



**PACIFIC ISLANDS FAMILIES STUDY 2014:  
MOTHER AND YOUTH GAMBLING**

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## EXECUTIVE SUMMARY

This report describes data from 2014 of the longitudinal Pacific Islands Families (PIF) Study, which is following a cohort of Pacific children (and their parents) who were born in the year 2000 and recruited from a large hospital in South Auckland. Results and discussion are presented for the children (referred to as youth as they are adolescents aged 14 years) and their mothers. Where it has been possible to examine changes over time from 2009 and 2006, these comparisons have been made.

Mothers were invited to participate in 2014 and to provide consent for their youth's participation. The majority of mothers were interviewed in their homes via structured Computer-Assisted Personal Interviews (CAPI); youth completed the questionnaire at school. Participants who had moved away from Auckland, who could not be seen face-to-face, were invited to participate via online or postal methods.

Data were collected from 923 mothers from 21 March 2014 to 24 July 2015; however, gambling-related data were only collected from 920 mothers. There was slight attrition from previous years; 945 mothers participated in 2009 and 989 in 2006. Data collection from youth commenced on 4 May 2014 and concluded on 24 July 2015. A total of 931 completed responses was received; there were 874 child respondents in 2009.

The gambling-related questions for mothers in 2014 were identical to those in 2009 and 2006, enabling longitudinal data analysis and identification of risk and protective factors in relation to problem gambling development. These questions included gambling participation and other behaviours, the Problem Gambling Severity Index (PGSI), and a question on self-belief about control over gambling. In 2009 and 2014, a question on self-perception of gambling problems was included and, in 2014 only, questions on help-seeking behaviours were included. Socio-demographic and health-related data included the General Health Questionnaire (GHQ12), Conflict Tactics Scale (CTS), and individual socio-economic deprivation (NZiDep). Cultural orientation data were also collected.

The 2014 questionnaire for youth was substantially different from that in 2009 due to the more advanced age of the children (14 years vs. 9 years). It included an extensive section on gambling behaviours and the DSM-IV-MR-J screen to assess adolescent problem gambling, as well as measures of substance use (cigarettes, alcohol and drugs), bullying-related experiences (Olweus Bully/Victim Questionnaire) and gang involvement; the questionnaire was self-administered via tablets. Other measures such as youth general health, behaviours (Child Behaviour Checklist), and parental supervision (Alabama Parenting Questionnaire) were asked of mothers.

### Study aims

The main aims were to collect detailed gambling-related data from mothers and youth in the PIF study when the latter were 14 years of age in order to:

- Assess extent of gambling and problem gambling amongst Pacific mothers and Pacific youth
- Assess for possible predictors (risk factors) and protective factors for gambling (longitudinal analyses using available data for mothers from prior data collection years)
- Investigate associations between youth gambling behaviours and social, familial, environmental and individual factors.

## Results

### ***Brief summary of main findings in 2014***

#### Gambling participation and expenditure

Fifty-two percent of mothers gambled on at least one activity in the prior 12 months; this was an increase over time from 2006 to 2014. However, *frequency* of gambling decreased from 2009 to 2014. The most common activities were Lotto (43%), Instant Kiwi/scratch tickets (10%), housie/bingo (8%) and casino electronic gaming machines (EGMS) (6%). Of mothers who gambled, 56% also gambled in 2009. Median monthly expenditure was \$20 (Lotto), \$5 (Instant Kiwi/scratch tickets), \$30 (housie/bingo) and \$50 (casino EGMS). Two-thirds (63%) of mothers gambled alone.

For mothers, the risk factors for gambling participation and expenditure in 2014 were: Gambling in 2009, alcohol consumption, being a victim or perpetrator of verbal aggression, and increased deprivation levels.

Fifty-four percent of youth had ever gambled on at least one activity, and 58% of these had not gambled in the past year. The most common gambling activities were bets with friends or family (37%), betting on card games (20%), sports matches (16%), marbles and housie/bingo (both 13%) and board games (12%). Most youth gambled with family and friends; 12% gambled alone. Seven percent had ever received a scratch ticket as a gift.

For youth, the risk factors for gambling participation and expenditure were: Being bullied at school, playing computer/video games, watching television/video/DVDs, gang involvement, and having a mother who gambled. Compared with Samoan youth, Cook Islands Māori youth were less likely to gamble on continuous activities.

#### Problem gambling, gambling transitions and help-seeking behaviour

In 2014, of the mothers who had gambled in the past year, 1.3% (n=6) were problem gamblers, 5.7% were moderate-risk gamblers, 14% were low-risk gamblers and 79% were non-problem gamblers. From 2009 to 2014, non-gamblers and non-problem gamblers were most likely to remain in those groups (64% and 57% respectively). A majority (72%) of low-risk gamblers in 2009 become non-problem gamblers or stopped gambling in 2014, and 17% gambled at a higher risk level. In 2014, one moderate-risk gambler and one problem gambler each remained in those groups from 2009, with the remainder transitioning to lower risk levels. Two mothers sought assistance from a problem gambling treatment service; one of these was a current problem gambler and the other a non-problem gambler. Thus 16% of problem gamblers (1 of 6) had sought professional assistance.

Risk factors for at-risk gambling (low-risk/moderate-risk/problem gambling) by mothers were gambling in 2009 and low alignment with New Zealand culture while retaining high Pacific culture.

Of the youth who gambled, 3.7% (n=18) were problem gamblers; of these 12 reported some level of worry about time or money spent gambling.

#### Effects of someone else's gambling - mothers

Seven percent of mothers experienced problems due to someone else's gambling; usually a spouse/partner, sibling or friend. Seventy percent of the affected mothers sometimes worried about the other person's gambling and 41% were paying for it financially.

Being a victim of physical violence was significantly associated with mothers experiencing problems due to someone else's gambling. Increasing age was a protective factor.

## ***Gambling participation and expenditure***

### Mothers

- The proportion of mothers who had gambled on at least one activity in the prior 12 months increased over time from 36% (2006) to 45% (2009) to 52% (2014).
- The most common gambling activity was Lotto participated in by 43% of all mothers in 2014. The next most common activities were Instant Kiwi/scratch tickets (10%), housie/bingo (8%) and casino electronic gaming machines (EGMs; 6%). Amongst mothers who gambled, the percentages were 84% (Lotto), 19% (Instant Kiwi/scratch tickets), 15% (housie/bingo) and 12% (casino EGMs).
- Of mothers who gambled in 2014, 56% had also gambled in 2009; 30% of non-gamblers in 2009 gambled in 2014, and 22% of gamblers in 2009 stopped gambling in 2014.
- In 2014, almost two-thirds (63%) of mothers gambled alone, one-fifth (19%) gambled with a spouse or partner, and one-tenth (10%) gambled with other family members.
- Frequency of gambling appeared to decrease over time. In 2014, 57% of mothers gambled less than monthly on Lotto and 20% gambled weekly; in 2009 the percentages were 28% and 41% respectively. A similar pattern was noted for Instant Kiwi/scratch tickets, housie/bingo and casino EGMs gambling. Daily gambling was unusual with only one mother reporting this for each of keno and casino EGM gambling.
- Median monthly expenditure on gambling in 2014 was similar to that in 2009 and varied according to the different gambling activities. In 2014, for the four most common activities it was \$20 (Lotto), \$5 (Instant Kiwi/scratch tickets), \$30 (housie/bingo) and \$50 (casino EGMs).

### Youth

- The proportion of youth who had ever gambled on at least one activity increased over time from 27% (2009) to 54% (2014).
- The most common gambling activity was bets with friends or family participated in by 37% of all youth in 2014. The next most common activities were betting on card games (20%), sports matches (16%), marbles and housie/bingo (both 13%), and board games (12%). Amongst youth who gambled, the percentages were 69% (bets with friends or family), 37% (card games), 30% (sports matches), 24% (marbles and housie/bingo) and 23% (board games).
- In 2014, seven percent of all youth reported having ever received an Instant Kiwi or scratch ticket as a present, compared with 17% in 2009.
- In 2014, youth mostly reported that they had gambled with family (57%) and/or with friends (42%); 12% of youth reported gambling alone. Multiple responses were allowed.
- Reasons for gambling were 'to have fun' (57%), 'to win money' (31%), 'for a challenge' (29%) and due to boredom (24%). Multiple responses were allowed.



- In 2014, of youth who had ever gambled:
  - 58% had not gambled in the past 12 months
  - 78% had not spent any time gambling each day
  - 57% had not spent any money gambling each week
  - 27% gambled once or twice in the past 12 months
  - 15% gambled for less than 15 minutes per day
  - 34% spent less than \$10 per week on gambling.

### ***Associations with gambling participation in 2014***

#### **Mothers**

- Highly statistically significant associations with mothers' gambling in 2014:
  - Gambling in 2009 (4.33 times higher), compared to not gambling in 2009.
  - Drinking alcohol in 2014, and increasing alcohol consumption from 2009 to 2014 (2.39 and 2.11 times higher respectively), compared with not drinking alcohol or unchanged alcohol consumption levels.
  - Being a victim of verbal aggression (1.77 times higher), compared with not being a victim of verbal aggression.

#### **Youth**

- In 2014, highly statistically significant associations with youth ever having gambled:
  - Being bullied at school (2.21 times higher), compared with not being bullied.
  - Playing computer or video games (1.68 times higher), compared with not playing these games.
  - Being involved with gangs (2.18 times higher), compared with not having gang involvement.
- The following were also significantly associated with youth ever having gambled:
  - Watching television/video/DVD for an hour or more per day (1.54 times higher), compared with watching for 30 minutes or less each day.
  - Having a mother who gambled but was a non-problem gambler (1.45 times higher), compared with having a mother who did not gamble.

## ***Associations with continuous<sup>2</sup> gambling activities in 2014***

### **Mothers**

- Highly statistically significant associations with mothers' gambling on continuous activities in 2014:
  - Being a perpetrator of verbal aggression (2.34 times higher), compared with not being a verbal aggressor.
  - Higher levels of deprivation (1.24 times higher per one-point increase in deprivation over time).

### **Youth**

- In 2014, compared with Samoan youth, Cook Islands Māori youth were less likely to gamble on continuous activities (0.43 times *lower*).

## ***Associations with gambling expenditure***

### **Mothers**

- Gambling in 2009 was highly statistically significantly associated with gambling \$40 or more per month in 2014 (2.85 times higher), compared with not gambling in 2009.
- The following were also significantly associated with gambling \$40 or more per month in 2014:
  - Being a perpetrator of verbal aggression (1.86 times higher), compared with not being a verbal aggressor.
  - Drinking alcohol in 2014, and increasing alcohol consumption from 2009 to 2014 (1.84 and 2.04 times higher respectively), compared with not drinking alcohol or unchanged alcohol consumption levels.

### **Youth**

- In 2014, being involved in a gang (n=47) was highly statistically significantly associated with having a usual weekly gambling expenditure (2.75 times higher), compared with not having gang involvement (n=346).

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<sup>2</sup> Continuous gambling activities are characterised by providing the opportunity for a continuous, repeated cycle of placing a stake, playing, determination of a win or loss, and the ability to collect and reuse winnings. For mothers, this included all gambling activities measured apart from Lotto and keno. For youth, this included betting on sports matches, housie/bingo, keno, Instant Kiwi, games on a mobile phone/tablet and internet gambling.

- In 2014, the following were also significantly associated with having a usual weekly gambling expenditure:
  - Being bullied at school (1.82 times higher), compared with not being bullied.
  - Having a mother who was an at-risk gambler (2.42 times higher), compared with having a mother who did not gamble.

### ***Problem gambling, transitions between risk levels and help seeking behaviour***

#### **Mothers**

- In 2014, of the mothers who gambled, 1.3% were problem gamblers, 5.7% were moderate-risk gamblers, 14% were low-risk gamblers and 79% were non-problem gamblers. The percentage of mothers at some level of risk was higher than in 2009 where 0.8% were problem gamblers, 2.7% were at moderate-risk, 5.4% were at low-risk and 91% were non-problem gamblers. Percentages in 2006 were generally similar to percentages in 2009.
- From 2009 to 2014, non-gamblers were the most stable group with 64% remaining in this category. About one-third of non-gamblers commenced gambling; 32% became non-problem gamblers and a low percentage became low-risk or moderate-risk gamblers (3.4% and 1.3% respectively).
- From 2009 to 2014, non-problem gamblers were the next most stable group with 57% remaining in this category. About one-third (30%) stopped gambling and slightly more than 10% transitioned into risk levels of gambling with a majority becoming low-risk gamblers (9%) and a low percentage becoming moderate-risk (3.4%) or problem gamblers (0.7%).
- Only 11% (n=2) of low-risk gamblers remained in that group from 2009 to 2014. A majority became non-problem gamblers (50%, n=9) or stopped gambling (22%, n=4), whilst a low percentage became moderate-risk (11%, n=2) or problem gamblers (5.6%, n=1).
- One moderate-risk gambler remained in that group from 2009 to 2014. Of those who transitioned out of this group, none became problem gamblers with all transitioning to non-problem gambler (n=3) or non-gambler (n=2) groups.
- One problem gambler remained in that group from 2009 to 2014. Of those who transitioned to lower risk categories, one each became moderate-risk or low-risk gamblers. None became non-problem gamblers or stopped gambling.
- In 2014, three mothers (0.6%) reported receiving assistance for their gambling. Two of the mothers (one problem gambler and one non-problem gambler) received professional help from a problem gambling treatment service and one non-problem gambler received informal support (e.g. from a partner, family member or friend). Thus 16% (1 of 6) problem gamblers had received professional assistance.

## Youth

- Overall, two percent of youth were problem gamblers (n=18); of youth who gambled they comprised 3.7%. Of the 18 youth, 12 reported some level of worry about the time or money they spent gambling and eight reported trying to cut down or give up gambling. At-risk gambling was not measured.
- Of youth who had ever gambled for money about one-third (31%) reported some level of worry about the time and money they spent gambling, and about one-quarter (24%) had attempted to reduce or give up gambling.
- If they had problems or concerns about their gambling, youth reported that they would seek help from parents (52%), friends (40%), other family members (34%) and school guidance counsellors (25%). Multiple responses could be selected.

## *Associations with gambling risk levels*

### Mothers

- The following were statistically significantly associated with being an at-risk gambler in 2014:
  - Retaining a high Pacific cultural orientation with low alignment to New Zealand culture (2.17 times higher), compared with having a high New Zealand/low Pacific alignment.
  - Gambling in 2009 (2.12 times higher), compared with not gambling in 2009.

## *Effects of someone else's gambling*

### Mothers

- In 2014, 6.9% of mothers had experienced problems due to someone else's gambling; this compares with 4.1% in 2009 and 2.7% in 2006.
- Seven of 16 mothers who experienced problems because of someone else's gambling in 2009 were still experiencing problems in 2014. Thirty mothers experienced problems with someone else's gambling in 2014 who had not had problems in 2009.
- In 2014, the other person was generally a spouse or partner (21%), parent (21%), sibling (16%) or friend (18%). Other people were less often mentioned.
- The two most problematic gambling activities of the other person, both reported by almost half of the mothers, were casino EGMs and pub EGMs.
- More than two-thirds (70%) of mothers reported that they sometimes worried about the other person's gambling, and two-fifths (41%) were paying for it financially. Other effects were less reported. Multiple responses were allowed.

## Youth

- Effects of someone else's gambling were not measured.

## *Associations with experiencing problems with someone else's gambling*

### Mothers

- The following were statistically significantly associated with mothers experiencing problems with someone else's gambling in 2014:
  - Being a victim of physical violence (3.23 times higher), compared with not being a victim.
  - Increasing age was a protective factor (0.94 times *lower* per unit increase in age).


## **Conclusion**

This study has expanded our knowledge of gambling behaviours and risk factors for Pacific youth and their mothers, with the longitudinal nature of the study allowing some exploration of changes over time. Based on the gambling behaviour of the youth and the problem gambling behaviour of a small proportion, it is important that preventative measures are considered and implemented to protect Pacific youth from remaining, or becoming, problem gamblers in late adolescence and early adulthood. Being bullied and gang involvement were risk factors for regular gambling. These findings provide impetus for interventions or approaches that will support victims of bullying so that maladaptive behaviours do not develop, and to provide supporting environments so that the appeal and consequences of gang involvement and affiliation is reduced. Mothers' gambling behaviours influenced their youth's gambling behaviours so adult education and public health awareness campaigns are important to increase understanding of the potentially negative intergenerational effects of adult behaviours.

Mothers transitioned into and out of gambling, carried on gambling, or transitioned through different gambling risk levels over time. Almost two-thirds of mothers gambled alone, which is potentially important when trying to understand the reasons why Pacific people are the most at-risk ethnic group for developing problematic gambling behaviours. The main risk factor for at-risk gambling amongst mothers was low alignment with New Zealand culture whilst retaining high Pacific culture. This suggests that, for this vulnerable proportion of the Pacific population, processes and resources are required to support and enhance greater alignment with New Zealand culture whilst retaining high Pacific culture, in order to increase resilience to acculturative stressors and reduce maladaptive behaviours such as risky gambling. Further research is warranted to understand why a proportion of Pacific mothers have difficulties in the acculturation process, as there could be a multitude of reasons. The study also showed that despite the availability of Pacific-specific gambling treatment services and awareness-raising efforts, help-seeking behaviours remained low (16% of current problem gamblers), indicating that barriers to accessing services are likely to be present.

Although the present study does not identify causal relationships, some trends over time are apparent and this gives confidence in the validity of the findings. These findings and the identification of risk and protective factors over time could be useful to inform the development

and implementation of policies and practices to minimise the risk for Pacific people and reduce the development of harmful gambling behaviours.



## 1 BACKGROUND

Pacific people make up a substantial and fast growing minority of the New Zealand population. Recent 2013 census data show that the percentage of Pacific people living in New Zealand increased from 6.9% in 2006 to 7.4% in 2013 (Statistics New Zealand, 2014). The Samoan ethnic group remains the largest at 3.6%, followed by Cook Islands Māori (1.5%), Tongan (1.5%), and other groups such as Niuean, Fijian, Tokelauan and Tuvaluan each at less than one percent (Statistics New Zealand, 2014). Ethnic population projections by Statistics New Zealand (2015) estimate that the Pacific population of 340,000 in 2013 will increase to between 440,000 and 480,000 by 2025. Compared to other major ethnic groups, Pacific people have the highest proportion (36%) of children aged up to 14 years of age (Statistics New Zealand, 2014). The different Pacific ethnic populations each have their own, as well as shared, language, history, cultural values, traditions and beliefs (Samu & Suaalii-Sauni, 2009; Tukuitonga & Finau, 1997).

Consistently over the past couple of decades or so, national surveys have found that Pacific adults are less likely to participate in gambling activities than European adults but those who do gamble have a substantially higher risk of developing problem gambling, and are more likely to have a considerably higher gambling expenditure than other population groups (Abbott, 2001; Abbott & Volberg, 2000; Abbott, Bellringer, Garrett, & Mundy-McPherson, 2014a, 2014b; Ministry of Health, 2006, 2009; Rossen, 2015; Tu, 2013). The phenomenon of lower overall participation with higher overall expenditure has been termed a ‘bi-modal’ distribution for gambling by Abbott and Volberg (Abbott, 2001; Abbott & Volberg, 2000). Populations with a bi-modal distribution are at higher-risk of developing gambling problems due to a variety of factors including those associated with migration, such as less experience with different gambling activities (particularly commercial forms that have a rapid interval between placing the bet and knowing the outcome, such as with electronic gaming machines) and experience stress associated with the acculturation process (i.e. living in, and adapting to, a new country and way of life (Abbott & Volberg, 2000).

Various research studies, usually relying on retrospective accounts of early gambling behaviours, have shown that children often start gambling before teenage years (though are not necessarily gambling for money) (see e.g. Gupta & Derevensky, 1998), and that there is a link between early childhood gambling behaviours and problem gambling as an adult (see e.g. Abbott & Volberg, 2000; Hardoon & Derevensky, 2001). The New Zealand Youth’12 study of 8,500 13 to 17 year olds reported that a significant minority of adolescents had gambled in the past year (24%), and 4.8% had reported two or more indicators of unhealthy gambling (Rossen et al., 2016). Pacific students were amongst the populations disproportionately at risk (Rossen et al., 2016); a finding mirroring that noted amongst adults, as mentioned in the previous paragraph.

Although cross-sectional studies can identify levels of risk in any given population and can also identify risk and protective factors for that population at the time of investigation, it is only through prospective studies following the same people over time that changes and factors predictive of change can be identified. The Pacific Islands Families (PIF) study is one such study. It is of particular importance given the continued higher risk for Pacific people developing problem gambling despite harm minimisation efforts and the availability of Pacific-specific gambling treatment services over the past few years.

The PIF study is a prospective study following a birth cohort of Pacific children and their families to assess the children’s development and wellbeing. The primary aim of the study is to determine the pathways leading to optimal health, developmental and social outcomes for

the children and their families. To date, the study has focused on the main developmental stages of childhood together with the influence of family environment and socio-cultural contexts.

An initial cohort of 1,398 children was recruited from infants born at Middlemore Hospital, South Auckland during the period 15 March to 17 December 2000. The children were selected from live births where the child had at least one parent who identified as being of Pacific ethnicity and who was also a New Zealand permanent resident. Full details regarding study design and methodology are described in detail elsewhere (Paterson et al., 2002, 2003, 2006). As cohort recruitment was from one location, the findings from this study cannot be generalised to the general New Zealand Pacific population. Even more so because by 2014 (the year of the current study) several families had moved to other parts of New Zealand and other countries (see section 2.4.1).

Data collection phases were at six weeks postpartum, then at one, two, four, six, nine, 11 and 14 years after the birth of the child. Interviews with mothers and assessments of children took place in all data collection years. Interviews with fathers occurred in the one, two, six and 11 data collection years.

In 2006, when the PIF children were six years old, the Ministry of Health funded a substantial gambling component in the study, with questions relating to gambling and problem gambling asked of mothers and fathers. The results from that study are presented elsewhere (Bellringer, Abbott, Williams & Gao, 2008). In brief, a bi-modal distribution of gambling participation was noted. There were gender differences in gambling participation and preferences. One percent of mothers who gambled and 5.7% of fathers who gambled were problem gamblers. Ethnicity, cultural orientation, income and education were socio-demographic factors associated with gambling participation. Substance use, psychological distress and physical violence were also associated with gambling participation and, in some cases, with at-risk gambling. A low percentage of mothers (4%) and fathers (10%) reported problems with someone else's gambling (Bellringer et al., 2008).

In 2009, when the children were nine years old, the Ministry of Health funded another gambling component for mothers and children. Again, the results from that study are reported elsewhere (Bellringer, Taylor, Savila & Abbott, 2014). In brief, there was a slight increase in gambling prevalence from 2006 for mothers; the prevalence of problem gambling amongst mothers who gambled remained at one percent. Some mothers commenced or stopped gambling, and 21% of mothers changed gambling risk level from 2006 to 2009. Gambling in 2006, worse financial situation, change in marital status, socio-economic deprivation, smoking tobacco, and major life events were associated with gambling participation in 2009. Less than three percent of mothers reported problems with someone else's gambling (Bellringer et al., 2014).

Almost all children (96%) reported gambling behaviours though a majority (77%) had not gambled for money; boys were more likely to gamble with money than girls. Children usually gambled with family or friends. Gang involvement, cognitive ability and parental monitoring were associated with gambling behaviours (Bellringer et al., 2014).

In 2014, the Ministry of Health funded a third gambling component in the PIF study, for mothers and children (now described as youth as they are adolescents aged 14 years). Due to the longitudinal nature of the study, this has allowed for some longitudinal analyses of mothers' gambling behaviours and to investigate youth gambling behaviours in 2014 against baseline data from 2009. These analyses would not be possible from cross-sectional data and are a strength of the additional gambling components in the PIF study.



## **2 RESEARCH METHODS**

### **2.1 Ethics approval**

Ethics approval for the 2014 phase of the PIF study was granted by the Southern Health and Disability Ethics Committee on 4 December 2013 (Reference 13/STH/159), shown in Appendix 1. The committee considers the ethical implications of proposals for research projects where human participants are asked questions in relation to their health. Application to the committee included all participant materials (i.e. questionnaires, information sheets and consent forms) and other relevant documents requiring approval.

Throughout the entire course of the study the following measures were taken to ensure participants' identity protection:

- All participants were allocated a code by the research team to ensure confidentiality
- No personal identifying information has been reported.

In addition to reassurance of their confidentiality, all participants were routinely informed of the voluntary nature of their participation and their right to withdraw from the study at any time. Participants were also provided the option to decline answering questions with which they felt uncomfortable.

### **2.2 Cultural awareness**

Throughout the PIF study, the research team endeavoured to ensure cultural safety, integrity and appropriateness of the research process. Thus, the study has relied on a team of appropriate staff and affiliates:

- One of the study's two directors is of Pacific ethnicity
- The core team comprises Pacific researchers fluent in different Pacific languages
- A study advisory board was established with Pacific community and health sector representatives
- Interviewers are ethnically matched, where possible, to the major Pacific ethnicities of the participants (i.e. Samoan, Tongan and Cook Islands Māori).

### **2.3 Study aims**

The main aims of the present study were to collect detailed gambling-related data from mothers and youth when the latter were 14 years of age in order to:

- Assess extent of gambling and problem gambling amongst Pacific mothers and Pacific youth
- Assess for possible predictors (risk factors) and protective factors for gambling (longitudinal analyses using available data for mothers from prior collection years)
- Investigate associations between youth gambling behaviours and social, familial, environmental and individual factors.

## **2.4 Research design**

### **2.4.1 Recruitment**

All PIF cohort primary caregivers<sup>3</sup> (usually mothers) were invited to participate in 2014 (including those who had missed participation in one or more previous data collection years), with the exception of those who were untraceable or had permanently withdrawn from the study. Each primary caregiver was asked to provide consent for her youth's participation.

As a substantial number of PIF cohort families had migrated to Australia, interviews were also conducted in Australia. Eight hundred and fifty-six interviews with mothers were conducted in New Zealand and 85 in Australia. For youth, 843 interviews were carried out in New Zealand and 87 in Australia. Additionally, one mother living in the United States of America completed an online version of the questionnaire, and one youth was interviewed in the Cook Islands.

Consistent with procedures used in earlier phases, the majority of mothers were interviewed in their homes and youth completed the questionnaire at school. While a paper-based method was used in 2006 and 2009, in 2014 mothers participated via structured Computer-Assisted Personal Interviews (CAPI) and youth self-administered the questionnaire using tablets. Participants who had moved away from Auckland, who could not be seen face-to-face, were invited to participate via online or postal methods.

### **2.4.2 Participation**

#### **Mothers**

Data were collected from primary caregivers between 21 March 2014 and 24 July 2015. For the purpose of this report, only data from female primary caregivers (mothers) have been included (i.e. male primary caregiver data have been excluded<sup>4</sup>). Completed interviews from 923 mothers were obtained in 2014. There was slight attrition from previous years; 945 mothers participated in 2009, and 989 in 2006.

In 2014, three mothers did not complete the gambling questions meaning that gambling data are available from 920 mothers; 721 of these mothers also completed the gambling questions in 2009. The 199 mothers who did not complete gambling questions in both 2009 and 2014 include cases where a different primary caregiver was interviewed between the years, and when a mother did not answer the gambling questions in both years.

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<sup>3</sup> The majority of primary caregivers (96%) were the birth mother of the cohort youth; a small minority were adoptive mothers or other family members (e.g. fathers). There was no statistical evidence that non-birth female caregivers differed from birth mothers in terms of the analyses presented in this report, so all female primary caregivers have been reported as 'mothers'.

<sup>4</sup> For comparative purposes in this report, male primary caregivers were excluded from the samples in 2006, 2009 and 2014. Twelve males (of 1,001 participants) were excluded from 2006 data; 51 males (of 996 participants) were excluded from 2009 data, and 19 males (of 942 participants) were excluded from 2014. Therefore, data presented in this report for 2006 and 2009 may differ slightly from data for those years presented in previous reports.

## Youth

Data collection from youth commenced on 4 May 2014 and concluded on 24 July 2015. A total of 931 completed responses was received. This is greater than the 874 child respondents in 2009.

