

# Measuring the Burden of Gambling Harm in New Zealand

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# Executive Summary

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## Project overview

The New Zealand Ministry of Health engaged Central Queensland University's (CQU) Experimental Gambling Research Laboratory and Auckland University of Technology's (AUT) Gambling and Addictions Research Centre to develop a framework and a methodology for understanding and measuring gambling-related harm in the New Zealand population. The aim of the project was to systematically investigate gambling-related harm in New Zealand, and assess the aggregate 'Burden of Harm' caused by gambling with reference to different levels of problem gambling, and other comparable conditions. This improved understanding of the quality and quantity of harm will help to better target efforts to prevent or reduce the potential negative consequences of problematic gambling.

The project was designed to accomplish these goals by adopting a public health perspective towards gambling; most notably in adopting existing summary measures of population health (WHO, 2009; WHO, 2013), specifically health state valuation methodology, to assess the impact of gambling harms. Our premise was that the diverse set of gambling harms experienced by individuals ultimately contributes to a decrement to a person's Health Related Quality of Life (HRQL). We consulted with experts and community members, combining this with extant literature, to refine and validate a pre-existing definition, conceptual framework, and taxonomy of gambling-related harms (originally developed for an Australian context), to ensure it was reflective of the cultural communities within New Zealand. The detailed taxonomy of harms was organised within eight broad domains and provided the basis for a comprehensive national survey on the prevalence of specific harms, with respect to different gambling risk profiles. The experiences of individuals across the continuum of gambling risk profiles were then represented as descriptive vignettes, and evaluated by experts and the general public in terms of HRQL impact via established health state valuation protocols as used in HRQL studies. These quantitative harm estimates at the individual level were then aggregated based on recent New Zealand gambling prevalence data and analysed with respect to domains of harm, problem gambling severity, demographics, and with respect to the harm caused by gambling relative to other health conditions.

## Background

Potential problems arising from gambling can occur to the individual gambler, their family/whānau and friends, and to the broader community. A public health approach encourages us to understand these potential negative impacts in terms of their effect on the totality of an individual's health and wellbeing. Our review of the literature identified a diverse set of gambling-related harms, which could be broadly grouped into six domains:

- Decrements to the person's health, both morbidity and mortality.
- Emotional or psychological distress.

- Financial difficulties, diverted financial resources, bankruptcy or reduction of financial situation.
- Reduced performance / loss of role at employment or study.
- Relationship conflict or breakdown.
- Criminal activity and neglect of responsibilities, including the consequences of such actions.

Whilst harm may be assumed to increase reliably in association with gambling problems, it is not synonymous with clinical addiction and some harms may occur well before diagnostic criteria are met. Standard instruments for measuring prevalence of gambling problems, such as the Problem Gambling Severity Index (PGSI), are designed to screen for the likelihood of experiencing problems, rather than describe the extent of harm being experienced. With respect to measuring harm, we concluded that:

- There should be an effort to capture the expected degree of harm across the spectrum of gambling problems.
- Harm to 'affected others' (most notably family/whānau and friends) should be acknowledged and measured.
- Gambling harms are diverse and can potentially affect multiple domains of health and wellbeing. Thus, harm should not be narrowly construed (e.g. as a financial loss) but rather capture all relevant dimensions.
- Since individuals subjectively experience harm as a decrement to their health and wellbeing, existing public health methodologies should be applied to measure this decrement.

## Methodology

We undertook several phases of data collection and analysis, with each phase informing the conduct of subsequent activities. In the first phase, a comprehensive literature review collated and organised existing knowledge regarding the nature and prevalence of gambling-related harms. In the next, consultative, phase data were gathered across two stages:

- Three focus group interviews with 26 participants comprising professionals (including Māori, Pacific, Asian and European/Other people) involved in the provision of problem gambling treatment and allied support services (budget advice, social support), consumer representatives, regulators and academics.
- Eight focus group interviews (including two Māori groups) and six individual interviews with a total of fifty-one individuals comprising community members and treatment seeking individuals who identified that they had experienced harm from either their own,

or someone else's gambling, and with staff of problem gambling treatment services (representing Pacific and Asian clients).

In the third, quantitative phase, we undertook an online national survey on gambling harms of 1,542 individuals affected by gambling, who completed an 83 item harms checklist, the PGSI, and other measures. These data were algorithmically transformed into plain English condition descriptors, which served as stimuli for Time Trade-Off and Visual Analogue Scale HRQL elicitation for estimates of the level of harm being experienced by gamblers. In the fourth phase of our study, 324 participants (both professionals and general public) provided a total of 3,888 estimates of HRQL decrement for 552 unique condition descriptions, randomly selected from cases within each PGSI category (non-problem gambler, low-risk gambler, moderate-risk gambler, problem gambler) from the previous survey. These data were analysed to yield an expected HRQL utility weight for each PGSI score (1-15+), which was then combined with New Zealand national prevalence data from 2012, for further analyses. In the final phase, the annual years of healthy life lost due to gambling-related harm was calculated at a population level using the formula:  $QALY_1 = (\text{New Zealand Adult Population} \times \text{Annual Prevalence (\%)} \text{ for Health State}) \times \text{Utility Weight}$ . The same formula was applied to other health conditions to allow comparisons of  $QALY_1$ .

Ethical clearance for all four stages of data collection (expert consultations, community consultations, national survey, and health related quality of life elicitation) were approved by CQU and AUT Human Research Ethics Committees.

## Results

From analysis of the qualitative data, a conceptual framework was developed, which expanded the original six domains of harm (health, emotion, financial, performance, relationship and neglect) identified by Langham et al. (2016) to eight (previous six domains, cultural harms, and lifecourse and intergenerational harms).

The framework also divided the experience of these dimensions into three temporal categories - general harms, crisis harms, and legacy harms - which captured the harms experienced from any level of gambling, the significance of harms that prompted seeking assistance, and harms that could still be experienced even if a person ceased gambling. A detailed and comprehensive taxonomy of harms was created, which captured and organised each specific harm discovered in the qualitative stages.

From the HRQL analyses, we concluded that the average low-risk, moderate-risk, and problem gambler in New Zealand suffers a HRQL decrement of 0.18, 0.37, and 0.54 respectively. Combined with prevalence data, this finding suggests that 48%, 34%, and 18% of the total harm resulting from gambling in New Zealand can be divided amongst low-risk, moderate risk and problem-gamblers, respectively.

At a national level, and taking into account both prevalence and severity, our analysis suggests that gambling causes over twice the amount of harm than chronic conditions such as osteoarthritis (2.1x) and diabetes (2.5x). However, gambling causes less harm than other disorders such as anxiety and depressive disorders (.63x) and hazardous drinking (.77x).

## Discussion

At a population level, aggregate harms accruing to non-problem gamblers exceed those occurring to problem gamblers by about 4:1. Demographic groups such as females aged 55+ years, whilst less likely individually to develop clinically significant gambling problems, nevertheless contribute substantially to the 'burden of harm' experienced by the New Zealand adult population. Annually, gambling problems generate significantly more ongoing harm than other key health conditions, such as osteoarthritis, diabetes, and drug use disorders. Caution must be exercised when comparing gambling problems to other health conditions (for example drug use disorders) as some of these disorders only include individuals with severe levels of problems, whereas gambling problems include low-risk individuals. Nonetheless, the aggregate harm of gambling problems is almost twice that of drug use disorders, bipolar affective disorder, eating disorders and schizophrenia combined. Both qualitative and quantitative results suggest that this burden of harm is primarily due to damage to relationships, emotional / psychological distress, disruptions to work / study, and financial impacts. The large proportion of gambling related harm is accruing to those who are not necessarily problem gamblers. For policy makers and regulators, we suggest that it is insufficient to concentrate simply on reducing the incidence of problem gambling. Rather, the focus should be on minimising gambling-related harm across the spectrum of problematic gambling behaviour.

# Literature review

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This chapter details findings from the first phase of our study – a comprehensive literature review on gambling-related harms.

## Literature review objectives and method

Negative impacts associated with problematic gambling are often referred to as gambling-related harms. Whilst this term is used consistently within the gambling literature, there is a lack of clarity as to what constitutes harm and how harm is differentiated from the precursors, symptoms, and other characteristics of problem gambling. This confusion is exemplified by the utilisation of harms as a means of diagnosis or assessment of problem gambling symptomology, and also the use of symptomatology as ‘indicators’ of harm. This has led to a lack of distinction between problematic gambling and gambling harm, and limited the discussion and measurement of harms as a unique conceptual construct.

The objective of this review was to address the above limitation by sourcing evidence that could inform the subsequent phases of our study including: (1) development of a definition of gambling-related harm, and (2) production of a conceptual framework of harms associated with gambling. To achieve this objective, both New Zealand and international literature were searched for definitions of gambling harm and related theoretical frameworks. A focus was given to recent empirical evidence on gambling-related harms as experienced by the different demographic groups in New Zealand, particularly high-risk groups; the mechanisms by which harms occur; and how harm is transmitted to *affected others* (the general term which will be used to describe an individual with a significant relationship to a gambler who is affected by their behaviour). Additionally, to inform the HRQL related components of this study, the literature review also covered HRQL methodologies, and population-health perspectives concerning gambling harm to identify possible methodological issues. To ensure method suitability to the context of gambling in New Zealand, the review compared and contrasted alternative HRQL methods, prior to selecting the most appropriate ones.

In the following sections, findings from the literature are categorised into thematic headings representing the types of harm experienced and the different levels and categories of gambling-related harm. Findings from the literature on HRQL methodologies are summarised at the start of the respective chapters.

## Definitions of gambling-related harm

Presently, there is a lack of a universal definition that is adequate in describing gambling-related harm. The New Zealand definition of gambling-related harm is the most comprehensive definition to date; it is consistent with a public health approach, and captures trends of harm highlighted within the literature. This definition is more thoroughly explored within the following section of this review; however, it illustrates the utility of a public health approach for providing a promising framework for understanding gambling-related harm, and is central to New Zealand gambling policy. New Zealand

policy stems from the 2003 legislation, which enshrined an explicit public health approach to gambling (Ministry of Health, 2005, 2010, 2013). For example, the Ministry's first strategic plan around problem gambling (Ministry of Health, 2005) provided a high-level framework to guide primary prevention and population approaches to minimise gambling-related harm, through to more selective intervention services for individuals, their families and significant others. Despite such efforts, the public health approach to gambling-related harm would benefit from a universal definition that can be operationalised and measured in order to support effective policy and evaluation.

As highlighted in the New Zealand definition, gambling-related harm should be understood not only in terms of the effects on the person who gambles but impacts that can occur to family, friends, whānau (extended family), and the broader community. Harms can also affect multiple domains of life including, but not limited to: financial hardships, poorer health, psychological and emotional distress, and impaired social and cultural relationships. Each of these harms can occur with varying trajectories, often escalating to a crisis point and continuing to have an impact even after the problematic behaviour ceases. The fact that gambling-related harms (e.g. due to relationship breakdown or loss of significant financial assets) can persist long after the problematic behaviour ceases, highlights the importance of distinguishing between the concepts of harm and behaviour. As will be discussed in detail below, gambling-related harms often occur in the presence of other negative life events – making it difficult to determine the degree to which gambling is the instrumental factor. This review will consider in detail the conceptualisation and operationalisation of gambling harms, as distinct from the problematic behaviour, with specific reference to the New Zealand context.

Despite consistent use of the term 'harm' within the literature to describe the potential consequences of problem gambling, an internationally accepted or agreed-upon definition has yet to be proposed. It is reasonable to treat harm as the damage or negative consequences caused by an action or behaviour, in this case gambling. However, traditional attempts to define harm have tended to either focus on financial loss or to treat symptomatology of gambling problems as a proxy for harm. As such, these definitions do not encompass the breadth of harms that can occur (e.g. emotional and social), and sidesteps questions such as *what* constitutes harm and *who* is experiencing the harm. Few attempts at a clear definition of gambling-related harm can be identified in the literature. An Australian definition from the Queensland Government (QLD Treasury, 2002) positioned gambling-related harm as a 'range of adverse consequences', in which 'the safety or wellbeing of gambling consumers or their family or friends are placed at risk' and/or negative impacts extended to the broader community'. This definition fails to determine what constitutes harm and rather utilises a product safety paradigm to assess the potential hazard of product consumption.

New Zealand's definition conceptualises gambling-related harm in a manner better suited to a public health approach to the issue. The codification of the definition in legislation has ensured that it remains central to the development of policy and harm minimisation strategies. Gambling-related harm is identified as occurring as a consequence of problem gambling, which is in turn described as any gambling that causes or may cause harm to an individual, his or her family, or the wider community (Department of Internal Affairs, 2013). Despite the somewhat tautological definition of the two constructs, the definition has a number of strengths. The New Zealand definition emphasises the multiple social levels at which gambling-related harm can be experienced: the individual person, spouse or partner, family, whānau, the wider community, workplace, or broader society. It also provides more clarity in terms of the mechanism, suggesting harm is any kind of "harm" or distress arising from, or caused or exacerbated by a person's gambling (The New Zealand Gambling Act, 2003). Implicit in this statement is delineation between the problematic behaviour and the harmful



consequences that ensue. Subsequently, the harm or distress encompassed within this definition is then explicitly referred to as personal, social, and economic harms.

Some authors have been critical of both the Queensland Government and the New Zealand definitions, suggesting they are too vague and imprecise to be operationalised in terms of measurement (Currie, Miller, Hodgins, & Wang, 2009; Neal, Delfabbro, & O'Neil, 2005). Both definitions identify that gambling-related harm extends beyond the individual who gambles to their families, friends and community. This is especially important when understanding the impact of harm in a New Zealand context, as family and community ties are more highly valued within some cultural groups, extending beyond the immediate family or geographic location. Another important distinction between the two is that the New Zealand definition highlights the comorbid nature of gambling problems, and potential for complex interactive causal effects, by noting that gambling can *exacerbate*, as well as *generate* harms (Currie et al., 2009). This is an important distinction in terms of the conceptualisation of gambling-related harm, because it can often co-occur with other harmful behaviours or conditions that interact with one another, such as depression or alcoholism. Unlike the Queensland definition, which makes no attempt to identify the different domains affected by gambling, the New Zealand definition identifies potential domains (personal, social, and economic), which may be vulnerable to gambling-related harm.

Neal et al. (2005) addressed the lack of an internationally accepted definition of gambling-related harm, suggesting this may be the result of the multi-disciplinary interest in the phenomena of gambling, and reflect that each research field has its own approaches and perspectives on the topic. Regardless of the cause, this failure to have developed a detailed and explicit definition, within an accompanying conceptual model, makes it challenging to operationalise the concept and thereby measure the impacts or severity of harm experienced (Neal et al., 2005). Despite these criticisms of other definitions of harm, Neal et al. (2005) and Currie et al. (2009) did not provide a definition for gambling-related harm. Instead, harmful behaviour is either explicitly or implicitly referred to as having “negative consequences” and thus these negative consequences are the harm caused by the behaviour (gambling). Such interchangeable use of the term harm to describe the behaviour has made it difficult to distinguish the difference between harm (being the outcome or effect of behaviour) and the source (problematic gambling behaviour).

Although there have been limited attempts at defining gambling-related harm, social and cultural construction of harm has been examined in relation to gambling (Borrell & Boulet, 2005). More recently, the Conceptual Framework of Harmful Gambling has been developed to provide an internationally relevant broad set of factors that conceptualises gambling-related harm and identifies the influencing factors causing harm to populations, communities and societies (Abbott et al., 2015). This is discussed in more detail later in this chapter.

The World Health Organisation's (WHO) definition of health highlights that different cultures have different understanding and experiences of health, suggesting that health and wellbeing are social constructs and any decrement to them would also be socially constructed. This too has been reflected within the gambling literature. Studies of Australian and Canadian indigenous populations have highlighted links between gambling and discrimination (Currie, Wild, Schopflocher, Laing, Veugelers, & Parlee, 2013), but have also illustrated the susceptibility of indigenous populations to develop high severity gambling problems (Bertossa & Harvey, 2012; Nagel, Hinton, Thompson, & Spencer, 2011; Wardman, El-Guebaly, & Hodgins, 2001). These findings are of particular relevance to the New Zealand context because of the sustained (over the past two decades) higher risk of developing gambling problems, and with it, the associated harms amongst certain populations which

includes Māori, migrants (particularly Pacific people in New Zealand), and people of lower socio-economic status (e.g. see Abbott, Bellringer, Garrett, & Mundy-McPherson, 2014a, 2015; Abbott & Volberg, 1991, 1996, 2000; Ministry of Health, 2006, 2008a). While Māori and other indigenous minority people experience higher rates of harm (consistent with colonisation, oppression, persistent social disadvantage, and health and wellbeing issues) it remains unclear how these factors link with gambling participation and harm (Abbott et al., 2015). Gambling harm for Māori has been identified with ongoing effects of colonisation (trauma, boredom, limited education, employment opportunities, alienation, and ongoing racial discrimination) operating in New Zealand society (Dyall, 2010). Recent data from the New Zealand (2012) National Gambling Study suggests that these findings cannot be accounted for by demographic differences and measures of social and economic inequality alone. These factors play a significant part in explaining high rates of problem gambling among Māori; however, ethnicity per se also remains an important predictor (Abbott et al, 2014a).

Attempts to define gambling-related harm to date have been limited and often rely on intuitive understandings of the notion of harm or simply refer to problematic gambling behaviours. The circular usage of symptomatology and harm throughout the literature has blurred the boundaries between the two constructs. It is important to separate the behaviour (gambling) from the symptomatology (risk profile or diagnosis) and the potential negative outcomes (harm). This is a necessary step in order to be able to operationalise the construct of harm with sufficient rigour to develop a robust summary measure. As identified by this review, the New Zealand definition of gambling-related harm appears to be the most comprehensive and universally applicable, providing a robust foundation for the development and implementation of a public health orientated approach to assessing harm.

## **Theoretical treatments of gambling-related harm**

The model or framework from which one approaches gambling-related harm has important implications for how it is positioned. Theoretical approaches are based on implicit assumptions, which when made explicit, are able to be analysed in terms of their influence. While findings from this review and the New Zealand policy approach favour the public health approach, it is helpful to compare and contrast it with other models to appreciate the limitations and benefits of each.

### **Consumer/Economic**

Self-responsibility and consumer/economic models look to place the individual or consumer (i.e., the person who gambles) as responsible for the safe consumption of a product, with the vendor/manufacture being responsible for providing a safe product and information on its safe use. According to the consumer model, gambling is a service product or consumer good that is being made available in the marketplace where the consumer is free to select it in order to gain utility (Productivity Commission, 2010). This model assumes that individuals are well-informed, rational beings with full access to information and product options. As a free market model, the self-responsibility model emphasises freedom to choose, and the responsibility of the individual to make effective and adaptive decisions. In the context of modern liberal economies, the self-responsibility model has strong intuitive appeal as it posits the individual as being the most qualified in making economic/consumer decisions for their own wellbeing (Productivity Commission, 2010).

In many Western countries, it is conceptions of self-responsibility and consumer models that predominantly inform political discourse and policy, particularly for government regulation or considerations surrounding restriction of contentious products; for example, gambling, tobacco, and firearms. Similarly, arguments from industry against regulation or harm minimisation are often based on these models, which appear to have been accepted within Western communities as evidenced through population surveys and public discourse (Borrell, 2008). Such systematic support may be seen reflected in the Queensland definition of gambling-related harm, which utilised a product safety framework of evaluating hazards involved with the consumption of commercial gambling, reflective of the dominant cultural paradigm in liberal free-markets. According to these models, gambling-related harms would be explained by abnormal characteristics, or flawed decision-making by the consumer, positioning deficiencies in the individual as the instrumental factor (Productivity Commission, 2010). One major criticism of self-responsibility and consumer models has been the assumption that a reasonable or typical consumer would not consume a product that decreases utility. There have been some attempts by Australian policy makers to incorporate fitness for purpose and safety standards that shift some responsibility from the consumer to the manufacturer/merchants (Productivity Commission, 2010), and this issue of fitness for purpose has also been addressed in public health campaigns to address gambling-related harm in some communities (see Whittlesea Interagency Taskforce on Gambling, 2012).

Despite the use of such models in other Western countries, self-responsibility and consumer models are inadequate in addressing important aspects of gambling-related harm. Not only do these models ignore important characteristics or elements of the product designed to increase consumption, they fail to consider the individual or the environmental circumstances in which the consumer engages with the product that may increase risk of overconsumption and subsequent harm. In addition, self-responsibility and consumer models fail to address potential external harms caused to other people (e.g., friends, family, and significant others). A self-interested consumer may, quite rationally, care little for the harm that they cause to others. Self-responsibility and consumer models disregard the influence of novel gaming technologies and environmental cues on gambling behaviour. Given the popularity of electronic gambling machines (EGMs) by those experiencing gambling problems, it is clear that particular characteristics of the product itself are more likely to attract, exacerbate or generate issues with problem gambling (Ministry of Health, 2009). Furthermore, self-responsibility and consumer models disregard comorbidities, pre-existing morbidities, traumas or social disadvantage that render people more vulnerable to overconsumption or misuse. The New Zealand 2012 National Gambling Study found that 53.3% of people experiencing problems with gambling reported having experienced past traumas, hardships or problems compared to 19.9% of non-gamblers and 22.9% of recreational gamblers (Abbott et al., 2014a). Similarly, problem gambling has also been found to be related to mental health issues, health problems and psychological distress that may also have the potential to exacerbate adverse gambling behaviours (Ministry of Health, 2009) while affecting some groups, such as ethnic groups, disproportionately more than others (Abbott & Volberg, 2000). These findings suggest that not all consumers are equally positioned in terms of their ability to engage in the marketplace, may be more vulnerable to particular market products, or may have less capacity to objectively assess the utility provided by consumption of a particular product.

## Pathological/Medical

A pathological/medical model positions problem gambling as a discrete disorder, which an individual either has or does not have, based on well-defined diagnostic criteria (DSM5; American Psychiatric Association, 2013). Harms are thought to arise as a result of the disorder, with the corollary that those without the disorder are not experiencing harms. There are a number of limitations associated with the medical model, which is grounded in a pathogenic paradigm and suggests treatment or prevention approaches to harm mitigation. That is, disordered or problem gambling is a condition that can be treated and would benefit from preventative measures to reduce risk factors. This model encourages a focus on biological or behavioural determinants and risk factors, and is less able to consider social, psychological, economic, cultural, and political factors that may influence the development of problem gambling and subsequent harms. In this way, the behaviour is the focus of the model, and it does not separate the outcome of harm from the generating behaviour. Given the influence of the medical model in driving, for instance, the development of measures of problem gambling prevalence, it is not surprising that some authors have criticised taking a discrete, categorical approach to defining gambling problems and subsequent harms (Korn, Gibbons, & Azmeier, 2003; Korn & Shaffer, 1999; Shaffer & Korn, 2002).

One of the key limitations of the medical model in relation to gambling-related harm is that harm can occur without a person necessarily having the symptomology for qualifying as a problem gambler. Rather, harm related to gambling is more reasonably understood to be a dimensional impact, influenced by a number of factors of which the extent of problematic gambling behaviour is the major one. The medical model restricts our understanding of harm to that associated with clinically diagnosed problem gambling while disregarding harm generated from non-problem (i.e. recreational gamblers) and at-risk levels of gambling (i.e. moderate risk and low risk gamblers). The New Zealand 2012 National Gambling Study provides an example of the need for harm minimisation to take account of the whole spectrum of gamblers, not just those with serious problems. Although lifetime probable pathological gamblers (determined using SOGS-R) and problem gamblers (determined using the PGSI) much more often reported that individual SOGS-R and PGSI items applied to them than did people in the less severe problem and at-risk groups, those in the latter groups and non-problem gamblers in aggregate reported more of these experiences. This is because there are many more people in the non-problem groups that report one or a few of the adverse gambling-related experiences measured by these scales. For example, while most of the estimated 0.7% of PGSI problem gamblers said they lost control of their gambling, 3.6% of adults overall reported this experience, meaning that over 80% adults who reported loss of control during the preceding 12 months were not problem gamblers (Abbott et al, 2014a).

Similarly, treated as an illness, there is an emphasis on the individual who gambles, failing to take into account how gambling can affect families, friends, whānau and communities. Finally, it fails to appreciate the complexity of problem gambling and how the manifestation of harms and the development of the gambling problems can vary between individuals. Allcock (1995) questioned the perception of problem gambling as a discrete entity, and emphasised the social construction of gambling harms, as well as the different ways in which excessive gambling can occur over time:

*'They may reflect little excesses, large excesses, episodic behaviour, frequent behaviour, accepted behaviour in a sub-culture, not accepted behaviour in a family culture' (Allcock, 1995, p. 114).*

Allcock's (1995) view is consonant with psychological/psychiatric understanding of mental illness, which acknowledges that it is the appropriateness or acceptability of the behaviour within a social

context that determines pathology. Behaviour that is adaptive in one context may be maladaptive in another. New Zealand has many different populations, broadly classified into four groups (Māori, Pacific Island, Asian and European/Other), which have different and specific beliefs and values regarding gambling and problem gambling (see Anae, Coxon, Lima, Atiga, & Tolley, 2008; Bellringer, Perese, Abbott, & Williams, 2006; Cowley, Paterson, & Williams, 2004; Guttenbeil-Po'u'hila, Hand, Htay, & Tu'itahi, 2004; Perese & Faleafa, 2000; Tse, Abbott, Clarke, Townsend, Kingi, & Manaia, 2005, 2012; Watene, Thompson, Barnett, Balzer, & Turinui, 2009; Wong & Tse, 2003). An accurate understanding of gambling harm must take into account the different cultural contexts in which the behaviour occurs. For example, in the context of the ongoing impacts of colonisation in New Zealand, gambling can be conceived by Māori as a valid mechanism to manage and improve low socio-economic status (Dyall, 2010). Asian cultural beliefs and values which produce stigma and practices of 'face-saving' exacerbate gambling harm by cutting people off from support networks and preventing them from participating in their communities (Sobrun-Maharaj, Rossen, & Wong, 2012).

## Harm reduction

Harm reduction or minimisation approaches are focused on minimising the potential negative outcomes associated with gambling by addressing the behaviour itself. They represent an aim to facilitate gambling at appropriate levels without adversely impacting on those who gamble in a non-problematic manner (Productivity Commission, 2010). The focus of harm reduction models is, therefore, the prevention of the harm from the behaviour (gambling) rather than prevention of the behaviour itself. This model has been adopted globally in response to other public health issues such as alcohol consumption, tobacco use and illicit drug use (Bissitt, Crate-Lionel, & Lambert, 1988; Dickson, Derevensky, & Gupta, 2002, 2004a, 2004b; Dickson-Gillespie, Rugle, Rosenthal, & Fong, 2008) and was originally applied to gambling in relation to youth gambling, and some other vulnerable groups such as the elderly and low income people (National Research Council, 1999).

Whilst there are multiple interpretations and debates regarding the use of harm reduction/minimisation strategies in relation to gambling (Gainsbury & Blaszczynski, 2012), there are clear parallels between this model and the New Zealand approach. Both are based on a public health approach, and the harm reduction or minimisation model demonstrates an appreciation for the environmental and social determinants of problem gambling, rather than being restricted to the characteristics of the individual who gambles. It assumes that gambling has the potential to cause harm to anyone, which differs from both the consumer-based and medical models that consider gambling problems to be a flaw in decision-making or individual illness. Subsequently, there is an increased emphasis on the product as an underlying cause or source of harms rather than just the person who gambles. Thus, this model targets the consumer's behaviour for prevention or (if needed) treatment in response to the risks involved with unrestrained use of the product. Such a focus acknowledges the breadth of risks associated with gambling. This is consistent with the New Zealand public health approach.

The New Zealand definition of problem gambling considers gambling behaviour to be problematic when it generates or exacerbates experiences of harm. Implicit within this definition is the assumption that gambling can occur at a safe level. Gambling is, therefore, often compared with other public health issues such as alcohol consumption or exposure to the sun (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999) where safe levels can be identified, and where there is a clear risk of harm occurring due to over-consumption/exposure.

This approach also considers the role of influences on the early development of problematic gambling behaviours in order to minimise harm. Alcohol abuse (including binge drinking) and youth gambling have been found to have high levels of comorbidity and share many of the same risk factors (Dickson et al., 2004a; 2004b). To address multiple morbidities, harm minimisation approaches support the identification of similar pathways or target areas in prevention strategies. For example, it is believed that, like alcohol, youth gambling is considered socially acceptable and is a normal part of experimentation during development (Dickson et al., 2004b). Given that both alcohol consumption and gambling harm exist on a continuum (Dickson et al., 2004b), public health frameworks designed for assessing alcohol consumption may be useful in addressing youth problem gambling. This framework is not simply limited to youth gamblers but can be applied across the lifespan and between genders (Hing & Breen, 2001), and in different cultural settings (Abbott, Volberg, Bellringer, & Reith, 2004; Breen & Gainsbury, 2013; Stevens & Golebiowska, 2013). Additionally, there is potential to use this model to address the disproportionate prevalence of gambling harm among disadvantaged populations in New Zealand. For example, people from lower socio-economic communities, who are more vulnerable to the development of gambling problems and exposed to higher numbers of EGMs due to where they live, may benefit from harm minimisation strategies that involve limits on EGM numbers within their communities.

Harm minimisation or reduction models are consistent with other theoretical approaches to gambling, such as the public health approach (Korn et al., 2003; Korn & Shaffer, 1999), despite some critics suggesting there to be no safe level of gambling (Carter, Miller, & Hall, 2012). The minimisation of harm is arguably a far more pragmatic and attainable outcome than trying to stop gambling altogether. Similarly, compared to the previous models that have been used to conceptualise gambling-related harm, the harm reduction and minimisation models are the first to encompass the elements and values that are codified within the New Zealand definition of gambling-related harm.

## Public health

In order to understand and easily explain gambling phenomena, public health perspectives use an infectious disease metaphor rather than a discrete disease (seen with the medical model), of which there are four main facets: 1) the *host* which is the gambler; 2) the *agent* referring to the specific gambling activities (e.g. EGM play); 3) the *vector* which is the level of investment (either money or time); and 4) the *environment* including the gambling venue as well as everything related to the gambler's situation such as physical, socio-economic, cultural, and political environments (Abbott et al., 2004; Korn & Shaffer, 1999). By considering all these factors, it is possible to identify what contributes to, or may protect from, risk of harm whilst acknowledging the potential benefits of gambling in order to inform public policy (Korn & Shaffer, 1999, Korn et al., 2003). The model was originally applied to gambling in an effort to place gambling within the public health framework to be examined and understood from a broader perspective (Korn & Shaffer, 1999). Korn and Shaffer (1999) considered that this would make it possible to position gambling as a public health issue that can impact not only on the gambler, but also on the family, friends, and community making it viable to consider prevention-based policy and treatment practices.

Public health approaches have proven to be successful in reducing mortality and morbidity associated with other public health issues (for instance, tobacco control, road safety, immunisation, and environmental contaminants control) and have been utilised internationally by policy analysts and researchers (Productivity Commission, 2010). Public health approaches are unique as they

incorporate harm minimisation/reduction perspectives in conjunction with health promotion (Dickson-Gillespie et al., 2008), focusing not only on prevention and policy directed at the individual, but also on building healthy communities of empowered and resilient people. This is particularly important as it not only acknowledges the characteristics of the product but also the effects unhealthy gambling behaviours can have on family, friends, and whānau; as well as the influences on cultural and community connectedness.

Several authors have noted the importance of the shift from the individual to the context and environment in understanding gambling harms (Abbott et al, 2004; Adams, Raeburn, & De Silva, 2009; Marshall, 2009; Messerlian, Derevensky, & Gupta, 2005). Adams et al. (2009) highlighted New Zealand's efforts to recognise gambling as a public health issue and the development of three main responses: 1) harm minimisation; 2) health promotion; and 3) political determinants. Whilst harm minimisation is well understood within the gambling literature, health promotion has been given much less attention. While some have attempted to encourage responsible gambling through advertising and policy changes (e.g. Australian responsible gambling campaigns), there has been little effort to understand the potential utility of health promotion for broader communities. Health promotion focuses on upstream determinants to try and circumvent the problem from occurring. Historically, efforts to address gambling harms have generally focused on downstream determinants of harm (behavioural and biological), or treatment and interventions after a problem occurs. This is particularly important when considering communities with varying cultural or socio-economic backgrounds, as there is not simply a "one fits all" approach to dealing with problem gambling.

At the environmental level, two major hypotheses have been advanced regarding associations between increased gambling availability and gambling-related harms including problem gambling and other adverse health and social costs. The availability/exposure hypothesis maintains that increased availability leads to increased problems. An adaptation effect has also been noted whereby problems with gambling might reduce at the population level as societies adapt and learn about gambling and ways to counter adverse effects (Abbott, Williams, & Volberg, 1999; Shaffer, Hall, & Vander Bilt, 1997). Although Orford (2005) and some others have stated or implied that availability and adaptation hypotheses are alternatives, Shaffer et al. (1997) and Abbott et al. (1999) regarded them as both applying at different times during periods of gambling expansion. Furthermore, Abbott (2006, 2007) argued that both occur simultaneously, with the relative balance influenced by a variety of factors related to the agent (nature of gambling activities and their availability), host (individuals involved in gambling) and the wider social, cultural, and economic environment. To some extent, this model is based on an analogy with traditional public health frameworks concerning infectious diseases, where agent, host, and environment interact in complex ways.

A public health approach also acknowledges the positive effects associated with safe levels of consumption of gambling products, unlike other models that tend to focus on gambling and subsequent harm. Recreational gambling can encourage positive community connection and enhance family interaction and engagement (for all whānau including immediate and extended families and other community members). For example, often Māori and Pacific families and communities play housie (bingo) in order to raise money for the church or other community causes (e.g. Bellringer, Taylor, Savila, & Abbott, 2014; Perese, Bellringer, Williams, & Abbott, 2009; Dyall, Thomas, & Thomas, 2009a). Others find gambling to be a form of relaxation or entertainment with most people not experiencing adverse outcomes or harm. At a broader community level, gambling generates employment opportunities while providing avenues for community togetherness by fostering social interaction within venues. Gambling also supports sporting events and other



activities that would otherwise be under-funded within the community. It is also interesting to consider the degree to which gambling may represent an adaptive coping mechanism for other problems; for instance for seniors in dealing with loneliness and social isolation. A position influenced by the public health approach was adopted in Australia by The Independent Pricing Regulatory Tribunal (IPART) (2005) whose goals were to prevent vulnerable people from developing gambling problems; reduce the prevalence of gambling within the community; reduce both the negative social and health consequences associated with problem gambling for individuals, families and their communities; preserve reasonable levels of enjoyment for recreational gamblers; and ensure the livelihood of those associated with the gambling industry is not unnecessarily compromised. Such recommendations are consistent with the New Zealand approach as they:

- Cover both the positive and negative effects of gambling.
- Consider those who are affected beyond an individual level, including the broader community and industry.
- Acknowledge the varying levels of vulnerability for particular groups.
- Recognise that gambling harms can affect multiple domains of life.

A public health approach to gambling harm recognises the broad network of social determinants of health, including but not limited to: political policy, social cohesion, cultural communities and values, education, life-course of health behaviours (including gambling), and subsequent health outcomes (harms). This approach provides a thorough conceptualisation of gambling-related harm that separates the potential outcome from the behaviour or symptomatology.

## How harm is manifested

When considering gambling-related harm, much of the focus is directed towards the person who gambles, and is experiencing problems with gambling. Often overlooked is the fact that gambling-related harm generally occurs on a number of different levels: harm to the individual who gambles, harm to family and friends, harms to their whānau, and harms to the general community. The source of harms clearly begins with the individual who is gambling at a problematic level. The harm may be understood to act like a contagion, spreading through social connections. Family and close friends are most immediately affected: these can be broken down into two categories, 1) immediate family; and 2) friends, extended family and whānau. The immediate family refers to those who often experience most immediate and pervasive harms due to their partner, child, parent, or sibling's gambling. The majority of the literature, and subsequently this review, focuses on the harms experienced by partners and children of gamblers. However, it is not unusual for other family members to experience similar harms dependent on the level of involvement with the gambler, particularly the parents of the person who gambles. Other affected persons may be friends; extended family and whānau; colleagues; peers; and those in social, cultural, or political networks. Whilst these groups may experience lower levels of harm than those in the gambler's immediate family, a small proportion may occasionally experience severe impacts (e.g. from criminal activity). On the broadest level are harms occurring to the community. The community can refer to a population bounded by a number of commonalities including geographical, cultural, political, or socio-economic links. The



spread and experience of harm across these different groups can vary significantly depending on the relationships or cohesion between them.

## **Harm to the individual**

Harm from gambling is often measured by proxy using symptomatology or using self-report in population surveys. For example, in New Zealand these include the New Zealand Health Surveys (Ministry of Health, 2009; 2012; 2014), the New Zealand 2012 National Gambling Study (Abbott et al., 2014a) or alternatively, client disclosures during treatment seeking (Abbott et al., 2012). The use of self-report assessment measures has generally been supported as a reliable tool for measuring gambling problems (Hodgins & Makarchuk, 2003). Whilst there is a large body of research exploring the types of harm that can be experienced by a person who gambles in New Zealand (see Walker, Abbott, & Gray, 2012 for a recent example), there is a lack of separation of harm from behaviour or symptomatology. This reflects an underlying implicit assumption that harms are symptoms of the problem rather than a distinct concept.

The 2012 New Zealand National Gambling Study (Abbott et al., 2014a) was the first nationally representative study (N=6,251) that focused on gambling in New Zealand since 1999. Impacts reported in this study included deprivation, unemployment, and impacts on relationships. Problem gamblers reported high levels of deprivation, with nearly three-quarters saying they had been forced to buy cheaper food during the past 12 months compared to a quarter of adults generally. Moderate-risk and low-risk gamblers also more frequently experienced some of these deprivations than non-gamblers and non-problem gamblers. Over a half of problem gamblers said they had been out of paid work for more than a month and around a third had received support from a benefit program. Problem gamblers more often reported an increase in the number of arguments with someone close (38% vs. 4% of non-problem gamblers). Moderate-risk and low-risk gambler groups also reported some life events more often than non-problem gamblers; including troubles with work, boss, or superiors; and an increase in arguments with someone close. When asked about the impacts of others' gambling, Māori (30%) and Pacific people (32%) more often referred to adverse financial impacts than European/Other (19%) and Asian (23%) peoples. Māori, relative to Asian people, more often mentioned feeling sorry or concern for the gambler, and loss of time together (Abbott et al., 2014a).

Many forms of gambling are available in New Zealand including casino table games, EGMs, Lotto, Instant Kiwi (scratch tickets), track betting (horse and dog races), sports betting, and housie (bingo) (Ministry of Health, 2012). The New Zealand 2012 National Gambling Study (Abbott et al., 2014a) data indicated Lotto was the gambling activity most often participated in, with more than half of adults having taken part during the past 12 months (61% from a store; 5% online) followed by a New Zealand lottery or raffle (47%), Instant Kiwi or other scratch tickets (33%) and bets with friends or workmates (15%). Somewhat lower rates applied to EGMs (12% at a pub, 8% at a casino and 6% at a club), betting on horse or dog races (8% at the track, 8% at a TAB, 3% at a TAB via telephone, online, or interactive television), casino table games (4% in New Zealand), betting on sports events (3% via the TAB at an event, 3% at a TAB and 2% at a TAB via telephone, online or interactive television), playing cards for money (not at a casino) (4.5%), playing poker for money or prizes (3% with friends or family at a private residence, 2% at a commercial venue in New Zealand and 0.5% on-line), playing a text game for money or prizes (3%), playing keno (2% from a store, 0.7% online) and playing housie or bingo (2%). Just less than one percent (0.9%) reported making short-term

speculative investments in the past year. Only a small number (0.7%) engaged in overseas Internet gambling for money or prizes. Apart from Lotto, relatively small numbers of people reported participating weekly or more often in other forms of gambling (Abbott, Bellringer, Garrett, & Mundy-McPherson, 2014b). In the year ending April 2014, 67% of new gambler presentations at New Zealand problem gambling services were in relation to EGM gambling (54% in relation to non-casino EGMs) (Ministry of Health, 2014). This is consistent with Australian findings (Productivity Commission, 2010). The strength of this association has led to the safety of the EGM as a gambling product being questioned by a number of authors (Dowling, Smith, & Thomas, 2005; Cantinotti & Ladouceur, 2008).

The nature of harms experienced by an individual can be broadly grouped by effects in the following domains:

- Decrements to health (both morbidity and mortality).
- Emotional or psychological distress.
- Financial harm.
- Reduced performance at work or education.
- Relationship disruption, conflict or breakdown.
- Criminal activity.

These will be discussed separately in the subsequent sections.

## Health

The majority of harm to an individual's health in relation to gambling is related to significant increases in their levels of stress and anxiety. Physical changes in an individual's biochemistry have been noted in people experiencing problems with gambling that are consistent with exposures to high levels of stress and arousal. This exposure occurring frequently or regularly has a proximal impact on an individual's health outcomes through the effect of epinephrine, cortisol, and diastolic blood pressure. Whilst these effects are predominantly associated with adult and older gamblers rather than youth, the long term impacts for youth (even if they cease gambling) have yet to be investigated (Fong, 2005).

There is a significant body of evidence showing that problem gambling is strongly associated with a number of other comorbidities. However, association does not imply causation, and causal sequences and interaction are difficult to determine. Strong associations have been identified between gambling and other addictions (Abbott et al., 2004; Ariyabuddhiphongs, 2013; Hodgins, Peden, & Cassidy, 2005; Holdsworth, Haw, & Hing, 2012; Hounslow, Smith, Battersby, & Morefield, 2011; Martin, Usdan, Cremeens, & Vail-Smith, 2013; Potenza, Maciejewski, & Mazure, 2006); mental health (Ariyabuddhiphongs, 2012; Bakken, Gøtestam, Gråwe, Wenzel, & Oren, 2009; Dickson et al., 2002; Dussault, Brendgen, Vitaro, Wanner, & Tremblay, 2011; Hodgins et al., 2005; Holdsworth et al., 2012; Hounslow et al., 2011; Källmén, Andersson, & Andren, 2008; Lloyd et al., 2010; Martin et al., 2013; Najavits, Meyer, Johnson, & Korn, 2011); social impairment

(Ariyabuddhiphongs, 2012; Bissitt et al., 1988; Dickson et al., 2002; Holdsworth & Tiyce, 2013; Parker, Summerfeldt, Kloosterman, Keefer, & Taylor, 2013; Welte, Barnes, Tidwell, & Hoffman, 2009); and age related health impairments (Ariyabuddhiphongs, 2012; Phillips, 2009). The escalation of such comorbidities may be a result of mutual, bi-directional causation between gambling and other comorbidities (alcoholism and homelessness) (Dussault et al., 2011; Holdsworth et al., 2012; Holdsworth & Tiyce, 2013; Lloyd et al. 2010; Martin et al., 2013), given that many share the same risk/protective factors as gambling (Dickson et al., 2002; Dussault et al., 2011; Hodgins et al., 2005; Holdsworth et al., 2012; Hounslow et al., 2011).

At a national level, evidence has been found for relationships between problem gambling, physical health, and self-reported health. The New Zealand 2012 National Gambling Study (Abbott et al., 2014a) noted that reported good health decreased with increasing risk of problem gambling. Fifty-seven percent of non-gamblers and 54% of recreational gamblers reported their general health to be good or excellent. There was a steady decline with increased gambling risk, with 44% of low-risk gamblers, 36% of moderate-risk gamblers and only 22% of problem gamblers reporting good or excellent general health (Abbott et al., 2014a), demonstrating a strong association between gambling risk level and harm to an individual's health. Furthermore, people experiencing problems with gambling often rated their health as only fair or poor (33%) whilst for other lower risk groups this ranged lower at between 14% and 20% (Abbott et al., 2014a). These findings were consistent with another large general population survey (N=7,010) that found people who participated in gambling at high intensities (as measured by expenditure and losses relative to income) experienced significantly worse physical and mental health (SHORE, 2008).

International research has identified some concerning patterns of harm relating to individual health and multiple risk factors. Black, Shaw, McCormick and Allen (2013) conducted a case control study (matched on age and gender) investigating the biological determinants of people who met the criteria for DSM-IV pathological gambling. Those who met the criteria for pathological gambling (DSM-IV) had more medical and mental health conditions, had a higher body mass index (BMI), were less likely to participate in regular exercise, and were more likely to be classified obese. They were also more likely to engage in unhealthy lifestyle behaviours such as excessive alcohol consumption, smoking, and watching more than 20 hours of television per week, and were less likely to seek health care (medical and dental) due to financial pressure (Black et al., 2013). These risk factors translated into poorer health outcomes with lower ratings of self-health, more emergency department visits, and increased likelihood of hospitalisation for a psychiatric condition (Black et al., 2013). It is important, however, to be cautious in how these findings are interpreted. The causal sequence between gambling behaviour, behavioural health determinants, and health outcomes is not established by this study and a third variable's influence (for example socio-economic status) cannot be discounted. Nevertheless, there are some obvious cases in which gambling can be identified as a causal factor; for example gambling is a sedentary behaviour (Cousins & Witcher, 2007) that increases the risk for other biological determinants of health.

In New Zealand, the 2012 National Gambling Study found that those experiencing, or at risk of developing, gambling problems had higher rates of tobacco, alcohol, and substance (drug) use (Abbott et al., 2014a). People experiencing problems with gambling were significantly more likely to have smoked more than 100 cigarettes in their lifetime, and significantly more problem and moderate-risk gamblers than recreational gamblers were current smokers. Similarly, people experiencing problems with gambling; and to a lesser extent, moderate-risk and low-risk gamblers; more often reported cannabis use in the past twelve months than recreational and non-gamblers, and were more likely to engage with other substances including ecstasy, amphetamines, party pills,

stimulants, and benzodiazepines (Abbott et al., 2014a). Additionally, these same groups also reported higher levels of alcohol misuse (Abbott et al., 2014a). These findings were consistent with a study using a client based sample (N=462) seeking help for gambling problems via the New Zealand National Gambling Helpline which found that 60% of the sample smoked tobacco, 12% reported substantial or moderate drug problems and 62% met the criteria for alcohol misuse (Abbott et al., 2012).

The New Zealand 2012 National Gambling Study (Abbott et al., 2014a) and results from the client-based study (Abbott et al., 2012) also indicate that problem gambling behaviour has substantial links to mental health problems and psychological wellbeing. From those seeking treatment for gambling problems, 56% had high levels of psychological disorder (as measured by the Kessler Scale) (Abbott et al., 2012), as did 46% of people experiencing problems with gambling in the New Zealand 2012 National Gambling Study (Abbott et al., 2014a). People classified as problem gamblers further reported higher rates of depression and anxiety (both 21%) relative to non-gamblers (6%, 5%) and non-problem gamblers (7%, 5%) (Abbott et al., 2014a). In client-based samples, 58% of subjects met the diagnostic criteria for major depression while a further 12% were considered to experience minor depression (Abbott et al., 2012). Both these findings have been supported in a previous New Zealand general population surveys, which showed that 60% of those with at least a moderate gambling problems indicated that they suffered depression as a result of their gambling (SHORE, 2008). The differences in the prevalence between the population survey and client survey could be due to either a temporal difference, or a difference in personal characteristics. A temporal difference suggests the experience of gambling problems could cause or exacerbate mental health issues. Likewise the difference could reflect personal characteristics of those who seek treatment – with help seeking populations exhibiting more severe gambling problems and greater comorbidities.

The links between problem gambling and mortality are complex and yet to be fully explored across multiple causes of mortality. Gambling as a determinant influences proximal biological determinants, but to a greater degree has a strong influence on distal determinants through complex causal pathways that make it challenging to capture in reporting protocols. For example, problem gambling may result in increases in blood pressure, loss of sleep, and contribute to behaviours detrimental to health such as sedentary behaviour, however there is also a significant impact on health through upstream, or social determinants of health. These include impacts on employment, income, family, neighbourhood, social cohesion, and life course. These determinants, whilst not as immediate in their impact, can be more pervasive. While currently the contribution of gambling to morbidity could be identifiable through mention of psychological determinants (such as depression, stress, or anxiety), the contribution of biological determinants of mortality, as outlined in Black et al.'s (2013) study, are yet to be fully explored. However, there has been some consideration of mortality within international gambling research focusing on suicide (Carroll, Davidson, Marsh, & Rodgers, 2011; Ledgerwood, Steinberg, Wu, & Potenza, 2005; Petry & Kiluk, 2002; Blaszczyński & Farrell 1998). Suicidal ideation and suicide attempts are positively correlated with gambling severity (Battersby, Tolchard, Schurrah, & Thomas, 2006) with higher rates of suicide in particular being associated with youth experiencing gambling problems (Nower, Gupta, Blaszczyński, & Derevensky, 2004). The relationship between gambling and suicide has been reported in New Zealand with 1.4% (N=150) of users of a national telephone helpline for problem gambling reporting suicide ideation in 2011; six of those clients had previously attempted suicide (Norton, 2012). In a previous study, 70 patients admitted to an Auckland hospital following a suicide attempt completed a brief problem gambling screen (the EIGHT Screen) administered by hospital staff (Penfold, Hatcher, Sullivan, & Collins, 2006a). Twelve (17%) of the patients returned positive results for problem gambling with half of these having previously attempted suicide. These patients were more likely to be Māori and experiencing

problems with alcohol consumption (measured by the CAGE alcohol screen) (Penfold, Hatcher, Sullivan, & Collins, 2006b). Similarly, exploratory qualitative research among Pacific communities in New Zealand identified suicide as one of the many extreme impacts caused by gambling and related financial deficits (Bellringer, Fa'amatuaunu, Taylor, Coombes, Poon, & Abbott, 2013).

It is important to note that both suicide and gambling are part of a much more complex interaction of determinants and morbidities. As argued by some researchers, to say gambling causes suicide may oversimplify the issue, leading to misunderstandings regarding the solution (MacCallum & Blaszczyski, 2003, Penfold et al., 2006b, Séguin et al., 2010). Instead, attribution of the role of gambling in suicide relies on what Blaszczyski and Marfels (2003) refer to as *subjective judgements* (also highlighted by Gray, 2013) in establishing the presence and contribution of problems being experienced with gambling. Like other crisis level harms, suicide has a relatively large impact but with very low prevalence; therefore suicide would be a relatively minor component of the aggregated amount of harm caused by gambling based on only a count of harms.

## **Emotional or psychological impact**

As previously identified, problem gambling has been found to have adverse effects on mental health and psychological wellbeing (Abbott et al., 2012; Abbott et al., 2014a). While these aspects refer to clinically diagnosable or recognised disorders such as depression or anxiety disorder, problem gambling can also affect the emotions and psychological distress experienced on a day-to-day level. International research has identified harm in terms of emotional or psychological distress as experiences of guilt, anxiety, and helplessness; as well as shame, stigma, grief, and self-hatred (Productivity Commission, 2010; Raisamo, Hame, Murto, & Lintonen, 2013). Indeed, the New Zealand 2012 National Gambling study found that 4% of those who gambled within the last 12 months had experienced feelings of guilt (Abbott et al., 2014a). There has been limited investigation of the relationship between emotional states and gambling severity (Yi & Kanetkar, 2011) and there are still significant gaps in our objective understanding of this type of harm.

The two aspects of emotional or psychological distress to receive attention are those of shame and stigma. In the New Zealand 2012 National Gambling Study, 2% of people reported experiencing criticism because of their gambling (Abbott et al., 2014a). Stigma and shame are not just an outcome of gambling behaviour but can also perpetuate other levels of harm, particularly in some New Zealand communities where there are broad social circles and extended family ties. This has been investigated in terms of the issues associated with problem gambling in Asian families where communities identified stigma and face-saving as cultural values and beliefs, suggesting that such states could potentially reduce help-seeking and community connectedness (Sobrun-Maharaj et al., 2012). Instead, individuals may isolate themselves by refusing to attend social events for fear of being stigmatised; exacerbating feelings of shame and the experience of other harmful outcomes (i.e., relationship breakdowns). Not only can shame and stigma affect social and community connectedness, but they can also severely impede help-seeking, early detection, and future treatment. The role of stigma as a health determinant, its impact on other health behaviours relating to self-care, and more upstream health determinants such as social inclusion and connectedness has yet to be fully explored within New Zealand communities.

## Financial

Financial harm does not simply refer to the crisis level harms such as bankruptcy or loss of a major asset (e.g., house, car, business) that usually precipitates help-seeking behaviour. Financial harms can include escalating harms such as the erosion of savings, juggling or failure to pay bills, borrowing money, or a decline in the standard of living. A function of financial harm is deprivation where individuals go without necessities as a result of increasing or perpetual gambling behaviours. The trajectory of this process - from loss of discretionary consumer items to deprivation to crisis - differs substantially depending on other factors such as socio-economic status, income, lifestyle, and severity of the gambling problem. This makes it difficult to develop a universally applicable conceptualisation of financial harm. A large portion of gambling-related harm and losses is often experienced by those living in low-income areas, and who are consequently more likely to be receiving welfare benefits (Wynd, 2005). In considering deprivation, the New Zealand 2012 National Gambling Study assessed whether individuals had gone without quality food or home-heating. People experiencing problems with gambling were found to have higher levels of deprivation, with almost three-quarters reporting they were forced to purchase cheaper food during the past twelve months compared to a quarter of adults generally (Abbott et al., 2014a). Moderate-risk and low-risk gamblers also experienced some of these deprivations more frequently than non-gamblers and non-problem gamblers. In an earlier study conducted by the Salvation Army investigating Foodbank clients, 37% of people accessing Foodbank services were either problem gamblers themselves or were affected by the gambling of others (Salvation Army and Abacus Counselling & Training Services Ltd, 2005). The authors were of the opinion that due to the participation in the survey being voluntary, the percentage of clients who were both accessing the Foodbank services and affected by problem gambling was probably higher. Findings such as these suggest a link between problem gambling and poverty, particularly given that areas with the highest number of Foodbank clients and lower socio-economic statuses seem to have the largest numbers of EGMs (Salvation Army and Abacus Counselling & Training Services Ltd, 2005, Wynd, 2005). While EGM numbers in such locations may simply be reflective of consumer demand, it is reasonable to suggest that the placement of EGMs in lower socio-economic markets may be further perpetuating disadvantage within these communities. Research investigating the distribution of EGMs across areas of New Zealand showed that the ratio of EGMs to people in higher socio-economic areas were 1 to 465 compared to 1 to 75.5 in poorer areas of the community (Wheeler, Rigby, & Huriwai, 2006). Poorer communities are more vulnerable to gambling problems, not only by possessing more limited financial resources, but also due to an increased susceptibility to the cognitive fallacy that a “big win” may break them out of poverty (Wheeler et al., 2006). A general population prevalence study identified differences in self-reports of actual income relative to ratings of financial situation. Compared to participants who experienced lower gambling losses those who experienced higher gambling losses, rated themselves as being financially good or very good despite having lower incomes (SHORE, 2008). Overall, however, participants perceived gambling to have a negative effect on their financial situation, housing situation and material standard of living. No association was found between these variables and problem gambling risk level (SHORE, 2008).

The interactions between gambling and financial harm are complex. Some ethnic groups (i.e., those from lower socio-economic backgrounds, or those experiencing comorbidities associated with gambling) are more likely to be vulnerable to financial harm than others. Similarly, financial harm may also be dependent on the mode of gambling behaviour. For instance, a population study (SHORE, 2008) showed Pākehā gamblers who wagered on TAB/race track and casino EGMs rated themselves better off financially than Pacific respondents who gambled on EGMs in a bar or casino. Māori EGM users rated themselves as having the worst housing situation compared to Pākehā and

Pacific gamblers. These findings suggest that experiences of financial harm may possibly arise due to a combination or interaction of multiple risk factors that render some individuals more vulnerable than others. In some of these population groups (e.g. Māori and Pacific groups), financial burdens and gambling problems can be exacerbated due to the lending, sharing, and borrowing of money between others in the communities (Families Commission, 2012; Dyal et al., 2009a). These interactions can aid in concealing the gambling problem, increasing debt and financial worries while the gambling problem remains untreated.

While some international research has provided links between gambling and extreme experiences of financial harm such as homelessness (Australian Institute of Health and Welfare, 2009), the breadth of gambling-related financial harm in New Zealand remains relatively unexplored. Much of the research tends to focus on gambling-related expenditure, episodic losses and gambling frequency rather than investigating the broader financial impacts. Some authors suggest the use of tracking “resource flows” in order to obtain data on how financial harm occurs and is shared. Bertossa and Harvey (2012) noted the value of research undertaken to track money trails to determine the relationship between gambling and the harm experienced (including to the family and the community). While this was only a small sample (one community), they were able to identify the pattern of money flow to distinguish where it was being spent, by whom and for what purpose. These methods, whilst highly informative, particularly given the available resources on money sharing in some New Zealand populations, are very resource heavy and challenging to implement on larger scales.

## **Reduced work performance**

There are multiple ways in which problem gambling can affect employment or study commitments, and reduced performance in these areas can contribute to both short and long-term impairment to finances and social relationships. Preoccupation with gambling can impair studying or working relationships, result in poorer work performance (e.g., gambling on internet devices at work) (Griffiths, 2009), absenteeism due to gambling, theft of resources to support gambling activities, and eventually, termination of employment or enrolment. It is important to note that in addition to paid employment and study, these same impacts can occur in volunteering (Wall, Peter, You, Mavoa, & Witten, 2010), which otherwise provides value to the community.

Where employment is the primary or major source of household income, harm to employment can contribute to financial harm and relationships. Over half of those experiencing problems with gambling, as surveyed in the New Zealand 2012 National Gambling Study, reported being out of paid work for more than a month with around a third having received some sort of benefit within the previous year (Abbott et al., 2014a). Whilst lack of work may not necessarily be an outcome of gambling, this is consistent with results from previous studies which found that those classed as heavier gamblers in New Zealand (a minimum of 3 hours spent gambling a week and/or a loss of at least 5% income) were more likely to report poorer work performance (Abbott, 2001a; 2001b; SHORE 2008; SHORE & Te Rōpū Whāriki, 2006).



## Relationship disruption

There is a strong connection between problem gambling and the breakdown of family and personal relationships. Research indicates that people experiencing problems with gambling are more likely to be separated or divorced, and also experiencing higher levels of conflict in other personal relationships (McMillen & Marshall, 2004). Again, it must be emphasised that the direction of causality is uncertain; relationship dysfunction may be a cause or an outcome of gambling, or both may be outcomes of a third factor. The New Zealand 2012 National Gambling Study found that, relative to the general population and recreational gamblers, people experiencing problems with gambling more often reported an increase in the number of arguments with someone close (39% vs. 4% of non-problem gamblers) (Abbott et al., 2014a). Compared to non-gamblers, those who were categorised as moderate and low-risk gamblers reported more troubles with work, a boss or superior, and increased arguments with someone close (Abbott et al., 2014a).

Most research that examines harm in terms of relationships tends to be conceptualised at a crisis level, for example, relationship breakdown, that prompts individuals to seek treatment (Carroll et al., 2011; Breen, Hing, & Gordon, 2013; Brown, Killian, & Evans, 2005). Less is known about the process of escalation, or lower level harms that fall within the category of conflict and disruption to relationships. Similarly there is a focus on the spouse or partner of the individual who gambles. Whilst this relationship is often harmed most significantly, other relationships such as workplace relationships, friends, parents, siblings, children, extended family, and other social, political, or cultural affiliations can also be affected. Similarly, it is important to distinguish that harm to relationships is not only a harm in itself, but can also contribute to adverse emotional states, poorer health outcomes and even homelessness whilst potentially exacerbating the gambling problem and other comorbidities. In the New Zealand 2012 National Gambling Study, around one in 12 participants were of the view that they had been affected personally by another person's gambling. Adverse financial impacts were mentioned most often, followed by relationship break-ups, stress to family, loss of trust, anger, frustration, and resentment. Approximately one in 33 adults reported an argument about gambling in their household during the past 12 months and around one in 36 reported that their family or household had gone without something they needed or that bills were not paid because of gambling (Abbott et al., 2014a).

## Criminality

Problem gambling has also been found to be associated with criminal behaviour for both the general population and those within the prison system, most commonly being associated with property crimes and fraud (Abbott & McKenna, 2000; Abbott, McKenna & Giles, 2000; Carroll et al., 2011; Breen et al., 2013; Brown et al., 2005; SHORE, 2008). However, studies conducted with recently sentenced males and females in New Zealand prisons indicated that many gambling-related offences were undetected by others or did not lead to criminal convictions (Abbott & McKenna, 2000; Abbott et al., 2000). In one formative investigation, 32 gamblers (26 being classified as problem gamblers) were interviewed to provide insight into the links between gambling and crime in New Zealand. Results indicated that a third of the participants reported that their gambling had led to problems with police or to a conviction for crimes relating to gambling. Almost two-thirds of participants reported their gambling behaviours were associated with, contributed to, and/or caused the crimes they had committed (Bellringer et al., 2009). Findings from this study supported earlier findings from a 2007 general population survey (SHORE, 2008) that suggested people with high gambling participation were significantly more likely to engage in illegal activities than people with



low participation or who did not gamble. For those who were involved in criminal behaviours, a quarter believed they would not have committed the crime if they had not been gambling in the last 12 months (SHORE, 2008). This finding is consistent with the prior prison studies, which found that few of the inmates started their criminal careers because of gambling but that many subsequently became problem gamblers, with gambling being a reason for the criminal behaviours (Abbott & McKenna, 2000; Abbott et al., 2000).

Consistent with the other gambling-related harms, there are identified factors that contribute to the likelihood of participating in illegal behaviours. Those who play poker or card games in private venues (e.g., theirs or a friend's home) or engage in EGM play in bars, were significantly more likely to be involved in criminal activities compared to those who never gamble (SHORE, 2008).

Individual harms are separate to gambling or problem gambling, although a close association between problem gambling level is identified for each of the domains of harm. These harms do not occur in isolation and often interact with one another, often exacerbating or creating other harms. However, there has been little consideration within the literature as to how these harms are manifested. Generally, the focus within the research to date has been the crisis point that triggers help-seeking behaviours (e.g. relationship separation, bankruptcy) for those classed as problem gamblers with little consideration as to how those with lower levels of problem gambling risk (non-problem or recreational gambler through to moderate-risk gambler) experience these harms. Similarly most of the research stops at the crisis level with little investigation into legacy harms (i.e., how harm continues to be experienced even after intensive gambling stops).

## **Harm to family and significant others**

Gamblers are not the only people who experience gambling-related harm. Consistent with the public health approach to gambling, the connection to other individuals through psychological, emotional, physical, economic, and familial pathways creates a vector for the transmission of the harm. Generally, there are four discrete groups that have different experiences of harms related to an individual's gambling behaviour; these are: the immediate family; extended family; friends and whānau. Estimates indicate that one person's gambling problem typically affects five to 10 people (Productivity Commission, 1999). The impact of gambling as experienced by others was highlighted in the 2012 New Zealand National Gambling Study. Approximately one-third of adults said they knew at least one person who they thought has (or had) a problem with gambling while about 8% reported that someone else's gambling had affected them personally. Impacts most commonly reported were detrimental financial impacts, followed by loss of relationship, stress to family, loss or lack of trust, anger, frustration and resentment as well as pity and efforts to help (Abbot et al., 2014a).

### **The immediate family**

The immediate family generally refers to those directly involved with a person who gambles, such as spouses/partners, children, siblings, and parents. A general population study (SHORE, 2008) found that approximately 12% of people had at least one person in their lives who they considered to be a heavy gambler in the past 12 months. The New Zealand 2012 National Gambling Study found that about a third of adults said they knew at least one person who they thought has (or had) a problem with gambling and about eight percent reported that it had affected them personally. Two

percent of adults considered their spouse or partner to have or have had a gambling problem. Corresponding estimates are fathers (4%), mothers (2%), brothers (3%), sisters (1%), sons or daughters (1%), workmates (5%), another close family member (9%), an additional close family member (1%), a friend or someone in the respondent's life (14%). Those who reported experiencing the most negative effects were close family members (partners, children, parents, siblings). The most commonly reported impacts included, physical health, mental wellbeing, housing situation, material standard of living, relationships, caregiving for children, feelings about self, overall quality of life, and overall satisfaction with life (Abbott et al., 2014a). People co-habiting (partners and children) often experienced greater levels of harm due to the sharing of finances and responsibilities as well as greater emotional investments within the relationship.

## **The spouse or partner**

There are a number of international studies examining the harms caused to partners and spouses that are of relevance to New Zealand. One Australian study identified the harms most commonly reported by partners as being financial impacts (increased debt and financial strain), breakdown of relationships due to conflict, loss of trust due to dishonesty and concealment of the gambling problem, and a change in roles within the marriage from working together to becoming the "gatekeeper" (Holdsworth, Nuske, Tiyce, & Hing, 2013b). Practical impacts require partners to go without daily household items and quality food, suffer financial burdens such as juggling payments, loss of utilities, and indebtedness whilst experiencing the shame and stigma that occurs when deficits become apparent to others (Dickson-Swift, James, & Kippen, 2005). Partners and spouses additionally experienced poorer health outcomes and development or exacerbation of maladaptive coping mechanisms themselves (such as alcoholism and overeating). A similar complex causality between harms as experienced by gamblers has also been observed in partners, such as inability to afford medication or treatment (Holdsworth, Nuske, & Breen, 2013a).

Experiences of isolation and self-blame have been explored internationally within qualitative studies. Isolation occurs through either partner distancing themselves due to feelings of shame, or by others distancing themselves from partners who gamble (Dickenson-Swift et al., 2005). Most common reasons for affected others isolating themselves from partners who gamble were the gambler's actions, usually related to issues of trust in relation to financial matters. Other reasons identified as causing feelings of isolation among affected others related to perceptions of safety in gambling venues due to the temptation to gamble and a loss of sense of self (Dickenson-Swift et al., 2005; Holdsworth et al., 2013b). Self-blame is another identified pervasive harm and refers to the idea that they should have been able to save or prevent the person from gambling. It also encompasses the imbalance between the perception of harm between a gambler and their partner. In a Canadian study, male pathological gamblers did not consider harms to be as severe as their partner did (Ferland et al., 2008). It is suggested this may be due to a gender bias, which is consistent with other international research that indicates women often seek help for another person's gambling problem (Heater & Patton, 2006; Hing, Tiyce, Holdsworth, & Nuske, 2013; McMillen, Marshall, Murphy, Lorenzen, & Waugh, 2004). Despite the harm often experienced by spouses or partners, support for them has been identified as improving treatment outcomes for people experiencing problems with gambling (Ingle, Marotta, McMillan, & Wisdom, 2008).

