



# Patterns of online gambling, problem gambling risk and harms in the Northern Territory

August 2021





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## **PREFACE**

This report presents an analysis of data related to online gambling from the 2015 and 2018 NT Gambling Prevalence and Wellbeing Surveys. The relationship between online gambling and gambling frequency, number of gambling activities, socio-demographic, socioeconomic and health risk factors, problem gambling risk and harm from own gambling are investigated. The results will be of use to policy makers in government tasked with developing legislation and regulatory approaches to online gambling, industry in understanding risks and harms from online gambling and counselling services treating clients experiencing gambling-related harms.

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## **CONFLICTS OF INTEREST**

The research team do not have any conflicts of interest to declare.

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## **EXECUTIVE SUMMARY**

### **Background**

Online gambling has been available for nearly two decades in Australia; however, over that time the gambling industry has shown itself to be dynamic and expansive in the way it has used technology to provide gamblers with an ever increasing range of gambling products, and increased opportunities to gamble. To date, studies identifying characteristics of online gamblers and risks associated with online gambling have lumped all online gamblers together, thereby treating all online gamblers the same, regardless of whether they gamble on different forms. The analyses contained in this report provide a more nuanced approach to online gambling, by separating out online gamblers by the type of online gambling they participate in and determining participation, problem gambling risk and harms from their own gambling.

### **Methods**

The 2015 and 2018 NT Gambling Prevalence and Wellbeing Surveys provide the data for all analyses in this report. Online gambling status was collected for racetrack (horses and dogs) betting, sports betting, electronic gambling machines (EGMs), keno and casino games. All analyses use population weighted data, present standard errors are calculated to account for the stratified survey design, and were carried out using Stata v15 (StataCorp 2015). Most analyses use the 2018 survey data. Bivariate associations are presented for individual online gambling activities and online gambling combinations by gambling frequency, highest spend and harms from own gambling. Multivariable models are presented describing characteristics of online gamblers by type and combination of gambling for socio-demographic, socioeconomic and health risk factors. Multivariable models are presented describing characteristics of gamblers at high risk of problem gambling (PGSI) for online gambling types and combinations, while controlling for other significant predictors (socio-demographic, socioeconomic and health risk factors) of problem gambling risk.

### **Results**

#### *Participation and frequency of gambling:*

The prevalence of online gambling in the NT increased non-significantly from 2015 (11.8%) to 2018 (13%), with 16,840 NT gamblers gambling online on at least one activity. In population, racetrack betting online was the most common activity with 36% (10,670) of racetrack bettors doing it online, followed by 71% (9,100) gambling on sports online. Around 6% (2,000) of EGM gamblers had gambled on EGMs online, which is an activity that is not licensed in Australia in any jurisdiction. Most online gamblers (85%) in 2018 gambled on one or two online activities, which was a slight decrease from 2015. Online gamblers were significantly more likely to participate in more forms of gambling (online and in venues) with 67% of online gamblers gambling on five or more activities, compared with 8% for non-online gamblers. Online gamblers were significantly more likely to gamble more frequently than non-online gamblers, when looking at all gambling frequency. In 2018, 20% of non-online gamblers gambled weekly, compared with 43%, 61% and 79% of online gamblers gambling on one, two, and three or more online activities respectively. Among racetrack gamblers, 5% of non-online gamblers gambled weekly, increasing to significantly to 21% for those betting on races online. Among sports bettors there was no significant difference between weekly gambling between online and non-online sports gambling. However, among sports gamblers gambling online on only on races

and sports, the weekly frequency increases to 22%, compared with 15% for non-online sports bettors.

*Gambling expenditure and online gambling:*

Online gamblers were significantly more likely to choose sports betting, casino table games, racetrack betting, and EGMs as their highest spend gambling activity, compared with non-online gamblers. Racetrack bettors betting online who nominated the activity as their highest spend activity were over-represented in the highest spend quartile for racetrack gambling expenditure (39%), compared with non-online racetrack gamblers nominating it as their highest spend activity (15%). Over 60% of online racetrack bettors nominating it as their highest spend were in the highest two spend quartiles, compared with 35% of non-online racetrack gamblers. The difference was not as large for sports bettors and not significant, with 46% of online sports gamblers nominating it as their highest spend falling in the highest two spending quartiles, compared with 38% of non-online sports bettors. The difference between self-reported spending between online and non-online EGM gamblers was the largest and most significant. Expenditure was collected for all EGM gamblers so quartiles for all EGM gambling self-reported expenditure were used for highest spend and all EGM gamblers by online status. Over 90% of online EGM gamblers had self-reported spending falling in the two highest spend quartiles, compared with 46% for non-online EGM gamblers, and this was similar for EGM gamblers nominating EGMs as their highest spend. Median annual gambling spend for all EGM gamblers also shows significantly higher spending for online EGM gamblers (\$2,600 per annum), compared with non-online EGM gamblers (\$160 per annum). For sports bettors online median self-reported expenditure (for highest spend sports bettors) was higher (\$400 per annum), compared with non-online sports bettors (\$200 per annum), though this was not significantly different. Online racetrack bettors median annual self-reported spend (\$520 per annum) was significantly higher than non-online racetrack bettors (\$140 per annum).

*Predictors of combination of online gambling activities:*

No previous research has been published that explores characteristics associated with online gambling combination by activity. Online gambling combination for which multivariable predictors were ascertained included: sports only, races only, sports and races only, EGMs plus 1-3 other online activities, and other combination not including EGM gambling. Sports only online gamblers were more likely to be living in Darwin or Palmerston, less than 30 years, male, living in group or couple with no children households, have highest education of bachelor's degree or higher and use cannabis. Races only online gamblers were more likely to be have personal annual income more than \$70,000 (and higher for \$120,000 or more), use cocaine, and drink alcohol (with or without a probable problem). Races and sports online only gamblers were more likely to be male, live in a group household, have a highest education of year 10, used legal drug illegally, and drink alcohol (with or without a probable problem). EGM plus 1-3 other online activities were more likely to be Indigenous, live in a group household, be a FIFO (or drive-in drive-out worker), and use LSD or hallucinogenic mushrooms. The last group of online gambling combination included other combinations of online gambling activities, not including EGMs and were more likely to be living in Darwin or Palmerston, 30 years or less, male, have a personal income of \$100,000 to \$119,999, and use cannabis.

*Problem gambling risk and online gambling:*

All gambling activities for which online gambling was captured show higher percentage of at-risk gamblers gambling online for the activity, with this being significant for racetrack, EGM, and casino gambling. Online EGM gamblers had the highest problem gambling risk, with 60% classified as experiencing problem or moderate risk of problem gambling, compared with 15% of non-online EGM gamblers. The greater the participation in online gambling activities, the higher the risk of problem gambling, with 1.3% of non-online gamblers classified as experiencing problem gambling, increasing to 3% for those doing one online activity, and increasing again to 12% for those doing two or more online activities. For online gamblers only gambling on sports, 13% were classified as experiencing problem gambling or a moderate risk of problem gambling, while for races only online it was 6%, races and sports only online it was 15%, EGMs plus 1-3 other online it was 60%, and for other online gambling combination not including EGMs it was 5% (though low risk was 50%), compared with 6% and 11% of non-online gamblers classified as experiencing problem or moderate risk and low risk gambling respectively. Just under 60% of all gamblers classified as experiencing problem gambling were online gamblers, with those participating in two or more online activities making up 36% of gamblers with problem gambling, yet only making up around 13% of gamblers. After controlling for socio-demographic, socioeconomic and gambling intensity (number of activities), online gambling on EGMs, racetrack and sports betting all were significantly independently associated with increased problem gambling risk. These significant gambling activity associations were not limited to online gambling and include venue-based gambling for these activities also.

## **Conclusions**

The analyses in this report clearly show that online gambling is associated with increased frequency of gambling, increased participation in the number of gambling activities, increased self-reported expenditure, increased risk of problem gambling and increased risk of experiencing harm from own gambling. There is an urgent need to develop new legislation that puts restraints on gamblers ability to gamble online and applies a consumer protection model as compared to the current model which places all onus of gambling on the gambler. This would include mandatory setting of time and spend on all different online gambling activities separately that are set at weekly, fortnightly, and monthly. Further, improved enforcement of codes and associated regulation is needed, including the release of de-identified data from gambling companies licenced in the NT.



## 1.0 BACKGROUND

With improved coverage of mobile phone networks and high-speed internet across Australia, combined with a dynamic gambling industry, there has been significant growth in online<sup>1</sup> gambling over the last decade. Online gambling has provided people with more opportunity to gamble, whether it be a sporting event, a horse and dog race, or casino style games such as roulette, or slots (equivalent to electronic gambling machines or pokies).

Previous studies have found online gamblers are more likely to be male, younger, have higher levels of education, and employed fulltime than their non-online counterparts (Wood and Williams 2011, Gainsbury, Russell et al. 2013, Gainsbury, Russell et al. 2015). Further, compared to land-based gamblers, online gamblers are also more likely to participate in a greater number of types of gambling (especially, sports betting, racetrack betting, and casino games) and spend more money on gambling (Griffiths, Wardle et al. 2009, Wood and Williams 2011, Gainsbury, Russell et al. 2013). Greater levels of problem gambling severity have also been reported for online gamblers as compared to non-online gamblers (Wood and Williams 2011, Gainsbury, Russell et al. 2013, Gainsbury, Russell et al. 2013).

Currently, little is known about the characteristics of online gamblers in the NT, and whether their patterns of gambling, problem gambling risk and harms from gambling differ to non-online gamblers. Information on the characteristics of, and gambling patterns of online gamblers, including types of and combinations of online gambling activities can be used by counselling services to better tailor client needs and target programs, and by government to inform policies that aim to reduce harms from online gambling in vulnerable population groups.

### 1.1 Aims and objectives

This study will:

1. Determine whether patterns of gambling (frequency and participation in activities) and problem gambling risk differ between online and non-online gamblers in the NT, and whether these are the same in 2015 and 2018.
  - Is this the same for different online gambling activities?
2. Determine differences in socio-demographic, socioeconomic and health risk factors for online and non-online gamblers in the NT, and whether these were the same in 2015 and 2018.
  - Is this the same for different online gambling activities (sports and racetrack betting)?
3. Determine if experience of harm from own gambling differs between online and non-online gamblers in the NT, and whether these are the same in 2015 and 2018.
  - Is this the same for different online gambling activities?

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<sup>1</sup> Online gambling is used to describe gamblers that use the internet to gamble, whether through a home or work connection or through mobile phone, use using a gambling company webpage, or app. Interactive gambling and internet gambling is also been used to describe online gambling.



## **1.2 Key outcomes**

This project will:

- 1.** Assist government policy makers in designing and implementing effective online gambling policy and legislation;
- 2.** Provide health and counselling services with information that can be used to inform treatment approaches to people experiencing harm from online gambling, and
- 3.** Provide the gambling industry with information that can be used to inform their understandings of indicators of gambling harm by online gamblers.

## 2.0 METHODS

### 2.1 Data sources

The 2015 and 2018 NT Gambling Prevalence and Wellbeing Surveys used a dual frame telephone sampling approach. However, the 2018 survey had a much larger sample frame of mobile phone numbers, resulting in 71% of respondents being interviewed on a mobile phone, compared with just 24% in the 2015 survey. The survey included a full and sub-sample, with sub-sample respondents receiving additional questions. The full sample ( $n_{2015}=4,945$ ;  $n_{2018}=5,000$ ) was larger than the 2015 survey, as was the sub-sample ( $n_{2015}=1,546$ ;  $n_{2018}=2,016$ ). The larger sub-sample included all at-risk gamblers, regular gamblers, monthly or more EGM gamblers and all Indigenous respondents, thereby ensuring improved accuracy of estimates for these population segments and for the sub-sample as a whole, when analysed. The survey data was weighted to the Australian Bureau of Statistics (ABS) 2015 or 2018 estimated adult (18 or more years) resident population for the Northern Territory depending on the survey, with separate population weights developed for non-Indigenous and Aboriginal and Torres Strait Islander samples.

The survey contained over 100 questions covering the following domains: gambling participation, problem gambling risk, EGM gambler specific questions, questions on gambling policy and regulation and impacts, negative consequences (harms) because of own gambling and help-seeking behaviour, negative consequences (harms) because of another person's gambling (relationship to person and type of gambling) and help-seeking behaviour, community attitudes to gambling, EGM load-up limits (2018 only) and EGM numbers in hotels, and clubs, health risk factors, and socio-demographic and socioeconomic factors.

### 2.2 Measuring online gambling

Online gambling was captured in the same way in both the 2015 and 2018 survey. For gambling activities that were known to be online, respondents were asked how they gambled on these activities in the last year. Types of gambling activities where this information was captured in the 2015 and 2018 surveys were **EGMs, racetrack betting, sports betting, keno**, and **casino table games**. In most instances this was captured using two questions. Questions for each activity capturing online gambling are shown in Box 1.

**Box 1.** How online gambling was captured in 2015 and 2018 NT gambling surveys

EGM:

Have you spent money on pokies or gaming machines in the last 12 months?

Y/N

In the last 12 months did you play pokies or gaming machines at a...

(a) Pub – Y/N, (b) Club – Y/N, (c) Casino – Y/N, (d) Online – Y/N, (e) another way – Y/N, please specify:

Racetrack betting:

Have you spent money on horses, harness or greyhound races, excluding sweeps, in the last 12 months?

Y/N

In the last 12 months did you bet on horses, harness or greyhound races at a...

(a) Racetrack – Y/N, (b) TAB – Y/N, (c) Pub – Y/N, (d) Club – Y/N, (e) Casino – Y/N, (f) Over the phone – Y/N, (g) Online – Y/N, (e) another way – Y/N, please specify:

Keno:

Have you spent money on keno in the last 12 months?

Y/N

In the last 12 months did you play keno at a...

(a) Pub – Y/N, (b) Club – Y/N, (c) Casino – Y/N, (d) Online – Y/N, (e) another way – Y/N, please specify:

Casino table games:

Have you spent money on casino table games such as Blackjack, baccarat, roulette or poker in the last 12 months?

Y/N

In the last 12 months did you play casino table games at a...

(a) Casino – Y/N, (b) Online – Y/N, (c) another way – Y/N, please specify:

\* Which one of the following casino table games did you spend the most money on in the last 12 months?

(a) Blackjack, (b) Baccarat, (c) Roulette, (d) Poker, (e) another game, please specify:

Sports betting:

Have you bet on a sport like AFL, cricket or tennis in the last 12 months, not including fantasy sports or footy tipping competitions in the last 12 months?

Y/N

In the last 12 months did you bet on a sport at a...

(a) Pub – Y/N, (b) Club – Y/N, (c) TAB – Y/N, (d) Casino – Y/N, (e) Over the phone – Y/N, (f) Online – Y/N, (e) another way – Y/N, please specify:

\* 2018 survey only

So, a gambler was classified as an online gambler if they indicated that they had gambled online for any one of the five activities. So, these gamblers gamble on activities in a combination of ways (i.e. online, and land-based, and/or phone). The converse of the online gamblers is the non-online gamblers which will be referred to as a land-based gambler, though this group may also include people who may gamble using their phone (only or in combination).

### **2.3 Limitations in online gambling measurement**

Several points need to be made regarding how online gambling was captured in the NT surveys. First, more gambling activities are becoming available to Australian gamblers online, with some of these gambling opportunities located with offshore companies. For example, Australian law does not allow for gambling on casino table games or pokies (also known as slots) online. It is also likely that some people gamble online on non-sporting events (e.g. political events), instant scratch tickets, bingo and lotto. Second, how much of the person's gambling is done online was not measured. Future surveys will need to capture online gambling for all activities. Third, what constitutes gambling (online) can also be a grey area, with new forms of gambling becoming available for gamblers to bet on. For example, some forms of what could be categorised as gambling were not collected in the NT surveys, but could make up a substantial amount of online gambling. These include e-sports betting (i.e. betting on people playing computer games), fantasy sports betting (i.e. picking teams from player pools and receiving points on how players performed in the actual game), and skins or loot box gambling. Skins and loot boxes occur within video games where players can pay money to uncover a prize that may or may not upgrade the video game character and are considered a grey zone by governments in terms of regulation under gambling legislation. However, there is a strong argument that they are a form of gambling, with someone paying money for a chance to get something, based on an uncertain outcome. Another approach to measuring online gambling is to ask gamblers to estimate how much of their gambling for each activity is done

online (following how often they gamble and how much they spend), and this has been done in the 2019/2020 Interactive Gambling Study (Hing *et al.*, in progress). Future NT surveys will include more detailed questions to better capture online gambling.

## **2.4 Statistical analysis**

All analyses were carried out on population weighted data using Stata "svy" commands which also adjust standard errors for the stratified sampling design.

### **2.4.1 Associations between online gambling, number of activities, gambling frequency and spend**

Descriptive statistics are presented for gambling participation on all activities for 2005, 2015 and 2018, while participation in online activities and number of activities are presented for 2015 and 2018. Chi Squared Tests were used to determine statistical differences over time (i.e. difference between surveys) and bivariate associations. A variable was derived to show the combination of online activities for each gambler for the five activities online gambling activities, which was collapsed into six groups: (1) No online gambling, (2) only sports betting online, (3) only racetrack betting online, (3) only sports and racetrack betting online, (4) EGMs online and a combination of 1-4 other online activities, and (5) Not EGMs online and a combination of 1-3 other online activities. Note, there were only a small number of gamblers in categories 4 and 5 of the online gambling combination variable and reporting of estimates in these categories were often associated with large standard errors and should be interpreted with caution (these are denoted in tables). Number of online gambling activities and the online gambling combination were cross tabulated with all gambling frequency for all gamblers, to determine if online gambling was associated with increased gambling frequency. Similarly, this was done for racetrack and sports bettors separately, but cross tabulated against betting frequency for the respective activity and for the online gambling combination variable. Self-reported gambling expenditure was captured for all gamblers on their highest spend activity. That is, gamblers were asked what their highest spend activity was and then quizzed about expenditure, while self-reported gambling expenditure was collected for all EGM gamblers. Quartiles of self-reported expenditure were cross tabulated with each activity by online status and against the online gambling combination variable. Median expenditure for each online activity was reported for EGM, sports and racetrack gambling by online status for each activity.

### **2.4.2 Multivariable adjusted predictors of online gamblers**

Multivariable adjusted multinomial regression models were constructed separately for 2015 and 2018 using the online gambling combination variable as the dependent variable, and socio-demographic (age, sex, language spoken at home English, Indigenous status, and household type), socioeconomic (labour force status (including fly-in fly-out status), highest education, student status and gross annual personal income) and health risk factor (self-assessed health, problematic alcohol use, psychological distress, domestic/family violence and drug use) variables as the explanatory variables. This type of regression identifies significant predictors for each category of the online gambling combination variable. Separate models were derived for (i) health risk factors, and (ii) socio-demographic and socioeconomic variables. This was done for two reasons. First, the large number of explanatory variables relative to the sample size, and second, because separate population

weights are used for the health risk factors, as these data were collected as part of a sub-sample of the main survey. First, significant ( $p < 0.10$ ) bivariate associations were determined between online gambling combination and (i) health risk factors and (ii) socio-demographic and socioeconomic variables. All variables showing a moderately significant association ( $p < 0.10$ ) were then entered simultaneously for each of the groups of variable and backward selection of variables applied, with removal at  $p > 0.05$  to derive final regression models.

#### **2.4.3 Multivariable adjusted predictors of problem gambling risk**

Two types of regression were used to determine associations between online gambling activities and online gambling combination with problem gambling risk, as measured using the Problem Gambling Severity Index (PGSI). First, a multinomial regression was used to determine associations between online gambling activities (individually) and problem gambling risk categories of low risk, moderate risk, and high risk of problem gambling, as compared with no risk gamblers. The first multinomial model uses individual online gambling activity variables, with each of the five online activities entered simultaneously into the model and backward selection applied with removal at  $p > 0.05$ . A simple multinomial regression was enough to assess the bivariate association between online gambling combination and problem gambling risk categories.

The second type of regression model used was the negative binomial regression, which models PGSI scores, so identifies whether there is an increased problem gambling risk, based on what online gambling activities the person is gambling on. Similar to the two approaches to modelling with the multinomial regression, first, individual online gambling activities were entered into a model and backward selection applied, with removal set at  $p > 0.05$ , to get a multivariable adjusted model of individual online gambling activities. Second, a simple negative binomial regression was calculated between PGSI score and the online gambling combination variable. Further to this, two multivariable models were developed that included significant socio-demographic and socioeconomic variables, in addition to online and non-online gambling activities. Where the sample permitted, frequency for an activity was separated into online and non-online gamblers for that activity. Lastly for the final model, rather than using individual online gambling activities, the online gambling combination variable in conjunction with individual non-online gambling activities, along with significant socio-demographic and socioeconomic variables.

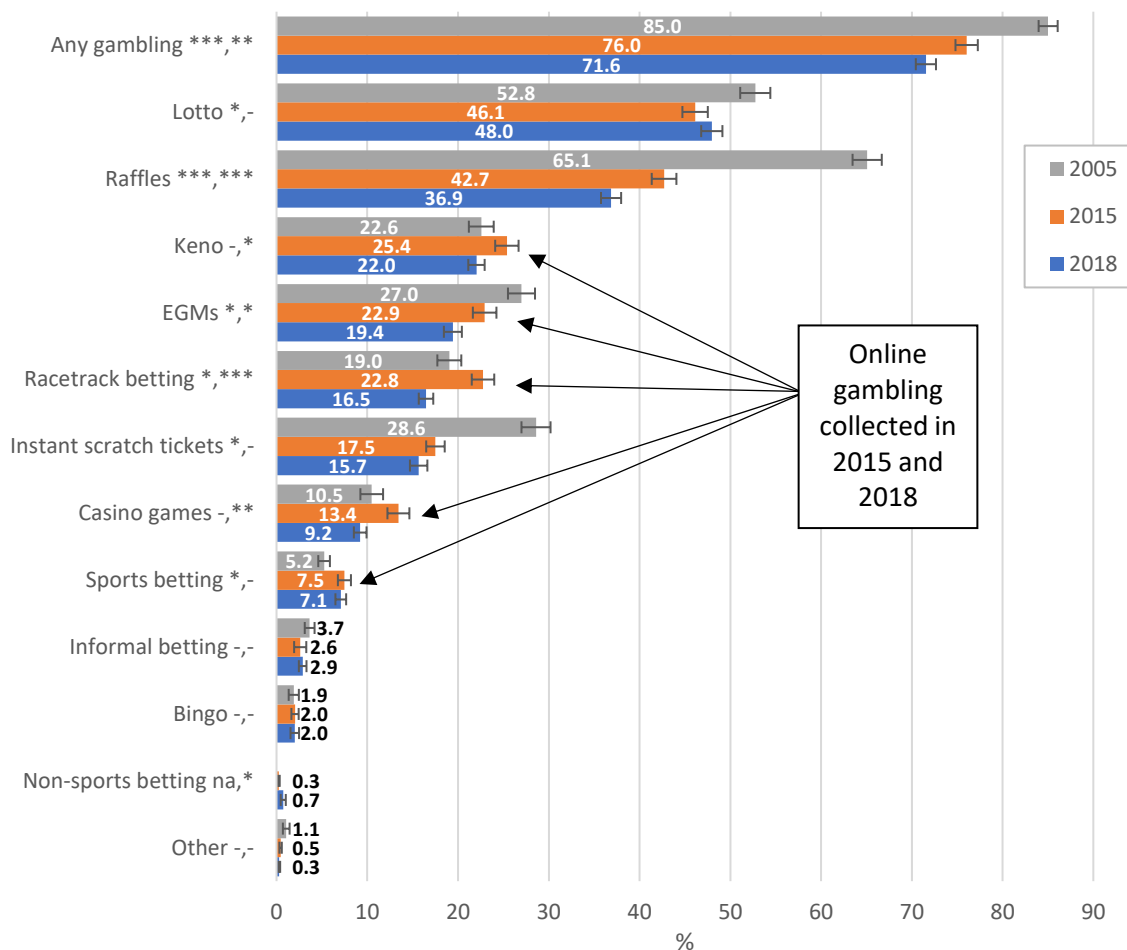
#### **2.4.4 Associations between harm and online gambling**

Simple bivariate associations were calculated between online gambling and number of online activities, individual online activities, and combination of online gambling activities. Significance was assessed through Chi Squared Tests of Independence.

### 3.0 RESULTS

#### 3.1 Gambling activity annual gambling participation

Figure 1 presents annual participation in gambling by activity for eleven types of gambling, and for informal gambling (i.e. private gambling on pool, darts, poker at home etc.) and other gambling. Online gambling participation was collected for keno, EGMs (often known as slots online), racetrack betting, casino table games and sports betting. Of the activities that online gambling status was collected, sports betting had the lowest annual participation at 7% in 2018, followed by (casino table games (9%), racetrack betting (17%), EGMs (19%) and keno (22%). Annual participation in most types of gambling have been declining since the 2005 and 2015 surveys, except for sports betting, though annual participation between the 2015 and 2018 surveys was similar (7.5% down to 7.1%).



**Figure 1: Percentage participation in gambling activities by time, 2005, 2015 and 2018 NT Adult population**

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05: Significant difference between 2005 and 2015, and 2015 and 2018 for activity  
**Sources:** 2005 NT Gambling Prevalence Survey, and the 2015 and 2018 NT Gambling Prevalence and Wellbeing Surveys (Young, Abu-Duhou et al. 2006, Stevens, Thoss et al. 2017, Stevens, Gupta et al. 2020)

Table 1 presents population counts for participation in each activity for 2005, 2015 and 2018, along with percentage of adults participating in the activity. The next section shows the percentage of gamblers gambling online for each possible online activity.

**Table 1:** Number and percentage of people participating in gambling activities by time, 2005, 2015 and 2018 adult population

	2018 N	2015 N	2005 N	2018 %	2015 %	2005 %
Any gambling	129,467	134,524	117,523	71.5	76.0	85.0
Lotto	86,785	81,592	72,915	48.0	46.1	52.8
Raffles/sweeps	66,703	75,537	89,951	36.9	42.7	65.1
Keno	39,865	44,902	31,178	22.0	25.4	22.6
EGMs	35,160	40,571	37,307	19.4	22.9	27.0
Racetrack betting	29,797	40,251	26,323	16.5	22.8	19.0
Instant scratch tickets	28,338	30,972	39,518	15.7	17.5	28.6
Casino table games	16,681	23,759	14,496	9.2	13.4	10.5
Sports betting	12,803	13,227	7,243	7.1	7.5	5.2
Informal betting	5,205	4,625	5,046	2.9	2.6	3.7
Bingo	3,630	3,601	2,623	2.0	2.0	1.9
Non-sports betting	1,337	467	-	0.7	0.3	-
Other gambling	547	792	1,475	0.3	0.4	1.1
<b>NT Population</b>	<b>180,956</b>	<b>176,916</b>	<b>138,225</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

*Sources:* 2005 NT Gambling Prevalence Survey, and the 2015 and 2018 NT Gambling Prevalence and Wellbeing Surveys (Young, Abu-Duhou et al. 2006, Stevens, Thoss et al. 2017)

### 3.2 Online gambling participation

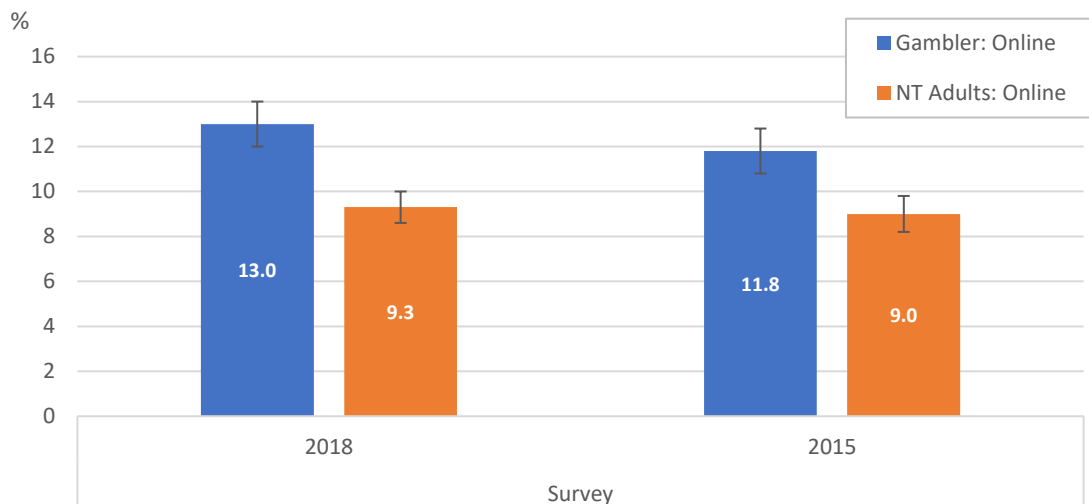
Table 2 presents the percentage of gamblers that gambled online for each of the five activities that online was collected. There was a significant increase between surveys in the percentage of racetrack gamblers betting online from 26.2% to 35.8%, while the increase was marginally non-significant for sports betting (58.9% to 71.1%) and keno (0.7% to 1.8%). There was a small non-significant decrease from 7.8% to 5.6% amongst EGM gamblers who gambled online. So, in 2018, online on sports was by far the most common at 71.1%, followed by racetrack betting (25.8%), EGMs (5.6%), casino table games (5.4%) then keno (1.7%). However, online racetrack betting had the largest number of people participating, followed by sports betting.