### 2.4.3 Questionnaire design

#### Mothers

In most instances, gambling-related questions (e.g. gambling participation and behaviour, problem gambling screens and problems resulting from someone else's gambling) asked of mothers were identical to those asked in 2009 and 2006. This has enabled longitudinal data analysis, which is important for identifying risk and protective factors in relation to problem gambling development. Questions relating to gambling-related help-seeking behaviours were included in 2014 that had not been included in previous years (Appendix 2).

The Problem Gambling Severity Index (PGSI) was included in all three data collection years. It is a nine-item problem gambling screen in a past 12-month timeframe, specifically designed for use in population surveys (Ferris & Wynne, 2001), which has been widely used in New Zealand and internationally. Participants are classified as non-gamblers, non-problem gamblers not experiencing any harms from gambling (score 0), low-risk gamblers experiencing a low level of harms from gambling (score 1 to 2), moderate-risk gamblers experiencing a moderate level of harms from gambling (score 3 to 7) or problem gamblers experiencing a high level of harms from gambling (score 8 to 27).

The two-question Lie-Bet screen, which asks respondents if they had ever been untruthful to others about their gambling and if they had ever felt the need to bet using increasing amounts of money (Johnson et al. 1997) was included in 2009 and 2014. A yes response to at least one of the two questions warns of a problem gambling risk (Van Wormer & Davis, 2013). In a validation study, Götestam, Johansson, Wenzel and Simonsen (2004) noted the Lie-Bet's usefulness for screening individuals with, or at-risk of developing, problem gambling.

In all three years, mothers were also asked a question on self-belief about control over gambling ("Thinking about the past twelve months, how often have you wanted to stop betting money or gambling but didn't think you could?"), and in 2009 and 2014 a question on self-perceptions of gambling problems ("Do you feel that you have ever had a problem with gambling?").

Selected socio-demographic and health related data were also included in the three years. They included the 12-item General Health Questionnaire (GHQ12) (Goldberg & Williams, 1988) used to assess psychological distress. Responses were collected using a Likert-type scale (0-1-2-3) with a value of 2 or 3 for three or more items categorised as symptomatic of psychological distress. The Conflict Tactics Scale (CTS) for measuring domestic violence including verbal aggression and physical violence, was also included (Straus, 1979, 1990).

The questionnaires in 2009 and 2014 included the eight-item NZiDep index (Salmond, King, Crampton, & Waldegrave, 2005) to estimate individual socio-economic deprivation. NZiDep measures of deprivation are based on economising behaviours (choosing lower quality consumables to save money) and deprivation signs (accepting help from governmental and charitable organisations) (Salmond, Crampton, King, & Waldegrave, 2006). The index is designed for use in research to examine the relationships between socio-economic status and

health/social outcomes (Salmond et al., 2006). Higher scores indicate higher levels of deprivation.

In 2014, a question on having traditional gift commitments to family or the church was included. Cultural orientation was also assessed using a modified version of the General Ethnicity Questionnaire (Tsai, Ying & Lee, 2000) adapted specifically for the PIF study, that is, the Pacific Island and New Zealand Acculturation Scales (Borrows, Williams, Schluter, Paterson & Helu (2011). Based on their scores, participants were assigned to one of four acculturation categories as described by Berry (1997) in his acculturation model. These were high alignment with New Zealand culture and low alignment with Pacific culture, high New Zealand and Pacific cultural alignment, high alignment with Pacific culture and low alignment with New Zealand culture, and low New Zealand and Pacific cultural alignment.

In some cases, changes to question wording between the years has meant that findings are not comparable. These are detailed in respective sections in the results chapter (Chapter 3).

## Youth

Compared to the questionnaire in 2009, the questionnaire for youth in 2014 included a more extensive section on gambling behaviours including gambling motivations and frequency, time spent gambling, gambling expenditure, concerns about gambling, and probable help-seeking behaviours (Appendix 3).

The questionnaire included the DSM-IV-MR-J screen<sup>5</sup> to assess adolescent problem gambling (Fisher, 2000); it contains nine dimensions which are assessed through 12 questions. Individual items in the DSM-IV-MR-J have different rating scales and response options. The screen was initially developed for use in face-to-face clinical settings and then adapted for use in non-clinical settings (Fisher, 2000). Dimensions 8 and 9 of the screen are broken down into sub-questions; for the purpose of scoring, a yes answer to any one of the sub-questions is regarded as a positive response to the item. Using the DSM-IV-MR-J screen, youth were classified as problem gamblers (4 or more positive responses) or non-problem gamblers (3 or less positive responses).

A range of other measures on youth health and development were assessed including substance use (cigarettes, alcohol and drugs), and bullying-related experiences from the revised Olweus Bully/Victim Questionnaire (OBVQ) (Olweus, 1996); the questionnaire was self-administered via tablets. Other measures on general health, problem behaviours (Child Behaviour Checklist - CBCL; Achenbach & Rescorla, 2001), and parental supervision using the short form of the Alabama Parenting Questionnaire (APQ) (Elgar, Waschbusch, Dadds, & Sigvaldason, 2007) were reported by mothers. Youths were also asked two questions on their gang<sup>6</sup> involvement: “have you had any involvement with gangs in terms of wearing gang colours or using gang signs?” and “have you done things to represent a gang such as spray painting gang signs or getting into fights etc?” There were some changes in the variables measured from one year to another and some psychometric measures were adapted to ensure cultural appropriateness and reduce respondent burden.

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<sup>5</sup> Diagnostic Statistical Manual-IV-Multiple-Response-Adapted for Juveniles.

<sup>6</sup> Defined as any street club that carries a name, wears particular colours etc.

#### **2.4.4 Data analysis**

##### **Quantitative data**

Quantitative data were analysed using R 3.3.0, a language and environment for statistical computing (R Core Team, 2016) and IBM SPSS Statistics 22.

Descriptive statistics (percentages) and cross-tabulations were used to present overall trends in gambling participation and gambling-related behaviours across the different years. To identify risk and protective factors, bivariate and multiple logistic regression analyses were performed.

Multiple logistic regression analyses using multivariable logistic regression models were performed to examine the strength of potential explanatory variables (from bivariate analyses) both for mothers and youth. Following an initial multivariable model for each binary outcome variable (that included all explanatory variables), a final multivariable model (adjusted for confounding variables and including only necessary variables) was created using backwards stepwise regression based on the Akaike Information Criterion (AIC). These final models provide a sound basis for statements about evidence of associations between gambling-related outcome variables and explanatory variables (more so than in the bivariate analysis and in the initial multivariable analysis which included all variables).

All variables with ranges (e.g. age and individual deprivation) or scales (e.g. gambling frequency) as responses were re-categorised, where appropriate, prior to the bivariate and multiple logistic regression analyses. Age and individual deprivation were treated as continuous linear predictor variables in the multiple logistic regression analyses as this provided greater power to detect an association. All outcome and predictor variables with insufficient numbers of respondents were excluded from the analyses. For gambling risk level analyses, as the sample sizes for low-risk, moderate-risk and problem gamblers were small, these were collapsed into one 'at-risk' category. All participants in the 'at-risk' category were experiencing some level of harm (low through to high) from their gambling as identified by the PGSI. Gamblers who were not experiencing any harms (score 0 on the PGSI) were not included in the 'at-risk' category.

Reported results include odds ratios that show the statistical strength of associations between the gambling-related outcome variables and explanatory variables. Due to the large number of analyses included in this report, only results reaching a significance level of  $p \leq 0.01$  have been reported as statistically significant and those reaching  $p \leq 0.001$  as highly statistically significant. Results reaching  $p \leq 0.05$  but not  $p \leq 0.01$  have been reported as suggestive of evidence of an association but not as statistically significant.

##### **Qualitative data**

Qualitative data obtained from a single open-ended question (why a particular gambling activity was preferred) asked of mothers in 2014 and 2009 were thematically analysed and the frequency of recurring themes estimated.



### 3 RESULTS

In this chapter, results for mothers and youth from the 2014 are presented along with comparable findings from the previous two data collection years involving gambling questions (2006 and 2009), where available, to identify patterns and changes over time.

Descriptive statistics for mothers are presented in section 3.1 and for youth in section 3.3. These include socio-demographic data; gambling participation and behaviour; problem gambling severity; help-seeking behaviours; and for mothers only, effects of someone else's gambling.

Risk and protective factors associated with gambling and/or problem gambling are presented in section 3.2 for mothers and section 3.4 for youth.

#### 3.1 Mothers - Descriptive statistics

This section details data in 2014 for mothers for selected socio-demographic and health characteristics (section 3.1.1), gambling participation and expenditure (section 3.1.2), problem gambling severity and beliefs about control over gambling (section 3.1.3), help-seeking behaviour (section 3.1.4), and effects of someone else's gambling (section 3.1.5). Findings from 2006 and 2014 are presented for comparative purposes, where possible.

##### 3.1.1 *Selected socio-demographic and health characteristics*

Table 1 details socio-demographic and health characteristics of mothers in 2014 compared with 2006 and 2009, where possible. Percentages detailed below relate to data from 2014, unless otherwise specified.

For some socio-demographic characteristics, the proportion of mothers remained similar across the three years. These included ethnicity, marital status, highest educational qualification, deprivation level, country of birth and cultural orientation. Samoans comprised the largest group (46%), followed by Tongans (23%) and Cook Islands Māori (16%). About three-quarters (77%) of the mothers were partnered, two-fifths (39%) had a post-school qualification, and a majority experienced two or more deprivation characteristics (70%). Two-thirds (67%) were not born in New Zealand. Larger proportions of mothers had either a high alignment with New Zealand culture and a low alignment with Pacific culture (42%), or a high alignment with Pacific culture and a low alignment with New Zealand culture (29%), rather than having a high (11%) or low (18%) alignment with both cultures.

Similarly, the proportion of mothers smoking tobacco (29%) remained similar over time. However, there was a slight increase in the proportion of mothers who consumed alcohol, from 35% in 2006 to 43% in 2014.

The socio-demographic characteristics that changed over time included age and number of years lived in New Zealand. These are time dependent, that is to say, over time the cohort gets older and the length of time they have lived in New Zealand increases. In 2006, one-quarter (25%) of the participants were aged 20 to 29 years and one-fifth (22%) were aged 40 years or older. By 2014, only 0.4% of mothers were in the former age range and 62% were in the latter age range. Similarly, in 2006, 14% of mothers had lived in New Zealand for 10 or fewer years and 22% for 31 or more years; in 2014 the proportions were 0.3% and 48%, respectively.

There was also an indication that the psychological health of the mothers changed over time. In 2006 and 2009, less than 10% of mothers reported symptoms of psychological distress; however, in 2014 almost one-fifth (19%) reported symptoms.

Traditional gift giving commitments were reported in 2014; this was not measured in 2006 or 2009. Three-quarters (75%) of the mothers reported traditional gift giving commitments.

**Table 1: Mothers - Selected socio-demographic and health characteristics - 2006, 2009 and 2014**

Socio-demographic and health variables	2006 (N=989)		2009 (N=945)		2014 (N=923)	
	n	(%)	n	(%)	n	(%)
<b>Ethnicity</b>						
Samoan	440	(46.1)	401	(44.5)	427	(46.3)
Cook Islands Māori	166	(17.4)	161	(17.8)	147	(15.9)
Niuean	45	(4.7)	43	(4.8)	40	(4.3)
Tongan	209	(21.9)	204	(22.6)	211	(22.9)
Other Pacific ‡	28	(2.9)	24	(2.7)	28	(3.0)
Non-Pacific	66	(6.9)	69	(7.6)	70	(7.6)
<b>Age (years)</b>						
20 - 29	250	(25.3)	90	(9.6)	4	(0.4)
30 - 39	522	(52.8)	462	(49.1)	346	(37.6)
≥ 40	217	(21.9)	388	(41.3)	570	(62.0)
<b>Highest educational qualification</b>						
None or secondary school qualification	543	(55.0)	560	(59.6)	558	(61.4)
Post-school qualification	445	(45.0)	380	(40.4)	352	(38.7)
<b>Marital status</b>						
Partnered	799	(80.9)	709	(75.7)	696	(76.5)
Non-partnered	189	(19.1)	228	(24.3)	214	(23.5)
<b>Deprivation level (NZiDep)</b>						
0 deprivation characteristics	-	-	114	(12.9)	109	(11.8)
1 deprivation characteristic	-	-	233	(26.4)	167	(18.1)
2 deprivation characteristics	-	-	229	(25.9)	208	(22.5)
3 - 4 deprivation characteristics	-	-	202	(22.9)	283	(30.7)
5 - 8 deprivation characteristics	-	-	106	(12.0)	156	(16.9)
<b>Years lived in New Zealand</b>						
≤ 10	140	(14.2)	33	(4.3)	3	(0.3)
11 - 20	311	(31.5)	204	(26.7)	199	(21.6)
21 - 30	318	(32.3)	278	(36.3)	276	(30.0)
≥ 31	217	(22.0)	250	(32.7)	443	(48.1)
<b>NZ born</b>						
No	629	(65.9)	597	(66.2)	614	(66.5)
Yes	325	(34.1)	305	(33.8)	309	(33.5)
<b>Traditional gift giving commitments</b>						
No	-	-	-	-	232	(25.3)
Yes	-	-	-	-	686	(74.7)
<b>Cultural Orientation</b>						
High NZ, Low Pacific	317	(32.2)	-	-	359	(42.2)
Low NZ, High Pacific	331	(33.6)	-	-	246	(28.9)
High NZ, High Pacific	160	(16.2)	-	-	93	(10.9)
Low NZ, Low Pacific	177	(18.0)	-	-	153	(18.0)
<b>Tobacco smoking</b>						
No	650	(66.7)	621	(66.5)	651	(71.0)
Yes	325	(33.3)	313	(33.5)	266	(29.0)
<b>Alcohol consumption (any)</b>						
No	645	(65.5)	564	(60.2)	523	(57.2)
Yes	340	(34.5)	373	(39.8)	392	(42.8)
<b>Psychological Distress (GHQ)</b>						
Non-symptomatic	928	(93.9)	835	(92.3)	743	(80.7)
Symptomatic	60	(6.1)	70	(7.7)	178	(19.3)

Numbers (and percentages) do not always total N (or 100%) due to missing values / ‡ Includes mothers identifying equally with two or more Pacific groups, equally with Pacific and non-Pacific groups, or with Pacific groups other than Tongan, Samoan, Cook Islands Māori or Niuean.

### 3.1.2 Gambling participation and expenditure

#### (a) Overall gambling participation

Overall, the proportion of mothers who participated in gambling (at least one gambling activity in the past 12 months) increased<sup>7</sup> over time from 36% (n=360) in 2006, to 45% (n=439) in 2009, to 52% (n=478) in 2014.

The overall gambling participation prevalence included mothers who gambled in all three years, mothers who did not gamble in one year but gambled in another year, and mothers who were gambling but then stopped. Slightly more than half of the mothers reported gambling in each of the years; 55% who gambled in 2006 also gambled in 2009, and 56% of mothers who gambled in 2009 also gambled in 2014. One-fifth (22%) of mothers who gambled in 2006 did not gamble in 2009; the same percentage (22%) of mothers who gambled in 2009 were non-gamblers in 2014. One-quarter (26%) of mothers who had not gambled in 2006 gambled in 2009; the proportion increased slightly from 2009 to 2014 (30%). Data are detailed in Table 2.

However, it is of note that a substantial proportion of mothers were not interviewed or did not complete gambling participation questions in the consecutive years, which could have affected the results.

**Table 2: Mothers - Gambling participation from 2006 to 2009 and 2009 to 2014**

	Non-gambler (2009)		Gambler (2009)		Not interviewed (2009)	
	n	(%)	n	(%)	n	(%)
Non-gambler (2006)	293	(46.6)	162	(25.8)	174	(27.7)
Gambler (2006)	79	(21.9)	199	(55.3)	82	(22.8)
Not interviewed (2006)	86	(34.5)	78	(31.3)	85	(34.1)
	Non-gambler (2014)		Gambler (2014)		Not interviewed (2014)	
	n	(%)	n	(%)	n	(%)
Non-gambler (2009)	240	(52.4)	138	(30.1)	80	(17.5)
Gambler (2009)	98	(22.3)	246	(56.0)	95	(21.6)
Not interviewed (2009)	105	(30.8)	94	(27.6)	142	(41.6)

2006 N=989, 2009 N=945, 2014 N=924

#### (b) Gambling participation by gambling activity

Details of past-year gambling participation by gambling activity for all mothers are provided in Table 3 and Figure 1 for 2006, 2009 and 2014. In all three years, Lotto was the most

<sup>7</sup> Of the 1,116 mothers seen in either 2009 or 2014, n=753 (67%) participated in both years and 33% participated in only one year. Therefore, there are inevitably some minor differences in demographics between the two years. Using a chi-squared test there was no statistical evidence to indicate that differences noted between 2009 and 2014 in relation to increased gambling prevalence were due to the different mothers being interviewed at these times. Similarly, there was no statistical evidence for differences noted between mothers interviewed in 2006 and 2009.

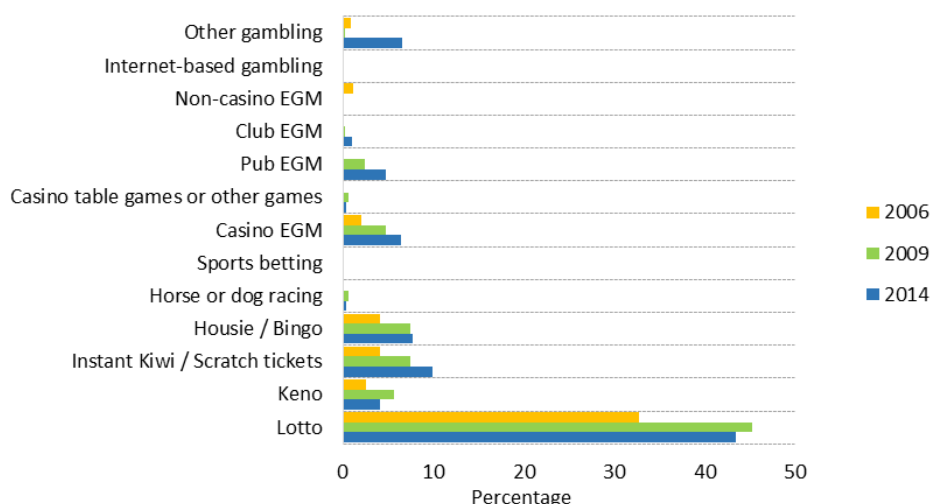


frequently reported gambling activity, followed at a much lower rate by Instant Kiwi/scratch tickets, housie/bingo, casino electronic gaming machines (EGMs) and other unspecified gambling. Sports betting and internet-based gambling were the least popular gambling activities among mothers.

The proportion of mothers participating in certain gambling activities increased over time. Lotto participation increased from one-third (33%) of mothers in 2006 to just less than half (45%) in 2009; this proportion remained static in 2014 (43%). A similar pattern was noted for housie/bingo and keno gambling albeit at a lower participation rate (less than 10%). The percentage of mothers gambling on casino, pub or club EGMs and Instant Kiwi or other scratch tickets increased each year, although overall participation was low at less than 10%.

**Table 3: Mothers - Past-year gambling participation by activity - 2006, 2009 and 2014 (all respondents)**

<b>Gambling activity</b>	<b>2006 (N=989)</b>		<b>2009 (N=945)</b>		<b>2014 (N=923)</b>	
	<b>n</b>	<b>(%)</b>	<b>n</b>	<b>(%)</b>	<b>n</b>	<b>(%)</b>
Lotto	323	(32.7)	410	(45.3)	399	(43.4)
Instant Kiwi/scratch tickets	41	(4.1)	68	(7.5)	91	(9.9)
Housie/bingo	41	(4.1)	67	(7.4)	71	(7.7)
Casino EGM	20	(2.0)	43	(4.7)	59	(6.4)
Pub EGM	-	-	22	(2.4)	44	(4.8)
Keno	25	(2.5)	52	(5.7)	38	(4.1)
Club EGM	-	-	2	(0.2)	9	(1.0)
Horse or dog racing	0	-	5	(0.6)	4	(0.4)
Casino table games or other games	1	(0.1)	5	(0.6)	4	(0.4)
Internet-based gambling	-	-	1	(0.1)	1	(0.1)
Sports betting (TAB or overseas betting)	1	(0.1)	1	(0.1)	0	-
Non-casino EGM	12	(1.2)	-	-	-	-
Other gambling	9	(0.9)	2	(0.2)	61	(6.6)



**Figure 1: Mothers - Past-year gambling participation by activity - 2009, 2009 and 2014 (all respondents)**

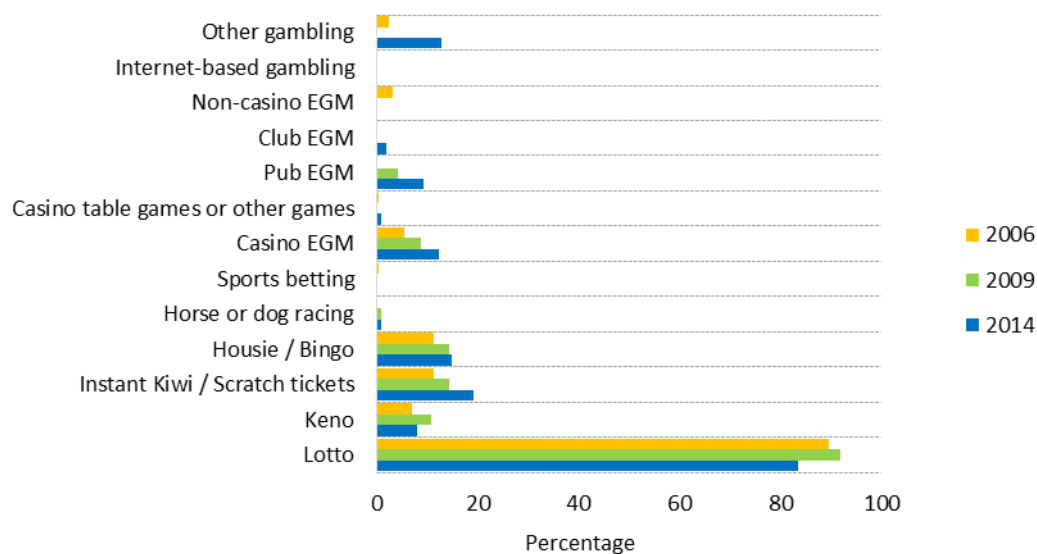
Table 4 and Figure 2 provide gambling participation data only for mothers who had gambled in the past 12 months. Similar participation patterns were generally noted compared with those of the whole sample of mothers.

Lotto was the most common gambling activity in all three years with a majority (>80%) of mothers who gambled reporting taking part in the past year. However, unlike the whole sample, where Lotto participation increased from 2006 to 2009, participation remained at a similar level across time amongst mothers who gambled.

In 2014, almost one-fifth (19%) of mothers who gambled bought Instant Kiwi or other scratch tickets, 15% gambled on housie or bingo, 12% gambled on casino EGMs, and 13% gambled on other unspecified forms. Just less than 10% gambled on pub EGMs (9%) and keno (8%). Two percent gambled on club EGMs. Participation in other forms of gambling was very low at less than one percent.

**Table 4: Mothers - Past-year gambling participation by activity - 2006, 2009 and 2014 (gamblers only)**

Gambling activity	2006 (N=360)		2009 (N=440)		2014 (N=477)	
	n	(%)	n	(%)	n	(%)
Lotto	323	(89.7)	404	(91.8)	399	(83.6)
Instant Kiwi/scratch tickets	41	(11.4)	63	(14.3)	91	(19.1)
Housie/bingo	41	(11.4)	64	(14.5)	71	(14.9)
Casino EGM	20	(5.6)	39	(8.9)	59	(12.4)
Pub EGM	-	-	18	(4.1)	44	(9.2)
Keno	25	(6.9)	48	(10.9)	38	(8.0)
Club EGM	-	-	1	(0.2)	9	(1.9)
Horse or dog racing	0	(0.0)	4	(0.9)	4	(0.8)
Casino table games or other games	1	(0.3)	0	(0.0)	4	(0.8)
Internet-based gambling	0	(0.0)	1	(0.2)	1	(0.2)
Sports betting (TAB or overseas betting)	1	(0.3)	0	(0.0)	0	(0.0)
Non-casino EGM	12	(3.3)	-	-	-	-
Other gambling	9	(2.5)	0	(0.0)	61	(12.8)



**Figure 2: Mothers - Past-year gambling participation by activity - 2006, 2009 and 2014 (gamblers only)**

### (c) Most preferred gambling activity

In an open-ended question in 2009 and 2014, mothers were asked to explain the reasons they preferred a particular gambling activity. Themes summarised from responses provided for Lotto, housie/bingo, casino EGMs, and Instant Kiwi/scratch tickets<sup>8</sup> are listed in Table 5 with an estimated number of mothers for each theme.

*Large prizes offered/hope to win* was the most frequently cited reason for preferring Lotto, and was also cited by a few mothers as a reason for preferring housie/bingo, casino EGMs and Instant Kiwi/scratch tickets. As quoted below, a hope to win was sometimes associated with an expectation of meeting financial commitments:

*I want to win [Lotto]. I want to get money to pay my mortgage and buy other things for my children.*

Some mothers also expressed the view that they preferred Lotto because of *better chances of winning* compared to other forms of gambling. *Perceptions of luck* were sometimes connected to this theme with some mothers believing they had better luck with Lotto than with other gambling activities, while other mothers indicated purchasing Lotto in anticipation of being lucky. These themes of better winning chances and luck were rarely mentioned in reference to other gambling activities.

*When I think I'm feeling lucky I go buy Lotto, hoping. I saw a shooting star last week and I thought I will buy Lotto. So I bought one on Saturday and I won a bonus line.*

Some mothers preferred Lotto because they found it *easier to play* than other types of gambling.

<sup>8</sup> These four gambling activities were selected as they had the largest number of respondents in both data collection phases allowing meaningful comparison.

*Just Powerball. Just pick your numbers and that's it. It's easier, we don't know how to play the others.*

A few mothers suggested that Lotto's *easy accessibility* (i.e. the convenience of making a purchase) was a reason for their preference.

*Easy to purchase [Lotto] whilst doing my shopping.*

A few mothers also reported Lotto to be a *cheaper form of gambling*. A small number also mentioned this reason in relation to their preference for housie/bingo and Instant Kiwi or other scratch cards.

*[Lotto, because] it's cheap and easy, you come home and cross your fingers.*

*[Playing housie/bingo is] relaxing, doesn't cost me that much. Spend about \$10, very cheap, time out for me and enjoy company of friends.*

For all four gambling types, another reason was that it was *more enjoyable*; that they gambled just *for fun* or simply to *pass time*.

*I'm happy when I'm playing [housie/bingo]. I go there to be happy not for money, but if you win it's happier.*

*[Gambling on EGMs at the casino] ...is more fun/enjoyable than other gambling activities. Good way of passing time.*

Other reasons for preferring a particular gambling activity were mentioned by very few mothers.

**Table 5: Mothers - Reasons for preferred gambling activity - 2009 and 2014**

Reason for preference	Lotto		Housie / Bingo		Casino EGMs		Instant Kiwi	
	2009 (n=305)	2014 (n=301)	2009 (n=42)	2014 (n=50)	2009 (n=20)	2014 (n=25)	2009 (n=13)	2014 (n=20)
Frequency of mention (number of mothers)								
Large prizes offered/hope to win	158	183	20	4	10	1	4	5
Better chances of winning	26	4	-	2	2	-	3	1
Perceptions of luck	10	34	1	2	-	1	-	3
Easier to play	23	14	1	1	-	1	1	2
Easy access/convenient	18	15	2	-	-	-	-	1
Cheaper form of gambling	8	10	3	3	-	-	5	5
More enjoyable/for fun/pass time	12	17	10	9	7	4	2	1
Ability to choose numbers	5	1	3	-	-	-	-	-
Requires less time	2	1	-	-	-	-	-	-
Advertising effects	-	4	-	-	-	-	-	-
Can be used as a gift	2	-	-	-	-	-	-	-
Better control over spending	-	4	-	-	-	-	-	-
Makes a community contribution	5	-	-	-	-	-	-	-
Not considered as gambling	-	2	-	-	-	-	-	-
Accepted form of gambling	2	4	11	-	3	-	-	-
Not addictive	-	2	-	-	-	-	-	2
Have won before	-	4	-	3	-	-	-	-
Offers time out	-	-	-	16	-	7	-	-
Opportunity to socialise	-	-	-	19	-	9	-	-
To support fundraising	-	-	-	5	-	-	-	-

Multiple responses were allowed

#### (d) Social context of gambling

In 2009 and 2014, mothers were asked to indicate with whom they gambled. As detailed in Table 6, over half of mothers in both years indicated that they gambled alone (52% in 2009 increasing to 63% in 2014). This was followed by a preference for gambling with a spouse or partner (34% in 2009, 19% in 2014). Ten percent or less of mothers in both years reported gambling with other family members, friends or co-workers, or with other people.

