ASSESSING GAMBLING-RELATED HARM IN VICTORIA

A PUBLIC HEALTH PERSPECTIVE

responsiblegambling.vic.gov.au

April 2016

Victorian Responsible Gambling Foundation

This report has been peer reviewed by two independent researchers. For further information on the foundation's peer review process of research reports, please see responsiblegambling.vic.gov.au.

Disclaimer

The opinions, findings and proposals contained in this report represent the views of the authors and do not necessarily represent the attitudes or opinions of the Victorian Responsible Gambling Foundation or the State of Victoria. No warranty is given as to the accuracy of the information. The Victorian Responsible Gambling Foundation specifically excludes any liability for any error or inaccuracy in, or omissions from, this document and any loss or damage that you or any other person may suffer.

Acknowledgements

The authors wish to thank Christine Hanley for her ongoing assistance with hosting and managing the surveys, and Dr James Douglas for his assistance in coordinating the early field work. The authors also wish to thank the participants in the study, including the gambling treatment and support professionals who gave so generously their time and experience, and people who gamble and their affected others who were prepared to share their stories and experiences. Their input was invaluable to this study.

Conflict of interest declaration

The authors declare no conflict of interest in relation to this report or project.

To cite this report

Browne, M, Langham, E, Rawat, V, Greer, N, Li, E, Rose, J, Rockloff, M, Donaldson, P, Thorne, H, Goodwin, B, Bryden, G & Best, T 2016, *Assessing gambling-related harm in Victoria: a public health perspective*, Victorian Responsible Gambling Foundation, Melbourne.

Enquiries

Michelle Bryne +61 3 9452 2619
michelle.bryne@responsiblegambling.vic.gov.au

Victorian Responsible Gambling Foundation

Level 6, 14–20 Blackwood Street
North Melbourne
Victoria 3051

PO Box 2156
Royal Melbourne Hospital
Victoria 3050

Telephone: +61 3 9452 2600
responsiblegambling.vic.gov.au

A Victoria free from gambling-related harm

vicrgf

responsiblegambling

Victorian Responsible Gambling Foundation

ResponsibleGambling

Assessing gambling-related harm in Victoria

A public health perspective

Matthew Browne
Erika Langham
Vijay Rawat
Nancy Greer
En Li
Judy Rose
Matthew Rockloff
Phillip Donaldson
Hannah Thorne
Belinda Goodwin
Gabrielle Bryden
Talitha Best

April 2016

Victorian Responsible Gambling Foundation

Table of contents

List of figures

List of tables

List of appendices

Key terms

Acronym	Description
AIHW	Australian Institute of Health and Welfare
AOR	Adjusted odds–ratio
BoD	Burden of disease
CALD	Culturally and linguistically diverse
CFA	Confirmatory factor analysis
CFI	Comparative fit index
CI	Confidence interval
CPGI	Canadian Problem Gambling Index
CQU	Central Queensland University
DALYs	Disability-adjusted life years
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, 5th Edition
EAP	Employee Assistance Program
EGM	Electronic gaming machine
EGRL	Experimental Gambling Research Laboratory
GBD	Global burden of disease
GDP	Gross domestic product
HALYs	Health-adjusted life years
HRQL	Health-related quality of life
IPART	Independent Pricing Regulatory Tribunal
IPV	Intimate partner violence
IRT	Item–response theoretic
LOTE	Language other than English
PGSI	Problem Gambling Severity Index
$QALY_1$	Quality-adjusted life years for a single year
QALYs	Quality-adjusted life years
RFs	Random Forests non-linear regression technique
RMSEA	Root mean square error of approximation
SG	Standard gamble
TTO	Time trade-off
VAS	Visual analogue scale
VRGF	Victorian Responsible Gambling Foundation
WHO	World Health Organisation
YLD_1	Years lost due to disability for a single year

Executive summary

Project overview

The Victorian Responsible Gambling Foundation engaged CQU's Experimental Gambling Research Laboratory to develop a framework and a methodology for understanding and measuring gambling-related harm in the Victorian population. The aim of the project was to systematically investigate gambling-related harm in Victoria, and assess the aggregate 'Burden of Harm' caused by gambling in Victoria 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 the summary health measures, 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 conducted expert and community consultations with Victorians, and combined this with the extant literature, to develop a definition, conceptual framework, and detailed taxonomy of harms – organised within eight broad domains. These results provided the basis for a comprehensive 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 burden of disease (BoD) studies. These quantitative harm estimates at the individual level were then aggregated based on recent Victorian prevalence data, and analysed with respect to domains of harm, PGSI categories, 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 and friends, and to the broader community. A public health approach encourages us to understand these potential negative impacts in terms of their impact 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.

While 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 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. A comprehensive literature review collated and organised existing knowledge regarding the nature and prevalence of gambling-related harms. In the next consultative phase, data was gathered across three stages:

- Focus groups and interviews with 35 professionals involved in the provision of problem gambling treatment, ancillary counselling services (finance, relationship or mediation), community education, primary health care, public policy, research, and the provision or promotion of responsible gambling within venues.
- Interviews with 25 individuals in the Victorian community who identified that they had experienced harm from either their own, or someone else's gambling.
- 469 forum posts on public internet gambling and support forums were examined to identify any further themes or harms not previously captured.

In the quantitative phases, we first undertook: an online 'harms survey' of 4136 individuals affected by gambling, who completed a 73-item harms checklist, the PGSI and other measures. This data was algorithmically transformed into natural 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 these gamblers. 735 participants (both professionals and general public) provided a total of 8820 estimates of HRQL impact for 798 unique condition descriptions, randomly selected from cases within each PGSI category from the previous survey. This data was analysed to yield an expected HRQL for each PGSI score (1-24+), which was then combined with prevalence data for further analyses.

Ethical clearance for all stages of data collection was approved by CQUniversity Human Research Ethics Committee (H14/06-142 community consultations; H14/05-120 expert consultations; H15/04-059 national survey; H15/05-126 health-related quality of life elicitation).

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) out to eight (previous six domains, cultural harms, and life course, generational, 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 that harm 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 Victoria suffers a HRQL decrement of .13, .29, and .44 respectively. Combined with prevalence data, this finding suggests that 50%, 34%, and 15% of the total harm resulting from gambling in Victoria can be divided among low-risk, moderate risk and problem-gamblers, respectively.

Discussion

At a population level, aggregate harms accruing to non-problem gamblers exceed those occurring to problem gamblers by about 6–1. Demographic groups such as females aged 55+, while less likely individually to develop clinically significant gambling problems, nevertheless contribute substantially to the ‘burden of harm’ experienced by Victorians. Comparisons with other health conditions suggest that gambling problems are a social issue on a similar order of magnitude to major depressive disorder and alcohol misuse and dependence. Both qualitative and quantitative results suggest that this burden of harm is primarily due to damage to relationships, emotional/psychological distress, health, and financial impacts. For policymakers and regulators, we conclude that there should be a broadening of focus from the prevention of “problem gambling” to the lessening of gambling problems, which are distributed across a broad section of the Victorian community.

Background

The term *harm* is often used to describe the potential negative consequences of gambling; but gambling harms are not often delineated from the symptomatology and characteristics of problem gambling or gambling addiction. This is reflected in widely used instruments for measuring gambling problems, which tend to combine gambling harms with other indicators symptomatic of (clinically defined) problem gambling. Further issues arise from the fact that gambling harm is a complex phenomenon, varying between individuals, and is not restricted to the individual problem gambler. Uncertainties and ambiguities in the definition and scope of gambling-related harm are occasionally discussed in the gambling literature. A public health perspective appears to provide a promising framework for approaching gambling harm. However, this approach demands a consistent and comparable definition, and a delineation of the scope, in order to proceed to developing measures that can support evidence-based practice. Therefore, addressing and clarifying these issues represents a major aim of this review.

While there is no single internationally agreed-upon definition of harm in relation to gambling, there are consistent patterns of interpretation throughout the literature that suggest some degree of convergence in the understanding of gambling harm. Unlike indicators of gambling addiction, measures that specifically target gambling harm are relatively under-developed. To a large degree, this reflects an emphasis on screening for problem gambling as a form of diagnostic exercise, rather than on measuring the range of outcomes arising from problematic gambling behaviours. Therefore, this review will consider various definitions of gambling harm, and seek to delineate the construct of harm from other related ideas, such as elevated gambling consumption, and gambling addiction.

Harm from gambling is manifested at the individual, social (family and friends) and community levels. Broad categories of harm can also be identified, including financial hardship, psychological distress, and interpersonal conflict or relationship breakdown. Furthermore, harms can be distributed over time, with harms (e.g. financial impacts) having the potential to occur long after the problematic behaviour has ceased. Finally, interactions and multiple directions of causation between these levels and these facets make the issue more complex still. Given the multi-faceted nature of harms, and the variety of acute, chronic, or diffuse impacts on the gambler, their social network, and the broader community, the challenge of rigorously conceptualising gambling-related harms should not be underestimated.

Definitions of harm as related to problem gambling

At first glance, harm is a term that appears to be immediately intuitive, implying damage and adverse consequences. However, the easy assumption, that it may be unnecessary to define the term in relation to gambling, is misleading. Neal, Delfabbro, and O'Neil (2005), in developing a national definition for problem gambling and harm, explored the issue of the lack of definition for not only harm, but in gambling literature in general. This lack of a robust, agreed-upon definition may reflect the multi-disciplinary interest in the phenomena of gambling, and the differences in approach and perspective on gambling from these different disciplines. Traditionally, the notion that harms arise from uncontrolled, addictive or problematic gambling behaviour has been treated as implicit, based on either self-assessment, help seeking behaviours, or clinical diagnosis. However the absence of a detailed and explicit definition, with an accompanying conceptual model, makes it difficult to operationalize the concept and thereby measure the impacts or severity of harm experienced (Neal, Delfabbro, & O'Neil, 2005).

Neal et al. (2005) identified two definitions of gambling harm, from the New Zealand Gambling Act (Department of Internal Affairs, 2003), and another from the Queensland Government (QLD Treasury, 2002a). The New Zealand Gambling Act definition is broad, describing harm as:

> *Any kind of harm or distress arising from, or caused or exacerbated by, a person's gambling.*

Although this definition is somewhat tautological, it perhaps can be taken to emphasise that harm also includes psychological or emotional impacts of gambling, as well as presumably more concrete forms of harm, such as financial loss. This is highlighted in the second part of the definition, which explicitly refers to personal, social or economic harms. The second part of the New Zealand definition emphasises the multiple social scales at which harm can take place, enumerating four levels at which harm may occur; the individual person, spouse, family, whanau, or wider community, in the workplace, or by society at large. The Queensland definition describes 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 extending to the broader community. In describing harm as a set of impacts and consequences, the Queensland definition is clear that gambling harms are the outcome of problematic gambling, rather than problematic gambling itself. However, in describing *safety* and *risk* in relation to the *product*, the Queensland definition would appear to be focused on a product-safety paradigm of evaluating the hazard involved in consumption of commercial gambling.

Neal et al. (2005) were critical of both definitions for being too vague and imprecise to be useful for the purpose of operationalizing the concept for the purpose of measurement. Four years later, similar limitations were noted by Currie, Miller, Hodgins, and Wang (2009) who identified three definitions of harm that were based on experience of consequences from severity scales, or dichotomous self-rated presence or absence of "harm". The Queensland Government definition does not make any implication as to the mechanism by which harms occur. However, the New Zealand definition does offer some insight, suggesting that gambling can *exacerbate*, as well as *generate* harms. This is an important point, as gambling harms rarely occur in isolation. Rather, one of the key features of gambling problems is co-morbidity with a range of other harmful behaviours or states, such as alcohol use and depression (Becona, Lorenzo, & Fuentes, 1996; Petry, 2001). These states and behaviours almost certainly interact with one another, i.e., they display bi-directional causal effects. To illustrate, gambling may seldom cause an otherwise healthy person to develop depression or drinking problems. However, gambling may more often be resorted to as a coping mechanism for those susceptible to other problems, and vice-versa, with the long-term effect of exacerbating both gambling and non-gambling problems. Importantly, both definitions describe harm as extending beyond the individual to the family, friends and community.

In the literature since Neal et al. (2005) and Currie et al. (2009), harm itself is still rarely defined, but 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). To add further uncertainty, the term harm is often used interchangeably to refer to the behaviour and not just the outcome or consequence. This conflation of the harm (outcome) with the source (problematic behaviour) is not isolated to gambling however, and is consistent with other public health literature, for example, alcohol (National Collaborating Centre for Mental Health, 2011).

Health and wellbeing are social constructs, as illustrated in the World Health Organisation's (WHO) definition of health, with differences in the understanding and experience of health between cultures. If gambling harm is understood as a decrement to health and wellbeing, then it must also be recognised as being socially constructed. This social and cultural construction of the concept of harm has been explored in studies of indigenous communities (Bertossa & Harvey, 2012; Dyall, 2010). Borrell and Boulet (2005) have also examined the social construction of harm in relation to gambling; however it is an emerging area in terms of our understanding of gambling harm. For the time being, it should at least be recognised that findings with respect to gambling harm in one cultural context are not necessarily applicable to other contexts.

Theoretical approaches of relevance to gambling-related harm

The model or framework from which one approaches gambling harm has important implications for how it is treated. Any theoretical approach will tend to yield implicit assumptions about the nature of gambling harms. We argue that it is important and useful to make these implicit assumptions explicit, so that they can be inspected and analysed. While this review takes a position in favour of a public health approach to understanding gambling-related harms, it is nevertheless useful to compare and contrast this approach with other theoretical approaches.

Self-responsibility and consumer models

The self-responsibility model was described by the Productivity Commission (2010) as a lens, rather than a model, through which gambling policy is often viewed. Arguments based on this stance tend to emerge in resistance from industry against increased regulation or harm minimisation measures. However, it is also reflected in population surveys and public discourse suggesting a degree of acceptance of this stance in the community (Borrell, 2008). A consumer model of gambling considers gambling purely as a service product or consumer good, which is offered in the marketplace and selected by consumers in order to maximise their utility. As with other classical economic models, it assumes the consumers are informed, rational agents with access to full information and multiple product options. The self-responsibility model is strongly associated with this; as a free-market model it emphasises both the freedom and the responsibility of the individual to make effective and adaptive consumer decisions. This perspective tends to inform political discourse wherever government regulation or restriction is contentious, including gambling, tobacco and firearms. In positing that the individual is best qualified to make economic/consumer decisions, they have strong intuitive appeal. Both perspectives may be considered as expressions of the dominant cultural paradigm in liberal free-market economies.

The self-responsibility/consumer model tends to neglect the possibility of gambling-related harm, based on the strong assumption that rational consumers do not normally consume goods that act to decrease their utility. To the extent that harms do arise, it is implicit that they are related to idiosyncratic aberrations or faulty decision making on the part of consumers. Therefore, the individual is treated as the root cause. More sophisticated versions of the self-responsibility/consumer model incorporate safety standards and the notion of fitness for purpose. These move some of the responsibility for harms arising from the product from individual consumers to merchants, and are more congruent with a harm minimisation approach. Regardless, these models are positioned in a paradigm of managed liberalisation rather than healthy communities (Productivity Commission, 2010).

This model is inconsistent with a public health approach to gambling because it ignores characteristics of the product, the environment, and the consumer, which lead to an elevated vulnerability to over-consumption. These include; the impact of the environmental effects of venues, the impact of novel gaming technologies, and vulnerabilities for consumers experiencing mental health morbidities and other biophysical morbidities and complex trauma, as well as the vulnerability of disadvantage. It also does not address the impact of the harm that goes beyond the person gambling (fraud, domestic violence, generational impact), or the negative impact of labelling (such as irresponsible) on help seeking, or management strategies. One of the most important criticisms of this model is that it also underestimates the opportunity for regulation to enhance and reinforce, rather than undermine, self-responsibility (Productivity Commission, 2010).

In terms of harm from gambling, the limitations outlined for these models make them ineffective in addressing any determinant that can influence harm that lie beyond the individual (Cosgrave, 2010). They

are also not capable of informing the functional mechanisms or co-morbid interactions associated with gambling-related harm, as highlighted in the New Zealand definition.

Medical model

In the simplest form, a medical model considers problem gambling as a discrete disease incurred by an individual that is treated on an individual level. Implicit in the medical model is a binary categorisation; that individuals either have gambling problems (in which case they are likely to experience harms) or they do not (harms are not occurring). On a practical level, meta-analysis of pharmacological treatments for pathological gambling has found limited support for their use (Bartley & Bloch, 2013), tending to support the idea that gambling is a socially constructed disorder, rather than one that is physiologically based. On a conceptual level, several researchers have identified issues with a discrete approach to defining the disorder and associated harms (Korn & Shaffer, 1999; Shaffer & Korn, 2002; Korn, Gibbons, & Azmier, 2003). Allcock (1995) also questioned the existence of 'gambling problems' as a discrete entity, emphasising the social construction of gambling harms, and the varying degrees to which excessive gambling can take place 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).*

The Productivity Commission (2010) outlined a number of shortcomings of the medical model in relation to gambling. In short, it fails to consider the social determinants of health or the more pervasive social harms. In terms of understanding gambling harm, this model again restricts gambling harm to clinically diagnosed problem gambling. Implicit in the model is that the very large proportion of the gambling population without gambling problems at a clinical level is not experiencing harms from the activity. Accordingly, it implies that efforts to reduce harm should be directed to treatment or management strategies targeted at problem gamblers.

Harm reduction or minimisation model

The harm reduction model or approach to problem gambling originated out of a response to a perceived gap in theoretical frameworks for addressing youth gambling. It utilises a public health approach that draws on the lessons learnt from the tobacco, alcohol and illicit drug prevention programs (Bissitt, Crate-Lionel, & Lambert, 1988; Dickson-Gillespie, Rugle, Rosenthal, & Fong, 2008; Dickson, Derevnsky & Gupta, 2004a; Dickson, Derevnsky, & Gupta, 2004b; Dickson, Derevnsky & Gupta, 2002). Dickson and colleagues drew on a variety of theoretical models and frameworks from research into areas such as resilience, risk, and protective factors from studies across many of the addiction fields. Harm reduction, as the name suggests, is about the prevention of harm rather than the prevention of use or involvement in the activity. There are a variety of definitions and interpretations, and even some debate (Gainsbury & Blaszczynski, 2012), of this framework in the literature. The Productivity Commission (2010) definition states that harm reduction encompasses harm minimisation strategies that aim to minimise the risk associated with gambling and facilitate gambling appropriate limits, without overtly disturbing those who gamble in a non-problematic manner. This definition also captures the divergence of harm reduction in gambling from other areas of addiction, where there is typically less regard for non-problematic uses (e.g., alcohol).

The divergence in harm reduction theory between gambling and other addictive behaviours occurs because it is considered that there is no safe level for the use of tobacco or illicit drugs. However, it is thought that gambling can occur at a safe (or harm free) level, similar to alcohol or other public health issues like sun safe behaviour (Detweiler, Bedell, Salovey, Pronin, & Rothman, 1999), and this is both an appropriate and realistic goal rather than abstinence for many people. In addition, youth gambling and alcohol abuse have high levels of comorbidity as well as shared risk factors (Dickson et al., 2004a,

Dickson et al., 2004b). Dickson et al. (2004b) suggest there are three tenets to this: 1) that gambling is a socially acceptable activity, 2) that there exists a continuum of harm for involvement in gambling, and 3) that adolescent experimentation is a normal part of the development process. This is consistent with other theoretical approaches to gambling (Korn et al., 2003, Korn & Shaffer, 1999), although there are critics of this approach who feel that gambling is always harmful (Carter, Miller, & Hall, 2012). The harm reduction model does not only apply to youth, and is equally relevant across the lifespan, between genders (Hing & Breen, 2001), and in different cultural settings (Abbott, Volberg, Bellringer, & Reith, 2004: Breen & Gainsbury, 2013; Stevens & Golebiowska, 2013).

A harm reduction approach assumes gambling, like other legal products, has the potential to create harm for any individual, if consumed inappropriately. Therefore, it differs markedly from the medical model of understanding gambling harms. It also puts the emphasis on the product as the underlying source of harms, rather than the individual. Although consumer behaviour may be targeted (e.g., in setting limits), these are viewed as a response to the intrinsic risks involved in unrestrained use of the product. It also implies that there is a manner of using gambling that is safe, and that measures can be put in place to encourage safe behaviour.

Public health approach

Korn and Shaffer's (1999) seminal paper presented a public health perspective towards gambling, that sought to:

- Create awareness among health professionals about gambling, its rapid expansion and its relationship with the health care sector.
- Place gambling within a public health framework by examining it from several perspectives, including population health, human ecology, and addictive behaviours.
- Outline the major public health issues about how gambling can affect individuals, families and communities.
- Propose an agenda for strengthening policy for prevention and treatment practices through greater public health involvement, using the framework of the Ottawa Charter for Health Promotion as a guide (Korn & Shaffer, 1999).

The public health perspective uses infectious disease as a metaphor for understanding gambling problems rather than treating the phenomena as a disease. Within a public health framework, gambling can be examined in terms of the *host* which is the gambler, the *agent* which is the specific gambling activities in which players engage (e.g., EGM play), the *vector* which is the money and time invested, and the *environment* which incorporates everything from the gambling venue, to the person's physical, socio economic, cultural, and political environments (Korn & Shaffer, 1999). They suggest that it is helpful to consider what increases a host's risk or protective factors, and also outlined the benefits of this approach for public policy (Korn et al., 2003; Korn & Shaffer, 1999).

The application of a public health approach to tobacco control, immunisation, road safety, and environmental contaminants has led to public health responses yielding significant reductions in morbidity and mortality over the last two centuries. As a result, researchers and policy analysts have adopted this approach internationally (Productivity Commission, 2010). Applied to gambling, this approach frames gambling within a whole of population approach, incorporating ideas such as healthy communities, empowered and resilient individuals, healthy environments, and evidence-based policy. Dickson-Gillespie et al. (2008) suggest that the public health approach incorporates both harm reduction and responsible gambling models. It could also be argued that the Pathways Model proposed by Blaszczynski and Nower

(Blaszczynski & Nower, 2002; Nower & Blaszczynski, 2004) is also consistent with the public health approach, as it follows a determinants of health framework to the development of gambling problems.

The potentially positive effects of gambling are also captured in the public health approach. It recognises positive impacts such as employment, the broader value of venues in enabling social interaction, and the support for sport and other activities by many of the venues. It also recognises that recreational gambling can be a positive experience, providing relaxation and entertainment for many people, and that not all gambling leads to harm. This is captured in the Independent Pricing Regulatory Tribunal (IPART) (2004) recommendations that had goals of:

- Preventing vulnerable individuals from developing gambling problems.
- Reducing the prevalence of gambling within the community.
- Reducing the negative social and health consequences associated with problem gambling for individuals, their families, and their communities.
- Maintaining a reasonable level of enjoyment from gambling by recreational gamblers.
- Ensuring the livelihood of those associated with the gaming industry is not unnecessarily compromised.

Dickson-Gillespie et al. (2008) identified that the IPART recommendations are consistent with the public health approach and represent “the most integrated model of prevention and harm minimisation yet developed”.

Adams, Raeburn, and De Silva (2009) also noted the importance of the public health approach’s shift from the individual diagnosis to addressing the context and environment in which gambling is consumed as addressed through policy and product regulations. This is consistent with other authors (Marshall, 2009; Messerlian & Derevensky, 2005). Adams et al. (2009) identified New Zealand’s efforts, stemming from their 2003 Gambling Act, as codifying the recognition of gambling as a public health issue. These included three responses: harm minimisation, health promotion, and political determinants. Harm minimisation is fairly well understood and examined in gambling literature. Health promotion is consistent with the Ottowa Charter with an emphasis on healthy communities and a human rights approach to health; grounded in building community capacity and resilience in terms of gambling. It is however, probably the least well understood or examined of the approaches in terms of gambling. In health promotion there is a focus on upstream determinants. In gambling there tends to be a focus on treatment and downstream determinants (behavioural and biological) due to pressure to ‘fix problems’, and the political expedience of being seen to be taking action.

Adams et al. (2009) recognized the complimentary roles of harm minimisation and health promotion, and saw policy development as part of that, but also noted the challenges given the conflicted role of the governments with the revenue generated from gambling activities. This was also noted in a later paper (Adams & Rossen, 2012) that explored the role of vested interests in de-railing the public health approach. This was supported by other international research (Barmaki, 2010) regarding gambling policy in jurisdictions where the government receives large amounts of revenue.

The Productivity Commission (2010) positions gambling policy within this model, citing the successful application in more recent years to issues such as smoking, immunisation, traffic accidents, and SIDS; these in turn building on a longer history of sanitation, clean water and public education. They also identify the difference to the medical model as being about prevention of harm and promotion of wellbeing rather than the treatment of problems and resolution of dysfunction (Productivity Commission, 2010).

A public health approach encompasses population health, which seeks to understand why different groups within the population experience different health outcomes. Public health encompasses a broad framework of determinants of health. This framework acknowledges and captures the impact of broad features of society such as policy, social cohesion, culture, education, and life-course on health behaviours (such as gambling) and subsequently health outcomes (such as harm). Utilising a public health approach, one can compare gambling to alcohol. That is, that not all consumption of gambling is bad, there are safe levels of consumption, and prevention and mitigation of harm are the goals (Productivity Commission, 2010).

The manifestation of harm – negative consequences experienced

The emergent theme from the literature is that harm from gambling occurs at three broad levels. At the centre is the person who gambles, and the harm that occurs to them as an individual. At the next level is the harm that occurs to the family and friends of the person who gambles; this level is sometimes referred to by terms such as *affected others* or *concerned significant others*. There is a subtle, yet important difference in these two terms that is worth noting. 'Affected others' suggests a more physical or overt harm that has occurred to them, while the term 'concerned significant others' implies that harm can occur from the engagement with the person and is a less overt, and purely psychological level of concern for the person who gambles. The term significant other also suggests a domestic partnership type of relationship. For this project the term affected other was adopted to reflect the breadth of relationships that can be impacted, including parents, children, siblings, extended family, close friends, and work colleagues. The third, and broadest, level at which harm is manifested is the community. Community is a relatively broad term, and can represent different forms of community, with various geographical, cultural, or socio-economic boundaries.

Harm to the person who gambles

There is a large body of research that explores the types of harm that can be experienced by a person who gambles; see Walker, Abbott and Gray (2012) for a recent example. The Productivity Commission (2010) found that 20% of people who gambled report that it has had an adverse effect on their life, while 70% reported it has made no difference, and 12% rate it as positive influence. There were obvious differences in stratification for severity of gambling based on the Canadian Problem Gambling Index (CPGI; Ferris & Wynne, 2001). As expected, for people experiencing problems with gambling there was a much smaller group who rated it as having a positive impact (6.6%), or having made no difference (5.2%) while 85.2% rated it as having had a negative impact (Productivity Commission, 2010). Consistent with the calls for better understanding of harm experienced by people experiencing lower levels of gambling severity, were the ratings for those assessed as being of moderate risk. While 31.6% rated gambling as having had a positive impact, 22.7% reported no effect and 45.8% reported a negative impact (Productivity Commission, 2010, p. 424).

Harm is experienced more by electronic gaming machine (EGM) players, and especially by regular EGM players, with reports of harm increasing significantly as frequency of play increases (Productivity Commission, 2010). This has raised the question of whether EGMs are a "safe product" (Cantinotti & Ladoucer, 2008; Dowling, Smith, & Thomas, 2005). While online gambling is an emerging and fast growing area of consumption, no difference to the nature of harms between online and offline gambling has been detected to date (McCormack & Griffiths, 2011).

Data on individually experienced harm from gambling is mostly gathered through self-report population surveys and disclosure by people seeking treatment (Productivity Commission, 2010). In terms of the

reliability of self-report for measuring gambling problems, Hodgins and Makarchuk (2003) are generally supportive of the use of this assessment method.

The nature of harms to the individual can be broadly grouped to:

- 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. While a rare outcome of gambling problems, entering the judicial system creates acute harm to individuals as well as the community. This includes (but is not limited to) incarceration, along with psychological harms of shame and stigma.

Harm to the individual's health

Most harm from gambling in relation to the health of a person who gambles is caused by increased levels of anxiety and stress. Gambling at problematic levels creates physical changes in human biochemistry that is consistent with exposure to high levels of stress or arousal. A frequent and regular cycle of this is damaging to physical health (through the function of epinephrine, cortisol, or diastolic blood pressure) (Productivity Commission, 2010). Adolescents are less likely to suffer from medical consequences of gambling such as hypertension, peptic ulcer, coronary heart disease (Fong, 2005), although the long-term impacts for these adolescents have yet to be investigated.

There are well established links between problem gambling and other comorbidities including addiction (Ariyabuddhiphongs, 2012; Bakken, Gøtestam, Gråwe, Wenzel, & Øren, 2009; Dickson et al., 2002; Dussault, Brendgen, Vitaro, Wanner, & Tremblay, 2011; Hodgins, Pedens, & Cassidy, 2005; Holdsworth, Haw, & Hing, 2012; Hounslow, Smith, Battersby, & Morefield, 2011; Källmén, Andersson, & Andren, 2008; Lloyd et al., 2010; Najavits, Meyer, Johnson, & Korn, 2011), mental health (Abbott et al., 2004; Ariyabuddhiphongs, 2013; Holdsworth et al., 2012; Hounslow et al., 2011; Potenza, Maciejewski, & Mazure, 2006; Hodgins et al., 2005), 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). It is important to emphasise that association does not imply causation, and that many of the comorbidities share the same risk and protective factors as identified by gambling research (Dickson et al., 2002; Dussault et al., 2011; Hodgins et al., 2005; Holdsworth et al., 2012; Hounslow et al., 2011; Källmén et al., 2008). However, the escalation of comorbidities is most likely explained by mutual (bi-directional) direct causation between gambling and other comorbidities such as depression or problems such as homelessness (Dussault et al., 2011; Holdsworth et al., 2012; Holdsworth and Tiyce, 2013; Lloyd et al., 2010; Martin, Usdan, Cremeens, & Vail-Smith, 2014). Nevertheless, the degree to which gambling is *instrumental;* that is, the degree to which the co-morbidity would decrease if gambling-harms were removed, is extremely difficult to establish at reasonable cost.

In a case control study examining the differences in biological determinants of people who met the criteria for DSM-IV pathological gambling, and age and gender matched control cases, Black, Shaw, Mccormick, and Allen (2013) identified some concerning patterns of multiple risk factors. People who met the DSM-IV criteria for pathological gambling had more medical and mental health conditions, were less likely to

exercise regularly, more likely to smoke, more likely to drink, had a higher BMI, more likely to be classified as obese, and more likely to watch more than 20 hours of television per week (Black et al., 2013). This translated into poorer health outcomes as evidenced by lower self-ratings of health, more emergency department visits, more likely to have been hospitalised for a psychiatric condition and more likely to be medicated for a mental health issue. They also identified that the participants who met the DSM-IV criteria for pathological gambling were less likely to have regular dental check- ups, and more likely to not seek medical care due to financial pressures.

These findings highlight an important causal pathway in terms of harm, linking the financial pressures to both short and long-term health outcomes, and the interaction with other significant behavioural and biological risk factors. This is important in addressing the harm or cost to the community through increased health costs. Early intervention or prevention of health issues is less costly and those costs are often borne by the individual.

With respect to the patterns identified in Black et al.'s (2013) study, it is important to note that a case control methodology does not establish causality. That is, it is unclear if people's health deteriorated because of gambling, if they started or increased their gambling in response to deteriorating health, or if there is there a third variable that influences both. It is not unreasonable to assume that broader determinants are at play on all these health outcomes, and the effects of these (e.g., socio-economic status) are well established. Gambling as an activity is sedentary, and not surprisingly it has been related to higher levels of sedentary behaviour (Cousins & Witcher, 2007) which contributes to risk factors in terms of biological determinants of health but temporal sequence cannot be established.

Linking gambling to mortality is more challenging and yet to be attempted. Methodologically, this requires an understanding of the contribution of gambling to the risk factors or contributing factors to the cause of death. While current mortality data does include contributing conditions or factors, gambling is too distal a determinant to be effectively captured within the existing reporting protocols. The contribution could be attributed within other mentions of stress or anxiety but the contributions to the biological determinants identified in Black et al.'s study (2013) have not yet been calculated.

Mortality through a completed suicide linked to gambling has been examined. Suicide ideation, attempts and completion have been examined in a number of studies as a gambling harm (Carroll, Davidson, Marsh, & Rodgers, 2011; Ledgerwood, Steinberg, Wu, & Potenza, 2005; Penfold, Hatcher, Sullivan, & Collins, 2006a; Penfold, Hatcher, Sullivan, & Collins, 2006b; Petry and Kiluk, 2002). Ideation and behaviours have been positively correlated with gambling. Battersby, Tolchard, Scurrah, and Thomas (2006), and Nower and Blaszczynski (2004) identified higher rates of suicide among youths experiencing problems with gambling. However, it is important to highlight that gambling is part of a complex interaction of determinants and morbidities. That is, to say gambling causes suicide can oversimplify the issue and misunderstand the solution (Maccallum & Blaszczynski, 2003; Penfold et al., 2006b; Séguin et al., 2010)

Blaszczynski and Farrell (1998) analysed 44 completed suicides from Victoria from 1990-1997 where the Coroner had identified problems with gambling as a primary or contributing issue. There was a gender bias towards males, with a mean age of 40 years, and 84% came from otherwise disadvantaged backgrounds. Nearly one third had made a previous suicide attempt, but only one quarter had sought help for the problems they were experiencing with gambling (Blaszczynski & Farrell, 1998). The study also identified the commonly associated harms of large financial debts, relationship breakdowns and comorbid depression.

Overall there appears to be a consensus that there is an undercount of suicidal behaviours where problems with gambling are a contributing factor because of the nature of how we attribute cause when recording health outcomes, and due to the complexity of the issues impacting on the person at the time of the behaviour. These complexities included the comorbid issues of substance abuse and mental illness;

generally noted in the literature. Attribution relies on what Blaszczynski and Marfels (2003) referred to as *subjective judgements* (also highlighted by Gray (2013) in establishing the presence and contribution of experienced gambling problems. Blaszczynski and Marfels (2003) sought to address the difficulties with a proposed standard protocol to be used by clinicians and researchers in psychological autopsy. In sum, while suicide or death due to gambling is rare, an exact assessment of the rates of mortality due to gambling is not possible with extant data.

Harm to the individual's emotional state

An individual's health is strongly linked to their emotional states. Harm is often referred to as being experienced in terms of feelings of guilt, anxiety, helplessness, as well as shame, stigma, grief and even self-hatred (Productivity Commission, 2010; Raisamo, Halme, Murto, & Lintonen, 2013). While the nature of this and its relationship to gambling severity has been explored (Yi & Kanetkar, 2011), there are significant gaps in our understanding of the nature and function of emotional states as gambling-related harm.

While we have an understanding of how emotional states such as anxiety can impact on health from a biophysical perspective, the experience of shame and stigma are included in the harms literature as outcomes. When considering or measuring harm, the prevalence of feelings of shame or stigma might be counted, but by only examining them as a harms outcome, we have an incomplete understanding of their impact as a determinant of further outcomes and harm. Shame and stigma in relation to gambling tend to be examined in relation to the impact on treatment (Carroll, Rodgers, Davidson, & Sims, 2013; Horch, 2011; Suurvali, Cordingley, Hodgins, & Cunningham, 2009). The role of stigma as a health determinant, its impact on other health behaviours relating to self-care, and more upstream health determinants such social inclusion and connectedness have not been given as much attention and are subsequently not as well understood.

Financial harm to the individual

Financial harm is often the crisis that precipitates treatment seeking by people experiencing problems with gambling. At the point of help-seeking, the harm is normally at an extreme level with loss of housing and bankruptcy often cited (Carroll et al., 2011). However, financial harm generally does not occur in a single instance of crisis. Rather, it develops over time, although the time frame can vary considerably depending on the individual. Financial harm occurs where individuals are no longer able to meet the cost of essential items, such as food, clothing, personal care products, utilities and housing. Financial harms due to opportunity costs are more difficult to define. Opportunity costs of a good or service are described in terms of not being able to purchase alternative discretionary consumer goods or services as a result of expenditure on that item. However, if the goods or services are discretionary rather than essential, it raises the problem of whether the utility obtained from gambling expenditure exceeded that that would have been obtained from the alternative good. In this case, gambling represents a healthy entertainment and a rational choice, and benefit rather than harm, is being incurred. Due to the difficulties in considering opportunity costs, we suggest restricting the definition of financial harms to those that impact on 'essential items', although we recognise that the definition of essential items may in some cases be somewhat arbitrary.

Measures of financial harm are fraught with contextual difficulty. The absolute value of money lost can have a varying impact depending on the individual's vulnerability, and aggregated measures of financial harm are limited in their value for this reason. Socio-economic status is the single most important predictor of health status (Australian Institute of Health and Welfare, 2014), and impacts on health (and harm) through a variety of causal pathways, interacting with both upstream and downstream health determinants. Financial harm therefore has both immediate and long-term impacts and influences on harm. Unravelling the complexity of the function and outcomes of financial harm, rather than relying on

aggregate spend or loss has yet to be undertaken at the broader level. Bertossa and Harvey (2012) noted the value of research undertaken by Martin (1993) that has tracked money trails to determine the relationship between gambling and the harm experienced (this included the family and community). While this represented a small study of only one community, they were able to identify a pattern of money flowing from the women, who had primary responsibility for providing household requirements (and who generally did not gamble) to the adult males (who were the main gamblers in the household). Winnings from gambling tended to be spent outside the home and used to purchase alcohol and other non-essential items. This pattern of money moving from the household without returning the goods and services needed to maintain health clearly demonstrates a process that contributes to harm. The study offers a useful methodology in better understanding the nature of financial harm. The method of following 'resource flows' appears to be far more informative than simply considering aggregated dollar spends that are generally reported. Disadvantages include the fact that it is resource intense and challenging to implement on a larger scale.

One extreme aspect of financial harm that has been examined in the literature is homelessness. The AIHW (Australian Institute of Health and Welfare, 2009) examined the role of gambling among those seeking homelessness services and identified that in 2007-08, 1.2% of Supported Accommodation Assistance Program (SAAP) support periods were for clients who identified as having gambling-related issues. They found that those seeking support were more likely to be male, older, non-indigenous, and have been previously employed (suggesting a financial crisis). Of those seeking support, 12.2% had children recorded against the support period, although this figure may be an underestimate due to the protocol that the children may be recorded against the other parent (Australian Institute of Health and Welfare, 2009). Adolescents experiencing problems with gambling are less likely than adults to lose access to housing; this is mostly explained by them continuing to live in the parental home (Fong, 2005). Other studies have examined the relationship between gambling and homelessness. However, similarly to other gambling comorbidities, and as pointed out by Griffith (2014) and Holdsworth and Tiyce (2013), the causal nature of this relationship is difficult to resolve.

Harm to employment or study

Harm from gambling is often experienced in terms of the individual's employment (Carroll et al., 2011) or study (Fong, 2005). Study is grouped with employment, due to the nature of its function in terms of socio-economic status and close link with financial harms. Harm in terms of employment or study ranges from reduced performance – caused by a preoccupation with gambling or other gambling harms or time spent gambling on internet or devices while at work (Griffiths, 2009), to absenteeism, and through to termination of employment. Where employment is the primary source of household income, this has a strong contributing impact on financial harm.

Harm to relationships

Relationship issues are another type of harm that prompts treatment seeking for people experiencing problems with gambling (Evans & Delfabbro, 2005; Pulford et al., 2009; Suurvali, Hodgins, Toneatto, & Cunningham, 2012). Harm to relationships tends to be conceptualised as the crisis level of break down, and the neglect of the family (Carroll et al., 2011) even by youth experiencing problems with gambling (Raisamo et al., 2013). As with the other forms of harm, there is a complex interaction of issues that contribute to the harm, that extend beyond just the gambling. Similarly it is important not to just categorise the harm to relationships as an outcome, but to recognise it as both an outcome and a determinant of other harms. The breakdown of relationships can contribute to homelessness, poorer health outcomes, and deteriorated emotional states.

Criminal activity

Gambling has been linked to the undertaking of criminal behaviours, particularly property crimes and fraud (Breen, Hing, & Gordon, 2013a; Brown, Killian, & Evans, 2005; Carroll et al., 2011). The impact of this is more fully considered later in this review, as harm to the community. However it is important to highlight that incarceration and any involvement in criminal activity create their own harms to the individual. Overall the literature focuses on harm that occurs when a person is experiencing a problem or pathological gambling. There is little examination of the experience of harm at recreational through to at-risk levels of gambling behaviour, and nor is there an examination of the continued experience of harm after seeking treatment or even being able to abstain from gambling, or gamble at a controlled or non-problem level.

Harm to family and friends

Harm is not only experienced by the person who gambles. Psychological, emotional, physical and economic connections between individuals can act as pathways for the transmission of harm. The experience of harm has been mostly examined in terms of the partner (or spouse) and the children of people with gambling problems. This is understandable, given that immediate family connections are usually the strongest, regardless of the type of connection, and are therefore likely to bear the majority of transmitted harms. There is a current gap in the literature in terms of the experience and impact of parents of people experiencing problems with gambling, who may have connections and responsibilities of equal weight, and who may have attempted to mediate or address any harms being experienced.

Harms experienced by partners or spouses include the breakdown of relationship due to conflict, loss of trust due to dishonesty and concealment, and change of power or equality in marriages. For example, when one goes from ‘partner’ to ‘gatekeeper’ or a parent–child relationship forms in terms of financial control (Holdsworth, Nuske, Tiyce, & Hing, 2013b). On a practical level, harms to family include going without household and personal items, quality of food, levels of indebtedness, juggling payments, loss of utilities and the shame or stigma that occurs when these deficits become apparent to others (Dickson-Swift, James, & Kippen, 2005). The health of partners and spouses can also be impacted, including the exacerbation of other health issues, or health impacts such as insomnia, migraines, and stomach upsets. They may also include the adoption of coping strategies by the partner, that are detrimental to their own health, such as overeating, drinking or smoking, in an effort to manage stress, depression and anxiety (Gaudia, 1987). In common with the potential harms to the individual, identified above, the partner is also vulnerable to harms caused by the impact of finances on health, such as an inability to afford medication, or treatment.

A number of qualitative studies have identified the harm caused by the effects on the emotional state of the partner, including isolation. Isolation can occur both through the partner being the one to distance themselves from affected others due to shame and being isolated by others (Dickson-Swift et al., 2005). When affected others created the distance and subsequent isolation from the partner, it was often reported to be due to the financial damage done to the relationship by the person who gambles. Isolation was also exacerbated by not feeling safe when going out to venues due to the temptation to gamble and a loss of sense of self (Dickson-Swift et al., 2005, Holdsworth et al., 2013b). A pervasive harm identified is that of self-blame; the idea that they should have been able to save or help the person gambling and an imbalance in the perception of the harm between the partner and the person who gambles. In a study of male pathological gamblers, Ferland et al. (2008) found the pathological gambler did not see the harms as being as severe to the partner. This could possibly be attributed to a gender based bias (study involved male gamblers), but it is consistent with other findings of women seeking help for another person’s gambling (Heater & Patton, 2006; Hing, Tiyce, Holdsworth, & Nuske, 2013; McMillen, Marshall, Murphy, Lorenzen, & Waugh, 2004). Despite the broad and significant experience of harm by the partner of a person who experiences problems with gambling, a large American study identified the support of a

significant other was related to improved treatment outcomes (reduction of harm) for the gambler themselves (Ingle, Marotta, McMillan, & Wisdom, 2008).

Special attention is paid in the literature to the relationship between gambling and intimate partner violence as a specific harm. The presence of problem gambling increased the odds of perpetrating pathological levels of dating violence (adjusted odds–ratio (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, Macmillan, & Sareen, 2010).

However, as cautioned previously, it cannot be assumed that gambling is the only causal factor resulting in elevated levels of violence. A limitation of the study was that DSM-IV criteria was used, so it was unable to explore the patterns of abuse in stratified levels of gambling severity. Korman et al.'s (2008) study, while using a small sample of 248 problem gamblers, identified that 62.9% of participants had either experienced or perpetrated intimate partner violence (IPV), with 25.4% of cases being at the severe end of the scale. This was consistent with other studies which showed higher rates of IPV for partners of pathological gamblers (Liao, 2008). Muelleman, DenOtter, Wadman, Tran, & Anderson's (2002) study of emergency room visits identified the Odds-Ratio (OR) for experiencing IPV for partners of problem gamblers was 10.5, and when combined with problem drinking this was OR 50, problem drinking on its own was OR 6.1.

As noted, it is important to be cautious about causality. Gambling is part of a complex interaction of issues of dysfunction within many relationships, contributing to the perpetration of IPV. In a recent 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. It was identified that 20% had experienced violence as victims, 10.8% as perpetrators, and 26% as both victims and perpetrators (Suomi et al., 2013). This figure of both victim and perpetrator supports the idea that there is a broader environment of dysfunction. The study also identified that parents and partners were most often the perpetrators of violence, and found no gender differences in reciprocal violence. Given the environment of dysfunction and the coincidental issues of alcohol or substance abuse (Breen, 2012b), it is difficult to determine the contribution of gambling as a causal factor. However gambling problems often precede the incidence of violence as a trigger event or issue (Suomi et al., 2013; Breen, 2012a). Suomi et al. (2013) found that when the partner of the person who gambled was the perpetrator of IPV, they were usually reacting to accumulated anger and mistrust from someone else's gambling, and where they were victims it was the expression of gambler's loss and frustration.

The impact of gambling harm on children has only been examined in detail by a small number of qualitative studies. Children are seen to be most affected by adult gambling losses, and more vulnerable to them in comparison to adults. The neglect of children is well established as a potential harm from gambling (Breen, 2012a; Darbyshire, Oster, & Carrig 2001a; Darbyshire, Oster, & Carrig 2001b; Minister for Gambling South Australian Government, 2007) although it remains poorly understood. Anecdotal catalogues of harms for children include various characteristics of 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 adequate supervision. However, an attempt to establish this vulnerability empirically could not establish a causal relationship between gambling and child sexual abuse (Dion, Collin-Vézina, De La Sablonnière, Philippe-Labbé, & Giffard, 2010).

Darbyshire et al. (2001b) characterised this impact on children as a *pervasive loss* that encompasses both physical and psychosocial aspects. This includes the *loss* of the gambling parent, the feeling of abandonment, the impact on relationships (changed parent/child, to loss of extended family), trust, security, sense of home, and an unreliable supply of material needs. Other issues identified in the study 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 can suffer as result of not getting to school, not being able to afford resources, missing school to look after their parent, 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 because they cannot attend normal social events (parties, movies, sports). Finally, and unsurprisingly, Darbyshire et al. (2001b) found that children of those with gambling problems were less optimistic about the future, often expressing no hope for a change for the better.

No studies or examination of the pervasive and long-term impact of the harm on children through their own determinants of health have been identified in the literature. There is a separate body of work that explores the impact of childhood deprivation and abuse on long-term health outcomes that could inform explorations of this harm. Again, it is important to highlight that gambling occurs as part of an environment of dysfunction, and that any estimation of its contribution at an individual level should be cognisant of that complex interaction. At a population level, this pervasive loss and potential impact is of significance given that 48.4% of females and 35.7% of males presenting for treatment for problem gambling have dependent children (Crisp et al., 2004).

Harm to the community

Attempts have been made to quantify the harm caused to the community by gambling. Using a cost measure, Thompson and Schwer (2005) utilised a small sample of Gamblers Anonymous members and used estimates of their self-reported missed work, levels of debt, proceeds from crime, and costs to judicial system and welfare system, and then extrapolated these costs to rates of gambling severity for that state. The method was crude, did not include costs for people below the problem level of gambling, and was incomplete in the attribution of costs having not included measures such as job turnover, absenteeism, and generational influences of impact on family. However, this attempt does highlight a number of methodological challenges with measuring harm to the community.

Direct harms to the community

Explicit harms to the community include the contribution to criminal activity. Wheeler, Round, and Wilson (2011) identified a relationship between the proliferation of gambling opportunities and an increase in crimes that generate funds in Victoria, even when controlling for other influences. Property crime was also identified as being related to gambling by Brown et al. (2005) in a study on youth in America.

Evidence surrounding these links between gambling and crime is incomplete and under-reported. The Independent Gambling Authority (2004) identified a sequence of systematic issues contributing to the under reporting that starts with crimes that are not detected, crimes that are not reported, and gambling not being linked to the crime as a contributing issue. Most analysis that links the issues occurs retrospectively, and through anecdotal reports or surveys from those entering treatment for gambling problems. Again this is subject to under reporting because only a very small percentage of people experiencing problems with gambling access treatment, and for those who do there are a number of barriers to them disclosing any criminal activities. The “gambling question” is not asked or recorded in crime reporting because it was not seen to add value to law enforcement’s operations (Independent Gambling Authority, 2004). The focus is usually on the more proximal manifestation of the activity (e.g. theft, extortion, fraud, prostitution). This is an example of a need for the public health approach to gambling, to include a Health in all Policy approach. By identifying the contributing issues to the crime it may not assist law enforcement operations initially, but by understanding the patterns and prevalence of the issue it can be addressed more distally which would ultimately reduce the load for law enforcement. In a resource scarce environment however, the incentive to invest in distal mediation will tend to be overlooked for more proximal initiatives at reducing harm. Minchin (2006) highlighted the lost opportunity that is incurred by not screening and identifying problem gambling as a contributing cause, in the way

alcohol and substance abuse is. The failure to offer or mandate treatment programs in sentencing reduces the potential to improve rehabilitation and reduce the likelihood of recidivism.

These links between gambling and crime are also established through studies of incarcerated populations. Higher rates of problem gambling are observed in incarcerated populations (Abbott & McKenna, 2005; Independent Gambling Authority, 2004; Turner, Preston, McAvoy, & Gillam, 2013; Turner & McAvoy, 2011). In a New Zealand study of 94 recently sentenced women, Abbott and McKenna (2005) found high levels of problem gambling, with one quarter of participants (half of those screened as problem gamblers) having committed a crime to obtain money to gamble. The study identified that they had engaged in criminal activity prior to this that did not relate to gambling. This was consistent with findings by Casey et al. (2011) who identified a history of rule breaking and other illegal activities in youth gamblers. The New Zealand study also found the type of offence committed was consistent with other studies, emphasising the role of property crimes as a means of obtaining money for gambling.

The other direct cost to the community is represented by increased health care and welfare costs. These include the direct costs of treatment for people experiencing problems with gambling, any counselling, treatment or support of the family of the person experiencing problems with gambling and the costs of harm to family as detailed previously (Productivity Commission, 2010). Black et al. (2013) noted that people experiencing problems with gambling would tend to delay medical care due to financial constraints, but had higher levels of emergency room visits. This suggests that earlier, lower cost medical interventions are missed, and the overall cost is increased and passed to the community through emergency room visits. The contribution of gambling harm indirectly to other health care costs has not yet been attempted.

Indirect harms to the community

One of the most pervasive harms to the community from gambling is that it contributes to the cycle of determinants impacting on poverty, poor health, lower levels of social and human capital; community resources that have been identified as being a risk factor to communities for problem gambling (Productivity Commission, 2010). This contribution acts to both compound and concentrate the harm further. Given the disproportionate location of EGM machines in poorer areas, and their increased risk of harms, this is particularly concerning. The impact is evident in the disproportionate share of EGM losses and problem gambling prevalence rates (Wheeler, Rigby, & Huriwai, 2006, Young, Markham, & Doran, 2012; Young, Lamb, & Doran, 2011). It has been postulated that the nature of disadvantage motivates people to gamble as a form of *seeking justice* (Callan, Ellard, Shead, & Hodgins, 2008), trying to catch up with rest of society (Clarke et al., 2006), and therefore being a misplaced form of aspiration of contemporary consumer culture (Casey, 2003).

Harm in indigenous communities

There is a growing body of research that has examined the experience and impact of gambling within indigenous communities. In a targeted survey of indigenous people residing in NSW who gamble, 70% spent more than $100 per week compared to 22% of non-indigenous gamblers, and had higher rates of EGM use, which is viewed as more harmful (Hing, Breen, Buultjens, & Gordon, 2012). They were more likely to report positive experiences with gambling but there were also very high levels of harm, feelings of depression, inability to maintain control, over spending, chasing losses, and subsequent harms of family conflict, as well as time away from work and study. Given the social construction of gambling, health and harm, it is appropriate to consider these communities separately. Indigenous communities have identified their strengths as family, health and culture (Nagel, Hilton, Thompson, & Spencer, 2011) but gambling, both traditional card playing and commercial, is of concern as it has negative effects on these areas of strength and is linked to substance abuse. Traditional card playing was seen to have minimal risk for harm to the individual or the community due to the traditions and environments surrounding play. Indigenous cultural beliefs of reciprocity (Breen, 2012a) ensured that when gambling was a social activity

within the community the money stayed within the community and it was equitably redistributed. However, the appearance of professional card players that move between the communities and commercial ventures that take the money from the community (Breen, Hing, & Gordon, 2011) have increased the harm to both the individual and the community. Bertossa and Harvey (2012) noted that this "risks further impoverishment of already disadvantaged communities". Indigenous communities that are already vulnerable due to pervasive and systematic disadvantage are also vulnerable to disproportionate amounts of harm and deprivation due to gambling. Breen's findings with indigenous Australians are consistent with findings in New Zealand that identified the contribution of gambling to social disorganisation and social deprivation in low income, indigenous and ethnic minority populations (Dyall, 2007).

In addition to the socio economic impacts Breen, Hing, and Gordon (2013b) also identified the non-fulfilment of cultural obligations as a gambling-related harm within the indigenous communities. The harm occurs through the loss of a protective health determinant of cultural resilience and connectedness. This was the only literature that identified the non-fulfilment of cultural obligations as harm and raises questions over whether similar harms occur within the general population that are not captured.

Financial loss to the community

The loss of money from the community or the transporting of harm has been examined in broader general populations particularly where destination gambling locations "export bankruptcy" back to the home location of the gambler (Garrett & Nichols, 2008). While this is not as big an issue in Australia with most gambling occurring closer to home it is of relevance to consider in terms of the transfer or loss of money to local communities both to external corporate entities, or to interstate or overseas providers of online gambling opportunities.

Social influences on the experience of harm

Consistent with a public health approach to gambling there are individual and environmental risk factors that influence the harm experienced in relation to gambling. There are a number of behaviours and characteristics common to people who gamble that can impact on the level and severity of harm they experience. While there is sufficient evidence to link the individual factors with harm, there are still significant gaps in our understanding or measurement of the relationship between these factors (exposures) and gambling-related harm (outcomes).

People who gamble and experience problems with control are more vulnerable to harm. In prevalence surveys of problem gambling this is measured using items that require the respondent to identify if they have difficulty resisting gambling, difficulty limiting the size of bets, difficulty in limiting amount spent, difficulty in stopping play, difficulty in limiting time or if they gamble after reaching limits. Given that these assessments inform the categorisation of gambling severity, it is not surprising that they are linked with the experience of harm. However, high rates of self-reported control problems occur in the *non-problem* groups and this of particular concern (Productivity Commission, 2010). It also supports the idea that there is a large aggregate of harm in the non-problem groups of gamblers that is often missed in assessing gambling harm. Consumption of gambling is related to control problems (Productivity Commission, 2010); that is, if you have control problems then you are likely to succumb to gambling more often and have trouble controlling the intensity of play.

Other issues that relate to severity of gambling can also be linked to harm, although this relationship between exposure to these risk factors and the experience of harm has yet to be evaluated. Dissociation, when a person gambling has lost track of reality, played in a trance, lost track of time, or felt someone else was controlling their actions, would make someone gambling more at risk of harm. Underestimation of gambling loss is a special type of dissociation that makes someone particularly vulnerable to harm.

Similarly faulty cognitions, erroneous conceptions and superstitions also make a person gambling more vulnerable to harm. Many people do not fully understand how gaming machines work as evidenced by beliefs that they are due for a win, playing games of chance using a strategy, superstitions, rituals, or perceptions of luck. These behaviours occur across the spectrum of severity and do not reduce with frequency of play, but rather tend to increase. This is inconsistent with consumption of other products, where more familiarity or use of the product increases understanding of the product, and how it works.

Using observations from both the literature and experience as a problem gambling counsellor, Bicego (2002) explored the gender differences of harm, and highlights the need for gendered analysis to highlight the differences in the impacts of gambling. Bicego (2002) positioned gambling as an adaptive behaviour used to deal with trauma, a lack of social cohesion, and mental health issues (particularly untreated). Gambling was seen as *self-soothing*, easily accessible and could occur in a *safe* place such as a community club. Although as Nixon et al. (2013) noted, in these types of scenarios gambling starts as a refuge and becomes another trauma. Bicego (2002) identified these harms such as increased isolation and damage to social skills, in addition to the normally reported loss of time and money, and the subsequent damage to relationships and employment. Shame and stigma also featured heavily in the narrative. Bicego's findings should not be assumed to be exclusive to women, and offer a different view on the nature of harm, highlighting the phenomena of the harm (or outcome) also becoming a determinant increasing the risk of other harm.

The comorbidities experienced by people who gamble (regardless of the severity of gambling) can act as either a risk factor for either the incidence or exacerbation of harm (Blaszczynski, 2013). Those with a high level of gambling severity are often found to have comorbid mental health issues (Abdollahnejad, Delfabbro, & Denson, 2013), particularly depression and anxiety (El-Guebaly et al., 2006) and harmful alcohol use and substance abuse (Cowlishaw, Merkouris, Chapman, & Radermacher, 2014). Studies of female gamblers identified similar high rates of depression, anxiety, and complex trauma, in addition to other disordered consumptive behaviours such as disordered eating, overspending, and also criminal activity (Boughton & Falenchuk, 2007; Holdsworth, Nuske, & Breen, 2013a). While there is a strong correlation between these and problems with gambling, the temporal sequence of the disorders differs between individuals with causal direction potentially occurring both ways (Holdsworth et al., 2012). It is also difficult to separate the harm caused from gambling from the other diagnoses.

