

## **Internet gambling: a secondary analysis of findings from the 2007 British Gambling Prevalence Survey**

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# 1 Abstract

- 1.1 This study provides the first ever analysis of a representative national sample of internet gamblers. Using participant data from the 2007 British Gambling Prevalence Survey (n = 9003 adults aged 16 years and over), all participants who had gambled online, bet online, and/or who had used a betting exchange in the last 12 months (n = 476) were compared with all other gamblers who had not gambled via the internet. Overall, results showed a number of significant socio-demographic differences between internet gamblers and non-internet gamblers. When compared to non-internet gamblers, internet gamblers were more likely to be male, relatively young adults, single, well educated, and in professional/managerial employment. Further analysis of DSM-IV scores showed that the problem gambling prevalence rate was significantly higher among internet gamblers than non-internet gamblers. It was also found that some items on the DSM-IV were more heavily endorsed by internet gamblers including gambling preoccupation and gambling to escape. Although the data does not allow any conclusions to be drawn about causation, the results may mean that the medium of the internet may be more likely to contribute to problem gambling than off-line gambling environments. However, more work is needed in this area if firm conclusions are to be drawn.

# 2 Introduction

- 2.1 It has been claimed that remote types of gambling have provided the biggest cultural shift in gambling in the past decade (Griffiths, Parke, Wood & Parke, 2006) and that the introduction of internet gambling has the potential to lead to increased levels of problematic gambling behaviour (Griffiths & Parke, 2002; Griffiths, 2003). Despite the introduction of these new media in which to gamble, there has been little empirical research examining internet gambling in the UK. The first national prevalence survey on Internet gambling was published in 2000 (from data collected in 1999) when internet gambling was almost non-existent (Griffiths, 2001). Griffiths reported that of the 2098 random people surveyed (918 males and 1180 females), only 495 of them were internet users (24%). Furthermore, the results showed that not one person in the survey gambled regularly on the internet (ie, once a week or more) and that only 1% of the internet users were occasional internet gamblers (ie, less than once a week).
- 2.2 A report by a UK Government body noted that online gambling had more than doubled in the UK since the first study by Griffiths (Department for Culture, Media and Sport [DCMS], 2006). It noted that at the time of writing, there were around 2,300 sites worldwide with a large number of these located in just a few particular countries such as Antigua and Costa Rica where there are around 1000 sites. In comparison, the UK has approximately 70 betting and lottery sites but as yet few gaming sites (eg, online casinos featuring poker, blackjack, roulette, etc). The DCMS (2006) report also claimed there were approximately one million regular online gamblers in Britain alone making up nearly one-third of Europe's 3.3 million regular online gamblers. The report also stated that Europe's regular online gamblers staked approximately £3.5bn pounds a year at around an average of £1,000 each. A more recent survey by the Gambling Commission (2008) reported that 8.8% of the 8,000 adults surveyed said they had participated in at least one form of remote gambling (through a computer, mobile phone or interactive/digital TV) in the previous month with no change in the participation rate from the previous year's survey. Those participating in remote gambling were more likely to be male than female, and were more likely to be aged 18-34 years.
- 2.3 Griffiths (2001) had noted in his prevalence survey that women said they were more likely to try gambling on the internet than other gambling environments such as casinos and bookmakers. Griffiths argued that the internet was gender-neutral and that females claimed they would feel less alienated and stigmatised gambling online. The DCMS (2006) report also reported that women were becoming increasingly important in the internet gambling market. For instance, during the 2006 World Cup, it was estimated that about 30 per cent of those visiting key UK based betting websites were women.

