RESEARCH REPORT

The social cost of gambling to Victoria

November 2017

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Victorian Responsible Gambling Foundation

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This project was funded by the Victorian Responsible Gambling Foundation through the Grants for Gambling Research Program.

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Conflict of interest declaration

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

To cite this report

Browne, M, Greer, N, Armstrong, T, Doran, C, Kinchin, I, Langham, E & Rockloff, M 2017, *The social cost of gambling to Victoria*, Victorian Responsible Gambling Foundation, Melbourne.

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Our vision: A Victoria free from gambling-related harm

Victorian Responsible Gambling Foundation

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The social cost of gambling to Victoria

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November 2017

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Key terms

Acronym	Description
ABS	Australian Bureau of Statistics
ACG	Allen Consulting Group
AIHW	Australian Institute of Health and Welfare
BoD	Burden of Disease
CPGI	Canadian Problem Gambling Index
CPI	Consumer Price Index (ABS Catalogue No. 6401.1)
CQU	Central Queensland University
CSF	Community Support Fund
DALY	Disability-Adjusted Life Years
DH	Department of Health (Victoria)
DHHS	Department of Health and Human Services
DHS	Department of Human Services (Victoria)
DJR	Department of Justice and Regulation (Victoria)
DOJ/DJR	Department of Justice (Victoria), now the Department of Justice and Regulation
DSS	Department of Social Services
DTF	Department of Treasury and Finance (Victoria)
DW	Disability Weight
EGM	Electronic Gaming Machine
EGRL	Experimental Gambling Research Laboratory
GDP	Gross Domestic Product
HSP	Homeless Support Program
ITSA	Insolvency Trustee Service Australia
MAV	Municipal Association of Victoria
NAHA	National Affordable Housing Agreement
NPAH	National Partnership Agreement on Homelessness
OLGR	Office of Liquor, Gaming and Racing
PC	Productivity Commission
PGSI	Problem Gambling Severity Index
PIP	Pre-commitment Implementation Project
SAAP	Supported Accommodation Assistance Program
SOGS	South Oaks Gambling Screen
VCAT	Victorian Civil and Administrative Tribunal
VCEC	Victorian Competition and Efficiency Commission
VCGLR	Victorian Commission for Gambling and Liquor Regulation
VRGF	Victorian Responsible Gambling Foundation
WHO	World Health Organization

Executive summary

The gambling industry generates economic activity, tax revenue and recreational benefits to players. Nevertheless, it is well recognised that gambling can also result in diverse negative consequences to at least some gamblers, as well as those around them ('affected others') and the broader community. The present study aimed only to assess the costs associated with gambling.

A series of Australian studies have attempted to cost these negative outcomes in financial terms. Total gambling expenditure[1] in Victoria in 2014–15 was $5.8 billion, generating a total of $1.6 billion in taxes and levies. Gamblers are generally categorised in population surveys into four categories based on the Problem Gambling Severity Index (PGSI; Ferris & Wynne 2001) scores: non-problem (PGSI = 0), low-risk (LR, PGSI = 1 or 2), moderate-risk (MR, PGSI = 3–7) and problem gambler (PG, PGSI = 8+). Spending by those with at least some gambling problems (i.e. PGSI 1+) may account for up to 77 per cent of total gambling revenue[2], which suggests that the cost of gambling is significant relative to the size of the industry. The present report found that all three PGSI 1+ categories (low-risk, moderate-risk and problem gamblers) contribute substantially to the overall cost of gambling, although prior work has focused only on the costs associated with problem gamblers.

The first phase of this project included a systematic and targeted review of the prior attempts to quantify the cost of gambling and found that the four previous attempts in Australia largely followed the framework developed by the Productivity Commission (PC) (1999). Costs associated with gambling have been categorised into five parts:

- financial costs
- productivity and employment costs
- crime and legal costs
- personal and family costs
- treatment costs.

In these prior studies, each cost was considered in terms of who was burdened by the cost: the individual, the immediate family, or the community. Many of the prevalence estimates used to establish the costs associated with harms were calculated by making assumptions from data obtained via population prevalence studies or from reports by treatment-seeking gamblers at the severe end of the problem gambling spectrum.

Previous costings have mainly excluded low-risk and moderate-risk gamblers and have been limited by a lack of reliable or accurate data relating to the prevalence of harms, particularly those experienced by affected others (Productivity Commission 1999, 2010; ACG 2011; VCEC 2012). Because prior costing studies have tended to focus only on PGs, costs have not hitherto been estimated for less severe but more prevalent aspects of gambling-related harm. The present study revealed substantial harm (in aggregate) occurring among less-affected gamblers (LR and MR).

[1] On EGMs, table games, wagering, racing, sports betting, lotteries, and Keno.
[2] See Table 10.

The second phase of this project estimated the costs of problem gambling to Victoria (2014–15) for all gambling severity levels (LR, MR and PG), following a similar costing framework to previous studies but utilising a more robust and representative source of prevalence figures of gambling-related harm across the various costing items. Where possible, costs were estimated for gamblers and affected others (which includes family, friends etc.) across the following categories: financial, emotional and psychological, relationships and family, crime (cost to the Victorian justice system), productivity loss and work impacts, and cost to the Victorian Government.

When considering costs arising from PGs only, and adjusting for inflation, we determined the cost of gambling to be $2.4 billion, which is quite similar to prior estimates. However, we also determined costs of $2.4 billion and $1.9 billion arising from lower risk categories (LR and MR), as well as $0.3 billion in non-gambler specific costs. *When these are included, the present analysis arrives at a total cost of $7 billion – substantially higher than previous estimates.* Thus, the increased cost arrived at by the present study is attributable to costs associated with less severe but more prevalent negative consequences of gambling, which were not included in previous estimates. Given the size of these costs, it is not possible to ignore them in any reasonable and complete accounting.

Table 1 summarises the estimated costs of gambling problems to Victoria in 2014–15. The total costs include all levels of gamblers. A further breakdown by PGSI and cost subcategories is provided in the Results section of this report.

Table 1: Estimated costs of gambling problems to Victoria (2014–15)

Category	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total cost to Victoria (2014–15)
Financial	$315,582,939	$337,505,836	$479,372,995	$1,348,095,911
Emotional and psychological	$815,133,289	$477,189,959	$300,633,433	$1,592,956,680
Relationships and family	$589,825,106	$585,809,945	$1,013,261,621	$2,188,896,672
Crime – Victorian justice system	$26,968,703	$31,229,297	$41,985,008	$100,183,007
Productivity loss and work impacts	$64,504,422	$195,190,478	$338,176,056	$597,870,956
Cost to the Victorian Government	$634,247,824	$275,246,025	$183,788,212	$1,145,477,560
Total cost	**$2,446,262,283**	**$1,902,171,540**	**$2,357,217,325**	**$6,973,480,788**[3]

The major components of the cost of gambling are borne by gamblers themselves and those around them. Of the $1.3 billion in financial costs, $1 billion could be attributed to direct financial deprivation from excessive spend on gambling. However, problematic gambling also gives rise to psychological impacts (e.g. loss of sleep due to worry, shame, stigma and distress), yielding costs that go beyond the simple monetary value of gambling losses. We estimated that psychological and emotional suffering by gamblers account for a further $1.6 billion of costs at the individual level. Further psychological and emotional impacts on the families and social networks of gamblers

[3] Total includes $267,829,640 costed in aggregate across all PGSI categories for subcategories: illegal offshore gambling; cost to Victorian state government in policy, regulation, research, and treatment; and the direct cost to local government in Victoria.

are costed at $2 billion. Factoring in other minor costs, *approximately 75 per cent of the total cost of gambling is borne by gamblers, their families and their social networks*.

Gambling involves a complex redistribution of wealth within society, at the individual, business and government levels. The average non-problem gambler spends $670 per annum on gambling, while the average gambler with some problems (PGSI 1+) spend an average of $5033 per annum on gambling (Victorian Gambling and Health Study 2008, Hare 2009). Applying a conservative discounting formula, we determined that excessive spend attributable to problematic gambling accounts for at least $1 billion in direct financial deprivation costs to gamblers. This calculation takes into account a generous assumption on the intentional and rational spending on gambling as a recreational pursuit by both non-problem and problem gamblers. The amount of money transferred from problem gamblers to operators is more than half the amount raised in taxes and levies by government. This suggests that *gambling taxation represents an inefficient and inequitable means of raising funds for public expenditure*.

Based on previous costings, alcohol and tobacco are each estimated to cost Victoria about $10 billion per annum. Therefore, gambling results in about 70 per cent of the cost of each of these issues in monetary terms. Prior work (Browne et al 2016) has quantified harm from gambling and alcohol in terms of health and wellbeing impact (years of life lost to disability – YLD). The ratio of the two conditions in terms of YLD is 69 per cent. This illustrates a very close correspondence between these two different methods of quantifying negative consequences from gambling – both monetary and non-monetary.

A final assessment of the ‘net’ effect of gambling (benefits – costs) is beyond the scope of the present study. Although the precise value of the ‘consumer surplus’ (entertainment benefit exceeding expenditure) is uncertain, the $7 billion in annual costs resulting from gambling calculated here can be compared to gross industry revenue of $5.8 billion. In our view, any reasonable estimate of the consumer surplus of gambling would likely entail a neutral or (more likely) negative net benefit to the Victorian community.

Phase 1: Systematic and targeted literature review

Introduction

In recent years, researchers and policy analysts have adopted a public health approach to managing the impact of gambling (Productivity Commission 2010). This in turn has led to the emergence of research focusing on definitions and conceptual frameworks of gambling-related impact or harm (Abbott et al. 2013; Binde 2011; Blaszczynski 2009; Currie et al. 2006; Currie & et al. 2009; Fearnley & et al. 2012; Langham et al. 2016; Young & Tyler 2008). The growing body of gambling-related harm research highlights that gambling not only has negative impacts on gamblers themselves, but also on others close to them (family, friends, colleagues) and the wider community (Abbott et al. 2013; Langham et al. 2016; Li et al. & 2016; Productivity Commission 2010).

A recent study by Langham et al. (2016) conducted an extensive literature review and collected data from gamblers experiencing harm, others affected by a gambler, and professionals in support or treatment of those with gambling problems. They used this data to generate a definition, conceptual framework and classification of gambling-related harms. For both gamblers and affected others, gambling-related harm could be classified into eight domain types:

1. financial harm
2. relationship disruption, conflict or breakdown
3. emotional or psychological distress
4. decrements to health
5. cultural harm
6. reduced performance at work or study
7. criminal activity
8. life course or intergenerational harms (Langham et al. 2016).

