 (2.79)	F (2,29) = 0.762, *p* = .476
Healthy behaviours	14.75 (2.27)	14.33 (0.58)	14.69 (2.72)	F (2,29) = 0.038, *p* = .963
Perceived stress	9.75 (2.93)	11.67 (4.04)	9.00 (2.71)	F (2,29) = 1.036, *p* = .368
K6	12.94 (6.86)	15.67 (8.33)	11.08 (5.88)	F (2,29) = 0.684, *p* = .513
Loneliness	19.06 (6.03)	22.00 (6.56)	17.23 (4.73)	F (2,29) = 1.007, *p* = .378
Health anxiety from COVID	6.50 (2.48)	5.67 (0.58)	6.77 (3.14)	F (2,29) = 0.206, *p* = .815
Financial hardship	7.31 (1.85)	6.33 (0.58)	6.85 (1.72)	F (2,29) = 0.524, *p* = .598
Stressful life events	18.25 (4.71)	16.00 (3.46)	15.85 (2.23)	F (2,29) = 1.572, *p* = .225
	n (%)	n (%)	n (%)	
Gender				
Male	10 (62.5)	3 (100.0)	12 (92.3)	χ² = 4.656, *p* = .097
Female	6 (37.5)	0 (0.0)	1 (7.7)	
Residence				
Metropolitan	14 (87.5)	2 (66.7)	12 (92.3)	χ² = 1.465, *p* = .481
Regional / rural	2 (12.5)	1 (33.3)	1 (7.7)	
Marital status				
Single / never married / separated / widowed	2 (12.5)	1 (33.3)	1 (7.7)	χ² = 1.465, *p* = .481
Living with partner / married	14 (87.5)	2 (66.7)	12 (92.3)	
Employment				
Full Time / part Time / casual / self-employed	14 (87.5)	3 (100.0)	11 (84.6)	χ² = 0.527, *p* = .768
Unemployed / student / home-duties / retired / pension / other	2 (12.5)	0 (0.0)	2 (15.4)	

Note. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.63 Factors associated with changes in online gambling frequency, T3-4, (n =301)

Variable	Decreased n = 80 (26.6%)	Same n = 122 (40.5%)	Increased n = 99 (32.9%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	
Variables at T3:				
PGSI	3.28_a (5.63)	1.61_b (3.34)	$2.01_{a,b}$ (3.48)	$F_{(2,298)} = 4.109$, $p = .017$
Variables at T4:				
Age (years)	59.49 (15.08)	60.93 (12.70)	58.93 (12.75)	$F_{(2,298)} = 0.656$, $p = .519$
Education	6.06 (1.29)	6.05 (1.41)	5.99 (1.22)	$F_{(2,298)} = 0.082$, $p = .921$
Unhealthy behaviours	12.76 (3.56)	13.54 (3.04)	13.16 (3.43)	$F_{(2,298)} = 1.349$, $p = .261$
Healthy behaviours	14.79 (2.53)	14.94 (2.33)	14.42 (2.83)	$F_{(2,298)} = 1.153$, $p = .317$
Perceived stress	9.36 (2.98)	8.43 (2.98)	8.98 (3.25)	$F_{(2,298)} = 2.313$, $p = .101$
K6	11.71_a (6.32)	9.41_b (4.33)	$10.58_{a,b}$ (5.15)	$F_{(2,298)} = 4.838$, $p = .009$
Loneliness	17.61 (4.80)	16.81 (4.21)	18.10 (4.67)	$F_{(2,298)} = 2.291$, $p = .103$
Health anxiety from COVID	6.04 (2.11)	5.80 (2.02)	5.80 (1.90)	$F_{(2,298)} = 0.408$, $p = .665$
Financial hardship	6.46 (1.17)	6.16 (0.65)	6.25 (0.81)	$F_{(2,298)} = 2.913$, $p = .056$
Stressful life events	15.54 (2.74)	15.00 (1.74)	15.59 (2.09)	$F_{(2,298)} = 2.491$, $p = .085$
	n (%)	n (%)	n (%)	
Gender*				
Male	53 (67.1)	94 (77.0)	79 (79.8)	$\chi^2 = 4.145$, $p = .126$
Female	26 (32.9)	28 (23.0)	20 (20.2)	
Residence				
Metropolitan	54 (67.5)	71 (58.2)	66 (66.7)	$\chi^2 = 2.459$, $p = .292$
Regional / rural	26 (32.5)	51 (41.8)	33 (33.3)	
Marital status				
Single / never married / separated / widowed	25 (31.3)	40 (32.8)	26 (26.3)	$\chi^2 = 1.156$, $p = .561$
Living with partner / married	55 (68.8)	82 (67.2)	73 (73.7)	
Employment				
Full Time / part Time / casual / self-employed	42 (52.5)	59 (48.4)	51 (51.5)	$\chi^2 = 0.392$, $p = .822$
Unemployed / student / home-duties / retired / pension / other	38 (47.5)	63 (51.6)	48 (48.5)	