Some people experiencing harm from gambling may have experienced harm from another adaptive behaviour due to pre-existing conditions such as complex trauma, brain injury, or mental health issues. In the absence of gambling availability, a different behaviour may have been adopted (and may also exist in conjunction with gambling) (Productivity Commission, 2010). This is evident in emerging issues of significantly higher rates of problem gambling (9.3% compared to 1.6% in general population) for people being treated with dopamine agonists (Crockford et al., 2008) and for post-traumatic stress disorder (Najavits et al., 2011). However, this does not suggest that everyone who has experienced complex trauma or suffers from mental illness develops problems with gambling, and nor does every person who experiences problems with gambling have a history of complex trauma or a diagnosis of a mental illness.

Consistent with a public health approach to gambling, in determining the factors that can contribute to harm we need to look beyond the individual to the environment. Beyond the physical environments in which individual forms of gambling occur, a broader environmental risk factor identified in the literature is the normalisation of gambling. The influential role of the environment, particularly the social environment, on gambling behaviour has been established (Barmaki, 2010). Both Adams et al. (2009) and Dyall, Tse, and Kingi (2009) liken the proliferation of commercial gambling operations to other consumer products such as fast food which have become ubiquitous within communities. This normalisation is also linked to other related activities from video games (Griffiths & Wood, 2000; Griffiths, 2008; Delfabbro, King, & Griffiths, 2014) and social media (Griffiths, 2013) to phone in quizzes (Griffiths, 2007) and is now being

considered in light of the integration with sports broadcast (Worthington, Brown, Crawford, & Pickernell, 2007).

Contributing to an environment where gambling is normalised is also the proliferation of advertising for gambling products that especially focus on the win (McMullan & Miller, 2009; McMullan, Miller, & Perrier, 2012; Monaghan & Derevensky, 2008; Monaghan, Derensky, & Sklar, 2008). Normalisation can occur beyond the commercial promotion and proliferation of gambling products in the form of social practice. This has been highlighted in research into indigenous gambling by Bertossa and Harvey (2012) which identified the normalisation of gambling (often with other addictive substances such as alcohol) to regular behaviour within some communities and discussed the impact this had in terms of harm from participation and barriers to reducing or ceasing the behaviour.

Other environmental factors that have been linked to the risk of harm include the influence of parental and peer gambling with pro-gambling attitudes. Delfabbro and Thrupp (2003) identified the influence of parents teaching budgeting, saving and financial management as reducing interest in future gambling.

Conceptual Framework of Harmful Gambling

Consistent with the public health approach, an international collaboration of gambling researchers guided by an expert panel have recently developed a Conceptual Framework of Harmful Gambling (Abbott et al., 2013). The collaboration identified the three objectives of the framework as being:

- A reflection on the current interdisciplinary knowledge of the factors that impact harmful gambling, and the relationships between those factors.
- A means of assisting service providers, policy makers, regulators and the public in understanding the complex relationship and interaction of those factors and to assist with informed decision making.
- A strategic map that can identify gaps in research and guide the research agenda to areas of need.

An important difference in this framework is the division of gambling into *harmful* and *non-harmful*, rather than *problem* and *recreational*, and the authors make the point that the difference between these is related to severity and frequency (Abbott et al., 2013). That is, a gambler with less severe gambling problems (in a diagnostic sense) is more likely to be able to recover from the impacts of intermittent problematic gambling behaviours. The framework also separates harmful gambling from gambling status and broadens the focus to the consequences beyond the person who gambles, to include family, social networks and community. It recognises the complexity of factors that drive the phenomenon rather than focussing on simplified causal pathways, which is consistent with a public health approach, especially in terms of prevention and health promotion. However, the reliance in the framework on pairing frequency with ‘severity’ of gambling problems, rather than intensity of consumption, may create some conceptual problems in delineating these constructs. The framework is illustrated at Figure 1.

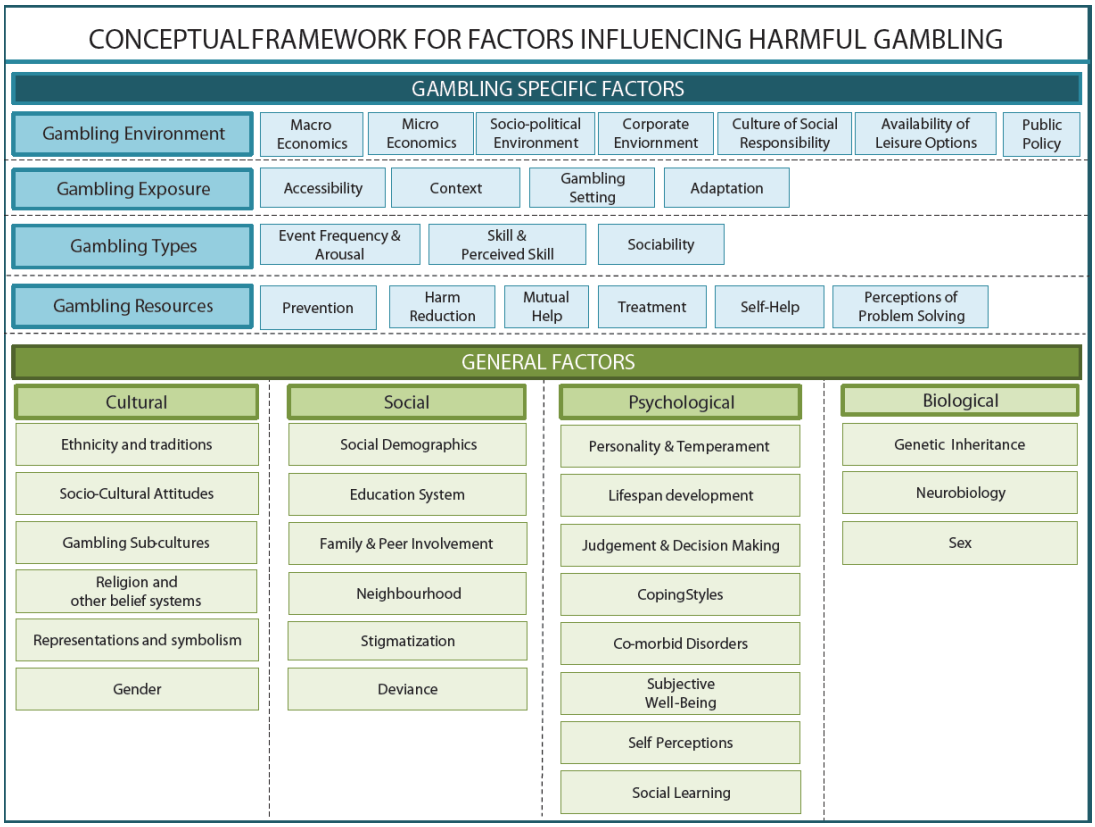
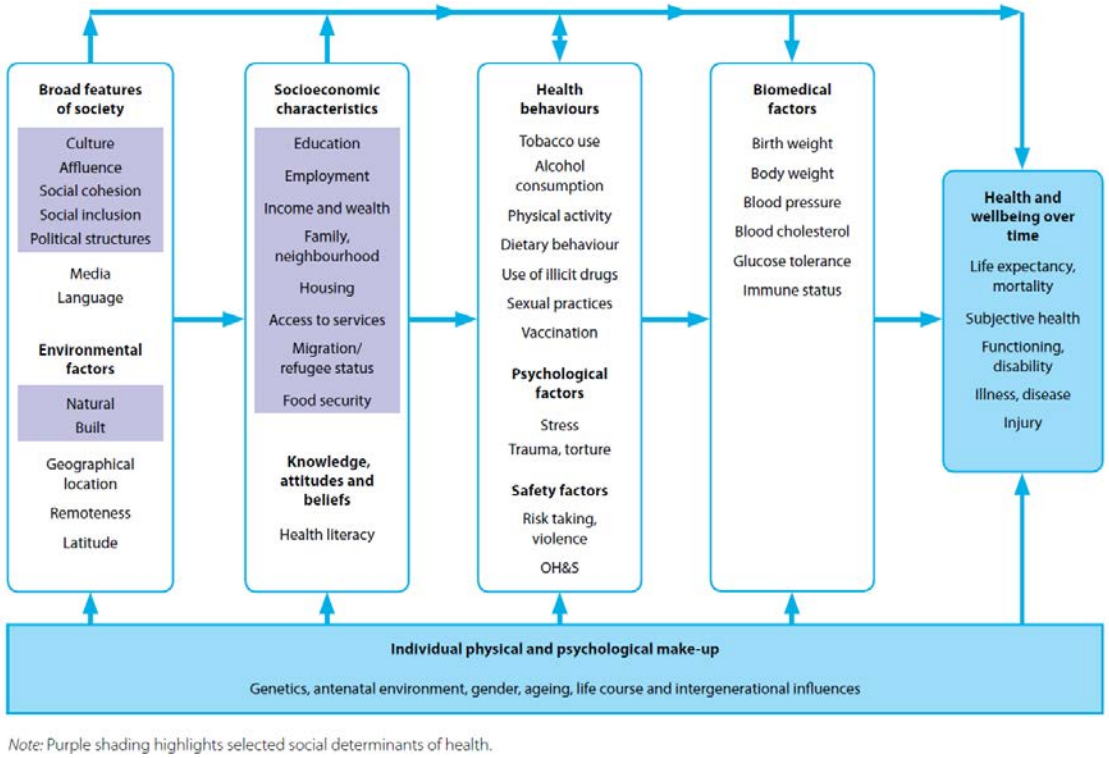


Figure 1. Conceptual framework for factors influencing harmful gambling

The framework represents a significant development in the conceptualisation and understanding of the function of harm in relation to gambling and is consistent with population health based frameworks for determinants of health, such as the Australian Institute of Health and Welfare (AIHW, 2014) framework illustrated at Figure 2.



Note: Purple shading highlights selected social determinants of health.

Figure 2. AIHW framework for the determinants of health

As the first comprehensive framework in the gambling field, it achieved its objectives of bringing together the current interdisciplinary knowledge of the factors that impact harmful gambling and identifying gaps in research or knowledge. For example, in their report, Abbott et al. (2013) identify the important gap in our current understanding is the linking of those determinants to harms. The objective of the framework to assist in the understanding of the complex relationship and interaction of the factors is better met when the framework is considered in conjunction with existing models of the determinants of health (such as that shown at Figure 2) which have captured the dynamic nature of interaction and causal pathways.

Abbott et al. (2013) stated that the value that the framework added was in part due to its use of harm as the organising principle, moving beyond the symptoms or behaviours of an individual and including the impact to the family, social networks and community. In achieving this, the framework can guide the development of more robust epidemiological measures of harm, to quantify the risk of the exposures to harm and to begin to address this gap in understanding.

Measurement of harm

The limitations and relative lack of progress in conceptualising harm is reflected in how harm is measured in the literature. Currie et al. (2009) identified three sources that the measurement of harms from gambling have been derived from. These were: diagnostic criteria of pathological or problem gambling, behavioural symptoms associated with disordered gambling, and the negative consequences experienced (Currie et al., 2009).

Diagnostic criteria as a measurement for harm

Levels of gambling severity are the most commonly used proxy measure for harm (Binde, 2011). A number of different measures of gambling severity are used and there is some debate about their appropriateness or validity. Most of that debate is not of relevance to this review, such as issues of the accuracy of the measures, concerns over the tools used to measure (CPGI and South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987)), complexities of the spectrum, and sampling issues (non-response and misreporting bias). However, one theme from the discussion surrounding measures relevant to harm is the argument that the measure for problem gambling should be centred around the incidence and extent of the problems (or harms) it creates rather than whether it is an addiction or a form of individual psychopathology (Svetieva & Walker, 2008). That this discussion is taking place illustrates that measures of problem gambling tend to indiscriminately combine harms (outcomes) and indicators of addiction (i.e., clinical symptoms). This is done with some justification, as both types of items tend to be good discriminators of problematic gambling behaviour. However, the cost to the discipline appears to be a conflation of the two concepts, and a neglect of the possibility that harms may occur with or without an addiction, and addiction does not necessarily imply that the highest level of harms are being incurred.

The issues raised above reflect the serious limitations associated with using clinical diagnostic criteria as a proxy for harm. The Productivity Commission (2010) summarised these concerns as follows:

- People may experience the traits but not experience harm (financial consequences are not excessive).
- People may be experiencing harms but gambling behaviours and attitudes may not be pathological.

Consistent with Svetieva and Walker (2008), the Productivity Commission (2010) also suggested that the measurement of problem gambling be based on an enumeration of those experiencing significant harm, and that this should include all the factors that lead to the harm – social, psychological and environmental. Blaszczynski (2013) also noted that harm was not contingent on a diagnosis or disorder

and may occur at any level of gambling, including recreational, using a metaphor of social drinking where harm can occur as a consequence of episodic consumption. This position was also supported by Abbott et al., (2013) during the development of their conceptual framework of harmful gambling. While we would argue for a strong conceptual distinction between harm and addiction, it is almost certainly the case that harm will tend to increase with the severity of the problematic behaviour or the addiction (Aditi et al., 2011). In other words, problem gambling severity and harm from gambling are constructs that are conceptually distinct, but closely coupled.

Harm from gambling can occur across the spectrum as measured by screening tools for problem gambling. The Productivity Commission (2010) identified an implicit assumption that only at a problem level of gambling did treatment or policy become relevant and that this concealed the harm being experienced due to any gambling that is below that diagnostic level. Empirical research has focussed on those with gambling problems rather than those that occur across the spectrum. However, the concern was raised that small individual-level harms can aggregate to a significant population level harm. So while acute harms will occur within a small group, the aggregate of the low-level harm may be of similar magnitude when considered as an aggregate impact on the population.

The Productivity Commission (2010) identified that while harm must occur above a particular threshold for someone to be considered as experiencing problem gambling, that harm to those below the threshold is still relevant to policy. In addition to chronic small level harms from recreational gambling, larger episodic harm is not well understood. A person could be a binge gambler with episodes of gambling that create harm, but not meet the criteria for problem gambling because of how regularly that occurs. Although a binge gambler will quite likely meet criteria for DSM-IV or another screen as problem or pathological, their behaviour can be quite different to a chronic gambler (Griffiths, 2006). Given this separation between severity and harm, Breen's (2012a) continuum of card gambler profiles that ranged from healthy and social, to binge, to committed and unhealthy, could be argued to be better for understanding harm than current problem gambling classifications, and is comparable to the model of harmful usage for alcohol.

Rodgers, Caldwell, and Butterworth (2009) also raised concerns about the way gambling was divided into recreational level or problem level, with little attention or clarification of the meaning and distinctions between moderate levels of gambling problems. By grouping everyone who is not a problem gambler together, it assumes that anything below problem gambling creates no harm. Rather, harm needs to be considered across the intensity spectrum and harm should be considered as separate to severity of gambling problems. Finally, it is worth noting that the development of the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) was based on psychometric performance criteria, which results in items capturing seven negative consequences (i.e., harms) and two behavioural indicators. This suggests that harms from gambling can in fact be captured reliably and robustly, that the PGSI might serve as an effective proxy for harm, and further raises the possibility that the PGSI might be 're-purposed' to suit a harm-based interpretation.

Behavioural symptoms as a measure for harm

From a conceptual perspective, behaviours (consumption) occur before, and contribute to the development of problem gambling or harms. Harm can occur without problem gambling, although problem gambling would almost always occur with harm. Therefore, behaviours reflecting excessive consumption should be a strong predictor or proxy for harm, and are of importance in their own right in clarifying the mechanisms by which harm arises.

Boldero, Bell, and Moore (2010), in a latent class analysis of youth gamblers, identified that gambling patterns of young people were indicative of potential problems. Braverman and Shaffer (2012) had consistent findings from an examination of internet gamblers' accounts, noting that those who closed their

account due to gambling-related problems had demonstrated characteristics of frequent and intensive betting, combined with high variability in bet amount, with a trend for increased bet size.

The individual's behaviour is influenced by the broader environment (social, physical and gambling product characteristics), which Breen and Zimmerman (2002) identified could have a strong influence in encouraging increased consumption that contributed to that rapid onset of problems. In examining the indicators of transition from recreational gambling to problem gambling and recovery, Clarke et al. (2006) also recognised the important role of the increase in consumption through access and availability, and broader social determinants such as culture and socioeconomic status, as well as individual factors.

Linking the influence of behaviour to harm, Currie, Hodgins, Wang, El-Guebaly, Wynne, and Chen (2006) found the risk of experiencing gambling-related harm increased steadily the more often someone gambled and the more money that was spent. Although it should be noted that harm was measured by utilising an endorsement of a problem from the PGSI as "harm". This finding was further supported by a later study (Currie et al., 2009) that demonstrated a strong relationship between expenditure based predictor variables (consumption) and harm, although again harm was based on PGSI items or dichotomous category (present/absent). Currie et al. (2012) then went on to utilise longitudinal data to examine transition from low to high risk behaviours; and increased intensity of consumption was identified as predictive of experiencing harm, although harm was not well defined.

Experience of negative consequences as a measure for harm

The third category of measures used to assess gambling harm identified by Currie was the experience of negative consequences. These types of measures are normally utilised on population or cross sectional surveys. There are a number of limitations to these types of measures that reduces their utility.

The broad wording of the description of harms required for population screens provides a limited understanding of how this harm manifests. For example, phrases used such as "affected health", "often bet more than can afford" or "adversely affected job performance" tell us little about the scale of the impact of that harm. Something could be said to have "affected our health" whether it had caused us mild distress through to suicidal behaviours. Similarly, the subjectivity in the interpretation of the descriptor further limits their use. Other indicator measures such as "had to change jobs" or "dismissal from work", "not enough time to look after family's interests", "breakup of important relationship", give us a better idea of the scale of the impact, but still lack detail to better understand whether the harm was a direct or indirect result of gambling. Other measures are more useful although still lacking detail "obtaining money illegally" and "trouble with police". In examining the items used on the surveys in the state based population surveys in Australia, the inconsistency between the measures make it difficult to compare the experience of harm between states.

Bertossa and Harvey (2012) identified problems with interpretations of gambling survey items in the context of indigenous gambling, and these criticisms are especially relevant to how we measure harm. For example, one item asked whether the respondent identified gambling as a personal stressor but it did not clarify whose gambling was being referred to (their own, a family/friend, the community). The term gambling problems is open to broad interpretation and other problems to do with language, education, question framing, the sensitivity of gambling and shame made it difficult to achieve accurate or complete population surveys of gambling harm.

Gambling expenditure is also used as another proxy indicator for harm (Broda et al., 2008). In areas of social disadvantage it is reasonable to be concerned with higher levels of expenditure per capita, and a strong relationship between expenditure based predictor variables (consumption) and harm has been demonstrated (Currie et al., 2009). However, these measures are normally based on aggregated data

that cannot provide detail on comparison to discretionary income, impact, or vulnerability and the individual level necessary to demonstrate causality.

How should we be measuring harm?

Given the limitations and concerns with current practices for measuring harm, it is timely to consider alternate methodologies that are consistent with a public health approach to gambling. Problem gambling measures have an important role to play, but they were not designed to assess exposure to gambling harm, nor can they delineate the broad range of harms than vary both in quality and severity. There still exists a requirement to develop indicators on participation and robust measures of both exposure and harm that are conceptually and operationally distinct (Rodgers et al., 2009), in order to develop our understanding and measurement of gambling-related harm. Ideally these measurements should facilitate a comparison with other public health issues. In addition to measuring harms, there needs to be an assessment of how these harms are influenced in relation to exposure and what types of exposure are significant (e.g. frequency of play, play intensity, environment). The research linking the exposure to risk factors and outcomes (harm) is still very much in its infancy (Rodgers et al., 2009; Currie et al., 2012).

By developing these measures, the opportunity has also been identified that there is the potential value of increasing our understanding of the complex interaction of the upstream determinants of health (cultural or social values, environment – accessibility and availability, and promotion of gambling) and their influence and contribution to gambling harm (Blaszczynski, 2013). These upstream factors contribute through interactions or bi-directional effects that lead to a positive compounding of negative consequences (McCormack & Griffiths, 2011).

Rodgers et al. (2009) flagged the specific measures of harm used in relation to alcohol consumption and the potential value in developing similar measures of exposures and harms for gambling. While there is a reasonable body of knowledge around risk factors and gambling severity, there is value in being able to separate consumption and severity to better understand at what stage risk and protective factors exert their influence on gambling harm. In the absence of longitudinal studies, there is a lack of empirical evidence about duration and patterns of intensity of consumption (Rodgers et al., 2009). This need to move to measuring harm rather than *cases* was supported by Blaszczynski (2009) who noted that a “separate measurement of exposures and harms” would clarify the concepts of “at risk”, the negative effects of moderate gambling, and the predictors and progression of gambling.

Other authors noted the lag in gambling research compared to other addictions (Abbott et al., 2013; Gainsbury et al., 2014) and the progression of understanding in terms of alcohol studies are often held up as offering a framework for moving forward. In addition to the similarity noted between alcohol and gambling, in that there are safe levels of consumption, other similarities have been noted, such as the consumption of the same quantity of the product can have different impacts on individuals due to their individual differences, the impact of the different parts of the product, and the context in which the consumption occurs (Griffiths, 2006). However, this evolution of practice and knowledge using the work done in alcohol studies is hindered by the failure to find an “adequate index of gambling participation”, and other important differences in achieving parity with other public health research, such as alcohol studies and the associated quantifiable indices of consumption (Blaszczynski, 2009). Finally, it is of interest that ideas around quality of life measures have been described in the context of gambling research. In examining measures of treatment efficacy for problem gambling, there is some precedent for the use of broader quality of life measures in addition to measures of anxiety and depression (Carlbring, Degerman, Jonsson, & Andersson, 2012; Carlbring & Smit, 2008).

A number of limitations have been identified in the current practices for measuring gambling harm, based on the narrow conceptualisation of the idea of harm being linked to clinical diagnosis, levels of severity or narrow measures of impact, and their failure to capture the harm beyond the individual or address the

social construction of harm. Recognising that addressing the harmful behaviour can improve quality of life, it would be appropriate to include a measurement of the decrements caused to quality of life caused by gambling harm.

Conclusion

At present, there exists no internationally agreed definition of harm in relation to gambling. While a number of definitions have arisen from legislative frameworks, a single, comprehensive definition that supports the operationalization of the concept for research purposes is yet to be developed, despite the value of one being identified. In the research into gambling harm, the concept is normally left to an intuitive definition, and then quantified using proxy measures such as gambling severity, the presence of gambling behaviours relating to gambling severity, or reporting of negative consequences. Each of these proxy measures has a number of limitations that has an impact on their validity and utility in better understanding gambling harm.

To support a move to a truly public health approach to gambling we need to move towards more robust and appropriate measures of harm, and we also need to be able to explore the relationship between exposures to risk factors (e.g. elevated consumption) as they lead to gambling-related harm. Due to the nature of gambling and the relationship to a variety of complex comorbidities that share similar determinants, this evolution of methodology will require a change in paradigm to how we think about harm. An international collaboration has created a framework for gambling that uses harm as the organising principle, with the goal of facilitating the application and development of epidemiological measures of gambling to improve the understanding of exposure and risk. While some work has already commenced in this area, it is still in its infancy and limited in its scope.

There is consistent support in the literature to further develop these methodologies; we should attempt to capture harm that occurs across the spectrum of gambling severity, as it occurs to the family and friends of affected gamblers, and how it continues to impact individuals after gambling has ceased. Since harm is a modifier to an individual's subjective personal state, quantitative measures that capture changes in subjective wellbeing due to gambling need to be considered. Health state valuations, specifically quality-adjusted life years (QALYs), offer a promising opportunity to improve our measurement of harm caused by gambling. From a methodological perspective, QALYs capture the complexities presented by comorbidities and are comparable in principle to other health states. On a conceptual level, the population-health perspective also has much to offer; allowing us to conceptualise gambling-related harm not as a constellation of indicators or behaviours, but rather as an adverse modification to an individual's quality of life. From this perspective, gambling harm has a very concrete meaning, in terms of representing a negative impact on an individual's (gambler or affected other) wellbeing, over a period of time. Such a concrete and well-defined concept of gambling harm will guide efforts to measure the construct in a more meaningful way, leading to instruments and data that can guide future policy initiatives.

Understanding gambling-related harm

Overall aims and scope

The two consultative phases address the broad aims of the project in relation to developing the definition and conceptual model of gambling-related harm and improving the understanding of the full breadth of these harms. Specifically they sought to:

1. Develop the definition and conceptual framework.
2. Elaborate on the catalogue of specific harms, placing them in a dimensional/categorical organisation.
3. Identify appropriate occurrence ranges for specific harm outcomes.
4. Inform the development of the instrument for use in the population survey.

In developing the definition of gambling-related harm and the conceptual framework, mechanisms of harm and the dynamics of social network effects were also to be considered. Both the definition and framework needed to be sensitive to the intended audience of researchers, those involved in developing public policy, and providers of treatment or social support, while still being consistent with the national definition of problem gambling.

Methodology

Design

Data for the consultative phase was gathered across two stages and validated in a third stage. Initial data was gathered from focus groups and interviews with professionals involved in the provision of problem gambling treatment, ancillary counselling services (finance, relationship, or mediation), community education, primary health care, public policy, research, and the provision or promotion of responsible gambling within venues. Interviews were then conducted with individuals who identified that they had experienced harm from either their own, or someone else's gambling. Data from both of these stages were analysed separately first, and then collectively to identify similarities and differences in findings. Finally, the findings were validated against online forum posts on gambling help websites to ensure the comprehensiveness of the catalogue of harms and validity of the framework.

Participants

Professionals involved in gambling treatment and community support services

Recruitment of potential participants was undertaken by a systematic identification of organisations and agencies that were involved in the provision of treatment and support services for people experiencing problems from their own, or someone else's gambling. This included searches of organisations that received funding for the provision of gambling treatment services and community sector services involved in the provision of financial counselling, relationship counselling, and emergency support services such as food pantries and housing. Further searches were undertaken to identify appropriate primary health care, community health education, and gambling industry representatives. A snowball technique was also utilised to leverage off informal networks and identify potential participants that may not have been previously identified for other reasons, for example if they were not currently working within the sector. Potential participants for this stage were contacted initially via phoning or emailing organisations in

Victoria that were identified as being involved in the provision of treatment services for gamblers, ancillary counselling services that might be accessed by people experiencing harm from gambling (such as financial or relationship counselling or relationship mediation), community welfare providers (such as food banks and welfare services), community education, primary health care, public policy relevant to gambling, and gambling industry representatives. Individuals involved in gambling-related research were also invited to participate. Potential participants were invited to share the invitation with colleagues that the research team had not already contacted, who may have knowledge to contribute, allowing us to leverage off the strong professional networks in the sector and capture people who may have significant experience but not be working in the sector at present.

Focus groups were conducted in a range of regional Victorian towns as well as in Melbourne to facilitate the participation of professionals from those areas. Where people were not able to participate in a focus group, they were offered the opportunity to be interviewed individually either in person or by phone according to their preference. No compensation was offered for participation.

In both the focus groups and the interviews, participants were informed about the purpose of the research in terms of the larger project, and the role this phase played in that. Participants were asked about their experience with gambling-related harm to establish context and then a semi-structured interview process was utilised. This started with asking them to identify the harms experienced by the person who gambles, moving out to the affected others, and then to the community. Participants were then asked about the sources of those harms in the context of the national definition of problem gambling and a proposed hydraulic model (i.e., the ‘flow on’ effect of harm).

The focus groups took between ninety-five minutes and one hundred and thirty minutes with the average time of one hundred and twelve minutes. The interviews took between thirty-three minutes and seventy-five minutes, with the average being forty-four minutes. All focus groups and interviews were recorded and transcribed verbatim by an external transcription service. Transcripts were checked for accuracy and completeness, then anonymised and uploaded into Nvivo Software to facilitate coding and analysis.

Thirty-five participants were interviewed in total. Eighteen of the participants were involved directly in the provision of gambling treatment or community welfare providers, four were financial counsellors, five were in community education roles, four in primary health care, and four in public policy or gambling research. Four participants also had significant experience in providing support to incarcerated populations experiencing problems with gambling, and two were involved in services specific to indigenous communities. All participants had at least seven years of service within the sector, and the majority had over ten years, with many reporting fifteen and twenty years plus experience. This made these participants particularly knowledgeable regarding gambling-related harm. They drew from a large history of experiences with a diversity of clients, and tended to report harms in terms of patterns observed throughout their career, using individual cases to highlight a trend or exceptional case.

People who gamble and affected others

A second phase of data gathering was undertaken to capture the experiences of people within the general population who had experienced harm from gambling. Two methods of recruitment were utilised; referral from a treatment or community support service, and advertising using social media. The response from treatment organisations was limited and participants were sharing harm at a more extreme level. The use of social media modalities for advertising was to recruit people who may have experienced harm from gambling, but may gamble at more low risk levels than those who were engaged with treatment and support services.

Three participants were recruited from treatment organisations. Potential participants who responded to flyers in treatment organisations were advised of the purpose of the study, asked whether they had discussed their involvement with their treatment provider, and forwarded information and consent forms.

Interviews were arranged for a mutually convenient time and were done by phone. Twenty-two participants were recruited via social media, utilising community noticeboards and sales sites. Potential participants who volunteered their interest were informed about the purpose of the research, including the broader project goals, and how this phase of data gathering contributed to that. They were given general information about the structure of the interview, the expected amount of time required and conditions for participation. Each potential participant who chose to proceed had an appointment made for one of the researchers to telephone them and was sent a project information sheet and consent form. All interviews were scheduled with a minimum of three days (normally a week) to allow people time to consider their decision and withdraw if they did not feel comfortable.

Participants were then telephoned for an interview by one of three researchers. These interviews took place between March and May, 2015. Informed consent was gained over the phone prior to the interview commencing and all participants were reminded that they had the right to withdraw from the study at any time, including after the interview. Semi-structured interview prompts were used to explore gambling harm experiences and participants were prompted to reflect on whether they had experienced different dimensions of gambling harms. Some participants, with perceived higher levels of gambling associated harm, were sent counselling and support service information via email after the interview.

The 25 participants identified as either gamblers (N=11) or affected others (e.g. family members) (N=9). Some participants fell into both of these categories or groups (N=5). In the sample, 70 per cent of the participants were female and 30 per cent male. In terms of residence in Victoria, 95 per cent of participants resided in outer metropolitan suburbs or regional towns. Only 5 per cent lived in a metropolitan centre. Half of the participants were employed, 37 per cent unemployed and 13 per cent had retired from the work force. In terms of age ranges, 45 per cent were younger (18 – 29 years), 40 per cent were middle aged (30-55 years) and 15 per cent were older (56 – 70 years). Although a modest sample, there was diversity among participants in terms of age and employment status, but women were more highly represented than men. As it was an exploratory phase of the research, the sample was not intended to be representative but to expand on the experience of harms prior to someone seeking assistance and confirm earlier data around people seeking assistance. Participants received a store card to compensate them for their time.

The interviews averaged 30 minutes in length, and were recorded by the researchers. All interviews were transcribed verbatim by an external transcription service. On receipt of the transcripts they were checked by the researchers and uploaded into NVivo Software to facilitate the coding and analysis processes.

Online forum posts

A limitation of interviews is that potential participants may not feel comfortable disclosing sensitive or stigmatised experiences and information due to social desirability bias. To ensure that this phase of the project was able to best meet the goal of elaborating on the catalogue of harms experienced, public internet gambling help or support forums (n=469 forum posts) were examined to validate the findings. These were accessed during October, 2014 to validate general themes, and again in June 2015 to validate the experiences of harm in the taxonomy in June, 2015.

Analysis

Analysis of the data began upon the receipt of transcripts. Transcriptions were checked for accuracy, anonymised and any gaps in the transcription were checked against the recording to identify words that had been unclear or where over-talking had occurred.

First-cycle coding

First-cycle coding involved a combination of coding methods to ensure that all of the aims of the phase could be achieved. Attribute coding (Saldana, 2013) was used to capture participant characteristics, specifically in terms of their professional role. The majority of participants had been involved in gambling support or treatment work for a long period of time and subsequently a number of participants had undertaken multiple roles during their careers. This was unsurprising as selection bias would influence that people who identified strongly with this field of service would be more likely to choose to participate, and this would likely be reflected in having been employed in this field for some time. Where participants identified that they had worked across a number of roles within their career, or currently fulfilled more than one role (i.e., treatment provider and community educator), they were identified by what they saw as their primary role, or where they had contact with people experiencing harm from gambling. When the data from interviews with people who gamble and affected others was added, attribute codes were added to reflect how they identified themselves: a person who gambles, an affected other, or someone who both gambled and was affected by another person's gambling. These attribute codes are used to identify the data included from participants in the findings, and a breakdown of codes is provided below in Table 1. Other structural coding was used to identify differences in site locations (rural/regional or metropolitan), and the method of data capture (focus group or interview).

Table 1. Attribute codes

Code	Description
TP	Treatment provider: a participant involved in providing counselling and/or treatment services to people experiencing problems with gambling and/or their affected others.
FC	Financial counsellor: a participant involved in providing financial counselling services to people experiencing problems with gambling and/or their affected others.
CE	Community educator: a participant involved in developing and/or delivering community education programs around gambling.
PR	Policy or research: a participant involved in policy development, implementation or regulation of gambling, or someone involved in gambling research.
PH	Primary health: a participant involved in the provision of primary health services around or including gambling.
Gam	A person who gambles: a participant who identified as a person who gambles.
AO	Affected other: a participant who identified as being affected by someone else's gambling.
AO/Gam	Affected other and person who gambles: a participant who identified as being both affected by someone else's gambling and who also gambled themselves.

Structural coding (Saldana, 2013) was used to identify whether experiences of gambling harm had occurred to the person who gambles, an affected other, or the community. This distinction was based on a sensitizing concept (Bowen, 2008) from Currie et al. (2009) that harm occurs across the these three levels. This enabled the comparison of experiences at each level. These levels reflect that the person who gambles would most likely be both the first to experience harm (the index case) and experience the greater magnitude of harm. It is not intended to imply that the cause of the harm is the person who gambles. The causal mechanisms of harm are a complex interaction of broad social and environmental determinants.

Descriptive coding (Saldana, 2013) was used to capture the catalogue of harm experiences. Descriptive coding was chosen over in vivo coding to expedite analysis and maximise the utility of the catalogue of harms, both for the current project, and as a finding of utility for other researchers, policy makers, and treatment and service providers. The use of descriptive coding meant that an experience of harm was captured as a general experience, for example "arguments with family member(s)" rather than an in vivo

code of “was going off at him constantly”. Causation coding (Saldana, 2013) was also used to identify sources of harm, mechanisms of harm or other factors that influenced the experience of harms.

Finally, in vivo coding (Saldana, 2013) was used to identify how people perceived harm and how they conceptualised harm, any other data of relevance to the project’s aims, and any other data that was beyond the scope of the current project that should be revisited for secondary analysis.

Second-cycle coding

The codes generated from the first-cycle coding were mapped into themes using the strategy recommended by Saldana (2013, p. 205) to keep the researcher grounded in the data. The strategy is to add the words “is” and “means” to each code. For example, “increased sedentary behaviour”, was considered as “increased sedentary behaviour is detrimental to health” or “increased sedentary behaviour means the person is at increased risk of other morbidities”. Through an iterative process the classifications for the harms emerged through a constant comparison of the first-cycle codes relating to the experiences of harm to assess their similarity and allocate them to a classification. The experiences of harm were then recoded using focused coding (Saldana, 2013), into an initial six classifications, which was later expanded to seven, with a further theme identified that transcended the classifications. This is discussed later in the findings.

Axial and longitudinal coding (Saldana, 2013) were then utilised to extend the analysis of the experiences to meet the objectives of identifying occurrence ranges for specific harm experiences, and developing the definition of gambling-related harm. Three broad temporal differentiations (categories) of the experiences within all the classifications were identified, and stratified levels of severity or groupings of harm experiences were identified within specific classifications. These are detailed later in the findings.

Finally, theoretical coding (Saldana, 2013) was utilised to address a central question of whether all gambling harm stemmed from the mismatch between funds or time expended on gambling and funds or time available.

Data saturation and verification of findings

The sample size for this phase of the project totalled 55 participants, which is beyond the recommended sizes of 20-30 (Creswell, 2007) or 30-50 (Morse, 1994) given for this type of enquiry. Indeed some authors warn against sample sizes beyond fifty participants due to the potential detrimental impact on data collection or analysis (Ritchie, Lewis, Nicholls, & Ormston, 2013). It is not the role of qualitative research to estimate issues of incidence or prevalence of the phenomena, and qualitative data by nature is rich in detail.

Subsequently the more important issue is that of saturation of the data. Morse (2000) clarified the sample size required to achieve saturation would depend on a number of factors which included: the quality of data; the scope of the study; the nature of the topic; the amount of useful information obtained from each participant; the use of shadowed data; and the study design. Ritchie et al. (2013) also include factors such as the heterogeneity of the population, the number of the selection criteria and the extent of their nesting, the level of intensity of study, the use of multiple samples, and from a more pragmatic approach, the budget and resources available. Other authors highlight the importance of expertise of participants (Jette, Grover, & Keck, 2003). All these factors were considered in determining the sample size for this phase. Key factors which determined the final sample size were the expertise of participants from the treatment and services group, the richness of the data, and the saturation of the data, as well as pragmatic considerations.

The concept of data saturation is contested within qualitative research (Bowen, 2008; Charmaz, 2006; Dey, 1991; Morse, 1995). Data saturation was defined for the purposes of this study (G. A. Bowen, 2008)

to have been achieved when no new experiences of harm were being identified. This is a narrow interpretation of data saturation, and does not address issues such as context of the experience (Charmaz, 2006), however, such issues were beyond the objectives of this research. Saturation, as defined for the purposes of this study was demonstrated when analysis of the data generated no new codes. This was verified through the analysis of the forum posts (n=469).

Findings

Consistent with the aims of the project, the consultative phases informed the development of a definition of gambling-related harm, a conceptual framework, and a taxonomy of harms relating to gambling categorised by appropriate occurrence ranges.

Measuring gambling-related harm

The absence of a universally agreed definition of gambling-related harm and the interchangeable use of the term within the literature to describe proxy measures such as behaviour rather than consequences, has created a conflation of the harm (outcome) with the source (behaviour). Before a phenomena can be measured it must be defined, and in the absence of a universally accepted (or even commonly adopted) definition for gambling harm, it is unsurprising that proxy measures of convenience are utilised. To inform the development of a definition of gambling-related harm we first analysed the data to determine whether what we currently measure as harm is appropriate, and if not how we need to define harm to develop more appropriate measures.

How we currently measure harm is inadequate

The current standard measures of harm, including behavioural indicators (such as PGSI) and amount of money spent, were universally agreed within the treatment and service professionals to be inadequate in measuring gambling-related harm. The perceptions of inadequacy centred on the theory that they do not capture the breadth and complexity of harms experienced from gambling. However, it is acknowledged that they are easy concepts to measure and to capture data with, therefore offering some utility.

In considering the two standard proxy measures of harm, dollars spent and behavioural categorisation (such as PGSI), participants identified a number of problems consistent with the literature. The use of measuring dollars spent, even when reported against individuals rather than per capita, was seen to lack the necessary context to understand its impact. The same amount of money lost could create very different impacts for people depending on such factors as their financial situation. The importance of context was explained by one treatment provider:

> *Who's to say that someone that puts $5000 through the pokies has a problem? How do you – they might have $5000 to put through the pokies; that's not for us to say. Whereas that person that just put $20 through the pokies has now got no money to feed their kids for the rest of the week (TP17).*

The difference in the impact from the dollars spent or lost had consequences not only for the person who gambled, but also for the affected others. Reporting of the dollars lost did not capture the harm of bills not paid, food not bought, or resources children might go without. Where the context of the loss, or the impact of the outcome was not made explicit, the use of the population level figures was seen to be meaningless especially to a desensitised audience. This was summed up by a financial counsellor:

> *I think time and money is too much the economic rationalist model to be honest. It's just a way of saying yeah we've so many millions or so many thousands per capita. It's easy, it's not real.*

> *Numbers are thrown around these days that are so big that none of us can conceive of them, so they're not real. You just switch off (FC1).*

Current prevalence measures were criticised for measuring behaviour rather than outcomes. While the standard measures (such as PGSI) include some items that are outcome focussed, they do not capture the breadth of harms that could be experienced. The use of behavioural measurements also put the focus back on the individual rather than the activity that contributed to the harm. This was seen to contribute to the stigmatisation of the behaviour and provided some expedience to how the issue of gambling was considered in the community. A participant commented:

> *And because the harm isn't well described it becomes invisible. Therefore a clean shiny building becomes more apparently valuable than all of the hidden – because it's so stigmatised harm is okay (PR1).*

Measuring gambling-related harm was seen to be a difficult issue to address due to the objective nature of measures against the subjective experience of harm. Unlike other public health issues, there is no empirically derived guideline for safe or harmful levels of consumption of gambling products. This separates gambling from other public health issues such as alcohol, where there is an empirical basis for defining when harm occurs in relation to consumption. A treatment provider described the impact on providing education in relation to gambling:

> *Yeah, it's very subjective. It's not like drug or alcohol abuse. If you're drinking alcohol you can say right, anything over three standard drinks in one sitting is going to be harmful (TP15).*

Overall it was highlighted that any definition and subsequent measure of gambling-related harm must be able to capture the subjectivity of the experience, and be able to capture individual subjectivity at a population level.

Improving how we measure gambling-related harm

There was strong, but cautious support for the development of improved measures of gambling-related harm expressed by the treatment and service professionals. Part of the caution stemmed from epidemiological methodologies being grounded in more biomedical models of health while gambling treatment, social welfare, and primary health organisation tend to be grounded in social models of health. The explanation of a more comprehensive model that captures the breadth of impact on health states rather than disability was seen to be appropriate and participants were strongly supportive of measures that allowed the comparison of gambling-related harm with other public health issues. A potential benefit of this was identified as raising awareness about the impact of gambling. Participants felt gambling was often the unseen contributor to harm within the community. As a treatment provider recounted:

> *It's usually looked upon as the drug or the alcohol, rather than looking at the gambling. That's interesting in itself, isn't it? That often a lot of the agencies don't see the gambling as a problem until I'll say do you realise they are going through their – oh, I didn't realise that. So often … (TP4).*

The invisibility of the contribution gambling has made to presentations in the community and health sectors was linked to a number of deficits in awareness and capability. For some services gambling simply was not considered, while for others it was more about knowing how they should ask the question. A primary health professional described the difficulties they had with including screening questions in their youth intake:

> *If you ask the question about gambling how do you ask it, what's the best question to ask, what do they see as gambling? It's all so difficult to really get a clear picture (PH1).*

For other services the issue was more about confidence in knowing how to respond to the answer. A community educator outlined some issues they had recently experienced at a workshop to address this issue:

> *So they wouldn't ask the question because, what do we do then? How do we deal with this? So there was a lot of that. So the knowledge about problem gambling and the confidence in actually broaching the subject and working with clients with gambling issues was something that they found difficult (CE2).*

This was not limited to people working in ancillary roles or support services. A treatment provider outlined the issues faced by a client when they had volunteered the information to their general practitioner that their gambling was causing harm:

> *I've heard of GPs saying to people who've actually disclosed and said, I'm feeling more stressed and anxious I'm gambling too much and the GP's response has been well you need to stop that, let me write you a prescription. But they're happy to write a script for the antidepressant or the antianxiety drug and the instructions for gambling is stop gambling. She actually said I don't know how and he said there's a help line you can call. That was the absolute best, there was no follow-up (TP17).*

Participants were sensitive to the demands placed on many staff in health and community services where the person presenting had multiple comorbidities including a range of complex conditions that contributed to their present situation. In the face of these presentations, staff needed to address the most immediate problems, but the opportunity to screen for gambling later was often overlooked.

A number of participants shared initiatives they had been involved in to increase awareness of the contribution of people's gambling behaviours to the harms they were presenting with, however, these met with some problems. For example, some staff were resistant to the message, seeing it as an expansion of their already demanding role. A community educator described this experience:

> *That's when they – the mental health staff would be, oh you're asking us to do this? Oh you're going to ask us to be bloody gambling counsellors now. I said, no we're not. We just want you to be able to identify it, work with it, and get some help from Gamblers Help to work with these people (CE2).*

Even where staff embraced the training and tools, like any newly acquired information it quickly lost currency unless the practice was encouraged, supported, or better still codified and embedded into procedures. Where this had occurred participants were able to report instances of positive outcomes, not only for the person who gambled, but also for the staff involved.

Beyond the actions of individuals in screening for and capturing the influence of gambling behaviours, there were a number of systematic gaps identified by participants. Apart from treatment providers, there was no systematic capture of gambling influence in areas such as welfare support services, criminal activity, or health data. Participant reports supported the existing literature on the strong correlation with comorbidities such as anxiety and depression (Blaszczynski & Farrell, 1998), as well as other stress related conditions such as cardiovascular diseases (Black, Shaw, Mccormick, & Allen 2013). Concern was also expressed by a number of participants around the influence on mortality especially from suicide. Despite the recent coroners' report (Gray, 2013), it was believed based on personal experiences with clients that gambling-related suicides were significantly under-reported. As a treatment provider suggested:

> *There's that (coroners' report) but nothing talks about – it picks up those ones who are overtly related to gambling but it doesn't pick up the ones that are – you don't realise there was*

> *gambling until you have a conversation with the family and they're now picking up the debt. So a verbal autopsy six months later (TP14).*

These significant gaps that exist in processes to capture the influence of exposure to gambling (directly or indirectly) on population health and other social indicators reflect the lack of a clear conceptualisation of gambling harm as an outcome and gambling behaviour as a determinant (risk factor) for health outcomes. This supports the development of a definition of harm and a means of measuring the impact at a population level consistent with social models of health.

Functional definition of gambling-related harm

The first aim of this phase of the research was to develop a definition of gambling-related harm. The concept of harm, while intuitive, is also highly subjective, which is reflective of a social model of health. Given this subjectivity, and the differences between disciplines interested in the phenomena of gambling, it is unsurprising that an agreed upon definition of gambling-related harm is yet to be realised. The data gathered for this project highlighted the breadth of experiences of harm across multiple domains of people's lives, the subjectivity of what people considered harmful to themselves or others, and the complex inter-relationships between harms and sources of harm. Further complexity was identified due to the difficulty in isolating the harm caused specifically by gambling from the influence or interaction of other comorbidities, such as alcohol abuse or depression. However, it was determined that capturing this subjectivity and complexity was not to be the role of a functional definition. The choice of the term *functional definition* is to distinguish the purpose of the definition developed. Rather than attempt to meet the varied conceptualisations and approaches from the multidisciplinary interest in gambling, the definition was required to meet the needs of the project. In particular, it needed to be appropriate to developing a summary measure of gambling-related harm. The definition must be focussed on the outcome and the manifestation of harm. The critical function for the definition was its ability to be operationalised in a way that gambling-related harm could be measured from a public health perspective, that is, consistent with standard epidemiological protocols.

The proposed functional definition of gambling-related harm generated from the analysis of the data is:

> *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.*

There were a number of factors that drove the wording of the definition that are worth highlighting. Firstly, the definition clearly delineates harm as an outcome, allowing the focus to be on consequences rather than causes or symptoms of harmful gambling. It is explicit in separating this from related, but different, issues such as categorisations of behaviour of gambling, clinical diagnosis, risk factors, or the environment in which gambling occurs. Secondly, the definition implies that harm can occur to any person, at any time. It allows for the inclusion of any instance of harm, from the first experience with gambling through to legacy and intergenerational harms, rather than being focussed only on harms experienced from gambling at a diagnostic point of problem gambling or only while engaging with gambling. This is an important broadening of focus that assists in addressing gambling-related harm from a public health perspective. Thirdly, the definition allows for harm being both subjective and socially constructed, consistent with the World Health Organisation (WHO) definition of health. Fourthly, the definition allows for harms that may occur from exposure to gambling, without having participated in gambling. This allows for the inclusion of harm to people who work in the gambling industry or are involved in treatment and support services accessed by people experiencing problems with gambling. This separates them from the more traditional definition of an affected other. Finally, the definition is grounded in a public health approach to allow for the operationalizing and measurement that is consistent with standard public health approaches to measuring health outcomes. It also allows for the influence of

comorbidities to be included in those measurements. The use of the word 'decrement' captures both the generation and exacerbation of harm related to health and wellbeing, and is consistent with health state valuation calculation methodologies.

Conceptual framework of gambling-related harm

Along with a definition of gambling-related harm, developing a conceptual framework of gambling-related harm was a key objective of this phase of the research. A conceptual framework links discrete concepts based on multiple theories and is seen as an impetus in the development of theory (Siebold, 2002). The proposed conceptual framework of gambling-related harm emerged from the inductive analysis of the data and linked several existing theories (such as life course theory) with those that were generated from the data. Sensitizing concepts (Bowen, 2008) from the literature review provided a starting point (Blumer 1954; Charmaz, 2003; Glaser, 1978; Padgett, 2004) to understand the experiences of harms (types and breadth) at three levels; including the person who gambles, affected others, and broader community (Currie, Miller, Hodgins, & Wang, 2009). A further sensitizing concept was the notion that smaller harms could occur from any level of engagement or behavioural level of gambling (Productivity Commission, 2010) and these were not as well captured in the literature as the more severe harms that tended to motivate people to seek assistance.

Through the second-cycle analysis described earlier (mapping of codes, constant comparison of findings, axial and longitudinal coding), two separate groups of themes were identified and the conceptual framework illustrates the relationship between them. The first theme was that harms could be grouped into clear dimensions or classifications relating to the experience of harm (e.g. financial). The second theme was that there is a temporal differentiation (categories) in the experience of harm, i.e., harm could occur from the first engagement with gambling and extend beyond engagement with gambling. Moreover, there was often a temporal point of significance where the experience of harm could be labelled as a crisis.

The classifications represent the different dimensions or domains in which harm occurs while the categories captured the temporal experience in which harm occurs. This addressed two of the principle deficiencies identified in the existing conceptualisation of gambling-related harm. The framework also assists with the classification and categorisation of experiences of harm for the creation of the taxonomy. Consistent with the guidelines for creating a taxonomy, the division of entities into classifications were mutually exclusive, yet they can cross categorical boundaries. That is, a harm that occurs in the general harm temporal category could also occur during a crisis or as a legacy harm. The framework does not attempt to capture causal sequences or pathways of harms.

The temporal differentiation of gambling-related harm

The data around the temporal differentiation in the experience of harms identified three key categories. The first theme to emerge reflected harms that occurred at a temporal point of significance, often labelled as a crisis. These harms were important enough to motivate people towards seeking assistance or treatment or make an attempt to change their behaviour. This was not unexpected given the initial data was gathered from professionals involved in treatment and support services.

The threshold or crisis that triggered the motivation to seek assistance or treatment varied considerably between people. It was quite often linked to the urgency of a financial crisis. Initially most participants identified financial harm as the threshold. However, in some cases for those with already low funds, deprivation was a normal way of living, or people had accepted that the money was gone and could not be recovered. In these instances it was the need to salvage a relationship that prompted the motivation to seek assistance. Treatment providers shared this common motivation:

> *The wife is threatening to leave if you don't get help (TP5)*

> *I suppose they're at that crisis stage and quite often saying if my partner doesn't change their ways soon I will be leaving them. This is their last ditch effort to do something about it, through counselling (TP2)*

While for others it was a sense of having crossed a significant personal boundary in terms of their behaviour that they could not tolerate. An example of this was recounted by a treatment provider:

> *One woman the first time she came into me she had – she didn't have any food in her cupboards, she hadn't been looking after herself medically, hadn't been looking after herself – but that didn't stop her, she took the money out of her granddaughter's money box and it was like – it was just – there were so many other things I could have seen as being the catalyst but she took the money out of her granddaughter's money box and couldn't pay it back and that was the catalyst for her and yet there was all these other things that just … Not paying a bill or not getting medical assistance when she needed it, not getting her scripts filled, a whole lot of other things (TP9).*

Even though her family had no idea what had happened, it was about how she felt within herself and the shame that motivated her to seek help:

> *Even to this day no idea because that was – she was a – not Australian she was – and her family was such a – so devastating to her that they could not know … she didn't want them to know about this secret life of hers that she's still pulling herself out of at the moment (TP9).*

While for others it was not until they were suicidal that they reached out for help. A treatment provider described the experience of clients who had got to this point:

> *But other times it's that I don't want to do this anymore. I am so sick to death of feeling sick and walking out of a venue going, what the fuck did you just do? That's literally what they say. They want to be sick, some want to kill themselves and they just go, I don't want to do this anymore. You know, the money's always there and they do say that the money – it's like, what am I going to do now I don't have any money left? But that it's not really that. It's a mixture of that and I don't want to feel like this anymore. I'm sick of feeling sick. I'm sick of feeling guilty. I've been hating myself. That's what a lot of people will say. I just can't do it anymore. Some kill themselves because it's easier and others just say, that's it (TP1).*

Similarly the second theme, which was labelled as legacy harms, was also strongly identified in the data from these participants. This theme related to those harms that continue to occur (or emerge) even if the person's engagement with gambling ceases. This is either because of changes in their own behaviour for a person who gambles, or someone else's behaviour for an affected other. The label was chosen to capture the ongoing impact of some harms, and to highlight that harm does not cease even if the behaviour that initially caused it does.

Less significant in the early data was detail around the general harms that might occur at any point from someone having an initial engagement with gambling. Participants were encouraged to expand on their experiences or recollection of these types of harms given the broad scope and previous identification of this gap in the understanding of these harms (Productivity Commission, 2010). For the treatment professionals, many of the clients they saw often could not recall earlier harms, quite often using phrases like *not knowing how they got there*, or that it had happened *before they knew it*. A treatment provider explained the process:

> *But the question – the explanation – I found myself talking about a lot of the time was trying to answer that question for them, how did I get to this (TP3).*

Financial counsellors were the exception to the rule due to the nature of their role.

In unpacking the trajectories of some case histories with participants it became apparent that there had been small flags appearing in different domains of people's lives indicating the early harms, but no single cohesive view at the time that could identify the cause. The challenge in improving harm minimisation is finding ways of identifying these early harms and intervening, before people reach the crisis or threshold.

It is important to highlight that these are temporal differentiations or categories, but they do not represent a continuum. This is because gambling is a behaviour, not a disease that follows a particular course. The framework is focussed on consequences (outcomes) and these are separate to any behavioural and diagnostic criteria. The behaviour can be present at different times, and may vary in its intensity in bilateral directions (Abbott & Volberg, 2000; LaPlante, Nelson, LaBrie, & Shaffer, 2008). Regardless of the behaviour or diagnosis at any particular time, the three temporal categories of harm experienced remain valid. For example, a person may have abstained from gambling for some years but they still experience legacy harms due to previous engagement with gambling. This is further highlighted in the data with the identification of *binge* gamblers, people who may not gamble for considerable amounts of time, but will have a night or weekend of gambling at a level that causes harm.

Further analysis of the data identified a final theme relating to life course and intergenerational harms. The position of this on the conceptual framework represents its unique position as both a classification and category. As a classification it represents a unique set of harms that reflect a cumulative, yet separate, impact to a person who gambles, an affected other, or the broader community. As a category it represents a unique position in terms of time frames, in that it can impact across all three categories, and that intergenerational harm is a pervasive legacy harm that impacts beyond the current life course.

Classifications of harms

The classifications of harms represents the first theory that was generated from the data; that harm occurs across a broad number of domains within the life of the person who gambles, affected others, and the broader community. Initially six different thematic classifications of harm were identified that could occur either sequentially or in parallel: financial harms, those harms relating to relationships, emotional or psychological harms, impacts on the person's health, impacts on work, study or economic activity, and criminal acts. Further analysis relating to CALD and indigenous populations identified a seventh classification of harm: cultural harms. These emerged as separate to the relationship harms, although they tend to occur together due to the strong link between culture and family and other relationships. The conceptual framework is illustrated at Figure 3 and the classifications are discussed in detail below.

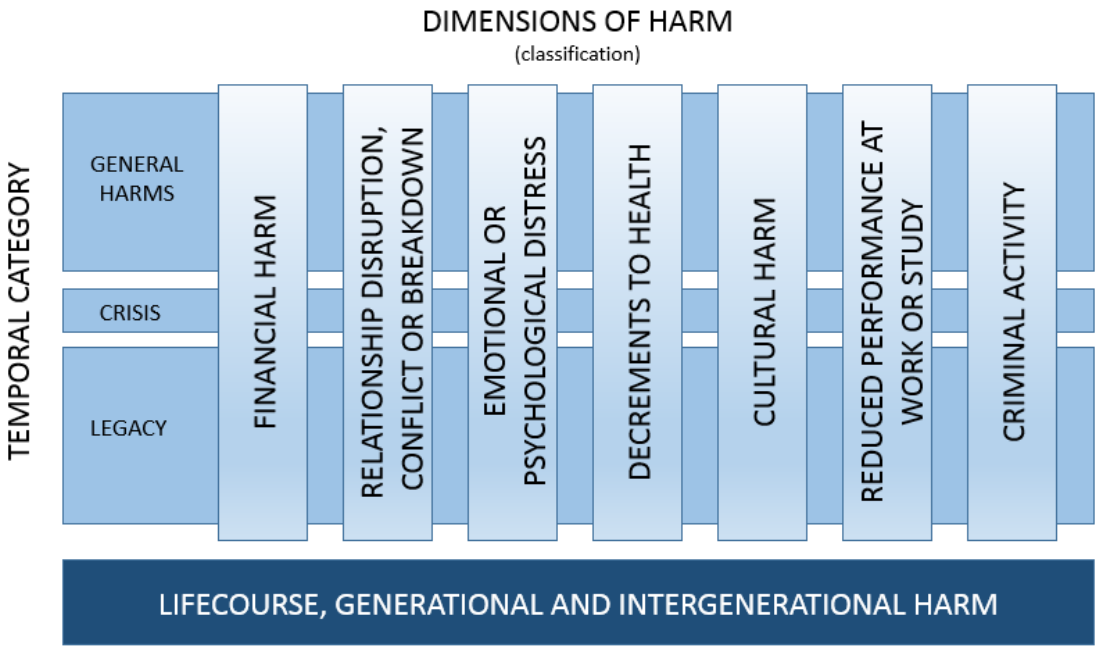


Figure 3. Conceptual framework of gambling-related harm

The classifications of harm possess the five attributes required for generating a classification for a taxonomy (McCarthy, 1995). Firstly, the classifications must be mutually exclusive, that is it must not be possible for an entry into one classification to be included in another. Secondly, the items in each classification should be homogenous, being more similar to each other than to items in other classifications. Thirdly, they should be exhaustive, although some writers argue it is not possible for our knowledge to be totally exhaustive (Gershenson & Stauffer, 1999). Fourthly they should be stable, and finally they should be relevantly named to aid effective communication. These same principles were identified by other authors (Chrisman, Hofer & Boulton, 1988) who posited that the classification system itself should be based on key characteristics of the observed phenomena, be more general rather than special purpose, be parsimonious, hierarchical in nature, and timeless. The attributes identified by both McCarthy (1955) and Chrisman, Hofer, and Boulton (1988) were adopted for the current study, with the exception of hierarchical nature (Chrisman et al., 1988). While hierarchy might be appropriate in objective or systems studies, it is not appropriate for the present study given the subjective nature of the experience of harm.