Utilising the framework for gambling-related harms, Li et al. (2016) measured harms among both gamblers and affected others and found their experiences of harm to be similar. Gamblers appeared to 'pass on' approximately half of the harms they experienced from gambling to those around them, and harms accrued with increasing levels of problem gambling severity (PGSI). A public health approach to gambling-related harm was adopted by Browne et al. (2016) who quantified the individual and community level impact of low-risk, moderate-risk and problematic gambling on the quality of life. Their research found that low-risk gambling was about as harmful to the individual as some musculoskeletal conditions (e.g. arthritis); that moderate-risk gambling was on par with the mild alcohol use disorder; and that problem gambling was as harmful as bipolar disorder and migraines (Browne et al. 2016). Furthermore, at the community level the study showed that the aggregate years of healthy life lost each year due to gambling problems in the Victorian population was 97,877 years, two-thirds of the impact of alcohol use or dependence or of

major depression (Browne et al. 2016). The gambling harms identified and measured in these studies (Browne et al. 2016; Langham et al. 2016; Li et al. 2016) are consistent with other developed frameworks of gambling impacts or harm (Abbott et al. 2013; Binde 2011; Blaszczynski 2009; Currie et al. 2006; Currie et al. 2009; Fearnley et al. 2012; Young & Tyler 2008).

While the abovementioned research has substantially advanced our understanding of gambling harm, attempts to estimate the aggregate costs caused by gambling harms on the individual, affected others and the community provide methodologies that are inconsistent and incomplete (Productivity Commission 1999, 2010; Victorian Competition and Efficiency Commission 2012). For example, a recent analysis by the VCEC (2012) estimated the social and economic costs of gambling to be between $1.5 billion and $2.7 billion a year VCEC (2012). That study's estimate was limited not only by the wide cost range nominated, but also because it focused only on costs arising from problem gamblers, when recent research shows that financial and other impacts arise also from gamblers at a lower risk of having gambling problems (Browne et al. 2016).

The Victorian Responsible Gambling Foundation (VRGF) has identified the need for a comprehensive economic measure of the social cost of gambling. The objective of this research is to estimate the current social cost of gambling in Victoria using all available information, including recent findings on gambling harms. The purpose of this first stage of the study is to conduct a systematic and targeted review of the literature on the social cost of gambling. Key considerations are the types of impacts of gambling and the appropriate methodologies used to quantify social costs of the impacts of gambling. In line with the Victorian Competition and Efficiency Commission's inquiry into the costs of problem gambling (2010), the current report considers only the social impacts and costing methodologies related to the *negative* costs of gambling on the individual, affected others and the wider community. While the Productivity Commission (1999; 2010) considered the benefits of gambling in terms of consumer surplus, tax revenue and social community benefits, a full cost-benefit analysis is highly complex and beyond the scope of this report.

Methods

Systematic literature review search strategy

The strategy utilised for the systematic review of peer-reviewed literature on gambling-related harms and costs adopted the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher & et al. 2009). A librarian designed and carried out a comprehensive search strategy for the systematic literature review. The following terms were searched in the title or abstract, article or MESH heading of peer-reviewed papers and non-reviewed reports:

1. gambling OR pathological gambling
2. cost* OR impact* OR social cost*
3. economic* OR socioeconomic*
4. AND/1–3.

The search was limited to studies published between 2010 and February 2016 (inclusive). A comprehensive search of 11 databases was then conducted:

- Medline/Ovid
- Embase/Ovid
- PsycINFO/Ovid
- EBM Reviews – Cochrane Database of Systematic Reviews/Ovid
- The Campbell Library
- APAIS-Health/Informit
- CINAHL/Ebsco
- Global Health/Ovid
- EconLit/Proquest
- Proquest Central/Proquest
- Geobase/Elsevier.

Articles were limited to those written in English and available as full manuscripts of the original research.

Article synthesis

Information was extracted from each paper on: author, year, country of data, objective, methodology, gambling type, gambling harm level and type, key findings and general comments. Greater attention was devoted to understanding and summarising research on gambling-related harms and any reported social costs. Two review authors (IK, NG) extracted the information and a third author (CD) checked the extracted data. Disagreements were resolved by discussion between the reviewers (IK, CD, NG) and the lead investigator (MB).

Qualitative analysis

Narrative synthesis was used to analyse the studies, an approach consistent with the guidance provided by Popay et al. (2006) This involved developing a preliminary synthesis of findings of the included studies, exploring relationships in the data by textual descriptions, clustering, tabulation and assessing the robustness of the synthesis product.

Targeted literature review search strategy

The targeted literature review was designed to consider publications not necessarily within the scope of the systematic literature review that specifically detailed costing methodologies rather than impact frameworks. Targeted literature included government reports, results from populations studies or other forms of ‘grey literature’ that were not included within the systematic search. Studies were identified by pursuing reports and articles presented on websites of known research, department or government websites and by taking advantage of professional networks in the industry to request potentially relevant documents from specific agencies and organisations. These articles were restricted to those specifically discussing costing methods using an infinite timeline.

Results

Systematic literature review

The systematic literature review search of 11 databases yielded a total of 173 citations of peer-reviewed publications. The papers were then reviewed by an experienced librarian and lead researcher (CD) and 112 exclusions were made based on the following criteria:

- 22 duplicates
- 90 records excluded with reason:
  - theory or modelling paper (n = 31)
  - risk-related behaviour (n = 29)
  - not specific to gambling (n = 10)
  - review papers (n = 7)
  - on interventions (n = 2)
  - protocol paper (n = 1)
  - full text not available (n = 1)
  - paper not translated into English (n = 1)
  - paper was an introduction to a special journal issue (n = 1).

The remaining 61 articles were reviewed by three authors (NG, CD, IK) and two themes emerged. The studies related to either:

- the impact of gambling-related harms on individuals, affected others (e.g. family, friends), or the community (n = 25) or
- gambling industry impacts, predominantly at a community level (n = 36).

The flow diagram shown in Figure 1 summarises the search strategy results for the systematic literature review.

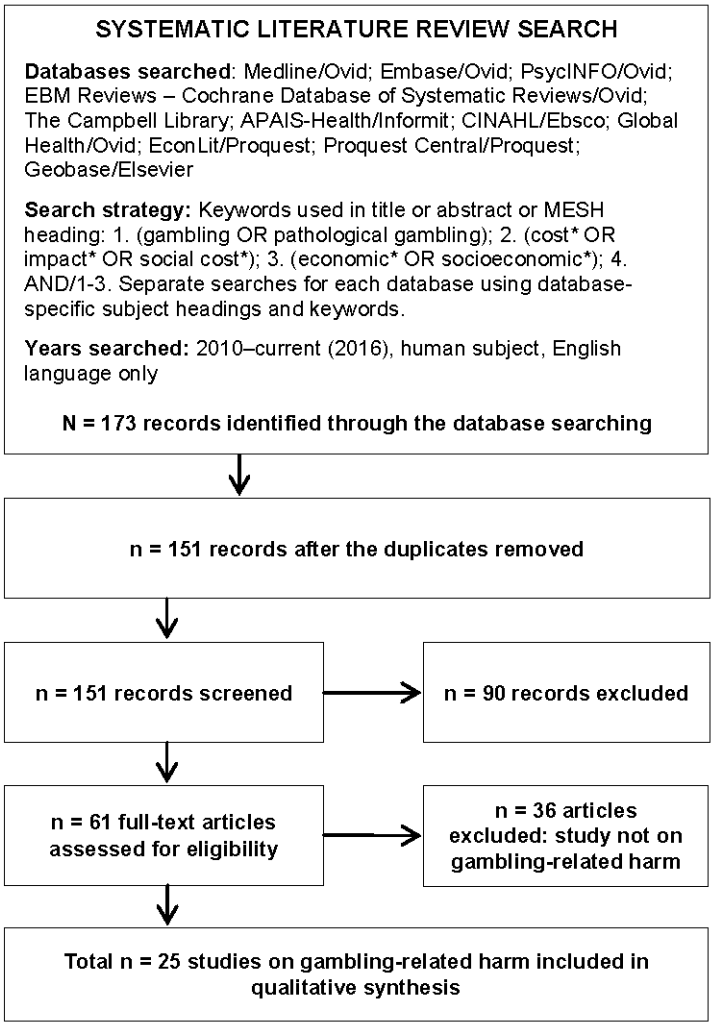

Figure 1: Systematic literature review selection log (PRISMA flow diagram)

The 36 publications related to gambling industry impacts varied in their content. Fifteen studies explored the impact of government regulations on *gaming taxation and/or revenue redistribution* to the community. Specifically, these studies explored:

- the impact of the gaming industry and associated taxation or revenue on the Macau (China) economy and communities (Gon Kim et al. 2011; Gu, Li & Tam 2013; Gu & Tam 2011, 2014; Li, Gu & Siu 2010; Li, Gu & Wu 2015; Pannell & Loughlin 2015; Zheng & Hung 2012; Vlcek 2015)
- the impact of casino gaming revenue allocation to Indigenous Indian communities in Canada (Belanger, Williams & Arthur 2012, 2013)
- the effect of taxation of casino gaming in regional Spanish communities (Leal, Lopez-Laorda & Rodrigo 2014)
- the impact of gaming tax policy changes on casino riverboat operators in the USA (Ahlgren, Tanford & Singh 2013)
- modelling the effects of casino taxation in the USA (Philander 2014)

- the tax regulation impact of private versus government run casinos in the USA and Canada (Chang, Lai & Wang 2010).

Nine studies explored the *introduction and impact of casinos,* including:

- the relationship between casino adoption and political corruption in the USA (Walker & Calcagno 2013)
- the impact of casinos on quality of life and business productivity in the USA (Wenz 2014)
- rent-seeking in the USA casino gaming industry (Mixon & Ressler 2014)
- an international review of factors associated with decisions to legalise casino gambling (Richard 2010)
- perceptions of the impacts of casino development in Macau and Singapore (Wu & Chen 2015) and Hong Kong (Tam,Tsai & Chen McCain 2013)
- modelling neighbourhoods around casinos in socio-demographic disadvantaged areas in the USA (Conway 2015)
- the impact of the introduction of the casino gaming industry to Indian nations (Conner & Taggart 2013) and Tunica County in the USA (Long, Johnson & Oakley 2011).

Two Australian studies focused on *electronic gaming machines (EGMs)*:

- the relationship between EGM expenditure and the receivership of economic stimulus cheques in Victoria, Australia (Buddelmeyer & Peyton 2014)
- a discussion of the relationship between government regulation and accessibility of EGMs in Australia and New Zealand on gambling consumption and harm (Livingstone & Adams 2011).

The remainder of the papers from the systematic literature review search examined:

- motivations for gambling in an Australian sample (Francis et al. 2015)
- problem gambling prevalence in Hungary (Kun et al. 2012)
- the association between lottery sales and suicide numbers in Taiwan (Chen, Stewart & Lee 2012)
- a review of publically available gambling data sources in Australia and how these measure gambling addiction (Farrell 2012)
- a review of the impact of the legalisation of gambling in Germany (Ludwig et al. 2013)
- modelling gambling participation and expenditure for economic growth versus recession in Sweden (Rude, Surry & Kron 2014)
- adolescent gambling frequency in a Norway population (Hansen & Rossow 2012)

- a commentary from a New Zealand author on the need for 'industry addiction studies' to influence policy and regulation change on consumption of harmful products (Adams 2013).