- 2.4** Another UK national prevalence survey examined internet gambling among adolescents. In a survey of 8,017 children aged between 12 and 15 years old, Griffiths and Wood (2007) reported that 8% of their sample (n = 621) had played a National Lottery game on the internet. Boys were more likely than girls to say they have played National Lottery games on the internet (10% and 6%, respectively), as were young people who were Asian and black. Not surprisingly, young people classified as 'problem gamblers' (as defined by the DSM-IV-J) were more likely than 'social gamblers' to have played a National Lottery game on the internet (37% compared with 9%).
- 2.5** When asked which of a series of statements best describes how they played National Lottery games on the internet, nearly three in ten adolescents who played online reported playing free games (29%), one in six reported that the system let them register (18%), slightly fewer played along with their parents (16%), and one in ten used their parent's online National Lottery account either with their permission (10%) or without it (7%). However, it should be noted that a third of online players said they 'couldn't remember' (35%). Overall these findings indicate that, of all young people (and not just players), 2% have played National Lottery games online with their parents or with their permission and 2% have played independently or without their parents. Those who have played independently are most likely to have played free games, with just 0.3% of young people having played National Lottery games on their own for money.
- 2.6** There have also been some other smaller scale studies. For instance, in Canada, a prevalence study of internet gambling by Ialomiteanu and Adlaf (2001) collected data by using a random telephone survey of 1,294 Ontario adults. The results showed that just over 5% had gambled on the internet during the previous year. Women were slightly more likely than men to have gambled online (6.3% versus 4.3%), but this was not statistically significant. Further analysis showed there were no differences in terms of age, region, education or income. The study did not examine any aspects of problem gambling.
- 2.7** In the United States (US), a survey by Ladd and Petry (2002) was carried out examining gambling among 389 self-selected individuals from university health and dental clinics. The study found that 90% of the sample had gambled within the last year and that 70% had gambled within the previous two months of the survey. It was also reported that 31 individuals (8%) had gambled on the internet at some point in their lives and that 14 of them (3.6%) engaged in internet gambling weekly. Mean scores on the South Oaks Gambling Screen showed that the internet gamblers had significantly higher scores than the non-internet gamblers (7.8 compared to 1.8). The authors concluded that internet gamblers were significantly more likely to be problem gamblers than non-internet gamblers. However, there were many limitations to the study; the most major being the use of a self-selected sample in dental waiting rooms.
- 2.8** The largest survey of internet gamblers was carried out by the International Gaming Research Unit (2007). A total of 10,865 internet gamblers completed an online survey (58% male and 42% female), with the majority of respondents being between the ages of 18-65 years. Respondents from 96 countries participated, and a broad range of occupations were represented. Problem gambling was not assessed. It was reported that the typical internet casino player was likely to: be female (54.8%), be aged 46-55 years (29.5%), play 2-3 times per week (37%), have played for 2-3 years (22.4%), play for between 1-2 hours per session (26.5%), and wager between \$30-\$60 (18.1%) per session. It was also reported that the typical internet poker player was likely to: be male (73.8%), be aged 26-35 years (26.9%), play 2 to 3 times per week (26.8%), have played for 2 to 3 years (23.6%), and play for between 1 to 2 hours per session (33.3%). Despite the size of the survey, it should be noted that the sample was not representative as they comprised people who filled out the online questionnaire (ie, it was a self-selected sample).
- 2.9** There is no conclusive evidence that internet gambling is more likely to cause problem gambling, although recent studies using self-selected samples suggest that the prevalence of problem gambling among student internet gamblers is relatively high for students who gamble on the internet in general (Griffiths & Barnes, 2008) and for those who engage in online poker (Wood, Griffiths & Parke, 2007).

- 2.10** For instance, Wood, Griffiths and Parke (2007) examined a self-selected sample of student online poker players using an online survey (n = 422). Results showed that online poker playing was undertaken at least twice per week by a third of the participants. Almost one in five of the sample (18%) was defined as a problem gambler using the DSM-IV criteria. Findings demonstrated that problem gambling in this population was best predicted by negative mood states after playing, gender swapping whilst playing (ie, men pretending to be a female when gambling online or women pretending to be a male, when gambling online), and playing to escape from problems. They also speculated that their data suggested a new type of problem gambler – one that wins more than they lose. Here, the negative detriments to the gamblers' lives are caused by the loss of time (eg, gamblers playing online poker for 14 hours a day and having little time for anything else in their lives).
- 2.11** Griffiths and Barnes (2008) examined some of the differences between internet gamblers and non-internet gamblers. It was hypothesised that (i) males would be significantly more likely to be internet gamblers than females, (ii) internet gamblers would be significantly more likely to be problem gamblers than non-internet gamblers, and (iii) males would be significantly more likely to be problem internet gamblers than females. A self-selected sample of 473 respondents (213 males; 260 females) aged between 18 and 52 years (mean age = 22 years; SD = 5.7 years) participated in an online survey. All three hypotheses were confirmed.
- 2.12** Griffiths and Barnes suggested that the structural and situational characteristics of internet gambling may be having a negative psychosocial impact on internet gambling. This is most notably because of increased number of gambling opportunities, convenience, 24-hour access and flexibility, increased event frequencies, smaller intervals between gambles, instant reinforcements, and the ability to forget gambling losses by gambling again immediately.
- 2.13** Griffiths and Parke (2007) carried out a small pilot study based on in-depth case study interviews comparing internet and non-internet gambling. Using thematic analysis, the results showed that the traditional gamblers expressed a strong desire to gamble on the internet for reasons such as convenience (eg, hours, proximity), improved facilities (eg, access to their account) and tax-free betting. However, they also reported there were barriers to internet gambling including the inability to obtain valid credit or debit cards, and the lack of the 'physical' transaction of collecting winnings that can be highly rewarding. Given this relative lack of empirical research, the following study carried out some secondary analysis of the 2007 British Gambling Prevalence Survey (Wardle et al, 2007). More specifically the data were further examined to see whether:
- any particular demographic variable was significantly associated with internet gambling
  - any particular demographic variable was significantly associated with non-internet gambling
  - the demographic profile between internet and non-internet gamblers was significantly different.