**Table 2:** Type of gambling by whether gambled online for that activity, 2015 and 2018 gamblers

	2018			2015		
	Online % (SE)	Activity N	Online N	Online % (SE)	Activity N	Online N
Any gambling	13.0 (1.0)	129,467	16,841	11.8 (1.0)	134,524	15,873
Racetrack betting **	35.8 (2.6)	29,797	10,668	26.2 (2.5)	40,251	10,563
Sports betting (p=0.06)	71.1 (4.2)	12,803	9,103	58.9 (5.1)	13,227	7,789
EGMs	5.6 (1.9)	35,160	1,969	7.8 (2.1)	40,571	3,160
Casino table games	5.4 (3.1)	16,681	901	4.0 (1.6)	23,759	954
Keno (p=0.06)	1.8 (0.5)	39,865	718	0.7 (0.3)	44,902	314

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant difference between surveys

Figure 2 shows the prevalence of online gambling in the total NT adult population and within gamblers. There was a small non-significant increase in the percentage of NT adults gambling online from 9% to 9.3%. Among gamblers, the increase in the percentage of online gamblers between 2015 (11.8%) and 2018 (13%) was slightly larger due to the lower percentage of adults gambling in 2018 (24% to 28.5%). See Table 3 for population counts.



**Figure 2:** Online gambling by time, 2015 and 2018 Adult and gambler population

Table 3 shows that the percentage of adults not participating in any gambling the NT increased significantly from 24% to 28.5% between the surveys. This resulted in a decrease in the number of adults gambling from 134,524 in 2015 to 129,467 in 2018. So, even though there was a percentage increase in online gambling amongst the gambling and total adult populations, the number of people gambling online remained relatively stable.

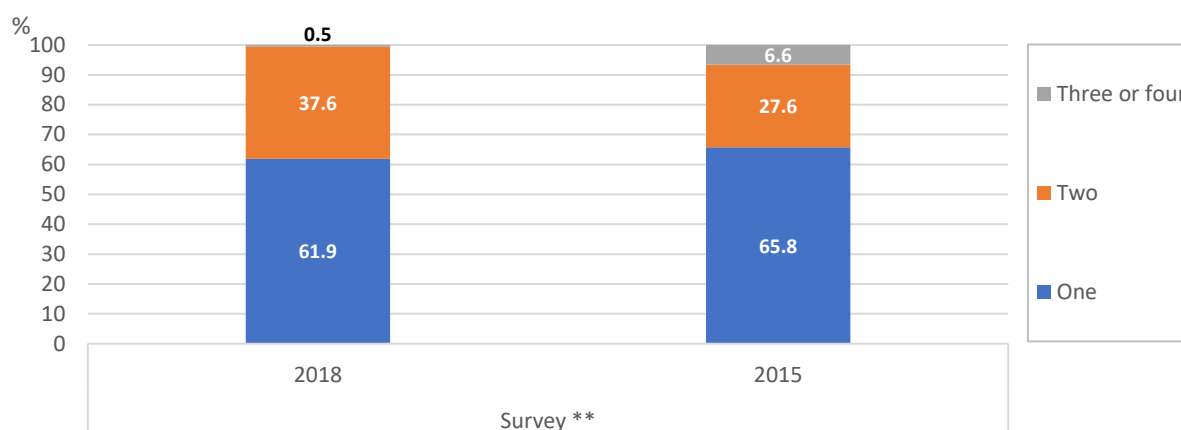
**Table 3:** Gambling status and number of online gambling activities by survey, 2015 and 2018 adult population

	2018	2015	2018	2015
Number online	% (SE)	% (SE)	N	N
None	62.2 (1.2)	67.1 (1.3)	112,627	118,651
One	5.8 (0.5)	5.9 (0.7)	10,416	10,444
Two	3.5 (0.5)	2.5 (0.4)	6,333	4,376
Three or four	0.1 (0.0)	0.6 (0.2)	91	1,052
<i>Total gamblers ***</i>	<i>71.5 (1.1)</i>	<i>76.0 (1.2)</i>	<i>129,467</i>	<i>134,524</i>
Non-gamblers ***	28.5 (1.1)	24.0 (1.2)	51,489	42,392
Total	100.0	100.0	180,956	176,916

\*\*\* p<0.001 Significant change in percentage of adults gambling between surveys

Figure 3 shows that there was a significant change from 2015 to 2018 in the distribution of number of online gambling activities participated in. In 2015, 65.8% of online gamblers only gambled on one type of online activity, and this decreased to 61.9% in 2018. In 2015, 6.6% of online gamblers gambled on three or more of the online forms, and this dropped to less than 1% in 2018, with the difference seen in an increase in online gamblers gambling on two online forms from 27.6% to 37.6%. The combinations of types of online gambling participated in is explored in the next few tables and figures.





**Figure 3:** Number of online gambling types by time, 2015 and 2018 online gamblers

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$  Significant difference between 2015 and 2018

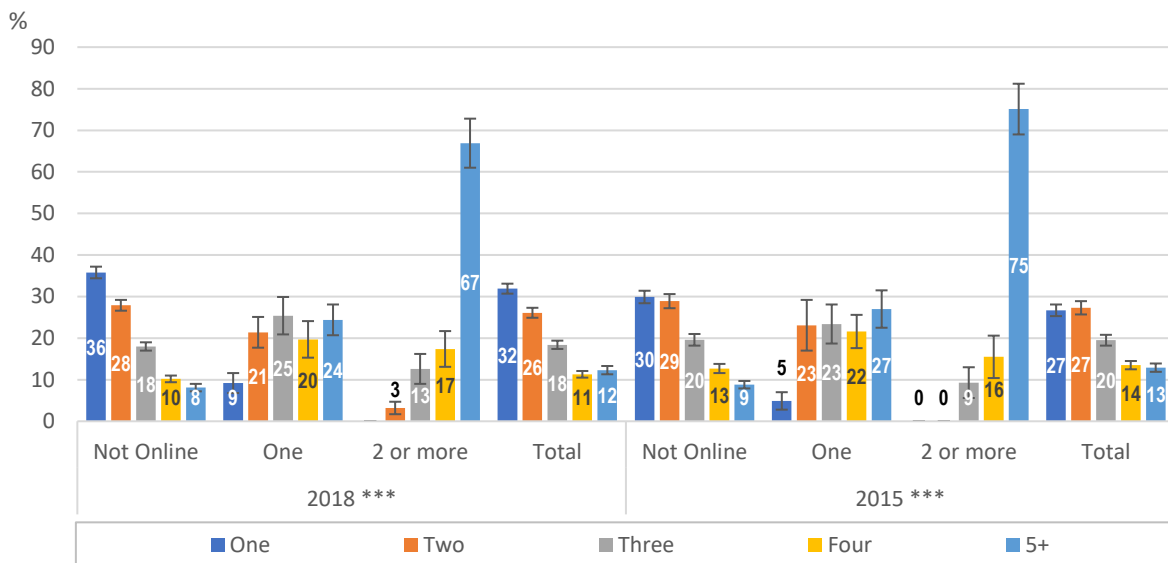
Table 4 shows that online gamblers were significantly more likely to gamble on four or more activities (online or not online), compared with land-based (not online) gamblers. The pattern of online gamblers gambling on significantly more activities was similar between 2015 and 2018, with 43.5% and 40.6% of online gamblers gambling on five or more activities. As a rule, the more activities a person gambles on, the more likely they are to experience harm from their own gambling. This will be further explored in the section exploring the relationship between problem gambling risk, harm from own gambling and online gambling participation.

**Table 4:** Number of gambling activities by online status and survey, 2015 and 2018 gamblers

Number of activities	2018 ***			2015 ***		
	Not online % (SE)	Online % (SE)	Total % (SE)	Not online % (SE)	Online % (SE)	Total % (SE)
One	35.8 (1.4)	5.7 (1.5)	31.9 (1.2)	29.9 (1.5)	3.2 (1.4)	26.7 (1.4)
Two	27.9 (1.3)	14.4 (2.4)	26.1 (1.2)	28.9 (1.7)	15.2 (4.3)	27.3 (1.6)
Three	18.0 (1.0)	20.5 (3.2)	18.4 (1.0)	19.6 (1.4)	18.6 (3.4)	19.5 (1.3)
Four	10.2 (0.8)	18.8 (3.2)	11.3 (0.8)	12.7 (1.1)	19.5 (3.2)	13.5 (1.0)
5 or more	8.1 (0.9)	40.6 (4.1)	12.3 (1.0)	8.8 (0.9)	43.5 (4.6)	12.9 (1.0)
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
Population	112,627	16,841	129,467	118,651	15,873	134,524

\*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$  Significant difference between online and not online (land-based) gamblers

Figure 4 shows the statistically significant relationship between number of online activities (not just online) and number of gambling activities. First, looking at the association in 2018. Online gamblers participating in one online activity were more likely to participate in three (25% cf. 18%), four (20% cf. 10%), and five (24% cf. 8%) total gambling types compared with non-online gamblers, while online gamblers participating in two or more online activities were more likely to participate in four (17% cf. 10%) and five (67% cf. 8%) total gambling types compared with non-online gamblers. A similar association was present for 2015.



**Figure 4:** Number of online gambling types by number of gambling activities, 2015 and 2018 gamblers

Table 5 shows the association between type of phone used to contact the respondent (landline or mobile) by online gambling for each online activity. Racetrack betting online was the only activity that showed a significant association with phone type, and this was present for both surveys. In 2018, 9.9% of gamblers contacted by mobile phone gambled on races online, compared with 5.3% amongst those contacted by landline. In 2015, 9.6% of those contacted by mobile phone gambled on races online, compared with 6.2% of those contacted by landline.

**Table 5:** Online gambling activity by phone type, 2015 and 2018 gamblers

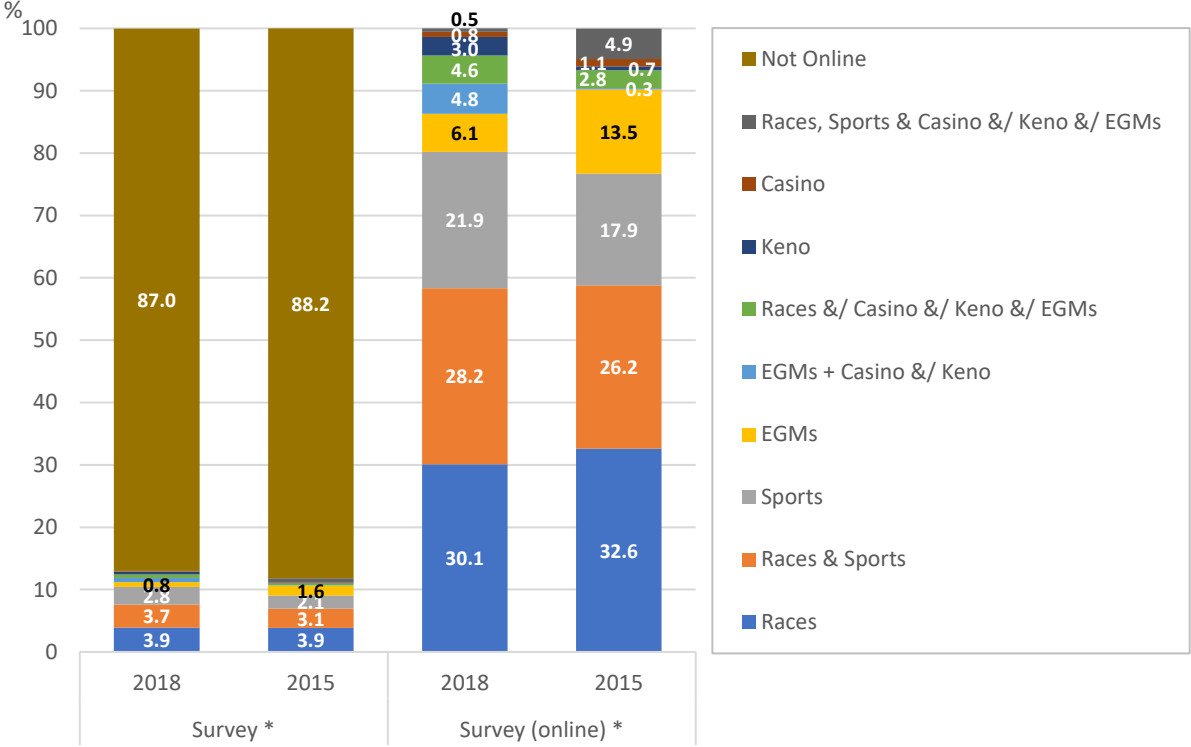
	2018			2015		
	Mobile % (SE)	Landline % (SE)	Total % (SE)	Mobile % (SE)	Landline % (SE)	Total % (SE)
Any online	13.9 (1.1)	8.9 (2.3)	13.0 (1.0)	12.7 (1.6)	11.0 (1.3)	11.8 (1.0)
Races online **,*	8.9 (0.9)	5.3 (1.2)	8.3 (0.8)	9.6 (1.4)	6.2 (0.8)	7.9 (0.8)
Sports betting online	7.3 (0.6)	5.7 (2.3)	7.0 (0.7)	6.6 (1.2)	5.0 (0.8)	5.8 (0.7)
EGMs online	1.3 (0.5)	2.3 (2.0)	1.5 (0.5)	2.2 (0.9)	2.5 (0.9)	2.3 (0.7)
Casino games online	0.8 (0.5)	0.1 (0.1)	0.7 (0.4)	0.9 (0.5)	0.5 (0.2)	0.7 (0.3)
Keno online	0.6 (0.2)	0.6 (0.2)	0.6 (0.1)	0.1 (0.1)	0.3 (0.2)	0.2 (0.1)

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05: Significant association between online activity and phone type (2015, 2018)

### 3.3 Combination of online gambling forms

From Figure 4, we know that in 2018, 61.9% of online gamblers only gamble on one online activity, and a further 37.6% only gamble on two online activities and less than 1% on three or more activities. Figure 5 shows the combinations of online gambling activities gambled on among online gamblers in 2015 and 2018. The difference between the distribution of the combination of gambling activities between the two surveys was marginally non-significant (p=0.06). For online gamblers only gambling on one online activity, racetrack betting (32.6% in 2015 and 30.1% in 2018) was the most common, followed by sports betting (17.8% in 2015 up to 21.8% in 2018), then EGMs (13.5% in 2015 and 6.1% in 2018), keno (0.7% in 2015 up to 3% in 2018), and lastly casino table games (1.1% in 2015 and 0.8% in 2018). For online gamblers gambling on two online activities, racetrack betting and sports betting made up the largest group with

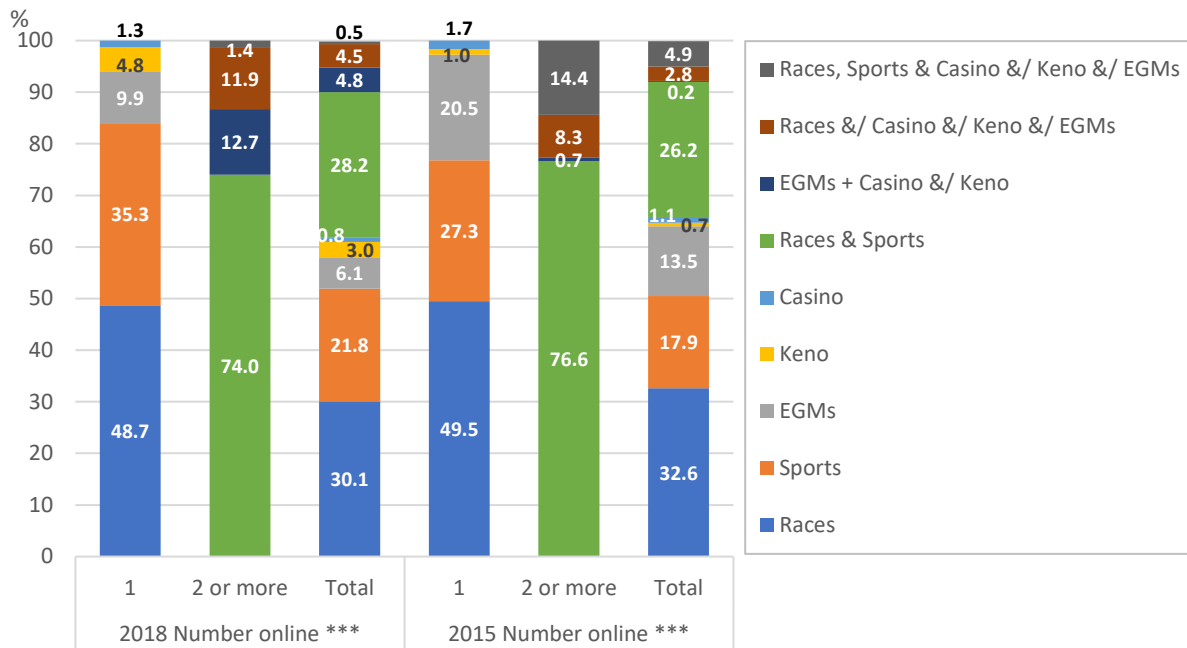
26.2% in 2015 and 28.2% in 2018 of online gamblers betting online on these two activities only. In 2018 the next most common pairing of online activities was EGMs and keno, with around 3.5% of online gamblers betting on these two activities online, followed by racetrack betting and casino table games (2.8%), EGMs and casino table games (1.4%), and racetrack betting and keno (1.2%).



**Figure 5: Combination of online gambling activities by survey, 2015 and 2018 online gamblers**

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant difference between 2015 & 2018 in the combination of online gambling activities

The next figure shows the combination of online gambling activity by the number of online activities they gambled on for online gamblers in 2015 and 2018, while Table 6 presents the data with standard errors. Unsurprisingly, number of online activities was significantly associated with the combination of online activities in both 2015 and 2018, with sports and racetrack betting dominating. In 2018, of those online gamblers only gambling on one online activity, just under 50% gamble on races, 35% sports, 10% EGMs, 5% keno and 1.3% casino table games. Of the online gamblers gambling on two or more online activities in 2018, 74% gambled on races and sports, 13% EGMs plus casino games and/or keno, 12% races and/or casino table games and/or keno and/or EGMs, and less than 2% on a combination of races plus sports plus casino games and/or keno and/or EGMs. In 2015, like 2018, just under 50% of online gamblers only gambled on races, followed by 27% on sports betting, 21% on EGMs, 1.7% on casino table games, and 1% on keno. Of the 2015 online gamblers gambling on two online activities, 95% gambled on races and sports, followed by 4.2% on races and EGMs, and less than 1% for both races and casino tables games, and races and keno. The main difference between 2015 and 2018 is a drop in online EGM gambling for gamblers only partaking in one online form, and less gamblers partaking in all online activities, possibly reflecting experimental gambling online in 2015, as products became online from land based.



**Figure 6:** Number of online gambling activities by combination of online activities and survey, 2015 and 2018 online gamblers

\*\*\* p<0.001 Significant difference between online gambling frequency and non-online gambling frequency by time

**Table 6:** Combination of online gambling activities by number of online activities gambled on, 2015 and 2018 gamblers

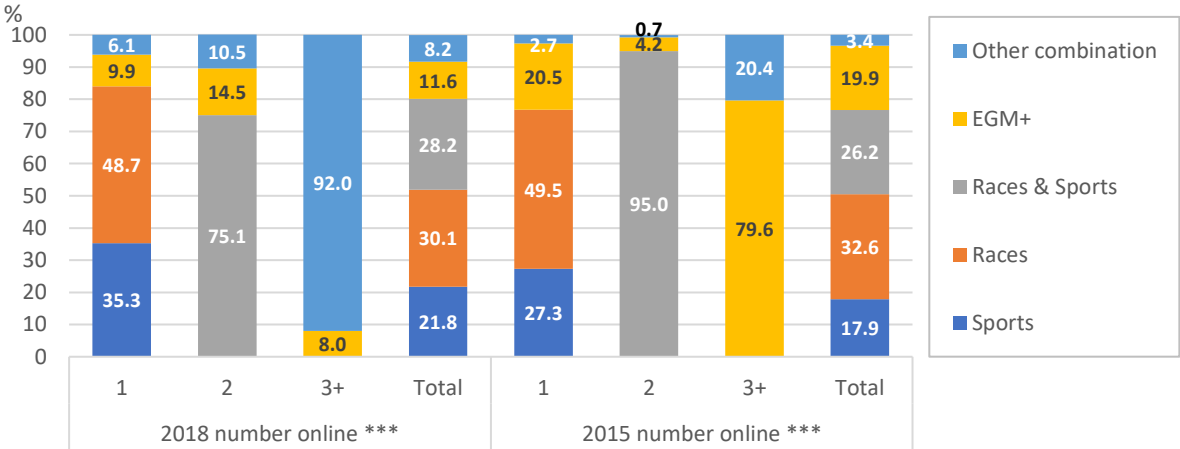
	2018 Number online ***			2015 Number online ***		
	One %	Two or more %	Total %	One %	Two or more %	Total %
Races	48.7 (4.7)	-	30.1 (3.5)	49.5 (5.8)	-	32.6 (4.0)
Sports	35.3 (4.1)	-	21.8 (2.7)	27.3 (4.4)	-	17.9 (3.0)
EGMs	<b>9.9 (4.1)</b>	-	<b>6.1 (2.6)</b>	<b>20.5 (6.5)</b>	-	<b>13.5 (4.6)</b>
Keno	4.8 (1.4)	-	3.0 (0.9)	<b>1.0 (0.8)</b>	-	<b>0.7 (0.5)</b>
Casino	<b>1.3 (1.0)</b>	-	<b>0.8 (0.6)</b>	<b>1.7 (0.8)</b>	-	<b>1.1 (0.5)</b>
Races & Sports	-	74.0 (8.7)	28.2 (3.2)	-	76.6 (6.8)	26.2 (4.0)
EGMs + Casino &/ Keno	-	<b>12.7 (7.4)</b>	<b>4.8 (3.0)</b>	-	<b>0.7 (0.7)</b>	<b>0.2 (0.2)</b>
Races + Casino &/ Keno &/ EGMs	-	<b>11.9 (6.7)</b>	<b>4.5 (2.8)</b>	-	<b>8.3 (4.0)</b>	<b>2.8 (1.4)</b>
Races, Sports & Casino &/ Keno &/ EGMs	-	<b>1.4 (0.9)</b>	<b>0.5 (0.3)</b>	-	<b>14.4 (5.9)</b>	<b>4.9 (2.1)</b>
<b>Total</b>	100.0	100.0	100.0	100.0	100.0	100.0
<b>Population</b>	10,416	6,333	16,841	10,444	4,376	15,873

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between number of online activities and combination of activities gambled on online

In order to simplify analyses and presentation in figures, the online gambling combination variable was collapsed into six groups: (i) not online, (ii) races only, (iii) sports only, (iv) races and sports only, (v) EGMs plus a combination of others, and (vi) other, which includes a mixture of a small number of respondents that only gambled on keno or casino table games, or combinations of races, sports, keno and casino games, but not EGMs.

Figure 7 shows the collapsed online combination variable by number of online activities. In 2018, 80% of online gamblers were gambling on either races (30.1%), sports (21.8%), or races and sports (28.2%), while 11.6% were gambling online on EGMs or EGMs plus a combination of other online activities, and 8.2% gambled on a combination of online activities, not including EGMs. In the 2015 and compared with 2018, a smaller percent gambled on races only (32.6%), sports only (17.9%), races and sports (26.2%), while a larger percent gambled on EGMs or EGMs plus a combination of other activities (19.9%). In 2015, online gamblers who only gambled on one online activity, the most popular was races (49.5%), followed by sports (27.3%), EGMs (20.5) and other, which was either keno or casino table games (2.7%). Compared with 2018 gamblers who only gambled on one online activity races (48.7%) remained steady, sports betting increased its share (35.3%) and EGMs decreased their share (9.9%), while the other category of either casino table games or keno online gamblers made up 6.1%, an increase from 2015. For those online gamblers only gambling on two online activities, in 2015 95% were gambling on races and sports, while in 2018, this decreased to 75.1%. Just 4.2% of those gambling online on two activities in 2015 gambled on EGMs and one other, while in 2018 this increased to 14.5%. There was a change in the combination of activities for online gamblers gambling on three or more activities between 2015 and 2018, with 79.6% gambling on EGMs plus two other activities, while in 2018 this dropped to 8%, while the other combination, which did not include EGMs increased, compared with 2015. Table 7 shows population counts for the data presented in Figure 8.