**Table 6: With whom mothers gambled - 2009 and 2014**

With whom gambled	2009 (n=396)		2014 (n=444)	
	n	(%)	n	(%)
Alone	207	(52.3)	280	(63.1)
With spouse or partner	133	(33.6)	82	(18.5)
With other family members	37	(9.3)	45	(10.1)
With friends or co-workers	18	(4.5)	33	(7.4)
With other individual or group	1	(0.3)	4	(0.9)

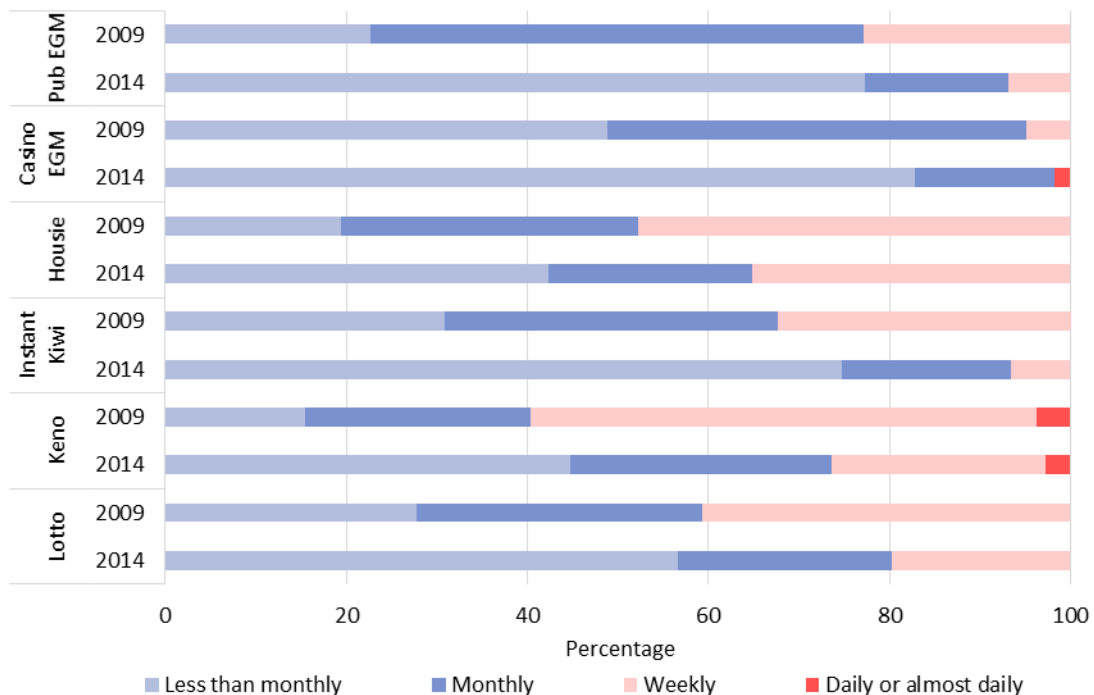
#### (e) Gambling frequency

In 2009 and 2014, mothers reported how often they engaged in each gambling activity<sup>9</sup> (Table 7 and Figure 3). The frequency of participation in different gambling activities decreased over time with lower proportions of mothers gambling weekly or monthly in 2014 compared to 2009, and with a corresponding increase in the proportion who gambled less often than monthly in 2014. Daily/almost daily gambling was not a norm; for keno, two mothers reported this in 2009 and one mother in 2014. One mother reported daily/almost daily casino EGM gambling in 2014.

**Table 7: Mothers - Frequency of gambling by activity - 2009 and 2014**

Gambling activity	Year and N	Frequency of gambling							
		Less than monthly		Monthly		Weekly		Daily or almost daily	
		n	(%)	n	(%)	n	(%)	n	(%)
Lotto	2009 (n=410)	114	(27.8)	129	(31.5)	167	(40.7)	0	-
	2014 (n=396)	224	(56.6)	94	(23.7)	78	(19.7)	0	-
Keno	2009 (n=52)	8	(15.4)	13	(25.0)	29	(55.8)	2	(3.8)
	2014 (n=38)	17	(44.7)	11	(28.9)	9	(23.7)	1	(2.6)
Instant Kiwi/scratch tickets	2009 (n=68)	21	(30.9)	25	(36.8)	22	(32.4)	0	-
	2014 (n=91)	68	(74.7)	17	(18.7)	6	(6.6)	0	-
Housie/bingo	2009 (n=67)	13	(19.4)	22	(32.8)	32	(47.8)	0	-
	2014 (n=71)	30	(42.3)	16	(22.5)	25	(35.2)	0	-
Casino EGMs	2009 (n=41)	20	(48.8)	19	(46.3)	2	(4.9)	0	-
	2014 (n=58)	48	(82.8)	9	(15.5)	0	-	1	(1.7)
Pub EGMs	2009 (n=22)	5	(22.7)	12	(54.5)	5	(22.7)	0	-
	2014 (n=44)	34	(77.3)	7	(15.9)	3	(6.8)	0	-

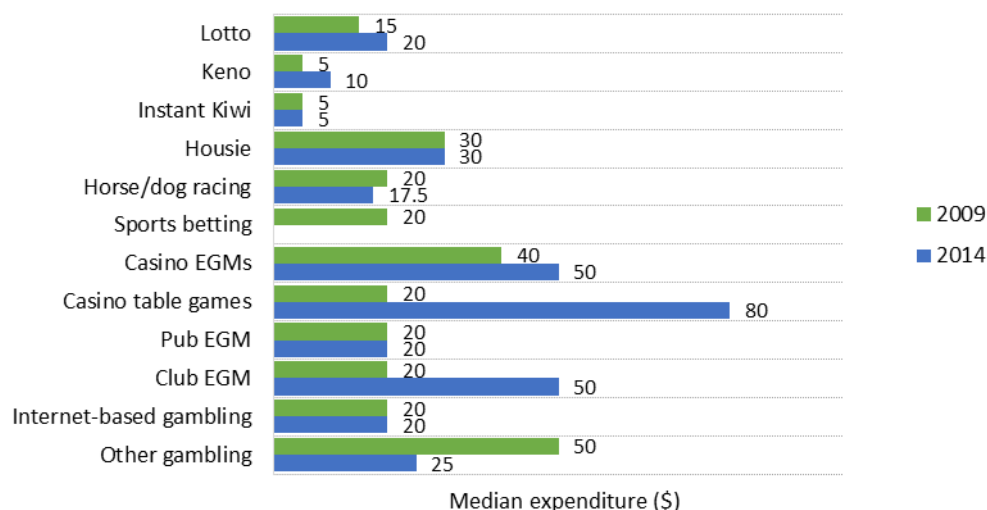
<sup>9</sup> Only gambling activities participated in by more than 20 mothers are presented in the table and figure.



**Figure 3: Mothers - Frequency of gambling by activity - 2009 and 2014**

#### (f) Gambling expenditure

Median usual monthly expenditure in 2009 and 2014 reported by mothers for the various gambling activities are provided in Figure 4. Generally, expenditure on gambling was about \$20 to \$30, although the range of expenditure was quite wide for some activities such as casino and pub EGM gambling, casino table games and housie/bingo (Table 8). Median expenditure was similar in 2009 and 2014 apart from for gambling on casino table games, club EGMs and other non-specified gambling activities. *However, these differences in median expenditure over time are likely to be an artefact of very small sample sizes (apart from other gambling in 2014).*



**Figure 4: Mothers - Median monthly expenditure by gambling activity - 2009 and 2014**

**Table 8: Mothers - Monthly expenditure by gambling activity - 2009 and 2014**

Gambling activity	Monthly expenditure (\$) by gambling activity									
	2009					2014				
	n	Median	Mean	(SD)	Range	n	Median	Mean	(SD)	Range
Lotto	410	15	20.1	(18.4)	5 - 120	377	20	24.1	(21.0)	5 - 150
Keno	52	5	7.6	(8.3)	5 - 35	37	10	13.6	(21.2)	5 - 130
Instant Kiwi	68	5	7.4	(11.1)	5 - 80	82	5	8.4	(6.4)	5 - 40
Housie/bingo	67	30	39.1	(28.7)	10 - 160	67	30	60.9	(56.2)	10 - 250
Horse or dog racing	5	20	21.0	(10.2)	5 - 30	4	17.5	22.5	(20.2)	5 - 50
Sports betting	1	20	20.0	-	20	0	-	-	-	-
Casino EGM	41	40	62.2	(71.4)	20 - 400	51	50	60.8	(39.3)	20 - 200
Casino table games	5	20	56.4	(84.4)	20 - 40	4	80	95.0	(77.2)	20 - 200
Pub EGM	22	20	26.0	(8.9)	10 - 400	39	20	64.0	(91.8)	5 - 400
Club EGM	2	20	20.0	(0.0)	20	7	50	55.7	(33.6)	10 - 100
Internet-based gambling	1	20	20.0	-	20	1	20	20.0	-	20
Other gambling	2	50	50.0	(14.1)	40 - 60	57	25	39.1	(38.3)	5 - 220

### 3.1.3 Gambling risk levels and problem gambling

#### (a) Prevalence of gambling risk levels

Using the PGSI, mothers were categorised as current (past 12 month) non-gamblers, non-problem gamblers, low-risk gamblers, moderate-risk gamblers or problem gamblers. Data are presented for 2006, 2009 and 2014 in Table 10. Generally over time, the percentage of non-problem, low-risk, moderate-risk and problem gamblers increased as more mothers commenced gambling. In 2014, 0.7% of mothers were problem gamblers, 2.9% were moderate-risk gamblers, 7.3% were low-risk gamblers and 41% were non-problem gamblers. *Note that the sample size for moderate-risk and problem gamblers was very small so percentages are indicative only.*

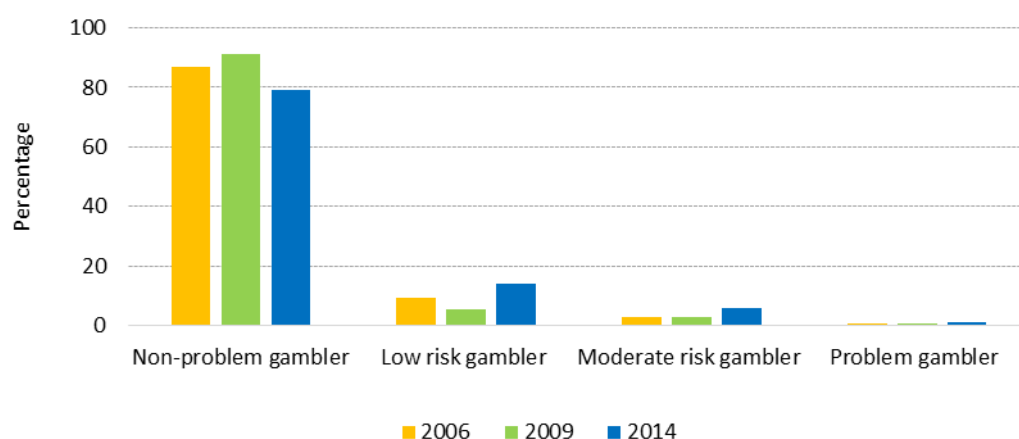
**Table 9: Mothers - Gambling risk level - 2006, 2009 and 2014 (all respondents)**

Gambling risk level	2006		2009		2014	
	n	(%)	N	(%)	n	(%)
Non-gambler	629	(63.6)	458	(55.2)	443	(48.1)
Non-problem gambler	313	(31.6)	338	(40.8)	378	(41.0)
Low-risk gambler	34	(3.4)	20	(2.4)	67	(7.3)
Moderate-risk gambler	10	(1.0)	10	(1.2)	27	(2.9)
Problem gambler	3	(0.3)	3	(0.4)	6	(0.7)

When examined only for mothers who had gambled in the past year, the percentage at some level of risk in 2014 was higher than in 2009 or 2006 (Table 10 and Figure 5). Problem gamblers were 1.3% of the mothers who gambled in 2014, 5.7% of the mothers were moderate risk gamblers and 14.0% were low-risk gamblers. Due to the higher percentage of mothers at some level of risk, the percentage of non-problem gamblers was lower in 2014 (79%) than in 2009 or 2006. *Note that the sample size for moderate-risk and problem gamblers was very small so percentages are indicative only.*

**Table 10: Mothers - Gambling risk level - 2006, 2009 and 2014 (gamblers only)**

Gambling risk level	2006		2009		20 14	
	n	(%)	N	(%)	n	(%)
Non-problem gambler	313	(86.9)	338	(91.1)	378	(79.0)
Low-risk gambler	34	(9.4)	20	(5.4)	67	(14.0)
Moderate-risk gambler	10	(2.8)	10	(2.7)	27	(5.7)
Problem gambler	3	(0.8)	3	(0.8)	6	(1.3)

**Figure 5: Mothers - Gambling risk level - 2006, 2009 and 2014****(b) Transitions between gambling risk levels**

Transitions refer to moving between the different risk levels or staying at the same level of risk over time. Increased risk indicates moving from a lower to a higher risk level over time, whilst decreased risk indicates moving from a higher to a lower risk level. Table 11 shows transitions between the different risk levels over time from 2006 to 2009 and from 2009 to 2014, for mothers who completed the PGSI in each year. *Note that the sample size is very small for some cells, thus results should be considered with caution and should be considered indicative rather than absolute.*

**Stability**

The most stable groups were non-gamblers and non-problem gamblers with more than half of the mothers remaining in those groups from 2006 to 2009, and from 2009 to 2014. One problem gambler in 2009 remained a problem gambler in 2014.

**Transitions to increased risk**

In both periods, about one-third of the mothers commenced gambling with the majority transitioning from non-gambler to non-problem gambler. From 2009 to 2014, a small proportion of mothers (about 5%) commenced gambling and transitioned into low-risk or moderate-risk gambling. No non-gamblers became problem gamblers over this period. A



similar finding had been noted from 2006 to 2009 although in that period, one non-gambler transitioned into problem gambler status.

From 2009 to 2014, nine percent of non-problem mothers transitioned to low-risk gambling and a small percentage increased risk level to moderate-risk or problem gambling. A similar finding had been noted from 2006 to 2009 although a lower percentage transitioned to low-risk gambling.

From 2009 to 2014, a few mothers who were low-risk gamblers became moderate-risk or problem gamblers. This finding was not noted in the previous time period (2006 to 2009). No mothers transitioned from moderate-risk gambling to problem gambling in either period.

### Transitions to decreased risk

In 2014, two of the three problem gamblers in 2009 transitioned to low-risk or moderate-risk gambling. This was different from 2009 when all three problem gamblers in 2006 transitioned to non-problem gambler or stopped gambling.

Apart from one mother who remained at moderate-risk, all moderate-risk gamblers in 2009 transitioned to non-problem gamblers or stopped gambling in 2014. This finding was similar to that noted from 2006 to 2009. Similar transitions to lower risk levels were noted for low-risk gamblers.

About one-third of non-problem gamblers in 2009 stopped gambling in 2014; this finding was similar to that noted between 2006 and 2009.

**Table 11: Mothers - Transitions in gambling risk from 2006 to 2009 and 2009 to 2014**

		Gambling risk level 2009									
		Non-gambler		Non-problem gambler		Low-risk gambler		Moderate-risk gambler		Problem gambler	
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Gambling risk level 2006	Non-gambler	293	(67.8)	125	(28.9)	8	(1.9)	5	(1.2)	1	(0.2)
	Non-problem	67	(30.7)	140	(64.2)	6	(2.8)	3	(1.4)	2	(0.9)
	Low-risk	9	(39.1)	13	(56.5)	1	(4.3)	0	-	0	-
	Moderate-risk	2	(28.6)	3	(42.9)	1	(14.3)	1	(14.3)	0	-
	Problem	1	(33.3)	2	(66.7)	0	-	0	-	0	-
		Gambling risk level 2014									
		Non-gambler		Non-problem gambler		Low-risk gambler		Moderate-risk gambler		Problem gambler	
		n	(%)	n	(%)	n	(%)	n	(%)	n	(%)
Gambling risk level 2009	Non-gambler	240	(63.5)	120	(31.7)	13	(3.4)	5	(1.3)	0	-
	Non-problem	79	(29.6)	152	(56.9)	25	(9.4)	9	(3.4)	2	(0.7)
	Low-risk	4	(22.2)	9	(50.0)	2	(11.1)	2	(11.1)	1	(5.6)
	Moderate-risk	2	(33.3)	3	(50.0)	0	-	1	(16.7)	0	-
	Problem	0	-	0	-	1	(33.3)	1	(33.3)	1	(33.3)

Percentages do not always add up to 100% due to rounding

### Table key

	No change
	Transition to a higher risk level
	Transition to a lower risk level

### (c) Lie-Bet Screen

Mothers' responses to the Lie-Bet screen in 2009 and 2014 are shown in Table 12. The Lie-Bet screen is a lifetime screen (framed as "have you ever..."). In both years, overall, a high majority of mothers who gambled (97% in 2009 and 93% in 2014) reported never lying to people about how much they gambled or never feeling the need to bet more and more money. The percentage of mothers who responded positively to one or both questions was similar from 2009 to 2014.

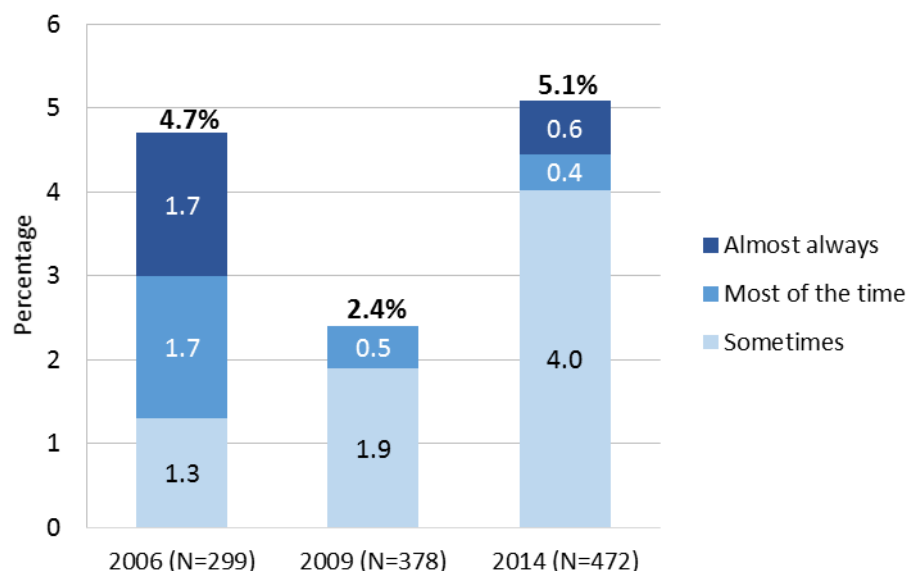
**Table 12: Mothers - Responses to the Lie-Bet screen - 2009 and 2014**

Lie-Bet responses	2009		2014	
	n	(%)	n	(%)
Negative response to both questions	359	97.4	439	92.6
Positive response to one or both questions	20	5.3	35	7.4

### (d) Self-perceptions about gambling problems and gambling control

In 2009 and 2014, mothers were asked "Do you feel that you have *ever* had a problem with gambling?" In 2009, of 379 mothers who responded, only five (1.3%) indicated affirmatively. In 2014, of 473 mothers, this increased to 21 (4.4%).

In 2006, 2009 and 2014, mothers were also asked "Thinking about the past twelve months, how often have you wanted to stop betting money or gambling but didn't think you could?" In all three years, a high majority of mothers (95% or more) responded 'never', indicating that most believed they had control over their gambling behaviour. The total percentage of mothers who reported wanting to stop gambling but did not believe they could was similar in 2006 and 2014 (4.7% and 5.1% respectively), but was slightly reduced in 2009 (2.4%) (Figure 6).



**Figure 6: Mothers - Self-belief about control over gambling - 2006, 2009 and 2014**

### 3.1.4 Assistance with problem gambling and help-seeking behaviour

In 2014, mothers were asked about seeking assistance for their gambling behaviour in the past year. Of 475 respondents, three (0.6%) reported having received assistance. Two mothers reported having received help from a problem gambling treatment service; one of these was classified as a problem gambler who had received help from face-to-face services, the other was a non-problem gambler who had received help from a telephone service. One mother reported informal support (e.g. from a partner, family member or friend); this participant was classified as a non-problem gambler. All three individuals rated the received help as *very helpful* (the highest rating in a 5-point scale).

### 3.1.5 Effects of someone else's gambling

The overall percentage of mothers who experienced problems due to someone else's gambling was 6.9% in 2014. This was higher than in 2006 (2.7%) and 2009 (4.1%).

When examined over time, of 710 mothers who did not experience problems from someone else's gambling in 2009, 46 reported they had experienced problems in 2014. Of 16 mothers who reported problems in 2009, seven were still experiencing problems in 2014. Similarly, 12 mothers reported problems with someone else's gambling in 2009, when they had not in 2006; and of 34 mothers who experienced a problem in 2006, six continued to experience problems in 2009.

As shown in Table 13, in 2014, half (51%) of the mothers who experienced problems because of someone else's gambling were non-problem gamblers and two-fifths (38%) were non-gamblers. A minority were mothers who were low-risk, moderate-risk or problem gamblers. This was similar to the percentages in 2009 but varied somewhat from 2006 when the majority of mothers were non-gamblers (63%) and a quarter were non-problem gamblers (27%).

**Table 13: Mothers - Problems with someone else's gambling by gambling risk level - 2006, 2009 and 2014**

Mothers' gambling risk level	Experienced problems with someone else's gambling					
	2006 (n=41)		2009 (n=21)		2014 (n=63)	
	n	(%)	n	(%)	n	(%)
Non-gambler	26	(63.4)	5	(23.8)	24	(38.1)
Non-problem gambler	11	(26.8)	14	(66.7)	32	(50.8)
Low risk gambler	2	(4.9)	1	(4.8)	4	(6.3)
Moderate risk gambler	1	(2.4)	1	(4.8)	2	(3.2)
Problem gambler	1	(2.4)	0	-	1	(1.6)

When asked to identify their relationship with the other person, in both 2014 and 2009, most mothers indicated an immediate family member (e.g. spouse or partner, parent or sibling). This was followed by other relatives (e.g. uncle, aunt or extended family member), reported by fewer mothers. None of the mothers reported problems due to a child (adult or minor). In 2014, almost one-fifth of mothers (18%) identified a friend as the other person; this finding was not noted in 2009 (Table 14)<sup>10</sup>.

<sup>10</sup> This question was not asked of mothers in 2006.

**Table 14: Mothers - Relationship to the person whose gambling they were affected by - 2009 and 2014**

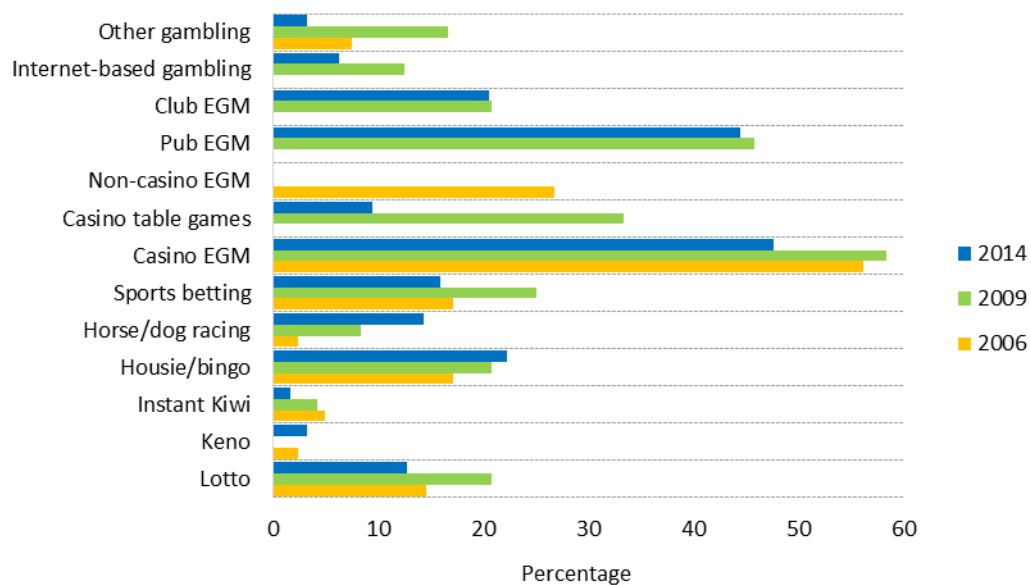
Relationship	2009 (n=24)		2014 (n=63)	
	n	(%)	n	(%)
Spouse or partner	8	(33.3)	13	(20.6)
Parent	6	(25.0)	13	(20.6)
Sibling (brother or sister)	8	(33.3)	10	(15.9)
Adult child	0	-	0	-
Child younger than 18 years	0	-	0	-
Uncle or aunt	4	(16.7)	8	(12.7)
Extended family	1	(4.2)	8	(12.7)
Friend	0	-	11	(17.5)
Work colleague	0	-	1	(1.6)
Other	1	(4.2)	8	(12.7)

In all three years, problems resulting from someone else's gambling were most frequently related to EGMs in a casino (see Table 15 and Figure 7). Pub EGMs were the next most frequently cited in 2014 and 2009<sup>11</sup>. Across the three years, housie/bingo and club EGM (not measured in 2006) gambling were consistently reported, by about one-fifth of mothers, to be the main gambling activity of the other person. Generally, other gambling activities were less reported. *However, due to small sample sizes, particularly in 2009, these findings should be considered indicative only.*

**Table 15: Mothers affected by someone else's gambling by gambling activity - 2006, 2009 and 2014**

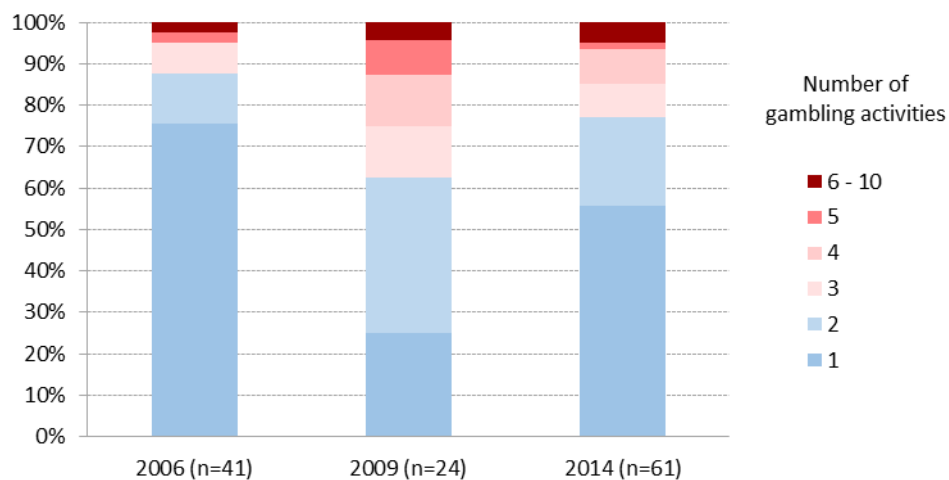
Gambling activity of other person	2006 (n=41)		2009 (n=24)		2014 (n=63)	
	n	(%)	n	(%)	n	(%)
Lotto	6	(14.6)	5	(20.8)	8	(12.7)
Keno	1	(2.4)	0	-	2	(3.2)
Instant Kiwi	2	(4.9)	1	(4.2)	1	(1.6)
Housie/bingo	7	(17.1)	5	(20.8)	14	(22.2)
Horse/dog racing	1	(2.4)	2	(8.3)	9	(14.3)
Sports betting	7	(17.1)	6	(25)	10	(15.9)
Casino EGM	23	(56.1)	14	(58.3)	30	(47.6)
Casino table games	0	-	8	(33.3)	6	(9.5)
Non-casino EGM	11	(26.8)	-	-	-	-
Pub EGM	-	-	11	(45.8)	28	(44.4)
Club EGM	-	-	5	(20.8)	13	(20.6)
Internet-based gambling	0	-	3	(12.5)	4	(6.3)
Other gambling	3	(7.5)	4	(16.7)	2	(3.2)

<sup>11</sup> In 2006 mothers were asked about non-casino EGMs, which included pub and club EGMs.