In addition, only three of these 35 studies reported on costs: one in relation to annual casino revenue (US$) allocated to community funds and charities (Belanger et al. 2013), another on the expenditure on EGMs (A$) in a given period (Buddelmeyer & Peyton 2014) and the third which cited figures from a 1999 US study on the annual and lifetime costs (US$) of gambling in the aggregate (US$ 5 billion annual, US$ 40 billion lifetime) and per problem or pathological gambler (Huberfeld & Dannon 2014).

These 36 studies were excluded from the qualitative analysis as they did not measure the direct impact or social costs of gambling by the individual, but rather the impact of the gambling industry overall and associated government regulation and taxation policies.

The 25 remaining publications on gambling-related harm studies were broadly grouped according to their focus on three levels of harm:

- the individual level (the gambler)
- affected others (e.g. family, friends)
- the community level (e.g. support services).

These are consistent with the gambling-related harms taxonomy proposed by Langham et al. (2016) and quantified in subsequent studies at an individual and population level by Browne et al. (2016). This approach to organising 'levels' of harm has previously been identified by Currie and colleagues (2006, 2007, 2009). This framework provides a suitable means to develop a methodology to measure the social costs of gambling by first identifying each gambling-related harm and the aggregate impact to the population. The next section summarises these 25 publications at each gambling-related harm level. A full summary of the studies and their findings are provided in Appendix 1.

Gambling-related harm articles

Out of 25 peer-reviewed publications on gambling-related harm, the largest proportion of research was on gambling-related harm in the USA (n = 8) and Australia (n = 6). Other countries included China (n = 3), New Zealand (n = 2), United Kingdom (n = 2), Czech Republic (n = 1), Denmark (n = 1), Sweden (n = 1) and a combined USA and South Korean paper (n = 1). The largest gain in the research output was observed between 2012 and 2014 with 19 publications (76 per cent).

Individual level harms

The majority of the studies identified were focused on the individual level harms to the gambler (n = 21) across all harm domains identified by Langham et al. (2016): financial difficulties, relationship conflict or breakdown, decrements to health, emotional or psychological distress, reduced productivity or loss of work or study, and criminal activity. The individual level harms from gambling identified in the systematically reviewed articles were: financial problems (Hing et al. 2012; Kerber et al. 2015; Svensson, Romild & Shepherdson 2013; Walker, Abbott & Gray 2012), debt (Brown et al. 2012; Kerber et al. 2015) or personal bankruptcy (Grote & Matheson 2014), impact on relationships (Black et al. 2012; Hing et al. 2012; Svensson et al. 2013; Walker et al. 2012), divorce (Black et al. 2012; Kerber et al. 2015), violence (Hing et al. 2012), substance use or abuse (Cheung 2014; Hayatbakhsh et al. 2012; Larsen, Curtis & Bjerregaard 2013; Maierova,

Charvat & Miovsky 2014; Najavits et al. 2011; Svensson et al. 2013), anxiety and depression (Hing et al. 2012; Holtslag et al. 2008; Lindberg, Fernie & Spada 2011; Maierova et al. 2014; Svensson et al. 2013), help-seeking behaviour (Gainsbury et al. 2014; Hing et al. 2012), suicidal thoughts and/or attempts (Maierova et al. 2014), loss of employment (Kerber et al. 2015; Maierova et al. 2014), and criminal activity (Cheng, Smyth & Sun 2014; Cheung 2014; Hing et al. 2012). One of the reviewed studies claimed a relationship between the opening of casinos and a 9.2 per cent increase in fatal alcohol-related traffic accidents near the casino locations during a 10-year period (Cotti & Walker 2010).

A study by Markham, Young and Doran (2014) tested the hypothesis that electronic gaming machine (EGM) expenditure could *predict* gambling-related harm at the level of the EGM venue (venue design). This is an emerging area of research that focuses on understanding how elements of venue design induce specific behaviours in individual gamblers (Abbott et al. 2013). Results revealed that after adjusting for venue type and number of EGMs, an increase in mean per capita monthly EGM expenditure from A$10 to A$150 was associated with a doubling in the prevalence of gambling-related harm from 9 per cent to 18 per cent in the adult population of the Northern Territory, Australia (Markham et al. 2014).

Affected others harms

Of the 25 gambling harm studies, only one focused on the gambling-related harm to others close to the gambler. Svensson et al. (2013) considered data from the Swedish Longitudinal Gambling Study and found that 18.2 per cent of the Swedish population reported having someone close to them who currently or previously had gambling problems. These ‘concerned significant others’ (CSOs) experienced similar negative consequences to gamblers, as they were significantly more likely than the general population to experience poor mental health, risky alcohol consumption, economic hardship and arguments with those closest to them. Gender differences were explored, finding that males and females were just as likely to be CSOs and experienced similar problems; women CSOs reported less social support and greater exposure to violence; and male CSOs reported more legal problems and were more afraid of losing their jobs (Svensson et al. 2013). The authors noted that the main limitation of the study was that the relationship between the CSO and the person previously or currently experiencing gambling problems was unknown (Svensson et al. 2013).

The remainder of the papers reported the negative impacts on persons close to a gambler (i.e. families, friends) as measured indirectly by the harms experienced by the problem gambler. These include: divorce (Black et al. 2012), family or relationship problems (Black et al. 2012; Maierova et al. 2014), seeking help from family or friends (Gainsbury et al. 2014; Hing et al. 2012), arguments in the household (Hing et al. 2012) or related to gambling (Tu, Gray & Walton 2014; Walker et al. 2012), violence (Hing et al. 2012) and lower household income (Brown et al. 2012).

Community level harms

At the community level the studies arising from systematic literature review broadly analyse the association between gambling participation, expenditure and access to gambling venues and levels of household income (Brown et al. 2012; Moellman & Mitra 2013; Pickernell et al. 2013; Tu et al. 2014), unemployment (Moellman & Mitra 2013; Pickernell et al. 2013), crime (Cheng et al. 2014; Cheung 2014; Humphreys & Soebbing 2014; Moellman & Mitra 2013), business bankruptcy (Grote & Matheson 2014) and tourism (Pickernell et al. 2013).

Moellman and Mitra (2013) conducted an empirical analysis in the USA on the relationship between gambling (measured as the number of gaming machines and tables), community welfare,

household income, unemployment, violent crime and property crime. Gaming machines and tables impacted the community negatively, with increases in levels of unemployment, violent crime and property crime as the numbers of gaming machines and tables increased. Median household income was negatively associated with the number of gaming machines but positively associated with the number of gaming tables (Moellman & Mitra 2013). An Australian study by Pickernell et al. (2013) found that EGM access (measured by the number of EGMs and venue size) was related to higher expenditure on EGMs per adult and higher unemployment rates.

One of the USA studies found mixed results in the relationship between crime and gambling, in that the access to *video lottery terminals (VLTs)* in clubs and bars was weakly associated with a decrease in prostitution and shoplifting and an increase in credit card fraud (Humphreys & Soebbing 2014). However, the presence of casinos was related weakly to an increase in robbery and a decrease in shoplifting. No relationship was found between the introduction of VLTs and casinos and breaking and entering, drug possession, or illegal gambling (Humphreys & Soebbing 2014).

Several studies identified in the systematic search focused on the impact of gambling within indigenous communities (Hing et al. 2012; Wolfe et al. 2012; Young, Lamb & Doran 2011). Hing et al. (2012) conducted a targeted survey of Aboriginal Australians living in NSW who gamble. Seventy per cent of the Aboriginal gamblers spent more than $100 per week compared to 22 per cent of non-Aboriginal gamblers, and the Aboriginal gamblers had higher rates of EGM use. The Aboriginal sample reported harms including depression, financial problems and need for financial assistance, family conflict, time away from work and study, and obtaining money illegally (Hing et al. 2012). Another study conducted in three remote towns in the Northern Territory with a high proportion of Aboriginal residents found a disproportionate distribution of EGM expenditure in these areas, with two venues in the Aboriginal community accounting for over $100,000 expenditure per EGM (Young et al. 2011). Young and colleagues (2011) argue that the redistribution of EGM revenue to the Community Benefit Fund, which aims to improve the negative consequences of gambling, is not reaching the most disadvantaged Aboriginal communities outside of town. The third study concerning indigenous communities and gambling found benefits of tribal casino gaming on American Indians on income, indicators of health, health-related behaviours and access to health care (Wolfe et al. 2012).

The *perceptions* of the positive benefits and negative impacts of casino gaming on the community were reported in two studies (Lee, Kang & Reisinger 2010; Wan 2012). Lee et al. (2010) collected data from two rural gaming locations in the USA and South Korea on the communities' perception of the impacts, benefits and support for casino gaming development. Via regression analysis the authors extracted six factors surrounding their perceptions: negative social impacts with direct gambling costs (e.g. gambling addiction, bankruptcy); negative environmental impacts (e.g. noise, crowding); negative social impacts with indirect gambling costs (e.g. crime, divorce, alcohol and drug problems); positive social impacts (e.g. traditional or cultural preservation, community spirit); positive economic impacts (e.g. tourism, employment); and negative economic impacts (e.g. tax burden, cost of living). Wan (2012) found that while community leaders' perceived the introduction of casino gaming in Macao to have positive social, economic and environmental contributions to the community, there were resultant harms at the individual and family levels including problem gambling, crime, school dropouts and family relationship problems.

Targeted literature review

Quantifying the costs of gambling

A number of studies beyond the scope of the systematic review have determined a range of harms associated with gambling (Anielski & Braaten 2008; Dickerson et al. 1998; Productivity Commission 1999 2010; The Allen Consulting Group, Problem Gambling Research and Treatment Centre (AGC) 2011; Victorian Competition and Efficiency Commission (VCEC) 2010).

As mentioned previously, one of the most comprehensive frameworks was developed by Central Queensland University (CQU) and detailed gambling-related harm in Victoria (Browne et al. 2016). Following Langham et al. (2016), the framework of harm used in that study incorporated eight categories of harm: financial, relationships, emotional or psychological distress, health, cultural, work or study performance, criminal activity, and life course or intergenerational harm. While the gambling harms frameworks presented by Langham et al. (2016) and other publications detailed in the systematic review have provided increased understanding of the harms resulting from gambling, they fail to consider the resulting financial burden of gambling-related harm. Both national and international organisations have attempted to put a figure on the cost of gambling (Anielski & Braaten 2008; PC 1999, 2010; VCEC 2012). The most prominently cited methodology used for quantifying the cost of problem gambling in Australia was developed by the Productivity Commission (1999). The Productivity Commission (1999, 2010) included the benefits associated with gambling in their costing frameworks. The current review will focus solely on the methodologies used to calculate the adverse social costs associated with gambling. While considering the benefits of gambling is important for a comprehensive understanding of the broader impacts of gambling, calculating gambling-related benefits is challenging, as it requires data from a number of unattainable sources and involves complex methodologies well beyond the scope of this report. Accordingly, the following sections will detail how the adverse costs of gambling have been quantified by the Productivity Commission (1999) and then consider how other authors adapted this methodology to incorporate different harms or perspectives.