**Figure 7:** Number of online gambling activities by collapsed combination of online activities, 2015 and 2018 online gamblers

\*\*\* p < 0.001 Significant association between online gambling combination and number of online activities

**Table 7:** Online gambling combination by number of online gambling activities, 2015 and 2018 online gamblers

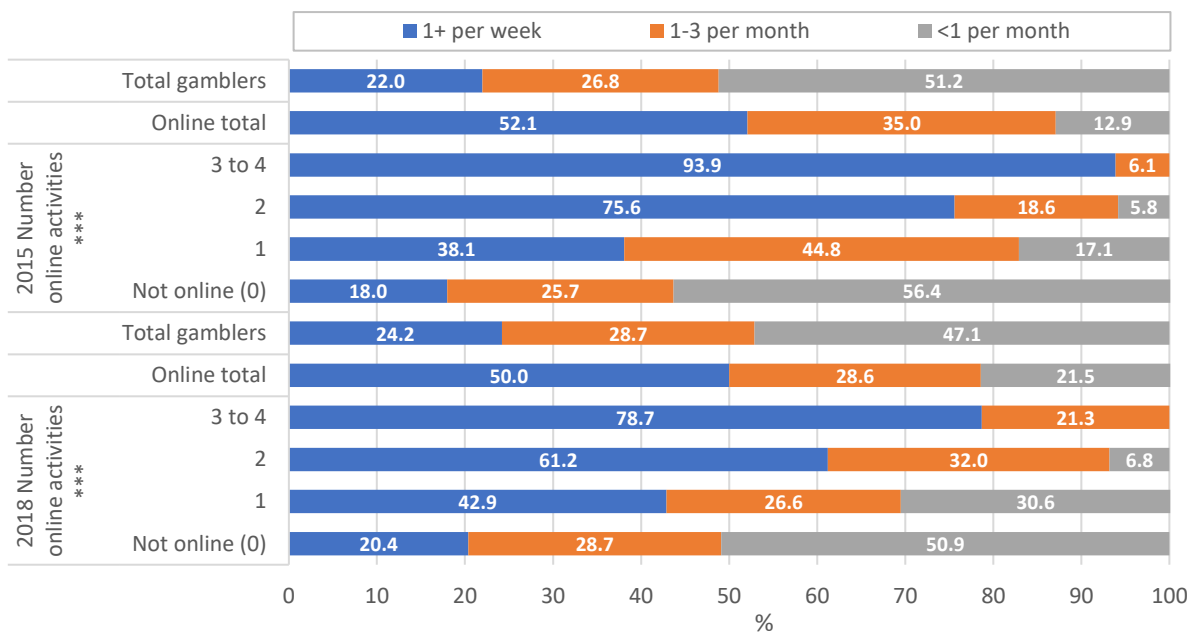
	2018 Number online ***				2015 Number online ***			
	One N	Two N	Three or more N	Total N	One N	Two N	Three or more N	Total N
Sports	3,680	-	-	3,680	2,848	-	-	2,848
Races	5,071	-	-	5,071	5,174	-	-	5,174
Races & Sports	-	4,754	-	4,754	-	4,159	-	4,159
EGM+(1 to 3 types)	1,028	917	7	1,952	2,136	186	838	3,160
Other (not EGMs)	638	663	84	1,385	286	31	214	532

<b>Total</b>	<b>10,416</b>	<b>6,333</b>	<b>91</b>	<b>16,841</b>	<b>10,444</b>	<b>4,376</b>	<b>1,052</b>	<b>15,873</b>
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### 3.4 Frequency of gambling by online gambling

#### 3.4.1 All gamblers

From Table 4 (number of activities by online gambling combination) it was clear that online gamblers participate in more forms of gambling, and it is likely that this transfers to gambling more frequently. Figure 8 and Table 8 below show there was a significant association in both surveys between number of online activities and all gambling frequency. In 2018, 50% of online gamblers gambled weekly, compared with 20.4% of non-online gamblers, while in 2015, 52.1% of online gamblers gambled weekly, compared with 22% of non-online gamblers. There is a clear trend present in both 2018 and 2015 between increased gambling frequency and increased participation in online gambling activities, with 78.7% and 93.9% of gamblers gambling on three to four online activities gambling weekly, dropping to 61.2% and 75.6% for two online activities and 42.9% and 38.1% for one online activity in 2018 and 2015 respectively.



**Figure 8: Number of online gambling activities by all gambling frequency, 2015 and 2018 gamblers**

\*\*\* p<0.001 Significant difference between online gambling frequency and non-online gambling frequency by time

Not shown in Figure 8 are the actual number of people estimated to be gambling online by frequency. Table 8 shows that it was a small number of people who gambled on three or more online activities and that this declined between 2015 (1,052 online gamblers) and 2018 (92 online gamblers), with estimates of gambling frequency for those gambling on three or more online activities having large standard errors and should be interpreted with caution. However, it is still not known what activities they are gambling on, and whether the extra gambling is being done on online activities or other activities they participate in. To get a better understanding of what online gamblers are gambling on, the next figures will focus on racetrack and sports betting, the number of online gambling activities, the combination of online activities, and frequency of gambling within sports and racetrack bettors.

**Table 8:** Number of online gambling activities by all gambling frequency, 2015 and 2018 gamblers

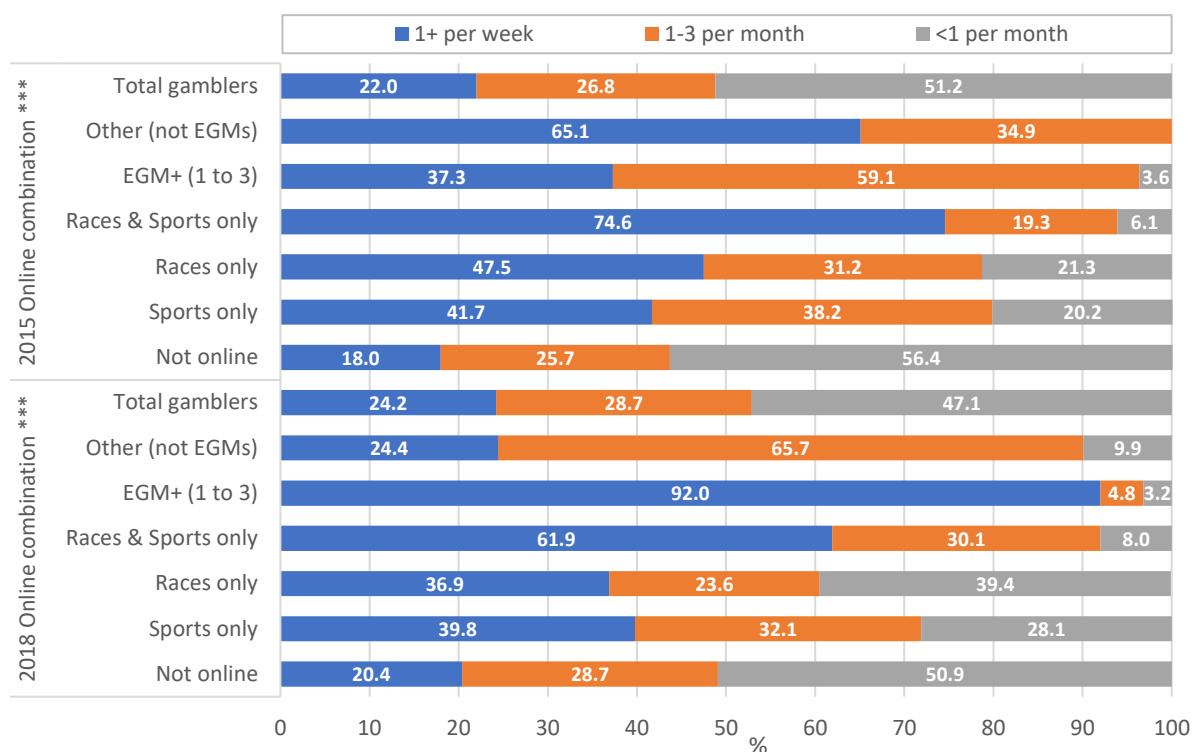
	All gambling frequency			All gambling frequency			Total N
	1+ per week % (SE)	1-3 per month % (SE)	<1 per month % (SE)	1+ per week N	1-3 per Month N	<1 per Month N	
2015 Number online ***							
Not online (0)	18.0 (1.1)	25.7 (1.5)	56.4 (1.7)	21,331	30,445	66,875	118,651
1	38.1 (5.2)	44.8 (5.9)	17.1 (3.6)	3,976	4,681	1,788	10,444
2	75.6 (6.8)	18.6 (6.0)	<b>5.8 (3.7)</b>	3,308	812	256	4,376
3 to 4	93.9 (4.7)	<b>6.1 (4.7)</b>	0.0 (0.0)	988	64	0	1,052
<i>Online total</i>	<i>52.1 (4.6)</i>	<i>35.0 (4.7)</i>	<i>12.9 (2.6)</i>	<i>8,272</i>	<i>5,557</i>	<i>2,044</i>	<i>15,872</i>
<b>Total 2015 gamblers</b>	<b>22.0 (1.1)</b>	<b>26.8 (1.5)</b>	<b>51.2 (1.6)</b>	<b>29,604</b>	<b>36,002</b>	<b>68,918</b>	<b>134,524</b>
2018 Number online ***							
Not online (0)	20.4 (1.0)	28.7 (1.3)	50.9 (1.4)	22,930	32,378	57,318	112,627
1	42.9 (4.8)	26.6 (3.9)	30.6 (4.8)	4,464	2,766	3,186	10,416
2	61.2 (7.1)	32.0 (7.1)	<b>6.8 (2.8)</b>	3,878	2,027	428	6,333
3 to 4	78.7 (21.)	<b>21.3 (21.)</b>	0.0 (0.0)	72	20	0	92
<i>Online total</i>	<i>50.0 (4.1)</i>	<i>28.6 (3.6)</i>	<i>21.5 (3.4)</i>	<i>8,414</i>	<i>4,813</i>	<i>3,614</i>	<i>16,840</i>
<b>Total 2018 gamblers</b>	<b>24.2 (1.1)</b>	<b>28.7 (1.2)</b>	<b>47.1 (1.3)</b>	<b>31,344</b>	<b>37,191</b>	<b>60,932</b>	<b>129,467</b>

\*\*\* p<0.001: Significant association between number of online activities and all gambling frequency

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

NOTES: Totals may not add up due to rounding of percentages and population weights

Figure 9 shows there was a significant association between all gambling frequency and online gambling combination. In both 2015 and 2018, gamblers who only gambled online on either races or sports had significantly higher weekly gambling frequency than non-online gamblers, but significantly less than gamblers who gambled online on both sports and racetrack betting. In 2018 gamblers gambling online on EGMs plus one to three other online activities were significantly more likely to be weekly gamblers, with over 90% of this group gambling weekly. Between 2015 and 2018 gambling frequency decreased for gamblers only gambling online on races (weekly from 47.5% to 36.9%) and sports (weekly from 41.7% to 39.8%) betting, and for those gambling on races and sports betting (weekly from 74.6% to 61.9%). In summary, the more online gambling activities gamblers participated in, the more frequently they gambled. Table 9 presents percentage estimates and population counts for online gambling combination by all gambling frequency. Note that some estimates in this table have relative standard errors greater than 30% and should be interpreted with caution.



**Figure 9:** Online gambling combination by all gambling frequency, 2015 and 2018 gamblers

\*\*\* p<0.001: Significant association between all gambling frequency & online gambling combination

**Table 9:** Online gambling combination by all gambling frequency, 2015 and 2018 gamblers

	All gambling frequency			All gambling frequency			Total N
	1+ per week % (SE)	1-3 per month % (SE)	<1 per month % (SE)	1+ per week N	1-3 per month N	<1 per month N	
2018 Online combination ***							
Not online	20.4 (1.0)	28.7 (1.3)	50.9 (1.4)	22,930	32,378	57,318	112,627
Sports only	39.8 (7.1)	32.1 (6.4)	28.1 (6.5)	1,464	1,179	1,036	3,680
Races only	36.9 (6.0)	23.6 (5.6)	39.4 (7.5)	1,873	1,199	2,000	5,071
Races & Sports only	61.9 (5.8)	30.1 (5.4)	<b>8.0 (3.5)</b>	2,944	1,430	380	4,754
EGM+ (1 to 3)	92.0 (4.2)	<b>4.8 (3.0)</b>	<b>3.2 (2.3)</b>	1,795	94	62	1,952
Other (not EGMs)	<b>24.4 (11.)</b>	65.7 (14.)	<b>9.9 (5.5)</b>	338	910	137	1,385
<b>Total gamblers</b>	<b>24.2 (1.1)</b>	<b>28.7 (1.2)</b>	<b>47.1 (1.3)</b>	<b>31,344</b>	<b>37,191</b>	<b>60,932</b>	<b>129,467</b>
2015 Online combination ***							
Not online	18.0 (1.1)	25.7 (1.5)	56.4 (1.7)	21,331	30,445	66,875	118,651
Sports only	41.7 (8.8)	38.2 (8.8)	<b>20.2 (7.0)</b>	1,187	1,087	574	2,848
Races only	47.5 (6.7)	31.2 (6.2)	21.3 (5.3)	2,459	1,615	1,100	5,174
Races & Sports only	74.6 (7.1)	<b>19.3 (6.3)</b>	<b>6.1 (3.9)</b>	3,101	803	256	4,159
EGM+ (1 to 3)	<b>37.3 (13.)</b>	59.1 (13.)	<b>3.6 (3.6)</b>	1,179	1,867	113	3,160
Other (not EGMs)	65.1 (15.)	<b>34.9 (15.)</b>	0.0 (0.0)	346	185	0	532
<b>Total gamblers</b>	<b>22.0 (1.1)</b>	<b>26.8 (1.5)</b>	<b>51.2 (1.6)</b>	<b>29,604</b>	<b>36,002</b>	<b>68,918</b>	<b>134,524</b>

\*\*\* p<0.001: Significant association between all gambling frequency & online gambling combination

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

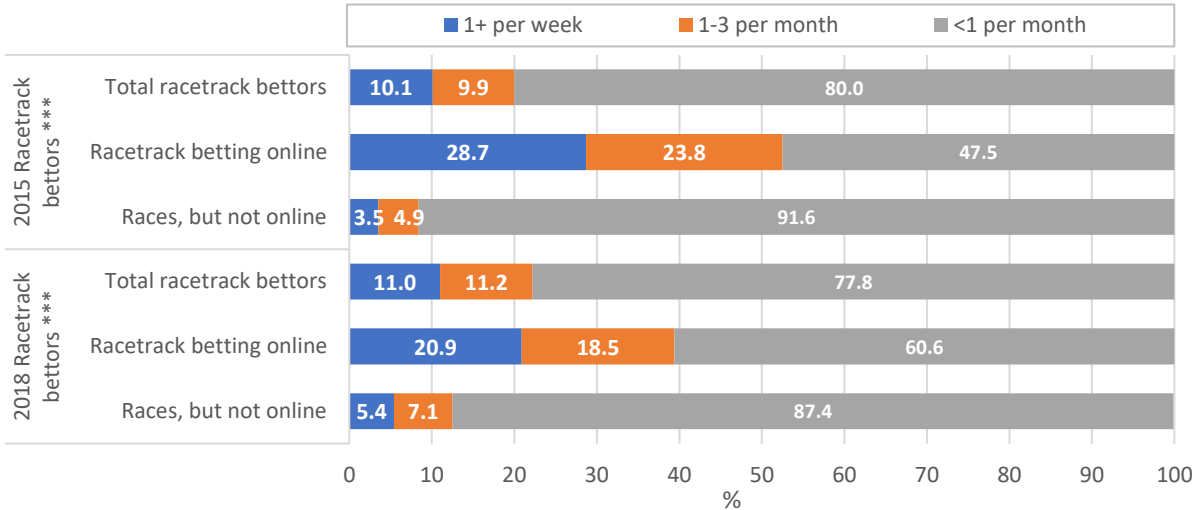
NOTES: Totals may not add up due to rounding of percentages and population weights

### 3.4.2 Racetrack gamblers

Figure 10 and Table 10 show the frequency of racetrack betting by the number of online activities gambled on by survey for racetrack gamblers only. This will help unpack whether online racetrack bettors are gambling more often on races,



compared with non-online racetrack bettors, and whether those racetrack bettors participating in more than one online activity gamble more frequently on races. Racetrack bettors who bet on races online gambled more frequently than racetrack bettors who did not gamble online, with this observation consistent in 2015 and 2018. Specifically, in 2015 only 3.5% of non-online racetrack bettors gambled weekly, compared with 28.7% of online racetrack bettors, while in 2018, 5.4% of non-online racetrack bettors gambled weekly, compared with 20.9% of online racetrack bettors.



**Figure 10: Racetrack betting online by racetrack betting frequency, 2015 and 2018 racetrack gamblers**

\*\*\* p<0.001: Significant association between racetrack betting online and racetrack betting frequency

Table 10 shows online racetrack betting and racetrack betting frequency and includes standard errors on percentage estimates along with population counts.

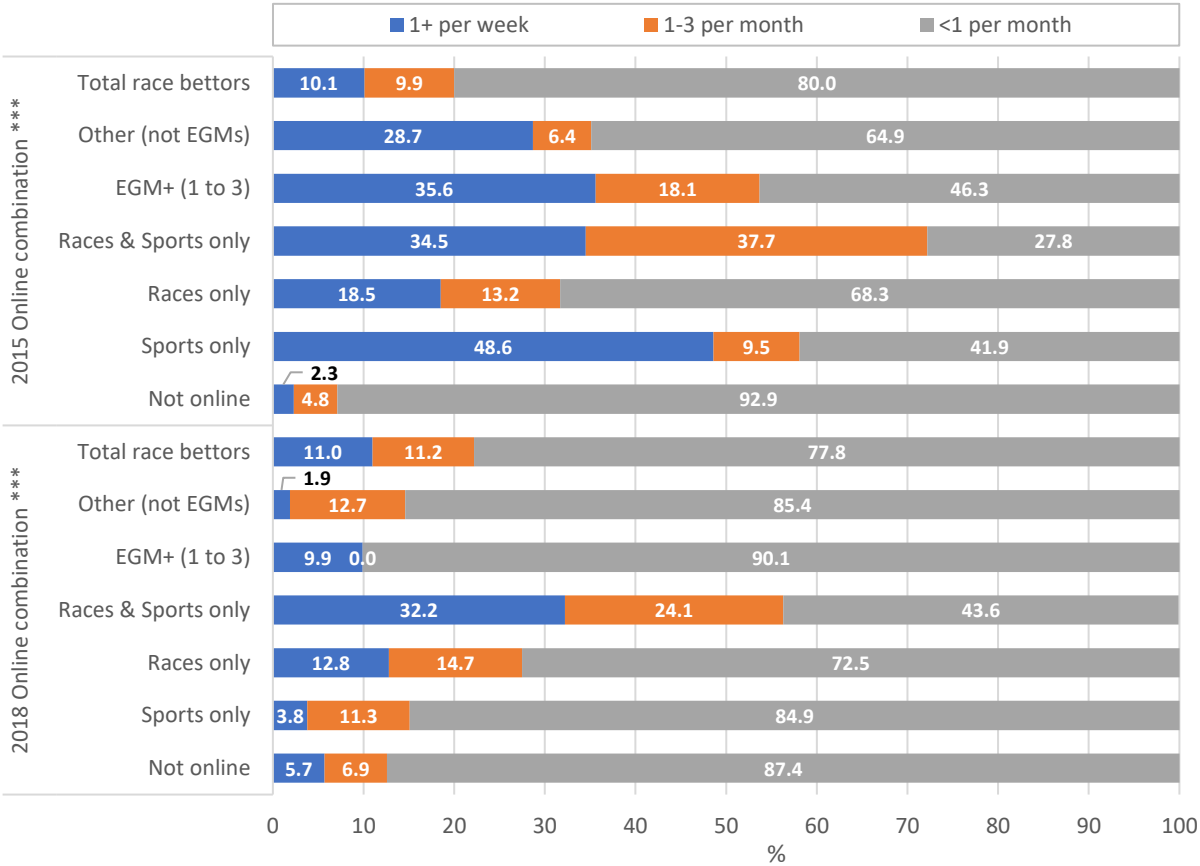
**Table 10: Racetrack betting online by racetrack gambling frequency, 2015 and 2018 racetrack gamblers**

	Racetrack frequency			Racetrack frequency			Total N
	1+ per week % (SE)	1-3 per month % (SE)	<1 per month % (SE)	1+ per Week N	1-3 per Month N	<1 per Month N	
2015 Racetrack bettors ***							
Races, but not online	3.5 (1.0)	4.9 (1.3)	91.6 (1.6)	1,027	1,461	27,200	29,688
Racetrack betting online	28.7 (4.9)	23.8 (4.8)	47.5 (5.2)	3,034	2,516	5,013	10,563
<b>Total racetrack bettors</b>	<b>10.1 (1.7)</b>	<b>9.9 (1.7)</b>	<b>80.0 (2.3)</b>	<b>4,060</b>	<b>3,978</b>	<b>32,213</b>	<b>40,251</b>
2018 Racetrack bettors ***							
Races, but not online	5.4 (1.3)	7.1 (1.6)	87.4 (1.9)	1,041	1,365	16,709	19,115
Racetrack betting online	20.9 (3.6)	18.5 (3.3)	60.6 (4.5)	2,236	1,978	6,468	10,682
<b>Total racetrack bettors</b>	<b>11.0 (1.5)</b>	<b>11.2 (1.6)</b>	<b>77.8 (2.0)</b>	<b>3,277</b>	<b>3,344</b>	<b>23,177</b>	<b>29,797</b>

\*\*\* p<0.001 Significant association between number of online activities and all gambling frequency

Figure 11 graphs estimates for online gambling combination by racetrack betting frequency for racetrack gamblers only. While the association was statistically significant between online gambling combination and racetrack betting frequency, several estimates had relative standard errors greater than 30% and should be interpreted with caution (see Table 11). First, the pattern of association between online gambling combination and racetrack betting frequency differs between 2015 and

2018. The graph shows clearly that racetrack gamblers who bet online gamble more frequently than those who do not. In 2018, a little under 6% of racetrack bettors who did not gamble online gambled weekly, compared with 13% for those racetrack gamblers betting online only on races, while in 2015, 2.3% of racetrack bettors not gambling online gambled weekly, compared with 19% who only gambled on races online. Similar with all gamblers, the more online activities racetrack gamblers gambled on, the more frequently they also gambled on races, with weekly gambling on racetrack gamblers gambling on sports and braces only over 30% for 2015 and 2018.



**Figure 11:** Online gambling combination by racetrack betting frequency, 2015 and 2018 racetrack gamblers

\*\*\* p<0.001: Significant association between racetrack betting frequency & online gambling combination

Table 11 shows estimates (with standard errors) and population counts for online gambling combination by racetrack betting frequency. Most racetrack bettors only gambled online on races, sports or both activities, though this was more pronounced in 2018.

**Table 11:** Online gambling combination by all racetrack betting frequency, 2015 and 2018 racetrack gamblers

	Racetrack betting frequency			Racetrack betting frequency			Total N
	1+ per week % (SE)	1-3 per month % (SE)	<1 per month % (SE)	1+ per week N	1-3 per month N	<1 per month N	
2018 Online combination ***							

Not online	5.7 (1.4)	6.9 (1.6)	87.4 (2.0)	1,005	1,225	15,494	17,724
Sports only	<b>3.8 (2.9)</b>	<b>11.3 (9.5)</b>	84.9 (9.7)	36	108	812	956
Races only	<b>12.8 (3.9)</b>	<b>14.7 (5.0)</b>	72.5 (6.0)	649	747	3,675	5071
Races & Sports only	32.2 (5.9)	24.1 (4.9)	43.6 (6.0)	1,531	1,147	2,075	4754
EGM+ (1 to 3)	<b>9.9 (8.4)</b>	0.0 (0.0)	90.1 (8.4)	38	0	347	385
Other (not EGMs)	<b>1.9 (2.1)</b>	<b>12.7 (9.5)</b>	85.4 (10.)	17	116	775	907
<b>Total racetrack gamblers</b>	11.0 (1.5)	11.2 (1.6)	77.8 (2.0)	3,277	3,344	23,177	29,797
<b>2015 Online combination ***</b>							
Not online	<b>2.3 (0.7)</b>	4.8 (1.4)	92.9 (1.5)	651	1,358	26,273	28,282
Sports only	<b>48.6 (17.)</b>	<b>9.5 (6.5)</b>	<b>41.9 (16.)</b>	376	73	324	773
Races only	18.5 (4.9)	<b>13.2 (4.9)</b>	68.3 (6.2)	960	681	3,533	5,174
Races & Sports only	34.5 (8.9)	37.7 (9.0)	27.8 (7.0)	1,434	1,568	1,157	4,159
EGM+ (1 to 3)	<b>35.6 (18.)</b>	<b>18.1 (11.)</b>	<b>46.3 (21.)</b>	542	276	705	1,523
Other (not EGMs)	<b>28.7 (21.)</b>	<b>6.4 (6.7)</b>	<b>64.9 (22.)</b>	98	22	221	341
<b>Total racetrack gamblers</b>	10.1 (1.7)	9.9 (1.7)	80.0 (2.3)	4,060	3,978	32,213	40,251

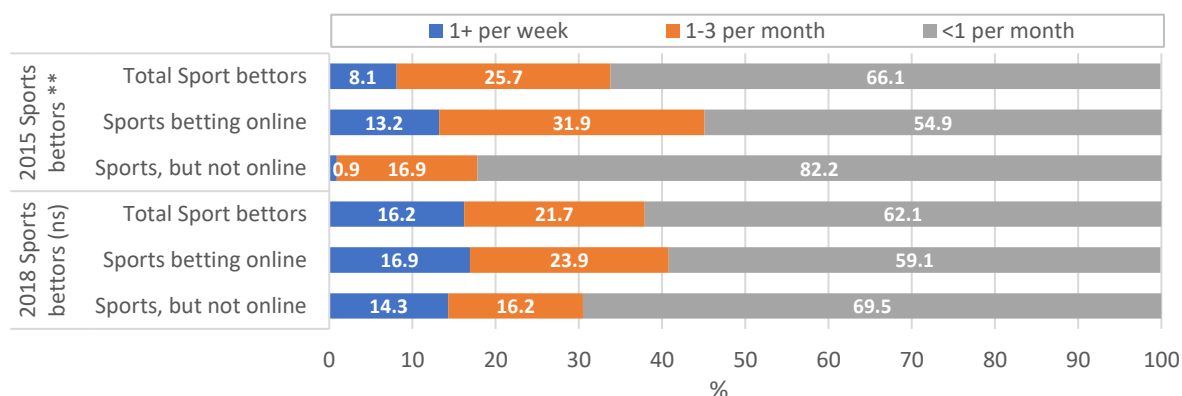
\*\*\* p<0.001: Significant association between races frequency & online gambling combination

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

NOTES: Totals may not add up due to rounding of percentages and population weights

### 3.4.3 Sports gamblers

Figure 12 show sports betting frequency by online status for 2015 and 2018 sports bettors. The association between sports betting online and sports betting frequency was significant in 2015, but not in 2018. In 2015, 13% of online sports bettors gambled weekly on sports betting, compared with 1% of non-online sports bettors, while 32% of online sports bettors gambled on sports monthly, compared with 17% of non-online sports bettors. However, in 2018, there was little difference in weekly sports betting between online (17%) and non-online sports bettors (14%), though online sports bettors were more likely to bet monthly (24%), compared with non-online sports bettors (16%), though this association was not statistically significant.



**Figure 12: Sports betting online by sports betting frequency, 2015 and 2018 sports gamblers**

\*\* p<0.01: Significant association between online racing status and racetrack betting frequency; ns: not significant

Table 12 shows estimates (with standard errors), and population counts for sports betting online by sports betting frequency. Some estimates in both 2015 and 2018 surveys for weekly and monthly sports betting had relative standard errors above 30% so care should be made in interpreting these estimates.