### **3 Method**

- 3.1** Data analysed in this study came from the second British Gambling Prevalence Survey. This survey was commissioned by the UK Gambling Commission; the British gambling regulator set up under the 2005 Gambling Act, and was carried out by the National Centre for Social Research (NatCen) with the first and third authors as advisors. The method was similar to that used in the first national survey carried out in 1999/2000 (Sproston, Erens & Orford, 2000). Using the Postcode Address File as the sampling frame, private addresses were randomly selected within 317 postcode sectors stratified by region, occupational status and proportion of non-white residents.
- 3.2** Fieldwork was carried out between September 2006 and March 2007 by NatCen's fieldforce trained by NatCen researchers at 19 training sessions held across Britain.

Following an advance letter, interviewers called at the selected addresses in order to complete a household interview with the 'household reference person' (HRP) or their spouse/partner (to collect socioeconomic information about the HRP and demographic information about each person resident in the household) and to assign a copy of the main self-completion questionnaire for each person aged 16 and over living in the household. Completed questionnaires were either collected at the same visit or on a later occasion. An online completion option was made available and was taken up by 7% of respondents. HRP interviews were achieved at 63% of addresses, and questionnaires were completed by 81% of adults at those addresses. Hence the overall response rate was 52% (n = 9,003). Further details are provided in the full report of the survey (Wardle et al, 2007).

- 3.3** From the data collected, a new variable was created which identified those people who gambled using the internet. Internet gamblers were all those participants who reported gambling online, betting online and/or gambling using a betting exchange. All other survey participants were either those who gambled but not online, or those who did not gamble at all. It should also be noted that the prevalence of internet gamblers in this study was likely to be lower than the true prevalence as those who used the internet to play the National Lottery or one of its associated products were not included. Therefore, secondary analysis was carried out on those participants who gambled using the internet (n = 476) and compared socio-demographic characteristics of this group against non-internet gamblers<sup>1</sup>.
- 3.4** All significance testing on the data to be reported used an adjusted *Wald's Test* to model the differences taking into account the complex sample design, weighting and clustering. All *p* values in the next section relate to this particular type of statistical testing.

## 4 Results

### Gender

- 4.1** Of the total sample, 6% had gambled on the internet (9% male and 3% female) (see Table 1). Results showed that internet gamblers were significantly more likely to be male – 74% men vs. 26% women ( $F(1,158) = 170.33; p < 0.001$ ). There were no gender differences for non-internet gamblers ( $F(1,158) = 0.20; p = 0.65$ ).

**Table 1** Type of gambling by gender

<i>All</i>			
	Men	Women	Total
	%	%	%
Internet gamblers	9	3	6
Non-internet gamblers	62	62	62
Non-gamblers	29	35	32
<i>Bases (weighted)</i>	4333	4636	8972
<i>Bases (unweighted)</i>	4241	4733	8978

### Age

- 4.2** Results showed that internet gamblers were more likely to be people aged 34 years and younger (55%). Only one in five internet gamblers (21%) were aged over 45 years. The prevalence of internet gambling was highest among those aged 16-24 years and 24-34 years and decreased with advancing age.

<sup>1</sup> This group of 'non-internet gamblers' under an 'umbrella heading' is a very diverse group of people covering a wide range and the socio-demographics characteristics and activities.

This was a different pattern to that observed among those who gambled offline, as prevalence was highest among those aged 45-64 years. These differences were significant. Age was significantly associated with online gambling ( $F(6,153) = 25.25$ ;  $p < 0.01$ ), and was highest among youngest age groups and lowest among older age groups (see Table 2). In addition, age was significantly associated with non-internet gambling ( $F(6,153) = 16.27$ ;  $p < 0.01$ ), and was highest among those 55-64 years and lowest among youngest 16-24 years.

**Table 2 Type of gambling by age**

All

	16-24	25-34	35-44	45-54	55-64	65-74	75+	Total
	%	%	%	%	%	%	%	%
Internet gamblers	9	11	7	4	2	2	1	6
Non-internet gamblers	49	60	66	67	68	66	56	62
Non-gamblers	42	29	27	29	30	32	43	32
<i>Bases (weighted)</i>	1286	1462	1731	1430	1338	915	793	8972
<i>Bases (unweighted)</i>	1032	1324	1719	1518	1566	1020	780	8978

## Ethnicity

- 4.3** Results showed that the vast majority of internet gamblers described themselves as White British (96%). The remainder described themselves as either Asian/Asian British (1%), Black/Black British (1%) or Other (2%). There were no significant differences in ethnicity between internet gamblers and non-internet gamblers.

## Marital status

- 4.4** Results showed that prevalence of internet gambling was highest among those who were single and lowest among those who were widowed (see Table 3). This was quite different to the pattern observed for non-internet gamblers, with prevalence being highest among those who were married or separated/divorced and lowest among those who were single.