**Figure 7: Mothers - Percentage affected by someone else's gambling by gambling activity - 2006, 2009 and 2014**

In all three years, in the majority of cases, the individuals affecting mothers engaged in one or two gambling activities (areas shaded blue in Figure 8).



**Figure 8: Number of gambling activities participated in by someone else causing problems for mothers - 2006, 2009 and 2014**

In 2009 and 2014, mothers were asked to indicate the effects on them from someone else's gambling. As detailed in Table 16, in both years, 'sometimes worrying about the gambling' was the most frequently reported, followed by financial effects.

**Table 16: Effects from someone else's gambling experienced by mothers - 2009 and 2014**

	2009 (n=24)		2014 (n=63)	
	n	(%)	n	(%)
I worry about it sometimes	22	(91.7)	44	(69.8)
I am paying for it financially	13	(54.2)	26	(41.3)
I am concerned about my safety	6	(25.0)	9	(14.3)
It is affecting my health	4	(16.7)	6	(9.5)
It is hard to talk about	8	(33.3)	5	(7.9)
Other effect	8	(33.3)	11	(17.5)

In 2014, of 61 mothers who responded to the question, a majority (n=52) reported experiencing one or two effects, while nine reported three to five effects. This was similar to findings in 2009 where of 24 mothers, over half (n=15) reported experiencing one or two effects, and nine experienced three to six negative effects.

## 3.2 Mothers - Associations with gambling

This section details associations in 2014 with mothers' past-year gambling participation (section 3.2.1), participation in continuous gambling activities<sup>12</sup> (section 3.2.2), gambling expenditure (section 3.2.3), at-risk gambling (section 3.2.4) and experiencing problems from someone else's gambling (section 3.2.5). Some changes from 2009 have also been included in the analyses. Bivariate associations and multiple logistic regression analyses are presented.

Statistical significance in the *bivariate analysis results* may not necessarily indicate a true association as the findings might be better explained by confounding variables.

In the *multiple logistic regression analyses*, due to the large number of variables included in the models and small sample sizes in some cases, the following convention has been used to interpret statistically significant findings:

- $p > 0.05$  means no evidence of an association (but possible confounding effects with other variables)
- $p < 0.05$  but  $p > 0.01$  is suggestive of an association, but not statistically significant
- $p < 0.01$  but  $p > 0.001$  is statistically significant (i.e. there is some evidence of an association)
- $p < 0.001$  is highly statistically significant (strong evidence).

### 3.2.1 Associations with gambling participation

#### Bivariate associations

Table 30 in Appendix 4 details bivariate associations with mothers' past-year gambling participation in 2014, and with selected socio-demographic and behaviour changes from 2009 to 2014. Several associations were noted for ethnicity, years lived in New Zealand, cultural orientation, perpetrating or being a victim of violence, consuming alcohol or tobacco, and gambling status in 2009.

Mothers who had lived in New Zealand for 31 or more years had higher odds (1.47 times) for gambling than mothers who had lived in New Zealand for 20 or less years. Mothers who were perpetrators of verbal or physical aggression, or who were victims of verbal aggression had higher odds (from 1.69 to 2.00 times) for gambling than mothers who were not perpetrators or victims of these forms of violence. Mothers who had gambled in 2009 had 4.35 times higher odds of gambling in 2014 than mothers who were non-gamblers in 2009. This finding was similar to that noted in 2009 (for mothers who had gambled in 2006).

Mothers who drank alcohol or who smoked tobacco had higher odds for gambling (2.59 and 1.92 times respectively) than mothers who did not do these things. Similarly, mothers who increased their alcohol consumption or tobacco smoking from 2009 to 2014 had higher odds for gambling in 2014 (2.17 and 1.78 times respectively) than mothers who did not change their consumption of alcohol or tobacco. The latter finding had also been noted in 2009 for mothers who increased consumption in alcohol or tobacco from 2006.

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<sup>12</sup> Continuous gambling activities are characterised by the opportunity for a continuous, repeated cycle of placing a stake, playing, determination of a win or loss, and the ability to collect and re-use winnings. For mothers, this included all gambling activities measured apart from Lotto and keno.

Tongan mothers had lower odds (0.66 times) for gambling than Samoan mothers. This finding had also been noted in 2006 but not in 2009. Similarly lower odds (0.64 times) were noted for mothers who retained a high Pacific cultural orientation with a low New Zealand cultural orientation, in comparison with mothers who showed the opposite cultural orientation (high New Zealand, low Pacific).

### Multiple logistic regression

Multiple logistic regression analyses showed that being a victim of verbal aggression, alcohol consumption and increased alcohol consumption over time, and gambling in 2009 remained highly statistically significantly associated with gambling in 2014. Additionally, an increase in age was suggestive of an association with gambling in 2014 (Table 17).

Mothers who were victims of verbal aggression had 1.77 times higher odds of gambling than mothers who were not victims. Mothers who drank alcohol in 2014 or who increased their alcohol consumption from 2009 to 2014 had more than twice the odds of gambling in 2014 (2.39 and 2.11 times respectively) than mothers who did not drink alcohol or who did not change their level of alcohol consumption. Mothers who gambled in 2009 had 4.33 times higher odds of gambling in 2014 than mothers who were non-gamblers in 2009. *These findings were highly statistically significant.* The findings for increased alcohol consumption over time and gambling in the previous data collection year had also been noted to be associated with gambling in the 2009 analyses.

Increasing age was *suggestive of an association* with gambling participation ( $p=0.03$ ), that is per one-year increase in age over time, mothers had statistically marginally greater odds for gambling participation.

**Table 17: Mothers - Multiple logistic regression for past-year gambling participation - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Verbal aggression victim</b>			
No	1.00		
Yes	1.77	(1.33, 2.35)	<0.001
<b>Alcohol consumption</b>			
No	1.00		
Yes	2.39	(1.74, 3.28)	<0.001
<b>Change to alcohol consumption 2009 to 2014</b>			
Unchanged	1.00		
Increased	2.11	(1.35, 3.28)	<0.001
Decreased	1.02	(0.63, 1.64)	0.94
<b>Age</b>			
Per one-year increase over time	1.02	(1.00, 1.05)	0.03
<b>Gambling status in 2009</b>			
Non-gambler	1.00		
Gambler	4.33	(3.15, 5.95)	<0.001



### 3.2.2 Associations with continuous forms of gambling

#### Bivariate associations

Table 31 in Appendix 4 details bivariate associations with mothers' past-year gambling on continuous activities in 2014, and with some socio-demographic and behaviour changes from 2009 to 2014. Several associations were noted for deprivation level, perpetrating or being a victim of verbal aggression, and smoking tobacco.

Mothers who experienced one, or three or more individual deprivation level characteristics had higher odds (2.23 times and 3.51 times respectively) for gambling on continuous activities in than mothers who had not experienced any deprivation. Mothers who were perpetrators or victims of verbal aggression had higher odds (1.61 and 1.50 times respectively) for gambling on continuous activities than mothers who were not perpetrators or victims of verbal aggression.

Mothers who smoked tobacco had higher odds for gambling on continuous activities (1.58 times) than mothers who did not smoke. This finding had also been noted in 2009.

#### Multiple logistic regression

Multiple logistic regression analyses showed that being a perpetrator of verbal aggression and increasing levels of individual deprivation remained highly statistically significantly associated with gambling on continuous activities in 2014. Marital status and tobacco smoking were suggestive of an association with gambling on continuous activities in 2014 (Table 18).

Mothers who were perpetrators of verbal aggression had 2.34 times higher odds of gambling on continuous activities than mothers who were not perpetrators. Mothers with increasing levels of deprivation had 1.24 times higher odds, per one-point increase in deprivation over time, for gambling on continuous activities. Deprivation had also been shown to be associated with continuous gambling activities in 2009. *These findings were highly statistically significant.*

Smoking tobacco was *suggestive of an association* with gambling on continuous activities ( $p=0.04$ ) than not smoking. Being partnered was *suggestive of an association* with less likelihood for gambling on continuous activities ( $p=0.02$ ) than being single.

**Table 18: Mothers - Multiple logistic regression for participation in continuous forms of gambling - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Marital status</b>			
Non-partnered	1.00		
Partnered	0.53	(0.30, 0.92)	0.02
<b>Verbal aggression perpetrator</b>			
No	1.00		
Yes	2.34	(1.46, 3.74)	<0.001
<b>Tobacco smoking</b>			
No	1.00		
Yes	1.51	(1.02, 2.25)	0.04
<b>Deprivation level (NZiDep)</b>			
Per one-point increase over time	1.24	(1.11, 1.38)	<0.001

### 3.2.3 Associations with gambling expenditure

#### Bivariate associations

Table 32 in Appendix 4 details bivariate associations with mothers' gambling expenditure of \$40 or more per month (the upper quartile of expenditure) in 2014, and with some socio-demographic and behaviour changes from 2009 to 2014. Several associations were noted for perpetrating or being a victim of verbal aggression, alcohol and tobacco consumption, and gambling in 2009.

Mothers who were perpetrators or victims of verbal aggression had higher odds (1.81 and 1.52 times respectively) for gambling expenditure in the upper quartile than mothers who were not perpetrators or victims of verbal aggression.

Mothers who drank alcohol or who smoked tobacco had higher odds for gambling expenditure of \$40 or more per month (1.93 and 1.76 times respectively) than mothers who did not drink alcohol or smoke.

Gambling in 2009 was also associated with higher odds for spending \$40 or more per month gambling compared with not gambling in 2009.

#### Multiple logistic regression

Multiple logistic regression analyses showed that gambling in 2009 remained highly statistically significantly associated with spending \$40 or more per month gambling in 2014. Being a perpetrator of verbal aggression and consuming alcohol also both remained significantly associated with gambling expenditure in the upper quartile in 2014. Additionally, increasing alcohol consumption from 2009 to 2014 was significantly associated with monthly gambling expenditure of \$40 or more; this finding just failed to achieve a level of statistical significance in the bivariate analyses ( $p=0.08$ ). Having traditional gift giving commitments or smoking tobacco were suggestive of an association with gambling expenditure in the upper quartile in 2014 (Table 19).

Mothers who gambled in 2009 had 2.85 higher odds of higher monthly gambling expenditure (\$40 or more) than mothers who did not gamble in 2009. *This finding was highly statistically significant.*

Mothers who were perpetrators of verbal aggression had 1.86 times higher odds of higher gambling expenditure than mothers who were not perpetrators. *This finding was statistically significant.*

Mothers who drank alcohol in 2014 or who increased their alcohol consumption from 2009 to 2014 had about twice the odds of higher gambling expenditure in 2014 (1.84 and 2.04 times respectively) than mothers who did not drink alcohol or who did not change their level of alcohol consumption. *This finding was statistically significant.*

Having traditional gift giving commitments and smoking tobacco were both *suggestive of an association* with higher monthly gambling expenditure in 2014 (both  $p=0.04$ ) compared with mothers who did not do these things.

**Table 19: Mothers - Multiple logistic regression for spending more than \$40 per month gambling - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Traditional gift giving commitments</b>			
No	1.00		
Yes	1.64	(1.02, 2.62)	0.04
<b>Verbal aggression perpetrator</b>			
No	1.00		
Yes	1.86	(1.24, 2.81)	0.003
<b>Alcohol consumption</b>			
No	1.00		
Yes	1.84	(1.19, 2.84)	0.006
<b>Change to alcohol consumption 2009 to 2014</b>			
Unchanged	1.00		
Increased	2.04	(1.19, 3.47)	0.009
Decreased	0.91	(0.46, 1.81)	0.79
<b>Tobacco smoking</b>			
No	1.00		
Yes	1.58	(1.03, 2.44)	0.04
<b>Gambling status in 2009</b>			
Non-gambler	1.00		
Gambler	2.85	(1.73, 4.69)	<0.001

### 3.2.4 Associations with gambling risk levels

#### Bivariate associations

Table 33 in Appendix 4 details bivariate associations with being an at-risk gambler (low-risk gambler, moderate-risk gambler and problem gambler combined) in 2014, and with some socio-demographic and behaviour changes from 2009 to 2014. Associations were noted for cultural orientation and gambling in 2014.

Higher odds (2.15 times) of being an at-risk gambler were noted for mothers who retained a high Pacific cultural orientation with a low New Zealand cultural orientation, in comparison with mothers who showed the opposite cultural orientation (high New Zealand, low Pacific). Similarly higher odds (2.11 times) of being an at-risk gambler in 2014 were noted for mothers who gambled in 2009 compared with mothers who did not gamble at that time.

#### Multiple logistic regression

Multiple logistic regression analyses showed that cultural orientation and gambling in 2009 both remained statistically significantly associated with being an at-risk gambler in 2014 (Table 20).

Mothers who retained a high Pacific cultural orientation with a low alignment to New Zealand culture had 2.17 times higher odds of being an at-risk gambler than mothers who showed the opposite cultural alignment (high New Zealand, low Pacific). *This finding was statistically significant.*

Mothers who gambled in 2009 had 2.12 higher odds of being an at-risk gambler in 2014 than mothers who did not gamble in 2009. *This finding was statistically significant.*

**Table 20: Mothers - Multiple logistic regression for being an at-risk gambler - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Cultural orientation</b>			
High NZ, Low Pacific	1.00		
Low NZ, High Pacific	2.17	(1.26, 3.74)	0.006
High NZ, High Pacific	1.50	(0.69, 3.23)	0.30
Low NZ, Low Pacific	0.79	(0.38, 1.64)	0.52
<b>Gambling status in 2009</b>			
Non-gambler	1.00		
Gambler	2.12	(1.19, 3.76)	0.01

### 3.2.5 Associations with experiencing problems with someone else's gambling

#### Bivariate associations

Table 34 in Appendix 4 details bivariate associations with experiencing problems due to someone else's gambling in 2014. Several associations were noted for age, cultural orientation, perpetrating or being a victim of violence, and alcohol and tobacco consumption. *However, due to small sample sizes these findings should all be considered cautiously.*

Mothers who were perpetrators or victims of physical violence or who were perpetrators of verbal aggression had higher odds (2.90, 3.74 and 1.73 times respectively) for experiencing problems with someone else's gambling compared with non-victim and non-perpetrator mothers.

Mothers who drank alcohol or who smoked tobacco had about twice the odds for experiencing problems from someone else's gambling (1.80 and 2.14 times respectively) than mothers who did not drink alcohol or smoke.

Mothers who were aged 50 years or older had lower odds (0.34 times) of experiencing problems with someone else's gambling, than mothers aged 39 years or younger. Lower odds (0.65 times) were also noted for the middle age group of 40 to 49 years, indicating a trend, although the confidence intervals spanned 1.

Mothers who retained a high Pacific cultural orientation with a low New Zealand cultural orientation also had lower odds (0.37 times) of experiencing problems with someone else's gambling than mothers who showed a high New Zealand/low Pacific orientation. However, the sample size was very small, and the association was not maintained in the multiple logistic regression analyses so this finding it is likely to be explained by other confounding factors.

#### Multiple logistic regression

Multiple logistic regression analyses showed that increasing age and being a victim of physical violence both remained statistically significantly associated with experiencing problems with

someone else's gambling in 2014. Additionally, smoking tobacco was suggestive of an association with experiencing problems with someone else's gambling in 2014 (Table 21).

Mothers who were victims of physical violence had 3.23 times higher odds for experiencing problems with someone else's gambling than mothers who did not experience physical violence. *This finding was statistically significant.*

Increasing age was associated with lower odds (0.94 times per one-year increase) of experiencing problems with someone else's gambling in 2014. *This finding was statistically significant.*

Smoking tobacco was *suggestive of an association* for experiencing problems with someone else's gambling (p=0.05) compared with mothers who did not smoke.

**Table 21: Mothers - Multiple logistic regression for experiencing problems with someone else's gambling - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Victim of physical violence</b>			
No	1.00		
Yes	3.23	(1.51, 6.88)	0.003
<b>Tobacco smoking</b>			
No	1.00		
Yes	1.72	(1.00, 2.93)	0.05
<b>Age</b>			
Per one-year increase over time	0.94	(0.90, 0.98)	0.006

### 3.3 Youth - Descriptive statistics

This section details data for youth in 2014 for selected socio-demographic and health characteristics (section 3.3.1), gambling participation and expenditure (section 3.3.2), and problem gambling (section 3.3.3). Findings from 2009 are presented for comparative purposes, where possible.

#### 3.3.1 Selected socio-demographic and health characteristics

##### (a) Socio-demographics and general health

Gender, ethnicity, individual deprivation level and general health in 2014 compared with 2009 are summarised in Table 22.

The proportion of youth in each category generally remained similar from 2009 to 2014. There was an equal distribution of boys and girls. In 2014, Samoans comprised the largest group (41%), followed by Tongans (23%) and Cook Islands Māori (12%). The majority (94%) of youth were in good, very good or excellent health; about one-third (30%) had no or only one level of deprivation.

**Table 22: Youth - Selected socio-demographic and general health characteristics - 2009 and 2014**

Variable	2009		2014	
	N	(%)	N	(%)
<b>Gender</b>				
Female	490	(49.2)	463	(49.7)
Male	506	(50.8)	468	(50.3)
<b>Ethnicity<sup>#</sup></b>				
Samoan	451	(45.3)	383	(41.1)
Tongan	221	(22.2)	214	(23.0)
Cook Islands Māori	176	(17.7)	114	(12.2)
Niuean	47	(4.7)	38	(4.1)
New Zealand European	-	-	45	(4.8)
Māori	-	-	42	(4.5)
Other Pacific <sup>‡</sup>	101	(10.1)	-	-
Other/Multiple Pacific/Missing	-	-	95	(10.2)
<b>Deprivation level (NZiDep; maternally-reported)</b>				
0 deprivation characteristics	-	-	107	(11.5)
1 deprivation characteristic	-	-	170	(18.3)
2 deprivation characteristics	-	-	210	(22.6)
3 - 4 deprivation characteristics	-	-	284	(30.6)
5 - 8 deprivation characteristics	-	-	156	(16.8)
<b>General health (maternally-reported)</b>				
Poor	17	(1.7)	6	(0.6)
Fair/OK	19	(1.9)	48	(5.2)
Good	155	(15.6)	173	(18.7)
Very good	507	(51.1)	409	(44.3)
Excellent	295	(29.7)	287	(31.1)

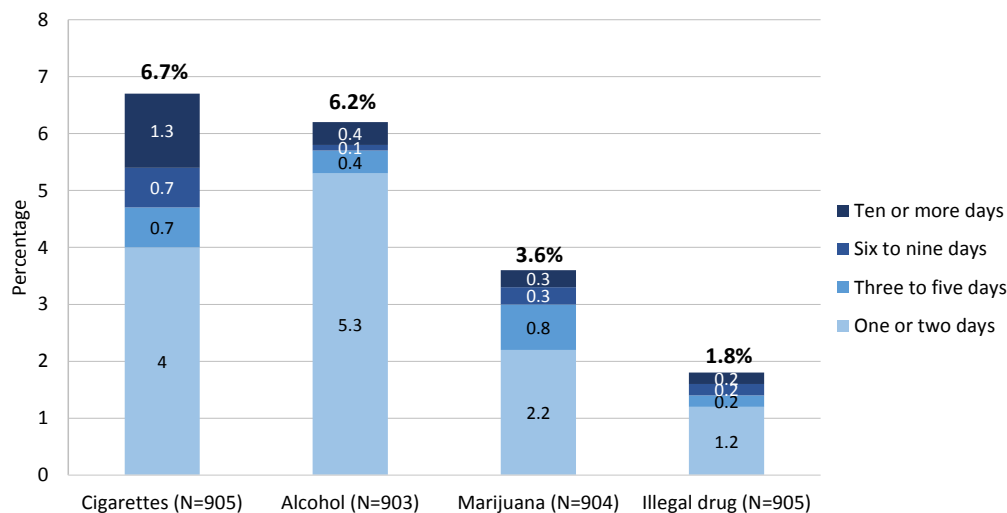
Numbers (and percentages) do not always total N (or 100%) due to missing values.

<sup>#</sup> In 2014, youth self-reported their ethnicity. In 2009, mothers reported their child's ethnicity.

<sup>‡</sup> Includes identifying equally with two or more Pacific groups, equally with Pacific and non-Pacific groups, or with Pacific groups other than Tongan, Samoan, Cook Islands Māori or Niuean.

## (b) Substance use

In 2014, youth were asked about substance use (smoking cigarettes, drinking alcohol, using marijuana and using other illegal drugs) in the past month. A high majority (more than 90%) reported that they had not used any substances in the past month. Small percentages of youth reported that they had smoked cigarettes (6.7%), consumed alcohol (6.2%), used marijuana (3.6%), or used other illegal drugs (1.8%) at various levels of frequency in the past month (Figure 9).



**Figure 9: Youth - Past-month substance use - 2014**

### 3.3.2 Gambling participation and expenditure

#### (a) Gambling participation by gambling activity

In 2014, youth were presented with a list of gambling activities and asked to indicate if they had *ever* participated in these activities for money. Overall, more than half of the 917 youth (54%, n=491) had gambled for money on one or more activities; 300 of these had engaged in continuous gambling activities<sup>13</sup>. This is an increase from 2009, when one-quarter (27%, n=234) of children reported gambling for money.

Betting with friends or family was the most frequently reported gambling activity reported by almost two-fifths (37%) of youth. This was followed by gambling on card games (20%), sports matches (16%), marbles and housie/bingo (both 13%), and board games (12%). Gambling on other activities was reported by less than 10% of youth. Responses are summarised in Table 23.

Among youth who had gambled for money in 2014, there was a slightly higher percentage of boys (53%, n=262) than girls (47%, n=262). Two-thirds (67%) of youth who reported gambling in 2014 had not reported gambling in 2009.

<sup>13</sup> Continuous gambling activities are characterised by providing the opportunity for a continuous, repeated cycle of placing a stake, playing, determination of a win or loss, and the ability to collect and reuse winnings. For youth, this included betting on sports matches, housie/bingo, keno, Instant Kiwi, games on a mobile phone/tablet and internet gambling.

**Table 23: Youth - Gambling for money by activity - 2014 (all respondents)**

Gambling activity	N	Yes	
		n	(%)
Bets with friends or family	893	329	(36.8)
Card game	894	175	(19.6)
Sports match	900	143	(15.9)
Game of marbles	885	113	(12.8)
Housie/bingo	898	115	(12.8)
Board game	885	107	(12.1)
Games on a mobile phone/tablet (e.g. txt games)	895	69	(7.7)
Instant Kiwi (scratchies)	897	57	(6.4)
Dice	901	39	(4.3)
Lotto (including Strike, Powerball, Big Wednesday)	897	31	(3.5)
Internet gambling (e.g. internet casinos or poker)	899	29	(3.2)
Keno	903	18	(2.0)
Any other form of gambling	884	49	(5.5)

When examined only by youth who had ever gambled, betting with friends or family remained the most frequently reported gambling activity reported by two-thirds (69%) of gamblers. This was followed by gambling on card games by one-third of gamblers (37%), sports matches (30%), marbles and housie/bingo (both 24%), and board games (23%). Gambling on other activities was reported by less than 15% of youth (Table 24).

**Table 24: Youth - Gambling for money by activity - 2014 (gamblers only)**

Gambling activity	N	Yes	
		n	(%)
Bets with friends or family	480	329	(68.5)
Card game	477	175	(36.7)
Sports match	482	143	(29.7)
Game of marbles	466	113	(24.2)
Housie/bingo	478	115	(24.1)
Board game	471	107	(22.7)
Games on a mobile phone/tablet (e.g. txt games)	474	69	(14.6)
Instant Kiwi (scratchies)	477	57	(11.9)
Dice	480	39	(8.1)
Lotto (including Strike, Powerball, Big Wednesday)	480	31	(6.5)
Internet gambling (e.g. internet casinos or poker)	479	29	(6.1)
Keno	481	18	(3.7)
Any other form of gambling	463	49	(10.6)

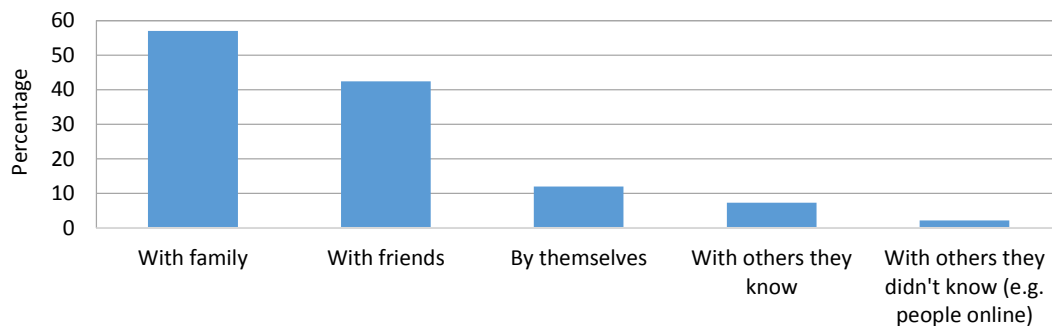
#### **(b) Receiving Instant Kiwi (or scratch) tickets as a gift**

In 2014, overall 7.4% (n=63) of all youth reported that they had ever received an Instant Kiwi or scratch ticket as a present. This contrasts with the 17% (n=146) who reported this finding in 2009 and indicates that many youth were either not responding to the question as a lifetime measure, or had forgotten about past Instant Kiwi gifts.



### (c) Social context of gambling

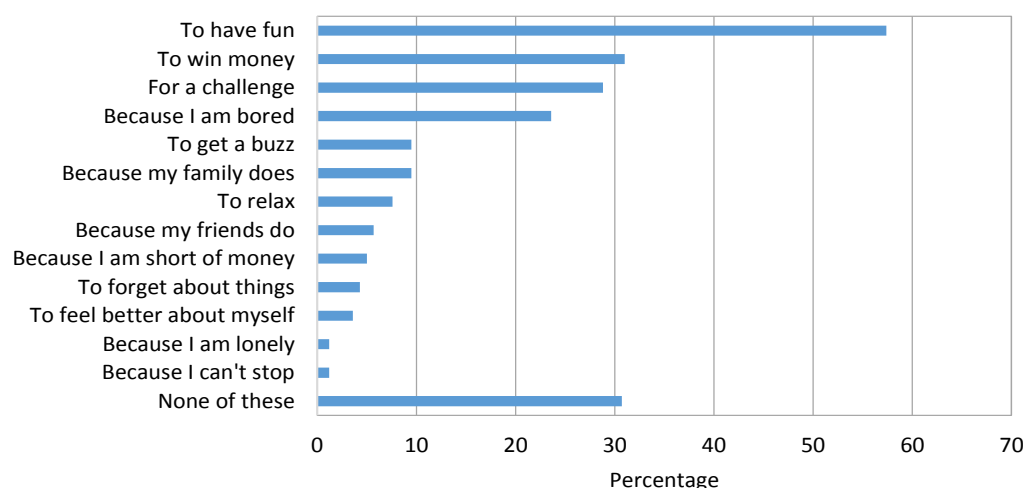
In 2014, youth who reported ever gambling for money were asked to indicate with whom they usually gambled (multiple responses were allowed). Youth reported gambling mostly with family (57%) or with friends (42%). Twelve percent gambled alone, and lower percentages gambled with other people they knew (7%) or with people they did not know (2%) (Figure 10). In 2009, 55% of children reported gambling for money with family and 20% with friends; however, the questions were not asked in the same way so the results are not directly comparable.