One area highlighted in both New Zealand and international literature is the link between problem gambling and intimate partner violence (IPV). A Canadian study found that problem gambling increased the odds of perpetrating dating violence (AOR 5.7 to 11.9), severe marital violence (AOR

20.4) and severe child abuse (AOR 13.2) even when adjusted for mental disorders (Afifi, Brownridge, MacMillian, & Sareen, 2010). There were two significant limitations to the study, the first being that the DSM-IV criteria was used to determine the exposure so there was no ability to stratify the sample to more detailed problem gambling risk levels. The other limitation was the cross-sectional nature of the study, which limited the understanding of causal mechanisms. Other Canadian research conducted by Korman and colleagues (2008), who sampled 248 problem gamblers, identified that 63% of participants had either experienced or perpetrated IPV, with 25% of cases being at the severe end of the scale. This has been shown to be consistent with other studies showing higher rates of IPV for partners of pathological gamblers within Chinese communities (Liao, 2008). Again this study was cross-sectional, and thus caution must be exercised in assuming any causality especially given the complex interaction of issues of dysfunction related to gambling and relationships that can contribute to IPV. In a recent Australian study, Suomi et al. (2013) identified from a sample of 120 help-seeking family members of people experiencing problems with gambling, that 52.5% had experienced violence. Twenty percent of those had experienced violence as victims, 11% as perpetrators, and 26% as both victims and perpetrators (Suomi et al., 2013). In each of these studies, it is difficult to distinguish the degree to which gambling is contributing to IPV, particularly given the comorbidity with other dysfunctions such as alcoholism (Breen, 2012b). However, in the latter study, gambling problems were reported to have often preceded the incidence of violence as a trigger event or issue (Breen, 2012a; Suomi et al., 2013). Suomi et al. (2013) found that when the partner of the person who gambles was the perpetrator of violence, it was most often a reaction to accumulated anger and mistrust and, when they were victims, it tended to be expressions of the gambler's feelings of loss and frustration. The study further identified that parents and partners were more often the perpetrators of violence but found no gender differences in violence conducted either by the partner or the gambler (Suomi et al., 2013). A longitudinal study of Pacific Island Families in New Zealand found that in Year 2 of data collection there was no association between gambling and IPV victimisation in either mothers or fathers; however, there were significant relationships between problem drinking and IPV (Schluter, Abbott, & Bellringer, 2008). Four years later, Year 6 data indicated that for the fathers of the cohort, gambling was associated with being perpetrators as well as victims of verbal aggression; perpetration of physical violence was three times more likely to be reported by at-risk/problem gambler fathers than non-problem gambler fathers. Conversely, for the cohort of mothers, at risk/problem gambling was associated with lower odds of perpetrating violence (Bellringer, Abbott, Williams, & Gao, 2008). These findings further highlight the complex dynamics in an environment of dysfunction and the danger of making assumptions of causal sequence from cross-sectional studies.

Cultural differences have not been explored in terms of the experience of harm to partners or whether a collectivist culture acts as a protective factor to partners. When considering harm to partners within a New Zealand context, the collectivist nature of some cultures may mean that partners receive more support (rather than being isolated), than seen in Westernised cultures (e.g. amongst Pākehā, or in Australia and Canada).

## **Children**

No large-scale quantitative studies could be identified for this review that had examined the nature of harm experienced by children of people experiencing problems with gambling. This was unsurprising given the vulnerability and ethical difficulties associated with accessing this population. The experiences of children have been sampled via small qualitative studies that offer more in-depth

analysis; or through data collected by administrative systems associated with welfare reporting. Harms affecting the household exacerbated by both direct and indirect transmission of harms by the parent(s), and the neglect experienced by the child living under such circumstances has been well documented (Breen, 2012a; Darbyshire, Oster, & Carrig, 2001a; 2001b; Minister for Gambling South Australian Government, 2007).

Children under the care of people experiencing problems with gambling are often harmed through deprivation of essential items due to financial harms. They may also be exposed to broken homes, damaged relationships, physical and emotional harm (both to themselves and their parents and siblings), and are at higher risk of eventually experiencing problems with gambling themselves. Anecdotal catalogues of harm have suggested multiple forms of harms that could be experienced by children including neglect, staying up late, losing sleep, missing school, being hungry, eating more take away or convenience food, and potential vulnerability to abuse through lack of supervision (Dion, Collin-Vézina, De La Sablonnière, Phillippe-Labbé, & Griffard, 2010). Children of problem gamblers are also more likely to experience some level of physical violence or abuse from their parents, particularly if the parent is experiencing other comorbidities such as alcohol abuse (Shaw, Forbush, Schlinder, Rosenman, & Black, 2007). A specific episode of neglect can include children or infants being left unattended in casinos and casino car parks while their parents or carers gamble. Figures from the Department of Internal Affairs (DIA) 2012, (reported by the New Zealand Problem Gambling Foundation) showed that in the year 2011, the DIA dealt with 59 reports of children being neglected at casino venues (not inclusive of data from pubs or clubs).

Empirical work by Darbyshire et al. (2001a, 2001b) has provided the largest contribution to understanding the experiences of children with gambling-related harm. They characterised this impact as a *pervasive loss* that encompasses both physical and psychosocial aspects of wellbeing. Children in these circumstances were found to be more likely to experience neglect or feelings of loss associated with the person who gambles. Most commonly reported harms were related to feelings of abandonment, altered relationships (both between the parent and child and the wider family), trust, security, sense of home, and insecurity of material needs (Darbyshire et al., 2001b). Other issues identified were abuse, emotional deprivation, poor role modelling, destructive behaviour problems, inadequate stress management skills, poor interpersonal relations, diminished coping abilities, greater risk of negative health outcomes, and psychosocial disruption due to the chaotic and unpredictable environment within the home. Educational attendance could suffer as result of not getting to school, not being able to afford resources, missing school to look after parents, or an inability to engage with school properly due to distraction/poor nutrition. It is notable that most or all of these impacts are also associated with low socio-economic status. Children can become more socially isolated when they cannot attend normal social events (e.g., parties, movies, sports). The wide range of specific forms of harm enumerated above illustrate a more general point that the specific forms in which harm manifests is often quite unique to each individual and family situation. This presents a significant methodological challenge in measuring harm.

The pervasive nature of the loss to children's welfare is best captured in Darbyshire et al.'s (2001b) finding that children of people with gambling problems were less optimistic about the future, often expressing no hope for a change for the better. Empirical evidence and the impact of legacy (long term) harms suggest their lack of optimism has some foundation. When a family experiences harms like relationship breakdown, emotional strain and financial hardship, often the needs of children can be overlooked. Deprivation of essential needs such as warmth, healthy or quality food, and sleep can result in other harms like health problems due to poor nutrition or malnutrition, issues at school, or adverse emotional states. Children with parents experiencing problems with gambling are more

at risk of developing unhealthy behaviours (Rossen, Butler, & Denny, 2011). American research involving family members showed, that compared to a control group, children with a parent experiencing problems with gambling were more likely to develop problems with drugs or alcohol, or develop a mental health or psychiatric disorder (Shaw et al., 2007). A consistent finding within the literature is that these children are more likely to develop problems with gambling themselves (Crisp et al., 2004). Australian research identified that children from families with a history of problem gambling were between 2 and 10 times more likely to develop a gambling problem later in life (Dowling, Jackson, Thomas, & Frydenberg, 2010). A grounded theory analysis of interviews with 14 problem gambling parents and their 18 children conducted in New Zealand highlighted economic deprivation, relationship issues with parents, and challenges in dealing with other siblings. Household circumstances mean that these children were performing parental roles and other adult behaviours within the family, resulting in excessive strain for young children who were not well equipped to function at these levels of strain (Wurtzberg & Tan, 2011).

Dyall and colleagues (2009a) created a model as to how children in Māori communities are at risk if exposed to gambling from a young age. Often Māori children participate in gambling activities such as housie (bingo) either at a community event or at home with their parents or whānau. Gambling may be considered a normal activity that is central to their social life and enhances community connectedness. This observation confirms the importance of recognising that the definition of dysfunctional behaviour is construed by the cultural context. Conflict or stress within the family home that can arise from parents gambling problems can often push children to seek an escape, which may even include gambling itself. As they get older, children become more and more reliant upon this escape, putting them at risk of developing a serious gambling problem. It should be noted that this model was designed based on interviews with a small sample of Māori participants (N=7) and, therefore, may not reflect the same pathway experienced by all Māori or those from other ethnic backgrounds.

### **Extended family, friends, and whānau**

Just as immediate family members and close friends experience harm related to gambling, similarly, the connection through psychological, emotional, physical, economic, and familial pathways creates a vector for the transmission of the harm further out. Whilst the majority of the focus of research to date has been targeted at investigating harms to immediate or direct family, there has been very little investigation into how problem gambling may harm those outside family circles, especially where they try to support the person who gambles, their partner, or children. Such harms may include increased responsibility for children (e.g. transporting to and from school or babysitting), being asked to lend money, providing support and guidance, being subject to petty theft or stealing to fuel gambling habits and, in extreme cases, offering accommodation or utilities payments when financial or relationship harms reach crisis point. It is theorised that many of these factors can produce their own harms on extended family or friends, putting pressure on their resources, relationships and physical and psychological wellbeing. Such harms will also depend heavily on the strength of the familial, cultural, economic or political affiliations, and what is expected of a person within these systems.

## Harms to the broader community

The measurement of gambling-related community level harms is difficult given the breadth of potential influence and the interaction between gambling and many other public health issues. Earlier attempts to quantify community level harms were made by William and Schwer (2005), who used a small sample of Gamblers Anonymous members in Nevada, USA. Estimates of their self-reported work, levels of debt, proceeds from crime and costs to judicial systems, and welfare systems were collected and costs were extrapolated to rates of gambling severity for that State. The methodology was limited; as there was no consideration of the costs associated with people who were not gambling in a problematic manner, nor did they include measures such as job turnover, absenteeism, and generational influences of impact on family; making the attribution of costs incomplete. Within New Zealand, studies have sought to investigate community level harms from gambling (Wall et al., 2010) and have theorised two possible pathways through which gambling exposure may impact on community wellbeing: harm arising *directly* through crime and disorder; and *indirectly* through the costs that gambling affected households impose on other households in their neighbourhoods.

### Direct harms

In New Zealand, higher exposure to gambling opportunities has been statistically linked to higher crime rates for all categories of crime (Wall et al., 2010). EGM density measures (especially number of machines within a 5,000 metre buffer) were also associated with the local crime rate (Wall et al., 2010). A formative qualitative investigation of the link between gambling and crime focused particularly on unreported crime and the nature of the resulting harms experienced by individuals, families, whānau, and communities (Bellringer et al., 2009). Problem gambling treatment providers, gambling industry staff, and community groups identified financial harm to the community resulting from theft to support gambling as most prevalent, as well as social security/services and benefit-related crimes. Strain on the community caused by gamblers who expect to be 'bailed-out' by their community, or who abuse positions of power or trust within their communities, was also highlighted by participants in this study as direct harms to the community.

Evidence surrounding the links between gambling and crime is incomplete and under-reported within New Zealand and internationally. The Australian Institute for Gambling Research (AIGR) (2001) analysed the impact of crime at two casinos in New Zealand (in Auckland and Christchurch) and found that the impacts of crime at both casinos were not as extensive as predicted. Further, since there was little reliable data on crimes committed to fund gambling, it was not possible to determine the impact of the casinos on crime. The authors concluded that while the New Zealand Department of Internal Affairs (DIA) had previously found no significant evidence to directly link crime with gambling, this may be because precise statistical data has not been available. AIGR (2001) assert that while analysts agree that gambling is indeed linked to crime, the most significant finding from their literature review of gambling and crime is that there is a lack of data or evidence to form valid assessment of levels of gambling-related crime. The literature on gambling and crime has been found to be questionable and often contradictory (Bellringer et al, 2009).

The Independent Gambling Authority (2004) in Australia identified a sequence of systematic issues contributing to under-reporting that includes crimes that are not detected, crimes that are not reported, and gambling not being linked to the crime as a contributing issue. Of the data obtained relating to gambling and crime, most is self-reported and sourced from people seeking treatment.



This is problematic as only a small percentage of people experiencing gambling problems seek treatment. The Independent Gambling Authority (2004) suggested that information relating to gambling behaviours is rarely collected as it adds no value to law enforcement operations that are generally focused on the immediate manifestation of crime (i.e., theft, extortion, fraud, prostitution) rather than what may have caused the crime. Unlike other public health issues such as alcohol and drug use, screening for problem gambling does not occur. Despite the potential for problem gambling screening to highlight patterns and measures of prevalence for the development of interventions targeted at gambling, reporting does not occur as it provides no immediate benefit to law enforcement. Nevertheless, addressing the motivations for crime due to gambling could ultimately reduce the demand on law enforcement (Minchin, 2006). Similarly, the failure to offer or mandate treatment programmes in sentencing might reduce the potential to improve rehabilitation and reduce the likelihood of recidivism.

The links between gambling and crime have also been noted through studies of incarcerated populations in New Zealand (Abbott, McKenna, & Giles, 2000; Bellringer et al., 2009; SHORE, 2008). Within the prison population, an estimated 23% of men and 34% of women meet the criteria for probable problem and pathological gambling within the six months prior to imprisonment (Abbott & McKenna, 2000; Abbott, et al., 2000). Additionally for men in prison, average monthly gambling expenditure prior to incarceration was reportedly six times higher than for the general population of men (Abbott et al., 2000). Abbott and McKenna (2000) identified that similar differences were apparent for recently sentenced women inmates, with one in three female prisoners having a current problem with gambling. This study also indicated one quarter of participants (half of those women screened as problem gamblers) had committed a crime to obtain money to gamble (Abbott & McKenna, 2005). However, care should be taken not to infer that the same proportion of gamblers in the general population have also committed a crime. The authors also indicated that participants had engaged in criminal activity prior to sentencing that was unrelated to their gambling. Further, a more recent study by Casey et al. (2011) found patterns of rule breaking and illegal activities in youths who gambled (compared to non-gamblers). There have been several other investigations that have provided evidence for higher rates of problem gambling within incarcerated populations (see Independent Gambling Authority, 2004; Turner & McAvoy, 2011; Turner, Preston, McAvoy, & Gillam, 2012).

Other direct community related harms that have been given less attention are those relating to health and welfare costs. Inclusive are the direct costs of treating the gambling problem itself (i.e., counselling, treatment or support) but also indirect costs associated with treating gambling-related harms (i.e., psychological and emotional harms, family breakdown, health problems) and harms experienced by affected others. Black et al. (2013) noted that people with gambling problems tended to delay medical care thus having a higher frequency of emergency room visits. Early intervention prevention activities are less expensive than emergency treatment for a health problem, and the delay in treatment increases the cost to the community both directly in terms of additional resources required and indirectly through burdening family, friends, or others with greater workloads or responsibilities (a form of opportunity cost).

## **Indirect harms**

One of the most pervasive harms to the community is how gambling continues to perpetuate cycles of disadvantage by affecting factors that contribute to poverty, poor health, and lower levels of human and social capital, thus compounding and concentrating harms. Given the disproportionate number

of EGMs located within poorer communities (Wynd, 2005) and the vulnerability of these groups, this is of particular concern; as evidenced by some populations (such as lower socio-economic and ethnic groups) experiencing greater losses than other populations (SHORE, 2008). It has been suggested that the nature of disadvantage motivates people to gamble as a form of *justice seeking* (Callan, Ellard, Shead, & Hodgins, 2008), that is, as a means to retrieve what they feel they deserve or to try to catch up with the rest of society (Clarke, et al., 2006). Such ideation reflects a misplaced form of aspiration of contemporary consumer culture (Casey, 2003).

There have been efforts to quantify and measure different indicators of community harm in New Zealand beyond the experiences of crime (Wall et al., 2010). For example, schooling outcomes, social capital, volunteering, involvement in school boards, food parcel distribution, poverty valuation, debt risk, and children at risk were suggested to be indicators of community level harms (Wall et al., 2010). The authors developed and adapted routinely collected data sets to measure these indicators and applied statistical modelling techniques to investigate associations between community-based gambling opportunities (in terms of EGM density and distance) and levels of gambling harm. Area deprivation and population characteristics were also taken into consideration. Key findings showed that indicators of crime, social capital, and volunteering seemed negatively associated with EGM exposure. In relation to social capital and volunteering, a higher density of EGMs was significantly associated with worse perceptions of a community's social capital and lower levels of volunteering. Participants also reported lower levels of trust, less sense of belonging, lower ratings of community cohesion, and poorer relationships with others (Wall et al., 2010). It is conceivable that gambling-related crime could produce indirect effects on the cost of insurance premiums, goods, and services within a community, however, these were not explicitly measured in the study by Wall and colleagues (2010).

## **Harms in Māori and other New Zealand communities**

There is strong evidence indicating that certain ethnic groups disproportionately experience harm related to gambling (e.g. Abbott & Volberg, 2000). The most frequently cited reasons for this are the socio-economic and political status of such groups within society (e.g. deprivation, lack of representation); access to gambling venues; cultural beliefs, values, practices and processes of colonisation; and migration and acculturation (e.g. Clarke et al., 2006; Raylu & Oei, 2004; Rintoul, Livingstone, Mellor, & Jolley, 2012). In the absence of an appropriate measure to assess harm, the level of problem gambling risk is used instead with a reasonable assumption that harm increases somewhat in line with problem gambling risk. In New Zealand, problem gambling prevalence is significantly higher for Māori and Pacific populations; this has been the case over a couple of decades. In 2012, for Māori, 6% were classified as problem or moderate-risk gamblers, 8% of Pacific people, 3% of Asian people and 1.8% of European/Other people (Abbott et al., 2014a). It is clear that Māori are at particular risk of experiencing harm from gambling, and Pacific people, if they gamble, are much more likely than others to develop gambling problems (Abbott & Volberg, 2000; Abbott et al., 2014a).

Statistics on help-seeking show that primary modes of problematic gambling can differ by ethnicity. In the 2013/2014 financial year, 31% of all presentations to problem gambling services were in relation to non-casino EGM gambling. However, 70% of Māori identified non-casino EGMs as the primary problematic mode, compared to 37% of Pacific people and just nine percent of Asian gamblers (Ministry of Health, 2014). Asian gamblers were more likely to identify casino table



gambling as problematic, and Pacific people identified lottery products and housie (bingo) more often than other groups. A study by Lin, Casswell, Huckle, You, and Asiasiga (2011) sought to explore how the impact of different modes of gambling on quality of life differs for different ethnic groups in New Zealand. These authors interviewed Pākehā/European (N=4,068), Māori (N=1,162), Pacific people (N=1,031), and Chinese and Korean people (N=984) in their study assessing gambling participation and quality of life. Māori and Pacific participants showed significant associations between gambling participation (especially time spent on non-casino EGMs) and poorer self-ratings on quality of life indicators (e.g. physical health, mental wellbeing, relationship quality, child-rearing ability, quality of life, satisfaction with life, and material standard of living). In contrast, significant associations between participation and wellbeing for Pākehā/European participants were all positive and there was no relationship between participation in non-casino EGM gambling and wellbeing. Findings for Chinese and Korean participants were more mixed; for example, playing casino table games was associated with better self-reported housing situation, whilst playing poker at home was associated with better relationships and poorer self-rated study performance. Lin et al. (2011) provided some evidence that different gambling modes are associated with different harm (in different domains of life) depending on ethnic background. They also commented that much more research is needed to understand gambling harm experienced in different cultural communities.

## Māori

Māori suffer more adverse impacts of gambling and experience more problem gambling than do non-Māori (Abbott & Volberg, 2000; Abbott et al., 2014a; Dyall, 2004). Gambling activities such as horse raising were introduced in New Zealand with the arrival of new settlers from Europe in the 19<sup>th</sup> century and Māori became quickly absorbed in such activities (Grant, 1991). Considering that gambling was not a norm within traditional Māori culture (Dyall & Morrison, 2002) their introduction to gambling highlights historical European influences on this culture. Culture-related harms have since been associated with the use of Māori cultural symbols and practices in gambling advertising. Dyall, Tse and Kingi (2009) referred to the opening ceremonies of casinos in New Zealand in the 1990s in which large Māori carvings were placed within the venues to symbolise welcome and protection, and where kaumātua (Māori elders) were invited to enhance the venues' safety through cultural and spiritual rituals. The authors argued that this was utilisation of Māori culture to promote and legitimise gambling venues as a safe place for Māori and was thus undermining of Māori culture. Morrison and Boulton (2013) noted how Māori symbols such as the "TikiTiki" (which symbolises good fortune) in electronic gaming machines (EGMs) was a feature that female Māori gamblers connected with, as it gave them a feeling of being welcomed and a way to identify with their own culture. The authors argued that such use of cultural symbols in EGMs was deliberate and had a definite impact on gambling among Māori women. Noting the ongoing strategic use of cultural symbols, including those of other ethnic minority groups<sup>1</sup> in gambling promotion and advertising (without prior consultation with the respective communities), Dyall, Tse and Kingi (2009) called for improvements to advertising regulations which would prohibit such use of culture, particularly considering that it encourages gambling among high risk groups.

A number of other studies have highlighted recurring patterns of harm experienced by Māori. A study on the socio-economic impacts of gambling in New Zealand by SHORE & Te Rōpū Whāriki (2006)

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<sup>1</sup> For instance, the use of the Chinese dragon dance symbols in gambling advertising during the Chinese New Year festival.

found that some gambling effects were unique to Māori; these included destruction of Māori family values and caregiving practices, damage to mana (prestige, status, spiritual power), and emotional harms in terms of a person's wairua (spirit/soul) and identity. Likewise, other qualitative research with Māori whānau and communities has suggested impacts such as the erosion of social and cultural capital and Māori cultural and family values, and the neglect of children and erosion of family relationships caused by reduced time and money available to families (Dyall & Hand, 2003; Dyall et al., 2009a; Dyall, 2007). In an exploratory qualitative study on the effects of gambling on whānau members and others affected by someone else's gambling, Dyall (2010) noted that these were wide ranging for Māori families. Impacts on whānau included child neglect, whakamā (shame), loss of respect for and of a trustful relationship with the gambler, negative consequences of resultant debt, and emotional distress and depression. In the New Zealand 2012 National Gambling Study, when asked about the impacts of others' gambling, Māori (30%) and Pacific people (32%) more often referred to adverse financial impacts than European/Other (19%) and Asian (23%). Māori, relative to Asian people, more often mentioned feeling sorry for or concern for the gambler, and loss of time together (Abbott, et al., 2014a).

In a study by Watene et al., (2009), the authors reported that gambling and gambling addiction, can encourage an individualised view of the world, which erodes or changes traditional concepts such as whānau, whanaunagatanga (relationship, kinship, sense of family connection and belonging) and koha (gifts and contributions to others that maintain social relationships and have connotations of reciprocity). A different study on gambling impacts in Manukau City (where the Māori population ranks first in size out of the 73 districts in New Zealand), identified harms to children, loss of mana and theft to pay for gambling as common experiences (Rankine & Haigh, 2003). Echoing earlier findings, Lin et al. (2011) highlighted how Māori, alongside Pacific people, differed from other ethnic groups in New Zealand in terms of gambling harms experienced. Their study, which included a sample of 1,162 Māori respondents, found significant relationship between time spent on electronic gaming machines and lower quality of life self-ratings such as perceptions of mental wellbeing, relationship quality, overall life satisfaction, living standards and child rearing capabilities. Additionally, a study which looked into connections between alcohol abuse, problem gambling and suicide attempts found that individuals of Māori descent who had attempted suicide tended to test positive concurrently for gambling problems and alcohol abuse, suggesting a higher level of vulnerability of this ethnic group in New Zealand in terms of gambling risks (Penfold, Hatcher, Sullivan & Collins, 2006).

Studies that have focused on gambling among Māori women (who tend to be marginalised and come from economically deprived backgrounds) have highlighted their early exposure to gambling, normalisation of gambling within their communities, and the harms experienced by this group (e.g. loss of status and self-esteem, and impacts on finances, relationships, health and wellbeing) (Morrison, 2004; Morrison, 2008; Morrison & Wilson, 2015). In one study that was based on a sample of women prisoners containing a large proportion of Māori women<sup>2</sup> almost all reported having gambled six months prior to their imprisonment (Abbott & McKenna, 2005). Considering that this study highlighted possible relationships between respondents' problem gambling status and their offending patterns, this raises concerns over gambling-related criminal activities among Māori women. The prevalence of problematic gambling among Māori women also leads to concerns of

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<sup>2</sup> Among the 94 female prisoners in this study, sixty-seven percent were of Māori ethnicity.

potential negative consequential impacts such as child neglect and abuse, for instance leaving children unattended in gambling venue car parks (Grogan, 2012).

It has been suggested that for Māori, gambling has come to represent hope and the possibility of changing financial status as well as a means to escape boredom and trauma. The accessibility of gambling products in low income communities, where many Māori reside, is consistently noted as being of concern (Dyall, 2007; Clarke et al, 2006).

## **Pacific people**

The Health Research Council of New Zealand uses the term 'Pasifika' to refer to indigenous groups from the Pacific Islands who are "linguistically, culturally and geographically distinctive from each other" (Health Research Council of New Zealand, 2004). In 2013, 7.4 percent of the New Zealand population (295,941 people) identified with one or more Pacific ethnic groups. The five largest Pacific ethnic groups are Samoan, Cook Islander, Tongan, Niuean, and Fijian people (Statistics New Zealand, 2014a). Although a large proportion of Pacific people do not gamble (as reflected in the lower participation rate compared with the national average), those who do gamble are at greater risk of developing problem gambling (Ministry of Health, 2009; 2012). It has also been shown that whilst fewer Pacific people take part in gambling activities than the general population, a disproportionate number of those who do gamble have a higher expenditure than other population groups; referred to as a 'bimodal' distribution for gambling (Abbott & Volberg, 2000)

Nationally representative prevalence surveys conducted in 1991 and 1999 estimated that Pacific populations were over six times more likely to experience problems than European/Pākehā populations (Abbott & Volberg, 1991; 2000). These findings have also been supported by the recent New Zealand 2012 National Gambling Study (Abbott et al., 2014a). Abbott and Volberg (2000) suggest that the bimodal pattern of engagement in gambling activity is one reason why Pacific peoples are more likely than others to develop gambling problems. In addition, prevalence surveys show that when re-interviewed seven years after the first assessment, Pacific peoples were less likely than New Zealand Europeans to have overcome gambling problems, suggesting that Pacific peoples were more likely to have persisting gambling problems (Abbott, 2001). Other research has indicated that gambling participation is associated with cultural beliefs, practices, and obligations amongst Samoan and Tongan communities, such as for fa'alavelave and other 'gift-giving' obligations (Anae et al., 2008; Bellringer et al., 2006; Cowley et al., 2004; Guttenbeil-Po'uuhila et al., 2004; Perese & Faleafa, 2000; Tse et al., 2005, 2012). For example, Pacific mothers who follow a gift giving cultural practice seem more likely to gamble and spend more money per week on gambling; and migrant Pacific mothers are more likely to gamble than those who are New Zealand born (Bellringer et al., 2006).

In 2013, the Gambling and Addictions Research Centre completed research into the impacts of gambling on Pacific families and communities in New Zealand. This research involved secondary analyses of Pacific data from existing data sets, as well as focus groups and interviews with key Pacific stakeholders (Bellringer et al., 2013). In one data set, almost three-quarters of respondents who gambled reported losing money on gambling, although only 15% reported negative financial impacts due to their own gambling (and 13% reported winning money overall, on gambling). Approximately one-fifth (21%) of respondents reported negative financial impacts from someone else's gambling, along with negative feelings about self (20%) and negative impacts on life satisfaction (18%). Similarly in another data set, 37% identified being 'unable to pay for household

bills/food/rent' as the top impact of harmful gambling and 32% identified 'financial problems'. The focus group and interview participants discussed the extreme nature of impacts caused by financial deficit including relationship breakdown, loss of accommodation and belongings, child neglect, and suicide. Gambling participation differences were also noted whereby lotto/keno gamblers were less likely to report negative impacts on the various life domains than other gamblers, whilst frequent gamblers on continuous modes were more likely to report negative impacts, particularly on financial situation and overall quality of life (Bellringer et al., 2013).

Another qualitative exploration of impacts of gambling in Samoan families and communities identified breakdown in family relationships (e.g. honesty, trust, time spent together) as a key impact as well as difficulty providing for children's needs; extra financial and care-giving burden pushed on to extended family; budgeting and financial problems (leading to selling of possessions and eviction); reduced contribution to the community; as well as negative impacts on health, employment and education (Perese & Faleafa, 2000).

## Asian people

The Asian community in New Zealand is also made up of many ethnicities with the five largest communities being Chinese, Indian, Filipino, Korean, and Japanese (Statistics New Zealand, 2014b). In New Zealand, it is well established that Asian clients seeking help for their gambling cite casino based gambling and more particularly, table games, as the primary mode of problematic gambling. East Asian<sup>3</sup> clients made up 5.6% of all presentations to problem gambling services in the 2013/2014 year, almost half of whom were seeking help in relation to a problem with casino table games (Ministry of Health, 2014). Asian presentations have been slightly higher in previous years (e.g. 6% in 2005, 7.6% in 2007) (Ministry of Health 2008b). Asian gamblers have reported substantially higher losses than other ethnicities (a median of \$4,000 in the 4 weeks prior to assessment compared to an overall median of \$1,000). Asian clients represented 11% of clients contributing to these data while accounting for 41% of the reported losses (Ministry of Health, 2008b). In the 2012 New Zealand National Gambling Study, typical monthly expenditure on gambling was slightly higher among Asian participants than European/Other participants (mean \$74 cf. \$66), though Māori and Pacific participants reported higher monthly averages (mean \$116 and \$112 respectively) (Abbott et al., 2014b).

In New Zealand, it is hypothesised that the acculturation process, lack of experience in New Zealand commercial gambling environments, significant spare cash and free time, limited English ability, difficulty gaining employment, and disconnection from family, all create a negative cycle whereby stress leads to gambling to try to win money and/or escape pressures (Wong & Tse, 2003). The lack of a cultural tradition of seeking support outside the family ('face-saving' avoidance of shame) is highlighted as both a significant barrier to help-seeking and a harmful impact of gambling where it contributes to disconnection and alienation from one's community among Asian gamblers (Li & Chan, 2006; Wong & Tse, 2003).

Sobrun-Maharaj, et al., (2012) recently undertook qualitative research into the impact of gambling and problem gambling on Asian families and communities in New Zealand. Focus group and

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<sup>3</sup> The state sector tends to define an Asian as someone from the Asian continent, excluding Indians and South Asian New Zealanders.

interview consultation was held with problem gambling intervention staff and within Asian communities. Key consequences of problem gambling for Asian individuals were summarised as loss of social connection and isolation; loss of financial security; engagement in illicit activities (theft and prostitution) to support gambling; mental health issues; and family conflict (Sobrun-Maharaj et al., 2012). Key impacts on Asian families and communities were loss of opportunities (becoming less able to achieve the kind of life for their families they envisaged with emigration); physical health issues (stress causes illness among family members); material and monetary loss within the community; loss of trust and community cohesiveness (problem gambling dividing communities) and; eroded social support mechanisms (Sobrun-Maharaj et al., 2012).

## **Social influences on the experience of harm**

Empirical research of gambling harms, including prevalence studies and qualitative investigations, suggest that there is a high degree of individual and environmental variability in the vulnerability to, and experience of, gambling harm. Factors such as the gambling space, exposure to gambling from an early age, past trauma, and individual beliefs relating to gambling can all influence the severity and susceptibility to experiences of harm. Despite many links being identified within the literature, the exact causal/moderating relationships between such factors and the quality or quantity of experienced harm are yet to be fully established.

One of the most commonly studied aspects of gambling harm in the literature is that of comorbidity with other forms of harmful experience, such as mental illness or substance abuse. However, the nature of the casual effects are difficult to confirm. It is recognised that there are multiple complex interactions between gambling and other individual factors, regardless of gambling severity, that can either perpetuate each other, or generate or exacerbate the experience of other harms (Blaszczynski, 2013). This idea of both *generating* and *exacerbating* harms has been identified within the New Zealand definition of gambling-related harm and has extended the boundaries for which harms are understood and distinguishing harm as separate from definitions of problem gambling. The most commonly mentioned comorbidities include substance use/abuse and mental health issues (particularly depression) which were all found to have strong associations with problem gambling in New Zealand prevalence studies (Abbott et al., 2014a). Comorbidities have received much international attention with findings relatively consistent within the literature (Abdollahnejad, Delfabbro, & Denson, 2013; Cowlishaw, Merkouris, Chapman, & Radermacher, 2014; el-Guebaly et al., 2006; Holdsworth et al., 2013a). Some researchers have suggested that other consumptive behaviours such as eating disorders and overspending may also be systematically associated with gambling behaviours (Boughton & Falenchuck, 2007, Holdsworth et al., 2013a). Through the consideration of comorbidities it has become clear that there is limited evidence to suggest uni-directional causation; as both gambling and the comorbid condition can be a result of one another, or reflect two outcomes of a third condition (e.g. unemployment or social disadvantage). Distinguishing the relative importance of the causal mechanisms requires expensive and methodologically challenging longitudinal studies - making it difficult to determine the degree to which gambling is the instrumental factor (Holdsworth et al., 2012).

It has been suggested that gambling problems can often be, at least partially, used as an adaptive coping mechanism in order to deal with or escape from a pre-existing stress or trauma. These can be biological or psychological traumas such as brain injury or mental illnesses like post-traumatic stress disorder (Najavitis et al., 2011) or social traumas such as divorce, hardships, or other

problems (Abbott et al., 2014a). For instance, research into the gambling behaviours of Indigenous Canadian populations, showed that gambling was used as a means to escape racial discrimination that was influential in the development of post-traumatic stress disorder (Currie et al., 2013). Older New Zealanders may gamble more often due to a desire for companionship in a safe public space – a potentially influential coping mechanism for loneliness when the spouse is deceased.

When considered as a coping mechanism, in the absence of gambling, other means of escapism may be adopted or alternatively used in conjunction with gambling (i.e. leading to comorbidities arising from a third variable, as described above). Thus, in some cases gambling is not necessarily the driving factor for the experience of harm, and should not be treated as the sole cause for subsequent experiences of harm. Nevertheless, it may still contribute to harm that has its origins in another source, and may interact with co-occurring consequential activities (e.g. drinking), creating a snowball effect of harm. An example of such pathway may be a trauma that results in an adverse emotional state leading to a need for escapism or social exclusion. In order to cope with the trauma, the individual resorts to non-adaptive coping strategies (e.g., gambling, alcoholism, and drug use), which generate their own harms in turn, exacerbating negative emotional states and, in conjunction, contributing to other harms (i.e., relationship conflict). These negative emotional states may encourage more of the maladaptive behaviours, leading to the exacerbation of experienced harm. This example demonstrates both influence of social context on gambling harm and the complexities in dealing with the interaction of gambling and other harms, due to the fact that gambling harm is part of a *process* that interacts with a number of social and individual factors over a period of time.

Bicego (2002) highlighted that gambling-related harms can also act as a determinant of the risk for other harms due to the relationship between the many different experiences of harm (e.g. isolation, trauma, lack of social cohesion, damaged social skills, loss of time, loss of money, conflict in relationships, employment shame, stigma, and mental health issues). These relationships can only be described in a probabilistic manner at a population level; the experience of harm in any given individual may be expected to follow a highly idiosyncratic path. In other words, a recognition of the social determinants of harm does not entail that everyone who experiences a trauma or social disadvantage also then develops a gambling problem, nor does it mean that one must have these issues in order to have a gambling problem.

Environmental and contextual factors can play a role in affecting the intensity and quality of gambling behaviour, potentially leading to increased risk of harm. In the past, most research considering gambling environments related to the immediate physical space in which gambling occurs. However, when considering the experiences of harm, it is now recognised that a community level approach is needed to understand the full scope of environmental influences; the most notable of which is the normalisation of gambling within a society or sub-population. The most commonly internationally cited modes linked with the normalisation of gambling are video games (Delfabbro, King, & Griffiths, 2013; Griffiths, 2008; Griffiths & Wood, 2000), social media (Griffiths 2013), phone in quizzes (Griffiths, 2007), the integration of gambling into sports (Worthington, Brown, Crawford, & Pickernell, 2007) and advertising that tends to focus on winning (McMullan & Miller, 2009; McMullan, Miller, & Perrier, 2012; Monaghan, Derevensky, & Sklar, 2008). The normalisation of gambling into Western society has also been likened to that of fast food given its growing pervasiveness in the daily lifestyles of community members (Adams et al., 2009; Dyall, Tse, & Kingi, 2009).

Normalisation can occur through exposure through advertising, the family home, and through local community events or activities. Children can be exposed to gambling from other avenues such as through their parents gambling behaviours; family, or community events that involve games of

chance (such as raffles, or other games which require a “gamble” or unknown outcome); and, even through education in finances, budgeting, and spending. In the New Zealand social context, attention should be paid to the degree to which children are exposed to gambling. A commonly reported form of exposure includes Māori and Pacific children participating in raising money for local causes (i.e., churches) through playing housie (bingo) with their families (e.g. Bellringer et al., 2014, 2014; Dyall, 2009a).

As well as considering social, community, and family factors that can influence the potential for harm, one should also consider internal characteristics of the individual that may affect gambling behaviour and subsequent harms. Those who have issues with self-regulation or control are more vulnerable to developing a gambling problem and, as such, are more susceptible to experiences of harm. Problems with control and regulation may be assessed using specific measures of gambling behaviour. Indicators of control or self-regulation problems include having trouble resisting gambling, and ceasing play; difficulty limiting bet sizes, expenditure, and time spent playing; and continuing to play after reaching set gambling limits. Such variables that are instrumental in defining problems with control are also factors that are used to indicate categorisation of gambling severity and are, therefore, unsurprisingly associated with experiences of gambling-related harm. However, it should be noted that people not classed as problem gamblers can also have problems with control. This was supported by findings in the New Zealand 2012 National Gambling Study, which found 3.6% of adults experienced loss of control whilst gambling compared with 0.7% of problem gamblers (Abbott et al., 2014a). Despite this, problems with self-regulation and control are most often investigated within samples of problem gamblers. Therefore, harms resulting from problems with control in lower risk categories can largely go unnoticed or remain uninvestigated.

Dissociation refers to an unthinking state associated with conscious or unconscious attempts to escape from reality (Dickerson, 1993); often resulting in losing track of time, blacking out, not recalling where you are or what you have done, or feeling as though you are someone else (Griffiths, 2006). In terms of gambling, dissociation is often in the form of losing track of time spent gambling and being unaware of expenditure or games played. This most commonly occurs when playing games that require limited cognitive loads and when games are played at an increased pace such as EGMs. EGMs are said to increase players’ focus and immersion in the game due to consistent interaction between the person and the machine (Dickerson, 1993; Ladouceur & Sévigny, 2006). As a result, dissociation is likely to increase game-rate resulting in lengthier gambling sessions, greater losses, and reduced control (Ladouceur & Sévigny, 2006) putting individuals at risk of experiencing gambling-related harm.

Finally, those who hold superstitions, faulty or erroneous cognitions, or misconceptions relating to gambling are often more likely to be vulnerable to harm. Most commonly these occur due to a lack of understanding surrounding how the game works and the odds of winning. Unlike other products where repeated consumption tends to result in greater familiarity and understanding, the frequency of which play is conducted does not lessen the extent to which these beliefs are maintained. Instead, with repeated use these beliefs often become more entrenched, ultimately perpetuating the gambling behaviour. An example of a common misconception is the “gamblers fallacy”. According to this belief, a sequence of recent losses is considered to increase the probability of future wins despite the outcome of most gambling games being unrelated to previous outcomes and, therefore, neither wins nor losses alter the probability of future success. Such distortions encourage disordered gambling (Barrault & Varescon, 2013) and occur at all levels of gambling problems. It appears likely that sub-cultural customs and beliefs may contribute to the development and maintenance of erroneous cognitions about gambling. However, this is a topic that is still largely unexplored.



# A conceptual framework for gambling harm

The first conceptual framework for understanding harmful gambling was developed by an international team of gambling researchers (Abbott et al., 2015). The objectives of this framework were: 1) to demonstrate the current state of interdisciplinary awareness of issues that impact on harmful gambling and the interaction between those factors; 2) to educate others in understanding the relationship and interaction of these factors to assist with informed decision making and provision of services by regulators, policy makers, service providers, and the general public; and 3) to navigate research towards gaps in knowledge that require further investigation (Abbott et al., 2015).

As per the New Zealand definition of harm, the Conceptual Framework of Harmful Gambling went beyond the understanding of harm according to traditional categorisations of gambling severity (problem gambling versus recreational gambling) and considered the degree of harm in relation to frequency and severity of gambling behaviour (Abbott et al., 2015). Broadening the conceptualisation beyond individual gambling classifications makes room not only to consider others harmed by gambling behaviours (e.g. family, extended family, whānau, friends and community impacts), but also to appreciate the complexity of gambling harm and the extent to which it affects all aspects of health determinants. An overview of the framework of factors that influence harmful gambling is presented in Figure 1.

Gambling-specific Factors			
Gambling Environment	Gambling Exposure	Gambling Types	Gambling Resources
Economics	Context	Structural Characteristics	Service Utilization
Socio-Political Environment	Gambling Setting	Motivations for Gambling	Protection, Prevention and Harm Reduction
Public Policy	Adaptation	Risk Assessment	Interventions
Culture of Social Responsibility	Accessibility		
	Marketing and Messaging		
General Factors			
Cultural	Social	Psychological	Biological
Ethnicity and Traditions	Social Demographics	Personality and Temperament	Genetic Inheritance
Indigenous Groups	Family and Peer Gambling Involvement	Self-perceptions	Neurobiology
Socio-Cultural Attitudes	Education System	Social Learning	
Religion and Other Belief Systems	Neighbourhood	Lifespan Development	
Gender	Stigmatization	Co-morbid Disorders	
	Deviance	Subjective Well-Being	

Figure 1. Conceptual framework for factors influencing harmful gambling (Abbott et al., 2015, p.13)

The Conceptual Framework of Harmful Gambling reflects the values and perspectives incorporated within the New Zealand definition of harm and has been further developed through the incorporation



of public health approaches. This framework is consistent with the World Health Organisation's framework of the social determinants of health presented in Figure 2 (Solar & Irwin, 2010) and with other international frameworks of health determinants (such as in Australia, Australian Institute of Health and Welfare, 2014, p 3).

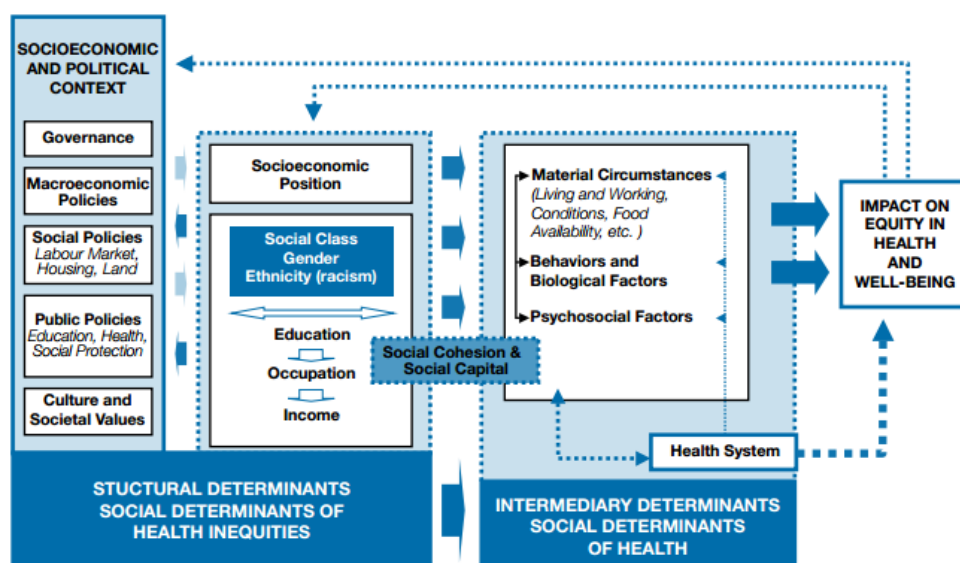


Figure 2. Final form of the CSDH conceptual framework (Solar & Irwin, 2010, p. 6)

The development of the Conceptual Framework for Gambling Harm represents substantial gains in the multidisciplinary and international understanding of the phenomena of gambling and harm. While many of these determinants of gambling harm have been identified within the literature, there is little understanding as to how they work (Abbott et al., 2015). This framework helps to identify these gaps in order to go beyond simply knowing the existence of these determinants, to quantifying and measuring the effects. The first step is to cease limiting harms to an individual experience but rather to gain insight into the differentiation between harm and gambling behaviours. Only then can the full scope of harms and the influence on others be fully appreciated and measures of assessment be developed.

## Measurement of harm

Currently there is no comprehensive or empirically feasible way to measure gambling-related harms according to progressive conceptualisations that go beyond the individual. This has been partly due to a lack of understanding surrounding the complexities of harm but also is a result of how harm has been measured within the literature. Currie et al., (2009) identified three ways in which harm has traditionally been measured. These are: diagnostic criteria for the categorisation of problem gambling, behavioural symptoms associated with problem gambling, and the experience of negative consequences resulting from problem gambling.

## Diagnostic criteria

As mentioned in earlier sections, harm is often considered in terms of gambling severity (Binde, 2011). While there are many conflicting ideas as to whether these measures are suitable, generally they are focused on issues surrounding accuracy, the tools used (e.g. PGSI & SOGS), the complexity of the levels or spectrums of gambling severity, or methodological sampling issues (e.g. non-response and misreporting bias); none of which are especially useful in understanding harm. However, there has been some debate as to the extent to which the harm associated with gambling is the focal point in conceptualising problem gambling. That is, researchers suggest that measures should be orientated around the harms or problems generated through gambling rather than diagnostic categorisations of addiction or forms of individual psychopathology (Svetieva & Walker, 2008).

Such arguments are reflected within a New Zealand definition of problem gambling that considers any gambling that causes harm to an individual, his or her family, or the wider community to be considered problematic (Department of Internal Affairs, 2013). As mentioned previously, this approach fails to distinguish harms as an outcome from indicators that are predictive of the problem (or clinical symptoms), potentially adding confusion to an already complex issue. Similarly, it implies there must be an addiction problem in order for harm to be incurred. Further, it lacks an appreciation of the range of harms that can be experienced at every level of problematic gambling (i.e., the presence or absence of 'problem gambling' does not necessarily determine the degree of harm that is being experienced). These limitations have also been noted in Australian literature, suggesting that some people may experience gambling problems without necessarily experiencing severe harms whilst others may experience harms without experiencing pathological or clinically diagnosable symptoms (Productivity Commission, 2010).

The idea that harms could be experienced on any diagnostic level of gambling was noted by Blaszczyński (2013), supported in the development of the conceptual framework by Abbott et al (2013), and further highlighted in New Zealand 2012 National Gambling Study - as people at all gambling severity levels expressed experiencing some form of gambling-related harm (Abbott et al., 2014a). While there is strong evidence for the relationship between problem severity and harm as evidenced by increases of reported harm with higher categorisation of problem gambling (Abbott et al., 2014a), there appears to be an assumption that measures for prevention and treatment be targeted at the most extreme level of gambling problems. This has tended to focus research on crisis level gambling behaviours, whilst failing to consider harms across the full spectrum of gambling levels - criticisms also made by Rodgers, Caldwell and Butterworth (2009). Acute harms tend to occur in a small minority of the gambling population, whilst a far larger portion of the population experiences less acute harms. Thus, it is possible that the aggregate level of 'diffuse harms' occurring to non-acute problem gamblers in the broader community may actually exceed the quantity of harm occurring to problem gamblers. For instance, people with lower incomes who experience crisis-level harms (such as bankruptcy) are relatively few compared to those who decrease their disposable income and limit their opportunities, by having higher expenditure on gambling (Abbott et al., 2014a). At a broader level, when a whole community starts to lower their disposable income due to gambling, it is possible that there are lower levels of revenue being invested back into the community.

Rogers et al. (2009) criticised the classification levels as possessing not enough specific differentiation between the moderate levels of harm; resulting in them being grouped together with their differential experiences of harm going unexplored. The experiences of those in the low to mid spectrum of gambling problems, and the process of development from one stage to another, seems

to be lacking in the research; insight that is both relevant and necessary for informing policy. While safe (i.e. harm-free) levels of gambling are considered possible, this does not mean that recreational gamblers are immune from harm. Investigations of the extent and degree of harms associated with recreational gambling are seriously lacking. For instance, those who engage in occasional “binge” like gambling behaviours may not meet classifications for having any degree of gambling problems, due to the infrequency of their gambling behaviour. However, they may still experience some level of intermittent or continuing harm from these sporadic problematic episodes. There have been some efforts to understand the idea of “binging” in gambling conceptualisations (Breen, 2012a) but largely this has remained unexplored. Perhaps moving away from the standard spectrum of gambling conceptualisation to one more reflective of those used for understanding alcohol consumption (that also incorporate “binging”) may highlight potential pathways for policy change while furthering understanding of gambling problems.

The most recognised, reliable, and widely used measure of gambling problems, the PGSI, is not intended to specifically quantify harm. Rather it was designed as a population measure of acute gambling-related problems. Nevertheless, the instrument does contain items that capture seven adverse outcomes or harms associated with problem gambling. Therefore, a promising approach to assessing harm at the population level may be to adapt or re-purpose the PGSI, so that inference can be made about the average quantity of harm that is experienced across the spectrum of PGSI scores. This would require the linking of the PGSI with a meaningful metric that can be interpreted and aggregated over individuals in terms of harm experienced. This in turn requires the operationalisation of the construct of harm as a quantitative exercise, for which public health methodologies would appear to be invaluable.

## **Behavioural indicators**

Behavioural symptoms refer to the behaviours of consumption that occur that are contributory to the development of gambling problems. Such behaviours are generally developed prior to harm being experienced, precipitate harmful consequences, and perpetuate further problem gambling. These behaviours might be considered as relatively reliable (albeit indirect) indicators of harm as excessive gambling is directly related to problem gambling.

Most commonly, these behaviours are those related to excessive consumption, particularly the frequency of gambling behaviour, intensity of betting, high variability in betting amounts, increased bet sizes, higher number of games, and prolonged playing times. Such behaviours have been most evidenced in research relating to EGM play (e.g. Walker, 2001; Williamson & Walker, 2000). As a result, people tend to chase wins or develop cognitive distortions as to the likelihood of an impending win. Such behaviours tend to prolong playing time, increase the number of games played and overall expenditure. While behaviours such as these do not constitute harms in themselves, they should be recognised both as potential indicators and antecedents of the occurrence of harm.

The behaviours mentioned above are not exclusive nor must they all be present to induce harm related to gambling. For instance, Pacific Islander groups generally do not participate in gambling as much as other populations within New Zealand. However, those who do participate are more at risk of problem gambling, as Pacific people’s gambling expenditure is disproportionately higher than other groups. This does not necessarily mean they are gambling more frequently or on more games, they could simply be placing larger bets on games that are played compared to others (Abbott et al,

2014a; Abbott, 2001b; Abbott & Volberg, 2000; Ministry of Health, 2009; 2010). These behaviours, the distribution of which is described as 'bimodal' by Abbott and Volberg (2000), have been noted in other research looking at Internet gambling (Braverman & Shaffer, 2012) and patterns of youth gambling (Boldero, Bell, & Moore, 2010). The example above highlights the fact that an increased incidence of harm in a given ethnic population or demographic category could be due to one or more of the following factors: (1) increased participation in gambling in the group; (2) increased expenditure or excessive gambling by people who do participate; (3) a differing ability to support such a level of expenditure; and (4) a differing level of susceptibility to the harms generated by excessive gambling behaviour.

Elements such as the environment (both social and physical) and the product itself can influence gambling behaviour and the vulnerability to harm (Breen & Zimmerman, 2002). For instance, venues can be designed in order to encourage overconsumption while product enhancements such as event dependent sound effects and visual displays on EGMs can make gambling appear exciting and appealing, initiating interest and further encouraging persistent and excessive gambling behaviour (Griffiths & Parke, 2005; Parke & Griffiths, 2006). Broader social determinants also increase vulnerability. These include access and accessibility, cultural, socio-economic, and individual factors (Clarke et al., 2006). This is highly evident in New Zealand as some ethnic groups are more vulnerable to problem gambling than others (Abbott et al., 2014a; Abbott & Volberg, 2000; Dyal, 2004). Additionally, those groups which are more vulnerable have been found to have greater accessibility to gambling opportunities given the disproportionate placing of EGMs in lower socio-economic areas (Clarke et al., 2006; Dyal, 2007; Salvation Army and Abacus Counselling & Training Services Ltd, 2005; Wheeler et al., 2006; Wynd, 2005).

The risk of experiencing gambling-related harm has been found to increase steadily with gambling frequency and expenditure (Currie, et al., 2006). This is not overly surprising as such behaviours are factors that are known to contribute to problem gambling, and problem gambling is directly related to experiences of harm. However, it does suggest that measures of behaviour may be able to reflect subsequent experiences of harm. It should be noted that in Currie et al.'s (2006) investigation of harm, the term 'harm' was measured using a criteria from within the PGSI. Further investigations found similar results in that gambling behaviour was strongly related to harm, however, measures of harm were similarly based on PGSI items or binary reports of harm being either present or absent (Currie et al., 2009). Currie et al (2012) also attempted to use longitudinal data to assess low and high-risk behaviours and increased intensity on the experiences of harm; while they were predictive, the construct of harm was not well established.

## **Negative consequences**

The final aspect most commonly used to measure harm is experience of negative consequences. Generally, measures of harmful consequences are obtained via self-report and cross-sectional surveys of those persons seeking-treatment or in population prevalence studies. Despite these being used quite consistently, there are a number of issues associated with using measures of consequences in order to address gambling harm.

The major problem associated with negative consequence measures is the construction or descriptions of harms within questionnaires or surveys used to obtain the data. The majority of these provide limited understanding as to the extent of these harms, as the wording of questions or criteria can be vague, subjective or lacking any extensive detail. For instance, the use of the phrase "affected

relationship” does not provide any indication as to how and to what degree this relationship was “affected”. Even with the use of directional terminology such as negative or positive, there is still very little information to determine the full impact of harm as “negative health impacts” could be inclusive of relatively mild health conditions to severely impaired health. Actions or events such as “dismissal from work” or “relationship conflict” provide a better idea as to the harms experienced, yet still fail to indicate whether these were directly or indirectly associated with gambling or the specific precursors that led to the dismissal or relationship conflict. Given varying levels and functions of gambling consequences and the differences between measures used, such methods make it difficult to compare results both nationally and internationally. Similarly, due to the subjectivity of constructs and the lack of depth, it is hard to determine severity given that one report of, for example, “trouble with police”, could similarly refer to numerous experiences ranging from minor to relatively severe.

Bertossa and Harvey (2012) further highlighted the limitations within the construction of these measures when respondents belong to varying (sub) groups. As previously suggested, such subjective presentation of consequences is open to broad levels of interpretation without specifically indicating to whom these negative experiences may be occurring. Particularly in Indigenous and other populations in New Zealand where “family” refers to those outside of Western biological ideals of family, there may be some confusion as to who is actually privy to the consequences being measured. Similarly, the perception of what constitutes a negative consequence and the interpretation of these measures can be influenced by multiple factors. These include language, education, the framing of the questions, the sensitivity of the issue, and the shame or stigma associated with gambling. Such measures tend to overlook cultural or spiritual elements associated with interpretations of harm that can occur within different populations; thus generating specific and unique consequences.

Finally, expenditure is commonly used to predict the risk or vulnerability to experiencing gambling-related harms (Broda, et al., 2008). As previously indicated, there is a high level of gambling expenditure by low-income earners in low socio-economic areas (SHORE, 2008). While for low-income individuals, the losses experienced may reflect high expenditure and, therefore, they may be more likely to experience harms, for those with higher incomes, the same expenditure may not result in the same experience of harm. In other words, individuals vary in their capacity to support a given level of gambling intensity. Therefore, using expenditure alone as a measure of harm is not effective in understanding the individual variability in the experience of gambling problems and harm.

## **How should we be measuring harm?**

Traditionally, gambling harms have been incorporated into measurements of problem gambling. While these measures are important in understanding gambling problem severity, they do not provide a detailed or effective assessment of the interactions between problem gambling, exposure to gambling activities, and subsequent gambling-related harm. Additionally, important individual variability relating to the experience of harm over various facets of life and how these experiences differ in severity become lost and remain relatively unexplored. In order to grasp the full picture of gambling-related harms, there is a need for tools that measure both exposure to and experiences of harm, that can be related to the severity of the gambling problem, and that are both empirically and conceptually robust (Rodgers et al., 2009). Additionally, such measures should be guided by and encourage comparisons with other public health issues, such as alcohol, in order to identify similar pathways, risks or modes of prevention that may facilitate research to address these commonalities.

Such measures should also consider how these harms are affected beyond the influence of gambling severity. For instance, it is important to consider what types of exposure are significant contributors (e.g. intensity and frequency of play, environment) and how these interact with the development of harm. Recent collaborative efforts to develop a conceptual framework of harm have been the first attempts at providing a framework in which to guide research and policy. However, research into harms and risk still require work (Currie et al., 2012; Rodgers et al., 2009), particularly in the upstream or predictive determinants of harm such as cultural and social values, environment, accessibility and availability, and the promotion of gambling in relation to the experience of harm (Blaszczynski, 2013). Identification of risk factors may help reduce the overall manifestation of harm that is generated by problem gambling (McCormack & Griffiths, 2011)

There have been multiple comparisons made between gambling and alcohol consumption within the literature. Rodgers et al. (2009) highlighted the various benefits of utilising measures of alcohol consumption in further understanding and guiding subsequent measures of exposure among other public health issues. The majority of attention has been given to identifying risk factors and defining gambling severity and thus these areas are relatively well understood. However, there is a need to be able to separate problem gambling behaviour and problem severity in order to distinguish the stages in which risks and harms occur and potentially identify protective factors that can minimise experiences of harm.

Unfortunately, due to the lack of longitudinal studies in gambling severity and risk research, there is limited knowledge surrounding the trajectory of gambling behaviours. Some relevant information on the presence and absence of gambling problems and risk factors over time has been provided by the Victorian and Swedish longitudinal studies (e.g. Billi, Stone, Marden, & Yeung, 2014; Svensson & Romild, 2013). While it is clear the risk and harms associated with problem gambling increase with excessive gambling behaviour and severity, there have been few attempts to quantify or systematically measure how these harms manifest and escalate with gambling behaviour and severity. Blaszczynski (2009) stated that in order to effectively measure harm and exposure, there needs to be clarity given to risk and the negative effects associated with lower gambling levels. Similarly, there needs to be a better understanding of the predictors and the progression of gambling and gambling-related harm.

Gambling research has developed relatively slowly and linearly when compared to other areas of addiction research (i.e. alcohol) as noted by Abbott et al. (2013) and Gainsbury, Blankers, Wilkinson, Schelleman-Offermans, and Cousijn (2013). As mentioned throughout this review, gambling is conceptually most similar to alcohol as there are deemed to be safe levels of consumption, the same level of consumption can have different effects on different individuals, various parts of the product have different effects and consumption is influenced by the environment (e.g., social, cultural, physical, political) in which it occurs (Griffiths, 2006). Despite robust conceptual models relating to risk, exposure, consumption, and harm designed for assessing alcohol use, progression of such tools in relation to gambling has been largely stalled by the lack of an effective measure of participation and the inability to compare to other public health research due to a lack of quantifiable measures of engagement with gambling products (Blaszczynski, 2009). There has been some support for the use of quality of life measures in conjunction with depression and anxiety measures in the assessment of treatment efficacy (Carlbring, Degerman, Jonsson, & Andersson, 2012; Carlbring & Smit, 2008) but this is still limited in terms of understanding the progression or trajectory of gambling problems or subsequent harm.



Currently, there is no adequate measure to assess the harms associated with gambling behaviours and exposure. This is partly due to an emphasis in gambling research on linking harm to problem gambling severity and clinical diagnosis using somewhat shallow and restrictive measures of impacts and outcomes. These measures often fail to differentiate and illustrate the harms that occur beyond the individual to family, friends, extended family, and communities; nor do they capture the various individual, cultural, environmental, social, and political constructions of harm that occur on varying levels of severity. In order to minimise the risk associated with gambling behaviour and, therefore, improve quality of life, there is a need for an internationally, empirically valid, conceptually appropriate measure of harm that can be used to inform policy and practice and minimise the harm associated with excessive gambling behaviour.

## Summary

Despite attempts by New Zealand to provide a progressive and conceptually relevant definition of gambling harm, there still remains no internationally or empirically agreed upon definition for understanding gambling harms. Currently, gambling harm and risk has best been understood through measures of gambling severity, gambling behaviours, and self-reported and unreliable measurements of the experience of negative consequences that are deemed to have occurred due to excessive gambling. This review has highlighted numerous limitations with these measures in the assessment of harm, demonstrating a need for specific and detailed measurements of harm to operationalise the construct for further investigation.

In order to fully adopt a public health approach to understanding gambling harm, there is a need to develop measures that are able to assess and quantify relationships and interactions between exposure, risk, and harm as experienced on multiple levels of severity, and beyond the experiences of the individual. In order to achieve this, the way in which gambling harm is conceptualised as a function of severity needs to be adapted in order to make way for a more progressive framework of gambling-related harm. While the international collaboration in developing such a conceptual framework that is intended to facilitate new methods of measuring gambling harm is a step in the right direction, these are relatively new developments requiring consideration before evidence can be provided to facilitate policy and service provision.

The national and international literature has highlighted the far-reaching effects of gambling-related harm beyond the individual and the influence on various facets of life. What is more, experiences of harm can range from relatively minor incidences to crisis level harms, at all levels of gambling severity and continue long after gambling behaviour stops. It is suggested that HRQL based on a public health approach, specifically a measure of the impact of gambling on Health Related Quality of Life (HRQL), may aid in the development of a conceptually relevant measure of harm. Such measures have been designed to address issues of comorbidities and also, rather than understanding harm as a qualitative list of possible adverse outcomes, we can conceptualise harm as an overall decrement in HRQL. By addressing gambling-related harm from this perspective, it is more easily defined and measured, in turn allowing for a clearer understanding of the quantity of harm experienced by individuals in the community and providing evidence for informing future policy.

# A definition, conceptual framework, and taxonomy of harms

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Findings from the second phase of this study (referred to as the consultative phase) generated from focus group interviews with professionals and experts in the field and focus group and individual interviews with people who gamble and affected others are reported in this chapter.

## Aims and objectives

The consultative phase of the present study (an expert consultation and individual and focus group interviews with people who gamble and affected others) built on previous Australian-based work by Langham et al. (2016) that proposed a definition, conceptual framework and taxonomy of harms related to gambling. Central to this work was the conceptualisation of gambling-related harm as an outcome of an interaction between gambling behaviour and other determinants of health. This conceptualisation was seen as addressing the inadequacy of current proxy measures of gambling-related harm such as behavioural measures (such as PGSI) and money spent. One of the limitations of this earlier work was the small representation of culturally diverse participants in the sample. Whilst experiences of harm were captured across cultures and the concept of cultural harm was identified as a separate domain (Langham et al., 2016), it was not possible to comprehensively explore whether particular harms were experienced differently due to cultural identity.

Building on the earlier work, the aims of the consultative phase of this study were to ensure that the definition, framework and taxonomy not only reflected actual harms experienced by New Zealanders affected by gambling but also captured the diversity of experience with respect to the four major ethnic groups (European/Pākehā, Māori, Pacific and Asian). This was achieved through purposive sampling to ensure representation of the above ethnic groups in the sample and via a consultative method to gain the perspectives and experiences of both the general public and the population of concern (i.e. people who gamble and individuals affected by someone else's gambling). More specifically, the objectives of this phase were:

1. To refine and expand the definition of gambling-related harm.
2. Expand on the knowledge of actual experienced harms reported in New Zealand.
3. Refine and adjust the theoretical framework as required to reflect local experiences.
4. To build a preliminary dimensional harm checklist for use in the subsequent phases of the project.

## Background

This phase builds on two sources of knowledge. The first was findings of the literature review outlined in the previous chapter, and the second was from a prior study undertaken utilising a similar



methodology to develop a summary measure of harm from gambling (Browne, Langham, Rawat, Greer, Li, Rose, et al., 2016). Subsequently, key findings from the above two sources created sensitising concepts that influenced the present study. Charmaz (2003, p. 259) defined sensitising concepts as “background ideas that inform the overall research problem”. Sensitising concepts aid qualitative research by providing a starting point for the analysis or a conceptual framework to guide the analysis, thus contributing to a deeper analysis of the data (Bowen, 2008a; Charmaz, 2003). The key findings of the literature review and the previous study, and how they were adopted as sensitising concepts are outlined below.

## Positioning gambling-related harm as an outcome

The literature review identified that, to date, within gambling literature there was a circular usage of behavioural symptomatology and harm that had blurred the boundaries between the two constructs, and the importance of separating the behaviour (gambling), from the symptomatology (risk profile or diagnosis) and the potential negative outcomes (harms). This was identified as a necessary step in developing a robust summary measure of the outcome (harm) that allowed the impact of gambling-related harms to be compared to other public health issues such as smoking and alcohol. This separation of behaviour and outcome is also consistent with harm minimisation approaches that are focused on minimising the negative outcomes (harms). Similarly, the focus of the study is on the manifestation of harm and not the risk factors for experiencing harm.

## Measuring gambling-related harm by its levels and mechanisms

In capturing and measuring the impact of gambling-related harms, three levels of impact (Browne et al., 2016) were adopted, that is, the person who gambles<sup>4</sup>, affected others, and the community. The person who gambles was considered as the first level, because they tend to experience the harm first.

When gambling harm is considered from a public health perspective, an infectious disease metaphor is often used to contextualise the factors involved:

1. The *host* which is the gambler.
2. The *agent* referring to the specific gambling activities (e.g. EGM play).
3. The *vector* which is the level of investment (either money or time).

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<sup>4</sup> The term ‘person who gambles’ is used throughout this chapter and this is distinguished from the term ‘problem gambler’ used in other sections of this report, which is regarded as having to do with a condition of the ‘person who gambles’.

4. The *environment* including the gambling venue as well as everything related to the gambler's situation such as physical, socio-economic, cultural and political environments (Korn & Shaffer, 1999).

Extending this metaphor to contextualise the three levels of harm adopted, the person who gambles is the *index case* for harm. Furthermore the *vector* of harm includes not only the investment of time and money, but the dissonance that engaging in gambling creates between people's values and expectations (Langham, 2016).

## Defining gambling-related harm

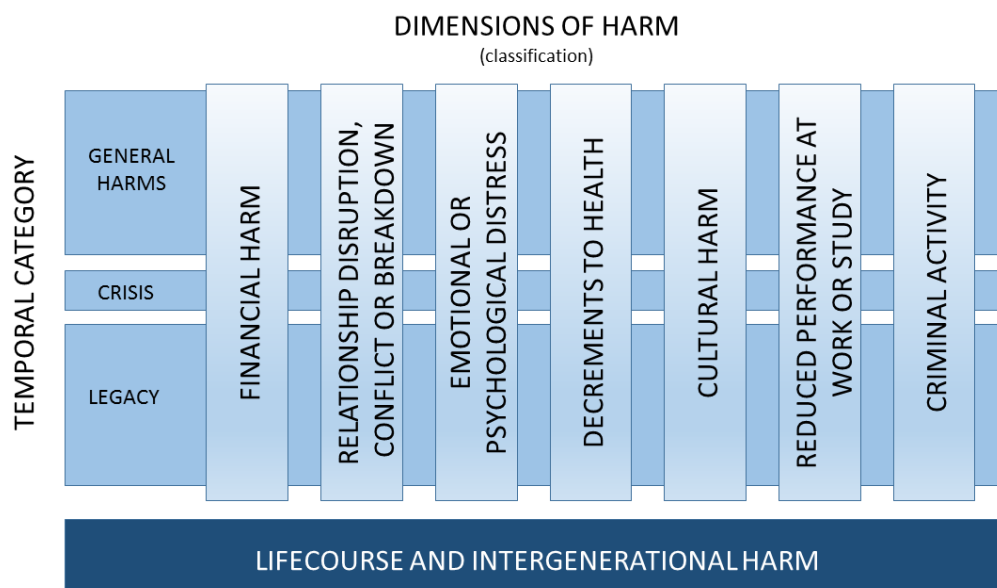
The literature review identified a lack of any consistent definition of gambling-related harm, with the meaning often implied, and the measure typically being a behavioural or diagnostic proxy. The New Zealand definition was identified as the most comprehensive, due to its identification of the multiple social levels at which harm can be experienced (the individual person, spouse or partner, family, whānau, the wider community, workplace or broader society) and its reference to the mechanisms that cause harm. However, in actually defining what harm is, it becomes tautological referring to harm as a consequence that may cause harm (Department of Internal Affairs, 2013). Langham et al. (2016) proposed a functional definition of gambling-related harm that was consistent with the goal of developing summary health measures of gambling harm:

*Any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community or population.*

This definition has some important characteristics: it delineates harm as an outcome; captures the breadth of those impacted; is consistent with the World Health Organisation (WHO) definition of health; allows for harm that occurs at any point in time; and is grounded in an approach consistent with the development of summary measures of health. This definition is thus a further sensitising concept acting as a starting point for consideration in this study.