Financial harms

The focus on financial harm

Financial harms were identified to the person who gambles, affected others, and the community. At a community level, these may also be referred to as economic. Financial harms were normally the first type of harm mentioned by all participants; both professionals and individuals who had experienced harm. Three potential reasons why this occurred were theorised. Firstly, financial harms are the trigger for a temporal point of significance, normally a change in behaviour, reassessing the view of a person or relationship, or seeking assistance and or treatment. As such, they were often a first-order harm, as a participant described:

> *Money is the medium of gambling, so in a way I think that is where it starts. But obviously the impact of that becomes more social (PR4).*

The impact of financial harms in causing subsequent harms, or exacerbating others was consistently identified by participants, and the ease with which it was quantified made it a common descriptor of loss.

This is the second reason financial harms are easily identified. The data contained many examples of reported estimates of total financial loss, overall spending patterns, and individual occasion losses. Clients could identify how much financial loss they had experienced, and treatment professionals, not just financial counsellors, would talk about the average amounts of financial harm their client group experienced. Even participants who were gamblers or affected others, not gambling at problematic levels, would report the amount of money spent on single occasions and over longer periods of time. Thirdly, financial harms often had an immediate significant impact, or were the first order harm that triggered further harms across other dimensions. Given these factors it was unsurprising that financial harms were such a dominant theme.

Trajectories of financial harm

In the second-cycle coding, longitudinal coding was used to examine trajectories of financial harm. While most of the professional participants' experience was with clients who had experienced some form of crisis from gambling at problematic levels, clear patterns of the escalation of financial harm were identified. Financial counsellors had a strong sense of the trajectory of financial harms due to the need in their dealings with clients to meet the requirements of creditors or government agencies, and the collation of financial records. Legal obligations relating to financial harms could not be avoided, and no matter the level of harm experienced, people often had to take stock of what had been lost. The trajectory for people who developed problems with gambling was summarised by a financial counsellor:

> *Over-commitment, credit cards maxed, more credit cards sought, kite-flying on the credit cards where they're using one credit card to pay another credit card and then not paying the mortgage. Trying to service the credit cards before you service the utilities or food on the table and then trying to seek emergency relief for food because you're servicing the credit cards. Then it snowballs down into embezzlement, Centrelink fraud, all of that. It just starts to snowball once it's on a ride (FC3).*

Two theories were generated in the analysis. The first was that the *path* of financial harm followed one of two courses: paring back or a house of cards. The second was that there were distinguishable levels of financial harm.

Paths of financial harm

Two common paths of financial harm were identified within the data. For some people there was a slow erosion of their finances. Spending was cut back in other areas and redirected to gambling. This was described by a financial counsellor as a *paring back*:

> *What goes first? Utilities go first and then they pare back on their food. Then they'll pare back on their medication. Then they'll pare back on the rent. Once it hits touching the roof over your head, you're on the slippery slope to being on the streets (FC3).*

Paring back could be either an ongoing practice, or a temporary strategy to recover from a particular gambling event. The participants who gambled and affected others also reported having experienced a period of financial difficulty meeting daily living costs associated with food, transport, accommodation, and utilities including electricity, water, gas, and phone. At this level, they often relied on family and friends to help meet the shortfall in such costs. Alternatively, some people who gambled reported having to cut back on necessities such as medication, petrol, or food for a period of time. For instance, a young male gambler reported 'stinging' or living on cheaper food alternatives following a 'gambling binge':

> *I've had weeks where I've had bills due and I've been gambling with my mates because we haven't caught up and seen them for ages, then we end up gambling. Then I'm stinging for about a month just trying to catch back up. That's what you do [laughs] … Sometimes it can*

> *be very stingy, [laughs] you're just eating not much … I'll buy just tuna or [laughs] just two minute noodles or sometimes I eat whatever's in the cupboard really (Gam 02).*

A young single mother reported calling on neighbours to help with food and transport when she had lost all her money to gambling. She also bought cheaper brands of food for her family, resulting in feelings of guilt:

> *If I've run out of milk or something I can go and ask, or if I don't have petrol I can run around the corner and say, "hey can you drop her to school today and I'll try and fix it up later?" … most the time it's home brand stuff, to send her to school and I feel guilty that other kids maybe their mums are at home cooking and making them things. I can't do that (Gam 12).*

The second path captured the experience of those who survived on what was described as *a house of cards*, that is, managing debt and credit to fund the gambling, while keeping their normal spending in place. Eventually the debt would become unmanageable and there would be a financial collapse. This was described by a financial counsellor:

> *But I think it can go like that right through or it can go suddenly where they've been hiding the debt with credit cards. So the family don't know. They're still eating. Same lifestyle but massive debt over their shoulders. When the family breakdown is when they … cannot hold this anymore and everything collapses. The house of cards situation (FC3).*

This concealment of more substantial debts was reported by a number of the participants who gamble and affected others, including the strategies used to defer debt or extend repayments. The husband of a gambler whose wife spent money on gambling rather than household related expenses reported:

> *The power bills would never get paid until that was nearly cut off. The rates, we were behind in the rates and the water was on for two years … I said, we must have a bill for water and she kept saying, no, they haven't sent it. When I did the investigating we were three years behind in water … I've still got this car loan we're paying off and I've asked her a fair few times how much have we got left on it and she won't tell me (AO1).*

An affected other whose close friend's mother gambled, reported helping the friend's mother to pay her utility bills so she could hide the issue from her family:

> *I had a friend whose mum was a heavy gambler and she used to ring me up and asked me to pay her bills because she couldn't pay her bills and she didn't want the family to know that she hadn't paid the electricity bill because the electricity used to get cut off and the telephone used to get cut off. I had that happen for years. Then she'd go and pawn stuff so that she could pay me back (AO14).*

For some participants, financial harms further escalated to a crisis level that resulted in adverse events including loss of major assets, declaring bankruptcy, and a period of homelessness. A middle-age male affected other noted that his wife gambled the proceeds of her house and superannuation account in her previous marriage:

> *Her previous marriage, she used to have a house. She must have gambled all that away, because where's the money gone? … I've just found out, since I came back from [interstate], she's cashed her super in as well and that was done 2012 … That was worth nearly $40,000 and that's since 2012 (AO1).*

Professional participants shared experiences of clients who had tried to mediate both paths (paring back and house of cards) through taking on extra work, however, this often only provided a temporary reprieve.

While they could generate more funds through this strategy, they could not generate more time, and were reducing the time available for family or their primary employment.

Levels of financial harm

There was a clear identification of different levels of severity in terms of financial harm within the general harms category. The first level could be described as the loss of *surplus*; those items or activities that are purchased beyond necessities with surplus or discretionary income or financial resources. These harms related to the loss of capacity to purchase luxury items such as holidays and electrical goods. This could be seen as a standard purchasing decision; a choice by a rational person to prioritise the purchase of gambling products over other items from discretionary income. However, instances were identified where this had changed from a deliberate informed choice to a process of automaticity by the person who gambles. The choice was often followed by regret and the impact of the choice may have harmed affected others.

Also identified in this first level of severity was the erosion of savings and financial resources and the capacity to spend on other discretionary, but not luxury, items such as family outings or social activities, involvement in artistic, cultural, sporting, or educational activities. Similarly, the losses had an impact on affected others who were not involved in the choice, and who identified it as an instance of harm. Within this group of harms, it was the loss of rational choice, and the influence of automaticity or sense of loss of awareness or control that made these harmful to both the person who gambled and affected others.

The early manifestation of harms also depended very much on the person or family's financial position to start with. Early harms essentially represented the loss of opportunity to purchase something and this created a sense of harm. This varied considerably depending on people's economic position and level of social connectedness. Participants shared a number of examples that highlighted this variance:

> *Sometimes it is sort of not enough to get groceries and that sort of stuff. Quite often high income families that it's thwarted our dreams of getting the house we wanted or going on holiday you wanted or whatever, are gone because of the money just not being there anymore (TP2).*

> *If they're on their own, they'll say they can't buy the grandchildren the presents anymore. So they are very aware of financially it's certainly impacting. We have very few that can actually afford it (TP5).*

> *But it's usually the family and friends are saying hey, what's going on here? There is no money. How come you are not coming away on weekends like you used to or the regular Bali trip is no longer happening? (TP4).*

Affected others also frequently reported that people who gamble were unable to afford discretionary spending on luxury items such a holiday or gifts for the family. A young woman explained how her mother-in-law gambled away her pension and was unable to buy gifts for her grandchildren:

> *She'll say that she'll get [grandson] shoes because she likes to buy the kids their school shoes or their day care shoes, and she'll get them next fortnight. Next fortnight never comes because by the time next fortnight's come, she's gone to the pokies, all her bills that she can't afford have come out and we don't get the shoes (AO23).*

A young man whose parents gambled remembered having less money in the household than other families when he was growing up, and on reflection believes this was due to money his father lost gambling on the horses:

> *We never really went anywhere as a family. I can remember there were times like we wouldn't – you basically had a second sort of standard, so where other kids at school got a certain brand of pencil that the school recommended, we would get the much cheaper ones because we didn't have as much money available as them (AO4).*

The second group of general financial harms related to activities undertaken to manage short-term cash flow issues by either the person who gambles or an affected other. These harms impacted on those who had limited or no surplus income or financial resources prior to engaging with gambling, or those who were consuming gambling products to the level of exhausting their surplus income or financial resources. The activities within this group could be divided into two strategies of managing short-term cash flow: funds generation or debt generation.

In terms of funds generation, for some participants, taking on extra work played an important role in providing the funds to gamble. A young woman who gambled heavily on the weekend explained:

> *I needed to work so then I could get money to gamble (Gam 7).*

Another gambler reported that when she was working and gambling she took on multiple jobs in order to pay for her gambling at the pokies:

> *I didn't classify myself as working three jobs to pay for the pokies, although now I know I was. But at the time I thought oh, I've got all this extra cash. I can afford to blow it (Gam 10).*

Participants reported the ease with which credit could be managed particularly with respect to utilities such as electricity bills. For example, when faced with disconnection, the ability to manage credit by switching between providers and then utilising welfare assistance or short-term credit options was identified as a common practice. Arranging continuous extensions on utility bills was another commonly reported method of avoiding payment. A financial counsellor described the process:

> *They'll cut back on their utilities, because they can build up quite fast … just stop paying the bill. Because you can actually talk your way into quite a big bill with never getting your power cut off. Our clients are very, very good at doing that and the way the industry is, they're reluctant to disconnect people (FC2).*

Similar practices were reported even with regard to medications because some larger chemists offer clients an account, and clients switched between businesses when they had exhausted that line of credit. Other items of non-immediate consequence that people would forego were the maintenance of vehicles and even vehicle registration. Food was also impacted with the quantity and quality of purchases being reduced. All of these practices created significant risk of future, more substantial harms, such as the impact on health of poor diet, the loss of utilities when credit ran out, and the potential risk to self and others from driving a car that had faulty brakes or bald tyres.

The third group of general financial harms identified related to the reduction or loss of ability to meet expenditure that had a non-immediate consequence. This included opting out or non-payment of insurance (health, home, income protection, and car), non-essential repairs and maintenance of assets such as homes and cars, preventative health activities such as dental check-ups, the purchase of non-essential medication, or utilisation of allied health support. This group represents harm in terms of either risk or vulnerability, that is, it may not have an immediate impact but creates the risk or vulnerability to a significant later impact, or it creates a more incremental lagged impact. For example, while the loss of insurance may not have an immediate negative effect, if it is needed it can have a significant detrimental impact that creates risk. The value of assets such as homes and cars are eroded by not maintaining or repairing them, and it can also create a risk of more significant harm where this contributes to an accident (i.e., faulty electrical wiring in a home, bald tyres on a car). Similarly the loss of health promotion or

screening activities creates risk and vulnerability for more significant and costly impacts later, a neglected filling becomes a tooth extraction, or an injury not managed with allied health support creates long-term disability.

The final group of general financial harms were related to the reduction or loss of ability to meet expenditure that had immediate consequence. These included the inability to purchase food, essential medications, clothing, health care services, housing, children's education requirements, and transport costs. It also included the loss of utilities such as heating or water where previous attempts to manage credit options had failed. These harms in addition to having immediate consequences, often created second and further order harms. These included causal sequences such as impacted ability to engage in education or work due to lack of food, inability to attend education or work due to lack of transport, decrements to health due to inappropriate clothing for the climate, or damage to children's feet due to poorly fitting shoes. For affected others there was a strong causal link to emotional and psychological distress due to the feelings of being unsafe or the inability to control the situation.

At this point most people had reached a temporal point of significance, they were reaching out for help beyond just trying to stay afloat through assistance from family and friends. The analysis of the financial group of experienced harms highlighted the subjectivity of the nature of harm due to some experiences being able to be tolerated or accommodated by some, but creating a crisis threshold for others. Treatment and assistance providers consistently identified the financial harms as the tipping point for seeking assistance. However, the point at which each individual or family could no longer tolerate a harm (or harms), and would seek assistance, varied and may be influenced by how normalised deprivation or poverty already was to them. This threshold was also mediated by informal support networks from families and communities.

Thresholds of financial harm

The threshold for seeking assistance was related to an inability to tolerate a magnitude of deprivation (such as food, heating, housing, and transport), the loss of a significant asset (home, business), the inability to access funds, or bankruptcy. The threshold or crisis could also represent the combination of these with the impact of a second order harm such as relationship breakdown, extreme emotional distress, suicidal ideation, or criminal activity. The threshold or crisis harms were linked to a change in behaviour, albeit only temporary or assistance seeking behaviour. In some cases the change for the person who gambles would include an ongoing effort to reduce, control, or abstain from gambling behaviours. However the patterns of changes to gambling behaviours and subsequent harms were variable, which is consistent with earlier empirical studies (Abbott & Volberg, 2000; LaPlante et al., 2008).

Where people came from a place of deprivation though, the harm was experienced more quickly and with more impact. This was related to capacity, as a participant stated:

> *They just haven't got the fall back and the support networks to make that change. It does happen really quickly (PH2).*

For a young single mother, she became homeless and was forced to live in her car. It was a difficult time, as she reports:

> *I ended up being homeless – walking out of my home and living in my car because going to the pokies it was so much more important at the time. I was in a really bad spot, and my daughter was only a little girl. She was just like a little baby, and it didn't matter, because she was so tiny, she could sleep – it'll be fine – I didn't think anything – my mum will take her – it's okay – I can sleep in the car … I was in the car for only just a short a time. I ended up staying in my car for about two weeks – maybe three weeks (Gam 12).*

A woman whose friend's mother gambled reported the rapid downward spiral into bankruptcy that was the result of using numerous high interest loans to try and pay off gambling debt:

> *She ended up going bankrupt I think because she lent so much money. You know those little loan sharks and unfortunately I think a lot of people that do gamble, it's quick easy money, like cash – not [pawn shop] – those other places. Yeah, the payday loans … so she had so many loans out and so many credit cards and … continually trying to chase her tail. She was working – she's always worked, but she ended up declaring bankruptcy (AO14).*

Financial harms had a profound impact from a legacy perspective, even when the person who gambled ceased to engage in the activity. Harms identified in the data included the long-term impacts of poor credit ratings, financial vulnerability, and poverty. Poor credit ratings often attracted higher costs of security bonds, and a reliance on more expensive credit options or pay as you go options, which created a compound and ongoing financial harm. When the overall financial harm was of a large magnitude or experienced by an already financially vulnerable individual or family, the impact was strong enough to create a second order harm labelled as a life course or intergenerational harm, such as tipping them into the poverty cycle or homelessness. Second order consequences from a legacy perspective of financial harm included people remaining in relationships they would otherwise leave due to the inability to establish themselves as viable separate households. This was described by one participant as being bound by debt.

Factors contributing to financial harm

While beyond the scope of the present study, a number of the participants raised concerns about the ease of securing and the impact of some credit products that were described as compounding financial harm. The concerns for the financial counsellors centred on what was perceived as regulatory deficits or a lack of disclosure about the reality of the product. These issues they believed, created vulnerability or risk for people already experiencing financial harm. In terms of pay day lenders, a treatment provider described the reality for young clients:

> *Younger people, pay day lenders, they're the biggest ones. The first sign that things are not going very well is when you've managed okay with your money and then all of a sudden they've started with these payday lenders. That just never works out well for anybody. I haven't seen anybody yet that's said yeah, I had a payday loan a year and a half ago but I paid that off and I'm all good now (TP15).*

A number of professional participants believed this was linked to the issue of the lack of financial literacy within the population. Participants expressed frustration at the resistance they had encountered in response to attempts to provide financial education through youth oriented organisations such as apprentice schemes. Similar to the payday lenders, the potential for harm from using pawn shops was explained by a financial counsellor:

> *Pawn shops in Victoria aren't regulated by the National Consumer Credit Code. There's no checks. No limits on the amount that can be pawned. No limits on those sorts of things. Whereas payday lenders they've been captured by the 2013 amendments in the National Consumer Credit Code. That's a national code or national legislation. But pawn shops are still state-based legislation. So there's still the huge interest rates, the holding on to the good. They're miners of money for the owners (FC3).*

Of even more concern in terms of the risk of harm, were the loopholes in the regulatory requirements for the online gambling providers themselves and their business practices in using the offer of credit to advertise. Two financial counsellors discussed their concerns:

> *From a financial counselling perspective the betting companies like [gambling providers] all of those, yes they hold money for clients but they don't fit under the ASIC regulations of other deposit-taking institution. Because they provide no interest on the monies that's held. So they're not held there. They're also not regulated by the ACCC in any way. So there's no federal legislation that regulates this which is a huge problem (FC3).*

> *The thing about online gambling that is quite concerning, a case study recently in regards to people trying to stop online gambling but they receive all these emails … you have credit, we're giving you extra credit … it's not going to cost you anything (FC4).*

> *So they're providing credit but they're not regulated by ASIC (FC3).*

> *They're not regulated by ASIC because they're not charging interest on the credit. But if you – they're very predatory in their collection of that debt and they're quick to go to judgement and quick to go to bankruptcy and quick to go against your house. So that's a huge problem with this cohort (FC4).*

The difference in state based regulation was highlighted as a concern creating community level financial harms. The companies were based in another state, which reaped the tax from their profits while the harm was experienced in Victoria.

Financial harm to affected others

The experience and impact of financial harms on affected others was reported to be reflective of that experienced by the person who gambles, and this is reflected in the taxonomies at tables 2–4. The notion of the affected other was broad, with spouses and domestic partners featuring heavily in the discussion from the professional participants due to the close financial ties that came with that type of relationship, however parents, children, siblings, extended family, and friends were also being impacted. The financial harm for many of the affected was often exacerbated by the lack of control or choice they had over behaviours that created the harm. The impact of financial harm on children was very significant, described as a pervasive and sustained experience of deprivation.

Financial harm to the community

Financial harms at the community level were identified as both direct and indirect costs. Direct costs included the cost of debt directly to businesses and to other consumers when losses from bad credit were then built into pricing models. Other direct costs related to the provision of welfare and services to support the person who gambles and their affected others. Indirect costs were identified as the opportunity costs, where the money spent on gambling might have been spent elsewhere and the economic flow of this spending across multiple businesses rather than funds remaining with a gambling provider. Similarly, it was noted that money spent on services and welfare could also be redirected. In terms of the costs to the government, this was described by one financial counsellor as a cost shift between levels of government:

> *So you've got basically a cost shift from the state government to the federal government. It is a cost shift because the federal government doesn't get any tax out of this so the cost shift is to the feds because of the increase impost on the social security budget. The cost shift comes back to the state government a little bit if there's a homelessness situation so it'll come back onto the homeless services. Obviously if there's debts ultimately the bankruptcy board but the cost to try and collect those debts is sort of a win for some areas of the community because they're trying to collect (FC3).*

In sum there was a significant amount of data around financial harms from both groups of participants. In addition to the identification of the two paths of harm; paring back and house of cards, theory was

generated about the dominance of the theme in reporting, and a differentiation of levels of financial harms was identified, as were the clear links to second and further order harms.

From a perspective of community level financial or economic harms, there is the impact of increased levels of debt and bankruptcy (and the administration of these), the increased reliance on welfare both in terms of welfare payments from government and support services provided by non-government and community organisations, and from a legacy perspective, the perpetuation of poverty and welfare reliance. Examples were also identified in the data of business closures related to embezzlement. This had further impact where there were employees who then lost jobs, and the flow on impact on other businesses that supplied or otherwise interacted with that business.

Financial community level harms included; the costs of relationship breakdowns, particularly marriages and the associated costs to the family law courts, the costs of increased welfare support, and the administration of custodial and financial support. Similar costs were identified relating to other relationship breakdowns, such as older parents or adult children who were no longer able to access care or support from family members.

Relationship disruption, conflict or breakdown

The second dimension of harms that emerged from the data was harms to relationships between people who gamble and their affected others (including family, friends, and community). Harms experienced in terms of relationships fell into three distinct categories; disruption, conflict, and breakdown. Disruption reflected change or damage to a relationship, such as loss of engagement, neglect, or distortion of the relationship. Conflict was reflected in hostility and arguments and breakdown reflected the temporary or permanent loss or estrangement of the relationship. Financial harms were the first mentioned, however, relationship harms appeared to be the most regretted and impacted the most on the person who gambles and their affected others especially from a legacy perspective.

Similar to financial harms, another key threshold in seeking assistance or treatment was identified where harm to a primary relationship had caused a breakdown of that relationship or a threat to end that relationship. While not able to be quantified as easily as financial harms, this crisis point reflected the importance of the harms to relationships to both the person who gambled and affected others.

Relationship harms were reported as both a second order harm due to the consequences of financial harms, but often a primary harm due to the loss of available time of the person who gambles, differences in levels of engagement (attachment/detachment) in the relationship, breaches in trust, and distortion of relationship roles.

Lack of time and the experience of relationship harms

Relationship harms were often strongly linked to the loss of time spent by a person gambling. These included the reduction of the amount of time available or spent with a partner, spouse, child, family member, or friend due to engagement with gambling and where the loss of that time spent has a negative impact on one or more parties. This is not unique to gambling and could be seen as similar to any other recreational activity. The loss of time was identified as ranging from episodic to pervasive with the sense of harm also varying based on individual characteristics of both the person who gambles and the affected other. For gamblers, the reduced amount of time they spent with their spouse, partner, or children often created feelings of resentment. A married father was aware that his gambling was keeping him away from quality time with his family, and it eventually prompted him to stop spending so much time gambling:

> *I've got kids and you know, it was like – yeah, so some days I would have been like, especially on a weekend, maybe eight to 10 hours watching sports. Yeah, so it was just a whole lot of wasted time … I'd try and fit in a couple of hours during the day, but because my*

wife, she does a bit with them as well and so yeah, it wasn't enough time with my kids. So I just got to the point where it was like, man, this has got to stop (Gam 05).

An affected other, whose partner gambled problematically, reported how he missed out spending time with his children as he often missed:

Reading with them, or putting them to bed, or being there at teatime (AO22).

Where the loss of time spent with an affected other would manifest into a second order harm of neglect of a minor or person in their care, this was captured under the dimension of criminal activity as an act of negligence.

The influence of trust and blame within relationship harms

Many of the reported relationship harms centred around two dominant emotional states, blame and trust. Blame was a vexed issue for treatment professionals working with either the person who gambled or the affected other. Blame manifested in anger and ongoing forms of punishment from the affected other, and shame for the person who gambled, creating significant barriers to engaging either party in the treatment process. This was described by a participant:

I'm trying to get the couple together, so that the other partner can help support, rather than get cross all the time and – because it's not going to help with their recovery if the partner constantly punishes them, which is a thing they tend to do. That's fair enough. They're furious. They've just lost $70,000 or whatever it is. I'd be pretty miffed myself (TP4).

Loss of trust created a large amount of long-term damage to relationships, having a pervasive and destructive effect on both the relationship and the involved parties that was difficult to restore. The impact on a relationship was described by a treatment provider:

She continued to think that he was gambling and anytime there was any fights it would often come back to the fact that – this – we could be somewhere else if you hadn't done that. But this one scenario was interesting because I thought – you would think that maybe five years down the track you could have moved on. But the amount of damage that must have been done in the first place – the lies, the deception, that sort of stuff. For the partner to be able to trust again was just, it was just too much (TP9).

Relationship harms caused by the loss of trust within a relationship were strong sub-themes within this dimension. Loss of trust is difficult to objectively determine or measure, yet featured prominently in the data. It was the source of conflict and breakdown of relationships, and particularly pervasive within the legacy category of harms. For a number of affected others, long-term relationship strain and perceived lies and disappointments led to a loss of trust in relationships with their family members who gambled. The young man whose mother gambled reported:

I don't trust anything my mother says now. I won't believe anything she says unless it's verified by somebody external, whether it's my sister or whether it's paperwork … So there's no trust there whatsoever. Our personal relationships are very strained for a very long time; in fact they still are (AO4).

A woman whose uncle gambled recalled that his gambling problems ultimately led to divorce. She also reported that her uncle's gambling made it difficult for her mother (who was his sister) and her cousins to maintain trust or a close relationship with him for a long period of time:

Yeah, so it was really hard because my mum was very close to her brothers and to have that in a sense – she used to say to me I feel betrayed … There was always constant yelling or

> *arguments. For my cousins it was quite difficult because after their parents split up it was like well we love you both but dad you did this sort of thing. So there was resentment there that it's taken a long time for them to build that trust back up again and to be able to forgive (AO15).*

Similar to trust, and equally difficult to determine or measure, was the identification of inequality in the amount of engagement or effort put into a relationship. This was particularly evident in the data from affected others. While the person who gambles might be present and spending time with them they would be reported as being distracted or withdrawn. A woman reported that her father spent more time on gambling than with her when she was growing up:

> *I probably thought that [gambling] was more important to him … It was just always – every time I went to have a conversation it was – he always talking about the races (AO20).*

The impact on affected others

Similarly, the experience of the affected other being more withdrawn and less engaged as a form of punishment of the person who gambles was also reported. Similar relationship harms included resentment, hyper-vigilance, and significant distress. Professional participants who had worked with affected others noted the draining effect of having to be the responsible person in the relationship, and the resentment that caused. A treatment provider shared:

> *Well I've had partners say, well look don't you think I want to go out and blow $500 or do anything, I want to go on a bender and get drunk and I want to go out but I can't because I have to hold it together for you and me (TP14).*

Beyond issues of time and trust, harm to the relationship also stemmed from the personal or cultural perceptions of gambling as deviant or unacceptable behaviour. In these instances even infrequent recreational engagements with gambling products could create disruption or conflict within a relationship. Second order harms relating to shame and stigma were closely related with these instances of relationship harms.

Relationship distortion

Where gambling was at diagnostically problematic levels, a separate category of relationship harm was identified in terms of relationship distortion. This included the child(ren) of a person who gambles assuming a parent role, with treatment professionals reporting instances of adult children taking on carer roles in terms of financial management tasks and the provision of food or other necessities. They reported instances of minor children having to take care of household tasks and younger children, and children staying home from school to try to stop parents from engaging with gambling. This is consistent with impacts reported from other addictive behaviours. For children living with parents experiencing problems with gambling, they were seen to grow up too quickly, often having to take on the role of a parent. A treatment provider described a case history:

> *I've heard about children becoming the parent. The role reversal where in single family where the mum was the gambler. The child taking the responsibility of the financial situation. The child was more a parent with financials and also to the younger children (TP17).*

In addition to reports of children playing the role of an adult, participants reported instances of adults who gamble reverting to a childlike relationship with their parents (infanticisation), relying on them for financial and physical support. This often caused strain on other family relationships due to feelings of resentment. Similarly, where partners had assumed more control, the previously equal roles in the relationship were distorted and a parent-child relationship emerged with them having to assume responsibility for all finances, checking on whereabouts, and issuing allowances. Where this occurred further-order harms were apparent to both the affected other and the person who gambles. By taking the role of the child it

allowed the person who gambles to excuse their behaviour as misbehaviour and not take responsibility. A treatment provider described the frustration at dealing with this when trying to work with the person:

> *It's just interesting the roles that couples do take on and they become the naughty – and they used to come in and go to me I've been naughty. I just want to slap them when they say that to me. I've been gambling again. I go you're not being naughty, try and contain myself. I'd say you have gambled, did you say? Because it used to piss me off when they said I've been naughty. It's like I've been a naughty boy … I actually haven't gambled but I've been naughty, a naughty person (TP1).*

A number of informants expressed second order harms of resentment or distress at having to adopt these roles with one informant likening it to a form of economic domestic violence due to the levels of control they had needed to assume. Maintaining high levels of financial control and accountability was described as a 'gatekeeper' role by one treatment provider who saw it as harmful to that person:

> *The financial gatekeeper role is hugely draining and it's almost like they feel as being a perpetrator of domestic violence because they're – so they're gone and they have to put themselves into that role of being a gatekeeper and being a perpetrator of that sort of economic violence and it's a really, really difficult way to be (TP14).*

In addition to the feelings of resentment, distorted roles in both partnerships and parental relationships created a sense of abandonment, because the person who should be there to provide support was not. For example, children of gamblers felt the parent experiencing problems with gambling had abandoned them.

The legacy impact of relationship harms

From a legacy perspective relationship harms were reported as very impactful for both the person who gambled and the affected others. While financial losses were of significant impact, they could be adapted to more than relationship losses. Unsurprisingly, the sense of having not been able to detect the problems sooner, or save the person from the problems, created a sense of hyper vigilance for affected others that could also extend to other relationships. This was exhausting for the affected other and perpetuated feelings of shame for the person who gambled. A treatment provider described the ongoing impact on the adult child of a person who gambled:

> *I recently had a phone call from the daughter, because she saw him going to the pub. She was absolutely – with thinking he had gone back into gamble. This 12 years down the track. So she rang me. Luckily I've been around for so long doing this. It's very consistent. I said ring him and ask him. You are going to have to for your sake, to find out, which she did. He was okay and it was alright. But still she doesn't trust him to this day. I don't think they ever will, to be quite honest with you. He knows that. He says that. He knows that they'll never trust him again. It doesn't make him feel very good (TP4).*

Her father's problems with gambling had also affected her behaviour in her marriage:

> *Very much scrutinising her own finances, her own husband's behaviours. What I didn't see there, I'm going to check for here (TP4).*

Quite often when relationship harm reached the level of a breakdown or estrangement, other relationships were impacted. Participants reported the separation of grandparents from children's lives either due to the breakdown of marriages, or the estrangement of a grandparent who had gambled. This type of situation was recounted by a treatment provider:

> *I think it's moved down to the grandchildren, to be quite honest with you. Poppy is not such the hero he used to be, which is quite sad, because he used to take them to so much. They know. I think they grieve a bit for who Poppy was once, I think you'll find (TP4).*

Alienation and denigration of the person who gambled was a common form of ongoing punishment for people who had experienced problems with gambling. This was identified in the relationship with their children, parents, and other family and friends, as described by a treatment provider:

> *But denigrating the other party and trying to get the support of children or families or third parties such as friends is very much an issue. Sometimes his parents will recognise there's a problem and the mother's already supporting the wife (TP6).*

The disruption to these relationships created harm for everyone involved, perpetuating shame and guilt, and contributing to more social isolation of the person who gambles, which was a barrier to successful treatment.

Relationship harms to the community

The harms to relationships have obvious costs to the community. From an economic perspective, there are the resource implications of support services, mediation, family court, increased reliance on public housing, and the administration of child support and custody. Relationship breakdowns also contributed to social costs associated with family break ups. Relationship or family breakdowns had significant consequences including social isolation, vulnerability to harmful maladaptive behaviours, contribution to emotional or psychological distress, and life course and intergenerational harms. Across the data there was a consistency in the focus placed on the ongoing impact of relationship harm.

Relationship harms at a community level include damage done to social cohesion and social capital through isolation or exclusion of individuals or groups. While this type of harm was usually identified in cases of relationship breakdowns between couples or families, some participants identified divisions within communities based on attitudes to gambling that became harmful when issues such as applications for increased gaming licences were being considered. This example of harm was not unique to gambling, and reflects community experiences on many contentious subjects.

Emotional or psychological harms

Harms relating to emotional and psychological distress occurred as both primary and secondary or further order harms, and were then exacerbated by the impact of other harms.

Three sub-themes relating to this classification were identified for both the person who gambles and affected others: emotional and psychological distress from feeling a lack of control over behaviour or circumstance; feelings of insecurity or lack of safety; and feelings of shame and stigma.

Loss of control and powerlessness

Both the person who gambles and affected others reported distress caused by a feeling of lack of control where gambling behaviours had escalated to problematic levels. For the person who gambles this related to the experience of distorted cognitions or erroneous beliefs, feelings of powerlessness in being able to manage gambling behaviours, and desperation in trying to recoup losses. Gamblers recounted the emotional highs and lows of winning and losing money. A single mother, who gambled, compared her emotional reactions to gambling to like being on a drug:

> *It's like I'm on a drug. You're on a high when you're there doing it, when you're in that moment pushing buttons and watching everything spin in front of you and you've got that high hope, and everything's great and you don't worry. Then the moment – even just the moment you*

> *walk out of the venue you're like, crap – I was meant to pay that bill today, or – crap, my daughter's got an excursion (Gam 12).*

An older female gambler, who was retired and caring for her chronically ill husband, provided a very negative self-judgement on her gambling behaviour which she felt was not in her control:

> *I do feel guilty if I spend what I call too much … I do get angry with myself if I spend too much … I get angry with myself for being stupid … Oh yeah, you go through all of it. The guilt, resentment, the stupidity … Oh you hate yourself (Gam 07).*

This lowered self-worth was also expressed by a middle-aged married father who felt unable to control or stop his gambling:

> *I felt like crap, hey … Yeah, felt real bad. Just felt like useless not being able to stop or give up or just even take a backwards step (Gam 05).*

The young single mother, with one child, also expressed guilt and harsh self-judgement as she perceived that her gambling behaviour meant that she could not provide for her daughter:

> *I'm a horrible person when it comes to the pokies … There's a whole lot of mixed emotions that it messes with, like it makes me feel guilty. Always, constantly I feel guilty because I just can't give my daughter whatever she wants. I feel guilty that I could have bought my daughter a new dress or something, but instead I decided stupidly I'm going to put [$50] in the pokies, and maybe – just maybe if I win I'm going to be able to buy her two dresses – three dresses – four (Gam12).*

The affected others reported similar experiences of powerlessness relating to their inability to control or influence the behaviour of the person who gambles or the impacts from that gambling, such as financial losses. There was a range of emotional responses to their family members gambling and these included feelings of stress, disappointment, resentment, and anger. For a young man whose parents both gambled throughout his life, this anger and resentment was deep and long-lasting. He reported:

> *I was very angry and disappointed in them and I was furious and I maintained that anger for quite a long time. .. I felt like they'd betrayed us and wandered off and done their own thing and ignored us (AO4).*

Control within relationships between people who gamble and affected others were often reported to operate on a type of continuum, with a move to either end often resulting in emotional or psychological harms. Where the affected other felt they did not have control, there would be reports of distress or anxiety, but where they were given (or had taken) control within the relationship (normally of finances), this also created harm. At this end of the spectrum the reported emotional harms centred on the experience of resentment or discomfort. The experience for the gambler was similar and participants reported emotional and psychological harms, as the wife of a person who gambles reported:

> *I know that he feels ripped off and I know he feels the stress … I think he's a bit angry, but he definitely feels a whole heap of extra stress because of it [gambling] (AO23).*

One middle-aged farmer described how his wife's moods seemed to mirror her gambling wins and losses:

> *I think that when she was really chatty and nice is when she won something and I think when she was in the real foul mood, she had a big loss. She had a really – well, that's what I think and looking at the bank statements, it adds up now … I think when she was in the real foul moods, she'd lost big. She'd lost really big (AO1).*

Loss of security and safety

Linked strongly to the theme of control was the sense of security or safety. This is due to the link between feeling in control of one's future and a sense of safety or security. Feelings of fear, uncertainty, and insecurity are also common for the person who gambles and their affected others. These emotional states could relate to a fear of a known consequence or a general sense of foreboding and they are linked to the notion of powerlessness over their own or someone else's behaviour. This was seen to be a pervasive and long lasting impact, with many living in a constant state of anxiety. The impact for a partner of someone who gambles was described by a treatment provider:

> *If you decide to stay in the relationship it's a big responsibility. First of all you're on tenterhooks because you're never 100 per cent sure whether there'll be a relapse even if the gambling's stopped (TP16).*

For children, who have even less sense of power or influence over the situation, these feelings were heightened. In one case, shared by a treatment provider, this was further exacerbated by the parent who gambles' emotional distress:

> *The psychological effect on children is difficult to measure especially if you don't see the children. Because I had a family who, dad was gambling and made a decision, none of the family knew about huge debts that he had, made a decision that he was going to kill himself. Went out in the car in the morning, left his three kids 16, 14 and nine a note, then changed his mind. The kids had by that time read the note. When you the family in, you get him in, he's unable to get in touch with the feelings that you had at the point. When you get the family in and the kids are telling you that basically they're just scared that dad's not going to come home and that's a year and a half later. That's going to be with them for their whole lives. The psychological impact of what gambling does to children in all the different ways that it can do it not just economic deprivation but the parents just not being there physically not there, being down the pokies. You need that interaction (TP14).*

However, other experiences of emotional or psychological harms around physical safety were identified by participants, relating to harassment by creditors (both legal and illegal). Another separate sub-theme related to the idea of being safe from gambling products for those who had experienced problems with their gambling. This was reported as a sense of the invasion of these products into the safety of the home through online product offerings. People who had implemented harm minimisation strategies of self-exclusion and actively avoiding land based gambling venues, felt their homes had previously been a safe place where there was not the need for the psychological effort required to resist the urge to gamble. However, the pervasive nature of advertising and links to online gambling through mediums such as social media, coupled with the ineffectiveness of blocking programs or applications as a form of online self-exclusion, had removed that feeling of safety and created distress.

Shame and stigma

Shame and stigma were the most pervasive types of emotional and psychological distress. They existed as initial harms and second or further order harms, and affected both the person who gambles and affected others. They could be experienced at any level of participation in gambling, reflecting the link to social and cultural values surrounding gambling. The impact of the emotional or psychological distress, especially that stemming from shame, for both parties was felt to be a very significant harm, often underestimated in terms of its impact as expressed by a participant:

> *Emotions like shame and denial and things are really – they are really serious consequences of gambling. I think they will turn out to be important. I think they're hard to quantify, but I don't think that means that they're not important (PR3).*

Shame and stigma represent a special type of emotional harm as it combines both the imagined and real attitudes and behaviours of other people toward you. Shame creates the expectation of stigma, even when it does not manifest towards the individual, creating barriers to treatment seeking, and creating delayed or lost opportunities for harm minimisation. The contribution of shame in compounding harm was described by a participant:

> *I think it's not as simple as you've lost your house because of this and you feel shame and guilt. You probably lost your house in part because you felt shame and guilt and therefore didn't tell anyone that you had a problem, and didn't go and seek help and didn't – the shame and guilt is a cause of things as well (PR 1).*

Gambling is a highly stigmatised activity, which was echoed by a number of participants. This same stigma was reported even with regards to prison populations, who might be expected to be more accepting of behaviours society considers deviant.

> *People have described they'd rather admit injecting drugs than having a gambling problem (PR1).*

The perception of stigma was heightened in smaller communities (geographic or cultural), which created additional barriers in terms of treatment provision. In smaller communities, the impact of the stigma for those experiencing problems with gambling was described as a scarlet letter by some participants. A treatment provider who worked in smaller regional communities described the impact it had:

> *Before I started working full time in the [town] area, I was in smaller country town areas and that's always been – that was always the issue of even if they went and saw a psychologist or counsellor in that area, somebody would know. Their next-door neighbour's aunty works as the receptionist or whatever and so there would be that whole thing and once again it comes back to that perception stuff and so I've seen both of those women – I actually saw outside of that town. I saw them in the other small country town that I worked in. They would actually travel to see me because they didn't want to take the chance of meeting somebody in the room, in the outside – office area. There's probably good reasons for that because I have had people bump into one another in the waiting areas (TP9).*

The notion of shame is also particularly strong in some cultural groups, and was both felt by and directed at the whole family. The legacy impact of shame on others was identified as being particularly strong, with some reports of the shame (damage to the family name) as being experienced even by subsequent generations.

Links to suicidal behaviours

Those experiencing problems with gambling often experienced shame and stigma at more intense levels and were strongly linked to suicidal ideation and attempts. The manifestation of extreme emotional or psychological distress in terms of suicidal ideation, attempt, or completion had been experienced by most professional participants who worked directly with clients. As one counsellor who had worked across gambling as well as alcohol and drugs commented:

> *We get very high suicide ideation with gambling. It's higher than alcohol and other drugs (TP4).*

A number of participants shared their experiences of suicidal ideation or attempt:

> *He was on a freeway and he pulled over on an exit and that's when he called the Help Line. He had already booked a hotel. He already had his plan mapped out. He was going to the*

supermarket to buy a sharp knife. So he was on his way and that's when he called the Help Line. So he just wanted me to give him some reason to keep living. But that's how close that was (TP14).

Yeah, we've had a couple. Usually two or three a year … (TP15).

I've been in the coroner's court with completed suicide (TP11).

I've had people suicide on me (TP4).

Many other participants simply nodded in agreement. These experiences had created further harms for the family and friends of the clients, and the impact on the participants themselves was obvious in their sharing of the information.

Legacy impacts

Stigma is not only a barrier to treatment but could be a by-product of assistance, treatment, and harm minimisation strategies such as self-exclusion. An example of this was provided by a participant in relation to assistance:

Plus using food vouchers. I cannot give food vouchers away. The clients won't take them, because they quite often know the people at the supermarket. They are not going to hand over a voucher. I've just stopped using them. Because I just – because I just couldn't give them away (TP4).

A similar example was provided regarding self-exclusion:

People won't go through the self-exclusion process because I know people that work at the venues and they'll see my photo in there, so I'm not going to the go through the self-exclusion process. So straight away that whole self-exclusion thing that stops people walking in the venue (TP8).

This was just as concerning to some affected others as it was to the person who had experienced problems with gambling. A treatment provider described the problems faced by a client:

One particular client had said she was quite happy to self-exclude. She lives in a very rural area and she was quite happy to go through the self-exclusion, understood that her photo would be on display, but her husband wouldn't allow it because he didn't want that stigma attached to him. I haven't heard that before either. I just thought that was really interesting to think that he was more concerned about what people were going to think about him as a husband if her photo was on display in this pub (TP15).

In the case of the venue workers attitudes towards people experiencing problems with gambling, a number of participants felt the perception of stigma was misplaced. They suggested that for any number of venue workers their attitude would be supportive, if not relieved, that people were putting strategies in place to minimise harm.

Beyond the perceptions of stigma associated with utilising harm minimisation strategies such as self-exclusion, was the reality of a process described by participants as being humiliating and cruel, especially for regional and rural people. Participants described the experiences of clients:

Self-exclusion is something we probably haven't touched on, is the process that's so – I had a lady recently that wanted to exclude from [metropolitan venue], so she had to go all the way down to Melbourne and go through the whole process at [venue]. She can't self-exclude up

here. You actually have to go to the venue and who was walked out the door by two security guards. She was quite humiliated (TP4).

One of the comments was that they were all up – the photos were up in the public bar. Yes, it faced away from the public but if you were at the side of the bar and if you knew that they were there. That causes more problems for the people that are trying to seek help. (TP15)

Even to self-exclude from local hotels that have a metropolitan based management structure could be equally humiliating:

The other one is the [hotel group] don't actually come up here. So we have to take our clients to a local solicitor and get their photographs taken. I think that in itself is an issue, because that puts a lot of people off wanting to self-exclude (TP4).

Given the value self-exclusion has as a harm minimisation strategy, particularly in regional and remote areas, any process that acted as a barrier to its uptake by inflicting more emotional harm was seen as problematic.

From a legacy perspective, these harms were particularly impactful especially when linked to other legacy harms such as financial harm and relationship breakdowns and they created further harms through the manifestation of a lack of self-worth, such as decreased levels of self-care. This could also lead to relapses in gambling. An example was given of a long-term client of a treatment provider:

When I first started working him he was literally skin over bone. He could barely walk. Years down the track he had improved greatly with his health and his gambling was somewhat under control. But he had this belief that he didn't deserve anything good. The more you tried to help him. If you got him furniture he'd give it away (TP4).

Affected others are often impacted by a sense of guilt that they did not notice something was wrong, which also creates emotional harms as described by a treatment provider:

I think it can devalue people's sense of self-worth. Why didn't I notice? Why didn't I – how stupid am I that I didn't see all this money disappearing. I wasn't able to protect the kids. All these things (TP14).

Overall there was a strong sense of how detrimental emotional and psychological harms were to people who gamble and affected others. Their impact was very pervasive, a form of harm multiplication, exacerbating other harms and creating new ones. The impact at a community level was around social inclusion, social capital, and harms that manifested through the expression of diminished emotional states. Shame and stigma were identified as being of particular importance in increasing the experience of harm, yet poorly captured or understood.

Decrements to health

The harms caused through decrements to biophysical health are not well captured or measured, as raised earlier in this chapter, despite occurring even at recreational levels of gambling. The effect on health was noticed by the people gambling themselves, with a primary health care worker noting the differences in self-reported health from youth who gambled, most noticeably in self-reported mental health.

Concerns were expressed by health professionals that gambling at any behavioural level represented another sedentary behaviour often contributing to the prevalence of that risk factor in at-risk populations.

This had been identified by one primary healthcare service of being concern to their client base in terms of chronic disease risk, as a community educator explained:

> *Also for people who have been sitting for long periods of time at the pokie machines and not moving so they're not – like in aeroplanes they advise you to get up and move. But they've been sitting there for such a long time so their digestive system's not working properly (CE6).*

Similar concerns were expressed by a treatment provider about extended sedentary play and the impact on peoples' health including their eyes:

> *We don't work with clients but some of the cases that we hear that people are sitting long times and also too they're not moving their legs or anything or having any physical activity. They're just sitting there all day. Also too their eyes on the screen watching the screen all day (TP13).*

Another gambler reported that her headaches intensified when she gambled:

> *I got really, really bad migraines and when … when you're sitting in front of them you tend not to have your lunch … I just get migraines now but for a long time I had really severe bad heads, headaches and that was the gambling. I don't know whether it was the lights, the bells, the whistles or I think it's too, you get very aggressive and very bitter. Your insides are in knots, that can't be good for anybody (Gam03).*

Within the data there were links to other risk factors such as smoking, alcohol consumption, and poor nutrition. Affected others noted that their family member's gambling often occurred with other 'addictive' behaviours such as smoking or drinking. These also contributed to decrements to health:

> *He smoked whilst he was drinking … it was constant. It was like if he had a drink in his hand he had a cigarette in the other. It was like – and they used to be able to smoke whilst they were sitting at the pokies and drink whilst they were at the pokies (AO15).*

The young man whose father gambled felt his father's early death may have been associated with his excessive drinking and smoking while gambling:

> *So he would hang out down there [venue] and he would hang out with the barflies and he would drink and smoke and all that sort of stuff, until we got to a point where I remember him going to the doctor … and he actually said, I can't drink beer anymore, I can't hang out there because his liver was all shot. So he would actually – he still went down the pub – bar – and he would still gamble and he would still smoke and hang out with his drinking buddies (AO4).*

In more problematic cases gambling was linked to poor sleep practices, non-compliance with medication, and reduced personal hygiene. A treatment provider outlined a case where someone would lose sleep to travel from their rural community and spend the night gambling in Melbourne:

> *She used to travel to the – she got self-excluded here [regional town] and used to travel to [venue in city]. Get home at seven o'clock in the morning, get the kids ready for school. It's unbelievable, her life (TP4).*

This was not an isolated example, with other participants making reference to people travelling to gamble in the capital city with three hour commutes each way, attracted to a particular venue or just to get to an area where they were not self-excluded.

Some people who gamble reported that gambling was initially related to lowered attention to self-care, and this in turn led to negative health effects. An older woman who gambled explained:

> *I kind of ran my health down a bit. I think too at the time that I wasn't particularly well and I didn't know why and that was another – I just wanted to escape from everything and just to go. I didn't really care what happened. I didn't get super sick. I became rundown, miserable and grumpy (Gam10).*

The intensity of play could also lead to more significant lapses in self-care as described by another treatment provider:

> *She wouldn't leave the machine at the [venue]. But that was unreal. She used to wet her pants sitting at the pokies (TP4).*

Affected others observed that their partners or family members who gambled sometimes missed allied health appointments (such as the dentist) or had difficulty paying for prescription medications they needed due to money lost gambling:

> *I guess he put off going to the dentist because he didn't have the money for it. He would have if he wasn't playing the pokies (AO23).*

> *Mainly – she was up here asking for money for a prescription just a month ago and I just I can't do it, I don't have it. But she managed to borrow money off someone else (AO23).*

> *She's on a variety of medications, so antipsychotic ones are probably the most popular ones that we really want to make sure she takes. She won't buy them; she'll avoid medication as much as she can. If she needs the money for gambling or whatnot, she just won't buy the things (AO4).*

When gamblers were unable to buy or did not get medications they needed, it exacerbated their existing medical conditions.

For others, existing health ailments worsened as gambling behaviour increased. This young single mother reported how it intensified her depression:

> *You just get sucked in so hard, and it's – and my depression. I've had depression since I was a young child but it's just – it gains that extra volume on top now (Gam12).*

Changes in self-care were often linked to emotional or psychological distress, particularly the impact on sense of self-worth. This could impact on physical or mental health in a number of ways. One treatment provider described how this could become a cycle for some people:

> *I think there's certainly a lot that affect them, probably something I haven't really talked about yet is the effect on mental health. In very broad and general terms, I think that the depression, anxiety, high prevalence particularly of [unclear] was very, very high and I think that pattern itself that becomes a bit of a cycle in itself and has its own side effects. I think it can quite often lead to other addictions and other more severe mental illnesses depending on the circumstances of the person as well (TP2).*

These behaviours were seen to create both short-term impacts, such as headaches and migraines relating to focussing on a screen for extended periods of time, but of most concern was their contribution in the long term to increasing risk, creating gateway effects, or exacerbating existing comorbidities, particularly chronic disease such as diabetes and depression. These long-term impacts also represented

legacy harms. This was highlighted as a concern by health professionals particularly for those people who had started or increased gambling as a recreational activity due to the restriction of other recreational activities due to illness, injury, or the impacts of aging. Affected others, particularly children, were also impacted often through the lack of available funds.

The biological manifestation of emotional and psychological distress, such as increased blood pressure or loss of sleep, was identified as another form of harm. This gambling-related stress also worsened other chronic ailments as reported by another young woman who gambled:

> *I actually suffer from psoriasis and so when my body gets stressed, that's my sign. I can physically see it … and [gambling] worsens the condition (AO/Gam 13).*

As highlighted earlier, the impact of this was felt by many professional participants to be underestimated and rarely captured in current health measures and was experienced by both the people who gamble and affected others. An older female gambler felt the heightened levels of stress associated her problem gambling contributed to her having a minor stroke:

> *I ended up, I had a TIA which is like a little stroke and I think it was all the stress. Yeah, the stress and the anxiety (Gam 03).*

Treatment providers recounted experiences of clients whose deaths had been attributed to causes such as cardiovascular disease, but felt their gambling should have been recorded as a contributing or underlying condition.

> *I had a person die with me, a heart attack, had massive heart attack, because of the stress, and he died, because of their gambling (TP4).*

> *I do have a couple of clients who associate their heart condition with gambling (TP13).*

Similar examples included emergency department presentations for mental health issues, complications due to non-compliance with medication, or medical injuries caused by violence (including intimate partner violence).

As a consequence of other harms (both individual and cumulative) gambling was identified as contributing to self-harm, suicidal ideation, suicide attempts, and suicide completions. Levels of these behaviours were anecdotally reported by treatment providers as being higher in people experiencing problems with gambling than those experiencing alcohol and drug problems. These types of harm were often linked to treatment seeking and represented a threshold or crisis in terms of harm. They also created ongoing decrements to health as legacy harms, even if engagement with treatment or assistance had a positive effect.

The decrements to health were a complex interplay of risk factors, and in some cases the direction of cause was not clear. It is not known if people's gambling reached harmful levels because of existing health states, whether another condition had made them more vulnerable to problems with gambling, or whether gambling exacerbated another condition. However, it was clearly noted that gambling behaviours were contributing to decrements to health.

Community level decrements to health can be described as an increased burden of disease due to the exacerbation of existing morbidities or increase in the onset of morbidity related to community members' engagement in gambling. Beyond the cumulative experience of loss to health there is a cost to the community associated through the need to provide health services, medications and treatment costs, and the opportunity cost of the funds used for these that might be addressing other health issues. However,

separating out the contribution to these decrements from comorbidities or other contributing behaviours was beyond the scope of the present study.

Cultural harm

Although cultural harms were not a strong theme within the data, they were identified as a separate theme to relationship harms, even though they tended to occur together due to the link between family and culture. A person's culture (including religion) is more than just their relationship with other people who share the culture, but is grounded in their cultural beliefs, practices, and roles. Disconnection from cultural groups represents more than just the social isolation of estranged relationships. While not strongly represented within the data due to the homogeneity of the participants, there was sufficient reporting to identify this classification. Harms reported included the dissonance between engaging with gambling where it was against cultural beliefs, the impact of the time spent gambling on the ability to participate in cultural practices and roles, reduction in the ability to contribute or meet the expectations of a cultural community, and the subsequent reduction of connection to the cultural community. Second order harms from this were around experiences of social isolation due to reduced connection, and specific types of shame relating to cultural roles and expectations. Extreme emotional distress was also reported due to a feeling of lost identify due to lost connection with community.

Cultural harms were not isolated to the person who gambles, and were experienced by affected others. This is not unexpected given the important role of family in most cultures. In some cases the harm could be felt by the affected other before the person who gambles. For example, where the affected other was unable to attend events due to the actions of the person who gambles, or their sense of shame at the absence of the person who gambles. Likewise the affected others could also experience social isolation due to lost connection to culture.

Cultural harm at a community level

Cultural harms were also identified at a community level, where the cultural community could not protect or "save" the person who experienced problems with gambling. This sense of harm to the community was described by a treatment provider:

> *But seeking of help is usually to a community leader or a religious leader or to a fellow member of the community or a family member. So usually it goes family first absorbs some of the debt … so then it goes a bit broader. The effect in those communities if there's a suicide where they feel that they should have been able to fix it because they were the people who were asked and were picked on the problem. It's enormous and the trauma effect with that can sit for years with that group. It's an area that needs a lot more research a lot more capacity within the community to respond to (TP16).*

Cultural harms at the community level occurred in two clear themes. The cumulative impact of individual harms led to the lost contribution (role, time, or financial) to the cultural community. This created a demand on other members or led to a reduced ability to engage in cultural practices by that community. A more direct group of harms were around cultural identity, including the use of cultural norms and practices to promote engagement with gambling, and the disconnection of youth when gambling was against cultural or religious beliefs. Cultural identity was also harmed through the exacerbation of cultural stereotypes, and hopelessness and powerlessness through the negative narrative surrounding gambling behaviours by certain groups. For indigenous cultures there was a sense of exacerbation of existing harms of cultural loss from colonisation.

While it could be argued that cultural harms could be grouped with relationship harms as social harms, they meet the criteria of a separate classification. Furthermore by making an explicit distinction it recognises the importance of culture to people's wellbeing and health. More research with a purposeful

sample of participants who have a strong cultural identity needs to be conducted to deepen the understanding of this classification of harm.

Reduced performance at work or study

The impact of gambling on workplaces is normally reported in terms of criminal activities relating to fraud and embezzlement to address financial demands relating to gambling. Criminal acts of fraud perpetrated against an employer, educational institution, or organisation at which someone might be volunteering were captured in a separate classification of harms. The experiences identified from the data within this theme demonstrated a broader and more pervasive catalogue of harms consistent between people who were in paid employment, studying, and undertaking volunteer work. These were grouped within one theme with each being a form of economic contribution.

Harms were identified that included reduced performance due to tiredness or distraction caused by gambling, and there was a sense of clear intensification if there was an escalation in gambling behaviour. This included primary harms such as increased absenteeism due to time spent gambling or second order harm of absenteeism due to lack of transport or ill health as a consequence of gambling.