Productivity Commission 1999

The Productivity Commission (1999) used data from the *National Gambling Survey 1999* and the *Survey of Clients of Counselling Agencies (SCCA)* to provide an estimation of the cost of gambling in the year 1997–98. Unless otherwise stated, the Productivity Commission used data from the *National Gambling Survey* sourced from a general population of regular gamblers. To be conservative, when using the SCCA, data was only included for gamblers who scored 10 or above on the South Oaks Gambling Screen (SOGS; 47,000 people) rather than the estimated total number of problem gamblers in the Australian population (293,000 people). It was expected that those seeking treatment would be likely to experience more severe harms than a general population sample of problem gamblers.

The Productivity Commission (1999) used a number of assumptions and parameters to deal with variations in question framing, causality and comorbidity. The SCCA often asked participants about adverse consequences as one-off events (i.e., have you ever …) rather than in reference to ‘the last year’. For these questions, the commission estimated and converted isolated instances to an annual figure based on an average lifespan of gambling problems of 8.9 years (generated from SCCA data). The annual figure allowed for an annual cost to be estimated for impacts measured as ‘one-off’ events.

The Productivity Commission (1999) also considered the issues of causality and the likelihood that the gambler would have experienced the impact or harm in the absence of gambling. They met

with prominent Australian gambling academics who agreed that for a number of outcomes related to personal and family impacts, approximately 15–20 per cent would have experienced problems regardless of the gambling problems. Financial burdens or consequences were considered to be a direct derivative of gambling problems. In the absence of data relating to causality, the Productivity Commission (1999) applied a 20 per cent reduction to the prevalence of personal and family harms of problem gambling, thus only calculating a prevalence of 80 per cent for these impacts. They acknowledge that the 20 per cent reduction estimate is in no way ideal, but does provide a useful guide to reduce the risk of overestimating gambling costs.

Gambling is likely to result in many harms that co-occur. As with causality, failing to consider comorbidity is likely to result in a significant overestimation of gambling costs. Many people who report some adverse outcomes in one area would be likely to experience other, related harms. For example, those who reported suicidal ideation are also likely to report depression. If unaccounted for, this can result in double-counting of harms. Therefore, the Productivity Commission (1999) would exclude the more 'severe' cases from estimates for the 'less' severe cases. For example, the estimated number of people with suicidal thoughts would be excluded from the estimates of those with depression.

The Productivity Commission grouped gambling-related costs into five categories: financial costs, productivity and employment costs, crime and legal costs, personal and family costs, and treatment costs. They included costs that were experienced by the gamblers, their families and the broader community.

Financial costs

Financial costs included debts imposed on others, such as family and friends, financial institutions and those obtained via informal sources such as loan sharks as a direct result of gambling as well as the costs associated with bankruptcy. The annual cost of debt transfers resulting from problem gambling was approximately $26 million. This figure was based on an average debt per person of $10,044 derived from SCCA data and adjusted for sample and question phrasing. The cost of bankruptcy was calculated based on the fee structure of the Insolvency and Trustee Service of Australia ($4000) multiplied by the number of bankruptcies reportedly resulting from problem gambling (317 per year), amounting to a total annual cost of $1.3 million. It should be noted that this figure is likely to be unreliable given the legalities of declaring bankruptcy with a recent gambling history. Furthermore, many bankruptcies are unlikely to generate a fee as they are self-declared rather than imposed by a third party (PC 1999).

Productivity and employment costs

Productivity and employment costs included productivity loss in the workplace and at home and the costs associated with changing a jobs as a result of gambling. Productivity loss was valued based on the average weekly earnings per person per year ($748 per week, $38,600 per year). This figure was then multiplied by the number of problem gamblers who reported workplace productivity loss due to gambling in the past 12 months 'often to always' (7000 people) for the lower cost estimate and 'sometimes to always' (49,200 people) for the higher cost estimate, providing a range between $21 million and $51 million per year. As 30 per cent of gamblers were unemployed, the Productivity Commission (1999) used the same method to determine loss of productivity at home, providing an estimate of between $7 million and $50 million per year.

In the year 1997–98, 5600 problem gamblers reportedly changed jobs due to their gambling. Lost income as a result of job change was calculated based on an average period of unemployment between jobs of six weeks and the average weekly income per person, providing a total annual

cost of $24 million. Based on the unemployment benefit payments at the time ($402 per fortnight for nine weeks for approximately half of those who change jobs), approximately $4.1 million of this cost was borne by the government[4]. The cost of job searches were calculated using an estimated cost of $2357 per person (half the average cost of job searches by major firms) reported by Dickerson et al. (1998). This provided a total annual cost of job searches resulting from gambling of $13 million. Staff training and replacement costs were assumed to amount to 10 per cent of the employer's annual salary. Based on the average weekly income, staff replacement costs amounted to a total annual figure of $22 million.

Crime and legal costs

Included in the Productivity Commission's (1999) framework were the costs associated with theft, court proceedings, police incidents and imprisonment. Theft was given a lower value of $500 and higher value of $3225 per incidence based on figures provided by Walker (1997). Based on a reported 9700 gamblers who committed gambling-related crime, this provided a range from $5 million to $31 million. A further 6300 people reported being involved in police incidents as a result of their gambling. The cost of police incidents were valued at $510 per incident based on figures provided by Dickerson et al. (1998), amounting to a total annual cost of $3.2 million. Approximately 700 gamblers reported having been involved in court proceedings as a result of their gambling. A value of $8000 was given to each case, equating to a total cost of $5.6 million per year.

The final component of crime and legal costs was costs associated with incarceration. A total of 6.4 per cent of gamblers surveyed by the SCCA reported serving a jail term as a result of problem gambling. After making adjustments for the sample, and assuming incarceration had only occurred once in the 8.9-year period of gambling problems, the annual number incarcerated as a result of problem gambling amounted to 336 people. Based on an average jail term of 3.4 months for non-violent crimes, the Productivity Commission (1999) estimated a total annual cost of $5.1 million per year.

Personal and family costs

Personal and family costs included the cost of emotional distress to immediate family and parents; costs associated with depression, suicidal ideation and suicide attempts; financial costs of divorce and separation; costs of emotional distress associated with relationship breakdown, divorce and separation; and the cost of gambling-related violence. Values for emotional distress caused by gambling were based on compensation payments for emotional harm. For minor cases, this ranged from $5000 to $15,000 per person and from $30,000 to $50,000 per person for more severe cases. To account for issues associated with causality, the Productivity Commission (1999) applied a 20 per cent reduction in the number of people estimated to be affected by personal and family impacts. To avoid double-counting for related impacts (i.e., depression and suicide), the Productivity Commission (1999) excluded the more extreme group when calculating costing for the broader category. For example: numbers for divorce and separation were excluded from the numbers of relationship breakdown; numbers of people reporting suicidal thoughts were excluded from the number reporting depression; and numbers of attempted suicides were excluded from the number of people reporting suicidal thoughts.

Emotional distress to immediate family and parents was calculated using data from the SCCA and therefore the necessary sample-based adjustments were applied, as well as adjustments for causality (minus 20 per cent). The Productivity Commission (1999) also excluded cases reporting

[4] This does not represent an additional cost but a transfer of income loss by the gambler to the government.

relationship breakdown or suicide attempts. They then multiplied the remaining cases by average family size (2.3 excluding the gambler) and average number of parents (1.8), equating to approximately 151,100 immediate family members. From these calculations, 133,200 parents were considered likely to have experienced emotional distress as a result of 'their offspring's gambling. For immediate family members, the Productivity Commission (1999) applied values based on the lowest and highest compensation schedules ($5000 and $15,000 respectively), providing a costing range of emotional distress from $756 million to $2.3 billion. For parents, they used only the lower range schedule of between $0 and $5000. As the lower value given to emotional distress was zero, the overall cost ranged from $0 to $666 million for parents.

The Productivity Commission (1999) used two levels of depression severity to determine the costing range: 'often' (n = 49,400) and 'always' (n = 21,200). For those who reported experiencing depression 'always', the number of people reporting suicidal thoughts were removed (n = 12,900). Both calculations were based on a value range of $5000 to $15,000 and causality adjustments were applied (20 per cent reduction). The two estimates were combined to generate a total annual cost of gambling-related depression ranging from $231 million to $692 million. After adjusting for causality and excluding suicide attempts, almost 8000 gamblers had suicidal thoughts caused by gambling. Using a value range of $15,000 to $30,000, the cost of suicidal contemplation was $120 million to $239 million. The same method was used to determine the cost of suicide attempts (2348). However, a range of $30,000 to $50,000 was applied. This provided an annual estimated cost of suicide attempts of $70 million to $117 million. They further considered the impact of these attempts on immediate family (multiplied by 2.3 and calculated using a range of $15,000 to $30,000) and parents (multiplied by 1.8 and using a range of $0 to $5000). The cost of suicide attempts caused by gambling for immediate family was $81 million to $161 million and for parents ranged between $0 to $21 million.

To determine the number of people adversely affected by relationship breakdown, the Productivity Commission (1999) excluded the number of divorces and separations (n = 3200) from those reporting relationship breakdown (n = 39,200), made causality adjustments (20 per cent reduction) and then doubled the number to account for the second party. This provided an overall figure of 57,600 people affected adversely by the breakdown of a relationship due to gambling. Using a compensation range of $5000 to $15,000, the total annual cost of emotional distress caused by gambling-related relationship breakdown ranged from $288 million and $864 million.

The same process was used in determining the cost of divorce and separation (n = 3200) but figures were multiplied according to the average number of people in a household (3.3) and the range used was between $15,000 and $30,000 for each affected person. This resulted in an estimated annual cost of between $126 million and $253 million for emotional distress resulting from gambling-related divorce and separation. Further, based on a figure of $1100 per case for legal and procedural fees, the total annual financial cost associated with gambling-related divorce and separation (n = 2560) amounted to $2.8 million.

The final component of personal and family costs considered by the Productivity Commission (1999) was the cost of violence resulting from gambling. After making adjustments for sampling from the SCCA, the average lifespan of problem gambling and causality (20 per cent reduction), the annual number of violent gambling-related incidences was 551. Using a range of $5000 to $15,000 to place a value on harm, the estimated cost of gambling-related violence was between $2.8 million and $8.3 million.

Treatment costs

The final category considered by the Productivity Commission (1999) in their costing framework was costs associated with problem gambling treatment. Government contributions to the treatment and counselling services for problem gambling were estimated to be $20 million in 1997–98.