**Table 12:** Sports betting online by sports betting frequency, 2015 and 2018 sports gamblers

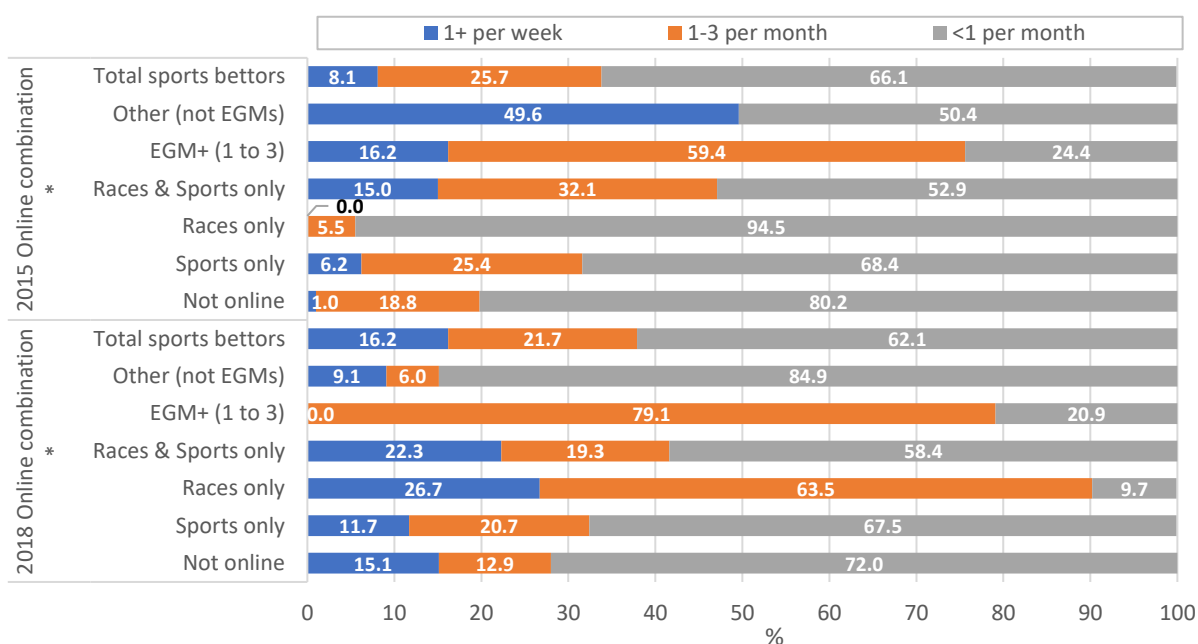
	Sports betting frequency			Sports betting frequency			Total N
	1+ per week	1-3 per month	<1 per month	1+ per Week	1-3 per Month	<1 per Month	
	% (SE)	% (SE)	% (SE)	N	N	N	
2015 Sports bettors **							
Sports, but not online	<b>0.9 (0.6)</b>	<b>16.9 (6.4)</b>	82.2 (6.4)	48	920	4,470	5,438
Sports betting online	13.2 (3.9)	31.9 (6.2)	54.9 (6.2)	1,028	2,484	4,277	7,789
<b>Total sports bettors</b>	<b>8.1 (2.4)</b>	<b>25.7 (4.7)</b>	<b>66.1 (4.9)</b>	1,076	3,405	8,747	13,227
2018 Sports bettors (ns)							
Sports, but not online	<b>14.3 (4.9)</b>	<b>16.2 (6.5)</b>	69.5 (8.0)	529	598	2,569	3,697
Sports betting online	16.9 (3.8)	23.9 (5.1)	59.1 (5.3)	1,542	2,178	5,386	9,106
<b>Total sports bettors</b>	<b>16.2 (3.1)</b>	<b>21.7 (4.2)</b>	<b>62.1 (4.5)</b>	2,071	2,776	7,956	12,803

\*\* p<0.01: Significant association between number of online activities and all gambling frequency; ns: not significant

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

NOTES: Totals may not add up due to rounding of percentages and population weights

Figure 13 presents estimates for online gambling combination by sports betting frequency for sports gamblers only. In 2018 there was little difference between non-online and online only on sports, with online slightly less likely to be weekly bettors (11.7% cf. 15.1%) but more likely to be monthly bettors (20.7% cf. 12.9%). However, sports bettors who also gambled on races were significantly more likely to gamble weekly than non-online sports bettors (22.3% cf. 15.1%) and monthly (19.3% cf. 12.9%). Sports bettors who didn't gamble online on sports but did gamble online on races were more likely to be weekly gamblers on sports. In 2015, sports bettors who gambled online were more likely to gamble weekly gamblers than those who didn't gamble online.



**Figure 13:** Online gambling combination by sports betting frequency, 2015 and 2018 sports gamblers

\* p<0.05: Significant association between sports betting frequency & online gambling combination

Table 13 shows estimates with standard errors and population counts for online gambling combination by sports betting frequency for sports gamblers. Most estimates

had large standard errors due to the small number of sports bettors, so caution advised in interpreting these estimates and those in Figure 14.

**Table 13:** Online gambling combination by all racetrack betting frequency, 2015 and 2018 sports gamblers

	Sports betting frequency			Sports betting frequency			Total N
	1+ per week % (SE)	1-3 per month % (SE)	<1 per month % (SE)	1+ per week N	1-3 per month N	<1 per month N	
2018 Online combination *							
Not online	<b>15.1 (5.2)</b>	<b>12.9 (5.9)</b>	72.0 (7.0)	433	369	2,061	2,863
Sports only	<b>11.7 (4.8)</b>	20.7 (5.7)	67.5 (6.7)	432	762	2,485	3,680
Races only	<b>26.7 (23.)</b>	<b>63.5 (25.)</b>	<b>9.7 (9.7)</b>	96	229	35	360
Races & Sports only	22.3 (5.9)	19.3 (4.3)	58.4 (6.2)	1,059	917	2,778	4,754
EGM+ (1 to 3)	0.0 (0.0)	79.1 (21.)	<b>20.9 (20.)</b>	0	466	123	589
Other (not EGMs)	<b>9.1 (9.1)</b>	<b>6.0 (6.0)</b>	84.9 (15.)	51	33	473	557
<b>Total sports gamblers</b>	16.2 (3.1)	21.7 (4.2)	62.1 (4.5)	2,071	2,776	7,956	12,803
2015 Online combination *							
Not online	<b>1.0 (0.7)</b>	<b>18.8 (7.2)</b>	80.2 (7.3)	48	892	3,809	4,748
Sports only	<b>6.2 (3.7)</b>	<b>25.4 (9.1)</b>	68.4 (9.1)	175	724	1,949	2,848
Races only	0.0 (0.0)	<b>5.5 (5.5)</b>	94.5 (5.9)	0	29	497	525
Races & Sports only	<b>15.0 (6.6)</b>	32.1 (8.4)	52.9 (9.0)	623	1,334	2,202	4,159
EGM+ (1 to 3)	<b>16.2 (13.)</b>	<b>59.4 (23.)</b>	<b>24.4 (19.)</b>	116	426	175	717
Other (not EGMs)	<b>49.6 (30.)</b>	0.0 (0.0)	<b>50.4 (30.)</b>	113	0	115	229
<b>Total sports gamblers</b>	8.1 (2.4)	25.7 (4.7)	66.1 (4.9)	1,076	3,405	8,747	13,227

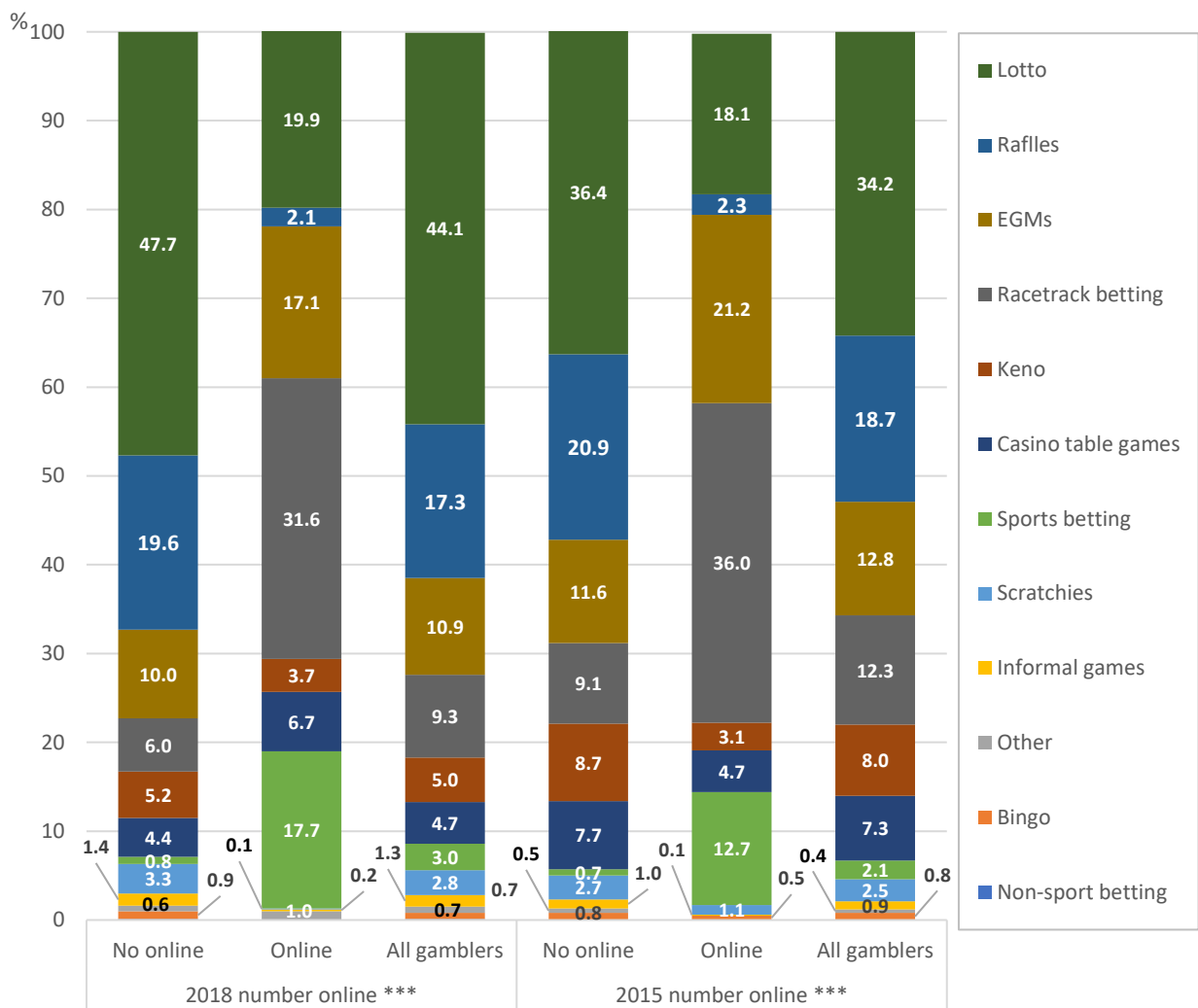
\* p<0.05: Significant association between sports betting frequency & online gambling combination

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

NOTES: Totals may not add up due to rounding of percentages and population weights

### 3.5 Highest spend and self-reported spending by online gambling

Figure 15 shows gamblers highest spend activity (self-selected) by the number of online activities they participated in, sorted by most common activity for all gamblers. There was significant variation in highest spend between non-online and online gamblers in both 2015 and 2018. In 2018, lotto (47.7%) was the most endorsed highest spend activity for non-online gamblers, while it ranked second (19.9%) for gamblers who gambled online. Raffles were less commonly a highest spend activity for online gamblers, with 2.1% of online gamblers (seventh most common), compared with 19.6% (second most common) of non-online gamblers in 2018 and this was similar in 2015. Racetrack betting (31.6%), followed by sports betting (17.7%) and EGMs (17.1%) were the second, third and fourth most selected highest spend activities for online gamblers. Results in 2015 were very similar to 2018, though between 2015 and 2018 there was a decrease in highest spend on racetrack betting for online gamblers (36% down to 31.6%), and an increase in sports betting (12.7% up to 17.7%).



**Figure 14: Online gambling by highest spend activity, 2015 and 2018 gamblers**

\*\*\*  $p < 0.001$ : Significant association between number of online activities and highest spend activity

Table 14 shows population counts for number of online activities by highest spend for the 2015 and 2018. Two activities showed an increase in the absolute number of people selecting as a highest spend activity. Lotto gamblers who gambled online increased from 2,876 to 3,359 (or 486 people) from 2015 to 2018, casino table gamblers increased from 749 to 1,124 (375 people), while the largest increase occurred for sports betting, increasing from 2,022 to 2,976 (954 people).

**Table 14: Number of online activities by highest spend activity, 2015 and 2018 gamblers**

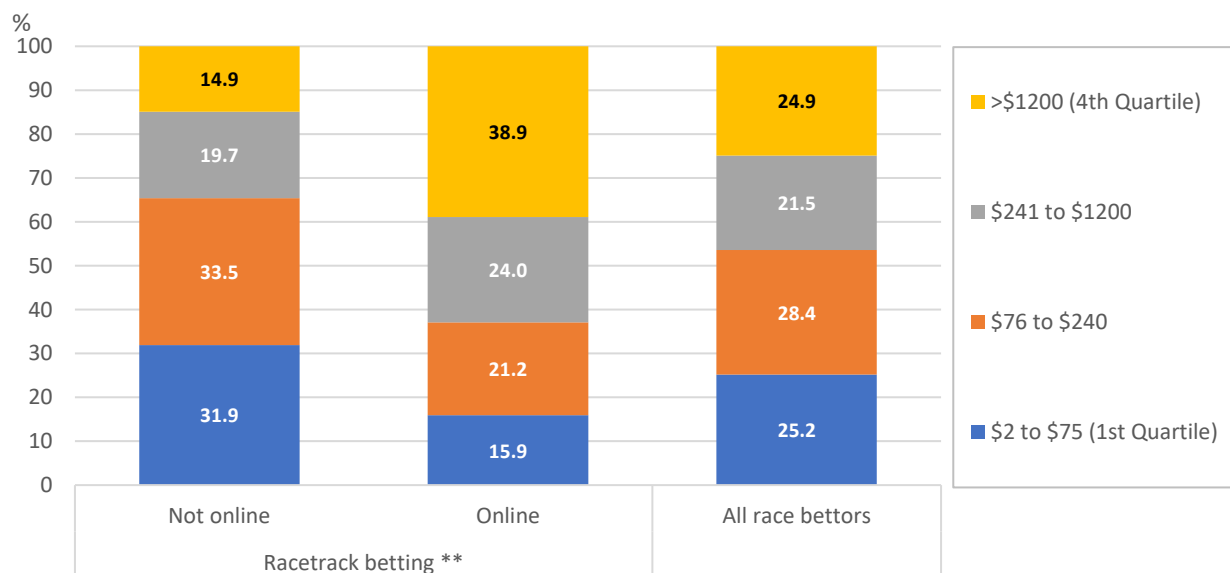
	2018 number online				All gamblers N	2015 number online			
	No online N	One N	Two or more N	All gamblers N		No online N	One N	Two or more N	All gamblers N
Lotto	53,685	2,504	855	57,045	43,131	2,100	776	46,006	
Raffles	22,025	315	41	22,381	24,770	329	40	25,139	
EGMs	11,296	1,367	1,507	14,170	13,813	2,833	539	17,185	
Racetrack betting	6,742	2,884	2,432	12,058	10,787	2,839	2,874	16,501	
Keno	5,849	541	88	6,478	10,273	228	272	10,772	
Casino table games	5,002	647	477	6,126	9,137	530	219	9,887	

Sports betting	886	1,952	1,024	3,862	858	1,345	677	2,881
Scratchies	3,674	9	0	3,683	3,167	172	0	3,339
Informal games	1,629	34	0	1,664	1,131	0	22	1,153
Bingo	958	0	0	958	933	68	10	1,011
Other	718	162	0	880	593	0	0	593
Non-sport betting	164	0	0	164	58	0	0	58
	<b>112,62</b>	<b>10,41</b>			<b>118,65</b>	<b>10,44</b>		
<b>Total</b>	<b>7</b>	<b>6</b>	<b>6,424</b>	<b>129,467</b>	<b>1</b>	<b>4</b>	<b>5,429</b>	<b>134,524</b>

### 3.6 EGM, racetrack and sports gamblers expenditure by online gambling type

Given the similarity in highest spend activities between 2015 and 2018 surveys, only the 2018 self-reported expenditure data is presented in this section. For all activities, gamblers were asked how much they spend on their highest spend gambling activity, though this was collected for all EGM gamblers. Self-reported expenditure quartiles were used to compare non-online and online gamblers for racetrack betting, sports betting, and EGMs, given these three activities were the most popular online activities.

Figure 15 shows the significant association between highest spend racetrack bettors' annual expenditure quartiles and online racetrack betting status. Online racetrack bettors were significantly over-represented in the fourth and third quartiles, with 39% of online racetrack bettors falling in the highest quartile of spending (more than \$1,200 per year), compared with 15% of non-online bettors. Online racetrack bettors were significantly under-represented in the first quartile compared with non-online racetrack bettors, with 16% of online bettors in the first quartile compared with 32% of non-online bettors.

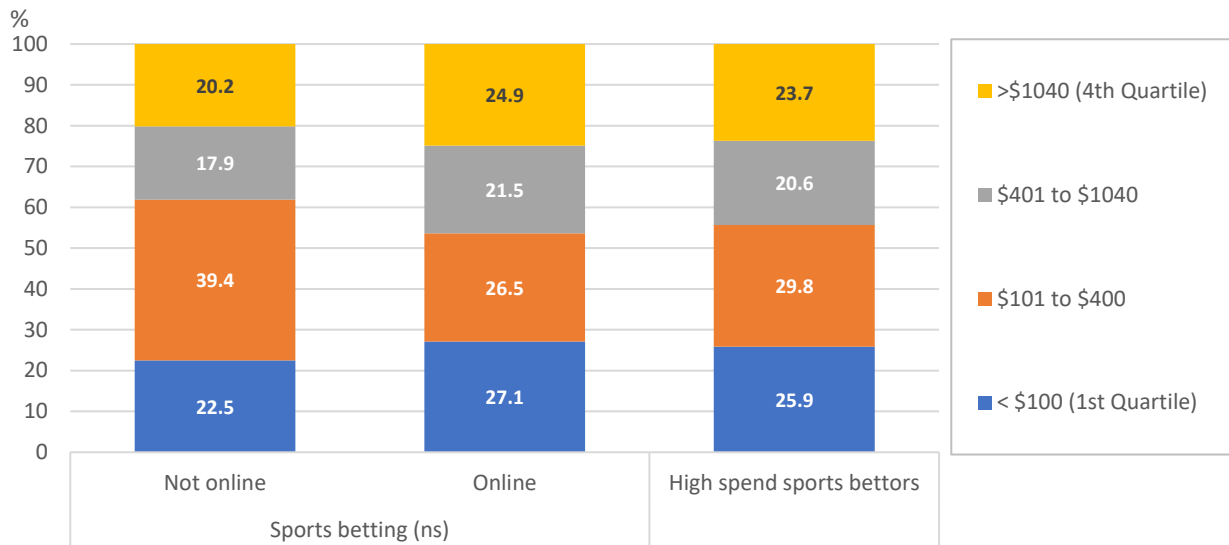


**Figure 15: Racetrack betting online status by race betting self-reported annual expenditure quartiles, 2018 highest spend racetrack bettors**

\*\* p<0.01: Significant association between racetrack betting online status and race betting expenditure quartiles

Figure 16 shows highest spend sports bettors' annual expenditure quartiles by online sports betting status. There was no significant difference between expenditure quartiles for sports bettors by online status. However, online sports bettors had a higher

percentage in the in the two highest quartiles, with 46% of online sports bettors' annual expenditure greater than \$401 compared with 38% of non-online sports bettors.

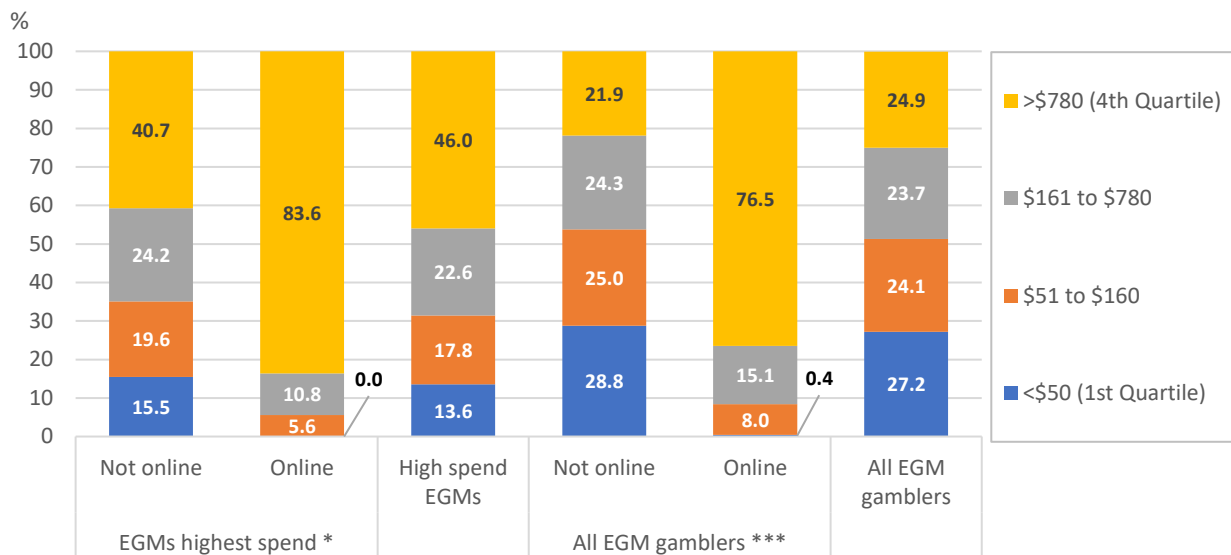


**Figure 16: Sports betting online status by sports bettors self-reported annual expenditure quartiles, 2018 highest spend sports bettors**

ns: Non-significant association between sports betting online status and sports betting expenditure quartiles

Figure 17 shows self-reported expenditure quartiles by EGM online status for gamblers selecting EGMs as their highest spend and for all EGM gamblers (note self-reported expenditure data was collected for all EGM gamblers). There was a highly significant difference across the distribution of expenditure quartiles between online and non-online EGM gamblers. For all EGM gamblers (far right bar), 76.5% who gambled on EGMs online were in the top quartile spending more than \$780 per year, compared with 22% of non-online EGM gamblers falling in the top quartile. The pattern was similar for gamblers choosing EGMs as their highest spend activity, with online compared with non-online EGM gamblers over-represented in the highest quartile of expenditure (84% cf. 41%). Less than 1% of online EGM gamblers for all EGM gamblers and highest spend EGM gamblers were in the lowest spending quartile, compared with non-online EGM gamblers.

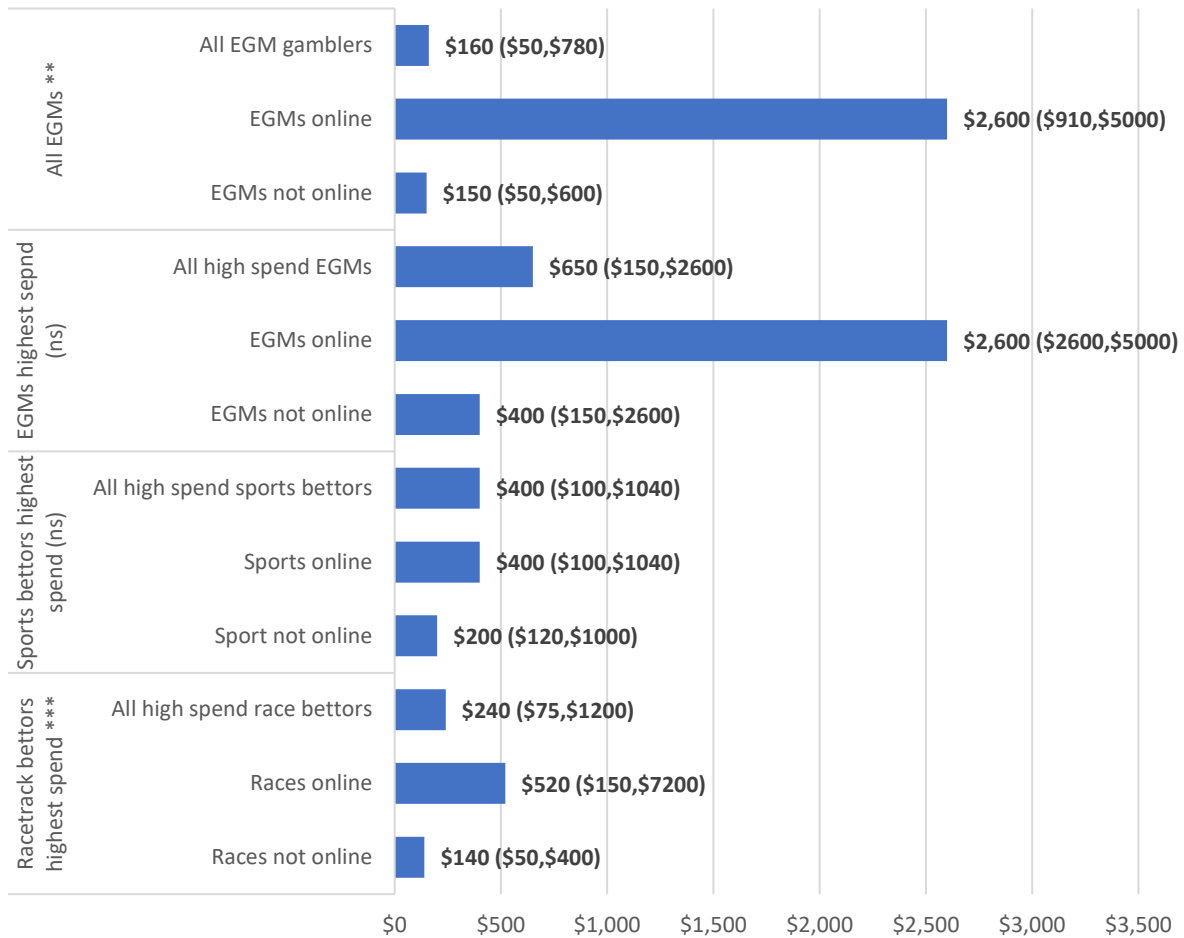




**Figure 17: EGMs online status by EGM self-reported expenditure quartiles, 2018 highest spend EGM gamblers and all EGM gamblers**

\*\*\* p<0.001, \* p<0.05: Significant association between EGMs online status and EGM expenditure quartiles

Figure 18 graphs median self-reported expenditure for gamblers who nominated their highest spend activity as racetrack betting, sports betting and EGM gambling and for all EGM gamblers. There was a significant difference in median expenditure between online and non-online gamblers for all EGM gamblers and racetrack bettors, and no significant difference for highest spend sports bettors or highest spend EGM gamblers. While large differences were observed in median spending for highest spend EGM gamblers, this did not reach significance due to small numbers in this group; however, for all three activities, online gamblers reported higher expenditure than non-online gamblers. For all EGM gamblers, online EGM gamblers had a significantly higher annual median spend of \$2,600, compared with \$150 for non-online EGM gamblers. Among racetrack bettors, online gamblers had self-reported median annual races spend of \$520, compared with \$140 per annum for non-online racetrack bettors.



**Figure 18:** Median (25<sup>th</sup> and 75<sup>th</sup> percentiles) self-reported expenditure for highest spend activities of races, sports, and EGMs, and for all EGM gamblers by online status, 2018 highest spend gamblers on races, sports and EGMs, and all EGM gamblers

\*\*\* p<0.001, \*\* p<0.01: Significant difference in median expenditure between online and non-online gamblers for activity

### 3.7 Multivariable adjusted associations between 2018 online gambling combination and socio-demographic and socio-economic factors

Exploratory analysis of associations between online gambling and socio-demographic and socioeconomic variables revealed inconsistencies in associations. For example, younger gamblers were more likely to be sports bettors, but age was not associated with online racetrack betting. By only having a binary outcome (online verse not online gambler), these associations may not show up as significant in statistical analyses. To explore this further the online gambling combination variable was used in a multinomial regression. This type of regression is an extension of logistic regression, except that the dependent (or outcome) variable has multiple categorical levels, rather than being a binary outcome. The dependent variable for the multinomial regression model is the online gambling combination variable and consists of groups (a) no online gambling (reference category), (ii) racetrack betting only online, (iii) sports betting only online, (iv) races and sports betting only online, (v) online EGMs plus 1 to 3 other online forms, and (vi) a final group consisting of all other online combinations, not including online EGM gambling. So, all the online gambling

combinations are compared to the reference category of no online gambling for each socio-demographic and socioeconomic variable to determine significance.