**Figure 10: With whom youth gambled - 2014**

### (d) Reasons for gambling

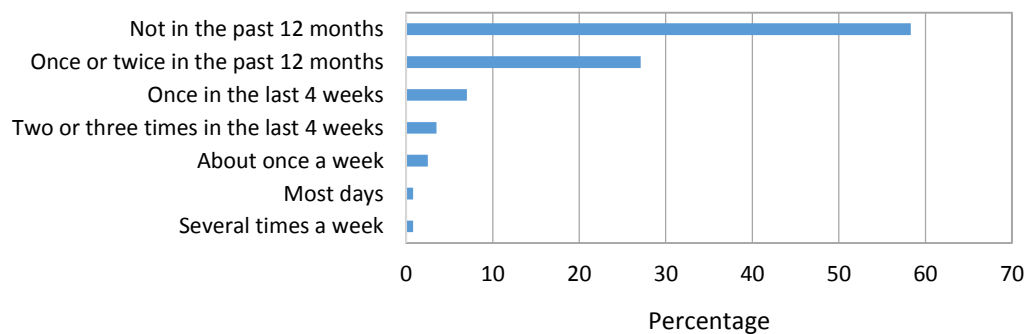
When asked to indicate why they gambled for money, by selecting from a list of thirteen different reasons (multiple responses were allowed), over half of the youth who gambled (57%, n=241) indicated that they did it to have fun; 54% of these respondents were boys. Almost one-third (31%) gambled to win money and slightly more than one-quarter (29%) reported that they gambled for the challenge. Almost one-quarter (24%) reported gambling when bored. 'None of the listed reasons' was reported by 31% of youth. Other reasons for gambling were mentioned by less than 10% of youth (Figure 11).



**Figure 11: Youth - Reasons for gambling - 2014**

### (e) Gambling frequency

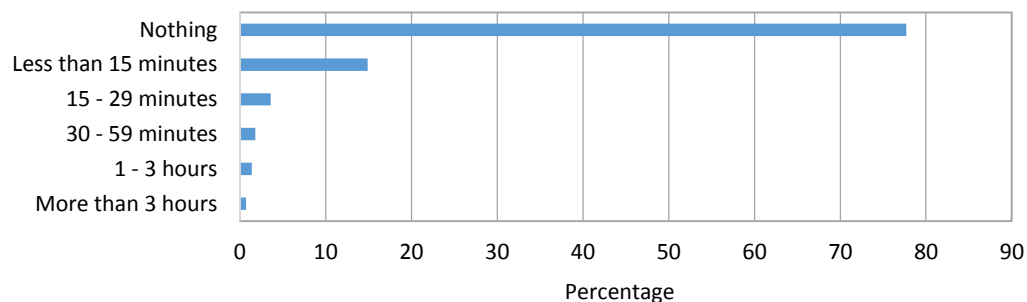
Youth who reported ever gambling for money were asked how often they usually gambled. A majority gambled infrequently, with more than half (58%) reporting not having gambled in the past 12 months and more than one-quarter (27%) reporting having gambled once or twice in the past 12 months. One-tenth (11%) reported gambling once or two to three times in the past month, 3.3% gambled once or several times a week, and 0.8% gambled on most days (Figure 12).



**Figure 12: Youth - Gambling frequency - 2014**

### (f) Time spent gambling

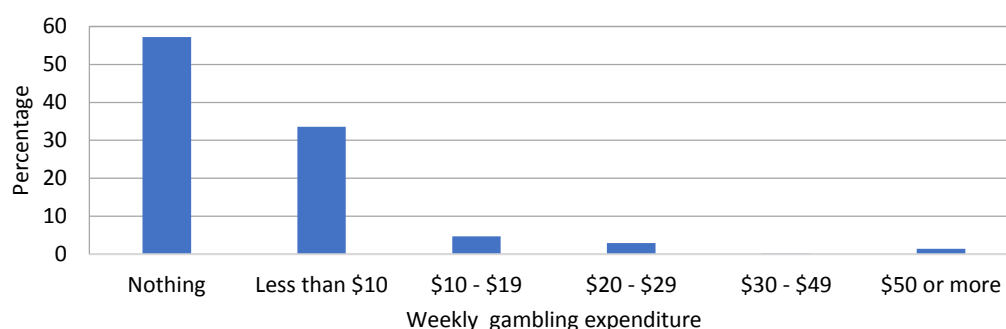
A majority (78%) of youth who had ever gambled for money reported not spending any time gambling each day; 15% reported gambling for less than 15 minutes each day. A small proportion of youth reported gambling for longer periods each day: 15 to 29 minutes (3.6%), 30 to 59 minutes (1.8%), one to three hours (1.4%) and more than three hours (0.7%) (Figure 13).



**Figure 13: Youth - Time spent gambling per day - 2014**

### (g) Gambling expenditure

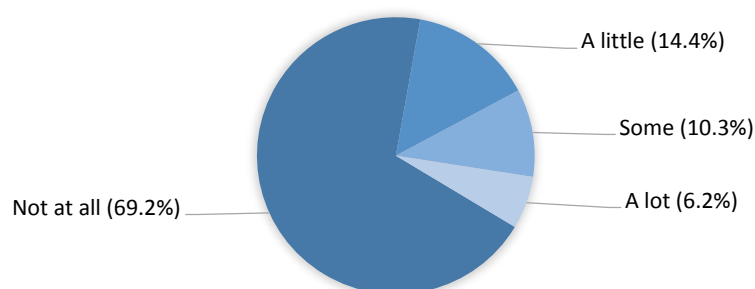
Of the youth who reported ever having gambled for money, more than half (57%) reported usually not spending any money per week gambling. One-third (34%) reported spending less than \$10 each week, and a small percentage (5%) usually spent \$10 to \$19 each week on gambling. In total, 4.5% of youth reported usually spending twenty dollars or more each week gambling (Figure 14).



**Figure 14: Youth - Amount spent gambling each week - 2014**

#### **(h) Worry over gambling and potential help-seeking behaviour**

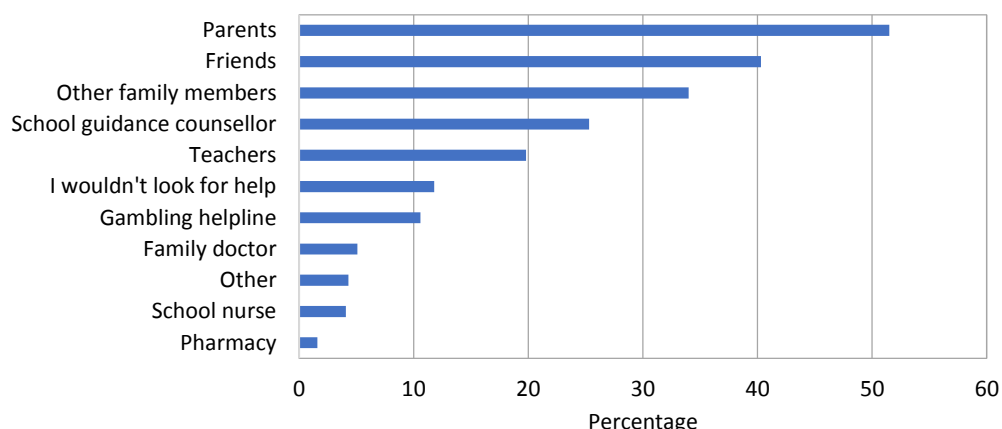
Most of the youth who reported ever having gambled for money (69%) were not worried about how much time or money they spent gambling. About one-third reported some level of worry (14% a little, 10% some, 6% a lot) (Figure 15).



**Figure 15: Youth - Worry over time or money spent on gambling -2014**

Of the 491 youth who reported ever having gambled, 120 (24%) reported that they had attempted to reduce or give up gambling.

From a list of 11 options, youth were asked to indicate from whom they would seek help if they had problems or concerns in relation to their gambling; multiple responses were allowed. As summarised in Figure 16, parents were most frequently cited (52%), followed by friends (40%), other family members (34%) and school guidance counsellors (25%). Other sources of help were each cited by less than a fifth of youth. Fifty-eight youth (12%) indicated that they would not seek help.



**Figure 16: Youth - From whom they would seek help - 2014**

### 3.3.3 Problem gambling

In 2014, the DSM-IV-MR-J screen was used to assess problem gambling for all youth. Of the 931 youth, 24 did not respond to any items in the screen; therefore, analysis was based on 907 respondents. While 632 youth completed the full screen, 275 did not answer one or more questions. As performed by Rossen (2008), based on the possibility that an indicative score may be reached even when all screen questions are not answered, all respondents with missing values were included in the analysis. Fully complete responses to all screen questions may have resulted in higher scores than reported here; therefore, scores for individual screen dimensions and total scores should be considered indicative only.

The cut-score for problem gambler is 4 with scores between 0 and 3 categorised as non-problem gambler (Fisher, 2000). The percentage of youth for each total score is listed in Table 25.

The majority of youth were non-problem gamblers. Eighteen scored as problem gamblers, representing two percent of the total sample and 3.7% of the 491 youths who had ever gambled.

Of the 18 problem gamblers, four were not at all worried about how much time or money they spent gambling, six worried 'a little', four 'sometimes', and two worried 'a lot'. Eight had tried to cut down or give up gambling. All of the 18 youth, however, indicated that they would seek help if they had problems with, or concerns about, their gambling.

**Table 25: Youth - DSM-IV-MR-J screen scores - 2014 (all respondents)**

Total number of positive responses	n	All youth (%)
0	748	(82.5)
1	86	(9.5)
2	47	(5.2)
3	8	(0.9)
4	8	(0.9)
5	5	(0.6)
6	3	(0.3)
7	2	(0.2)
8	0	-
9	0	-

Responses to individual screen items are detailed in Table 26. The most endorsed item related to illegal acts of taking money from various sources, without permission, to use on gambling with 18% of gamblers reporting this. Risking education or relationships was the next most endorsed by 10% of gamblers, followed by lying (7.7%), tolerance (5.7%) and withdrawal (5.3%). Preoccupation with gambling was the least endorsed by 0.9% of gamblers.

**Table 26: Youth - Responses to individual DSM-IV-MR-J screen dimensions - 2014 (gamblers only)**

Dimension	In the past year...	Youth gamblers			
		Negative		Positive	
		n	(%)	n	(%)
<b>Preoccupation</b>	...how often have you found yourself thinking about gambling or planning to gamble?	444	(99.1)	4	(0.9)
<b>Tolerance</b>	...have you needed to gamble with more and more money to get the amount of excitement you want?	381	(94.3)	23	(5.7)
<b>Loss of control</b>	...have you ever spent much more than you planned to on gambling?	426	(98.8)	5	(1.2)
<b>Withdrawal</b>	...have you felt bad or fed up when trying to cut down or stop gambling?	358	(94.7)	20	(5.3)
<b>Escape</b>	...how often have you gambled to help you escape from problems or when you are feeling bad?	390	(97.0)	12	(3.0)
<b>Chasing</b>	...after losing money gambling, have you returned another day to try and win back money you lost?	385	(95.5)	18	(4.5)
<b>Lying</b>	...has your gambling ever led to lies to your family?	373	(92.3)	31	(7.7)
<b>Illegal acts</b>	...have you ever taken money from the following without permission to spend on gambling: school dinner money or fare money?	367	(81.7)	82	(18.3)
	...have you ever taken money from the following without permission to spend on gambling: money from your family?				
	...have you ever taken money from the following without permission to spend on gambling: money from outside the family?				
<b>Risking education or relationship</b>	...has your gambling ever led to arguments with family/friends or others?	398	(89.6)	46	(10.4)
	...has your gambling ever led to missing school?				

### 3.4 Youth - Associations with gambling

This section details associations in 2014 with youth gambling participation (ever gambled) (section 3.4.1), participation in continuous forms<sup>14</sup> of gambling (section 3.4.2), and gambling expenditure (section 3.4.3). Bivariate associations and multiple logistic regression analyses are presented. Associations with problem gambling were not possible due to the very small sample size of problem gamblers (n=18).

Note that statistical significance in the *bivariate analysis results* may not necessarily indicate a true association as the findings might be better explained by confounding variables.

In the *multiple logistic regression analyses*, due to the large number of variables included in the models and small sample sizes in some cases, the following convention has been used to interpret statistically significant findings:

- $p > 0.05$  means no evidence of an association (but possible confounding effects with other variables)
- $p < 0.05$  but  $p > 0.01$  is suggestive of an association, but not statistically significant
- $p < 0.01$  but  $p > 0.001$  is statistically significant (i.e. there is some evidence of an association)
- $p < 0.001$  is highly statistically significant (strong evidence).

#### 3.4.1 Associations with gambling participation

##### Bivariate associations

Table 35 in Appendix 5 details bivariate associations in 2014 with youth ever having gambled. Several associations were noted for gender, using the internet, watching television on a typical weekday, playing computer or video games (such as Nintendo or Xbox) on a typical weekday, drinking alcohol, being involved in gangs, bullying (victim and perpetrator), having gambled for money when aged nine years, and mother's gambling.

Boys had higher odds (1.32 times) of ever having gambled for money than girls. Similarly higher odds for ever gambling (1.33 times) were noted for youth who had gambled for money when aged nine years, compared with youth who had not gambled for money at that age.

Youth who regularly (defined as weekly or more often) played online games had 1.61 times higher odds of ever having gambled than those who never played online games. Likewise, youth who played computer or video games for 15 minutes or longer per day also had higher odds (1.96 times) of ever having gambled compared with those who did not play computer/video games. A high level of watching television, videos or DVDs (an hour or more per day) was associated with 1.58 times higher odds for ever having gambled than a low viewing level (30 minutes or less per day).

Youth who had consumed alcohol in the past month had more than twice the odds (2.15 times) of ever having gambled than those who had not consumed alcohol. Youth who were involved

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<sup>14</sup> Continuous gambling activities are characterised by providing the opportunity for a continuous, repeated cycle of placing a stake, playing, determination of a win or loss, and the ability to collect and reuse winnings. For youth, this included betting on sports matches, housie/bingo, keno, Instant Kiwi, games on a mobile phone/tablet and internet gambling.

in gangs<sup>15</sup> (defined as any street club that carries a name, wears particular colours etc) had 2.35 times higher odds of ever having gambled than those who were not involved in gangs.

Being bullied and being a bully at school were both associated with more than twice the odds (2.23 and 2.19 times respectively) of ever having gambled than not being involved in bullying behaviours at school.

Youth who had mothers who gambled in a non-problematic manner had 1.41 times higher odds for ever having gambled than youth whose mothers did not gamble.

Although a level of statistical significance was just attained ( $p=0.05$ ) for youth who spent some spare time online versus those who did not, the confidence intervals overlapped 1 and this finding is likely to be due to confounding factors.

### Multiple logistic regression

Multiple logistic regression analyses showed that playing computer or video games, being involved in gangs, and being bullied at school remained highly statistically significantly associated with ever having gambled. Watching television, videos and DVDs, and having a mother who gambled also remained significantly associated with ever having gambled. Additionally, cell phone use and good health were suggestive of an association with ever having gambled (Table 27).

Youth who played computer or video games for 15 minutes or longer each day had 1.68 times higher odds for ever having gambled compared with those who did not play these games. Similarly, youth with gang involvement or who were bullied at school had slightly more than twice the odds for ever having gambled (2.18 and 2.21 times respectively) than youth who were not involved in gangs or who were not bullied. *These findings were highly statistically significant.*

A high level of watching television, videos or DVDs (an hour or more per day) was associated with 1.54 times higher odds for youth ever having gambled than a low viewing level (30 minutes or less per day). Youth who had mothers who gambled in a non-problematic manner had 1.45 times higher odds for ever having gambled than youth whose mothers did not gamble. *These findings were statistically significant.*

Having very good health, compared to excellent health was *suggestive of an association* with ever having gambled ( $p=0.02$ ). This finding was also noted in the bivariate analysis, although a level of statistical significance had not been achieved. Using a cell phone compared with not using one ( $p=0.04$ ) was *suggestive of an association* with a lower likelihood (0.72 times) of ever having gambled; this finding was not noted in the bivariate analyses.

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<sup>15</sup> Wore gang colours, used gang signs, and/or done things to represent a gang such as spray painting gang signs or getting into fights.

**Table 27: Youth - Multiple logistic regression for ever having gambled - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>General health (maternally reported)</b>			
Excellent	1.00		
Very good	1.47	(1.06, 2.03)	0.02
Poor to good	1.09	(0.75, 1.58)	0.67
<b>Maternal gambling risk level</b>			
Non-gambler	1.00		
Non-problem gambler	1.45	(1.08, 1.94)	0.01
Low-risk / moderate-risk / problem gambler	1.33	(0.83, 2.13)	0.24
<b>Cell phone use</b>			
No	1.00		
Yes	0.72	(0.54, 0.98)	0.04
<b>Television / video / DVD watching</b>			
Low-level (half hour or less per day)	1.00		
High-level (an hour or more per day)	1.54	(1.10, 2.16)	0.01
<b>Playing computer or video games</b>			
No	1.00		
Yes (15 minutes or longer per day)	1.68	(1.25, 2.25)	<0.001
<b>Involvement with gangs</b>			
No	1.00		
Yes	2.18	(1.47, 3.23)	<0.001
<b>Victim of bullying at school</b>			
No	1.00		
Yes	2.21	(1.61, 3.02)	<0.001

### 3.4.2 Associations with continuous forms of gambling

#### Bivariate associations

Table 36 in Appendix 5 details bivariate associations in 2014 with youth ever having gambled on continuous forms<sup>16</sup>. Several associations were noted for ethnicity, substance use, and being involved in gangs.

Youth who had consumed alcohol or who had used an illegal drug (marijuana or other drug) in the past month had higher odds (4.28 and 6.74 times respectively) of ever having gambled on continuous forms than youth who had not used these substances. *However, the confidence intervals were wide due to very small sample sizes, so these findings should be considered indicative rather than absolute.*

Youth who were involved in gangs had 1.91 times higher odds of ever having gambled on continuous forms than those who were not involved in gangs.

<sup>16</sup> Continuous gambling activities are characterised by providing the opportunity for a continuous, repeated cycle of placing a stake, playing, determination of a win or loss, and the ability to collect and reuse winnings. For youth, this included betting on sports matches, housie/bingo, keno, Instant Kiwi, games on a mobile phone/tablet and internet gambling.



Cook Islands Māori had half the odds (0.50 times) for gambling on continuous forms than Samoans.

### Multiple logistic regression

Multiple logistic regression analyses showed that substance use and ethnicity remained suggestive of an association for youth ever having gambled on continuous forms (Table 28).

Youth who had consumed alcohol or who had used an illegal drug (marijuana or other drug) in the past month had higher odds (3.40 and 7.76 times respectively) of ever having gambled on continuous forms than those who had not used these substances. *These findings were suggestive of an association. However, the confidence intervals were wide due to very small sample sizes, so odds ratio values should be considered indicative rather than absolute.*

Youth of Cook Islands Māori or Tongan descent had lower odds for gambling on continuous forms (0.43 and 0.61 times respectively) than Samoan youth. *The finding for Cook Islands Māori was significantly associated; however, the finding for Tongans was only suggestive of an association.*

**Table 28: Youth - Multiple logistic regression for participation in continuous forms of gambling - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Ethnicity</b>			
Samoan	1.00		
Cook Islands Māori	0.43	(0.23, 0.79)	0.007
Tongan	0.61	(0.37, 1.00)	0.05
Other	1.27	(0.75, 2.14)	0.38
<b>Alcohol consumption</b>			
No	1.00		
Yes	3.40	(1.19, 9.76)	0.02
<b>Drug use</b>			
No	1.00		
Yes	7.76	(1.45, 41.40)	0.02

### 3.4.3 Associations with gambling expenditure

#### Bivariate associations

Table 37 in Appendix 5 details bivariate associations in 2014 for usually spending money on gambling each week. Several associations were noted for playing online games, playing computer or video games, substance use, being involved in gangs, being bullied, having poor parental supervision, and mother's gambling.

Youth who regularly (weekly or more often) played online games had 1.88 times higher odds of usually spending money on gambling each week than those who never played online games. Similarly, youth who played computer or video games for 15 minutes or longer each day also had higher odds (1.71 times) of usually spending money on gambling, compared with those who did not play computer/video games.

Youth who had smoked cigarettes, consumed alcohol or used illegal drugs in the past month had about three times the odds (2.47, 3.19 and 3.49 times respectively) of having a usual weekly gambling expenditure than those who had not used these substances. Youth who were involved in gangs had 2.80 times higher odds of usually spending money on gambling each week than those who were not involved in gangs.

Being bullied at school was associated with twice the odds of having a usual weekly gambling expenditure compared with youth who were not bullied at school.

Youth who were poorly supervised by their parents had 1.51 times higher odds for having a usual weekly gambling expenditure than those who were not poorly supervised. Youth who had mothers who gambled in a risky manner (low-risk, moderate-risk or problem gambling) had 2.27 times higher odds for usually spending money on gambling each week, than youth whose mothers did not gamble.

### Multiple logistic regression

Multiple logistic regression analyses showed that being involved in gangs remained highly statistically significantly associated with having a usual weekly gambling expenditure. Being bullied at school and having a mother who was an at-risk gambler also remained significantly associated with usually spending money on gambling per week (Table 29).

Youth with gang involvement had 2.75 times higher odds for having a usual weekly gambling expenditure than those who were not involved in gangs. *This finding was highly statistically significant.*

Youth who were bullied at school or who had mothers who were at-risk gamblers had higher odds (1.82 and 2.42 times respectively) for usually spending money on gambling in a week than those who were not bullied or whose mothers did not gamble. *These findings were statistically significant.*

**Table 29: Youth - Multiple logistic regression for having a weekly gambling expenditure - 2014**

Variable	Odds ratio	(95% CI)	p-value
<b>Maternal gambling risk level</b>			
Non-gambler	1.00		
Non-problem gambler	1.30	(0.85, 1.98)	0.22
Low-risk/moderate-risk/problem gambler	2.42	(1.23, 4.76)	0.01
<b>Involvement with gangs</b>			
No	1.00		
Yes	2.75	(1.70, 4.44)	<0.001
<b>Victim of bullying at school</b>			
No	1.00		
Yes	1.82	(1.17, 2.83)	0.007



## 4 DISCUSSION AND CONCLUSION

Over the past couple of decades, Pacific people have consistently been at higher-risk of developing problem gambling despite the introduction of harm minimisation approaches and treatment services specifically designed for Pacific people (Abbott, Bellringer, Garrett & Mundy-McPherson, 2014b; Abbott & Volberg, 2000). Thus, the main aims of the present research were to increase understanding of gambling and problem gambling behaviour amongst Pacific people and, in particular, amongst Pacific mothers and youth over time, and to identify possible predictors (risk factors) and protective factors for gambling and problem gambling. A further aim was to investigate associations between youth gambling behaviours and social, familial, environmental and individual factors.

Data were collected from mothers and youth in the longitudinal Pacific Islands Families (PIF) study in 2014 and were compared with data collected in 2009 (mothers and children) and 2006 (mothers only), where possible, so that changes over time could be assessed. Generally, the reported trends over time were cross-sectional population level comparisons, not longitudinal analyses where only participants who took part at each time point would be included in the analyses; this is a limitation of this study. The exception is for analyses of gambling participation over time and gambling risk level over time for mothers, whereby only those who participated at the relevant time points were included in the analyses.

The study participants are not necessarily representative of Pacific youth and females at a national level. Additionally, the data have not been weighted, so all results only reflect the study population and not the New Zealand Pacific population. Nevertheless, the study sample was reasonably similar to the 2013 Census data, which indicated that nationally 49% of Pacific people were Samoan, 21% were Cook Islands Māori and 20% were Tongan (Statistics New Zealand, 2014). In the 2014 study sample, Samoans comprised the largest group of mothers (46%) and youth (41%), followed by Tongans (23% each mothers and youth), and Cook Islands Māori (16% and 12% respectively). The rest of the participants were of Niuean or of another Pacific ethnicity.

### **Gambling participation**

#### ***Mothers***

The proportion of mothers who, in 2014, had participated in at least one gambling activity during the prior year was lower (52%) than the 64% to 75% of Pacific adults (male and female combined) who reported past-year gambling in recent national surveys (Abbott, Bellringer, Garrett & Mundy-McPherson, 2014a; Tu, 2013). The reason for the lower participation is unknown but is unlikely to be related to gender. In the 2012 National Gambling Study, gambling participation data were presented by ethnicity and gender, and similar to the overall participation rate of 75% for Pacific people, it was 71% for females (Abbott et al., 2014a). One reason for a lower participation in gambling activities by PIF mothers could be the presence of adolescents in the household. Responsibilities for looking after child/ren would mean less free time to gamble. Another reason could be due to mothers gaining employment as their children aged, again leaving less free time to gamble; however, information on employment was not collected in this study. Methodological differences between the studies (such as the way the gambling questions were asked), and cohort differences from the general Pacific population (e.g. 62% of the mothers were aged 40 years or older) could also explain the lower gambling participation prevalence.

In 2006, only 36% of mothers had gambled in the prior year. Bellringer et al. (2008) hypothesised that gambling participation would increase as the children aged, and this appears to have been the case with 45% gambling in 2009, and 52% in 2014. It could be that as the children aged, became more independent and had more school activities, the mothers had more available spare time and some chose to start gambling. Alternatively, due to the costs associated with raising adolescents (e.g. school fees, stationery and uniform requirements), some mothers may have gambled to try to win the money they needed. In a qualitative study of Pacific people's motivations to gamble, Urale et al. (2016) identified that some participants thought that gambling was an easy way to make money to counter times of financial hardship that they could allocate to family necessities. The increasing proportion of mothers who gambled may also be related to the length of time living in New Zealand with integration and adaptation to New Zealand culture and activities, such as gambling. Two-thirds of the mothers were not born in New Zealand and, in 2006, about one-half (54%) had lived in New Zealand for 21 or more years; by 2014 this proportion had increased to almost four-fifths (78%). Employment, whilst mentioned in the previous paragraph as potentially being a reason for not gambling, conversely may also be a reason for starting gambling due to availability of more disposable income.

The longitudinal nature of this study has enabled some transitions over time to be explored. Of mothers who were interviewed in both 2009 and 2014, slightly more than half of those who had gambled in 2009 continued to gamble in 2014, about one-third of non-gamblers in 2009 started gambling in 2014, and about one-fifth of gamblers in 2009 stopped gambling in 2014. Very similar proportions transitioning into or out of gambling participation, or remaining gamblers had also been noted from 2006 to 2009. This shows the fluid nature of gambling behaviour and indicates that the cross-sectional prevalence rates over time reflect mothers who start and stop gambling as well as those who remain gamblers. A limitation, however, is that a substantial proportion of mothers (about one-fifth to one-quarter of gamblers and non-gamblers) were not interviewed or did not complete gambling participation questions at consecutive time points.

The most frequently reported past-year gambling activities in 2014 were Lotto, Instant Kiwi/scratch tickets, housie/bingo and casino EGM gambling. The percentages of mothers participating in these activities were generally similar to those noted for Pacific people in the most recent national surveys, apart from Instant Kiwi/scratch tickets where it was about half as low (Abbott et al., 2014a; Tu, 2013). As previously mentioned, the overall prevalence of participation in past-year gambling by PIF mothers in 2014 was lower than Pacific adult participation in national studies. However, as detailed above, for the most frequently reported gambling activities, the prevalence was similar for PIF mothers compared with Pacific adults nationally. This suggests that PIF mothers' participation in other gambling activities was lower than that reported by the general Pacific population. Indeed, this was the case, particularly for the more traditionally male dominated gambling activities such as horse or dog racing (0.4% PIF mothers, 7% to 8% national studies) and sports betting (no PIF mothers, 2% to 6% national studies). However, as previously mentioned, gender did not appear to be the reason why a lower percentage of PIF mothers gambled overall in comparison to Pacific people in the recent national surveys.

Almost two-thirds of mothers reported gambling alone in 2014. Gambling alone has been noted to be a risk factor for transitioning from social or low-risk gambling into moderate-risk/problem gambling (Abbott et al., 2016). However, as the majority of mothers who gambled participated in activities that are not group activities such as buying Lotto tickets or scratch tickets, the high level of mothers who gambled alone is not surprising. Nonetheless, a substantial minority of mothers who gambled participated in higher risk activities such as casino and pub EGM gambling and for those mothers, gambling alone would be likely to increase the risk for developing or maintaining problematic gambling. For this reason, it would be prudent for public health programmes to encourage the importance of the social context, so

that other people can act as safeguards against spending more time and money than desired on gambling.