For some people who gamble, reduced job performance associated with gambling was relatively minor or sporadic as reported by this affected other:

> *Sometimes she'd have a day off work or she'd come into work and she'd be really quiet because she'd been out all night (AO14).*

However, instances were reported within the data of people having their employment terminated due to ongoing poor performance. Gambling behaviour was reported to have more serious consequences at work for one person who gambled, periodically losing his job due to problems with gambling:

> *He has lost a couple of jobs through the years and stuff … He just used to think well I'll just get another job. I'm a jack-of-all-trades; someone will take me on. He never used to think much of it (AO15).*

A similar experience was shared by a treatment provider who had been working with a young apprentice who had been terminated from his employment. Termination of employment or study opportunities had long-term impacts both in terms of gaining future employment (or study), and also contributed to the exacerbation of other harms due to the impact on the ability to generate income creating significant legacy harms.

The experience of ill health could be a second or further order harm itself, and thus the impact on work or study could be a compound harm. Similarly the loss of employment and subsequent loss of wages exacerbated financial harms already being experienced.

In addition, work and study harms were experienced by both people who gamble and affected others. For affected others, the harm could occur as a second order harm, for example, where being tired and distracted at work or study was the result of emotional or psychological distress. This also impacted on the children of people who gamble, as shared by a treatment provider:

> *It was things like mum – mum was gambling so mum would make her drive to the venue with her so she could gamble and wait and perhaps she'd also be drinking so it's almost like it's her taxi service home. This girl was in uni or year 12 and only just got her licence. (TP15)*

For the children of gamblers, financial insecurity also made it difficult for them to pursue higher education or study at the same rate as peers. For a young man whose parents gambled, studying at university was difficult because he couldn't afford textbooks, and had to work to support himself through his degree:

> *I ended up cutting back uni to only two subjects and working and things like that, because I couldn't survive on student benefits and things like that … Yeah, so I did one or two subjects per semester, it took me twice as long as anyone else, but I got through in the end (AO4).*

Similar experiences were reported around children being unable to attend school due to the lack of funds to put petrol in the car or struggling at school due to insufficient food in the house. These impacts on children are of particular concern given the long-term effect on the child.

Community level harms relating to performance in work or study were another dimension that had secondary financial impacts at this level. Absenteeism and job turnover contribute either direct or indirect costs to the economy, as do businesses that close or have a reduced capacity. Similarly, the reduced engagement or withdrawal from post-secondary education had immediate community level impacts and the long-term effect of reduced workforce skills which impacts on employability. Volunteer (non-paid) work was included within this dimension due to the direct impact volunteer contributions make to the economy and social capital of communities. Examples were identified in the data where the ability or desire to engage in volunteer work had been impacted by individual's gambling behaviours.

Criminal activity

Involvement in criminal activity as a consequence of gambling was reported in relation to people who experienced problematic, rather than recreational, levels of gambling. The involvement in criminal activity was deemed to be a harm, consistent with the functional definition adopted by the present study, in that it creates a decrement to the health or wellbeing of a person, both the perpetrator of the criminal act and affected others, as well as creating loss of wellbeing within the community.

The types of criminal activities formed three clear sub-themes: crimes of negligence such as child neglect; crimes of duress such as drug trafficking or prostitution to repay debts; and crimes of opportunity, including acts from petty theft from family members, illicit lending, and fraudulent efforts to attain funds. Fraudulent efforts included embezzlement from employers, welfare fraud, and systematic efforts to obtain funds from family members. Theft and embezzlement were the two types of crimes most commonly identified by participants, a number of whom worked with prison communities.

Involvement in criminal activity was mostly reported as a second order harm, most commonly to address deficits of funds available to continue engaging in gambling. Interestingly, it was reported as being about sourcing funds for gambling rather than for other purchases, which is contrary to findings from Abbott and McKenna's small study of female prisoners in New Zealand (2005). This is perhaps not surprising, given the number of crimes reported in the data where people had avoided contact with the justice system. Even where people were now incarcerated, they had quite often started with small crimes of opportunity that had escalated, as described by a treatment provider:

> *I would say the majority of them – the criminal stuff came after rather than the before. It would be the same sort of thing of slow escalation of taking from the money boxes in the house to taking from – getting money from loan sharks who then start to put the pressure on and what do you do next sort of scenario? A boss that might be a little bit lenient, get the money from there or friends that sort of stuff, so and people that would normally probably never ever thought about doing such things in their lives (TP9).*

Crimes of negligence related mostly to the acts of neglect against children, who would be left alone while parents or carers gambled. While there have previously been reports of children left in casino car parks, a regional primary health worker was aware of it occurring during bingo games. Other treatment providers, researchers, and some affected others also reported instances of young children or dependent adults being left alone also. These instances would be difficult to capture objectively due to the implications of disclosure.

Crimes of duress included examples of criminal acts committed to meet the demands of illegal lenders, such as prostitution and transporting drugs. An example of this was given by a treatment provider:

> *The jail's been full of these young Vietnamese women who don't necessarily go in for gambling, who go in drug trafficking but the drug trafficking is a consequence of their gambling (TP3).*

Although sometimes this was seen as the only option to generate income:

> *The other thing that used to come up a bit with clients – especially with young women – was prostitution and it tended to be quite dangerous prostitution. So they'd lose a lot and couldn't afford to pay the rent so they'd put themselves in a very risky situation [street walking] (TP3).*

Crimes of opportunity were most commonly reported. Some treatment providers worked with people who had entered the justice system due to crimes relating to their gambling behaviour. A large number of opportunistic crimes were reported, often using language that minimised the act, such as referring to it as *petty theft* or having *taken* rather than *stolen* from family and friends. Many crimes were not reported to the police however, and never picked up by the criminal justice system. This is a hidden impact of gambling reported by both the professionals and affected others. The following report from the middle-aged farmer explained how his wife stole money from her children and stepchildren in order to gamble:

> *My two daughters, they worked – they had money tins … one of those money tins and she was saying that one was taking it from the other. She was pitting them against each other and in the long run, she was actually taking the money from them. With her six kids, she was taking money from them as well (AO1).*

For another family, their mother stole jewellery and took it to the local pawn shop to obtain cash for gambling:

> *She has actually pawned some of my sister's things before … So the worst thing that actually really upset her, my sister and both myself was she pawned some jewellery that my uncle up in Queensland that my father used to see, he used to make jewellery, that was his trade. So he made some custom pieces for my father to give to my mother and after dad had died, my mum had given my sister these, like they were rings essentially, silver rings with – they weren't gemstones or anything, they were like opals or something, they were really nice – but she actually took them and pawned them (AO4).*

A woman whose uncle gambled, remembered that personal items from her aunt and cousins were pawned to pay for her uncle's gambling:

> *Hocking stuff was a huge thing especially jewellery – family heirloom jewellery that's been passed down through the family. Kids' Nintendos and stuff like that, that was always where's it gone sort of thing (AO15).*

Families would quite often deal with matters privately, which was not unexpected. However, some businesses were also not reporting thefts and embezzlement either, preferring to deal with it internally. The reasons for this were to avoid substantial costs with reporting the theft, a situation explained by a financial counsellor:

> *The other side of that too though is if the company tries to deal with it in-house, it means the company doesn't have to report it to the insurance company. Because the insurance company will want charges laid. It'll increase their insurance premium. The insurance company will require an audit at the company's cost … Because they'll have to do an audit to find out*

> *exactly how much is gone. They'll have to then report back to the insurance company, and then the insurance company does the driving of forcing the company – it's got to be reported to the police. Then they've got to put in an increased auditing, increased reporting and things like that. Most companies it's better for them just to, there's the carpet we'll sweep it under (FC4).*

Where criminal activity was detected, this often created a threshold event that led to the detection of problematic gambling, engagement with the justice system, and attempts to address the problems with gambling. These threshold events triggered further harms of relationship conflict or breakdown, job loss, or incarceration. Incarceration, or child neglect where children were removed from the person's care, were deemed as life course and intergenerational harms, given the profound impact it had on both the perpetrator and their affected others.

There was a considerable amount of frustration expressed by many participants at the lack of diversion programmes for crimes from gambling. This was expressed by a few participants who had been working with incarcerated clients:

> *My big issue was that the diversion programs that are available to people with mental health, ABI, intellectual disability, drug and alcohol, not for gamblers. I keep saying to these guys, this is something we should be really advocating strongly. If you've got a methamphetamine addiction, you're more likely to get onto a program and have assistance than if you're a – I mean in the prison it's a mix. There's crims that gamble and gamblers that there's no way known they'd be there apart from the gambling (CE2).*

> *I'd love to see a diversion program. I reckon that would be so good, like they've got for drug and alcohol. Put you on a diversion program rather than put you in prison. I'd love to see a gambling diversion. So that they get the help they need and can address it, rather than just – but anyway (TP4).*

Incarceration created an additional risk for people whose problems with gambling were not addressed. As a treatment provider stated:

> *Gambling in prison is very risky because if they start to gamble and they can't pay their debts, the consequences are rather severe (TP5).*

This support from treatment providers for diversion programs as an alternative to prison was based on their observation that incarceration did not remedy gambling.

From a legacy perspective criminal activity created considerable harms. These included shame and stigma, the impact of a criminal record, and the impact of custodial sentences on both the perpetrator and affected others. At an individual level, the affected others extends to any potential victims of the crime both financially and emotionally and this varied depending on the nature of the crime committed. These were noted as being of consequence not only from an immediate impact but as having a long-term second order impact particularly at an emotional or psychological level.

At a community level criminal activity has very clear impacts. The direct impacts include the costs of the criminal activity in terms of the investigation of crimes or neglect, the costs from the judicial system, provision of incarceration, management of probation and parole, or costs of removing and case managing children experiencing neglect. Other direct harms include the cumulative effect on any victims of the crime or neglect, and the families or friends of the perpetrator. Indirectly, criminal activity and neglect have strong effects on social capital including social cohesion and feelings of safety. Crime creates feelings of insecurity, not only for the victims, but the broader community.

Life course and intergenerational harms

Through the analysis of case histories shared by professional participants it became apparent that sometimes a single incident of harm or a cumulative effect of multiple harms could result in a more profound impact that would change someone's life course, creating generational or intergenerational loss. These included the cases of marriage breakdowns and people becoming homeless. An example of one client's case history from a treatment provider illustrated this situation:

> *Not only did he lose his wife, his children, his home, his car, he's bankrupt, he was also morally destroyed because he'd worked for 30 years and there was something there that he should have got but he didn't get because of that. So he ended up homeless sleeping in local shelters at night where he'd have to be out by nine o'clock in the morning and things like that (TP6).*

While the data clearly identified the complex inter-relationship and multiple causal sequences of individual harms and dimensions, there was a collective negative impact that went beyond the sum of the individual harms. There were sufficient instances of this within the data, with consistent characteristics and outcomes that they were identified as a separate classification. From a temporal perspective, they usually occurred as a threshold harm but were, as the label of the classification suggests, pervasive legacy harms for both the person who gambles and affected others.

Life course and intergenerational effects are a focus within public health due to the level of impact they have as a determinant of health. Since life course theory was first introduced and developed by Elder (Elder Jr, 1994), there has been a growing body of evidence on the importance of the life course (Bartley, Blane, & Montgomery, 1997; Halfon & Hochstein, 2002; Hutchison, 2005; Pearlin, Schieman, Fazio, & Meersman, 2005; Poulton et al., 2002), especially with regard to child health, and the first five years (Fine & Kotelchuck, 2010; Hertzman & Power, 2004; Irwin, Siddiqi, & Hertzman, 2007; Johnson & Schoeni, 2011; Maggi, Irwin, Siddiqi, & Hertzman, 2010).

Generational loss

Generational loss was determined to have occurred when a person experienced a loss of a developmental or life course stage. This could occur at any age. An example given by a treatment provider was of a young man aged twenty who had experienced problems with online sports gambling, who lost his car and subsequently his apprenticeship, then had to move to another town due to the stigma and his inability to secure new employment. The nature of this loss was not reclaimable, and was described by another treatment provider who had seen a number of similar cases:

> *I think one of the things we haven't really talked about that is very big issue, I see in young blokes … is loss of developmental stage. They are a step behind their peers. So they often get to a point and they are not financially there (TP16).*

> *You've got an interruption in the transition from bachelorhood to couple hood to parenthood. When the couples come in and they've got a new baby and a toddler and the gamblers come around again and we've already dealt with them once or twice as a couple. Now it's got really serious because now we've got two children. We're still renting and our peers have got this lovely homes and cars. Yet he's still working in a managerial position (TP16).*

The young man whose parents gambled felt he was unable to take the opportunity to travel overseas, as many of his peers had, just in case *"things turned sour"* financially when his parents gambled:

> *I had a lot of trips that my friends did from uni, they all went overseas and everything. I've never been overseas; it's never been something that I can do. I'd love to go, but I just don't … I don't feel I can justify spending that money, if that makes sense … A lot of it stems around,*

> *like there's a lot of – quite a lot of my focus is being stable and financially secure because I don't feel like I had that during my life and also now mum will leak money like a sieve if she ever gets it, if she gets a choice. So I will deny myself things, doing things, I won't go places, I won't go overseas (AO4).*

For many young people, the gap year or trip overseas is a life-enriching milestone often taken after the completion of formal education. For this young man this milestone was not attainable. A single mother with children described succinctly how her gambling had denied her the opportunity to buy into the housing market:

> *I'm nearly 30 years old, with two kids, still living at my parents' house (Gam16).*

This could also include people at later stages of life, on the cusp of retirement or retired who experienced generational loss, although the dollar value of the loss was often greater because they had accumulated more assets by that stage. This situation was described by a treatment provider:

> *I've got an older lady who – and they've worked all their lives. She has gambled away literally everything that they've worked – they've had a business (TP5).*

This often created a loss that was not reclaimable. One case history described the situation for a man who had experienced problems with gambling and embezzled from his employer. The couple lost, not only their home, boat, caravan, and other assets, but had to utilise the superannuation to repay the employer to avoid the man going to jail. Now at retirement age, instead of enjoying a good standard of living, financial security, and travel, they were living in public housing and he was cleaning to provide their other necessities. The relationship was described as being *bound by debt*; it was cheaper to live together than apart. He was consumed with shame and she with resentment, but due to their stage of life there was no chance to recover the loss.

> *Because they can never get back the money. Because it happened in their sixties, there is no – they are retired. Like I'm saying, he's cleaning the warehouses and getting up at four o'clock in the morning to clean schools so they've got food and they're 72 years old. It's too late. It's like I said, they lost absolutely everything. She is very resentful and lets him know that as well. Kind of fair enough really, isn't it, I suppose (TP4).*

This was echoed by one of the financial counsellors who had seen similar situations:

> *Very much bound by debt. Very much bound by the largest growth in, if you look at the Bureau of Stats is unrelated families or unrelated households because you cannot afford to live on benefits alone. You just cannot do it. An average cost of a single bedroom flat is $300 a week. If you're on an age pension even with rent assistance well there's more than half of your benefit in the fortnight (FC3).*

Examples within the data included the experience of generational loss normally relating to financial security or expected stages of financial achievement, such as the inability to secure, or the loss of, a major financial asset such as a house or superannuation. Generational loss was noted in all groups, from young men who had lost their car and job, to middle aged people who had lost homes and businesses, and retirees who had lost homes and savings. The deferment or avoidance of life course milestones such as engagements, marriages, and choices surrounding fertility were also reported, with examples of choices to terminate pregnancies or not have children representing another form of generational loss.

Homelessness, incarceration, and the removal of children (by government agencies) represented a life course and intergenerational harm. The immediate and ongoing impacts of either were significant for both the person who was incarcerated and any children. Part of the impact was related to, and similar in nature

to, a general life course and intergenerational harm of a family entering the poverty cycle. Each of these experiences is within themselves an example of a complex interaction of decrements to the health and wellbeing of a family due to issues like the impact on socio economic status, access to services, experiences of shame and stigma, and further decrements to health.

Intergenerational harm

Intergenerational effects were a third type of harm within this category and of significant concern to participants. The impact of problematic or harmful gambling within a family on children is not yet well understood or captured, although our understanding could draw on the existing knowledge surrounding deprivation. A child of people who gamble reported an intergenerational effect of money lost via his parent's gambling. He reported that he felt a step behind his peers, in terms of buying a home and his prospects of longer term financial security:

> *I always think about it, like I sort of described it in my head at one stage as there's – if you chart things in generational terms, there's the generation that establishes stability and have a bit of a foundation, then their children will rely on that stability and get a bit further ahead and then they'll inherit and there's a bit of a cascading effect onwards … I always sort of felt, all my friends are at level two, I'm still down here at level one (AO4).*

Deprivation was not only economic, it could also be emotional due to the absence of a parent from a child's life, either practically or figuratively. This was described by a treatment provider who worked with youth:

> *So there's that but the under spoken one – I'm doing a lot of unpacking work on now is the time deficient in the parenting relationship. Every moment they're at the pub or wherever they are doing pokies or what have you, they're not with their child. So it's almost like a third order consequence. There's the impacts of the family's budget, finances and all that sort of thing and the all the stuff that they – the opportunity loss of the money being spent elsewhere, but there's the time in parenting connection lost particularly during – between those formative years of 15 through 18 where teenagers are learning to be grown-ups. They don't have those connections with their own parents to have that I'm finding is really – they've got two different lives that are not intersecting (TP7).*

While individual instances of harm were raised, the cumulative impact of these was often overlooked. An example mentioned several times by participants was the impact of insufficient money for petrol becoming a persistent disruption to school. This was described by a participant:

> *Here it's more the lack of time, and a lack of supervision. Or there's no petrol to put in the car so we can't take the kids to school today. The thought of walking them to school, it just doesn't go there, so no petrol in the car means we're not going to school today. So it just rolls on like that. Of course the more often you do that, the harder it is to then take them into school, so you've got to explain why he didn't go to school (PH2).*

Where these cumulative impacts became apparent, children had been removed from the home. Many parents and the children themselves would attempt to hide the levels of deprivation for fear of this occurring. The children were subsequently kept on the periphery of the engagement people had with the service providers. However, service providers were often aware of impacts on the children, and the flow on impacts this created for other family members such as grandparents who would try to assist. Overall, participants felt a key challenge in addressing gambling harm was a better understanding of the impact on children, and being able to support them without creating more harm.

The loss of primary relationships and subsequent social connection were also reported and represented both a life course and intergenerational harm. In some cases where an adult child had become estranged from their parents, it meant their own children had lost the relationship with their grandparents. While family breakdown can be quantified in terms of measuring the incidence of the harm, the impact of it is more difficult to capture. A woman who was both a gambler and an affected other reported how her father's gambling led to dysfunctional behaviour and relationships for her generation:

> *I moved out, got pregnant and moved out before I was 18. My sister married very young and moved out for the same reason just to get out. My brother left home when he was 16, 17. Had a big fight with dad, I can remember big punch up. Then my brother just left and went to Queensland and I never saw him again … Yeah, so – yeah, it was very dysfunctional (AO11 & Gam11).*

These rifts within familial relationships sometimes took generations to repair or remained irreparable. Its importance is highlighted by the focus placed on the loss of relationships by those who had experienced it. Similar experiences of loss of social connection were also reported in cases where people had to relocate due to the loss of job opportunities, incarceration, or stigma.

Taxonomy of harms

A taxonomy of the specific harms that were identified within the data was created to inform the development of a population level survey in the next phase of the study. Beyond the present research, the taxonomy may be of utility to facilitate the development of more robust measurements of gambling harm, for use in developing policy in relation to harm minimisation and prevention, as a potential tool for treatment, and to support professionals in assisting clients to unpack individual experiences and identify complimentary support services. This was separated into three separate taxonomies of gambling harm that are included at tables 2-4. The separation reflects the differentiation of harms experienced by the person who gambles, affected others and the broader community. The taxonomies for the person who gambles and the affected others reflect the proposed conceptual framework while the community level harms reflect the classifications but not the categories of the conceptual framework. This is because the community level harms represent a collective or population level experience and not an individual one, making the temporal categories inappropriate.

In each of the taxonomies the items are mutually exclusive between classifications, but not categories. The categories assigned within the taxonomies represent the temporal sequence where they were identified within the data, however this data is not representative and cannot be generalised. The subjective nature of a threshold makes generalisation inappropriate and as such it is seen more of a threshold where people identified with a harm within the data.

The items listed within each of the taxonomies represent broad, rather than specific harms to facilitate operationalizing measures of harm in future studies. On completion of the taxonomies, each identified harm within the data was checked against the items to ensure the individual experience was captured in the generalised items. For example, "lied to my mates" is captured by "Dishonest communication within relationships with spouse, partner, children, family, friends, or community".

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

	General	Crisis	Legacy

Financial harm	• Reduction or loss of capacity to purchase luxury items (e.g., holidays, electronics)
	• Reduction or loss of discretionary spending such as non-gambling-related entertainment or other family members' activities (i.e. children's sports)
	• Erosion of savings
	• Activities to manage short-term cash-flow issues:
	  ○ Additional employment or other forms of income generation
	  ○ Accessing more credit
	  ○ Use of credit cards (kite flying)
	  ○ Selling or pawning items
	  ○ Pay day loans
	  ○ Non-payment or juggling of large bills such as utilities or rates
	• Cost of replacing items sold or pawned as part of short-term cash strategies
	• Reduction or loss of non-immediate consequence expenditure
	  ○ Insurance (health, home, car, income protection, business)
	  ○ Repairs or maintenance costs (home, car, business)
	  ○ Health promotion activities (check-ups, long-term medications, allied health support)
	  ○ Household items
	• Reduction or loss of expenditure on items of immediate consequence:
	  ○ Children's expenses (education)
	  ○ Medication or health care
	  ○ Clothing
	  ○ Food (including use of food parcel)
	  ○ Housing or accommodation
	  ○ Needing assistance with bill payments from welfare organisations or inability to pay bills (eg utilities)
	  ○ Transport costs (petrol, fares)
		• Loss of sources of additional funds (i.e., no further credit available)
		• Loss of capacity to meet requirements of essential needs (food)
		• Loss of normal accommodation requiring temporary accommodation or resulting in homelessness
		• Loss of major assets (car, home, business)
		• Bankruptcy
			• Reliant on welfare
			• Restrictions due to bankruptcy or credit rating
			• Ongoing financial hardship
			• "Forced" cohabitation or involvement in unhealthy relationship due to financial constraint
			• Further financial harm from attempts to manage debt (i.e., non-reputable finance providers for debt consolidation)
			• Ongoing issues relating to financial security, poverty, or financial disadvantage.
			• Higher costs associated with poor credit rating including premium cost of pay-as-you-go services or increased security bonds.

Relationship disruption, conflict or breakdown	• Dishonest communication within relationships with spouse, partner, children, family, friends, or community	• Threat of separation or rejection from relationship with spouse, partner, children, family, friends, or community	• Social isolation due to ongoing estrangement from relationships with

	General	Crisis	Legacy
	• Unreliable or unavailable to spouse, partner, children, family, friends, or community • Reduced amount of time spent with spouse, partner, children, family, friends, or community • Reduced quality of time spent with spouse, partner, children, family, friends, or community • Disengagement or withdrawal from relationship responsibilities • Increased levels of neglect of relationships • Pervasive neglect or disengagement from relationships • Reduced engagement in family or social events • Tension with spouse, partner, children, family, friends, or community • Minor or occasional conflict due to increased involvement in gambling or suspicion of increased involvement with gambling • Serious or regular conflict due to increased involvement in gambling or suspicion of increased involvement with gambling • Major or constant conflict due to increased involvement in gambling or suspicion of increased involvement with gambling • Loss of trust from relationship with spouse, partner, children, family, friends, or community • "Punishment" by spouse, partner, children, family, friends, or community • Episodic distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role) • Incidence or escalation of family violence or intimate partner violence	• Actual separation or rejection from relationship with spouse, partner, children, family, friends, or community • Social isolation • Loss of relationship (temporary or permanent) with spouse, partner, children, family, friends, or community • Distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role) • Incidence or escalation of family violence or intimate partner violence	spouse, partner, children, family, friends or community • Vulnerability to problematic gambling relapse due to isolation or relationship breakdown • Inability or reluctance to participate in social functions at gambling venues • Ongoing "punishment" or resentment from spouse, partner, children, family, friends or community • Relationship rebuilding or reconciliation • Ongoing involvement of family court in parenting or co-parenting • Long-term damage or estrangement from relationship/s with spouse, partner, children, family, friends, or community • Ongoing distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role) • Loss of psychological development through lack of appropriate social interaction • Incidence or escalation of family violence or intimate partner violence
Emotional or psychological distress	• Emotional and psychological distress caused by living outside of your value system • Experience of distorted cognitions or erroneous beliefs	• Extreme emotional or psychological distress in relation to other harms • Extreme emotional or psychological distress due to harm caused to others	• Experienced, perceived, and internal stigma • Ongoing guilt and shame • Emotional and psychological impacts of managing recovery or harm minimisation

	General	Crisis	Legacy
	• Emotional or psychological distress of hiding gambling from others (including lying and creating alibis for lost time and money) • Reduced feelings of self-worth and pride • Increased feelings of shame • Increased feelings of inadequacy or personal failing because of inability to control gambling to recreational levels • Perceptions of being stigmatised • Emotional or psychological distress of inability to control gambling • Increased feelings of insecurity and vulnerability • Emotional or psychological distress caused by other harms • Emotional or psychological distress due to harm caused to others (guilt) • Loss of "face" or reputation due to impact of other harms • Desperation from not being able to recoup losses • Emotional or psychological distress of not wanting to accept problems with gambling • Loss of sense of future or ability to get ahead • Increasing feelings of powerlessness • Fear and distress from follow up and harassment by creditors (legal and illegal)	• Extreme emotional or psychological distress caused by living outside of your value system • Complete loss of feelings of self-worth and pride • Extreme shame • Extreme sense of hopelessness and powerlessness • Suicidal ideation • Loss of "face" or reputation (stigma) if problem with gambling becomes publicly known • Shame from utilising responsible gambling measures such as exclusion or seeking treatment • Extreme fear and distress from follow up and harassment by creditors (legal and illegal)	strategies including constant vigilance and behavioural adaptation • Ongoing feelings of insecurity and vulnerability • Ongoing emotional and psychological distress in relation to other harms • Ongoing emotional or psychological distress due to harm caused to others • Ongoing emotional or psychological distress caused by having lived outside of your value system • Ongoing vulnerability to suicidal behaviours
Decrements to health	• Increased sedentary behaviour during time spent gambling • Biological manifestation of emotional and psychological distress (e.g., increased blood pressure, loss of sleep) • Reduced levels of self-care: ○ nutrition ○ hygiene ○ sufficient sleep ○ compliance with medical care ○ physical activity ○ reduced quality of living circumstances (i.e.. cannot afford heating)	• Physical impacts of living rough due to homelessness, including increased risk of disease, violence, and impact of poor living conditions • Experience of violence due to involvement in gambling • Medical emergency (including mortality) due to onset, exacerbation, or failure to diagnose condition due to gambling • Serious self-harm • Attempted (or completed) suicide	• Ongoing disability or decrement to health through attempted suicide or other forms of self-harm • Ongoing increased risk of disease or decrement to health due to legacy effects of risk factors or poor self-care • Ongoing disability or decrement to health due to other medical conditions exacerbated or advanced due to involvement with gambling

	General	Crisis	Legacy
	• Incidence of disease or injury due to reduced levels of self-care • Increased risk due to gateway effect, interaction with, or exacerbation of other health risk factors (drinking, smoking, illegal substances) • Increased risk due to gateway to, interaction with, or exacerbation of comorbidities (depression, anxiety, biophysical chronic disease) • Increased experience of family violence due to involvement in gambling • Incidence of self-harm • Minor health ailments (headache migraine) relating to focussing on a screen for long periods of time with particular gambling products		
Cultural harm	• Reduced engagement in cultural rituals • Culturally based shame in relation to cultural roles and expectations • Reduction of contribution to community and cultural practices of the community • Reduction of cultural practices • Reduced connection to cultural community • Harm to individual through reduced connection to community and culture in terms of increased social exclusion or isolation	• Extreme cultural shame in relation to culturally based roles and expectations • Loss of ability to contribute to community • Impact (loss) on cultural practices • Damaged or lost connection to community and culture • Harm to individual through reduced or lost connection to community	• Ongoing cultural shame in relation to roles and expectations • Ongoing reduction or loss of contribution to community • Ongoing reduction or loss of cultural practices • Ongoing loss of connection to community • Ongoing harm to individual through reduced connection to community
Reduced performance at work or study	• Reduced performance due to tiredness or distraction • Increased absenteeism due to time spent actually gambling, tiredness, ill health, or lack of transport due to gambling • Workplace or educational institution consequences of use of work or educational institution resources for gambling activity • Reduced availability to contribute to the community through volunteer work	• Loss of job due to theft or fraud involving employment or educational institution • Loss of job, suspension or exclusion from educational institution due to poor performance • Exacerbation or contribution to other harms due to job loss (including loss of wage) • Rejection from volunteer work	• Reduced opportunity for employment or enrolment due to past poor performance or criminal activity • Ongoing impact in participation in volunteer work (linked to reputation and restriction of activities)
Criminal activity	• Vulnerability to illegal activities that can provide fast access to funds • Engagement in crimes of negligence – acts such as child neglect (leaving children unsupervised)	• Arrest and/or conviction of criminal activity of opportunity • Arrest and/or conviction of criminal activity of duress	• Impact of criminal record on future employment opportunities, voluntary and community opportunities, and travel restrictions

	General	Crisis	Legacy
	• Engagement in crimes of opportunity – petty theft including from family members • Engagement in crimes of opportunity – property crimes for funds, illicit lending, fraudulent efforts to attain funds • Engagement in crimes of duress – relating to repaying debt such as drug trafficking and prostitution	• Arrest and/or conviction of criminal activity of negligence	• Disruption to relationships of custodial sentence • Ongoing impact on spouse, partner, child, family and friends due to impact of criminal record or custodial sentence through other mechanisms • Trans-generational impact of criminal record or custodial sentence • Shame and stigma of criminal conviction or involvement in criminal activity
Life course and intergenerational harms	• Generational loss relating to financial security or stages of financial achievement (ongoing impact caused by inability to secure or loss of major asset, superannuation) • Loss of life course events such as engagement / marriage / having children (generational loss) • Loss of primary relationships and social connection (including parents/children/community) • Having to move towns/states due to impact of gambling or other harms • Homelessness • Change to career due to impact of gambling or other harms • Incarceration due to gambling		

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

	General	Crisis	Legacy

Financial harm	• Additional costs due to lack of capacity of person who gambles to meet their costs or joint costs (minor to major items)
	• Reduction or loss of capacity to purchase luxury items such as holidays, electronics
	• Reduction or loss of discretionary spending such as non-gambling-related entertainment or other family members' activities (i.e. children's sports)
	• Erosion of savings
	• Activities to manage short-term cash-flow issues:
	  ○ Additional employment or other forms of income generation
	  ○ Accessing more credit
	  ○ Use of credit cards (kite flying)
	  ○ Selling or pawning items
	  ○ Pay day loans
	  ○ Non-payment or juggling of large bills such as utilities or rates
	• Cost of replacing items sold or pawned as part of short-term cash strategies
	• Reduction or loss of non-immediate consequence expenditure
	  ○ Insurance (health, home, car, income protection, business)
	  ○ Repairs or maintenance costs (home, car, business)
	  ○ Health promotion activities (check-ups, long-term medications, allied health support)
	  ○ Household items
	• Reduction or loss of expenditure on items of immediate consequence:
	  ○ Children's expenses (education)
	  ○ Medication or health care
	  ○ Clothing
	  ○ Food (including use of food parcel)
	  ○ Housing or accommodation
	  ○ Needing assistance with bill payments from welfare organisations or inability to pay bills (e.g. utilities)
	  ○ Transport costs (petrol, fares)
		• Loss of capacity to meet requirements of essential needs (food)
		• Loss of normal accommodation requiring temporary accommodation or resulting in homelessness
		• Loss of major assets (car, home, business)
		• Bankruptcy
			• Reliant on welfare
			• Restrictions due to bankruptcy or credit rating
			• Ongoing financial hardship
			• "Forced" cohabitation or involvement in unhealthy relationship due to financial constraint
			• Further financial harm from attempts to manage debt (i.e. non-reputable finance providers for debt consolidation)
			• Ongoing issues relating to financial security, poverty, or financial disadvantage.
			• Higher costs associated with poor credit rating including premium cost of pay as you go services or increased security bonds.

	General	Crisis	Legacy
Relationship disruption, conflict or breakdown	• Dishonest communication within relationship from person who gambles to affected other • Person who gambles is unreliable or unavailable to affected other • Reduced amount of time spent with person who gambles • Reduced quality of time spent with person who gambles • Feelings of unequal contribution to relationship with person who gambles • Disengagement or withdrawal from relationship responsibilities by person who gambles • Increased levels of neglect of relationship by person who gambles • Reduced engagement in family or social events with person who gambles, • Tension in relationship with person who gambles • Tension in other relationships due to emotional and/or material demands of trying to manage relationship with person who gambles • Minor or occasional conflict due to increased involvement in gambling or suspicion of increased involvement with gambling by person who gambles • Serious or regular conflict due to increased involvement in gambling or suspicion of increased involvement with gambling by person who gambles • Major or constant conflict due to increased involvement in gambling or suspicion of increased involvement with gambling by person who gambles • Loss of trust from relationship with person who gambles • Episodic distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role) • Significant disruption to other relationships due to emotional and/or material demands	• Contemplation of separation or rejection from relationship with person who gambles • Actual separation or rejection from relationship with person who gambles and potentially related others • Loss of other relationships due to emotional and/or material demands of trying to manage or remaining in relationship with person who gambles • Social isolation due to feelings of shame or being stigmatised • Loss of relationship (temporary or permanent) with spouse, partner, children, family, friends or community • Distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role) • Incidence or escalation of family violence or intimate partner violence	• Feelings of guilt over ending relationship with person who gambles and potential impact • Social isolation due to ongoing estrangement from other relationships • Vulnerability to continuing in ongoing unhealthy relationship with person who gambles (episodic reconciliations) for reasons of guilt or inadequacy • Inability or reluctance to participate in social functions at gambling venues to protect person who gambles • Ongoing resentment and shame within relationship with person who gambles • Relationship rebuilding or reconciliation • Ongoing involvement of family court in parenting or co-parenting • Long-term damage or estrangement from person who gambles and potentially related others • Ongoing distortion of relationship roles (infantilising the person gambling, others including children having to take parental type role or confidant role) • Inability to form trusting relationships with others or hyper-vigilance within relationships • Incidence or escalation of family violence or intimate partner violence

	General	Crisis	Legacy
	of trying to manage relationship with person who gambles • Episodic distortion of relationship between affected others (i.e. Spouse of person who gambles using children of relationship as confidant) • Incidence or escalation of family violence or intimate partner violence		
Emotional or psychological distress	• Feelings of frustration over person who gamble's behaviour • Anxiety when person who gambles does not respond to normal communication methods • Emotional and psychological distress caused by difference to own value system • Emotional or psychological distress of feelings of suspicion or being lied to • Reduced feelings of self-worth • Feelings of shame or guilt • Loss of feeling safe and secure in life • Increased feelings of inadequacy or personal failing because of inability to help person who gambles • Emotional or psychological distress from being manipulated or threatened (threats to the affected other or threats of self-harm by person who gambles) • Perceptions of being stigmatised • Anxiety when person who gambles disappears for extended periods of time without contact (days) • Emotional or psychological distress of being blamed for other person's gambling • Emotional or psychological distress at people arguing because of gambling behaviours (children) • Increased feelings of insecurity and vulnerability • Emotional or psychological distress caused by other harms • Loss of "face" or reputation due to impact of other harms • Loss of sense of future or ability to get ahead	• Extreme emotional or psychological distress in relation to other harms • Extreme emotional or psychological distress due to harm caused to other affected others • Extreme emotional or psychological distress caused by living in constant feelings of insecurity and vulnerability • Complete loss of feelings of self-worth and pride • Extreme shame • Extreme sense of hopelessness and powerlessness • Emotional or psychological distress of dealing with person who gambles problems including their distress, self-harm, suicidal ideation or completion. • Loss of "face" or reputation (stigma) if person who gambles' problem with gambling becomes publicly known • Emotional or psychological distress of supporting and/or assisting person who gambles to seek treatment • Extreme fear and distress from follow up and harassment by creditors (legal and illegal) • Grief and/or resentment for loss of security, lifestyle, relationship • Feelings of rejection that gambling is chosen over them	• Experienced and perceived stigma • Ongoing guilt and shame • Emotional and psychological impacts of supporting recovery or harm minimisation strategies including constant vigilance and behavioural adaptation • Ongoing feelings of insecurity and vulnerability • Ongoing emotional and psychological distress in relation to other harms • Ongoing emotional or psychological distress due to harm caused to other affected others • Ongoing emotional or psychological distress of vigilance to mental health status of person who gambles including distress, self-harm, suicidal ideation or completion • Ongoing feelings of grief, resentment and anger

	General	Crisis	Legacy
	• Increasing feelings of powerlessness • Guilt over harms to other affected others • Increased feelings of anger and frustration • Fear and distress from follow up and harassment by creditors (legal and illegal) • Feelings of guilt if affected other was the person who introduced the person who gambles to gambling • Increased risk to emotional or psychological wellbeing of affected other in the care of the person who gambles due to their distraction or tiredness		

Decrements to health	• Physical impacts of other harms
	• Biological manifestation of emotional and psychological distress e.g. Feeling tired, increased blood pressure, loss of sleep, migraine, nausea, diarrhoea
	• Reduced levels of self-care:
	  ○ nutrition
	  ○ hygiene
	  ○ sufficient sleep
	  ○ compliance with medical care
	  ○ physical activity
	  ○ reduced quality of living circumstances (i.e cannot afford heating)
	• Incidence of disease or injury due to reduced levels of self-care
	• Increased risk due to gateway effect, interaction with, or exacerbation of other health risk factors (drinking, smoking, illegal substances)
	• Increased risk due to gateway to, interaction with, or exacerbation of morbidities (depression, anxiety, biophysical chronic disease)
	• Increased experience of family violence due to involvement with person who gambles
	• Incidence of self-harm
	• Increased risk to physical wellbeing of affected other in the care of the person who gambles due to their distraction or tiredness
		• Onset of health condition due to exacerbation of risk factors or continued stress from other harms
		• Physical impacts of living rough due to homelessness, including increased risk of disease, violence and impact of poor living conditions
		• Experience of violence due to involvement with person who gambles
		• Medical emergency (including mortality) due to onset, exacerbation, or failure to diagnose condition due to impacts of person who gamble's behaviours
		• Serious self-harm
		• Attempted (or completed) suicide
			• Ongoing disability or decrement to health through attempted suicide or other forms of self-harm
			• Ongoing increased risk of disease or decrement to health due to legacy effects of risk factors or poor self-care
			• Ongoing disability or decrement to health due to other medical conditions exacerbated or advanced due to involvement with person who gambles

	General	Crisis	Legacy
Cultural harm	• Reduced engagement in cultural rituals • Culturally based shame in relation to cultural roles and expectations • Reduction of contribution to community and cultural practices of the community • Reduction of cultural practices • Reduced connection to cultural community • Harm to individual through reduced connection to community and culture in terms of increased social exclusion or isolation	• Extreme cultural shame in relation to culturally based roles and expectations • Loss of contribution to community • Impact (loss) on cultural practices • Damaged or lost connection to community and culture • Damage to individual through reduced or lost connection to community	• Ongoing (including intergenerational) cultural shame in relation to culturally based roles and expectations • Ongoing reduction or loss of contribution to community • Ongoing reduction or loss of cultural practices • Ongoing loss of connection to community • Ongoing (intergenerational)damage to individual through reduced connection to community
Reduced performance at work or study	• Reduced performance due to tiredness or distraction • Increased absenteeism due to time spent supporting or addressing problems of person who gambles • Reduced availability to contribute to the community through volunteer work	• Theft or fraud involving employment or educational institution • Loss of job, suspension or exclusion from educational institution • Exacerbation or contribution to other harms due to job loss (including loss of wage) • Impact on others of loss of job or education	• Reduced opportunity for employment or enrolment due to past poor performance or criminal activity • Trans-generational impact of loss of income and reduced future ability to participate in employment • Ongoing impact in participation in volunteer work (linked to reputation and restriction of activities)
Criminal activity	• Victim of crime from person who gambles – petty theft of items or small amounts of cash. • Vulnerability to illegal activities that can provide fast access to funds • Engagement in crimes of opportunity – petty theft including from family members • Engagement in crimes of opportunity – property crimes for funds, illicit lending, fraudulent efforts to attain funds • Engagement in crimes of duress – relating to repaying debt such as drug trafficking and prostitution	• Victim of crime from person who gambles –fraud • Victim of crime from person who gambles – significant theft of money or items • Victim of crime from involvement of person who gambles in illegal activities • Arrest and/or conviction of criminal activity of opportunity • Arrest and/or conviction of criminal activity of duress • Arrest and/or conviction of criminal activity of negligence	• Ongoing impacts from being victim of crime • Impact of criminal record on future employment opportunities, voluntary and community opportunities, travel restrictions • Disruption to relationships of custodial sentence • Ongoing impact on spouse, partner, child, family and friends due to impact of criminal record or custodial sentence through other mechanisms • Trans-generational impact of criminal record or custodial sentence • Shame and stigma of criminal conviction or involvement in criminal activity
Life course and intergenerational harms	• Delay in life course events and matters of financial security and achievement • Generational loss relating to financial security or financial achievement (ongoing impact caused by loss of major asset, superannuation) • Loss of life course events such as engagement / marriage / having children (generational loss) • Loss of primary relationships and social connection (including parents/children/community) • Homelessness • Having to move towns/states due to impact of person who gambles or other harms • Incarceration		

Table 4. A taxonomy of harms experienced by communities

Financial harm	Relationship disruption, conflict or breakdown	Emotional or psychological distress	Decrements to health
• Increased reliance on welfare both community and government provided • Increased levels of debt and bankruptcy (administration of these) • Broader impact to the community of business closures • Perpetuation of poverty and welfare reliance from a generational perspective. • Redistribution of community funds through biased processes • Impact on fundraising ventures for community organisations	• Costs to the family law courts, and associated organisations • Costs of caring for dependents no longer supported • Damage to social cohesion and social capital through isolation and exclusion	• Decline in social and cultural capital • Costs associated with provision of services to assist people with emotional and psychological harms • Burden of disease from related psychological harms • Harms to venue workers	• 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
Cultural harm	**Reduced performance at work or study**	**Criminal activity**	**Life course or intergenerational harms**
• Community must make up for lost contributions (roles, time, finance) due to disconnection of members • Use of cultural norms and practices to promote gambling (disrespectful to the culture) • Exacerbation of hopelessness through negative narrative associating culture with gambling problems • Disconnection of youth (generational loss)	• Cost of job turnover and absenteeism • Impact on employment at other businesses affected by gambling harm (i.e., where a business closes and businesses that interacted with it lose sales) • Decreased participation in volunteering and other community activities	• Direct costs of criminal activity in terms of the investigation of crime, costs to the judicial system, incarceration, probation, and parole • Cost to victims of crime both financial and emotional	• Normalisation of gambling and gambling-related harm • Cumulative impact of generational losses • Trans-generational loss creating dependency

Other findings of relevance

Two other issues of relevance were highlighted from the data collected from the professional participants. These were around harms relating to people working in gambling-related fields, and the links between harm and other public health issues of prominence.

Harm to people working in gambling-related fields

Separate to the notion of an affected other which was has previously been limited to people who had a personal relationship with the person who gambles (concerned significant other), two other distinct groups were identified who could experience harm from gambling. Venue workers were identified as experiencing harm from other people's gambling, and also the staff in the health and community sector who provide assistance or treatment to people experiencing harm from gambling.

Support and treatment workers experienced harm due to a number of factors relating to the nature of their profession, and most of these are not exclusive to those working in areas related to gambling. The nature of work in these fields and the emotional states of their clients create an ongoing vulnerability for psychological and emotional harm. This was highlighted by participants' experiences relating to client's suicidal behaviours and the impact it had on them:

> *I've had three and that's enough. I don't want any more thanks (TP4).*

> *That had a big effect on the staff members at that time and they found that really quite difficult because I think we all think what could've we done differently, did they not know that we were here and did they not know they could get help and all those sorts of things as well (TP15).*

Participants displayed a sense of obligation to be available to clients often continuing to work longer hours than they were funded for because people may only reach out for help once, and when they did make that contact it needed to be acted on. As a participant explained:

> *How desperate it is for people and how urgent it is when they do come in the door. They don't just come in and go, well I've decided to do something about it. It's like, I want to do something right now. So if someone comes in the girls know, if I'm there grab me and don't let them out the door until I at least can say hello to them and give them – even if it's five minutes of my time so that they know someone's here. The last thing you want is them walking back out and not coming back (TP1).*

The alternative was the sense of a lost opportunity to assist and reduce the harm being experienced by the person, and their affected others. A number of participants described the stigma that was associated with their role while others reported not being treated any differently within their communities. Despite the demands of the role, the majority of the participants had worked within the industry for a long time. It was a vocation. A service manager stated that the gambling counsellors had the longest lengths of employment compared to other counselling services in their organisation.

Harms to venue staff were also identified beyond the increased risk of them experiencing problems with gambling. Participants emphasized the dissonance between the choice of a job in hospitality with the reality of working around people experiencing problems with gambling. This was again perceived as worse in regional and rural areas where there are less options for employment. A community educator described the situation in smaller towns:

> *It's really hard is small towns like we've got little small towns all around here with one pokie machine venue so everyone knows each other and the staff don't want to be seen as weak*

either. They don't want to go and see anyone about it either, so there's a real issue there too (CE4).

The general feeling from participants was that younger staff members were more vulnerable and felt less confident in being able to do anything because training does not prepare you for the reality of the situation. While there was some discussion of improvements in this area in the last three years, it was felt that the support for venue staff was variable between venues, and there was little value in most employee assistance programs (EAPs) that only provided three counselling sessions. A treatment provider described how some venue staff members were utilising the Gamblers Help service:

A lot of the time they end up with the Gambler's Help service because it's a specialised service. Accessing EAP is usually three sessions – I think; something like that – that most of the venues have. It's just not enough for some of the venue workers. It's the long-term effect that it has on them, watching people lose houses, money and they know that they've lost houses because they live in these small communities or the family's broken down, those sorts of things; they can actually physically see that harm. Distressing, I think, is probably the most-used term (TP15).

The value of being able to access this service under the current funding arrangements was highlighted as being of value:

I think VRGF have been really good in recognising that it's not necessarily just an EAP event, that this is something that's a community and quite a personal event for some of these venue staff. So they've been a lot more generous in offering the services out to people (TP15).

Other participants mentioned that venue workers had been scared of losing their job if they spoke up either about concerns regarding people's gambling, or the harm it was doing them to see people experiencing problems and feeling powerless to help. Again, the limited availability of alternate employment opportunities in rural and regional areas magnified this harm.

Links with other public health issues

At an individual level, gambling at harmful levels often occurs in conjunction with other morbidities that contribute to the harm, and other detrimental health behaviours. At a population level, harmful levels of gambling can occur in conjunction with other public health issues such as intimate partner violence (IPV). Two emergent areas participants linked with gambling were the issues of ice (methamphetamine), and people with acquired brain injury (ABI) and cognitive impairment (CI). The complex interplay of harmful gambling with other issues presents a challenge not only in terms of measurement of harm, but in efforts by treatment providers to minimise harm.

There were strongly reported links between gambling and IPV that occurred through a number of different scenarios. Participants identified cases where the person who gambled was the perpetrator of incidents of violence linked to gambling losses or financial pressures. This was described in one case as:

We could quite clearly track that it was when he'd lost big money on the horses that these incidents then resulted in these episodes of family violence because he would obviously go home and either take it out on her because he was stressed or she would say the traditional I need money for food and the baby hasn't got nappies and all that sort of stuff and then that would escalate (TP15).

In other cases, the person who gambled was the victim of the violence, with the impacts of their gambling used as a justification for the violence. These types of incidents were described by a treatment provider:

> *I had one woman and yes she has done some really dreadful things with her gambling but then its justified as to why she then gets beaten … the gambling is what the partner uses as a reason as to why – if she gave up this – stopped using that money, she stopped gambling then she wouldn't be in the situation that she's in (TP9).*

Another area of concern was clients who had begun gambling as a refuge from violence. The venues represented a safe place to escape until the danger at home passed. This was highlighted in regional and rural areas where there were few places for a woman to go at night without someone asking questions. One scenario was described by a treatment provider from a regional service:

> *To be honest, I don't think she puts a whole lot of money through the pokies so it's probably not noticeable but she certainly spends an awful lot of time there because she doesn't have any other options in her particular area. Come five o'clock, that whole town shuts down; there's nothing else open, there's nothing else available after 5:00 pm at night. You can't even go and watch a movie. The closest cinema's an hour and a half away. There's nothing to do. If you can't be in the room with him and it's usually when he's drinking and things like that, so she says I'll go to the pokies, I'll sit at the pokies for a couple of hours until he drinks himself and passes out and then I'll go home after that (TP15).*

The compounding of harm from both the gambling and the violence was a significant concern for a number of participants.

A number of participants in rural and regional areas made reference to the increase in gambling-related problems "*when ice came to town*", as a treatment provider put it. Some service providers identified the link between ice, gambling, and crime and saw the issues as being based around money, as a treatment provider recounted:

> *Yeah because – again there's the whole thing to do with the pokies particularly and Ice seems to have been – I've had a number of young males who have – it's – they've been on the Ice they've done the gambling then the criminal, the burglaries that sort of stuff to get the money for the Ice but also for the gambling (TP9).*

However, the connection was more insidious and of a multiplicative nature rather than an additional impact. In addition to gambling venues being available late at night when ice users could not sleep or were high, the interaction of having taken ice with the auditory and visual stimulation of electronic gaming machines (EGMs) created a more intense sensory experience while they were gambling while simultaneously reducing their cognitive function. This was described by a participant who had a lot of experience working with clients who were ice users:

> *Ice users that were gamblers because – there was those that were dealers obviously that were using, and they had the money and would gamble. Then there's the other thing was that what's open past 12 o'clock. We're on the gear, we're not going to be sleeping, bored, we need something to do … the other thing is with real heavy ice users, these repetitive behaviours that they get involved in. So sitting there going like that (pushing buttons), and also the stimulation from getting free spins and stuff was just that much intensified. You'd hear the guys in the prison and they're going, oh man, you get these free spins when you're on the gear man? The rush, oh, crazy (CE2).*

This was related more so to EGMs rather than other forms of gambling due to the impact of the visual and auditory stimuli.

An emergent concern related to people who had ABI or CI, two groups that represented a growing client base for some participants. Participants believed that the nature and restrictions of their condition made

them more vulnerable to developing problems with gambling, and for those reliant on government support they were economically vulnerable also. One project being conducted in a regional area had identified the limited availability of public transport or alternate entertainment options as potentially contributing to the issue. Other concerns were raised about gambling as an entertainment activity becoming a gateway to other detrimental health behaviours. A treatment provider working with a number of clients with disabilities stated:

> *The other thing that concerns me because I work with a lot of people with disabilities, every possible kind, I'm finding gambling is presenting almost like a gateway, as in marijuana does with NAOD sectors. Gambling is a gateway for tobacco and alcohol abuse for people who don't make good decisions. Because the pokies are an easy thing to use their left over change on, it's bright, it's colourful, it makes great noises (TP7).*

Source of gambling-related harm

One of the underlying goals of the present study has been to clearly position gambling-related harm as the potential outcome of any engagement with gambling. Gambling behaviour (as measured through screening tools) is a contributing determinant to the experience of harm. The experience of harm would be expected to be greater as behaviour increased (problem gambling), however other determinants would also explain the variance in the experience of harm. The national definition of problem gambling states that the behaviour is characterised by difficulties that are experienced by people in limiting the time and/or money spent engaging in the behaviour (Neal, Delfabbro, & O'Neil, 2005). It is widely accepted that the increased consumption of time and/or money by the behaviour creates a deficit of both resources which becomes the mechanism by which harm occurs, with other factors impacting on the experience of harm.

Participants were asked whether, based on their experience, they believed all harm stemmed from the imbalance in available time and money. Differing views were held on this issue. Some participants believed that any of the enumerated harms could be ultimately traced back to a source of time or money. For example, where the loss of trust in a relationship stemmed from one partner being dishonest, the dishonesty had been a means of hiding lost money or time. Other participants felt this was a very narrow perspective, as one financial counsellor expressed:

> *So I think time and money is to much the economic rationalist model to be honest. (FC1)*

Participants were able to share cases where they had clients (both people who gamble and affected others) whose experience of harm stemmed from a different source. As one treatment provider explained:

> *Breaking of your own values – the values that are a part of your growing up of who you are in society and people are actually not living that and that's what most of them are in my counselling room for. Because I can't help them with the money and I can't help them with the time, that's gone. It's the deeper stuff who I am, who I believed I should be and I'm not that person. All these people who love me don't really know who that person is. I want to be that person again. That's the stuff that can't be measured but that's the stuff I deal with every day. (TP9)*

The source stemmed around the violation of personal values or beliefs, not discrepancies in time and money. The counter argument to this position was that even in these cases the violation of personal values was around how someone had spent their time or money, so ultimately these were still the sources of the harm. Other participants linked the breach of values to the social value and stigma that is around gambling, rather than the time and money, suggesting that the same time and money spent on other recreational activities would not have caused the same harm due to these differences in social value and stigma.

There is merit in both views of this issue. The issue has importance beyond a theoretical consideration. From a practical perspective if our harm minimisation and treatment efforts do not consider an alternate source of harm, then an important opportunity to better address harm may be missed.

Conclusion

It is important to caveat that many of the harms reported could occur due to other behavioural choices and can be influenced by comorbidities or existing dysfunction. Similarly, this was an exploratory investigation with a non-representative sample subject to a number of biases. The most prominent being selection bias due to the self-selection of participants. However, the aim of this phase was to broaden our conception of gambling-related harm, and enumerate a broad catalogue of harms experienced within the population. Determining the incidence or prevalence of these harms or linking the experience of them to potential risk factors is beyond the scope of this phase or study.

However, this initial work aimed to facilitate a broader understanding of gambling-related harm than is currently implied by the use of proxy measures relating to finance and behaviour, and one that was consistent with a public health approach to gambling. The WHO definition of health was adopted to ensure that the definition, conceptual framework, and taxonomy of harms captured the full breadth and impact of gambling. Consistent with an understanding of the determinants of health, gambling as behaviour can be seen to have an impact on a number of other determinants, both proximal and distal, that increase risk of, or contribute to, negative health outcomes. The relationship and interaction between these harms and determinants of health are complex and interwoven, and vary significantly between individuals, families, and communities. Equal weight was placed on the harms suffered by gamblers themselves, and the individual and community surrounding them.

The contribution of this chapter has been to identify and organise the diverse impacts on health and wellbeing that can occur as a result of gambling. The seven domains identified provide an organising structure for the subsequent methods to measure harms. While it does not follow that each domain necessarily contributes equally to the ‘burden of harm’; each domain should at the least be investigated to ascertain its relative contribution to the experience of harm.

A survey of harms arising from gambling

Introduction

The taxonomy of gambling harms described in the previous chapter forms the basis of a quantitative survey on harm, as it occurs across the spectrum of gambling problems. The current chapter builds on this taxonomy, which organised the diverse range of impacts into eight dimensions. This chapter aims to provide insight and comparisons regarding the specific types of harms that occur, to both gamblers and affected others, with respect to PGSI category. We expected to observe a changing profile of harms with respect to problem gambling status, but did not have specific expectations regarding a different pattern of harms to gamblers and affected others. We also expect that harms would vary considerably with regard to base prevalence, as well as with respect to the PGSI. The information gained in this chapter can be used to describe the experience of harm, as it occurs with respect to increasing gambling problems, for evaluation of the total impact of harms to an individual's quality of life.

Measuring gambling-related harms

There has been a lack of research into the conceptual similarities and differences between gambling problems and gambling harms. One of the most popular measures of gambling problems, the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001) has been used in numerous gambling studies since its publication (e.g., Browne et al., 2014; Li, Rockloff, Browne, & Donaldson, 2015; Rockloff, Browne, Li, & O'Shea, 2014). Conceptually the PGSI does not measure 'amount of harm experienced', but is rather a clinical screening instrument for gambling problems (Hodgins, Stea, & Grant, 2011). However, problem gambling is intimately connected to gambling-related harms, and the PGSI does probe several key harms as indicators of problem gambling. What is lacking is a systematic survey of harms associated with different levels of problem gambling, and an understanding of their relative prevalence to PGSI categories. 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.

Impact on others

Gambling can not only have negative impacts on gamblers themselves, it can also lead to adverse consequences on those connected to them: most notably their family and friends. Spouses or partners of gamblers have also been reported to suffer from financial insecurities, health problems, psychological difficulties, or even deteriorating relationships (Dickson-Swift et al., 2005; Holdsworth et al., 2013b; Lorenz & Shuttlesworth, 1983; Lorenz & Yaffee, 1988). Research has also found that children of problem gamblers could experience reduced material and non-material wellbeing, as well as greater risk of developing unhealthy behaviours (Darbyshire et al., 2001b; Jacobs et al., 1989). Moreover, negative consequences from gambling can have further impacts on other family members or friends (Kalischuk, Nowatzki, Cardwell, Klein, & Solowoniuk, 2006; Salonen, Castren, Alho, & Lahti, 2014; Wenzel, Oren, & Bakken, 2008). Despite this information, the current state of gambling literature is currently not in a position to provide meaningful insight regarding how gambling harms are experienced by both gamblers and *affected others*: which is the more general term we shall employ to describe any person with a significant relationship to a gambler who is affected by their behaviour. Accordingly, 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 threefold:

1. Obtaining prevalence data on specific harms experienced as a result of gambling, to both gamblers and affected others.

2. Testing individual harms as indicators of six general domains of harm (as identified by previously reported qualitative research).

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.

Method

Development of harms checklists

As mentioned, the taxonomy of harms identified a large number of specific harms. These harms were developed into a set of personal statements, following five criteria:

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 tension in my relationships (suspicion, lying, resentment, etc.)'. This phrasing captures the broader construct (tension) 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 appropriate 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.