## Conceptualising gambling-related harm

Bowen (2008a) highlighted the value of a sensitising concept as a conceptual framework for qualitative analysis. The conceptual framework proposed by Langham et al. (2016) and summarised in Figure 3 was also adopted as a point of consideration in this study. The framework was of relevance for understanding the experience of harm at the three levels (the person who gambles, affected others and community).



**Figure 3. Conceptual framework of gambling related harm**

The conceptual framework reflects gambling impacts across different domains of people's lives (classifications), highlights temporal differentiations in the experience of harm (categories) and is consistent with guidelines for creating a taxonomy (Chrisman, Hofer, & Boulton, 1988; Gershenson & Stauffer, 1999; McCarthy, 1995). The framework classifies harms into eight classifications: (1) financial harms; (2) relationship disruption, conflict or breakdown; (3) emotional or psychological distress; (4) decrements to health; (5) cultural harm; (6) reduced performance at work or study; (7) criminal activity; and (8) lifecourse and intergenerational harms.

There are three main temporal differentiations. The first, 'general harms', captures harms that can occur from any initial engagement with gambling, directly or indirectly. The second, labelled as 'crisis', captures harms that tend to occur when the experience of harm is significant enough that it motivates help-seeking or changes to gambling behaviour or exposure. The third labelled 'legacy', captures harms that may continue to occur, or even emerge, even when a person is no longer exposed to gambling behaviour (their own or someone else's).

The final groups within the framework are labelled lifecourse<sup>5</sup> and intergenerational harms<sup>6</sup>. They occupy a unique position as both a classification and a category.

<sup>5</sup> Drawn from the lifecourse theory (Elder, Johnson, & Crosnoe, 2003), the definition of 'lifecourse harms' in the present study includes harms that relate to the social pathways, developmental trajectories and changes to structural and cultural contexts that individuals undergo within their life span.

<sup>6</sup> Within the context of this study, 'intergenerational harms' refers to patterns of harmful gambling or other related behaviours and the effects of those behaviours that are passed on from one generation to the next (often children). Such harms among children can occur as a result of either direct or indirect exposure to adults' gambling.

## Enumerating gambling-related harm

A further sensitising concept for this study was the actual enumeration of harms experienced from gambling as captured in the earlier developed taxonomy of gambling-related harms (Langham et al., 2016). The taxonomy whilst based on Australian data, was used as a coding framework for the present study. The original taxonomy was based on the conceptual framework, and enumerated harms for the individual, affected other and community.

## Methods

### Study method

In this phase, qualitative research methods (focus groups and individual interviews) were used to explore the conceptual framework described above and to detail its relevance within a New Zealand context. Data for this phase was gathered in two stages from pre-defined groups of interest. In the first stage, consultative focus groups with professionals and experts in the field were conducted. Participants included those involved in gambling policy formulation and implementation, professionals involved in primary health care and in gambling-related community education, gambling researchers, treatment providers, consumer representatives<sup>7</sup>, and allied support service providers who have regular contact with gamblers such as financial counsellors, food bank workers, and people involved in the justice system. In the second stage, focus groups and a small number of individual interviews were conducted with members of the general public and treatment seeking individuals which included the target population of people who gamble and individuals affected by someone else's gambling.

Semi-structured interview guides were developed for both phases (see Appendix 1 and 2). The guides were based on the two information sources described in the preceding sections – the literature review and the prior study which had used a similar methodology.

### Participant recruitment

#### Stage 1

Recruitment for the first stage (professionals and experts) was carried out through AUT researchers' networks and professional affiliates. Regulators, academics, and alcohol and other drug service representatives were recruited through government departments, a university and an alcohol and drugs (AOD) treatment service provider. Allied support service representatives (budget advisers, social workers and probation officers) were recruited through problem gambling services who often facilitate referrals or liaise with these services on behalf of clients, or were recruited using a snowball method as participants agreed to take part. Problem gambling service provider and consumer

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<sup>7</sup> Consumer representatives (sometimes referred to as consumer advisors) are often individuals who have experienced gambling harms themselves. All problem gambling service contracts in New Zealand require the involvement of consumer representatives in the planning and delivery of services (Ministry of Health, 2009).

representatives were recruited from national and ethnic-specific problem gambling intervention services. Participants included people of Māori, Pacific, Asian and European/Other ethnicity.

A letter of invitation, a Participant Information Sheet and indicative focus group questions were sent to the manager or team coordinator of the most relevant department of each organisation. The manager or coordinator was requested to pass on the research invitation to two to three potential representatives with suitable knowledge and experience of the gambling and problem gambling field. Three focus groups were held in Auckland on 3-4 December 2014 and lasted approximately two hours each. All participants were served refreshments and given a \$30 petrol voucher to compensate the travel expenses incurred. Flights and airport transfers were provided for two consumer representatives based outside Auckland to enable their participation.

Overall, the sample for Stage 1 comprised 26 participants; eight allied support services staff, three regulators, four academics, eight problem gambling treatment service staff, and three consumer representatives. Some of these participants represented the minority ethnic groups (Māori, Pacific and Asian) and thus provided perspectives on the respective ethnicities during the discussions. A breakdown of participants, their roles and the expertise they brought to each group is provided in Table 1.

**Table 1. Details of participants in Stage 1 focus group with professionals and experts**

Focus group	Participant roles	Participant expertise
Allied professional staff	Probation services (3)	Community probation
	Social worker (2)	Community social work
	Budget advisor (2)	Budget advice (general and within Pacific communities)
Regulators, academics and AOD services	AOD service (1)	AOD service provision
	Regulatory and/or health policy advisor (3)	Regulatory and health policy development and implementation
	Academic (4)	Gambling and addictions academic research including specific examination of gambling in mainstream, Māori and Pacific communities
Problem gambling service providers and consumer representatives	Clinical service leaders (3)	Managers of problem gambling clinical and public health services
	Clinician/public health worker (4)	Clinical and public health work with Asian, Pacific, Māori and mainstream communities
	Consumer representative (3)	Consumer experience

## Stage 2

For recruitment in the second stage, a purposeful sampling protocol was used to ensure that the outcomes of this phase captured the actual harms experienced by New Zealanders affected by gambling, and reflected the potential diversity of experiences with respect to the four major ethnic groups. Key pre-defined groups of interest for this stage were:

1. Members of the general public who were experiencing harms from their gambling.
2. Treatment seeking individuals who were experiencing problems with gambling.

3. Members of the general public who were affected by someone else's gambling.
4. Treatment or support seeking individuals affected by someone else's gambling.
5. Treatment seeking individuals of Māori ethnicity who were experiencing harms from their gambling.
6. Individuals of Māori ethnicity experiencing gambling harms and Māori professionals with experience on gambling harms.
7. Pacific treatment provider professionals.
8. Asian treatment provider professionals.

The following channels<sup>8</sup> were used to recruit participants from the general public (groups 1 and 3):

- Paid advertisements (Appendix 3) placed in community newspapers covering all regions in Auckland followed by a second round of advertisement covering South Auckland (an area of higher deprivation) only.
- Paid advertisements in the "Trade Me" website (<http://www.trademe.co.nz/>).
- Online advertisements placed in the Gambling and Addictions Research Centre and AUT School of Public Health websites.
- A4-sized posters (Appendix 4) placed on community notice boards in public places such as libraries, community houses/centres, family service centres, community law centres and Citizens Advice Bureau offices in different suburbs in South Auckland and the North Shore (an area of lower deprivation). The posters were sent to specific individuals following phone conversations explaining the study purpose and their agreement to put up the posters at their centres. The posters were also placed on notice boards in AUT campuses.
- A brief notice using two supermarket chains' customer cards (Appendix 5) was placed in several supermarkets in the southern and northern suburbs of Auckland.

Interested parties who called the researcher were given an overview of the study and its objectives. Some people declined to participate at this point.

Participants for groups 2, 4 and 5 were recruited through communication with treatment service providers located in Auckland. Following contact with managers, the help of counsellors was sought to recruit clients willing to participate in the study. Group 5 comprised Māori participants and was led by a Māori facilitator following kaupapa Māori protocols.

A special poster was designed for Group 6 recruitment (Appendix 6), which was a Māori-only focus group, facilitated by a Kaupapa Māori researcher. The facilitator placed the A4-sized posters in

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<sup>8</sup> The majority of respondents indicated having seen the advertisements in community newspapers and Trade Me.

centres that were likely to be frequented by Māori as well as centres for the general public. Participants for this group were also recruited through the facilitator's personal network.

For groups 7 and 8, treatment provider professionals from two ethnic-dedicated services (Asian and Pacific) were recruited via their respective team leaders. Professionals (rather than clients) were recruited due to language and cultural barriers experienced by individuals seeking treatment from these services. This did not preclude English speaking Pacific and Asian individuals from participating in the other focus groups described above. Treatment providers were identified to be particularly valuable participants as they draw on experience of working with clients. As reflective practitioners, of similar ethnicity to their clients, they are often keenly aware of patterns of harm experiences that they are able to convey. The focus group with Asian professionals was facilitated by a Chinese researcher but was conducted fully in English. The focus group with Pacific professionals was also conducted in English, although respondents often used terms from the Pacific languages to describe particular aspects.

All focus groups interviews were carried out between 19 March and 30 March 2015. To enable maximum participation, individuals who were not able to attend the focus groups were invited to participate in an individual interview at a date and time that was convenient for them. Six additional interviews were conducted between 20 and 30 April 2015 with six affected others and one person who gambles; five were individual interviews and one was an interview with two people.

All participants were given a Participant Information Sheet during the recruitment phase and signed consent forms prior to their participation. Each participant was given a \$40 petrol voucher as compensation for their time and sharing of experiences.

The overall sample for Stage 2 (focus groups and individual interviews) included fifty-one participants, which was higher than the recommended guidelines for this type of enquiry (Creswell, 2007; Morse, 1994). More specifically, the total sample consisted of 21 people who gamble, 14 affected others, 15 staff of problem gambling treatment services, and one individual from a health and social service. The sample comprised 18 individuals who were Māori, 11 Pacific people, eight Asian people, 13 Europeans and one of other ethnicity<sup>9</sup>. The breakdown for gender included 25 females and 26 males.

## Analysis

All focus group and individual interviews were digitally recorded and transcribed. The transcripts were checked for accuracy and completion by researchers at both CQUniversity and the Gambling and Addictions Research Centre, with particular attention paid to parts of the discussion where there had been over-talking, unclear words, or words in languages other than English. Analysis of the data began with critical reflection of the experience of the focus group and any notes made during the session. Analytic memos were created to capture these reflections.

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<sup>9</sup> The ethnicity of participants became known to the researchers during recruitment (via communication with their counsellors) or during the interview when discussing culture-related harms. As ethnicity was not self-identified in all cases, the numbers reported here are to be treated as estimates only.

## **First cycle coding**

First cycle coding using a combination of coding methods was undertaken to ensure all objectives of this phase were achieved. Attribute coding (Saldaña, 2012) was used to capture characteristics of relevance of the participants. Characteristics of interest included whether a participant identified as a person who gambled, an affected other, or in a professional role. Further characteristics of interest were participant's cultural identity to allow a comparison of the experience of culture between the four major cultural groups within the analysis. While professional participants were identified by their current role, their cultural perspectives were presented as reflecting a cultural identity.

Consistent with the sensitising concept that harm occurs across three levels, to the person who gambles, affected others and the community (Browne et al., 2016) structural coding (Saldaña, 2012) was utilised to identify which level a reported harm had occurred at. This facilitated comparison between harm levels, particularly for the person who gambles and affected others. The harm experiences were then coded using descriptive coding (Saldaña, 2012) based on the taxonomy of gambling-related harms utilised in a similar study (Langham et al., 2016). The use of descriptive coding was utilised to expedite analysis and maximise the comparability between levels. This meant that an experience of harm was coded at a general level, for example "biological manifestation of emotional and psychological distress", rather than an *in vivo* code of "I got so worried and then my psoriasis would flare up". *In vivo* coding (Saldaña, 2012) was used to capture any harm experiences that did not initially map to an existing general description, perceptions and conceptualisations of harm, and any other data of relevance to the project's aims or objectives. Finally causation coding (Saldaña, 2012) was used to identify any reports of sources and mechanisms of harm.

## **Second cycle coding**

No additional codes were generated to describe harm experiences in the New Zealand data, with all experiences being captured by the codes from the existing taxonomy. To ensure that experiences were not being forced into existing codes rather than generating new codes, the experience was considered using a strategy recommended by Saldaña (2012) to keep the researcher grounded in the data. This strategy involved adding the words "is" and then "means" to each experience. For example, for an experience described in the data as "I discovered that she had taken my Mum's credit card" is considered as "taking someone's credit card IS a crime of opportunity".

Axial and longitudinal coding were used to compare the experiences in terms of temporal differentiations to the conceptual framework. Axial coding was also used to examine the differences in experiences based on culture.

## **Data saturation**

Whilst data saturation is a contested concept in qualitative research (Bowen, 2008b; Charmaz, 2006; Dey, 1999; Morse, 1995) data saturation was defined as having been achieved when no new experiences of harm were identified from the data. This level of saturation met the needs of the present study. Whilst specific examples of experiences for all codes were not found within the data,



this was beyond the objective of this phase. The full set of codes (developed earlier) were still included in the taxonomy for testing in the population survey.

## Findings specific to the objectives for this phase:

Findings for this phase specific to the objectives cover:

- The definition of gambling-related harm.
- Refinement of the conceptual framework.
- Building of the preliminary harm checklist (taxonomy).
- Expansion of the knowledge of actual experienced harms reported in New Zealand.

The definition of gambling-related harm is considered first. This is followed by the refinement of the conceptual framework and building of the preliminary harm checklist. Finally a discussion of the experiences of harms reported in New Zealand is provided and grouped consistently with the framework.

### Definition of gambling-related harm

The initial objective of this phase was to “refine and expand the definition of gambling-related harm”. As previously highlighted, the sensitising concepts concerning this outcome were the existing New Zealand definition of gambling-related harm (Department of Internal Affairs, 2013) and a functional definition of gambling-related harm that was proposed to facilitate the development of summary measures of health for gambling (Langham et al., 2016).

Given the specific purpose of the definition for this project, the functional definition proposed by Langham et al. (2016), was considered to see if there was some way it could be refined or expanded. Based on the findings of this phase, specific terminologies were included to form the following broader definition:

*Any initial or exacerbated adverse consequence due to an engagement with gambling that leads to decrement to the health or wellbeing of an individual, family unit, whānau, community or population.*

### Refinement of the conceptual framework and development of a taxonomy of harms

The third and fourth objectives of this phase were to “refine and adjust the theoretical framework as required to reflect local experiences” and “build a preliminary dimensional harm checklist for use in the subsequent phases of the project”. The conceptual framework proposed by Langham et al. (2016) adopted as a sensitising concept for this analysis was validated by the data, both in terms of

the classifications of harm and the temporal differentiations (categories). The taxonomy of harms was adjusted to reflect local experiences in terms of cultural harms and the importance of identifying whānau as a distinct group of affected others. The revised taxonomy of harms is provided in Tables 2 to 4 at the end of this chapter.

## Temporal differentiations

The temporal differentiations identified in the framework were evident within the data. The data were somewhat dominated by experiences of harms that occurred at a temporal point of significance (crisis) or were a legacy of previous engagement with gambling. This was unsurprising for a few reasons. First, among the total of 77 participants in this phase, close to half were professionals engaged in problem gambling treatment (n=23) or providing related support services (n=9). Furthermore, among 38 individuals who had experienced problems with gambling, almost all were either still undergoing or had previously received treatment. Therefore, the temporal immediacy of the crisis (that led to treatment seeking) became the focus.

Second, the affected others group (n=14) was dominated by people who had been affected by high problematic levels of gambling. This was again unsurprising as it is less likely that someone who was only mildly affected would be as motivated to participate in the study.

Third, although participants were able to identify earlier harms when prompted, from their own reflection, the early (general) harms they experienced or observed were often ignored or distorted at the time. This was linked to the speed with which the harm reached a point of significance, meaning for some people there was only a short period of time where the gambling was creating smaller harms. As a treatment provider explained:

*You also do see a lot of clients who don't all fall in the camp of gambling for 20 and 40 years. We see people who have only gambled for six to 18 months and recognise serious harm and it developed very quickly. They recognised there was a very small period where they didn't so it's not quite like alcohol is it?*

Fourth, amongst individuals from the general public group who identified as gamblers (n=5), a few did not identify many experiences of harm. This may have been influenced by cognitive distortions of their gambling experiences in some cases.

Finally, some of the emphasis on crisis level or legacy harms may also have been due to the prominence of relationship harms in terms of the importance and affect they had for participants.

## Differences between harms to people who gamble and affected others

In extending the analogy of the disease model by Korn and Shaffer (1999), Langham et al. (2016) suggested that the person who gambles is the *index case* for harm, and that the harm then spreads through affected others; the severity of which is dependent on the nature of the relationship and the risks created. The harms experienced by affected others are collectively similar to those experienced by the person who gambles, but at an individual level these harms are influenced by a complex interaction of numerous factors. For example, at a collective level both people who gamble and affected others can experience feelings of shame and/or feelings of anger. However, at an individual

level, in one relationship, the person who gambles could be experiencing stronger feelings of shame (for the harms others have experienced) and the affected other stronger feelings of anger (in response to lying by the person who gambles). In another relationship, the person who gambles may have stronger feelings of anger (towards a person who introduced them to gambling) and the affected other stronger feelings of shame (for introducing the person to gambling). Consistent with these examples, instances of significant harm were identified in the data both to people who gamble and affected others.

## Gambling harms experienced in New Zealand

The second objective of this phase of the research was to expand the knowledge of actual gambling-related harms experienced in New Zealand. Overall the experiences of harm reported within the present data were consistent with both the framework and the taxonomy, although not every experience from the taxonomy was specifically identified within the data.

### Financial harms

#### Overall findings against the conceptual framework

Financial harms are a common theme in any discussion of harm experienced from gambling. This is presumed to be because financial problems are often the trigger for a crisis, are easily identified and have immediate impacts (Langham et al., 2016). Financial harm has been identified as occurring in a trajectory of severity (Langham et al., 2016), from the loss of surplus or discretionary finances through to the loss of ability to meet expenditure that has immediate consequences as shown in Figure 4. These were evident within the data of the present study.

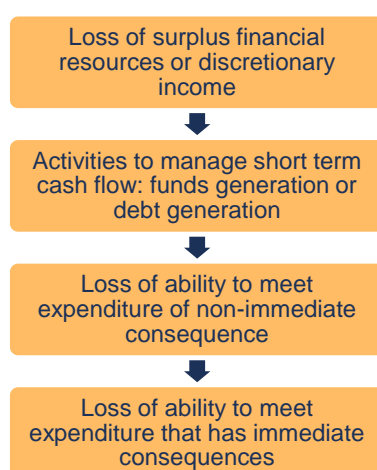


Figure 4. Trajectory of financial harm

The experiences of financial harm in New Zealand described within the data were consistent with the temporal sequencing of the trajectory of harm (as shown in Figure 4).

### Subjectivity of financial harms

It is important to highlight that the level at which harm manifests is dependent on individual financial circumstances. If a person, or family, is already experiencing deprivation, then the initial impact of financial harm from gambling might be at the level of loss of ability to meet expenditure that has immediate consequence. A treatment provider shared a case history that illustrated how financially vulnerable some families already were, describing the impact of instances of binge buying of lottery tickets when there was a large jackpot:

*The poor family, it could be really devastating, a doctor's visit or something, or a pair of shoes or something, it could be really devastating, or the electricity bill.*

Similarly, the previous experience, or normalisation, of deprivation could influence the response to financial harm from gambling, with it becoming just another experience of deprivation. Conversely, people with more disposable income or financial resources may be able to absorb losses for longer. Although their discretionary spending is affected, they are still able to meet essential needs either through income, savings or credit options.

This subjectivity of experience highlights the inadequacy of using money spent as a proxy measure of harm for gambling. Dependent on existing circumstances, spending \$50 on a gambling session could have a significantly different impact for different people.

### The loss of surplus financial resources or discretionary income

The choice to spend surplus financial resources or discretionary income on gambling products can be a normal purchasing decision. Instead of choosing to go to the movies, or on a holiday, a person could choose to spend their money deriving entertainment from gambling. However, if this choice leads to regret in the person who made it and/or creates a loss for others, then it can be considered harmful. The feeling of regret or loss (for an affected other) is what makes this harmful, and may contribute to second-order harms in terms of a relationship or emotional wellbeing. This was particularly of relevance when people felt compelled to gamble.

An example of this sense of regret or loss was provided by a male participant with a young family, who described his feelings of regret from choosing to spend discretionary funds on sports betting rather than holidays or outings for the family (loss). With the Christmas holidays approaching this became a strong motivator for cutting back his sports betting:

*Because other previous holidays I'd waste too much time and money and I just wanted to make sure this holiday was different.*

He went on to comment that by being able to significantly cut back the money spent on sports betting, the holidays had been more enjoyable and they had “*heaps more money to do the little things*”.

This loss of discretionary income or savings was also identified by affected others who had tried to financially assist people experiencing problems with gambling. A retired female whose adult son had experienced significant problems with gambling described the financial support her son had received from his sister, which meant a substantial reduction to her discretionary funds:

*His sister was really good, went to interviews with him and all sorts. She supported him. But it's cost her quite a bit of money. I reckon she seems to think all up it's about \$30,000 he would owe her. That's quite a bit of money really, isn't it? ... [she was] reasonably well off...but you don't have to give it away, do you?*

The small sample for this phase included a number of people who had already experienced lower levels of socio-economic status or intergenerational deprivation, so there were not a large number of instances reported on the level of financial harm resulting from surplus funds loss. What was apparent, however, was the influence of aspiration towards a position of having surplus financial resources on motivation to gamble. A number of participants commented that, ironically, they had seen gambling as a way of achieving financial security or improving their financial position, whilst it had ended up having the opposite effect.

### **Activities to manage short term cash flow**

Activities to manage short term cash flow can be divided into two categories, funds generation and debt generation (Langham et al., 2016). For people without savings or discretionary funds, the consequences of needing to manage short term cash flow can be the level of financial harm they first experience. Funds generation often involved borrowing from family, whānau and friends. When this was not a surplus financial resource for the person who was lending the money, the impact was more significant. A financial counsellor gave an example of the effect of these familial loans:

*I've got a client coming tomorrow, who owes her mother \$20,000, her sister \$3,000, another sister \$1,500. That's just the ones the mother knows about because she rang to book the appointment for her daughter. Says it's pulling our family apart and if we don't get this sorted out - because one of the daughters that's owed the money is struggling. She's a single mum on a benefit, she's not coping terribly well.*

Such instances of borrowing from family members were commonly reported within the data. Even children's savings were affected, as a female described her son's strategies for securing funds to gamble from her granddaughter:

*She did say that dad had borrowed \$500 off her when she first started work and she never saw it again. But see it's the borrowing, the taking, yeah.*

Similarly a male who was in treatment reported the ease of securing money from vulnerable family members:

*Mainly my mother, my dear mother. She was - she didn't know about the gambling, but she always wanted to see me right. Always wanted to see me okay and she was easy. It was, oh, I need some money for this and she would just give it to me.*

Money was often easily secured from family members due to the nature of the relationship; however, when the money was not repaid impacts on the relationships could often be a second-order harm. Family members who were financially affected often needed to generate income to make up for the money loaned, or in the case of marriages, the money lost to the household. The husband of a female who experienced problems with gambling described having to take on extra work:

*So for about 18 months I just worked. I think the longest I worked was 26 weeks in a row without a break and ended up having two days off, only because I was so exhausted. Then I think I said to myself, if I have to work, I will only work six weeks in a row and that's it, I've got to take time off. When I mean in a row, I worked seven days a week. Usually my hours were, I would do between 12 and 14 hour days. So they were long days.*

Selling or pawning items was often reported as a means of generating income, and sometimes the same item would be pawned multiple times creating significant financial harm from repeated payment of the gap between the amount given for an item and what must be paid to retrieve it. This could become a cycle of behaviour. An affected other described the pattern of pawning items as a short term strategy that was generating a lot of harm to the family, both directly and indirectly:

*She had a computer and I found that what a lot of the gamblers do; they put their computer in, get a bit of money out. Go and gamble it and if she's lucky enough to win, she will get it back out again. But there's been so many times, the last computer, I'd gone into the pawn shop that she regularly went to and I said to the guy, how many times has this computer been in over the last two years? I was astounded. It had been in 23 times. ...So the impact there was that in three months' time if I didn't get it out I had to pay the - and the worst one was \$700 and then after paying \$700, I said, no I refuse. She lost that computer and then when I went to [university], a friend of mine gave me an old computer to use. She ended up putting that in. The same thing happened and her actual brand new computer, her son bought her a computer for her birthday last year. ...We went into the pawn shop she normally used and that's already been in seven times. I've got it out four and I have refused to do it after that. ...At the moment it is still sitting in there, but her story was she didn't do it for herself, she did it for her friend, because she put it in, gets \$250 and then they go and gamble it. Now, for us to get it out by the end of this month, I have to pay \$390 and I refuse to. I'm not going to get it out. It's unfortunate for her because right now she is doing a certificate [course] and she needs a computer. But I refuse to let her use anything of mine because in the past she hasn't accepted the consequences that come with giving her computer away or giving money away.*

This example illustrates the high cost of short-term funds generation strategies. The cost of retrieving the item from the pawn shop was significantly more than the money given for it when it was surrendered, and this cost was paid nearly every month over two years. The use of these types of credit providers was highlighted by a number of participants, and the cost of using them was a second-order financial harm. Family members were again commonly affected. A young female participant described her ex-partner's behaviour:

*He's pawned all his possessions, he has nothing, so then he would pawn his friend's and his children's possessions and family possessions that weren't his. That was the first time the family got involved.*

A number of participants expressed anger and frustration at what they saw as the complicit actions of pawn shops and pay day lenders in perpetuating and exacerbating gambling harm and problems. As one treatment provider commented regarding these businesses:

*They're within the law but I guess you could question the ethics of their business practice.*

This sentiment was also expressed by a female whose partner had experienced long term problems with gambling. She voiced her frustration with the lack of appropriate action from finance providers, suggesting a form of self-exclusion would be of benefit. She reported that the pay day lenders' response to requests from family to refuse credit had been to recommend that the person experiencing the problems should just not use their account. She reported similar experiences with finance companies. Whilst on the surface, this idea of self-exclusion from credit may appear to offer some protection from harm, it needs to be considered if a desperate individual would be pushed towards even more predatory and illegal creditors. As one person who had experienced problems with gambling explained, if one source of funds is not available they will look for the next:

*Saying to my family, I need the money for this purpose and then going and gambling it. So you're telling lies. You start over-limiting your credit cards and things. So you get another credit and then you go to the loan sharks and you're just - anything you can to get more money.*

### **Loss of ability to meet expenditure of non-immediate consequence**

Expenditure of non-immediate consequence, as defined by Langham et al. (2016), refers to normal expenditure on items such as insurance, asset maintenance, and preventative health measures that do not create immediate consequences if not purchased. However, failure to purchase these items creates greater financial risk (e.g. not getting a dental check leading to needing more extensive dental work), and risks to safety (e.g. not replacing tyres on a car). Whilst there were a number of reports within the data that related to these types financial harms, they were not commonly identified. This may be partly due to a number of participants having experienced some level of deprivation prior to gambling or due to normalised deprivation; lack of expenditure on such non-immediate but essential items was thus not a priority in terms of their experiences of harm.

Additional to the risk created by not maintaining assets or preventative health practices, a similar form of risk was identified; that of things that need replacing being delayed. In some cases, there may not be an immediate identifiable impact such as an injury from this, but the awareness of the loss of choice, or having made the wrong choice, created a sense of loss or harm. A male sports bettor who also played a lot of team sport described the impact of his sports betting on his participation in sports:

*I remember instead of being able to pay it [player fees] in lump sums, they were allowing [me] to pay off. So in some ways I was sort of all right in that sense, but like . . . there was occasions on certain clubs I played for that if you don't pay by that certain date, then it would go up by - more so you'd incur extra fees. But maybe I need a new pair of cleats or something, but I wouldn't, I'd just do with the old ones. Then I'd get the odd niggling injury or something like that, or perhaps otherwise I'd be using, for instance, cricket or softball I'd be using other people's bats, something like that.*

The inability to pay sports fees is included in this group of non-immediate consequence harms because of the contribution to decreased levels of physical activity and loss of social connection, both of which have a further impact on health. Similarly, the effect of using items that were in need of replacing, such as the sports shoes reported by the participant, can have longer term impact, such



as the exacerbation of existing injury. Reporting of these types of harms was again strongly influenced by participants' pre-gambling financial position.

### **Loss of ability to purchase items of immediate consequence**

The loss of ability to purchase items of immediate consequence is considered the highest level of financial harm (Langham et al., 2016) and was often a trigger, both for people who gamble and affected others, to seek assistance or treatment. These types of items include food, housing, essential medications, transport costs and the loss of utilities. The consequences are not just limited to the immediate impact, but often trigger second and further order harms, such as loss of health due to a poor diet, vulnerability of living rough, or impact on school or work through loss of transport (Langham et al., 2016). Experiences of harm that fell into this category were identified by treatment professionals, people who gamble and affected others within the data. The experiences for the person who gambles and affected others were comparable in terms of the financial impact, but the second-order emotional harms associated with these experiences differed. For the person who gambled it often created feelings of shame and vulnerability. For an affected other there could be feelings of shame and vulnerability but also anger towards the person who gambled.

In terms of purchasing food, the quality and amount of food could be pared back considerably and supplemented from a number of sources. This can create significant second-order harms when a long-term pattern of poor dietary intake is experienced, especially for children whose education is affected by inadequate nutrition. An affected other described the impact on the family's diet from the level of financial deprivation they were experiencing due to gambling:

*We didn't have much in the fridge to cook because we only lived on a \$50 budget [for groceries per week]. With two growing boys it was a real struggle. So sometimes we would only buy milk and bread because we couldn't afford anything else.*

This example was consistent with reports from community organisations who supply food parcels. The influence of gambling on demand for food parcels had been identified by their staff:

*This year 40 per cent of people coming through have had - said that they're affected by someone else who's gambling.*

These experiences pertaining to the ability to purchase food seldom occurred in isolation; the husband of a female experiencing problems with gambling described the effect on their utilities:

*We would be sitting and it would be literally like on TV, when you're sitting having dinner and the power goes out. I would look at her and I said, did you pay the bill? I paid it. So I would get on my mobile and ring around and find out that it hasn't been paid for three months, that's why your power got cut off. Water, we had no water. I would be in the shower, and literally I was having a shower and the water stopped coming out. I walked outside and the guy said, well you haven't paid your water bill. You've got to go and pay your water bill.*

This participant also described the inability to pay for petrol to get to work:

*I remember ringing one of my customers and said, look I honestly can't make it today, I've got no gas. He said, well if you can get here, I will fill your wagon up. I*



*just need you here. So I managed to get there and I was lucky enough that this particular company filled my wagon up and he said, now come for the rest of the week, I don't care. They just needed the job done.*

A female participant who had experienced problems with gambling reported similar experiences, and the effect on her relationship:

*I was spending money on - that I was supposed to be putting in for the housekeeping, and food and rent and all that, power and all that. The next thing I'm getting the power cut off, getting eviction notices from the house, and - which put stress on my relationship with my partner. Then, well, I was told to get lost.*

The second-order harms of these experiences were significant, especially in relation to relationships and emotional harms. Given this compound impact of financial deprivations, relationship stress and emotional distress, it is unsurprising that these harms precipitated treatment or assistance seeking.

### **Differences in the experience of general financial harm**

Whilst a clear trajectory of harm has been previously identified (Langham et al., 2016), and the reporting within this phase was consistent with that trajectory, the experience of these harms is very subjective. Previous levels of socio-economic status or deprivation meant individuals or families may already be living without discretionary income or savings, already be relying on credit to help manage their financial demands, or even struggling to meet all their expenses. A number of participants identified the experience of financial struggles as a motivator to gamble in order to secure their financial future. Additionally, the earlier levels of the trajectory could be distorted by funds and debt generation efforts by the person who gambles, with affected others unaware of the harm until an immediate consequence (e.g. the power being cut off or being evicted) is experienced. This has been described as a *house of cards* (Langham et al., 2016) and tended to occur when the person who gambled was also the only one in the relationship or family who controlled the money or when money was kept separate within relationships. A female whose partner was experiencing problems with gambling described finding out the severity of his financial situation:

*Well obviously there's a lot of secrecy around it, so I didn't notice anything until he was incredibly distraught and in tears and almost in paralysis with emotion. He had lots of bank loans that were owing or loan shark loans that were owing. We were about to move into a new place together, and he had no money to pay for the rent or the deposit or anything like that. So that was probably the first time when he told me what was going on. He was very cagey about - there was something fishy going on with money. He never seemed to have any, but he didn't seem to spend any either.*

### **Crisis level financial harms**

When financial harm reaches a point at which people can no longer tolerate the impact, it creates a temporal point of significance, referred to as a crisis level of harm (Langham et al., 2016), which motivates some form of behavioural change. For many of the participants in this study, that point of significance related to the loss of their ability to purchase items of immediate consequence, whilst

others were still able to meet those expenses, but lost an asset of significant value, such as a house, car or business. This loss could be triggered through increasing intensity of gambling behaviour over a period of time. A female whose husband's gambling had a significant effect on them financially, described a similar experience for her sister who lived in Australia:

*My sisters live in Australia ... my sister ... she was really against all this pokies and all that. Slowly my brother used to go and they used to have a lot of fight. Now my sister's started going to the TABs and she is one of the biggest one doing gambling. She is working, she's ... and every time she says the club is her home. They actually ... had a house. They bought a house and both of them go to the club and they borrow money off the house. Just last year their house got repossessed. That's the effect.*

The sister who was on the cusp of retiring had lost an important asset at a time in her life where she could not recover financially, going from owning a home to renting. Similar large scale losses were also reported from episodes of binge gambling. Binge gambling<sup>10</sup> was not reported sufficiently within the sample to be able to fully consider the unique way it may create gambling-related harm in comparison to more regular gambling; however, the effect in this instance was of a comparable magnitude. An affected other described the experience of extreme binge gambling from his wife, whom he reported had previously only played the pokies occasionally and spent very small amounts of money:

*Well, one particular Friday she went to work and she left home at quarter past six. Her boss rang at 7:30 and asked, where is she? We didn't hear from her for three days. What she had done, she had picked up one of her workmates and her workmate talked her into going to the casino in Auckland and they spent three days in there. I couldn't do anything for 48 hours. I had contacted the police because I had no idea where she was. They finally found her at the casino. When I realised she was at the casino, I found out she had spent \$12,000 over the three days.*

This was the first of three binge gambling examples that had profound effects:

*But as it escalated, like I said, over the three visits to the casino, I owned my own company ... My wife was a director and it took me nearly two and a half years before I removed her as a director because she had access to my funding. Yeah, and that's where the biggest problem started because my business started to suffer. My bills, my business bills weren't getting paid. Her wages were to take care of the mortgage and that wasn't getting paid either. So I ended up working extra hours just to cover the mortgage and my business expenses. ...The first time she went she spent \$12,000 in one weekend at the casino. Then almost a year later or about 18 months later she spent \$35,000 and then it wasn't until she went to [city] with her sister that my accountant rung me up and said, your account has been drained. There is \$50,000 missing. It wasn't until then that I realised that she was still doing it.*

Ultimately they lost their home as well. The potential for financial harm in a single binge episode is significant and differences between those who gamble between binges and those who do not

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<sup>10</sup> Binge gambling refers to intermittent episodes of compulsive gambling behaviours (Nower & Blaszczynski, 2003).

warrants further research to determine differences in motivation, play behaviour and the experiences of harm. Whilst the harms themselves may be the same as for those who gamble regularly, there was some suggestion that for less intense binge gamblers that there is a period of increased deprivation following a binge whilst they recover, then the financial situation is somewhat normalised until the next binge episode.

### Legacy financial harms

Financial harm could continue to a person who gambles or affected others even if the gambling behaviour ceases. These ongoing financial harms from past gambling behaviour have been described as legacy harms (Langham et al., 2016). In some circumstances, these harms related to strategies to manage gambling behaviour and minimise harm. An example of this was getting rid of ATM cards or reducing the amount of money they could access in daily transactions. A female currently in treatment explained the strategy she had utilised previously whilst living in Australia but she was not able to do in New Zealand:

*I was able to limit my access to money by putting a hold as to how much I can take out of my account. I had put it at \$100 which was way too much, because to me I had \$40, I can still go to a pokie machine with \$40 and that may be all the money I've got. So I put it at \$100, which helped a lot, because it means I can't go and get hundreds and hundreds and hundreds and keep going back, couldn't do it here. Put a hold on just how much you – now why can't those little things which will help a gambler a hell of a lot. I mean I got to the stage now where like you, I have to get rid of my cards. It's very hard to get rid of cards, because you're rife with cards now. So if I want to go and get money and say I only want to get \$40 and I've got to go to the bank to get just \$40 to keep me in food or whatever. I'm going to have to pay them \$3 to get that money out of the - so why can't little things like that be looked at to limit you.*

These strategies were important to participants in terms of avoiding relapse and managing their recovery without having to hand over their finances to someone else, or regaining control over their own finances. However, being financially disadvantaged, through additional banking fees, for trying to put harm minimisation strategies in place felt like a form of punishment and additional harm to some participants.

Other financial legacy harms related to a bad credit history included having to pay higher rates of interest for credit facilities and more expensive pay-as-you-go options for utilities and communications. Financial counsellors reported this was a common impact on clients due to the improvement in credit reporting between utilities companies and credit reporting companies. The effect of this was experienced for five years after achieving stability, but relapses or other effects on finances could extend this. As one financial counsellor said “*their past always stays with them*”. For other participants their credit rating was so damaged from their financial difficulties and previous efforts to obtain funds that they could no longer secure credit through regulated commercial providers. Where this occurs it requires people to rely on informal lending through family, creating a further demand on them, or they rely on unregulated and illegal credit providers. Both of these options create the risk of second-order harms. One participant relayed the awkward feeling of having to get help from his parents as an adult:

*Yeah I can't get loans, can't get credit cards, can't - I've just had major work done on my car and I had at 42 years of age, I've had to go back and ask mum and dad for some money to get the repairs done, because I can't get overdrawn or loan.*

The ongoing impact of legacy financial harms creates second-order harms related to shame and vulnerability. These are of importance as they create feelings of hopelessness and risk of relapse.

### **Community level financial harms**

Financial harms at a community level can also be referred to as economic harms. Overall direct financial harms at the community level as previously defined (Langham et al., 2016) were not explicitly identified in the present data. Such harms were, however, implicitly identified through the direct costs of the provision of services, the indirect costs in terms of lost businesses and bankruptcy, and future costs in terms of increased welfare reliance and perpetuation of poverty.

In the present data, community level financial harms were reported as loss of capacity within communities to engage in non-gambling fundraising and biased redistribution of gambling funds. A consumer representative reported that they were starting to see some communities push back on this issue:

*They're saying, the trust is saying we put all this money back to sport, and they're going yeah but do you know how hard it is for us to apply for our peewee football team to get this. Yet to get \$1,000 grant, and we've got to jump through all these hoops. But you've given \$250,000 to harness racing. So communities are actually starting to see that, people's eyes are opening to the realisation that no that money isn't staying in the community, it's actually going out of our community and we're losing it.*

This biased redistribution of funds was of particular priority within Māori and Pacific communities, where community gambling such as housie is a normal form of fund raising. A Māori researcher explained the experience of a number of communities:

*One of the things I've come across is that people, communities, have lost the ability to do their own fundraising, because they're dependent on someone filling out an application. But when you get those community fliers in the newspaper ... and whatnot, you see pages and pages of who did get money, and you also see pages of who didn't. Those are the ones I'm interested in, I look at them and see how many Māori communities applied and didn't get the funding. But yet they probably contributed two thirds of the money.*

A Pacific researcher agreed:

*We have become dependent on those funds.*

A number of participants involved in policy and research also echoed these sentiments. Some reported that the issue of biased redistribution of gambling funds had been investigated, and the findings suggested that it had to do with the quality of the applications received. However this relied

on human capital<sup>11</sup> within a community to be able to produce applications of a suitable quality and most of the communities that had the greatest need for the funding had the lowest levels of human capital. It was identified that for many of these communities gambling erodes factors that contribute to social capital<sup>12</sup> – also needed to secure these grants. This created a cycle of inequity and perpetuated deprivation. The communities most affected by gambling and, therefore, needing the assistance, lacked the resources (human and social capital) to be able to compete for funding, partly because of gambling. Furthermore, the failure to secure the funding to support community clubs had an additional detrimental impact on social capital, further contributing to this cycle of inequity. As participants in the expert groups expressed:

*...we've done quite a bit of work around...looking at grants back into communities and why societies aren't giving money back to some of them. ...The applications aren't coming through at the right kind of level, we can work with some of these groups. But because they're new groups, they're forever changing... We don't get the right information back after compliance or it's not used in the right way. So it's really interesting that here's the people that need it the most, who need a different level of support to actually make application and meet the compliance.*

*It's a barrier already there.*

At a community level there is an opportunity to address financial harm caused through exacerbation of inequity and erosion of social capital, both of which arguably contribute to and are perpetuated by commercial gambling, by addressing the role of gambling in redistributing funds in a biased way.

### **Cultural differences in the experience of financial harms**

It is important to separate cultural harms, addressed later in this chapter, from cultural beliefs and practices that may influence gambling-related risks, vulnerabilities and harms. Cultural harms are outcomes that create a decrement to health and wellbeing within a person's cultural beliefs, practices, identity and connection. Cultural beliefs and practices were also identified as creating differences in the vulnerability to harmful gambling and the experiences of resultant financial harms.

Analysis of the present data found that differences in risk and vulnerability between cultures related to:

- Perceived difference between community-based gambling and commercially provided gambling.

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<sup>11</sup> Human capital is typically defined as the skill sets, knowledge, qualifications, and experiences of individuals within a community that enables them to be economically productive (Coleman, 1988; Dinda, 2008, Parts, 2003).

<sup>12</sup> Although often variably defined, social capital concerns the condition of relationships among individuals within a society and is measured by indicators such as social networks, shared identity, shared values, trustful relationships and social cohesion among others (Coleman, 1988; Dinda, 2008, Parts, 2003). Greater social capital contributes to greater productivity (e.g. a group of people with trustful relationships will have greater capacity to accomplish something than a group that does not) and enables creation of future human capital (e.g. effects of strong social capital on positive education outcomes in youth) (Coleman, 1988).

- Collective cultural practices in relation to the sharing of financial resources.
- Vulnerability of new migrants resulting from acculturation processes.

*We have a couple of Asian clients at the moment who are really, really bad gamblers. It's not so much about the asking for money and stuff, it's more that it's normalised. When they came to New Zealand it's normalised that that's how they interact with each other. Dad takes son to the casino and that's their fun time. So it's not noticed in the family or the culture as a problem, because it's what people do. They don't go New Zealand culture, you have drinks on Friday after work. For them it's well on Friday night you go to the casino and you spend \$50 grand. So...*

Differences in the experience of harm related to:

- The amount of harm experienced due to the vulnerabilities identified above.
- The way in which harms spread from the person who gambles (the index case) to their family and community.
- Differences in social structures between western and collectivist cultures.

Influences of culture on gambling and its normalisation have been noted among Māori and Pacific communities (Bellringer, Fa'amatua'inu, Taylor, Coombes, Poon, & Abbott, 2013; SHORE & Te Rōpū Whāriki, 2006; Urale, Bellringer, Landon & Abbott, 2015) often because of the popularity of housie and other fundraising practices within the church communities.

The data showed that some cultural practices could increase risk, for instance, normalising gambling as a means to generate funds and inadvertently increasing risk of financial harms. Within Pacific communities, fa'alavelave<sup>13</sup> (gift giving), where people ask for money often for special occasions, although intended to contribute to the collective wellbeing may inadvertently allow a problem to continue or go unnoticed for longer; the longer the delay the more harm:

*So there's your immediate, there's your related blood family, then there's your village family and then your country family, on migration to a whole new country. So in essence that means a Pacific problem gambler has several people to go to. So what I've suggested is that delays the identification of problem gambling... Although in the Pacific context, people come and ask for money often, and it's called fa'alavelave. Where we contribute to the collective wellbeing and to collective events et cetera. Often it's not questioned when people come along and ask for assistance or for some monetary support. So for a problem gambler not being asked why you want money, has again huge implications for that individual, their family.*

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<sup>13</sup> Fa'alavelave is a Samoan term for customary gift giving during significant events and occasions such as weddings, funerals or births.

*...because people won't question other people when they come for money, would that allow a problem to... Continue ... Or to go unnoticed... The longer it's delayed the more harm that's going on.*

## Relationship harms

Relationship harms refer to those harms that affect the relationships between people who gamble and their affected others. Relationship harms have been identified as occurring at differing levels, labelled as 'disruption', 'conflict' or 'breakdown' (Langham et al., 2016). Disrupted relationships refers to a loss of the normal functioning of the relationship; conflict refers to the manifestation of disagreement or argument; and breakdown refers to the loss or estrangement of the relationship. Again, these levels are not a continuum and the harms can manifest across or within the levels dependent on other factors. In an Australian context, relationship harms were found to be related to loss of time available from the person who gambles, loss of trust within the relationship, inequality in the amount of engagement and effort put into the relationship, and differences in perceptions of acceptable and deviant behaviour (Langham et al., 2016). By comparison, participants in this New Zealand study gave a much greater level of priority to relationship harms, more so than financial harms. This was consistent across the cultural groups and may be reflective of the influence of collectivist and family-centred cultures on the broader population. Furthermore the consistency was seen across the differing levels of gambling behaviour, and also from participants who were affected others. In a group of participants currently engaged in treatment, financial harm was not the focus, although people spoke of the amounts lost. Relationships were the more resonant harm. The sense of the financial harms being more quickly normalised within the experience, they became more distal, whilst the people, and subsequently the relationships remained salient. As one participant explained:

*... it's not about the money and I've lost thousands over the last few years. But I've learnt you know you never get it back. It becomes just numbers, it's not real money. But I have a partner, a lovely woman and I betrayed her several times as far as I think, this lady talked about the trust. You don't trust yourself and how can she trust you and my children are sick of hearing about me going back to the pokies.*

Another male participant who had experienced a lot of harm and was still seeking support from treatment providers had similar regrets around relationship harm:

*Yeah I'd give all the money I had, just to get my relationships back. It wouldn't matter if I ended up broke, just to get my relationships back, that would be more important to me than the money I lost, or I went to prison or shame or anything like that, or the guilt. The trust I don't have any more, people who don't trust me, I'd give all my money away just to get three relationships back yeah. So that's what it means to me, relationships more than anything else.*

This sentiment of the importance of relationships was echoed by others who had experienced significant harm from both their own gambling and other people's gambling.

An affected other who described significant harms to an extended family from her sister-in-law's gambling (which included theft, estrangement, and fraud), in hindsight, identified that the greatest harm to her was the loss of her friendship with her sister-in-law. A female whose husband's gambling resulted in substantial financial losses described the most significant harm to her as follows:



*It's probably the trust. Yeah. I'd say that because I can't trust him. You give him money and then you worry what's he going to do with that. What else - can't trust - you lose that trust. Financially we were living on - renting or owning a house, it's just four walls, doesn't matter.*

### **Relationship disruption**

Early experiences of harm were easily identified by treatment providers and people who were undergoing treatment, suggesting a level of self-awareness and insight had been gained during the treatment process. A treatment provider shared the collective experience of clients they had worked with over a number of years in terms of the early identification of relationship harms:

*They recognise they quickly became unreliable and lost confidence, they could see the confidence was lost in other people's eyes. They were not where they should be when they said they would be there.*

A consumer representative who had experienced significant problems with gambling was also able to identify similar early signs of harm:

*I think one of the quick notices I was probably - was when I didn't take phone calls in the casino. You go outside or you just switch it off so that you didn't have to hear it, have anybody hearing that you were there. Or telling people you were somewhere and you were somewhere else. I think they were probably the early signs.*

Distinct patterns were identified within the data in how general relationship harms were reported by participants. Affected others most commonly reported harms concerning loss of trust, such as dishonest communication. An affected other identified lying as being very harmful:

*That was the biggest killer, was her lying.*

Another affected other expressed a similar view:

*That is the biggest thing, with the gamblers it's just complete out and out lies. I don't know how they do it. They just look you in the eye and lie.*

Harms relating to unreliability or reduction of time, however, were more often reported in relation to the effect on relationships with children than with spouses or partners. A young father who had reduced his gambling due to its effect on his family reported that the time spent engaging in sports betting had crept up on him:

*I've got work and I've got kids and you know, it was like - yeah, so some days I would have been, especially on a weekend, maybe eight to 10 hours watching sports... so it was just a whole lot of wasted time ... it wasn't enough time with my kids.*

Another sports bettor who did not initially believe he experienced any harm from his gambling, went on to identify the time it took away from his children both in terms of quantity and quality, suggesting he should be playing sport with his child rather than watching it:



*Well I can sit in front of the computer watching a soccer game for an hour and a half. My kids are running around, I probably should be playing with them rather than sitting in front of the computer. So that is a bit of a concern for me.*

Noting he felt he could spend the time he currently utilised betting, watching the games he bet on and researching his bets, he was asked what he felt would be a better use of the time:

*...Just [being] outside, maybe kicking the ball around with my boy or something, rather than sitting in that damn computer screen.*

The effect of this lost time, or quality of interaction, was harmful to his children. A treatment service participant described the effect concerning time on children:

*I don't think the children understand as much on the financial side of things. I think it's the lack of time, what they're going without, things that they see their peers having but they don't have and so they don't make the link between the losses of gambling and how it's affecting them . . . deep down they just wish that their parent could just come and support their Saturday game because they see other parents there supporting their children. They –... see their peers and they have what they don't have, like shoes, sports equipment and uniforms and . . . It is not about the things, as just having the involvement.*

Even when parents were physically present, the quality of the relationship could be affected. Parents who were experiencing problems with gambling were reported to be impatient with children, and they were often not mentally or emotionally engaged, as one treatment provider explained:

*There's that lack of closeness in relationship like a presence always being interested in getting away to gamble.*

They went on to describe the long-term effect this had on children:

*Insecure attachments that form. So just the time that's spent as a child with their parents or significant people in their life who gamble very heavily. Has often been around the gambling, it's the only way they could spend time with their parent. So they themselves feel that they really have a very insecure attachment and it has followed them in their life as an adult.*

Where one parent was experiencing problems with gambling the effect on the other parent was described as assuming a single parent role, being solely responsible for the child(ren) and running of the household. However, the effect of the gambling made this more difficult because one adult was consuming the majority of the household resources.

### **Relationship conflict**

When relationship harms were at the level of conflict, the harm became greater to the parties involved and those around them. Conflict often became cyclic for a number of affected others dependent on the gambling intensity and how much had been won or lost. A female whose husband gambled described the effect it had on his moods:

*His mood swings. He used to get angry and take it out on me. He - the mood swings would vary. When he wins he's happy and everything is happy and everything is okay. When he loses or when he knows that he is then really bad, he comes home and just goes to sleep or he – you can't talk to him.*

She went on to describe how the withdrawal pattern of behaviour would escalate to conflict on occasions:

*Sometimes he's very quiet. He just comes home, goes to bed and wouldn't do anything. Doesn't want to eat, doesn't want to talk. I feel like what have I done wrong? What have I done? Why are you treating me like this? I couldn't understand why. After a while when I knew - when I started to understand that's the gambling, then I know that he's lost some - fair amount of money. Then he'll - then I'll get angry and that's sort of when I start talking to him he gets angry and then we start shouting. It's really hard to understand at the beginning. I - my background, my family we were never involved in any gambling.*

Children living in a home with conflict are often aware something is wrong, even if they do not understand the source of it. This was reported by people who gamble, affected others and treatment providers. As one participant, who was experiencing problems with gambling himself, recalled from his childhood:

*They were having little squabbles. My parents and - were having their little . . . They'd go to the room. We could hear that they were arguing. Maybe the - this has to do with personal money worries or something like that. We know there was something going on.*

A number of participants reported relationship conflict that manifested in episodes of violence both by, and to, the person who gambles. A treatment provider recalled an incident where a female gambler had been the victim of violence, after escalation of conflict with her partner over the effect of her gambling. A young male who was experiencing problems with gambling recalled the environment of his childhood home, where his father's problems with gambling had contributed to episodes of violence and the subsequent break-up of the family.

### **Relationship estrangement**

A number of participants shared experiences of relationships that had become estranged due to the influence of gambling. In most of these cases, the estrangement was initiated by the affected other. These decisions, however, were not made quickly or easily. A female participant who was in a relationship with a man who had experienced problems with gambling for over twenty years had put considerable thought into the decision to end the relationship, taking into account issues like what the future would be like if he did not change his behaviour, the likelihood of him changing his behaviour, and the potential effects of her ending the relationship. She explained:

*But as we have got on ... is this something I really want to do for the rest of my life. Do I want to manage his money and constantly question if that is his wage or if he's hiding that? Do I constantly want to monitor his internet and his emails and for finance loans coming through, or internet usage? If I could see he wanted to improve then I probably wouldn't mind so much, but now because I can't see he wants to*

*change, he's just so sucked in with this sickness that it's not something I want to do for the rest of my life. I don't enjoy doing it. Most normal people don't have to do that.*

The decision to end the relationship was delayed by what she described as her initial approach of separating the normal, loving partner from the person who gambled, and how she believed she could keep them separate. Over time she described a sense of realisation that he was a *total package*, and the positive aspects of the relationship were not enough to outweigh the negative. Like other affected others, she reported a concern that she would be *dragged down* with him. In her deliberations, and wanting to be sure of her decision, she had reached out to other women who had been in relationships with him, and friends who were no longer in touch with him. It was the long history of harm to himself and others that had influenced her decision:

*I've made a lot of contact with his past partners to fully understand the scale of the problem, and friends who have known him for a long [time]. Everyone his life has touched has gone through exactly the same thing. So what I'm doing is nothing new to what his wife would have done, to what his previous girlfriend would have done and what friends have done. His life has been full of people wanting to help him and even his sporting club who he played for were there to support him and help him, but he was never there for himself. Now he's pushed all those - he feels that everyone's given up on him, but no-one's given up on him, he's given up on himself. He never backed himself from the beginning. So now I know that, he had had the chance, because I just presumed no one knew about it or that when they found out they left and didn't try and help him, but now I've actually spoken to people about it. Every one of his relationships, to differing degrees, the partner has always done the same - managed his money, tried to get him help, involved his parents.*

This experience resembles a pattern of behaviour reported by other participants, both those who gambled and affected others. The impact of gambling at problematic levels is highly destructive to all relationships. As a male participant in treatment explained:

*You're a different person and nothing means anything to you, you don't think of your children, you don't think of your partner, you don't think of your job. Nothing matters, and nothing matters anymore, it's the next press of the button or the pull of the lever, that's all that matters.*

### **Relationship distortion**

Within the context of gambling harms, relationship distortion has been previously defined (Langham et al, 2016) as situations where the person who gambles is infantilised or where children have to take on adult roles and responsibilities due to the physical or emotional absence of a parent due to gambling. In the present study, distortion was reported by a number of participants, mostly within adult relationships. A female whose husband experienced problems with gambling described the need to take control of the finances, and give her husband an allowance as not only *wearing her down* but also as a change in roles within the relationship:

*It's stressful for me. Not doing all this - I shouldn't keep a tab. You're an adult I shouldn't. It's like looking after a kid.*

Similarly, another affected other described the incongruity of a distorted relationship:

*In a normal relationship you wouldn't involve your parents in that day-to-day stuff but because it is so massive and because it is his mental health and it is money he doesn't have and I don't have, they have to be involved.*

A further form of distortion noted within the Asian cultures was the use of the treatment organisation or counsellor as the “authority” who needed to tell the person who gambled what to do. Parents and spouses would contact them to ask them to tell the person what to do but without mentioning the parent or spouse, due to the harm that would create within the relationship.

### **Relationship legacy harms**

Overall, the priority given to relationship harms in the data was often due to pervasive impacts on the people involved. Whilst financial harm can be normalised and becomes distant, the harms to relationship remain strongly felt. When asked what the greatest harm was, similar to the affected others quoted above, a number of participants who had experienced problems with gambling nominated relationship harm as the worst. Trust was not easily rebuilt within relationships and many relationships were permanently damaged or lost. A participant who worked in the justice system described the experiences of a client who was trying to rebuild relationships with her family twenty five years after stealing from them, and having charges pressed by them.

*It's a long time, a loss, and an absence from family, a big separation . . . It's really hard for them around Christmas time. They can't have that family around.*

Another male participant who was estranged from his family stated that it was not just the special occasions:

*It's still a lonely existence at times, it's funny. I don't really notice being alone until I'm doing things like the washing up or shopping for one and stuff like that.*

Many participants, both people who gamble and affected others, reported the hopelessness in trying to rebuild or re-establish relationships. Affected others and treatment providers consistently mentioned the issue of trust and the inability to restore it. For others, the damage from the sense of loss and abandonment could not be repaired. A consumer representative shared the experience of a man who had gambled heavily whilst his children were young and was trying to re-establish the relationship:

*Not the money, but the days and the time he had lost with his children. It was when his children were grown and his wife had cancer, and they went on a trip. They went to go on a world trip and one of his children said it's too late dad, you're too late, you weren't there for the picnics mum took us on, you weren't there for this that mum took us on. It just - this grown man just sobbed his heart out for all of those years of that time he had lost with his family. It was too late. He'd given himself permission all that time, so that was his harm from the very beginning. Not the finances, the finances were never the problem, it was the fact that this children actually said it's too late dad.*

Of particular concern is that the loss of primary and significant relationships caused a vulnerability or risk to further harms. For those who were still gambling, other gambling venue patrons became the only relationships left. As one treatment provider shared:

*So recently, I saw this guy - young man. Only three years of gambling, he lost all his schoolmates, friends. Now he only has with the gambling - those in the casino. But if he withdraw himself out of casino, he has no more friends.*

For those who wanted to stop gambling, the loss of relationships represented a vulnerability to relapse. As one female about to re-enter treatment explained:

*I have support of my family and my kids, but I have no trust, and I don't know that I'll ever really get that back.*

She reported having made repeated attempts to stop gambling, and had managed to at times with the assistance of particular programmes or counsellors, but when the programme finished or the counsellor moved, the relapse was never far away. She had even tried to move to cities where there were very limited opportunities to gamble, but being isolated, the lure of gaming venues was even stronger.

*These little lights on them, they're flickering at you, you know. You might be driving along a road and there's 10,000 signs, but the only one that you're going to see, is the one that says gaming. To me that jumps out at you.*

### **Community level relationship harms**

There was little explicit evidence of community level relationship harm within the data. However, some implicit community level harms were noted.

### **Emotional and psychological distress**

Emotional and psychological distress caused by gambling was a dominant theme within the data. This was linked to the long-term effect that these types of harms could have on individuals. The source of harm could vary, often stemming from conflict between behaviour and values, distorted cognitions, or as second-order effects from other harms.

### **Gambling as a breach of values**

Elements of dissonance were observed in the present data in terms of conflicts with cultural value systems or conflicts with self-expectations (personal value systems). A number of participants talked about gambling as being something that *wasn't done* in their family, and was at odds with their religious beliefs or cultural values. This dissonance created a sense of harm, at living outside the value systems that someone was raised within. One female spoke of feeling fear when she had won a car in a raffle as a young adult because of her father's views on any type of gambling. In some cases this was a cultural view. A treatment provider explained:

*I think for Asian culture, we still see gambling as a vice. Yeah. So in that way, when you are involved*

### **Keeping the secret of gambling**

The breach of values was not related to just the act of gambling; for many the resultant secrecy and lying sat uncomfortably outside their value systems. As a female who had experienced problems with gambling explained:

*The harm of lies to your loved ones. I never lied [previously]. One thing I was brought up, my dad, we were brought up hard life. I was brought up old school, where kids were... [seen but not heard]. You never lied. One thing my dad couldn't stand was lying. To lie to him, oh Dad I need this money for this, the kid's thing, and he's like oh yep, and give the money.*

She shared the considerable effect it had on her emotionally:

*Just that devastation of how I felt as a person, man... Yeah just that feeling of being a liar and just losing the trust from my family.*

A male participant agreed that the shame of what you had done to your family was very strong:

*Yeah. Oh yeah. You'd rather hang yourself.*

Trying to hide gambling also created many emotional and psychological harms. Gambling was viewed by a number of participants who had experienced problems with it as a *dirty little secret*. One male participant shared an experience of running into a customer at a venue one day:

*A lady sat beside me, and she started chatting to me, and we weren't even looking at each other, started oh blah blah blah, this isn't paying. All that sort of bullshit talk, and all of a sudden we looked at each other and thought oh no, one of my customers you know. She didn't, aren't you [name] the [tradesman], and the embarrassment. It's like - and it came to mind that I wouldn't have been embarrassed if I was just a social gambler, if there is such a thing, I'm sure there is. If I was a person like someone \$20 enjoy yourself and leave. But the embarrassment because I felt completely sprung wide open, she knows what I do on my days off sort of thing, that sort of feeling. . . maybe she felt the same, I don't know, it doesn't matter it was about my feelings at the time. So I did leave soon after, I think I was getting pretty low on funds anyway. But yeah it was that whole feeling of you've been caught, and I didn't stop again this time until I'd run out of the rent money and the food money and everything else.*

A female in treatment explained that “*You hide and that comes at a cost.*” These costs were other reported harms such as sleeplessness, constant anxiety, and when the hiding involved deception there were often harms to relationships. But for others hiding was a necessity because of beliefs about how they would be treated, as one male participant shared:

*The gambling thing, I didn't even want to tell anybody aye, it's like it's a real shame thing, it's like there's just a feeling that everyone thinks you're after their money, or*

*fraudulent activities. All the rest of it, you're not to be trusted at all, whereas I can trust a drunk.*

A few participants identified drinking to be a more social activity than gambling. This difference between being a heavy drinker and gambling was explained:

*You can get on with a drunk, have a hell of a good time, as long as he's comfortable with what he's doing, or she. You can laugh and joke, I go to a pokies room, I don't want to know anybody else that's there, it's me and the machine, it's real closed shop sort of thing. It's very secretive, I don't want to talk to someone, I want to play that machine.*

This was an interesting perception, because both are promoted as, and can be, social activities. However both can become something done alone, that exacerbate social exclusion when done secretly. The secrecy and hiding of the behaviour, however, only created more harm when it removed the possibility for early intervention and harm minimisation. The effect of the built-up harm from hiding the issue was described by the mother of a person who gambled:

*I didn't know about it until it all crashed and that's actually eight years ago. But I remember saying to ... on the phone, it was like a pebble in a pond; just ripples and ripples and ripples.*

Ironically, in sharing the family's experience of harm, she was now the one keeping the secret: "He doesn't know I'm doing this, by the way" she explained. Affected others also reported trying to hide the gambling and its effects from others. A man whose wife had experienced problems with gambling described trying to hide his feelings about his wife's gambling and its effect from the children:

*It's just that the only way it affects my boys now is they see how much I'm upset. It's more my worry that they're worried about it than mum. My youngest boy now, he's 22 now. He says, I always know when mum is gambling. I say, why? I can tell you're not happy or your body language or mood. I used to be able to hide it well, but I just refuse to hide it now. I used to think, I don't want the boys thinking the worst of their mum, but at the end of the day they're adults now. I'm not going to hide anything.*

### **Distorted cognitions and erroneous beliefs**

Distorted cognitions and erroneous beliefs experienced by people who gamble were also identified as a form of psychological harm. Indicators of distorted cognitions and erroneous beliefs were evident in the rhetoric of some participants who considered themselves controlled gamblers, although they did not identify them as such. A male sports bettor was convinced of his luck from an early age after a big win:

*I grew up with sort of a big Irish family. So from day dot we were at the races betting, aunties and uncles having family card games for hundreds of dollars. This is when I was - we used to hide under the table and aunties and uncles would drop money down. So I grew up with that. Then before long, 15, 16 years old, I'm playing family card games with aunties and uncles for \$1,500. Reasonable money. I was winning \$400, \$500.*



The recollection of another early experience had reinforced this:

*I went to Australia to live. ...I went over there with my auntie and my cousin. I had \$300 Australian to live. I was 15 years old. My auntie got me into the Australian casino in the Gold Coast, because her name was [last name] and I'm [same last name], so, oh he's my son. He's 18 type of thing. So I got in. I went straight to the \$100 minimum table, 15 years old. \$100 down. Lost it. \$300 to live. Put down another \$100. Won it back. So I was even. I got up and walked away. So mate, I was 15 years old.*

This was very different from how people who were in treatment recalled their experiences. People who have recognised the problems were more aware that occasional wins were followed by losses, as one male recalled:

*Occasionally I might use the win or up to \$1,500 or something like that, but it would all go back in again, and again and again and again.*

Another male in treatment recalled:

*You go there full of expectations, you say to yourself tonight's my night kind of thing and you go there, as soon as you sit down and you press the button or pull the lever, that's it, you're in another world.*

The reality would hit later, as a female participant in treatment explained:

*Yeah and you suddenly realise, I spent all this money and it should have gone elsewhere.*

The differences in the recall of spending, winning and losses were pronounced between participants who considered themselves recreational or controlled gamblers and those who had identified their problems and sought treatment. In the former group, participants considered themselves controlled but reported spending a lot of time and money gambling and often described themselves as being ahead or lucky. Of particular concern was the influence of sports betting on their perceptions. Watching sports matches was framed as *research*, and their knowledge was considered of more importance than random factors that could influence the outcome of a sports game. In contrast, participants who were in treatment or recovery could reflect on these types of self-identity and beliefs with more clarity. As one male participant who had experienced a number of relapses over the years explained:

*So I'm under no illusion that I can be very deluded.*

Recognising these distorted patterns of thinking was identified as helpful in being able to successfully engage with treatment. Gaining an understanding of how the brain works, and the different influences on thinking had been helpful for a number of participants in recovery. One participant was able to describe the distortion in thinking that occurred even after a big win, when a more rational idea might be to take the money and use it for debt reduction or purchasing goods or a holiday:

*So there's a real conflict between what the money should have been used for and then you're just playing with it. You're treating it like a toy, even though you're sort of - "I can win more with this". You get more of this fuel. Money becomes the fuel for your own excitement, so it's a real - you're really buying adrenaline. You're*



*buying your own adrenaline with it and if you win more, it's more to buy more adrenaline.*

He also described the influence of superstitions and other irrational thoughts that had influenced his play behaviour:

*One of my favourites was the pyramid one, because it gets you thinking of, maybe there's some supernatural force at play here and if I can hook into the supernatural force, I'm going to win. I used to sit at a blackjack table and try and juice the - I used to try and put my energy into the table to try and get money out of it. I mean, so there's a level of irrational thinking around it all. I mean, anybody who knows anything about gambling says it's the game of chance. It's all it is, be it cards, dice or a random number generator in a poker machine. It's just chance, but when you're in it, you're trying to believe in all these supernatural - "if I think positively about winning this game, I'm going to win it", you know, whatever that's called. Yeah. So I guess that's a harm. It's - we haven't mentioned up til now - is the - you get irrational around it - around, yeah, if I do this, I'll win. If I do that, I'll win. If I - yeah. Of course, you don't. You do sometimes, but you don't always.*

Superstition and religious beliefs were often linked to distorted cognitions and erroneous beliefs. Treatment providers working with some cultural groups identified the struggle with separating gambling outcomes from spiritual beliefs and this was made harder by linguistic nuances. For instance, gambling wins framed as blessings from God.