Qualitative responses provided by mothers explaining their preference for Lotto, Instant Kiwi/scratch tickets, housie/bingo and casino EGMs indicated that some had misconceptions about chances of winning on a particular gambling activity (reported for all four gambling activities) and the potential to become addicted (e.g. gambled on Lotto or Instant Kiwi due to a belief that these activities were not addictive). A few mothers also associated luck with winning, reflecting an underlying illusion of control or biases in evaluation (Joukhador, Blaszczynski, & Maccallum, 2004; Joukhador, Maccallum, & Blaszczynski, 2003). Several mothers mentioned the large prizes on offer and the hope to win as a reason for preferring a particular gambling activity. Some of these mothers hoped a gambling win would allow them to meet financial commitments. This has the potential to lead to problematic behaviour if loss-chasing takes place or more than discretionary money is gambled in repeated attempts to win a jackpot.

Although the percentage of mothers who participated in gambling activities increased over time, the frequency of gambling decreased. For the most popular gambling activities in 2014 a greater proportion of mothers gambled monthly or less often, than in 2009. Conversely, therefore, a higher percentage of mothers in 2009 gambled weekly than in 2014. Very few mothers reported gambling daily or almost daily, with keno (n=1) and casino EGMs (n=1) being the only activities reported at this frequency. This finding was not unexpected as it is similar to that reported by Abbott et al. (2014a) in the 2012 National Gambling Study where weekly and past-year participation decreased from 2005 to 2012 for the more popular gambling activities. Decreased frequency of gambling participation over recent years appears, therefore, to be a national trend and this was mirrored amongst mothers in the PIF study.

## ***Youth***

The percentage of Pacific youth who reported ever having gambled for money increased with increasing age, with more than half (54%) gambling for money when aged 14 years compared with 27% when aged nine years. Two-thirds (67%) of youth who reported ever having gambled at age 14 had not reported gambling at age nine. This might indicate that some of the youth did not, in fact, give lifetime (ever) responses but had responded in a more recent timeframe. Alternatively, it could mean that when aged nine years, some of the children were not entirely accurate when recollecting whether or not they had gambled for money. Eighteen percent of youths reported that they had gambled in the past 12 months. This is slightly lower than the 26% participation rate reported for Pacific students in the Youth'12 survey (Rossen et al., 2013). However, this discrepancy may have occurred because in the present study, the youth were all 14 years old and New Zealand born, whereas in the Youth'12 survey they were aged 13 to 17 years and included New Zealand born as well as those born overseas.

When frequency of gambling was examined it was evident that the majority of youth who had ever gambled did not regularly participate in gambling activities. Slightly more than half had not gambled in the past 12 months, about one-quarter had gambled once or twice in the past 12 months, and only 15% gambled relatively regularly (once a month or more often). The proportion regularly gambling for money was higher than the proportion who reported substance use in the past month; 6.7% reported smoking cigarettes, 6.2% consumed alcohol, 3.6% used marijuana and 1.8% used other illegal drugs. The percentages reporting substance use were lower than those reported in the 2012 Youth Insights Study, which monitored substance use in 14 to 15 year old youths. Amongst the 400 Pacific youths in that study, 13% had smoked in the past month and 22% had consumed alcohol in a risky manner in the past month (White & Newcombe, 2014). Nevertheless, the present findings indicate that a

minority of the youth were taking part in risky behaviours such as using various substances, both legal and illegal, and gambling for money.

It was expected that a higher proportion of youth would have participated in gambling for money when aged 14 years compared to five years prior when they were only children aged nine years. First, they were more likely to have spending money (pocket money or earnings from jobs such as baby-sitting or paper rounds). Second, it is well-reported that taking risks increases from childhood to adolescence (see e.g. Igra & Irwin, 1996; Steinberg, 2008) and this includes behaviours such as gambling and substance use (see e.g. Doremus-Fitzwater, Varlinskaya, & Spear, 2010; Griffiths & Wood, 2000; Gupta, Derevensky & Ellenbogen, 2006). The top four reasons for gambling were to have fun, the prospect of winning money, for a challenge and to relieve boredom. These were also the top four reasons cited by youth in both the Youth'07 and Youth'12 surveys (Rossen et al., 2013).

In 2014, the most frequently cited gambling activity was bets with friends or family. Making bets with friends or family is likely to be the way many youth learn about gambling; the Youth'12 survey also reported this activity as the most common (Rossen et al., 2013). Similarly, the other common gambling activities participated in by youth are all socially oriented in that they have to be, or are more likely to be, participated in by more than one person. When asked to indicate with whom they usually gambled when gambling for money, more than half reported gambling mostly with family and two-fifths mostly with friends. Gambling activities that are more likely to be solitary activities (e.g. text games, Lotto, scratch cards, internet gambling) were each participated in by less than 10% of the youth; 12% reported that they mostly gambled alone. As gambling alone, in adults, is a risk factor for problematic gambling, it is re-assuring to know that most of the youth in the present study were gambling with other people, albeit a substantial minority were already gambling alone.

In 2014, seven percent of youth reported that they had ever received an Instant Kiwi or other scratch ticket as a present. This was lower than the 17% of children who reported this in 2006. Again, this indicates that at least some of the youth were not answering the question in a lifetime format but in some other finite time frame, or they had forgotten about previous scratch ticket gifts they had received (i.e. they had recall bias). As this form of gambling is high risk due to its potentially continuous nature, there is a legal age restriction of 18 years and it is an offence to purchase an instant ticket for a person younger than the age restriction (Gambling Act 2003, Section 301). Although the lifetime nature of the question in the present study makes it difficult to know how recently the youth received scratch tickets as gifts, due to the likelihood that the participants answered the question in a time frame shorter than lifetime, it can probably be assumed that at least some of the youth had received a scratch ticket subsequent to age nine years when they last took part in the study. That being the case, it is clear that more education and harm minimisation public health work is required so that adults realise the potential harms when buying seemingly 'innocuous' gifts, such as scratch tickets, for adolescents.

## **Gambling expenditure**

### ***Mothers***

Median monthly gambling expenditure by mothers in 2014 was variable, dependent on the gambling activity. For the four most common activities, it was \$20 (Lotto), \$5 (Instant Kiwi/scratch tickets), \$30 (housie/bingo) and \$50 (casino EGMs). This was very similar to the median expenditure reported for these gambling activities in 2009. Thus, although a greater proportion of mothers was gambling in 2014 compared with 2009, the median level of gambling expenditure over time remained similar. These data are only indicative as reliable gambling

expenditure estimates are extremely difficult to discern from self-reports (Volberg, Gerstein, Christiansen, & Baldridge, 2001). However, they are comparable to the self-reported expenditure data of past-year gamblers from the 2012 National Gambling Study, which showed that mean amount of money spent monthly on those four gambling activities was \$26 (Lotto), \$7 (Instant Kiwi/scratch tickets), \$35 (housie/bingo) and \$52 (casino EGMs) (Abbott et al., 2014a).

### ***Youth***

In 2014, slightly more than half of the youth who had ever gambled reported not having a weekly gambling expenditure, one-third reported spending less than \$10 weekly, and five percent each spent \$10 to \$19 weekly or had a weekly gambling expenditure of \$20 or more. These findings were similar to those reported in the Youth'12 survey; overall among all youth and among Pacific students only, a small proportion (4% in both cases) spent \$20 or more in a typical week on gambling (Rossen et al., 2013). The low level of gambling expenditure mirrors the low frequency of gambling by the youth, as detailed previously.

## **Associations with gambling participation and expenditure**

### ***Mothers***

Multiple logistic regression analyses indicated that gambling in 2009 and being a victim of verbal aggression were both highly statistically significantly associated with past-year gambling (on any activity) in 2014. Drinking alcohol in 2014 or increasing alcohol consumption from 2009 to 2014 was also highly significantly associated with past-year gambling and with gambling \$40 or more per month (the upper quartile of expenditure).

It was not surprising that gambling in 2009 was highly associated with gambling participation and higher gambling expenditure in 2014, as slightly more than half of the gamblers in 2009 continued to be gamblers in 2014, and some transitioned into higher risk levels of gambling (see discussion on transitions later in this chapter).

It was also expected that drinking alcohol or increasing alcohol consumption over time would be associated with gambling behaviour and with a higher monthly gambling expenditure. An association between alcohol and gambling participation had previously been noted from 2006 to 2009 (Bellringer et al., 2012) and in other analyses over time in the PIF study (Bellringer et al., 2013). Additionally, numerous studies both within New Zealand (see e.g. Abbott et al., 2014b; Rossen, 2015) and internationally have shown that alcohol use and abuse co-exist with gambling and problem gambling (see Lorains, Cowlshaw & Thomas, 2011 for a systematic review).

Gambling to escape from pressured family environments has been reported by a few participants in a recent New Zealand study investigating the links between family violence and abuse (which mostly comprised verbal aggression) (Bellringer et al., 2016). Thus for the PIF mothers who were a victim of verbal aggression, gambling could have been a way to escape abusive situations. Walker, Hinch and Weighill (2005) analysed data from 900 Canadian adults who had gambled at a casino in the past 12 months and surmised that some women may gamble at a casino to escape from everyday problems as well as a coping strategy. However, the association could also have been due to various other reasons. A study conducted by Dowling et al. (2014) in Australia concluded that there was substantial comorbidity between problem gambling and family violence (physical violence and verbal abuse); this had also been noted in

the New Zealand study (Bellringer et al., 2016). Dowling et al. (2014) also noted that the co-occurrence of family violence and gambling could have been confounded by substance abuse and mental health issues.

Multiple logistic regression analyses in the present study indicated that perpetrating verbal aggression was statistically significantly associated with gambling on continuous forms in 2014 and with having a higher gambling expenditure per month (\$40 or more). The reasons for this are likely to be similar to the reasons that being a victim of verbal aggression is associated with gambling behaviours, that is to say, there is substantial comorbidity between gambling and family violence/abuse both with being a victim and with being a perpetrator.

Gambling on continuous forms was also highly statistically associated with mothers living in conditions of higher deprivation (per one-point increase in deprivation over time). This association has previously been noted amongst mothers in the PIF study (Bellringer et al., 2012) and has also been reported for at-risk and problem gamblers in recent national prevalence surveys (Abbott et al., 2014b; Rossen, 2015). This association indicates that there is a negative relationship between gambling on continuous activities and standard of living. In New Zealand it has been demonstrated that non-casino EGMs (a continuous form of gambling) are disproportionately located in areas of higher deprivation (Wheeler, Rigby & Huriwai, 2006) and this could be one reason for the statistically significant association. Another reason is that the circumstances of poverty and high deprivation could contribute to gambling behaviours in the misguided belief that gambling could be an easy way to make money. This fallacy has been noted in previous studies with Pacific people in New Zealand (e.g. Bellringer et al., 2013; Urale, Bellringer, Landon & Abbott, 2015) and, as mentioned, EGMs are more likely to be located in the poorer areas, meaning that there is easy access to a continuous form of gambling.

## **Youth**

In 2014, being bullied at school, playing computer or video games for 15 minutes or longer each day, and being involved with gangs were all highly statistically significantly associated with ever having gambled. Being bullied at school and gang involvement were also associated with having a usual weekly gambling expenditure, that is to say, with current regular gambling. Additionally, watching television, videos or DVDs for an hour or more each day and having a mother who gambled in a non-risky way were significantly associated with ever having gambled. Having a mother who gambled in a risky manner was also significantly associated with having a usual weekly gambling expenditure. Compared with Samoan youth, Cook Islands Māori youth were less likely to gamble on continuous activities. This could indicate that some aspect associated with Cook Islands culture is protective in regard to gambling on continuous activities. This is worthy of further attention in future studies.

It is difficult to draw direct conclusions about the associations between the various behaviours detailed in the previous paragraph and the youth ever having gambled, as the behaviour and the gambling may not have occurred within the same, or even a similar time frame, meaning that the behaviour may not actually be associated with *current* gambling behaviour. However, as some of the associations were also noted to exist with having a usual weekly gambling expenditure, this has provided information on risk factors for current gambling. Although the gambling participation questions were in a lifetime format, useful information on potential risk and protective factors has been ascertained, which can be further assessed in the future as the youth grow into late teenage years and early adulthood.

Being bullied at school, which was associated with both current and lifetime gambling participation is somewhat akin to the association between being a victim of verbal aggression



and gambling noted with mothers. As with mothers, gambling could be a means of ‘escape’ from the situation. A recent study of 16 year old school students in Taiwan (N=2,992) found that victims of school bullying were more likely to have lower self-esteem and depression than those who were not bullied (Chang, Lee, Chui, His, Huang & Pan, 2013). In an earlier study, Hampel, Manhal and Hayer (2009) reported that youth (aged 10 to 16 years) who were victims of school bullying showed higher maladaptive coping, and this could be one reason why the youth in the present study had a higher likelihood for regular gambling when that was not usual peer behaviour. This is of concern as numerous studies have shown a link between problem gambling in adulthood and childhood gambling (see e.g. Abbott & Volberg, 2000; Abbott, Volberg, Bellringer & Reith, 2004; Hardoon & Derevensky, 2001).

Gang involvement was associated with both current and lifetime gambling participation. This had also been noted at the age of nine years and, thus, appears to be a robust finding that has remained as the children developed into adolescence. Being involved in a gang meant wearing gang colours, using gang signs, and/or doing things to represent a gang such as spray painting gang signs or getting into fights. Youth gang involvement and the relationship with gambling is not a subject that has received research attention.

In an early experimental study of 104 Canadian children aged nine to 14 years, Gupta and Derevensky (1996) identified that children/adolescents who played video games at a high frequency (at least five days per week and 1.5 hours per session) were significantly more likely to also report gambling once a week or more often. A later study of 2,669 Australian adolescents aged 13 to 17 years found consistent results with Gupta and Derevensky’s earlier work, but the authors concluded that playing video games was unlikely to be a risk factor for developing *problematic* gambling amongst youth as the effect almost disappeared when gender was controlled (Delfabbro, King, Lambos & Pugliese, 2009). Delfabbro et al. postulated several theories for the association between video game playing and gambling including a gender bias towards boys for playing video games, the same intrinsic motivations for gaming and gambling such as to have fun, and the availability and accessibility of both activities as well as the social nature of both. In the present study, current playing of computer or video games was highly significantly associated with ever having gambled, which is consistent with previous research showing an association between the two behaviours, although the frequency of video game playing was not captured in our study. It remains to be seen whether frequent video game playing will be associated with future problem gambling behaviour amongst the PIF youth.

Similarly, a high frequency of watching television, videos or DVDs on a typical weekday (one hour or more) was highly associated with ever having gambled. This association could possibly be due to the television aspect as Lotto advertising is common in New Zealand as well as the televised Lotto draw twice a week. Although participation in Lotto was low (3.5%), the television attention might have influenced the normalisation of gambling amongst the youth. As indicated by Delfabbro and Thrupp (2003), children are most likely to be watching television with their parents at the times of the Lotto draws; times when parents could become excited about the outcome of the draws and portray gambling as a sociably acceptable activity.

Mothers’ gambling behaviour was statistically significantly associated with youth gambling. Youth who had a mother who gambled in a non-risky way were more likely to have ever gambled than those whose mothers were non-gamblers. Youth who had a mother who gambled in a risky manner were more likely to be currently gambling (i.e. they usually spent money on gambling each week). This finding suggests that if the mother is a non-problem gambler, their children will ‘try’ gambling (in our study, shown by ‘ever’ having gambled) but if the mother gambles at a higher, more risky, level, their child is more likely to also gamble more frequently (in our study, shown by current gambling). This is an interesting finding as in the earlier assessment of the PIF children, at age nine years, no association between mothers’ gambling

and children's gambling was found (Bellringer, Taylor, Savila, & Abbott, 2014). Bellringer et al. hypothesised that this null effect, despite international evidence reporting associations between parental gambling and child gambling, may have been due to the young age of the children. It appears that this may have been the case given the current findings five years later when the youth were 14 years old.

Cook Islands Māori youth had half the odds for gambling on continuous activities than Samoan youth. The reason for this finding is not immediately apparent and there are currently no reported studies investigating differences in youth gambling behaviour amongst the different Pacific ethnicities. In an investigation of three different studies with Pacific adults in New Zealand, ethnic differences were noted in gambling behaviour; however, the different studies had conflicting findings (Bellringer et al., 2013). Two of those studies reported that Tongan adults were the least likely population to gamble on continuous activities and were more likely to be non-gamblers; the third study found that Cook Islands Māori adults were more likely to gamble on non-casino EGMs (Bellringer et al., 2013). These findings might indicate that it is not ethnicity per se, that leads to higher gambling or problem gambling risk, but some socio-demographic or other factors not controlled for in the multiple logistic regression analyses. If the PIF youth continue to be assessed as they reach the end of adolescence and enter early adulthood, it may be possible to identify ethnic and other socio-cultural factors that are protective or predictive of the development of risky gambling behaviours.

## **Problematic gambling and help-seeking behaviours**

### ***Mothers***

Gambling risk was assessed using the Problem Gambling Severity Index (PGSI), which has been shown in a meta-analysis of two nationally representative New Zealand surveys to be a valid measure in the New Zealand Pacific population (Devlin & Walton, 2012). In 2014, 0.7% of all mothers were problem gamblers, 2.9% were moderate-risk gamblers and a further 7.3% were low-risk gamblers. This was an increase in mothers exhibiting some level of risky gambling behaviour from 2009. Gambling participation also increased in that time from 45% in 2009 to 52% in 2014. The percentage of moderate-risk/problem gamblers combined amongst mothers in 2014 is 3.6%. This is similar to the 4.9% reported for Pacific females in the 2012 National Gambling Study (Abbott et al., 2014b), with a 95% confidence interval in the national study of 2.8% to 8.0%. This finding indicates that the prevalence of moderate-risk/problem gambling amongst the PIF mothers, despite an overall lower gambling participation, remains at the elevated rate noted in national studies and means that PIF mothers have a similar high risk for harms from gambling. This could lead to intergenerational effects on their children; as already mentioned, this is currently noted with youth more likely to be currently gambling if they have a mother who gambles at a risky level.

Longitudinal data from population studies in New Zealand and Australia have shown that gambling risk levels are fluid, with people transitioning to higher or lower risk levels over time, as well as staying in the same risk level (Abbott et al., 2015, 2016; Billi, Stone, Marden & Yeung, 2014). These studies also showed that transitions to a higher or lower risk level do not necessarily occur in a linear progression but that people can 'jump' into any risk level including, for example, becoming a problem gambler from being a non-gambler at the prior assessment. Similar findings were noted for mothers in the present study.

In 2014, four percent of the mothers reported that they felt they had ever had a problem with gambling and five percent reported that they had wanted to stop betting money or gambling in the prior year but did not think they could stop. Despite this, less than one percent (n=3) of

mothers reported actually having received assistance for their gambling during the past year; two accessed a problem gambling treatment service and one sought help from informal sources (e.g. partner, family or friend). Of the three participants, only one was a current problem gambler (sought help from a treatment service) with the other two being non-problem gamblers. Thus 16% (1 of 6) of current problem gamblers and no moderate-risk gamblers had sought professional help. However, as gambling risk level was measured in a past 12 month time period, it could be that the other two mothers had been gambling at a problematic level, had sought assistance and had subsequently stopped the problematic behaviour leading to a non-problem gambler score on the PGSI. A mixed methods study investigating the impacts of gambling and problem gambling on Pacific people in New Zealand found that there was limited awareness of the availability of problem gambling treatment services (Bellringer et al., 2013); this could be one reason for the low percentage seeking help in the present study. Other reasons could include shame and stigma or other barriers to accessing services/seeking help, such as wanting to deal with problems within the family (Perese, 2009).

## Youth

In 2014, about a third of the youth who had ever gambled reported some level of worry about the time or money they spent gambling. This is similar to the finding from the Youth'12 survey, which found that Pacific students (36%) were more likely to express worry over their gambling than European students (6%) (Rossen et al., 2013). One-quarter of the PIF study youth reported that they had attempted to reduce or give up gambling. Again, this finding was similar to the 36% of Pacific students in the Youth'12 survey who had attempted to cut down or give up gambling activities (Rossen et al., 2013).

Eighteen youth in 2014 were identified as current (past-year) problem gamblers using the DSM-IV-MR-J screen, representing two percent of the entire sample and 3.7% of youth who had ever gambled. This prevalence is lower than reported in a previous New Zealand study which found that problem gamblers represented 3.8% of the entire sample of students (aged 11 to 17 years) and six percent of students who had gambled in the past year (N=1,171) (Rossen, 2008). Although the same screening instrument was used, the variance in findings could be due to differences in the age range of the youth (14 years vs. 11 to 17 years), ethnicity (Pacific vs. all ethnicities), and timeframe of gambling questions (lifetime vs. past year). One of the reasons for using the DSM-IV-MR-J screen in the present study was evidence of its reliability (Olason, Sigurdardottir, & Smari, 2006). This tool, however, has some limitations including the possibility of misinterpretation of items among adolescents (Pelletier, Ladouceur, Fortin, & Ferland, 2004).

Given the prevalence of problem gambling of 3.7% of youth who had ever gambled, compared with 1.3% of mothers who had gambled (in the past year) being problem gamblers, it is important to ensure that preventative measures are in place to protect youth from remaining problem gamblers in their late adolescence and early adulthood.

When responses to individual items of DSM-IV-MR-J were examined separately, the 'illegal acts' dimension received the largest percentage of positive responses (18% of gamblers) followed by 'risking education/relationship' (10% of gamblers). Thus in the past year a substantial minority of youth had taken money without permission to spend on gambling activities, and/or had arguments with friends and family or missed school because of gambling. These behaviours have the potential to escalate and result in additional problems in later life such as stealing leading to a risk of incarceration, and poor academic achievement resulting in lost potential for further education and future job opportunities.

Four of the 18 problem gamblers reported being unconcerned about their gambling behaviour, whilst eight had attempted to cut down or give up gambling. This suggests that some youth may not be aware of the potential harmful consequences of excessive gambling. Public health initiatives such as youth education could contribute towards enhancing awareness.

Parents were most frequently cited as people youth would go to for help with their gambling-related problems or concerns, followed by friends, other family members and school guidance counsellors. This was very similar to students in the Youth'12 survey who most frequently cited the same sources of help (Rossen et al., 2013). As the question about help-seeking was framed hypothetically, it was not possible to ascertain if the eight problem gamblers who had attempted to cut down or give up gambling had actually sought help, or if their attempts had been self-directed; the outcome of any attempts, therefore, was also not captured. This is a limitation of the study that can be addressed in future study assessments.

### **Associations with problematic gambling**

Only associations for mothers are discussed below. It was not possible to assess associations with youth problem gamblers due to the small number.

Multiple logistic regression analyses indicated that gambling in 2009 and cultural orientation were both statistically significantly associated with mothers being an at-risk gambler (low-risk/moderate-risk/problem gambler) in 2014.

It was expected that gambling in 2009 would be associated with at-risk gambling in 2014, as a substantial proportion of mothers transitioned into risky gambling from 2009 to 2014 and many remained as at-risk gamblers over time (see discussion on transitions earlier in this chapter). A limitation of this study is the small proportion of mothers who were moderate-risk or problem gamblers, meaning that examination of associations with those higher risk levels was not possible. Moderate-risk and problem gamblers experience a greater level of harm than low-risk gamblers and it would be useful to be able to identify specific risk factors for Pacific mothers in those categories.

Retaining a high alignment with Pacific culture whilst having a low alignment with New Zealand culture was also a significant risk factor for mothers being low-risk/moderate-risk/problem gamblers. Historically, Pacific people have experienced little or no commercial gambling opportunities in their home islands so when in an environment with wide availability of gambling opportunities, they are at higher risk for developing gambling problems (Abbott, 2006). This may be compounded by other consequences of migration such as social isolation, being bored and/or under-employed, experiencing financial hardship and wanting to take part in acceptable recreational activities (Clarke, Abbott, DeSouza, & Bellringer, 2007). Migration was previously identified as a reason for Pacific people gambling in a mixed methods study that involved a desktop analysis of three nationally representative data sets for Pacific people and a qualitative interview approach with more than 100 people of Samoan, Tongan and Cook Islands Māori descent (Bellringer et al., 2013).

For some Pacific people, commercial gambling is erroneously thought to be an easy way to gain, or win, money for cultural obligations (Bellringer et al., 2013; Urale et al., 2015), with financial pressure being the mediator (Urale et al., 2015). When the mothers in this study were assessed six weeks after the birth of the cohort child, it was found that those who participated in traditional cultural activities, such as gift-giving obligations, were more likely to gamble, had a higher weekly gambling expenditure and were more likely to be criticised for their gambling (Bellringer, Perese, Abbott, & Williams, 2006); a problem gambling screen was not

used in that assessment. The authors postulated that the mothers who actively participated in gift-giving traditions could be at higher risk for developing future problematic gambling behaviours. A similar association between gift-giving and higher gambling expenditure was noted in 2002 of the PIF study (Perese, Gao, Erick, Macpherson, Cowley-Malcolm, & Sundborn, 2011). Maintaining a high level of traditional customs and culture without counterbalancing them with the realities and requirements for living in a new and predominantly Western culture can be challenging. This may be due to a number of reasons such as valuing the original culture whilst avoiding interaction with the mainstream culture, resisting the mainstream culture to avoid cultural conflict, or being forced to remain separate (segregation) by the mainstream/dominant culture (Berry, 2005). This is consistent with Raylu and Oei's (2004) view that increased gambling and problem gambling behaviours amongst migrant groups in Western countries could be due either to a successful acculturation process (i.e. adapting to the Western culture) or to difficulties in the acculturation process (i.e. not adapting, and keeping the culture of country of origin); the latter appears to be the case for some PIF study mothers. Irrespective of the reasons, it is clear that for this vulnerable proportion of the Pacific population, processes and resources are required to support and enhance greater alignment with New Zealand culture whilst retaining high Pacific culture, in order to increase resilience to acculturative stressors and reduce maladaptive behaviours such as risky gambling. Further research is warranted to examine, contextualise and understand why a proportion of Pacific mothers have difficulties in the acculturation process.

### **Effects of someone else's gambling**

Mothers were asked questions about the effects of someone else's gambling in the past year; youth were not asked similar questions.

In 2014, seven percent of mothers reported experiencing problems with someone else's gambling in the prior 12 months, with 11% of these having also reported problems with someone else's gambling in 2009. In the 2012 National Gambling Study, 35% of Pacific participants reported that they knew people who currently or in the past had a problem with gambling. Of those, 16% indicated that there had been negative effects of the other person's gambling (Abbott et al., 2014b). That 16% is equivalent to six percent of the total Pacific population in the National Gambling Study, which is very similar to the seven percent of Pacific mothers in the present study. Similarly, five percent of the Pacific participants in the 2011/12 New Zealand Health Survey reported being affected by someone else's gambling (Rossen, 2015).

The 'someone else' was generally a close family member (such as spouse or partner, parent or sibling) or a friend and their gambling on casino or pub EGMs was generally the most problematic gambling activity. The main consequences related to worrying about the other person's gambling followed by financial effects. These findings were very similar to those noted in both 2009 and 2006 and to findings from both the 2012 National Gambling Study and the 2011/12 New Zealand Health Survey, although these two national studies were not directly comparable (Abbott et al., 2014b; Rossen, 2015). These findings are expected since the effects of problematic gambling are more likely to be felt by people close to the gambler (family or friends) and as gambling involves money, financial problems are inevitable if someone is having problems controlling their gambling behaviour. A recent small study investigating the links between problem gambling and family violence in a sample of people seeking help for someone else's gambling issues (n=42) found that financial deprivation was the most commonly reported effect of problematic gambling, with 64% of participants affected by someone else's gambling reporting this (Bellringer et al., 2016).

Over time, the proportion of mothers experiencing problems with someone else's gambling, who themselves gambled, increased. In 2014, 62% were gamblers compared with 27% in 2006. The 2009 proportion was similar to 2014 (76%). The reason for this increase is currently unknown but could be partly related to the general increase in gambling participation over time by mothers.

### **Associations with experiencing problems with someone else's gambling**

Only associations for mothers are discussed below. Youth were not asked questions about someone else's gambling.

In the multiple logistic regression analyses, being a victim of physical violence was statistically significantly associated with mothers experiencing problems with someone else's gambling in 2014. This finding suggests that there is a link between problematic gambling and family violence, corroborating a finding recently reported in a study investigating family violence and gambling wherein 11% of 84 people affected by another's gambling reported being a victim of physical violence (Bellringer et al., 2016).

Increasing age of the mothers appeared to be a protective factor in that per one-year increase in age over time, mothers were statistically less likely to experience problems with someone else's gambling. There are many possible explanations for this finding, which could include the gamblers accessing help for their gambling over time, increased mothers' coping skills, or increased support from family and friends if the gambling issues became known over time. However, further longitudinal research is required to replicate and understand this finding.