**Table 3 Type of gambling by marital status**

All

	Married/ living as married	Separated/ Divorced	Single, never married	Widowed	Total
	%	%	%	%	%
Internet gamblers	5	5	9	1	6
Non-internet gamblers	65	67	55	59	62
Non-gamblers	30	28	36	40	32
<i>Bases (weighted)</i>	4775	690	2587	653	8972
<i>Bases (unweighted)</i>	4976	735	2327	671	8978

Marital status was significantly associated with internet gambling ( $F(3,156) = 15.30$ ;  $p < 0.01$ ), and was highest among those who were single and lowest among those who were widowed. Marital status was also significantly associated with non-internet gambling, and was highest among those who are separated/divorced and lowest among those who were single ( $F(3,156) = 18.29$ ;  $p < 0.01$ ).

## Education

- 4.5 The relationship between gambling and education was somewhat variable (see Table 4). However, it is worth noting that the prevalence of internet gambling was higher among those with a degree whereas the prevalence of non-internet gambling was lowest among this group. Further analysis showed that the level of educational qualifications was significantly associated with internet gambling ( $F(5,154) = 15.30; p < 0.01$ ), and was highest among those who have A-levels and a degree, and lowest among those with no qualifications. The level of educational qualifications was also significantly associated with non-internet gambling, and was highest among those with a professional qualification or GCSEs, and lowest among those with a degree ( $F(5,154) = 17.00; p < 0.01$ ).

**Table 4 Type of gambling by highest educational qualifications**

*All*

	Degree level or higher	Professional, below degree	A-levels	GCSE/ O levels	Other	None	Total
	%	%	%	%	%	%	%
Internet gamblers	8	4	8	7	3	2	6
Non-internet gamblers	53	68	60	66	66	65	62
Non-gamblers	39	29	32	27	31	33	32
<i>Bases (weighted)</i>	<i>1943</i>	<i>603</i>	<i>1095</i>	<i>2405</i>	<i>347</i>	<i>2142</i>	<i>8972</i>
<i>Bases (unweighted)</i>	<i>1893</i>	<i>639</i>	<i>1026</i>	<i>2373</i>	<i>362</i>	<i>2252</i>	<i>8978</i>

## Occupational status

- 4.6 Results showed that almost half of all internet gamblers (48%) came from managerial and professional households (see Table 5). The prevalence of internet gambling was significantly higher among managerial/professional households and small account worker households than routine and semi-routine households.

**Table 5 Type of gambling by NS-SEC of household reference person**

*All*

	Managerial & professional occupations	Intermediate occupations	Small employers & own account workers	Lower supervisory & technical occupations	Semi-routine & routine occupations
	%	%	%	%	%
Internet gamblers	7	5	8	4	4
Non-internet gamblers	60	62	61	71	65
Non-gamblers	33	33	31	25	30
<i>Bases (weighted)</i>	<i>3389</i>	<i>766</i>	<i>920</i>	<i>981</i>	<i>2364</i>
<i>Bases (unweighted)</i>	<i>3421</i>	<i>769</i>	<i>930</i>	<i>1021</i>	<i>2322</i>

The opposite was true for non-internet gamblers, as those in semi-routine and routine households and lower supervisory households being more likely to gamble offline. Further analysis showed that type of occupation was significantly associated with internet gambling ( $F(4, 155) = 5.28; p < 0.01$ ), and was highest among small employers, and lowest among semi-routine households. In addition, type of occupation was significantly associated with non-internet gambling, and was highest among lower supervisory workers, and lowest among managerial and professional groups ( $F(4, 155) = 8.66; p < 0.01$ ).

## Economic activity

- 4.7 Results showed that the prevalence of using the internet to gamble was highest among households where the Household Reference Person (HRP) was in full time education (13%) followed by unemployed households (8%). The reverse was true among non-internet gamblers, with prevalence being highest among paid work households and lowest among full time education households and unemployed households (see Table 6). The association between internet gambling and economic activity was significant ( $F(6,153) = 12.55$ ;  $p < 0.01$ ).

**Table 6 Using internet to gamble by economic activity of Household Reference Person**

*All*

	Paid work	Un-employed	Long term disability	Looking after family/home	Retired	Full time education	Other	Total
	%	%	%	%	%	%	%	%
Internet gamblers	7	8	5	4	1	13	5	6
Non-internet gamblers	64	55	59	60	61	39	58	62
Non-gamblers	29	37	36	36	38	49	38	32
<i>Bases (weighted)</i>	5706	114	277	380	2033	204	104	8972
<i>Bases (unweighted)</i>	5613	108	296	364	2189	151	106	8978

## Smoking

- 4.8 Results showed that just over a third of internet gamblers (36%) and just over a quarter of non-internet gamblers (27%) were cigarette smokers. Smoking status was significantly associated with both past year internet gambling ( $F(1,158)=27.87$ ;  $p < 0.01$ ) and past year non-internet gambling ( $F(1,158)=66.73$ ;  $p < 0.01$ ). However, there was a significant difference between internet gamblers and non-internet gamblers with internet gamblers being significantly less likely to smoke than non-internet gamblers ( $F(1,158) = 12.33$ ;  $p < 0.01$ ).