A further distortion to thinking was identified in the way people viewed and valued money inside and outside the commercial gambling environment. As explained by a treatment service participant:

*One other thing is a big impact, even though they stop gambling, is that the value of money is totally changed, which means that if they go - when they go to [a casino], in front of them \$1,000, bom, bom, bom, bom. It's nothing. They are used to it. ...They had it so many times that they win, lose, win, kind of thing. Actually, even though they finished the gambling, now they have to face \$20 per hour, even less than a kind of minimum wage. They have to face that kind of thing. That makes them really depressed. Just because the value of the money is totally already changed and they can't adjust themselves to \$15 per hour work because \$1,000, \$10,000 you put to it. They had a real experience winning.*

### **Shame and stigma**

Harms frequently mentioned within this domain were the feelings of shame, loss of self-worth and inability to control the gambling. A consumer representative who had experienced significant harm from gambling shared his experience:

*When I was gambling pretty badly back in [timeframe], pretty much emptying my pay check into the pokies each week, I mean that's pretty common. All the usual harms occurred like loss of money, loss of friends, destroyed relationships. But the thing that really got me was the sense of shame and hopelessness attached to it. It really stopped me approaching the problem as I should, instead of getting help, the sense of shame actually held me back. I don't want them to know so I'll just keep*

*on going like I am and I won't tell anyone about it. So I think that shame and that hopelessness really affects your ability to identify problems in your life, and resolve them ... instead of committing other things like fraud and theft or stealing money.*

Shame and stigma was often associated with hiding and lying about the gambling. A participant working within the justice system explained:

*I think the harms, perhaps from a psycho-therapeutic perspective are much deeper. The loss of self-esteem, the loss of any level of pride. But I think that's one of the reasons why they do lie, they really don't want to face that. They'd prefer to drink themselves stupid rather than face what they've done. I think the harms are definitely a human cost.*

The effects were not just felt by the person who gambled. Affected others also reported feelings of inadequacy for not being able to stop the behaviour or protect the family from other resultant harms. This would often challenge their identity in terms of family or gender roles. A female whose spouse had experienced problems with gambling was angry with herself:

*It pisses me off that I didn't recognise it, you know.*

This clarity, in hindsight, paralleled the clarity the person who gambled often experienced. For the affected other it was a sense of missed opportunity to have been able to stop the harm, or save the person. Where the affected other already had a nurturing or protective role in terms of the relationship, they often experienced a stronger sense of shame or anger at themselves. The older sister of a female who gambled described her sense of having failed to save her sister:

*I'm a problem solver and I'm not - haven't been able to. I feel I've kind of failed myself, her. I feel very responsible. You do your best but sometimes that's not good enough. And I fully understand, I mean blaming myself is not much good because if the person is an adult, that's their choice and if you make wrong choice, there is consequence but I can't just sit back and think, that okay, she made that choice.*

A female whose son had experienced a lot of harm from gambling experienced her own ongoing distress at him not being able to achieve his potential. When asked what the greatest harm was she explained:

*For me, I think seeing him not being able to get where he is perfectly capable.*

Similar to people who gamble, the shame and stigma experienced by affected others also delayed social assistance seeking. Whilst assistance options from social services were available they were not easily accepted by many. A social worker identified that this delay often created second-order harms to the family:

*They definitely recognise that they haven't put their hands up for help with a range of services. Welfare or other for children, because of the shame and stigma that they fear, and they've been trying to protect their children from coming out into the community. So they've struggled along for a very long time before it's come out and the children have really suffered as a result.*

## **Insecurity and vulnerability**

Both people who gamble and affected others experienced pervasive feelings of fear and insecurity resulting from financial and relationship effects. Insecurity was often related to an inability to keep utilities available, housing paid for, or food supplied. The power of this fear is better understood when it is considered in terms of the underlying feelings of insecurity over the inability to provide food and shelter. When finances were handed over to financial counselling services, the quality of life was reported as improving significantly, both from a practical and emotional perspective as a financial counsellor shared:

*They usually say their quality of life is much better. They're not worried about someone knocking on the door demanding money. They're not getting harassing phone calls after dinner, at night. They know the power's not going to be turned off and the phone isn't going to be turned off. That just makes your life feel better.*

Feelings of fear and insecurity were also often linked to the illegal credit sources some people were using, having exhausted legitimate credit suppliers. Social workers and treatment providers shared a number of examples of the harassment that their clients had experienced:

*There's money lenders at the casino. I've had clients who have been so frightened because of people coming down and throwing paint over their house, following the kids to school. Really putting hard pressure on them....These people took photographs of them and then sent them to the mother and said, we know where your kids are.*

A treatment provider shared the effect of a visit from loan sharks on a child:

*His mum say he doesn't know but he just quiet when the loan shark come to pull those parents and shouting to the - then the little kid just crying and sometimes the mum just say, oh playing the computer game. Don't worry. This is not your issue. It's my issue. Just do whatever you can do – but my client say, her son is really scared.*

## **Emotional and psychological legacy harms**

The effect of ongoing emotional and psychological legacy harms was apparent not only in the experiences reported by participants in treatment, but in their demeanour as they spoke and their nonverbal cues. This was unsurprising, as even in seeking treatment, gambling was often stigmatised in treatment services dealing with other addictions. As one male participant who had been at a residential addictions centre described:

*Having gone through the treatment stuff, it's a bit more socially acceptable and cool to be an alcoholic or a drug addict or anything like that. I was one of the few that had gambling issues, and it was - people just don't understand in a lot of cases. It's a very - as you know it's just a really secretive dirty little thing. But people can't understand or don't think that, and even it's not the same street cred amongst other addicts for want of a better term. Because you're looked at if you're a drug or alcoholic, you're looked at a bit more [pause], than the gambling to be honest. I work with nine other addicts, I'm the only gambling addict in our office. But when people*

*ask me, when I started what your addiction was or what your poison was and I said gambling, quite a few of them said oh geez you've got the worst one.*

When asked about the reasons for that perception, given they had not experienced problems with gambling, the difference was not just about the idea of the consumption of a chemical (alcohol or drug) versus a behaviour as expressed in the general population, but around the perceived outcomes of the addictions:

*Just the stories they've heard and what do you actually get out of it, out of the gambling. I think they probably look at it, especially drug addicts or alcoholics, I actually had a bloody good time and got high and did all these fun things or times or whatever out of it. But you don't get anything out of gambling.*

Shame and stigma were often pervasive and incremental, either enhancing the effect of other harms or generating new ones. The effects of shame and stigma were often prolonged and contributed to relapse. Themes such as 'not being able to forgive oneself' or 'still feeling ashamed' were common among those who had experienced significant problems and harm from their gambling. A male in treatment shared his perspective on the effect:

*Yeah so you know they talk about how grief lasts forever in one form or another. I think so too your hurts, your pain, your feelings. The innateness of it stays with you, it's about living with it each day and doing the most.*

The effects of shame and stigma were also felt by affected others. This created barriers to seeking formal support from services as well as to seeking informal support from family and friends. A female whose ex-husband had experienced problems with gambling described her experience:

*You have to know who you can trust. There was friends that I, you know, like one friend I spoke to..., I think he's doing this and dah, dah, dah, they never spoke to me again. So yeah, there's also that. People don't like it.*

For treatment providers, this presented a challenge in being able to assist clients minimise harm, as a treatment provider shared:

*I think this is an area where, as a counsellor I actually find a challenge when this happens, because I work in the field of gambling and we are defined or determined with the amount of sessions we have with a client before we exit [them]. But when it comes to that factor I tend to be challenged because of that very word that you're saying. The shame does not go away. The gambling has stopped but the person is dealing with this stuff and it has a major impact on the person, on the relationship and that's what they're trying to restore and that's not going to take me 12 or 18 sessions, it doesn't, so what then do I do?*

### **Vulnerability to suicidal ideation**

The combination of entrenched feelings of lack of self-worth, hopelessness and shame over harm caused to others often contributed to suicidal ideation. This was raised by people who gambled, affected others and treatment professionals. A female whose husband had experienced problems with gambling described a spiral of financial stress, unemployment and the effect on him:

*He actually after one job he lost, he did an OD [overdose]. He took - he's on antidepressants and he took - he came home and he just swallowed a whole lot of pills with vodka.*

A similar story of the cumulative effect of all the harm was shared by another female whose partner experienced problems with gambling. His suicidal thoughts created an ongoing fear for those close to him:

*So he was incredibly suicidal just with everything - the package of what he'd done and we had some very difficult nights taking his keys, taking his wallet and trying to block him from doing anything or going anywhere.*

When the issue of suicidal ideation and behaviours was raised, one participant who had gambled reported that he had considered suicide:

*A couple of times. Yeah, to be fair, which I guess that's a harm.*

A treatment provider shared a case of a once proud female who was experiencing problems with gambling and feeling shamed by what she perceived as a weakness:

*But it caused a lot of shame for her because she was such a strong woman that had gotten her kids through their mortgages, got them through university, she was a [professional] and so it caused a lot of shame for her, and hurt. With that her whole mental wellbeing was down the gurgler, spiritually she felt very low and quite suicidal.*

The experience of suicidal ideation was not limited to when gambling was problematic. A treatment provider shared one case where a female only had suicidal thoughts when she stopped gambling. Gambling had been an escape, there was still the hope of winning back the money, but once she stopped gambling she had to give up that hope and face all the problems it had created:

*I think that a problem gambler stop gambling means that there's no hope to retrieve their loss anymore. That kind of thing will keep them doing something silly because they are - get used to trying solving the problem at once by gambling kind of thing.*

Given the small sample for this phase, albeit not a representative population sample, it is of concern that suicidal ideation was so commonly reported. Similar concerns have been raised in previous findings both in Australia (Browne et al., 2016) and in New Zealand (Penfold et al., 2006a), and highlights under-reporting of gambling influence on suicide attempts.

### **Community level emotional harm**

Emotional harm at a community level may include feelings towards affected others that members of wider community may have; for instance, feeling sorry for the affected person, or even distress or frustration over their inability to relieve the other's suffering. There was little evidence of such emotional harm at a community level in the present data. One participant in the expert group, referred to how others in the wider community are affected by gambling impacts on children:

*But they've ruined other people's lives... and they're absolutely oblivious to it, they have no idea about how mum feels, how aunty feels, how embarrassed the*

*community is. The need to sell off this and the pawnbrokers, lost money, it's huge, it's not just mum, dad and kids, it's the wider community. The kids have gone to school without lunches and the teachers are affected by it, feeling sorry for this child.*

## **Decrements to health**

Decrements to physical health were not commonly reported within the present data. This could be partly due to priority given to other harms, health issues being linked to other causes, or a lag between engagement with gambling and the experience of health loss. Most decrements to physical health for the person who gambles were associated with effects of the length of play, such as eye strain, poor nutrition, dehydration, loss of sleep, headaches or increased sedentary behaviour. A treatment provider who worked with both Asian and non-Asian clients noted that Asians, who were less comfortable talking about emotional or relationship harms, tended to emphasise physical effects.

*I see clients in the mainstream as well. Yeah. So for mainstream, I don't see that many talking about - the first thing talking about, oh my health is impacted. I think probably the experience is like, for Asian, we don't talk a lot about emotions. So it's from the external. Something that is more distant from us. Physical, you can't [laughs] - you can't blame a physical body in that sense. But emotions is something that we don't talk so openly with someone, especially counsellors, a stranger. So I kind of see that because, in the mainstream, they're more open. Straight away they'll say that, I feel sad, stressed and all that. So I see the difference of reporting what comes first.*

The lack of a clearly visible link between gambling and physical health problems was also an issue in people's engagement with general health professionals, who may not ask about the person's gambling, and the focus for treatment is rather on the manifestation of health loss. Another counsellor explained:

*When people experience stress because if someone gamble or themselves gambling, they may see a GP but they don't talk about gambling issue. What I mean is that even the day I expose gambling too long, make them give them a back pain or shoulder pain or a stomach problem, but they seek help for the stomach, shoulder pain but they never talk about the cause of problem because shame kind of thing.*

Declining health, such as restriction of function caused by aging or injury, have been previously identified as contributing factors to gambling escalation (Browne et al., 2016). An example of this was shared by a female whose husband had problems with gambling. She described the impact of his hearing loss on him, making him uncomfortable in social situations and saw him gambling more on pokies:

*Yeah the hearing yeah and because of that - because of the hearing, he start cutting off his friends and his more spending alone time. Then he's onto the pokies. He goes to the pokies yeah. That was the issue.*

Gambling also affected health-related behaviours such as diet and physical activity. Participants commented that dietary behaviours were sometimes linked to gambling outcomes. As one treatment provider described her clients' experiences:

*When you win, you are too happy to eat anything. When you lose, you don't have the appetite.*

Conversely, other participants linked gambling to over-eating. A male participant who had completed treatment had the insight to note a pattern of excessive consumption and what he described as *a real problem with instant gratification*. Whilst not having the same level of insight into his behaviour, a male sports bettor noted that he was not only over-eating whilst spending long hours either gambling or researching his bets through reading forms and watching sport, but he was no longer as physically active:

*I used to go to the gym, outdoors, and stuff. Then I just look at it as my motivation just crashes. It's just like - I'd just rather go sit at the computer, play a computer game, talk to someone. It's probably not good for my health, but it's - I don't know... maybe I've just changed my interests.*

Effects on sleep patterns were also reported both by participants who gambled and affected others. This was not linked to play patterns but to the experiences of emotional or psychological distress. Even when people slept it was not always restorative. As one female currently seeking treatment described:

*I have nightmares and whatever, because my mind never switches off. Even though I've done this mindfulness stuff to try and do that, it doesn't switch off.*

The loss of quantity and quality of sleep is a significant health risk factor, having long term effects on chronic health conditions, whilst also increasing the risk of injury from accidents. An affected other shared how her lack of sleep due to worrying about the effects of a family member's gambling caused her to have a car accident:

*I wasn't sleeping. I wasn't concentrating. I had an accident in my car one morning when I was driving to work.*

Gateway effects of gambling to other addictions and comorbidities was also identified in the data, especially depression and anxiety. A young male experiencing problems with gambling believed it had contributed to the onset of his depression:

*That's when depression kicked in, when I had to live with the guilt. Knowing that you hurt the closest ones to you. Burning un-burnable bridges, and that's family. Being in a sense of - being under a blanket.*

A female in treatment described the complex interaction of social exclusion and emotional harms in her experience of depression:

*But I think when I look back actually, it caused depression. Partly depression, because of all that I was losing, the worse I became emotionally as a person, psychologically. There was a bit of isolation, where you knew that cycle of gambling, all you know other people that gamble, so you're not really socialising properly. Then there's a frustration of knowing you shouldn't have gambled but then you - it's an addiction where you keep on gambling, trying to make ends meet. Then you end up, in the end when you're down and out, a hopelessness sets in. If you don't get your help that you need, well you've had it. You could end up committing suicide. The thoughts have always been there, years ago, when I look back. Yeah. I lost*



*some of my friends who have committed suicide. That made me stop and hesitate, this is years ago.*

The relationship between gambling and depression is complex and often bi-directional. The distorted sense of temporal sequence and accurate recall of emotional states means that it is hard to pinpoint whether changes in the behaviour preceded the depression or vice versa. However, it is reasonable to suggest that both could exacerbate the harmful experience of the other.

## **Cultural harms**

It is important to separate the concept of cultural harms from aspects of people's culture that can create additional risk of harm from gambling. Cultural harms are separate to a shared history, cultural beliefs and cultural practices that may influence differences in the risks and vulnerabilities to the behaviour and the potential for harm. Cultural harms are outcomes of engagement with gambling that create a decrement to a person, family or community's wellbeing in relation to their cultural beliefs, practices, identity or connection.

A further separation that needs to be distinguished is that different cultural beliefs place different values on harms and subsequently change the context of that experience of harm. These differences are discussed later in the chapter.

### **The experience of cultural harm**

For some participants, gambling was an unacceptable behaviour according to their cultural or religious beliefs. To participate in gambling created a feeling of sin, or betrayal against their beliefs that made them feel unable to participate in cultural or religious rituals. This sometimes created second-order harms such as shame, emotional distress or reduced connection with their cultural community. For one Muslim participant who had been seen engaging in gambling by a community elder, the feeling of shame and being unworthy to engage in the normal religious rituals, led him back to the gambling venue:

*I didn't go to the praying [place]. Usually the praying ... is at night. So I didn't go to the praying place, but go to the gambling place instead.*

This incident had occurred decades earlier yet still caused him great shame. To understand the strength of the shame, the context of this experience needs to be considered. This was the only negative experience to have come from a very short engagement with gambling, yet decades later he still identified as having experienced a harm from gambling enough to actively respond to a research participant advertisement and commit time and effort to attend a focus group.

Inability to fulfil culturally-identified roles within their family or community was a profound effect. The importance of this was highlighted by a number of participants who were rebuilding themselves through treatment and working to reclaim these roles. As a male Māori participant shared:

*My journey is starting when I go back home to my own little back yard. It's going to be a tough journey but somebody has to stand up to the plate, and - well not being the tāne of the whare, you know, that brings home the bacon . . . If I can show that*



*role model to my wahine and my tamariki and my moko, I think that could do a bit of change<sup>14</sup>.*

The idea of “bringing home the bacon” however, extended beyond the intuitive sense of financially providing for the family and was linked to what participants referred to as needing to “step up to the plate”. Their role was to assume responsibility for and provide leadership, protection, and stewardship for their whānau and community. Subsequently, their mana [authority, status, honour, respect] was linked to the ability to fulfil this role and their capacity to look after the people they were responsible for. For the individual mana also had to do with a sense of belonging and identity.

The loss of mana and the experience of whakamā [shame, embarrassment] was shared by a number of participants, because of their holistic or extended sense of health as being about the whole family’s wellness, not just the individual’s. A man whose wife had experienced problems with gambling shared how it made him feel as a man:

*I was quite ashamed. In Māori, we call it whakamā, so shame, and I was pretty sad about it. It took me maybe a couple of weeks to come out of that shameful feeling and that's why I was saying, I felt like I wasn't a very good father, not being able to provide.*

What he felt ashamed about was not just the idea of providing materially for his family, but providing emotional protection to stop his wife from developing problems with gambling, and to protect his children from the harms they experienced because of their mother’s gambling. That he had been unable to stop this harm at both levels created an experience of whakamā.

Similar experiences of culturally-based harm were shared by treatment providers working with both the Pacific and Asian communities. They referred to culturally-defined roles that individuals played within their family and community that were affected by their involvement with gambling. Again this affected an individual’s culturally-defined identity and the harm spread within the family unit, as a service manager explained:

*Well from a male perspective around that yes, it definitely hits hard in terms of dignity and being a male you should be able to protect and the man starts questioning his role....it does hit the core of a male and then it starts to bleed out towards the family members. Especially if it's - first of all if he's the gambler - it's just slightly different in the dynamics in that part. You go okay, and if she's the gambler then it reinforces his manhood - if you want to look at it that way, or disempowers that part - so the only way that he can disempower her is to go another way and then the kids just get caught in the middle of it all.*

### **The experience of harm in relation to contributions to family and community**

Whilst most societies have an expectation that its members contribute to the greater good or are mutually supportive, such expectations are more overt within particular cultures. This expectation of collective contribution is often explicit within communities that gather in the practice of organised

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<sup>14</sup> tāne of the whare - man of the house, wahine - wife, tamariki - children, moko - short for mokopuna - grandchildren.

religion. For a number of participants, the church community they belonged to represented another form of financial obligation to which they needed to contribute. When gambling behaviours reduced the available funds to contribute, it created an additional experience of harm.

For people unable to contribute to community or religious fundraising, experiences included culturally-based shame that sometimes led to isolation and withdrawal from cultural celebrations or social activities within their communities. A researcher who had worked with Pacific cultures explained the experience:

*So embarrassed, and that embarrassment and shame of not being able to contribute to a wider family function, say a wedding, a 21<sup>st</sup>, there are many in the Pacific context and to the church meant that they just wouldn't go to these things to avoid being embarrassed publically. So there's that self-isolation and then it gets to a point where I guess the collective might just expect or not even invite anymore, because they know this person may not come along.*

In some cases, the community's response also contributes to the individual's disconnection. A treatment provider described:

*It's usually - when people don't contribute, they don't have - at first they are all pressured to give that because it's all unshared expectations. Then people are put under pressure that they must provide because they came to our stuff but even if they don't have anything they would sell whatever they have, or gamble in order to have that to maintain the relationship. Sometimes when they cannot maintain the relationship they seem to lose their credibility within their community. So it makes them look like a lesser person than anybody else so it really is that.*

The reaction from the community could contribute to the internalised feelings of shame. People reported being labelled or “othered”, which increased feelings of desperation. In turn, these feelings motivated them to gamble more as they saw it as the only option for raising the funds needed to be able to contribute and restore their sense of worth and community connection.

The importance of family and community connection was highlighted by a number of participants, and its loss created numerous second and further order harms. This was highlighted in terms of the pervasive long-term impact, or legacy harms. A researcher who had examined gambling harm within Pacific communities explained that this extended beyond the person who gambled:

*There's also a loss of respect or a sense of a loss of respect within that family group and their community. That loss of respect can have huge detrimental consequences, potential suicidal ideation et cetera. That loss of respect reflects not only on that individual, but on their family who all have the same name. So that connectedness tarnishes one and many at the same time.*

The importance of culturally-based harm experienced by the family was also highlighted by a treatment provider who worked with Asian communities in terms of the fear of this shame acting as a barrier to treatment:

*Once someone develops with problem gambling, whole family feel shame - not the problem gambler themselves; the whole family feel shame, which means that they don't want to talk about that issue with other people... and hide problem away from*

*other people. Also, it's [an] "our problem" kind of thing and actually, that kind of hinders them from seeking help at the early stage.*

This had intergenerational effects, with participants from a number of cultural groups reporting negative impacts of the loss of a family's "good name".

### **Community level cultural harms**

When community members are unable to contribute in terms of their roles, time or resources, the effect is felt by the rest of the community which needs to make up for that loss. This affects the collective wellbeing, and in some communities this situation was identified as being experienced "extensively". Some participants described the "hard core of people" who were doing "huge amounts". Such inequity in contribution can damage social cohesion, which creates further disconnection and harm.

Consistent with culture-related harms identified in the literature (Dyall, Tse, & Kingi, 2009; Morrison & Boulton, 2013) participants from some cultural groups reported the use of cultural norms (such as beliefs or superstitions), traditional game designs, and culturally significant events in the design and promotion of commercial gambling to target people of that culture as a form of cultural harm. Whilst it could be argued that this is no different from marketing strategies used to create a sense of connection to a product, it was seen by a number of participants as being exploitative and harmful. This was particularly in relation to marketing strategies that promoted commercial gambling as a way for cultural communities to socialise and form connections. A treatment provider shared their view:

*They [i.e. the gambling industry] make it sound like a community. So people say oh that is less harmful because it's community, it's a game, it's a social[sing activity], actually it's not.*

In opinions shared by a number of participants, outcomes were the opposite, in that it contributed to disconnection and isolation. Similar concerns were expressed about role models within cultural communities, such as sports stars doing promotional work for gambling products. Whilst this is again a standard marketing strategy, the esteem with which particular people are held by youth was highlighted as an unacceptable risk for their community.

A final community level cultural harm identified within the data and consistent with those previously identified by Langham et al. (2016), was the exacerbation of hopelessness through negative narrative that associates culture with gambling problems. This was described by one participant as a "huge whakamā [shame] to our culture".

Whilst it is important to identify inequities (e.g. health inequities) between cultural groups in New Zealand, it is equally important to be specific about the causes of inequity to avoid an inadvertent normalisation of these inequities and subsequent influence on people. A number of participants described the experience of gambling problems or other health problems as "normal" within their culture:

*Memories, yeah... gambling was pretty normalised for me growing up and it was just something that we did.*

*So parental responses to gambling and there's examples of a woman who actually was married, and had three children. But was able to go to that safety net, like young people do, of her parents, because in their eyes she's young. Or I don't know, maybe it's normalised for them, that this is the type of behaviour that this particular child of theirs does.*

This creates a tension in terms of being able to highlight issues, provide education and talk openly about issues affecting communities. As one treatment manager shared:

*But hey what else are we going to do; it's just a matter of finding a way to maybe help our people to think about it, even though it's hard. But on the other hand I thought to myself; shall we keep quiet about it or wave the flag and raise the awareness for our people.*

What was apparent within the data was that it was not so much a person's culture that was the risk factor for experiencing problems with gambling. Rather culture was an overt measure of a shared experience that created risk and vulnerability. Exposure to processes of colonisation, dispossession, migration and social exclusion were factors that act through a complex web of causal sequence in relation to aspiration and attempts to compensate for loss. For some participants, reconnecting with culture through culturally appropriate treatment modalities was critical to their recovery from problems with gambling.

### **Reduced performance at work or study**

Harms relating to work and study were not well reported in the present data. This is likely to be due to over a quarter of participants (n=20) being in treatment who focused on the ongoing harms they were experiencing, which were centred on relationships and feelings of self-worth. Nevertheless, both people who gamble and affected others had experienced reduced performance in their work, study and volunteering due to tiredness, distraction and absenteeism. For participants who gambled, this type of harm was related to the gambling behaviour, whilst for affected others it was related either to practical issues of managing other resultant harms, or the stress from having to deal with the harms. People who gambled shared experiences of long lunches or days off, as a male horse bettor reported:

*Because I was into horse racing and that, and I got to the point where I was going - taking time off work to go to the races during the week meetings.*

A female whose partner experienced significant problems with gambling shared her experiences of the affect on her work:

*I've had quite a bit of time off work at the beginning just when I was in this fight or flight mode and going holy shit I've got to do something and really panicking about - because, as I said before, I don't know anything about gambling or why you'd even want to or the severity of it all. So I had quite a bit of time off work while I went and talked to all the support organisations. Went and talked to lots of counsellors to try and find someone that he might connect with before I took him to wherever I was going to take him. I've had to have time off work to go to finance companies and pay finance companies out and go to [pawn broker], pay [finance providers] out, go to [the casino] with him, make sure he signs a form to say he can't go in there . . .*

*so I've had quite a lot of time off work to do all these things and stress... and I've just had quite a few days off just to sleep.*

Where reliability at work became problematic, instances of termination of employment were reported. An affected other described the effect gambling had on his wife's attendance at work and how it had contributed to her employment being terminated:

*She was meant to turn up to work on a Friday and she wouldn't turn up and would have two or three days off. That ended up being a regular occurrence for her over about a three year period. She had already been given quite a few warnings.*

Within the conceptual framework (Langham et al., 2016) volunteer work is identified as part of this domain due to its contribution to both economic activity and social capital. Within the present set of data, volunteer work was identified as a community level harm, without prompting. This suggested that people were aware of the loss. Volunteer work also offers another means of achieving connections - the same thing sought by some patrons in gambling venues.

Community level relationship harm was also identified in the missed opportunities resulting from reduced or refrained participation in voluntary or community activities by a person who gambles or an affected other. Referring to her sister who was experiencing problems with gambling, one participant shared:

*She's got good intentions but to be able to go ahead and do that sort of thing, so many times she said that I want to volunteer, it's just would like to, would like to. Has she done anything? No...*

### **Interference with education**

The effect of gambling on education was infrequently identified within this data set in relation to people who gamble. In one case, a husband of a female who frequently pawned her computer to obtain cash for gambling talked about how this eventually deprived her of a potential tool to support her education:

*It's unfortunate for her because right now she is doing a teacher aide certificate and she needs a computer. But I refuse to let her use anything of mine because in the past she hasn't accepted the consequences that come with giving her computer away or giving money away.*

Effects on educational outcomes were identified more frequently in relation to children. This interference occurred through a variety of mechanisms due to the lack of appropriate food, funds for educational supplies, transport to school, and parental supervision including oversight of homework and attendance. This sometimes extended beyond school to tertiary education settings. A treatment provider described the effect on one family where the oldest child had withdrawn from tertiary studies due to a parent's gambling and the consequent need to secure employment to help support the family. This created further order harms in terms of the relationship, due to feelings of anger and resentment, and long-term impacts on that child's employability, and future earning potential. These types of harms to children are of particular concern due to the importance of education in addressing poverty and inequality. The effect on education combined with the impact on socio-economic status from problematic gambling behaviours creates a significant risk of intergenerational harm.

### Legacy effects on employment, study and voluntary work

Legacy effects on employment and study were noted for people who had been in treatment for gambling behaviours, and especially for those who had ended up with criminal records. A female whose son had experienced problems with gambling described the ongoing effect on job seeking:

*But always, always, always petrified when he applied for a job, petrified that they would - I've gone all cold - they'd want references. He'd been in the same job, I think, for 20 years and if they looked too far, he wouldn't have a reference. That was one of the big evils out of it.*

Other participants expressed similar fear. One man who had completed a long-term residential treatment programme and was currently working in a community organisation, shared that there had been more concerns over his employment due to his history with gambling problems and fraud, than other employees who had criminal records for drug trafficking and murder.

A few participants expressed a need to 'give back' or make up for past wrong doings through their employment, which suggested lingering feelings of regret. A few were working in treatment provision as support workers or as consumer representatives. Whilst most were comfortable with those choices, one participant who had a criminal record influencing his employment options expressed concern:

*It also can be a bit overwhelming at times, because at times I feel my life is around addiction the whole time, and when the hell do I get a break from it. But on the whole it is good and better for me.*

Others were volunteering to reach out to people who were experiencing similar harm or to prevent others from having to experience the same harms. A male participant in treatment shared:

*Yeah I do the same, about humbling myself, I go and do a couple of nights a week on the streets of South Auckland, giving out food and soup and that to people that probably are in situations that I was in. I've joined as a facilitator at a youth group of about 20 kids in South Auckland that meet every week, and I tell my story and let them ask questions and be there for them and go on outings and things like that. Just get my reward or giving back out of that, because it's still that reward thing or finding a way that you're somehow safe. To get that back.*

Another male participant who had found benefit in arts based therapy of creative writing was now facilitating a creative writing group:

*I'm going every Friday, I take an intellectually handicapped class in creative writing, at a place called [name] in [area] and I go there every Friday and take the class for a couple of hours. I quite enjoy it.... It's good to see how much they improve, and just in creating a story and making up people and their names and colours. I've had a lot of enjoyment out of it actually. It feels like you've done something bad against society and now you're putting something back kind of thing. Not that it equals it out, but it helps. So I enjoy that.*

Similarly, other participants commented on the value of being able to give something back through volunteering, and how this had assisted their own recovery. For instance, another man commented that taking on the gardening for the set of units where he lived was a starting point.

### **Community level effects resulting from reduced employment and voluntary work**

One example of community level effects relating to reduced work performance includes effects on children (future generations). One participant in the expert group shared effects resulting from a gambler's lack of contributions as a sports coach:

*When it comes to putting back to the voluntary sector, the next generation, you know sport, they're not trustable. Coaching, sports coaching, they're not available because they've got that position. They're just not available and so the community loses out.*

Likewise, another participant referred to his experiences while at school of the loss of his tutor (in an extracurricular programme) as a consequence of gambling:

*...he [my uncle] used to actually be one of the teachers in my kapa haka group [traditional Māori performance group] and then one day he just disappeared and I asked my [dad]. He didn't tell me the full story until I was about 15, when I asked him where he was. [It was a loss] ... because kapa haka after that actually stopped, after he left.*

Wider losses to the community were also identified in cases where people experiencing gambling harms were not functioning at maximum capacity, as a participant in the expert group shared:

*The contribution those people would make to the voluntary sector. ...The time that they would be doing, putting their talents to - you know a lot of those people are very clever and they are educated, sometimes very highly.*

The experiences in the above sections highlight the value of being able to make meaningful social connections to an individual's health and wellbeing. Employment and social participation were also valuable factors in recovery. Participants who had experienced problems with gambling but now had purpose through employment, education or voluntary experiences all identified the importance it had in being able to avoid relapse.

### **Criminal harms**

Criminal acts stemming from engagement in gambling have been categorised into three groups consistent with the adopted conceptual framework:

- Crimes of negligence capture acts such as child or elder neglect.
- Crimes of duress capture people being drawn into drug trafficking to settle debts relating to gambling.



- Crimes of opportunity capture criminal acts such as theft and fraud used to generate funds (Langham et al., 2016).

### Crimes of neglect

Cases of child neglect that had led to children being legally removed from their parents were reported. The removal of children was often related to an overall environment of neglect where gambling problems were comorbid with other issues such as drug use. Instances of child neglect differed from crimes of opportunity in that they were not intentional. A female who had experienced problems with gambling herself shared her experiences as a child in a family that gambled:

*My step-mum was a pokie lady. That's how we had our power not paid, our rent not paid. So when she used to bring us over, and I used to have to look after the kids in the car, she used to drive all the way over to here. She used to go - duck into the pokies somewhere in [area], and I used to just think we were sitting at the WINZ [Work and Income New Zealand], but we weren't. I found out - in - only overhearing an argument with dad and mum, and it came out she was a gambler.*

A man whose brother and sister-in-law experienced problems with gambling identified an early warning sign when he would go to their home and find their children left on their own. He shared their experiences:

*The worst is the kids. Because they're the ones that don't... have toys, they don't have, for example, food. You see, as I said, the example, the toys, sometimes you go there say in winter or summer and it's started like six or seven and my nephews and nieces still haven't eaten, so I just go straight to the shop and get them something... something to eat. That's another worse thing is the food... for example, if they go to the machine they will still; because they will ring, the kids will ring them on their mobile or text them, "where are you? We're still waiting for food".*

Participants who had experienced neglect as a child, and those reporting on neglects by the person who gambled used phrases like *overstaying* and *time getting away* which suggests that this was influenced by cognitive dissonance and over-involvement in the activity rather than a deliberate act of neglect. This is not to suggest that these harms are insignificant, but understanding the mechanism is of value in identifying effective harm minimisation strategies.

### Crimes of duress

Only a few instances of crimes of duress were reported by participants. These were largely case histories from treatment providers and involved the sale of drugs to settle illegal debts. A treatment provider spoke of a client who was in prison for drug dealing due to gambling debts. He had also worked with a couple who had acted as drug mules to clear gambling debts and ended up incarcerated, and their young child in foster care. Another reported case was of an elderly couple experiencing significant problems with gambling who was approached by drug dealers who offered



help, but the cost was utilising their home as a *tinnie house*<sup>15</sup>. The female was caught, arrested, prosecuted and ended up in jail. She had never previously had any problems with the law.

### Crimes of opportunity

The majority of the crimes of opportunity reported were committed against people known to, or close to, the person experiencing problems with gambling. Family were common targets. A female whose husband experienced problems with gambling shared:

*He'll go and get the money. Even the kids' piggy bank he'll get money out of there.*

A female who had experienced problems with gambling spoke of her shame at having transferred money from her children's savings accounts, whilst a male who had experienced problems with gambling had also taken from family members:

*I used to pull cheques out of my mother's cheque book, out of the back. I took - pulled them out and cashed them, and down the local or that, to pay for me and my gambling and other things.*

It was not just family who were affected, as participants also reported stealing from neighbours, friends, colleagues and employers.

*I committed theft and fraud against my employer, basically to try and pay back the losses that I was making and just ended up in a mess.*

Multiple instances of these types of crimes were identified where it had not been reported to the authorities, and people were kept out of the justice system even when significant amounts of money were involved. In some cases, keeping the matter out of the justice system meant that there was a better chance of recovering the monies stolen. This was highlighted by one experience shared by a participant:

*A guy that I used to play soccer with. He was a [tradesman]. Then he got paid for a job that he had to do.... He got paid \$25,000, \$24,000-odd on a Friday afternoon, cash, from a builder or whatever. He's obviously got to take it back to his boss Friday afternoon. So the boss is... I'm going to see you Monday. He went and put that whole \$24,000 on Manchester United to win within the 90 minutes. It was a draw after 90 minutes. They won at extra time. He lost the \$24,000. He had to go to his boss on Monday, so that \$24,000, I gambled it away. So then for the next however long, he was - pretty much he was working 80, 90 hour weeks just so that he could pay \$500 off this debt and then still have a liveable wage.*

The reports of these types of crimes suggests that there are missed opportunities for addressing the gambling behind the crimes. There is an *all or nothing* choice that is made due to the severity of the effect of criminal charges. When families try to protect people who gamble by settling their debts, or businesses try to protect the opportunity to recover lost assets, there is a lost opportunity to ensure

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<sup>15</sup> Tinnie or tinny house - Slang term in New Zealand referring to a house or building where cannabis (and sometimes other drugs) are sold, in small amounts, wrapped in tin foil.

the person addresses their problematic gambling behaviours. The outcome may be dealt with but the causal behaviour remains unchanged and the potential for further harm may increase due to the lack of appropriate consequences to motivate behaviour change. An example of this was from a male participant who had worked in a bank and sourced funds for gambling through illegal transactions:

*That was when I was starting to do dodgy bank transfers and things to put money in my account to go to [casino] to gamble.*

This also included extending his own line of credit (which when discovered contributed to his employment being terminated) and stealing money from an unused corporate account which was never discovered. He acknowledged that had he been caught, it might have helped him address the behaviour sooner. He relayed the sense of having *sweated on that* until he was aware the statute of limits had passed for prosecution. Overall, there was a sense of escalation of what people were prepared to risk, if they got away with smaller crimes of opportunities. An affected other talking about her sister-in-law shared their family's experience:

*I discovered that she had taken my mum's credit card and used it and I was paying mum's accounts and things and I didn't know what to do with it.*

The family discovered that she had also stolen jewellery and taken out credit using the name of the older female (who was suffering from dementia). The matter was not reported, and her sister in law's behaviour continued unchanged. Unable to access more funds from her mother-in-law, she then stole from her husband's business some years later:

*Four years ago she went off the rails again. She stole off him. He has a business and he would write the cheques out and sign them and she would fill them in. He was always busy and not taking too much notice and she filled them out for cash and cashed them. A couple of months down the track the people - suppliers were ringing him and saying why haven't you paid your bill.*

This pattern of behaviour is concerning given the amount of petty crime within families that people were not held accountable for within this small sample. This suggests that holding these people accountable in some way, may be a protective factor against the escalation to other crimes.

## **Lifecourse and intergenerational harms**

At times an individual experience of harm or a combination of multiple harms can create a significant decrement to people's life course, cause generational loss or create intergenerational harm. Lifecourse and intergenerational harm are of particular interest to public health due to the level of impact they have on health determinants (Langham et al., 2016). Examples of lifecourse and intergenerational harm, and especially generational loss were identified within the present data.

Experiences of generational loss was usually related to significant financial or developmental loss that eroded or prevented the achievement of generational milestones such as home ownership or retirement. The effect varied depending on the age of the person affected, and the particular milestone lost. A researcher within the gambling field explained this type of effect for youth:

*Depending on what age that happens, that can be really, really critical in terms of if you think about adolescence. The developmental stages that they're going through, they can miss out in terms of things like social attachment, educational achievements. If you drop out of school that's not something you just pick up again, potentially that's the rest of your life that you don't get good education, you therefore don't get a well-paying job, you therefore don't get to own a house. You're sort of struggling for the rest of your life.*

The main experiences shared were on milestones relating to financial achievement or relationship milestones rather than social development. This was expected given that both financial and relationship milestones are more easily identified and measured through comparison with peers. Social development is a more individual issue and harder for an individual to identify. For example, lost opportunity for achieving a financial milestone was shared by a female affected other reflecting on the profound impact of her ex-husband's gambling:

*There was never a house, never a deposit for a house. It's only through my own hard work [after her divorce] that I've got myself a house.*

Generational loss also captures choices relating to fertility, and the loss of choice or capacity to have children. A further generational loss this female had experienced was the opportunity to have children. She described her ex-husband's prioritisation of gambling over having children and how the loss of having children was a harm that continued to affect the present:

*No, it was not my choice [to not have children]. He refused to sleep with me after a while in case I got pregnant and that was kind of the beginning of the end [the marriage] . . . there never was any money, there never was any of the things.... But it is a shame, it does wreck lives and it makes me very angry that I've never had children because I wanted to and I know I would have been a good mother.*

The loss of potential children was experienced by another affected other, who shared the painful decision she had made to terminate a pregnancy after careful consideration of the options based on her partner's 25 years of problems with gambling, his inability to deal with those problems, and the pervasive effect it had already had on those around him, including issues of physical security due to his use of loan sharks for credit. She explained:

*If there was no gambling we would be having the baby, but I can't put myself in that vulnerable situation. Aside from the gambling and the finance and the debts, he needs so much emotional support that he'll suck me dry and there'll be nothing. If we have a baby I mean it's incredibly - probably the most difficult thing I'll ever have to do, and to do it - for me to cope emotionally with that and to support [my partner], the intense emotional support he needs, there's nothing for myself. I think it'd just end in complete disaster, so I know there's no way I can put myself in that situation.*

The cycle of deprivation that some people with gambling problems experienced was disruptive even to those who had benefitted from a tertiary education and a well-paid job. Gambling problems could easily erode that foundation and affect the achievement of lifecourse milestones. A male participant who had completed a residential treatment programme described the effect gambling had on him:

*I used to go away and work for a couple of years, good job, I'd do well and everything. Then come crashing down again after a couple of years and went back*

*home with mum and dad. Essentially bludge off them really and then do another - do it again, move out somewhere else and think it was all going to be okay, and then same thing again. So it's just a repetitive cycle of running away from everything instead of dealing with what was happening. I don't have a partner, I haven't had one for 10 years, don't have kids, don't have a house, don't have - yeah I've got my \$2,000 car and that's about it really.*

Generational loss could also have a pronounced effect on people on the cusp of retirement. Parents of adult gamblers who had tried to assist them financially were often affected. A social worker gave an example of a client:

*The consequences were that the parents had much less money and they had to work. I think between them they had to work another 13 years.*

In some cases, the effect stemmed from the lost relationships, for example children were removed from homes, or estrangement of adults meant children lost connection with extended family. In one case, the steps taken by a female who had experienced problems with gambling to redress other harms created a lifecourse harm of moving overseas and losing connection with her children. A financial counsellor shared the experience of this client who had generated a huge amount of debt, nearly costing the family their home. Her marriage had broken down. She moved overseas to take a higher paying job, allowing her to send money back to clear the debts, whilst she lived in an environment where gambling was not allowed. However, her children were teenagers, remained in New Zealand with their father, and only got to see their mother once a year. The effect was felt by all of the family, and whilst she was able to make some reparation of the financial loss, and felt safe from gambling by living where it was illegal, there was harm done because of her absence in her children's lives. The loss of a mother constitutes a lifecourse harm from the perspective of the children.

Similar experiences were reported in relation to people who had been incarcerated. Incarceration creates a series of further order harms relating to relationships, emotional wellbeing, future employment and financial standing. A female in treatment for her problems with gambling shared her experience:

*I think prison impacted greatly on my children I had at that time as well as my immediate whānau, my wider whānau as well. It's impacted on my ability to gain employment now, so that's a real negative effect. I had to file for [bankruptcy] procedure.*

Where parents had been drawn into illegal activity, intergenerational harms were identified in terms of choices their children then made. A treatment provider shared the story of a family where the father had ended up in prison from drug dealing to clear his gambling debts. His sons were also incarcerated; whilst they had never gambled, they had been drawn into the drug dealing.

### **The normalisation of gambling as an intergenerational harm**

The normalisation of gambling which creates a risk or vulnerability in future generations, can be considered a form of intergenerational harm. Many of the participants who had experienced problems with gambling spoke of the early exposure and involvement in gambling due to older family members. A female participant in treatment shared:

*We were brought up with gambling. It was very much part of our lives and upbringing from a very young age. My dad and my grandparents were very heavily - they used to bet on horses and that, and we were ourselves as kids grew up and [we'd then] play cards for money and stuff like that. So we were brought up in that environment where it was an acceptable means of entertainment and making money.*

A similar memory was shared by another participant in treatment:

*I used to play poker with my mother and I would imagine being about 10 years old. I was still in primary school and we had a jar of - and it was even pennies and stuff, a jar of coins. Every night, myself and my mum, kid from down the road, would come and play poker. We would be playing poker every night, my mum and dad played poker on a regular - on a Wednesday night. It was as long as I can remember from a little child, we'd always go to racecourses. So we'd always be around gambling, and I've got two brothers, we've all had a problem with pokie machines, ongoing, stopping and going.*

As a treatment provider participant explained:

*Say for example Tuesday, Thursday and Saturday; those are normally training days for children for sports or even drama classes or parent interviews but you know, the parent can't make it because they prefer to go the housie or to go for a dabble. I've spoken to some kids who now perceive it as a norm, like them growing up and their family and their parents going for a gamble or going to the TAB, they just see it as a norm now.*

A number of participants recalled early experiences of gambling within their family. It was part of the fun, social activities they would do together, creating positive associations for them as one man currently seeking treatment remembered:

*Before that it was all fun and everyone loved it. Well me, my brothers, my cousins, everyone, every time we saw each other it was card games.*

Another participant described his first experiences of gambling with his grandfather, with whom he was particularly close and whom he admired for his sporting achievements:

*My first experience was probably going with my grandfather to a TAB where he placed bets... I must have been around about eight or nine, it was in school holidays or something; he didn't take me in there. He went and placed a bet and come out and I was sort of a little bit curious. Then we were at home and he was looking through the guide in the paper and he sort of explained to me what everything meant. So I sort of learnt from then.*

Sometimes the experience was the only time the child had with the parent, and so it became even more valued, as one male participant in treatment shared:

*I had no choice, to sit in a car in front of the TAB for hours on end straight after school, as a kid. My dad would pick me up. That's a consequence there. I'm thinking oh yay, my dad's picking me up. I didn't even know it until I got older, but why the hell would I want to do that for?*

Children would often see the celebration of a win and might remember a dinner out or a day at the zoo because someone had won money. However, they did not always see the effect of the losses, which were hidden. There was concern that this distorted perception of gambling (which was centred on only the fun and winning elements) was another form of intergenerational harm, making them more vulnerable to harmful gambling when they grew up. A service manager shared the collective experience of children they had worked with:

*They see the positive - oh I shouldn't say positive side of gambling, but the winning - so family celebrating the wins, but they don't see [the negative effects on the] family, I mean they don't understand that when they're arguing about the losses that it's related to gambling. So of course when the families are celebrating their gambling wins they'll take the family out for a meal someplace nice but of course, when they've lost a lot of money... they did not associate that with the lack of food or conflict.*

It is important to highlight that within a family where gambling was part of their daily life, that not all of the now adult children gambled. Some rejected the behaviour totally. A female whose husband grew up in a family that gambled a lot described the differences between his siblings:

*He used to do horse betting, because his family - he grew up in that environment. His grandmother used to live with them and the grandmother used to do the horses. They had a telephone account and they put money in the account and then from home they'd ring and do the bet. His mother is into that, so he was raised in that environment. It was a thing to do. So I don't blame him, he grew up in that environment - racing and all that. It became a big issue and now I would tend and blame it on his mother. His mother says she doesn't want to take responsibility... there's two other kids. She's got three kids. He is the one who's close to the parents and he is the one taken over the rugby and all the sports - they're into it. The other two kids, they hate gambling... they don't do anything with it. They say that it's up to the individual. They can give up. It's like he likes doing it, so it's - he has to stop it.*

She had blamed his mother for encouraging the behaviour but his mother and siblings rejected that, saying it was up to him. No explanation could be offered for why children raised in the same environment would experience different attitudes and outcomes.

Of further concern was the normalisation of keeping secrets and lying. Participants reported that children were living in an environment where it was common to keep secrets (to maintain face within the community) or to hide the gambling within the family. This type of behaviour is at odds with the practices encouraged for protective behaviour. For protective behaviours, children are usually taught not to keep secrets, and the concern is that a child who keeps secrets can be more vulnerable to predatory behaviours. These types of perpetrators tend to seek out vulnerable children such as those whose parents are not giving them the time and attention they deserve. This creates a perfect storm of risk; children who are neglected and who are also more amiable to keeping secrets. Whilst no specific cases of this issue were identified within these data, it is a concern in terms of the potential risk created by the normalisation of unhealthy behaviours.

# Cultural differences in the experience of gambling harm

Given the small number of participants in this phase and the unequal representation of the different ethnic groups, it is not possible to make meaningful comparisons between different ethnicities in terms of their cultural-specific experiences of gambling harm. However, some broad level differences between non-European populations and Western culture were evident in the present data.

## Inadvertent creation or enhancement of risk resulting from aspects of culture

It is important to separate the concept of 'cultural harms' described in the preceding section from 'aspects of people's culture' that can increase risk-levels or create additional risk of gambling harm. 'Aspects of people's culture' include cultural practices, shared history and cultural beliefs that may influence differences in risks and vulnerabilities in relation to gambling behaviour, and potential for harm. For instance, the tradition of financially supporting others without question because of culturally-valued practices such as fa'alavelave [gift giving] may provide gamblers with a safety net, enabling continuation of gambling and inadvertently delaying problem recognition. While not a 'cultural harm', fa'alavelave is an 'aspect of culture' that may inadvertently create risk for gamblers.

Likewise, as already noted in the preceding sections, the normalisation of gambling in some cultures because of longstanding gambling-based fundraising practices within church communities, inadvertently increases the risks experienced by these communities. Traditionally, gambling to raise funds among Pacific communities is viewed positively; as one participant in the expert group described:

*...people are definitely connected and the majority of us are affiliated with a particular church. Our churches fundraise to be able to provide for the collective through housie [bingo], and that happens every night of the week. Many of our people go to housie, they take their children along, it happens in the islands as well. The children are there sitting, observing... Children sit there on the concrete floor, listening out to the housie numbers, they get a packet of chips, they get a soft drink, they're happy. Mum and dad are playing because it's for the good of the community. So that exists here in New Zealand as well, and it is considered acceptable because of the relationship between the minister of the church and god.*

However, the transition from traditional gambling activities to gambling in commercial venues, by some Pacific people, when they move to New Zealand, means that this traditional fund-raising practice becomes capable of unintentionally creating harm for this community. As another participant in the Pacific treatment service provider group explained:

*Just to add a little bit more onto that, in terms of fundraising - I have a sort of a definition, there is this commercial gambling and then there's home gambling. With the home gambling in terms of the fundraising part, we've had that throughout both Māori and Samoan culture for many, many - for moons you know, just to create the fun to support the community and so forth.... in my view we've had that part of us*



*towards an easy transition over to the commercial gambling. It was very easy and that's how these two mixed to a point that the harm has now become more from both sides at the same time, but to see what sort of degree is yet to show us how bad. So with the gambling and the home gambling yes it was for a particular reason. It's maybe for a funeral, maybe for the building of a whare [dwelling place] it was all going back into the community but it has transformed itself into these sorts of things now. Now, when we have our youth groups doing certain things, that's taken it to another type of fundraising for that or whichever the case is, and then it's just easy - it just goes on to the next level and so on and so on and so on. We haven't been able to stop that transformation across, that was all forwards - backwards or forwards - and it goes like that all the time. The bigger the demand is, especially for the community to grow, the bigger the demand is for money, of course the bigger the fundraising has to be.*

It may be argued that when gambling for fundraising in the Pacific Islands, wins went towards the church and losses simply went to someone else in the community – in other words, money remains within the community. The same gambling for fundraising practiced in New Zealand, however, creates risks when some individuals feel so pressured to contribute that they resort to gambling at commercial venues to try and win money. Gambling losses in this case means a loss not only to the individual but to the community they belong to. Participants in this study commented on the biased redistribution of gambling funds (see community-level financial harm) in that the money does not go back to the same community that it was generated from. The losses further exacerbate harm to the individual, who now also feels shame for having lost the capacity to even make a small contribution to the community fundraising.

The shared history of Māori in New Zealand, particularly impacts resulting from colonisation, may also increase risk of gambling harm for this population. The review of literature for this study noted that gambling was not a norm in traditional Māori culture but was rather introduced with the arrival of European settlers in the 19<sup>th</sup> century (Dyall & Morrison, 2002; Grant, 1994). In the expert consultation, participants discussed how the social environment in gambling venues were filling the void in Māori communities following colonisation:

*...Yeah maybe they don't have that - the other thing to take into account, the historical trauma and the impact of colonisation. Where we've lost a lot of our cultural strengths, they've been systematically stripped by oppression, so we don't have those systems in place, where we have the backups. We don't have - especially urbanised Māori.... They don't have the backups, they don't have close family living nearby where they can say oh aunty can you watch the kids, mum's gone out for a while. It's not happening in an urban context.*

*Do you suppose harms from colonisation, because I just went to [a conference] and saw another indigenous speaker. She said that the casino, people go to fill those needs, the loss that's been taken away through colonisation, to feel important, to feel loved....*

This vulnerability may be exploited by commercial gambling venues; some participants in this study drew attention to marketing messages promoting the gambling environment as a venue for socialising (see section on community level cultural harm).

It may be hypothesised that other populations which do not have similar cultural practices or historical experiences of colonisation would be less likely to be subjected to such additional risks and vulnerabilities.

## Contribution of culture to the meaning and experience of harm

In a number of populations there is a particular, culturally-based experience of shame that transcends experiences of emotional harm from a Western construct (Sachdev, 1990). As already cited in preceding sections, examples from Māori of loss of mana and whakamā were highlighted in the data as being significant and dominant experiences of harm both for people who gambled and affected others. Culture and cultural roles were central to many participants' experience of harm. This was sometimes described in terms of feelings of shame (of not meeting cultural role obligations) or fear (of the problem becoming known to the wider community). In some cases, these feelings affected how participants related to their wider community.

*So the isolation from that collective wellbeing so to speak is extensive. Isolating oneself from that collective also means that at times this person can't contribute to the obligations that are associated with being part of that collective...*

The feeling of shame resulting from problems with gambling may be experienced by individuals from any culture including Western culture. For instance, as expressed by a European female in reference to her ex-husband who gambled:

*He lost his job and I think he didn't like his job anyway. He was just feeling incredibly low; I think the guilt and the shame. As a way of punishing himself he then cheated on me and had a relationship with another lady...*

The meaning of shame experienced was, however, different in different cultural contexts. The experience of shame (indicated by Māori and Pacific participants in particular) was broader in that it was not only linked to the family/whānau but also to the culture of the broader community they belonged to; expressed, for instance, as "being embarrassed publically". (See the section above on experience of harm in relation to contributions to family and community).

A further distinction was the different cultural beliefs that place different values on harms and subsequently change the context of experienced harms. For instance, one participant expressed that he did not feel resentment at carrying an extra load, saying that he was happy to step up for his family:

*That's part of our culture, is that if one family member is put out, then the whole family pulls in together at home, no matter what it is.... I don't have a problem with delegating the time because ... it's a family member... So to me, time isn't an issue, irrespective of whether it consumes most of my time or not. ...I don't see it as shouldering extra responsibility. I don't. Why? ...Well you can't see it as that because it's family, go right back to what I said before about family. Whatever - if there's something wrong with my family, it's not shouldering responsibility. Yes it's my responsibility to go there and help them sort it out. Absolutely, but it's not shouldering. It's not a burden on me, in other words.*

This was a unique case. While the researchers in this study identified the loss of time among affected others (while supporting the person who gambles) as a form of harm, the above respondent did not view it as a “burden” because of a strong sense of familial responsibility based on Māori culture. This alerts to the possibility that individuals with a strong culturally-based sense of duty to family, although affected by a family member’s gambling, may refuse to acknowledge harms to self because of how they choose to define such harm. Such harms, among affected others are likely to remain hidden. This highlights a key difference between harms as experienced by the more collectivist type cultures and the more individualistic Western culture. In the latter, loss to personal time is more likely to be identified as a harm.

## Conclusion

The objectives of this phase of the study were to:

1. To refine and expand the definition of gambling-related harm.
2. Expand on the knowledge of actual experienced harms reported in New Zealand.
3. Refine and adjust the theoretical framework as required to reflect local experiences.
4. To build a preliminary dimensional harm checklist for use in the subsequent phases of the project.

The actual experienced harms reported in this study aligned with the existing taxonomy of gambling-related harms proposed by Langham et al. (2016). All the examples of harms experienced within the data were reflected in the broad descriptions of harm experiences in the taxonomy. Some harm experiences, however, were rephrased within the taxonomy to make them more relevant to specific cultural structures in New Zealand, in particular the importance of whānau.

Thus, overall, the previously proposed definition of gambling-related harm: *Any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family unit, community or population* (Langham et al., 2016) appears to remain appropriate although fails to take into account the importance of whānau. Therefore, we refine the definition of gambling-related harm in New Zealand to: *Any initial or exacerbated adverse consequence due to an engagement with gambling that leads to a decrement to the health or wellbeing of an individual, family or whānau, community or population.*

The theoretical or conceptual framework proposed for this study was validated by the gathered data. Data analysis enabled an expansion of our understanding of cultural harms and an exploration of the underlying reasons for the priority given to different domains. It was noted that there was a greater emphasis on emotional harms and harms to relationship, which were often regarded as more important than financial harms by participants of all ethnicities.

Some experiences of harm identified within the taxonomy (developed in Australia) were not reported within the data collected for this phase of the study. This was not surprising given the size of the sample, and the dominance of people who had experienced problems with gambling at a more severe level. This is not to say that these harms were not experienced but rather that they were not a priority in how people shared their experience. As such, all previously identified harms (including

those not explicitly identified in the current data) were considered for the national survey for this study, given New Zealand's similarities to Australia in terms of ethnic diversity.

The limitations of this phase included:

- A small sample size - whilst more than appropriate for a qualitative study of this type, the sample was not representative and, as such, no generalisations to the broader population can be drawn. It was not possible to state that the entire range of harm experiences relevant to New Zealand was captured.
- A dominance of participants who were previously or currently experiencing significant problems with gambling and undergoing treatment, and professionals involved in providing treatment. This influenced the priority given to particular types of harms. Whilst this did not expand on experiences of early types of general harms from gambling, it did offer insight into the priority given to harm over time and from a legacy perspective.

The findings of this phase enabled the development of a revised dimensional harms check list that is relevant to the New Zealand context and which supported the development of the population survey.