Based on the above framework, the Productivity Commission (1999) reported a total annual cost of problem gambling of between $1.8 billion and $5.6 billion each year (approximately $6000 to $19,000 per problem gambler per year).

Productivity Commission 2010

The Productivity Commission (2010) sought to provide an 'up-to-date' aggregated cost-benefit analysis of problem gambling in Australia using a similar framework for calculating the benefits and costs as featured in the commission's 1999 inquiry. They used data obtained in the 1999 report but altered the values to account for changes in demand, the prevalence rate of problem gambling, population growth, household income and inflation. Using the same costings framework as the 1999 inquiry, the social costs of problem gambling fell within the range of $10,000 to $30,000 per problem gambler per year (excluding financial costs). When considered in conjunction with the financial losses of problem gamblers (average problem gambling expenditure minus average gambling expenditure at a level reflective of non-problem play), the overall cost of problem gambling ranged from $4.7 billion to $8.4 billion. Based on their calculations and consideration of the benefits, a 10 per cent reduction in the harm experienced by problem gamblers would be likely to provide an average annual gain of around $470 million (PC 2010).

The Victorian Competition and Efficiency Commission 2012

The VCEC (2012) used a similar framework to that used by the Productivity Commission (1999) in estimating the cost of problem gambling in Victoria, Australian in 2010–11. They categorised all impacts as either economic (impacting resources) or social (impacting wellbeing) costs. Economic costs included direct costs to government, indirect costs, costs to the justice system, costs to business, and economic costs associated with excess expenditure. Social costs referred to those associated with mental and physical wellbeing. Data was sourced from the *Victorian Gambling Study* (Department of Justice 2009) (problem gamblers, PGSI 8+) and unpublished *Gambler's Help Data* provided by the Victorian Responsible Gambling Foundation. In the absence of Victorian data, the VCEC (2012) used the Productivity Commission's data from the 1999 *National Gambling Survey* (regular gamblers) and the *Survey of Clients of Counselling Agencies* (problem gamblers seeking help). To calculate the costs of each harm they used the same principles as the Productivity Commission (1999); that is, the cost of the harm multiplied by the number of people experiencing the harm.

Given that gambling regulation and policy is determined by each state, it was possible for the VCEC (2012) to provide estimates of the direct costs of problem gambling for the Victorian Government, local government and the Commonwealth Government rather than just overall government treatment costs as seen in the Productivity Commission's 1999 inquiry. The VCEC used data from the Department of Justice and the Victorian Commission for Gambling and Liquor Regulation. The total direct cost of gambling incurred by the Victorian Government was $42.1 million, $20 million of which was accounted for by services provided to problem gamblers, their family and friends. Direct costs of gambling to the Victorian Government include the cost of policy and regulation (beyond standard fairness and probity procedures), treatments and services for problem gamblers and affected others; the cost of education and research initiatives; and other regulatory or policy costs (such as employment for staff associated with problem gambling policy).

Direct costs incurred by local government were those associated with policy and research development, the cost of processing applications for increasing the number of gaming machines due to consumer demand, and the costs associated with promoting alternative activities to gambling. The direct cost of gambling to local government was between $0.3 million and $0.7 million. The figure provided for Commonwealth costs was based on predicted future spending for problem gambling counselling services. The VCEC (2012) estimated the annual cost to the Commonwealth in relation to Victorian problem gamblers to be $1.6 million.

The VCEC (2012) also considered the indirect costs of problem gambling on health and human service systems and the justice system. Using human services outputs from the Victorian budget, the VCEC (2012) identified multiple areas – such as mental health, public housing, homelessness, child protection and disability services – that were likely to be affected by problem gambling. Based on problem gambling prevalence in Victoria, the VCEC (2012) estimated the cost of problem gambling for health and human service systems to be between $6 million and $79 million. The lower figure was based on the total number of problem gamblers reporting a mental wellbeing cost (0.05 per cent) and assumes that gamblers are no more or less complex to treat than anyone else. The upper figure assumes that all problem gamblers have had at least some contact with human service systems.

Other economic costs included by the VCEC (2012) were featured in the Productivity Commission's (1999) costing framework and the VCEC took the same approaches for calculating their impact. Indirect costs considered were the costs of job change ($12 million), productivity loss outside of work ($2 million to $4 million), bankruptcy costs ($0.5 million to $6 million), bad debt costs ($3 million to $37 million) and the financial costs of divorce and separation ($1 million). Other economic costs which also featured in the Productivity Commission's (1999) framework were costs to the justice system ($26 million), including court costs ($1.5 million), police incidents ($1.7 million) and corrections (23.1 million); and to business, including workplace productivity loss ($6 million to $39 million) and the cost of theft (transfer costs of $4 million to $5 million).

The VCEC (2012) incorporated the same harms and used the same approaches as the Productivity Commission (1999) to calculate social and wellbeing costs. That is, they used the same adjustments for causality (20 per cent reduction), average lifespan of problem gambling (8.9 years), average household sizes (2.3 excluding gambler) and number of parents (1.8) and the same compensation schedules converted to 2010–11 prices. They also included the same impacts to the gambler, immediate family members and parents (depression, suicide, relationship breakdown including divorce and separation, and family violence). The total annual estimated wellbeing costs of problem gambling in Victoria ranged from $400 million to $1.2 billion. Approximately 90 per cent of the cost of emotional distress due to problem gambling is incurred by immediate family ($340 million to $960 million) and parents (zero to $160 million).

After including the cost of excess spending by problem gambling that amounted to $1.4 billion in 2010–11, the total cost of problem gambling in Victoria in 2010–11 was between $1.5 billion and $2.8 billion.

The Allen Consulting Group and Co.

The Allen Consulting Group (ACG) (2011) reported on the costs associated with Tasmania's gambling industry in 2011. Their methodology was largely consistent with previous attempts in 2008 (The South Australian Centre for Economic Studies 2008) that followed closely the methodology used by the Productivity Commission (1999; 2010) in their costing frameworks. The *Social and Economic Impact Study of Gambling in Tasmania Survey 2011* was used by the ACG

(2011) to determine the prevalence of problem gambling in Tasmania. Using the Problem Gambling Severity Index (PGSI), the ACG (2011) separated gamblers into two groups: non-problem/low-risk gamblers and moderate-risk/problem gamblers. Prevalence estimates of the experience of harms were obtained from the Productivity Commission's 1999 *SCCA*. In order to provide a comprehensive estimation, they provided costings based on the assumption that all prevalence rates of harm apply to all problem gamblers and gave three estimates based on prevalence percentages of the experience of harm applying to moderate gamblers at 25 per cent (narrow approach), 50 per cent (moderate approach) and 75 per cent (broad approach).

The ACG (2011) used the same categorisation as the Productivity Commission (1999) – financial costs, effects on productivity and employment, crime and legal costs, personal and family impacts and treatment costs – and measured the same harms as the Productivity Commission (1999) under each category. These costs were again calculated by multiplying the estimated number of people experiencing the harm by the estimated cost of the harm, and the same approaches were used for causality, lifespan of gambling problems and double-counting. Where information specific to Tasmania was not available, the ACG (2011) used the Productivity Commission's (1999) estimates but adjusted the cost to account for inflation to reflect 2011 prices. Based on the three approaches to the experience of moderate gamblers, the ACG (2011) provided three costing figures:

- Narrow approach: The cost of gambling-related harms in Tasmania in 2011 based on all problem gamblers and 25 per cent of moderate-risk gamblers experiencing harm was between $37 million and $104 million.
- Moderate approach: The cost of gambling-related harms in Tasmania in 2011 based on all problem gamblers and 50 per cent of moderate-risk gamblers experiencing harm was between $51 million and $144 million.
- Broad approach: The cost of gambling-related harms in Tasmania in 2011 based on all problem gamblers and 75 per cent of moderate-risk gamblers experiencing harm was between $64 million and $184 million.

Around 85 to 90 per cent of these costs fall within the category of personal and family costs. In particular, costs of emotional distress to parents and immediate family members account for approximately half of total costs (around 47 to 60 per cent). While these estimates do consider the cost of harm to those other than problem gamblers, it is difficult to determine which approach (narrow, moderate or broad) paints the most accurate picture of the costs associated with moderate-risk gambling.

International approaches

Efforts have been made in Canada and New Zealand to substantiate the costs associated with gambling problems. In Canada, Anielski and Braaten (2008) developed 'the 'Socio-Economic Impact of Gambling (SEIG) Framework''. The SEIG framework includes the benefits and costs associated with gambling problems under six categories – health and wellbeing; economic and financial; employment and education; recreation and tourism; legal and justice; and culture – and accounts for the varying levels of impact (individual, household and family, community, regional and provincial level).

The major difference between the SEIG and the Productivity Commission (1999) costing analysis is that Anielski and Braaten (2008) included cultural costs such loss of social cohesion (i.e. sense

of community, social capital) in a community and accounted for the losses in income and employment in other areas of entertainment due to legalised gambling development. Impacts such as employment were argued by the Productivity Commission (1999) to reflect a transfer rather than a cost or benefit. For instance, the loss of employment in other areas of entertainment would represent an increase in employment opportunities in the gambling industry.

There have also been efforts made in New Zealand to determine the scope of impacts associated with gambling problems, with a specific focus on the experience of harm beyond the gamblers themselves to the community, children and elderly, and the different experiences of ethnic populations (Centre for Social and Health Outcomes Research and Evaluation 2006, 2008; Wall, Peter, You, Mavoa & Witten 2010). A methodological approach for quantifying harms to attempt to establish a dollar value of gambling-related costs in New Zealand has yet to be explored.

What is missing?

It appears that the majority of Australian attempts to quantify the costs of gambling have largely 'piggy-backed' off the approaches developed by the Productivity Commission (1999) with only minor departures or updates in response to new data sources. While consistency can provide the benefit of being able to draw comparisons between costing outcomes, it does mean that efforts to consider impacts beyond those traditionally incorporated in costing analyses are largely absent. Many negative impacts associated with gambling problems have been excluded from a number of the costing analyses discussed above presents harms within these costing frameworks that have been identified as being associated with gambling problems but which were excluded from costing analyses. The most commonly reported barrier to quantifying gambling-related costs is insufficient data detailing the prevalence and extent of harms (Anielski & Braaten 2008; Dickerson et al. 1998; PC 1999, 2010; AGC 2011; VCEC 2010). As a result, many harms that have been identified to be associated with gambling problems are missing from costing analyses while others are calculated based on assumptions regarding the extent of the harm or causality.