### **Conclusion**

This study has expanded our knowledge of gambling behaviours and risk factors for Pacific youth and their mothers, with the longitudinal nature of the study allowing some exploration of changes over time. It has met the main aims of the research by identifying the extent of gambling and problem gambling amongst Pacific mothers and youths, identified possible risk factors and protective factors, and investigated associations between youth gambling behaviours and social, familial, environmental and individual factors.

In this study, one in twenty-seven youth were screened as problem gamblers and almost one in five youth who had ever gambled reported that they had taken money without permission in the past year to spend on gambling activities. These findings highlight that negative gambling behaviours were occurring in a minority of 14 year old Pacific children, which if not curtailed could lead to legacy harms such as future criminal record or incarceration, and poor academic achievement resulting in reduced opportunity for further education and employment. Youth who were bullied at school or who had gang involvement were more likely to be regular gamblers, than those who were not bullied or not affiliated with gangs. This is an important finding as numerous studies have shown a link between problem gambling in adulthood and childhood gambling. These findings provide impetus for interventions or approaches that will support victims of bullying so that maladaptive behaviours do not develop, minimise the development of bullying behaviour, and to provide supporting environments so that the appeal and consequences of gang involvement and affiliation is reduced. Regular gambling by the youth was also more likely if they had a mother who gambled in a risky manner; this stresses the importance of adult education and public health awareness campaigns to increase public understanding of the potentially negative intergenerational effects of their behaviours. Similarly, more harm minimisation public health work and education is required so that adults

realise the potential harms when buying seemingly ‘innocuous’ gifts, such as scratch tickets, for adolescents.

This study has also shown that gambling behaviour is fluid with mothers starting and stopping gambling over time as well as remaining gamblers. It also showed that risky gambling behaviour over time was fluid with mothers transitioning into higher or lower risk levels or remaining at the same risk level. Almost two-thirds of mothers gambled alone, though as Lotto was the most common gambling activity, this finding is unsurprising. However, gambling alone is associated with transitioning from a non-problem or low-risk gambling state to a moderate-risk or problem gambling state, so this finding is potentially of importance in understanding why Pacific people are the most at-risk ethnic group for developing problematic gambling behaviours. The multiple logistic regression analyses, controlling for confounding factors, showed that the main risk factor for at-risk gambling amongst mothers was low alignment with New Zealand culture whilst retaining high Pacific culture. This suggests that, for this vulnerable proportion of the Pacific population, processes and resources are required to support and enhance greater alignment with New Zealand culture whilst retaining high Pacific culture, in order to increase resilience to acculturative stressors and reduce maladaptive behaviours such as risky gambling. Further research is warranted to understand why a proportion of Pacific mothers have difficulties in the acculturation process, as there could be a multitude of reasons. Seeking assistance from problem gambling treatment services was only undertaken by two mothers despite four percent (n=21) reporting that they felt they had ever had a problem with gambling; 16% of current problem gamblers (1 of 6) sought assistance from a face-to-face problem gambling treatment service. This indicates that despite the availability of Pacific-specific gambling treatment services and awareness-raising efforts, barriers to accessing services are likely to still be present.

Although the present study does not identify causal relationships, some trends over time are apparent and this gives confidence in the validity of the findings. These findings and the identification of risk and protective factors over time could be useful to inform the development and implementation of policies and practices to minimise the risk for Pacific people and reduce the development of harmful gambling behaviours.



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## APPENDIX 1: Ethical approval



### Health and Disability Ethics Committees

C/- MEDSAFE, Level 6, Deloitte House  
10 Brandon Street  
PO Box 5013  
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0800 4 ETHICS  
hdec@moh.govt.nz

04 December 2013

Professor Janis  
Paterson HY -  
Akoranga Campus  
Auckland University of Technology  
Private Bag 92006  
Auckland 1142

Dear Professor Paterson

Re:	<b>Ethics ref:</b>	<b>13/STH/159</b>
	Study title:	Pacific Islands Families Study: Transitioning Through Adolescence

I am pleased to advise that this application has been approved by the Southern Health and Disability Ethics Committee. This decision was made through the HDEC-Full Review pathway.

### Conditions of HDEC approval

HDEC approval for this study is subject to the following conditions being met prior to the commencement of the study in New Zealand. It is your responsibility, and that of the study's sponsor, to ensure that these conditions are met. No further review by the Southern Health and Disability Ethics Committee is required.

### Standard conditions:

1. Before the study commences at *any* locality in New Zealand, all relevant regulatory approvals must be obtained.
2. Before the study commences at a *given* locality in New Zealand, it must be authorised by that locality in Online Forms. Locality authorisation confirms that the locality is suitable for the safe and effective conduct of the study, and that local research governance issues have been addressed.

### After HDEC review

Please refer to the *Standard Operating Procedures for Health and Disability Ethics Committees* (available on [www.ethics.health.govt.nz](http://www.ethics.health.govt.nz)) for HDEC requirements relating to amendments and other post-approval processes.


Your next progress report is due by 4 December 2014.

Participant access to ACC

The Southern Health and Disability Ethics Committee is satisfied that your study is not a clinical trial that is to be conducted principally for the benefit of the manufacturer or distributor of the medicine or item being trialled. Participants injured as a result of treatment received as part of your study may therefore be eligible for publicly-funded compensation through the Accident Compensation Corporation (ACC).

Please don't hesitate to contact the HDEC secretariat for further information. We wish you all the best for your study.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Raewyn Idoine', with a horizontal line underneath.

Ms Raewyn Idoine  
Chairperson  
Southern Health and Disability Ethics Committee

## APPENDIX 2: Mother's gambling-related questions

### Gambling activities

1. Could you please tell me which gambling activities you have bet or spent money on in the last 12 months:
  - a. Lotto (including Strike, Powerball and Big Wednesday) (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than monthly / monthly / weekly / daily or almost daily)
  - b. Keno (not in a casino) (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than monthly / monthly / weekly / daily or almost daily)
  - c. Instant Kiwi or other scratch tickets (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
  - d. Housie (bingo) for money (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
  - e. Horse or dog racing (excluding office sweepstakes) (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
  - f. Sports betting at the TAB or with an overseas betting organisation (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
  - g. Gaming machines or pokies at the casino (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
  - h. Table games or any other games at the casino (Yes/No)
    - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
    - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)



- i. Gaming machines or pokies in a pub (not the casino or clubs) (Yes/No)
  - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
  - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
- j. Gaming machines or pokies in a club (not the casino or pubs) (Yes/No)
  - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
  - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
- k. Internet-based gambling (Yes/No)
  - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
  - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)
- l. Other gambling activity. (Yes/No) *Please specify:*
  - If yes, how much do you usually spend in a typical MONTH? (To nearest \$5.00)
  - If yes, how often do you take part in this activity? (Less than 1 hour / 1-2 hours / 3-5 hours / 6-12 hours / more than 12 hours)

If YES to any activities in Q.1, proceed to Q.2. If NO to all activities in Q.1, proceed to Q.10.

2. Thinking about the sorts of activities we have just mentioned, please tell me which is the gambling activity that you most prefer? (Options as in a - l in Q.1)
3. If Yes to one of these activities, can you tell me why that is your most preferred gambling activity?
4. When you participate in the gambling activity that you most prefer, do you usually do so: alone / with your spouse or partner / with other family members / with friends or co-workers / with some other individual or group

#### **Problem Gambling Severity Index (5 a - i)**

5. Please rate how often you exhibit or do the following behaviours (never / sometimes / most of the time / almost always)<sup>17</sup>.
  - a. Thinking about the past 12 months, how often have you bet more than you could really afford to lose?
  - b. Thinking about the past 12 months, how often have you needed to gamble with larger amounts of money to get the same feeling of excitement?
  - c. Thinking about the past 12 months, how often have you gone back another day to try to win back the money you lost?
  - d. Thinking about the past 12 months, how often have you borrowed money or sold anything to get money to gamble?
  - e. Thinking about the past 12 months, how often have you felt that you might have a problem with gambling?
  - f. Thinking about the past 12 months, how often have people criticised your betting or told you that you had a gambling problem, regardless of whether or not you thought it was true?

---

<sup>17</sup> The corresponding scores are: Never = 0, Sometimes = 1, Most of the time = 2, Almost always = 3. Thus the maximum total score for the nine-item screen is 27. A total score of 0 = non-problem gambler, 1-2 = low risk gambler, 3-7 = moderate risk gambler, 8+ = problem gambler.

- g. Thinking about the past 12 months, how often have you felt guilty about the way you gamble, or what happens when you gamble?
- h. Thinking about the past 12 months, how often has your gambling caused you any health problems, including stress or anxiety?
- i. Thinking about the past 12 months, how often has your gambling caused any financial problems for you or your household?
- j. Thinking about the past 12 months, how often have you wanted to stop betting money or gambling but didn't think you could?

### **Lying and betting**

- 6. Have you ever felt the need to bet more and more money?
- 7. Have you ever had to lie to people about how much you gambled?
- 8. Do you feel that you have ever had a problem with gambling?
- 9. What was the largest amount of money you have ever lost in ONE day of gambling?

### **Someone else's gambling**

- 10. Have you had problems because of someone else's gambling in the last 12 months?  
(Yes/No)

- a. If Yes, can you say what kind of gambling was involved?
  - Lotto (including Strike, Powerball and Big Wednesday)
  - Keno (not in a casino)
  - Instant Kiwi or other scratch ticket
  - Housie (bingo) for money
  - Horse or dog racing (excluding office sweepstakes)
  - Sports betting at the TAB or with an overseas betting organisation
  - Gaming machines or pokies at the casino
  - Table games or any other games at the casino
  - Gaming machines or pokies in a pub (not the casino or clubs)
  - Gaming machines or pokies in a club (not the casino or pubs)
  - Internet-based gambling
  - Other gambling activity. *Please specify:*
  - Not sure/don't know
- b. If Yes, how would you describe the effect of that person's gambling on you?
  - I worry about it sometimes
  - It is affecting my health
  - It is hard to talk with anyone about it
  - I am concerned about my or my family's safety
  - I am paying for it financially
  - Other. Please specify:
- c. If Yes, what relationship is that person to you?
  - Spouse or partner
  - Parent
  - Sibling (brother or sister)
  - Adult child
  - Child younger than 18
  - Uncle or Aunt
  - Aiga or extended family member
  - Friend

- Work colleague
- Other. Specify:

### Help-seeking

11. Have you received assistance from any service or person for your gambling during the past 12 months?

- YES
- NO
- Don't know/unsure

If Yes to 11 - Was this assistance from a professional service, or an informal support such as partner, family member or friend?

- Professional service
- Informal support
- Both professional and informal support
- Don't know/unsure

If a or c - Which professional service have you received assistance from? (multiple options allowed)

- Gambling helpline
- Problem Gambling Foundation
- Salvation Army Oasis Centres
- Gamblers Anonymous
- Online/internet-based service
- Other problem gambling support service: Specify\_\_\_\_\_
- Don't know/unsure

If b or c - Who did you receive your informal support from? (multiple options allowed)

- Partner
- Family member
- Friend
- Other support person: Specify\_\_\_\_\_
- Don't know/unsure

If Yes to 11 - how effective was this help overall?

- Very helpful
- Helpful
- Neither helpful nor unhelpful
- Unhelpful
- Very unhelpful
- Don't know/unsure

### APPENDIX 3: Youth's gambling-related questions

#### Gambling activities, behaviour and attitudes

1. Have you EVER bet/played for money on.....?

*[Select all that apply]*

- a) Game of marbles?
- b) Board game?
- c) Card game?
- d) Sports match?
- e) Playing dice?
- f) Housie/Bingo?
- g) Lotto (including Strike, Powerball, Big Wednesday)?
- h) Keno?
- i) Instant Kiwi (scratchies)
- j) Games on a mobile phone/tablet (e.g. txt games)?
- k) Internet gambling (e.g. internet casinos or poker)?
- l) Bets with friends or family?
- m) Any other form of gambling?
- n) None of these?

All YES/NO response

2. Thinking about the activities in the previous question, how often would you usually do this?

- a) Not in the past 12 months
- b) Once or twice in the past 12 months
- c) Once in the last 4 weeks
- d) Two or three times in the last 4 weeks
- e) About once a week
- f) Several times a week
- g) Most days

3. How much money would you usually spend each week on bets or gambling?

- a) Nothing
- b) Less than \$10
- c) \$10 - \$19
- d) \$20 - \$29
- e) \$30 - \$49
- f) \$50 or more

4. How much time would you usually spend each day on bets or gambling?

- a) Nothing
- b) Less than 15 minutes
- c) 15 - 29 minutes
- d) 30 - 59 minutes

- e) 1 - 3 hours
  - f) More than 3 hours
5. When you do these activities or gamble, who do you usually do it with? (Choose as many as you need)
- a) Friends
  - b) Family
  - c) Other people I know
  - d) Other people I don't know (e.g. people online)
  - e) By myself

All YES/NO response

6. Are you worried about how much time or money you spend on these activities or gambling?
- a) A lot
  - b) Some
  - c) A little
  - d) Not at all
7. Have you ever tried to cut down or give up gambling or any of these activities?

YES/NO response

8. If you had problems or concerns because of your gambling, who would you go to for help? (Choose as many as you need)?
- a) School guidance counsellor
  - b) Friends
  - c) Teachers
  - d) Parents
  - e) Other family members (e.g. grandparent, aunts, uncles, cousins)
  - f) School nurse
  - g) Family doctor
  - h) Gambling helpline
  - i) Pharmacy/chemist shop
  - j) Other
  - k) I wouldn't look for help

All YES/NO response

9. Have you EVER received an Instant Kiwi or scratch ticket as a present?

YES/NO response

10. Why do you participate in gambling or bet for money? (Choose as many as you need)
- a) To have fun

- b) To win money
- c) Because I am bored
- d) To relax
- e) To feel better about myself
- f) To forget about things
- g) Because my friends do
- h) Because my family does
- i) For a challenge
- j) Because I can't stop
- k) Because I am short of money
- l) To get a buzz
- m) Because I am lonely
- n) None of these

All YES/NO response

#### DSM-IV-MR-J Screen

1. In the past year, how often have you found yourself thinking about gambling or planning to gamble?  
 Never                  Once or Twice                  Sometimes                  Often
2. During the course of the past year, have you needed to gamble with more and more money to get the amount of excitement you want?  
 Yes                          No
3. In the past year, have you ever spent much more than you planned to on gambling?  
 Never                  Once or Twice                  Sometimes                  Often
4. In the past year, have you felt bad or fed up when trying to cut down or stop gambling?  
 Never                  Once or Twice                  Sometimes                  Often                  Never Tried to cut down
5. In the past year, how often have you gambled to help you escape from problems or when you are feeling bad?  
 Never                  Once or Twice                  Sometimes                  Often
6. In the past year, after losing money gambling, have you returned another day to try and win back money you lost?  
 Never                  Less than half the Time                  More than half the time                  Every time
7. In the past year, has your gambling ever led to lies to your family?  
 Never                  Once or Twice                  Sometimes                  Often
8. In the past year, have you ever taken money from the following without permission to spend on gambling:
 

	Never	Once or twice	Sometimes	Often
a. School dinner money or fare money?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Money from your family?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

c. Money from outside the family? ☐ ☐ ☐ ☐

9. In the past year, has your gambling ever led to :

	Never	Once or twice	Sometimes	Often
a. Arguments with family/friends or others?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. Missing school?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

## APPENDIX 4: Mothers - bivariate associations

**Table 30: Mothers - Bivariate associations with past-year gambling participation - 2014**

Variable	Gambled in past 12 months				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Ethnicity</b>							0.04
Samoan	197	(46)	227	(54)	1.00		
Cook Islands Māori	66	(45)	81	(55)	1.07	(0.73, 1.55)	
Tongan	120	(57)	91	(43)	0.66	(0.47, 0.92)	
Other Pacific	33	(49)	35	(51)	0.92	(0.55, 1.54)	
Non-Pacific	27	(39)	43	(61)	1.38	(0.82, 2.32)	
<b>NZ born</b>							0.27
No	303	(49)	310	(51)	1.00		
Yes	140	(46)	167	(54)	1.17	(0.89, 1.53)	
<b>Marital status</b>							0.40
Non-partnered	108	(50)	106	(50)	1.00		
Partnered	328	(47)	367	(53)	1.14	(0.84, 1.55)	
<b>Deprivation level (NZiDep)</b>							0.59
0 deprivation characteristics	46	(43)	60	(57)	1.00		
1 deprivation characteristic	79	(47)	88	(53)	0.85	(0.52, 1.39)	
2 deprivation characteristics	107	(51)	101	(49)	0.72	(0.45, 1.16)	
≥ 3 deprivation characteristics	211	(48)	228	(52)	0.83	(0.54, 1.27)	
<b>Age (years)</b>							0.82
≤ 39	173	(50)	176	(50)	1.00		
40 - 49	200	(48)	221	(52)	1.09	(0.82, 1.44)	
≥ 50	70	(47)	78	(53)	1.10	(0.75, 1.61)	
<b>Years lived in New Zealand</b>							0.03
≤ 20	107	(53)	94	(47)	1.00		
21 - 30	143	(52)	132	(48)	1.05	(0.73, 1.51)	
≥ 31	193	(44)	249	(56)	1.47	(1.05, 2.05)	
<b>Traditional gift giving commitments</b>							0.41
No	106	(46)	126	(54)	1.00		
Yes	335	(49)	351	(51)	0.88	(0.65, 1.19)	
<b>Cultural orientation</b>							0.002
High NZ, Low Pacific	151	(42)	208	(58)	1.00		
Low NZ, High Pacific	131	(53)	115	(47)	0.64	(0.46, 0.88)	
High NZ, High Pacific	44	(47)	49	(53)	0.81	(0.51, 1.28)	
Low NZ, Low Pacific	71	(47)	81	(53)	0.83	(0.57, 1.21)	
<b>Psychological distress (General Health Questionnaire)</b>							0.43
Non-symptomatic	362	(49)	380	(51)	1.00		
Symptomatic	81	(46)	97	(54)	1.14	(0.82, 1.58)	
<b>Verbal aggression perpetrator</b>							<0.001
No	239	(55)	195	(45)	1.00		
Yes	204	(42)	282	(58)	1.69	(1.30, 2.20)	
<b>Verbal aggression victim</b>							<0.001
No	271	(55)	219	(45)	1.00		
Yes	172	(40)	258	(60)	1.86	(1.43, 2.41)	
<b>Physical violence perpetrator</b>							0.002
No	410	(50)	411	(50)	1.00		
Yes	33	(33)	66	(67)	2.00	(1.29, 3.10)	
<b>Physical violence victim</b>							0.30
No	422	(49)	447	(51)	1.00		
Yes	21	(41)	30	(59)	1.35	(0.76, 2.39)	
<b>Alcohol consumption</b>							<0.001
No	303	(58)	220	(42)	1.00		
Yes	136	(35)	256	(65)	2.59	(1.98, 3.40)	
<b>Tobacco smoking</b>							<0.001
No	344	(53)	307	(47)	1.00		
Yes	98	(37)	168	(63)	1.92	(1.43, 2.57)	
<b>Gambling status in 2009</b>							<0.001
Non-gambler	240	(63)	138	(37)	1.00		
Gambler	98	(29)	245	(71)	4.35	(3.18, 5.95)	



Variable	Gambled in past 12 months				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Change to deprivation level 2009 to 2014</b>							0.30
Unchanged	92	(50)	93	(50)	1.00		
Increased	136	(43)	180	(57)	1.31	(0.91, 1.88)	
Decreased	97	(48)	106	(52)	1.08	(0.73, 1.61)	
<b>Change to marital status 2009 to 2014</b>							0.79
Unchanged	274	(47)	309	(53)	1.00		
Separated	28	(47)	31	(53)	0.98	(0.57, 1.68)	
Became partnered	29	(43)	39	(57)	1.19	(0.72, 1.98)	
<b>Change to smoking behaviour 2009 to 2014</b>							0.02
Unchanged	240	(50)	238	(50)	1.00		
Increased	39	(36)	69	(64)	1.78	(1.16, 2.75)	
Decreased	56	(43)	73	(57)	1.31	(0.89, 1.94)	
<b>Change to alcohol consumption 2009 to 2014</b>							<0.001
Unchanged	254	(50)	249	(50)	1.00		
Increased	39	(32)	83	(68)	2.17	(1.43, 3.30)	
Decreased	42	(46)	50	(54)	1.21	(0.78, 1.90)	

**Table 31: Mothers - Bivariate associations with continuous forms of gambling - 2014**

Variable	Gambling (continuous forms)				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Ethnicity</b>							0.78
Samoan	105	(46)	122	(54)	1.00		
Cook Islands Māori	44	(54)	37	(46)	0.72	(0.43, 1.20)	
Tongan	44	(48)	47	(52)	0.92	(0.56, 1.50)	
Other Pacific	18	(51)	17	(49)	0.81	(0.40, 1.66)	
Non-Pacific	22	(51)	21	(49)	0.82	(0.43, 1.58)	
<b>NZ born</b>							0.15
No	144	(46)	166	(54)	1.00		
Yes	89	(53)	78	(47)	0.76	(0.52, 1.11)	
<b>Marital-status</b>							0.22
Non-partnered	46	(43)	60	(57)	1.00		
Partnered	184	(50)	183	(50)	0.76	(0.49, 1.18)	
<b>Deprivation level (NZiDep)</b>							<0.001
0 deprivation characteristics	42	(70)	18	(30)	1.00		
1 deprivation characteristic	45	(51)	43	(49)	2.23	(1.12, 4.46)	
2 deprivation characteristics	55	(54)	46	(46)	1.95	(0.99, 3.84)	
≥ 3 deprivation characteristics	91	(40)	137	(60)	3.51	(1.90, 6.48)	
<b>Age (years)</b>							0.43
≤ 39	89	(51)	87	(49)	1.00		
40 - 49	111	(50)	110	(50)	1.01	(0.68, 1.51)	
≥ 50	33	(42)	45	(58)	1.39	(0.81, 2.39)	
<b>Years lived in New Zealand</b>							0.40
≤ 20	45	(48)	49	(52)	1.00		
21 - 30	59	(45)	73	(55)	1.14	(0.67, 1.93)	
≥ 31	129	(52)	120	(48)	0.85	(0.53, 1.37)	
<b>Traditional gift giving commitments</b>							0.26
No	67	(53)	59	(47)	1.00		
Yes	166	(47)	185	(53)	1.27	(0.84, 1.90)	
<b>Cultural orientation</b>							0.17
High NZ, Low Pacific	111	(53)	97	(47)	1.00		
Low NZ, High Pacific	51	(44)	64	(56)	1.44	(0.91, 2.27)	
High NZ, High Pacific	19	(39)	30	(61)	1.81	(0.96, 3.41)	
Low NZ, Low Pacific	43	(53)	38	(47)	1.01	(0.60, 1.69)	
<b>Psychological distress (General Health Questionnaire)</b>							0.32
Non-symptomatic	190	(50)	190	(50)	1.00		
Symptomatic	43	(44)	54	(56)	1.26	(0.80, 1.97)	
<b>Verbal aggression perpetrator</b>							0.01
No	109	(56)	86	(44)	1.00		
Yes	124	(44)	158	(56)	1.61	(1.12, 2.33)	
<b>Verbal aggression victim</b>							0.03
No	119	(54)	100	(46)	1.00		
Yes	114	(44)	144	(56)	1.50	(1.05, 2.16)	
<b>Physical violence perpetrator</b>							0.26
No	205	(50)	206	(50)	1.00		
Yes	28	(42)	38	(58)	1.35	(0.80, 2.28)	
<b>Physical violence victim</b>							0.17
No	222	(50)	225	(50)	1.00		
Yes	11	(37)	19	(63)	1.70	(0.79, 3.66)	
<b>Alcohol consumption</b>							0.25
No	114	(52)	106	(48)	1.00		
Yes	119	(46)	137	(54)	1.24	(0.86, 1.78)	
<b>Tobacco smoking</b>							0.02
No	163	(53)	144	(47)	1.00		
Yes	70	(42)	98	(58)	1.58	(1.08, 2.32)	
<b>Gambling status in 2009</b>							0.79
Non-gambler	69	(50)	69	(50)	1.00		
Gambler	119	(49)	126	(51)	1.06	(0.70, 1.61)	

Gambling (continuous forms)							
Variable	No	(%)	Yes	(%)	Odds ratio	(95% CI)	p-value
Change to deprivation level 2009 to 2014							0.18
Unchanged	47	(51)	46	(49)	1.00		
Increased	80	(44)	100	(56)	1.28	(0.77, 2.11)	
Decreased	59	(56)	47	(44)	0.81	(0.47, 1.42)	
Change to marital status 2009 to 2014							0.61
Unchanged	151	(49)	158	(51)	1.00		
Separated	13	(42)	18	(58)	1.32	(0.63, 2.79)	
Became partnered	21	(54)	18	(46)	0.82	(0.42, 1.60)	
Change to smoking behaviour 2009 to 2014							0.44
Unchanged	120	(50)	118	(50)	1.00		
Increased	29	(42)	40	(58)	1.40	(0.82, 2.41)	
Decreased	37	(51)	36	(49)	0.99	(0.59, 1.67)	
Change to alcohol consumption 2009 to 2014							0.12
Unchanged	132	(53)	117	(47)	1.00		
Increased	34	(41)	49	(59)	1.63	(0.98, 2.69)	
Decreased	22	(44)	28	(56)	1.44	(0.78, 2.65)	

**Table 32: Mothers - Bivariate associations with spending more than \$40 per month gambling - 2014**

Variable	Spent over \$40 per month				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Ethnicity</b>							0.21
Samoan	140	(62)	87	(38)	1.00		
Cook Islands Māori	59	(73)	22	(27)	0.60	(0.34, 1.05)	
Tongan	62	(68)	29	(32)	0.75	(0.45, 1.26)	
Other Pacific	27	(77)	8	(23)	0.48	(0.21, 1.10)	
Non-Pacific Island	28	(65)	15	(35)	0.86	(0.44, 1.70)	
<b>NZ born</b>							0.74
No	207	(67)	103	(33)	1.00		
Yes	109	(65)	58	(35)	1.07	(0.72, 1.59)	
<b>Marital status</b>							0.54
Non-partnered	73	(69)	33	(31)	1.00		
Partnered	241	(66)	126	(34)	1.16	(0.73, 1.84)	
<b>Deprivation level (NZiDep)</b>							0.47
0 deprivation characteristics	42	(70)	18	(30)	1.00		
1 deprivation characteristic	62	(70)	26	(30)	0.98	(0.48, 2.00)	
2 deprivation characteristics	69	(68)	32	(32)	1.08	(0.54, 2.16)	
≥ 3 deprivation characteristics	143	(63)	85	(37)	1.39	(0.75, 2.56)	
<b>Age (years)</b>							0.47
≤ 39	119	(68)	57	(32)	1.00		
40 - 49	149	(67)	72	(33)	1.01	(0.66, 1.54)	
≥ 50	47	(60)	31	(40)	1.38	(0.79, 2.39)	
<b>Years lived in New Zealand</b>							0.26
≤ 20	69	(73)	25	(27)	1.00		
21 - 30	84	(64)	48	(36)	1.58	(0.88, 2.81)	
≥ 31	163	(65)	86	(35)	1.46	(0.86, 2.47)	
<b>Traditional gift giving commitments</b>							0.10
No	91	(72)	35	(28)	1.00		
Yes	225	(64)	126	(36)	1.46	(0.93, 2.28)	
<b>Cultural orientation</b>							0.30
High NZ, Low Pacific	135	(65)	73	(35)	1.00		
Low NZ, High Pacific	75	(65)	40	(35)	0.99	(0.61, 1.59)	
High NZ, High Pacific	32	(65)	17	(35)	0.98	(0.51, 1.89)	
Low NZ, Low Pacific	61	(75)	20	(25)	0.61	(0.34, 1.08)	
<b>Psychological distress (General Health Questionnaire)</b>							0.44
Non-symptomatic	255	(67)	125	(33)	1.00		
Symptomatic	61	(63)	36	(37)	1.20	(0.76, 1.92)	
<b>Verbal aggression perpetrator</b>							0.003
No	144	(74)	51	(26)	1.00		
Yes	172	(61)	110	(39)	1.81	(1.21, 2.69)	
<b>Verbal aggression victim</b>							0.03
No	156	(71)	63	(29)	1.00		
Yes	160	(62)	98	(38)	1.52	(1.03, 2.23)	
<b>Physical violence perpetrator</b>							0.30
No	276	(67)	135	(33)	1.00		
Yes	40	(61)	26	(39)	1.33	(0.78, 2.27)	
<b>Physical violence victim</b>							0.46
No	298	(67)	149	(33)	1.00		
Yes	18	(60)	12	(40)	1.33	(0.63, 2.84)	
<b>Alcohol consumption</b>							<0.001
No	163	(74)	57	(26)	1.00		
Yes	153	(60)	103	(40)	1.93	(1.30, 2.85)	
<b>Tobacco smoking</b>							0.005
No	217	(71)	90	(29)	1.00		
Yes	97	(58)	71	(42)	1.76	(1.19, 2.61)	
<b>Gambling status in 2009</b>							<0.001
Non-gambler	110	(80)	28	(20)	1.00		
Gambler	147	(60)	98	(40)	2.62	(1.61, 4.26)	