**Table 2. A taxonomy of harms experienced by people who gamble**

	General	Crisis	Legacy
Financial harm	<ul style="list-style-type: none"> <li>• Reduction or loss of capacity to purchase luxury items (e.g. holidays, electronics)</li> <li>• Reduction or loss of discretionary spending such as non-gambling entertainment or other family members' activities (e.g. children's sports)</li> <li>• Erosion of savings</li> <li>• Activities to manage short term cash-flow problems: <ul style="list-style-type: none"> <li>○ Additional employment or other forms of income generation</li> <li>○ Accessing more credit</li> <li>○ Credit card balance transfers</li> <li>○ Selling or pawning items</li> <li>○ Pay day loans</li> <li>○ Non-payment or juggling of large bills such as utilities or rates</li> </ul> </li> <li>• Cost of replacing items sold or pawned as part of short term cash strategies</li> <li>• Reduction or loss of non-immediate consequence expenditure <ul style="list-style-type: none"> <li>○ Insurance (e.g. health, home, car, income protection, business)</li> <li>○ Repairs or maintenance costs (home, car, business)</li> <li>○ Health maintenance activities (e.g. check-ups, long-term medications, allied health support)</li> <li>○ Household items</li> </ul> </li> <li>• Reduction or loss of expenditure on items of immediate consequence: <ul style="list-style-type: none"> <li>○ Children's expenses (education)</li> <li>○ Medication or health care</li> <li>○ Clothing</li> <li>○ Food (including use of food parcel)</li> <li>○ Housing or accommodation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Loss of additional financial sources (e.g. no further credit available)</li> <li>• Loss of capacity to meet essential needs (e.g. food)</li> <li>• Loss of normal accommodation – homelessness or requiring temporary accommodation</li> <li>• Loss of major assets (e.g. car, home, business)</li> <li>• Bankruptcy</li> </ul>	<ul style="list-style-type: none"> <li>• Reliant on welfare</li> <li>• Resultant restrictions due to bankruptcy or credit rating</li> <li>• Ongoing financial hardship</li> <li>• Further financial harm from attempts to manage debt (e.g. non-reputable finance providers for debt consolidation)</li> <li>• Ongoing issues relating to financial security, poverty, or financial disadvantage.</li> <li>• Higher costs associated with poor credit rating including premium cost of pay-as-you-go services or increased security bonds.</li> <li>• "Forced" cohabitation or involvement in unhealthy relationships due to financial constraint</li> </ul>

	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>○ Needing assistance with bill payments from welfare organisations or inability to pay bills (e.g. utilities)</li> <li>○ Transport costs (petrol, fares)</li> </ul>		
Relationship disruption, conflict or breakdown	<ul style="list-style-type: none"> <li>• Dishonest communication within relationships with spouse, partner, children, family, whānau, friends or community</li> <li>• Unreliable or unavailable to spouse, partner, children, family, whānau, friends or community</li> <li>• Reduced amount of time spent with spouse, partner, children, family, whānau, friends or community</li> <li>• Reduced quality of time spent with spouse, partner, children, family, whānau, friends or community</li> <li>• Disengagement or withdrawal from relationship responsibilities</li> <li>• Increased levels of neglect of relationships</li> <li>• Pervasive neglect or disengagement from relationships</li> <li>• Reduced engagement in family, whānau or social events</li> <li>• Tension with spouse, partner, children, family, whānau, friends or community</li> <li>• Minor or occasional conflict due to increased involvement in gambling or suspicion of increased involvement with gambling</li> <li>• Serious or regular conflict due to increased involvement in gambling or suspicion of increased involvement with gambling</li> <li>• Major or constant conflict due to increased involvement in gambling or suspicion of increased involvement with gambling</li> </ul>	<ul style="list-style-type: none"> <li>• Threat of separation or rejection from relationship with spouse, partner, children, family, whānau, friends or community</li> <li>• Actual separation or rejection from relationship with spouse, partner, children, family, whānau, friends or community</li> <li>• Social isolation</li> <li>• Loss of relationship (temporary or permanent) with spouse, partner, children, family, whānau, friends or community</li> <li>• Distortion of relationship roles (e.g. infantilising the person gambling, others including children having to take parental type role)</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>	<ul style="list-style-type: none"> <li>• Social isolation due to ongoing estrangement from relationships with spouse, partner, children, family, whānau, friends or community</li> <li>• Vulnerability to problematic gambling relapse due to isolation or relationship breakdown</li> <li>• Inability or reluctance to participate in social functions at gambling venues</li> <li>• Ongoing “punishment” or resentment from spouse, partner, children, family, whānau, friends or community</li> <li>• Relationship rebuilding or reconciliation</li> <li>• Ongoing involvement of family court in parenting or co-parenting</li> <li>• Long term damage to, or estrangement from, relationship/s with spouse, partner, children, family, whānau, friends or community</li> <li>• Ongoing distortion of relationship roles (e.g. infantilising the person gambling, others including children having to take parental type role)</li> <li>• Loss of psychological development through lack of appropriate social interaction</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>

	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>• Loss of trust from relationship with spouse, partner, children, family, whānau, friends or community</li> <li>• “Punishment” by spouse, partner, children, family, whānau, friends, or community</li> <li>• Episodic distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role)</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>		
Emotional or psychological distress	<ul style="list-style-type: none"> <li>• Emotional and psychological distress caused by living outside personal value systems</li> <li>• Experience of distorted cognitions or erroneous beliefs</li> <li>• Emotional or psychological distress from hiding gambling from others (including lying and creating alibis for lost time and money)</li> <li>• Reduced feelings of self-worth and pride</li> <li>• Increased feelings of shame</li> <li>• Increased feelings of inadequacy or personal failure because of inability to control gambling</li> <li>• Perceptions of being stigmatised</li> <li>• Emotional or psychological distress from inability to control gambling</li> <li>• Increased feelings of insecurity and vulnerability</li> <li>• Emotional or psychological distress caused by other resultant harms</li> <li>• Emotional or psychological distress due to harm caused to others (guilt)</li> <li>• Loss of “face” or reputation due to impact of other resultant harms</li> <li>• Desperation from not being able to recoup losses</li> </ul>	<ul style="list-style-type: none"> <li>• Extreme emotional or psychological distress in relation to other resultant harms</li> <li>• Extreme emotional or psychological distress due to harm caused to others</li> <li>• Extreme emotional or psychological distress caused by living outside personal value systems</li> <li>• Complete loss of feelings of self-worth and pride</li> <li>• Extreme shame</li> <li>• Extreme sense of hopelessness and powerlessness</li> <li>• Suicidal ideation</li> <li>• Loss of “face” or reputation (stigma) if problem with gambling becomes publicly known</li> <li>• Shame from utilising responsible gambling measures such as exclusion or seeking treatment</li> <li>• Extreme fear and distress from creditors’ (legal and illegal) follow up and harassment</li> </ul>	<ul style="list-style-type: none"> <li>• Experienced, perceived and internal stigma</li> <li>• Ongoing guilt and shame</li> <li>• Emotional and psychological effects from the process of recovery (e.g. constant vigilance and behavioural adaptation)</li> <li>• Ongoing feelings of insecurity and vulnerability</li> <li>• Ongoing emotional and psychological distress in relation to other harms</li> <li>• Ongoing emotional or psychological distress due to harm caused to others</li> <li>• Ongoing emotional or psychological distress caused by having lived outside personal value systems</li> <li>• Ongoing vulnerability to suicidal behaviours</li> </ul>



	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>Emotional or psychological distress from not wanting to accept problems with gambling</li> <li>Loss of sense of future or ability to get ahead</li> <li>Increasing feelings of powerlessness</li> <li>Fear and distress from creditors' (legal and illegal) follow up and harassment</li> </ul>		
Decrements to health	<ul style="list-style-type: none"> <li>Increased sedentary behaviour during time spent gambling</li> <li>Biological manifestation of emotional and psychological distress (e.g. increased blood pressure, loss of sleep)</li> <li>Reduced levels of self-care: <ul style="list-style-type: none"> <li>nutrition</li> <li>hygiene</li> <li>sufficient sleep</li> <li>compliance with medical care</li> <li>physical activity</li> <li>reduced quality of living circumstances (e.g. cannot afford heating)</li> </ul> </li> <li>Incidence of disease or injury due to reduced levels of self-care</li> <li>Increased risk due to gateway effect, interaction with, or exacerbation of other health risk factors (e.g. alcohol use, tobacco use, illegal substances use)</li> <li>Increased risk due to gateway effect, interaction with, or exacerbation of health comorbidities (e.g. depression, anxiety, biophysical chronic disease)</li> <li>Increased experience of family violence due to involvement in gambling</li> <li>Incidence of self-harm</li> <li>Minor health ailments (e.g. headache migraine) related to focusing on a screen</li> </ul>	<ul style="list-style-type: none"> <li>Physical effects of living rough due to homelessness, or poor living conditions including increased risk of disease, and violence.</li> <li>Experience of violence due to involvement in gambling</li> <li>Medical emergency (including mortality) due to onset exacerbation of, or failure to diagnose a health condition due to gambling</li> <li>Serious self-harm</li> <li>Attempted (or completed) suicide</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing disability or decrement to health through attempted suicide or other forms of self-harm</li> <li>Ongoing increased risk of disease or decrement to health due to legacy effects of risk factors or poor self-care</li> <li>Ongoing disability or decrement to health due to other medical conditions exacerbated or advanced due to involvement with gambling</li> </ul>

	General	Crisis	Legacy
	for long periods of time with particular gambling products		
Cultural harm	<ul style="list-style-type: none"> <li>Reduced engagement in cultural rituals</li> <li>Culturally-based shame in relation to cultural roles and expectations</li> <li>Reduced contribution to community and reduced participation in cultural practices of the community</li> <li>Reduced connection to community</li> <li>Harm to individual through reduced connection to community and culture in terms of increased social exclusion or isolation</li> </ul>	<ul style="list-style-type: none"> <li>Extreme cultural shame in relation to culturally-based roles and expectations</li> <li>Loss of ability to contribute to community</li> <li>Impact on or loss of cultural practices</li> <li>Damaged or lost connection to community and culture</li> <li>Harm to individual through reduced or lost connection to community</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing cultural shame in relation to roles and expectations</li> <li>Ongoing reduction or loss of contribution to community</li> <li>Ongoing reduction or loss of cultural practices</li> <li>Ongoing loss of connection to community</li> <li>Ongoing harm to individual through reduced connection to community</li> </ul>
Reduced performance at work or study	<ul style="list-style-type: none"> <li>Reduced performance due to tiredness or distraction</li> <li>Increased absenteeism due to gambling during work/study hours, tiredness, ill health or lack of transport due to gambling</li> <li>Consequences of using work or educational institution resources for gambling Reduced availability to contribute to the community through volunteer work</li> </ul>	<ul style="list-style-type: none"> <li>Job loss due to theft or fraud</li> <li>Job loss, suspension, or exclusion from educational institution due to poor performance</li> <li>Exacerbation of, or contribution to, other harms due to job loss (including loss of wage)</li> <li>Rejection from volunteer workforce</li> </ul>	<ul style="list-style-type: none"> <li>Reduced opportunity for employment or enrolment due to past poor performance or criminal activity</li> <li>Ongoing effect on volunteer work participation (linked to reputation and restriction of activities)</li> </ul>
Criminal activity	<ul style="list-style-type: none"> <li>Vulnerability to illegal activities that offer fast access to funds</li> <li>Engagement in crimes of negligence - acts such as child neglect (e.g. leaving children unsupervised)</li> <li>Engagement in crimes of opportunity - petty theft including from family members</li> <li>Engagement in crimes of opportunity - property crimes for funds, funds from illicit lending, fraudulent efforts to attain funds</li> <li>Engagement in crimes of duress to repay debt (e.g. drug trafficking)</li> </ul>	<ul style="list-style-type: none"> <li>Arrest and / or conviction due to crime of opportunity</li> <li>Arrest and / or conviction due to crime of duress</li> <li>Arrest and / or conviction due to crime of negligence</li> </ul>	<ul style="list-style-type: none"> <li>Prolonged consequences of having a criminal record on future employment opportunities, voluntary and community opportunities, and travel restrictions</li> <li>Disruption to relationships due to custodial sentence</li> <li>Ongoing effects on spouse, partner, child, family, whānau and friends due criminal record or custodial sentence through other mechanisms</li> <li>Intergenerational consequences of criminal record or custodial sentence</li> <li>Shame and stigma of criminal conviction or involvement in criminal activity</li> </ul>

	General	Crisis	Legacy
Lifecourse and intergenerational harms	<ul style="list-style-type: none"> <li>• Generational loss relating to financial security or stages of financial achievement (e.g. ongoing consequences of inability to secure finances, or loss of major asset, superannuation)</li> <li>• Loss of lifecourse events such as engagement / marriage / having children (generational loss)</li> <li>• Loss of primary relationships and social connection (including parents / children / community)</li> <li>• Having to move towns / countries due to consequences of gambling or other harms</li> <li>• Homelessness</li> <li>• Change to less profitable or less suitable career due to impact of gambling or other harms</li> <li>• Incarceration due to gambling</li> </ul>		

**Table 3. A taxonomy of harms of experienced by affected others of people who gamble**

	General	Crisis	Legacy
Financial harm	<ul style="list-style-type: none"> <li>• Additional costs due to lack of capacity of person who gambles to contribute their share of costs or joint costs (minor to major items)</li> <li>• Reduction or loss of capacity to purchase luxury items (e.g. holidays, electronics)</li> <li>• Reduction or loss of discretionary spending such as non-gambling entertainment or other family members' activities (e.g. children's sports)</li> <li>• Erosion of savings</li> <li>• Activities to manage short term cash-flow problems: <ul style="list-style-type: none"> <li>○ Additional employment or other forms of income generation</li> <li>○ Accessing more credit</li> <li>○ Credit card balance transfers</li> <li>○ Selling or pawning items</li> <li>○ Pay day loans</li> <li>○ Non-payment or juggling of large bills such as utilities or rates</li> </ul> </li> <li>• Cost of replacing items sold or pawned as part of short term cash strategies</li> <li>• Reduction or loss of non-immediate consequence expenditure <ul style="list-style-type: none"> <li>○ Insurance (e.g. health, home, car, income protection, business)</li> <li>○ Repairs or maintenance costs (e.g. home, car, business)</li> <li>○ Health maintenance activities (e.g. check-ups, long term medications, allied health support)</li> <li>○ Household items</li> </ul> </li> <li>• Reduction or loss of expenditure on items of immediate consequence: <ul style="list-style-type: none"> <li>○ Children's expenses (education)</li> <li>○ Medication or health care</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Loss of capacity to meet essential needs (e.g. food)</li> <li>• Loss of normal accommodation – homelessness or requiring temporary accommodation</li> <li>• Loss of major assets (e.g. car, home, business)</li> <li>• Bankruptcy</li> </ul>	<ul style="list-style-type: none"> <li>• Reliant on welfare</li> <li>• Resultant restrictions due to bankruptcy or credit rating</li> <li>• Ongoing financial hardship</li> <li>• “Forced” cohabitation or involvement in unhealthy relationship due to financial constraint</li> <li>• Further financial harm from attempts to manage debt (e.g. non-reputable finance providers for debt consolidation)</li> <li>• Ongoing issues relating to financial security, poverty or financial disadvantage.</li> <li>• Higher costs associated with poor credit rating including premium cost of pay-as-you-go services or increased security bonds.</li> </ul>

	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>○ Clothing</li> <li>○ Food (including use of food parcel)</li> <li>○ Housing or accommodation</li> <li>○ Needing assistance with bill payments from welfare organisations or inability to pay bills (e.g. utilities)</li> <li>○ Transport costs (petrol, fares)</li> </ul>		
Relationship disruption, conflict or breakdown	<ul style="list-style-type: none"> <li>• Dishonest communication within relationship from person who gambles to affected other</li> <li>• Person who gambles is unreliable or unavailable to affected other</li> <li>• Reduced amount of time spent with person who gambles</li> <li>• Reduced quality of time spent with person who gambles</li> <li>• Feelings of unequal contribution to relationship from person who gambles</li> <li>• Disengagement or withdrawal from relationship responsibilities by person who gambles</li> <li>• Increased levels of neglect of relationship by person who gambles</li> <li>• Reduced engagement in family or social events with person who gambles</li> <li>• Tension in relationship with person who gambles</li> <li>• Tension in or disruption of other relationships due to emotional and/or material demands of trying to manage relationship with person who gambles</li> <li>• Minor or occasional conflict due to increased involvement in gambling or suspicion of increased involvement with gambling by person who gambles</li> <li>• Serious or regular conflict due to increased involvement in gambling or suspicion of</li> </ul>	<ul style="list-style-type: none"> <li>• Contemplation of separation or rejection from relationship with person who gambles</li> <li>• Actual separation or rejection from relationship with person who gambles and potentially with other related individuals</li> <li>• Loss of other relationships due to emotional and/or material demands of trying to manage, or remaining in, relationship with person who gambles</li> <li>• Social isolation due to feelings of shame or being stigmatised</li> <li>• Loss of relationship with person who gambles</li> <li>• Distortion of relationship roles (e.g. infantilising the person gambling, others including children having to take parental type role)</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>	<ul style="list-style-type: none"> <li>• Feelings of guilt over ending relationship with person who gambles and potential impact of this</li> <li>• Social isolation due to ongoing estrangement from other relationships</li> <li>• Vulnerability to continuing in ongoing unhealthy relationship with person who gambles (episodic reconciliations) for reasons of guilt or inadequacy</li> <li>• Inability or reluctance to participate in social functions at gambling venues to protect person who gambles</li> <li>• Ongoing resentment and shame within relationship with person who gambles</li> <li>• Relationship rebuilding or reconciliation</li> <li>• Ongoing involvement of family court in parenting or co-parenting</li> <li>• Long-term damage or estrangement from person who gambles and potentially with related others</li> <li>• Ongoing distortion of relationship roles (e.g. infantilising the person gambling, others including children having to take parental type role or confidant role)</li> <li>• Inability to form trusting relationships with others or hypervigilance within relationships</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>

	General	Crisis	Legacy
	<p>increased involvement with gambling by person who gambles</p> <ul style="list-style-type: none"> <li>• Major or constant conflict due to increased involvement in gambling or suspicion of increased involvement with gambling by person who gambles</li> <li>• Loss of trust in the relationship with the person who gambles</li> <li>• Episodic distortion of relationship roles (e.g. infantilising the person gambling, others including children having to take parental type role)</li> <li>• Significant disruption to other relationships due to emotional and/or material demands of trying to manage relationship with person who gambles</li> <li>• Episodic distortion of relationship between affected others (e.g. spouse of person who gambles using their children as confidants)</li> <li>• Incidence or escalation of family violence or intimate partner violence</li> </ul>		
Emotional or psychological distress	<ul style="list-style-type: none"> <li>• Feelings of frustration over behaviour of person who gambles</li> <li>• Anxiety when person who gambles does not respond to normal communication methods</li> <li>• Emotional and psychological distress caused by conflicts with personal value systems</li> <li>• Emotional or psychological distress caused by feelings of suspicion or being lied to</li> <li>• Reduced feelings of self-worth</li> <li>• Feelings of shame or guilt</li> <li>• Reduced feelings of safety and security in life</li> </ul>	<ul style="list-style-type: none"> <li>• Extreme emotional or psychological distress in relation to other harms</li> <li>• Extreme emotional or psychological distress due to harm caused to other affected others</li> <li>• Extreme emotional or psychological distress caused by living with constant feelings of insecurity and vulnerability</li> <li>• Complete loss of feelings of self-worth and pride</li> <li>• Extreme shame</li> <li>• Extreme sense of hopelessness and powerlessness</li> <li>• Emotional or psychological distress from dealing with person who gambles' problems including their distress, self-harm, or suicidal ideation or completion</li> </ul>	<ul style="list-style-type: none"> <li>• Experienced and perceived stigma</li> <li>• Ongoing guilt and shame</li> <li>• Emotional and psychological consequences resulting from the process of recovery (e.g. constant vigilance and behavioural adaptation)</li> <li>• Ongoing feelings of insecurity and vulnerability</li> <li>• Ongoing emotional and psychological distress in relation to other resultant harms</li> <li>• Ongoing emotional or psychological distress due to harm caused to other affected others</li> <li>• Ongoing emotional or psychological distress from vigilance to mental health status of person who gambles including distress, self-harm, or suicidal ideation or completion</li> </ul>

	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>Increased feelings of inadequacy or personal failure because of inability to help person who gambles</li> <li>Emotional or psychological distress from being manipulated or threatened (e.g. threats to the affected other or threats of self-harm by person who gambles)</li> <li>Perceptions of being stigmatised</li> <li>Anxiety when person who gambles disappears for extended periods of time (days) without contact</li> <li>Emotional or psychological distress from being blamed for other person's gambling</li> <li>Emotional or psychological distress (including among children) from witnessing family members arguing over gambling behaviours</li> <li>Increased feelings of insecurity and vulnerability</li> <li>Emotional or psychological distress caused by other resultant harms</li> <li>Loss of "face" or reputation due to effect of other resultant harms</li> <li>Reduced sense of hope for the future or ability to get ahead</li> <li>Increasing feelings of powerlessness</li> <li>Guilt over harms to other affected others</li> <li>Increased feelings of anger and frustration</li> <li>Fear and distress from creditors' (legal and illegal) follow up and harassment</li> <li>Feelings of guilt if affected other was the person who introduced the person who gambles to gambling</li> <li>Increased risk to emotional or psychological wellbeing of affected other in the care of the person who gambles due to their distraction or tiredness</li> </ul>	<ul style="list-style-type: none"> <li>Loss of "face" or reputation (stigma) if the gambling problem becomes publicly known</li> <li>Emotional or psychological distress from supporting and/or assisting person who gambles to seek treatment</li> <li>Extreme fear and distress from creditors' (legal and illegal) follow up and harassment</li> <li>Grief and/or resentment due to loss of security, lifestyle or relationship</li> <li>Feelings of rejection that gambling is chosen over the affected other</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing feelings of grief, resentment and anger</li> </ul>

	General	Crisis	Legacy
Decrements to health	<ul style="list-style-type: none"> <li>Physical impacts of other harms</li> <li>Biological manifestation of emotional and psychological distress (e.g. feeling tired, increased blood pressure, loss of sleep, migraine, nausea, diarrhoea)</li> <li>Reduced levels of self-care: <ul style="list-style-type: none"> <li>nutrition</li> <li>hygiene</li> <li>sufficient sleep</li> <li>compliance with medical care</li> <li>physical activity</li> <li>reduced quality of living circumstances (e.g. cannot afford heating)</li> </ul> </li> <li>Incidence of disease or injury due to reduced levels of self-care</li> <li>Increased risk due to gateway effect, interaction with, or exacerbation of other health risk factors (e.g. alcohol use, tobacco use, illegal substance use)</li> <li>Increased risk due to gateway effect, interaction with, or exacerbation of health comorbidities (e.g. depression, anxiety, biophysical chronic disease)</li> <li>Increased experience of family violence due to involvement with person who gambles</li> <li>Incidence of self-harm</li> <li>Increased risk to physical wellbeing of affected other in the care of the person who gambles due to their distraction or tiredness</li> </ul>	<ul style="list-style-type: none"> <li>Onset of health condition due to exacerbation of risk factors or continued stress from other harms</li> <li>Physical effects of living rough due to homelessness, and consequences of poor living conditions including increased risk of disease, and violence</li> <li>Experience of violence due to involvement with person who gambles</li> <li>Medical emergency (including mortality) due to onset or exacerbation of, or failure to diagnose a health condition due to consequences of the behaviour of the person who gambles</li> <li>Serious self-harm</li> <li>Attempted (or completed) suicide</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing disability or decrement to health through attempted suicide or other forms of self-harm</li> <li>Ongoing increased risk of disease or decrement to health due to legacy effects of risk factors or poor self-care</li> <li>Ongoing disability or decrement to health due to other medical conditions exacerbated or advanced due to involvement with person who gambles</li> </ul>
Cultural harm	<ul style="list-style-type: none"> <li>Reduced engagement in cultural rituals</li> <li>Culturally-based shame in relation to roles and expectations</li> <li>Reduced contribution to community and participation in cultural practices of the community</li> </ul>	<ul style="list-style-type: none"> <li>Extreme cultural shame in relation to culturally-based roles and expectations</li> <li>Loss of ability to contribute to community</li> <li>Impact on or loss of cultural practices</li> <li>Damaged or lost connection to community and culture</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing (including intergenerational) cultural shame in relation to roles and expectations</li> <li>Ongoing reduction or loss of contribution to community</li> </ul>



	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>Reduced connection to community</li> <li>Harm to individual through reduced connection to community and culture in terms of increased social exclusion or isolation</li> </ul>	<ul style="list-style-type: none"> <li>Damage to individual through reduced or lost connection to community</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing reduction or loss of cultural practices</li> <li>Ongoing loss of connection to community</li> <li>Ongoing (intergenerational) damage to individual through reduced connection to community</li> </ul>
Reduced performance at work or study	<ul style="list-style-type: none"> <li>Reduced performance due to tiredness or distraction</li> <li>Increased absenteeism due to time spent supporting or addressing problems of person who gambles</li> <li>Reduced availability to contribute to the community through volunteer work</li> </ul>	<ul style="list-style-type: none"> <li>Theft or fraud involving employment or educational institution</li> <li>Loss of job, or suspension or exclusion from educational institution</li> <li>Exacerbation of, or contribution to, other harms due to job loss (including loss of wage)</li> <li>Consequence of loss of job or education on others</li> </ul>	<ul style="list-style-type: none"> <li>Reduced opportunity for employment or enrolment due to past poor performance or criminal activity</li> <li>Ongoing intergenerational consequences of loss of income and reduced future ability to participate in employment</li> <li>Ongoing effect on participation in volunteer work (linked to reputation and restriction of activities)</li> </ul>
Criminal activity	<ul style="list-style-type: none"> <li>Victim of crime from person who gambles – petty theft of items or small amounts of cash</li> <li>Vulnerability to illegal activities that can provide fast access to funds</li> <li>Engagement in crimes of opportunity - petty theft including from family members</li> <li>Engagement in crimes of opportunity - property crimes for funds, illicit lending, fraudulent efforts to obtain funds</li> <li>Engagement in crimes of duress - relating to repaying debt (e.g. drug trafficking)</li> </ul>	<ul style="list-style-type: none"> <li>Victim of crime from person who gambles - fraud</li> <li>Victim of crime from person who gambles - significant theft of money or items</li> <li>Victim of crime from involvement of person who gambles in illegal activities</li> <li>Arrest and / or conviction of criminal activity of opportunity</li> <li>Arrest and / or conviction of criminal activity of duress</li> <li>Arrest and / or conviction of criminal activity of negligence</li> </ul>	<ul style="list-style-type: none"> <li>Ongoing consequences from being victim of crime</li> <li>Effect of criminal record on future employment opportunities, voluntary and community opportunities, and travel restrictions</li> <li>Disruption of custodial sentence to relationships</li> <li>Ongoing effects on spouse, partner, child, family, whānau and friends due to consequences of criminal record or custodial sentence through other mechanisms</li> <li>Intergenerational consequences of criminal record or custodial sentence</li> <li>Shame and stigma of criminal conviction or involvement in criminal activity</li> </ul>
Lifecourse and intergenerational harms	<ul style="list-style-type: none"> <li>Delay in lifecourse events and matters of financial security and achievement</li> <li>Loss relating to financial security or financial achievement (ongoing consequences caused by loss of major assets, superannuation)</li> <li>Loss of lifecourse events such as engagement / marriage / having children (generational loss)</li> <li>Loss of primary relationships and social connection (including parents / children / community)</li> <li>Homelessness</li> </ul>		

	General	Crisis	Legacy
	<ul style="list-style-type: none"> <li>• Having to move towns / countries due to consequences from person who gambles or other harms</li> <li>• Incarceration</li> </ul>		

**Table 4. A taxonomy of harms experienced by communities**

Financial Harm	Relationship Disruption, Conflict or Breakdown	Emotional or Psychological Distress	Decrements to Health
<ul style="list-style-type: none"> <li>Increased reliance on both community and government provided welfare</li> <li>Increased levels of debt and bankruptcy (including administrative costs of these)</li> <li>Broader effects on the community resulting from business closures</li> <li>Perpetuation of poverty and welfare reliance from a generational perspective</li> <li>Redistribution of community funds through biased processes</li> <li>Effects on fundraising ventures for community organisations</li> </ul>	<ul style="list-style-type: none"> <li>Costs to the family law courts and associated organisations</li> <li>Costs of caring for dependents no longer supported</li> <li>Damage to social cohesion and social capital through isolation and exclusion</li> </ul>	<ul style="list-style-type: none"> <li>Decline in social and cultural capital</li> <li>Costs associated with provision of services to assist people with emotional and psychological harms</li> <li>Burden of disease from related psychological harms</li> <li>Harms to venue workers</li> </ul>	<ul style="list-style-type: none"> <li>Increased costs to the health system (direct and indirect) both in terms of treatment for gambling and costs associated with other medical conditions caused or exacerbated by gambling</li> </ul>
Cultural Harm	Reduced Performance at Work or Study	Criminal Activity	Lifecourse or Intergenerational Harms
<ul style="list-style-type: none"> <li>Community must make up for lost contributions (e.g. roles, time, finance) due to disconnection of members</li> <li>Use of cultural norms and practices to promote gambling (disrespectful to the culture)</li> <li>Exacerbation of hopelessness through negative narrative associating culture with gambling problems</li> <li>Disconnection of youth (generational loss)</li> </ul>	<ul style="list-style-type: none"> <li>Cost of job turnover and absenteeism</li> <li>Effects on employment at other businesses (e.g. where a business closes and businesses that interacted with it lose sales)</li> <li>Decreased participation in volunteering and other community activities</li> </ul>	<ul style="list-style-type: none"> <li>Direct costs of criminal activity in terms of the investigation of crime, costs to the judicial system, incarceration, probation, and parole</li> <li>Financial and emotional cost to victims of crime</li> </ul>	<ul style="list-style-type: none"> <li>Normalisation of gambling and gambling-related harm</li> <li>Cumulative impact of generational losses</li> <li>Intergenerational loss creating dependency</li> </ul>

# A national survey of harms arising from gambling

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This chapter reports findings from the third phase of our study – a quantitative national survey of harm based on the comprehensive taxonomy of gambling harms as discussed in the previous chapter. We build on this taxonomy, which organised the diverse range of impacts into eight dimensions (financial; relationship disruption, conflict or breakdown; emotional or psychological distress; decrements to health; cultural harm; reduced performance at work or study; criminal activity; and life course and intergenerational harms). The current chapter aims to provide insight and comparisons into the specific types of harms that occur across the spectrum of gambling problems, to both gamblers and affected others, with respect to PGSI category. It was expected that harms would vary considerably with regard to base prevalence, as well as with respect to the PGSI. While this study represents a significant output in and of itself, the experiences of harm reported by respondents were subsequently used in later stages of the broader project to form a database of vignettes describing the harm symptomology reported by individuals suffering from varying degrees of gambling problems.

## Measuring gambling-related harms

The Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) is one of the most commonly used measures in gambling research to assess gambling problems (e.g., Browne et al., 2014; Li, Rockloff, Browne, & Donaldson, 2015; Rockloff, Browne, Li, & O'Shea, 2014) and is routinely used in recurring national studies of gambling in New Zealand such as the National Gambling Study, the New Zealand Health Survey and the Health and Lifestyles Survey. However, conceptually the PGSI does not measure 'amount of harm experienced', but is rather a clinical screening instrument for gambling problems (Hodgins, Stea, & Grant, 2011). Gambling harms are intrinsically related to gambling problems. This is reflected by the PGSI probing several key harms as indicators of problem gambling. The conceptual similarities and differences between gambling problems and gambling harms are still not fully understood. To enable a better understanding of this, a systematic national survey of harms associated with different levels of problem gambling is needed. Accordingly, the present survey takes a comprehensive and exploratory approach; casting a 'wide net' in terms of probing for specific harms that may affect individuals.

Furthermore, gambling can not only adversely impact gamblers themselves; it can also lead to a wide range of consequences for those connected to them, such as spouses/partners (Dickson-Swift et al., 2005; Holdsworth et al., 2013b; Lorenz & Shuttlesworth, 1983; Lorenz & Yaffee, 1988), their children (Darbyshire et al., 2001b; Jacobs et al., 1989), and other family/whānau members/friends (Kalischuk, Nowatzki, Cardwell, Klein, & Solowoniuk, 2006; Salonen, Castren, Alho, & Lahti, 2014; Wenzel, Oren, & Bakken, 2008). Despite this knowledge, the body of gambling literature is currently not in a position to provide meaningful insight regarding how gambling harms are experienced by both gamblers and their affected others. Therefore, the present study places approximately equal weight on the harms experienced by gamblers and affected others to make comparisons between these two groups.

## Aims

The aims of the current chapter are fourfold:

1. Establishing the prevalence of specific harms experienced by gamblers and affected others because of gambling.
2. Testing individual harms as indicators of six general domains of harm (adapted from eight dimensions<sup>16</sup> of harm identified in the study's second phase qualitative component reported in the preceding chapter).
3. Assessing each of the harms in terms of their relationship to the PGSI, particularly with respect to identifying the threshold at which gambling problems are most likely to yield a given harm.
4. Identifying differences between ethnic groups across gambling harm domains.

## Method

### Development of harms checklists

The taxonomy of harms from the second phase of this research identified a large number of specific harms, many of which were in common with harms previously identified in Australia, and some that were distinct to New Zealand. These harms were transformed into individual items to be used as personal statements within the national survey. We used the following five criteria in developing the items:

1. Coverage of the harms identified in the taxonomy.
2. Accessibility by the general population, including using plain language, and the use of examples where appropriate, e.g. 'Experienced greater conflict in my relationships (arguing, fighting, ultimatums)'. This phrasing captured the broader construct (conflict) while providing further detail on the meaning of the probe.
3. Making each item unitary in scope. For example, a candidate harm, 'spent less time and got less enjoyment from spending time with people I care about' was broken into two more specific items. This enabled respondents to respond definitively to each item.
4. Avoiding content overlap between items.
5. Using phrasing that was similar regardless of whether the source of the harms was one's own gambling, or someone else's gambling. This facilitated comparisons between the two groups.

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<sup>16</sup> Due to the social desirability bias of criminal activity this domain was grouped into 'other harms' along with cultural transgressions. Lifecourse and intergenerational harms from the taxonomy were not included in the current national survey due to temporal issues in measurement.

This process builds on previous research (Browne et al., 2016) and included additional items, which were culturally appropriate within the New Zealand context (such as 'neglected my whānau/family responsibilities'). The process resulted in a set of 83 specific potential harms arising from gambling (Appendix 7), organised within the six broad domains adapted from the dimensional harms framework. These six domains were financial, work/study, health, emotional/psychological, relationship, and other harms.

A checklist format for presenting these harms to participants was adopted for several reasons. First, the large item set required that respondents be able to scan and respond to each probe quickly, in order to maintain a reasonable time to complete the survey. Second, the content suited a binary response in terms of 'has this happened or not'; which contributed to interpretation in terms of prevalence. Finally, the responses were intended to form the basis for generating 'condition descriptions' of the experience of living with gambling harms: the binary response determined whether or not the harm was included in the condition description. Accordingly, for each domain, participants were asked to review the list and check (tick) each item if they experienced, or believed, that issue to be a result of the gambling. A single 4-point Likert response item that assessed the overall level of harm experienced in that domain followed each domain checklist. For example, the health domain concluded with the following item: '*Overall, what level of impact did your gambling have upon your physical or mental health during this time?*'. Responses on this general self-assessment did not form part of the main analysis, but served as a useful further check on the validity of the specific harms. In addition to the harms checklist, participants also completed the PGSI, and a demographic questionnaire.

## Survey design

Our focus was to understand the prevalence of harmful outcomes, relative to a particular degree of gambling problems. Given the low expected prevalence of *current* gambling problems and harms in the general population, we opted for a retrospective survey design in order to elicit information from across the participant's lifetime. The cost to this decision involved accepting the use of a PGSI modified slightly to suit retrospective responding. The benefit was to greatly increase the amount of useful data obtained, for a given sampling effort. We were interested in harms that accrue to significant others around the gambler ('affected others'), as well as the gambler themselves. Participants were requested to focus on the 12-month period of their life when the gambling was causing the most problems. Throughout the survey, participants were reminded to reflect on that 12-month period. This approach of reminding participants to continue to focus on the relevant 12-month period was matched for an accompanying retrospective version of the PGSI. The PGSI items themselves were not modified except for the addition of the prefix 'At this time...' and the utilisation of past tense (e.g., 'At this time, did gambling cause you any health problems, including stress or anxiety?'). For affected others, the PGSI was completed 2<sup>nd</sup> hand, from the perspective of the affected person (e.g., 'At this time, did gambling cause the person any health problems, including stress or anxiety?'). However the harms were measured in both cases as a self-report from the person who experienced them (either gambler or affected other).

## Recruitment of participants

Research studies conducted within the gambling field have used online panels as a method of recruiting participants (Hing, Russell, Gainsbury, & Nuske, 2015; Gainsbury, Wood, Russell, Hing, & Blaszczynski, 2012). A similar online recruitment method was adopted here, despite concerns about the representativeness and generalisability of online surveys (Fan & Yan, 2010). The panel size of our recruitment provider was quite large which ensured the recruitment of participants from a wide range of demographics. Our goal for recruitment was to obtain a stratified sample of harms across PGSI categories. Recruitment for the online national survey was done in two stages through SSI, an ISO-accredited international commercial panel provider. In the first stage of recruitment, the criteria for participation were either: that *the participant's own gambling had caused them problems, no matter how minor* (participants directed toward the questionnaire for gamblers), or *having had a close relationship with a person whose gambling had caused them problems, no matter how minor* (directed toward the questionnaire for affected others). All respondents were residing in New Zealand at the time of the study and completed only one questionnaire. If a participant fulfilled both criteria, they were directed to complete the questionnaire for gamblers. In total, 902 respondents were recruited in stage 1.

Of the 500 gamblers and 402 affected others who met the eligibility criteria and completed the survey, 59% of gamblers and 76% of affected others reported the existence of gambling problems. The sampling design yielded a high proportion of gamblers at the higher levels of gambling problem severity due to the screening criteria. In order to achieve a greater representation of participants in lower-risk categories, we initiated a second stage of recruitment. The screening criteria were modified to indicate a time in the participant's life *when they were gambling often* (directed toward the questionnaire for gamblers), or *had a close relationship with someone who was gambling often* (directed toward the questionnaire for affected others). Thus, the criteria for inclusion made no reference to gambling problems, only towards 'gambling often'. A further 451 gamblers and 189 affected others were recruited in the second stage, with 25% of gamblers and 56% affected others in this group meeting the criteria for problem gambling based on the PGSI cut-off score of 8.

The demographic characteristics of the sample are presented in Table 5. A key aim of the survey was to obtain responses from gamblers and affected others in varying life situations, experiencing different degrees of impact from gambling. In order to capture population heterogeneity, we recruited a reasonably large number of respondents (N = 1,524), varying in demographic characteristics.

**Table 5. Demographic characteristics**

Variable	Sub-category	n	%
Group	Gambler	951	61.7
	Affected other	591	38.3
Gender	Male	703	45.6
	Female	839	54.4
Age <sup>a</sup>	18-24 yrs	134	8.7
	25-34 yrs	343	22.4
	35-49 yrs	463	30.2
	50-64 yrs	379	24.7
	65+ yrs	215	14.0
Marital status	Single	402	26.1
	Widowed	47	3.0
	Divorced/separated	208	13.5
	Married	587	38.1
	De facto	275	17.8
	Other	23	1.5
Country of birth	New Zealand	1205	78.1
	Other	337	21.9
Ethnic group <sup>b</sup>	New Zealand European	1125	73.0
	Māori	207	13.4
	Pacific Islander	74	4.8
	Asian	136	8.8
	Other	149	9.7
Place of residence	Urban	746	48.4
	Regional town or city	620	40.2
	Rural	176	11.4
Main employment status	Full-time	540	35.0
	Part-time	209	13.6
	Casual	36	2.3
	Self-employed (FT)	69	4.5
	Self-employed (PT)	45	2.9
	Self-employed (Casual)	14	0.9
	Unemployed	149	9.7
	Home duties	131	8.5
	Student	100	6.5
	Retired	162	10.5
	Pensioner	33	2.1
	Other	54	3.5
Highest level of education	No formal school qualifications	203	13.2
	School level qualifications	515	33.4
	Trade or technical certificate	272	17.6
	Professional qualifications	128	8.3
	Degree level qualifications	379	24.6
	Other	45	2.9

<sup>a</sup> N for all variables = 1,542, with the exception of age (N = 1,534).

<sup>b</sup> As respondents could select multiple ethnicities N for ethnic groups > 100% (N = 1,691).



Nine hundred and fifty-one complete responses were obtained from participants reporting on harms arising from their own gambling (hereafter *gamblers*) and 591 responses were obtained from affected others. The age distribution in these two participant groups was very similar, with mean ages of 45 and 44.5 years. Participants in the affected others group reported their relationship to the person whose gambling had affected them. The prevalence of the relationship categories reported in this survey is given in Table 6.

**Table 6. Relationship of participants (affected others) to gamblers**

Relationship to gamblers	n	%
Spouse / de facto / romantic partner	200	33.8
Parent	114	19.3
Other close family member / whānau	99	16.8
Close friend	80	13.5
Sibling	38	6.4
Child	24	4.1
Close co-worker/colleague	18	3.0
Other	18	3.0

## Data analyses

All analyses were conducted in the R statistical programming environment, using the *lavaan* package (Rosseel, 2012) for testing of measurement invariance of the PGSI. Our choice of analysis was guided by several considerations. Firstly, our premise is that individuals vary in the degree of aggregate harm that they experience, and that this aggregate harm is not directly measurable but rather may be inferred by existence of ‘symptoms’, being our harms checklist representing a large set of specific indicators or probes. This means that a confirmatory factor analysis (CFA) is a reasonable methodology to apply. Secondly, the indicators themselves are not continuous, but rather binary – implying that logistic links to items from the latent factor are required; this is broadly equivalent to an item-response theoretic (IRT) approach. From this perspective, specific symptoms may vary in the degree to which they reliably indicate generalised gambling harm and, furthermore, may provide information at different points along the spectrum of harm – from mild to severe. These two item characteristics, item discrimination and item severity respectively, may be determined by the application of IRT methods. Finally, we are interested in whether our measure of gambling problems – using the PGSI in retrospective and 2<sup>nd</sup> person reported forms, is generalisable between the different groups considered: gamblers versus affected others, current versus retrospective respondents. This meant that assessment of equivalent item functioning of the PGSI between groups was necessary. Our sampling priority was to ensure coverage of the full diversity of harm profiles in the population, and across different levels of gambling problem severity. As the main goal of analysis was to capture population heterogeneity, and was not hypothesis driven, no power calculation method is available to decide on appropriate sample size.

The *ltm* package (Rizopoulos, 2006) was used for estimating IRT parameters of the harm items, and general purpose functions were utilised for calculating key item indicators such as percentages, confidence intervals, and correlations. Our sample included a reasonably large proportion of individuals (33.0% of gamblers; 20.6% of affected others) who reported having experienced

gambling problems and harms in the last 12 months. This allowed scope to check for the validity of retrospective reporting by testing for measurement invariance of the PGSI between individuals reporting current problems, and those who were reflecting on a historical 12-month period. We also made comparisons in PGSI responses between those reporting on their own problems, versus those reporting on the problems of a significant other. We conducted measurement invariance tests (Vandenberg & Lance, 2000) comparing group-variant and group-invariant CFA models using the comparative fit index (CFI) and the root mean square error of approximation (RMSEA). Both measures incorporate penalty terms for degrees of freedom and, therefore, improved fit measures are possible for more highly constrained models, when the extra degrees of freedom are not supported by data fit. Additionally, t-tests were employed to compare means between categories of participants. For each domain of gambling harm considered, a separate IRT model was applied. IRT modelling assumes the existence of a latent dimensional construct (e.g. financial harm), higher scores of which are manifested by a greater probability of observing positive scores on a set of measurable indicators (i.e. the specific harms on our checklists). In a two-parameter model, items can differ in terms of their 'difficulty' (hereafter *severity*) and discrimination parameters. A higher item severity parameter means that the indicator tends to be positive only when latent scores are relatively high. That is, sensitive for discriminating between high degrees of gambling harm. Conversely, a lower severity parameter indicates that the item is sensitive for discriminating between lower levels of harm. The discrimination parameter describes how reliably the indicator discriminates individuals overall with respect to the latent construct. Because IRT does not make use of information outside the items being considered, it is related to item reliability rather than validity. In order to infer validity, correlations and cross-tabulations with the PGSI were calculated - providing further measures of item functioning. Prevalence and 95% confidence intervals were calculated for all four PGSI categories. The item's point-biserial correlation coefficient was calculated with respect to: (a) the PGSI, (b) the general domain Likert item measuring 'overall harm', and (c) the sum of positive answers in corresponding harm domain (item-total correlation, excluding the current item). Lastly, we summarised the overall relationship between number of harms reported, socio-demographic factors, and the PGSI. A series of regressions were run for gamblers and affected others separately. A criterion  $p$  for null hypothesis rejection of 0.01 was applied uniformly.

## Results

### PGSI functioning across measurement groups

In the current sample, a strong assumption can be made that the gamblers who responded to our survey (reporting first-hand themselves), and the gamblers causing harms to affected others (reported second-hand by affected individuals), have similar demographic characteristics, being either online panel participants or the people close to them. If our modified PGSI is functioning correctly, we would expect that the observed PGSI means and variances for the second-hand PGSI reporting of the affected others ought to be similar to the first-hand reporting of gamblers themselves. Similarly, if the retrospective measurement is functioning equivalently, we would expect not to observe large differences between current and retrospective reporting – by either gamblers or affected others. Three hundred and fourteen (33.0%) gamblers reported gambling problems and harms experienced *currently* (i.e. in the last 12 months), while the remainder reported *retrospectively* on a period earlier in their lives. No significant differences were observed between the means of the current (7.65) and retrospective (7.36) PGSI reporting of gamblers ( $t(562.56) = 0.70, p = .50$ ). The variance of PGSI scores also did not differ significantly ( $F(313, 636) = 1.26, p = .014$ ). One hundred

and twenty-two (20.6%) participants in the affected others group reported on currently experienced harms. The variance of PGSI scores of affected others versus own gambling also did not differ significantly ( $F(121, 468) = 1.23, p = 0.13$ ). No significant difference was observed between the means of current (10.45) and retrospective (10.65) PGSI reporting of affected others ( $t(175.6) = -0.33, p = .74$ ). The variances of PGSI scores of the two groups also did not differ significantly ( $F(950, 590) = 0.97, p = 0.70$ ). The mean PGSI score reported first-hand by gamblers (7.46) was 3.15 points lower than that reported second-hand by affected others (10.61), though the effect of first-hand versus second-hand reporting only accounted for 6.45% of variance in PGSI scores.

Table 7 shows CFI and RMSEA fit indices for a sequence of four CFA models, testing for measurement invariance on the PGSI for four contrasts between the four groups of participants. PGSI items were treated as ordinal indicators. As detailed in Table 7, each successive row of the table corresponds to a model with progressively stronger assumptions regarding the item-level measurement invariance of the PGSI across groups.

**Table 7. Model comparisons testing for equivalent item functioning for PGSI reporting across groups**

Group contrast Subset (df)	Current vs. retrospective				Gamblers vs affected others	
	Gamblers		Affected others		CFI	RMSEA
	CFI	RMSEA	CFI	RMSEA		
Model 1 (54)	.964	.120	.888	.160	.929	.148
Model 2 (62)	.969	.104	.911	.133	.933	.134
Model 3 (79)	.963	.100	.889	.131	.757	.225
Model 4 (80)	.972	.086	.914	.115	.749	.228

Model 1: Configural invariance. The same factor structure is imposed on all groups.

Model 2: Weak invariance. The factor loadings are constrained to be equal across groups

Model 3: Strong invariance. The factor loadings and intercepts are constrained to be equal across groups

Model 4: The factor loadings, intercepts and means are constrained to be equal across groups

For self-reporting gamblers, PGSI item functioning was remarkably consistent between current and retrospective reporting, with the best fitting model being Model 4, which applied the most strict equivalence constraints between the two groups. This was also true in comparing current and retrospective reporting for affected others. This finding supports the validity of applying the retrospective version of the PGSI to measure gambling problems. In comparing self-reports of gamblers to second-hand reports by affected others, Model 2 was best supported. This suggests that whilst the factor loadings of the PGSI items are equivalent between these two groups, item and factor means tended to vary. Considering the lower mean obtained by self-reports, this probably reflects the tendency of self-reporters to under-estimate the degree of their gambling problems.

## Socio-demographic factors and PGSI

Socio-demographic factors were regressed against the PGSI separately for gamblers and affected others (see Table 8 below for the beta coefficients (standard error)). In general population samples, the PGSI generally has many zeroes and high positive skew, necessitating transformation or other means to handle non-normal residuals. In the present targeted sample, PGSI scores were close enough to being normally distributed to enable application of standard ordinary least squares regression.

**Table 8. Influence of socio-demographic factors on the PGSI**

Predictors	Gamblers (N = 951)	Affected Others (N = 591)
(Intercept)	8.89*** (1.01)	10.78*** (1.33)
Gender (Female)	0.19 (0.38)	1.25* (0.54)
Age	-0.03** (0.01)	-0.02 (0.02)
European	-0.25 (0.74)	-0.32 (1.00)
Māori	2.81*** (0.66)	1.91* (0.80)
Pacific	0.58 (0.98)	1.08 (1.33)
Asian	-1.63 (0.96)	-1.67 (1.31)
Other	-0.78 (0.88)	-0.58 (1.14)

\*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05

Note. The IRT severity parameter places the specific harm on a continuum of harmfulness (the intercept)

For both groups, Māori respondents tended to report higher PGSI scores compared to other ethnic categories. Higher PGSI scores were also found for female affected others, and older gamblers.

## Ethnic differences across harm domains

To determine cultural differences for gambling-related harm, ethnicity and PGSI scores were regressed against each of the six harm domains separately and also for overall harm. Beta coefficients (standard error) were calculated separately for gamblers (G) and affected others (AO) and are presented in Table 9.

**Table 9. Influence of ethnicity on harm domains**

	Financial		Relationships		Emo/Psy		Health		Work/Study		Other		Overall harm	
	G	AO	G	AO	G	AO	G	AO	G	AO	G	AO	G	AO
(Intercept) <sup>a</sup>	0.40 (0.30)	0.98 (0.52)	-0.29 (0.30)	1.16* (0.53)	-0.03 (0.30)	0.56 (0.42)	-0.29 (0.28)	0.43 (0.40)	-0.45* (0.21)	-0.19 (0.27)	-0.81*** (0.22)	0.45 (0.26)	-1.08*** (0.09)	-0.56** (0.18)
PGSI	0.31*** (0.01)	0.14*** (0.02)	0.30*** (0.01)	0.12*** (0.02)	0.36*** (0.01)	0.15*** (0.02)	0.29*** (0.01)	0.10*** (0.01)	0.15*** (0.01)	0.07*** (0.01)	0.15*** (0.01)	0.04*** (0.01)	0.13*** (0.08)	0.06*** (0.01)
European (n = 1125)	0.42 (0.28)	-0.32 (0.47)	0.10 (0.28)	0.03 (0.48)	0.12 (0.28)	0.47 (0.38)	0.26 (0.26)	0.02 (0.36)	0.21 (0.19)	0.20 (0.24)	<b>0.45*</b> <b>(0.20)</b>	-0.25 (0.24)	0.09 (0.08)	0.03 (0.16)
Māori (n = 207)	<b>0.51*</b> <b>(0.25)</b>	0.01 (0.37)	-0.02 (0.25)	-0.14 (0.38)	-0.06 (0.25)	-0.11 (0.30)	0.21 (0.24)	-0.10 (0.28)	0.18 (0.17)	0.23 (0.19)	<b>0.45*</b> <b>(0.18)</b>	0.16 (0.19)	0.05 (0.07)	0.00 (0.13)
Pacific (n = 74)	0.61 (0.37)	0.40 (0.61)	0.07 (0.37)	-0.45 (0.63)	0.10 (0.37)	-0.05 (0.50)	0.24 (0.35)	0.13 (0.47)	0.11 (0.25)	-0.01 (0.31)	0.20 (0.27)	0.47 (0.31)	0.18 (0.11)	0.00 (0.21)
Asian (n = 136)	-0.08 (0.36)	-0.52 (0.60)	0.09 (0.36)	-0.05 (0.62)	-0.20 (0.36)	0.23 (0.49)	-0.04 (0.33)	-0.23 (0.46)	0.43 (0.24)	0.41 (0.31)	0.47 (0.26)	-0.39 (0.30)	0.09 (0.11)	-0.10 (0.21)
Other (n = 149)	0.28 (0.34)	-0.43 (0.53)	0.05 (0.34)	-0.16 (0.54)	0.08 (0.34)	0.39 (0.43)	0.28 (0.31)	0.08 (0.41)	0.23 (0.23)	0.29 (0.27)	0.46 (0.25)	-0.50 (0.27)	0.18 (0.10)	-0.04 (0.18)

\*\*\*p < 0.001, \*\*p < 0.01, \*p < 0.05. Significant effects in bold.

Note. Participants could indicate more than one ethnicity. Therefore N for ethnicity exceeds total sample size (N = 1542).

<sup>a</sup> The IRT severity parameter places the specific harm on a continuum of harmfulness (the intercept)

For the regressions reported in Table 9, we are predicting the number of harms experienced while controlling for PGSI. Therefore, estimated beta coefficients indicate whether or not there was a tendency for different ethnic groups to experience greater harm, given a similar degree of gambling problems. As gambling problems are intrinsically linked to gambling harms, it is not surprising that the PGSI was significant for all domains considered. Māori and European gamblers provided higher scores for 'other' harms, which covered both cultural transgressions and harms related to criminality or social deviance (see Appendix 7 for full item list). Māori gamblers also had higher financial harms, given a similar degree of gambling problems, compared to other ethnic groups. No ethnic differences were observed for affected others across the harm domains.

A one point increase in PGSI was associated with 0.36 (vs 0.15) more emotional/psychological harm, 0.31 (vs 0.14) more financial harm, and 0.30 (vs 0.12) relationship harm for gamblers/affected others respectively. Thus, gamblers tended to 'pass on' about half as many harm symptoms as they themselves experienced, with each point increase in PGSI score. This difference is expected, as effects of gambler's problem gambling severity on others' quality of life is a more distal relationship than harms to oneself, which is likely to be mediated by several factors. Whilst gamblers at a given problem severity level consistently nominated more harms than affected others, the pattern of effects was similar for both groups. Emotional/psychological, financial, and relationship were the three domains most strongly related to gambling problems for both groups.

## IRT parameters, PGSI categories, and correlations

Tables 10-15 summarise the prevalence of specific harms, for each of the six domains considered. IRT severity and discrimination parameters are provided for each item. Specific harms are ordered with respect to IRT based severity, within each domain. As mentioned above, the IRT severity parameter places the specific harm on a continuum of harmfulness (the intercept) and the discrimination parameter indicates how well the item separates lower and higher levels of harmfulness (slope). Data for gamblers (Tables 10-12) and affected others (Tables 13-15) were analysed separately. In addition, the tables also show the percentages and 95% confidence intervals of each harm probe for the four PGSI categories (i.e., no identifiable problems, low risk, moderate risk, problem gamblers). Further, the tables present the point-biserial correlation coefficient with respect to the PGSI and the general domain Likert harm item. Finally, the item-total correlation for that harm domain (excluding the current item) is also given, providing a classical assessment of the reliability of that indicator in reflecting a presumed underlying dimension of harm within each category. This set of statistics provides a picture of the functioning of each item, with respect to the domain and to gambling problem status. To illustrate, we consider one example, the item 'Red. Ben. Exp.' (reducing spending on beneficial items), when administered to gamblers (Table 10). This item was the most effective probe for discriminating higher versus lower levels of financial harm (3.05 discrimination parameter). The severity parameter was medium to low (1.01), indicating that it was relatively effective for discriminating at moderate levels of financial harm. The efficacy of the item is supported by cross-tabulation with the PGSI. None of the non-problem gamblers responded positively to this item, compared to 33.4% of problem gamblers. The highest proportional prevalence increase between PGSI categories for this item was between moderate-risk and problem gamblers. This item had the highest item-total correlation (amongst other financial harms; .61), the second highest correlation with the general financial harm Likert item (.48) and was moderately correlated (.41) with the PGSI for the financial harm items.

**Table 10. Financial and Work/Study (Gamblers)**

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<b>Financial</b>									
Assist. Marae	4.02	1.28	0.0 (0.0,5.4)	0.0 (0.0,3.8)	0.0 (0.0,1.4)	2.9 (1.6,5.2)	.18	.14	.15
Bankruptcy	3.17	1.50	0.0 (0.0,5.4)	0.0 (0.0,3.8)	0.9 (0.2,2.8)	4.6 (2.9,7.3)	.20	.22	.23
Add. Employ.	2.76	1.32	0.0 (0.0,5.4)	0.8 (0.0,5.2)	2.7 (1.3,5.2)	9.3 (6.7,12.6)	.22	.20	.27
Emerg. Acc.	2.46	2.52	1.2 (0.1,7.3)	0.8 (0.0,5.2)	0.6 (0.1,2.4)	4.4 (2.7,7.0)	.24	.24	.33
Loss Assets	1.96	2.19	0.0 (0.0,5.4)	0.8 (0.0,5.2)	1.2 (0.4,3.2)	13.4 (10.3,17.2)	.35	.40	.42
Loss Utilities	1.96	1.98	1.2 (0.1,7.3)	0.0 (0.0,3.8)	3.0 (1.5,5.6)	13.9 (10.8,17.7)	.31	.32	.41
Welfare	1.70	2.11	1.2 (0.1,7.3)	0.8 (0.0,5.2)	4.2 (2.4,7.1)	18.0 (14.5,22.2)	.35	.37	.44
Inc. CC debt	1.53	0.92	4.7 (1.5,12.3)	9.0 (4.8,15.9)	17.4 (13.5,22.0)	35.6 (31.0,40.5)	.33	.35	.31
Sold Items	1.27	2.09	0.0 (0.0,5.4)	4.9 (2.0,10.8)	6.0 (3.8,9.2)	31.7 (27.3,36.5)	.44	.44	.52
Assist. Whānau	1.18	2.17	1.2 (0.1,7.3)	1.6 (0.3,6.4)	6.3 (4.0,9.6)	35.4 (30.8,40.2)	.49	.46	.53
Red. Ess. Exp.	1.02	2.82	1.2 (0.1,7.3)	0.8 (0.0,5.2)	14.1 (10.6,18.4)	32.4 (28.0,37.2)	.40	.43	.57
Red. Ben. Exp.	1.01	3.05	0.0 (0.0,5.4)	0.8 (0.0,5.2)	12.6 (9.3,16.7)	33.4 (28.9,38.2)	.41	.48	.61
Late Bills	0.74	2.94	0.0 (0.0,5.4)	1.6 (0.3,6.4)	17.1 (13.3,21.6)	46.3 (41.5,51.3)	.46	.51	.59
Red. Savings	0.16	1.18	4.7 (1.5,12.3)	23.8 (16.7,32.5)	42.5 (37.2,48.0)	64.9 (60.0,69.5)	.35	.40	.40
Red. Rec. Exp.	0.15	1.05	17.6 (10.5,27.8)	24.6 (17.4,33.4)	49.1 (43.6,54.6)	57.8 (52.9,62.6)	.25	.31	.37
Red. Spending	-0.72	1.09	22.4 (14.3,32.9)	45.1 (36.1,54.3)	71.9 (66.7,76.5)	75.4 (70.8,79.4)	.23	.34	.32
<b>Work/Study</b>									
Exc. Study	2.69	1.75	0.0 (0.0,5.4)	2.5 (0.6,7.6)	0.3 (0.0,1.9)	4.9 (3.1,7.6)	.17	.25	.28
Lost Job	2.44	1.71	1.2 (0.1,7.3)	0.0 (0.0,3.8)	0.0 (0.0,1.4)	8.5 (6.1,11.8)	.30	.40	.31
Conflict. Class.	2.26	4.04	0.0 (0.0,5.4)	0.0 (0.0,3.8)	0.3 (0.0,1.9)	2.4 (1.2,4.6)	.21	.26	.48
Withdraw	2.16	2.08	0.0 (0.0,5.4)	0.8 (0.0,5.2)	0.6 (0.1,2.4)	8.5 (6.1,11.8)	.22	.34	.34
Conflict Coll.	1.89	2.29	0.0 (0.0,5.4)	0.8 (0.0,5.2)	2.1 (0.9,4.5)	10.5 (7.8,14.0)	.27	.43	.37
Resources	1.72	2.48	1.2 (0.1,7.3)	4.1 (1.5,9.8)	2.7 (1.3,5.2)	11.2 (8.4,14.8)	.26	.36	.41
Hinder. Job Efforts	1.62	2.33	0.0 (0.0,5.4)	0.8 (0.0,5.2)	3.3 (1.7,6.0)	15.9 (12.5,19.8)	.33	.41	.36
Lack Progress	1.46	3.03	0.0 (0.0,5.4)	0.0 (0.0,3.8)	5.4 (3.3,8.5)	15.1 (11.9,19.0)	.31	.47	.48
Time	1.35	2.47	1.2 (0.1,7.3)	4.1 (1.5,9.8)	9.3 (6.5,13.0)	17.8 (14.3,21.9)	.25	.40	.31
Absent	1.27	3.48	0.0 (0.0,5.4)	4.9 (2.0,10.8)	4.2 (2.4,7.1)	19.8 (16.1,24.0)	.33	.47	.52
Late	1.25	3.59	0.0 (0.0,5.4)	0.8 (0.0,5.2)	7.5 (5.0,11.0)	18.8 (15.2,23.0)	.30	.46	.49
Red. Perform.	0.85	4.01	3.5 (0.9,10.7)	0.8 (0.0,5.2)	11.7 (8.5,15.7)	35.1 (30.5,40.0)	.38	.58	.36



**Table 11. Health and Emotional/Psychological (Gamblers)**

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<i>Health</i>									
Emerg. Treat.	2.97	1.38	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	0.9 (0.2, 2.8)	7.3 (5.1,10.4)	.19	.28	.23
Self-Harm	2.72	2.15	0.0 (0.0, 5.4)	0.0 (0.0, 3.8)	0.3 (0.0, 1.9)	4.1 (2.5, 6.7)	.20	.26	.29
Suicide	2.70	1.67	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	0.3 (0.0, 1.9)	7.3 (5.1,10.4)	.24	.33	.29
Overeating	2.61	0.90	0.0 (0.0, 5.4)	5.7 (2.5,11.9)	9.3 (6.5,13.0)	17.1 (13.6,21.1)	.22	.25	.23
Service	2.50	2.11	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	0.3 (0.0, 1.9)	6.1 (4.1, 9.0)	.26	.29	.31
Living Cond.	2.03	1.66	2.4 (0.4, 9.0)	2.5 (0.6, 7.6)	3.9 (2.2, 6.7)	14.6 (11.4,18.5)	.30	.37	.38
Medical Needs	1.86	2.29	0.0 (0.0, 5.4)	0.0 (0.0, 3.8)	2.4 (1.1, 4.8)	14.4 (11.2,18.3)	.34	.39	.45
Hygiene	1.83	2.22	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	4.2 (2.4, 7.1)	13.9 (10.8,17.7)	.31	.35	.45
Alcohol	1.59	1.04	7.1 (2.9,15.3)	5.7 (2.5,11.9)	18.6 (14.6,23.2)	28.8 (24.5,33.5)	.24	.32	.33
Tobacco	1.41	1.25	7.1 (2.9,15.3)	3.3 (1.1, 8.7)	15.9 (12.2,20.3)	31.7 (27.3,36.5)	.32	.35	.39
Malnutrition	1.33	1.75	0.0 (0.0, 5.4)	4.1 (1.5, 9.8)	12.0 (8.8,16.1)	29.3 (25.0,34.0)	.34	.39	.45
Depression	1.17	1.93	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	12.6 (9.3,16.7)	34.4 (29.8,39.2)	.41	.51	.50
Physical Activity	1.11	1.45	1.2 (0.1, 7.3)	7.4 (3.6,13.9)	17.7 (13.8,22.3)	38.3 (33.6,43.2)	.36	.39	.44
Stress Problems	1.02	2.57	1.2 (0.1, 7.3)	2.5 (0.6, 7.6)	12.3 (9.0,16.4)	35.9 (31.2,40.7)	.42	.52	.56
Red. Sleep Gamb.	1.01	2.05	4.7 (1.5,12.3)	5.7 (2.5,11.9)	12.3 (9.0,16.4)	39.0 (34.3,44.0)	.40	.49	.52
Red. Sleep Worry	0.83	2.23	0.0 (0.0, 5.4)	2.5 (0.6, 7.6)	13.8 (10.4,18.0)	48.3 (43.4,53.2)	.52	.56	.54
<i>Emotional/Psychological</i>									
Mental Illness	1.68	2.15	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	3.6 (2.0, 6.4)	18.5 (15.0,22.7)	.38	.38	.48
Escape	1.31	1.86	1.2 (0.1, 7.3)	0.0 (0.0, 3.8)	6.0 (3.8, 9.2)	32.7 (28.2,37.5)	.47	.51	.50
Worthless	1.13	3.52	1.2 (0.1, 7.3)	1.6 (0.3, 6.4)	5.1 (3.1, 8.2)	28.5 (24.3,33.2)	.45	.50	.65
Ext. Distress	1.05	2.43	0.0 (0.0, 5.4)	0.8 (0.0, 5.2)	5.4 (3.3, 8.5)	38.5 (33.8,43.5)	.54	.60	.59
Vulnerable	0.91	2.91	0.0 (0.0, 5.4)	2.5 (0.6, 7.6)	11.4 (8.3,15.4)	37.6 (32.9,42.5)	.45	.51	.64
Failure	0.83	2.47	4.7 (1.5,12.3)	2.5 (0.6, 7.6)	12.6 (9.3,16.7)	43.2 (38.3,48.1)	.47	.49	.60
Hopeless.	0.82	1.96	3.5 (0.9,10.7)	6.6 (3.1,12.9)	14.1 (10.6,18.4)	45.9 (41.0,50.8)	.46	.50	.54
Distress	0.57	2.87	1.2 (0.1, 7.3)	1.6 (0.3, 6.4)	19.2 (15.2,23.9)	52.9 (48.0,57.8)	.48	.51	.64
Anger	0.51	2.26	0.0 (0.0, 5.4)	5.7 (2.5,11.9)	22.5 (18.2,27.4)	56.6 (51.6,61.4)	.49	.52	.58
Shame	0.40	1.84	3.5 (0.9,10.7)	11.5 (6.6,18.8)	32.9 (28.0,38.3)	56.1 (51.1,60.9)	.41	.45	.52
Regret	0.30	1.19	5.9 (2.2,13.8)	14.8 (9.2,22.6)	42.8 (37.5,48.3)	57.8 (52.9,62.6)	.36	.43	.43



**Table 12. Relationships and Other (Gamblers)**

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<i>Relationships</i>									
Actual Ending	2.14	1.76	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	2.4 ( 1.1, 4.8)	13.2 (10.1,16.9)	.25	.39	.38
Exp. Violence	1.89	2.55	0.0 ( 0.0, 5.4)	0.0 ( 0.0, 3.8)	1.2 ( 0.4, 3.2)	13.2 (10.1,16.9)	.34	.42	.48
Belittled	1.83	1.98	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	4.2 ( 2.4, 7.1)	16.3 (13.0,20.4)	.33	.39	.46
Threat Ending	1.41	2.42	2.4 ( 0.4, 9.0)	0.8 ( 0.0, 5.2)	3.6 ( 2.0, 6.4)	26.1 (22.0,30.7)	.38	.57	.53
Isolation	1.29	1.69	1.2 ( 0.1, 7.3)	2.5 ( 0.6, 7.6)	10.5 ( 7.5,14.4)	33.2 (28.7,38.0)	.44	.50	.49
Red. Enjoyment	1.22	1.98	1.2 ( 0.1, 7.3)	3.3 ( 1.1, 8.7)	8.7 ( 6.0,12.4)	33.4 (28.9,38.2)	.40	.42	.53
Neg. Resp. Whānau	1.16	2.90	1.2 ( 0.1, 7.3)	2.5 ( 0.6, 7.6)	7.5 ( 5.0,11.0)	30.5 (26.1,35.2)	.43	.57	.63
Reduced Events	1.14	1.67	1.2 ( 0.1, 7.3)	7.4 (3.6,13.9)	15.0 (11.4,19.4)	35.4 (30.8,40.2)	.35	.38	.50
Increased Conflict	1.11	3.31	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	7.5 ( 5.0,11.0)	32.0 (27.5,36.7)	.44	.60	.64
Neg. Resp.	0.89	2.69	1.2 ( 0.1, 7.3)	3.3 ( 1.1, 8.7)	15.0 (11.4,19.4)	39.8 (35.0,44.7)	.39	.54	.62
Increased Tension	0.81	3.84	0.0 ( 0.0, 5.4)	3.3 ( 1.1, 8.7)	12.9 ( 9.6,17.1)	42.9 (38.1,47.9)	.48	.61	.67
Reduced Time	0.58	2.00	5.9 ( 2.2,13.8)	10.7 (6.0,17.9)	23.7 (19.3,28.7)	53.7 (48.7,58.5)	.45	.53	.54
<i>Other</i>									
Arrested. Driving	2.86	2.12	0.0 ( 0.0, 5.4)	0.0 ( 0.0, 3.8)	0.3 ( 0.0, 1.9)	3.7 ( 2.1, 6.1)	.19	.25	.37
Children Unsup.	2.83	1.90	1.2 ( 0.1, 7.3)	0.8 ( 0.0, 5.2)	0.9 ( 0.2, 2.8)	3.9 ( 2.3, 6.4)	.16	.25	.36
Outcast Church	2.59	2.40	1.2 ( 0.1, 7.3)	0.0 ( 0.0, 3.8)	0.0 ( 0.0, 1.4)	4.6 ( 2.9, 7.3)	.23	.23	.44
Violence	2.56	1.53	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	3.0 ( 1.5, 5.6)	8.8 ( 6.3,12.1)	.21	.39	.38
Shame Church	2.26	3.54	0.0 ( 0.0, 5.4)	0.0 ( 0.0, 3.8)	0.9 ( 0.2, 2.8)	4.6 ( 2.9, 7.3)	.20	.26	.52
Crime	2.21	2.21	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	0.9 ( 0.2, 2.8)	9.5 ( 6.9,12.9)	.27	.38	.46
Outcast Comm.	2.21	3.09	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	0.3 ( 0.0, 1.9)	6.3 ( 4.3, 9.3)	.26	.31	.50
Red. Connec. Church	2.20	2.46	0.0 ( 0.0, 5.4)	1.6 ( 0.3, 6.4)	1.8 ( 0.7, 4.1)	7.3 ( 5.1,10.4)	.20	.26	.47
Children Neglected	2.19	1.57	0.0 ( 0.0, 5.4)	2.5 ( 0.6, 7.6)	4.8 ( 2.9, 7.8)	12.7 ( 9.7,16.4)	.21	.39	.40
Red. Contrib. Church	2.17	2.78	0.0 ( 0.0, 5.4)	0.0 ( 0.0, 3.8)	0.9 ( 0.2, 2.8)	7.6 ( 5.3,10.7)	.22	.29	.51
Red. Contrib. Community	2.13	2.12	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	2.1 ( 0.9, 4.5)	10.5 ( 7.8,14.0)	.20	.27	.44
Theft Government	1.99	2.08	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	2.1 ( 0.9, 4.5)	13.7 (10.6,17.5)	.34	.47	.47
Took Money	1.97	1.75	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	3.0 ( 1.5, 5.6)	17.1 (13.6,21.1)	.36	.44	.41
Shame Community	1.96	3.41	0.0 ( 0.0, 5.4)	0.8 ( 0.0, 5.2)	0.6 ( 0.1, 2.4)	9.3 ( 6.7,12.6)	.26	.43	.56
Pay Money	1.92	1.72	0.0 ( 0.0, 5.4)	0.0 ( 0.0, 3.8)	2.1 ( 0.9, 4.5)	19.8 (16.1,24.0)	.41	.44	.41
Red. Connec. Community	1.88	2.18	1.2 ( 0.1, 7.3)	0.0 ( 0.0, 3.8)	3.9 ( 2.2, 6.7)	14.1 (11.0,18.0)	.25	.40	.47

**Table 13. Financial and Work/Study (Affected Others)**

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<b>Financial</b>									
Assist. Marae	4.90	1.14	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	1.0 (0.3, 2.6)	.09	.09	.10
Bankruptcy	4.13	1.28	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	1.5 (0.6, 3.3)	.13	.11	.13
Add. Employ.	2.77	1.46	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.1 (1.0, 8.3)	4.6 (2.9, 7.2)	.10	.17	.27
Emerg. Acc.	2.72	1.53	0.0 (0.0,16.0)	4.2 (0.2,23.1)	0.0 (0.0, 3.6)	5.1 (3.3, 7.8)	.20	.20	.27
Loss Assets	2.07	1.67	0.0 (0.0,16.0)	4.2 (0.2,23.1)	1.6 (0.3, 6.1)	9.9 (7.3,13.3)	.16	.35	.38
Welfare	2.03	1.60	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.9 (1.4, 9.3)	10.7 (7.9,14.1)	.15	.27	.36
Loss Utilities	1.92	1.84	0.0 (0.0,16.0)	4.2 (0.2,23.1)	1.6 (0.3, 6.1)	10.7 (7.9,14.1)	.14	.34	.39
Inc. CC debt	1.71	1.58	0.0 (0.0,16.0)	4.2 (0.2,23.1)	6.2 (2.9,12.3)	15.3 (12.0,19.2)	.18	.40	.41
Sold Items	1.61	2.00	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.1 (1.0, 8.3)	14.8 (11.6,18.6)	.28	.39	.49
Assist Whānau	1.09	2.19	3.8 (0.2,21.6)	4.2 (0.2,23.1)	10.2 (5.7,17.1)	24.0 (20.0,28.4)	.24	.48	.55
Red. Savings	1.09	1.85	0.0 (0.0,16.0)	0.0 (0.0,17.2)	14.8 (9.4,22.5)	25.4 (21.4,30.0)	.14	.54	.52
Red. Ess. Exp.	1.01	2.83	0.0 (0.0,16.0)	12.5 (3.3,33.5)	7.8 (4.0,14.3)	24.2 (20.2,28.7)	.20	.52	.59
Red. Ben. Exp.	0.98	3.16	0.0 (0.0,16.0)	8.3 (1.5,28.5)	13.3 (8.2,20.7)	22.8 (18.9,27.2)	.13	.50	.62
Late Bills	0.80	2.70	3.8 (0.2,21.6)	0.0 (0.0,17.2)	14.8 (9.4,22.5)	30.8 (26.4,35.5)	.20	.53	.59
Red. Rec. Exp.	0.74	2.12	7.7 (1.3,26.6)	12.5 (3.3,33.5)	26.6 (19.3,35.2)	30.8 (26.4,35.5)	.10	.47	.53
Red. Spending	0.64	2.15	0.0 (0.0,16.0)	4.2 (0.2,23.1)	21.1 (14.6,29.4)	37.5 (32.9,42.4)	.19	.57	.55
<b>Work/Study</b>									
Lost Job	3.24	1.50	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	2.9 (1.6, 5.2)	.16	.30	.21
Conflict Class.	2.71	2.15	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.8 (0.0, 4.9)	2.4 (1.2, 4.6)	.09	.19	.28
Exc. Study	2.63	2.30	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	2.7 (1.4, 4.9)	.09	.26	.30
Withdraw	2.58	1.79	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.8 (0.0, 4.9)	4.6 (2.9, 7.2)	.15	.33	.26
Conflict Coll.	2.50	1.44	0.0 (0.0,16.0)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	7.5 (5.2,10.6)	.11	.34	.31
Time	2.37	1.73	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	6.5 (4.4, 9.5)	.10	.31	.34
Resources	2.32	1.93	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.8 (0.0, 4.9)	6.1 (4.0, 8.9)	.16	.27	.36
Hind. Job Efforts	2.24	2.12	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	5.6 (3.6, 8.4)	.13	.35	.39
Lack Progress	1.86	2.43	3.8 (0.2,21.6)	4.2 (0.2,23.1)	2.3 (0.6, 7.2)	8.2 (5.8,11.4)	.08	.44	.49
Late	1.56	3.00	3.8 (0.2,21.6)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	12.1 (9.2,15.7)	.20	.43	.51
Absent	1.49	3.93	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.1 (1.0, 8.3)	11.6 (8.8,15.2)	.22	.46	.57
Red. Perform.	1.13	1.74	0.0 (0.0,16.0)	12.5 (3.3,33.5)	14.8 (9.4,22.5)	24.9 (20.9,29.5)	.15	.57	.42