## Alcohol intake

- 4.9 Results showed that one in five internet gamblers reported drinking more than four times their recommended daily intake of alcohol on their heaviest drinking day. The prevalence of internet gambling was highest among those that drank the most in the last week and increased as alcohol consumption increases. A different pattern was observed among non-internet gamblers, with prevalence being highest among those who reported drinking more modestly. Further analysis showed that alcohol consumption was significantly associated with both internet gambling ( $F(5, 154) = 26.07$ ;  $p < 0.01$ ) and non-internet gambling ( $F(5, 154) = 4.32$ ;  $p < 0.01$ ). However, there was a significant difference between past year internet gamblers and past year non-internet gamblers with internet gamblers being significantly more likely to drink more heavily than non-internet gamblers ( $F(5, 154) = 20.21$ ;  $p < 0.01$ ).



**Table 7 Type of gambling by alcohol consumption***All*

	Does not drink alcohol, alcohol last week	Does drink alcohol, did not drink in last week	Drank less than 6 units (women) or 8 units (men) on heaviest drinking day	Drank between 6- 12 units (women) or 8-16 units (men) on heaviest drinking day	Drank more than 12 units (women) or 16 units (men) on heaviest drinking day	Total
	%	%	%	%	%	%
Internet gamblers	3	6	5	11	19	6
Non-internet gamblers	51	64	66	71	66	62
Did not gamble	46	30	30	19	15	32
<i>Bases (weighted)</i>	2634	694	3918	1267	459	8972
<i>Bases (unweighted)</i>	2592	705	4025	1235	421	8978

**General health status**

- 4.10** Results showed no difference between self-reported health status and gambling with approximately four-fifths of internet gamblers and non-internet gamblers reporting that they were in good or very good health. Further analysis showed that general health status was not significantly associated with internet gambling ( $F(2,157) = 0.35$ ;  $p=0.70$ ) but was significantly associated with offline gambling ( $F(2,157) = 9.31$ ;  $p<0.01$ ). However, there was no significant difference between internet gamblers and non-internet gamblers in general health profile ( $F(2,157) = 0.73$ ;  $p=0.49$ )<sup>2</sup>.

**Table 8 Type of gambling by general health status***All*

	Very good/good	Fair	Bad/very bad	Total
	%	%	%	%
Internet gamblers	6	5	5	6
Non-internet gamblers	61	67	57	62
Non-gamblers	33	28	38	32
<i>Bases (weighted)</i>	7020	1454	378	8972
<i>Bases (unweighted)</i>	6963	1498	401	8978

**Type of gambling activity**

- 4.11** Internet gambling prevalence was also examined by gambling activity. Spread bettors were the most likely to have gambled on the internet (64%), followed by those who used FOBTs (47%). The remaining results were gambling or betting on: casino games (38% also used the internet to gamble), football pools (27%), greyhounds (24%), slot machines (20%), horses (17%), scratchcards (13%), bingo (12%), and the National Lottery draw (8%).

<sup>2</sup> The findings in this section may just be a function of sample size for offline gamblers being much larger. Therefore, these may not be real differences and could be an artefact of sample size.

## Number of gambling activities participated in the past year

- 4.12** Table 9 highlights the number of gambling activities (one to eight or more) and it shows that as the number of gambling activities participated in the last year increases, the percentage of internet gamblers also increases (ie, of those that gambled on just two activities, 3% were internet gamblers whereas of those who gambled on eight or more activities, 75% were internet gamblers).

**Table 9 Using internet to gamble by number of activities gambled on in past year**

<i>All</i>	1	2	3	4	5	6	7	8
	%	%	%	%	%	%	%	%
Internet gamblers	0	3	8	16	25	41	42	75
<i>Bases (weighted)</i>	2367	1543	935	533	271	183	100	153
<i>Bases (unweighted)</i>	2460	1575	933	526	266	173	92	136

## Regression analyses

- 4.13** Further analysis aimed to produce a regression model. Past year gamblers were used as the base as it was important to differentiate between those who used the internet to gamble and those who did not. If all participants were included in the base (including non-gamblers), there was the risk that the regression analysis would only pick up factors that were associated with gambling in general rather than purely focusing on the difference between internet gamblers and non-internet gamblers. The regression model was developed in two stages.
- 4.14** Forward step-wise regression was used to identify potentially significant variables. The variables entered into this initial model were: age; gender; marital status; ethnic group; occupation type of household reference person; equivalised household income; educational qualifications; general health status; presence of a limiting longstanding illness; current smoking status; and alcohol consumption.
- 4.15** The significant variables were then entered into a final model (using the enter method). These were: age; gender; occupation type of household reference person; educational qualifications; general health status; presence of a limiting longstanding illness; current smoking status; and alcohol consumption.
- 4.16** Table 10 shows the variables that were significantly associated with using the internet to gamble within the final model. The odds associated with the outcome variable are presented for each category of the independent variable. Odds are expressed relative to a reference category, which are given a value of 1.