Note. * 1 participant who reported 'other' was excluded from this analysis due to small cell count.
Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.64 Factors associated with changes in harmful gambling, T3-4, (N = 458)

Variable	0 at both Times (No problems) n = 277 (60.5%)	1+ to 0 (Problems decreased) n = 37 (8.1%)	1+ at both Times (Sustained problems) n = 115 (25.1%)	0 to 1+ (Problems increased) n = 29 (6.3%)	Inferential statistic
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)	
Age (years)	62.92_a (12.04)	$59.92_{a,b}$ (14.49)	57.83_b (13.54)	$60.97_{a,b}$ (16.10)	$F_{(3,454)}$ = 4.355, p = .005
Education	6.11 (1.34)	5.78 (1.42)	5.99 (1.25)	6.38 (1.37)	$F_{(3,454)}$ = 1.329, p = .264
Unhealthy behaviours	13.48 (2.97)	12.43 (3.59)	13.14 (3.67)	13.21 (2.93)	$F_{(3,454)}$ = 1.307, p = .271
Healthy behaviours	15.03_a (2.24)	$14.41_{a,b}$ (3.20)	14.28_b (2.70)	$15.03_{a,b}$ (1.92)	$F_{(3,454)}$ = 2.988, p = .031
Perceived stress	8.01_a (2.90)	9.46_b (3.07)	10.08_b (2.95)	$9.21_{a,b}$ (3.10)	$F_{(3,454)}$ = 14.588, p < .001
K6	9.24_a (4.62)	$11.08_{a,b}$ (6.14)	12.03_b (5.59)	$11.14_{a,b}$ (5.47)	$F_{(3,454)}$ = 9.064, p < .001
Loneliness	16.63_a (4.17)	$17.38_{a,b}$ (4.38)	18.97_b (4.82)	$19.17_{b,c}$ (4.73)	$F_{(3,454)}$ = 9.296, p < .001
Health anxiety from COVID	5.55_a (1.60)	$6.27_{a,b}$ (1.97)	6.67_b (2.48)	5.28_a (1.07)	$F_{(3,454)}$ = 11.396, p < .001
Financial hardship	6.17_a (0.74)	$6.32_{a,b}$ (1.08)	6.47_b (1.14)	$6.41_{a,b}$ (0.78)	$F_{(3,454)}$ = 3.480, p = .016
Stressful life events	15.03_a (1.73)	$15.08_{a,b}$ (1.93)	16.10_b (2.73)	$15.90_{a,b}$ (2.79)	$F_{(3,454)}$ = 7.751, p < .001
	n (%)	n (%)	n (%)	n (%)	
Gender*					
Male	169_a (61.0)	$23_{a,b}$ (63.9)	86_b (74.8)	$22_{a,b}$ (75.9)	χ^2 = 8.287, p = .040
Female	108_a (39.0)	$13_{a,b}$ (36.1)	29_b (25.2)	$7_{a,b}$ (24.1)	
Residence					
Metropolitan	171 (61.7)	22 (59.5)	81 (70.4)	20 (69.0)	χ^2 = 3.327, p = .344
Regional / rural	106 (38.3)	15 (40.5)	34 (29.6)	9 (31.0)	
Marital status					
Single / never married / separated / widowed	73 (26.4)	14 (37.8)	32 (27.8)	12 (41.4)	χ^2 = 4.583, p = .205

Variable	0 at both Times (No problems) n = 277 (60.5%)	1+ to 0 (Problems decreased) n = 37 (8.1%)	1+ at both Times (Sustained problems) n = 115 (25.1%)	0 to 1+ (Problems increased) n = 29 (6.3%)	Inferential statistic
Living with partner / married	204 (73.6)	23 (62.2)	83 (72.2)	17 (58.6)	
Employment *Full Time / part Time / casual / self-employed*	126 (45.5)	16 (43.2)	62 (53.9)	11 (37.9)	
					χ² = 3.628, *p* = .305
Unemployed / student / home-duties / retired / pension / other	151 (54.5)	21 (56.8)	53 (46.1)	18 (62.1)	

Note. * 1 participant who reported 'other' was excluded from this analysis due to small cell count. Subscripts indicate significant differences across rows. Groups with different subscripts (e.g., a vs b) differ significantly.