This process resulted in a set of 73 specific potential harms arising from gambling (Table 5), organised within the six broad domains adapted from the dimensional harms framework. These six domains included financial, work/study, health, emotional/psychological, relationship, and other harms. The 'other harms' covered both cultural transgressions and criminal activity related harms. Harms from the domain of life course, generational, and intergenerational harms were not included as they mostly reflect the cumulative impact of other harms. A checklist format for presenting these to participants was adopted for several reasons. Firstly, 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. Second, the content suited a binary response in terms of 'has this happened or not'; which contributes 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 each item if they experienced that issue as 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 financial domain concluded with the following item: '*Overall, what level of impact did your gambling have upon your financial security during this time?*'

Table 5. Abbreviated and full item labels for potential harms arising from gambling

Item abbreviation	Full item label
Financial	
Bankrup.	Bankruptcy
Loss Utilities	Loss of supply of utilities (electricity, gas, etc.)
Emerg. Acc.	Needed emergency or temporary accommodation
Add. Employ.	Took on additional employment
Loss Assets	Loss of significant assets (e.g. car, home, business, superannuation)
Welfare	Needed assistance from welfare organisations (food banks or emergency bill payments)
Sold Items	Sold personal items
Inc. CC. Debt	Increased credit card debt
Red. Ben. Exp.	Less spending on beneficial expenses such as insurances, education, car and home maintenance
Red. Ess. Exp.	Less spending on essential expenses such as medications, healthcare and food
Late Bills	Late payments on bills (e.g. utilities, rates)
Red. Rec. Exp.	Less spending on recreational expenses such as eating out, going to movies or other entertainment.
Red. Sav.	Reduction of my savings
Red. Spend.	Reduction of my available spending money
Work/study	
Exc. Study	Excluded from study
Lost Job	Lost my job
Conflict	Conflict with my colleagues
Hin. Job. Seek	Hindered my job-seeking efforts
Resources$_a$	Used my work or study resources to gamble
Lack Prog.	Lack of progression in my job or study
Time$_a$	Used my work or study time to gamble
Absent	Was absent from work or study
Late	Was late for work or study
Red. Perf.	Reduced performance at work or study (i.e. due to tiredness or distraction)
Health	
Emerg. Treat.$_a$	Required emergency medical treatment for health issues caused or exacerbated by gambling
Overeating	Ate too much
Suicide	Attempted suicide
Self-Harm	Committed acts of self-harm
Living Cond.	Unhygienic living conditions (living rough, neglected or unclean housing, etc.)
Service$_a$	Increased use of health services due to health issues caused or exacerbated by my gambling
Medical Needs	Neglected my medical needs (including taking prescribed medications)
Hygiene	Neglected my hygiene and self-care
Alcohol	Increased my consumption of alcohol
Malnutrition	Didn't eat as much or often as I should
Tobacco	Increased my use of tobacco
Physical Activity$_a$	Reduced physical activity due to my gambling
Stress Problems	Stress related health problems (e.g. high blood pressure, headaches)

Item abbreviation	Full item label
Red. Sleep Gamb.[a]	Loss of sleep due to spending time gambling
Depression	Increased experience of depression
Red. Sleep Worrya	Loss of sleep due to stress or worry about gambling or gambling-related problems
Emotional/psychological	
Escape	Thoughts of running away or escape
Worthless.	Felt worthless
Vulnerable	Felt insecure or vulnerable
Ext. Distress	Feelings of extreme distress
Failure	Felt like a failure
Hopeless.[a]	Feelings of hopelessness about gambling
Distress[a]	Felt distressed about my gambling
Anger[a]	Felt angry about not controlling my gambling
Shame[a]	Felt ashamed of my gambling
Regret[b]	Had regrets that made me feel sorry about my gambling
Escape	Thoughts of running away or escape
Relationship	
Actual Ending	Actual separation or ending a relationship/s
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
Increased Conflict	Experienced greater conflict in my relationships (arguing, fighting, ultimatums)
Reduced Events	Spent less time attending social events (non-gambling-related)
Increased Tension	Experienced greater tension in my relationships (suspicion, lying, resentment, etc.)
Neglected Resp.	Neglected my relationship responsibilities
Reduced Time	Spent less time with people I care about
Other	
Children Unsup.	Left children unsupervised
Arrested Driving	Arrested for unsafe driving
Shame Culture[a]	Felt that I had shamed my family name within my religious or cultural community
Violence	Had experiences with violence (include family/domestic violence)
Theft Government	Petty theft or dishonesty in respect to government, businesses or other people (not family/friends)
Children Neglected	Didn't fully attend to needs of children
Red. Connec. Cult.	Felt less connected to my religious or cultural community
Outcast[a]	Outcast from religious or cultural community due to involvement with gambling
Red. Contrib. Cult.	Reduced my contribution to religious or cultural practices
Crime[a]	Felt compelled or forced to commit a crime or steal to fund gambling or pay debts
Pay Money	Promised to pay back money without genuinely intending to do so
Took Money	Took money or items from friends or family without asking first

[a] 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.
[b] This item was only asked in the questionnaire for gamblers.

In addition to the comprehensive 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 were completed 2nd 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.

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, & Blaszcynski, 2012) and as such a similar method was adopted here. The panel size of our recruitment provider was quite large (>379,000 members) 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, across the lifetime of the participant. Recruitment for the online survey was done through an ISO-accredited Australian commercial panel provider in two stages. In the first stage of recruitment, the criteria for participation was 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 Australia at the time of the study and completed only one questionnaire. In the case that a participant fulfilled both criteria, they were directed to complete the questionnaire for gamblers. Figure 4 illustrates the recruitment process.

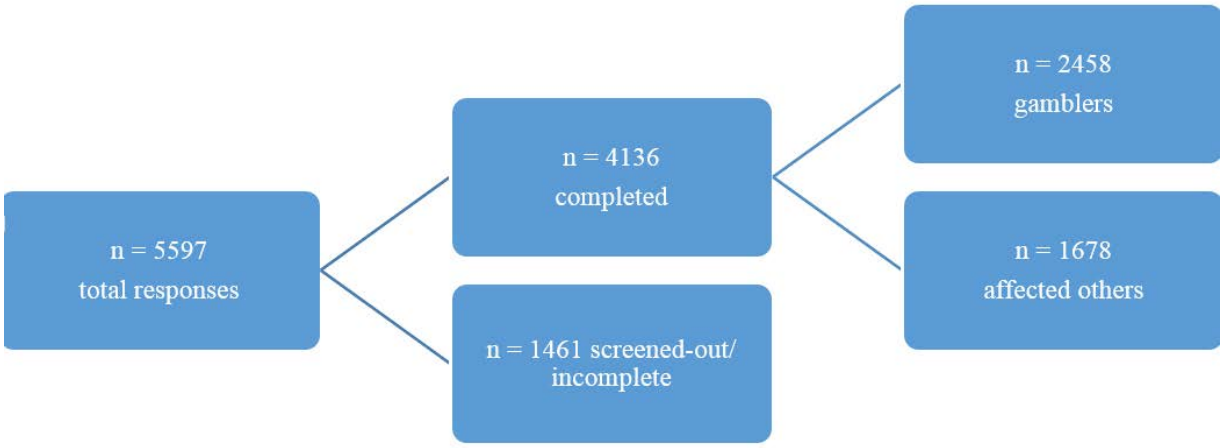


Figure 4. Stage 1 recruitment (inclusion criteria: lifetime experience of gambling harms)

Of the 2458 gamblers and 1678 affected others who met the eligibility criteria and completed the survey, 71% of gamblers and 81% of affected others reported gambling problems in the most severe problem

gambling category. Nevertheless, the sampling design did yield a surprisingly high proportion of gamblers at the higher levels of gambling problem severity – presumably due to participant interpretation of the screening criteria. In order to achieve a greater representation of participants in lower-risk categories, we initiated a second stage of recruitment (Figure 5). 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 618 gamblers and 451 affected others were recruited in the second stage, with 35% of gamblers and 64% affected others in this group meeting the criteria for problem gambling base on the PGSI cut-offs.

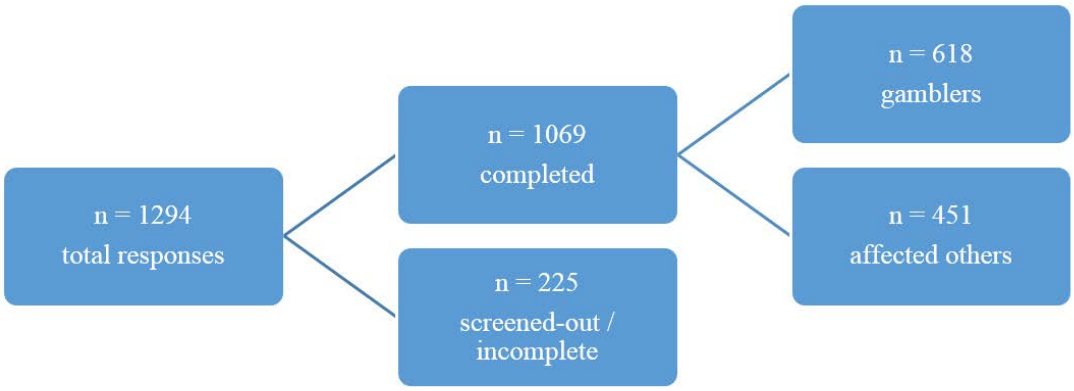


Figure 5. Stage 2 recruitment (inclusion criteria: lifetime experience of frequent gambling)

The demographic characteristics of the sample are presented in Table 6. A key aim of the survey was to obtain responses from gamblers and affected others with varying degrees of impacts from gambling. As such, we recruited a large number of respondents (N = 5205) varying across demographic features.

Table 6. Demographic characteristics

Variable	Sub-category	N	%
Group	Gambler	3076	59.0
	Affected other	2129	41.0
Gender	Male	2356	45.3
	Female	2849	54.7
Age	18-24 yrs	338	6.5
	25-34 yrs	1099	21.2
	35-49 yrs	1581	30.5
	50-64 yrs	1454	28.0
	65+ yrs	713	13.8
Marital status	Single	1216	23.4
	Widowed	155	3.0
	Divorced/separated	796	15.3
	Married	2237	43.0
	De facto	775	14.9
	Other	26	0.5
Country of birth	Australia	4188	80.5

Variable	Sub-category	N	%
	Other	1017	19.5
Indigenous	Yes	153	2.9
	No	5052	97.1
Place of residence	Urban	2800	53.8
	Regional town or city	1990	38.2
	Rural	415	8.0

N for all variables = 5205, with the exception of age (N = 5185).

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 a variety of specific indicators or probes. This entails that a confirmatory factor analysis (CFA) is most 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, which is broadly equivalent to an item–response theoretic approach. Finally, we are interested in whether the indicators of harm are generalizable between the different groups considered (gamblers and affected others, current versus retrospective respondents. This entailed that assessment of equivalent item functioning 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 our analysis was not hypothesis driven, no power calculation method is available to decide on appropriate sample size. This criterion, as well precedents of similar CFA analyses, led us to aim for a sample size of approximately 3000 participants.

The *ltm* package (Rizopoulos, 2006) was used for estimating item–response theoretic (IRT) parameters of the harm items, and lastly 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 who reported on 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 on current problems, and those who were reflecting on a historical 12-month period in their lives.

We also made comparisons in PGSI responding between those reporting on their own problems, versus those reporting on the problems of a significant other. We conducted measurement 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 of the items being considered, it is related to item reliability rather than validity. Therefore, correlations and cross-tabulations with the PGSI provide an alternative measure 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 and the PGSI. A series of linear and loess smoothed regressions were run for gamblers and affected others separately. In these simple regression models, the PGSI score was the predictor, and the number of specific harms reported for each harm domain, and across all domains, were the response variables.

Results

3076 (1364, 44.3% female) complete responses were obtained from participants reporting on harms arising from their own gambling (hereafter *gamblers*). 2129 (1485, 69.7% female) responses were obtained from affected others. The age distribution in these two participant groups was very similar, with mean ages of 46.0 and 45.8, and 50% of participants aged between 33 and 58 in both groups. Participants in the affected others group reported their relationship to the person whose gambling had affected them; the prevalence of the relationship categories used in this survey is given in Table 7.

Table 7. Relationship of participants (affected others) to gamblers

Relationship to gamblers	N	%
Child	58	2.7
Close friend	375	17.6
Parent	408	19.2
Sibling	142	6.7
Spouse	809	38.0
Other close family member	264	12.4
Close co-worker/colleague	73	3.4

PGSI functioning across measurement groups

A strong assumption can be made that both gamblers and affected others in the current sample have similar demographic characteristics, being either online panel participants or the people close to them. We would therefore expect that the observed PGSI means and variances for the second-hand PGSI reporting done by the affected others ought to be similar to the first-hand reporting done by the gamblers themselves. Similarly, if the measurement is functioning equivalently, we would expect not to observe large differences between current and retrospective reporting. 1206 (39.2%) of gamblers reported on 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. The current group had a significantly higher mean PGSI score (11.2) than the retrospective group (9.5); (t (2540.59) = 7.76, $p < 0.01$). However, group mean differences accounted for only 1.9% of variance in PGSI scores. 561 (26.4%) of 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 (1205, 1869) = 1.03, p = .52). No significant difference was observed between the means of current (11.6) and retrospective (12.1) PGSI

reporting done by affected others (t (949.35) = 1.68, p = .09). The variances of PGSI scores of the two groups also did not differ significantly (F (560, 1568) = 1.09, p = .18). The mean PGSI score reported first-hand by gamblers (10.1) was 1.8 points lower than that reported second-hand by affected others (11.9), though the effect of first-hand versus second-hand reporting only accounted for 2.2% of variance in PGSI scores. A variance ratio test comparing variances of PGSI scores between these two groups was not significant (F (3075,2128) = 1.06, p = .10).

Table 8 shows CFI and RMSEA fit indices for a sequence of three 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 8, each row of the table corresponds to a model with a progressively stronger assumption regarding the item-level measurement invariance of the PGSI across groups. The best fits were observed for the weakly invariant measurement model (Model 2), suggesting that item loadings, but not item (ordinal) response thresholds were invariant across participant groups.

Table 8. 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		Current		Retrospective	
	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA	CFI	RMSEA
Model 1 (54)	.939	.148	.831	.180	.939	.148	.924	.150
Model 2 (62)	.942	.134	.853	.157	.942	.134	.930	.134
Model 3 (79)	.849	.192	.821	.153	.849	.192	.675	.257

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

IRT parameters, PGSI categories, and correlations

Tables 9-14 summarise the prevalence of specific harms, for each of the six domains considered. IRT severity and discrimination parameters are provided, and the specific harms are ordered with respect to IRT based severity, within each domain. Hence, the IRT severity parameter places the specific harm on a continuum of harmfulness that is indicated by the whole group of items in each category from less severe to most severe. The IRT discrimination parameter indicates how well the item discriminates between low and high levels of harmfulness.

Data for gamblers (Tables 9-11) and affected others (Tables 12-14) 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. Ess. Exp.’ (reducing spending on essential items), when administered to gamblers (Table 9). This item was the most effective probe for discriminating higher versus lower levels of financial harm (3.28 discrimination parameter). It was most effective for discriminating medium to low levels of financial harm. 1.7% of non-problem gamblers responded positively to this item, as compared to 30.8% of problem gamblers (as measured by the modified PGSI). The highest proportional prevalence increase between PGSI categories for this item was between moderate risk and problem gamblers. Consistent with the IRT results, this item had the highest item-total correlation (among other financial harms; .56), the second highest correlation with the

general financial harm Likert item (.40) and the second highest correlation with the PGSI for the financial harm items.

Table 9. Financial and work/study (gamblers)

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non-problem	Low risk	Moderate risk	Problem	PGSI	Gen.	Tot
Financial									
Bankrup.	4.10	0.80	1.7 (0.3,6.6)	0.0 (0.0, 3.0)	0.7 (0.3,1.7)	7.0 (5.9,8.2)	.21	.23	.18
Loss Utilities	3.53	0.66	1.7 (0.3,6.6)	0.6 (0.0, 4.0)	2.4 (1.5,3.8)	15.1 (13.6,16.8)	.24	.17	.20
Emerg. Acc.	3.26	1.23	0.0 (0.0,3.9)	0.6 (0.0, 4.0)	0.4 (0.1,1.1)	5.2 (4.3,6.3)	.19	.17	.24
Add. Employ.	3.2	0.88	0.0 (0.0,3.9)	0.0 (0.0, 3.0)	2.5 (1.6,3.9)	10.8 (9.4,12.2)	.23	.17	.24
Loss Assets	3.06	0.79	0.8 (0.0, 5.3)	0.6 (0.0, 4.0)	2.3 (1.4,3.6)	14.8 (13.3,16.5)	.27	.26	.25
Welfare	2.27	1.01	2.5 (0.7,7.8)	0.0 (0.0, 3.0)	3.0 (2.0,4.5)	18.1 (16.4,19.8)	.30	.29	.30
Sold Items	1.28	1.42	3.4 (1.1,9.0)	1.3 (0.2, 5.0)	3.3 (2.2,4.8)	30.2 (28.2,32.3)	.41	.37	.44
Inc. CC. Debt	1.04	0.83	3.4 (1.1,9.0)	3.8 (1.6, 8.5)	17.0 (14.5,19.8)	42.2 (40.1,44.5)	.36	.36	.32
Red. Ben. Exp.	0.85	2.81	1.7 (0.3,6.6)	1.9 (0.5, 5.9)	10.6 (8.6,13.0)	31.1 (29.1,33.2)	.36	.37	.55
Red. Ess. Exp.	0.85	3.28	1.7 (0.3,6.6)	1.9 (0.5, 5.9)	8.7 (6.9,10.9)	30.8 (28.8,32.9)	.38	.40	.56
Late Bills	0.71	1.98	3.4 (1.1,9.0)	1.9 (0.5, 5.9)	14.6 (12.3,17.2)	39.4 (37.2,41.6)	.36	.43	.52
Red. Rec. Exp.	0.02	1.72	8.5 (4.4,15.4)	19.7 (14.0,27.0)	47.3 (43.8,50.7)	55.1 (52.9,57.3)	.23	.27	.42
Red. Sav.	-0.41	0.87	7.6 (3.8,14.4)	21.0 (15.1,28.4)	51.5 (48.0,55.0)	65.9 (63.8,68.0)	.27	.33	.29
Red. Spend.	-0.69	1.32	16.1 (10.2,24.3)	30.6 (23.6,38.5)	69.2 (66.0,72.3)	71.3 (69.2,73.3)	.21	.27	.33
Work/study									
Exc. Study	2.27	1.32	0.0 (0.0,3.9)	0.6 (0.0,4.0)	2.9 (1.9,4.3)	12.2 (10.8,13.8)	.18	.33	.28
Lost Job	2.17	1.54	2.5 (0.7,7.8)	0.0 (0.0,3.0)	1.7 (1.0,2.9)	11.1 (9.8,12.6)	.24	.44	.33
Conflict	2.09	1.99	3.4 (1.1,9.0)	0.0 (0.0,3.0)	1.4 (0.8,2.6)	8.4 (7.2,9.7)	.20	.34	.40
Hin. Job. Seek	2.04	1.38	0.0 (0.0,3.9)	1.3 (0.2,5.0)	3.4 (2.3,4.9)	14.5 (13.0,16.2)	.25	.35	.36
Resources	1.76	2.25	2.5 (0.7,7.8)	2.5 (0.8,6.8)	1.8 (1.1,3.0)	11.7 (10.3,13.2)	.24	.35	.47
Lack Prog.	1.63	1.92	1.7 (0.3,6.6)	0.6 (0.0,4.0)	4.3 (3.1,6.0)	15.8 (14.3,17.5)	.23	.40	.46
$Time_a$	1.36	1.88	2.5 (0.7,7.8)	1.3 (0.2,5.0)	7.0 (5.4,9.0)	21.7 (19.9,23.6)	.28	.41	.45
Absent	1.27	2.39	0.8 (0.0,5.3)	1.9 (0.5,5.9)	4.6 (3.3,6.3)	21.7 (19.9,23.6)	.30	.46	.52
Late	1.21	2.07	1.7 (0.3,6.6)	1.9 (0.5,5.9)	7.2 (5.6,9.3)	24.4 (22.5,26.4)	.29	.44	.49
Red. Perf.	1.09	1.56	2.5 (0.7,7.8)	3.2 (1.2,7.7)	12.5 (10.4,15.0)	30.4 (28.4,32.5)	.30	.50	.42

Table 10. Health and emotional/psychological (gamblers)

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non-problem	Low risk	Moderate risk	Problem	PGSI	Gen.	Tot
Health									
Emerg. Treat.	3.63	0.72	0.0 (0.0,3.9)	0.6 (0.0,4.0)	1.6 (0.9,2.7)	12.2 (10.8,13.8)	.24	.20	.15
Overeating	2.88	0.76	5.1 (2.1,11.2)	0.6 (0.0,4.0)	7.6 (5.9,9.7)	15.4 (13.9,17.1)	.16	.19	.19
Suicide	2.84	1.25	1.7 (0.3,6.6)	1.9 (0.5,5.9)	0.7 (0.3,1.7)	7.5 (6.4,8.7)	.19	.28	.25
Self-Harm	2.48	1.97	0.8 (0.0,5.3)	1.3 (0.2,5.0)	0.6 (0.2,1.5)	4.9 (4.0,5.9)	.20	.27	.33
Living Cond.	2.37	1.06	1.7 (0.3,6.6)	0.6 (0.0,4.0)	3.6 (2.5,5.2)	15.1 (13.6,16.8)	.23	.28	.27
Service	2.11	2.28	0.8 (0.0,5.3)	0.0 (0.0,3.0)	0.6 (0.2,1.5)	7.2 (6.1,8.5)	.26	.29	.40
Medical Needs	1.69	1.98	0.8 (0.0,5.3)	0.0 (0.0,3.0)	1.3 (0.7,2.4)	15.2 (13.7,16.9)	.34	.34	.45
Hygiene	1.60	1.79	1.7 (0.3,6.6)	0.6 (0.0,4.0)	3.9 (2.7,5.5)	17.5 (15.9,19.3)	.29	.33	.45
Alcohol	1.32	0.85	5.1 (2.1,11.2)	12.7 (8.1,19.2)	22.2 (19.4,25.2)	32.2 (30.2,34.3)	.18	.25	.30
Malnutrition	1.30	1.29	0.8 (0.0,5.3)	3.8 (1.6,8.5)	11.2 (9.2,13.6)	28.4 (26.5,30.5)	.29	.31	.39
Tobacco	1.18	0.92	2.5 (0.7,7.8)	6.4 (3.3,11.7)	19.8 (17.2,22.7)	35.0 (32.9,37.2)	.25	.28	.32
Physical Activity	0.90	1.44	4.2 (1.6,10.1)	5.1 (2.4,10.1)	17.0 (14.5,19.8)	36.0 (33.8,38.1)	.30	.35	.43
Stress Problems	0.89	1.87	5.1 (2.1,11.2)	3.2 (1.2,7.7)	12.3 (10.2,14.8)	34.1 (32.0,36.3)	.36	.42	.49
Red. Sleep Gamb.	0.79	1.43	5.1 (2.1,11.2)	3.2 (1.2,7.7)	15.3 (13.0,18.0)	40.6 (38.4,42.8)	.36	.38	.43
Depression	0.75	1.77	3.4 (1.1,9.0)	3.2 (1.2,7.7)	12.5 (10.4,15.0)	40.2 (38.0,42.4)	.37	.48	.48
Red. Sleep Worry	0.54	1.56	2.5 (0.7,7.8)	1.3 (0.2,5.0)	16.6 (14.2,19.4)	48.3 (46.1,50.6)	.42	.45	.44
Emotional/psychological									
Escape	1.10	1.52	4.2 (1.6,10.1)	3.2 (1.2,7.7)	7.2 (5.6,9.3)	32.2 (30.2,34.3)	.40	.48	.46
Worthless.	0.86	2.89	3.4 (1.1,9.0)	1.3 (0.2,5.0)	5.2 (3.8,7.0)	32.3 (30.2,34.4)	.44	.47	.62
Vulnerable	0.77	1.99	4.2 (1.6,10.1)	4.5 (2.0,9.3)	11.1 (9.1,13.5)	37.4 (35.3,39.6)	.40	.43	.55
Ext. Distress	0.64	1.59	4.2 (1.6,10.1)	3.2 (1.2,7.7)	9.0 (7.2,11.3)	46.3 (44.1,48.6)	.50	.51	.48
Failure	0.47	1.87	3.4 (1.1,9.0)	3.2 (1.2,7.7)	14.1 (11.9,16.7)	49.0 (46.8,51.3)	.43	.46	.53
Hopeless.	0.43	1.73	3.4 (1.1,9.0)	1.3 (0.2,5.0)	17.5 (15.0,20.3)	50.2 (48.0,52.4)	.42	.45	.51
Distress	0.27	1.90	6.8 (3.2,13.3)	3.8 (1.6,8.5)	24.5 (21.6,27.6)	53.2 (51.0,55.4)	.38	.45	.55
Anger	0.09	1.70	2.5 (0.7,7.8)	3.8 (1.6,8.5)	34.1 (30.9,37.5)	58.2 (56.0,60.4)	.36	.41	.52
Shame	0.04	1.79	5.1 (2.1,11.2)	3.8 (1.6,8.5)	32.8 (29.6,36.1)	60.8 (58.6,62.9)	.38	.41	.51
Regret	0.01	1.17	3.4 (1.1,9.0)	17.2 (11.8,24.2)	46.9 (43.5,50.4)	55.8 (53.6,58.0)	.22	.33	.42

Table 11. Relationship and other (gamblers)

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non-problem	Low risk	Moderate risk	Problem	PGSI	Gen.	Tot
Relationship									
Actual Ending	2.49	0.84	0.8 (0.0,5.3)	1.9 (0.5,5.9)	3.3 (2.2,4.8)	19.5 (17.8,21.3)	.27	.34	.22
Belittled	1.69	1.80	1.7 (0.3,6.6)	1.3 (0.2,5.0)	4.1 (2.9,5.7)	15.6 (14.0,17.3)	.28	.33	.42
Threat Ending	1.42	1.52	1.7 (0.3,6.6)	2.5 (0.8,6.8)	4.3 (3.1,6.0)	24.8 (23.0,26.8)	.32	.46	.40
Isolation	1.08	1.31	4.2 (1.6,10.1)	4.5 (2.0,9.3)	10.5 (8.5,12.8)	34.4 (32.3,36.6)	.34	.42	.41
Red. Enjoyment	0.99	1.55	2.5 (0.7,7.8)	3.8 (1.6,8.5)	11.7 (9.6,14.1)	33.9 (31.8,36.0)	.35	.37	.47
Increased Conflict	0.85	2.39	4.2 (1.6,10.1)	3.2 (1.2,7.7)	9.9 (8.0,12.2)	33.4 (31.3,35.6)	.35	.49	.55
Reduced Events	0.80	1.27	3.4 (1.1,9.0)	6.4 (3.3,11.7)	19.5 (16.9,22.4)	40.1 (37.9,42.3)	.31	.34	.43
Increased Tension	0.67	2.15	1.7 (0.3,6.6)	3.2 (1.2,7.7)	14.0 (11.7,16.6)	40.4 (38.2,42.6)	.39	.47	.53
Neglected Resp.	0.57	2.19	4.2 (1.6,10.1)	3.2 (1.2,7.7)	16.4 (14.0,19.1)	43.3 (41.1,45.5)	.36	.48	.55
Reduced Time	0.33	1.62	6.8 (3.2,13.3)	7.6 (4.2,13.3)	27.0 (24.1,30.2)	51.5 (49.2,53.7)	.34	.46	.47
Other									
Children Unsup.	2.36	1.99	0.8 (0.0,5.3)	0.6 (0.0,4.0)	1.0 (0.4,2.0)	5.6 (4.7,6.8)	.18	.24	.35
Arrested Driving	2.35	1.86	0.0 (0.0,3.9)	0.6 (0.0,4.0)	0.8 (0.4,1.8)	6.5 (5.5,7.7)	.16	.23	.32
Shame Culture[a]	2.31	1.77	3.4 (1.1,9.0)	0.6 (0.0,4.0)	1.7 (1.0,2.9)	7.1 (6.0,8.3)	.17	.28	.35
Violence	2.20	1.62	0.8 (0.0,5.3)	0.6 (0.0,4.0)	1.3 (0.7,2.4)	9.9 (8.7,11.4)	.20	.36	.35
Theft Government	2.06	1.52	2.5 (0.7,7.8)	0.6 (0.0,4.0)	3.0 (2.0,4.5)	12.3 (10.9,13.9)	.24	.39	.35
Children Neglected	2.03	1.46	1.7 (0.3,6.6)	1.9 (0.5,5.9)	4.3 (3.1,6.0)	13.0 (11.5,14.6)	.18	.28	.34
Red. Connec. Cult.	2.03	1.71	1.7 (0.3,6.6)	1.9 (0.5,5.9)	2.9 (1.9,4.3)	10.8 (9.4,12.2)	.17	.26	.36
Outcast[a]	1.91	2.19	0.8 (0.0,5.3)	0.6 (0.0,4.0)	1.1 (0.5,2.1)	10.0 (8.8,11.5)	.20	.29	.41
Red. Contrib. Cult.	1.86	2.01	0.8 (0.0,5.3)	0.6 (0.0,4.0)	3.0 (2.0,4.5)	11.3 (10.0,12.8)	.19	.28	.41
Crime[a]	1.72	2.06	0.8 (0.0,5.3)	0.6 (0.0,4.0)	2.1 (1.2,3.3)	13.9 (12.4,15.5)	.26	.36	.41
Pay Money	1.59	1.82	1.7 (0.3,6.6)	0.6 (0.0,4.0)	2.7 (1.7,4.1)	18.4 (16.7,20.2)	.31	.40	.41
Took Money	1.57	2.04	1.7 (0.3,6.6)	0.6 (0.0,4.0)	2.9 (1.9,4.3)	17.1 (15.5,18.9)	.28	.39	.44

Table 12. 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
Financial									
Bankrup.	3.09	1.37	0.0 (0.0,13.3)	0.0 (0.0,10.0)	0.9 (0.2,2.8)	3.7 (2.8,4.8)	.08	.23	.23
Add. Employ.	2.84	1.29	3.1 (0.2,18.0)	0.0 (0.0,10.0)	2.1 (0.9,4.5)	5.5 (4.4,6.8)	.09	.19	.24
Emerg. Acc.	2.73	1.58	3.1 (0.2,18.0)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	4.1 (3.2,5.2)	.10	.22	.26
Loss Assets	2.08	1.41	6.2 (1.1,22.2)	0.0 (0.0,10.0)	3.3 (1.8,6.0)	11.1 (9.6,12.8)	.16	.32	.35
Loss Utilities	2.05	1.73	3.1 (0.2,18.0)	2.3 (0.1,13.5)	1.8 (0.7,4.1)	8.8 (7.5,10.4)	.14	.27	.37
Welfare	1.75	1.80	6.2 (1.1,22.2)	0.0 (0.0,10.0)	3.6 (2.0,6.4)	12.1 (10.5,13.9)	.19	.34	.41
Inc. CC. Debt	1.52	1.39	12.5 (4.1,29.9)	2.3 (0.1,13.5)	10.8 (7.8,14.8)	18.5 (16.6,20.6)	.15	.39	.40
Sold Items	1.48	1.84	12.5 (4.1,29.9)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	17.1 (15.3,19.1)	.25	.37	.48
Red. Ess. Exp.	0.96	3.11	18.8 (7.9,37.0)	0.0 (0.0,10.0)	8.4 (5.8,12.1)	23.0 (21.0,25.3)	.16	.44	.59
Red. Ben. Exp.	0.89	3.51	9.4 (2.5,26.2)	4.5 (0.8,16.7)	12.3 (9.1,16.5)	23.8 (21.7,26.1)	.13	.43	.61
Red. Sav.	0.85	1.30	9.4 (2.5,26.2)	6.8 (1.8,19.7)	16.3 (12.6,20.8)	34.2 (31.8,36.6)	.22	.47	.43
Late Bills	0.80	2.60	3.1 (0.2,18.0)	2.3 (0.1,13.5)	16.3 (12.6,20.8)	28.4 (26.2,30.8)	.18	.48	.58
Red. Rec. Exp.	0.46	2.04	12.5 (4.1,29.9)	20.5 (10.3,35.8)	36.4 (31.3,41.9)	37.5 (35.0,40.0)	.06	.41	.52
Red. Spend.	0.46	1.82	9.4 (2.5,26.2)	11.4 (4.3,25.4)	26.2 (21.6,31.3)	40.6 (38.1,43.1)	.18	.51	.52
Work/study									
Lost Job	2.78	1.73	6.2 (1.1,22.2)	0.0 (0.0,10.0)	0.9 (0.2,2.8)	3.2 (2.4,4.2)	.08	.34	.25
Conflict	2.59	1.50	0.0 (0.0,13.3)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	5.8 (4.7,7.1)	.13	.27	.29
Exc. Study	2.53	1.60	9.4 (2.5,26.2)	0.0 (0.0,10.0)	2.7 (1.3,5.3)	5.0 (4.0,6.3)	.09	.33	.28
Hin. Job. Seek	2.36	1.51	3.1 (0.2,18.0)	0.0 (0.0,10.0)	5.4 (3.3,8.6)	6.7 (5.5,8.1)	.08	.29	.33
Resources	2.28	1.73	0.0 (0.0,13.3)	0.0 (0.0,10.0)	1.5 (0.6,3.7)	6.7 (5.5,8.1)	.12	.28	.34
Time	2.05	1.71	6.2 (1.1,22.2)	0.0 (0.0,10.0)	2.7 (1.3,5.3)	9.0 (7.6,10.6)	.15	.30	.36
Lack Prog.	1.63	2.31	6.2 (1.1,22.2)	6.8 (1.8,19.7)	5.1 (3.1,8.2)	11.1 (9.6,12.8)	.11	.43	.48
Late	1.53	2.60	0.0 (0.0,13.3)	2.3 (0.1,13.5)	6.6 (4.3,10.0)	11.7 (10.2,13.5)	.16	.37	.50
Absent	1.51	2.80	3.1 (0.2,18.0)	0.0 (0.0,10.0)	3.6 (2.0,6.4)	12.2 (10.6,14.0)	.19	.44	.51
Red. Perf.	0.97	1.71	3.1 (0.2,18.0)	9.1 (3.0,22.6)	16.9 (13.1,21.4)	27.5 (25.2,29.8)	.20	.53	.42

Table 13. 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
Health									
Suicide	2.83	1.84	3.1 (0.2,18.0)	0.0 (0.0,10.0)	0.0 (0.0,1.4)	2.7 (2.0,3.7)	.09	.17	.24
Self-Harm	2.66	2.03	3.1 (0.2,18.0)	0.0 (0.0,10.0)	1.8 (0.7,4.1)	2.4 (1.7,3.4)	.07	.20	.27
Emerg. Treat.	2.63	1.62	3.1 (0.2,18.0)	0.0 (0.0,10.0)	1.8 (0.7,4.1)	4.4 (3.5,5.6)	.10	.21	.27
Overeating	2.44	1.05	6.2 (1.1,22.2)	0.0 (0.0,10.0)	6.3 (4.1,9.7)	11.6 (10.0,13.3)	.10	.23	.25
Alcohol	2.22	1.09	6.2 (1.1,22.2)	9.1 (3.0,22.6)	9.3 (6.5,13.1)	12.6 (11.0,14.4)	.07	.20	.29
Living Cond.	2.16	1.65	9.4 (2.5,26.2)	2.3 (0.1,13.5)	2.7 (1.3,5.3)	8.0 (6.7,9.5)	.12	.28	.34
Hygiene	2.13	2.33	3.1 (0.2,18.0)	4.5 (0.8,16.7)	1.8 (0.7,4.1)	5.0 (4.0,6.3)	.12	.25	.40
Service	2.01	2.92	0.0 (0.0,13.3)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	4.9 (3.9,6.1)	.12	.29	.42
Medical Needs	1.87	2.72	3.1 (0.2,18.0)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	6.8 (5.6,8.2)	.15	.30	.45
Physical Activity	1.73	1.63	6.2 (1.1,22.2)	4.5 (0.8,16.7)	3.6 (2.0,6.4)	13.9 (12.2,15.8)	.15	.31	.41
Tobacco	1.73	1.28	9.4 (2.5,26.2)	4.5 (0.8,16.7)	8.7 (6.0,12.4)	16.9 (15.0,18.9)	.12	.29	.35
Malnutrition	1.47	1.77	9.4 (2.5,26.2)	4.5 (0.8,16.7)	9.6 (6.8,13.5)	16.3 (14.5,18.2)	.12	.37	.42
Red. Sleep Gamb.	1.39	1.56	9.4 (2.5,26.2)	0.0 (0.0,10.0)	9.6 (6.8,13.5)	19.9 (17.9,22.0)	.19	.35	.42
Depression	0.93	2.22	6.2 (1.1,22.2)	4.5 (0.8,16.7)	16.9 (13.1,21.4)	25.9 (23.7,28.2)	.17	.51	.52
Stress Problems	0.92	1.98	12.5 (4.1,29.9)	2.3 (0.1,13.5)	11.7 (8.6,15.8)	28.5 (26.3,30.9)	.23	.49	.49
Red. Sleep Worry	0.46	1.48	9.4 (2.5,26.2)	15.9 (7.2,30.7)	24.7 (20.2,29.8)	42.7 (40.2,45.3)	.23	.51	.42
Emotional/psychological									
Failure	1.50	1.92	9.4 (2.5,26.2)	0.0 (0.0,10.0)	5.7 (3.6,8.9)	15.4 (13.6,17.3)	.17	.33	.42
Worthless.	1.38	2.57	12.5 (4.1,29.9)	0.0 (0.0,10.0)	7.5 (5.0,11.1)	14.2 (12.5,16.1)	.13	.36	.48
Escape	0.91	1.67	15.6 (5.9,33.5)	0.0 (0.0,10.0)	15.4 (11.7,19.8)	29.4 (27.1,31.7)	.17	.51	.46
Vulnerable	0.84	2.45	9.4 (2.5,26.2)	6.8 (1.8,19.7)	15.1 (11.5,19.5)	27.1 (24.9,29.4)	.15	.45	.54
Ext. Distress	0.57	2.05	12.5 (4.1,29.9)	2.3 (0.1,13.5)	16.9 (13.1,21.4)	37.5 (35.0,40.0)	.29	.54	.53
Shame	0.55	1.34	12.5 (4.1,29.9)	15.9 (7.2,30.7)	28.0 (23.3,33.2)	39.3 (36.8,41.8)	.16	.37	.45
Anger	0.21	1.12	12.5 (4.1,29.9)	13.6 (5.7,28.0)	32.5 (27.6,37.9)	49.4 (46.9,52.0)	.19	.38	.40
Hopeless.	0.19	1.23	28.1 (14.4,47.0)	15.9 (7.2,30.7)	31.6 (26.7,37.0)	49.4 (46.9,52.0)	.22	.38	.43
Distress	-0.50	1.20	21.9 (9.9,40.4)	27.3 (15.5,43.0)	48.2 (42.7,53.7)	66.2 (63.7,68.5)	.20	.40	.39

Table 14. Relationship and other (affected others)

Item abb.	IRT parameters		PGSI category				Correlations		
	Severity	Dscrm	Non-problem	Low risk	Moderate risk	Problem	PGSI	Gen.	Tot
Relationship									
Neglected Resp.	1.72	1.40	9.4 (2.5,26.2)	4.5 (0.8,16.7)	6.6 (4.3,10.0)	15.8 (14.0,17.8)	.17	.24	.39
Actual Ending	1.27	1.23	18.8 (7.9,37.0)	0.0 (0.0,10.0)	15.1 (11.5,19.5)	25.1 (23.0,27.4)	.15	.40	.36
Isolation	1.25	1.41	12.5 (4.1,29.9)	9.1 (3.0,22.6)	16.0 (12.3,20.5)	22.8 (20.8,25.1)	.13	.32	.42
Red. Enjoyment	1.25	1.20	12.5 (4.1,29.9)	13.6 (5.7,28.0)	15.7 (12.0,20.1)	25.7 (23.5,28.0)	.14	.25	.40
Threat Ending	1.12	1.25	12.5 (4.1,29.9)	4.5 (0.8,16.7)	20.2 (16.1,25.0)	27.0 (24.8,29.3)	.14	.37	.37
Belittled	1.12	2.14	9.4 (2.5,26.2)	2.3 (0.1,13.5)	16.3 (12.6,20.8)	20.5 (18.5,22.6)	.10	.36	.52
Reduced Events	1.05	1.91	6.2 (1.1,22.2)	15.9 (7.2,30.7)	12.7 (9.4,16.8)	24.1 (22.0,26.3)	.15	.30	.52
Reduced Time	0.96	1.28	21.9 (9.9,40.4)	18.2 (8.7,33.2)	21.1 (16.9,26.0)	30.0 (27.7,32.3)	.13	.31	.44
Increased Conflict	0.21	2.42	15.6 (5.9,33.5)	13.6 (5.7,28.0)	32.8 (27.9,38.2)	46.7 (44.2,49.3)	.16	.46	.54
Increased Tension	0.04	2.27	12.5 (4.1,29.9)	9.1 (3.0,22.6)	42.2 (36.8,47.7)	52.0 (49.5,54.5)	.13	.46	.51
Other									
Shame Culture	2.94	1.25	0.0 (0.0,13.3)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	5.6 (4.5,6.9)	.12	.26	.27
Arrested Driving	2.86	1.96	3.1 (0.2,18.0)	0.0 (0.0,10.0)	0.6 (0.1,2.4)	2.1 (1.5,3.0)	.07	.14	.24
Outcast	2.77	1.84	6.2 (1.1,22.2)	0.0 (0.0,10.0)	2.7 (1.3,5.3)	2.4 (1.7,3.3)	.06	.16	.28
Red. Contrib. Cult.	2.58	1.72	0.0 (0.0,13.3)	0.0 (0.0,10.0)	2.4 (1.1,4.9)	4.2 (3.3,5.4)	.07	.20	.33
Red. Connec. Cult.	2.51	1.54	6.2 (1.1,22.2)	2.3 (0.1,13.5)	4.2 (2.4,7.1)	5.3 (4.2,6.5)	.05	.26	.34
Crime	2.46	2.26	0.0 (0.0,13.3)	0.0 (0.0,10.0)	0.6 (0.1,2.4)	3.3 (2.5,4.4)	.15	.22	.34
Theft Government	2.30	2.04	0.0 (0.0,13.3)	0.0 (0.0,10.0)	1.2 (0.4,3.3)	5.1 (4.0,6.3)	.11	.24	.35
Children Unsup.	2.20	2.29	0.0 (0.0,13.3)	2.3 (0.1,13.5)	1.2 (0.4,3.3)	4.9 (3.9,6.2)	.08	.20	.39
Children Neglected	1.73	1.82	3.1 (0.2,18.0)	2.3 (0.1,13.5)	5.4 (3.3,8.6)	12.2 (10.7,14.0)	.11	.30	.41
Violence	1.68	1.44	3.1 (0.2,18.0)	2.3 (0.1,13.5)	6.6 (4.3,10.0)	16.3 (14.5,18.3)	.13	.54	.38
Pay Money	1.55	1.97	12.5 (4.1,29.9)	2.3 (0.1,13.5)	6.0 (3.8,9.3)	14.1 (12.4,16.0)	.14	.29	.42
Took Money	1.53	2.84	3.1 (0.2,18.0)	0.0 (0.0,10.0)	4.8 (2.9,7.9)	11.3 (9.8,13.1)	.18	.31	.49

For gamblers, ‘bankruptcy’ (4.10), ‘excluded study’ (2.27), ‘emergency treatment’ (3.63), ‘escape’ (1.10), ‘actual ending’ (2.49), and ‘children unsupervised’ (2.36) were the most severe harms within the financial, work/study, health, emotional/psychological, relationship, and other domain, respectively. In comparison, ‘bankruptcy’ (3.09), ‘lost job’ (2.78), ‘suicide’ (2.83), ‘failure’ (1.50), ‘neglected responsibilities’ (1.72), and ‘shame culture’ (2.94) were the most severe harms for affected others within each of the six

corresponding domains. Hence, 'bankruptcy' was the most severe financial harm for both gamblers and affected others.

For gamblers, 'reduced essential expenses' (3.28), 'absent' (2.39), 'service' (2.28), 'worthlessness' (2.89), 'increased conflict' (2.39), and 'outcast' (2.19) 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' (3.51), 'absent' (2.80), 'service' (2.92), 'worthlessness' (2.57), 'increased conflict' (2.42), and 'took money' (2.84) appeared the best discriminator for affected others within the corresponding domains. Hence, 'absent' was the most reliable indicator for work/study harms on both gamblers and affected others, and so was 'service' for health harms, 'worthlessness' for emotional/psychological harms, and 'increased conflict' for relationship harms.

For gamblers, 'reduced spending' (71.3; 95% CI: 69.2, 73.3), 'reduced performance' (30.4; 95% CI: 28.4, 32.5), 'reduced sleep worry' (48.3; 95% CI: 46.1, 50.6), 'shame' (60.8; 95% CI: 58.6, 62.9), 'reduced time' (51.5; 95% CI: 49.2, 53.7), and 'pay money' (18.4; 95% CI: 16.7, 20.2) were reported by the highest percentage of problem gamblers identified by the PGSI, within the financial, work/study, health, emotional/psychological, relationship, and 'other' domains respectively. In comparison, 'reduced spending' (40.6; 95% CI: 38.1, 43.1), 'reduced performance' (27.5; 95% CI: 25.2, 29.8), 'reduced sleep worry' (42.7; 95% CI: 40.2, 45.3), 'distress' (66.2; 95% CI: 63.7, 68.5), 'increased tension' (52.0; 95% CI: 49.5, 54.5), and 'violence' (16.3; 95% CI: 14.5, 18.3) were reported by the highest percentage of affected others to problem gamblers, within the corresponding domains. Hence, 'reduced spending' was the financial harm most frequently reported by both problem gamblers and their affected others, and so was 'reduced performance' as the most frequently reported work/study harm, and 'reduced sleep worry' as the most frequently reported health harm.

For gamblers, 'sold items' (.41), 'absent' (.30), 'reduced performance' (.30), 'reduced sleep worry' (.42), 'extreme distress' (.50), 'increased tension' (.39), and 'pay money' (.31) 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' (.25), 'reduced performance' (.20), 'stress problems' (.23), 'reduced sleep worry' (.23), 'extreme distress' (.29), 'neglected responsibilities' (.17), and 'took money' (.18) had the highest correlation with PGSI reported by affected others, within the corresponding domains. Hence, 'sold items', 'reduced performance', 'reduced sleep worry', and 'extreme distress' were, respectively, the most reliable financial, work/study, health, and emotional/psychological consequence of increasing gambling problems, among both gamblers and affected others.

For gamblers, 'late bills' (.43), 'reduced performance' (.50), 'depression' (.48), 'extreme distress' (.51), 'increased conflict' (.49), and 'pay money' (.40) had the highest correlation with their corresponding general domain Likert harm item. In comparison, 'reduced spending' (.51), 'reduced performance' (.53), 'depression' (.51)/'reduced sleep worry' (.51), 'extreme distress' (.54), 'increased conflict' (.46)/'increased tension' (.46), and 'violence' (.54), as reported by affected others, also had the highest correlation with their corresponding general domain item. Hence, 'reduced performance', 'depression', 'extreme distress', and 'increased conflict' were, respectively, the most reliable predictor of general work/study, health, emotional/psychological, and relationship harm, for both gamblers and affected others.

For gamblers, the item-total correlations between 'reduced essential expenses' (.56), 'absent' (.52), 'stress problems' (.49), 'worthlessness' (.62), 'increased conflict'(.55), 'neglected responsibilities' (.55), 'took money' (.44) and the rest of the items in their corresponding harm domain were strongest in each domain. In comparison, 'reduced beneficial expenses' (.61), 'absent' (.51), 'depression' (.52), 'vulnerable' (.54), 'increased conflict' (.54), and 'took money' (.49), as reported by affected others, also had the strongest item-total correlations for their respective domains. Hence, 'absent', 'increased conflict', and 'took money' were each respectively the most reliable indicator in reflecting the underlying dimension of work/study, relationship, and other harm, for both gamblers and affected others.

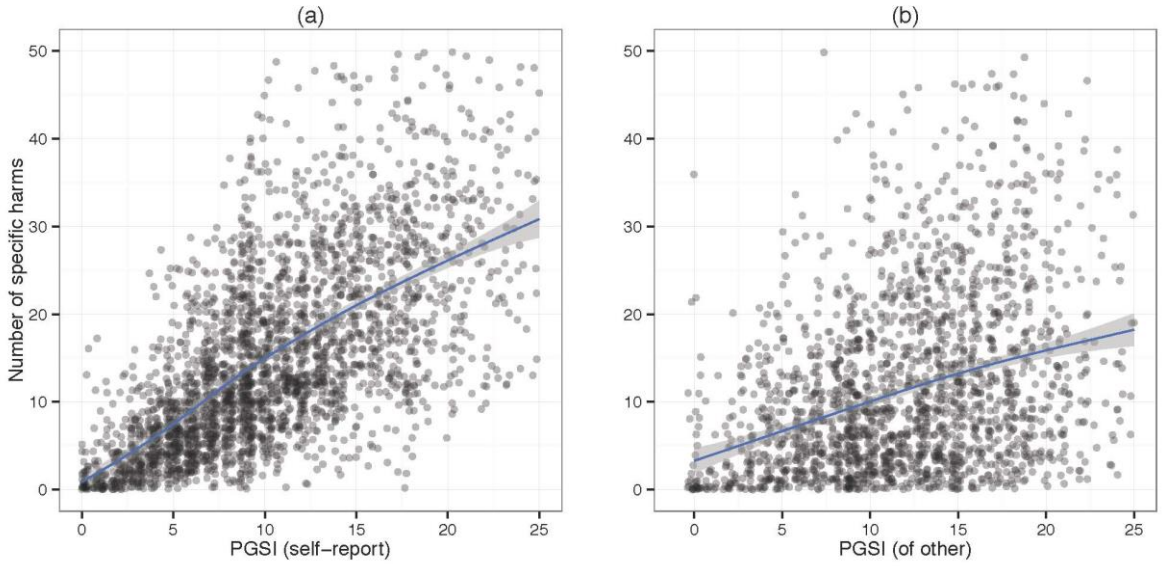
Count of harms with respect to PGSI

The number of specific harms was regressed against the PGSI, and the linear regression slopes estimated for each harm domain and across all domains are listed in Table 15. Non-linear loess smoothed curves are displayed in Figure 6. A common pattern arising from these regressions was greater slopes found among gamblers who reported their own PGSI rather than those among affected others who reported others' PGSI. For example, each one point increase in PGSI was associated with 0.26 (vs. 0.14) more financial harm, 0.28 (vs. 0.13) more health harm, 0.24 (vs. 0.11) more relationship harm, and 1.34 (vs. 0.64) more harms across all domains for gamblers (vs. affected others). Hence, harms were more reliably related to PGSI for the gambler themselves, as compared to the affected other. This is an unsurprising result, given that the relationship between gamblers' PGSI and harm to an affected other is a more distal relationship than harm to oneself, and depends on a number of other factors, such as the nature of the relationship of the affected other to the gambler.

Table 15. Linear regression slopes

Slopes	PGSI (self-report)	PGSI (of other)
Financial	0.26	0.14
Work/study	0.14	0.07
Health	0.28	0.13
Emotional/psychological	0.31	0.14
Relationship	0.24	0.11
Other	0.12	0.06
All harm domains	**1.34**	**0.64**

Figure 6. Fitted regression lines



Discussion

The results suggest that there is a high level of correspondence in the type of harms experienced by gamblers and affected others. Nevertheless, harms in all domains tended to accumulate more quickly to the gambler than to the affected other as problems increased. The results also provide a great deal of insight into the specific 'symptoms' of harm: in terms of prevalence, as an indicator of increasing harm,

and also of increasing gambling problems. We shall discuss each of the domains of harm separately in the following sections.

Financial

Unsurprisingly, bankruptcy was found to be the most severe indicator of financial harm for both gamblers and affected others. However, it was also a relatively unreliable indicator of harm, for both groups – most likely due to its low prevalence, and the fact that bankruptcy is affected by a number of other factors, such as capacity to borrow money and incur debt. Reduced spending (including on recreational activities) was the least severe indicator, supporting the intuitive idea that the first impact of gambling spending is to reduce funds available for other activities. Reduced spending on essential and beneficial items were the most reliable indicators of financial harm. This accords with what one might propose as the definition of financial gambling harm, which is to divert money away from expenditure necessary to provide for basic necessities. The prevalence of this 'everyday' inability to spend money on essential items also varied strongly with respect to problem gambling status. Interestingly, even in the non-problem gambling group, the prevalence of this harm was similar to the low-risk problem gamblers (1.7% and 1.9% respectively). Even at this relatively low prevalence of harm, given that over 60% of the population fall into this category of non-problem gamblers, this might translate to a potentially high proportion of people in the general population experiencing limitation of spending on essential items due to gambling. Along with restrictions on essential expenditure, increased credit card debt and selling items to fund gambling, showed the strongest escalation in prevalence in the problem category, and also had the strongest correlations to the PGSI.

Work and study

As expected, being excluded from study, losing one's job, and conflict at work were the most severe harms in this category for both groups. Being absent or late for work or study were the least severe, and also very reliable, indicators of work/study harms for both gamblers and affected others. Thus, as gambling problems begin to occur, a reliable early warning sign would appear to be the decision to skip work in order to gamble – or to deal with the consequences of another's gambling. Interestingly, absenteeism could be related to a number of co-morbid harms (i.e., emotional/psychological harm, health, financial), however as an isolated behaviour, it offers a ready, everyday indicator for risk of harm in both non-problem gamblers, gamblers and affected others that could be usefully used to identify risk. Performance reduction caused by tiredness or distraction was the most reliable work/study consequence of increasing gambling problems, as well as the most reliable predictor of general work/study harm, for both participant groups. Additionally, this harm had the highest correlation with PGSI in the work/study domain, performance reduction was also reported by the highest percentages of problem gamblers (as identified by PGSI) and their affected others.

Health

Thoughts of suicide, requiring emergency treatment and self-harm were the most severe indicators of health-related harm in both groups. However, these tended to be below-average in terms of their reliability in indicating increasing levels of harm. The increased use of health-related services due to gambling was the most reliable indicator for both groups. 'Early indicators' of health-related problems included reduced sleep due to worry, stress, and depression. These were among the most reliable indicators of health-related harm, which more generally appeared to be those health impacts associated with psychological/emotional distress. Moreover, loss of sleep not only had the highest correlation with PGSI within the health domain, but was also the health harm most frequently reported by both problem gamblers and their affected others. Again, this is a health-related impact that can be understood to occur as a result of worry, stress, and other psychological or relationship impacts.

Emotional and psychological

Feelings of failure, worthlessness, extreme distress and vulnerability were the most extreme harms in this category for both groups. Regret was a reliable early indicator of harm for gamblers themselves, while feelings of anger and hopelessness were the negative emotions that tended to be first felt by those affected. These differing emotions for the two groups make sense, given the different roles of the gambler and the affected others with respect to the problems. A sobering and somewhat surprising result is that feelings of worthlessness were the most reliable indicator of emotional harm not only for gamblers, but also for affected others. This suggests that affected others tend to share in, and internalise, the threat to self-regard that uncontrollable gambling instigates. These results are consistent with emerging awareness of the emotional and psychological wellbeing to gamblers and problem gamblers. Specifically, recent research indicates that problem gambling is associated with higher scores of anxious and depressive symptoms of emotional and psychological health (Jauregui, Urbiola, & Estevez, 2015).

Relationships

Experiencing greater relationship conflict was the most reliable discriminator and predictor of relationship harms for both participant groups. Conflict within relationships is generally regarded as a reliable indicator of an underlying disagreement or relationship problem, and it is reasonable that it should also be a reliable signal of gambling problems. There were illuminating differences between the groups for some indicators. For example, the neglect of responsibilities was one of the earliest indicators of relationship harm for gamblers themselves. However, neglect of responsibilities was the most severe indicator for affected others. This has an intuitively appealing interpretation in terms of gambling problems causing a ‘cascade’ of responsibility neglect through the social network around the gambler. Initially, gamblers are able to compensate for their time and money investment in gambling by relying on those around them to absorb the duties. However, as pressure on those around them increases with the most severe gambling problems, they in turn will become more likely to neglect their responsibilities – a second order relationship effect.

Other

This diverse category did not have an underlying construct attached, as did the other domains. Therefore IRT results for this domain should be interpreted with great caution. Focusing on the relationship of indicators with the PGSI; crime and not paying back money were most reliably associated with the PGSI for gamblers. This was also true for affected others, for whom experiences with violence and neglect of children were also more strongly associated with the PGSI. In general, associations in this category, both in terms of reliability and with respect to the PGSI, were much lower than for other categories. This reflects the fact that harms in this category were diverse, very specific, and quite low prevalence.

Conclusions

There were broad similarities in the experience of harm reported by gamblers and affected others. The most notable difference between the two groups appears to be in quantity, rather than the quality of the harm. That is, the slope of the relationship between problems and harms for affected others was approximately half that of gamblers. Loosely speaking, gamblers appear to ‘pass on’ about half of the harms they experience to those around them. However, affected others surveyed in this study assessed PGSI second-hand, and the potential issues in this approach need to be acknowledged. Particularly, respondents reflecting on the problems of another would be less likely to minimise problems, leading to a greater mean score. This was reflected in the slightly higher mean PGSI score reported by affected others. However, this difference accounted for only 2.2% of the variance. In other respects, the PGSI appeared to function equivalently between respondent groups. Therefore, despite this limitation, we consider the responses of the affected other to provide a reasonably sound representation of harms that

accrue with increasing PGSI. Also, self-report retrospective reflection has been shown to be a valid and reliable process for measures of behaviour and emotional responses (mental health outcomes); with foundational work of this principle and approach established in the 1990's (Reznick, Hegeman, Kaufman, Woods, & Jacobs, 1992).