Table 2: Harms excluded from costing analyses identified in impact frameworks according to the Productivity Commission (1999) categorisation

Category	Excluded Impacts
Financial	• Lost earning or borrowing capacity • Money borrowed to finance spending • Bad debts and associated costs (transfers only) • Indirect costs of property sales
Productivity and employment	• Consideration of who is burdened with the cost of productivity losses (employer, employees, colleagues) • Job loss
Crime and justice	• Costs associated with crime prevention
Personal and family	• Emotional distress to immediate family and parents caused by moderate problem gamblers • Medical costs associated with conditions • Physical wellbeing costs • Long-term effects on children as a result of family disharmony • Actual suicides • Mild depression (rarely to sometimes)

Category	Excluded Impacts
Regulation, policy and treatment	• Treatment costs provided by voluntary agencies • Treatment costs of private sector treatment providers • Non-government contributions • Research funding • Education funding • Costs on businesses for implementation of gambling-related regulation and voluntary responsible gambling measures
Other	• Non-regular gamblers or low-risk, non-problem gamblers • Costs experienced in later years from a one-off event • Cultural harms

Sources: ACG 2011; Productivity Commission 1999, 2010; VCEC 2012.

Important methodological considerations

A number of methodological considerations were identified by those who attempted to develop a framework to quantify the cost of gambling.

1. Comorbidity. Many harms experienced by gamblers as a result of gambling could also occur due to an existing or subsequent comorbidity. Costings attempts to date have addressed comorbidity issues by excluding the more 'severe' cases when calculating estimates for the 'less' severe (e.g., excluding the prevalence of suicidal thoughts from estimates of depression). While this approach does avoid issues with double-counting, it is unlikely this all-or-nothing approach will deliver an accurate depiction of gambling harms. Focusing on the total prevalence does not take into account the relative degree or marginal effect of one harm on another. Such an approach is likely to result in an overestimation of comorbidity and therefore an underestimation of the costs, as harms that may only have limited comorbidity are excluded from the costing analyses.

2. Causality. Determining whether the harm was caused only by gambling problems is challenging. Current methods of measuring harms often fail to establish causality due to the lack of longitudinal data and dominance of cross-sectional survey methods. The high rate of comorbidity associated with gambling, the dominant focus on only 'clinical' cases of 'problem gambling' and methodological constraints in establishing the sequence of incidence make it difficult to determine what proportion of the harm is attributable to gambling and what proportion may have been a result of other, confounding issues (PC 1999, 2010; VCEC 2012).

In order to be considered a harm caused by gambling, it needs to be determined whether or not the harm would have occurred in the absence of gambling. Failing to identify whether a harm pre-dated the gambling behaviour is likely to contribute to an overestimation of gambling costs, as impacts not caused by gambling are likely to be included (PC 1999)**.** The 80 per cent estimate of causality generated by the Productivity Commission (1999) has been adopted by others due to a lack of an alternative. The VCEC (2012) states: 'The feasibility of applying a more sophisticated adjustment procedure was investigated, but a paucity of data precluded its application.' (Appendix B, p. 47).

The PC (1999) suggested many methods for establishing causation, none of which can be applied retrospectively to pre-existing data on gambling-related harms. For instance, longitudinal studies of gamblers would provide a more detailed account of the progression of the harms of gambling, allowing researchers to track and explore how harms are developed or exacerbated over the lifetime a gambling problem. However, such studies are costly and obtaining a large sample

representative of a general population of gamblers is impractical and prone to significant attrition rates.

Self-assessment methods are likely to be the most efficient and practical way of measuring causality. However, harms resulting from gambling are at risk of being underreported due to the stigma associated with gambling problems, and there is also a need for gamblers to be self-aware of how and when harms were first experienced in relation to comorbidities and other social determinants of health. Causality is a major limitation associated with any costing methodology and significant resources are required to investigate an alternative approach to that adopted in current costing attempts.

3. Self-report measures. Costing methodologies to date have relied largely on self-report measures that are notoriously unreliable, given the tendency for people to exaggerate, forget or misjudge the severity of their experiences of harm. Misrepresentation of causation or the sequence of events, or underreported consequences experienced as a result of gambling (due to the stigma associated with gambling) are all likely to impact the accuracy of costing estimates (PC 1999)**.**

The Productivity Commission (1999) reported that prior to seeking help, problem gamblers indicate that they would be unlikely to answer a survey honestly. Thirty-eight per cent believed they would answer honestly compared to forty-five per cent who indicated they would hide their problem to some extent. When dealing with vulnerable groups that are engaging in what may be considered by others as 'deviant' or 'unacceptable' behaviours, it is necessary to consider the issues of stigma and social desirability and the impact this is likely to have on results.

4. Focus on problem gambling. Costing frameworks that focus solely on the reports of problem gamblers disregard the harms experienced by those who may be moderate- or low -risk gamblers. While the Productivity Commission (1999) used a general population sample of regular gamblers, this technique does not allow for discussion of the unique contributions of varying levels of gambling severity. Recently, a strong case has been made for the position that harm is not experienced only by those experiencing a clinical level of gambling problems (Browne et al. 2016). The Productivity Commission (1999) suggests that while the severity or prevalence of harm may be lower in non-problem gambling populations, the total number of people experiencing some harm is in the tens of thousands of people. It is therefore likely that costing frameworks that do not include non-problem, low-risk and moderate-risk gamblers are significantly underestimating the overall social and economic costs of gambling.

5. Assessing the severity of gambling. Several authors noted that different measures of gambling severity are likely to influence prevalence rates of problem gambling and therefore alter the prevalence of impacts included in the cost analysis (PC 1999, 2010; VCEC 2012). The Productivity Commission (2010) specifically drew comparisons between the SOGS and the Canadian Problem Gambling Index (CPGI), as it was suggested that the SOGS classifies more people as problem gamblers than the CPGI. The Productivity Commission (1999, 2010) further suggested that the extent of harm experienced by those who meet the criteria for problem gambling on the SOGS but not the CPGI would be more likely to experience less harm than those who met the CPGI alone. Similar issues were raised by the VCEC (2012) regarding the PGSI generating false positive and false negative problem gambling classifications. The overall cost analysis would therefore differ depending on which measure was used. To counteract these issues, costing analyses have focused predominantly on those scoring at the severe end of problem gambling measures in order to minimise the likelihood of false positives.

6. Cultural differences. It has been shown that different cultural groups experience harm differently and to different extents due to cultural values and practices, socioeconomic and political status within society, and acculturation and migration processes that have contributed to deprivation and a lack of representation (Clarke et al. 2006; Raylu & Oei 2004; Rintoul, Livingstone, Mellor & Jolley 2013). Many large population studies such as those used in the aforementioned costings frameworks tend not to take into consideration the costs to different subgroups. A major limitation of these approaches is that it is assumed all harms are experienced equally. Given the over-representation of Aboriginal and Torres Strait Islander and minority groups who classify as problem gamblers, making assumptions that everyone experiences harms the same way may attribute significant monetary costs to harm that are not experienced as intensely for some compared to others, despite them sharing 'problem gambling' status.

Some culturally and linguistically diverse (CALD) communities and Aboriginal and Torres Strait Islander groups are also likely to be affected in ways that tend not to be measured in prevalence and gambling harm studies and may not be experienced by those from western cultures. For instance, problem gambling that disrupts family life and community connections may impede the transfer of cultural knowledge, stories and wisdom that are key to the legacy of Aboriginal and Torres Strait Islander culture. The impact of these types of harms are not homogenous between cultural groups. Another issue is that many Aboriginal and Torres Strait Islander cultures incorporate large family units beyond the traditional western perception of family size. Therefore, the 'average' family size of 2.3 is unlikely to be an accurate depiction of the number of people affected by a person's gambling in Aboriginal and Torres Strait Islander family units.

7. Using treatment-seeking populations. Those seeking treatment make up a small portion of problem gamblers (Productivity Commission 1999). It is likely that the prevalence and severity of harms is higher in treatment groups as it is often these harms that motivate people to seek help (Browne et al. in press; Li et al. 2017). Costing analyses may therefore overstate the costs of gambling for the wider problem gambling community if these differences are inadequately addressed (Productivity Commission 1999).

Discussion

Defining and measuring gambling-related harms is a contentious issue in the gambling literature (Walker 2007). The systematic literature review aimed to determine the current state of knowledge regarding the harms associated with gambling. Impacts of harmful gambling were reviewed using the domains identified by Langham et al. (2016) and included the impacts on individuals, affected others and the community. Just over half of the research on gambling-related harm from the systematic review was conducted in the USA and Australia, and three-quarters was conducted between 2012 and 2014. Individual level harms to the gambler dominated the research, with little direct focus on the harms to others close to the gambler. Community level harms from gambling were mainly measured in broad terms of the impact on household income, unemployment rates, gambling expenditure, criminal activity and Aboriginal and Torres Strait Islander communities. Of the gambling-related harm domains, the majority of papers were focused on financial, emotional or psychological distress, or relationship and health impacts. However, none of the papers from the systematic literature review attempted to place a monetary cost on gambling-related harms.

The second part of this review explored approaches used to quantify gambling-related harms to provide an aggregate financial cost of problem gambling in both Australia (PC 1999, 2010; ACG 2011; VCEC 2012) and Canada (Anielski & Braaten 2008). Only three recent Australian attempts have been made to quantify problem gambling (PC 2010; ACG 2011; VCEC 2012). All of these

attempts were based on the costing framework developed by the Australian Productivity Commission (1999) as a foundation for cost estimates. As noted above, the Productivity Commission's (1999) approach to estimate costs has been well-regarded and often emulated, having been described as 'the most competent of the studies that have so far attempted to quantitatively estimate the social costs of problem gambling' in Australia (Eadington 2004).

Costs were categorised by the Productivity Commission (1999) into five broad classes: financial costs (family debts and bankruptcy); effects on productivity and employment (productivity loss and job change); crime (theft, court cases and imprisonment); personal and family impacts (distress of family and parents; relationship breakdown, divorce and separation; violence; depression and suicide); and treatment costs (gambling counselling services). The prevalence of the harm was then multiplied by the number of people experiencing the harm making adjustments for causality, problem gambling duration and number of affected others.

Those who have discussed or attempted to quantify the costs of gambling have conceded that there is not a one-size-fits-all approach to quantifying gambling costs (Anielski & Braaten 2008; ACG 2011, 2014; Productivity Commission 1999, 2010; Williams, Rheum & Stevens 2011). Rather, the methodology used to calculate the costs is largely dependent on the data available and by making informed judgements about the extent, severity and subsequent value placed on intangible impacts (VCEC 2012).

While the limitations and the methodological considerations regarding these frameworks have already been mentioned, there are some notable limitations deserving further discussion. Firstly, the majority of these costing analyses fail to include gamblers who are not categorised as a problem gamblers. While non-problem and low-risk gamblers may not experience harms to the same extent as problem gamblers, increased prevalence of low-level harms is likely to lead to a significant cost that is largely missing in costing studies. Previous implementations also fail to account for how harms may be experienced differently by different cultural groups. While the Canadian SEIG framework attempted to broaden the perspective of community harm by including cultural losses such as loss of social cohesion, this has yet to be attempted in Australia.