Table D.65 Mixed model ANOVAs for PGSI scores and categorical variables, T3-4

Gender						
Male			Female			
T3 Mean (SD)	T4 Mean (SD)	Simple effect	T3 Mean (SD)	T4 Mean (SD)	Simple effect	Interaction
1.69 (3.57)	1.69 (3.79)	0.007, p = .962	1.51 (3.71)	1.37 (3.76)	-0.140, p = .466	F (1,455) = 0.384, p = .536

Location						
Metropolitan			Regional / rural			
T3 Mean (SD)	T4 Mean (SD)	Simple effect	T3 Mean (SD)	T4 Mean (SD)	Simple effect	Interaction
1.84 (3.95)	1.64 (3.87)	-0.204, p = .145	1.25 (2.89)	1.48 (3.61)	0.226, p = .229	F (1,456) = 3.377, p = .067

Relationship						
Single / never married / separated / widowed			Living with partner / married			
T3 Mean (SD)	T4 Mean (SD)	Simple effect	T3 Mean (SD)	T4 Mean (SD)	Simple effect	Interaction
1.79 (3.79)	1.58 (3.77)	-0.214, p = .310	1.56 (3.54)	1.58 (3.79)	0.015, p = .909	F (1,456) = 0.848, p = .358

Employment						
Full Time / part Time / casual / self-employed			Unemployed / student / home-duties / retired / pension / other			
T3 Mean (SD)	T4 Mean (SD)	Simple effect	T3 Mean (SD)	T4 Mean (SD)	Simple effect	Interaction
2.00 (4.29)	2.00 (4.48)	-	1.30 (2.85)	1.21 (2.99)	-0.095, p = .540	F (1,456) = 0.176, p = .675

Table D.66 Linear regressions for PGSI scores and continuous variables, T3-4

Variable	Slope	p	µ - 1SD	µ	µ + 1SD
Age	-.011	.221	0.07	-0.08	-0.22
Education	.003	.969	-0.06	-0.05	-0.05
Unhealthy behaviours	.033	.346	-0.16	-0.05	0.06
Healthy behaviours	-.009	.844	-0.03	-0.05	-0.07
Perceived stress	.051	.168	-0.20	-0.05	0.11
K6	.061	.005	-0.36	-0.05	0.27
Loneliness	.056	.024	-0.31	-0.05	0.20
Health anxiety from COVID	-.048	.414	0.04	-0.05	-0.14
Financial hardship	.248	.048	-0.27	-0.05	0.17
Stressful life events	.078	.137	-0.21	-0.04	0.12

Table D.67 Overall gambling participation and changes in PGSI, T3-4, (N = 458)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Abstained (n = 37)	0.00 (0.00)	0.00 (0.00)	-
Commenced (n = 21)	0.00 (0.00)	2.14 (5.49)	t(20) = -1.786, p = .089
Sustained (n = 377)	1.92 (3.86)	1.79 (3.90)	t(376) = 1.077, p = .282
Ceased (n = 23)	1.00 (2.81)	0.00 (0.00)	t(22) = 1.705, p = .102

Table D.68 EGM frequency and changes in PGSI, T3-4, (n = 132)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Decreased (n = 52)	4.21 (6.62)	3.59 (6.39)	t(51) = 1.565, p = .124
Same (n = 31)	3.54 (4.48)	4.16 (6.11)	t(30) = -1.126, p = .269
Increased (n = 49)	3.44 (4.54)	3.40 (4.47)	t(48) = 0.089, p = .930

Table D.69 Sports betting frequency and changes in PGSI, T3-4, (n = 145)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Decreased (n = 54)	4.29 (6.58)	3.87 (6.30)	t(53) = 0.876, p = .385
Same (n = 44)	3.02 (4.02)	3.11 (4.61)	t(43) = -0.269, p = .773
Increased (n = 47)	2.23 (3.42)	2.10 (3.42)	t(46) = 0.246, p = .807

Table D.70 Race betting frequency and changes in PGSI, T3-4, (n = 190)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Decreased (n = 51)	3.92 (5.97)	2.92 (5.28)	t(50) = 1.879, p = .066
Same (n = 81)	2.65 (4.41)	2.75 (4.89)	t(80) = -0.472, p = .638
Increased (n = 58)	2.56 (3.92)	2.56 (3.94)	t(57) = 0.000, p = 1.000

Table D.71 Casino games frequency and changes in PGSI, T3-4, (n = 37)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Decreased (n = 14)	9.64 (8.81)	8.85 (8.99)	t(13) = 0.681, p = .508
Same (n = 9)	5.22 (5.33)	6.22 (7.72)	t(8) = -0.781, p = .457
Increased (n = 14)	4.42 (5.45)	3.07 (4.15)	t(13) = 1.324, p = .208

Table D.72 Online gambling frequency and changes in PGSI, T3-4, (n = 301)

	T3 PGSI Mean (SD)	T4 PGSI Mean (SD)	Inferential statistic
Decreased (n = 80)	3.27 (5.62)	2.88 (5.75)	t(79) = 1.219, p = .227
Same (n = 122)	1.60 (3.33)	1.22 (2.47)	t(121) = 1.765, p = .080
Increased (n = 99)	2.01 (3.48)	2.48 (4.43)	t(98) = -1.611, p = .110

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RESEARCH REPORT

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