In addition to the above issue, there is the issue of whether to conduct the analyses using the population weighted data or the unweighted data. The population weighted data provides the best estimates for gambling participation, problem gambling and other gambling-related variables collected in the Gambling Prevalence and Wellbeing Surveys, but weights can affect statistical analyses, particularly when there are small numbers of observations with large individual population weights. Separate population weights were derived for the Indigenous and non-Indigenous populations in the NT, and again, this was done to obtain the best estimates for the NT for gambling-related variables. The Indigenous population weights were on average higher (Indigenous mean population weight of 120 cf. non-Indigenous mean population weight of 30). Therefore, multivariable models were developed for the total sample (Indigenous and non-Indigenous) using population weighted data, for non-Indigenous sample using population weighted data and using unweighted data. Only results for the total sample using weighted data are presented as there was little or no difference with the unweighted total sample model and the non-Indigenous weighted and unweighted models. Results from the population weighted multivariable multinomial regression are summarised in Table 15, while weighted percentage estimates for the online gambling combination variable by socio-demographic and socioeconomic variables are shown in Tables 16 and 17. For full details of the population weighted multinomial regression with relative risk ratios see Table 28 in Appendix A.

Factors significantly associated with increased participation in sports only online betting included region (living in Darwin or Palmerston), age (less than 30 years), sex (male), household type (couple with no children and group/other households), and highest education (bachelor's degree or higher).

Only one socio-demographic and socioeconomic variable was significantly associated with increased participation in racos only online betting, and was having an annual personal income of \$70,000 or higher.

Factors significantly associated with participation in racos and sports only online betting included sex (male), household types (group/other), and highest education (Year 10).

Factors significantly associated with increased participation in EGM online and a combination of other online types included Indigenous status (Indigenous), household type (group/other), and labour force participation (FIFO/DIDO).

Factors significantly associated with increased participation in other combinations of online gambling (includes those who only gambled online on casino games or keno), but not online EGM gambling included region (living in Darwin or Palmerston), age (less than 30 years), sex (male), and annual personal income between \$100,000 and \$119,999.

**Table 15:** Summary of multivariable significant socio-demographic and socioeconomic predictors of online gambling combination

Online combination	Lower participation	Higher participation
Sports only	Region: Alice Springs and Rest of NT Age: 40 years and over Sex: Female Household type: Couple with children  Highest education: Certificate III/Diploma	Region: Darwin & Palmerston Age: Less than 30 years Sex: Male Household type: Couple no children, Group/other Highest education: Bachelor's degree or higher
Races only	Income: <\$30,000 per annum	Income: \$70,000 or more per annum (and highest in \$120,000+)
Races and sports only	Sex: Female Language at home: Not English	Sex: Male  Household type: Group/other Highest education: Year 10
EGMs online + (1 to 3 online forms)	Indigenous status: Non-Indigenous  Student status: Studying Labour force status: Unemployed Highest education: Year 12	Indigenous status: Indigenous Household type: Group/other  Labour force status: FIFO/DIDO
Not EGMs, 1 to 4 online forms	Region: Regional towns Age: 50 years or more Sex: Female Language at home: Not English Household type: Couple no children Income: < \$50,000 per annum	Region: Darwin & Palmerston Age: Less than 30 years Sex: Male  Income: \$100K-\$119,999 per annum

**Table 16:** Socio-demographic variables by online gambling combination, 2018 gamblers

	Not Online % (SE)	Sports % (SE)	Races % (SE)	Races & Sports % (SE)	EGMs + (1 to 3 online forms) % (SE)	Not EGMs, 1 to 4 online forms % (SE)
NT	87.0 (1.0)	2.8 (0.4)	3.9 (0.5)	3.7 (0.4)	1.5 (0.5)	1.1 (0.4)
Region ***						
Darwin & Palmerston	85.7 (0.9)	3.9 (0.6)	3.9 (0.5)	4.7 (0.6)	0.8 (0.2)	0.9 (0.2)
Alice Springs	87.4 (3.3)	<b>1.2 (0.5)</b>	<b>3.7 (1.5)</b>	<b>2.1 (1.2)</b>	<b>3.1 (2.1)</b>	<b>2.5 (2.0)</b>
Regional towns <sup>1</sup>	90.4 (4.0)	<b>1.3 (1.3)</b>	<b>5.3 (3.6)</b>	<b>2.0 (1.0)</b>	<b>0.8 (0.8)</b>	<b>0.1 (0.1)</b>
Rest of NT	91.3 (3.9)	<b>0.1 (0.1)</b>	<b>2.9 (1.0)</b>	<b>1.2 (0.7)</b>	<b>3.9 (3.8)</b>	<b>0.5 (0.3)</b>
Age (years) ***						
18-29	79.8 (3.4)	6.8 (1.5)	<b>5.1 (2.1)</b>	<b>3.0 (1.0)</b>	<b>2.5 (1.9)</b>	<b>2.9 (1.9)</b>
30-39	84.4 (2.1)	3.6 (0.9)	3.9 (1.0)	5.7 (1.2)	<b>1.7 (1.4)</b>	<b>0.7 (0.3)</b>
40-49	87.8 (1.6)	1.5 (0.4)	3.5 (0.7)	5.0 (1.1)	<b>1.2 (0.8)</b>	1.0 (0.3)
50 or more	92.4 (0.8)	<b>0.9 (0.4)</b>	3.6 (0.6)	1.7 (0.3)	1.0 (0.3)	0.4 (0.1)
Sex ***						
Female	92.9 (0.9)	1.0 (0.3)	3.3 (0.5)	<b>0.9 (0.3)</b>	<b>1.5 (0.7)</b>	<b>0.4 (0.2)</b>
Male	81.4 (1.6)	4.6 (0.7)	4.5 (1.0)	6.3 (0.8)	<b>1.5 (0.8)</b>	<b>1.7 (0.8)</b>
Indigenous status **						
Non-Indigenous	87.0 (0.8)	3.2 (0.5)	4.1 (0.4)	4.3 (0.5)	<b>0.6 (0.2)</b>	0.7 (0.2)
Indigenous	87.0 (3.3)	<b>1.5 (0.8)</b>	<b>3.3 (1.8)</b>	<b>1.5 (0.9)</b>	<b>4.6 (2.3)</b>	<b>2.2 (1.6)</b>
Language at home ***						
English	86.9 (1.0)	2.4 (0.4)	4.1 (0.6)	3.9 (0.5)	<b>1.5 (0.6)</b>	<b>1.2 (0.4)</b>
Not English	88.5 (3.2)	<b>8.4 (2.7)</b>	<b>1.6 (1.4)</b>	<b>0.3 (0.3)</b>	<b>1.2 (1.1)</b>	0.0 (0.0)
Household type **						

	Not Online % (SE)	Sports % (SE)	Races % (SE)	Races & Sports % (SE)	EGMs + (1 to 3 online forms) % (SE)	Not EGMs, 1 to 4 online forms % (SE)
NT	87.0 (1.0)	2.8 (0.4)	3.9 (0.5)	3.7 (0.4)	<b>1.5 (0.5)</b>	<b>1.1 (0.4)</b>
Couple with children	87.2 (1.8)	2.1 (0.5)	4.8 (1.2)	3.4 (0.6)	<b>1.0 (0.9)</b>	<b>1.5 (1.0)</b>
Couple with no children	88.2 (1.4)	3.4 (0.9)	4.0 (0.8)	3.6 (0.8)	<b>0.5 (0.2)</b>	<b>0.2 (0.1)</b>
One parent with children	91.2 (2.2)	<b>1.4 (1.0)</b>	<b>2.4 (1.0)</b>	<b>3.2 (1.4)</b>	<b>0.7 (0.6)</b>	<b>1.0 (0.6)</b>
One-person household	89.5 (1.9)	<b>1.4 (0.6)</b>	2.8 (0.7)	3.0 (0.9)	<b>1.7 (1.2)</b>	<b>1.6 (0.7)</b>
Group or other	78.7 (3.5)	6.3 (1.7)	<b>3.7 (1.3)</b>	<b>5.4 (1.8)</b>	<b>5.0 (2.7)</b>	<b>0.9 (0.4)</b>

<sup>1</sup> Regional towns = Katherine, Tennant Creek and Nhulunbuy, <sup>2</sup> NILF = Not in the labour force (i.e. retired, not looking for work)

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between socio-demographic variable and online gambling  
**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

**Table 17: Socioeconomic variables by online gambling combination, 2018 gamblers**

	Not Online % (SE)	Sports % (SE)	Races % (SE)	Races & Sports % (SE)	EGMs + (1 to 3 online forms) % (SE)	Not EGMs, 1 to 4 online forms % (SE)
NT	87.0 (1.0)	2.8 (0.4)	3.9 (0.5)	3.7 (0.4)	<b>1.5 (0.5)</b>	<b>1.1 (0.4)</b>
Studying **						
Not Studying	87.1 (1.0)	2.3 (0.4)	4.1 (0.6)	3.9 (0.5)	<b>1.7 (0.6)</b>	0.8 (0.2)
Studying	86.4 (3.1)	5.8 (1.6)	<b>2.6 (1.3)</b>	<b>2.1 (0.8)</b>	<b>0.3 (0.2)</b>	<b>2.8 (2.4)</b>
Labour force status ***						
NILF <sup>2</sup> /Unemployed	95.5 (0.8)	<b>0.5 (0.4)</b>	2.1 (0.5)	<b>1.1 (0.4)</b>	<b>0.3 (0.3)</b>	<b>0.5 (0.2)</b>
FIFO/DIDO <sup>3</sup>	79.1 (4.7)	<b>5.8 (1.8)</b>	<b>2.9 (1.0)</b>	<b>3.2 (1.1)</b>	<b>4.9 (3.4)</b>	<b>4.2 (3.4)</b>
Employed	85.9 (1.1)	3.0 (0.5)	4.5 (0.7)	4.4 (0.6)	<b>1.3 (0.6)</b>	0.8 (0.2)
Highest education ***						
Bachelor or higher	88.9 (1.2)	4.0 (0.9)	3.5 (0.6)	2.8 (0.7)	<b>0.5 (0.3)</b>	<b>0.5 (0.2)</b>
Certificate 3-Diploma	85.1 (1.6)	2.2 (0.5)	5.8 (1.3)	5.0 (0.8)	0.7 (0.2)	<b>1.2 (0.4)</b>
Year 12	79.6 (3.6)	<b>3.4 (1.1)</b>	3.5 (1.0)	5.1 (1.4)	<b>5.5 (2.8)</b>	<b>2.9 (2.0)</b>
Year 10 or below	94.9 (1.1)	<b>1.6 (0.8)</b>	1.5 (0.4)	<b>1.2 (0.4)</b>	<b>0.7 (0.4)</b>	<b>0.1 (0.1)</b>
Personal income ***						
\$20-\$29K	94.8 (1.3)	<b>2.1 (1.0)</b>	<b>1.1 (0.5)</b>	<b>0.9 (0.5)</b>	<b>0.5 (0.4)</b>	<b>0.5 (0.2)</b>
\$30-\$49K	89.3 (2.1)	<b>4.7 (1.6)</b>	<b>3.7 (1.3)</b>	<b>0.4 (0.2)</b>	<b>1.7 (0.9)</b>	<b>0.2 (0.2)</b>
\$50-\$69K	85.5 (3.1)	<b>2.5 (0.9)</b>	<b>2.6 (0.8)</b>	<b>3.8 (1.3)</b>	<b>3.1 (2.2)</b>	<b>2.4 (2.0)</b>
\$70-\$99K	84.7 (2.2)	<b>2.0 (0.7)</b>	<b>4.5 (1.5)</b>	5.6 (1.0)	<b>2.3 (1.3)</b>	<b>1.0 (0.4)</b>
\$100-119	89.9 (1.5)	<b>2.8 (1.0)</b>	4.0 (0.9)	<b>1.6 (0.6)</b>	<b>0.5 (0.3)</b>	<b>1.2 (0.6)</b>
\$120k+	81.0 (2.2)	4.1 (1.1)	7.0 (1.6)	6.9 (1.4)	<b>0.2 (0.2)</b>	<b>0.7 (0.5)</b>

<sup>1</sup> Regional towns = Katherine, Tennant Creek and Nhulunbuy, <sup>2</sup> NILF = Not in the labour force (i.e. retired, not looking for work), <sup>3</sup> FIFO/ DIDO = fly-in fly-out and drive-in drive-out workers

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between socio-demographic variable and online gambling  
**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

### 3.8 Multivariable adjusted associations with 2018 online gambling combination and health risk factors

As with the previous multivariable model for socio-demographic and socioeconomic factors and online gambling combination, a summary of health risk factors associated with each combination of online gambling is provided in Table 18. See Table 29 in Appendix A for relative risk ratios for health risk factors and online gambling combination.

Using cannabis in the last year was significantly associated with *increased participation in sports only online betting*.

Using cocaine use in the last 12 months, drinking alcohol in the last 12 months, and having a probable alcohol problem were associated with *increased participation* in races only online betting included.

Using legal drugs illegally in the last 12 months, drinking alcohol in the last 12 months, and having a probable alcohol problem were significantly associated with *increased participation* in races and sports only online betting.

Using legal drugs illegally in the last 12 months, drinking alcohol in the last 12 months, and having a probable alcohol problem were significantly associated with *increased participation* in races and sports only online betting.

Using LSD/mushrooms in the last year was significantly associated with *increased participation* in EGM online and a combination of other online types.

Using cannabis in the last year was significantly associated with increased participation in other combinations of online gambling (not online EGM gambling).

**Table 18:** Summary of multivariable significant health risk predictors for 2018 online gambling combination

<b>Online combination</b>	<b>Lower participation</b>	<b>Higher participation</b>
Sports only	Meth/Ice use in last year LSD/mushrooms use in last year	Cannabis use in last year
Races only	Legal drug used illegally use in last year LSD/mushrooms use in last year	Cocaine use in last year Drinks alcohol with no problem Drinks alcohol with probable problem
Races and sports only		Legal drug used illegally use in last year Drinks alcohol with no problem Drinks alcohol with probable problem
EGMs + (1 to 3 online forms)	Legal drug used illegally use in last year Cocaine use in last year	LSD/mushrooms use in last year
Not EGMs, 1 to 4 online forms		Cannabis use in last year

**Table 19:** Health risk factors by online gambling combination, 2018 gamblers

	<b>Not Online % (SE)</b>	<b>Sports % (SE)</b>	<b>Races % (SE)</b>	<b>Races &amp; Sports % (SE)</b>	<b>EGMs + (1 to 3 online forms) % (SE)</b>	<b>Not EGMs, 1 to 4 online forms % (SE)</b>
NT Gamblers	84.3 (1.3)	2.7 (0.5)	4.9 (0.8)	4.8 (0.7)	1.9 (0.6)	1.3 (0.5)
Cannabis***						
No use	86.2 (1.3)	2.3 (0.5)	4.8 (0.8)	4.8 (0.8)	1.6 (0.6)	0.4 (0.1)
Cannabis use	73.9 (4.2)	5.2 (1.9)	5.7 (2.5)	4.9 (1.4)	3.8 (1.8)	6.5 (3.1)
Legal drugs illegally**						
No use	84.6 (1.3)	2.7 (0.5)	5.0 (0.8)	4.5 (0.7)	2.0 (0.6)	1.2 (0.5)
Legal drug use	71.1 (9.8)	1.7 (1.7)	0.5 (0.5)	21.4 (8.3)	0.0 (0.0)	5.3 (5.2)
Methamphetamine***						
No use	84.8 (1.3)	2.8 (0.5)	5.0 (0.8)	4.6 (0.7)	2.0 (0.6)	0.9 (0.4)
Methamphetamine use	65.7 (12.)	0.0 (0.0)	2.5 (1.9)	14.0 (7.8)	1.4 (1.1)	16.4 (11.)
Cocaine***						
No use	85.5 (1.3)	2.6 (0.5)	4.6 (0.7)	4.5 (0.7)	2.0 (0.6)	0.8 (0.4)

Cocaine use	62.1 (8.4)	<b>4.4 (3.7)</b>	<b>11.1 (6.0)</b>	<b>11.4 (4.5)</b>	0.0 (0.0)	<b>10.9 (6.1)</b>
LSD/Mushrooms***						
No use	84.9 (1.3)	2.8 (0.5)	5.0 (0.8)	4.7 (0.7)	<b>1.7 (0.6)</b>	<b>0.8 (0.3)</b>
LSD/Mushroom use	57.2 (14.)	0.0 (0.0)	0.0 (0.0)	<b>10.8 (5.7)</b>	<b>10.7 (8.2)</b>	<b>21.3 (14.)</b>
CAGE <sup>1</sup> Alcohol problems*						
No alcohol	92.7 (2.2)	<b>3.9 (1.9)</b>	<b>0.6 (0.4)</b>	<b>0.9 (0.5)</b>	<b>0.8 (0.8)</b>	<b>1.0 (0.6)</b>
No Problem	85.2 (1.5)	2.0 (0.5)	5.7 (1.0)	4.3 (0.8)	<b>1.9 (0.6)</b>	<b>0.8 (0.5)</b>
Probable problem	76.3 (3.9)	<b>4.8 (1.8)</b>	<b>4.2 (1.7)</b>	8.9 (2.4)	<b>2.5 (2.0)</b>	<b>3.2 (1.8)</b>

<sup>1</sup> CAGE (Bernadt, Taylor et al. 1982)

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between socio-demographic variable and online gambling

**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

### 3.9 Summary of multivariable associations with online gambling combination

Lastly, Table 20 summarises multivariable associations for socio-demographic, socioeconomic and health risk factors.

**Table 20:** Summary of multivariable significant socio-demographic, socioeconomic and health risk factor predictors for 2018 online gambling combination

Online combination	Lower participation	Higher participation
Sports only	Region: Alice Springs and Rest of NT Age: 40 years and over Sex: Female Household type: couple no children  Highest education: Certificate III/Diploma Meth/Ice use in last year LSD/mushrooms use in last year	Region: Darwin & Palmerston Age: Less than 30 years Sex: Male Household type: Couple no children, Group/other Highest education: Bachelor's degree or higher Drug use: Cannabis use in last year
Races only	Income: <\$30,000 per annum Legal drug used illegally use in last year LSD/mushrooms use in last year	Income: \$70,000 or more per annum (and highest in \$120,000+) Drug use: Cocaine use in last year Alcohol use: Drinks with no problem Alcohol use: Drinks with probable problem
Races and sports only	Sex: Female Language at home: Not English	Sex: Male Household type: Group/other Highest education: Year 10 Legal drug used illegally use in last year Drinks alcohol with no problem Drinks alcohol with probable problem
EGMs + (1 to 3 online forms)	Indigenous status: non-Indigenous  Labour force status: Unemployed Highest education: Year 12 Legal drug used illegally use in last year Cocaine use in last year	Indigenous status: Indigenous Household type: Group/other  Labour force status: FIFO/DIDO  LSD/mushroom use in last year
Not EGMs, 1 to 4 online forms	Region: Regional towns Age: 50 years or more Sex: Female Language at home: Not English	Region: Darwin & Palmerston Age: 30 years or less Sex: Male

Online combination	Lower participation	Higher participation
	Household type: Couple no children Income: < \$50,000 per annum	Income: \$100K-\$119,999 per annum Cannabis use in last year

### 3.10 Problem gambling risk and online gambling

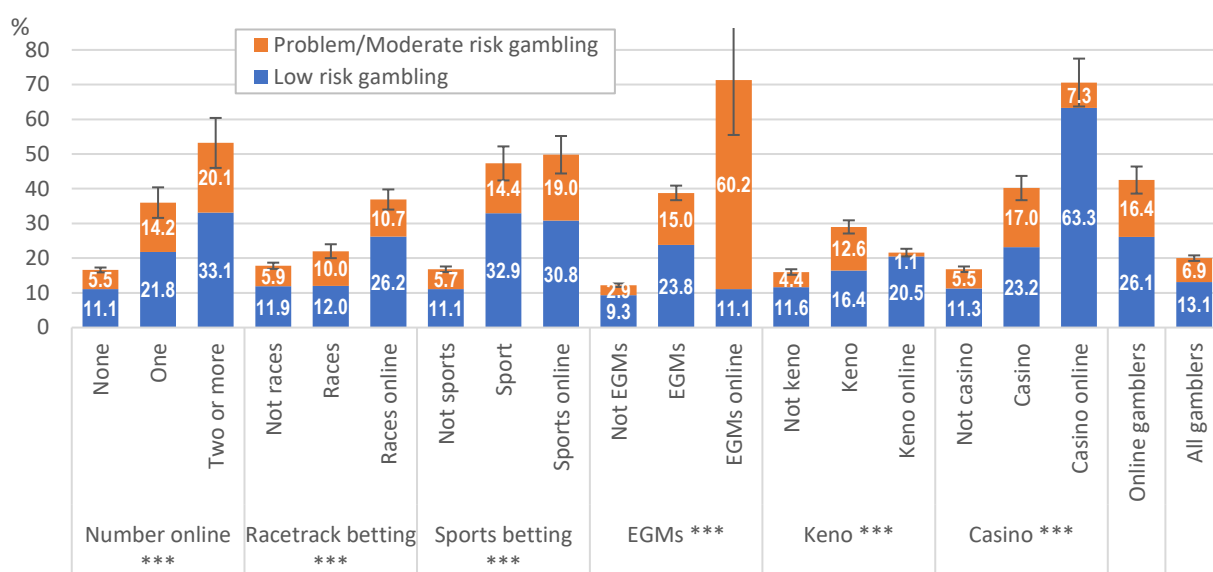
#### 3.10.1 Bivariate associations between problem gambling risk and online gambling

To investigate the bivariate relationship between problem gambling risk and online gambling, the problem and moderate risk of problem gambling categories of the PGSI were collapsed (though they are separated in tables for raw population counts). This was due to small sample size in both the at-risk gambler group, and the subset that participate in online gambling.

Figure 19 shows all online gambling activities individually had a strong statistically significant association with problem gambling risk. Just higher than 5% of non-online gamblers were classified as experiencing problem/moderate risk of problem gambling, increasing to 14.2% for gamblers participating in one online gambling activity, and to 20.1% for those participating in two or more online gambling activities and 16.4% for all online gamblers. Problem/moderate risk problem gambling rates were highest among EGM online gamblers at 60.2%, followed by online sports betting (19%), online racetrack betting (10.7%), online casino table games (7.3%) and online keno (1.1%). More than 70% of online casino table gamblers and online EGM gamblers were classified at risk of problem gambling, compared with around 40% who gambled on these activities, but not online. There was little difference between problem gambling risk for online and non-online sports bettors (50% cf. 47%), while for races 37% of online bettors were classified at risk of problem gambling, compared with 22% of non-online racetrack gamblers.

So, problem gambling risk was higher in four of the five online gambling activities compared with non-online gambling on the same activity, with only sports betting and keno showing little difference in problem gambling risk between online and non-online. Figure 19 only shows problem gambling risk for each online activity individually and does not provide information on combinations of online activities (see Figure 20).





**Figure 19: Bivariate associations between online gambling activity and problem gambling risk, 2018 gamblers**

\*\*\* p<0.001: Significant association between online activity and problem gambling risk

Table 21 further breaks down the problem/moderate risk problem gambling into problem, moderate and low risk of problem gambling. Note that most problem gambling estimates, and some moderate risk gambling estimates had relative standard errors greater than 30% indicating a small sample size – these estimates should be interpreted with some caution (though most estimates of problem/moderate risk gambling in the previous figure had RSEs below 30%). Starting from the top of Table 21, compared with non-online gamblers, online gamblers were nearly five times more likely to be classified as experiencing problem gambling (6.4% cf. 1.3%) and a little over double the rate for moderate (10% cf. 4.2%) and low risk gambling (26.1% cf. 11.1%). Participation in just one online activity was also associated with a significant increase in problem gambling (3.2% cf. 1.3%), and this increases substantially for two or more online activities (11.5% cf. 1.3%). For all activities, except keno and casino table games, problem gambling was higher for online gamblers for that activity.

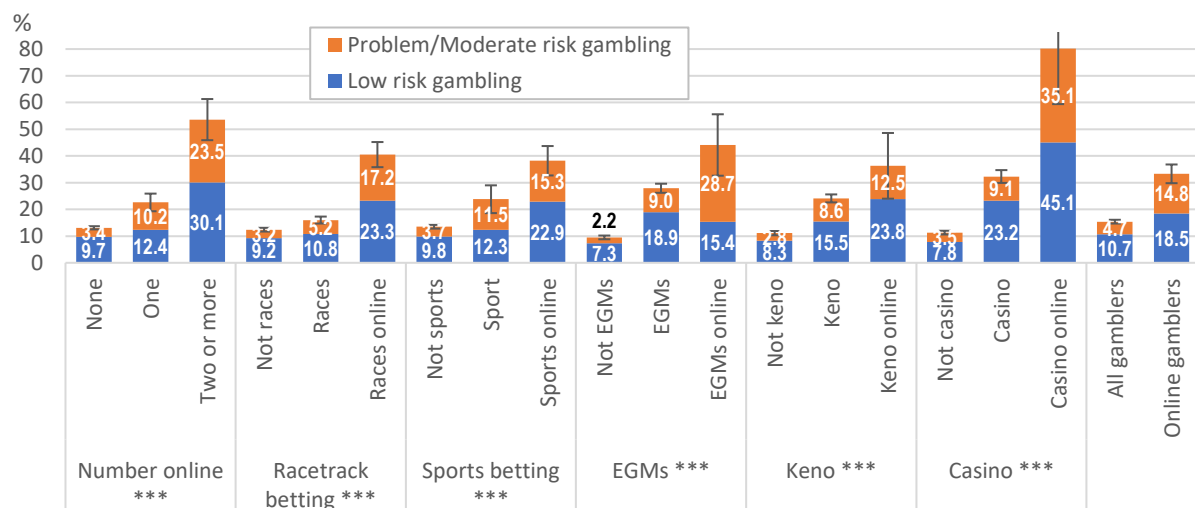
**Table 21: Online gambling activity by problem gambling risk, 2018 gamblers**

Online activity	Problem gambling % (SE)	Moderate risk % (SE)	Low risk % (SE)	Non-risk % (SE)	Population N
<i>All gamblers</i>	1.9 (0.5)	5.0 (0.7)	13.1 (1.1)	80.0 (1.2)	129,467
Online gamblers	<b>6.4 (3.1)</b>	10.0 (2.9)	26.1 (3.7)	57.5 (4.2)	16,841
Number online***					
None	1.3 (0.3)	4.2 (0.6)	11.1 (1.1)	83.4 (1.2)	112,627
One	<b>3.2 (1.5)</b>	<b>10.9 (4.3)</b>	21.8 (4.0)	64.0 (5.0)	10,416
Two or more	<b>11.5 (7.3)</b>	<b>8.6 (2.7)</b>	33.1 (7.0)	46.8 (7.0)	6,424
Racetrack betting***					
Not races	<b>1.5 (0.5)</b>	4.4 (0.8)	11.9 (1.2)	82.2 (1.4)	99,670
Races	<b>2.9 (1.0)</b>	7.1 (1.8)	12.0 (1.9)	77.9 (2.5)	19,115
Races online	<b>3.9 (2.3)</b>	6.8 (1.8)	26.2 (4.9)	63.1 (5.0)	10,682
Sports betting***					
Not sports	1.4 (0.3)	4.3 (0.7)	11.1 (1.1)	83.2 (1.2)	116,664
Sport	<b>3.6 (2.7)</b>	<b>10.8 (4.2)</b>	<b>32.9 (10.)</b>	52.7 (9.1)	3,697
Sports online	<b>8.3 (5.3)</b>	10.8 (2.8)	30.8 (4.4)	50.1 (5.0)	9,106

Online activity	Problem gambling % (SE)	Moderate risk % (SE)	Low risk % (SE)	Non-risk % (SE)	Population N
All gamblers	1.9 (0.5)	5.0 (0.7)	13.1 (1.1)	80.0 (1.2)	129,467
EGMs***					
Not EGMs	<b>0.3 (0.2)</b>	2.6 (0.5)	9.3 (1.0)	87.7 (1.1)	94,307
EGMs	4.7 (1.1)	10.3 (1.8)	23.8 (2.8)	61.2 (2.9)	33,208
EGMs online	<b>32.4 (19.)</b>	<b>27.9 (18.)</b>	<b>11.1 (6.5)</b>	<b>28.6 (13.5)</b>	1,952
Keno***					
Not keno	<b>0.8 (0.3)</b>	3.6 (0.7)	11.6 (1.3)	84.0 (1.5)	89,603
Keno	<b>4.5 (1.4)</b>	8.1 (1.5)	16.4 (1.8)	71.1 (2.3)	39,136
Keno online	0.0 (0.0)	<b>1.1 (1.1)</b>	<b>20.5 (9.4)</b>	78.5 (9.4)	728
Casino table games***					
Not casino	<b>1.6 (0.5)</b>	3.9 (0.6)	11.3 (1.1)	83.3 (1.3)	112,786
Casino	<b>4.5 (1.8)</b>	12.5 (3.2)	23.2 (3.1)	59.8 (3.9)	15,786
Casino online	<b>0.8 (0.9)</b>	<b>6.5 (6.6)</b>	<b>63.3 (26.)</b>	<b>29.4 (24.)</b>	895

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between problem gambling risk and online gambling  
**Bold font** indicates relative standard errors greater than 30% - interpret estimate with caution

Figure 20 shows each online gambling activity by problem gambling risk with the problem/moderate risk categories combined to improve accuracy of estimates (i.e. large standard errors due to small numbers in the sample) for 2015. Similar to 2018 (Figure 20), there is an increasing trend in problem gambling risk the more forms of online gambling someone participates in, with problem/moderate risk of problem gambling 3.4% among those not gambling online, increasing to 10.2% for those doing one online activity and increasing to 23.5% for those gambling on two or more online activities. For all online activities there is a significant association between online participation and increasing problem gambling risk with 14.8% of online gamblers experiencing problem or moderate risk of problem gambling, compared with 4.7% of non-online gamblers. Participation in online casino table games carried the highest problem gambling risk, followed online EGM gambling, online racetrack betting and online sports betting.