**Table 10 Odds of using the internet to gamble***Past year gamblers*

Socio-demographic characteristic	Odds ratio	95% CI
<b>Sex (p&lt;0.01)</b>		
Female	1	
Male	2.75	(2.26,3.35)
<b>Age group (p&lt;0.01)</b>		
16-24	1	
25-34	1.03	(0.72, 1.47)
35-44	0.62	(0.43, 0.89)
45-54	0.37	(0.25, 0.56)
55-64	0.22	(0.13, 0.35)
65 and over	0.17	(0.10, 0.30)
<b>Alcohol consumption in past week (p&lt;0.01)</b>		
Does not drink alcohol	1	
Does drink alcohol, but did not drink in last 7 days	1.52	(1.00, 2.32)
Drank less than 6 units (women) or 8 units (men) heaviest drinking day	1.07	(0.79, 1.44)
Drank between 6-12 units (women) or 8-16 units (men) heaviest drinking day	1.41	(1.03, 1.94)
Drank more than 12 units (women) or 16 units (men) on heaviest drinking day	2.40	(1.66, 3.49)
<b>NS-SEC of household reference person (p&lt;0.01)</b>		
Managerial and professional occupations	1	
Intermediate occupations	0.80	(0.52, 1.24)
Small employers and own account workers	1.29	(0.91, 1.82)
Lower supervisory and technical occupations	0.57	(0.38, 0.86)
Semi-routine/ routine occupations	0.68	(0.49, 0.94)
Unknown	0.86	(0.51, 1.45)
<b>Educational qualification (p&lt;0.05)</b>		
Degree or higher	1	
Professional, below degree	0.52	(0.31, 0.87)
A-levels	0.85	(0.60, 1.19)
GCSE/ O levels	0.80	(0.60, 1.07)
Other	0.49	(0.25, 0.96)
None	0.54	(0.37, 0.79)
Not answered	1.03	(0.49, 2.14)
Base (unweighted)	6161	

**4.17** An odds ratio greater than one indicates higher odds of internet gambling prevalence, and odds ratios less than one indicate lower odds. Also included are the 95% confidence intervals shown for each odds ratio. The regression model shows that the factors that most predict internet gambling were being male and drinking at least twice the daily recommended intake of alcohol in one day. Odds of using the internet to gamble were 2.75 times higher among men than women and were 1.41 times higher for those who drank more than double their daily recommended intake of alcohol. Likewise odds were 2.40 times higher among those who drank over four times their daily recommended intake of alcohol in one day than those who did not drink alcohol. Certain characteristics were also predictive of being less likely to use the internet to gamble. These were being aged 35 and over, having no educational qualifications and being from a routine or manual household.

## Problem gambling

- 4.18** Overall, problem gambling prevalence among internet gamblers using the DSM-IV was 5%. The base sizes were too small to analyse by age and gender but an analysis by age showed that problem gambling prevalence rate peaked at 5.7% in the 35-54 year age group.

**Table 11 Problem gambling prevalence (DSM-IV) among internet gamblers by age group**

<i>Internet gamblers</i>			
	DSM problem gamblers	<i>Bases (weighted)</i>	<i>Bases (unweighted)</i>
	%	<i>n</i>	<i>n</i>
16-34	4.8	261	219
35-54	5.7	171	172
55 and over	3.4	48	56
<b>All</b>	<b>5.0</b>	<b>481</b>	<b>448</b>

**Table 12 DSM score of internet gamblers vs. non-internet gamblers by number of criteria**

<i>Past year gamblers</i>			
DSM-IV score	Internet gamblers	Non-internet gamblers	
	%	%	
0	84.5	92.8	
1	8.4	6.1	
2	2.1	0.5	
3	0.5	0.3	
4	0.8	0.1	
5	1.0	0.1	
6	1.1	0.0	
7	0.2	-	
8	1.1	0.0	
9	-	0.0	
10	0.4	-	
<b>Score 3 or above:</b>	<b>5.0</b>	<b>0.5</b>	
<i>Bases (weighted)</i>	<i>518</i>	<i>5567</i>	
<i>Bases (unweighted)</i>	<i>476</i>	<i>5685</i>	

- 4.19** Results also showed that internet gamblers were more likely to score positively on the DSM-IV than non-internet gamblers. Further analysis of DSM-IV scores showed that problem gambling prevalence rate was significantly higher among internet gamblers than non-internet gamblers ( $F(1,158) = 52.09; p < 0.01$ ).
- 4.20** Table 13 highlights the differences between internet gamblers and non-internet gamblers on each of the DSM-IV criteria. Internet gamblers predictably endorsed each one of these items more than non-internet gamblers as they had higher DSM scores overall.
- 4.21** It was also noted that some items on the DSM-IV were more heavily endorsed by internet gamblers compared to non-internet gamblers. Most notably this included preoccupation and gambling to escape.