Table 14. Health and Emotional/Psychological (Affected Others)

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<b>Health</b>									
Living Cond.	3.13	1.11	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.1 (1.0, 8.3)	6.1 (4.0, 8.9)	.14	.17	.20
Hygiene	2.59	2.03	3.8 (0.2,21.6)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	3.4 (1.9, 5.8)	.10	.24	.30
Self-Harm	2.54	2.04	0.0 (0.0,16.0)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	3.1 (1.8, 5.5)	.06	.24	.32
Service	2.52	2.40	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	2.4 (1.2, 4.6)	.06	.24	.32
Suicide	2.43	3.09	3.8 (0.2,21.6)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	1.5 (0.6, 3.3)	.02	.20	.31
Emerg. Treat.	2.36	2.13	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	4.4 (2.7, 6.9)	.08	.30	.32
Overeating	2.21	1.33	0.0 (0.0,16.0)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	12.1 (9.2,15.7)	.14	.27	.29
Alcohol	2.17	1.31	0.0 (0.0,16.0)	0.0 (0.0,17.2)	6.2 (2.9,12.3)	11.6 (8.8,15.2)	.08	.23	.32
Medical Needs	2.12	2.86	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	4.8 (3.1, 7.5)	.15	.27	.40
Physical Activity	1.87	1.75	7.7 (1.3,26.6)	4.2 (0.2,23.1)	3.9 (1.4, 9.3)	11.4 (8.6,14.9)	.14	.25	.40
Tobacco	1.67	1.53	0.0 (0.0,16.0)	4.2 (0.2,23.1)	6.2 (2.9,12.3)	16.9 (13.5,21.0)	.13	.30	.38
Malnutrition	1.66	2.00	0.0 (0.0,16.0)	4.2 (0.2,23.1)	3.1 (1.0, 8.3)	13.8 (10.7,17.6)	.23	.36	.43
Red. Sleep Gamb.	1.62	1.71	3.8 (0.2,21.6)	4.2 (0.2,23.1)	6.2 (2.9,12.3)	16.0 (12.7,20.0)	.17	.37	.42
Depression	1.18	2.46	7.7 (1.3,26.6)	12.5 (3.3,33.5)	12.5 (7.5,19.8)	19.4 (15.7,23.6)	.10	.47	.53
Stress Problems	1.14	2.06	0.0 (0.0,16.0)	8.3 (1.5,28.5)	12.5 (7.5,19.8)	23.2 (19.3,27.7)	.17	.53	.49
Red. Sleep Worry	0.71	1.56	7.7 (1.3,26.6)	4.2 (0.2,23.1)	17.2 (11.3,25.1)	39.2 (34.5,44.1)	.26	.53	.42
<b>Emotional/Psychological</b>									
Mental Illness	1.94	2.62	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.9 (1.4, 9.3)	6.5 (4.4, 9.5)	.11	.31	.41
Failure	1.82	1.81	0.0 (0.0,16.0)	8.3 (1.5,28.5)	2.3 (0.6, 7.2)	12.3 (9.4,16.0)	.23	.30	.41
Worthless	1.54	2.52	7.7 (1.3,26.6)	4.2 (0.2,23.1)	6.2 (2.9,12.3)	11.9 (9.0,15.5)	.12	.37	.48
Escape	1.12	2.11	3.8 (0.2,21.6)	12.5 (3.3,33.5)	7.8 (4.0,14.3)	24.0 (20.0,28.4)	.19	.49	.49
Vulnerable	1.08	2.60	3.8 (0.2,21.6)	12.5 (3.3,33.5)	10.9 (6.3,18.0)	21.5 (17.7,25.9)	.15	.47	.54
Ext. Distress	0.82	2.76	3.8 (0.2,21.6)	8.3 (1.5,28.5)	13.3 (8.2,20.7)	29.8 (25.5,34.5)	.24	.57	.56
Shame	0.76	1.19	3.8 (0.2,21.6)	25.0 (10.6,47.1)	16.4 (10.7,24.2)	40.4 (35.7,45.4)	.26	.39	.40
Anger	0.72	1.30	0.0 (0.0,16.0)	4.2 (0.2,23.1)	25.0 (18.0,33.6)	39.2 (34.5,44.1)	.25	.41	.43
Hopeless.	0.38	1.15	3.8 (0.2,21.6)	8.3 (1.5,28.5)	30.5 (22.8,39.3)	49.2 (44.2,54.1)	.27	.41	.39
Distress	-0.16	1.23	11.5 (3.0,31.3)	25.0 (10.6,47.1)	48.4 (39.6,57.4)	59.8 (54.9,64.5)	.21	.48	.38

**Table 15. Relationships and Other (Affected Others)**

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non Problem	Low Risk	Moderate Risk	Problem	PGSI	Gen.	Tot.
<i>Relationships</i>									
Neg. Resp. Whānau	1.96	1.59	3.8 (0.2,21.6)	8.3 (1.5,28.5)	0.0 (0.0, 3.6)	12.8 (9.8,16.5)	.22	.29	.41
Neg. Resp.	1.62	1.90	0.0 (0.0,16.0)	4.2 (0.2,23.1)	6.2 (2.9,12.3)	14.5 (11.3,18.4)	.18	.31	.48
Red. Enjoyment	1.44	1.22	7.7 (1.3,26.6)	4.2 (0.2,23.1)	17.2 (11.3,25.1)	22.8 (18.9,27.2)	.11	.33	.40
Exp. Violence	1.37	2.66	3.8 (0.2,21.6)	8.3 (1.5,28.5)	9.4 (5.2,16.1)	14.8 (11.6,18.6)	.12	.45	.55
Isolation	1.33	1.79	11.5 (3.0,31.3)	16.7 (5.5,38.2)	13.3 (8.2,20.7)	18.6 (15.1,22.8)	.07	.35	.49
Actual Ending	1.32	1.58	0.0 (0.0,16.0)	0.0 (0.0,17.2)	10.2 (5.7,17.1)	23.5 (19.5,27.9)	.19	.49	.44
Reduced Events	1.25	2.17	3.8 (0.2,21.6)	8.3 (1.5,28.5)	12.5 (7.5,19.8)	19.1 (15.5,23.3)	.10	.35	.55
Threat Ending	1.21	1.32	3.8 (0.2,21.6)	20.8 (7.9,42.7)	10.2 (5.7,17.1)	28.1 (23.9,32.7)	.20	.42	.40
Belittled	1.18	2.52	3.8 (0.2,21.6)	8.3 (1.5,28.5)	11.7 (6.9,18.9)	19.6 (16.0,23.8)	.11	.41	.58
Reduced Time	1.12	1.58	7.7 (1.3,26.6)	4.2 (0.2,23.1)	16.4 (10.7,24.2)	26.4 (22.3,31.0)	.17	.42	.51
Increased Conflict	0.49	2.98	3.8 (0.2,21.6)	20.8 (7.9,42.7)	26.6 (19.3,35.2)	38.5 (33.8,43.4)	.15	.56	.61
Increased Tension	0.36	2.48	3.8 (0.2,21.6)	16.7 (5.5,38.2)	28.1 (20.7,36.9)	45.0 (40.2,50.0)	.19	.51	.57
<i>Other</i>									
Shame Church	3.10	1.82	0.0 (0.0,16.0)	4.2 (0.2,23.1)	0.0 (0.0, 3.6)	1.9 (0.9, 3.9)	.04	.20	.25
Arrested Driving	3.02	1.99	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	1.5 (0.6, 3.3)	.02	.20	.24
Red. Contrib. Community	3.01	1.54	0.0 (0.0,16.0)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	3.1 (1.8, 5.5)	.07	.21	.22
Outcast Church	2.99	2.41	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	1.2 (0.4, 3.0)	.11	.10	.24
Red. Contrib. Church	2.84	1.80	0.0 (0.0,16.0)	4.2 (0.2,23.1)	0.8 (0.0, 4.9)	2.9 (1.6, 5.2)	.02	.15	.26
Children Unsup.	2.77	1.65	3.8 (0.2,21.6)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	3.6 (2.1, 6.1)	.07	.22	.27
Red. Connec. Church	2.70	2.22	3.8 (0.2,21.6)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	2.4 (1.2, 4.6)	.01	.17	.29
Shame Community	2.39	2.01	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.8 (0.0, 4.9)	5.3 (3.4, 8.1)	.10	.25	.36
Outcast Comm.	2.36	2.70	0.0 (0.0,16.0)	0.0 (0.0,17.2)	0.0 (0.0, 3.6)	3.6 (2.1, 6.1)	.15	.26	.37
Crime	2.33	3.09	0.0 (0.0,16.0)	0.0 (0.0,17.2)	1.6 (0.3, 6.1)	2.7 (1.4, 4.9)	.06	.26	.36
Theft Government	2.17	2.36	0.0 (0.0,16.0)	0.0 (0.0,17.2)	3.1 (1.0, 8.3)	5.3 (3.4, 8.1)	.07	.35	.38
Red. Connec. Community	2.17	2.03	3.8 (0.2,21.6)	4.2 (0.2,23.1)	0.8 (0.0, 4.9)	7.0 (4.8,10.0)	.09	.30	.36
Violence	2.14	1.29	3.8 (0.2,21.6)	0.0 (0.0,17.2)	4.7 (1.9,10.4)	13.1 (10.1,16.8)	.15	.50	.31
Children Neglected	2.05	1.68	3.8 (0.2,21.6)	8.3 (1.5,28.5)	6.2 (2.9,12.3)	9.0 (6.5,12.2)	.08	.29	.34
Took Money	1.99	2.01	7.7 (1.3,26.6)	0.0 (0.0,17.2)	2.3 (0.6, 7.2)	9.0 (6.5,12.2)	.13	.26	.37
Pay Money	1.70	1.78	3.8 (0.2,21.6)	0.0 (0.0,17.2)	6.2 (2.9,12.3)	14.5 (11.3,18.4)	.15	.32	.38

For gamblers, 'assistance marae' (4.02), 'excluded study' (2.69), 'emergency treatment' (2.97), 'mental illness' (1.68), 'actual ending' (2.14), and 'arrested driving' (2.86) were the most severe harms within the financial, work/study, health, emotional/psychological, relationship, and other domain, respectively. In comparison, 'assistance marae' (4.90), 'lost job' (3.24), 'living condition' (3.13), 'mental illness' (1.94), 'neglected responsibilities whānau' (1.94), and 'shame church' (3.10) were the most severe harms for affected others within each of the six corresponding domains. Requiring assistance from marae and feeling like having a mental illness were the most severe financial and emotional/psychological harms for both gamblers and affected others respectively.

For gamblers, 'reduced beneficial expenses' (3.05), 'conflict classmates' (4.04), 'stress problems' (2.57), 'worthless' (3.52), 'increased tension' (3.84), and 'shame church' (3.54) were the most effective in discriminating between low and high levels of harmfulness for the financial, work/study, health, emotional/psychological, relationship, and 'other' domains. In comparison, 'reduced beneficial expenses' (3.16), 'absent' (3.93), 'suicide' (3.09), 'extreme distress' (2.76), 'increased conflict' (2.98), and 'crime' (3.09) appeared the best discriminator for affected others within the corresponding domains. Hence, 'reduced beneficial expenses' was the most reliable indicator for financial harms on both gamblers and affected others.

For gamblers, 'reduced spending' (75.4), 'reduced performance' (35.1), 'reduced sleep worry' (48.3), 'regret' (57.8), 'reduced time' (53.7), and 'pay money' (19.8) were reported by the highest percentage of problem gamblers, within the financial, work/study, health, emotional/psychological, relationship, and 'other' domains respectively. In comparison, 'reduced spending' (37.5), 'reduced performance' (24.9), 'reduced sleep worry' (39.2), 'distress' (59.8), 'increased tension' (45.0), and 'pay money' (14.5) were reported by the highest percentage of affected others, within the corresponding domains. Hence, 'reduced spending', 'reduced performance', 'reduced sleep worry', and 'pay money' were harms most frequently reported by both problem gamblers and their affected others for the financial, work/study, health, and 'other' domains respectively.

For gamblers, 'assistance whānau' (.49), 'reduced performance' (.38), 'reduced sleep worry' (.52), 'extreme distress' (.54), 'increased tension' (.48), and 'pay money' (.41) had the highest correlation with their reported PGSI, within the financial, work/study, health, emotional/psychological, relationship, and other domain respectively. In comparison, 'sold items' (.28), 'absent' (.22), 'reduced sleep worry' (.26), 'hopeless' (.27), 'neglected responsibilities whānau' (.22), and 'outcast community; violence; pay money' (.15) had the highest correlation with PGSI reported by affected others, within the corresponding domains. Hence, 'reduced sleep worry', and 'pay money' were, respectively, the most reliable health, and 'other' consequence of increasing gambling problems, among both gamblers and affected others.

For gamblers, 'late bills' (.51), 'reduced performance' (.58), 'reduced sleep worry' (.56), 'extreme distress' (.60), 'increased tension' (.61), and 'theft government' (.47) had the highest correlation with their corresponding general domain Likert harm item. In comparison, 'reduced spending' (.57), 'reduced performance' (.57), 'stress problems' (.53), 'reduced sleep worry' (.53), 'extreme distress' (.57), 'increased conflict' (.56), and 'violence' (.50), as reported by affected others, also had the highest correlation with their corresponding general domain item. Hence, 'reduced performance', 'reduced sleep worry', and 'extreme distress', were, respectively, the most reliable predictor of general work/study, health, and emotional/psychological harm, for both gamblers and affected others.

For gamblers, the item-total correlations between 'reduced beneficial expenses' (.61), 'absent' (.52), 'stress problems' (.56), 'worthlessness' (.65), 'increased tension' (.67), and 'shame community' (.56)

and the rest of the items in their corresponding harm domain were strongest in each domain. In comparison, 'reduced beneficial expenses' (.62), 'absent' (.57), 'depression' (.53), 'extreme distress' (.56), 'increased conflict' (.61), and 'pay money; theft government' (.38), as reported by affected others, also had the strongest item-total correlations for their respective domains. Hence, 'reduced beneficial expenses' and 'absent' were respectively the most reliable indicators in reflecting the underlying dimension of financial and work/study harm, for both gamblers and affected others.

## Discussion

For the most part, the pattern of harms experienced with increasing gambling problems, appeared to be quite similar for gamblers and affected others. Nonetheless, harms across all domains accumulated more, and more consistently, to the gambler compared to the affected other, with respect to increasing gambling problem severity. This raises the interesting tentative conclusion that whilst the quantity of harm accruing to gamblers and affected others differs, the quality of harm *in broad terms* is somewhat similar. However, this is not to say that specific symptoms of harm do not vary significantly in their prevalence, depending on whether one is a gambler or an affected other. To illustrate, both gamblers and affected others tend to reliably experience more psychological and emotional harms as problems increase. However, gamblers are more likely to experience feelings of shame and remorse, whilst affected others are more likely to experience feelings of anger and hopelessness. A more detailed investigation into the different manifestation of harms in gamblers and affected others is beyond the scope of the present report, but represents an interesting avenue for further research. The primary aim of the survey was to obtain a set of harm symptomology, for differing degrees of gambling harm. However, the findings also provide insight into how each of the specific symptoms of gambling-related harm occurs with respect to problems: in terms of prevalence, as an indicator of increasing harm, and also of increasing gambling problems. Each of the six harm domains is discussed separately in the subsequent sub-sections.

### Financial

Requiring assistance from one's marae community was the most severe indicator of financial harm among gamblers and affected others. For both groups it was a fairly unreliable indicator of harm, which may reflect its low prevalence, as well as the fact that it is not applicable to some population groups. Nevertheless, the event only occurred among problem gamblers. This suggests that approaching the marae community may occur as a last resort once other avenues to resolve gambling-related issues have been exhausted. The least severe indicator of financial harm, for both gamblers and affected others, was reduced spending, which supports the intuitive idea that the first impact of gambling problems is to reduce funds available for recreational activities. Reduced spending on beneficial and essential expenses were among the most reliable indicators for both groups. This aligns with a fundamental characteristic of financial gambling harm – which is to reduce and divert money away from basic necessities. Requiring assistance from whānau, and selling items to fund gambling, had quite high escalations in prevalence in the problem category, and unsurprisingly had the strongest correlations the PGSI.

## Work/Study

For both gamblers and affected others, being excluded from educational study, losing a job, and conflict with colleagues were the most severe work/study harms. Being absent, late, or reduced performance were the least severe harms for both groups, and were among the most reliable indicators of harm within this domain. Therefore, a reliable early indicator of gambling harm would be missing work/study to gamble, or as a consequence of someone else's gambling. While absenteeism could relate to several co-morbid harms (e.g. health, emotional/psychological harm), as an isolated behaviour it could be used as a ready, everyday indicator of risk for both gamblers and affected others. Reduced performance at work/study due to tiredness or distraction was the most reliable consequence of increasing gambling problems for gamblers and affected others. Additionally, for both groups it was also the most reliable predictor of the general work/study harm domain, and reported by the highest percentages of problem gamblers and affected others.

## Health

Committing acts of self-harm were among the least prevalent but the most severe indicators of health related harm for both gamblers and affected others. Neglecting one's medical needs (such as not taking prescription medications) was a reliable early indicator of health harm for both groups. Other early indicators for gamblers included stress-related health problems (such as high blood pressure) and loss of sleep due to worrying about gambling, and for affected others included experiences of depression. Reduced sleep due to worrying, for both groups, also had the highest correlation with the PGSI. This was the harm most commonly reported by problem gamblers and affected others, and was the most reliable predictor of the health domain.

## Emotional/Psychological

Feeling worthless and feeling like they had a mental illness were the most extreme harms for both gamblers and affected others within this domain, with mental illness being the least prevalent overall. Feeling worthless was also the most reliable early indicator for gamblers, whereas affected others felt extreme distress first. Feelings of hopelessness were the most prevalent in all groups but, relatively, was less strongly related to general harm. Given the differing roles in gambling for gamblers/affected others, these findings are in accord with intuition regarding the differing primary emotions most likely to be experienced by gamblers and affected others. Additionally, feeling vulnerable was among one of the most reliable indicators for both groups within this domain. This suggests that affected others tend to share the susceptibility, and threat to self-regard, that gambling problems instigate.

## Relationships

Experiencing greater relationship conflict was among the most reliable discriminators and predictors of relationship harms for gamblers and affected others. Conflict within relationships can be understood as a reliable indicator of problems, and is probably a reliable early signal of the onset of gambling harm. Interestingly, neglecting one's responsibilities within a relationship was one of the earliest and least severe indicators for gamblers. For affected others, however, it was among one of



the most severe harms reported within this domain. This finding suggests gambling causes a 'cascade' of relationship neglect for those close to the gambler. Initially, time and monetary investments into gambling can be compensated for by those close to them. However, as gambling problems increase, the affected other will possibly in turn neglect their own responsibilities - a second-order relationship effect.

## Other

Caution should be exercised when interpreting IRT analysis results for this domain. Unlike all other domains, this 'other' category did not have a unitary underlying construct attached. Not paying back money was the item most highly correlated with the PGSI for both gamblers and affected others. This item was also reported by the highest percentages of problem gamblers and affected others. Associations with regards to reliability and PGSI were lower for this domain compared to other categories. This is shown by the fact that harms in this domain were diverse, specific, and had relatively low prevalence.

## Conclusions

The findings of this chapter provide new evidence on the broad similarities between gamblers and those close to them in their experiences of harm. The findings also provide a detailed picture of the type of harms that most effectively discriminate between different levels of problem gambling, and which harms tend to occur most reliably as problems increase. A marked difference between the two groups occurred in the quantity of harm. Specifically, the beta coefficient between problems and harms for gamblers was twice as high as that of affected others. This can be understood as gamblers 'passing on' approximately half of their harm symptomology to the people around them. Broad similarities were observed in the quality of harm (at the domain level of description), but differences were apparent in the relative prevalence of specific symptoms between the two groups. The limitation and issues of affected others assessing the PGSI of the gambler second-hand needs to be acknowledged. However, there is no *a priori* reason to necessarily expect that affected others would be better or worse at reporting gambling problems. Whilst gamblers might have better knowledge of their own behaviour and thoughts, affected others who reflect on the problems of another would be less likely to minimise or censor problems. This was observed in the present survey in that affected others reported a greater mean PGSI score than gamblers, although this difference accounted for only 6.45% of variance in PGSI scores. Additionally, the affected others recruited into this survey were not necessarily associated with the gambler participants. Thus, affected others could have been reporting on gamblers with more severe gambling problems.

With respect to the broader project, the survey provided a large database of harm symptomology experienced by gamblers and affected others, across the range of the PGSI. This was applied in the subsequent phase of this study (reported in the following section) to create condition descriptions associated with differing degrees of gambling problems. Additionally, as a stand-alone study, the results reported above provide a clearer picture of the prevalence of harm symptomology due to gambling, and the changing profile of harm as gambling problems increase.



## Assessing individual level harm from gambling via HRQL weights

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The qualitative and quantitative findings reported in previous chapters provided a comprehensive and detailed description of harms relating to gambling. The national survey of harm symptomology with respect to PGSI, in particular, provided insight into the increasing number and types of specific harms that occur as the relative impact of problematic gambling grows. It became clear that the prevalence of symptoms increase with PGSI score or category. However, similar to previous research on the topic, the results so far do not describe the overall degree of harm experienced either by an individual, or at a population level. That is, although the data reported in the preceding chapter describes the increasing prevalence of harm symptomology as gambling behaviour increases, it does not quantify the effect this harm has on the individual or the population. In this chapter findings from the fourth phase of our study, which address this limitation, are presented. The objective of this phase was to measure how much a typical individual is harmed, given a certain level of gambling problems, and extrapolate that result to the population level. This was a necessary prerequisite for meaningful comparisons to be made between gambling-related harm and the harm caused by other common health conditions, such as alcohol abuse disorder and depression.

### The importance of a cardinal scale for measuring gambling harm

The PGSI, like most other psychometric measures, yields measurements on an ordinal, rather than a cardinal (or metric) scale. This means that intervals between each score on the PGSI are not comparable. Thus, it is not possible to make statements of the type 'An individual with a PGSI score of 8 is harmed twice as much as an individual with a score of 4'. Accordingly, it is not possible to compare the following two outcomes as equivalent in benefit in terms of community benefit:

- a) Successful treatment/avoidance of gambling problems of 1 individual with a PGSI score of 8 for 5 years.
- b) Successful treatment/avoidance of gambling problems of 2 individuals with a PGSI score of 4 for 5 years.

In order to estimate the amount of harm that is being experienced, either by an individual, or the population, it is necessary to translate indicators of harm to a cardinal scale. Measuring harm on a cardinal scale presents a number of advantages. For example, it is possible to infer that an individual who has scored  $2x$  on the measure is suffering from twice the amount of harm as an individual who has scored  $x$ . Furthermore, with the assumption that the wellbeing of different individuals is equally valuable, it is possible to aggregate harms experienced across individuals. This enables comparisons between populations, and the evaluation of alternative treatment or policy initiatives with regard to how much they improve the summary measure. Finally, if a common scale is used for gambling and other conditions, it will be possible to make meaningful comparisons of the overall cost to the community between conditions and, thereby, make informed decisions about how to allocate scarce resources to different issues.

## Summary measures of population health

In order to create a cardinal measure of gambling harm it is useful to apply summary measures commonly utilised in population health research. Summary measures combine data on mortality and non-fatal health outcomes into a single metric to quantify the health of a population (WHO, 2009). These measures are utilised for a variety of purposes, such as comparing the experiences of health between populations in different countries (e.g. Aaronson et al., 1992), identifying inequalities within populations (Gakidou, Murray, & Frenk, 2000) and in determining cost effectiveness of health interventions (Holmes, Hemmett, & Garfield, 2005; Solberg, Maciosek, & Edwards, 2008). This knowledge can assist in setting priorities for health planning, service provision, research and development activities (Nord, 1999). There is clear public benefit in allocating the most resources to problems that are proven to cause the greatest harm, thereby achieving the optimal return on investment.

There are several common summary measures that simultaneously capture the combined impact of both mortality and morbidity. They are collectively referred to as Health Adjusted Life Years (HALYs), and the two most commonly used measures are Quality Adjusted Life Years (QALYs) and Disability Adjusted Life Years (DALYs). The two measures differ in a number of key aspects but both are calculated using Health Related Quality of Life (HRQL) weights, otherwise known as utilities. These weights, described below, capture deviations from a normal and unaffected enjoyment of life.

## Health Related Quality of Life (HRQL) weights

The construct of Health Related Quality of Life (HRQL) is operationalised as a health state utility, or weight. This utility represents the benefit to an individual in living one year in the condition specified and, when measured across a sample, reflects a consensus view of preferences for different health outcomes. By convention, they are estimated on a cardinal scale between zero and one; with either zero or one being equivalent to death and the other end of the scale reflecting ideal health and wellbeing. Thus, the utility (or benefit) to both the individual and the community, of a single individual living a year in optimal health and wellbeing is standardised to utility. Gambling-related harm can, therefore, be described as a decrement to one's utility  $U$ , or  $1-U$ , which is the operational definition we shall apply subsequently in this report.

In health economics, HRQL utilities are often combined with incidence, duration, relapse, and mortality data in order to generate quality-adjusted life years (QALYs) for use in cost-utility analyses, interventions and policy. For example, two treatments for an illness may extend the life expectancy of an individual by 10 years. However, treatment A may restore the individual to full health ( $U=1$ ) while treatment B may restore the individual to only partial health ( $U=0.5$ ). Treatment A yields  $10 \times 1.0 = 10$  QALYs, while treatment B yields  $10 \times 0.5 = 5$  QALYs. From this simple example, it can be seen that QALYs represent a numerical integration of health utilities over time. It is also possible to aggregate QALYs over individuals. For example, consider two treatment alternatives of a chronic condition that are of equivalent cost. Treatment A is a symptom relief medication, resulting in an improvement in utility from 0.5 to 0.55 in 100,000 individuals. Treatment B is surgery leading to complete cure, improving utility from 0.5 to 1.0 in 1,000 individuals. Treatment A yields  $0.05 \times 100,000 = 5000$  QALYs per annum. Treatment B yields  $0.5 \times 1000 = 500$  QALYs per annum. Research on the use of health utilities and QALYs is extensive, and though not without controversy, remains a widely accepted methodology for health priority setting from a public health perspective.

## **QALYs to DALYs comparison**

In addition to QALYs, disability adjusted life years (DALYs) are another summary measure commonly applied in population health research. Some differences between the two measures are apparent:

### **QALYs**

- Were developed from the late 1960s with a purpose of quantifying the health or quality of life gain from health interventions. The focus is on the improved utility gained, reflective of the influence of economists in the development of the measure, and being grounded in welfare economics and expected utility theory.
- Traditionally attach HRQL weights (the morbidity component of a HALY) to decrements in physical functioning caused by the disease, rather than the diseases themselves. This is done indirectly, by assessing the condition using generic measures.
- Are calculated so that a score of zero represents death and a score of one represents ideal health. Therefore, the QALY measures the equivalent healthy years lived without the disease or condition.

### **DALYs**

- Were originally conceptualised by Murray and Lopez (1996) to capture the gap between a population's experience of health and a hypothetical ideal of health. The focus and purpose of the DALY reflects the health and medical demography background of its developers in terms of the aspects of health it values. In particular, these measures were originally envisioned to capture aspects of physical health and suffering.
- Tend to attach the HRQL directly to the diseases rather than to the individual health states.
- Are calculated so that zero is equivalent to no disability (perfect health) and one is death. Therefore, a DALY measures the loss of health due to infirmity.

Both DALY and QALY measures necessarily assume an “average” burden for a disease state or health condition that varies between individuals but is, nevertheless, accurate when summed across the population.

## **Measuring HRQL**

Two main components are required for measuring HRQL, which we have applied to assessing gambling harm. The first component is the definition and description of a set of health states of interest, along with establishing an appropriate reference point that is free from harms arising from the condition. The second component involves elicitation and estimation of valuations of the health states corresponding to these health conditions, so as to permit estimation of health state utilities on the [0,1] cardinal scale.

## Condition descriptions

Standard health state valuation protocols require stimuli in the form of a description of the sequelae, i.e. a concise description of the condition to be evaluated. In standard evaluations of health-related conditions, many conditions are treated as binary in character; that is, one is understood to either have the condition or not. For example, the condition 'Amphetamine dependence' is described as:

*"Uses stimulants (drugs) and has difficulty controlling the habit. The person sometimes has depression, hallucinations and mood swings, and has difficulty in daily activities."*

(Salomon et al., 2013)

Other conditions, such as alcohol use disorder, are treated using several (e.g. three) standard condition descriptions. The severe level of this condition is described as:

*"Gets drunk almost every day and is unable to control the urge to drink. Drinking and recovering replaces most daily activities. The person has difficulty thinking, remembering and communicating, and feels constant pain and fatigue."*

(Salomon et al., 2013)

This relatively simple approach to condition description is most appropriate when the condition is discrete and the symptoms are quite homogenous in the affected population. However, it might be criticised when applied to gambling. There is not a binary classification as 'suffering from gambling harms' or not, but rather a spectrum that increases, on average, with respect to gambling problems. While disordered gambling can be defined in terms of the Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5), the description does not exclusively rest on 'harms' but also other subjective experiences such as #5, 'often gambles when feeling distressed'. Whilst gambling disorders can be assessed in an interview using the DSM-5 (as an internationally agreed definition), the experience of harms occurring to people is not well described by the DSM-5 items. A clearer harms-based description of the experience of gambling problems would appear to be needed to evaluate the decrement to quality of life from the experience of gambling problems. Finally, data collected in the previous phases of this project confirm the research consensus that there is significant heterogeneity in the experience of gambling harms in the population, even given a fixed level of gambling problems. If gambling problems and harms are assumed to be both diverse and dimensional (with respect to problems) in their occurrence in the population, then a less discrete approach to condition description is required. There are several examples of such an approach in the literature. One study evaluating the impact of cancer (Llewellyn-Thomas et al., 1984) interviewed 12 patients with a broad spectrum of symptoms and prepared a number of condition descriptions based on case studies.

For example:

*"... I am unable to work. I am tired and sleep poorly due to discomfort in my back and arm. I am worried about my health and finances. I am able to drive my car and I make an effort to walk about my neighbourhood."* (Case A)

*"... I have been tired and weak and unable to work. I have lost 15 pounds in weight. I walk slowly, and travel outside the house is difficult. Much of the day I am alone, lying down in my bedroom. Social contact with my friends is reduced."* (Case D)

These condition descriptions were assumed to provide a fair coverage of the experience of having cancer and then employed for the purpose of direct elicitation of health utilities. The final utility estimate was an aggregate of elicitations of all 12 condition descriptions.

The use of condition descriptions (or vignettes) is a common method for describing conditions for subsequent direct or indirect evaluation (e.g. Bennett, Torrance, Boyle, Guscott, & Moran, 2000; Bennett, Torrance, Moran, Smith, & Goldsmith, 1997). However, care must be taken in specifying appropriate condition descriptions to ensure that the elicited HRQL valuations match the affected population. For example, Gray et al., (2014) reviewed health state descriptions used in seven direct preference studies of stroke survivors, and found broad variation in the amount of detail provided, and the representation of the condition in the descriptions that could not be explained by differing degrees of condition severity. They concluded that this variation in condition description raised concerns as to the validity of the results. Given that we expect harms from gambling to be highly diverse, the present study describes a conservative approach to defining condition descriptions, using a large set of condition descriptions to ensure adequate coverage of the population of affected individuals.

## Valuation methods for HRQL utility elicitation

Before outlining the protocols used in the present study for eliciting HRQL gambling harm utilities, we will first distinguish between direct and indirect valuation methods for eliciting the impact of conditions on one's quality of life.

### Direct versus indirect methods

A two-stage, or **indirect approach** involves matching the condition to a dimensional profile, which is then linked to a HRQL. Using this method, a standardised descriptor of decrements to functioning and wellbeing to the condition is applied. Published instruments include the Health Utilities Index (HUI; Torrance, Zhang, Feeny, Furlong, & Barr, 1992), the Quality of Well-Being Scale (QWB; Kaplan & Bush, 1982) and the EurQol (EQ-5D; Hurst et al., 1994). The EQ-5D, for example, asks participants to rate their wellbeing on five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. These results are then converted to a utility using previously established values. This can provide a convenient method for establishing utilities for new conditions, since after employing the instrument, a researcher can consult standard tables to obtain the HRQL (Arnold, Girling, Stevens, & Lilford, 2009). Using the **direct approach**, the HRQL of a new condition is directly evaluated – either by those experiencing the condition personally, or third parties via the use of condition descriptions.

Indirect approaches have some advantages in maximising comparability between conditions, but arguably lose sensitivity and validity when compared to direct evaluation of condition-specific descriptions (Rowen, Brazier, Tsuchiya, Young, & Ibbotson, 2012), especially when the scope of the generic measure is not a good fit to the condition under evaluation. This is arguably true in for gambling. For example, relationship dysfunction appears to play a major role in the experience of gambling harm (see previous chapter). However, relationships are not represented on the EQ-5D, potentially leading to an underestimate of harm when applied to gambling. Therefore, the approach of the present study was to employ a direct method of HRQL utility estimation, i.e. presenting participants with specific vignettes for utility evaluation.

## Protocols of direct methods for HRQL utility elicitation

Measurement frameworks for HRQL rely on the use of valuations for eliciting the utilities that reflect the HRQL associated with the health state. Three established valuation methods for directly eliciting cardinal utility values (weights) for HRQL include the Time Trade-Off (TTO), Visual Analogue Scale (VAS), and Standard Gamble (SG). A fourth emerging method, which has predominantly been used in indirect HRQL measures (i.e. EQ-5D), is the Discrete Choice Experiment (DCE).

### Time Trade-Off (TTO)

A discrete time trade-off valuation asks respondents to make a choice between two scenarios – living for a fixed amount of time (for example 10 years) with an impaired health state, or living for a shorter period of time in ideal health. The time period spent in full health is varied against the poorer health state until the respondent answers to being indifferent between the two choices. A variation on the discrete TTO is to require respondents to directly indicate a proportion of time they would be willing to give up in order to avoid the condition. For example, consider a participant is willing to sacrifice 3 of the 10 years left to live in ideal health without depression. This implies that 10 years with depression is equivalent to 7 years in good health and, therefore, that the HRQL utility of depression is 0.7 – or equivalently, that the harm accrued with each year of living with depression is 0.3. See Figure 5. for an example of the calculation of utility from TTO (Whitehead & Ali, 2010). The TTO is consistent with economic models of decision-making and is fundamentally connected to the concept of utility (Whitehead & Ali, 2010). However, the TTO has been criticised for being too complex for many respondents (Dolan & Stalmeier, 2003; Rowen, Brazier, & Van Hout, 2015; Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006). Accordingly, some researchers recommend that the TTO is administered face-to-face by an interviewer amongst small samples and amongst ‘experts’, such as health professionals (Norman et al., 2010; Shah, Lloyd, Oppe, & Devlin, 2013).

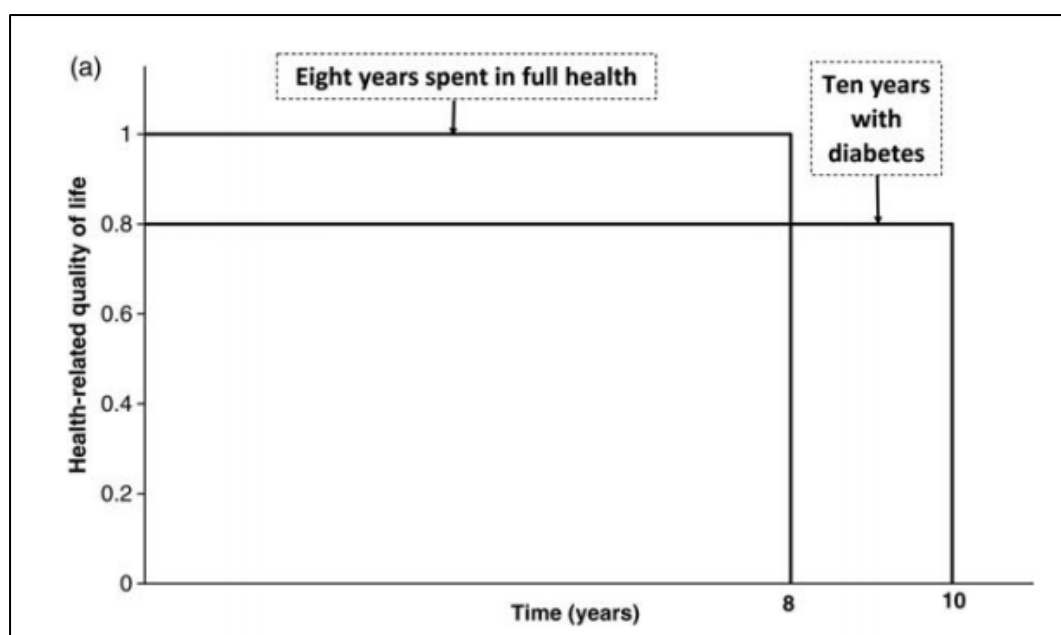


Figure 5. Time Trade-Off

### Visual Analogue Scale (VAS)

The VAS is a rating protocol in which health states are evaluated by asking the respondent to indicate where on the scale from '0 – worst imaginable' to '100 – best imaginable' they would place the health state. The HRQL utility estimate is simply the rating from the VAS transformed into a value from 0 to 1.

There has been some criticism of VAS for evaluating HRQL, partly due to a perceived lack of theoretical validity, and recognition of the potential of scale biases, e.g. end-of-scale bias, where ratings at the extreme ends of the scale are avoided (Stubbs et al., 2000; Tolley, 2009; Whitehead & Ali, 2010). Nord, Menzel, and Richardson (2006) noted that interval differences on the VAS should be weighted more strongly at the extremes of the bounded scale, suggesting a transformation to accomplish this. Mathers, Vos, Lopez, Salomon, and Ezzati (2001) recommended that a sufficient number of different states with different severity levels should be provided as reference points on the VAS, in order to ensure respondents minimise scaling distortions, which is typically observed when only a few states are considered. This accords with reports in the literature of the use of ordinal ranking of alternative health conditions in conjunction with the VAS (Salomon & Murray, 2004). Despite theoretical concerns with the VAS, it has been found to perform well relative to other methods. For example, Badia, Monserrat, Roset, and Herdman, (1999) found that the VAS was slightly more feasible and reliable than the TTO for health state valuation, but that the TTO was better able to discriminate between health states. Gudex, Dolan, Kind, and Williams (1996) also found that the VAS had good test-retest reliability. More recently, Parkin and Devlin (2006) who reviewed findings regarding the VAS, made a strong defence of the protocol for health state valuations, arguing that it performed well empirically compared to alternative methods.

### Standard Gamble (SG)

The standard gamble is a valuation method which offers the respondent a choice to make a decision between a 100% certainty of remaining in a particular health state, or taking a gamble for a better health state (e.g. 20% probability of full health) or a worse health state (e.g. 80% probability of death). The probability of death is varied in the standard gamble until the individual is indifferent between the certainty of remaining in the health state and the gamble. The probability of the better outcome at this indifference point generates the health state utility. For example, a SG task may yield a result that an individual is indifferent between the option of: (a) certainty of living with severe multiple sclerosis, and (b) a 70% probability of living in full health. The health state valuation for multiple sclerosis for this example is 0.7.

The SG has some disadvantages. It is relatively time-consuming, and applying the concept of probabilities can be difficult for respondents (Tolley, 2009). Another criticism of the standard gamble is that it may elicit responses that not only reflect the value that person places on the health state but their attitude towards risk taking (Mathers et al., 2001; Tolley, 2009; Torrance, Furlong, Feeny, & Boyle, 1995). This suggests that the health state utility elicited from the SG is dependent on the population surveyed, where a higher tendency towards risk behaviour would result in a lower HRQL utility for the health state and vice versa. This may be problematic when used in populations of gamblers, where their evaluation of the condition may be confounded with a propensity towards risk-taking behaviour. While the SG has been described as the 'gold standard' of direct valuation methods (Mathers et al., 2001), its complexity and vulnerability to risk aversion bias has led some researchers to advocate the TTO as a more reliable and sound valuation method (Tolley, 2009).



## Discrete Choice Experiments (DCE)

In recent years Discrete Choice Experiments (DCE), also known as pairwise comparisons, has emerged as an alternative health-state valuation method to overcome the complexities of the TTO, VAS, and SG techniques (Rowen et al., 2015). DCE is a preference-based *ordinal measure*, which requires a choice between the better-worse of two health states (Brazier, Rowen, Yang, & Tsuchiya, 2012; Rowen et al., 2015; Stolk, Oppe, Scalone, & Krabbe, 2010). The key challenge of using DCE to generate health-related utilities is designing the best DCE method and analyses to model the latent utility function from the ordinal DCE data onto a cardinal 1-0 utility scale.

A twenty-year literature review (1990-2008) on the use of DCEs in health economic studies was conducted by de Bekker-Grob, Ryan, and Gerard (2010) focusing on the experimental design, estimation procedures, and response validity of DCE. They identified 114 DCE studies covering a wide range of objectives, and only two studies used DCE to estimate utility weights within the QALY framework by anchoring valuations onto the TTO or SG full health (1) to death (0) scale. However, only one of these studies measured the utility of a specific health state – Glaucoma (Burr, Kilonzo, Vale, & Ryan, 2007), and the other measured the utility of older adults' social care outcomes (Ryan, Netten, Skatun, & Smith, 2006). At the time of their review, the authors criticised the use of utility weights based on DCE ordinal data and their interpretation at a cardinal level (de Bekker-Grob et al., 2010).

Since this 2010 paper, the popularity of DCEs has increased with the majority of studies using DCE to estimate utilities for health states sourced from generic preference-based health instruments, most predominantly the EQ-5D (Bansback, Brazier, Tsuchiya, & Anis, 2012; Bansback, Hole, Mulhern, & Tsuchiya, 2014; Pullenayegum & Xie, 2013; Robinson, Spencer, & Moffatt, 2015; Stolk et al., 2010; Viney et al., 2014). Of recent, utilities for specific health states have been measured using DCE methods, such as asthma (Brazier et al., 2012; Rowen et al., 2015), overactive bladder (Brazier et al., 2012), sexual quality of life (Ratcliffe, Brazier, Tsuchiya, Symonds, & Brown, 2009), and the 2010 and 2013 Global Burden of Disease studies (Salomon et al., 2012; 2015).

Researchers vary in their approach to DCE design as they attempt to find the 'best' method. Studies range from presenting respondents with the traditional choice between the best or worst of two hypothetical health states (Brazier et al., 2012; Burr et al., 2007; Ratcliffe et al., 2009; Ryan et al., 2006; Salomon et al., 2012; Salomon et al., 2015; Stolk et al., 2010; Viney et al., 2014), two health states and a third 'dead' state (Brazier et al., 2012; Stolk et al., 2010; Viney et al., 2014), the incorporation of duration of the health state in a DCE-TTO design (Bansback et al., 2012; Bansback et al., 2014; Viney et al., 2014) trade-off between treatment groups in a DCE-SG design (Robinson et al., 2015) a DCE-PTO design (Lancsar, Wildman, Donaldson, Ryan, & Baker, 2011), or a combined DCE and 'population health equivalence design' (the antecedent to the PTO) which asks respondents to choose which of two health programs produce the 'greater overall population health benefit' (Salomon et al., 2012; Salomon et al., 2015).

The statistical analyses in transforming the latent utility from DCE ordinal data onto the cardinal 1-0 utility scale is complex and challenging and requires anchoring values to an arbitrary 1-0 scale (Rowen et al., 2015). Logit or probit regression models to anchor coefficient values to the "full health" or "perfect health" (1) to "dead" (0) scale data are typically used, methods differing from anchoring onto TTO data (Brazier et al., 2012; Pullenayegum & Xie, 2013; Ratcliffe et al., 2009; Rowen et al., 2015; Stolk et al., 2010), combined DCE-TTO data (Bansback et al., 2012; Bansback et al., 2014; Rowen et al., 2015; Viney et al., 2015), a third "dead" state dummy variable (Brazier et al., 2012; Rowen et al., 2015; Stolk et al., 2010), to the "best" (1) and "worse" (0) health states in line with the logical ordering on the classification system (i.e. EQ-5D) (Robinson et al., 2015; Ryan et al., 2006),



using a compensating variation (CV) approach (Lanscar et al., 2011), or to population health equivalence data on a 0-1 disability scale (Salomon et al., 2012; Salomon et al., 2015) where 1 represents “dead or as bad as dead” (Nord, 2013).

Alongside this variability in the approach to modelling DCE data, is evidence that different statistical models produce different results when compared to other DCE approaches (Brazier et al., 2012; Rowen et al., 2015). DCE derived utilities have also been shown to yield higher values than TTO (Bansback et al., 2012; Brazier et al., 2012; Stolk et al., 2010; Viney et al., 2014), the VAS (Burr et al., 2007; Stolk et al., 2010), and rank data (Ratcliffe et al., 2009).

In the health-state utility context several weaknesses of DCE have been put forward, including that many respondents don't see health states as being worse or better than dead (Brazier et al., 2012; Rowen et al., 2015), the addition of duration into the DCE task adds complexity (Rowen et al., 2015), their general inability to derive individual-level utility values (violating the assumption of variance heterogeneity) which require a large number of paired comparison typically avoided due to complicating the design or overburdening respondents (Bansback et al., 2014; Lanscar & Louviere, 2008; Flynn, 2010; Flynn, Louviere, Peters, & Coast, 2010; Robinson et al., 2015) lack of evidence of external validity (de Bekker-Grob et al., 2010; Lanscar & Louviere, 2008), smaller DCE designs violation of the assumption of the independence of irrelevant alternative (in multinomial logit models) (Bansback et al., 2012; Stolk et al., 2010), DCE methods are not widely used due to the challenge of anchoring ordinal data onto the 1-0 QALY scale (Rowen et al., 2015), and the lack of guidance to calculate the minimum sample size requirements (de Bekker-Grob, Donkers, Jonker, & Stolk, 2015).

Finally, this lack of consensus on the DCE design, statistical modelling, and results has researchers advocating for further research comparing DCE methods for deriving health state utilities (Bansback et al., 2014; Brazier et al., 2012; de Bekker-Grob et al., 2010; Gu, Norman, & Viney, 2014; Nord, 2013; Ratcliffe et al., 2009; Robinson et al., 2015; Rowen et al., 2015; Stolk et al., 2010; Viney et al., 2014). Based on the lack of validity of the DCE method, the current research into gambling-related harm utilities has ruled out using a DCE methodology.

## **Applying summary measures to the current research**

Outcomes from summary measures can be calculated and applied in two different ways: as health expectancies and health gaps. Health expectancies reflect life expectancies from birth that take into account lower utilities for years lived in health states worse than full health (Murray, Salomon, & Mathers, 2000). Most useful for the current study, however, are health-gap measures that quantify the difference between actual health and some stated norm or goal health status. These measures provide a common metric for population health that link the experience of health gaps with the potential health gain from interventions. Health gaps are measured on a common metric scale, which allows for relative comparisons across a number of different diseases and social problems, including problem gambling. This is particularly useful for priority setting processes as it allows relative comparison of potential effectiveness of remedial action.

## Limitations / considerations to choice of measure for gambling-related harm

Two main obstacles restrict the utilisation of a standard health decrement measure to capture the impact of gambling-related harm at a population level. The first is the absence of credible or systematic mortality data relating to gambling. The second is the restricted ability to develop a credible disease model for gambling.

Both QALYs and DALYs incorporate a mortality component within the measure that reflects the cost of premature death. Premature death related to gambling is not possible to capture within the scope of the present study. The experience of mortality associated with gambling-related harm is complex as gambling may be an underlying contribution to a death (i.e. via suicide), but not the immediate cause or captured in the record of death. Therefore, involvement in gambling would need to be evaluated as a risk or contributing factor. This is of particular importance given the prevalence of comorbidities and other common behavioural risk factors in people with gambling problems. One of the key findings of the consultations with the treatment and service community (in the second phase of this study) was the systemic problem with capturing the contribution of gambling when people presented with multiple health problems, particularly when those problems were biophysical in nature. Whilst there have been some efforts to capture the influence of gambling on people attempting suicide (Blaszczynski & Farrell, 1998; Newman, 2007; Wong, Cheung, Conner, Conwell, & Yip, 2010), it is unlikely that any comprehensive data on contribution to all-cause mortality will be available in the short or medium term.

The experience of engaging with an activity that leads to harms, such as gambling, does not fit a traditional disease model. In the absence of screening for involvement in gambling in large representative health or gambling surveys, it is not possible to assess it as a risk factor and calculate population attributable risk factors (PAFs) based on exposure. The majority of people who gamble do so at a low risk level, or engage in heavy gambling only occasionally. Moreover, people can move between behavioural categorisations of recreational (i.e. “no risk”), low risk, medium risk, high risk and problematic, in both directions, multiple times across their lifespan. Even for those who develop problems with gambling, the experience of periods of control or abstinence punctuated with problematic gambling varies significantly between individuals. To date there are no data from longitudinal studies of gambling that can provide reliable population measures duration or age of onset; although some prevalence studies can inform the distribution of severity disaggregated by age and gender.

Given the state of knowledge regarding incidence and life-course morbidity patterns of gambling problems, it is not practicable to calculate a true QALY or DALY measure for the impact of gambling-related harm within the present study. Therefore, we focus on a more circumscribed, but nonetheless informative objective, which is calculation of the decrement to health from morbidity only, HRQL, for a single year. This information can be combined with prevalence data to estimate the population-aggregate decrement to health-related quality of life. It is natural for people to reflect on how the experience of gambling harm might be compared to an alternative option in the absence of such harm. The experience of different levels of gambling problems, with attendant harms, relates more to different health states than diseases. However, unlike the normal calculation of QALYs, which are focused on utility or quality of life gained, the present study calculates the loss of utility or quality of life as a decrement. Whilst this approach could be seen to be more consistent with the calculation of DALYs, given the strong grounding in health states and the inability to include mortality in the calculation, the resulting summary measure has been termed as a QALY<sub>1</sub>, which is consistent with

standard demographic notation of subscript indications of time (where 1 represents 1 year of quality of life decrement).

This approach to developing an appropriate summary measure allows for the generation of a meaningful cardinal scale of harm, that when combined with prevalence data from the New Zealand 2012 National Gambling Study (Abbott et al., 2014a), can provide an initial estimate of a burden of harm for a calendar year (assuming some stability of behavioural categorisation). This information can be utilised as a disability weight for true QALY or DALY calculations when more complete epidemiological data for gambling are available. Most critically, it also allows a calculation of gambling harms that is comparable with most other disease states studied with the HRQL methodology, and even those calculated prior to the present study for the purpose of being applied to differing methodologies (QALY or DALY based).

## **Summary and implications for assessing gambling harm**

The literature on measuring and reporting on health has not yet resolved all of the conceptual issues and some disagreements and inconsistencies remain. However, there are several salient issues for describing and eliciting utilities for gambling harms. First, like many other health conditions, gambling harms occur along a spectrum of severity. Therefore, any approach to describing gambling-related harms must be dimensional in nature, and describe the experience of harm along a continuum. Second, there is potentially wide variation in the individual experience of harms with respect to quality of life. Any attempt to simplify the description of harms using a limited number of discrete descriptors invites criticism of the validity of the measure in terms of coverage of diversity in the population. Thus, the stimuli used to elicit the HRQL gambling-harm utilities must account for heterogeneity in the experience of gambling-related harm in the population. Third, existing dimensional descriptive systems, understandably, have a focus on biological health and physical functioning and may, therefore, be a poor match for the full scope of gambling-related harms. In this case, utilising standard scales such as the EQ-5D for indirect assessment of harm, would not yield a complete representation of the impact of the condition, and almost certainly yield an under-estimate of the impact of gambling problems. Therefore, we favour the use of direct methods to elicit gambling-harm valuations. The TTO and VAS measures have been identified as the most appropriate valuation techniques for eliciting gambling-related harm utilities, as the risk component of the SG (as mentioned previously) is ill-suited to gamblers; and the best DCE method to elicit utilities is yet to be established.

Finally, these issues are exacerbated by the fact that, as compared to issues such as depression, the diagnostic characteristics of gambling problems at various levels of severity are not well defined. Therefore, we cannot assume that harm only occurs to individuals who satisfy diagnostic criteria for gambling disorder. In sum, any attempt to describe the health states corresponding to the experience of gambling problems should place emphasis on achieving a population-representative, and comprehensive set of health state descriptors, along the continuum of gambling problem severity. After presenting our methodology and results, we will return to these methodological considerations in the discussion.

## Method

The present study utilised a direct elicitation framework, involving online administration of TTO and a VAS incorporating reference conditions. In contrast to previous health state valuation research, we estimated harm ( $1 - \text{utility}$ ) as a dimensional construct, i.e. as a continuous increasing function of the PGSI. Another novelty in our approach is that we avoided assuming that any small set of condition descriptions would be a representative ‘average’ experience for a given degree of severity. Rather, we sampled cases from the national harms survey (as detailed in the previous chapter), and used these to algorithmically generate a large set of textual descriptions. The elicited harm values were then averaged with respect to PGSI score and analysed further with respect to PGSI prevalence in the New Zealand population to obtain aggregate QALY<sub>1</sub> measures.

## Materials

### Condition descriptions

The harms survey described in the previous chapter provided, for each respondent, both a PGSI score and a list of harms that the person had experienced. We sampled 552 cases with profiles of harm from the national survey, stratified with respect to PGSI categories. By assessing a large, representative sample of condition vignettes, each with a potentially unique profile of harms, we avoided making assumptions about a standard or generic harm experience. We also assessed harms across the spectrum of gambling problems. As non-problem and low-risk categories were relatively under-represented in our sample, we selected all cases in the first two categories, and a fixed random sample (without replacement) in the two higher categories (moderate-risk gambler and problem gambler). Table 16 shows the number of cases in each PGSI category selected from the national harms survey for inclusion in the condition vignettes dataset.

**Table 16. Number of cases from the national harms survey selected for inclusion in the condition vignette stimuli data set**

Vignette group	Problem Gambling Status				Total
	Non-Problem	Low-Risk	Moderate-Risk	Problem	
Own gambling	36	93	100	100	329
Affected others	9	14	100	100	223
<b>Total</b>	<b>45</b>	<b>107</b>	<b>200</b>	<b>200</b>	<b>552</b>

Each harm profile reported by individuals in our national survey were converted to a plain language descriptor, for use as stimuli, using a simple algorithm. This involved firstly specifying a clause for each gambling-related harm checklist item covered in the national survey. For example, the item ‘*Committed acts of self-harm*’ in the health domain was associated with the single word clause ‘*self-harming*’. Other harms involved multi-word clauses; for example ‘*Felt insecure or vulnerable*’ was transformed to ‘*feeling vulnerable*’. Some harms included examples to make the meaning clear, such as ‘*neglecting your medical needs (e.g. taking prescriptions)*’. Each harm in the checklist was associated with a particular sentence in the vignette (indexed within domain). Each harm in the checklist was also associated with a particular sentence in the vignette (also indexed within domain). The complete harm-vignette clause assignment table is provided in Appendix 8.

Each sentence followed a stereotypical format, with a standard initial starting phrase. For example, *'The gambling is making you feel'*, is the initial clause in the first sentence in the emotional/psychological domain. It was followed by each of the harm clauses, separated by a comma (between subsequent harms occurring within the same sentence) and a particular conjunction (for the final harm occurring in the sentence). The full table of sentence descriptors is provided in Appendix 9. For a given sentence, when a participant reported no harms, that sentence was omitted completely from the vignette. The algorithm outputs and wordings of accompanying task instructions were inspected by the research team at AUT and CQU and edited by a researcher to correct any minor unexpected grammatical issues that arose. The respondents were asked to imagine experiencing the condition themselves, which facilitated instructions for the elicitation protocols. The operation of the vignette generation algorithm can be seen by the following examples from a respondent reporting on harm from their own gambling (henceforth known as 'Form A'):

*Your gambling is affecting your quality of life. The gambling is making you feel hopeless. You also feel like a failure. You are experiencing stress related health problems (e.g. high blood pressure). You are also living in unhygienic conditions (e.g. living rough, neglected). You neglect your relationship responsibilities. At work/study you have reduced your performance (e.g. due to tiredness or distraction). (A377)*

The goal of utilising the deterministic algorithm that generated vignettes was to ensure an objective and standard method to translate the quantitative symptomology data into plain language vignettes that faithfully represented the experiences as reported by survey respondents. The initial sentence for Form A (harm to self) group was fixed as *'Your gambling is affecting your quality of life.'* For those describing harms caused by another's gambling (Form B), the initial sentence matched the relationship of the person to the gambler. For example, B113 describes an individual who was affected by a parent's gambling:

*Your parent's gambling is affecting your quality of life. You also feel vulnerable. You spend less recreationally (e.g. movies, eating out). You are less physically active. You are concerned that your relationship will result in separation or end. At work/study you have been late. (B113)*

The full set of 552 condition vignettes was randomly sampled with replacement, before being arranged in sequences of six unique vignettes for evaluation by individual participants. The stimuli for each participant were either six Form A vignettes (harm from own gambling) or six Form B vignettes (harm from another's gambling), and not a mixture of the two - to avoid respondent confusion between the two types of vignettes. The online survey was programmed so each participant (uniquely identified) was given his or her own unique set of six vignettes to evaluate. Thus, each participant in this part of the study was asked to judge the experience of harm from six real experiences of harm reported by others in the prior gambling harms national survey, which included experiences of gamblers or people affected by gambling.

## **Online evaluation protocol**

The online evaluation protocols involved participants undertaking the VAS and TTO tasks for each of the six vignettes. Prior to completing the tasks, participants were provided with a tutorial regarding how to correctly complete the protocols. The protocols took approximately 15 minutes to complete and comprised 3 sections:

## VAS

This task involved participants assessing 6 vignettes and ranking them according to how much they believe their own imagined quality of life would be affected if they were to experience the scenario in the vignette. Rankings could range on a continuum from 0 (comparable to death) to 100 (perfect health). Other health conditions such as schizophrenia, for which disability weighting estimates have been previously established, were also presented on the scale as reference points. Three unique VAS scales were developed, each with 9 reference conditions. Reference conditions were selected to ensure a spread of health states that varied according to severity. Participants were also provided with descriptions for each of these reference conditions, which were displayed as a mouse-over pop-up text box. The full list of conditions and descriptions that appeared across the 3 VAS scales are presented in Appendix 10. Figure 6 shows an example of the VAS task.

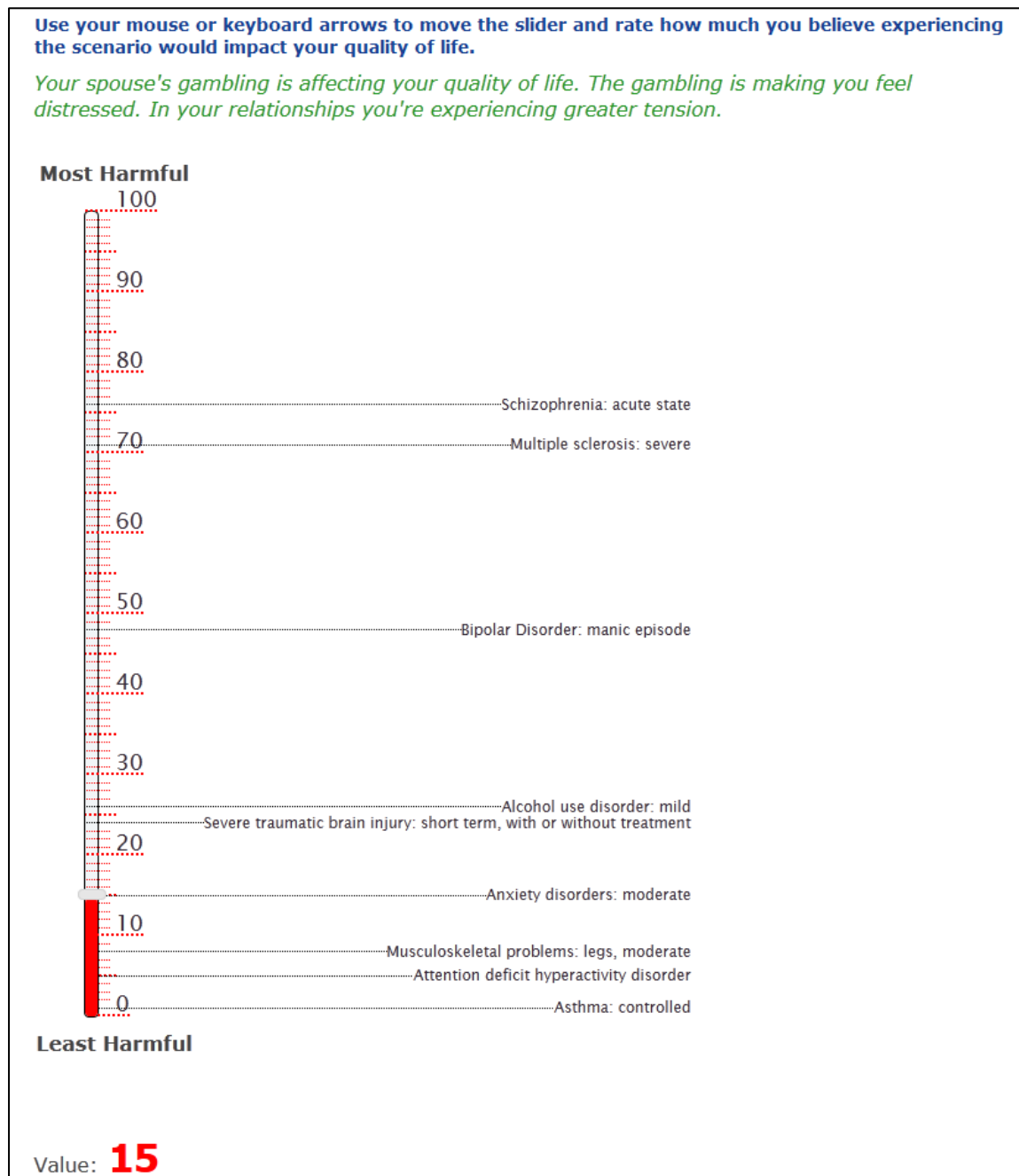


Figure 6. Screenshot of the VAS task

The value in such ratings comes from the precise ranking of the experiences of harm described in the scenarios relative to the known and calibrated harms from other conditions. It allows for a direct estimation of “how bad” each scenario is, compared to the experience of the other illnesses and health states. Detailed descriptors of the symptoms and living conditions of the alternative states were sourced from the Global Burden of Disease (GBD) Study 2010 (Salomon et al., 2013) and presented to participants in pop-up boxes that appeared when the survey respondent hovered their computer cursor over each item. The descriptors from the most recent GBD study in 2013 were not published until November 2015 (Salomon et al., 2015), after data collection was completed.

## TTO

For the second task, participants were presented with the same 6 vignettes. This task involved participants imagining they had 10 years left to live. For each vignette, participants were instructed to identify how much time, of this 10-year period, they would give up in order to avoid the harms as described in the vignette. Figure 7 below shows an example of the TTO task as completed by participants.

**SCENARIO 1**

Adjust the bar until you believe Option B is equivalent to Option A. You can use your mouse or keyboard arrows to adjust the slider, or enter the value in the textbox. You may choose to enter your answer in years, days, or months by using the dropdown menu.

Your spouse's gambling is affecting your quality of life. The gambling is making you feel distressed. In your relationships you're experiencing greater tension.

Now 2.5 5.0 7.5 10 years

Living the full 10 years affected by the issues described

Now 2.5 5.0 7.5 10 years

Living for a shorter period of time, **avoiding** the issues described

\*Value: 9.00

Years

*\*Living for this length of time free of the problems described in the scenario above, would have the same worth to me as 10 years of life affected by those issues.*

**Figure 7. Screenshot of the TTO task**

The TTO provided a useful counterpoint to the VAS. Whilst being significantly more cognitively demanding to complete, it is more directly linked to the underlying concept of utility as conceptualised in health economics. The visual feedback emphasises the duration of time lived in the two health states, and colours were selected to remind the participant that the time was spent either affected or unaffected by the symptoms described. The number box provides an alternative input method to the slider with finer control – assisting with accurate input for assessing milder symptomatology near the boundaries of the scale.



## Demographics & Lie-Bet Scale

The survey closed with demographic questions. The general population participants (but not the experts) were also asked two questions from the Lie-Bet Scale screening tool for problem gambling (Johnson et al., 1998) and a general question on their experience with gambling problems. These were gathered as potential control variables that could incidentally affect their judgements.

## Participants

Individuals from four different populations were invited to participate in the HRQL elicitation study. Our goal was to survey a broad-section of the community, with differing types of experience with gambling harms. We used information from the previous national survey of harms, and screening questions to target these groups. The first population consisted of 'experts' classified as having significant professional experience with people who had problems with gambling and with affected others. Recruitment of experts occurred with the assistance of problem gambling treatment services. Managers and team leaders of problem gambling intervention services were asked to forward the information sheet and invitation to the online survey to their staff members. Managers and team leaders from these services were also asked for contact details of allied service professionals who work with problem gamblers and any other health and social service professionals whom they believed to be able to participate in the study. Individuals from these allied services were sent an invitation seeking their participation. Additional participants were also recruited through the Gambling and Addiction Research Centre's local networks and professional affiliates. All invitees were followed up with a general reminder two weeks after the initial contact, to encourage participation.

The remaining three population groups: gamblers, affected others, and general community members, were sourced from the commercial recruitment panel used in the previous national survey phase. The criteria for inclusion for gamblers and affected others was outlined in 'Recruitment of Participants' in the previous chapter. For the general population, participants were those who indicated that they had not experienced harm due to their own or someone else's gambling. The sample sourced from the panel received panel points for participating.

A total of 324 participants completed the survey. Table 17 shows the participants by group type and vignette group completed (own gambling or affected other).

**Table 17. Participants by vignette group and sample type**

Participant Type	Vignette Group		Total
	Own Gambling	Affected Other	
Gamblers	45	66	111
Affected Others	12	20	32
General population	69	64	133
Expert	25	23	48
<b>Total</b>	<b>151</b>	<b>173</b>	<b>324</b>

This sampling method is considered to be robust in that it represents the views of those affected by gambling problems, the community, and experts in the field.