The findings of this study provide new and consolidated evidence that similar harms can occur to both gamblers and to people who are close to them. It also provides a detailed picture of the changing profile of harms as problem gambling severity increases, as well as the type of harms that most effectively discriminate between different levels problem gambling. Furthermore, it provides some indication of which harms tend to occur most reliably as problems increase. Most importantly, in terms of the goals of the broader project, the survey provides a large database of particular harm experiences, across the range of the PGSI. This information will be used in subsequent chapters to create condition descriptions of harms from gambling. However, as a stand-alone result, these results provide a clearer picture of the prevalence of harm due to gambling, and the changing profile of harm as gambling problems increase.

Assessing individual-level harm from gambling via HRQL utility weights

The qualitative and quantitative findings reported in previous sections provide a comprehensive and detailed description of harms relating to gambling. The quantitative analysis provides insight into the increasing number and types of specific harms that occur as the relative impact of problematic gambling grows. It is clear that the prevalence of harms increase with PGSI score or category. However, similar to previous research on the topic, the results so far do not describe the quantum of harm experienced at a population level utilising a summary measure. That is, although we can make some predictions regarding the amount and types of harm experienced as gambling behaviour increases, we are still unable to quantify the effect this harm has on the individual or the population. The present chapter deals with the objective of measuring how much a typical individual is harmed, given a certain level of gambling problems, and extrapolating that result to the population level. This is a necessary pre-requisite 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 with a decrement of 0.8 to their health and wellbeing is suffering from twice the amount of harm as an individual with a decrement of 0.4. Furthermore, it is possible to aggregate harms experienced across individuals, which enables comparisons between populations, and the evaluation of alternative treatment or policy initiatives. Finally, if the scale is shared with measures of harm from other conditions, it is possible to make meaningful comparisons of the overall cost to the community between conditions, and make informed decisions about how to allocate scarce resources accordingly.

Summary measures of population health

In order to create a cardinal measure of gambling harm it is useful to apply summary measures commonly utilized 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 utilized for a variety of purposes, such as comparing the experiences of health between populations (e.g., different countries; 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 capture the combined impact of both mortality and morbidity simultaneously. 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. These weights, described below, capture deviations from a normal and unaffected enjoyment of life.

Health-related quality of life (HRQL) weights

The construct of HRQL is operationalised as a health state utility. 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. They are estimated on a ratio 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. 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, 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*1.0=10 QALYs, while treatment B yields 10*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 1000 individuals. Treatment A yields 0.05*100,000 = 5000 QALYs per annum. Treatment B yields 0.5*1000 = 500 QALYs per annum. Research on the use of health utilities and QALYs is extensive, and though not without controversy, remains a useful methodology for health priority setting from a public health perspective.

Disability-adjusted life years (DALYs)

In addition to QALYs, disability-adjusted life years 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) for the purpose of capturing 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 HQRL weights

Two main components are required for measuring HRQL, which we shall apply 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. The second component involves elicitation and estimation of valuations of the health states so as to permit estimation of utilities on the [0,1] 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. 3) 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'. While 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 represented by the DSM-5 items. A clearer harms-based description of the experience of gambling problems is needed to evaluate the decrement to quality of life from the experience of gambling problems.

Furthermore, our data confirms 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 in their occurrence in the population, then a less discrete approach to condition description is required. For example, one study (Llewellyn-Thomas et al., 1984) evaluating the impact of cancer 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 then employed for the purpose of direct elicitation of health utilities. 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.

Protocols for HRQL elicitation

Direct versus indirect methods for eliciting HRQL

Before outlining the protocols used in the present study for eliciting HRQL, we will first distinguish between direct and indirect frameworks for eliciting the impact of conditions on one's quality of life. 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 Wellbeing 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 the case of 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, leading to an underestimate of harm. Therefore, the approach of the present study is to employ a direct method of utility estimation.

Protocols

Measurement frameworks for HRQL rely on the use of protocol(s) for eliciting the utilities that reflect the HRQL associated with a condition. Three popular techniques for eliciting cardinal utility weights for HRQL include the time trade-off, visual analogue scale, and standard gamble (SG).

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 of depression is 0.7 – or equivalently, using our definition that the harm accrued with each year of living with depression is 0.3. See Figure 7 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 (Rowen, Brazier, & Van Hout, 2014; Dolan & Stalmeier, 2003; Smith, Sherriff, Damschroder, Loewenstein, & Ubel, 2006). This may be why some researchers recommend that the TTO is administered face-to-face by an interviewer among small samples and among the ‘experts’, such as health professionals (Norman et al., 2010; Shah, Lloyd, Oppe, & Devlin, 2013).

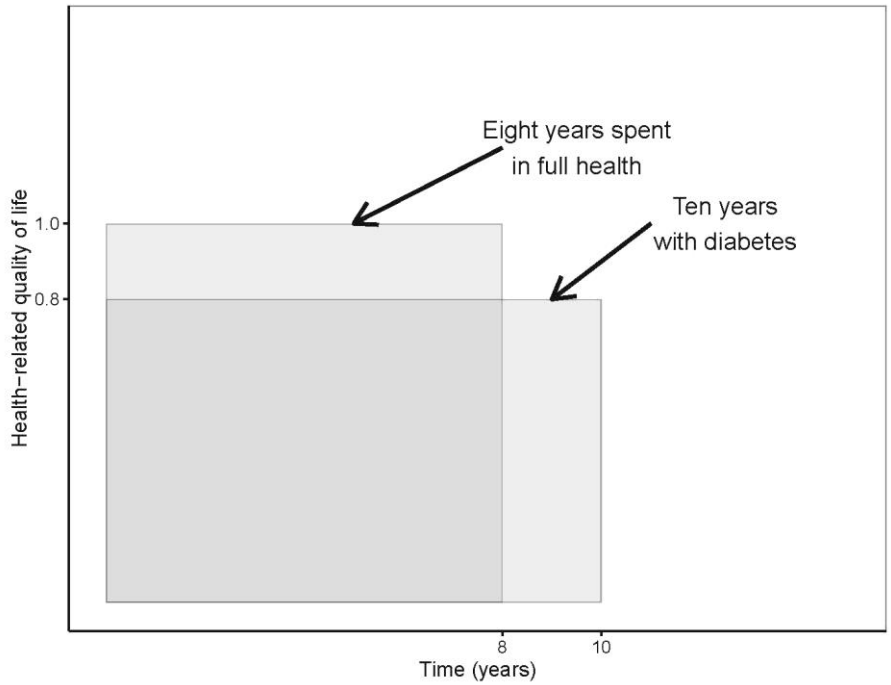


Figure 7. Time trade-off

Visual analogue scale (VAS)

The visual analogue scale, is a rating scale 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 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 (Whitehead & Ali, 2010; Tolley, 2009; Stubbs et al., 2000). 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) recommend that a sufficient number of different states with different severity levels should be on the VAS in order to ensure respondents minimise scaling distortions, which typically are 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 that the VAS performed better than the TTO for health state valuation. Gudex, Dolan, Kind, and Williams (1996) also found that the VAS had good test-retest reliability. More recently, Parkin and Devlin (2006) reviewed findings regarding the VAS, make a strong defence of the protocol for health state valuations, arguing that it performs 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 utility score. 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 which not only reflect the value that person places on the health state but their attitude towards risk taking (Tolley, 2009; Mathers et al., 2001; Torrance, Furlong, Feeny, & Boyle, 1995). This suggests that the utility score from the SG is dependent on the population surveyed, where a higher tendency towards risk behaviour would result in a lower utility score 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).

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 weights 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 the 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

Two main obstacles restrict the utilisation of a standard health gap 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 was the systemic problems with capturing the contribution of gambling when people present with multiple health problems, particularly when those problems are biophysical in nature. While 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 surveys, it is not possible to assess it as a risk factor and calculate population attributable risk based on exposure. The majority of people that 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 is no data from longitudinal studies of gambling that can provide reliable population measures of incidence, 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. We therefore 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 then be combined with prevalence data to estimate the population-aggregate decrement to health. 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 focussed on utility or quality of life gained, the present study calculates the loss of utility or quality of life as a decrement. While 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 $QALY_1$ which is consistent with standard demographic notation of subscript indications of time.

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 2014 Study of Gambling and Health in Victoria (Hare, 2015), can provide an initial estimate of a burden of harm for a calendar year (assuming some stability of behavioural categorisation), and can be utilised as a disability weight when more complete epidemiological data for gambling is available. Most critically, it also allows a calculation of gambling harms that is comparable with most other disease states studied with the burden of disease (BoD) methodology, and even those calculated prior to the present study using somewhat 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 as to the validity of the measure. Thus, the stimuli used to elicit the HRQL 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 health state valuations. 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 addiction. 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 – 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 harm survey, 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 Victorian population to obtain aggregate $QALY_1$ 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 798 cases with profiles of harm from the population 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 avoid making assumptions about a standard or generic harm experience. We also assess harms across the spectrum of gambling problems. Given that non-problem and low-risk statuses 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. Table 16 below 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	47	104	200	200	551
Affected others	18	29	100	100	247
Total	**65**	**133**	**300**	**300**	**798**

Each harm profile was converted to a natural language descriptor in a standardised manner using a simple algorithm. The algorithm translated the specific profile of harms reported by individuals in our national survey into a consistent natural language description suitable for use as stimuli. This involved firstly specifying a clause for each gambling-related harm checklist item covered in the population survey. For example, the item '*Had regrets that made me feel sorry about my gambling'* in the emotional/psychological domain was associated with the single word clause '*regretful'*. Other harms involved multi-word clauses; for example '*Thoughts of running away or escape*' was transformed to '*have thoughts about escaping*'. Some harms included examples to make the meaning clear.

Each harm in the checklist was also associated with a particular sentence in the vignette (indexed within domain). The complete harm – vignette clause assignment table is provided at Appendix 1. 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 would then be 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 at Appendix 2. For a given sentence, when a participant reported no harms, that sentence was omitted completely from the vignette. The output of the algorithm was inspected 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 respondents reporting on harm from their own gambling (Form A), one with lower levers of problems (A1001), and another with intermediate gambling problems (A1003):

> *Your gambling is affecting your quality of life. The gambling is making you feel distressed. You have less spending money and have reduced savings.*
>
> (A1001, PGSI = 2, *z* = *-1.20*)

> *Your gambling is affecting your quality of life. The gambling is making you feel regretful. You spend less recreationally (e.g. movies, eating out) and are late on bill payments. Additionally, you have reduced your spending on essential items (e.g. medication, food). You are losing sleep due to spending time gambling. You are eating too much and drinking more alcohol. You spend less time with the people you care about. In your relationships you're experiencing greater conflict. You neglect your relationship responsibilities. Additionally, in your work/study you use this time to gamble.*
>
> (A1003, PGSI = 6, *z* = -0.01)

It is important to emphasise that the vignettes above corresponded to the exact experiences of harm, as reported by these two survey respondents. These experiences of harm are examples of the raw materials for subsequent judgements on the level of harm being experienced as judged by multiple others.

It can be seen that the initial sentence for this 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, B1007 describes an individual who was affected by relatively severe gambling problems of a parent:

> *Your parent's gambling is affecting your quality of life. The gambling is making you feel angry and hopeless. You also feel extremely distressed. You have reduced spending on beneficial expenses (e.g. insurance, car and home maintenance). You are experiencing depression and are experiencing stress related health problems (e.g. high blood pressure). Your tobacco use is increasing. Within your religious/cultural community, you feel less connected. In your relationships you're experiencing greater tension and conflict. At work/study you have reduced your performance (e.g. due to tiredness or distraction).*
>
> (B1007, PGSI = 15, z = +0.42)

The full set of 798 condition vignettes were 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 6 Form A vignettes (harm from own gambling) or 6 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 (identified by a unique ID) was given their own set of 6 vignettes. It is an assumption of the selected methodology (random sampling with replacement) that each participant receive a unique set of vignettes. Furthermore, as a large number of condition vignettes (798) were used the likelihood of two participants receiving the same set of vignettes is dramatically reduced. Therefore, each participant in this part of the study was asked to judge the experience of harm from 6 real experiences of harm reported by others in the prior survey: including the 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 of 3 sections:

1. Visual analogue scale (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 impacted 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 at Appendix 3. Figure 8 below shows a hypothetical example of the VAS task participants would complete.

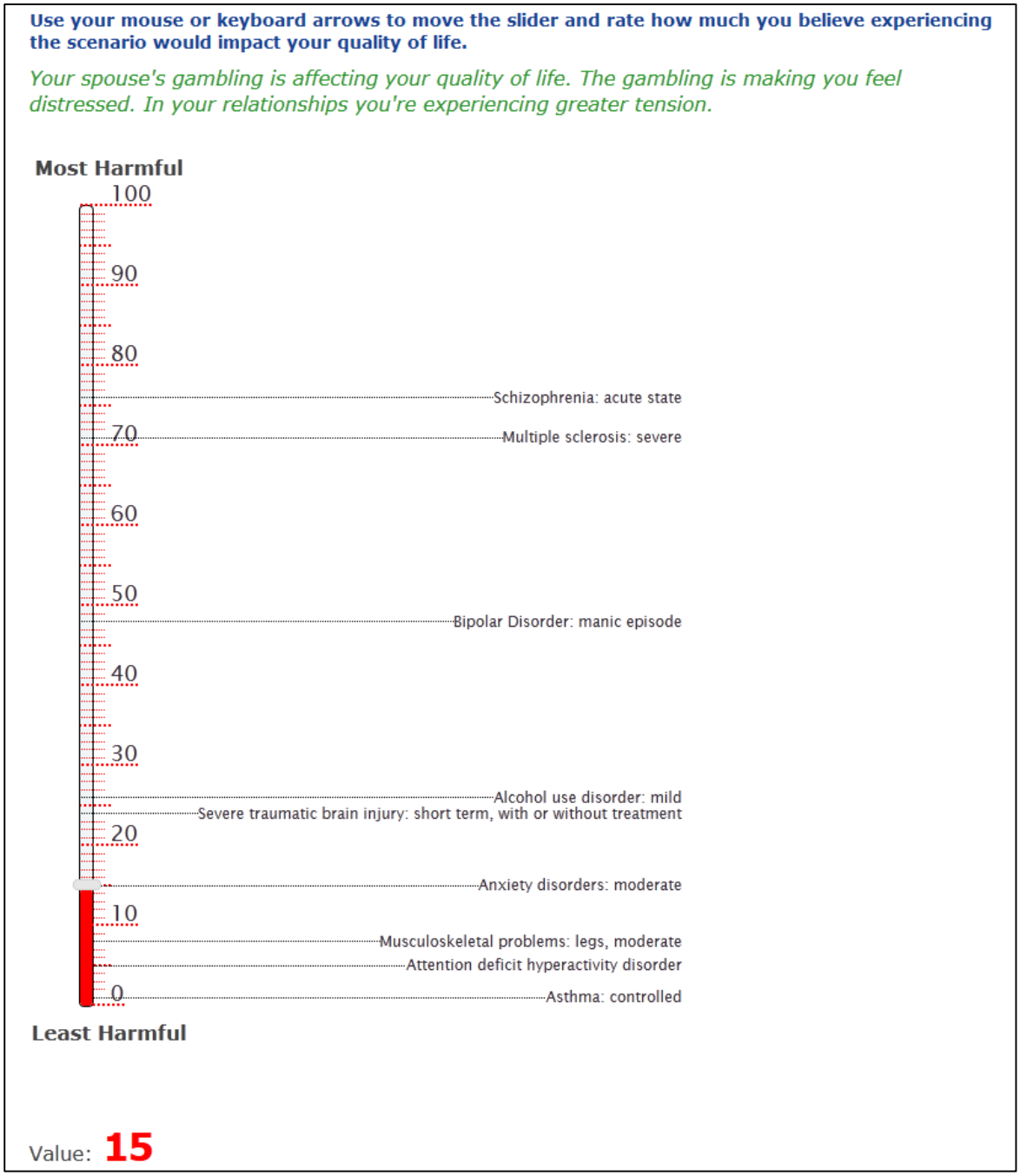


Figure 8. Screenshot of the VAS task

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 these other illnesses and health states. Detailed descriptors of the symptoms and living conditions of these alternative states were sourced from the Global Burden of Disease Study 2010 (Salomon et al., 2013) and presented to participants in pop-ups that appeared when the survey respondent hovered their computer cursor over each item.

2. Time trade-off (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 then 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 9 below shows an example of the TTO task participants as completed by participants.

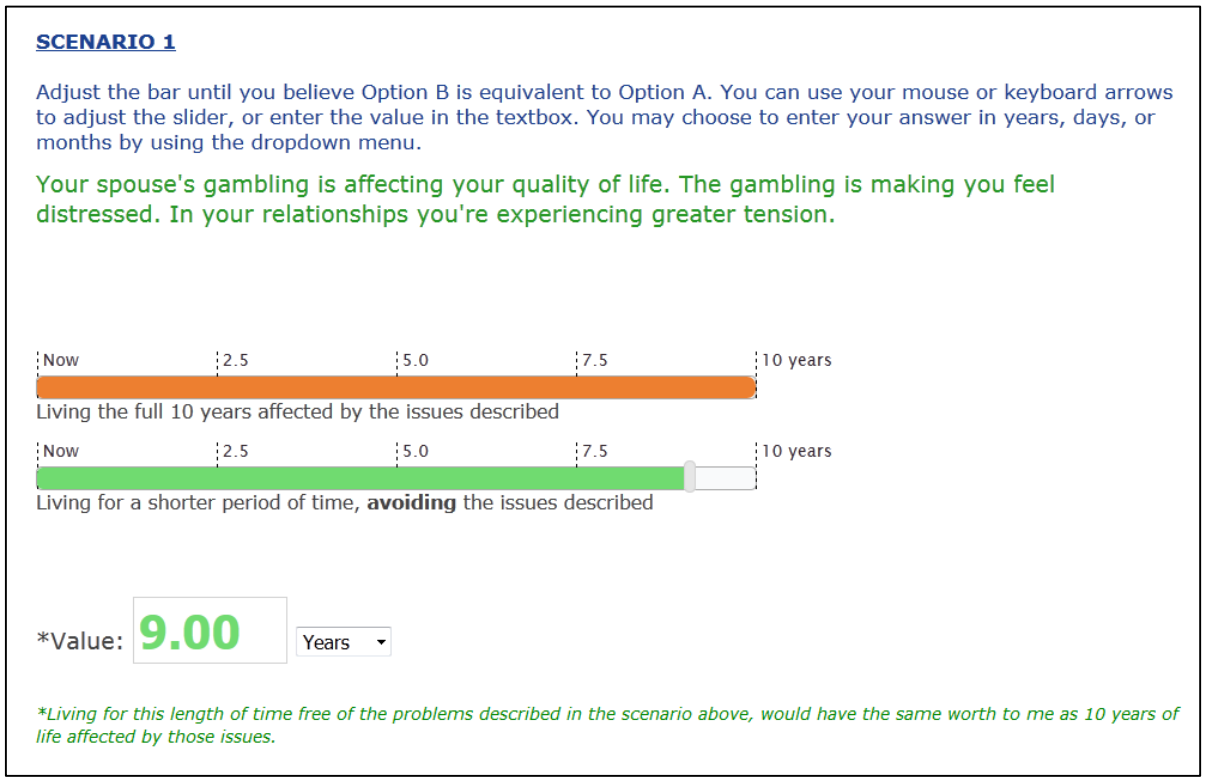


Figure 9. Screenshot of the TTO task

The TTO provided a useful counterpoint to the VAS. While 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.

3. Demographics and Lie-Bet scale

The survey closed with demographic questions, two questions from the Lie-Bet scale screening tool for problem gambling (Johnson et al., 1988), and a general question asking participants to indicate 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 prior surveys, and screening questions to target these groups. The first consisted of ‘experts’ classified as having significant professional experience with people experiencing problems with gambling and affected others (for example counsellors and support workers). Details for experts were obtained via networking and member lists obtained by the Victorian Responsible Gambling Foundation (VRGF). Experts were contacted via email by CQU researchers and provided a link to complete the survey, along with contact details for CQU should they have any questions. They were offered $40 gift card as compensation for their time. The remaining three groups: gamblers, affected

others, and general community members; were sourced from the Australian commercial recruitment panel sourced from 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 which 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 786 participants completed the survey. Table 17 below 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	124	128	**252**
Affected others	115	123	**238**
General population	123	122	**245**
Expert	29	22	**51**
Total	**391**	**395**	**786**

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. The majority of burden of disease research has sampled small groups of experts, such as health professionals due to their knowledge and experience with health conditions and their ability to complete the complex valuations tasks. The other most commonly sampled group are those experiencing the health condition, such as patients. Sampling these groups' means only small sample sizes can be achieved since the administration is often done face-to-face. Also, experts tend to elicit greater estimates and patients lower estimates. More recently, in the latest Global Burden of Disease 2010 study (Salomon et al, 2013), the general population was sampled via an online methodology. The estimates from the general population in this study were comparable to previous estimates with the other samples. In the current survey we sought to replicate a larger sample size, and elicit valuations from all types of groups sampled in BoD research: experts (e.g. gambling counsellors), people experiencing gambling harms (own or from another), and the general community (who were not currently experiences gambling harms). These latter 3 groups comprise of our 'general population'.

In reporting two groups are of interest: the general population, which combines all the online panel sample (ranging across no harms, own gambling harms, and harms from others) and the experts. Table 18 provides a demographic overview of these two participant groups.

Overall 396 respondents (50.4%) had contact in their personal lives with someone experiencing gambling-related harms, and this was higher for the expert sample (n=31, 60.8%) than the general population (n=365, 49.7%). In the general population sample, 129 (17.6%) had experienced some harm from their own gambling compared to 0 of the expert sample. Overall, 188 (23.9%) had experienced some form of harm from another's gambling, and this experience was only slightly higher for the expert sample. Measured by the Lie-Bet scale, 283 participants (36%) had possible gambling problems, the majority being from the general population sample (n=280).

Table 18. General population and expert sample demographic characteristics

Demographic		General population (%) (n = 735)	Experts (%) (n = 51)	Overall (%) (n = 786)
Gender	Male	50.1	27.5	48.6
	Female	49.9	72.5	51.4
Age	18-34 years	21.1	9.8	20.4
	35-54 years	38.0	68.6	39.9
	55+ years	41.0	21.6	39.7
	Mean years	49.3	47.1	49.2
Cultural background	Australian	70.2	66.7	69.9
	Other	29.8	33.3	30.1
ATSI	Yes	1.8	2.0	1.8
	No	98.2	98.0	98.2
Contact with person experiencing gambling-related harms – personally	Yes	49.7	60.8	50.4
	No	50.3	39.2	49.6
Contact with person experiencing gambling-related harms – professionally	Yes	15.2	96.1	20.5
	No	84.8	3.9	79.5
Experienced gambling-related harms due to own gambling	Yes	17.6	0	16.4
	No	82.4	100	83.6
Experienced gambling-related harms due to the gambling of someone else	Yes	23.7	27.5	23.9
	No	76.3	72.5	76.1
Problematic gambling (Lie-Bet screen)	No problem	61.9	94.1	64.0
	Possible problem gambling	38.1	5.9	36.0
State	Victoria	Not collected	93.6	-
	Other	Not collected	6.4	-

Each of the 12 valuations representing TTO and VAS ratings for 6 random condition descriptions 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, in total, we elicited 8820 HRQL evaluations from 735 (367 female) general population participants with a mean age of 48.8 (SD=14.9). 362 participants provided 4344 evaluations of vignettes describing harms arising from one's own gambling. 373 participants provided 4476 evaluations of harm to affected persons arising from another's gambling. Additionally, 51 experts provided 612 HRQL evaluations. 29 experts provided 348 evaluations of harm from one's own gambling, and 22 experts provided 264 evaluations of harm to others. Since each condition description was generated from a PGSI-stratified random sample of respondents from the prior harms survey, the data sets could be merged. That is, each HRQL rating could be matched to PGSI score and other measures corresponding to the condition description. Each of the condition descriptions was evaluated an average of 8.69 (SD=3.76) times by different participants.

Table 19. Number of HRQL evaluations generated by participant type and vignette group

Participant type	Participant N	Vignette group HRQL evaluations		Total HRQL evaluations
		Own gambling	Affected Other	
General Population	735	4,344	4,476	**8,820**
Expert	51	348	264	**612**
Total	**786**	**4,692**	**4,740**	**9,432**

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 stabilize the error variance of the bounded response variable. 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 harms 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. 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.

Accounting for test-retest reliability of raters

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. Because the response variable is bounded between zero and one, if a reasonably large proportion of respondents are not responding accurately, it has the potential to bias the estimates. Since HRQL was elicited twice, for each condition description, for each participant, we could calculate a form of test-retest reliability in the form of a correlation between TTO and VAS ratings. 92% of the experts had a correlation of greater than 0.5. However, only 45% of the general population sample had correlations above 0.5. These included a small proportion of respondents with a strong negative correlation, suggesting that at least some participants had misunderstood the use of the TTO 'slider', and were responding in the opposite direction for this task. Therefore, we considered schemes for the purpose of down-weighting participants with less reliable estimates. According to Crocker and Algina (1986, p. 133), *"Few, if any, standards exist for judging the minimum acceptable value for a test-retest reliability estimate*", and determining what is acceptable requires a consideration of the cost of different types of measurement errors. We calculated candidate mean HRQLs by PGSI using a logistic weighting function with a gradient of $b=5$, and with intercepts ranging from 0 to 0.6. The difference between the largest and smallest HRQL was <0.03 (on the [0,1] scale) for each PGSI category. This suggested that the mean estimates were robust to the test-retest reliability threshold, and an arbitrary threshold of 0.3 was applied to ensure respondents satisfied a minimal criterion of reliability.

Harms for those with a PGSI score of 0

Of the 118 cases in the survey of harm from one's own gambling with a PGSI score of 0, 47 (39%) reported one or more harms. This may be compared to 104 out of 157 cases (66%) in the low-risk

category that 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 gambling problems. Nevertheless, our methodology for assessing gambling harms in Victoria relies on existent datasets that rely on the PGSI as a prevalence estimate for harms – which constrains the scope of our measure of harm. We judged that using the 47 out of 118 cases to make an inference of harm on the very large proportion of gamblers who respond 0 on the PGSI in the Victorian 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. In other words, our measure of harm is conservative – making the assumption that PGSI 0 individuals suffer zero harm. We shall return to this point in the discussion.

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 harm. This wide variation is illustrated by Figure 10, 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 entail that the confidence intervals for the harm estimates would reflect primarily inter-rater disagreement, and would ignore most variability contributed by sampling the population of possible harm experiences. 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 incorporates both sources of variability via random sampling, increasing our confidence than 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 can be obtained, even given relatively high variation in both harm reports and in elicited judgements, through high sampling effort in both stages of data gathering.

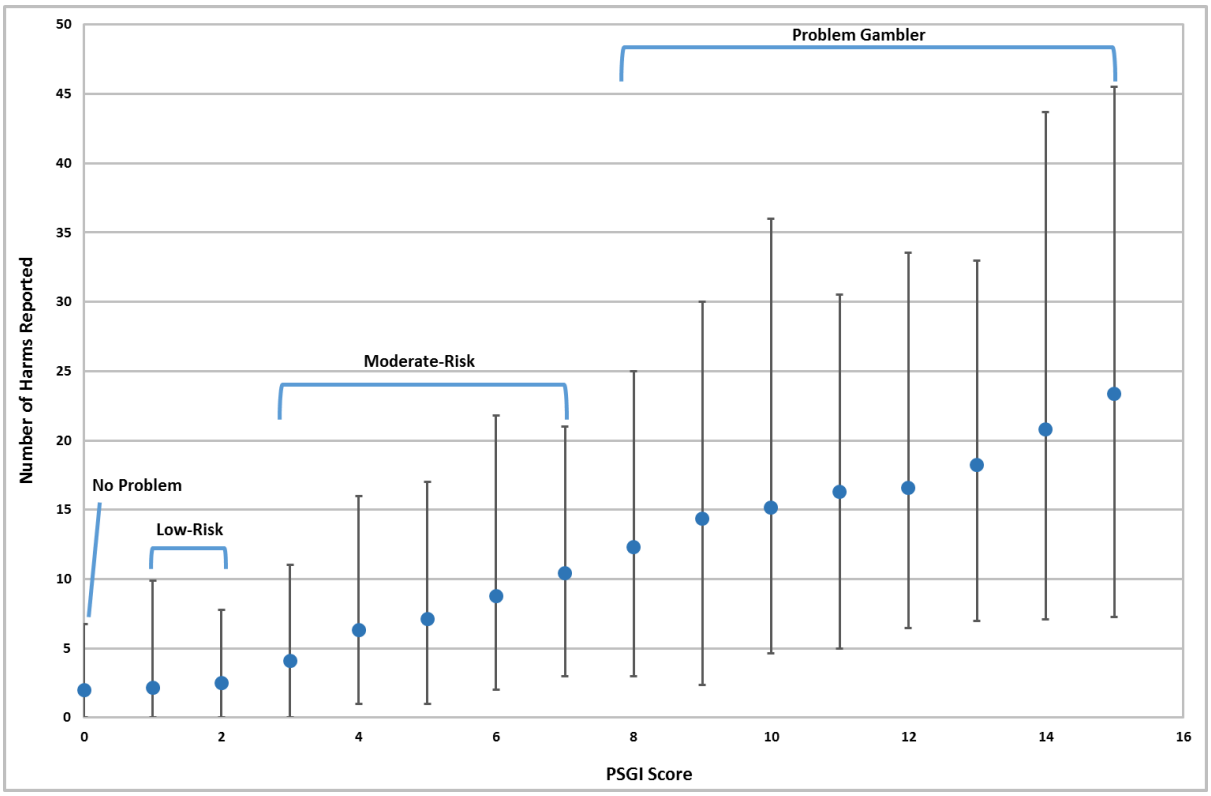


Figure 10. Number of harms reported by PGSI for harms from own gambling

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 2014 Study of Gambling and Health in Victoria (Hare, 2015) asks respondents whether they have experienced harm from their own gambling, and also whether they experienced harm from another's gambling. However, the PGSI score of the 2nd person is obviously not known. The harms survey conducted in this study obtained a PGSI score based on the perceptions of the affected other. However given that it is a second hand report, it cannot be compared directly to a PGSI score obtained via self-report. Therefore, while 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 Victorian 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 is 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 type of relationship between the two individuals. Our vignettes included a random sample of several forms of relationship (e.g. spouse, sibling, etc.). However, determining the moderating effect of relationship between 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 assume that the relationships nominated by respondents to the harms survey were a fair sample of those in the population.

Results

Figure 11 compares elicited harm valuations from the expert and general population samples, across the three PGSI categories. It can be seen that the pattern of harm valuations is similar for the two groups, except that experts tended to consistently provide weights of approximately .05 less than the general population. While 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 estimates overlap markedly for the moderate-risk and problem gambler categories, making it difficult to conclude that there is a definite difference in the two populations. 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 personal experience of some kind with gambling harms. Therefore, we proceeded by weighting responses in the two groups equally to create final pooled estimates. However, we also provide separate numerical data on the PGSI category harm estimates, weighted with respect to the Victorian population (Table 20).

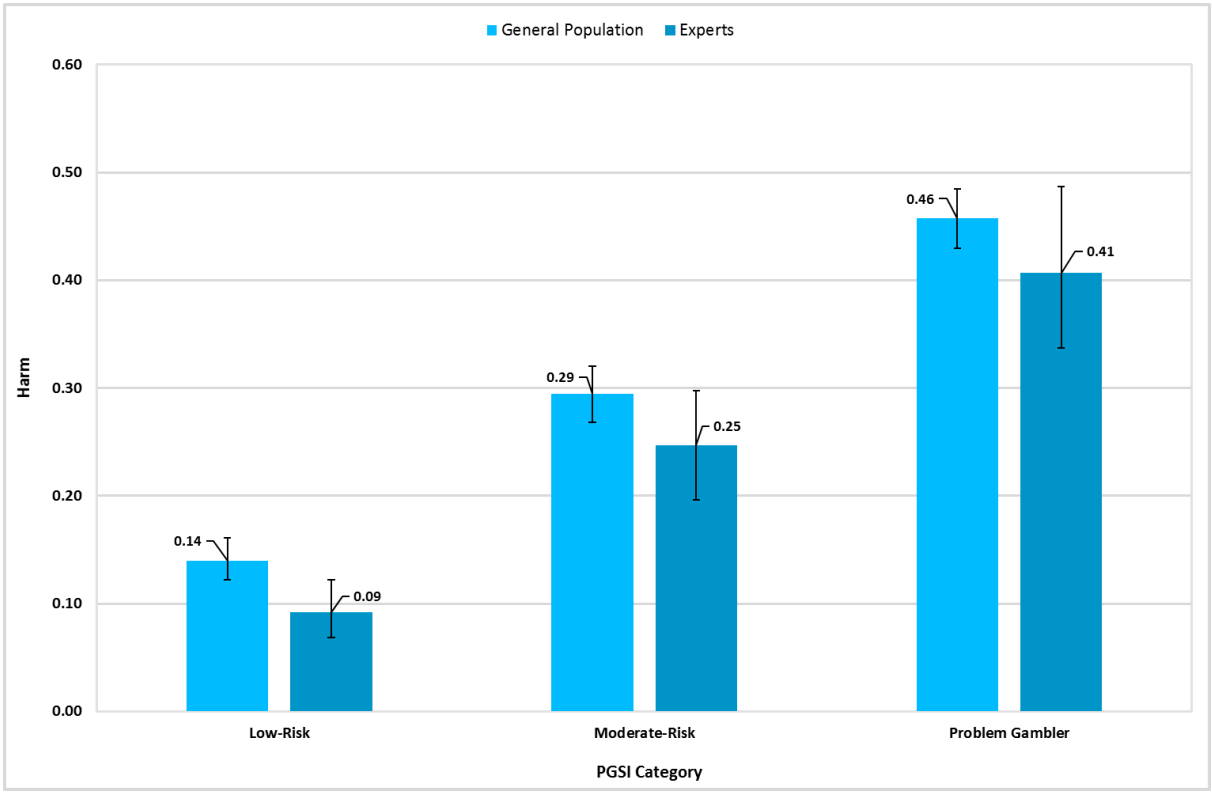


Figure 11. Harm by sample type and PGSI category

Note. Error bars indicate 95% confidence intervals of the mean.

Table 20. Harm 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	0.14	0.12	0.16	0.09	0.07	0.12	**0.13**
Moderate risk	0.29	0.27	0.32	0.25	0.20	0.30	**0.29**
Problem gambler	0.46	0.43	0.48	0.41	0.34	0.49	**0.44**

As well as considering differences in utility valuations between expert and general public respondents, we also examined other respondent characteristics (Table 21). Women tended to provide higher harm valuations, as did those who responded positively to the Lie-Bet scale. Those who had experienced harm from another's gambling tended to provide slightly lower estimates.

Table 21. Influence of respondent characteristics on elicited harm valuations

Predictors	*β*	*SE β*	*t*	*p*
Gender (female)	0.158	0.053	2.982	.003*
Had gambling experiences	0.026	0.053	0.488	.625
Experience at work with gambling problems	-0.140	0.074	-1.880	.060
Experienced harm from other's gambling	-0.268	0.089	-3.029	.002*
Experienced harm from own gambling	0.092	0.060	1.528	.127
Lie-Bet (gambling problems)	0.196	0.043	4.562	.000**

*p < .01, **p < .001

Figure 12 shows the estimated marginal means for the harm (1 – utility) weight with respect to the PGSI. This data is also provided numerically in Table 22. Vignettes generated from data associated with low-risk gamblers were associated with an average harm of 0.13. The harm rises quickly across the moderate risk category, and stabilizes at around 0.44 for the problem category. As Figure 12 illustrates, there were sharp jumps in harm between PGSI 2 and 3, as well as 7 and 8 – which correspond to the boundaries between the PGSI categories. Given that our analyses were not constrained by category boundaries in any way, this appears to provide independent support to PGSI category boundaries. PGSI scores of 3 and 7 were characterised by wider confidence intervals than other values, suggesting that these scores lie at points of inflection in the accelerating experience of harm as PGSI increases. For other regions of the PGSI; 1-2, 3-6, and 8+, the degree of harm experienced is relatively flat, with conditional mean estimates lying within common standard error bounds.

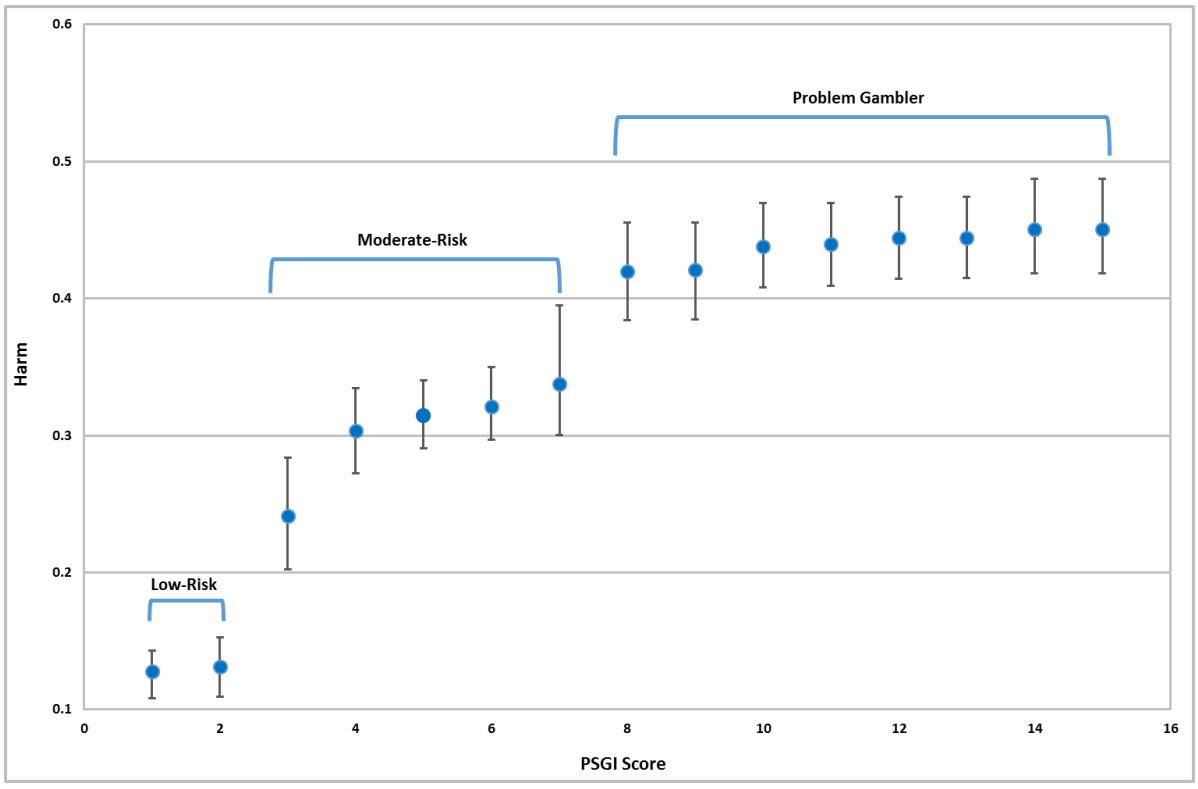


Figure 12. Harm from one's own gambling by PGSI

Note. Error bars indicate 95% confidence intervals of the mean.

Table 22. Harm by PGSI

PGSI score	PGSI category	Harm	Upper CI	Lower CI
1	Low risk	0.13	0.14	0.11
2		0.13	0.15	0.11
3	Moderate risk	0.24	0.28	0.20
4		0.30	0.33	0.27
5		0.31	0.34	0.29
6		0.32	0.35	0.30
7		0.34	0.40	0.30
8	Problem gambler	0.42	0.46	0.38
9		0.42	0.46	0.38
10		0.44	0.47	0.41
11		0.44	0.47	0.41
12		0.44	0.47	0.41
13		0.44	0.47	0.41
14		0.45	0.49	0.42
15+		0.45	0.49	0.42

For each PGSI category, the conditional harm means were weighted with respect to Victorian prevalence data, and averaged. This accounts for the greater prevalence of lower scores than higher scores within categories, and permits an interpretation of the category mean as the expected value for a randomly selected individual falling into that category. This data is provided in Table 20 for both experts and general population elicited harm, and for the pooled estimate.

We re-ran the isotonic regression of the elicited utilities on PGSI score separately for the VAS and TTO rating protocols in order to provide some indication of method variance. Figure 13 compares the bootstrapped regression functions for these two protocols. As the figure illustrates, TTO elicited harm was lower than the VAS. However, the shape of the regression function was similar across protocols. Harm estimates via both protocols tended to display a distinct jump between PGSI categories.

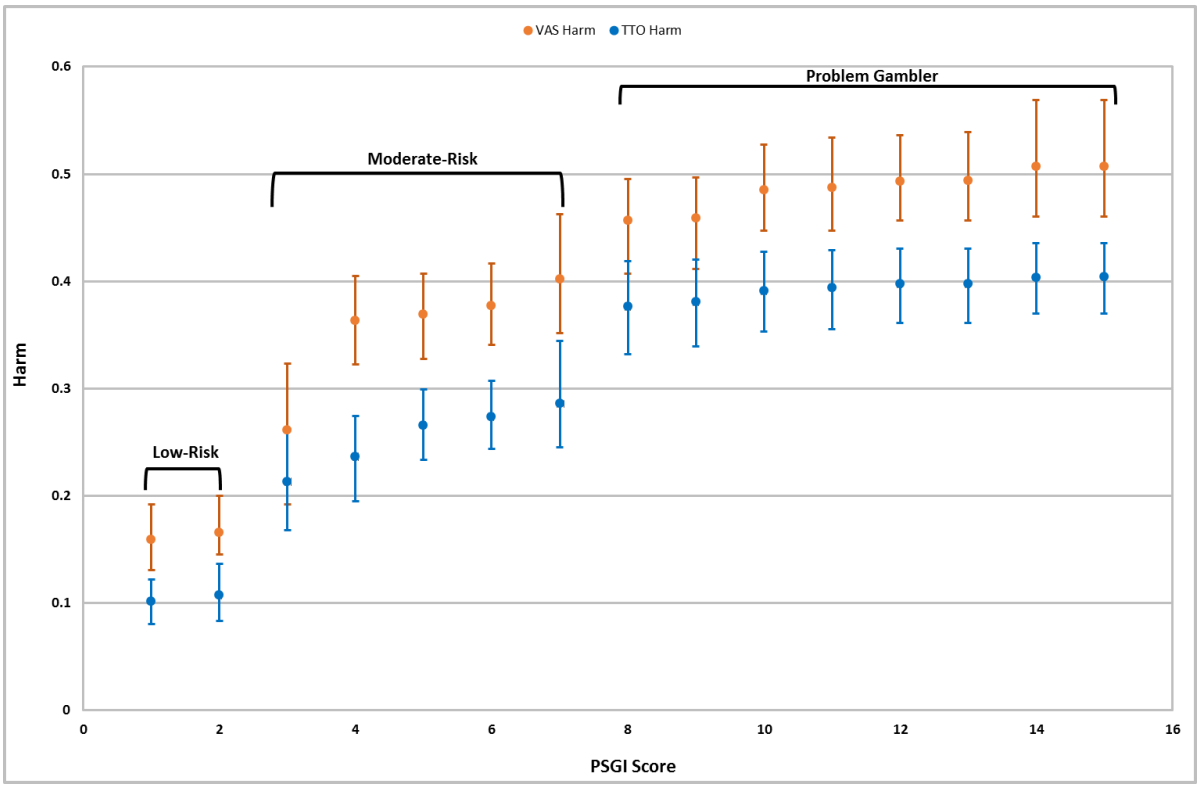


Figure 13. Harm by PGSI and valuation method

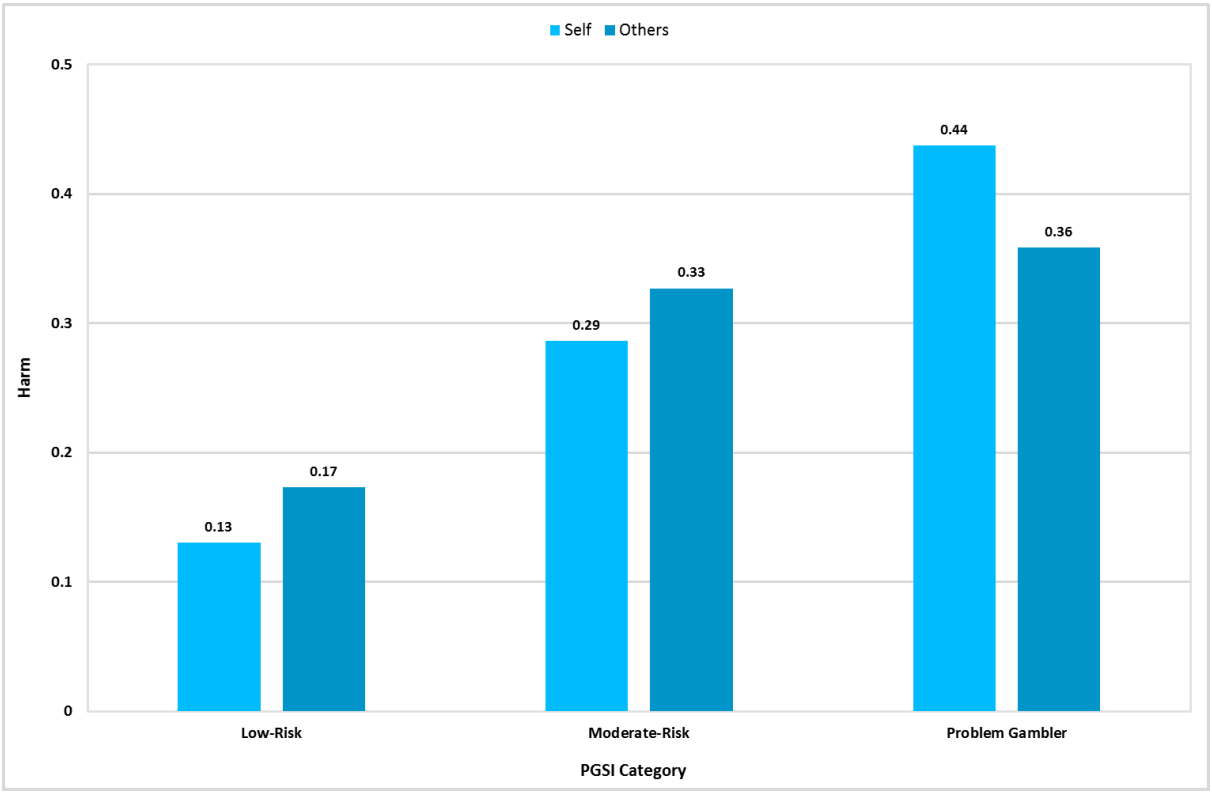


Figure 14. Harm to self and others by PGSI category

Figure 14 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 0.44 utility decrement personally, and furthermore can cause a 0.36 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. Nevertheless, it appears that proportionally more harm is caused to others in the two lower risk categories that the problem gambler category.

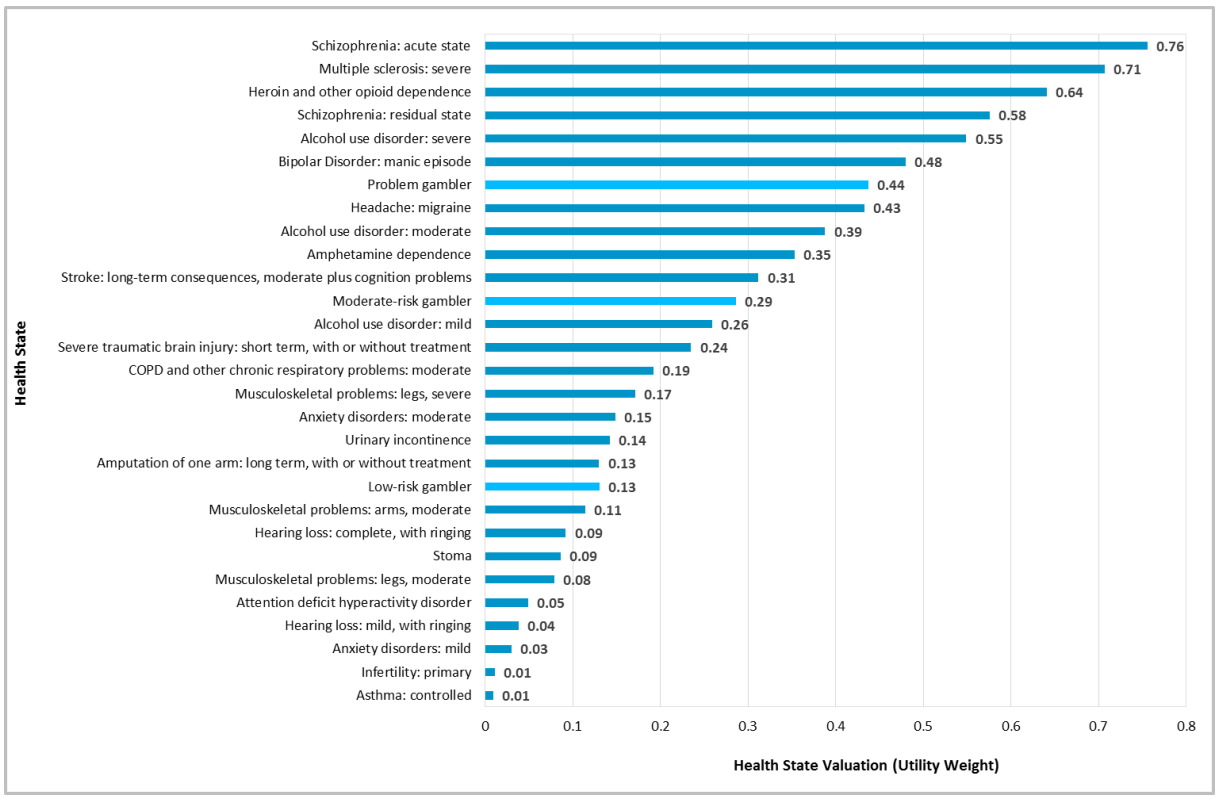


Figure 15. HRQL utilities for gambling compared to other health states

Figure 15 compares the estimated HRQL utilities for gambling with other conditions from the 2010 Global Burden of Disease Study (GBD; Salomon et al., 2013). This set of utility estimates is particularly comparable to those of the present study since (a) they used similar direct elicitation protocols to obtain their weightings, and (b) conditions from the GBD study were incorporated as reference points in the VAS. As illustrated, problem gambling is considered less severe than severe alcohol use disorder, or heroin/opioid dependence, but more severe than moderate alcohol use disorder or migraine headache. Moderate-risk gamblers suffer harm (as defined by HRQL utilities), slightly higher than mild alcohol use disorder, but less so than amphetamine dependence. Finally, low-risk gambling status yields similar utility decrements to that of hearing loss or moderate anxiety disorders.

Assessing population level harm from gambling in Victoria

Method

The final stage of the study quantified the ongoing harm per year in terms of $QALY_1$ – the aggregate years of healthy life lost each year due to gambling in the Victorian adult population. Our aim was to effect $QALY_1$ 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 results in ongoing harm due to being in the state itself (comparable via our $QALY_1$ approach), but also results in an increased likelihood of experienced 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 in the case of alcohol, it being a major public health concern in Victoria that is often compared to 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 $QALY_1$ 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 Victorian Burden of Disease 2001 Study (Department of Health & Human Services, 2005).

Calculating $QALY_1$ – annual years of life lost to disability (YLD_1)

The $QALY_1$, or annual years lost due to disability (YLD_1), for harm due to gambling and other comparable health states were calculated using the formula:

YLD_1 = (Victorian Adult Population x Annual Prevalence (%) for Health State) x Utility Weight

*As this is only for a single year it is referred to as YLD_1. The estimated Victorian adult population used in analysis was 4,390,438.

Meaningful YLD_1 estimates depend on a clear definition of the health state. In burden of disease 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 YLD_1 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 YLD_1 estimate. An extensive search was conducted to source matching prevalence figures for the health states of interest to compare against gambling 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.

While the current report focuses on the gambling harm to the Victorian adult population, the gambling harm utility weights are applicable to the Australian population as vignette descriptions and participants completing the survey were sampled Australia wide. Therefore, the analyses conducted for this report can

be applied to the Australian population when utilising national data sources (e.g. national gambling prevalence by PGSI category).

Data sources

2014 Study of Gambling and Health in Victoria

The source for estimates of the Victorian adult population data was the 2014 Study of Gambling and Health in Victoria (Hare, 2015). The Victorian Responsible Gambling Foundation conducted this survey with a representative sample of 13,554 Victorians aged 18 years and over. This dataset was provided to the researchers by VRGF, who then appended a gambling harm utility variable into the database by PGSI category: low-risk (0.13), moderate-risk (0.29), and problem gambler (0,44). Analysis of the Victorian population level harm due to gambling were conducted from this dataset weighted to be representative of the adult population (see Hare, 2015 for details of the weighting approach). Having no gambling harm utility score, non-gamblers and no-problem gamblers were excluded from analysis.

The utility weights for harms by PGSI category were multiplied by PGSI prevalence estimates to yield $QALY_1$ YLD_1 estimates. Weighted data to the Victorian population was used in generating the following figures in our analysis:

- Victorian adult population – 4,390,438.
- Population and prevalence by PGSI category – See Table 23.
- YLD_1 by demographics and PGSI category.
- YLD_1 by participation in gambling activities and PGSI category.
- YLD_1 for others harmed by gamblers.

Utility weights

As discussed previously, utility weights for 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 following studies:

- Global Burden of Disease Study 2010 (Salomon et al., 2013).
- Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005).
- Global Burden of Disease Study 1990 (Murray & Lopez, 1996).
- ‘Dutch weights’ from the 1996 Dutch project on ‘Disability Weights for Diseases’ (Stouthard, Essink-Bot, Bonsel, Barendregt, & Kramers, 1997).

Prevalence of other health states in the Victorian population

Wherever possible, the percentage annual prevalence of other health states were sourced for Victoria from population studies. In the instance that these figures were not available at the Victorian level they were sourced from Australian population studies with the assumption that national rates apply to Victoria. When neither Victorian nor Australian estimates were available we sourced from countries of a similar culture with the assumption that prevalence figures would be comparable to Australia. The sources of prevalence estimates used in calculations include:

- 2007 National Survey of Mental Health & Wellbeing (Slade et al., 2009).
- Victorian Population Health Survey 2011-2012 (Department of Health, 2014).
- The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) 2012 (Tanamas et al., 2013).
- 2007–2008 National Health Survey (NHS; ABS, 2009).
- Survey of Disability, Ageing and Carers (SDAC) 2009 (ABS, 2011).
- Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005).
- Global Burden of Disease Study 2010 (Salomon et al., 2013).
- Other studies or publications:
    - The Epidemiology of Major Depressive Disorder: Results From the National Comorbidity Survey Replication (NCS-R; Kessler et al., 2003).
    - A dynamic population model of disease progression in COPD (Hoogendoorn et al., 2005).
    - Health states for schizophrenia and bipolar disorder within the Global Burden of Disease 2010 Study (Ferrari et al., 2012).
    - Epilepsy across the spectrum: Promoting health and understanding (England, 2012).
    - A Systematic Review of the Prevalence of Schizophrenia (Saha, Chant, Welham, & McGrath, 2005).
    - Data from the AUDIT-C from a 2014 online study conducted by CQUniversity Experimental Gambling Research Laboratory (EGRL) – See Appendix 4 for details of this survey.

To calculate the QALY1 YLD1 for other health conditions the same formula was used as gambling harm: Victorian Adult Population (4,390,438) x Prevalence (%) for Health State) x Utility Weight. See Appendix 4 for the figures used in calculation of QALY1 YLD1 for gambling harms and the other health conditions.

Results

Prevalence of gambling problems in Victoria

Figure 16 compares the prevalence of gambling to other health-related conditions in Victoria. Mild gambling problems are more prevalent than major depression, but considerably less prevalent than harmful use of alcohol or anxiety disorders. Clinical levels of gambling problems are about half as prevalent as the comparable alcohol dependence category.

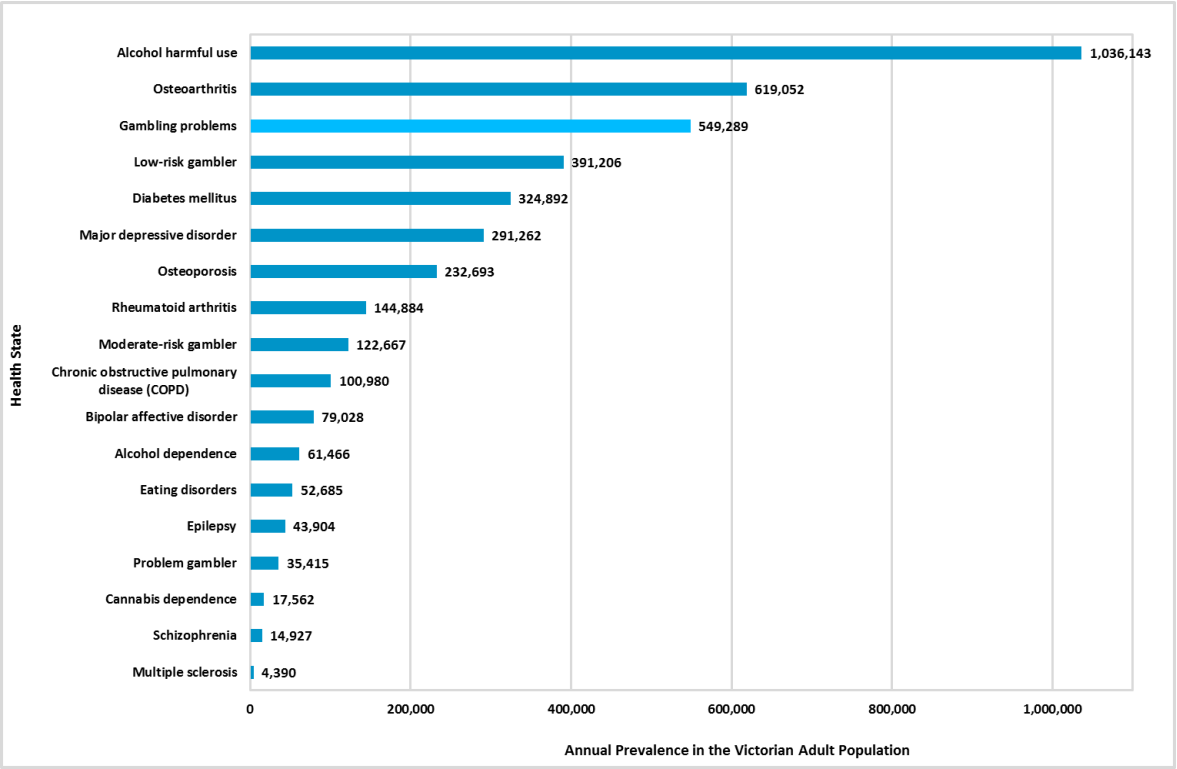


Figure 16. Annual prevalence of gambling problems (by PGSI category) and other health states in the Victorian adult population

Harm to self

The aggregate years of healthy life lost each year ($QALY_1$ YLD_1) in the Victorian adult population due to one's own gambling, for those experiencing gambling problems or at low or moderate risk, were calculated to be 101,675 years. Table 23 displays the total harm and YLD_1 in the Victorian adult population by PGSI category.