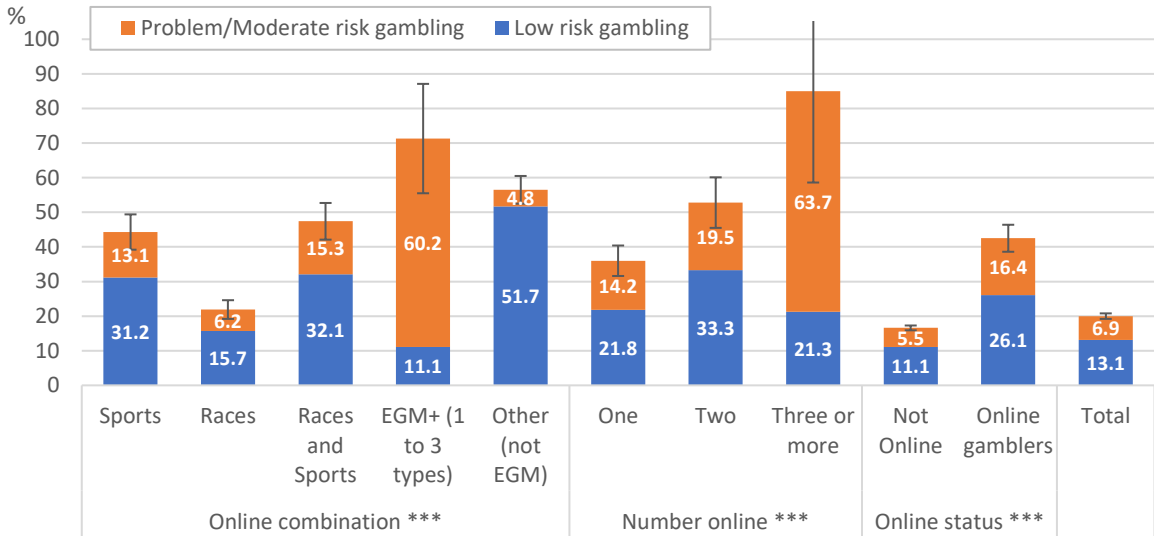


**Figure 20: Bivariate associations between online gambling activity and problem gambling risk, 2015 gamblers**

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between online activity and problem gambling risk

Figure 21 shows the significant association between problem gambling risk and online gambling combination and number of online activities. Starting from the right-hand side, 6.9% and 13.1% of all gamblers were classified as problem/moderate risk and low risk of problem gambling respectively, jumping to 16.4% and 26.1% for online gamblers, and dropping to 5.5% and 11.1% for non-online gamblers. Gamblers who only bet

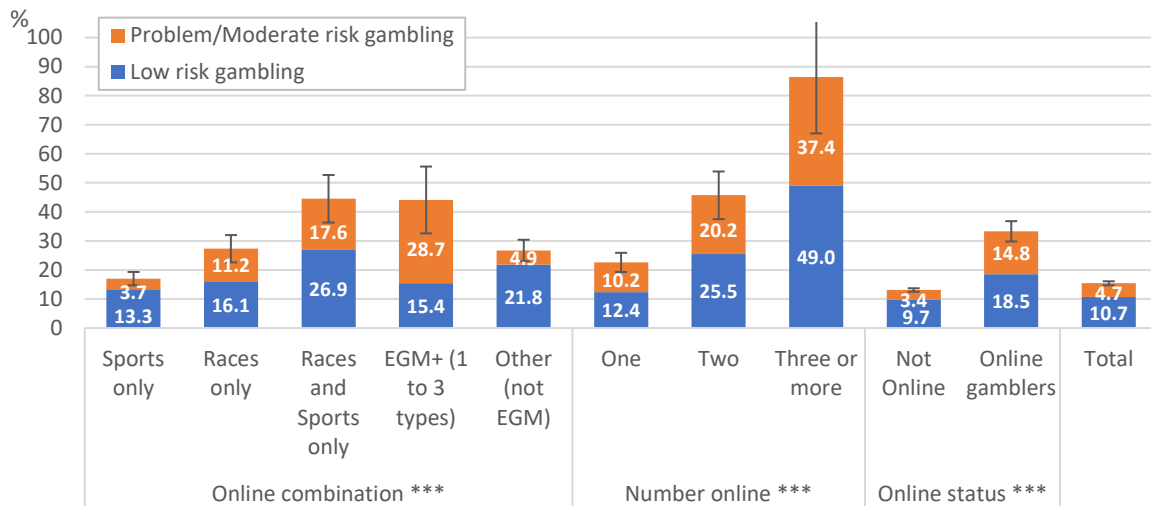
online on sports (far left) had significantly increased problem gambling risk compared with non-online gamblers, while those who only bet on the races online had a similar problem gambling risk profile to all gamblers, but with a slightly higher risk than non-online gamblers. However, gamblers who gambled online on both races and sports, increased their problem gambling risk to a similar level as that seen in sports only online gamblers. Problem/moderate risk of problem gambling was highest in the online gambler group that gambled on EGMs online plus one to three other online activities, with 60% of these online gamblers classified as experiencing problem or moderate risk of problem gambling, while for other online combinations (includes those only gambling on one online activity (but no EGMs online), 4.8% were classified as experiencing problem or moderate risk of problem gambling and 51.7% as low risk, with the former estimate lower than for non-online gamblers, but the low risk estimate significantly higher.



**Figure 21: Online gambling combination by problem gambling risk, 2018 gamblers**

\*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between online combination and problem gambling risk

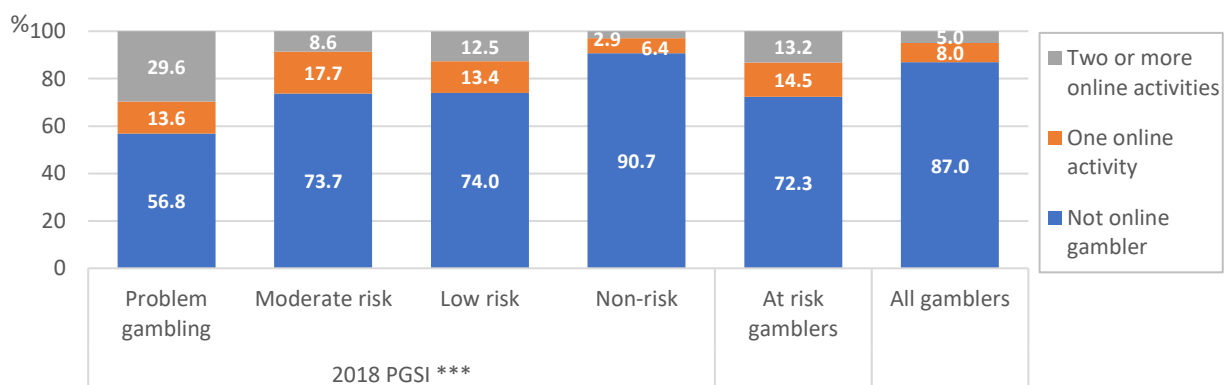
Figure 22 shows problem gambling risk by online gambling combination for 2015. Sports only online gamblers problem gambling risk was like non-online gamblers, and lower than that observed in the previous graph for sports betting, as it includes online gamblers who only gambled online on sports betting, while the previous graph the online sports gamblers included those that also gambled online on other activities. There is a clear significant increasing trend in the number of online activities and problem gambling risk, with 10.2% of online gamblers gambling online on one activity classified as experiencing problem/moderate risk gambling, increasing to 20.2% for those gambling on two online activities, and 37.4% for those gambling on three or more online activities. Races only online gamblers problem gambling risk was significantly higher than non-online gamblers.



**Figure 22: Online gambling combination by problem gambling risk, 2015 gamblers**

\*\*\* p<0.001: Significant association between online gambling and problem gambling risk

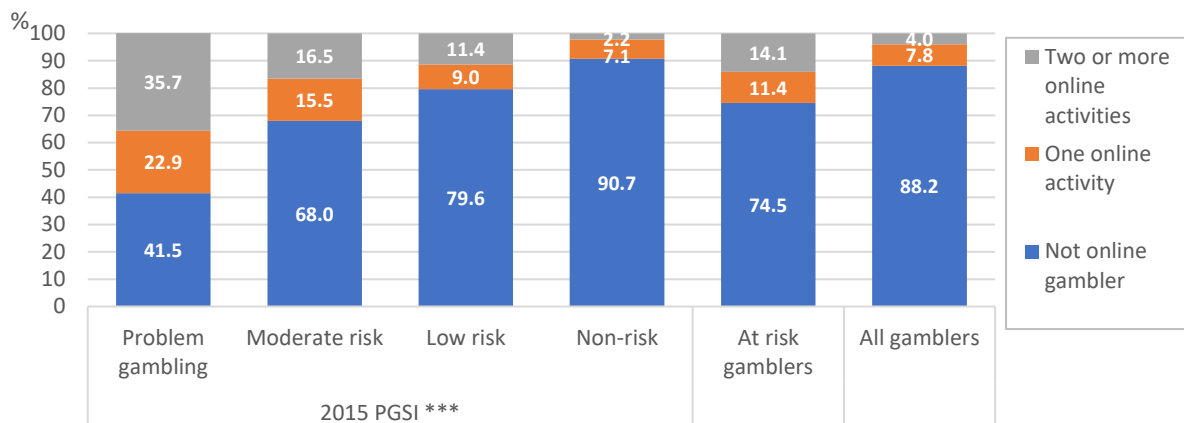
Another way of looking at the association between problem gambling risk and online gambling is to look at the distribution of the number of online activities in each problem gambling risk category. Figure 24 shows that across all gamblers in 2018, 13% were online gamblers, while in the problem gambling group 43% were online gamblers, 26% were online gamblers in the moderate and low risk problem gambling groups, and 9% were online gamblers in the non-risk group.



**Figure 23: Problem gambling risk by number of online gambling activities, 2018 gamblers**

\*\*\* p<0.001: Significant association between number of online activities and problem gambling risk

Figure 24 shows the distribution of number of online gambling activities within problem gambling (PGSI) risk categories for 2015 gamblers. There was a clear increasing trend in online gambling participation by problem gambling risk, with less than 10% of non-risk gamblers participating in online gambling, compared with 20.4% of low risk, 32% of moderate risk, and 58.6% of high-risk problem gambling. Participation in two or more online gambling activities also increased with increasing problem gambling risk.



**Figure 24: Problem gambling risk by number of online gambling activities, 2015 gamblers**

\*\*\* p<0.001: Significant association between number of online activities and problem gambling risk

### 3.10.2 Multinomial regression model for problem gambling risk categories by online gambling

The previous section showed associations between problem gambling risk and online gambling activities and online gambling combination. To assist in interpretation of the association between problem gambling risk and online gambling, multinomial regressions were carried out for each survey year. The multinomial regression model has the advantage over other statistical models such as modelling problem gambling risk scores (using a negative binomial regression model) or only modelling problem gambling (using a logistic regression model). Modelling PGSI scores assumes that problem gambling risk increases monotonically, and this is the same for each online activity, while the logistic regression model for problem gambling as the dependent variable compares differences between problem gambling, with other risk categories (moderate, low risk and no risk). This could be circumvented through excluding low and moderate risk problem gambling gamblers from the analysis, but this means the statistical model loses power to detect significant differences due to the reduced sample size.

So, in a multinomial regression model, problem gambling risk categories are the dependent variable (with no problem gambling risk as the reference category), and individual online gambling activities and the online gambling combination variable are the independent (or explanatory) variables (but in separate models). Two models for each survey year are presented. The first is a multivariable adjusted model that adjusts for significant individual online gambling activities. That is all individual online activities were first entered into a model and backward selection of variables applied, with variable removal set at  $p > 0.05$ , and a final model with significant multivariable adjusted associations between individual online activity's and problem gambling risk category presented. The second model will be a simple unadjusted model between problem gambling risk categories (dependent variable) and online gambling combination as the independent variable. Relative risk ratios (RRR) with 95% confidence intervals (CIs) are used to present effect sizes in multivariable models, and the mean PGSI score (95% CI) are also presented. The reference category for gambling activities is denoted by one (1), which indicates the risk is relative to that category.

Table 22 shows relative risk ratios for the multivariable adjusted multinomial model for PGSI categories with individual online gambling activities. Gambling online on EGMs,

casino table games and sports betting remained significant in the multivariable adjusted model. Keno and racetrack betting both dropped out of the model on the first and second steps respectively. Gambling on EGMs online (Score RR 269.6, 95% CI 49-1477) had the largest effect size on problem gambling, followed by gambling on EGMs in land-based venues (RRR 19.65, 95% CI 5.51-70.1), then sports betting online (Score RR 6.76, 95% CI 2.017-22.1). Similarly, for moderate risk gambling, the largest effect size was for online EGMs (Score RR 30.65, 95% CI 3.76-249), followed by land-based EGMs (Score RR 4.75, 95% CI 2.83-7.99), online sports betting (Score RR 2.95, 95% CI 1.30-6.66), and lastly land-based casino table games (Score RR 2.46, 95% CI 1.19-5.10). For low risk gambling, the largest effect size was observed for online sports betting (Score RR 4.15, 95% CI 2.56-6.74), followed by land-based EGMs (Score RR 3.24, 95% CI 2.16-4.85), land-based sports betting (Score RR 2.87, 95% CI 1.25-6.61), and land-based casino games (Score RR 1.59, 95% CI 1.03-2.46). Mean PGSI scores generally reflect score risk ratios, with online EGM gamblers having a mean PGSI of 4.7 and was next highest for online sports betting (mean PGSI=1.8).

**Table 22:** Multivariable adjusted multinomial regression for PGSI category: model for individual online gambling activities, 2018 gamblers

	<b>Problem gambling</b> <b>Score RR (95% CI)</b>	<b>Moderate risk</b> <b>RRR (95% CI)</b>	<b>Low risk</b> <b>RRR (95% CI)</b>	<b>PGSI score</b> <b>Mean (95% CI)</b>
All gamblers	-	-	-	0.6 (0.5-0.7)
EGMs				
No EGMs	1.0	1.0	1.0	0.3 (0.2-0.3)
Land-based EGMs	<b>19.65 (5.51-70.1)</b>	<b>4.75 (2.83-7.99)</b>	<b>3.24 (2.16-4.85)</b>	1.3 (1.0-1.6)
Online EGMs	<b>269.59 (49.2-1477)</b>	<b>30.65 (3.76-249.)</b>	1.98 (0.30-12.9)	4.7 (2.3-7.1)
Casino table games				
No casino games	1.0	1.0	1.0	0.5 (0.4-0.6)
Land-based casino games	1.53 (0.59-3.98)	<b>2.46 (1.19-5.10)</b>	<b>1.59 (1.03-2.46)</b>	1.3 (0.8-1.8)
Online casino games	0.08 (0.00-2.64)	0.56 (0.02-18.4)	5.73 (0.66-49.5)	1.7 (0.6-2.8)
Sports betting				
No sports betting	1.0	1.0	1.0	0.5 (0.4-0.6)
Land-based sport betting	3.90 (0.74-20.4)	3.00 (0.99-9.02)	<b>2.87 (1.25-6.61)</b>	1.3 (0.8-1.8)
Online sports betting	<b>6.76 (2.07-22.1)</b>	<b>2.95 (1.30-6.66)</b>	<b>4.15 (2.56-6.74)</b>	1.8 (0.9-2.8)

**Bold font** for Score Rate Ratio RR indicates confidence interval does not overlap one & significant at p<0.05 for category of gambling activity

Table 23 presents Score RRs for the multinomial model for PGSI categories and online gambling combination, along with mean PGSI scores. Online EGM gambling again had the largest effect size on PGSI categories with gamblers gambling on a combination of EGMs plus one to three other online activities having a Score RR of 75.08 (95%CI 12.3-457) for problem gambling, and a Score RR of 19.32 (95% CI 3.06-122) for moderate risk gambling. The online gambling combination with the next largest effect size was online races and sports betting with a Score RR of 7.17 (95% CI 1.21-42.5) for problem gambling, an Score RR of 3.62 (95% CI 1.59-8.22) for moderate risk gambling and a Score RR of 4.56 (95% CI 2.62-7.79) for low risk gambling. Online sports and races betting only was the only online combination that was significantly

associated with all three categories of the PGSI. Gamblers who only gambled online on sports had a significant increased risk of moderate risk problem gambling (Score RR 4.51, 95% CI 1.72-11.8) and low risk problem gambling (Score RR 4.20, 95% CI 2.12-8.30). Mean PGSI scores reflected these effect sizes, with the online EGM plus one to three other online activities having a mean PGSI score of 4.7, followed by online races and sports only gamblers with a mean PGSI score of 1.8.

**Table 23:** Simple multinomial regression model for PGSI category: online gambling combination

	<b>Problem gambling</b> Score RR (95% CI)	<b>Moderate risk</b> Score RR (95% CI)	<b>Low risk</b> Score RR (95% CI)	<b>PGSI score</b> Mean (95% CI)
All gamblers	-	-	-	0.6 (0.5-0.7)
Online gambling combination				
No online gambling	1.0	1.0	1.0	0.5 (0.4-0.5)
Sports only online	0.57 (0.07-4.41)	<b>4.51 (1.72-11.8)</b>	<b>4.20 (2.12-8.30)</b>	1.0 (0.6-1.5)
Races only online	2.47 (0.52-11.7)	0.84 (0.29-2.39)	1.50 (0.62-3.64)	0.6 (0.2-1.0)
Races & sports only online	<b>7.17 (1.21-42.5)</b>	<b>3.62 (1.59-8.22)</b>	<b>4.56 (2.62-7.95)</b>	1.8 (0.4-3.1)
EGMs + (1-3 others) online	<b>75.08 (12.3-457.)</b>	<b>19.32 (3.06-122.)</b>	2.91 (0.74-11.5)	4.7 (2.3-7.1)
Other combination online	0.80 (0.10-6.49)	1.94 (0.31-12.1)	<b>8.90 (2.09-37.9)</b>	1.3 (0.5-2.0)

**Bold font** for RRR indicates confidence interval does not overlap one (1) and significant at  $p < 0.05$  for category of gambling activity

### 3.10.3 Negative binomial regression model for problem gambling score by online gambling

A second multivariable model was also developed to determine the relationship between problem gambling risk and online gambling. The negative binomial model uses the continuous PGSI score, which ranges from 0 to a maximum of 27, as the dependent variables and online gambling activities and the online combination variable as independent or explanatory variable(s). Effect sizes are presented as PGSI "score" rate ratios (SRR) for the online gambling variables and combination. So, a PGSI SRR of 2.00 for a category of the independent variable can be interpreted as the mean PGSI score being on average two times higher for that category compared with the reference category.

Table 24 presents the multivariable adjusted negative binomial regression model for PGSI score and individual online gambling activities. EGMs and sports betting remained significant in the final adjusted model, with casino table games dropping out, compared with the multinomial regression model shown in Table 21. Gambling on EGMs online again showed the largest effect size (SRR 15.41, 95% CI 8.06-29.5) for problem gambling risk, followed by land-based EGM gambling (SRR 5.23, 95% CI 3.71-7.35), online sports betting (SRR 3.52, 95% CI 2.38-5.21), and land-based sports betting (SRR 2.81, 95% CI 1.61-4.90). Estimates of problem gambling risk reflect the high score rate ratios with 32% online EGM gamblers classified as experiencing problem gambling, 28% at moderate risk of problem gambling, and 11% as low risk problem gambling. Problem gambling prevalence for online sports bettors (8.3%) was double of that in land-based sports bettors (3.6%), while moderate and low risk problem gambling was similar for online and land-based sports bettors, but was more than double observed for all gamblers for those with moderate risk problem gambling (10.8% cf. 5%) and low risk problem gambling (30.8% cf. 13.1%).

**Table 24:** Multivariable adjusted negative binomial regression model for PGSI score and individual online gambling activities, 2018 gamblers

	PGSI Score RR (95% CI)	PGSI score Mean (95% CI)	Problem gambling % (SE)	Moderate risk % (SE)	Low risk % (SE)
All gamblers	-	0.6 (0.5-0.7)	1.9 (0.5)	5.0 (0.7)	13.1 (1.1)
EGMs					
No EGMs	1.0	0.3 (0.2-0.3)	0.3 (0.2)	2.6 (0.5)	9.3 (1.0)
Land-based EGMs	<b>5.23 (3.71-7.35)</b>	1.3 (1.0-1.6)	4.7 (1.1)	10.3 (1.8)	23.8 (2.8)
Online EGMs	<b>15.41 (8.06-29.5)</b>	4.7 (2.3-7.1)	32.4 (19.) <sup>¥</sup>	27.9 (18.) <sup>¥</sup>	11.1 (6.5) <sup>¥</sup>
Sports betting					
No sports betting	1.0	0.5 (0.4-0.6)	1.4 (0.3)	4.3 (0.7)	11.1 (1.1)
Land-based sport betting	<b>2.81 (1.61-4.90)</b>	1.3 (0.8-1.8)	3.6 (2.7) <sup>¥</sup>	10.8 (4.2) <sup>¥</sup>	32.9 (10.) <sup>¥</sup>
Online sports betting	<b>3.52 (2.38-5.21)</b>	1.8 (0.9-2.8)	8.3 (5.3) <sup>¥</sup>	10.8 (2.8)	30.8 (4.4)

**Bold font** for RRR indicates confidence interval does not overlap one (1) and significant at p<0.05 for category of gambling activity

<sup>¥</sup> indicates relative standard error greater than 30% - interpret estimate with caution

Table 25 presents the simple negative binomial regression model for PGSI score and online gambling combination. The largest effect size was again observed for gambling online on EGMs plus 1-3 other online activities with a PGSI SRR of 10.37 (95% CI 6.03-17.8) and this is reflected in much higher prevalence of problem (32.4%), moderate risk (27.9%) and low risk (11.1%) of problem gambling. The second largest effect size was seen in gamblers betting online on races and sports only (SRR 3.89, 95% CI 1.79-8.47), and is reflected in all PGSI categories being significantly larger than those gamblers not gambling online.

**Table 25:** Simple negative binomial regression model for PGSI score: model for online gambling combination, 2018 gamblers

	PGSI Score RR (95% CI)	PGSI score Mean (95% CI)	Problem gambling % (SE)	Moderate risk % (SE)	Low risk % (SE)
All gamblers	-	0.6 (0.5-0.7)	1.9 (0.5)	5.0 (0.7)	13.1 (1.1)
Online gambling combination					11.1 (1.1)
No online gambling	1.0	0.5 (0.4-0.5)	1.3 (0.3)	4.2 (0.6)	11.1 (1.1)
Sports only online	2.29 (0.56-3.37)	1.0 (0.6-1.5)	0.5 (0.5) <sup>¥</sup>	12.7 (5.0) <sup>¥</sup>	31.2 (6.9)
Races only online	1.31 (0.66-2.59)	0.6 (0.2-1.0)	2.9 (2.1) <sup>¥</sup>	3.3 (1.6) <sup>¥</sup>	15.7 (5.7) <sup>¥</sup>
Races & sports only online	<b>3.89 (1.79-8.47)</b>	1.8 (0.4-3.1)	5.7 (4.7) <sup>¥</sup>	9.6 (3.3) <sup>¥</sup>	32.1 (5.6)
EGMs + (1-3 others) online	<b>10.37 (6.03-17.8)</b>	4.7 (2.3-7.1)	32.4 (19.) <sup>¥</sup>	27.9 (18.) <sup>¥</sup>	11.1 (6.5) <sup>¥</sup>
Other combination online	<b>2.77 (1.52-5.07)</b>	1.3 (0.5-2.0)	0.5 (0.5) <sup>¥</sup>	4.2 (3.9) <sup>¥</sup>	51.7 (18.) <sup>¥</sup>

Notes: **Bold font** for RRR indicates confidence interval does not cross one (1) and significant at p<0.05 for category of gambling activity

<sup>¥</sup> indicates relative standard error greater than 30% - interpret estimate with caution



### 3.11 PGSI multivariable model: socio-demographic, socioeconomic and activities

Tables 26 and 27 show multivariable negative binomial regression models that include socio-demographic and socioeconomic variables, along with non-online and online gambling activities, with the latter table using the online gambling combination variable, rather than individual online activities. Also included in the tables are the distribution of all variables and estimates of problem and moderate risk of problem gambling, and mean PGSI score for significant multivariable adjusted variables. Some caution is recommended in interpreting some estimates due to large standard errors (as shown by bold font percentage estimates in the tables). Another difficulty in developing multivariable models for gambling harm using activities, is that there is likely to be an interaction effect between some activities and the total number of gambling activities a person gambled on. For example, if someone only gambles on lotto and instant scratch tickets (i.e. two activities) and neither of these forms of gambling is likely to be a risk, compared with a person who is also gambling on EGMs, informal gambling and sports betting then this makes a total of five activities, which would therefore increase the risk associated with any single gambling activity. Due to the number of categories in gambling frequency and number of activities variables, assessing interactions is not possible due to the small sample that occurs in all the combinations. Confidence intervals for PGSI score rate ratios that do not cross one indicate the category of variable is significant, as compared with the reference category of the variable denoted by one.

Referring to Table 26, the model explained 12.7% of the variation in PGSI scores. Being male, Indigenous, not speaking English at home, being unemployed or a fly-in fly-out (FIFO) worker and having a less than year 10 highest education were associated with increased problem gambling risk. Five gambling activities (from 12) and number of gambling activities also showed a positive multivariable association with problem gambling risk. This model uses information on gambling frequency for all activities (though frequency was collapsed for some activities due to small numbers) but divides frequency for online and non-online gamblers to determine the interaction between online status, gambling frequency for the activity and problem gambling risk.