Haagsma and colleagues (2014) reviewed the methodological design choices of 22 HRQL studies eliciting disability weight studies conducted between 1990 and 2012, including the composition of the panel valuating the health states. Of the 16 studies which valued specific health states (excluding 6 studies using the generic MAUI model tool), more than 60% (n=10) consisted of panels of medical experts or health professionals (Basiri, Mousavi, Naghavi, Araghi, & Namini, 2008; Havelaar, de Wit, van Koningsveld, & van Kempen, 2000; Hong & Saver, 2009; Schwarzing, et al., 2003; Kruijshaar, Hoeymans, Spijker, Stouthard & Essink-Bot, 2005;; Lai, Habicht, and Kiivet, 2009; Murray and Lopez, 1996; Stouthard et al., 1997; van Spijker, van Straten, Kerkhof, Hoeymans, & Smit, 2011; Yoon et al., 2007) ranging from sampling sizes of 9 (Hong & Saver, 2009) to 49 (Kruijshaar et al., 2005). 3 studies derived valuations from panels of the general population (Haagsma, van Beeck, Polinder, Hoeymans, Mulder, & Bonsel, 2008; Salomon et al., 2010). Of these, the most recent and largest study was the Global Burden of Disease 2010 study with a global population of 30,320 valuating 291 health states, via mixed methods of face-to-face administration (n=13,902) and an online survey (n=16,328) (Salomon et al., 2013). Lastly, the review found that 3 studies were administered to multiple panels: 2 with medical experts/health professionals and the general population (Baltussen, et al., 2002; Jelsma, et al., 2000), and 1 study with health professionals, policymakers, and people with disabilities and their carers (Ustun et al., 1999).

What this review shows is that the majority of HRQL research has sampled small groups of medical experts or health professionals, selected due to their knowledge and experience with health conditions and their ability to complete the complex valuations tasks (Murray & Lopez, 1997). The other most commonly sampled group utilising other types of methodologies producing health state utilities (i.e. indirect elicitation methods such as generic instruments HUI, QEB, and EuroQol) not picked up in Haagsma and colleagues' review (2014) are populations experiencing the health condition (e.g., Haagsma et al., 2001; Holtslag et al., 2008; Hurst, Kind, Ruta, Hunter, & Stubbings, 1997; Mittal, Fortney, Pyne, Edlund, & Wetherell, 2006; Prigent, Auraaen, Kamendje-Tchokobou, Durand-Zaleski, & Chevreul, 2014; Saarni et al., 2006; Saarini et al., 2007; Trome et al., 2014; Ustun et al., 1999). Recent HRQL studies employing indirect elicitation methods, have also sampled the general population (Bansback et al., 2012; Bansback et al., 2014; Brazier et al., 2012; Lancsar et al., 2011; Pullenayegum & Xie, 2013; Ratcliffe et al., 2009; Robinson et al., 2015; Ryan et al., 2006; Stolk et al., 2010; Viney et al., 2014).

In the current survey, we sought to replicate a larger sample size, and elicit valuations from all types of groups sampled in HRQL research: experts (e.g. gambling counsellors), people experiencing gambling harms (own or from another), and the general community (who were not currently experiencing gambling harms).

In describing the characteristics of the raters, two overarching groups are of interest: the general population, which combines all sources from the online panel sample (individuals experiencing no harm, harm from one's own gambling, and harms from another's gambling) and the experts. Table 18 provides a demographic overview of these two participant groups. A higher percentage of the expert sample was female (75.6%) than the general population sample (48.9%). Furthermore, the expert sample had a more diverse cultural background (44.7% non-European) than the general population (22.8% non-European).

The general population were asked about their own gambling experiences and contact with others with gambling problems. Overall, 41.3% had contact in their personal lives with a person experiencing gambling problems, and 10.9% had in a professional capacity. Harm experienced from one's own gambling was present for 16.7% of the general population sample, and 11.6%

experienced harm from someone else's gambling. Measured by the Lie-Bet Scale, 40.6% of the general population sample had possible gambling problems at some time in their lives.

**Table 18. General population and expert sample demographic characteristics**

Demographic		General Population (%) (n = 276)	Experts (%) (n = 48)	Overall (%) (n = 324)
Gender	Male	51.1	24.4	47.1
	Female	48.9	75.6	52.9
Age	18-34 years	20.3	18.8	20.1
	35-54 years	43.8	47.9	44.4
	55+ years	35.9	33.3	35.5
	Mean (SD)	47.77 (SD = 15.22)	47.85 (SD = 12.90)	47.78 (SD = 14.84)
Cultural Background	European	77.2	56.3	74.0
	Māori	10.5	22.9	13.1
	Samoan	1.1	8.3	3.0
	Cook Islands Māori	0.7	0.0	8.2
	Tongan	0.7	2.1	0.6
	Niuean	0.4	0.0	2.5
	Chinese	4.3	6.3	4.3
	Indian	4.0	0.0	4.0
	Other	10.1	14.6	10.1
Contact with person experiencing gambling-related harms – personally	Yes	41.3	N/A*	N/A*
	No	58.7	N/A*	N/A*
Contact with person experiencing gambling-related harms – professionally	Yes	10.9	N/A*	N/A*
	No	89.1	N/A*	N/A*
Experienced gambling-related harms due to own gambling	Yes	16.7	N/A*	N/A*
	No	83.3	N/A*	N/A*
Experienced gambling-related harms due to the gambling of someone else	Yes	11.6	N/A*	N/A*
	No	88.4	N/A*	N/A*
Problematic Gambling (Lie-Bet Screen)	No problem	59.4	N/A*	N/A*
	Possible problem gambling	40.6	N/A*	N/A*

\* Gambling experiences of the expert sample were not collected.

Each of the 12 valuations representing TTO and VAS ratings for six random gambling-related harm vignettes from each participant were recorded and transformed to a similar HRQL [0,1] scale, with 1

representing most harmful and 0 being least harmful. As shown in Table 19, we elicited 3,888 HRQL evaluations from 324 participants – 1,812 evaluations of vignettes describing harms arising from one's own gambling and 2,076 evaluations of harm to affected persons arising from another's gambling. Two hundred and seventy-six participants from the general population provided 3,312 evaluations and 48 experts provided 576 evaluations. Since each condition description was generated from a PGSI-stratified random sample of respondents from the prior gambling harms national survey, the data sets could be merged. That is, each HRQL valuation could be matched to PGSI score and other measures corresponding to the condition description. Each of the condition descriptions describing harm from one's own gambling were evaluated an average of 4.95 (SD=2.69) times by different participants. Each of the condition descriptions describing harm from another's gambling were evaluated an average of 8.22 (SD=3.69) times by different participants.

**Table 19. Number of HRQL valuations generated by participant type and vignette group**

Participant Type	Participant N	Vignette Group HRQL Valuations		Total HRQL Valuations
		Own Gambling	Affected Other	
General Population	276	1,512	1,800	3,312
Expert	48	300	276	576
<b>Total</b>	<b>324</b>	<b>1,812</b>	<b>2,076</b>	<b>3,888</b>

## Analysis

The aim of analysis was to estimate the conditional mean of the elicited harm evaluations with respect to the PGSI, pooling information from both elicitation protocols. All analyses were conducted on the logit scale in order to stabilise the error variance of the [0,1] bounded response. We assumed that harm is an increasing function of gambling problems. Therefore, we applied isotonic (monotonely increasing nonparametric) least squares regression (Barlow, Bartholomew, Bremner, & Brunk, 1972; Robertson, Wright, & Dykstra, 1988). The estimated function of harm with respect to PGSI was then inverse-transformed to the original scale. Elicited values of zero or one yield infinite scores on the logit scale and, accordingly, these were excluded from the transformation, and their counts integrated into the final mean. For those cases in the gambling harms national survey data that nominated zero harms, condition description evaluation was not meaningful, and these were excluded from the condition description sampling procedure. It was assumed that these conditions corresponded to a zero HRQL and, accordingly, the corresponding proportion of zero-harm cases was used to scale each conditional HRQL estimate according to the prevalence of zero harm responders. Standard errors were calculated by bootstrapping the entire numerical process with 200 replications. The PGSI has a 'long tail' of progressively less common scores beyond 15. Our analyses confirmed that there was a negligible relationship between PGSI and harm beyond 15. Presented tables and figures are cropped at this point.

## Filtering low-quality evaluations

Health state valuation protocols are potentially a cognitively challenging task, requiring that participants have the capacity and the motivation to understand and follow the instructions. A potential disadvantage of internet-based elicitation is that the researcher is unable to personally check for attention and understanding. However, because we obtained multiple evaluations from

each participant, we could calculate a within-rater reliability score in the form of a correlation, for each rater, between their ratings and the PGSI. Based on the assumption that a true negative correlation between PGSI and valuations should be very unlikely, we excluded raters whose ratings failed to correlate positively with the PGSI. Additionally, we checked for non-attention as displayed by non-varying or constant ratings. Raters were excluded if the standard deviation (SD) of their ratings was less than 0.1. The mean correlation of ratings with the PGSI was 0.57, and the mean SD (of correlations) was 0.19. If raters failed either of these tests, for either protocol, their responses were excluded. These operations resulted in a reduced set of 1962 valuations for subsequent analysis.

### **Harms for those with a PGSI score of 0**

Of the 85 cases in the HRQL survey for harm from one's own gambling with a PGSI score of 0, 36 (42%) reported one or more harms. This may be compared to 93 out of 122 cases (76%) in the low-risk category who reported one or more harms. In other words, respondents with a score of zero on the PGSI may nevertheless be experiencing some degree of gambling harm. This is not a surprising result, given the brevity of the PGSI, and its emphasis on sensitivity for detecting the presence of severe – rather than marginal - gambling problems. Nevertheless, our methodology for assessing gambling harms in New Zealand depended on existent datasets that rely on the PGSI as a prevalence estimate for harms – which constrained the scope of our measure of harm. We judged that using the 36 out of 85 cases to make an inference of harm on the very large proportion of gamblers who respond zero on the PGSI in the New Zealand population would be anti-conservative. Thus, although these cases were included in the vignette creation process, and subsequently evaluated using the elicitation protocols, they were excluded from further analysis. This had the effect of making our measure of harm more conservative – in that we assume that PGSI zero individuals suffer zero harm. We shall return to this point in the discussion.

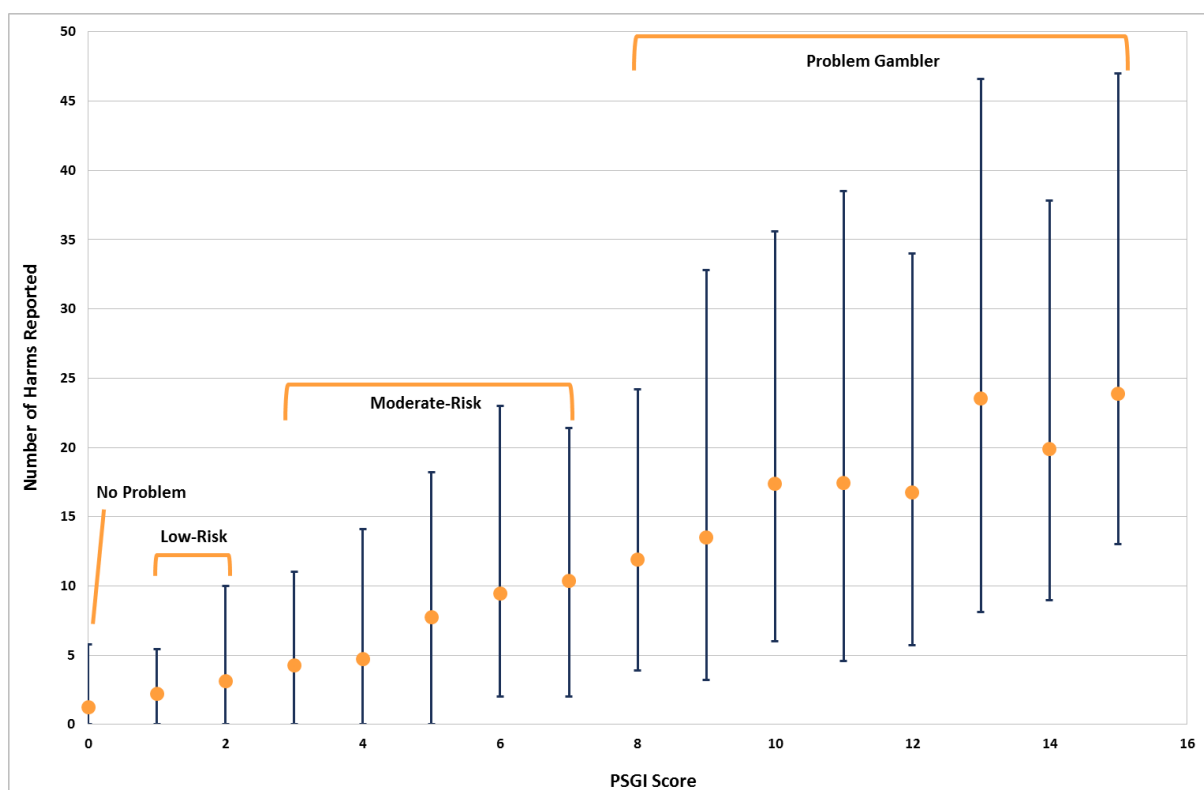
### **Cases with a PGSI score greater than 0 but no harms**

Six percent (52/866) of cases from the national survey selected as vignettes for the HRQL survey involved a non-zero PGSI score, but reported no harms from the checklist. Given there were no harms with which to create a vignette, it was not reasonable to elicit evaluations in this scenario. Therefore, these cases were removed from the vignette creation process. To avoid biasing the estimate, we assumed these cases had no quality of life impairment, and offset the final estimates accordingly.

### **Accounting for heterogeneity and uncertainty**

As has been already mentioned, random sampling of cases appeared twice in the analysis. First, random stratified sampling was used to select cases from the harm survey for subsequent vignette generation and utility elicitation. Second, each presentation of vignettes to participants was done via random sampling with replacement, with the constraint that each participant considered a unique set of 6 vignettes. The quality and number of harms reported varied considerably, not only with respect to PGSI score (dimensionality), but also within each level of the PGSI – which we refer to as heterogeneity in the experience of gambling-related harm. The variability comprises both 'true' variability in the relationship between problems and harms, and also error variance in that neither

the PGSI nor the harm symptomology are perfectly reliable measures. This wide variation is illustrated by Figure 8, which shows the .05 and .95 quantiles of the count of harms with respect to PGSI. One methodological approach would have been to select cases for vignette creation that were most typical for a given level of gambling problems. This would have reduced the heterogeneity of cases for evaluation of utilities, and resulted in more precise estimates. However, this would mean that the confidence intervals for the harm estimates would reflect primarily only inter-rater disagreement, and would ignore most variability contributed by sampling the population of possible harm experiences. Thus, it has the potential to introduce bias by ignoring possible population heterogeneity in the experience of harm, at a given level of gambling problems. Our approach incorporated both sources of variability via random sampling, thus increasing our confidence that the mean harm estimate is a true reflection of the average amount of harm experienced for a given level of gambling problems. Relatively precise final estimates were obtained, even given relatively high variation in both harm reports and in elicited judgements, through high sampling effort in both stages of data gathering.



**Figure 8. Number of harms reported by PGSI for harms from own gambling**

Note. Error bars represent 95% quantiles of the distribution.

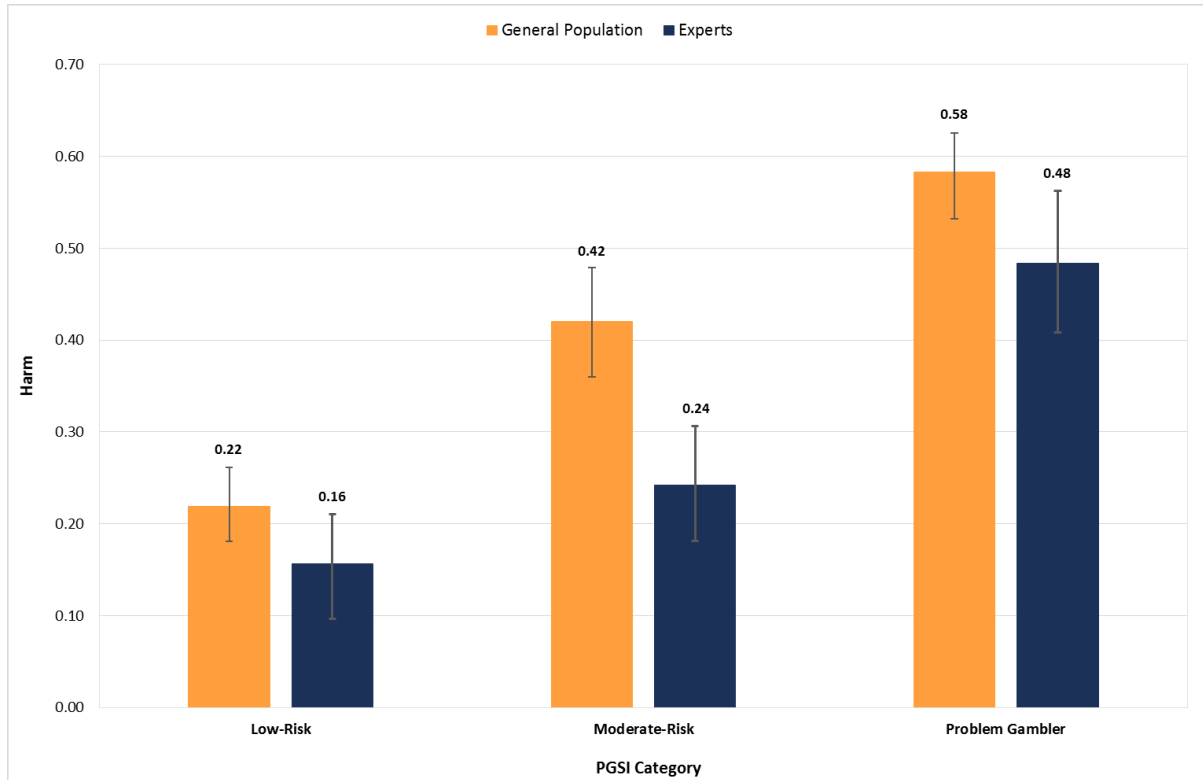
## Harm to others

Harm caused to others by an individual's gambling problems presents its own methodological issues, and was accordingly treated differently from harm caused by one's own gambling. The 2012 New Zealand National Gambling Study (NZ NGS; Abbott et al., 2014a) asked participants of a list of close relationships (e.g. spouse/partner, parent, sibling, child, workmate, other family member etc.), whether they think this person may have a problem with gambling and, if so, how their relationship with them was mainly affected by the other person's gambling (for each person mentioned). Weighted to the NZ population, overall 14.4% were negatively affected by someone else's gambling.

Unlike the gambling harms national survey conducted in this study, the NZ NGS did not obtain from the participant their perception of the severity of gambling problems (PGSI score) for the other person whose gambling was causing them harm. However, as such a PGSI score is derived from second-hand reporting, it cannot necessarily be compared directly to a PGSI score obtained via first-hand reporting. Therefore, whilst the prevalence of harm to oneself could be conditioned directly on population PGSI prevalence estimates, a similar strategy could not be followed for harm to others. Rather, we made the assumption that a person affected by another's gambling was affected by an individual randomly drawn from the New Zealand population of individuals with PGSI scores greater than zero. Accordingly, the harm they experienced was treated as a population weighted average of the PGSI-conditional harm estimates obtained in the present study. This was a somewhat conservative approach, since less prevalent, high PGSI individuals might be presumed to be more likely to affect others than more prevalent, low PGSI individuals. Finally, we note that the relationship between PGSI and harm to another is a more distal relationship than harm to oneself, as the quantum of harm experienced depends not only on the severity of problems, but also on the nature of the relationship between the two individuals. Our vignettes included a random sample of several forms of relationship (e.g. spouse, sibling). However, determining the moderating effect of relationship between a gambler's PGSI and degree of harm experienced by the affected other was not attempted, since relationship type is not known from the prevalence data. Therefore, we assumed that the relationships nominated by respondents to the harms survey were a fair sample of those in the population.

## Results

Figure 9 compares elicited gambling-related harm valuations (0-1 utility) from the expert and general population samples, across the three PGSI categories. It can be seen that the pattern of gambling-related harm valuations is similar for the two groups, although experts tended to consistently provide lower estimates than the general population. Whilst experts tended to be more consistent in their evaluations, the much larger sample size in the general population resulted in more narrow confidence intervals for their evaluations. The confidence intervals of the mean utility estimates overlap for the low-risk and problem gambler categories, making it difficult to conclude that there is a definite difference in the perceptions of these two populations of raters. However, a significant difference was observed in the ratings made with respect to moderate-risk vignettes. There are no clear principles regarding whether, or to what degree, an expert judgement should be weighted more heavily than that of a non-expert – especially considering many general public respondents had some personal experience with gambling harms. Therefore, we proceeded by weighting responses in the two groups equally to create final pooled estimates. However, we have also provided separate numerical data on the PGSI category gambling-related harm utility estimates, weighted with respect to the New Zealand population (Table 20).



**Figure 9. Gambling-related harm (utility) by sample type and PGSI category**

Note. Error bars indicate 95% confidence intervals of the mean.

For each PGSI category, the conditional harm means were weighted with respect to New Zealand prevalence data, and averaged. This accounted for the greater prevalence of lower scores than higher scores within categories, and permitted an interpretation of the category mean as the expected value for a randomly selected individual falling into that category. These data are provided in Table 20 for both experts and general population elicited gambling harm, and for the pooled estimate.

**Table 20. Gambling-related harm (utility) by sample type and PGSI category**

PGSI Category	General Population			Experts			Overall Harm
	Harm	Lower CI	Upper CI	Harm	Lower CI	Upper CI	
Low Risk	0.22	0.18	0.26	0.16	0.10	0.21	<b>0.18</b>
Moderate Risk	0.42	0.36	0.48	0.24	0.18	0.31	<b>0.37</b>
Problem Gambler	0.58	0.53	0.63	0.48	0.41	0.56	<b>0.54</b>

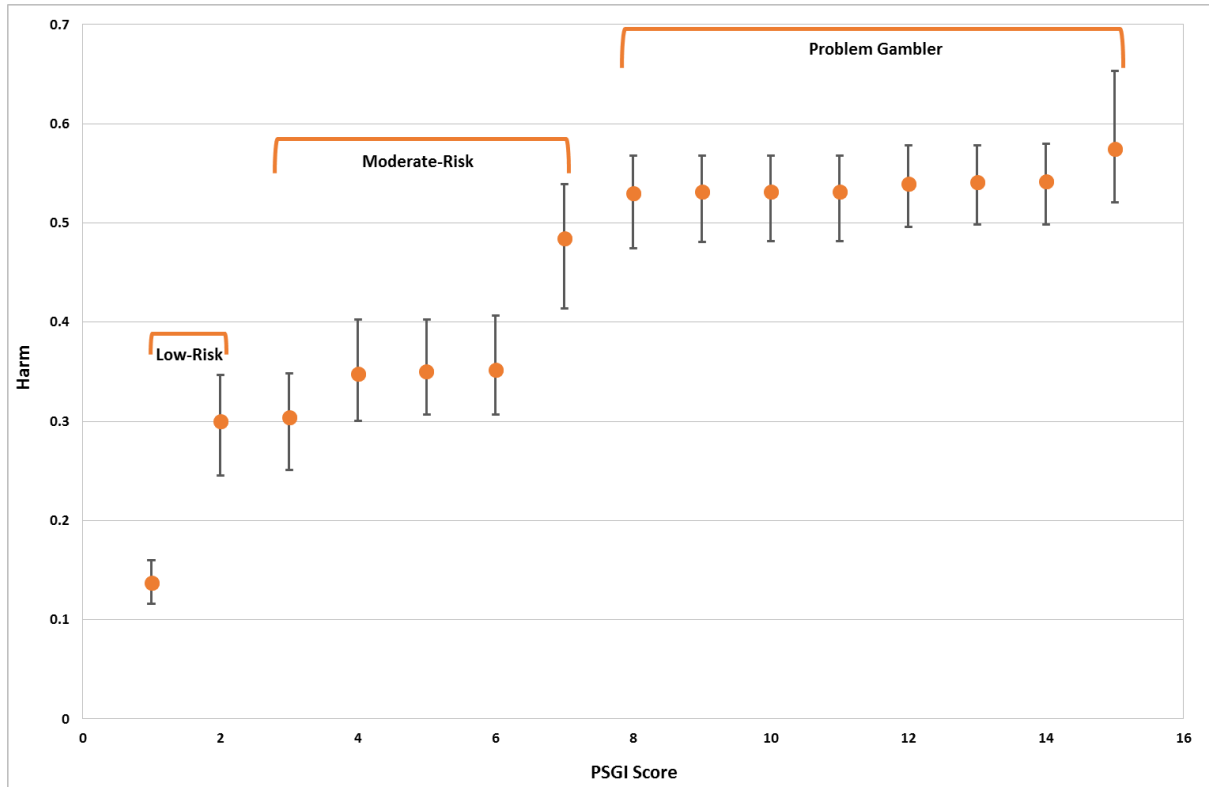
As well as considering differences in utility valuations of gambling-related harm between expert and general public respondents, we also examined other respondent characteristics (Table 21). No significant differences in gambling-related harm valuations were found for age, gender, gambling experiences (only collected from general population), or ethnicity.

**Table 21. Influence of respondent characteristics on elicited gambling-related harm valuations**

Predictors	<i>B</i>	<i>SE β</i>	<i>t</i>	<i>p</i>
Intercept	-1.348	1.182	-1.141	0.254
Age	0.001	0.001	1.474	0.141
Gender (Female)	-0.018	0.017	-1.065	0.287
Had gambling experiences	0.027	0.020	1.391	0.165
Experience at work with gambling problems	-0.015	0.036	-0.427	0.669
Experienced harm from other's gambling	0.029	0.042	0.695	0.487
Experienced harm from own gambling	0.017	0.026	0.631	0.528
Lie-bet (Gambling problems)	-0.006	0.017	-0.337	0.736
Māori	0.022	0.027	0.797	0.425
Pacific	0.031	0.067	0.466	0.641
Asian	0.038	0.038	1.020	0.308
European/Other ethnicity	0.038	0.027	1.409	0.159

Figure 10 shows the estimated marginal means for the gambling-related harm (0-1 utility) with respect to the PGSI. These data are also provided numerically in Table 22. Utilities generated from data associated with low-risk gamblers had an average gambling-related harm utility of 0.18. The harm rose quickly across the moderate-risk category, and stabilised at around 0.54 for the problem category. As Figure 10 illustrates, there were sharp jumps in harm between PGSI scores of 1 and 2, as well as scores of 6 and 7 – which correspond closely (though not exactly) to the boundaries between the PGSI categories. A PGSI score of 7 was characterised by wider confidence intervals than other values, suggesting that this score lies at a point of inflection in the accelerating experience of gambling-related harm as PGSI increases. For other PGSI scores of 1, 2-6, and 8-14, the degree of harm experienced was relatively flat, with conditional mean estimates lying within common standard error bounds.





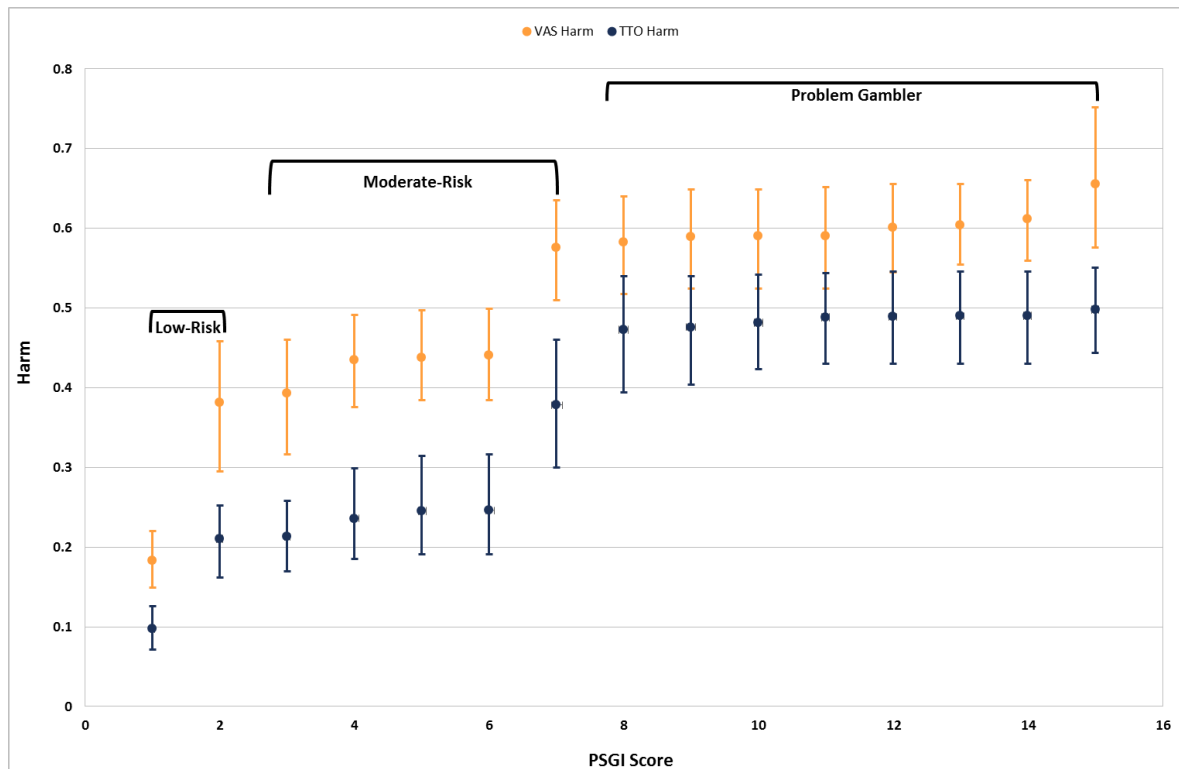
**Figure 10. Gambling-related harm (utility) from one's own gambling by PGSI**

Note. Error bars indicate 95% confidence intervals of the mean.

**Table 22. Gambling-related harm (utility) by PGSI score**

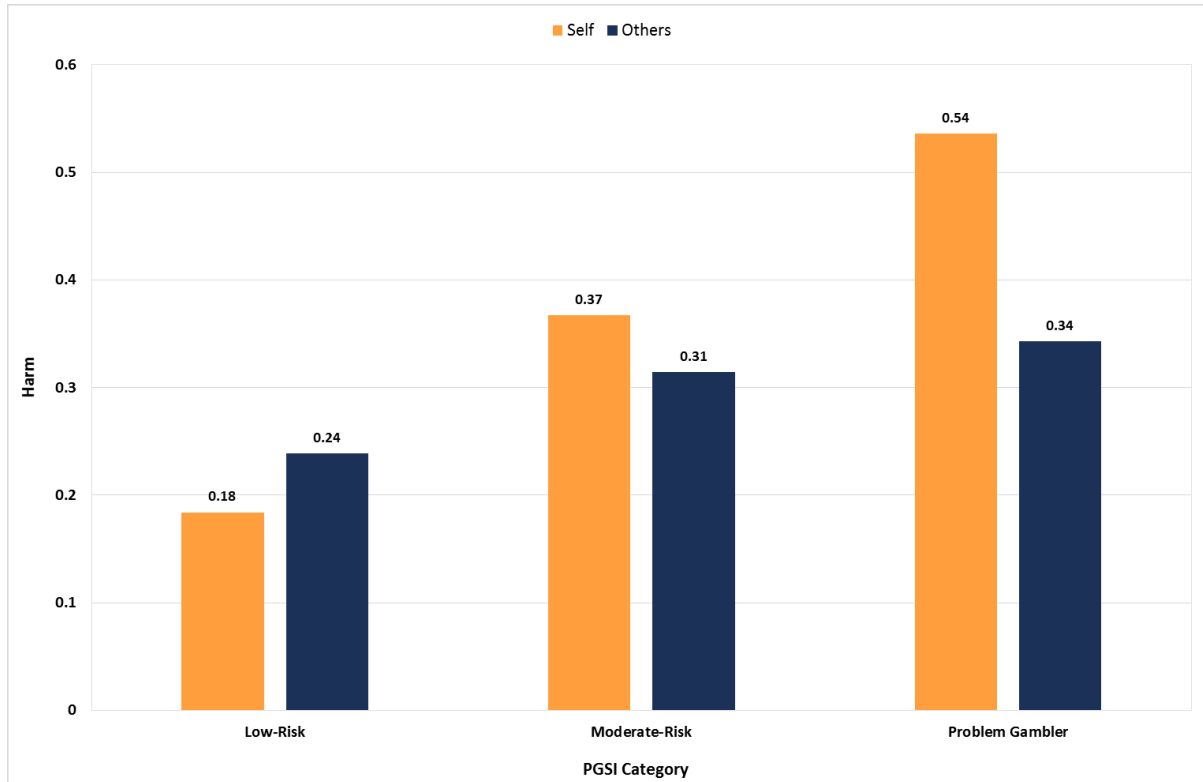
PGSI Score	PGSI Category	Harm	Lower CI	Upper CI
1	Low-Risk	0.14	0.12	0.16
2		0.30	0.25	0.35
3	Moderate-Risk	0.30	0.25	0.35
4		0.35	0.30	0.40
5		0.35	0.31	0.40
6		0.35	0.31	0.41
7	Problem Gambler	0.48	0.41	0.54
8		0.53	0.47	0.57
9		0.53	0.48	0.57
10		0.53	0.48	0.57
11		0.53	0.48	0.57
12		0.54	0.50	0.58
13		0.54	0.50	0.58
14		0.54	0.50	0.58
15+		0.57	0.52	0.65

We re-ran the isotonic regression of the elicited gambling-related harm utilities on PGSI score separately for the VAS and TTO rating protocols in order to provide some indication of method variance. Figure 11 compares the bootstrapped regression functions for these two protocols. As the figure illustrates, TTO elicited gambling-related harm utility was lower than the VAS. However, the shape of the regression function was similar across protocols. Gambling-related harm utility estimates via both protocols tended to display a distinct jump near, but not exactly between, PGSI categories.



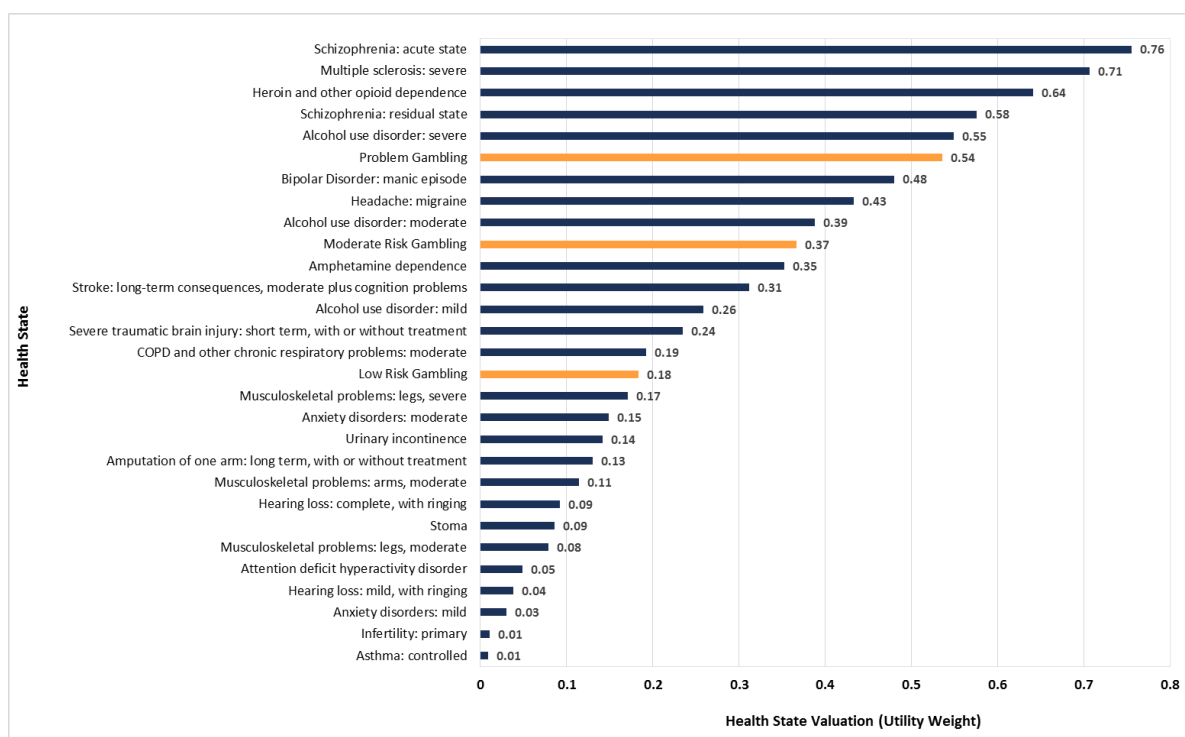
**Figure 11. Gambling-related harm (utility) by PGSI and valuation method**

Figure 12 compares the harm to others with respect to harms from one's own gambling for each PGSI category. For example, a typical problem gambler is estimated to experience a 0.54 utility decrement personally, and furthermore can cause a 0.34 utility decrement to their affected others. However, it is important to bear in mind a limitation of the methodology; that the PGSI category of the gambler was determined by the perceptions of the affected other. Our investigations of group invariance of first-hand versus second-hand reported PGSI scores confirmed that first-hand reporters tended to provide lower PGSI sum estimates. This is understandable, given that self-reporters would in most cases be less likely to admit to problems. This difference has the potential to bias the resulting gambling-related harm utility estimates, which are based on PGSI category scores. However, as the gambling-related harm utility decrement varies only between 0.31 and 0.34 for harm to others between moderate-risk and problem gamblers, this discrepancy would have only a minor impact on the aggregate harm estimates. These observations notwithstanding, it is reasonable to conclude that proportionally more harm to quality of life is caused to others in the low-risk category than the moderate-risk and problem gambling categories. This accords with our theoretical perspective that individuals with low levels of gambling problems can 'pass on' a number of harms to those around them, but that gamblers with advanced problems tend to exhaust their avenues for support from their social network. To put this point another way, there appears to be a limit to which the friends and family will 'absorb' harms caused by a problem gambler.



**Figure 12. Gambling-related harm (utility) to self and others by PGSI category**

Figure 13 compares the estimated utilities for gambling-related harm by PGSI category with other conditions from the 2010 Global Burden of Disease Study (GBD; Salomon et al., 2013). This set of health state utilities are particularly comparable to those of the present study since: (a) they used similar direct elicitation protocols, and (b) conditions from the GBD study were incorporated as reference points in the VAS. As illustrated, problem gambling is considered more severe than moderate alcohol use disorder or migraine headache, as harmful as severe alcohol use disorder, but less harmful than schizophrenia or heroin/opioid dependence. Moderate-risk gamblers suffer harm slightly higher than amphetamine dependence, but slightly less than mild alcohol use disorder. Lastly, low-risk gambling yields similar utility decrements to that of moderate chronic obstructive pulmonary disease (COPD)/other respiratory problems or anxiety disorders.



**Figure 13. Gambling-related harm utilities compared to other health state utilities from GBD 2010**

## Discussion

### HRQL Utility Estimates for Gambling-Related Harm

This chapter described the first attempt to measure the impact of gambling-related harms on an individual's quality of life, drawing upon ideas and methodologies from public health research. Treating gambling as a health condition presented certain challenges, most notably related to: (a) the dimensional nature of the condition, with varying degrees of harm occurring across the spectrum of gambling problem severity, and (b) the complex and diverse scope of potential harms, and heterogeneity of their occurrence in the population. The study was designed with these issues in mind, relying heavily on a large sample approach with respect to both harm condition descriptions, and number of independent utility elicitations made. The confidence intervals we report incorporate two sources of 'error' or sampling variability. First, because we used a large sample of vignettes, we achieved a fair representation of the true variation in the experience of gambling-related harm in the population. Second, we used a large sample of elicitations, which captured variability in terms of how individuals judge the severity of the conditions. This allowed us to calculate meaningful error bounds for our mean utility estimates – something that, to our knowledge, has not been previously done in the population health literature. Nevertheless, our results are limited by the available data, most particularly with respect to the prevalence data, which were gathered with the aim of assessing the prevalence of gambling problems, not gambling harm. Additionally, despite the reasonably large sample, the high level of variability in harm symptomology with respect to the PGSI created some difficulty in calculating a precise estimate of the utilities with respect to the PGSI. Furthermore, systematic differences were observed between experts and general population raters, and between elicitation methods (VAS versus TTO). These are known issues in the population health metric literature, with no straightforward remedy, and will be discussed in more detail below.

## Expert versus general population utility elicitation

We found that expert and general population judgements were broadly consistent, except for the fact that experts tended to provide lower gambling-related harm utility estimates than the general population. Interestingly, this difference was the opposite direction from that generally found in health utility valuation experiments in which experts tend to rate conditions as more severe than the public (Baltussen, Sanon, Sommerfeld, & Wurthwein, 2002; Barbist, Renn, Noisternig, Rumpold & Hofer, 2008; Haagsma, Polinder, Cassini, Colzani, & Havelaar, 2014; Jelsma, Chivaura, Mhundwa, De Weerd, & de Cock, 1999; Ustun et al., 1999). Our interpretation of this result is that it could be due to the greater stigma towards gambling than other health conditions; a bias that would be more apparent in the general population than in experts.

It is unclear whether general population or expert judgements should be considered the most valid. On one hand, experts should be more familiar with gambling problems and should be able to imagine a more realistic life-situation given a verbal description. Additionally, experts tend to be more reliable in their estimates, which would likely reflect a better comprehension of the instructions, and better attention to the task. However, definitions of HRQLs involve a social consensus judgement regarding the desirability or undesirability of a condition. From this point of view, it is the perception of the public that 'counts' in valuing health states. A further advantage of general public sampling is that much larger samples can be obtained, especially when using internet-based elicitation protocols. This can more than compensate for lower reliability in responding, especially when intra-respondent reliability estimates are used to reject poor responses. That is, whilst there is lower reliability of any single participant in the general public, the large number of respondents that can be efficiently recruited balances this. Therefore, we conclude that large-sample general public recruitment for this form of task has attractive properties, both in terms of validity – being more easily interpreted as a 'social consensus', and on statistical grounds. Nevertheless, the additional use of expert evaluations provides a useful point of comparison, especially given the circumstantial evidence that general population ratings are affected by stigma. The calculations done in this report have weighted expert and general public responses equally. However, a valid alternative would have been to take the mid-point of the two group's ratings. This would have led to lower gambling-related harm utility estimates for the moderate and problem categories, and a slightly higher estimate for the low-risk category, for example, the estimate for low-risk category would have been 0.19 instead of 0.18 due to the general population rating this condition as 0.22.

## Harm with respect to gambling problems

Our dimensional approach to understanding gambling harm, and reliance on the PGSI as our population-representative measure of prevalence, led us to estimate the relationship of the PGSI to a utility decrement. The gambling-related harm valuations tended to exhibit a systematic relationship to the PGSI, with inflection points similar, but not identical to, established PGSI harm categories. The raw elicited harm valuations showed a reasonable and expected curve with respect to the PGSI – rising sharply through the moderate-risk category, and then saturating shortly after the problem gambling threshold. This effect was similar for both elicitation methods. However, the VAS appeared to yield higher ratings across all levels of the PGSI. Method variance, or different mean estimates obtained by using different protocols, is a well-recognised concern in utility elicitation studies (Haagsma et al., 2014; Schwarzing, Southard, Burstrom, & Nord, 2003; Haagsma, Havelaar, Janssen, & Bonsel, 2008; Nord, 1991; Murray et al., 2013). At present, the favoured approach appears to be through the use of multi-method protocols. Therefore, further work on gambling harms could contribute by implementing and comparing a wider variety of protocols, such as Discrete

Choice Experiments (DCE). One way to introduce further diversity in protocol would be to apply the VAS without any comparison conditions. The comparison conditions could then be incorporated into a separate rank-ordering task.

## **Harm to self and others**

For a given level of gambling problems, harm caused to oneself and others were relatively consistent. However, a relatively higher proportion of harms from a low-risk gambler appeared to be 'passed on' to those surrounding them, than from a problem gambler. This is understandable, given that there is generally a limit to the degree to which the more intense harms can be 'transmitted' from one person to another. At lower levels of problems, affected individuals may engage and support the gambler more fully, but beyond a certain point, affected others either cannot or will not make the problems of the gambler their own. As noted earlier, we interpret these effects with caution, because a limitation of the methodology was that the PGSI status of the gambler for harm to others was evaluated second-hand by the affected person. Whilst the PGSI items were found to be functioning relatively consistently via first-hand and second-hand reporting, first-hand reporters tended to provide lower scores. Thus, some of the apparent differences in harm response to gambling problems is due to subtle shifts in category boundaries of the PGSI.

## **Gambling harm compared to other conditions**

We compared our HRQL gambling-related harm utility for the three categories of gamblers (low-risk, moderate-risk, and problem) with comparable conditions mostly from the New Zealand Burden of Diseases, Injuries and Risk Factors Study, 2006-2016 (NZBD) (Ministry of Health, 2013). It is worthwhile noting that the NZBD study sourced their utilities from the Global Burden of Disease Study 2010 (Salomon et al., 2013), and slightly modified them based on advice from an expert group. Given the significant psychological and relationship distress that accompanies problem gambling, the placement of the most severe category near other conditions, such as alcohol use disorder or bipolar disorder, appears plausible. These figures confirm that the experience of gambling problems results in a severe impact on a gambler's quality of life. The effect of being a low-risk gambler is arguably more questionable. It is worth keeping in mind that relatively less data was available at the lower end of the severity spectrum to condition our estimates, and also that experts and the general public displayed more discrepancies in evaluating the condition descriptions in this category. More information is needed on the experience of gambling-related harms at the lower end of the severity spectrum to improve our understanding of the degree of harm experienced by these individuals, who represent a far larger proportion of the New Zealand population.

# Assessing population level harm from gambling in New Zealand

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The previous chapter has presented findings on the impact of gambling at the individual level. The final stage of this study focuses on the impact of gambling-related harm at the population level. The goal is to quantify the ongoing harm per year in terms of QALY<sub>1</sub> (the aggregate years of healthy life lost each year due to gambling) in the New Zealand adult population. Our aim was to look at QALY<sub>1</sub> comparisons between: PGSI categories, harms to self and others, gambling and other comparable health states, and demographic differences. In comparing gambling to other health states, it is important to bear in mind that our approach does not incorporate subsequent conditions potentially caused by a health state. For example, alcoholism not only results in ongoing harm due to being in the state itself (comparable via our QALY<sub>1</sub> approach), but also results in an increased likelihood of other health conditions, such as cardio-vascular disease – often at some undefined point in the future. Therefore, we have attempted to select comparable conditions in which the primary decrement to health in wellbeing is due to the experience of being in the state itself (e.g. depression). An exception is made for alcohol use (which involves both on-going and cumulative harm), as it is a major public health concern in New Zealand that is often compared with gambling. Our approach should not be taken to imply that conditions such as depression or gambling cannot also lead to subsequent morbid conditions or premature mortality. However, the QALY<sub>1</sub> prevalence-based approach cannot incorporate these aspects of the possible ‘cost’ of acquiring a condition. This distinction should be borne in mind in all comparisons reported below. The approach to defining and assessing conditions was largely based on methods developed for the GBD Study (Murray & Lopez, 1996) and subsequently utilised in the Health Lost in New Zealand report on burden of diseases (Ministry of Health, 2013). The main departure being the exclusion of incorporating population attributable risk factors (PAFs), duration, age, and gender into the calculation of population level gambling-related harm, due to a lack of reliable longitudinal gambling studies to provide the relevant data. The 2010 GBD study also decided to simplify the calculation of YLDs using the prevalence of each health condition (sequela) x disability weight, rather than incorporating incidence, as had been previously; and implemented no discounting for age. However, they did adjust for comorbidity in the YLD calculation. The present study follows this approach closely, but makes not adjustment for comorbidities due to the difficulty of implementing such an adjustment for gambling-related harm. This entails that the raw QALY<sub>1</sub> estimates will be somewhat inflated, and therefore raw GBD YLD and the present QALY<sub>1</sub> figures should not be directly compared.

## Method

### Calculating QALY<sub>1</sub> – Annual years of healthy life lost

The QALY<sub>1</sub>, or annual years of healthy life lost for harm due to gambling and other comparable health states were calculated using the formula:

$$\text{*QALY}_1 = (\text{New Zealand Adult Population} \times \text{Annual Prevalence (\%)} \text{ for Health State}) \times \text{Utility Weight}$$

\*As this is only for a single year it is referred to as QALY<sub>1</sub>. The New Zealand adult population used in analysis was estimated from the 2013 New Zealand census as 3,571,947.

Meaningful estimates of population level years of life lost depend on a clear definition of the health state. In HRQL studies, utility weights for health states are often calculated at different levels of severity (e.g. mild, moderate, severe), whether the condition had been treated or not, or stage of condition (e.g. residual or acute). In calculating years of life lost, it is necessary to ensure the utility weight and the population prevalence data match in definition. Errors in this matching can result in a substantial error in the estimate. An extensive search was conducted to source matching prevalence figures for the health states of interest to compare against gambling-related harms. This exercise proved challenging, due to the fact that many population health studies are not designed to collect data on various levels or stages of health states; they are normally reported as present or absent for the condition. In some cases, matching condition definitions for prevalence and utility weights could not be identified. As a result, some health states of interest (such as cardiovascular diseases) were excluded from the analysis due to the inability to source matching prevalence figures. In other cases, reasonable approximations were assumed, and this is noted where appropriate.

## Data sources

### New Zealand 2012 National Gambling Study

The source for estimates of the New Zealand adult population data was the 2012 New Zealand National Gambling Study (Abbott et al., 2014a). This survey was conducted by the Gambling and Addictions Research Centre at Auckland University of Technology (AUT) with a representative sample of 6,251 adults aged 18 years and older. This dataset was provided to the researchers by the AUT statistician responsible for that data and the gambling harm utility variables were then appended to the database by PGSI category: low-risk (0.18), moderate-risk (0.37), and problem gambler (0.54). Analysis of the New Zealand population level harm due to gambling was conducted from this dataset, weighted to be representative of the adult population. Non-gamblers and non-problem gamblers were excluded from analysis, as they did not have a gambling harm utility score.

The utility weights for gambling-related harms by PGSI category were multiplied by PGSI prevalence estimates to yield QALY<sub>1</sub> estimates. Weighted data to the New Zealand adult population was used to generate the following figures in our analysis:

- New Zealand adult population as per 2013 census – 3,571,947.
- Population and prevalence by PGSI category – See Table 23.
- QALY<sub>1</sub> by demographics and PGSI category.
- QALY<sub>1</sub> for others harmed by gamblers.

## Utility weights

As discussed previously, utility weights for gambling-related harm to self and others, by PGSI, were derived from the current study. Utility weights (also known as disability weights) for other comparable health states were sourced from the New Zealand Burden of Diseases, Injuries and Risk Factors Study, 2006-2016 (Ministry of Health, 2013). The exception was 'hazardous drinking' of alcohol in



which the 'Dutch weight' for problem drinking was used (Stouthard, Essink-Bot, Bonsel, Barendregt, & Kramers, 1997) due to the data not being available for New Zealand.

### **Prevalence of other health states in the New Zealand population**

Wherever possible, the percentage annual prevalence of other health states were sourced for New Zealand from population studies. When those figures were not available, they were sourced from countries of a similar social-economic status with the assumption that prevalence figures would be comparable to New Zealand. The sources of prevalence estimates used in calculations included:

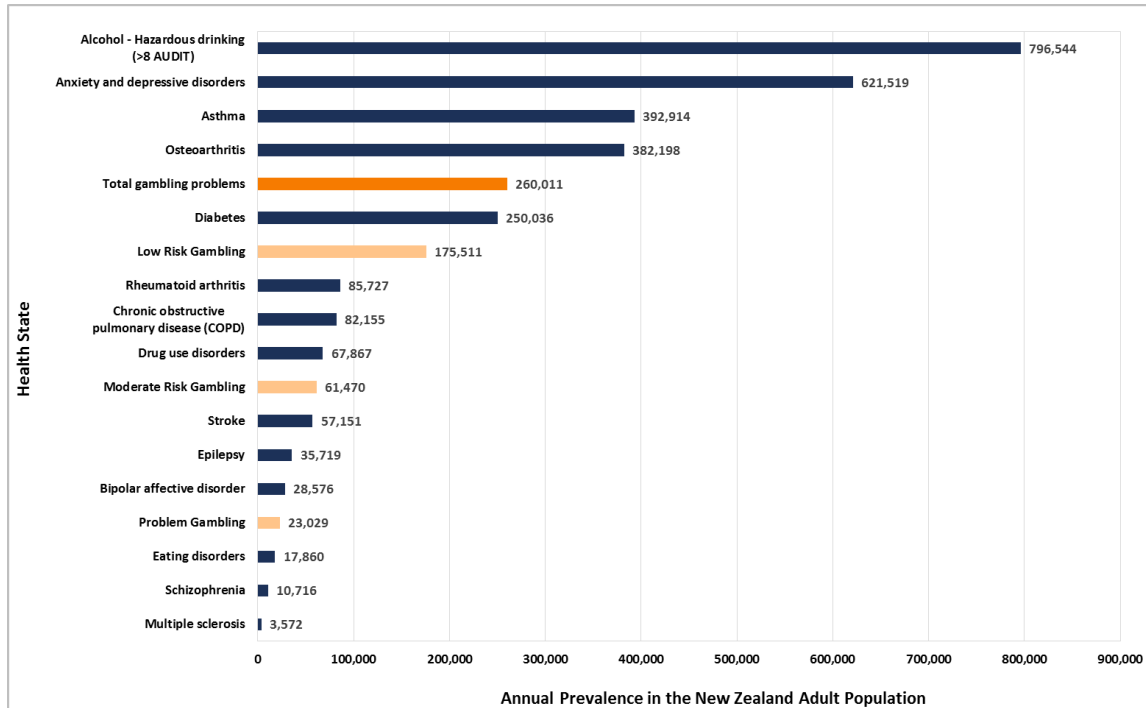
- Annual update of key results 2014/15: New Zealand Health Survey (Ministry of Health, 2015).
- Prevalence, interference with life and severity of 12 month DSM-IV disorders in Te Rau Hinengaro: The New Zealand Mental Health Survey (Wells et al., 2006).
- Epilepsy across the spectrum: Promoting health and understanding (England, 2012).
- Multiple sclerosis in New Zealand (Alla & Mason, 2014).
- Prevalence of diagnosed and undiagnosed diabetes and prediabetes in New Zealand: findings from the 2008/09 adult nutrition survey (Coppell et al., 2013).
- The impact of respiratory disease in New Zealand: 2014 update (Barnard et al., 2015).
- Mental health in New Zealand from a public health perspective (Ellis & Collings, 1997).

To calculate the QALY<sub>1</sub> for other health conditions the same formula was used as for gambling harm: New Zealand Adult Population (3,571,947) x Prevalence (%) for Health State x Utility Weight. See Appendix 11 for the figures used in calculation of QALY<sub>1</sub> for gambling harms and the other health conditions.

## **Results**

### **Prevalence of gambling problems in New Zealand**

Figure 14 compares the prevalence of gambling to other health-related conditions in New Zealand. Low-risk gambling problems are more prevalent than rheumatoid arthritis, COPD and drug use disorders, but considerably less prevalent than hazardous drinking of alcohol (>8 AUDIT score) and anxiety and depressive disorders. Moderate-risk gambling problems are similar in prevalence to drug use disorders, slightly higher than stroke, and twice as prevalent as bipolar affective disorder. Combining all levels of gambling problems, prevalence is slightly higher than diabetes.



**Figure 14. Annual prevalence of gambling problems (by PGSI category) and other health states in the New Zealand adult population**

## Harm to self

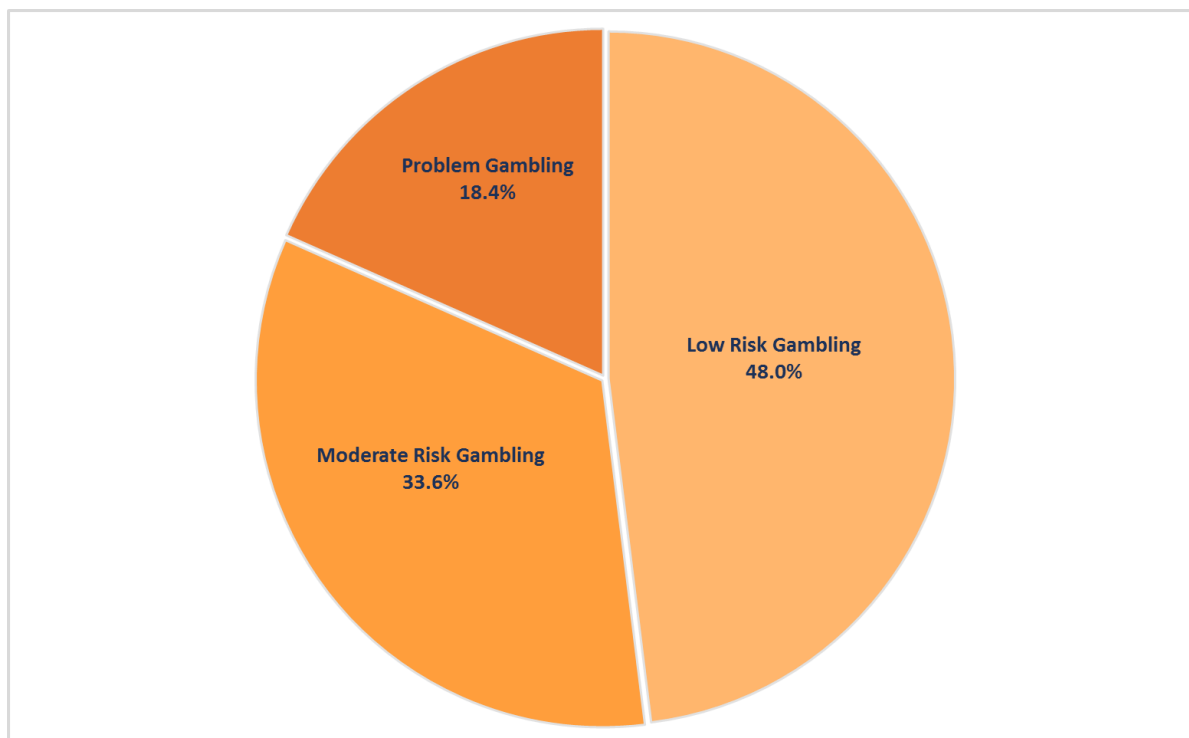
The aggregate years of healthy life lost each year (QALY<sub>1</sub>) in the New Zealand adult population due to one's own gambling, for those experiencing gambling problems or at low- or moderate risk, were calculated to be 67,199 years. Table 23 displays the total gambling-related harm and QALY<sub>1</sub> in the New Zealand adult population by PGSI category.

**Table 23. Gambling-related harm by PGSI category**

Problem Gambling Severity Index (PGSI)	Harm	Prevalence in NZ Population (%)	Total of NZ Population	Years of Healthy Life Lost (QALY <sub>1</sub> )	Proportion of QALY <sub>1</sub> (%)
Low Risk	0.18	4.91	175,511	32,280	48.04
Moderate Risk	0.37	1.72	61,470	22,577	33.60
Problem Gambling	0.54	0.64	23,029	12,341	18.37
<b>Total Gambling Problems</b>		<b>7.28</b>	<b>260,011</b>	<b>67,199</b>	<b>100</b>

Weighted population base: Total New Zealand (n= 3,571,947).

As shown in Figure 15, almost half of the total QALY<sub>1</sub> due to one's own gambling harms are attributable to the New Zealand adult population who are at low-risk for developing gambling problems (48.0%), followed by those at moderate-risk (33.6%) and problem gamblers (18.4%).



**Figure 15. Proportion of harm in New Zealand population by PGSI risk category**

## Harm to others

The QALY<sub>1</sub> measure of harm caused by another's gambling in the New Zealand adult population is estimated at 94,730 years. As described in the analysis section above, the figure assumes (conservatively) that the person causing the harm had a PGSI score randomly selected from the population-representative sample of non-zero PGSI scores. Thus, the HRQL utility weight estimated from our sample with respect to PGSI was weighted similarly, giving a utility decrement of 0.195. The 2012 New Zealand National Gambling Study (Abbott et al., 2014a) asked respondents who know someone who may have gambling problems whether they have been harmed by that person's gambling. Weighted to the NZ population, a total of 14.4% was negatively affected by someone else's gambling.

This 14.4% prevalence of harm to others was applied to the analysis of years of healthy life lost due to others gambling, factoring in problematic gambling severity status of the individual impacted by the others' gambling. For individuals who have a greater risk of gambling problems (therefore greater harm from one's own gambling) there may be a co-morbidity of experiencing harm from their own gambling and harm from another's gambling. For co-morbid individuals, it therefore not possible to assume that these two sources of harms are additive. Given that we do not have information to accommodate this increased co-occurrence, a slight positive bias is likely to be introduced in treating harm to self and others as independent components of population level harm.

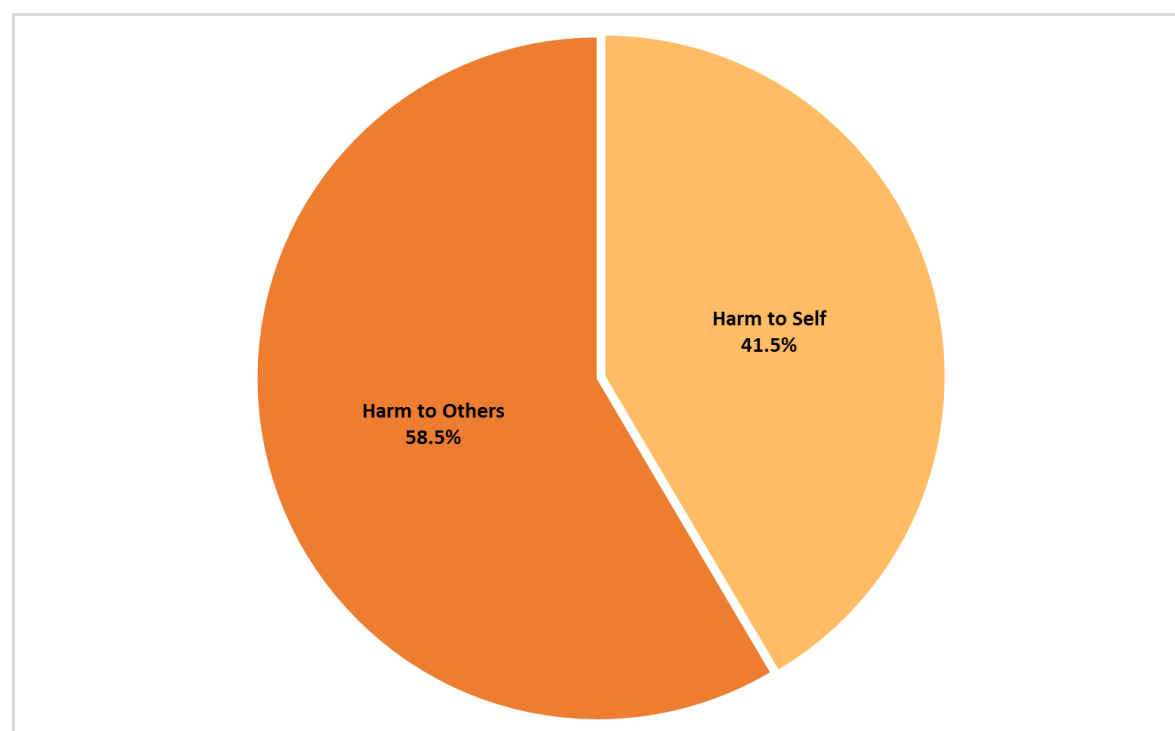
As shown in Table 24, the majority of harm to others occur to persons who fall in the non problem gambling category. In assessing the QALY<sub>1</sub> due to harm from others, one should take into account whether or not the person being harmed is also experiencing harm from their own gambling. If harm from one's own gambling is moderate or severe, then it would be anti-conservative to assume that the two HRQL components are additive. Therefore, as detailed in Table 24, these two contributions are excluded from the QALY<sub>1</sub> total.

**Table 24. Gambling-related Harms from someone else's gambling and PGSI category to the New Zealand adult population in the last 12 months**

PGSI Category	Harm	Prevalence (%) in NZ Adult Population Harmed	Total NZ Adult Population Harmed	Years of Healthy Life Lost (QALY <sub>1</sub> )
Non gamblers	0.195	1.9%	67,867	13,234
Non problem gamblers	0.195	10.6%	378,626	73,833
Low risk gamblers	0.195	1.1%	39,291	7,662
Moderate risk gamblers	0.195	0.5%	17,860	3,483
Problem gamblers	0.195	0.3%	10,716	2,090
<b>Total</b>	<b>0.195</b>	<b>14.4%</b>	<b>514,360</b>	<b>100,302</b>
<b>Adjusted Total*</b>	<b>0.195</b>	<b>13.6%</b>	<b>485,785</b>	<b>94,730</b>

\* Total QALY<sub>1</sub> excludes QALY<sub>1</sub> attributable to moderate-risk and problem gamblers. Prevalence figures sourced from the 2012 New Zealand National Gambling Study (Abbott et al., 2014a). Weighted population base: Total New Zealand (n= 3,571,947).

The combined total of QALY<sub>1</sub> to the New Zealand adult population due to harms from someone else's gambling and one's own gambling is 161,928 years. Figure 16 below displays the proportion of the total harm to self and others, with the nearly 60% of QALY<sub>1</sub> being attributable to harm from someone else's gambling.



**Figure 16. Proportion of total gambling-related harm to New Zealand adult population - harm to self and others**

## Assessing relative impact of the domains of harm

In the item-response theoretic analyses of the national gambling-related harms survey data reported in the previous chapter, we found that the extracted latent scores correlated very highly (>90% shared variance) with simple counts of harm indicators across each of the domains of harm. Therefore, for a given vignette, we considered counts of indicators within each domain to be an acceptable measure for the degree of harm in that domain. Although gambling-related harm-counts were reasonably highly correlated across domains, a simultaneous regression model has the potential to reveal the unique contributions of the different domains of harm. Consistent with our other analyses, the response variable was a logit-transformation of the HRQL utility valuations. The regression model was significant ( $F(941) = 32.81$ ,  $p < .001$ ).