Methodological challenges in quantifying the costs identified in the literature revolved around the limited availability of data that:

(a) (a) illustrates the relationship of the cost with gambling and

(b) (b) describes the extent to which the harm is experienced by the gambler, affected others and the community.

Researchers were often required to make adjustments or assumptions based on theoretical approaches in order to account for causality or comorbidity.

Large-scale longitudinal studies have been proposed as the most effective means for obtaining quality data that may reliably provide insights into the extent and experience of harm resulting from gambling (Productivity Commission 1999; VCEC 2012). While this method would also provide insights into harms that may occur after a person stops gambling, it is also highly impractical and obtaining a precise estimation of social costs may be impossible by any other means (Chang et al. 2010). However, recourse can be made to direct methods for assuming causality, e.g. asking survey respondents to report only those harms they believe arose as a consequence of gambling (Browne et al. 2016) and using behavioural economic methods.

Other challenges identified including assessing differential impacts on different groups; consistency issues with defining costs; and difficulties in measurement methodology, including the valuation of intangible costs. Intangible costs were deemed difficult to quantify as in order to obtain a cost estimate, researchers were required to determine the economic value based on assumptions or tentative comparisons between the harm experienced by gambling and the value placed on the harm in other areas (i.e., compensation claims for emotional distress). Central issues remain unresolved, most notably the issues of sourcing reliable data for a range of social or intangible costs and how to provide an accurate representation of their value to provide an overall economic figure of gambling cost. The inclusion of harms in costing analysis has largely relied on the data available, resulting in many known gambling-related harms being excluded from costing analyses (Anielski & Braaten 2008).

Policy implications

A standardised comprehensive methodology for quantifying gambling-related harm would enable comparisons of costs across different populations to provide a more accurate depiction of the cost of gambling harms. There is a need for a universally accepted approach that systematically and reliably equates economic values to intangible harms, considers causality and comorbidity, and accounts for the harms beyond those considered to date. This will support the comparison of impacts between different populations and time frames, and help to determine the return on investment of future harm minimisation strategies. This starts with the development of a comprehensive framework detailing the impact of gambling-related harms, with clear operational definitions (Anielski & Braaten, 2008).

Conclusion

The negative consequences of gambling are complex and multifaceted, occurring in almost all domains of the life of the gambler and those close to them, as well as in the community at large. This makes the quantification of gambling-related impacts and the subsequent calculation of the aggregate social of cost of gambling a challenging task. Limitations in our knowledge, particularly with respect to prevalence, comorbidity and causality (or attributable fraction), creates uncertainty in estimating the social cost of gambling. Further, assumptions regarding the value of intangible costs must also be made; with the result that any costing is influenced by the value judgements of its society, and perhaps also the researchers involved.

However, the range of impacts of gambling have been quite comprehensively explored and credible attempts at costings – most notably by the Australian Productivity Commission (1999) – have been implemented. The research area would benefit from greater adherence to a common set of terminology and concepts, and a common model for approaching the costing of gambling-related harms. This would help make explicit the assumptions and approximations in a given costing model and promote the reconciliation of any differences in approach. Despite the conceptual, empirical and methodological challenges, an appropriate costing of the impact of gambling is a feasible objective, with clear and significant benefits for gambling policy development.

Phase 2: The social cost of gambling to Victoria

Introduction

Gambling-related harm imposes both direct and indirect costs on the gambler, members of their familial and social networks ('affected others'), the community and the Victorian Government. Direct costs include the costs to the Victorian Government of policy, regulation and research on problem gambling, costs to local government, and treatment costs for problem gambling. Indirect costs are harder to measure, and include costs of excessive expenditure on gambling, bankruptcy, illegal offshore gambling, and emotional or psychological costs to the gambler, which include depression, suicide attempts and ideation, and experiences of violence. These costs also extend to affected others in the form of divorce or separation, experiences of violence, emotional distress and, in extreme cases, the impact of suicide attempts or fatality by suicide. Costs also extend to third parties and the community in the form of productivity loss and work impacts, the cost of crime to businesses and the Victorian justice system, and costs to the health and human service sector, the mental health sector and homelessness services.

As discussed in the literature review of this report, previous attempts to calculate the costs of gambling have focused only on the costs associated with problem gambling, which corresponds to a small percentage of the population (0.8 per cent in Victoria) who meet this criterion through population screens. However, a recent study by Browne and colleagues (2016) has shown that problem gamblers only account for around 15 per cent of the total years of healthy life lost due to gambling-related harms in the Victorian adult population, while the moderate- and low-risk groups account for the majority of harms (35 per cent and 50 per cent respectively). In addition, gambling-related harms are being experienced by others close to the gambler ('affected others') by various degrees based on problem gambling severity. It is estimated that for every problem gambler, six others are typically affected by their gambling, while gamblers at moderate risk impacted three others, and low-risk gamblers one other (Goodwin et al. 2017).

The purpose of this phase of the project is to estimate the cost of gambling-related harm at all severity levels (low-risk, moderate-risk and problem gambling) to Victoria in the 2014–15 financial year. The methodology has been adapted from previous costing studies, including those by the Productivity Commission (PC 1999; 2010) and the Victorian Competition and Efficiency Commission (VCEC 2012). The main departure in the current estimates has been the utilisation of a more robust and representative source of prevalence figures of gambling-related harm across the various costing items.

The methodology section of this report summarises the steps taken in estimating the costs of each gambling-related harm item, including the data sources for prevalence figures and cost assumptions used in the calculations. The results section provides a summary of the estimates of the total costs of gambling and a breakdown of the cost estimates by costing item and PGSI category (where applicable). A comparison of our findings to the costs of alcohol, tobacco and illicit drugs and the implications for future policies and research on gambling-related impact are discussed in the final section of the report.

Methodology

Methodological considerations

Several methodological assumptions were used in deriving estimates of the cost of gambling-related harm in Victoria. These are outlined below:

- The approach adopted an existing gambling framework that included gambling-related harms across a range of domains including:
    - financial
    - emotional and psychological
    - relationships and family
    - crime
    - productivity loss and work
    - the cost to the Victorian Government.
- Three gambling categories were considered: low-risk, moderate-risk and problem gambling.
- Where appropriate, prevalence data were taken from a recent study conducted by Browne and colleagues (2016).
- For each item, a three-step costing process was followed: identification, measurement and evaluation.
- Cost estimates were derived using multiple data sources; where data may be lacking, conservative assumptions were derived using expert opinion or previous methods.
- Costs are presented in Australian dollars for the reference year 2014–15. If 2014–15 price weights were not available, the Consumer Price Index (CPI) was used to adjust costs to 2014–15 dollars..
- The costing methods are based on accepted techniques; where differences in costing methodology is applied, rationale and justification are provided.
- An ‘average’ cost estimate per item was adopted and a conservative (i.e. lower) estimate was employed where there was uncertainty. Low and high cost estimates are presented only when there is uncertainty in a parameter that significantly affects the estimate.
- Where appropriate, double-counting was avoided by following the procedures applied in previous costings.
- Where applicable, an 80 per cent counterfactual was applied to prevalence numbers in accordance with the approach used by the Productivity Commission (1999) and the VCEC (2012).

Cost of gambling framework

The current cost of gambling framework aligns closely with previous frameworks examined in Phase 1 of the report: those used by the Productivity Commission (1999, 2010), Allen Consulting Group (ACG 2011) and the VCEC (2012). The cost categories include gambling-related harm impacts in the domains of financial impacts, emotional and psychological costs, relationship and family impacts, crime, productivity loss and work impacts, and costs to the Victorian state and local governments. A summary of the cost framework by cost category, subcategory and who bears the cost is shown in Table 3.

The current approach differed from the previous studies in that it included costs associated with gambling-related absenteeism to business, illegal offshore wagering, fatality by suicide and emotional and psychological costs to the gambler. It also took into account the emotional distress from violence experienced by those with close relationships to the gambler (known as 'affected others' for the purpose of this report). The current approach also considered costs arising from negative outcomes from low- and moderate-risk gamblers, as well as problem gamblers.

Table 3: Cost of gambling framework

Cost category	Sub-category	Cost attributed to
Financial impacts	Total opportunity cost of gambling spend	Gambler
	Bankruptcy	
	Cost of administration	Government
	Unpaid debts	Affected others & community
	Illegal offshore wagering	Gambler
Emotional and psychological	Depression – emotional distress to the gambler	Gambler
	Attempted suicide – emotional distress to the gambler	Gambler
	Suicide ideation – emotional distress to the gambler	Gambler
	Other emotional or psychological costs to the gambler	Gambler
Relationships and family	Divorce and separation	
	Financial cost to the gambler	Gambler
	Emotional distress to the gambler	Gambler
	Emotional distress to affected others	Affected others
	Experiences of violence	
	Emotional distress to the gambler	Gambler
	Emotional distress to affected others	Affected others
	Suicide attempts of gambler – impact on affected others	Affected others
	Fatality by suicide of gambler – impact on affected others	Affected others
	Other emotional distress to affected others	Affected others
Crime	Police system cost	Government
	Court system cost	Government
	Corrections system cost	Government
	Productivity loss to business	Community (business)

Cost category	Sub-category	Cost attributed to
Productivity loss and work impacts	Cost of job loss	
	Loss of income	Gambler
	Job search cost to the gambler	Gambler
	Employer staff replacement costs	Community (business)
	Unemployment benefits	Government
	Cost of absenteeism to business	Community (business)
	Cost of crime to business	Community (business)
	Cost of fatality by suicide	Community (business) and government
Cost to Victorian Government	Policy, regulation, research (including treatment funding)	Government
	Direct costs to local governments in Victoria	Government
	Health and human services systems	Government
	Mental health sector	Government
	Homelessness services	Government

Data sources

Three key data source types are required to calculate the cost of gambling for each category:

- Victorian population prevalence
- prevalence of cost item
- average cost per item.

Where possible, data was sourced for the 2014–15 financial year. Where this was not available, most recent information was preferred.

Prevalence estimates

Data on the prevalence of problem gambling severity in Victoria was sourced from the 2014 Victorian Gambling and Health Study weighted dataset which was produced on behalf of the Victorian Responsible Gambling Foundation (VRGF) and the Victorian Department of Justice and Regulation (DJR) (Hare 2015). Table 4 summarises the prevalence and estimated total of the Victorian population in 2014 by problem gambling severity (PGSI). While non-gamblers and non-problem gamblers are present in the table, they were excluded from the cost analysis. That is, it was assumed that no costs arose from gambling associated with non-problem gamblers. This may not necessarily be the case, but given the lack of research on harms to non-problem gamblers, it would appear to be an appropriately conservative stance.