Purchasing instant scratch tickets were significantly associated with problem gambling risk and are a relatively common form of gambling in the NT, with 22% of gamblers buying an instant scratch ticket in the last year. Any informal gambling with less than monthly or more regularly was associated with higher risk of problem gambling, with more than 65% of monthly or more informal gamblers classified as high or moderate risk of problem gambling, with a mean PGSI score of 4.9 (95% CI 2.4-7.4). The remaining significant gambling activities could all be done online and non-online. All levels of frequency of sports betting, whether online or in a venue had higher levels of high and moderate risk problem gambling, though significance was only reached for online weekly gambling who had a mean PGSI score of 4.2 (95% CI 0.8-7.7), with 79% of these weekly gamblers classified as high or moderate risk of problem gambling, venue and online sports betting 1 to 3 times per month, and venue and online sports betting less than monthly. Racetrack bettors gambling online 1 to 3 times per month, and venue and online weekly racetrack bettors all had significantly higher problem gambling risk, compared with non-sports bettors, with 57% of 31% of weekly venue and online gamblers respectively, being classified as high or moderate risk of problem gambling, and both having a mean PGSI of 3.3. Number of activities showed that people who gamble on three or more activities have a significantly higher problem gambling risk,

with 23.5% of people gambling on five or more activities classified as high or moderate risk of problem gambling, with a mean PGSI score of 2 (95% CI 1.4-2.6).

**Table 26:** Multivariable adjusted negative binomial regression model for PGSI score: socio-demographic, socioeconomic variables and individual activities, 2018 gamblers

	Distribution % (SE)	Score RR (95% CI)	Problem gambling risk		Mean PGSI score (95% CI)
			High or moderate risk % (SE)	Low risk % (SE)	
<i>Pseudo R<sup>2</sup>=12.7%</i>					
NT	100.0	-	6.9 (0.8)	13.1 (1.1)	0.6 (0.5-0.7)
<b>Sex</b>					
Female	48.8 (0.9)	1.0	5.4 (0.9)	9.0 (1.4)	0.4 (0.3-0.5)
Male	51.2 (0.9)	1.36 (1.04-1.79)	8.3 (1.3)	17.0 (1.6)	0.8 (0.6-1.0)
<b>Indigenous status</b>					
Non-Indigenous	77.1 (1.6)	1.0	5.0 (0.5)	10.7 (0.7)	0.4 (0.3-0.5)
Indigenous	22.9 (1.6)	1.72 (1.20-2.45)	13.2 (3.1)	21.0 (3.9)	1.2 (0.8-1.7)
<b>Language spoken at home</b>					
English	92.6 (0.8)	1.0	6.1 (0.8)	12.7 (1.1)	0.5 (0.4-0.7)
Not English	7.4 (0.8)	3.64 (2.35-5.64)	16.7 (4.0)	17.9 (3.6)	1.2 (0.7-1.6)
<b>Labour force status</b>					
NILF/retired	13.8 (0.8)	1.0	4.4 (1.1)	7.9 (1.4)	0.4 (0.2-0.5)
Unemployed	4.5 (0.7)	3.04 (1.64-5.66)	<b>23.7 (7.7)</b>	15.3 (4.4)	1.4 (0.8-2.1)
FIFO/DIDO	10.5 (0.9)	1.63 (1.02-2.61)	<b>10.0 (3.6)</b>	21.8 (4.2)	1.0 (0.5-1.6)
Employed	71.2 (1.3)	1.53 (1.02-2.28)	5.9 (0.8)	12.7 (1.3)	0.5 (0.4-0.7)
<b>Highest education</b>					
Bachelor's degree or higher	29.4 (1.1)	1.0	4.4 (0.8)	9.9 (1.2)	0.4 (0.3-0.5)
Certificate 3, 4/Diploma	34.5 (1.2)	1.08 (0.78-1.48)	5.9 (1.0)	12.7 (1.4)	0.5 (0.4-0.6)
Year 12	18.1 (1.3)	0.87 (0.59-1.29)	<b>7.8 (2.9)</b>	15.4 (3.4)	0.8 (0.3-1.2)
Year 10	15.0 (1.1)	1.36 (0.92-2.00)	11.8 (2.9)	16.8 (4.0)	0.9 (0.6-1.3)
Less than year10	3.0 (0.4)	2.84 (1.22-6.63)	<b>10.8 (4.7)</b>	<b>16.3 (5.8)</b>	1.0 (0.1-1.9)
<b>Instant scratch tickets</b>					
No scratch ticket gambling	78.1 (1.3)	1.0	4.9 (0.7)	11.8 (1.1)	0.4 (0.3-0.5)
< 1 per month	18.7 (1.2)	1.46 (1.06-2.02)	14.0 (3.1)	16.3 (3.2)	1.1 (0.7-1.5)
1-3 per month	2.2 (0.4)	1.84 (1.08-3.13)	<b>13.9 (4.4)</b>	<b>28.5 (8.6)</b>	1.5 (0.6-2.3)

	Distribution % (SE)	Score RR (95% CI)	Problem gambling risk		Mean PGSI score (95% CI)
			High or moderate risk % (SE)	Low risk % (SE)	
<i>Pseudo R<sup>2</sup>=12.7%</i>					
NT	100.0	-	6.9 (0.8)	13.1 (1.1)	0.6 (0.5-0.7)
1+ per week	1.0 (0.2)	1.07 (0.36-3.21)	<b>16.3 (6.6)</b>	<b>16.3 (9.5)</b>	1.6 (0.2-2.9)
Informal gambling					
No informal gambling	96 (0.6)	1.0	5.8 (0.7)	12.6 (1.1)	0.5 (0.4-0.6)
Less than 1 per month	2.9 (0.4)	2.45 (1.53-3.91)	<b>19.7 (6.8)</b>	24.5 (5.7)	1.2 (0.6-1.8)
1 or more per month	<b>1.2 (0.4)</b>	4.89 (1.72-13.9)	67.8 (14.)	<b>22.6 (12.)</b>	4.9 (2.4-7.4)
Sports betting					
No sports betting	90.1 (0.8)	1.0	5.7 (0.8)	11.1 (1.1)	0.5 (0.4-0.6)
Venue: < 1 per month	2.0 (0.4)	1.98 (1.03-3.79)	<b>6.1 (4.0)</b>	<b>32.1 (13.)</b>	0.9 (0.3-1.5)
Online: < 1 per month	4.2 (0.4)	2.06 (1.29-3.31)	<b>8.0 (3.0)</b>	35.8 (5.6)	0.9 (0.6-1.1)
Venue: 1-3 per month	<b>0.5 (0.2)</b>	4.71 (1.57-14.2)	<b>26.4 (16.4)</b>	<b>49.5 (21.)</b>	2.4 (0.4-4.5)
Online: 1-3 per month	1.7 (0.4)	1.81 (0.69-4.71)	<b>28.1 (16.2)</b>	<b>26.1 (9.1)</b>	2.5 (0.1-4.9)
Venue: 1+ per week	0.4 (0.1)	1.95 (0.48-7.97)	<b>41.2 (17.3)</b>	<b>18.2 (16.)</b>	2.1 (0.8-3.4)
Online: 1+ per week	1.2 (0.3)	2.62 (1.05-6.50)	44.8 (12.7)	<b>20.1 (9.2)</b>	4.2 (0.8-7.7)
EGMs					
No EGM gambling	72.8 (1.3)	1.0	2.9 (0.5)	9.3 (1.0)	0.3 (0.2-0.3)
Venue: < 1 per month	19.7 (1.2)	2.23 (1.56-3.18)	10.7 (2.4)	21.8 (3.4)	0.9 (0.6-1.2)
Online: < 1 per month	<b>0.2 (0.1)</b>	5.76 (2.29-14.5)	<b>24.6 (14.)</b>	<b>29.8 (15.)</b>	1.1 (0.3-1.9)
Venue: 1-3 per month	4.3 (0.5)	8.08 (5.25-12.4)	24.4 (4.7)	30.5 (5.7)	2.3 (1.4-3.1)
Online: 1-3 per month	<b>0.3 (0.1)</b>	3.38 (1.16-9.84)	<b>9.7 (9.6)</b>	<b>38.1 (22.)</b>	1.1 (0.2-1.9)
Venue: 1+ per week	1.6 (0.2)	16.6 (9.98-27.6)	41.9 (7.5)	30.9 (6.9)	4.3 (2.8-5.9)
Online: 1+ per week	<b>1.1 (0.5)</b>	12.8 (5.16-31.5)	79.2 (17.)	1.1 (1.2)	6.2 (3.3-9.2)
Racetrack betting					
No racetrack betting	77.0 (1.1)	1.0	5.9 (0.9)	11.9 (1.2)	0.5 (0.4-0.6)
Venue: < 1 per month	12.9 (0.8)	0.94 (0.66-1.33)	7.0 (1.9)	11.2 (1.9)	0.6 (0.3-0.9)
Online: < 1 per month	5.0 (0.6)	1.02 (0.61-1.73)	5.0 (2.2)	21.6 (7.0)	0.6 (0.2-0.9)
Venue: 1-3 per month	1.1 (0.2)	0.59 (0.21-1.65)	<b>10.4 (5.3)</b>	<b>23.7 (12.)</b>	1.1 (0.0-2.1)

	Distribution % (SE)	Score RR (95% CI)	Problem gambling risk		Mean PGSI score (95% CI)
			High or moderate risk % (SE)	Low risk % (SE)	
<i>Pseudo R</i> <sup>2</sup> =12.7%					
NT	100.0	-	6.9 (0.8)	13.1 (1.1)	0.6 (0.5-0.7)
Online: 1-3 per month	1.5 (0.3)	2.29 (1.05-5.00)	<b>5.7 (3.6)</b>	40.8 (10.)	0.9 (0.5-1.3)
Venue: 1+ per week	0.8 (0.2)	2.83 (1.27-6.29)	57.4 (11.)	<b>10.8 (5.9)</b>	3.3 (1.7-5.0)
Online: 1+ per week	1.7 (0.3)	3.60 (1.48-8.75)	<b>31.5 (9.5)</b>	26.7 (7.9)	3.3 (0.7-5.8)
Number of activities					
One	31.9 (1.2)	1.0	1.9 (0.5)	5.1 (1.3)	0.2 (0.1-0.2)
Two	26.1 (1.2)	1.28 (0.82-2.00)	2.9 (0.8)	11.5 (2.0)	0.3 (0.2-0.4)
Three	18.4 (1.0)	1.92 (1.18-3.12)	9.8 (2.3)	14.3 (1.8)	0.8 (0.5-1.1)
Four	11.3 (0.8)	2.11 (1.22-3.63)	7.5 (2.0)	21.3 (3.6)	0.7 (0.5-1.0)
Five or more	12.3 (1.0)	1.76 (0.99-3.13)	23.5 (4.2)	27.8 (4.6)	2.0 (1.4-2.6)

Notes: **Bold font** indicated relative standard error greater than 30% and estimate should be interpreted with caution

Table 27 shows the multivariable model for PGSI score including the online gambling combination variable, which explained 7.7% of the variation in PGSI score, which was less than the previous model. Highest level of education dropped out of this model (and was only marginally significant in the previous model), with all other socio-demographic and socioeconomic variables remaining significant with similar score rate ratios as in the previous model. Instant scratch tickets and informal gambling also remained significant in this model, though the score rate ratio for less than monthly and weekly scratch tickets purchases were lower than the previous model. While for informal gambling the score rate ratio was higher for monthly or more informal gamblers and lower for those who gambled less than monthly (and not significant for this category). The multivariable adjusted association between online gambling combination and PGSI score was like the unadjusted association. Those gambling only on races or sports online did not have a significantly higher problem gambling risk, while those who gambled on races and sports only did have a significantly higher problem gambling risk with 15% classified as high or moderate risk and 32% of low risk for problem gambling. The largest effect size was evident for online gamblers that gambled on one to four activities that included online EGMs (or slots), with 60% of these gamblers classified as high or moderate risk of problem gambling, with a mean PGSI score 4.7 (95% CI 2.3-7.1). Interestingly, the number of activities had much larger effect sizes in this model, compared to the previous model where online activities were entered separately. This may reflect an interaction occurring between number of activities and specific types of activity with specific combinations of activities and total number of activities associated with higher problem gambling risk. For example, someone who gambles on lotto, keno and scratch tickets may not have a higher risk of problem gambling, but is gambling on three different activities, compared with someone gambling on races online, sports betting online and keno (still three activities), with this latter group having a higher risk of problem gambling.

**Table 27:** Multivariable adjusted negative binomial regression model for PGSI score: model for socio-demographic, socioeconomic variables and online gambling combination and activities, 2018 gamblers

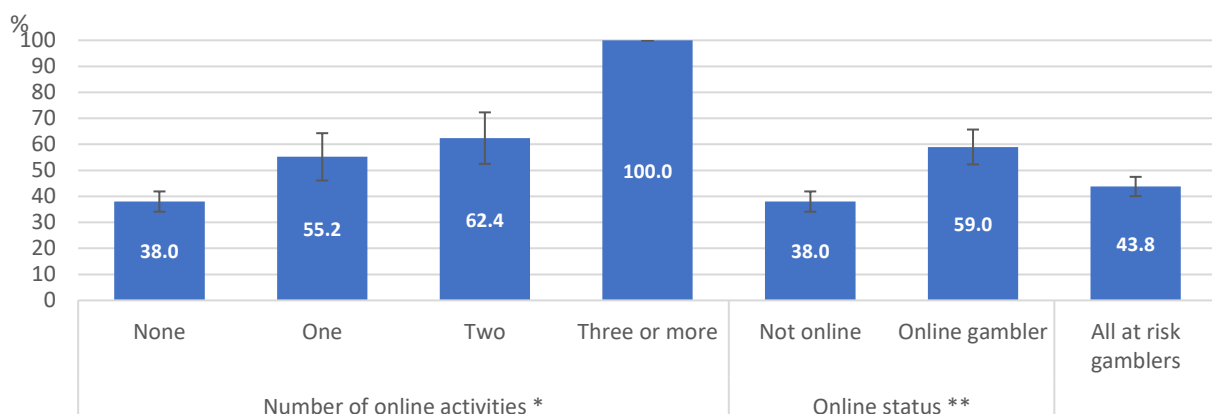
		Problem gambling risk			Mean PGSI score (95% CI)
		High or moderate risk % (SE)	Low risk % (SE)		
<i>Pseudo R<sup>2</sup>=7.7%</i>					
	Distribution % (SE)	Score RR (95% CI)			
NT	100.0	-		13.1 (1.1)	0.6 (0.5-0.7)
Sex					
Female	48.8 (0.9)	1.0	5.4 (0.9)	9.0 (1.4)	0.4 (0.3-0.5)
Male	51.2 (0.9)	1.48 (1.09-2.01)	8.3 (1.3)	17.0 (1.6)	0.8 (0.6-1.0)
Indigenous status					
Non-Indigenous	77.1 (1.6)	1.0	5.0 (0.5)	10.7 (0.7)	0.4 (0.3-0.5)
Indigenous	22.9 (1.6)	2.07 (1.46-2.93)	13.2 (3.1)	21.0 (3.9)	1.2 (0.8-1.7)
Language spoken at home					
English	92.6 (0.8)	1.0	6.1 (0.8)	12.7 (1.1)	0.5 (0.4-0.7)
Not English	7.4 (0.8)	3.57 (2.28-5.60)	16.7 (4.0)	17.9 (3.6)	1.2 (0.7-1.6)
Labour force status					
NILF/retired	13.8 (0.8)	1.0	4.4 (1.1)	7.9 (1.4)	0.4 (0.2-0.5)
Unemployed	4.5 (0.7)	2.72 (1.36-5.46)	<b>23.7 (7.7)</b>	15.3 (4.4)	1.4 (0.8-2.1)
FIFO	10.5 (0.9)	1.29 (0.75-2.23)	<b>10.0 (3.6)</b>	21.8 (4.2)	1.0 (0.5-1.6)
Employed	71.2 (1.3)	1.05 (0.68-1.65)	5.9 (0.8)	12.7 (1.3)	0.5 (0.4-0.7)
Instant scratch tickets					
No scratch ticket gambling	78.1 (1.3)	1.0	4.9 (0.7)	11.8 (1.1)	0.4 (0.3-0.5)
< 1 per month	18.7 (1.2)	1.27 (0.88-1.85)	14.0 (3.1)	16.3 (3.2)	1.1 (0.7-1.5)
1-3 per month	2.2 (0.4)	2.24 (1.15-4.37)	<b>13.9 (4.4)</b>	<b>28.5 (8.6)</b>	1.5 (0.6-2.3)
1+ per week	1.0 (0.2)	2.08 (0.75-5.71)	<b>16.3 (6.6)</b>	<b>16.3 (9.5)</b>	1.6 (0.2-2.9)
Informal gambling					
No informal gambling	96.0 (0.6)	1.0	5.8 (0.7)	12.6 (1.1)	0.5 (0.4-0.6)
Less than 1 per month	2.9 (0.4)	1.40 (0.87-2.24)	<b>19.7 (6.8)</b>	24.5 (5.7)	1.2 (0.6-1.8)
1 or more per month	<b>1.2 (0.4)</b>	5.66 (1.78-18.0)	67.8 (14.)	<b>22.6 (12.)</b>	4.9 (2.4-7.4)
Online gambling combination					
No online gambling	87.0 (1.0)	1.0	5.5 (0.7)	11.1 (1.1)	0.5 (0.4-0.5)
Sports only	2.8 (0.4)	1.44 (0.82-2.51)	<b>13.1 (5.1)</b>	31.2 (6.9)	1.0 (0.6-1.5)

	Distributio n % (SE)	Score RR (95% CI)	Problem gambling risk		Mean PGSI score (95% CI)
			High or moderate risk % (SE)	Low risk % (SE)	
<i>Pseudo R<sup>2</sup>=7.7%</i>					
<i>NT</i>	100.0	-	6.9 (0.8)	13.1 (1.1)	0.6 (0.5- 0.7)
Races only	3.9 (0.5)	1.46 (0.74- 2.88)	<b>6.2 (2.7)</b>	<b>15.7 (5.7)</b>	0.6 (0.2-1.0)
Races and Sports only	3.7 (0.4)	1.76 (1.06- 2.92)	<b>15.3 (5.3)</b>	32.1 (5.6)	1.8 (0.4-3.1)
EGMs + (1-4 types)	<b>1.5 (0.5)</b>	2.88 (1.26- 6.56)	60.2 (16.)	<b>11.1 (6.5)</b>	4.7 (2.3-7.1)
Not EGMs online + (1-3 types)	<b>1.1 (0.4)</b>	1.03 (0.61- 1.76)	<b>4.8 (4.0)</b>	<b>51.7 (18.)</b>	1.3 (0.5-2.0)
<b>Number of activities</b>					
One	31.9 (1.2)	1.0	1.9 (0.5)	5.1 (1.3)	0.2 (0.1-0.2)
Two	26.1 (1.2)	1.65 (1.04- 2.60)	2.9 (0.8)	11.5 (2.0)	0.3 (0.2-0.4)
Three	18.4 (1.0)	4.49 (2.69- 7.50)	9.8 (2.3)	14.3 (1.8)	0.8 (0.5-1.1)
Four	11.3 (0.8)	4.77 (2.90- 7.86)	7.5 (2.0)	21.3 (3.6)	0.7 (0.5-1.0)
Five or more	12.3 (1.0)	7.64 (4.64- 12.6)	23.5 (4.2)	27.8 (4.6)	2.0 (1.4-2.6)

Notes: **Bold font** indicates relative standard error greater than 30% and estimate should be interpreted with caution

### 3.12 Harm from own gambling and online gambling

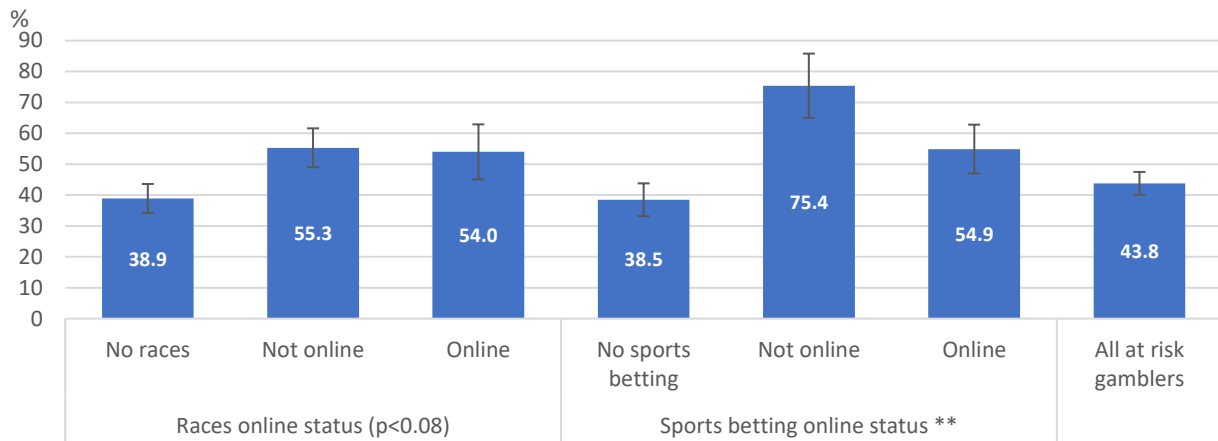
Figure 25 shows a significant association between harms from own gambling and the number of online activities gambled on for at-risk gamblers (PGSI one or more). Non-online gamblers were significantly less likely to be harmed from their own gambling, with 38% identifying at least one harm, compared with 55% of gamblers participating on one activity online experiencing harm, increasing to 62% for those participating in two online activities and 100% of gamblers participating in three or more online activities.



**Figure 25: Harm from own gambling by online gambling status and number of online activities, 2018 at risk gamblers**

\*\* p<0.01 \* p<0.05: Significant association between number of online activities, online status and harm from own gambling

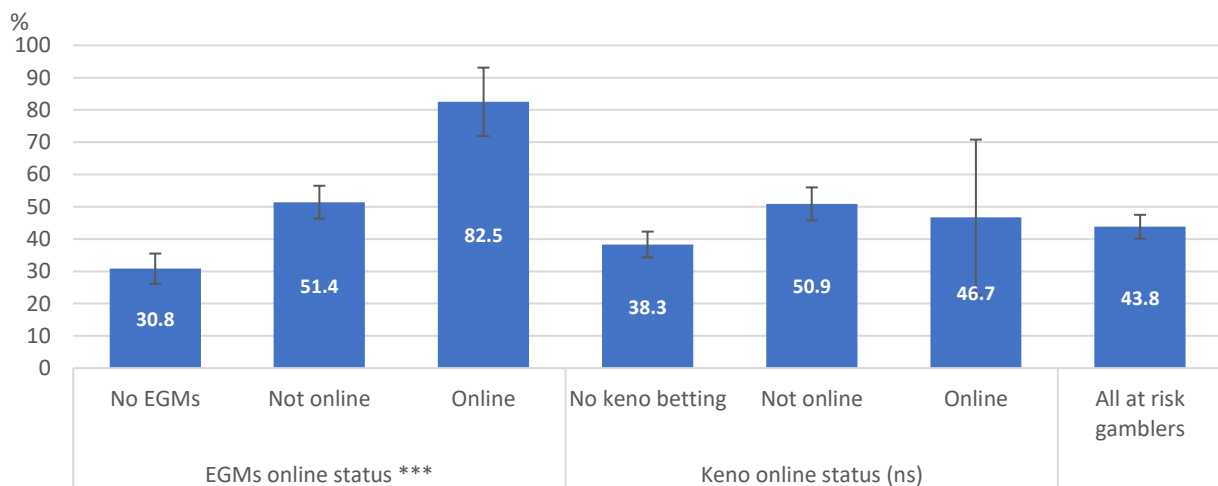
Figure 26 shows the significant association between online gambling on sports with harm from own gambling and a marginally non-significant association for racetrack betting. Across all at-risk gamblers, 44% experienced at least one harm from their own gambling, while for land-based and online racetrack bettors it was 55% and 54% respectively. Online sports bettors experienced lower levels of gambling harms (55%) than land-based (and/or phone) sports bettors (75%).



**Figure 26: Harm from own gambling by races and sports online gambling status, 2018 at risk gamblers**

\*\*\* p<0.001 \*\* p<0.01: Significant association between online activity and harm from own gambling

Figure 27 shows the non-significant association between harm from own gambling with online keno status and a significant association with online EGM gambling. Experiencing at least one harm from own gambling was higher for online (83%) and non-online (51%) EGM gamblers, compared with all at risk gamblers (44%). For keno, 47% of online gamblers and 51% of non-online gamblers experienced harm from their own gambling, which was not significantly higher than all at-risk gamblers (44%).

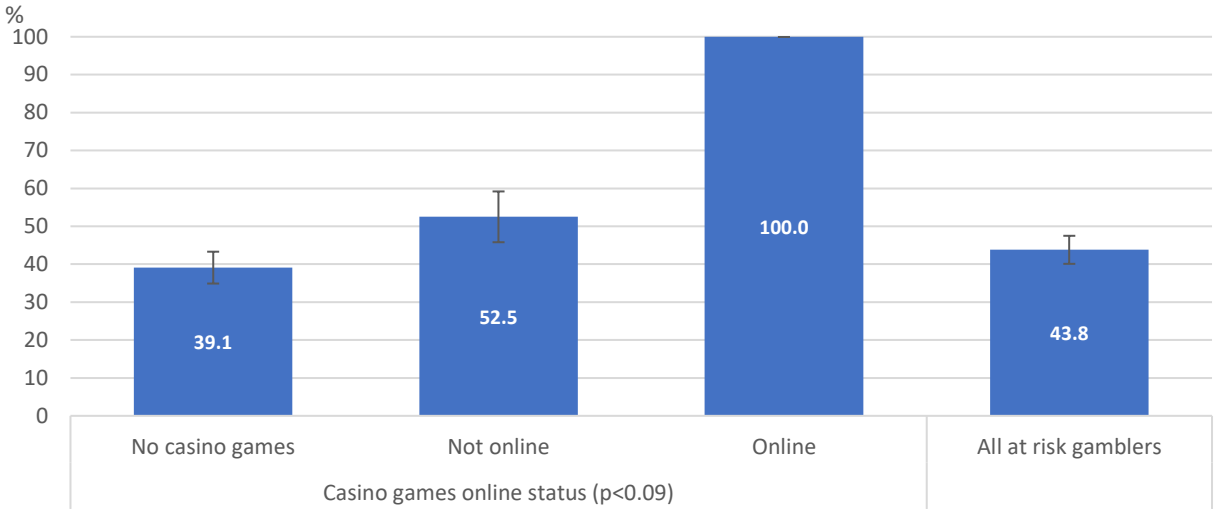


**Figure 27: Harm from own gambling by EGM and keno online gambling status, 2018 at risk gamblers**

\*\*\* p<0.001: Significant association between online activity and harm from own gambling, ns: not significant

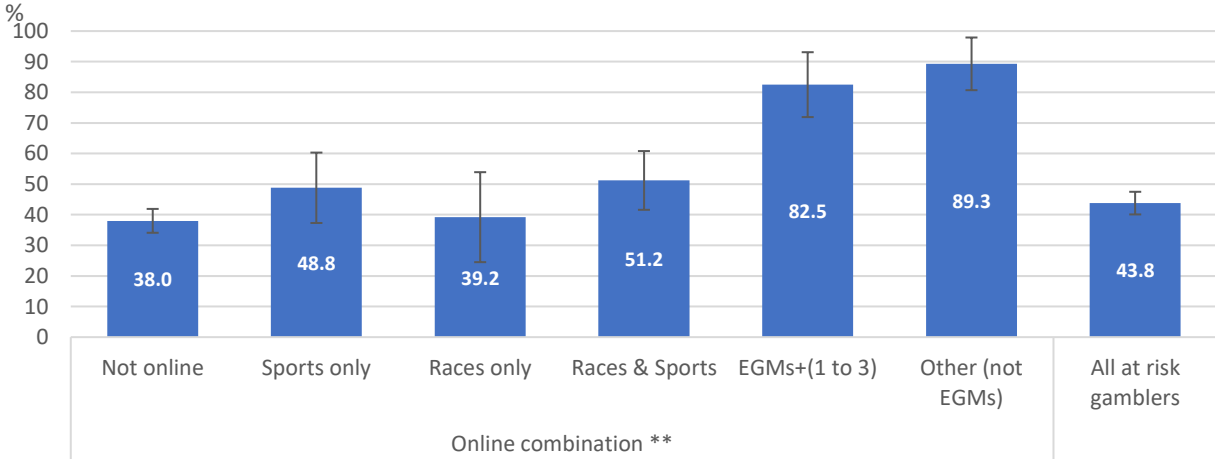
Figure 28 shows the marginally non-significant association between casino table games online gambling status and harm from own gambling for 2018 at-risk gamblers. All online casino game gamblers experienced at least one harm from their gambling,

compared with 53% of non-online casino game gamblers, and 44% of all at-risk gamblers. Small numbers of online casino game gamblers limited the statistical power to detect a significant association.