Variable	Spent over \$40 per month				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Change to deprivation level 2009 to 2014</b>							0.26
Unchanged	63	(68)	30	(32)	1.00		
Increased	114	(63)	66	(37)	1.22	(0.72, 2.07)	
Decreased	77	(73)	29	(27)	0.79	(0.43, 1.45)	
<b>Change to marital status 2009 to 2014</b>							0.66
Unchanged	211	(68)	98	(32)	1.00		
Separated	20	(65)	11	(35)	1.18	(0.55, 2.57)	
Became partnered	24	(62)	15	(38)	1.35	(0.68, 2.68)	
<b>Change to smoking behaviour 2009 to 2014</b>							0.4
Unchanged	165	(69)	73	(31)	1.00		
Increased	44	(64)	25	(36)	1.28	(0.73, 2.25)	
Decreased	45	(62)	28	(38)	1.41	(0.81, 2.43)	
<b>Change to alcohol consumption 2009 to 2014</b>							0.08
Unchanged	173	(69)	76	(31)	1.00		
Increased	47	(57)	36	(43)	1.74	(1.05, 2.91)	
Decreased	36	(72)	14	(28)	0.89	(0.45, 1.74)	

**Table 33: Mothers - Bivariate associations with being an at-risk gambler - 2014**

Variable	At-risk gambler				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Ethnicity</b>							0.06
Samoan	174	(77)	53	(23)	1.00		
Cook Islands Māori	71	(88)	10	(12)	0.46	(0.22, 0.96)	
Tongan	67	(74)	24	(26)	1.18	(0.67, 2.06)	
Other Pacific	27	(77)	8	(23)	0.97	(0.42, 2.27)	
Non-Pacific	38	(88)	5	(12)	0.43	(0.16, 1.15)	
<b>NZ born</b>							0.06
No	237	(76)	73	(24)	1.00		
Yes	140	(84)	27	(16)	0.63	(0.38, 1.02)	
<b>Marital status</b>							0.58
Non-partnered	82	(77)	24	(23)	1.00		
Partnered	293	(80)	74	(20)	0.86	(0.51, 1.45)	
<b>Deprivation level (NZiDep)</b>							0.14
0 deprivation characteristics	51	(85)	9	(15)	1.00		
1 deprivation characteristic	73	(83)	15	(17)	1.16	(0.47, 2.87)	
2 deprivation characteristics	83	(82)	18	(18)	1.23	(0.51, 2.94)	
≥ 3 deprivation characteristics	170	(75)	58	(25)	1.93	(0.90, 4.17)	
<b>Age (years)</b>							0.29
≤ 39	144	(82)	32	(18)	1.00		
40 - 49	168	(76)	53	(24)	1.42	(0.87, 2.32)	
≥ 50	64	(82)	14	(18)	0.98	(0.49, 1.97)	
<b>Years lived in New Zealand</b>							0.13
≤ 20	70	(74)	24	(26)	1.00		
21 - 30	100	(76)	32	(24)	0.93	(0.51, 1.72)	
≥ 31	206	(83)	43	(17)	0.61	(0.34, 1.07)	
<b>Traditional gift giving commitments</b>							0.09
No	106	(84)	20	(16)	1.00		
Yes	271	(77)	80	(23)	1.56	(0.91, 2.68)	
<b>Cultural orientation</b>							0.003
High NZ, Low Pacific	174	(84)	34	(16)	1.00		
Low NZ, High Pacific	81	(70)	34	(30)	2.15	(1.25, 3.70)	
High NZ, High Pacific	38	(78)	11	(22)	1.48	(0.69, 3.18)	
Low NZ, Low Pacific	70	(86)	11	(14)	0.80	(0.39, 1.68)	
<b>Psychological distress (General Health Questionnaire)</b>							0.07
Non-symptomatic	307	(81)	73	(19)	1.00		
Symptomatic	70	(72)	27	(28)	1.62	(0.97, 2.71)	
<b>Verbal aggression perpetrator</b>							0.67
No	156	(80)	39	(20)	1.00		
Yes	221	(78)	61	(22)	1.10	(0.70, 1.73)	
<b>Verbal aggression victim</b>							0.51
No	176	(80)	43	(20)	1.00		
Yes	201	(78)	57	(22)	1.16	(0.74, 1.81)	
<b>Physical violence perpetrator</b>							0.49
No	327	(80)	84	(20)	1.00		
Yes	50	(76)	16	(24)	1.25	(0.68, 2.30)	
<b>Physical violence victim</b>							0.44
No	355	(79)	92	(21)	1.00		
Yes	22	(73)	8	(27)	1.40	(0.61, 3.25)	
<b>Alcohol consumption</b>							0.61
No	172	(78)	48	(22)	1.00		
Yes	205	(80)	51	(20)	0.89	(0.57, 1.39)	
<b>Tobacco smoking</b>							0.81
No	242	(79)	65	(21)	1.00		
Yes	134	(80)	34	(20)	0.94	(0.59, 1.50)	
<b>Gambling status in 2009</b>							0.008
Non-gambler	120	(87)	18	(13)	1.00		
Gambler	186	(76)	59	(24)	2.11	(1.19, 3.76)	

Variable	At-risk gambler				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Change to deprivation level 2009 to 2014</b>							0.68
Unchanged	74	(80)	19	(20)	1.00		
Increased	142	(79)	38	(21)	1.04	(0.56, 1.93)	
Decreased	88	(83)	18	(17)	0.80	(0.39, 1.63)	
<b>Change to marital status 2009 to 2014</b>							0.14
Unchanged	254	(82)	55	(18)	1.00		
Separated	22	(71)	9	(29)	1.89	(0.83, 4.33)	
Became partnered	28	(72)	11	(28)	1.81	(0.85, 3.86)	
<b>Change to smoking behaviour 2009 to 2014</b>							0.74
Unchanged	192	(81)	46	(19)	1.00		
Increased	56	(81)	13	(19)	0.97	(0.49, 1.92)	
Decreased	56	(77)	17	(23)	1.27	(0.67, 2.38)	
<b>Change to alcohol consumption 2009 to 2014</b>							0.37
Unchanged	201	(81)	48	(19)	1.00		
Increased	62	(75)	21	(25)	1.42	(0.79, 2.55)	
Decreased	42	(84)	8	(16)	0.80	(0.35, 1.81)	

**Table 34: Mothers - Bivariate associations with experiencing problems with someone else's gambling - 2014**

Variable	Problem with someone else's gambling				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Ethnicity</b>							0.09
Samoan	401	(95)	21	(5)	1.00		
Cook Islands Māori	130	(89)	16	(11)	2.35	(1.19, 4.64)	
Tongan	197	(93)	14	(7)	1.36	(0.68, 2.73)	
Other Pacific	60	(88)	8	(12)	2.55	(1.08, 6.01)	
Non-Pacific	66	(94)	4	(6)	1.16	(0.39, 3.48)	
<b>NZ born</b>							0.27
No	574	(94)	38	(6)	1.00		
Yes	280	(92)	25	(8)	1.35	(0.80, 2.28)	
<b>Marital status</b>							0.91
Non-partnered	199	(93)	15	(7)	1.00		
Partnered	646	(93)	47	(7)	0.97	(0.53, 1.76)	
<b>Deprivation level (NZiDep)</b>							0.82
0 deprivation characteristics	98	(93)	7	(7)	1.00		
1 deprivation characteristic	158	(95)	9	(5)	0.80	(0.29, 2.21)	
2 deprivation characteristics	193	(93)	14	(7)	1.02	(0.40, 2.60)	
≥ 3 deprivation characteristics	405	(92)	33	(8)	1.14	(0.49, 2.66)	
<b>Age (years)</b>							0.04
≤ 39	315	(91)	32	(9)	1.00		
40 - 49	394	(94)	26	(6)	0.65	(0.38, 1.11)	
≥ 50	143	(97)	5	(3)	0.34	(0.13, 0.90)	
<b>Years lived in New Zealand</b>							0.07
≤ 20	188	(94)	11	(6)	1.00		
21 - 30	262	(95)	13	(5)	0.85	(0.37, 1.93)	
≥ 31	402	(91)	39	(9)	1.66	(0.83, 3.31)	
<b>Traditional gift giving commitments</b>							0.76
No	215	(93)	17	(7)	1.00		
Yes	638	(93)	46	(7)	0.91	(0.51, 1.62)	
<b>Cultural orientation</b>							0.02
High NZ, Low Pacific	331	(93)	26	(7)	1.00		
Low NZ, High Pacific	238	(97)	7	(3)	0.37	(0.16, 0.88)	
High NZ, High Pacific	82	(88)	11	(12)	1.71	(0.81, 3.60)	
Low NZ, Low Pacific	139	(91)	13	(9)	1.19	(0.59, 2.38)	
<b>Psychological distress (General Health Questionnaire)</b>							0.37
Non-symptomatic	691	(94)	48	(6)	1.00		
Symptomatic	163	(92)	15	(8)	1.32	(0.72, 2.42)	
<b>Verbal aggression perpetrator</b>							0.04
No	411	(95)	22	(5)	1.00		
Yes	443	(92)	41	(8)	1.73	(1.01, 2.95)	
<b>Verbal aggression victim</b>							0.23
No	460	(94)	29	(6)	1.00		
Yes	394	(92)	34	(8)	1.37	(0.82, 2.29)	
<b>Physical violence perpetrator</b>							0.002
No	771	(94)	48	(6)	1.00		
Yes	83	(85)	15	(15)	2.90	(1.56, 5.41)	
<b>Physical violence victim</b>							0.002
No	813	(94)	53	(6)	1.00		
Yes	41	(80)	10	(20)	3.74	(1.78, 7.88)	
<b>Alcohol consumption</b>							0.03
No	495	(95)	27	(5)	1.00		
Yes	356	(91)	35	(9)	1.80	(1.07, 3.03)	
<b>Tobacco smoking</b>							0.005
No	616	(95)	34	(5)	1.00		
Yes	237	(89)	28	(11)	2.14	(1.27, 3.61)	



## APPENDIX 5: Youth - bivariate associations

**Table 35: Youth - Bivariate associations with ever having gambled - 2014**

Variable	Ever gambled				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Gender</b>							0.04
Female	228	(50)	229	(50)	1.00		
Male	198	(43)	262	(57)	1.32	(1.02, 1.71)	
<b>Ethnicity</b>							0.56
Samoan	166	(44)	211	(56)	1.00		
Cook Islands Māori	52	(46)	61	(54)	0.92	(0.61, 1.41)	
Tongan	100	(47)	111	(53)	0.87	(0.62, 1.22)	
Other	108	(50)	108	(50)	0.79	(0.56, 1.10)	
<b>General health (maternally reported)</b>							0.10
Excellent	145	(51)	139	(49)	1.00		
Very good	173	(43)	230	(57)	1.39	(1.02, 1.88)	
Poor to good	106	(48)	116	(52)	1.14	(0.80, 1.62)	
<b>Maternal psychological distress</b>							0.24
Non-symptomatic	337	(46)	402	(54)	1.00		
Symptomatic	88	(51)	86	(49)	0.82	(0.59, 1.14)	
<b>Maternal gambling risk level</b>							0.04
Non-gambler	221	(51)	213	(49)	1.00		
Non-problem gambler	162	(42)	220	(58)	1.41	(1.07, 1.86)	
Low-risk/moderate-risk/problem gambler	42	(43)	55	(57)	1.36	(0.87, 2.12)	
<b>Deprivation level (NZiDep; maternally reported)</b>							0.66
0 deprivation characteristics	45	(43)	60	(57)	1.00		
1 deprivation characteristic	82	(49)	85	(51)	0.78	(0.48, 1.27)	
2 deprivation characteristics	93	(45)	113	(55)	0.91	(0.57, 1.46)	
3 - 4 deprivation characteristics	127	(45)	154	(55)	0.91	(0.58, 1.43)	
5 - 8 deprivation characteristics	78	(51)	76	(49)	0.73	(0.44, 1.20)	
<b>Poor parental supervision (Alabama Parenting Questionnaire)</b>							0.65
No	256	(48)	283	(52)	1.00		
Yes	159	(46)	187	(54)	1.06	(0.81, 1.39)	
<b>Internalising behaviour (Child Behaviour Check List)</b>							0.64
Normal	255	(47)	282	(53)	1.00		
Borderline	82	(47)	94	(53)	1.04	(0.74, 1.46)	
Clinical	80	(43)	104	(57)	1.18	(0.84, 1.65)	
<b>Externalising behaviour (Child Behaviour Check List)</b>							0.62
Normal	322	(46)	376	(54)	1.00		
Borderline	48	(51)	46	(49)	0.82	(0.53, 1.26)	
Clinical	47	(45)	58	(55)	1.06	(0.70, 1.60)	
<b>Gambled for money at age 9 years</b>							0.05
No	311	(49)	329	(51)	1.00		
Yes	115	(42)	162	(58)	1.33	(1.00, 1.77)	
<b>Cell phone use</b>							0.27
No	135	(44)	173	(56)	1.00		
Yes	288	(48)	311	(52)	0.84	(0.64, 1.11)	
<b>Home internet use</b>							0.89
No	77	(45)	95	(55)	1.00		
Yes	334	(47)	379	(53)	0.92	(0.66, 1.29)	
<b>Spare time spent online (using internet)</b>							0.05
None	65	(49)	68	(51)	1.00		
Less than one hour per day	84	(56)	66	(44)	0.75	(0.47, 1.20)	
One hour or more per day	248	(44)	317	(56)	1.22	(0.84, 1.78)	
<b>Television / video / DVD watching</b>							0.02
Low-level (half hour or less per day)	114	(55)	92	(45)	1.00		
High-level (an hour or more per day)	301	(44)	385	(56)	1.58	(1.16, 2.17)	
<b>Facebook use</b>							0.36
Never	44	(42)	62	(58)	1.00		
Sometimes	18	(40)	27	(60)	1.06	(0.52, 2.17)	
Regular	271	(46)	312	(54)	0.82	(0.54, 1.24)	

Variable	Ever gambled				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Playing online games</b>							0.005
Never	130	(51)	124	(49)	1.00		
Sometimes	62	(53)	55	(47)	0.93	(0.60, 1.44)	
Regular	147	(39)	226	(61)	1.61	(1.17, 2.22)	
<b>Playing computer or video games (15 minutes or longer per day)</b>							<0.001
No	191	(57)	146	(43)	1.00		
Yes	218	(40)	327	(60)	1.96	(1.49, 2.58)	
<b>Cigarette smoking</b>							0.15
No	397	(47)	440	(53)	1.00		
Yes	22	(37)	38	(63)	1.56	(0.91, 2.68)	
<b>Alcohol consumption</b>							0.03
No	400	(48)	438	(52)	1.00		
Yes	17	(30)	40	(70)	2.15	(1.20, 3.85)	
<b>Drug use</b>							0.09
No	406	(47)	451	(53)	1.00		
Yes	11	(31)	25	(69)	2.05	(0.99, 4.21)	
<b>Involvement with gangs</b>							<0.001
No	346	(50)	347	(50)	1.00		
Yes	47	(30)	111	(70)	2.35	(1.62, 3.42)	
<b>Victim of bullying (Olweus Bully/Victim Questionnaire)</b>							<0.001
No	232	(56)	181	(44)	1.00		
Yes	120	(36)	209	(64)	2.23	(1.66, 3.00)	
<b>Perpetrator of bullying (Olweus Bully/Victim Questionnaire)</b>							<0.001
No	282	(52)	256	(48)	1.00		
Yes	65	(34)	129	(66)	2.19	(1.55, 3.08)	
<b>Part-time work</b>							0.96
No	330	(47)	379	(53)	1.00		
Yes	36	(45)	44	(55)	1.06	(0.67, 1.69)	

**Table 36: Youth - Bivariate associations with ever having participated in continuous forms of gambling - 2014**

Variable	Gambling (continuous forms)				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Gender</b>							0.76
Female	85	(38)	139	(62)	1.00		
Male	93	(37)	161	(63)	1.06	(0.73, 1.53)	
<b>Ethnicity</b>							0.03
Samoan	70	(34)	135	(66)	1.00		
Cook Islands Māori	30	(51)	29	(49)	0.50	(0.28, 0.90)	
Tongan	47	(43)	63	(57)	0.70	(0.43, 1.12)	
Other	31	(30)	73	(70)	1.22	(0.73, 2.03)	
<b>General health (maternally reported)</b>							0.15
Excellent	58	(42)	79	(58)	1.00		
Very good	82	(37)	141	(63)	1.26	(0.82, 1.95)	
Poor to good	34	(30)	78	(70)	1.68	(0.99, 2.85)	
<b>Maternal psychological distress</b>							0.16
Non-symptomatic	151	(39)	239	(61)	1.00		
Symptomatic	26	(31)	59	(69)	1.43	(0.87, 2.37)	
<b>Maternal gambling risk level</b>							0.10
Non-gambler	87	(42)	122	(58)	1.00		
Non-problem gambler	76	(36)	137	(64)	1.29	(0.87, 1.90)	
Low-risk/moderate-risk/problem gambler	14	(26)	39	(74)	1.99	(1.02, 3.88)	
<b>Deprivation level (NZiDep; maternally reported)</b>							0.62
0 deprivation characteristics	23	(38)	37	(62)	1.00		
1 deprivation characteristic	28	(35)	53	(65)	1.18	(0.59, 2.35)	
2 deprivation characteristics	44	(40)	66	(60)	0.93	(0.49, 1.78)	
3 - 4 deprivation characteristics	60	(40)	91	(60)	0.94	(0.51, 1.74)	
5 - 8 deprivation characteristics	22	(30)	51	(70)	1.44	(0.70, 2.97)	
<b>Poor supervision (Alabama Parenting Questionnaire)</b>							0.13
No	111	(40)	166	(60)	1.00		
Yes	60	(33)	121	(67)	1.35	(0.91, 2.00)	
<b>Internalising behaviour (Child Behaviour Check List)</b>							0.93
Normal	106	(38)	170	(62)	1.00		
Borderline	33	(37)	57	(63)	1.08	(0.66, 1.76)	
Clinical	37	(37)	64	(63)	1.08	(0.67, 1.73)	
<b>Externalising behaviour (Child Behaviour Check List)</b>							0.35
Normal	142	(39)	226	(61)	1.00		
Borderline	18	(41)	26	(59)	0.91	(0.48, 1.72)	
Clinical	16	(29)	39	(71)	1.53	(0.83, 2.84)	
<b>Gambled for money at age 9 years</b>							0.57
No	122	(38)	198	(62)	1.00		
Yes	56	(35)	102	(65)	1.12	(0.75, 1.67)	
<b>Cell phone use</b>							0.28
No	71	(42)	98	(58)	1.00		
Yes	105	(35)	198	(65)	1.37	(0.93, 2.01)	
<b>Home internet use</b>							0.84
No	34	(36)	60	(64)	1.00		
Yes	139	(38)	229	(62)	0.93	(0.58, 1.49)	
<b>Spare time spent online (using internet)</b>							0.78
None	24	(35)	44	(65)	1.00		
Less than one hour per day	20	(32)	42	(68)	1.15	(0.55, 2.37)	
One hour or more per day	120	(39)	190	(61)	0.86	(0.50, 1.49)	
<b>Television / video / DVD watching</b>							0.76
Low-level (half hour or less per day)	30	(35)	56	(65)	1.00		
High-level (an hour or more per day)	144	(38)	235	(62)	0.87	(0.54, 1.43)	
<b>Facebook use</b>							0.89
Never	20	(33)	40	(67)	1.00		
Sometimes	9	(35)	17	(65)	0.94	(0.36, 2.49)	
Regular	116	(38)	187	(62)	0.81	(0.45, 1.45)	

<b>Gambling (continuous forms)</b>						<b>Odds ratio</b>	<b>(95% CI)</b>	<b>p-value</b>
<b>Variable</b>	<b>No</b>	<b>(%)</b>	<b>Yes</b>	<b>(%)</b>				
<b>Playing online games</b>								0.80
Never	42	(34)	80	(66)	1.00			
Sometimes	22	(42)	30	(58)	0.72	(0.37, 1.39)		
Regular	83	(38)	137	(62)	0.87	(0.55, 1.38)		
<b>Playing computer or video games (15 minutes or longer per day)</b>								0.45
No	56	(39)	89	(61)	1.00			
Yes	118	(37)	198	(63)	1.06	(0.70, 1.58)		
<b>Cigarette smoking</b>								0.19
No	163	(38)	267	(62)	1.00			
Yes	9	(25)	27	(75)	1.83	(0.84, 3.99)		
<b>Alcohol consumption</b>								0.003
No	168	(39)	259	(61)	1.00			
Yes	5	(13)	33	(87)	4.28	(1.64, 11.19)		
<b>Drug use</b>								0.004
No	172	(39)	268	(61)	1.00			
Yes	2	(9)	21	(91)	6.74	(1.56, 29.09)		
<b>Involvement with gangs</b>								0.02
No	138	(40)	204	(60)	1.00			
Yes	28	(26)	79	(74)	1.91	(1.18, 3.09)		
<b>Victim of bullying at school (Olweus Bully/Victim Questionnaire)</b>								0.19
No	73	(41)	106	(59)	1.00			
Yes	65	(32)	135	(68)	1.43	(0.94, 2.18)		
<b>Perpetrator of bullying behaviour (Olweus Bully/Victim Questionnaire)</b>								0.82
No	95	(38)	154	(62)	1.00			
Yes	47	(38)	78	(62)	1.02	(0.66, 1.59)		
<b>Part-time work</b>								0.19
No	145	(39)	224	(61)	1.00			
Yes	12	(27)	32	(73)	1.73	(0.86, 3.46)		

**Table 37: Youth - Bivariate associations with weekly gambling expenditure - 2014**

Variable	Weekly gambling expenditure				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Gender</b>							0.10
Female	127	(61)	80	(39)	1.00		
Male	127	(54)	110	(46)	1.37	(0.94, 2.01)	
<b>Ethnicity</b>							0.82
Samoan	113	(57)	86	(43)	1.00		
Cook Islands Māori	33	(62)	20	(38)	0.80	(0.43, 1.48)	
Tongan	58	(58)	42	(42)	0.95	(0.59, 1.55)	
Other	50	(54)	42	(46)	1.10	(0.67, 1.81)	
<b>General health (maternally reported)</b>							0.67
Excellent	74	(58)	53	(42)	1.00		
Very good	112	(55)	92	(45)	1.15	(0.73, 1.79)	
Poor to good	64	(60)	43	(40)	0.94	(0.56, 1.58)	
<b>Maternal psychological distress</b>							0.18
Non-symptomatic	204	(56)	162	(44)	1.00		
Symptomatic	48	(64)	27	(36)	0.71	(0.42, 1.19)	
<b>Maternal gambling risk level</b>							0.04
Non-gambler	116	(61)	74	(39)	1.00		
Non-problem gambler	116	(57)	86	(43)	1.16	(0.78, 1.74)	
Low-risk/moderate-risk/problem gambler	20	(41)	29	(59)	2.27	(1.20, 4.31)	
<b>Deprivation level (NZiDep; maternally reported)</b>							0.84
0 deprivation characteristics	36	(63)	21	(37)	1.00		
1 deprivation characteristic	43	(56)	34	(44)	1.36	(0.67, 2.73)	
2 deprivation characteristics	57	(55)	47	(45)	1.41	(0.73, 2.74)	
3 - 4 deprivation characteristics	79	(59)	56	(41)	1.22	(0.64, 2.30)	
5 - 8 deprivation characteristics	37	(54)	31	(46)	1.44	(0.70, 2.95)	
<b>Poor supervision (Alabama Parenting Questionnaire)</b>							0.04
No	158	(61)	100	(39)	1.00		
Yes	86	(51)	82	(49)	1.51	(1.02, 2.23)	
<b>Internalising behaviour (Child Behaviour Check List)</b>							0.50
Normal	148	(58)	109	(42)	1.00		
Borderline	45	(53)	40	(47)	1.21	(0.74, 1.98)	
Clinical	58	(62)	36	(38)	0.84	(0.52, 1.37)	
<b>Externalising behaviour (Child Behaviour Check List)</b>							0.28
Normal	202	(59)	138	(41)	1.00		
Borderline	23	(55)	19	(45)	1.21	(0.63, 2.30)	
Clinical	26	(48)	28	(52)	1.58	(0.89, 2.80)	
<b>Gambled for money at age 9 years</b>							0.14
No	180	(60)	122	(40)	1.00		
Yes	74	(52)	68	(48)	1.36	(0.91, 2.03)	
<b>Cell phone use</b>							0.17
No	93	(61)	59	(39)	1.00		
Yes	159	(56)	126	(44)	1.25	(0.84, 1.87)	
<b>Home internet use</b>							0.20
No	56	(64)	31	(36)	1.00		
Yes	192	(56)	151	(44)	1.42	(0.87, 2.31)	
<b>Spare time spent online (using internet)</b>							0.72
None	34	(56)	27	(44)	1.00		
Less than one hour per day	31	(53)	27	(47)	1.10	(0.53, 2.26)	
One hour or more per day	168	(57)	125	(43)	0.94	(0.54, 1.63)	
<b>Television / video / DVD watching</b>							0.61
Low-level (half hour or less per day)	44	(54)	37	(46)	1.00		
High-level (an hour or more per day)	203	(58)	150	(42)	0.88	(0.54, 1.43)	
<b>Facebook use</b>							0.43
Never	36	(65)	19	(35)	1.00		
Sometimes	12	(48)	13	(52)	2.05	(0.78, 5.37)	
Regular	161	(56)	127	(44)	1.49	(0.82, 2.73)	
<b>Playing online games</b>							0.02
Never	74	(65)	39	(35)	1.00		
Sometimes	34	(68)	16	(32)	0.89	(0.44, 1.82)	
Regular	103	(50)	102	(50)	1.88	(1.17, 3.02)	

Variable	Weekly gambling expenditure				Odds ratio	(95% CI)	p-value
	No	(%)	Yes	(%)			
<b>Playing computer or video games (15 minutes or longer per day)</b>							0.04
No	89	(66)	46	(34)	1.00		
Yes	156	(53)	138	(47)	1.71	(1.12, 2.61)	
<b>Cigarette smoking</b>							0.03
No	236	(59)	167	(41)	1.00		
Yes	12	(36)	21	(64)	2.47	(1.18, 5.16)	
<b>Alcohol consumption</b>							0.006
No	237	(59)	162	(41)	1.00		
Yes	11	(31)	24	(69)	3.19	(1.52, 6.70)	
<b>Drug use</b>							0.02
No	240	(58)	172	(42)	1.00		
Yes	6	(29)	15	(71)	3.49	(1.33, 9.17)	
<b>Involvement with gangs</b>							<0.001
No	204	(64)	117	(36)	1.00		
Yes	38	(38)	61	(62)	2.80	(1.76, 4.45)	
<b>Victim of bullying at school (Olweus Bully/Victim Questionnaire)</b>							0.004
No	110	(65)	58	(35)	1.00		
Yes	96	(49)	101	(51)	2.00	(1.31, 3.05)	
<b>Perpetrator of bullying behaviour (Olweus Bully/Victim Questionnaire)</b>							0.41
No	143	(59)	99	(41)	1.00		
Yes	63	(52)	58	(48)	1.33	(0.86, 2.06)	
<b>Part time work</b>							0.15
No	207	(59)	141	(41)	1.00		
Yes	17	(45)	21	(55)	1.81	(0.92, 3.56)	