**Table 13 Response to DSM-IV items among internet gamblers and non-internet gamblers**

*Past year gamblers*

DSM-IV item	Internet gamblers	Non-internet gamblers
	%	%
Chasing losses	8.6	5.5
Preoccupation with gambling	9.3	1.2
Need to gamble with increasing amounts of money	3.2	0.4
Restless or irritable when tried to stop gambling	3.6	0.4
Gambling as escapism	4.7	0.4
Tried but failed to cut back or stop gambling	4.0	0.3
Lying to people to conceal gambling	3.1	0.4
Committed a crime to finance gambling	0.7	0.1
Risked a relationship because of gambling	2.3	0.2
Reliance on other to help in financial crisis caused by gambling	3.0	0.6
<i>Bases (weighted):</i>	<i>483</i>	<i>5065</i>
<i>Bases (unweighted):</i>	<i>450</i>	<i>5192</i>

## 5 Discussion

- 5.1** This study provides the first ever analysis of a representative national sample of internet gamblers. Overall, results including the regression analysis showed a number of significant socio-demographic differences between internet gamblers and non-internet gamblers. When compared to non-internet gamblers, internet gamblers were more likely to be male, relatively young adults, single, well educated, and in professional/managerial employment. Problem gambling (as measured by the DSM-IV) was also significantly more likely among internet gamblers when compared to non-internet gamblers. Many of these results confirm findings from smaller scale studies (eg, Ladd & Petry, 2002; Griffiths & Barnes, 2008).
- 5.2** Previous UK studies have tended to report that internet gamblers are more likely to be male (eg, Wood, Griffiths & Parke, 2007; Griffiths & Wood, 2007; Griffiths & Barnes, 2008) although some studies elsewhere in the world have shown that females gamble on the internet as much as males (Ialomiteanu & Adlaf, 2001: International Gaming Research Unit, 2007) although this may be a consequence of the methodologies used. This study clearly showed that males were nearly three times more likely than females to gamble on the internet and reflects studies carried out in different but related fields such as online computer gaming (eg, Griffiths, Davies & Chappell, 2003a; 2003b; 2004; Chappell, Eatough, Davies & Griffiths, 2006; Grüsser, Thaleman & Griffiths, 2007). In many non-gambling technological fields, males are often more likely than females to be 'early adopters' of such technologies but it is likely that such gender differences will erode over time as evidenced in other online commercial activities such as computer gaming and shopping. The increase of certain activities, such as online bingo which are being increasingly marketed to women, is likely to facilitate this.
- 5.3** The finding that internet gamblers are more likely to be below the age of 35 years is unsurprising and most likely reflects internet usage in the general population. 'Technophobia' is less prevalent in younger age groups, and new technologies (such as mobile phones and the internet), are used widely by adolescents and young adults.

The latest national British adolescent gambling survey found that 8% of adolescents had engaged in lottery gambling online (Griffiths & Wood, 2007) – a slightly higher percentage of online gambling than found in this British adult gambling survey.

As these adolescents and young adults get older, the age differences in internet gambling are likely to be less pronounced and to dissipate over time.