Table 23. Harm by PGSI category

Problem Gambling Severity Index (PGSI)	Utility weight	Prevalence in population (%)	Total of Victorian population	Years of life lost to disability (YLD_1)	Proportion of YLD_1 (%)
Low risk	0.13	8.9	391,206	51,082	50.24
Moderate risk	0.29	2.8	122,667	35,099	34.52
Problem gambler	0.44	0.8	35,415	15,494	15.24
Total gambling problems		**12.5**	**549,289**	**101,675**	**100**

As shown in Figure 17, half of the total YLD_1 due to one's own gambling harms are attributable to the Victorian adult population who are at low-risk for developing gambling problems (50.2%), followed by those at moderate-risk (34.5%) and problem gamblers (15.2%).

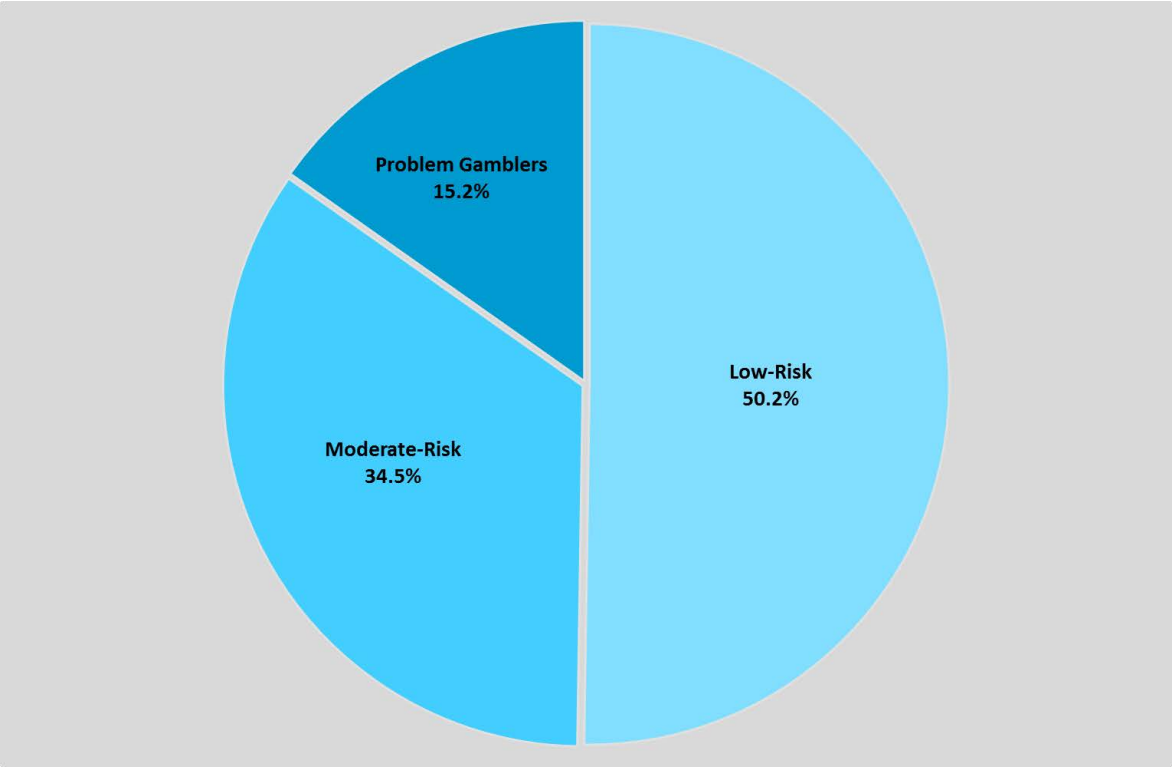


Figure 17. Proportion of harm in Victorian population by PGSI risk category

Harm to others

The QALY1 YLD1 measure of harm caused by another's gambling in the Victorian adult population is estimated at 16,230 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 .22. The 2014 Study of Gambling and Health in Victoria (Hare, 2015) asks respondents whether they have encountered harm from another's gambling, and it is this estimate of prevalence of harm to others that is applied here.

Table 24 shows the population weighted estimated number of individuals harmed by another's gambling, for each category of gambler (of the affected person). The likelihood of being affected by another's gambling increases as the PGSI of the affected person increases, reflecting clustering of gamblers in families and other social units. As shown in the last column of Table 24, the majority of harm to others nevertheless occurs to non-gamblers and non-problem gamblers, due to the higher prevalence of these groups in the population. In assessing the YLD1 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 YLD1 total.

Table 24. Harms from someone else's gambling and PGSI category to the adult Victorian population in the last 12 months

PGSI category	Population harmed in the last 12 months	Percentage (%) of Victorian adult population harmed	Total Victorian adult population	Percentage (%) of PGSI group harmed in last 12 months	Disability weight	Years of life lost to disability (YLD_1)
Non-gamblers	12,009	0.37%	801,431	1.50%	0.22	2,642
Non-problem gamblers	36,559	1.12%	1,921,643	1.90%	0.22	8,043
Low-risk gamblers	25,207	0.77%	341,722	7.38%	0.22	5,545
Moderate-risk gamblers	11,967	0.37%	154,811	7.73%	0.22	2,633
Problem gamblers	5,538	0.17%	52,640	10.52%	0.22	1,218
Total	**91,280**	**2.79%**	**3,272,246**	**2.79%**	**0.22**	**16,230***

* Total YLD_1 excludes YLD_1 attributable to moderate-risk and problem gamblers.
Source: Derived from variable (Harm_13_1) in the Study of Gambling and Health in Victoria 2014 (Hare, 2015). Sub-sampling population weight applied (n=3,272,246).

The combined total of YLD_1 to the Victorian adult population due to harms from someone else's gambling and one's own gambling is 117,905 years. Figure 18 below displays the proportion of the total harm to self and others, with the majority (86.2%) of YLD_1 being attributable to one's own gambling. However, as noted above, this figure is likely weighted in favour of harm to self, given the ambiguities resulting from limited information on the type of gambler who is likely to affect another, and in resolving the co-morbidity issue of being both a problematic gambler and an affected other.

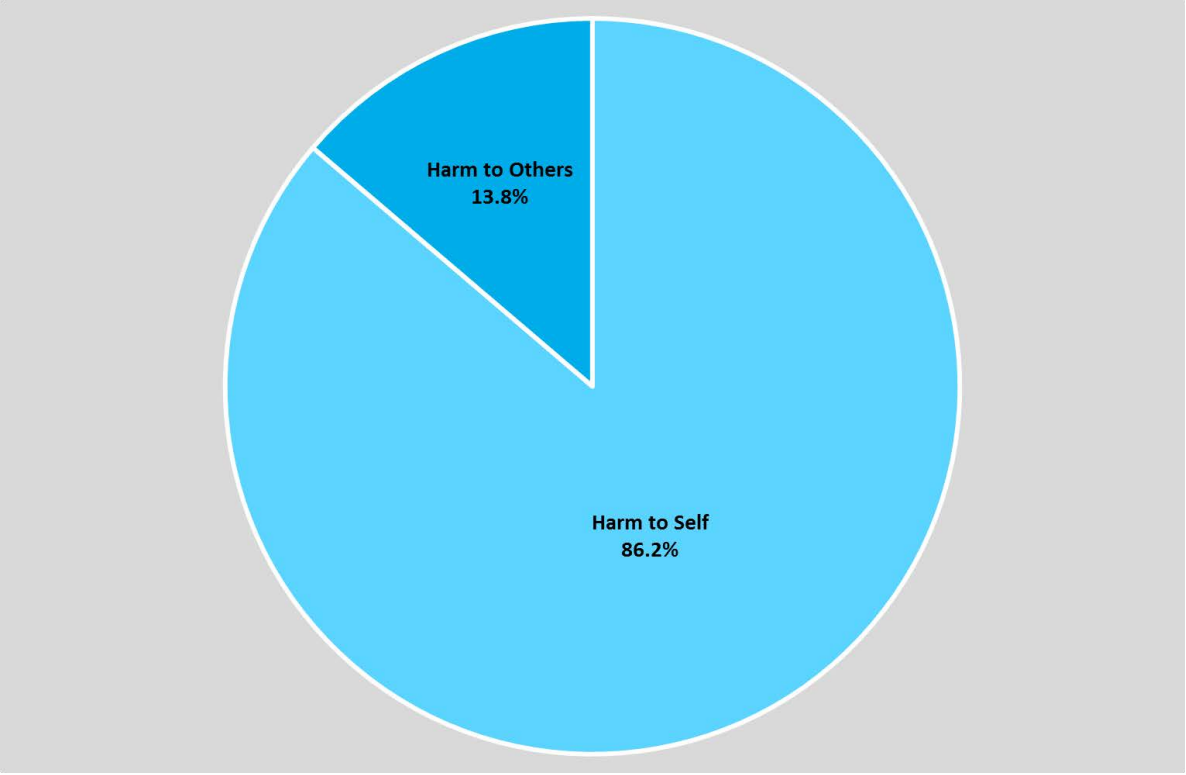


Figure 18. Proportion of total harm to Victorian adult population – harm to self and others

Assessing relative impact of the domains of harm

In the item–response theoretic analyses of the harm 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 that counts of indicators within each domain to be an acceptable measure for the degree of harm in that domain. Although 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 ($F(4199) = 60.55$, $p < .001$). 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, relationship and emotional/psychological, and 'other' harms appeared to be the most instrumental in driving HRQL valuations. 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 harm domains to HRQL utility

Predictors	*β*	*SE β*	*t*	*p*
Intercept	-1.156	0.039	-29.732	.000*
Financial harms	-0.002	0.014	-0.158	.875
Relationship harms	0.090	0.016	5.636	.000*
Emotional/psychological harms	0.061	0.015	4.089	.000*
Health harms	0.030	0.018	1.662	.097
Work/study harms	0.009	0.025	0.377	.706
Other harms	0.111	0.025	4.372	.000*

*p < .001

Figure 19 shows the relative contribution of harm domains to HRQL using the RF method. Compared to the regression approach, it tends to allocate harms more equitably across the domains. However, in common with the regression approach, the RF method also suggests that relationships and emotional/psychological harms tend to be most important.

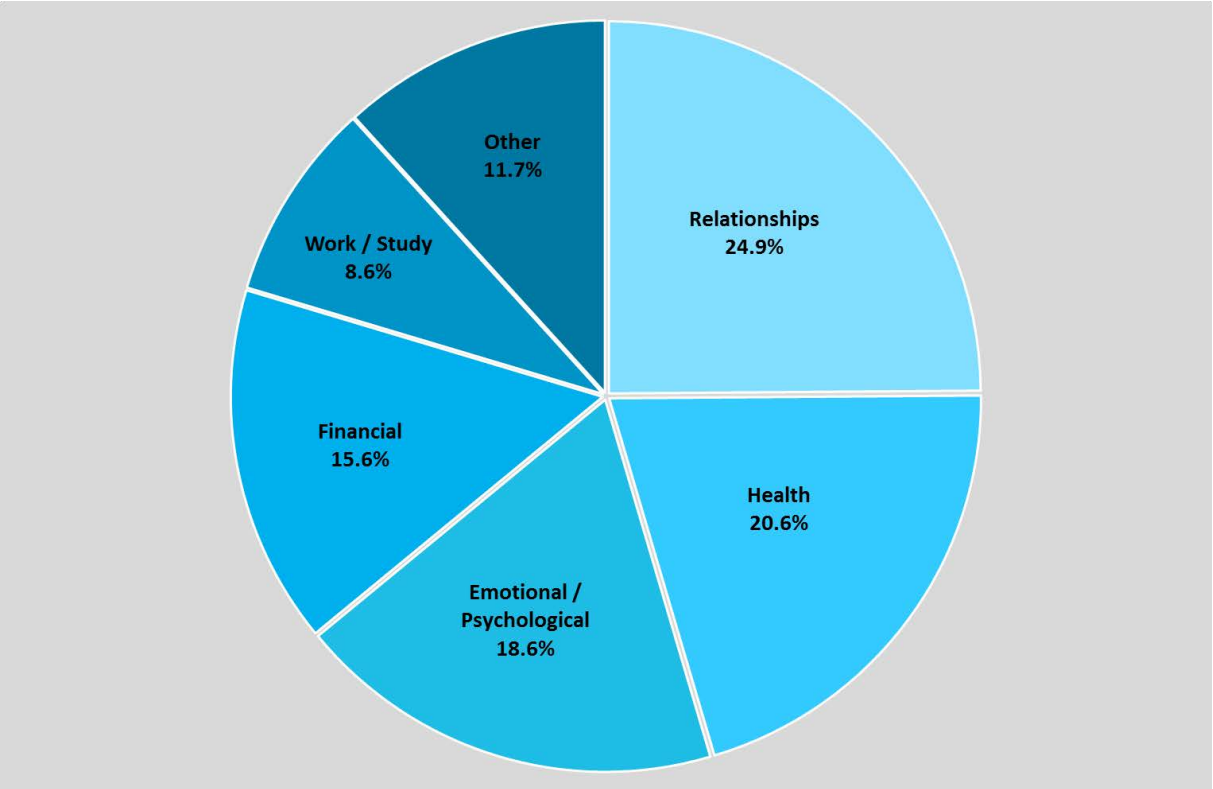


Figure 19. Proportion of harm contributed by each domain, as calculated by random forest variable importance measure

Harm compared to other health states

The annual YLD_1 in the Victorian adult population were 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 4 for a summary of these calculations and data sources. Figure 20 plots YLD_1 for other health conditions against harm from one's own gambling problems. The YLD_1 in the Victorian adult population due to a major depressive disorder (mild, moderate, and severe cases) or alcohol use and dependence were both approximately 1.5 times higher than that of gambling problems. Gambling generates significantly more ongoing harm than a wide range of other conditions. Alcohol has similar utility decrements to gambling, but yields a higher aggregate YLD_1 due to the relatively higher prevalence. Depression, on the other hand, has a lower prevalence than gambling problems (when low-risk gamblers are included), but yields a higher aggregate YLD_1 due to a higher decrement to utility.

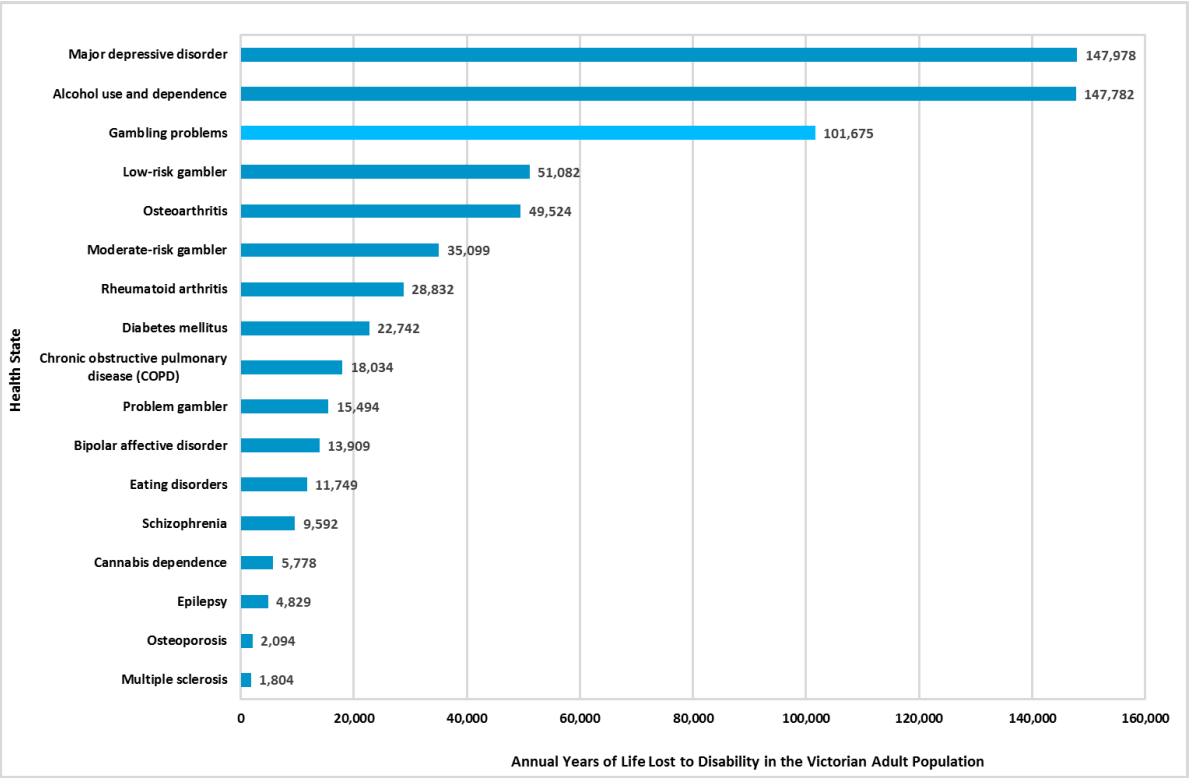


Figure 20. YLD_1 in the Victorian adult population – gambling problems versus other health states

Harm and demographic differences

A descriptive analysis was conducted to identify the relative contribution of total years of life lost to disability annually in the Victorian adult population due to own gambling problems by demographic characteristics and PGSI category. For analysis the harm utility weights were added to the dataset from the 2014 Study of Gambling and Health in Victoria (Hare, 2015) by PGSI category (Low-Risk = 0.13; Moderate-Risk = 0.29; Problem Gambler = 0.44) and cross tabulations run by utility weight (count, mean) x PGSI x demographic. Annual YLD_1 were then calculated for each cell, as well as the percentages of the overall YLD_1.

Females in the low-risk category contribute nearly one-third (28.9%) of the YLD_1, followed by males at moderate-risk (25.3%), and males at low-risk (21.3%). See Table 26 for calculations and Figure 21 for a graphical representation.

Table 26. Gambling harms to the Victorian adult population by gender and PGSI category

PGSI category	Males		Females		Total
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	
Low risk	21,686	21.3	29,396	28.9	51,082
Moderate risk	25,716	25.3	9,383	9.2	35,099
Problem gambler	9,443	9.3	6,051	6.0	15,494
Total	**56,845**	**55.9**	**44,830**	**44.1**	**101,675**

Weighted population bases: Total (n= 549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Gender: male (n=271,751), female (n=277,538).

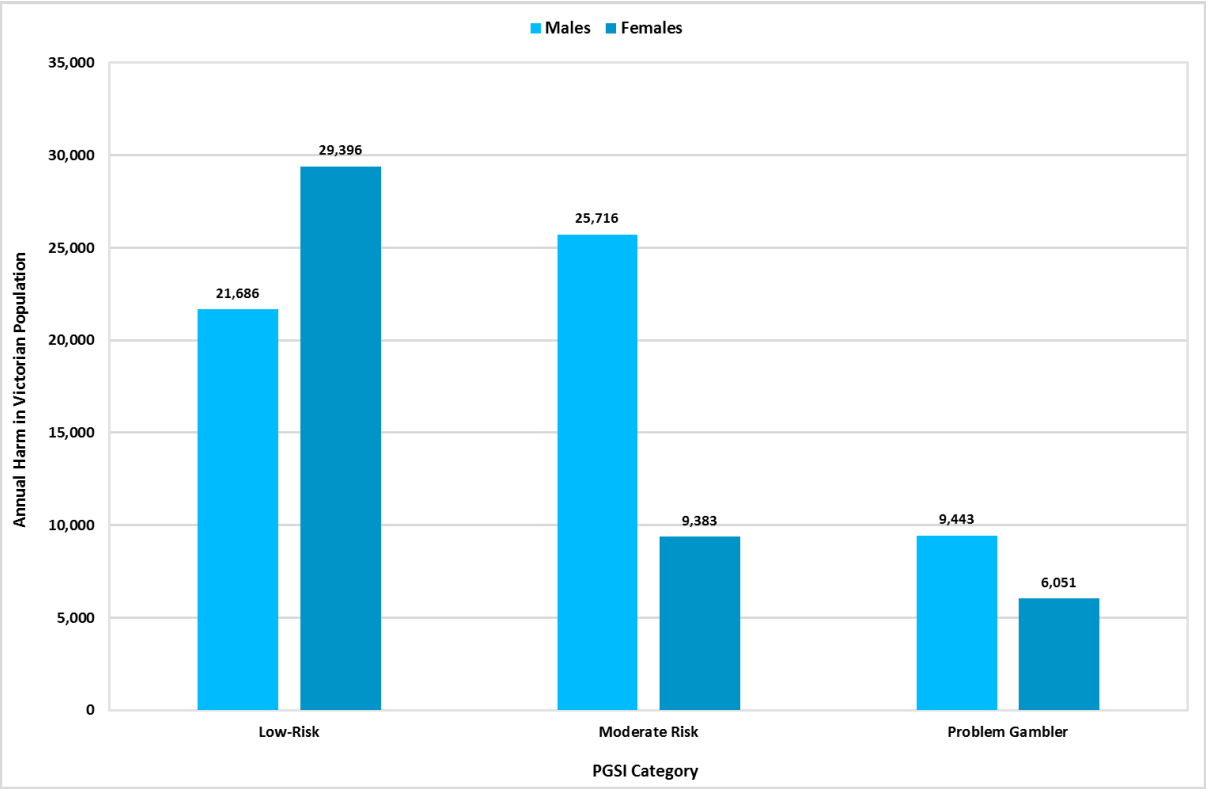


Figure 21. Gambling harms to the Victorian adult population by gender and PGSI category

Descriptive statistics were calculated with respect to age categories at a fine scale (Table 27) and course scale (Table 28). 18-24 year olds, 40-44 year olds, and 65-69 year olds each contribute between 12-15% to the total YLD_1. Low-risk gamblers aged 55 year and above account for just over one-fifth of YLD_1 due to own gambling. As shown in Table 27, gambling harms to those aged 55+ in all categories account for just over 40% of all harm.

Cross-tabulation by age, gender, and PGSI (Table 28) revealed females 55 years and over with low-risk gambling problems accounted for the largest proportion of the harms of any single category (14.5%), followed by males 55 years and over with moderate-risk gambling problems (13.8%).

Table 27. Gambling harms to the Victorian adult population by age range and PGSI category

Age range	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
18-24 years	6,643	6.5	4,527	4.5	1,437	1.4	12,607	12.4
25-29 years	4,671	4.6	656	0.6	604	0.6	5,931	5.8
30-34 years	2,580	2.5	2,114	2.1	1,060	1.0	5,753	5.7
35-39 years	3,582	3.5	2,783	2.7	3,344	3.3	9,709	9.6
40-44 years	4,088	4.0	3,807	3.7	3,441	3.4	11,336	11.2
45-49 years	2,136	2.1	1,339	1.3	732	0.7	4,207	4.1
50-54 years	5,102	5.0	2,805	2.8	2,133	2.1	10,040	9.9
55-59 years	2,675	2.6	1,514	1.5	662	0.7	4,852	4.8
60-64 years	5,442	5.4	1,238	1.2	843	0.8	7,524	7.4
65-69 years	6,981	6.9	7,412	7.3	599	0.6	14,992	14.8
70-74 years	2,481	2.4	5,785	5.7	113	0.1	8,380	8.3

Age range	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
75-79 years	3,869	3.8	678	0.7	131	0.1	4,677	4.6
80-84 years	593	0.6	204	0.2	396	0.4	1,192	1.2
85 years +	239	0.2	100	0.1	0	0.0	338	0.3
18-34 years	***13,893***	***13.7***	***7,298***	***7.2***	***3,100***	***3.0***	***24,291***	***23.9***
35-54 years	***14,909***	***14.7***	***10,871***	***10.7***	***9,650***	***9.5***	***35,429***	***34.8***
55 years +	***22,280***	***21.9***	***16,931***	***16.7***	***2,744***	***2.7***	***41,954***	***41.3***
Total	**51,082**	**50.3**	**34,962**	**34.4**	**15,494**	**15.3**	**101,538**	**100**

Weighted population bases: Total (n=548,809). PGSI: low-risk (n=391,206), moderate-risk (n=122,187), problem gambler (n=35,415). Age range: 18-24 (n=69,978), 25-29 (39,447), 30-34 (n=29,566), 35-39 (n=44,804), 40-44 (n=52,487), 45-49 (n=22,711), 50-54 (n-53,752), 55-59 (n=27,294), 60-64 (n=47,935), 65-69 (n=80,734), 70-74 (n=39,481), 75-79 (n=32,395), 80-84 (n=6,156), 85 + (n=2,175).

Table 28. Gambling harms to the Victorian adult population by gender x age range and PGSI category

Gender x age range	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
Male 18-34 years	8,017	7.9	5,599	5.5	2,757	2.7	16,372	16.1
Female 18-34 years	5,877	5.8	1,699	1.7	343	0.3	7,919	7.8
Male 35-54 years	6,182	6.1	6,097	6.0	5,253	5.2	17,532	17.2
Female 35-54 years	8,727	8.6	4,773	4.7	4,397	4.3	17,897	17.6
Male 55 years +	7,487	7.4	14,020	13.8	1,433	1.4	22,940	22.6
Female 55 +	14,793	14.5	2,910	2.9	1,311	1.3	19,014	18.7
Total	**51,082**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,675**	**100**

Weighted population bases: Total (n=549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Gender x Age Range: male 18-34 (n=87,263), female 18-34 (n=51,728), male 35-54 (n=80,662), female 35-54 (n=93,565), male 55+ (n=109,612), female 55+ (n=126,458).

The majority of YLD_1 due to harms from one's own gambling were for the Victorian adult population who were identified as non-indigenous (96.3%). Based on current prevalence data, YLD_1 expressed as a proportion of the population were varied between indigenous and non-indigenous groups by PGSI category. Approximately 50% of the gambling harm within the indigenous Victorian population is attributable to problem gamblers whereas within the non-indigenous Victorian population 50% is accounted for those at low-risk for gambling problems. However, as this was a general population survey, the relatively small number of participants in the indigenous category entails that strong conclusions on differential effects should not be drawn.

Table 29. Gambling harms to the Victorian adult population by ATSI status and PGSI category

Aboriginal, Torres Strait Islander, or Australian South Sea Islander	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
Yes	1,034	1.0	777	0.8	1,924	1.9	3,735	3.7
No	50,007	49.2	34,322	33.8	13,570	13.4	97,899	96.3
Total	**51,041**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,634**	**100**

Weighted population bases: Total (n=548,978). PGSI: low-risk (n=390,895), moderate-risk (n=122,667), problem gambler n=35,415). Aboriginal, Torres Strait Islander, or Australian South Sea Islander: Yes (n=15,032), No (n=533,946).

Nearly 80% of the total annual YLD_1 due to gambling harms were among the Victorian adult population residing in urban areas (Southern, Eastern, and Northern Melbourne), while the remainder were attributable to regional and rural areas.

Table 30. Gambling harms to the Victorian adult population by region and PGSI category

Victorian region	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
Barwon/Great South Coast	2,271	2.2	940	0.9	1,510	1.5	4,720	4.6
Southern Melbourne – Bayside/Frankston-Mornington Peninsula	11,885	11.7	11,311	11.1	4,571	4.5	27,766	27.3
Eastern Melbourne/Inner East	11,875	11.7	8,060	7.9	5,533	5.4	25,468	25.0
Gippsland	1,922	1.9	1,523	1.5	481	0.5	3,926	3.9
Goulbourne Valley/Hume	2,024	2.0	1,879	1.8	53	0.1	3,955	3.9
Grampians	2,193	2.2	2,058	2.0	331	0.3	4,582	4.5
Inner North Melbourne/North	16,136	15.9	8,786	8.6	2,918	2.9	27,840	27.4
Loddon-Mallee	2,777	2.7	543	0.5	97	0.1	3,418	3.4
Urban	***39,896***	***39.2***	***28,156***	***27.7***	***13,022***	***12.8***	***81,074***	***79.7***
Regional/rural	***11,186***	***11.0***	***6,943***	***6.8***	***2,472***	***2.4***	***20,601***	***20.3***
Total	**51,082**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,675**	**100**

Weighted population bases: Total (n=549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Barwon/Great South Coast (n=24,125), Southern Melbourne (n=140,995), Eastern Melbourne/Inner East (n=131,759), Gippsland (n=21,140), Goulbourne Valley/Hume (n=22,183), Grampians (n=24,743), Inner North Melbourne/North (n=160,954), Lodden-Mallee (n=23,389). Total Urban (n=433,708). Total Regional/rural (n=115,581).

YLD_1 in the Victorian adult population due to harms from one's own gambling were distributed fairly equally among the employed and unemployed population (48.6% and 51.0% YLD_1 respectively). Similarly, half of the employed and unemployed population contributing to the YLD_1 were low-risk gamblers (25.4% and 24.6% YLD_1 respectively). See Table 31 for details.

Table 31. Gambling harms to the Victorian adult population by employment status and PGSI category

Employment status	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
Employed	25,842	25.4	14,386	14.1	9,151	9.0	49,379	48.6
Not employed	25,019	24.6	20,595	20.3	6,206	6.1	51,819	51.0
Unknown	221	0.2	118	0.1	137	0.1	476	0.5
Total	**51,082**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,675**	**100**

Weighted population bases: Total (n=549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Employment status: employed (n=269,104), not employed (n=277,765), unknown (n=2,420).

Around 40% of YLD_1 due to harms from one's own gambling occur to those earning $32k or below: the lowest income category. This is about 5 times more than the harms occurring to the highest earners ($78k or above). However, this effect is primarily due to greater number of low-income individuals (214,449) than high-income individuals (46,706).

Table 32. Gambling harms to the Victorian adult population by personal income and PGSI category

Personal income	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
No or negative income to $599 ($0-$31,199)	18,628	18.3	17,278	17.0	4,989	4.9	40,895	40.2
$600-$799 ($31,200-$41,599)	3,238	3.2	3,173	3.1	2,776	2.7	9,187	9.0
$800-$999 ($41,600-$51,999)	5,091	5.0	1,973	1.9	1,256	1.2	8,320	8.2
$1,000-$1,499 ($52,000-$77,999)	4,171	4.1	3,378	3.3	1,776	1.7	9,325	9.2
$1,500 or over ($78,000 or over)	4,613	4.5	2,213	2.2	1,594	1.6	8,421	8.3
Don't know	7,293	7.2	2,969	2.9	492	0.5	10,754	10.6
Refused	8,048	7.9	4,115	4.0	2,610	2.6	14,773	14.5
Total	**51,082**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,675**	**100**

Weighted population bases: Total (n=549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Personal income: No or negative income to $599 ($0-$31,199) (n=214,449), $600-$799 ($31,200-$41,599) (n=42,234), $800-$999 ($41,600-$51,999) (n=48,755), $1,000-$1,499 ($52,000-$77,999) (n=47,807), $1,500 or over ($78,000 or over) (n=46,706), Don't know (n=67,357), Refused (n=81,981).

Only a small proportion of the YLD_1 due to harms from one's own gambling were for adults in the Victorian population who migrated to Australia in the last 5 years (2.7%). See Table 33.

Table 33. Gambling harms to the Victorian adult population by recent migration (last 5 years) and PGSI category

Migrated to Australian in last 5 years	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
Yes	1,623	1.6	1,018	1.0	144	0.1	2,785	2.7
No	49,381	48.7	34,081	33.6	15,095	14.9	98,557	97.3
Total	**51,003**	**50.3**	**35,099**	**34.6**	**15,239**	**15.0**	**101,341**	**100**

Weighted population bases: Total (n=548,105). PGSI: low-risk (n=390,605), moderate-risk (n=122,667), problem gambler (n=34,832). Migrated to Australian in last 5 years: yes (n=16,314), no (n=531,791).

As shown in Table 34, approximately one-quarter of the YLD_1 due to gambling harms were for the Victorian adult population who spoke a language other than English (26.3%).

Table 34. Gambling harms to the Victorian adult population by language other than English spoken and PGSI category

Language other than English spoken	Low risk		Moderate risk		Problem gambler		Total	
	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm	YLD_1	% Pop. harm
English only	39,381	38.7	24,020	23.6	11,526	11.3	74,927	73.7
Speaks other language	11,701	11.5	11,079	10.9	3,968	3.9	26,748	26.3
Total	**51,082**	**50.2**	**35,099**	**34.5**	**15,494**	**15.2**	**101,675**	**100**

Weighted population bases: Total (n=549,289). PGSI: low-risk (n=391,206), moderate-risk (n=122,667), problem gambler (n=35,415). Language other than English spoken: English only (n=411,888), speaks other language than English (n=137,401).

Discussion

HRQL utility weights for gambling

This chapter described the first attempt to measure the impact of gambling harms on an individual's quality of life, drawing upon ideas and methodologies from public health research. Treating gambling as a health condition presents 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. Our sampling approach incorporated uncertainty contributed by sampling the population of harm experience profiles, and also the variation in elicited harm judgements. This allowed us to calculate error bounds for our mean utility estimates – something that to our knowledge has not been previously done in the population health literature. Our results are nevertheless limited by the available data, most particularly with respect to the prevalence data – which was gathered with the aim of assessing the prevalence of gambling problems, not gambling harm. We shall mention these limitations in the following discussion.

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 slightly lower estimates than the general population. However, these differences were within the bounds of statistical error. Interestingly, this difference is 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 Weerdt, & de Cock, 2000; Ustun et al., 1999).

It is unclear whether general population or expert judgements should be considered the most valid. On one hand, experts would be assumed to be more familiar with gambling problems and should be able to imagine a more realistic life-situation given a verbal description. Also, experts tend to be more reliable in their estimates. However, definitions of QALYs involve a social consensus judgement regarding the desirability or undesirability of a condition. From this point of view, it is the perceptions 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. While there is lower reliability of any single participant in the general public, the large number of respondents that can be efficiently recruited balances this. We therefore conclude that large-sample general public recruitment for this form of task is the more desirable alternative, both in terms of validity – being more easily interpreted as a 'social consensus', and on statistical grounds. 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 slightly lower harm estimates for the lower categories – e.g. the estimate for the low-risk category would have been .115 instead of .13 due to experts rating this condition as .09.

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 – or harm. The harm valuations tended to exhibit moderate jumps between each of the PGSI harm categories. This result appears to support the validity of the PGSI category cut-offs, and makes summaries of harm with respect to categories more informative. 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; Schwarzinger, 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 a wider variety of protocols. 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 in the results, 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. Despite our analyses in the previous chapter that confirmed that the PGSI was functioning relatively consistently via 1st hand and 2nd hand reporting, it may be that 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 utility weights for the three categories of problem gambler with comparable conditions from the 2010 Global Burden of Disease Study (Salomon et al., 2013). 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 migraine headache, appears plausible. These figures confirm that the experience of gambling problems results in a severe impact on a gambler's quality of life – on a par with severe substance dependence. The impact 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 harms at the lower end of the severity spectrum to improve our understanding of the degree of harm experienced by this large group of individuals.

Population level harm from gambling in Victoria

An important finding of the study was regarding 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 was occurring at the less severe end of the spectrum. Although problem gamblers' quality of life is affected 3-4 times more than a low-risk gambler, this is far outweighed by the much larger prevalence of individuals in the low-risk category. We have noted some concerns with our estimates for low-risk gamblers: this category was supported by relatively fewer condition descriptions, and was also subject to a greater discrepancy between expert and general population respondents. However, even allowing for a wide margin of error in estimating the relative harm caused to the low-risk group, the conclusion appears unmistakable that they contribute a major, if not the majority, of gambling-related harm. Although Australia endorses a public health approach to gambling problems and harms, the research emphasis appears to have nevertheless been influenced by the medical model, leading to a

concentration of attention on the most severe category of problem gamblers. This perspective is akin to treating the impact of alcohol on health to be restricted only to full-blown alcoholics. Our study confirms that attention should be refocused from problem gamblers to gambling problems – which are concentrated in some individuals, but nevertheless spread widely throughout the population.

The prevalence of gambling-related harm in Victoria is relatively high across the spectrum of severity. Compared to high-profile mental illnesses, low-risk gambling problems are more prevalent than depression, and problem gambling is more than twice as common as schizophrenia. Compared to alcohol, low-risk gambling problems are present at almost half the prevalence of harmful use of alcohol, which is one of the most prevalent conditions affecting population health in Australia. This ratio is similar at the most severe end of the spectrum, with problem gambling occurring at just over half the prevalence of alcohol dependence. Therefore, based on prevalence alone, gambling is an issue of similar magnitude to other health conditions of national importance.

Harm caused to others

Combining prevalence information from previous studies with the HRQL impact assessed in the present study, gambling was found to contribute to 101,675 years of life lost to disability (YLD_1) 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 gambling. Additionally, we estimated a figure of 16,230 YLD_1 caused to affected individuals connected to people with gambling problems. Given that previous research has suggested that each gambler may affect over 5 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 Victorian survey who indicated that they had been harmed by another's gambling in the last 12 months (2.79%), which appears to conflict with the notion that gamblers affect 5 or more other persons. Also, contributing to this relatively low estimate, our utility decrement used for harm to others was 0.22 – which is based on the assumption that the gambler causing the harm was a randomly selected individual from the population of Victorian persons 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 harm and quality of life

Decomposing the contributions of the different domains of harm to overall quality of life impact is mathematically challenging, due to the high degree of co-variation between different domains. For example, an individual who is suffering financial harms is very often 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 relationship harms, emotional/psychological harms, and 'other harms' were instrumental in determining utility decrements. Note that 'other' included a range of harms involving crime, shame, neglect of children and other responsibilities. Therefore, these can be conceptually grouped with relationship and psychological harms. Interestingly, financial harms and work/study harms had no relationship to quality of life impact, once controlling for psychosocial harms. This is despite the fact that financial harms displayed the most reliable relationship to increasing gambling problems. This finding was broadly supported by the more conservative Random Forest approach for ascertaining the relative contributions of each domain. 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. Financial harms and work/study harms, in contrast, are not directly experienced – and important to the degree to which they cause subsequent psychosocial impact. 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 Victorian community. Comparisons to other conditions confirm that gambling has an impact in the same class as depression, and excessive alcohol consumption. The aggregate impact of gambling problems exceeds that of cannabis dependence, schizophrenia, epilepsy, and eating disorders 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. 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 development of clinical gambling problems. Our results suggest that, like alcohol, gambling generates significant harms to individuals below the threshold of clinical addiction. This result should contribute to a re-orientation towards how to reduce the aggregate burden of harm, rather than being restricted 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 and females. Our findings with respect to age were more surprising; with almost half (41%) of harm in total being attributable to those aged over 55. Broken down by age and gender simultaneously, females aged 55+ made the greatest single contribution (14.5%) to the aggregate burden of harm – almost double the contributions of males aged 18-34 years (7.9%). Gambling research has previously tended to focus on young men, who are more likely to develop gambling problems than other demographic groups. However, the relatively high prevalence of low-level harms among older women, and the fact that they make up a large proportion of the Victorian population, entails that this group is at least equally deserving of attention. The burden of harm was relatively equally distributed with respect to LOTE, regional versus metropolitan areas, employment status, and income. That is, the proportion of harm attributable to these groups was approximately in line with population prevalence.

Discussion

Victoria faces the same fundamental challenges as other States and Territories 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 burden of disease (BoD) 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 Victoria should not just lead long lives but also healthy lives. Health includes 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 impact on these domains, and can subtract significantly from the happy and productive enjoyment of life that Victorian's value.

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.

In the first phase of the research, qualitative studies were conducted with gambling treatment providers, other health experts, and active gamblers to understand the potentially unique harms that Victorians are experiencing. These studies are important to create a detailed taxonomy of harms, sampling from the diverse experiences and perspectives of various groups. In the 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 helps to identify a diverse set of harms that fall outside the physical disabilities commonly explored with BoD methodologies. In the third phase, a survey explored the frequencies of 73 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" these 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 Value studies. The results revealed that the experience of problem gambling by a single person is approaching the level of severe alcohol abuse 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 whole Victorian community. 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 is attributable to "low risk" gamblers. These are gamblers who are at the lower-end of experiencing gambling problems, but who nevertheless represent a sizable percentage of the whole Victorian population.

As a result, the accumulation of harms, in terms of the decrement to quality of life, is largest for the sum of people in the low-risk category, and this group includes roughly half of all harms. Accepting this at face-value implies the need for a radical rethink of our approach to gambling policy. Most 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. However, 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, there appears to be a need to develop a broader public health focus on gambling problems rather than the traditionally 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 Victorian community. There was an estimated 111,697 Years-of-Life-Lost to Disability (YLD) due to harms from gambling in 2014. Subjectively, this can be interpreted as a total of 1,362 lives that are perceived as barely worth living due to the experience of gambling problems. Although some of this 'burden of harm' is concentrated in problem gamblers, our results suggest that at a population level the majority of harm is 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.

These Victorian estimates put the total burden of harms occurring to gamblers approaching the level of major depressive disorders, and alcohol use and dependency; and greater than most of the other common health conditions we were able to compute. 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 by state and federal government into reducing the full extent of gambling-related harms, and provide important direction to guide where these efforts should be targeted.

References

Aaronson, N. K., Acquadro, C., Alonso, J., Apolone, G., Bucquet, D., Bullinger, M., … Ware, J. E. (1992). International quality of life assessment (IQOLA) project. *Quality of Life Research*, *1*(5), 349–351. doi: 10.1007/BF00434949

Abbott, M., Binde, P., Hodgins, D., Pereira, A., Volberg, R. & Williams, R. J. (2013). *Conceptual Framework of Harmful Gambling: An international collaboration*. Retrieved from Ontario Problem Gambling Research Centre (OPCRC) website.

Abbott, M., Volberg, R., Bellringer, M. & Reith, G. (2004). *A Review of Research on Aspects of Problem Gambling.* Retrieved from Auckland University of Technology Gambling Research Centre for Responsibility in Gambling Trust website: http://www.glasgowheart.org/media/media_34551_en.pdf

Abbott, M. W. & McKenna, B. G. (2005). Gambling and problem gambling among recently sentenced women in New Zealand prisons. *Journal of Gambling Studies*, *21* (4), 559-581. doi: 10.1007/s10899-005-5563-5

Abbott, M., & Volberg. R. (1999). *Taking the pulse on gambling and problem gambling in New Zealand: A report on phase one of the 1999 national prevalence survey*. Wellington: Department of Internal Affairs

Abdollahnejad, M., Delfabbro, P. & Denson, L. (2013). The clustering of psychiatric disorders in high-risk gambling populations. *Journal of Gambling Studies, 30* (4), 933-947. doi: 10.1007/s10899-013-9392-7

Australian Bureau of Statistics (ABS). (2011). Disability, Ageing and Carers, Australia: Summary of Findings. Australian Bureau of Statistics. Retrieved from http://www.abs.gov.au/AUSSTAT-S/abs@.nsf/DetailsPage/4430.02009?OpenDocument#Publications

Australian Bureau of Statistics (ABS). (2009). National health survey: summary of results, 2007-08. Australian Bureau of Statistics. Retrieved from http://apo.org.au/node/14367

Adams, P. J., Raeburn, J. & De Silva, K. (2009). A question of balance: Prioritizing public health responses to harm from gambling. *Addiction*, *104* (5), 688-688. doi: 10.1111/j.1360-0443.2008.02414.x

Adams, P. J. & Rossen, F. (2012). A tale of missed opportunities: Pursuit of a public health approach to gambling in New Zealand. *Addiction*, *107* (6), 1051-1056. doi: 10.1111/j.1360-0443.2012.03800.x

Aditi, G., Michael, A. K., Ingrid, M. M., Scott, D., Kelly, H., Ann, M. M., Sayantani, M., Dante, P. & Justine, R. (2011). From use to abuse: When everyday consumption behaviours morph into addictive consumptive behaviours. *Journal of Research for Consumers*, *19*. 1-8. Retrieved from http://jrconsumers.com/academic_articles/issue_19/ Addiction_Academic3.pdf

Afifi, T O., Brownridge, D. A., Macmillan, H. & Sareen, J. (2010). The relationship of gambling to intimate partner violence and child maltreatment in a nationally representative sample. *Journal of Psychiatric Research*, 44, 331-337. doi: 10.1016/j.jpsychires.2009.07.010

Allcock, C. (1995, September). Some ponderings on pathological gambling: An introspective essay. In High Stakes in the Nineties. Sixth National Conference of the National Association for Gambling Studies (pp. 87-95).

Arnold, D., Girling, A., Stevens, A., Lilford, R. (2009). Comparison of direct and indirect methods of estimating health state utilities for resource allocation: Review and empirical analysis. *British Medical Journal, 339*. doi: 10.1136/bmj.b2688

Ariyabuddhiphongs, V. (2013). Problem gambling prevention: Before, during, and after measures. *International Journal of Mental Health and Addiction*, *11* (5), 568-582. doi: 10.1007/s11469-013-9429-2

Ariyabuddhiphongs, V. (2012). Older adults and gambling: A review. *International Journal of Mental Health and Addiction*, *10* (2), 297-308. doi: 10.1007/s11469-011-9325-6

Attride-Stirling, J. (2001). Thematic networks: an analytic tool for qualitative research. *Qualitative Research, 1* (3), 385-405

Australian Institute of Health and Welfare, (2009). *Problem gambling among those seeking homelessness services.* (Report No. HOU 215). Canberra: AIHW

Australian Institute of Health and Welfare, (2014). *Australia's health 2014*. (Report No 14). Canberra: AIHW

Badia, X., Monserrat, S., Roset, M., & Herdman, M. (1999). Feasibility, validity and test–retest reliability of scaling methods for health states: The visual analogue scale and the time trade-off. *Quality of Life Research, 8*(4), 303–310. http://doi.org/10.1023/A:1008952423122

Bakken, I. J., Gøtestam, K. G., Gråwe, R. W., Wenzel, H. G. & Øren, A. (2009). Gambling behavior and gambling problems in Norway 2007. *Scandinavian Journal of Psychology*, *50* (4), 333-9. doi: 10.1111/j.1467-9450.2009.00713.x

Baltussen, R. M., Sanon, M., Sommerfeld, J., and Wurthwein, R. (2002). Obtaining disability weights in rural Burkina Faso using a culturally adapted visual analogue scale. *Health Econ, 11*:155–163.

Barbist, M.-T., Renn, D., Noisternig, B., Rumpold, G., & Hofer, S. (2008). How do medical students value health on the EQ-5D? Evaluation of hypothetical health states compared to the general population. *Health and Quality of Life Outcomes, 6*, 111. http://doi.org/10.1186/1477-7525-6-111

Barlow, R. E., Bartholomew, D. J., Bremner, J. M., & Brunk, H. D. (1972). *Statistical Inference Under Order Restrictions*. Wiley: London.

Barmaki, R. (2010). Gambling as a social problem: On the social conditions of gambling in Canada. *Journal of Youth Studies*, *13* (1), 47-64. doi: 0.1080/13676260903173470

Bartley, C. A. & Bloch, M. H. (2013). Meta-analysis: Pharmacological treatment of pathological gambling. *Expert Review of Neurotherapeutics, 13*(8), 887-94. doi: 10.1586/147371 75.2013.814938

Bartley, M., Blane, D., & Montgomery, S. (1997). Socioeconomic determinants of health: Health and the life course: why safety nets matter. *BMJ, 314*(7088), 1194.

Battersby, M., Tolchard, B., Scurrah, M. & Thomas, L. (2006). Suicide ideation and behaviour in people with pathological gambling attending a treatment service. *International Journal of Mental Health and Addiction*, *4* (3), 233-246. doi: 10.1007/s11469-006-9022-z

Beck, C. T. (1999). Facilitating the work of a meta-analyst. *Research in Nursing and Mental Health, 22* (6), 523-530

Becona, E., Lorenzo, M. D. C., & Fuentes, M. J. (1996). Pathological gambling and depression. *Psychological Reports, 78*(2), 635-640. doi: 10.2466/pr0.1996.78.2.635

Bennett, K. J., Torrance, G. W., Boyle, M. H., Guscott, R., & Moran, L. A. (2000). Development and testing of a utility measure for major, unipolar depression (McSad). *Quality of Life Research, 9*(1), 109–120. doi: 10.1023/A:1008952602494

Bennett, K. J., Torrance, G. W., Moran, L. A., Smith, F., & Goldsmith, C. H. (1997). Health state utilities in knee replacement surgery: the development and evaluation of McKnee. *The Journal of*

Rheumatology, 24(9), 1796–1805. Retrieved from: http://europepmc.org/abstract/med/9292806

Bertossa, S. & Harvey, P. (2012). Measuring problem gambling in Indigenous communities: An Australian response to the research dilemmas. Australian Aboriginal Studies, 2, 21-30. Retrieved from: http://search.informit.com.au/documentSummary;dn=020685154111 478;res=IELIND

Bicego, B. (2002). When a woman's best friend is doing her harm. *Aboriginal and Islander Health Worker Journal*, 26 (5), 7-10. doi: http://search.informit.com.au/documentSummary;dn=185546535002321;res=IELIND

Binde, P. (2011). What are the most harmful forms of gambling? Analyzing problem gambling prevalence surveys. *CEFOS Working Papers, 12.* Retrieved from: http://hdl.ha ndle.net/2077/26165

Bissitt, D., Crate-Lionel, P. & Lambert, R. (1988). Winsome, Lose Some: Beating the Gaming Machine. *Probation Journal*, *35* (3), 116-117. doi: 10.1177/026455058803500316

Black, D. W., Shaw, M., Mccormick, B. & Allen, J. (2013). Pathological gambling: Relationship to obesity, self-reported chronic medical conditions, poor lifestyle choices, and impaired quality of life. *Comprehensive psychiatry*, *54* (2), 97-104. doi: 10.1016/j.comppsych.2012.07.001

Blaszczynski, A. (2009). Problem gambling: We should measure harm rather than 'cases'. *Addiction*, *104*(7), 1072-1072. doi: 10.1111/j.1360-0443.2009.02505.x/full

Blaszczynski, A. (2013). A critical examination of the link between gaming machines and gambling-related harm. *Journal of Gambling Business & Economics*, *7*(3), Retrieved from: http://ubplj.org/index.php/jgbe/article/view/818

Blaszczynski, A. & Farrell, E. (1998). A case series of 44 completed gambling-related suicides. *Journal of Gambling Studies, 14*(2), 93-109. doi: 10.1023/A:1023016224147

Blaszczynski, A. & Marfels, C. (2003). A protocol for determining gambling-related suicides in psychological autopsy studies. *Gaming Law Review*, *7*(5), 353-361. doi: 10.1089/10921880377023848 9?journalCode=glr

Blaszczynski, A. & Nower, L. (2002). A pathways model of problem and pathological gambling. *Addiction*, *97*(5), 487-487. doi: 10.1046/j.1360-0443.2002.00015.x

Blumer, H. (1954). What is wrong with social theory? *American Sociology Review, 18*, 3-10

Boldero, J. M., Bell, R. C. & Moore, S. M. (2010). Do gambling activity patterns predict gambling problems? A latent class analysis of gambling forms among Australian youth. *International Gambling Studies*, *10*(2), 151-163. doi: 10.1080/14459795.2010.501808

Borrell, J. (2008). A thematic analysis identifying concepts of problem gambling agency: With preliminary exploration of discourses in selected industry and research documents. *Journal of Gambling Issues*, *22*, 195-218. doi: 10.4309/jgi.2008.22.4

Borrell, J. & Boulet, J. (2005). A theoretical exploration of culture and community health: Implications for prevention, research, and problem gambling. *Journal of Gambling Issues,* 13,,doi: 10.4309/jgi.2005.13.3

Boughton, R. & Falenchuk, O. (2007). Vulnerability and comorbidity factors of female problem gambling. *Journal of Gambling Studies*, *23*(3), 323-334. doi: 10.1007/s10899-007-9056-6

Bowen, G. (2008). Grounded theory and sensitizing concepts. *International journal of qualitative methods, 5*(3), 12-23.

Bowen, G. A. (2008). Naturalistic inquiry and the saturation concept: a research note. *Qualitative research, 8*(1), 137-152.

Braverman, J., & Shaffer, H. J. (2012). How do gamblers start gambling: Identifying behavioural markers for high-risk Internet gambling. *The European Journal of Public Health, 22*(2), 273-278. doi: http://dx.doi.org/10.1093/eurpub/ckp232

Breen, H. (2012a). Indigenous card gambler profiles in North Queensland. *Australian Aboriginal Studies, 2,* 72-86. Retrieved from: http://search.informit.com.au/documentSummary;dn=021113712450416;res=IELAPA

Breen, H. M. (2012b). Risk and protective factors associated with gambling consequences for Indigenous Australians in north Queensland. *International Journal of Mental Health and Addiction, 10*(2), 258-272. doi: 10.1007/s11469-011-9315-8

Breen, H., & Gainsbury, S. (2013). Aboriginal gambling and problem gambling: A review. *International journal of mental health and addiction, 11*(1), 75-96. doi: 10.1007/s11469-012-9400-7

Breen, H., Hing, N., & Gordon, A. (2013a). Indigenous Australian gambling crime and possible interventions: a qualitative study. *Asian Journal of Gambling Issues and Public Health, 3*(1), 1-16. doi: 10.1186/2195-3007-3-4

Breen, H. M., Hing, N., & Gordon, A. (2013b). Gambling impacts on Aboriginal communities in New South Wales, Australia: community leaders' perspectives. *Asian Journal of Gambling Issues and Public Health, 3*(1), 1-12. doi: 10.1186/2195-3007-3-10

Breen, H. M., Hing, N., & Gordon, A. (2011). Indigenous gambling motivations, behaviour and consequences in Northern New South Wales, Australia. *International Journal of Mental Health and Addiction, 9*(6), 723-739. doi: 10.1007/s11469-010-9293-2

Breen, R. B., & Zimmerman, M. (2002). Rapid onset of pathological gambling in machine gamblers. *Journal of Gambling Studies, 18*(1), 31-43. doi: 10.1023/A:1014580112648

Broda, A., LaPlante, D. A., Nelson, S. E., LaBrie, R. A., Bosworth, L. B., & Shaffer, H. J. (2008). Virtual harm reduction efforts for Internet gambling: effects of deposit limits on actual Internet sports gambling behavior. *Harm Reduction Journal, 5*(27), 1-9. doi: :10.1186/1477-7517-5-27

Brown, R., Killian, E., & Evans, W. (2005). Gambling attitudinal and behavioral patterns and criminality in a sample of Las Vegas area detained youth. *Journal of Gambling Issues*. *13.* doi: 10.4309/jgi.2005.13.5

Browne, M., Langham, E., Rockloff, M. J., Li, E., Donaldson, P., & Goodwin, B. (2014). EGM Jackpots and Player Behaviour: An In-venue Shadowing Study. *Journal of Gambling Studies*.

Callan, M. J., Ellard, J. H., Shead, N. W., & Hodgins, D. C. (2008). Gambling as a search for justice: Examining the role of personal relative deprivation in gambling urges and gambling behavior. *Personality and Social Psychology Bulletin, 34*(11), 1514-1529. doi: 10.1177/0146167208322956

Cantinotti, M., & Ladouceur, R. (2008). Harm reduction and electronic gambling machines: Does this pair make a happy couple or is divorce foreseen? *Journal of Gambling Studies, 24*(1), 39-54.doi: 10.1007/s10899-007-9072-6

Carlbring, P., Degerman, N., Jonsson, J., & Andersson, G. (2012). Internet-based treatment of pathological gambling with a three-year follow-up. *Cognitive behaviour therapy*, *41*(4), 321-334. doi: 10.1080/16506073.2012.689323

Carlbring, P., & Smit, F. (2008). Randomized trial of internet-delivered self-help with telephone support for pathological gamblers. *Journal of Consulting and Clinical Psychology, 76*(6), 1090. doi: 10.1037/a0013603

Carroll, A., Davidson, T., Marsh, D., & Rodgers, B. (2011). Help-seeking and uptake of services amongst people with gambling problems in the ACT. *Canberra: Australian Capital Territory Gambling and Racing Commission.* Retrieved from: http://www.jogoremo to.com/docs/extra/H9Bn0e.pdf

Carroll, A., Rodgers, B., Davidson, T., & Sims, S. (2013). Stigma and help-seeking for gambling problems. In: *Act Gambling And Racing Commission* (ed.). Canberra. Retrieved from: http://hdl.handle.net/1880/49905

Carter, A., Miller, P. & Hall, W. (2012). The ethics of harm reduction. In: Pates, R. & Riley, D. M. (eds.) *Harm reduction in substance use and high-risk behaviour: International policy and practice.* West Sussex: Blackwell Publishing.