**Figure 28:** Harm from own gambling by casino games online status, 2018 at risk gamblers

Figure 29 shows the significant association between online gambling combination and harm from own gambling. Some caution should be made in interpreting differences across online combinations due to the smaller sample and larger standard errors associated with estimates. However, the figure clearly shows that a greater percentage of gamblers gambling online on EGMs and other combinations of online types experience harm from their own gambling.



**Figure 29:** Harm from own gambling by online gambling combination, 2018 at risk gamblers

\*\* p<0.01: Significant association between online activity and harm from own gambling





## 4.0 DISCUSSION

Online gambling has been available to gamblers for around 20 years; however, over that time the gambling industry has shown itself to be dynamic and expansive in the way it has used technology to provide gamblers with an increased range of products, and increased opportunities to gamble. To date, studies identifying characteristics of online gamblers and risks associated with online gambling have mostly lumped all online gamblers together, thereby treating all online gamblers the same, regardless of whether they gamble on different forms. The analyses contained in this report provides a more nuanced approach to online gambling, by separating out online gamblers by the type of online gambling and combinations of that they participate in.

### 4.1 Participation and spending on online gambling activities

Between 2015 and 2018 there was a small increase in the number of adults gambling online in the NT from 15,870 to 16,840, which represents 11.8% and 13% of all gamblers respectively. Numerically, races bettors (10,668) make up the largest population segment of online gamblers, followed by sports bettors (9,103), EGMs (1,969), with fewer than 1,000 participating in online casino games and keno. The low numbers participating in online games of chance (i.e. keno, EGMs and casino games) reflects that gambling companies in Australia are not legally allowed to provide these activities. There was a similar trend from 2015 to 2018 for racetrack and sports bettors, with the overall number of gamblers betting on these activities declining; however, for sports bettors there was a marginally non-significant increase with 59% of sports bettors doing it online in 2015 (7,789), increasing to 71% (9,103) in 2018. This reflects the growing popularity of sports betting, especially in men under the age of 30 years.

Previous research has shown consistent and strong associations between gambling intensity, measured by frequency and number of activities, and problem gambling risk in both non-online and online gamblers (Gainsbury, Russell et al. 2015). The analyses contained in this report support this finding, with online gamblers significantly more likely to gamble on more activities (online and land-based), and more frequently. The analyses also looked at gambling intensity by the number of online activities from the five collected by frequency, with 79% of 2018 gamblers participating in three or four online activities gambling weekly, reducing to 61% for those gambling on two online activities, 43% for those gambling on one online activity, and just 20% weekly gamblers for non-online gamblers. The increased accessibility to betting that online gambling provides, compared with land-based venue gambling clearly increases the frequency at which people gamble, and this was even more prominent in the 2015 survey, where 64% of gamblers who gambled on three or four online activities were weekly gamblers. The decrease between 2015 and 2018 in online gambling frequency may indicate some rationalisation of the market and consumers adjusting their gambling accordingly, though the higher percentage of online gamblers who gambled more frequently is a concern, given association with problem gambling risk and subsequent gambling-related harms.

The finding regarding frequency and online gambling was further investigated through the online gambling combination variable. These analyses showed that the increased in gambling frequency was predominantly associated with an increase associated with all gambling activities, and not just increases due to the online gambling for a particular activity. This is evident when comparing Figure 10, which graphs online gambling combination by all gambling frequency for all gamblers, and shows that

around 40% of sports only, races only online gamblers gambled weekly, while 62% of sports and races only online gamblers gambled weekly. When this analysis was constricted to races bettors, only 13% of races only online gamblers gambled weekly, compared with 5.7% of non-online races bettors. Similarly, when the analyses were constricted to sports bettors, just 4% of sports only online bettors gambled weekly, which was in fact lower than non-online sports bettors and those that only bet online on sports.

The findings with regards to number of activities and frequency indicate that gambling messaging around the number of activities, both online and non-online are important indicators of risky gambling.

*It is recommended to develop health promotion material to encourage gamblers to monitor their overall gambling frequency across multiple gambling activities, and not just how often they gamble on a particular activity.*

The analysis of self-reported expenditure and highest spend activity showed that online gamblers were more likely to choose sports betting, racetrack betting and EGMs as highest spend activities, compared with non-online gamblers. Research has shown that these activities, especially EGMs are the most risky form of gambling (Productivity Commission 2010, Delfabbro, King et al. 2020). Also, both online racetrack and sports bettors (though not as pronounced) were over over-represented in the highest spend quartiles (>\$1200 per annum), providing strong evidence that gambling on an activity online, rather than in a venue, is associated with a greater expenditure on the activity. When looking at EGM highest spend gamblers and all EGM gamblers, there was a significant difference in the quartile distribution by online EGM gambling status, with 84% of online EGM gamblers in the highest quartile (>\$780 per annum) of annual EGM expenditure, compared with 41% of non-online highest spend EGM gamblers. A similar pattern emerged when looking at expenditure for all EGM gamblers, with 77% of online EGM gamblers in the highest spending quartile, compared with the expected 25% across all EGM gamblers.

*It is recommended that health promotion of gambling encourage gamblers to regularly monitor their gambling expenditure across all activities.*

#### **4.2 Characteristics of online gambling by activity**

Online gambling was collected for sports betting, racetrack betting, keno, casino table games, and EGMs. The online gambling combination variable classified five types of online gambler: (i) sports only online (22%), (ii) racetrack only online (30%), (iii) racetrack and sports only online (28%), (iv) EGMs online and (1-4 other online activities) (12%), and (v) non-EGM online gamblers and (1-3 other online activities) (8%). Racetrack only online gambling was the most common type of online gambling in 2018, followed by sports only, sports and racetrack only, making up around 80% of all online gamblers. The analysis identifying characteristics of online gamblers by the combination of online activities they participated in showed significant differences between online gambling activities and predictive socio-demographic, socioeconomic and health risk factors. Factors significantly associated with sports only online gamblers were similar to those found in past research that identified characteristics of online gamblers, but not by activity (Wood and Williams 2011, Gainsbury, Russell et al. 2013, Gainsbury, Russell et al. 2015). Specifically, being under 30 years, having a bachelor's degree or higher, male, living in group households, and

specific to the NT, living in Darwin/Palmerston. Income was the only significant predictor of the racetrack betting only online gamblers, with higher participation in gamblers earning more than \$70,00 per annum and highest for those earning \$120,000 or more per annum. Interestingly, rather than being a combination of predictors for sports only and races only gamblers, predictors of sports and racetrack betting only online were being male (same as sports betting online only), living in a group household (same as sports betting online only) and Year 10 as highest education (different to sports only and racetrack only online gamblers).

Multivariable adjusted predictors of online EGM gambling and a combination of up to three other online activities found three significant predictors: being Indigenous, living in a group household and employed as a fly-in fly-out (FIFO) or drive-in drive-out (DIDO) worker. No studies to date have separated out FIFO/DIDO out workers in the employed category, and this may be explained by the on and off nature of work and using gambling to pass time after shifts or in between flying in and out. The smallest online gambling combination included four of the five online gambling activities, but not online EGM/slots gambling. This group of online gamblers were more likely to be living in Darwin/Palmerston, less than 30 years, male and on annual income between \$100,000 per annum and \$119,999 per annum.

The analysis shows that different online gamblers, depending on what they gamble on, come from different population segments. Online EGMs were found to have the highest problem gambling risk, as do land-based EGMs (Productivity Commission 2010, Delfabbro, King et al. 2020). The NT has population attributes that put segments of the population in a higher risk category of developing and experiencing gambling-related harms. Specifically, the NT has a younger population than other jurisdictions in Australia, has the highest proportion of Aboriginal and Torres Strait Islander people, and a large FIFO workforce (Australian Bureau of Statistics 2017).

The finding that gamblers who gamble on different online activities and combinations of online activities have different socio-demographic, socioeconomic and health risk profiles is not surprising, as different gambling activities are designed to appeal to a broad range of people. So, there is no typical online gambler, but there are characteristics associated with online gambling on specific activities and combinations of.

*An implication of this findings is that developed education materials on harms associated with gambling must have a broad appeal to ensure messaging is reaching different online gambler profiles.*

#### **4.3 Online gambling, problem gambling risk and gambling-related harms**

Online gambling on any of the five activities for which it was measured was strongly associated with problem gambling risk, with rates three times higher for problem gambling (6.4% cf. 1.9%), double for moderate (10% cf. 5%) and low risk (26% cf. 13%) of problem gambling compared with all gamblers. All online gambling activities included in the analysis, produced higher problem gambling risk, except for keno, compared with the same activity only being played in a venue. We also see that the more online activities gambled on, the greater a gamblers chance is of experiencing problem gambling. When looking at the online gambling combination variable, all combinations (sports only, races only, sports and races only, EGMs plus 1-3 other types, and other not including EGM gambling), all possible combinations were associated

with higher levels of problem gambling risk, and this was the highest in the group where EGMs were played online. This was also the case when looking at individual bivariate associations with online gambling activity variables, where EGMs online had the highest problem gambling risk for gamblers.

*It is recommended that further education materials be developed for online gamblers that highlight the increased risk of harm from their gambling.*

*It is recommended that the use of a gambling card be investigated that requires gamblers to set mandatory limits on cash deposits and time gambling that relate to time and money spent and problem gambling risk from existing or new commissioned research. All gambling would come through this card and the card will allow for differentiation between different gambling activities and whether they are played online or not.*

#### **4.4 Gambling by Aboriginal and Torres Strait Islander Territorians**

Research in the NT over the last couple of decades has consistently found that Aboriginal Territorians have significantly higher risk of harmful gambling (Stevens and Young 2009, Stevens and Bailie 2012, Fogarty 2013, Stevens, Thoss et al. 2017, Stevens, Gupta et al. 2020). Between 2015 and 2018 in NT, rates of high risk problem gambling among Aboriginal people increased from 1.5% to 5.3% (1,500 people), so now more than one in twenty Aboriginal gamblers experience problem gambling from their own gambling, and a further 8% (2,300 people) and 21% (6,200 people) are at a moderate and low risk of problem gambling respectively. This equates to just under a quarter of the adult Aboriginal population in the NT at risk of problem gambling, compared with 14% of the non-Indigenous population.

Aboriginal adults in the NT do not have higher gambling participation when looking across all activities, but they do have increased participation and frequency of gambling for EGMs, which are the most risky form of gambling in terms of developing problem gambling (Donaldson, Langham et al. 2015, Delfabbro, King et al. 2020). Further, much of the NT Aboriginal population experience significant socioeconomic and health disadvantage, which further increases financial and emotional/psychological harm associated with any gambling, and in particular EGM gambling. The analysis of predictors of online gambling combinations in showed the Aboriginal gamblers were significantly more likely to gamble on online EGMs (see Section 3.6: 4.6% cf. 0.6%). The high risk associated with problem gambling and EGMs, both online and not online, and the higher participation by Aboriginal gamblers was seen in the multivariable analysis of problem gambling risk including socio-demographic variables, where Indigenous status remained an independent predictor of problem gambling risk (see Section 3.10). Aboriginal gamblers were had PGSI score rate ratio of 1.7 compared with non-Indigenous gamblers (mean PGSI score 1.2, cf. 0.4), and 13.2% classified as moderate or high risk of problem gambling compared with 5% for non-Indigenous, and 21% as low risk compared with 10.7% for non-Indigenous gamblers.

*It is recommended that resources be developed for use in remote and urban areas for Aboriginal gamblers that warn of the higher harms associated with online gambling, especially on online EGMs (which are illegal in Australia, so are only supplied through offshore companies).*

*It is recommended that further research be conducted with Aboriginal people (gamblers and non-gamblers) in remote, regional, and urban settings, exploring motivations to gamble online and strategies to reduce participation on online gambling forms. These educational materials should highlight that online EGMs are not licensed in Australia and if they win, they may not be paid out.*

#### **4.5 Conclusions**

The analyses conducted for this report clearly show that online gambling *increases*:

1. participation and frequency of gambling (across online and non-online activities),
2. problem gambling risk, and
3. harm from own gambling.

There is an urgent need to develop improved regulation through legislation that mandates gamblers set limits on spending, time, and number of gambling activities (not just online, but across all types of gambling). Further, enforcement of regulations, legislation and code of conduct be improved, focussing on consumer protections, rather than placing all the onus of responsibility of the gambler, especially for gamblers with indications of addiction. A comprehensive advertising campaign with a focus on health promotion that includes the types of harms associated with problem gambling is urgently needed. This would include portrayals of gamblers with lived experience of problem gambling and the types of harms they experience including running out of money for essentials (bills, food, rent/mortgage), increased relationship tensions with friends and family, elevated psychological distress and reduced social and emotional wellbeing.



## **APPENDIX A**

Table 26 shows the multivariable adjusted multinomial regression model for socio-demographic and socioeconomic factors and online gambling combination using population weighted data. Individual associations between each explanatory variable and online gambling combination are not shown as all socio-demographic and socioeconomic variable had a significant association with at least one category of the online gambling combination variable. After putting all socio-demographic and socioeconomic variables into a single multivariable adjusted model, all variables remained significant. Relative risk ratios are presented and indicate the relative risk of participation in the category of the online gambling combination variable. A relative risk ratio below one with 95% confidence intervals not overlapping one indicates lower chances of participation and the converse for a relative risk ratio above one. Table 27 shows the multivariable multinomial regression model for health risk factors.



**Table 28:** Population weighted multivariable adjusted multinomial logistic regression for online gambling combination: socio-demographic and socioeconomic factors, 2018 gamblers

	Sports	Races	Races & Sports	EGMs + (1 to 3 online forms)	1 to 4 online forms, not EGMs <sup>‡</sup>
	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)	RRR (95% CI)
<b>Region</b>					
Darwin-Palmerston	1.0	1.0	1.0	1.0	1.0
Alice Springs	<b>0.37 (0.15-0.95)</b>	1.09 (0.48-2.48)	0.55 (0.21-1.41)	1.86 (0.67-5.17)	1.27 (0.51-3.16)
Regional towns <sup>1</sup>	0.30 (0.05-1.94)	1.56 (0.52-4.69)	0.52 (0.17-1.64)	0.38 (0.06-2.56)	<b>0.02 (0.00-0.27)</b>
Rest of NT	<b>0.03 (0.00-0.26)</b>	0.75 (0.29-1.98)	0.39 (0.11-1.39)	1.39 (0.28-7.01)	0.24 (0.04-1.70)
<b>Age (years)</b>					
18-29	1.0	1.0	1.0	1.0	1.0
30-39	0.56 (0.28-1.12)	0.52 (0.19-1.43)	2.24 (0.94-5.35)	1.69 (0.40-7.12)	0.33 (0.08-1.35)
40-49	<b>0.23 (0.10-0.54)</b>	0.46 (0.19-1.12)	1.85 (0.71-4.82)	1.86 (0.32-10.9)	0.39 (0.10-1.53)
50 or more	<b>0.15 (0.05-0.43)</b>	0.57 (0.27-1.20)	0.61 (0.26-1.46)	1.90 (0.50-7.28)	<b>0.22 (0.06-0.83)</b>
<b>Sex</b>					
Female	1.0	1.0	1.0	1.0	1.0
Male	<b>4.96 (2.51-9.81)</b>	1.23 (0.75-2.01)	<b>8.07 (4.15-15.7)</b>	0.85 (0.30-2.42)	<b>4.38 (1.64-11.7)</b>
<b>Indigenous status</b>					
Non- Indigenous	1.0	1.0	1.0	1.0	1.0
Indigenous	1.22 (0.42-3.52)	0.98 (0.37-2.58)	0.54 (0.17-1.76)	<b>8.31 (2.91-23.8)</b>	2.09 (0.63-6.85)
<b>Language at home</b>					
English	1.0	1.0	1.0	1.0	1.0
Not English	1.77 (0.84-3.76)	0.50 (0.09-2.69)	<b>0.05 (0.01-0.41)</b>	1.23 (0.21-7.03)	<b>0.00 (0.00-0.00)</b>
<b>Household type</b>					
Couple with children	1.0	1.0	1.0	1.0	1.0
Couple with no children	<b>2.15 (1.06-4.39)</b>	0.87 (0.47-1.60)	1.48 (0.80-2.73)	0.29 (0.03-3.12)	<b>0.28 (0.08-0.93)</b>
One parent with children	1.05 (0.25-4.37)	0.54 (0.17-1.71)	1.54 (0.58-4.13)	1.04 (0.12-9.05)	1.47 (0.37-5.90)
One-person household	0.95 (0.34-2.67)	0.69 (0.35-1.39)	1.34 (0.64-2.80)	2.79 (0.57-13.8)	1.35 (0.38-4.76)
Group or other	<b>2.19 (1.06-4.49)</b>	1.01 (0.43-2.39)	2.37 (0.96-5.85)	<b>8.02 (2.47-26.0)</b>	0.59 (0.13-2.67)
<b>Student status</b>					
Not studying	1.0	1.0	1.0	1.0	1.0
Studying	1.43 (0.77-2.65)	0.54 (0.17-1.73)	0.53 (0.22-1.32)	<b>0.16 (0.03-0.84)</b>	1.92 (0.73-5.04)
<b>Labour force status</b>					
NILF/unemployed	1.0	1.0	1.0	1.0	1.0
FIFO/DIDO	9.01 (0.96-84.3)	0.73 (0.27-1.99)	1.17 (0.37-3.67)	<b>27.40 (2.87-262)</b>	1.82 (0.54-6.08)
Employed	5.90 (0.64-54.7)	1.12 (0.58-2.16)	1.99 (0.75-5.24)	6.56 (0.80-53.8)	0.55 (0.18-1.66)
<b>Highest education</b>					
Bachelor or more	1.0	1.0	1.0	1.0	1.0
Cert 3-Diploma	<b>0.50 (0.26-0.98)</b>	1.71 (0.99-2.94)	1.20 (0.65-2.20)	1.57 (0.43-5.75)	1.65 (0.56-4.86)
Year 12	0.76 (0.33-1.75)	1.34 (0.58-3.08)	<b>2.22 (1.04-4.73)</b>	<b>9.30 (2.15-40.2)</b>	2.86 (0.80-10.2)
Year 10 and below	0.69 (0.25-1.91)	0.47 (0.20-1.13)	0.46 (0.18-1.13)	1.02 (0.15-7.07)	0.18 (0.03-1.16)
<b>Personal income</b>					
<\$30K	1.0	1.0	1.0	1.0	1.0
\$30-\$49K	1.14 (0.36-3.63)	3.23 (0.99-10.5)	0.28 (0.05-1.45)	4.05 (0.60-27.2)	0.70 (0.08-5.84)
\$50-\$69K	0.62 (0.20-1.95)	2.04 (0.63-6.56)	2.69 (0.68-10.7)	0.96 (0.17-5.34)	3.95 (0.89-17.4)
\$70-\$99K	0.45 (0.13-1.55)	<b>3.43 (1.09-10.7)</b>	2.84 (0.75-10.7)	4.04 (0.42-38.9)	3.85 (0.73-20.3)
\$100-119K+	0.98 (0.27-3.61)	<b>3.29 (1.05-10.2)</b>	0.75 (0.16-3.42)	1.00 (0.11-9.24)	<b>5.41 (1.01-28.8)</b>
\$120k+	0.98 (0.31-3.13)	<b>5.74 (1.78-18.4)</b>	2.41 (0.60-9.61)	0.62 (0.05-7.18)	1.83 (0.23-14.9)

<sup>‡</sup> Other forms of gambling include races, sports betting, casino table games and keno

<sup>1</sup> Regional towns = Katherine, Tennant Creek and Nhulunbuy, <sup>2</sup> NILF = Not in the labour force (i.e. retired, not looking for work)

**Bold font** indicates significant association between socio-demographic variable and online gambling combination  
 \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between socio-demographic variable and online gambling

**Table 29:** Population weighted multivariable adjusted multinomial logistic regression for online gambling combination: Health risk factors, 2018 gamblers

	Sports RRR (95% CI)	Races RRR (95% CI)	Races & Sports RRR (95% CI)	EGMs + (1 to 3 online forms) RRR (95% CI)	1 to 4 online forms, not EGMs <sup>‡</sup> RRR (95% CI)
Cannabis	<b>2.84 (1.11-7.22)</b>	1.01 (0.42-2.40)	0.37 (0.11-1.23)	2.08 (0.42-10.3)	<b>7.17 (1.83-28.2)</b>
Legal drug	0.39 (0.04-3.70)	<b>0.07 (0.01-0.88)</b>	<b>4.78 (1.20 -19.0)</b>	<b>0.00 (0.00-0.00)</b>	0.21 (0.02-3.01)
Meth/ice	<b>0.00 (0.00-0.00)</b>	0.27 (0.04-2.15)	2.47 (0.58-10.6)	0.82 (0.10-6.78)	3.90 (0.67-22.6)
Cocaine	1.96 (0.29-13.1)	<b>5.32 (1.45-19.6)</b>	2.38 (0.60-9.35)	<b>0.00 (0.00-0.00)</b>	2.08 (0.14-31.5)
LSD/mushroom	<b>0.00 (0.00-0.00)</b>	<b>0.00 (0.00-0.00)</b>	1.34 (0.28-6.43)	<b>12.10 (1.20-121.)</b>	9.67 (0.41-226.)
CAGE alcohol problems					
No alcohol	1.0	1.0	1.0	1.0	1.0
No Problem	0.48 (0.16-1.43)	<b>9.18 (2.71-31.06)</b>	<b>5.93 (1.82-19.3)</b>	2.09 (0.25-17.1)	0.25 (0.05-1.28)
Alcohol Problem	1.16 (0.29-4.69)	<b>7.49 (1.78-31.52)</b>	<b>12.38 (3.43-44.7)</b>	3.31 (0.22-49.1)	0.78 (0.18-3.36)

<sup>‡</sup> Other forms of gambling include races, sports betting, casino table games and keno

<sup>1</sup> Regional towns = Katherine, Tennant Creek and Nhulunbuy, <sup>2</sup> NILF = Not in the labour force (i.e. retired, not looking for work)

**Bold font** indicates significant association between socio-demographic variable and online gambling combination  
 \*\*\* p<0.001, \*\* p<0.01, \* p<0.05 Significant association between socio-demographic variable and online gambling

## REFERENCES

- Australian Bureau of Statistics (2017). 2016 Census of Population and Housing General Community Profile: Northern Territory. Cat No. 2001.0. Canberra, Commonwealth of Australia.
- Bernadt, M. W., C. Taylor, J. Mumford, B. Smith and R. M. Murray (1982). "Comparison of questionnaire and laboratory tests in the detection of excessive drinking and alcoholism." The Lancet **319**(8267): 325-328.
- Delfabbro, P., D. L. King, M. Browne and N. A. Dowling (2020). "Do EGMs have a Stronger Association with Problem Gambling than Racing and Casino Table Games? Evidence from a Decade of Australian Prevalence Studies." Journal of Gambling Studies.
- Donaldson, P., E. Langham, M. Rockloff and M. Browne (2015). "Veiled EGM jackpots: The effects of hidden and mystery jackpots on gambling intensity." Journal of Gambling Studies: 1-12.
- Fogarty, M. A. (2013). From card games to poker machines: Gambling in remote Aboriginal communities in the Northern Territory. Doctorate of Philosophy, Charles Darwin University.
- Gainsbury, S., A. Russell, N. Hing, R. Wood and A. Blaszczynski (2013). "The impact of Internet gambling on gambling problems: A comparison of moderate-risk and problem Internet and non-Internet gamblers." Psychology of Addictive Behaviors **27**(4): 1092–1101.
- Gainsbury, S., A. Russell, N. Hing, R. Wood, D. Lubman and A. Blaszczynski (2013). "How the Internet is changing gambling: Findings from an Australian prevalence survey." Journal of Gambling Studies.
- Gainsbury, S. M., A. Russell, A. Blaszczynski and N. Hing (2015). "The interaction between gambling activities and modes of access: A comparison of Internet-only, land-based only, and mixed-mode gamblers." Addictive Behaviors **41**: 34-40.
- Gainsbury, S. M., A. Russell, N. Hing, R. Wood, D. Lubman and A. Blaszczynski (2013). "How the Internet is Changing Gambling: Findings from an Australian Prevalence Survey." Journal of Gambling Studies **31**(1): 1-15.
- Griffiths, M. D., H. Wardle, J. Orford, K. Sproston and B. Erens (2009). "Sociodemographic correlates of internet gambling: Findings from the 2007 British Gambling Prevalence Survey." CyberPsychology and Behavior(12): 199–202.
- Productivity Commission (2010). Gambling: Productivity Commission Inquiry, Volume 1, Report No. 50. Canberra, Australian Government.
- StataCorp (2015). Stata Statistical Software: Release 15.1. College Station, TX, StataCorp LP.
- Stevens, M. and R. Bailie (2012). "Gambling, housing conditions, community contexts and child health in remote Indigenous communities in Australia." BMC Public Health **12**: 377.
- Stevens, M., H. Gupta and M. Flack (2020). Northern Territory Gambling Prevalence and Wellbeing Survey Report, 2018. Darwin, Menzies School of Health Research & the Northern Territory Government.
- Stevens, M., M. Thoss and T. Barnes (2017). 2015 Northern Territory Gambling Prevalence and Wellbeing Survey Report. Darwin, Menzies School of Health Research & the Northern Territory Government.
- Stevens, M. and M. Young (2009). "Betting on the evidence: Reported gambling problems amongst the Indigenous population of the Northern Territory." Australia and New Zealand Journal of Public Health **33**(6): 556-565.
- Wood, R. and R. Williams (2011). "A comparative profile of the Internet gambler: Demographic characteristics, game play patterns, and problem gambling status." New Media & Society(13): 1123–1141.
- Wood, R. T. and R. J. Williams (2011). "A comparative profile of the Internet gambler: Demographic characteristics, game-play patterns, and problem gambling status." New Media & Society **13**(7): 1123-1141.
- Young, M., I. Abu-Duhou, T. Barnes, E. Creed, M. Morris, M. Stevens and B. Tyler (2006). Northern Territory Gambling Prevalence Survey, 2005. Darwin, School for Social and Policy Research, Charles Darwin University.