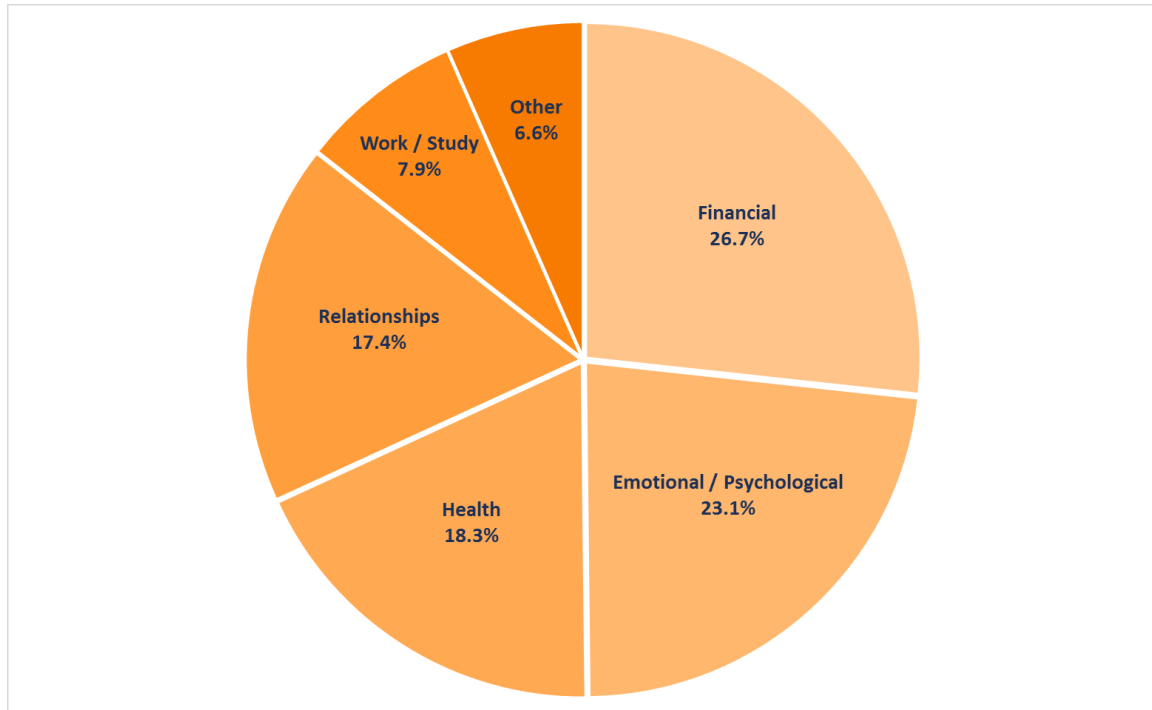
Table 25 summarises the beta coefficients of the model, which provide a guide to the relative contribution of each domain of harm to quality of life decrements, on the logit scale. As shown in the table, financial and emotional/psychological harms appeared to be the most instrumental in driving HRQL valuations, followed by work/study, relationship, and 'other' harms. Gambling-related harms on health did not significantly contribute to the HRQL utility. However, the topic of attributing importance to correlated predictor variables is a complex one (Grömping, 2009) and interpretation must be made keeping in mind the manner in which simultaneous regression handles correlations between predictors. An alternative is available via the use of Random Forests (RFs), which represent an alternative robust non-linear regression technique. RFs attribute variable importance via random permutation of each predictor and assessing the decrease in model fit as a result of this destruction of information.

**Table 25. Contribution of gambling-related harm domains to HRQL utility**

Predictors	$\beta$	SE $\beta$	t	p
Intercept	0.248	0.014	17.191	.000***
Financial Harms	0.019	0.005	3.656	.000***
Relationship Harms	0.017	0.006	2.91	.004**
Emotional / Psychological Harms	0.016	0.005	3.284	.001**
Health Harms	0.008	0.006	1.267	.206
Work / Study Harms	0.031	0.011	2.929	.003**
Other Harms	0.025	0.011	2.277	.023*

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Figure 17 shows the relative contribution of harm domains to HRQL utility using the RF method. Compared to the regression approach, it tends to allocate more harm from the health domain and less from the work/study and 'other' domains. However, in common with the regression approach, the RF method also suggests that financial and emotional/psychological harms tend to be most important in influencing assessments of harm.



**Figure 17. Proportion of gambling-related harm contributed by each domain, as calculated by random forest variable importance measure**

## Harm compared to other health states

The annual QALY<sub>1</sub> in the New Zealand adult population was calculated for other health states using a similar method of combining utility weights and prevalence data. Since the information available for other health states did not include information regarding loss of utility or prevalence of harm other than to the individual, gambling harm to others was excluded for these comparisons. See Appendix 11 for a summary of these calculations and data sources. Figure 18 plots QALY<sub>1</sub> for other health conditions against harm from one's own gambling problems. The QALY<sub>1</sub> in the New Zealand adult population due to gambling problems (low-risk, moderate-risk and problem gambling combined) was just over three-quarters the harm of hazardous drinking of alcohol and nearly two-thirds of the harm of anxiety and depressive disorders.

Annually, gambling problems generate significantly more ongoing harm (years of healthy life lost) than other key health conditions such as osteoarthritis, diabetes, and drug use disorders. Furthermore, the aggregate harm of gambling problems is close to double that of drug use disorders, bipolar affective disorder, eating disorders and schizophrenia combined. Problem gamblers, which account for less than 1% of the NZ population, accumulate more harm per year than those suffering from COPD and asthma, as well as mental health conditions of bipolar affective disorder and schizophrenia.

Alcohol and depression have similar utility decrements to low-risk gambling, but yield a higher aggregate QALY<sub>1</sub> due to the relatively higher prevalence.

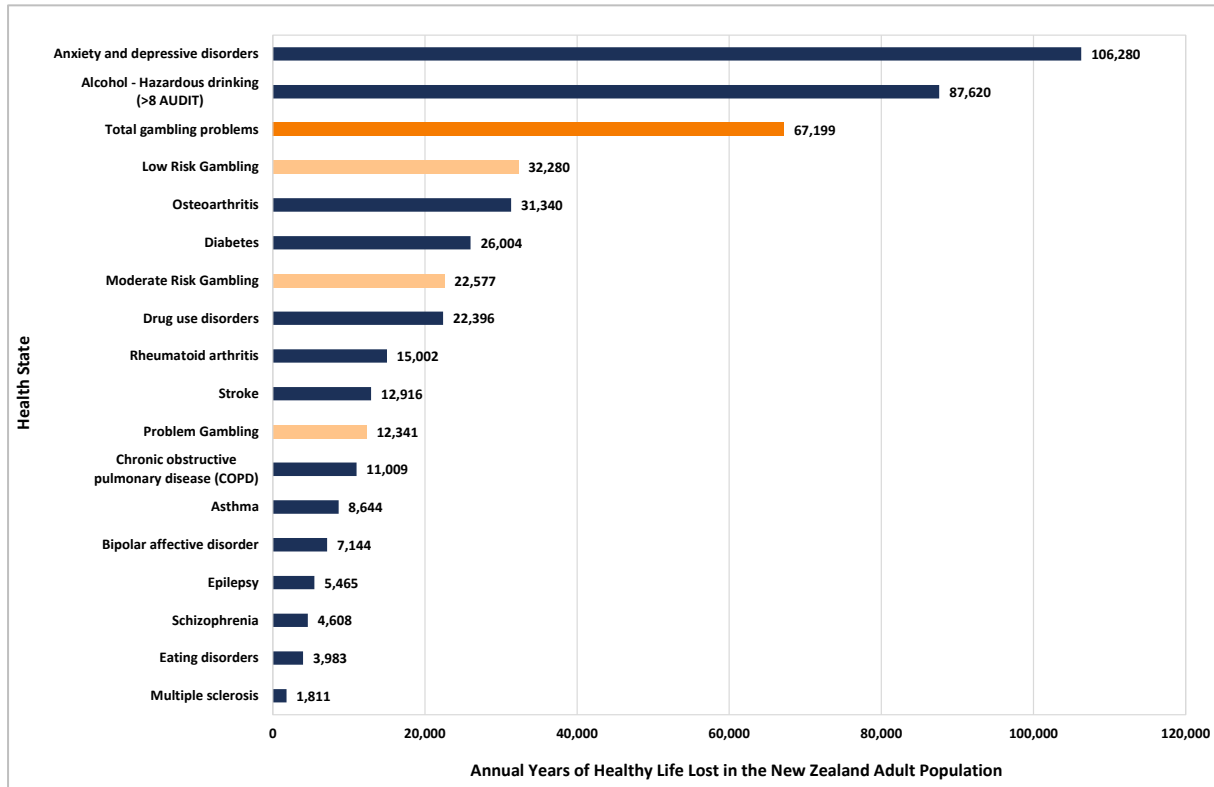


Figure 18. QALY<sub>1</sub> in the New Zealand adult population - gambling problems versus other health states

## Harm and demographic differences

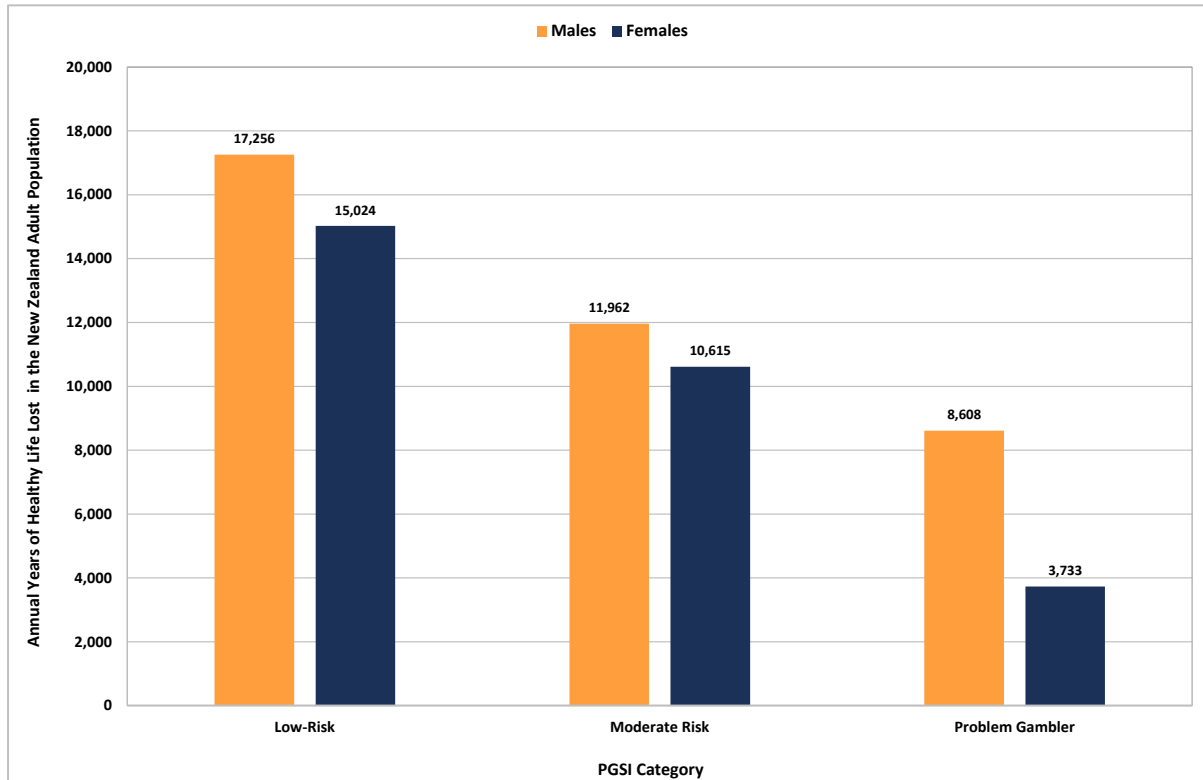
A descriptive analysis was conducted to identify the relative contribution of total years of healthy life lost annually in the New Zealand adult population due to own gambling problems by demographic characteristics and PGSI category. For analysis, the gambling-related harm utility weights were added to the dataset from the New Zealand 2012 National Gambling Study (Abbott et al., 2014a) by PGSI category (Low-Risk = 0.18; Moderate-Risk = 0.37; Problem Gambler = 0.54) and cross-tabulations run by utility weight (count, mean) x PGSI x demographic. Annual QALY<sub>1</sub> were then calculated for each cell, as well as the percentages of the overall QALY<sub>1</sub>.

Males in the low-risk category contribute a quarter (25.7%) of the QALY<sub>1</sub>, followed by females at low-risk (22.4%). See Table 26 for calculations and Figure 19 for a graphical representation.

Table 26. Gambling-related harms to the New Zealand adult population by gender and PGSI category

PGSI Category	Males		Females		Total
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	
Low Risk	17,256	25.7%	15,024	22.4%	32,280
Moderate Risk	11,962	17.8%	10,615	15.8%	22,577
Problem Gambler	8,608	12.8%	3,733	5.6%	12,341
<b>Total Gambling Problems</b>	<b>37,827</b>	<b>56.3%</b>	<b>29,371</b>	<b>43.7%</b>	<b>67,199</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Gender: males PGSI 1+ (n=142,458), females PGSI 1+ (n=117,553).



**Figure 19. Gambling-related harms to the New Zealand adult population by gender and PGSI category**

Whilst male problem gamblers contribute more than twice the harm than females in the same category, the bulk of harm is accruing to less acute categories, in which the contribution of males and females is quite similar.

Descriptive statistics for gambling harms to the NZ population were calculated by age categories and PGSI (Table 27), and age categories by gender and PGSI (Table 28). Overall, 25-34 year olds contributed the largest proportion of the total QALY<sub>1</sub> (26.3%) while the oldest group (65+ years) contributed the lowest (8.5%). Combined, 18-44 year olds accounted for approximately two-thirds of the QALY<sub>1</sub> (63.4%). Low-risk gamblers aged 18-34 years accounted for one-fifth (20.7%) of the QALY<sub>1</sub>.

**Table 27. Gambling harms to the New Zealand adult population by age range and PGSI category**

Age Range	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
18-24 years	5,051	7.5	6,186	9.2	798	1.2	12,036	17.9
25-34 years	8,854	13.2	5,610	8.3	3,232	4.8	17,696	26.3
35-44 years	4,650	6.9	4,366	6.5	3,831	5.7	12,847	19.1
45-54 years	5,505	8.2	2,506	3.7	3,352	5.0	11,363	16.9
55-64 years	3,948	5.9	2,496	3.7	1,128	1.7	7,572	11.3
65+ years	4,272	6.4	1,412	2.1	0	0.0	5,684	8.5
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Age & PGSI 1+: 18-24 years (n=45,798), 25-34 years (n=69,447), 35-44 years (n=44,319), 45-54 years (n=43,010), 55-64 years (n=30,365), and 65+ years (n=27,072).



A cross-tabulation by age, gender, and PGSI (Table 28) shows that the largest proportion of the harms came from males aged 18-34 years with low-risk gambling problems (11.7%), followed by males aged 18-34 years with moderate-risk gambling problems (10.2%). Overall, males aged 18-34 years accounted for just over one-quarter (27.1%) of the QALY<sub>1</sub>.

**Table 28. Gambling-related harms to the New Zealand adult population by gender x age range and PGSI category**

Age Range	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
Male 18-34 years	7,877	11.7	6,853	10.2	3,460	5.1	18,189	27.1
Female 18-34 years	6,029	9.0	4,943	7.4	571	0.8	11,543	17.2
Male 35-54 years	5,366	8.0	3,425	5.1	4,609	6.9	13,400	19.9
Female 35-54 years	4,789	7.1	3,448	5.1	2,573	3.8	10,810	16.1
Male 55+ years	4,014	6.0	1,685	2.5	539	0.8	6,238	9.3
Female 55+ years	4,206	6.3	2,224	3.3	589	0.9	7,018	10.4
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Age, Gender, & PGSI 1+: Male 18-34 years (n=67,941), Female 18-34 years (n=47,304), Male 35-54 years (n=47,100), Female 35-54 years (n=40,229), Male 55+ years (n=27,418), Female 55+ years (n=30,020).

The QALY<sub>1</sub> in the New Zealand adult population due to harm from own gambling problems was assessed by ethnic groups identified in the 2012 New Zealand National Gambling Study (Abbott et al., 2014a). Due to identification with multiple ethnicities, analysis was conducted using both the singularly derived hierarchical ethnicity<sup>17</sup> (Table 29) and all ethnicities identified<sup>18</sup> (Table 30).

Just over a half of the QALY<sub>1</sub> due to harm from own gambling was attributed to the NZ adult population of European/Other ethnicity (53.1%), followed by Māori (22.3%). Pacific and Asian adults each shared around 12% of the QALY<sub>1</sub>.

<sup>17</sup> Where participants identified with more than one ethnicity, they were categorised into a single ethnic group using the following hierarchical order: Māori, Pacific, Asian, European/Other (e.g. if someone identified as being both of Māori and European ethnicity, they were categorised as Māori).

<sup>18</sup> Analysis conducted with the multiple response ethnicity data as the proportion answering 'yes' to identifying for each ethnicity: Māori, Pacific, Asian, European/Other.

**Table 29. Gambling-related harms to the New Zealand adult population by Ethnic Group (Hierarchical) and PGSI category**

Ethnic Group (Hierarchical)	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
European / Other*	19,815	29.5	10,797	16.1	5,073	7.5	35,686	53.1
Māori	5,338	7.9	5,067	7.5	4,569	6.8	14,974	22.3
Pacific	3,049	4.5	3,833	5.7	1,432	2.1	8,314	12.4
Asian	3,896	5.8	2,880	4.3	1,268	1.9	8,044	12.0
Unknown	181	0.3	0	0	0	0.0	181	0.3
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Ethnic Group (Hierarchical) & PGSI 1+: NZ European/Other (n=146,602), Māori (n=51,346), Pacific (n=29,686), Asian (n=31,393), and Unknown ethnicity (n=984).

\*Other ethnicities include: Middle Eastern, Latin American, African (excluding South African which were categorised as European), and unspecified New Zealander.

Table 30 shows the proportion of harm to the NZ population within each identified ethnicity (response of yes, non-hierarchical method). For example, people identifying as Māori with gambling problems accounted for 22.3% of the QALY<sub>1</sub>, while people not identifying as Māori accounted for the remaining 77.7%. Similar to the hierarchical ethnicity analysis, the largest proportion of harms due to own gambling were attributable to people identifying as European/Other ethnicity (61.5%), and half were accounted for by low-risk gamblers within this group (33.0%).

**Table 30. Gambling-related harms to the New Zealand adult population by Ethnic Group (all identified) and PGSI category**

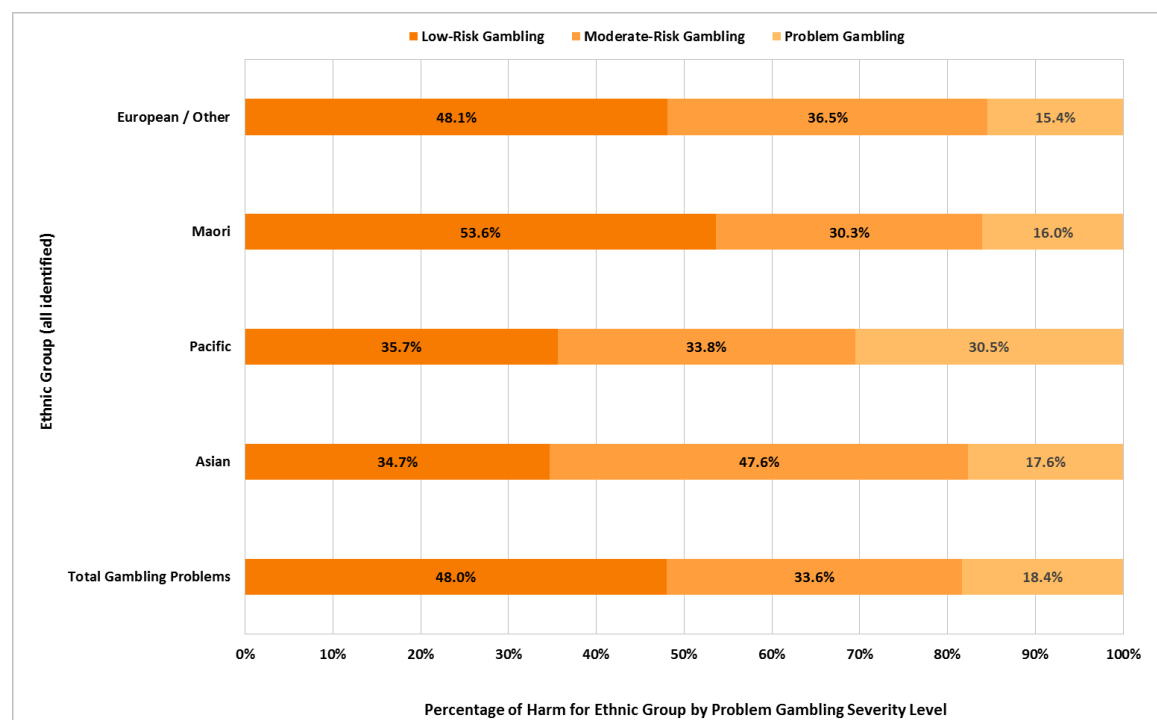
Ethnic Group (all identified)	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
European / Other	22,185	33.0	12,548	18.7	6,625	9.9	41,358	61.5
Māori	5,338	7.9	5,067	7.5	4,569	6.8	14,974	22.3
Pacific	3,167	4.7	4,346	6.5	1,610	2.4	9,123	13.6
Asian	3,955	5.9	2,997	4.5	1,268	1.9	8,221	12.2

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Ethnic Group (all identified) & PGSI 1+: NZ European/Other (n=167,151), Māori (n=51,346), Pacific (n=32,054), Asian (n=32,033).

\*Other ethnicities include: Middle Eastern, Latin American, African (excluding South African which were categorised as European), and unspecified New Zealander.

Figure 20 shows the distribution of harm within each ethnic group by PGSI category. The NZ European/Other population showed similar proportions of harm by PGSI to the overall population with gambling problems (low-risk 48.1%, moderate-risk 36.5% and problem gambling 18.4%). This is not surprising given that people identifying as European/Other ethnicity make up two-thirds of the weighted NZ adult population. The contribution of low-risk gambling QALY<sub>1</sub> is the highest within the

Māori adult population (53.6%). The population identifying as Pacific had harm distributed fairly evenly across PGSI categories (35.7%, 33.8%, and 30.5% respectively), while the moderate-risk gamblers identifying as Asian accounted for nearly half of the harm within this group (47.6%).



**Figure 20. Gambling-related harms to the New Zealand adult population within ethnic group (all identified) by PGSI category**

Nearly half of the harms due to gambling in the NZ population were from the population with gambling problems living outside the major regions of Auckland, Wellington, and Christchurch, namely the “rest of NZ” (45.0% of the total QALY<sub>1</sub>). This was followed by approximately one-third of the total QALY<sub>1</sub> being accounted for by people living in the Auckland region (34.8%). The population with low-risk gambling problems residing in the “rest of NZ” contributed the largest proportion of the total harms (22.2%), followed by the low-risk gamblers living in the Auckland region (15.9%). See Table 31.

**Table 31. Gambling-related harms to the New Zealand adult population by region and PGSI category**

Region	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
Auckland	10,712	15.9	8,191	12.2	4,504	6.7	23,408	34.8
Wellington	3,792	5.6	1,731	2.6	3,175	4.7	8,698	12.9
Christchurch	2,995	4.5	1,751	2.6	75	0.1	4,820	7.2
Rest of NZ	14,781	22.0	10,905	16.2	4,587	6.8	30,273	45.0
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4%</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Region & PGSI 1+: Auckland (n=88,950), Wellington (n=31,256), Christchurch (n=21,189), and Rest of NZ (n=118,616).

Descriptive statistics for the proportion of the total QALY<sub>1</sub> to the NZ adult population by employment status were conducted, showing that three-fifths (60.1%) of the harm arises from the employed

population and that one-third is attributable to low-risk gamblers who are employed (30.6%). See Table 32.

**Table 32. Gambling-related harms to the New Zealand adult population by employment status and PGSI category**

Employment Status	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
Employed	20,578	30.6	12,125	18.0	7,662	11.4	40,365	60.1
Unemployed	4,159	6.2	4,703	7.0	2,798	4.2	11,660	17.4
Student / Homemaker / Retired	7,055	10.5	5,749	8.6	1,806	2.7	14,610	21.7
Other	488	0.7	0	0.0	75	0.1	563	0.8
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Employment status & PGSI 1+: employed (n=159,194), unemployment (n=40,638), student/homemaker/retired (n=57,383), and other employment type (n=2,795).

As presented in Table 33, just over two-thirds of the harm due to gambling to the NZ adult population occurs to people with a personal income of \$40,000 or less (67.6%), followed by nearly one-fifth from in the next income bracket of \$40,001 - \$60,000 per annum.

**Table 33. Gambling-related harms to the New Zealand adult population by personal income and PGSI category**

Personal Income	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
<\$20,000	10,579	16.7	9,148	14.4	3,921	6.2	23,649	37.3
\$20,001 - \$40,000	7,749	12.2	7,935	12.5	3,562	5.6	19,245	30.3
\$40,001 - \$60,000	6,660	10.5	3,125	4.9	2,400	3.8	12,185	19.2
\$61,001 - \$80,000	2,337	3.7	1,778	2.8	1,072	1.7	5,187	8.2
\$80,001 - \$100,000	1,202	1.9	225	0.4	378	0.6	1,805	2.8
>\$100,000	1,213	1.9	0	0.0	148	0.2	1,360	2.1
<b>Total</b>	<b>29,740</b>	<b>46.9</b>	<b>22,211</b>	<b>35.0</b>	<b>11,481</b>	<b>18.1</b>	<b>63,432</b>	<b>100</b>

Weighted population bases\*: Total New Zealand PGSI 1+ (n=243,599). PGSI: low-risk (n=175,511), moderate-risk (n=60,473), problem gambling (n=21,425). Personal income & PGSI 1+: <\$20,000 (n=89,747), \$20,001-\$40,000 (n=70,382), \$40,001-\$60,000 (n=49,199), \$60,001-\$80,000 (n=19,549), \$80,001-\$100,000 (n=7,854), >\$100,000 (n=6,868).

\*Excludes missing data for weighted population & PGSI 1+ (n=16,412).

As shown in Table 34, the majority of the total QALY<sub>1</sub> due to gambling harms were for the NZ adult population born in New Zealand (71.2%).

**Table 34. Gambling-related harms to the New Zealand adult population by Country of Birth and PGSI category**

Country of Birth	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
New Zealand	23,414	34.8	14,478	21.5	9,972	14.8	47,864	71.2
Elsewhere	8,866	13.2	8,099	12.1	2,369	3.5	19,334	28.8
<b>Total</b>	<b>32,280</b>	<b>48.0</b>	<b>22,577</b>	<b>33.6</b>	<b>12,341</b>	<b>18.4</b>	<b>67,199</b>	<b>100</b>

Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). Country of Birth & PGSI 1+: New Zealand (n=185,332), Elsewhere (n=74,679).

Of the adult population with gambling problems who were not born in New Zealand, nearly 80% of their QALY<sub>1</sub> due to gambling harms were experienced by those arriving more recently to New Zealand (2008 or later). See Table 35.

**Table 35. Gambling-related harms to the New Zealand adult population by Year Arrived in NZ and PGSI category**

Year Arrived to live in NZ	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
2008 or later	7,230	37.4	6,415	33.2	1,732	9.0	15,377	79.5
Before 2008	1,637	8.5	1,684	8.7	637	3.3	3,958	20.5
<b>Total</b>	<b>8,866</b>	<b>45.9</b>	<b>8,099</b>	<b>41.9</b>	<b>2,369</b>	<b>12.3</b>	<b>19,334</b>	<b>100</b>

Weighted population bases: Total Born Overseas & PGSI 1+ (n=74,679). PGSI: low-risk (n=48,207), moderate-risk (n=22,577), problem gambling (n=12,341). Year Arrived to live in NZ & PGSI 1+: 2008 or later (n= 60,007), before 2008 (n=14,672).

Just over three-quarters of the total QALY<sub>1</sub> due to harms from their own gambling were for the NZ adult population whose first language was English (76.3%). Only a small proportion of the harm was for the population whose first language was Māori (2.8%) or Samoan (4.6%). See Table 36.

**Table 36. Gambling-related harms to the New Zealand adult population by first language spoken and PGSI category**

First Language Spoken	Low-Risk		Moderate-Risk		Problem Gambler		Total	
	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm	QALY <sub>1</sub>	% Pop. Harm
English	25,576	38.1	15,767	23.5	9,922	14.8	51,265	76.3
Māori	581	0.9	787	1.2	503	0.7	1,871	2.8
Samoan	1,125	1.7	1,503	2.2	481	0.7	3,109	4.6
Other Language	4,999	7.4	4,520	6.7	1,434	2.1	10,953	16.3

Total	32,280	48.0	22,577	33.6	12,341	18.4	67,199	100
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Weighted population bases: Total New Zealand PGSI 1+ (n=260,011). PGSI: low-risk (n=175,511), moderate-risk (n=61,470), problem gambling (n=23,029). First Language Spoken & PGSI 1+: English (n=200,503), Māori (n=6,240), Samoan (n=11,107), and Other Language (n=42,161).

## Discussion

### Population level harm from gambling in New Zealand

An important finding of the study is the aggregate amount of harm occurring across the spectrum of gambling problems. Somewhat counter-intuitively, but in line with our expectations, we found that a greater proportion of harm is attributable to the less severe end of the problem gambling spectrum. Although problem gamblers' quality of life is affected 3 times more than for low-risk gamblers, this is outweighed by the much larger prevalence of individuals in the low-risk category. A notable concern with our estimate for low-risk gamblers, is that it is supported by relatively fewer condition descriptions. However, even allowing for a wide margin of error in estimating the relative harm caused to the low-risk group, the clear conclusion would be that they contribute the majority of gambling-related harm. Our study shows that attention should not just be focused on problem gamblers but to all people affected by gambling harms, which are concentrated in some individuals, but nevertheless spread widely throughout the population. This supports the Ministry of Health's strategy to prevent and minimise gambling harm by addressing that harm across different population groups, and to aim for health equality for everyone in New Zealand (Ministry of Health, 2010). Compared to anxiety and depressive disorders, gambling problems are less than half as prevalent. Low-risk gambling problems are more than twice as common as drug use disorders. Overall, gambling problems are a third as prevalent as hazardous alcohol drinking, which is one of the most predominant conditions affecting population health in New Zealand. However, gambling problems cannot be directly compared against drug use disorders and hazardous alcohol drinking. Both the latter only include people with a severe level of problems whereas gambling problems include people at low-risk and who exhibit a low level of problems (i.e. it includes people at a subclinical level as well as at a severe level).

### Harm caused to self and others

Combining prevalence information from previous studies with the HRQL utility weights in the present study, gambling was found to contribute to 67,199 years of healthy life lost (QALY<sub>1</sub>) due to decreased quality of life, per year. Even without reference to comparison conditions, this is a figure that suggests a large quantity of avoidable human suffering arising from one's own gambling. Additionally, we estimated a figure of 94,730 QALY<sub>1</sub> caused to affected individuals connected to people with gambling problems. Given that previous research has suggested that each gambler may affect more than five other individuals (Ladouceur, 1993; Lobsinger, Bechett, & Relationships Australia, 1996; Productivity Commission, 1999), this is a somewhat surprisingly small proportion of gambling harm occurring to others. Our figure is based on the percentage of respondents to the NZ National Gambling Study who indicated that their relationship with someone with possible gambling problems had been negatively affected. Overall, 14.4% of participants indicated negative effects from someone they knew who had a problem with gambling. However, a third (32.3%) of participants reported knowing someone who currently or previously had a problem with gambling and of those people, nearly half (44.6%) reported some form of negative effects from that person's gambling. Also, contributing to this relatively low estimate, our utility decrement used for harm to others was

0.195 – which is based on the assumption that the gambler causing the harm was a randomly selected individual from the population of the NZ population with a PGSI score greater than zero. As noted in the previous section, the accuracy of this weighting is limited by the information available in the prevalence survey, and is likely to be conservative. Conducting a representative population survey of harms caused by others' gambling would refine this figure, and would likely result in an increased estimate of harm to others.

## **Different domains of gambling-related harm and quality of life**

Decomposing the contributions of the different domains of gambling-related harm to overall quality of life impact is difficult, due to the high degree of co-variation between different domains. For example, an individual who is suffering financial harms is very often also suffering emotional/psychological and relationship harm. Therefore, determining which domains are instrumental in determining overall quality of life decrements is to some degree intractable. However, the analyses presented provide an insight into how harm is manifested, which is consistent with our expectations, and also our theoretical understanding of how a person experiences harm. Our regression analysis suggested that financial and emotional/psychological harms were instrumental in determining utility decrements, followed by work/study, relationship, and 'other' harms. Note that 'other' included a range of harms involving crime, shame, neglect of children and other responsibilities. Whilst these harms are certainly severe, they tend to be much less prevalent and, accordingly, have less overall impact on the amount of harm caused. Therefore, these can be conceptually grouped with relationship and psychological harms. Interestingly, health harms had no relationship to quality of life impact, once controlling for psychosocial harms. This finding was broadly supported by the more conservative Random Forest approach for ascertaining the relative contributions of each domain. This may be due to some conceptual overlap between the health and psychological harms, with several health harms (e.g. lack of sleep due to stress) encompassing both domains. These results accord with the theoretical approach to quality of life as a subjective lived experience. From this point of view, psychological effects are primary since they are immediately experienced. Because humans are intrinsically social animals, relationship harms are implicitly tied to psychological harms – harm to an intimate relationship is interpreted as intrinsically bound to a corresponding psychological experience. The finding also confirms our proposed theoretical model, in which gambling reduces one's time and money resources to meet one's needs, including meeting obligations to others. Thus, the time and money absorbed by gambling mediated the relationship between gambling problems and psychosocial harms, which in turn are the primary drivers of a decrease in quality of life.

## **The burden of gambling harm compared to other conditions**

Our results indicate that gambling presents a significant burden to the wellbeing of the New Zealand population. Comparisons to other conditions confirm that gambling has an impact in the same class as excessive alcohol consumption and anxiety and depressive disorders. The aggregate impact of gambling problems is close to twice that of drug use disorders, bipolar affective disorder, eating disorders and schizophrenia combined. This is a significant result, as it is the first time that the aggregate impact of gambling harm has been quantified in a meaningful way. However, as previously mentioned, these comparisons must be considered with caution as gambling harm includes the spectrum of harm from a low subclinical level to the severest levels, whilst the other disorders that gambling harm is compared against all reflect clinically severe harmful behaviours.



Notwithstanding this caveat, this knowledge of harms from gambling can be weighed against the recreational and social benefits of gambling, to determine appropriate policy, regulation, prevention initiatives, and treatment. Arguably, the cost of gambling has hitherto been implicitly ascribed to the number of people experiencing clinically defined gambling problems (i.e. addiction). Our results suggest that, like alcohol, gambling generates significant harms to individuals below the threshold of clinical addiction. This result validates the Ministry of Health's orientation towards reducing the aggregate burden of harm through a public health approach, rather than restricting it to the treatment or avoidance of the clinical condition of problem gambling.

## **Demographic breakdown of the burden of harm**

Males make up a higher proportion of problem and moderate-risk gamblers, but females are over-represented in the low-risk category. From this, harms are reasonably equally distributed between males (56.3%) and females (43.7%). Our findings with respect to age were in accordance with previous findings with respect to age; nearly half (44.2%) of harm in total being attributable to those aged 18-34 years. Broken down by age and gender simultaneously, males aged 18-34 years made the greatest single contribution (11.7%) to the aggregate burden of harm - almost double the contributions of males aged 55+ years (6.0%). This is in line with research that has focused on young men, who are more likely to develop gambling problems than other demographic groups.

The New Zealand adult population identifying as European/Other ethnicity attributed to just over half of the burden of harm (53.1%), followed by Māori (22.3%). However, the distribution of harm by PGSI category within ethnic group differed. The population identifying as Māori harmed due to gambling, were higher in proportion of low-risk gamblers (53.6%) than European/Other (48.1%) and the overall population (48.0%). Pacific peoples' harm was evenly distributed across the PGSI spectrum (all around 30%-35%), and those of Asian ethnicity had a higher distribution of harm arising from moderate-risk gamblers. Thus, the distribution of harm with respect to PGSI category appeared to differ depending on ethnicity.

The proportion of gambling-related harm was mainly accounted for by these population demographics: residing in the rest of New Zealand and Auckland, being employed, lower annual incomes, being born in New Zealand, speaking English as a first language. The proportion of harm attributable to these groups was approximately in line with population prevalence.



## Discussion

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New Zealand faces the same fundamental challenges as other countries in effectively addressing public health problems. Resources are limited, and there is often insufficient knowledge about the relative impacts of various diseases, including addictions. The HRQL paradigm offers a valuable common metric on which to judge the relative impacts that physical ailments play on both quantity and quality of lives lived. The use of a comparable summary measure of health impact allows for a clear basis for allocations of efforts to where they are likely to have the greatest return.

Apart from the common and important metric of economic development, as for example represented by Gross Domestic Product (GDP), there is a natural interest that people in New Zealand should not just lead long lives but also healthy lives. Health includes not just physical health, but also mental health, personal wellbeing and community wellbeing. The harms that result from excessive time and money spent on gambling, as well as feelings of social and moral failure, clearly affect these domains, and can subtract significantly from the happy and productive enjoyment of life that the population values.

The contributions of this report to understanding gambling-related harm are varied, but can be organised by the phases of the research. Results from both qualitative and quantitative phases confirmed that gambling problems are reliably associated with financial pressures, resulting in damage to relationships and emotional and psychological distress, which are themselves instrumental in determining one's quality of life.

Following a comprehensive review of literature in the first phase of our study, in a subsequent consultative phase, qualitative studies were conducted with gambling treatment providers, health and social service professionals, regulators, people who gamble and people affected by someone else's gambling, to understand the potentially unique harms that the New Zealand population were experiencing. These studies were important to create a detailed taxonomy of harms, sampling from the diverse experiences and perspectives of various groups. In this second phase, the harms discovered in the qualitative studies added to harms previously described in the literature, and allowed for the creation of a conceptual framework for understanding the typology of harm. Although detailed, the framework helped identify a diverse set of harms that fell outside the physical disabilities commonly explored with HRQL methodologies.

In the third phase, a national survey explored the frequencies of 83 harms, as outlined in the framework, in a large set of current gamblers. This resulted in a detailed accounting of the types of harms experienced by people with varying levels of gambling risk as determined by the Problem Gambling Severity Index (PGSI). This result by itself is valuable for understanding the relative likelihoods of experiencing each type of harm dependent on a person's level of problem gambling risk.

In the fourth phase, a separate survey then "graded" the above profiles of harm, to create a picture of how individuals in each category of gambling-risk (low, medium and problem gambler) experienced harm as a decrement to their quality of life, using a metric common to prior health state valuation studies. The results revealed that the experience of problem gambling by a single person is approaching the level of severe alcohol use disorder and severe migraines, in terms of impact on their quality of life.

Lastly, the individual impacts of the experience of harms from gambling were "scaled up" to reflect the known prevalence of gambling problems within the New Zealand adult population. These results

allowed for some critical reflections on gambling harms at the individual and the population level. A surprisingly large contribution of harm from gambling was attributable to “low risk” gamblers. These were gamblers who were at the lower-end of experiencing gambling problems, but who, nevertheless, represented a sizable percentage of the whole New Zealand population. As a result, the accumulation of harms, in terms of the decrement to quality of life, was largest for the sum of people in the low-risk category, and this group included roughly half of all harms. Accepting this at face value endorses the need for a whole-of-population public health approach to gambling policy. Whilst much of the attention given to gambling reform and public health efforts focuses on preventing people from becoming problem gamblers or assisting people who are problem gamblers, the largest aggregate source of harm is occurring outside this group. As a result, we are obliged to consider that public health approaches should focus effective evidenced-based efforts on also addressing these low and medium experiences of gambling harm. In short, this validates the necessity of developing a broader public health focus on gambling problems rather than the having narrow focus on chronic gamblers with severe problems.

A final and most critical result from the present research is regarding absolute scale of harms from gambling to the New Zealand population. There was an estimated 161,928 years of healthy life lost (QALY<sub>1</sub>) due to harms from gambling in 2012. Subjectively, this can be interpreted as a total of 1,374 that were perceived as barely worth living due to the experience of gambling problems. Although some of this ‘burden of harm’ was concentrated in problem gamblers, our results suggested that at a population level the majority of harm was attributable to a wider cross-section of the community. One must acknowledge that this social cost of gambling is offset by benefits in terms of entertainment, industry and government revenue. Nevertheless, the level of harms is substantial in comparison to our estimates of harm attributable to other acknowledged priority areas. Furthermore, our methodology encompassed only harms that were incurred within a year of the problematic gambling behaviour. Thus, our harm estimates do not include much of the impact of legacy harms, which may extend years after the behaviour has ceased. Thus, our estimate of harm is likely a conservative one in this respect.

Whilst the absolute estimates of the population-level impact of gambling-related harm may appear to be large, this is primarily a direct consequence of the prevalence and severity of the condition. Our estimation of both these parameters were obtained via application of established methodologies (in the case of DW) or well-established figures (in the case of prevalence), and accordingly are not likely to be affected by significant error or bias. However, the present method did not apply discounting due to comorbidities among conditions. Nevertheless, our interpretation has focused on relative comparisons between conditions, which would be relatively unaffected by this issue. Gambling can result in significant ‘legacy’ harms, which persist long after the problematic behaviour has ceased. Our prevalence-based approach only considered harms occurring at the time the problematic behaviour was occurring, which would have contributed to a negative bias in the estimate of aggregate harm.

The estimates mentioned above put the total burden of harms occurring to gamblers greater than common health conditions (such as diabetes and arthritis) and approaching the level of anxiety and depressive disorders. Further, it provides an empirical basis for decisions regarding an appropriate level of investment in public health measures to reduce gambling-related harm, harm reduction strategies, prevention, treatment and related services. The results of this report make a potent argument for serious public investments from the government into reducing the full extent of gambling-related harms, and provide important direction to guide where these efforts should be targeted.



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# Appendices

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## Appendix 1. Semi-structured interview guide (Stage 1 expert consultations)

### Expert consultant session and session structure:

- 1) Welcome and introduction, confidentiality, group expectations and courtesies to be followed, etc.
- 2) We're interested in your perceptions, experience, general knowledge and ideas about gambling.
- 3) Introductions and scan of types of roles of those in the room and the connection with gambling or the harm caused by it.
- 4) What consequences they have seen gambling have on individual gamblers? (Prompts: money, relationships, work, legal problems)
- 5) What sort of consequences has a gambler's gambling had on others close to them? (Prompts: money, relationships, trust, work, legal problems)
- 6) What sort of consequences has a gambler's gambling had on the broader community?
- 7) How, or in what way, have these experiences and consequences that you have identified changed over time? (Prompts: have they remained the same, got worse, improved)
- 8) An influential definition of gambling harm implies that it stems from the way it takes up time or money. Based on your experiences, what are your thoughts about time and money being at the core of harm experienced from gambling? (Prompt: do you think everything can be traced back to time or money, or do you think there is anything else at the core of this?)

Additional prompts:

Cultural differences contained within the above – how does culture construct and influence the harms identified?

Harm trajectory: What is the intensity, sequencing and progression of the harms identified? Early signs? When does the harm abate?

## Appendix 2. Semi-structured interview guide (Stage 2 focus group / individual interviews)

### Study on the negative effects of gambling

#### A. Facilitator's welcome and introduction

#### B. Facilitator's introduction of research objectives and process

1. The main aim of this research is to gain your views about the negative effects of gambling. This may include your own experiences or what you may have observed among people you work with or people close to you.
2. Gambling is a broad issue. Considering the limited time, we will keep the focus on experiences of harm only, and the underlying reasons. So I will ask some specific questions.
3. To make our discussion safe and inclusive of everyone, we have a few guidelines. I will read these out to you and if anyone disagrees with something, we can discuss how it can be modified to suit everyone's needs.
  - Everyone here, had agreed in their consent forms for this **session to be recorded**. Is everyone still agreeable to that?
  - We ask that you speak loudly and clearly so we can have an accurate record of what you share.
  - To ensure that everyone is included and everyone's voice is clearly captured, we should **speak one at a time**.
  - We ask that everyone respect the confidentiality of the group. All information you hear today should be kept to yourself.
4. Is there anything you would like to seek clarification on? [Time for questions]
5. Could we turn on the recording device now and start our discussion?

#### C. Research Questions

1. Have you experienced any negative consequences from gambling that you would be happy to share?
2. We have identified a lot of different types of negative consequences that people experience from gambling, and they would tend to fall within these broad categories (such as time and money). But we wonder if the source of these harms goes beyond the time or money spent on gambling?
  - If you were to spend that same amount of time and money on another activity, say for example fishing, would you experience the same negative consequence at the same level? Would it cause the same level of conflict in your relationship? [ANSWER MOST LIKELY NO]. Fishing takes up a lot of time, but why are the effects different?



- What if you had spent money and time trying to start a business, and then lost it all. Would the negative effects still be the same?
- If you were spending money that you could afford to lose and the time was not keeping you from other responsibilities, could there still be harm / negative consequences?

**If discussions don't progress beyond time and money – use following stories from other discussions:**

- “A retired lady who had plenty of disposable income, wasn't spending that much money, and it wasn't keeping her away from other activities, but she still hated that she was doing it.”
  - “Some people have lied about what they are doing because they know family and friends don't like gambling.”
3. What were the earliest negative consequences you can recall? What were some of the early signs of harm?
  4. How have the negative consequences changed over time?
  5. What negative consequences are still experienced because of past gambling?
  6. What negative consequences will continue being experiencing in the future, even after gambling has stopped?
  7. What negative consequences has gambling had for others? (e.g partners, children, family, whānau)
  8. What negative consequences has gambling had for the community?
  9. Have you experienced or noticed unlawful activities resulting from gambling? For example, taking spare cash from a family member's wallet?

### Appendix 3. Recruitment advertisements (community newspaper)



**Have you experienced  
any negative effects  
from your own or from  
someone else's gambling?**

AUT University is holding small discussion groups asking people to talk about the negative effects they have experienced (personally and/or in their families and networks) from gambling.

Groups will be 2 hours long and will be held at AUT rooms in the Manukau or the North Shore Campuses.

**AUT**  
UNIVERSITY  
TE WĀNANGA ARONUI O TAMAKI MAKAU RAU

**For further information and to take part,**  
please contact Komie  
[kkolanda@aut.ac.nz](mailto:kkolanda@aut.ac.nz) | 09 921 9999 ext 8164.

Appendix 4. A4 sized recruitment posters (general population)



AUT University is holding small discussion groups asking people to talk about the negative effects they have experienced (personally and/or in their families and networks) from gambling.

Groups will be 2 hours long and will be held at AUT rooms in the Manukau or the North Shore Campuses.

27 & 30 March 2015



**For further information and to take part,**  
please contact Komie  
[kkolanda@aut.ac.nz](mailto:kkolanda@aut.ac.nz) | 09 921 9999 ext 8164.

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## Appendix 5. Advertisements using supermarket customer cards



**NEW WORLD**

**CUSTOMER CARD**



**Research participants needed**

**Have you experienced any negative effects from your own  
or someone else's gambling?**

AUT University is holding small 2-hour discussion groups asking people to talk about negative effects experienced from gambling (personally and/or in their families). Discussions will be held on **27 & 30 March 2015** at AUT Manukau or North Shore campuses.

For further information or to take part please contact:

Post or view notices on-line: [www.mynotice.co.nz](http://www.mynotice.co.nz)

CONTACT: Komie	TEL: 09-921 9999 ext 8164
EMAIL: <a href="mailto:kkolanda@aut.ac.nz">kkolanda@aut.ac.nz</a>	
DATE: 18 February 2015	DISPLAY PERIOD: 14-21 DAYS

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## Appendix 7. Abbreviated and full item labels for potential harms arising from gambling

Item abbreviation	Full item label
<b>Financial</b>	
Assist. Marae	Required assistance from your marae community
Bankruptcy	Bankruptcy
Add. Employ.	Took on additional employment
Emerg. Acc.	Needed emergency or temporary accommodation
Loss Assets	Loss of significant assets (e.g. car, home, business, superannuation)
Loss Utilities	Loss of supply of utilities (electricity, gas, etc.)
Welfare	Needed assistance from welfare organisations (foodbanks or emergency bill payments)
Inc. CC debt	Increased credit card debt
Sold Items	Sold personal items
Ass. Whānau	Required assistance from whānau/family
Red. Ess. Exp.	Less spending on essential expenses such as medications, healthcare and food
Red. Ben. Exp.	Less spending on beneficial expenses such as insurances, education, car and home maintenance
Late Bills	Late payments on bills (e.g. utilities, rates)
Red. Savings	Reduction of my savings
Red. Rec. Exp.	Less spending on recreational expenses such as eating out, going to movies or other entertainment.
Red. Spending	Reduction of my available spending money
<b>Work/Study</b>	
Exc. Study	Excluded from study
Lost Job	Lost my job
Conflict Class.	Conflict with my classmates
Withdraw	Had to withdraw from study
Conflict Coll.	Conflict with my colleagues
Resources <sub>b</sub>	Used my work or study resources to gamble
Hind. Job Efforts	Hindered my job-seeking efforts
Lack Progress	Lack of progression in my job or study
Time <sub>b</sub>	Used my work or study time to gamble
Absent	Was absent from work or study
Late	Was late for work or study
Red. Perform.	Reduced performance at work or study (i.e. due to tiredness or distraction)
<b>Health</b>	
Emerg. Treat. <sub>b</sub>	Required emergency medical treatment for health issues caused or exacerbated by gambling
Self-Harm	Committed acts of self harm
Suicide	Attempted suicide
Overeating	Ate too much
Service <sub>b</sub>	Increased use of health services due to health issues caused or exacerbated by my gambling
Living Cond.	Unhygienic living conditions (living rough, neglected or unclean housing, etc)
Medical Needs	Neglected my medical needs (including taking prescribed medications)
Hygiene	Neglected my hygiene and self-care
Alcohol	Increased my consumption of alcohol
Tobacco	Increased my use of tobacco

Item abbreviation	Full item label
Malnutrition	Didn't eat as much or often as I should
Depression	Increased experience of depression
Physical Activity <sub>b</sub>	Reduced physical activity due to my gambling
Stress Problems	Stress related health problems (e.g. high blood pressure, headaches)
Red. Sleep Gamb. <sub>b</sub>	Loss of sleep due to spending time gambling
Red. Sleep Worry <sub>b</sub>	Loss of sleep due to stress or worry about gambling or gambling-related problems
<b>Emotional/Psychological</b>	
Mental Illness <sub>b</sub>	Felt like I might have a mental illness
Escape	Thoughts of running away or escape
Worthless	Felt worthless
Ext. Distress	Feelings of extreme distress
Vulnerable	Felt insecure or vulnerable
Failure	Felt like a failure
Hopeless. <sub>b</sub>	Feelings of hopelessness about gambling
Distress <sub>b</sub>	Felt distressed about my gambling
Anger <sub>b</sub>	Felt angry about not controlling my gambling
Shame <sub>b</sub>	Felt ashamed of my gambling
Regret <sub>a</sub>	Had regrets that made me feel sorry about my gambling
<b>Relationships</b>	
Actual Ending	Actual separation or ending a relationship/s
Exp. Violence	Experienced physical or emotional violence in my relationships
Belittled	Felt belittled in my relationships
Threat Ending	Threat of separation or ending a relationship/s
Isolation	Social isolation (felt excluded or shut-off from others)
Red. Enjoyment	Got less enjoyment from time spent with people I care about
Neg. Resp. Whānau	Neglected my whānau/family responsibilities
Reduced Events	Spent less time attending social events (non-gambling related)
Increased Conflict	Experienced greater conflict in my relationships (arguing, fighting, ultimatums)
Neg. Resp.	Neglected my relationship responsibilities
Increased Tension	Experienced greater tension in my relationships (suspicion, lying, resentment, etc)
Reduced Time	Spent less time with people I care about
<b>Other</b>	
Arrested Driving	Arrested for unsafe driving
Children Unsup.	Left children unsupervised
Outcast Church <sub>b</sub>	Outcast from church due to involvement with gambling
Violence	Had experiences with violence (include family/domestic violence)
Shame Church	Felt that I had shamed my family name within my church
Crime <sub>b</sub>	Felt compelled or forced to commit a crime or steal to fund gambling or pay debts
Outcast Comm. <sub>b</sub>	Outcast from community due to involvement with gambling
Red. Connec. Church	Felt less connected to my church
Child Neglected	Didn't fully attend to needs of children

Item abbreviation	Full item label
Red. Contrib. Church	Reduced my contribution to church obligations
Red. Contrib. Community	Reduced my contribution to community obligations
Theft Government	Petty theft or dishonesty in respect to government, businesses or other people (not family/whānau/friends)
Took Money	Took money or items from friends or family/whānau without asking first
Shame Community	Felt that I had shamed my family name within my community
Pay Money	Promised to pay back money without genuinely intending to do so
Red. Connec. Community	Felt less connected to my community

Note. The taxonomy of harms was used as a base for item creation, therefore the phrasing for some items slightly varied between the taxonomy and the items used in the national survey of harms. For example, the item 'less spending on beneficial expenses' from the financial harm domain, was originally 'reduction or loss of non-immediate consequence expenditure' within the taxonomy.

a This item was only asked in the questionnaire for gamblers.

b The core contents of these items remained the same in both questionnaires, however their phrasing was slightly varied to suit either gamblers' or affected others' perspectives. For example, the full item for "Resources" read "Used my work or study resources to gamble" in the questionnaire for gamblers, and read "Used my work or study resources to assist with matters arising from their gambling" in the questionnaire for affected others.



## Appendix 8. Vignette clause assignment

	Domain	Full label	Sentence	Phrase
1	emotional/psychological	Had regrets that made me feel sorry about my gambling	1	regretful
	emotional/psychological	Felt ashamed of my gambling	1	ashamed
	emotional/psychological	Felt angry about not controlling my gambling	1	angry
	emotional/psychological	Felt distressed about my gambling	1	distressed
	emotional/psychological	Feelings of hopelessness about gambling	1	hopeless
	emotional/psychological	Felt like a failure	2	like a failure
	emotional/psychological	Feelings of extreme distress	2	extremely distressed
	emotional/psychological	Felt insecure or vulnerable	2	vulnerable
	emotional/psychological	Felt like I had a mental illness	2	like you have a mental illness
	emotional/psychological	Felt worthless	2	worthless
2	financial	Reduction of my available spending money	1	have less spending money
	financial	Reduction of my savings	1	have reduced savings
	financial	Less spending on recreational expenses such as eating out, going to movies or other entertainment.	1	spend less recreationally (e.g. movies, eating out)
	financial	Late payments on bills (e.g. utilities, rates)	1	are late on bill payments
	financial	Less spending on beneficial expenses such as insurances, education, car and home maintenance	1	have reduced spending on beneficial expenses (e.g. insurance, car and home maintenance)
	financial	Increased credit card debt	2	increased credit card debt
	financial	Sold personal items	2	needed to sell personal items
	financial	Needed assistance from welfare organisations (foodbanks or emergency bill payments)	2	needed assistance from welfare organisations
	financial	Less spending on essential expenses such as medications, healthcare and food	2	reduced your spending on essential items (e.g. medication, food)
	financial	Required assistance from whanau/family	2	required assistance from whanau/family

	Domain	Full label	Sentence	Phrase
	financial	Loss of significant assets (e.g. car, home, business, superannuation)	3	lost assets
	financial	Needed emergency or temporary accommodation	3	needed emergency accommodation
	financial	Loss of supply of utilities (electricity, gas, etc.)	3	lost utilities (e.g. electricity)
	financial	Bankruptcy	3	gone bankrupt
3	health	Loss of sleep due to stress or worry about gambling or gambling-related problems	1	losing sleep due to worrying about gambling
	health	Loss of sleep due to spending time gambling	1	losing sleep due to spending time gambling
	health	Increased experience of depression	1	experiencing depression
	health	Stress related health problems (e.g. high blood pressure, headaches)	1	experiencing stress related health problems (e.g. high blood pressure)
	health	Ate too much	4	eating too much
	health	Reduced physical activity due to my gambling	4	less physically active
	health	Increased my use of tobacco	2	tobacco use is increasing
	health	Didn't eat as much or often as I should	3	eating as much as you should
	health	Increased my consumption of alcohol	4	drinking more alcohol
	health	Neglected my hygiene and self-care	4	neglecting your hygiene
	health	Neglected my medical needs (including taking prescribed medications)	4	neglecting your medical needs (e.g. taking prescriptions)
	health	Increased use of health services due to health issues caused or exacerbated by my gambling	4	using more health services
	health	Unhygienic living conditions (living rough, neglected or unclean housing, etc)	5	living in unhygienic conditions (e.g. living rough, neglected)
	health	Committed acts of self harm	5	self-harming
	health	Attempted suicide	6	attempted suicide
	health	Required emergency medical treatment for health issues caused or exacerbated by gambling	6	required emergency medical treatment due to gambling related issues

	Domain	Full label	Sentence	Phrase
4	other	Took money or items from friends or family/whanau without asking first	1	taking money/items from family/whanau or friends without asking
	other	Promised to pay back money without genuinely intending to do so	1	promising to pay back money without intending to do so
	other	Felt compelled or forced to commit a crime or steal to fund gambling or pay debts	3	feel compelled to commit a crime to fund gambling or pay debts
	other	Reduced my contribution to church obligations	2	have reduced your contribution to church obligations
	other	Reduced my contribution to community obligations	2	have reduced your contribution to community obligations
	other	Outcast from church due to involvement with gambling	2	are an outcast from church
	other	Outcast from community due to involvement with gambling	2	are an outcast from your community
	other	Didn't fully attend to needs of children	3	do not attend fully to your children's needs
	other	Petty theft or dishonesty in respect to government, businesses or other people (not family/whanau/friends)	1	engaging in petty theft/dishonesty with professional enterprises (e.g. governments, businesses, colleagues)
	other	Felt less connected to my church	2	feel less connected to your church
	other	Felt less connected to my community	2	feel less connected to your community
	other	Had experiences with violence (include family/domestic violence)	3	have experiences with violence (include family/domestic)
5	relationships	Got less enjoyment from time spent with people I care about	1	don't get enjoyment from spending time with people you care about
	relationships	Spent less time with people I care about	1	spend less time with the people you care about
	relationships	Spent less time attending social events (non-gambling related)	1	spend less time attending social events
	relationships	Social isolation (felt excluded or shut-off from others)	1	experience social isolation
	relationships	Experienced greater tension in my relationships (suspicion, lying, resentment, etc)	2	tension
	relationships	Experienced greater conflict in my relationships (arguing, fighting, ultimatums)	2	conflict

	Domain	Full label	Sentence	Phrase
	relationships	Experienced physical or emotional violence in my relationships	2	physical or emotional violence
	relationships	Neglected my relationship responsibilities	3	neglect your relationship responsibilities
	relationships	Neglected my whanau/family responsibilities	3	neglect your whanau/family responsibilities
	relationships	Felt belittled in my relationships	3	feel belittled in your relationship
6	work/study	Was late for work or study	1	been late
	work/study	Was absent from work or study	1	been absent
	work/study	Reduced performance at work or study (i.e. due to tiredness or distraction)	1	reduced your performance (e.g. due to tiredness or distraction)
	work/study	Used my work or study time to gamble	2	use this time to gamble
	work/study	Lack of progression in my job or study	2	lack progression
	work/study	Used my work or study resources to gamble	2	use resources to gamble
	work/study	Conflict with my colleagues	2	have conflict with colleagues
	work/study	Conflict with my classmates	2	have conflict with classmates
	work/study	Hindered my job-seeking efforts	3	are being hindered in your job-seeking efforts
	work/study	Excluded from study	3	are being excluded from study

## Appendix 9. Sentence descriptors

	Domain	Sentence	Stem	Conjunction
1	emotional/psychological	1	The gambling is making you feel	and
	emotional/psychological	2	You also feel	and
	emotional/psychological	3	You	
2	financial	1	You	and
	financial	2	Additionally, you have	and have
	financial	3	You have also	and have
3	health	1	You are	and are
	health	2	Your	and
	health	3	You are not	
	health	4	You are	and
	health	5	You are also	and
	health	6	You have	and
4	other	1	You are	and
	other	2	You	and
	other	3	You also	and
5	relationships	1	You	and
	relationships	2	In your relationships you're experiencing greater	and
	relationships	3	You	and
	relationships	4	Your	
6	work/study	1	At work/study you have	and
	work/study	2	Additionally, in your work/study you	and
	work/study	3	You	and

## Appendix 10. Comparison conditions displayed on the visual analogue scale

Condition	% ranking on VAS	Descriptor
Asthma: controlled	0.9	You wheeze and cough once a month, which does not cause difficulty with your daily activities.
Infertility: primary	1.1	You want to have a child and have a fertile partner, but you cannot conceive.
COPD and other chronic respiratory problems: mild	1.5	You cough and are short of breath after heavy physical activity, but are able to walk long distances and climb stairs.
Stroke: long-term consequences, mild	2.1	You have some difficulty in moving around and some weakness in one hand, but are able to walk without help.
Asthma, partially controlled	2.7	You wheeze and cough once a week, which causes some difficulty with your daily activities.
Anxiety disorders: mild	3	You feel mildly anxious and worried, which makes it slightly difficult to concentrate, remember things, and sleep. You tire easily but are able to perform daily activities.
Bipolar Disorder: residual state	3.5	You have mild mood swings, irritability and some difficulty with daily activities.
Hearing loss: mild, with ringing	3.8	You have great difficulty following a conversation in a noisy environment, and have ringing in the ears for more than 5 minutes, almost every day.
Neck pain: acute, mild	4	You have neck pain, and difficulty turning the head and lifting things.
Attention deficit hyperactivity disorder	4.9	You are hyperactive and have difficulty concentrating, remembering things, and completing tasks.
Diarrhoea: mild	6.1	You have diarrhoea three or more times a day with occasional discomfort in your belly.
Stroke: long-term consequences, moderate	7.2	You have some difficulty in moving around, and in using your hands for lifting and holding things, dressing, and grooming.
Musculoskeletal problems: legs, moderate	7.9	You have moderate pain in your leg, which makes you limp, and causes some difficulty walking, standing, lifting and carrying heavy things, getting up and down, and sleeping.
Stoma	8.6	You have a pouch attached to an opening in your belly to collect and empty stools.
Hearing loss: complete, with ringing	9.2	You cannot hear at all, even loud sounds, cannot use a phone, and have ringing in your ears for more than 5 minutes, almost every day.
Musculoskeletal problems: arms, moderate	11.4	You have moderate pain and stiffness in your arms and hands, which causes difficulty lifting, carrying, and holding things, and you have trouble sleeping because of the pain.
Amputation of one arm: long term, with or without treatment	13	You have lost one hand and part of the arm, leaving pain and tingling in the stump and flashbacks from the injury. You require help lifting objects and in daily activities such as cooking.
Urinary incontinence	14.2	You cannot control your urinating.
Anxiety disorders: moderate	14.9	You feel anxious and worried, which makes it difficult to concentrate, remember things, and sleep. You tire easily and find it difficult to perform daily activities.
Musculoskeletal problems: legs, severe	17.1	You have severe pain in your leg, which makes you limp and causes a lot of difficulty walking, standing, lifting and carrying heavy things, getting up and down, and sleeping.

Condition	% ranking on VAS	Descriptor
COPD and other chronic respiratory problems: moderate	19.2	You cough, wheeze and are short of breath, even after light physical activity. You feel tired and can walk only short distances or climb only a few stairs.
Severe traumatic brain injury: short term, with or without treatment	23.5	You cannot concentrate and have headaches, memory problems, dizziness, and feel angry.
Alcohol use disorder: mild	25.9	You drink a lot of alcohol and sometimes have difficulty controlling the urge to drink. While intoxicated, you have difficulty performing daily activities.
Stroke: long-term consequences, moderate plus cognition problems	31.2	You have some difficulty in moving around, in using the hands for lifting and holding things, dressing and grooming, and in speaking. You are often forgetful and confused.
Amphetamine dependence	35.3	You use stimulants (drugs) and have difficulty controlling the habit. You sometimes have depression, hallucinations and mood swings, and have difficulty in daily activities.
Alcohol use disorder: moderate	38.8	You drink a lot, get drunk almost every week and have great difficulty controlling the urge to drink. Your drinking and recovering cause great difficulty in daily activities, sleep loss, and fatigue.
Headache: migraine	43.3	You have severe, throbbing head pain and nausea that cause great difficulty in daily activities and sometimes confine you to bed. Moving around, light, and noise make it worse.
Bipolar Disorder: manic episode	48	You are hyperactive, you hear and believe things that are not real, and engage in impulsive and aggressive behaviour that endanger yourself and others.
Alcohol use disorder: severe	54.9	You get drunk almost every day and are unable to control the urge to drink. Your drinking and recovering replace most daily activities. You have difficulty thinking, remembering and communicating, and feel constant pain and fatigue.
Schizophrenia: residual state	57.6	You hear and see things that are not real and have trouble communicating. You can be forgetful, have difficulty with daily activities, and think about hurting yourself.
Heroin and other opioid dependence	64.1	You use heroin daily and have difficulty controlling the habit. When the effects wear off, you feel severe nausea, agitation, vomiting and fever. You have a lot of difficulty in daily activities.
Multiple sclerosis: severe	70.7	You have slurred speech and difficulty swallowing. You also have weak arms and hands, very limited and stiff leg movement, have loss of vision in both eyes and cannot control urinating.
Schizophrenia: acute state	75.6	You hear and see things that are not real and are afraid, confused, and sometimes violent. You have great difficulty with communication and daily activities, and sometimes want to harm or kill yourself.

**Appendix 11. Figures and sources for harm and years of healthy life lost for the New Zealand adult population**

Health State	Utility Weight	Prevalence in Population (%)	NZ Population With Health State	Years of Healthy Life Lost	Source of Prevalence (%)
<b>Total gambling problems</b>		7.3	260,011	67,199	2012 New Zealand National Gambling Study (Abbott et al., 2014a)
Low Risk Gambling	0.18	4.9	175,511	32,280	
Moderate Risk Gambling	0.37	1.7	61,470	22,577	
Problem Gambling	0.54	0.6	23,029	12,341	
<b>Other health conditions*</b>					
Alcohol - Hazardous drinking (>8 AUDIT)	0.11	22.3	796,544	87,620	Ministry of Health (2015)**
Anxiety and depressive disorders	0.17	17.4	621,519	106,280	Ministry of Health (2015)**
Asthma	0.02	11.0	392,914	8,644	Ministry of Health (2015)**
Osteoarthritis	0.08	10.7	382,198	31,340	Ministry of Health (2015)**
Diabetes	0.10	7.0	250,036	26,004	Coppell et al. (2013)**
Rheumatoid arthritis	0.18	2.4	85,727	15,002	Ministry of Health (2015)**
Chronic obstructive pulmonary disease (COPD)	0.13	2.3	82,155	11,009	GBC Health Research Limited as cited in Barnard, Baker, Pierse, & Zhang (2015) page 66
Drug use disorders	0.33	1.9	67,867	22,396	Wells et al., 2006*** Combined drug abuse (1.2%) and dependence (0.7%)
Stroke	0.23	1.6	57,151	12,916	Ministry of Health (2014)** Note: excludes transient ischemic attacks
Epilepsy	0.15	1.0	35,719	5,465	England (2012)
Bipolar affective disorder	0.25	0.8	28,576	7,144	Ministry of Health (2015)**
Eating disorders	0.22	0.5	17,860	3,983	Wells et al., 2006***
Schizophrenia	0.43	0.3	10,716	4,608	Oakley-Browne et al 1989, as cited in Ellis and Collings (1997) page 355.
Multiple sclerosis	0.51	0.1	3,572	1,811	Alla & Mason (2014)

\* Source of utility weights for other health conditions: Alcohol – Hazardous drinking (Stouthard et al. 1997); all other conditions (Ministry of Health, 2013).

\*\* Sample consisted of participants aged 15 years and above

\*\*\* Sample consisted of participants aged 16 years and above