Casey, D. M., Williams, R. J., Mossière, A. M., Schopflocher, D. P., el-Guebaly, N., Hodgins, D. C., ... & Wood, R. T. (2011). The role of family, religiosity, and behavior in adolescent gambling. *Journal of adolescence, 34*(5), 841-851.. doi: 10.1016/j.ado lescence.2011.02.002

Casey, E. (2003). Gambling and Consumption Working-Class Women and UK National Lottery Play. *Journal of Consumer Culture, 3*(2), 245-263. doi: 10.1177/14695405030032005

Charmaz, K. (2006). Constructing grounded theory: A practical guide through qualitative research. *SagePublications Ltd, London*.

Charmaz, K. (2003). Grounded theory. In Smith, J. A. (ed.), *Qualitative psychology: A practical guide to research methods,* 81-110. London: Sage

Chrisman, J. J., Hofer, C. W., & Boulton, W. B. (1988). Toward a system for classifying business strategies. *Academy of Management Review, 13*(3), 413-428

Clarke, D., Tse, S., Abbott, M., Townsend, S., Kingi, P., & Manaia, W. (2006). Key indicators of the transition from social to problem gambling. *International Journal of Mental Health and Addiction, 4*(3), 247-264. doi: 10.1007/s11469-006-9024

Cosgrave, J. F. (2010). Embedded addiction: The social production of gambling knowledge and the development of gambling markets. *Canadian Journal of Sociology/Cahiers canadiens de sociologie, 35*(1), 113-134. Retrieved from: http://www.jstor.org/st able/canajsocicahican.35.1.113

Cousins, S. O. B., & Witcher, C. S. (2007). Who plays bingo in later life? The sedentary lifestyles of 'little old ladies'. *Journal of Gambling Studies, 23*(1), 95-112. doi: 10.1007/s10899-006-9030-8

Cowlishaw, S., Merkouris, S., Chapman, A., & Radermacher, H. (2014). Pathological and problem gambling in substance use treatment: a systematic review and meta-analysis. *Journal of Substance Abuse Treatment, 46*(2), 98-105. doi: doi:10.1016/j.jsat.20 13.08.019

Creswell, J. W. (2007). Qualitative enquiry and research design: Choosing among five approaches.

Crisp, B. R., Thomas, S. A., Jackson, A. C., Smith, S., Borrell, J., Ho, W. Y., ... & Thomason, N. (2004). Not the same: a comparison of female and male clients seeking treatment from problem gambling counselling services. *Journal of Gambling Studies, 20*(3), 283-299. doi: 10.1023/B:JOGS.0000040280.64348.d1

Crocker, L., & Algina. J. (1986). *Introduction to Classical and Modern Test Theory.* Cengage: Orlando, FL.

Crockford, D., Quickfall, J., Currie, S., Furtado, S., Suchowersky, O., & el-Guebaly, N. (2008). Prevalence of problem and pathological gambling in Parkinson's disease. *Journal of Gambling Studies, 24*(4), 411-422. doi: 10.1007/s10899-008-9099-3

Currie, S. R., Hodgins, D. C., Casey, D. M., El-Guebaly, N., Smith, G. J., Williams, R. J., ... & Wood, R. T. (2012). Examining the predictive validity of low-risk gambling limits with longitudinal data. *Addiction, 107*(2), 400-406. doi: 10.1111/j.1360-0443.2011.03622.x

Currie, S. R., Hodgins, D. C., Wang, J., El-Guebaly, N., Wynne, H., & Chen, S. (2006). Risk of harm among gamblers in the general population as a function of level of participation in gambling activities. *Addiction, 101*(4), 570-580. doi: 10.1111/j.1360-0443.2006.01392.x

Currie, S. R., Miller, N., Hodgins, D. C., & Wang, J. (2009). Defining a threshold of harm from gambling for population health surveillance research. *International Gambling Studies, 9(*1), 19-38. doi: 10.1080/14459790802652209

Darbyshire, P., Oster, C., & Carrig, H. (2001a). Children of parent (s) who have a gambling problem: a review of the literature and commentary on research approaches. *Health & Social Care in the Community, 9*(4), 185-193. doi: 10.1046/j.0966-0410.2001.00302.x

Darbyshire, P., Oster, C., & Carrig, H. (2001b). The experience of pervasive loss: Children and young people living in a family where parental gambling is a problem. *Journal of Gambling Studies, 17*(1), 23-45. doi: 10.1023/A:1014536315167

Delfabbro, P., & Thrupp, L. (2003). The social determinants of youth gambling in South Australian adolescents. *Journal of Adolescence, 26*(3), 313-330. doi: 0.1016/S0140-1971(03)00013-7

Delfabbro, P., King, D., & Griffiths, M. D. (2014). From adolescent to adult gambling: An analysis of longitudinal gambling patterns in South Australia. *Journal of Gambling Studies, 30*(3), 547-563. doi: 10.1007/s10899-013-9384-7

Department of Health. (2014). Victorian Population Health Survey 2011–12, survey findings. State Government of Victoria, Melbourne. Retrieved from https://www2.health.vic.go-v.au/getfile//?sc_itemid=%7b604DCF4F-A8B2-41B3-ABFF-CAECF30C2B3F%7d

Department of Health & Human Services. (2005). Victorian Burden of Disease Study. Mortality and morbidity in 2001. Retrieved from https://www2.health.vic.gov.au/getfile/?sc_itemid=%7-BF84D614F-47FC-4027-BD0B-777AA49070A7%7D&title=Victorian%20Burden%20-of%20Disease%20Study

Department of Internal Affairs. (2003). *New Zealand Gambling Act.* Wellington, New Zealand.

Detweiler, J. B., Bedell, B. T., Salovey, P., Pronin, E., & Rothman, A. J. (1999). Message framing and sunscreen use: gain-framed messages motivate beach-goers. *Health Psychology, 18*(2), 189. doi: 10.1037/0278-6133.18.2.189

Dey, I. (1999). *Grounding grounded theory: Guidelines for qualitative inquiry*: Academic Press.

Dickson-Gillespie, L., Rugle, L., Rosenthal, R., & Fong, T. (2008). Preventing the incidence and harm of gambling problems. *The Journal of Primary Prevention, 29*(1), 37-55. doi: 10.1007/s10935-008-0126

Dickson-Swift, V. A., James, E. L., & Kippen, S. (2005). The experience of living with a problem gambler: Spouses and partners speak out. *Journal of Gambling Issues*,*13,* doi: 10.4309/jgi.2005.13.6

Dickson, L. M., Derevensky, J. L., & Gupta, R. (2004a). Harm Reduction for the Prevention of Youth Gambling Problems Lessons Learned from Adolescent High-Risk Behavior Prevention Programs. *Journal of Adolescent Research, 19*(2), 233-263. doi: 10.117 7/0743558403258272

Dickson, L., Derevensky, J. L., & Gupta, R. (2004b). Youth gambling problems: A harm reduction prevention model. *Addiction Research & Theory, 12*(4), 305-316. doi: 10.1080/1606635042000236466

Dickson, L. M., Derevensky, J. L., & Gupta, R. (2002). The prevention of gambling problems in youth: A conceptual framework. *Journal of Gambling studies, 18*(2), 97-159. doi: 10.1023/A:1015557115049

Dion, J., Collin-Vézina, D., De La Sablonnière, M., Philippe-Labbé, M. P., & Giffard, T. (2010). An exploration of the connection between child sexual abuse and gambling in Aboriginal communities. *International Journal of Mental Health and Addiction, 8*(2), 174-189. doi: 10.1007/s11469-009-9234-0

Dolan, P., & Stalmeier, P. (2003). The validity of time trade-off values in calculating QALYs: Constant proportional time trade-off versus the proportional heuristic. *Journal of Health Economics, 22*(3), 445–458. doi: 10.1016/S0167-6296(02)00120-0

Dowling, N., Smith, D., & Thomas, T. (2005). Electronic gaming machines: are they the 'crack-cocaine'of gambling? *Addiction, 100*(1), 33-45. doi: 10.1111/j.1360-0443.2005.00962

Dussault, F., Brendgen, M., Vitaro, F., Wanner, B., & Tremblay, R. E. (2011). Longitudinal links between impulsivity, gambling problems and depressive symptoms: a transactional model from adolescence to early adulthood. *Journal of Child Psychology and Psychiatry, 52*(2), 130-138. doi: doi/10.1111/j.1469-7610.2010.02313.x

Dyall, L. (2010). Gambling: A poison chalice for Indigenous peoples'. International Journal of Mental Health and Addiction, 8(2), 205-213. doi: 10.1007/s11469-009-9212-6

Dyall, L. (2007). Gambling, social disorganisation and deprivation. *International Journal of Mental Health and Addiction, 5*(4), 320-330. doi: 10.1007/s11469-007-9085-5

Dyall, L., Tse, S., & Kingi, A. (2009). Cultural icons and marketing of gambling. International Journal of Mental Health and Addiction, 7(1), 84-96. doi: 10.1007/s11469-007-9145

Elder Jr, G. H. (1994). Time, human agency, and social change: Perspectives on the life course. *Social Psychology Quarterly*, 4-15.

El-Guebaly, N., Patten, S. B., Currie, S., Williams, J. V., Beck, C. A., Maxwell, C. J., & Wang, J. L. (2006). Epidemiological associations between gambling behavior, substance use & mood and anxiety disorders. *Journal of Gambling Studies, 22*(3), 275-287. doi: 10.1007/s10899-006-9016-6

England, M. J. (2012). Epilepsy across the spectrum. [electronic resource] : promoting health and understanding. Washington, D.C. : National Academies Press, c2012. Retrieved from http://ezproxy.cqu.edu.au/login?url=http://search.ebscohost.com/login.aspx?direct=true&db=cat00311a&AN=cqu.1040923&site=eds-live&scope=site

Evans, L., & Delfabbro, P. H. (2005). Motivators for change and barriers to help-seeking in Australian problem gamblers. *Journal of Gambling Studies, 21*(2), 133-155. doi: 10.1007/s10899-005-3029-4

Ferland, F., Fournier, P. M., Ladouceur, R., Brochu, P., Bouchard, M., & Pâquet, L. (2008). Consequences of pathological gambling on the gambler and his spouse. *Journal of Gambling Issues, 22*, 219-229. doi: 10.4309/jgi.2008.22.5

Ferrari, A. J., Sukanta Saha, McGrath, J. J., Norman, R., Baxter, A. J., Vos, T., & Whiteford, H. A. (2012). Health states for schizophrenia and bipolar disorder within the Global Burden of Disease 2010 Study. Population Health Metrics, 10, 16–22. Retrieved from http://www.biomedcentral.com/content/pdf/1478-7954-10-16.pdf

Ferris, J., & Wynne, H. (2001). The Canadian problem gambling index: Final report. Ontario, Canada: Canadian Centre on Substance Abuse

Fine, A., & Kotelchuck, M. (2010). Rethinking MCH: The MCH life course model as an organizing framework. US DHHS, HRSA, Maternal and Child Health Bureau.

Fong, T. W. (2005). Pathological gambling in adolescents: No longer child's play. *Developmental and Clinical Studies, 29*, 119-147

Gakidou, E. E., Murray, C. J., & Frenk, J. (2000). Defining and measuring health inequality: an approach based on the distribution of health expectancy. *Bulletin of the World Health Organization*, *78*(1), 42–54. Retrieve from: http://www.scielosp.org/scielo.php?pid=S0042-96862000000100005&script=sci_arttext

Gainsbury, S., Wood, R., Russell, A., Hing, N., & Blaszczynski, A. (2012). A digital revolution: comparison of demographic profiles, attitudes and gambling behaviour of internet and non-internet gamblers. *Computers in Human Behaviour, 28*(4), 1388-1398.

Gainsbury, S. M., Blankers, M., Wilkinson, C., Schelleman-Offermans, K., & Cousijn, J. (2014). Recommendations for international gambling harm-minimisation guidelines: Comparison with effective public health policy. *Journal of Gambling Studies, 30*(4), 771-788. doi: 10.1007/s10899-013-9389-2

Gainsbury, S. & Blaszczynski, A. 2012. Harm minimisation: Gambling. In: Pates, R. & Riley, D. M. (eds.) *Harm reduction in substance use and high-risk behaviour: International policy and practice*. West Sussex: Blackwell Publishing.

Garrett, T. A., & Nichols, M. W. (2008). Do casinos export bankruptcy?. *The Journal of Socio-Economics, 37*(4), 1481-1494. doi: 10.1016/j.socec.2006.12.079

Gaudia, R. (1987). Effects of compulsive gambling on the family. *Social Work*, 254-256. Retrieved from: http://www.jstor.org/stable/23715190

Gershenson, J. K., & Stauffer, L. A. (1999). A taxonomy for design requirements for corporate customers. *Research in Engineering Design, 11* (2), 103-115

Glaser. B. G. (1978). Theoretical sensitivity: Advances in methodology of grounded theory. SF: The Sociology Press

Gray, J., Lie, M. L. S., Murtagh, M. J., Ford, G. A., McMeekin, P., & Thomson, R. G. (2014). Health state descriptions to elicit stroke values: Do they reflect patient experience of stroke? *BMC Health Services Research, 14*(1), 573. http://doi.org/10.1186/s12913-014-0573-6

Gray, J. I. 2013. *Gambling Related Suicides, Victoria 2000 – 2012*. In: coroners court of victoria (ed.). Victoria: Coroners Prevention Unit.

Griffiths, M. D. (2014). The relationship between gambling and homelessness: A commentary on Sharman et al. (2014). *Journal of Gambling Studies,* 1-7. doi: 10.1007/s10899-014-9491-0

Griffiths, M. D. (2013). Social gambling via Facebook: Further observations and concerns. *Gaming Law Review and Economics, 17*(2), 104-106. doi:10.10 89/glre.2013.1726

Griffiths, M. D. (2009). Internet gambling in the workplace. *Journal of Workplace Learning, 21*(8), 658-670. doi: 10.1108/13665620910996197

Griffiths, M. D. (2008). Videogame addiction: Further thoughts and observations. *International Journal of Mental Health and Addiction, 6*(2), 182-185. doi: 10.1007/s11469-007-9128

Griffiths, M. (2007). Interactive television quizzes as gambling: A cause for concern? *Journal of Gambling Issues, 20*, 269-276. doi: 0.4309/jgi.2007.20.9

Griffiths, M. D. (2006). A case study of binge problem gambling. *International Journal of Mental Health and Addiction, 4*(4), 369-376. doi: 10.1007/s11469-006-9035-7

Griffiths, M., & Wood, R. T. (2000). Risk factors in adolescence: The case of gambling, videogame playing, and the Internet. *Journal of Gambling Studies, 16*(2-3), 199-225. doi: 10.1023/A:1009433014881

Grömping, U. (2009). Variable Importance Assessment in Regression: Linear Regression versus Random Forest. *The American Statistician, 63*(4), 308–319. doi: 10.1198/tast.2009.08199

Gudex, C., Dolan, P., Kind, P., & Williams, A. (1996). Health state valuations from the general public using the Visual Analogue Scale. *Quality of Life Research, 5*(6), 521–531. http://doi.org/10.1007/BF00439226

Haagsma, J. A., Polinder, S., Cassini, A., Colzani, E., & Havelaar, A. H. (2014). Review of disability weight studies: comparison of methodological choices and values. *Population Health Metrics*, 12(1), 20.

Haagsma, J,A., Havelaar, A,H., Janssen, B,M., Bonsel, G.J. (2008). Disability Adjusted Life Years and minimal disease: application of a preference-based relevance criterion to rank enteric pathogens. *Popul Health Metr*, *6*, 7

Halfon, N., & Hochstein, M. (2002). Life course health development: an integrated framework for developing health, policy, and research. *Milbank Quarterly, 80*(3), 433-479.

Heater, J., & Patton, D. (2006). Gender differences in problem gambling behaviour from help-line callers. *Journal of Gambling Issues, 16*. doi: 10.4309/jgi.2006.16.21

Hertzman, C., & Power, C. (2004). Child development as a determinant of health across the life course. *Current Paediatrics, 14*(5), 438-443. doi: http://dx.doi.org/10.1016/j.cupe.2004.05.008

Hing, N., Russell, A., Gainsbury, S., & Nuske, E. (2015). The public stigma of problem gambling: Its nature and relative intensity compared to other health conditions. *Journal of Gambling Studies,* 1-18. doi: 10.1007/s10899-015-9580-8

Hing, N., & Breen, H. (2001). An empirical study of sex differences in gaming machine play among club members. *International Gambling Studies, 1*(1), 66-86. doi: 10.1080/14 459800108732288

Hing, N., Breen, H., Buultjens, J., & Gordon, A. (2012). A profile of gambling behaviour and impacts amongst Indigenous Australians attending a cultural event in New South Wales Australia. *Australian Aboriginal Studies, 2*, 1-20

Hing, N., Tiyce, M., Holdsworth, L., & Nuske, E. (2013). All in the family: help-seeking by significant others of problem gamblers. *International Journal of Mental Health and Addiction, 11*(3), 396-408. doi: 10.1007/s11469-012-9423-0

Hodgins, D. C., & Makarchuk, K. (2003). Trusting problem gamblers: Reliability and validity of self-reported gambling behavior. *Psychology of Addictive Behaviors, 17*(3), 244. doi: doi.org/10.1037/0893-164X.17.3.244

Hodgins, D. C., Peden, N., & Cassidy, E. (2005). The association between comorbidity and outcome in pathological gambling: A prospective follow-up of recent quitters. *Journal of Gambling Studies, 21*(3), 255-271. doi: 10.1007/s10899-005-3099-3

Hodgins, D. C., Stea, J. N., & Grant, J. E. (2011). Gambling disorders. *The Lancet*, *378*(9806), 1874-1884.

Holdsworth, L., Haw, J., & Hing, N. (2012). The temporal sequencing of problem gambling and comorbid disorders. *International Journal of Mental Health and Addiction, 10*(2), 197-209. doi: 10.1007/s11469-011-9324-7

Holdsworth, L., Nuske, E., & Breen, H. (2013a). All mixed up together: Women's experiences of problem gambling, Comorbidity and co-occurring complex needs. International *Journal of Mental Health and Addiction, 11*(3), 315-328. doi: 10.1007/s11469-012-9415-0

Holdsworth, L., Nuske, E., Tiyce, M., & Hing, N. (2013b). Impacts of gambling problems on partners: Partners' interpretations. *Asian Journal of Gambling Issues and Public Health, 3*(1), 1-14. doi: 10.1186/2195-3007-3-11

Holdsworth, L., & Tiyce, M. (2013). Untangling the complex needs of people experiencing gambling problems and homelessness. *International Journal of Mental Health and Addiction, 11*(2), 186-198. doi: 10.1007/s11469-012-9409-y

Holmes, J., Hemmett, L., & Garfield, S. (2005). The cost-effectiveness of human papillomavirus screening for cervical cancer. *The European Journal of Health Economics, 6*(1), 30–37. doi: 10.1007/s10198-004-0254-1

Hoogendoorn, M., Rutten-van Mölken, M. P. M. H., Hoogenveen, R. T., van Genugten, M. L. L., Buist, A. S., Wouters, E. F. M., & Feenstra, T. L. (2005). A dynamic population model of disease progression in COPD. *The European Respiratory Journal, 26*(2), 223–233. doi: 10.1183/0-9031936.05.00122004

Horch, J. D. (2011). *Problem Gambling Stigma: Stereotypes, Labels, Self-Stigma, and Treatment-Seeking*. NR81472 Ph.D., University of Calgary (Canada).

Hounslow, V., Smith, D., Battersby, M., & Morefield, K. (2011). Predictors of problem gambling severity in treatment seeking gamblers. *International Journal of Mental Health and Addiction, 9*(6), 682-695. doi: 10.1007/s11469-010-9292-3

Hutchison, E. (2005). The life course perspective: A promising approach for bridging the micro and macro worlds for social work. *Families in society: the journal of contemporary social services, 86*(1), 143-152.

Hurst, N. P., Jobanputra, P., Hunter, M., Lambert, M., Lochhead, A., & Brown, H. (1994). Validity of euroqol: A generic health status instrument in patients with rheumatoid arthritis economic and health outcomes research group. *Rheumatology, 33*(7), 655–662. doi: 10.1093/rheuma-tology/33.7.655

Independent Gambling Authority. (2004). *Study into the relationship between crime and problem gambling: report to the Minister.* Adelaide: Independent Gambling Authority

Independent Pricing and Regulatory Tribunal. (2004). *Gambling: Promoting a culture of responsibility.* Sydney: Independent Pricing and Regulatory Tribunal

Ingle, P. J., Marotta, J., McMillan, G., & Wisdom, J. P. (2008). Significant others and gambling treatment outcomes. *Journal of Gambling Studies, 24*(3), 381-392. doi: 10.1007/s108 99-008-9092-x

Irwin, L. G., Siddiqi, A., & Hertzman, C. (2007). Early child development: a powerful equalizer. *Final report to the WHO Commission on social determinants of health, Geneva*.

Jacobs, D. F., Marston, A. R., Singer, R. D., Widaman, K., Little, T., & Veizades, J. (1989). Children of problem gamblers. *Journal of Gambling Behavior*, *5*(4), 261-268.

Jauregui, P., Urbiola, I., & Estevez, A. (2015). Metacognition in Pathological Gambling and Its Relationship with Anxious and Depressive Symptomatology. *Journal of Gambling Studies*, 1-14. doi: 10.1007/s10899-015-9552-z

Jelsma, J., Chivaura, V.G., Mhundwa, K., De Weerdt, W., and de Cock, P. (1999). The global burden of disease disability weights. *Lancet, 355*:2079–2080.

Jette, D. U., Grover, L., & Keck, C. P. (2003). A qualitative study of clinical decision making in recommending discharge placement from the acute care setting. *Physical Therapy, 83*(3), 224-236.

Johnson, R. C., & Schoeni, R. F. (2011). The influence of early-life events on human capital, health status, and labor market outcomes over the life course. *The BE journal of economic analysis & policy, 11*(3).

Johnson, E. E., Hammer, R., Nora, R. M., Tan, B., Eistenstein, N., & Englehart, C. (1998). The lie/bet questionnaire for screening pathological gamblers. *Psychological Reports, 80*, 83-88

Kalischuk, R. G., Nowatzki, N., Cardwell, K., Klein, K., & Solowoniuk, J. (2006). Problem gambling and its impact on families: A literature review. *International Gambling Studies*, *6*(1), 31-60.

Källmén, H., Andersson, P., & Andren, A. (2008). Are irrational beliefs and depressive mood more common among problem gamblers than non-gamblers? A survey study of Swedish problem gamblers and controls. *Journal of Gambling Studies, 24*(4), 441-450. doi: 10.1007/s10899-008-9101-0

Kaplan, R. M., & Bush, J. W. (1982). Health-related quality of life measurement for evaluation research and policy analysis. *Health Psychology, 1*(1), 61. doi: 10.1037/0278-6133.1.1.61

Kessler, R. C., Berglund, P., Demler, O., Jin, R., Koretz, D., Merikangas, K. R., ... & Wang, P. S. (2003). The epidemiology of major depressive disorder: results from the National Comorbidity Survey Replication (NCS-R). *JAMA*, *289*(23), 3095-3105. doi: 10.100-1/jama.289.23.3095

Korman, L. M., Collins, J., Dutton, D., Dhayananthan, B., Littman-Sharp, N., & Skinner, W. (2008). Problem gambling and intimate partner violence. *Journal of Gambling Studies, 24*(1), 13-23. doi: 10.1007/s10899-007-9077-1

Korn, D., Gibbons, R., & Azmier, J. (2003). Framing public policy towards a public health paradigm for gambling. *Journal of Gambling Studies, 19*(2), 235-256. doi: 10.1023/A:1023685416816

Korn, D. A., & Shaffer, H. J. (1999). Gambling and the health of the public: Adopting a public health perspective. *Journal of Gambling Studies, 15*(4), 289-365. doi: 10.1023/A:1023005115932

Ladouceur, R. (1993). Jeu pathologique [Pathological gambling]. In R. Ladouceur, O. Fontaine, & J. Cottraux (Eds.), Thérapie cognitive et comportementale (pp. 123-128). Paris: Masson.

LaPlante, D. A., & Nelson, S. E., LaBrie, R. A., & Shaffer, H. J. (2008). Stability and progression of disordered gambling: Lessons from longitudinal studies. *Canadian Journal of Psychiatry, 53* (1), 52-60

Ledgerwood, D. M., Steinberg, M. A., Wu, R., & Potenza, M. N. (2005). Self-reported gambling-related suicidality among gambling helpline callers. *Psychology of Addictive Behaviors, 19*(2), 175. doi: 10.1037/0893-164X.19.2.175

Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry, 144*, 1184-1188

Li, E., Rockloff, M. J., Browne, M., & Donaldson, P. (2015). Jackpot Structural Features: Rollover Effect and Goal-Gradient Effect in EGM Gambling. *Journal of Gambling Studies*.

Liao, M. S. (2008). Intimate partner violence within the Chinese community in San Francisco: Problem gambling as a risk factor. *Journal of Family Violence, 23*(8), 671-678. doi: 10.1007/s10896-008-9190-7

Llewellyn-Thomas, H., Sutherland, H. J., Tibshirani, R., Ciampi, A., Till, J. E., & Boyd, N. F. (1984). Describing health states: Methodologic issues in obtaining values for health states. *Medical Care 22* (6), 543–552. Retrieved from: http://www.jstor.org/stable/3764509

Lloyd, J., Doll, H., Hawton, K., Dutton, W. H., Geddes, J. R., Goodwin, G. M., & Rogers, R. D. (2010). How psychological symptoms relate to different motivations for gambling: An online study of Internet gamblers. *Biological psychiatry, 68*(8), 733-740. doi: 0.101 6/j.biopsych.2010.03.038

Lobsinger, C., Bechett, L., & Relationships Australia (Qld.). (1996). Odds on to Break Even: A Practical Approach to Gambling Awareness. Relationships Australia (Qld.) Incorporated. Retrieved from https://books.google.com.au/books?id=XchxNAAACAAJ

Lorenz, V. C., & Yaffee, R. A. (1988). Pathological gambling: Psychosomatic, emotional and marital difficulties as reported by the spouse. *Journal of Gambling Behavior*, *4*(1), 13-26.

Lorenz, V. C., & Shuttlesworth, D. E. (1983). The impact of pathological gambling on the spouse of the gambler. *Journal of Community Psychology*, *11*(1), 67-76.

Maccallum, F., & Blaszczynski, A. (2003). Pathological gambling and suicidality: An analysis of severity and lethality. *Suicide and life-threatening behavior, 33*(1), 88-98. doi: 10.1521/suli.33.1.88.22781

Maggi, S., Irwin, L. J., Siddiqi, A., & Hertzman, C. (2010). The social determinants of early child development: an overview. *Journal of Paediatrics and Child Health, 46*(11), 627-635.

Marshall, D. (2009). Gambling as a public health issue: The critical role of the local environment. *Journal of Gambling Issues*, *23*, 66-80. doi: 10.4309/jgi.2009.23.4

Martin, R. J., Usdan, S., Cremeens, J., & Vail-Smith, K. (2014). Disordered gambling and co-morbidity of psychiatric disorders among college students: An examination of problem drinking, anxiety and depression. *Journal of Gambling Studies, 30*(2), 321-333. doi: 10.1007/s10899-013-9367

Martin, D. F. (1993). *Autonomy and relatedness: An ethnography of Wik people of Aurukun, western Cape York Peninsula*. (Dissertation/Thesis, ANU, Canberra). Retrieved from: http://hdl.handle.net/1885/10999

Mathers, C., Vos, T., Lopez, A., Salomon, J., & Ezzati, M. (2001). National Burden of Disease Studies: A Practical Guide. Edition 2.0. Global Program on Evidence for Health Policy. Geneva: World Health Organization.

McCarthy, I. (1995). Manufacturing classifications: lessons from organizational systematics and biological taxonomy. *Integrated Manufacturing Systems, 6* (6), 37-48

McCormack, A., & Griffiths, M. (2011). The effects of problem gambling on quality of life and wellbeing: A qualitative comparison of online and offline problem gamblers. Gambling Research, 23(1), 63. Retrieved from: <http://search.informit.com.au/documentSummary;dn=443683607024145;res=IELHSS>

McMillen, J., Marshall, D., Murphy, L., Lorenzen, S., & Waugh, B. (2004). *Help-seeking by problem gamblers, friends and families: A focus on gender and cultural groups.* Centre for Gambling Research (CGR), ANU. Retrieved from: http://hdl.handle.net/1885/45186

McMullan, J. L., & Miller, D. (2009). Wins, winning and winners: The commercial advertising of lottery gambling. *Journal of Gambling Studies, 25*(3), 273-295. doi: 10.1007/s10 899-009-9120

McMullan, J. L., Miller, D. E., & Perrier, D. C. (2012). "I've Seen Them So Much They Are Just There": Exploring Young People's Perceptions of Gambling in Advertising. *International Journal of Mental Health and Addiction, 10*(6), 829-848. doi: 10.1007/s11469-012-9379-0

Messerlian, C., & Derevensky, J. L. (2005). Youth gambling: A public health perspective. *Journal of Gambling Issues, 14,* doi: 0.4309/jgi.2005.14.9

Minchin, G. (2006). Sentencing problem gamblers in New Zealand. *International Journal of Mental Health and Addiction, 4*(1), 53-64. doi: 10.1007/s11469-006-9007-y

Minister for Gambling South Australian Government. (2007). *Problem gambling family protection orders: Report to Parliament*. Adelaide: Independent Gambling Authority

Monaghan, S., Derevensky, J., & Sklar, A. (2008). Impact of gambling advertisements and marketing on children and adolescents: Policy recommendations to minimise harm. *Journal of Gambling Issues 22*, 252-274. doi: 10.4309/jgi.2008.22.7

Monaghan, S. M., & Derevensky, J. (2008). An appraisal of the impact of the depiction of gambling in society on youth. *International Journal of Mental Health and Addiction, 6*(4), 537-550. doi: 10.1007/s11469-008-9155-3

Morse, J. M. (1994). Designing funded qualitative research. In N. Denzin & Y. Lincoln (Eds.), *Handbook of qualitative researcch* (Second ed.). Thousand Oaks,: Sage.

Morse, J. M. (1995). The significance of saturation. *Qualitative Health Research, 5*(2), 147-149.

Morse, J. M. (2000). Determining sample size. *Qualitative Health Research, 10*(1), 3-5.

Muelleman, R. L., DenOtter, T., Wadman, M. C., Tran, T. P., & Anderson, J. (2002). Problem gambling in the partner of the emergency department patient as a risk factor for intimate partner violence. *The Journal of Emergency Medicine, 23*(3), 307-312. doi: 10.1016/S0736-4679(02)00543-7

Murray, C. J, Vos, T., Lozano, R., Naghavi. M., Flaxman A. D., Michaud, C., … Benjamin, E. J. (2013). Disability-adjusted life years (DALYs) for 291 diseases and injuries in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. *Lancet*, *380*, 2197–2223

Murray, C. J., Salomon, J. A., & Mathers, C. (2000). A critical examination of summary measures of population health. *Bulletin of the World Health Organization, 78*(8), 981–994. doi: 10.159-0/S0042-96862000000800008

Murray, C. J., & Lopez, A. D. (1996). *The global burden of disease and injury series, volume 1: a comprehensive assessment of mortality and disability from diseases, injuries, and risk factors in 1990 and projected to 2020*. Cambridge: MA.

National Collaborating Centre for Mental Health (Great Britain). (2011). *Alcohol-use disorders: diagnosis, assessment and management of harmful drinking and alcohol dependence.* (No. 115). RCPsych Publications.

Nagel, T., Hinton, R., Thompson, V., & Spencer, N. (2011). *Yarning about gambling in indigenous communities: An Aboriginal and Islander mental health initiative*. Retrieved from : <http://search.informit.com.au/documentSummary;dn=65667141 5286494;res=IELFSC>

Najavits, L. M., Meyer, T., Johnson, K. M., & Korn, D. (2011). Pathological gambling and posttraumatic stress disorder: A study of the co-morbidity versus each alone. *Journal of Gambling Studies, 27*(4), 663-683. doi: 10.1007/s10899-010-9230-0

Neal, P. N., Delfabbro, P. H., & O'Neil, M. G. (2005). *Problem gambling and harm: Towards a national definition.* The SA Centre for Economic Studies with the Department of Psychology (University of Adelaide). Retrieved from: http://www.adelaide.edu.au/sa ces/gambling/publications/ProblemGamblingAndHarmTowardNationalDefinition.pdf

Newman, S. C. (2007). The association between pathological gambling and attempted suicide: findings from a national survey in Canada. *Canadian Journal of Psychiatry, 52*(9), 605. Retrieved from: http://search.proquest.com/openview/c76e608e8fa2f0a7163a251-0944368db/1?pq-origsite=gscholar

Nixon, G., Evans, K., Kalischuk, R. G., Solowoniuk, J., McCallum, K., & Hagen, B. (2013). Female gambling, trauma, and the not good enough self: an interpretative phenomenological analysis. *International Journal of Mental Health and Addiction, 11*(2), 214-231. doi: 10.1007/s11469-012-9413-2

Nord, E., Menzel, P. and Richardson, J. (2006), Multi-method approach to valuing health states: problems with meaning. Health Econ., 15: 215–218. doi: 10.1002/hec.1063

Nord, E. (1999). *Cost-value analysis in health care: making sense out of QALYs*. Cambridge: University Press.

Nord, E. (1991). The validity of a visual analogue scale in determining social utility weights for health states. *Int J Health Plann Manage, 6*, 234–242.

Norman, R., King, M. T., Clarke, D., Viney, R., Cronin, P., & Street, D. (2010). Does mode of administration matter? Comparison of online and face-to-face administration of a time trade-off task. *Quality of Life Research, 19*(4), 499–508. doi: 10.1007/s11136-010-9609-5

Nower, L., & Blaszczynski, A. (2004). The pathways model as harm minimization for youth gamblers in educational settings. *Child and Adolescent Social Work Journal, 21*(1), 25-45. doi: 10.1023/B:CASW.0000012347.61618.f7

Padgett, D. (2004). The qualitative research experience. Brooks/Cole Cengage Learning: CA

Parker, J. D., Summerfeldt, L. J., Kloosterman, P. H., Keefer, K. V., & Taylor, R. N. (2013). Gambling behaviour in adolescents with learning disorders. *Journal of Gambling Studies, 29*(2), 231-239. doi: 10.1023/B:CASW.0000012347.61618.f7

Parkin, D., & Devlin, N. (2006). Is there a case for using visual analogue scale valuations in cost-utility analysis? *Health Economics, 15*(7), 653–664. http://doi.org/10.1002/hec.1086

Pearlin, L. I., Schieman, S., Fazio, E. M., & Meersman, S. C. (2005). Stress, health, and the life course: Some conceptual perspectives. *Journal of Health and Social Behavior, 46*(2), 205-219.

Penfold, A., Hatcher, S., Sullivan, S., & Collins, N. (2006a). Gambling problems and attempted suicide. Part I. High prevalence amongst hospital admissions. *International Journal of Mental Health and Addiction, 4*(3), 265-272. doi: 10.1007/s11469-006-9025-9

Penfold, A., Hatcher, S., Sullivan, S., & Collins, N. (2006b). Gambling problems and attempted suicide: Part II—Alcohol abuse increases suicide risk. *International Journal of Mental Health and Addiction, 4*(3), 273-279. doi: 10.1007/s11469-006-9027-7

Petry, N. M., & Kiluk, B. D. (2002). Suicidal ideation and suicide attempts in treatment-seeking pathological gamblers. *The Journal of Nervous and Mental Disease, 190*(7), 462. doi: 10.1097/01.NMD.0000022447.27689.96

Petry, N. M. (2001). Substance abuse, pathological gambling, and impulsiveness. *Drug and Alcohol Dependence, 63*(1), 29-38. doi: 10.1016/S0376-8716(00)00188-5

Phillips, W. J. (2009). *Senior casino motivation and gaming intention: An extended theory of planned behavior model* (Doctoral dissertation, Kansas State University). UMI Dissertations Publishing. Retrieved from: http://krex.k-state.edu/dspace/handle/20 97/1124

Potenza, M. N., Maciejewski, P. K., & Mazure, C. M. (2006). A gender-based examination of past-year recreational gamblers. *Journal of Gambling Studies, 22*(1), 41-64. doi: 10.1007/s10899-005-9002-4

Poulton, R., Caspi, A., Milne, B. J., Thomson, W. M., Taylor, A., Sears, M. R., & Moffitt, T. E. (2002). Association between children's experience of socioeconomic disadvantage and adult health: a life-course study. *The Lancet, 360*(9346), 1640-1645.

Productivity Commission. (2010). *Gambling*. Report No. 50, Canberra: Productivity Commission

Productivity Commission. (1999). *Australia's gambling industries*. Report No. 10, AusInfo, Canberra.

Pulford, J., Bellringer, M., Abbott, M., Clarke, D., Hodgins, D., & Williams, J. (2009). Reasons for seeking help for a gambling problem: The experiences of gamblers who have sought specialist assistance and the perceptions of those who have not. *Journal of Gambling Studies, 25*(1), 19-32. doi: 10.1007/s10899-008-9112

Queensland Treasury. (2002a). *The Queensland responsible gambling strategy: A partnership approach.* Brisbane, Australia: Queensland Government Treasury

Raisamo, S., Halme, J., Murto, A., & Lintonen, T. (2013). Gambling-related harms among adolescents: a population-based study. *Journal of Gambling Studies, 29*(1), 151-159. doi: 10.1007/s10899-012-9298-9

Reznick, J. S., Hegeman, I. M., Kaufman, E. R., Woods, S. W., & Jacobs, M. (1992). Retrospective and concurrent self-report of behavioral inhibition and their relation to adult mental health. *Development and Psychopathology, 4*(02), 301-321. doi: doi:10.1017/S095457940000016X

Ritchie, J., Lewis, J., Nicholls, C. M., & Ormston, R. (2013). *Qualitative research practice: A guide for social science students and researchers*: Sage.

Rizopoulos, D. (2006). ltm: An R package for latent variable modeling and item response theory analyses. *Journal of statistical software*, *17*(5), 1-25.

Robertson, T., Wright, F. T. and Dykstra, R. L. (1988) *Order Restricted Statistical Inference.* Wiley: New York

Rockloff, M. J., Browne, M., Li, E., & O'Shea, T. (2014). It's a sure bet you're going to die: Existential terror promotes gambling urges in problem players. *Gambling Research*, *26*(1), 33-43.

Rodgers, B., Caldwell, T., & Butterworth, P. (2009). Measuring gambling participation. *Addiction, 104*(7), 1065-1069. doi: 10.1111/j.1360-0443.2008.02412.x

Rosseel, Y. (2012). lavaan: An R package for structural equation modeling. *Journal of Statistical Software*, *48*(2), 1-36.

Rowen, D., Brazier, J., & Van Hout, B. (2014). A comparison of methods for converting DCE values onto the full health-dead QALY scale. *Medical Decision Making*, doi: 10.1177/02729-89X14559542.

Rowen, D., Brazier, J., Tsuchiya, A., Young, T., & Ibbotson, R. (2012). It's all in the name, or is it? The impact of labeling on health state values. *Medical Decision Making, 32*(1), 31–40. doi: 10.1177/0272989X11408435

Saha, S., Chant, D., Welham, J., & McGrath, J. (2005). A Systematic Review of the Prevalence of Schizophrenia. *PLoS Medicine, 2*(5), 413–433. doi: 10.1371/journal.pmed.0020141

Saldana, J. (2013). *The coding manual for qualitative researchers*. New Delhi: Sage

Salomon, J. A., Vos, T., Hogan, D. R., Gagnon, M., Naghavi, M., Mokdad, A., … Blyth, F. (2013). Common values in assessing health outcomes from disease and injury: disability weights measurement study for the Global Burden of Disease Study 2010. *The Lancet, 380*(9859), 2129–2143. doi: 10.1016/S0140-6736(12)61680-8

Salomon, J. A., & Murray, C. J. (2004). A multi-method approach to measuring health-state valuations. *Health Economics, 13*(3), 281-290. doi: 10.1002/hec.834

Salonen, A. H., Castrén, S., Alho, H., & Lahti, T. (2014). Concerned significant others of people with gambling problems in Finland: a cross-sectional population study. *BMC public health*, *14*(1), 398.

Schwarzinger, M., Stouthard, M.E., Burstrom, K., Nord, E. (2003). Cross-national agreement on disability weights: the European Disability Weights Project. *Popul Health Metr, 1,* 9.

Séguin, M., Boyer, R., Lesage, A., McGirr, A., Suissa, A., Tousignant, M., & Turecki, G. (2010). Suicide and gambling: Psychopathology and treatment-seeking. *Psychology of Addictive Behaviors, 24*(3), 541. doi: doi.org/10.1037/a0019041

Shaffer, H. J., & Korn, D. A. (2002). Gambling and related mental disorders: A public health analysis. *Annual Review of Public Health, 23*(1), 171-212. doi: 0.1146/annurev.pub lhealth.23.100901.140532

Shah, K. K., Lloyd, A., Oppe, M., & Devlin, N. J. (2013). One-to-one versus group setting for conducting computer-assisted TTO studies: Vindings from pilot studies in England and the Netherlands. *The European Journal of Health Economics, 14*(S1), 65–73. http://doi.org/10.1007/s10198-013-0509-9

Siebold, C. (2002). The place of theory and the development of a theoretical framework in a qualitative study. *Qualitative Research Journal, 2* (3), 3-15

Smith, D. M., Sherriff, R. L., Damschroder, L., Loewenstein, G., & Ubel, P. A. (2006). Misremembering colostomies? Former patients give lower utility ratings than do current patients. *Health Psychology, 25*(6), 688. doi: 10.1037/0278-6133.25.6.688

Slade, T., Johnston, A., Teesson, M., Whiteford, H., Burgess, P., Pirkis, J., & Saw, S. (2009). The Mental Health of Australians 2. Report on the 2007 National Survey of Mental Health and Wellbeing.

Solberg, L. I., Maciosek, M. V., & Edwards, N. M. (2008). Primary care intervention to reduce alcohol misuse: ranking its health impact and cost effectiveness. *American Journal of Preventive Medicine, 34*(2), 143–152. doi: 10.1016/j.amepre.2007.09.035

Stevens, M., & Golebiowska, K. (2013). Gambling problems amongst the CALD population of Australia: hidden, visible or not a problem? *Asian Journal of Gambling Issues and Public Health, 3*(1), 1-20. doi: 10.1186/2195-3007-3-1

Stouthard, M., Essink-Bot, M., Bonsel, G., Barendregt, J., & Kramers, P. (1997). Disability weights for diseases in the Netherlands. Rotterdam: Department of Public Health, Erasmus University.

Stubbs, R. J., Hughes, D. A., Johnstone, A. M., Rowley, E., Reid, C., Elia, M., … Blundell, J. E. (2000). The use of visual analogue scales to assess motivation to eat in human subjects: A review of their reliability and validity with an evaluation of new hand-held computerized systems for temporal tracking of appetite ratings. *British Journal of Nutrition, 84*(04), 405–415. doi: 10.1017/S0007114500001719

Suomi, A., Jackson, A. C., Dowling, N. A., Lavis, T., Patford, J., Thomas, S. A., ... & Cockman, S. (2013). Problem gambling and family violence: family member reports of prevalence, family impacts and family coping. *Asian Journal of Gambling Issues and Public Health, 3*(1), 1-15. doi: 10.1186/2195-3007-3-13

Hare, S. 2015. Study of Gambling and Health in Victoria, Victoria, Australia: Victorian Responsible Gambling Foundation and Victorian Department of Justice and Regulation

Suurvali, H., Cordingley, J., Hodgins, D. C., & Cunningham, J. (2009). Barriers to seeking help for gambling problems: A review of the empirical literature. *Journal of Gambling Studies, 25*(3), 407-424. doi: 10.1007/s10899-009-9129-9

Suurvali, H., Hodgins, D. C., Toneatto, T., & Cunningham, J. A. (2012). Motivators for seeking gambling-related treatment among Ontario problem gamblers. *Journal of Gambling Studies, 28*(2), 273-296. doi: 10.1007/s10899-011-9268-7

Svetieva, E., & Walker, M. (2008). Inconsistency between concept and measurement: the Canadian Problem Gambling Index (CPGI). *Journal of Gambling Issues, 22* 157-173. doi: 10.4309/jgi.2008.22.2

Tanamas, S.K., Magliano, D.J., Lynch, B., Sethi, P., Willenberg, L., Polkinghorne, K.R., … Shaw, J.E. (2013). The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) 2012. Baker IDI Heart and Diabetes Institute. Retrieved from http://www.bakeridi.edu.au/Assets/Fi-les/Baker%20IDI%20Ausdiab%20Report_interactive_FINAL.pdf

Thompson, W. N., & Schwer, K. (2005). Beyond the limits of recreation: Social costs of gambling in southern Nevada. *Journal of Public Budgeting, Accounting & Financial Management*, *17*(1), 62-93. Retrieved from: http://pracademics.com/attachm ents/article/645/SympAr4.pdf

Tolley, K. (2009). *What are health utilities*. Hayward Medical Communications: London.

Torrance, G. W., Furlong, W., Feeny, D., & Boyle, M. (1995). Multi-attribute preference functions. *Pharmacoeconomics, 7*(6), 503–520. doi: 10.2165/00019053-199507060-00005

Torrance, G., Zhang, Y., Feeny, D., Furlong, W., & Barr, R. (1992). Multi-attribute Utility Functions for a Comprehensive Health Status Classification System: Health Utilities Index Mark 2 (Centre for Health Economics and Policy Analysis Working Paper Series No. 1992-18). Centre for Health Economics and Policy Analysis (CHEPA), McMaster University, Hamilton, Canada. Retrieved from https://ideas.repec.org/p/hpa/wpaper/199218.html

Turner, N. E., Preston, D. L., McAvoy, S., & Gillam, L. (2013). Problem gambling inside and out: The assessment of community and institutional problem gambling in the Canadian correctional system. *Journal of Gambling Studies, 29*(3), 435-451. doi: 10.1007/s10899-012-9321-1

Turner, N. E., & McAvoy, S. (2011). Problem gambling in the correctional system: A brief summary report. *Gaming Law Review and Economics, 15*(10), 593-598. doi: 10.1089/glre.2011.151006

Ustun, T.B., Rehm, J, Chatterji, S., Saxena, S, Trotter, R., Room, R., and Bickenbach, J. (1999). Multiple informant ranking of the disabling effects of different health conditions in 14 countries. WHO/NIH Joint Project CAR Study Group. *Lancet*, 354, 111–115

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement invariance literature: Suggestions, practices, and recommendations for organizational research. *Organizational research methods*, *3*(1), 4-70.

Walker, S. E., Abbott, M. W., & Gray, R. J. (2012). Knowledge, views and experiences of gambling and gambling-related harms in different ethnic and socio-economic groups in New Zealand. *Australian and New Zealand Journal of Public Health, 36*(2), 153–159. doi:10.1111/j.1753-6405.2012.00847.x

Welte, J. W., Barnes, G. M., Tidwell, M. C. O., & Hoffman, J. H. (2009). Association between problem gambling and conduct disorder in a national survey of adolescents and young adults in the United States. *Journal of Adolescent Health, 45*(4), 396-401. Retrieved from: http://www.sciencedirect.com/science/article/pii/S1054139X09000974

Wenzel, H. G., Øren, A., & Bakken, I. J. (2008). Gambling problems in the family–A stratified probability sample study of prevalence and reported consequences. *BMC Public Health*, *8*(1), 412.

Wheeler, S. A., Round, D. K., & Wilson, J. K. (2011). The relationship between crime and electronic gaming expenditure: Evidence from Victoria, Australia. *Journal of Quantitative Criminology, 27*(3), 315-338. doi: 10.1007/s10940-010-9123-5

Wheeler, B. W., Rigby, J. E., & Huriwai, T. (2006). Pokies and poverty: problem gambling risk factor geography in *New Zealand. Health & Place, 12*(1), 86-96. doi: 10.1016/j.health place.2004.10.011

Whitehead, S. J., & Ali, S. (2010). Health outcomes in economic evaluation: the QALY and utilities. *British Medical Bulletin, 96*(1), 5-21. doi: doi: 10.1093/bmb/ldq033

Wong, P. W., Cheung, D. Y., Conner, K. R., Conwell, Y., & Yip, P. S. (2010). Gambling and completed suicide in Hong Kong: A review of coroner court files. *Primary Care Companion to the Journal of Clinical Psychiatry, 12*(6). Retrieved from http://www.ncbi.nlm.nih.go-v/pmc/articles/PMC3067982/

World Health Organization (WHO). (2009). Quantifying environmental health impacts. Global estimates of burden of disease caused by environmental risks. *World Health Organization*, Geneva. Retrieved from: http://www.who.int/quantifying_ehimpacts/publications/en/92415 46204chap3.pdf

Worthington, A., Brown, K., Crawford, M. & Pickernell, D. (2007). Gambling participation in Australia: findings from the national Household Expenditure Survey. *Review of Economics of the Household, 5*, 209-221. Retrieved from: http://pracademics.com/att achments/article/645/SympAr4.pdf

Yi, S., & Kanetkar, V. (2011). Coping with guilt and shame after gambling loss. *Journal of Gambling Studies, 27*(3), 371-387. doi: 10.1007/s10899-010-9216

Young, M., Markham, F., & Doran, B. (2012). Placing Bets: gambling venues and the distribution of harm. *Australian Geographer, 43*(4), 425-444. doi: 10.1080/00049182.2012.731302

Young, M., Lamb, D., & Doran, B. (2011). Gambling, resource distribution, and racial economy: an examination of poker machine expenditure in three remote Australian towns. *Geographical Research, 49*(1), 59-71. doi: 10.1111/j.1745-5871.2010.00667.x

Appendices

Appendix 1. 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 worthless	2	worthless
	emotional/psychological	Thoughts of running away or escape	3	have thoughts about escaping
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 (food banks 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	Took on additional employment	3	taken on additional employment
	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

	Domain	Full label	Sentence	Phrase
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
4	other	Took money or items from friends or family without asking first	1	taking money/items from family 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 religious or cultural practices	2	have reduced your contribution to practices
	other	Outcast from religious or cultural community due to involvement with gambling	2	are an outcast
	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/friends)	1	engaging in petty theft/dishonesty with professional enterprises (e.g. governments, businesses, colleagues)
	other	Felt less connected to my religious or cultural community	2	feel less connected

	Domain	Full label	Sentence	Phrase
	other	Had experiences with violence (include family/domestic violence)	3	have experiences with violence (include family/domestic)
	other	Felt that I had shamed my family name within my religious or cultural community	2	feel that you have shamed your family name
	other	Left children unsupervised	3	leave your children unsupervised
	other	Arrested for unsafe driving	3	have been arrested for unsafe driving
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
	relationships	Neglected my relationship responsibilities	3	neglect your relationship responsibilities
	relationships	Felt belittled in my relationships	3	feel belittled in your relationship
	relationships	Threat of separation or ending a relationship/s	3	are concerned that your relationship will result in separation or end
	relationships	Actual separation or ending a relationship/s	4	relationship has ended
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	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
	work/study	Lost my job	3	have lost your job

Appendix 2. 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	Within your religious/cultural community, 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 3. 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.
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.

Condition	% ranking on VAS	Descriptor
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 4. Figures and sources for harm and years of life lost to disability for the Victorian adult population

Health state	Disability weight	Prevalence in population (%)	Vic population with health state	Years of life lost to disability	Source of prevalence (%)	Source of disability weight
Gambling problems		12.5%	528,771	97,877	Survey for the Victorian Gambling and Health Study 2014 (Hare, 2015)	Current Study
Low-risk gambler	0.13	8.9%	376,154	49,116		
Moderate-risk gambler	0.29	2.8%	118,340	33,861		
Problem gambler	0.44	0.8%	33,812	14,792		
Bipolar affective disorder	0.18	1.8%	76,076	13,389	2007 National Survey of Mental Health & Wellbeing (Slade et al., 2009)	Composite Dutch Weight from the Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005)
Major depressive disorder		6.6%	280,382	142,451	The Epidemiology of Major Depressive Disorder Results From the National Comorbidity Survey Replication (NCS-R; Kessler et al., 2003)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Mild episode	0.16	0.7%	29,010	4,613		
Moderate episode	0.41	2.5%	107,673	43,715		
Severe episode	0.66	3.4%	143,699	94,123		
Cannabis dependence	0.33	0.4%	16,906	5,562	2007 National Survey of Mental Health & Wellbeing (Slade et al., 2009)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Eating disorders		1.2%	50,717	11,310	Cited in the Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Anorexia nervosa	0.22	0.5%	21,132	4,712		
Bulimia nervosa	0.22	0.7%	29,585	6,597		
Diabetes mellitus	0.07	7.4%	312,757	21,893	The Australian Diabetes, Obesity and Lifestyle Study (AusDiab) 2012 (Tanamas et al., 2013)	'Dutch weights' from the 1996 Dutch project on 'Disability Weights for Diseases' (Stouthard, Essink-Bot, Bonsel, Barendregt, & Kramers, 1997)
Alcohol use and dependence		25.0%	1,056,611	142,262	AUDIT-C data from a 2014 online study conducted by CQUniversity Experimental Gambling Research	'Dutch weights' from the 1996 Dutch project on 'Disability Weights for Diseases'

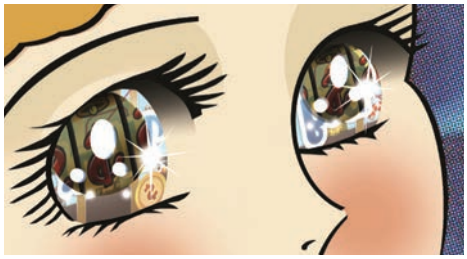
Health state	Disability weight	Prevalence in population (%)	Vic population with health state	Years of life lost to disability	Source of prevalence (%)	Source of disability weight
					Laboratory (EGRL). AUDIT C 4+ Score.	(Stouthard, Essink-Bot, Bonsel, Barendregt, & Kramers, 1997)
Alcohol harmful use	0.11	23.6%	997,441	109,718	AUDIT-C data from a 2014 online study conducted by CQUniversity Experimental Gambling Research Laboratory (EGRL). Prevalence of 25% (AUDIT C 4+ Score) minus the prevalence of alcohol dependence from the 2007 National Survey of Mental Health & Wellbeing (1.4%).	Dutch Weight – problem drinking derived in the Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005)
Alcohol dependence	0.55	1.4%	59,170	32,544	2007 National Survey of Mental Health & Wellbeing (Slade et al., 2009)	Dutch Weight – problem drinking and manifest alcoholism derived in the Victorian Burden of Disease Study 2001 (Department of Health and Human Services, 2005)
Epilepsy	0.11	1.0%	42,264	4,649	Epilepsy across the spectrum: Promoting health and understanding (England, 2012)	'Dutch weights' from the 1996 Dutch project on 'Disability Weights for Diseases' (Stouthard, Essink-Bot, Bonsel, Barendregt, & Kramers, 1997)
Schizophrenia		0.3%	14,370	9,234	A Systematic Review of the Prevalence of Schizophrenia (Saha, Chant, Welham, & McGrath, 2005)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Residual state	0.58	0.2%	9,053	5,215	Health states for schizophrenia and bipolar disorder within the Global Burden of Disease 2010 Study (Salomon et al., 2013)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Acute state	0.76	0.1%	5,317	4,020	Health states for schizophrenia and bipolar disorder within the Global Burden of Disease 2010 Study (Salomon et al., 2013)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Chronic obstructive pulmonary disease (COPD)		2.3%	97,208	17,360	2007–2008 National Health Survey (NHS; ABS, 2009)	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Mild	0.02	0.6%	26,246	394	A dynamic population model of disease progression in COPD (Hoogendoorn et al., 2005). Calculated from figure cited as 27% proportion of COPD as mild.	Global Burden of Disease Study 2010 (Salomon et al., 2013)

Health state	Disability weight	Prevalence in population (%)	Vic population with health state	Years of life lost to disability	Source of prevalence (%)	Source of disability weight
Moderate	0.19	1.3%	53,465	10,265	A dynamic population model of disease progression in COPD (Hoogendoorn et al., 2005). Calculated from figure cited as 55% proportion of COPD as moderate.	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Severe	0.38	0.4%	17,497	6,702	A dynamic population model of disease progression in COPD (Hoogendoorn et al., 2005). Calculated from figure cited as 15% proportion of COPD as severe + 3% as very severe.	Global Burden of Disease Study 2010 (Salomon et al., 2013)
Osteoporosis	0.01	5.3%	224,002	2,016	Victorian Population Health Survey 2011-2012 (Department of Health, 2014)	Dutch Weight (see Victorian Burden of Disease Study 2001)
Osteoarthritis	0.08	14.1%	595,929	47,674	Victorian Population Health Survey 2011-2012 (Department of Health, 2014)	Adjusted Dutch Weight from the Victorian Burden of Disease Study 2001
Rheumatoid arthritis	0.20	3.3%	139,473	27,755	Victorian Population Health Survey 2011-2012 (Department of Health, 2014)	Global Burden of Disease Study 1990 (Murray & Lopez, 1996)
Multiple sclerosis	0.41	0.1%	4,226	1,737	Victorian Population Health Survey 2011-2012 (Department of Health, 2014)	Global Burden of Disease Study 1990 (Murray & Lopez, 1996)

Inside GAMBLING

Online magazine

See *Inside gambling* for the latest information, evidence and expert opinion on gambling issues in Australia and overseas.



Teenage gambling: a business that's only getting riskier

Sport and gambling – loving the odds more than the game?

Five minutes with...

Gambler's Help financial counsellor, Pam Mutton

Hear from:

- public health experts
- gambling sector professionals
- people with firsthand experience of gambling problems

Let us know what you'd like to read

If you have ideas for themes or stories for *Inside gambling*, we would love to hear from you. Go to: **insidegambling.com.au/contact-us**

Subscribe to *Inside gambling* FREE!

insidegambling.com.au

Victorian Responsible Gambling Foundation