- 5.4** The finding that internet gamblers are more likely to be single may be due to a number of reasons but is most likely to be explained by age. Given the finding that internet gamblers are likely to be younger (for the reasons outlined above), it is also likely that the younger the person is, the less likely they are to be in an established relationship. In addition to this, single people are likely to spend more time on a range of leisure activities (including gambling) as they are likely to have a greater amount of free time as they are not in an established relationship and/or have children.
- 5.5** There were also many socio-demographic indicators that are likely to be connected to each other. For instance, the results of the secondary analysis also showed that internet gamblers were more likely than non-internet gamblers to be well educated (especially degree level and above).
- 5.6** Computer literacy may be a consequence of being well educated and therefore those who are more computer literate may be more likely to engage in computer-based activities. Another consequence of being well educated is that it increases the likelihood of (a) getting a job and (b) getting a good job. Therefore, the finding that internet gamblers are more likely than non-internet gamblers to work in managerial or professional employment, is perhaps unsurprising given its relationship to education. A further consequence of having a good job is being able to afford computer equipment and broadband access at home. Therefore, having a computer at home is likely to increase the likelihood of engaging in 'convenience gambling' at home.
- 5.7** Both internet gambling and non-internet gambling was shown to have a significant association with smoking (nicotine) and drinking (alcohol). Such links have been found in many studies including large British studies of both adolescent gamblers (eg, Griffiths & Sutherland, 1998; MORI/International Gaming Research Unit, 2006) and adult gamblers (eg, Sproston, Erens & Orford, 2000).
- 5.8** Such findings indicate that behaviours such as gambling do not exist in a vacuum and that there are certain lifestyle behaviours that often co-occur and cluster. However, although smoking and drinking were significantly associated with both internet gambling and non-internet gambling, there were significant differences between both the groups on these variables. Internet gamblers were significantly more likely to smoke cigarettes than non-internet gamblers. This result is perhaps to be expected as gamblers are currently unable to smoke in gambling environments and therefore smokers may prefer to gamble at home (as they can smoke freely) rather than in gambling environments (where they cannot). However, it must be noted that these data were collected before the introduction of the national smoking bans, and it will be interesting to see what effect the smoking bans have on gambling participation. Such legislative measures may further encourage gamblers who smoke to participate online at home as they can smoke at their leisure.
- 5.9** The findings also indicated that internet gamblers were more likely to drink alcohol heavily over the preceding week when compared to non-internet gamblers. One of the reasons for this may be the fact that if internet gamblers are playing online at home they can also drink alcohol fairly cheaply compared to going out and drinking in (say) a casino. In essence, it is cost effective for internet gamblers to drink at home and they do not have the added expense of peripheral extras such as travel costs. Furthermore, non-internet gamblers may be prevented from drinking in some gambling environments.
- 5.10** In respect to number and type of gambling activities that internet gamblers engaged in, there were some interesting findings.

The more gambling activities that a person participated in, the more likely that person was to have gambled on the internet. For instance, among individuals who had gambled on eight or more activities in the previous year, three-quarters of them had gambled on the internet.

- 5.11** This, in itself, is not particularly surprising as it could perhaps be speculated that those who gamble on more activities are more regular gamblers and that it is these gamblers that will use the most convenient methods and mediums to gamble, it is a salient activity in their lives. Results also showed that people who participated in particular forms of gambling such as spread betting, FOBTs, and casino games were the most likely to have also used the internet to gamble. These types of gambling are very closely associated with dedicated gambling environments and gaming operators. In essence, individuals engaged in these types of gambling activity are people who seek out particular gambling experiences in particular types of environment. It is perhaps therefore no surprise that it is these individuals who are also more likely to gamble on the internet as they are looking for value and convenience (Griffiths, 2005).
- 5.12** The finding that internet gamblers were more likely to be problem gamblers has been reported previously in a number of smaller scale studies in both the UK (Griffiths & Barnes, 2008) and the US (Ladd & Petry, 2002) and as noted in the introduction, many papers have claimed that internet gambling could be a less protective environment for vulnerable gamblers (Griffiths & Parke, 2002; Griffiths, 2003; Griffiths et al, 2006). The findings of this large-scale nationally representative study appear to confirm such assertions. However, the finding that internet gamblers were more likely to be problem gamblers should be put into the context of the data set. Because of the cross-sectional nature of the study, no definitive conclusions can be drawn in relation to causality. Causality could only be confirmed through further research, and preferably through a longitudinal study.
- 5.13** As has been pointed out in many papers over the last decade, to a problem gambler, the internet provides the possibility for 24/7 gambling all year round from the comfort of one's own home. Given the low levels of social responsibility that have been found in empirical studies of internet gambling sites (Smeaton & Griffiths, 2004; Sevigny, Cloutier, Pelletier & Ladouceur, 2005), this is of particular concern.
- 5.14** Given these findings and the potential concerns that arise from them, it is clear that gaming companies need to acknowledge they will need to provide even better social responsibility infrastructures online than offline. Some companies are starting to do this (see Griffiths, Wood, Parke & Parke [2007] and Griffiths & Wood [2008] for some online social responsibility initiatives in this area). Furthermore, there is also the issue of how internet problem gamblers can be helped.
- 5.15** Recent research suggests that online problem gamblers appear to prefer to seek help online (eg, Griffiths & Cooper, 2003; Wood & Griffiths, 2007), therefore online help, guidance and treatment may be a potential way forward to help those who may feel too stigmatised to seek traditional face-to-face help for their gambling problems.
- 5.16** The rise and challenges of internet gambling cannot be seen in isolation particularly as there is ever-increasing multi-media integration between the internet, mobile phones and interactive television. Furthermore, young people appear to be very proficient in using and accessing these media and are likely to be increasingly exposed to remote gambling opportunities. These young people will therefore require targeted education and guidance to enable them to cope with the challenges of convenience gambling in all its guises.

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