Table 4: Prevalence of gambling in Victoria by problem gambling severity (PGSI)

Problem gambling severity index (PGSI)	Prevalence in Victorian population (%)	Estimated number in Victorian population
Non-gambler (last 12 months)	29.9%	1,312,769
Non-problem gambler (0 score)	57.6%	2,528,381
Low-risk gambler (1–2 score)	8.9%	391,206
Moderate-risk gambler (3–7 score)	2.8%	122,667
Problem gambler (8+ score)	0.8%	35,415
Total	**100.0%**	**4,390,438**

Source: Victorian Gambling and Health Study 2014 weighted dataset (Hare 2015)

One of the weaknesses of previous gambling cost studies, such as those by VCEC (2012) and the PC (1999, 2010) was sourcing prevalence estimates from unrepresentative samples for some cost estimates, such as populations seeking treatment for gambling problems. Another limitation was the use of out-dated prevalence figures, often replicated from the 1999 Productivity Commission study report. In many cases, more recent and better quality prevalence estimates are now available. Thus, the current cost analysis aims to source prevalence figures by cost items which are as current and representative as possible.

A major data source for the prevalence of negative gambling impacts was a study conducted recently by Browne et al. (2016), which measured 72 gambling-related harms reported by a large national Australian sample of gamblers and affected others. Browne et al. (2016) data is not population representative; rather, it was a convenience sample, stratified so as to provide approximately equal groups with respect to PGSI category. Therefore, where it is applied, this 'gambling-related harms' data was used as prevalence rates for individual cost items broken down by PGSI category, which was then applied to population-representative estimates of PGSI categories (Table 4).

The gambling-related harm items cover six domains: financial, emotional and psychological, relationships, health, work and study, and other impacts such as crime and experiences of violence. See Appendix 2 for the gambling-related harms study questionnaire (Browne et al. (2016). In the instance that a cost item could not be matched to a harms item, prevalence data was sought from other academic research, back-calculated from actual figures (e.g. people using the Victorian mental health system), or sourced from previous gambling cost studies.

Table 5 provides the prevalence estimates by problem gambling severity (PGSI) for each gambling-related harm cost item used in the calculations of gambling costs.

Table 5: Prevalence estimates and data sources for cost items by problem gambling severity (PGSI)

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Estimated % of Victorian population 2014–15	8.9%	2.8%	0.8%	Problem gambling severity index (PGSI) – prevalence (%) in Victorian population 2014–15	Victorian Gambling and Health Study 2014 weighted dataset (Hare 2015, Table 1)
Estimated total adult Victorian population 2014–15	391,206	122,667	35,415	Problem gambling severity index (PGSI) – estimated total in Victorian population 2014–15 (of 4,390,438)	Victorian Gambling and Health Study 2014 weighted dataset (Hare 2015)
Estimated number of 'affected others' by gambler in Victorian population 2014–15 (of 4,390,438)	391,206	368,001	212,493	Estimated number of Victorian population 2014–15 (of 4,390,438)	Victorian Gambling and Health Study 2014 weighted dataset (Hare 2015) Ratio of gambler to others affected (low-risk: 1; moderate-risk: 3; problem: 6) and affected others data for level of emotional or psychological impact from gambler (Goodwin et al. 2017)
Financial					
Total opportunity cost of gambling spend	29.7%	30.0%	40.2%	Increased per person spend by problem gambling risk category over that of non-problem gamblers	Victorian Gambling-Related Harms Study (Browne et al. 2016) national survey dataset – financial harms. Prevalence figures represent percentage of the total opportunity cost of gambling spend. Victorian Gambling and Health Study 2008 weighted dataset (Hare 2009) – average expenditure by PGSI
Bankruptcy	0.0%	0.7%	7.0%	% of PGSI group whose gambling contributed to or caused bankruptcy (12-month period)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 9) national survey dataset, variable Q5a_4 (see Appendix 2 of this report)
Illegal offshore wagering	N/A	N/A	N/A	Not applicable: all expenditure on illegal offshore wagering included in cost estimate	Not applicable: all expenditure on illegal offshore wagering included in cost estimate

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Emotional and psychological					
Depression – emotional distress to the gambler	3.2%	12.5%	40.2%	% of PGSI group who experienced an increase in depression as a result of their gambling (12-month period) as self-reported depression × % of those diagnosed with depression	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset – self reported depression, variable Q8a_11 (see Appendix 2 of this report) 55% diagnosed depression – Gwynn et al. (2008, p. 664)
Suicide attempts impact on gambler	1.9%	0.7%	7.5%	% of PGSI group whose gambling contributed to or caused them to attempt suicide (12-month period) × 80% counterfactual and minus (–) suicide attempts and fatality by suicide	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset, variable Q8b_3 (see Appendix 2 of this report)
Suicide ideation – emotional distress on gambler	8.2%	3.1%	32.1%	% of PGSI group experiencing suicide ideation. Calculated from % attempted suicide (with 80% counterfactual) as ratio of 4.3 gamblers with suicide ideation to every 1 attempting suicide. To avoid double-counting suicide ideation, suicide attempts and fatality by suicide were subtracted.	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset for attempted suicide % (variable Q8b_3) (see Appendix 2 of this report) VCEC (2012) for 1:4.3 ratio of attempted suicide (1.5%): suicide ideation (6.5%) (Table F.3)
Emotional and psychological costs to the gambler	50.3%	34.5%	15.2%	Disability weight by PGSI category × % attributable to emotional and psychological harm (dominance analysis, described in this study) excluding depression	Victorian Gambling-Related Harms Study (Browne et al. 2016) national survey dataset – emotional and psychological gambling-related harm variables (Q7a and Q7b series) (see Appendix 2 of this report)
Relationships and family					
Divorce and separation – gambler and affected others	1.9%	3.3%	19.5%	% of PGSI group whose gambling contributed to or caused 'actual separation or ending a relationship' (12month period). For affected others this number is multiplied by average household size minus the gambler (1.6).	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 11) national survey dataset, variable Q6b_2 (see Appendix 2 of this report) Average household size (ABS 2015d) to estimate the average number of others affected

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Experiences of violence – gambler and affected others	0.6%	1.3%	9.9%	% of PGSI group whose gambling contributed to or caused them to have experiences with violence (including family/domestic violence) (12-month period). For affected others this number is multiplied by average household size minus the gambler (1.6)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 11) national survey dataset, variable Q10b_4 (see Appendix 2 of this report) Average household size (ABS 2015d) to estimate the average number of others affected
Suicide attempts of gambler – impact on affected others	1.9%	0.7%	7.5%	% of PGSI group whose gambling contributed to or caused them to attempt suicide (12month period) × 6 (average number of others affected)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset, variable Q8b_3 (see Appendix 2 of this report) Average number of persons affected by suicide (Beautrais 2004; ConNetica 2016)
Fatality by suicide of gambler – impact on affected others	1.9%	0.7%	7.5%	% of PGSI group whose gambling contributed to or caused them to attempt suicide (12-month period) / 15 (attempted suicides that result in fatality) × 6 (average number of others affected)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset, variable Q8b_3 (see Appendix 2 of this report) Average number of persons affected by suicide (Beautrais 2004; ConNetica 2016)
Other emotional distress to affected others	6.5%	16.4%	53.9%	Ratio of others affected by PGSI group (of gambler) minus impacts to affected others already accounted for (divorce/separation, experiences of violence, suicide attempts of gambler, fatality by suicide of gambler) × % affected others by PGSI group (of gambler) reporting moderate-major emotional or psychological impact from the gambler	Victorian Gambling-Related Harms Study (Browne et al. 2016) national survey dataset, variable Q7c (see Appendix 2 of this report) Ratio of gambler to others affected (low-risk: 1; moderate-risk: 3; problem: 6) and affected others data for level of emotional or psychological impact from gambler (Goodwin et al. 2017)
Crime – Cost to the Victorian justice system					
Crime	1.3%	4.7%	21.9%	% of PGSI group who committed a serious crime as a result of their gambling (12-month period) – either 'petty theft or dishonesty in respect to government, businesses or other people (not family/friends)' or 'felt compelled or forced to commit a crime or steal to fund gambling or pay debts'	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 11) national survey dataset, variables Q10b_1 and Q10b_2 (see Appendix 2 of this report)

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Police system cost	0.5%	1.7%	8.0%	% of PGSI group who committed a crime which resulted in being investigated by the police	VCEC (2012, Table E.2), as sourced from PC (1999) – 36.5% of total crimes committed result in a police investigation
Court system cost	0.4%	1.5%	6.9%	% of PGSI group who committed a crime which resulted in police bringing criminal charges and a subsequent court appearance	VCEC (2012, Table E.2), as sourced from PC (1999) – 86.3% of total crimes committed which resulted in a police investigation result in criminal charges and a court appearance
Corrections system cost	0.2%	0.6%	2.8%	% of PGSI group who committed a crime which resulted a court appearance resulting in a prison sentence	VCEC (2012, Table E.2), as sourced from PC (1999) – 40.5% of total committing crime and appearing in court on charges result in a prison sentence
Productivity loss and work impacts					
Productivity loss to business	3.2%	12.5%	30.4%	% of PGSI group who experienced reduced performance at work or study as a result of their gambling (12-month period)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 9) national survey dataset, variable Q9a_1 (see Appendix 2 of this report)
Cost of job change	0.0%	1.7%	11.1%	% of PGSI group whose gambling contributed to or caused them to lose their job (12-month period)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 9) national survey dataset, variable Q9b_1 (see Appendix 2 of this report)
Cost of absenteeism to business	1.9%	4.6%	21.7%	% of PGSI group who experienced an absence from work or study as a result of their gambling (12-month period)	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 9) national survey dataset, variable Q9a_3 (see Appendix 2 of this report)
Cost of crime to business	0.6%	3.0%	12.3%	% of PGSI group who committed a ‘petty theft or dishonesty in respect to government, businesses or other people (not family/friends)’	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 11) national survey dataset, variable Q10b_1 (see Appendix 2 of this report)

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Fatality by suicide	0.1%	0.0%	0.4%	% of PGSI group who suffered fatality by suicide. Calculated as 1:15 ratio of attempted suicide: fatality by suicide.	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10) national survey dataset for attempted suicide % (variable Q8b_3) (see Appendix 2 of this report) Doran, Ling, Milner & Doran (2015) for 1:15 ratio
Cost to Victorian Government					
Policy, regulation, research and treatment	N/A	N/A	N/A	2014–15 Victorian Government costs for: VRGF, DJR and VCGLR, and Pre-Commitment Implementation Project. All costs included, unable to distribute costs by PGSI.	VRGF and Pre-Commitment Implementation Project – Department of Treasury and Finance (DTF 2015) DJR policy costs – VCEC (2012) 2010–11 costs of DOJ inflated to 2014–15 using CPI (ABS 2015c) VCGLR regulation costs – direct correspondence with VCGLR
Direct costs to local governments in Victoria	N/A	N/A	N/A	Number of local Victorian councils responding to gaming machine applications in 2014–15 – submission, hearing attendance and VCAT appeal. All costs included, unable to distribute costs by PGSI.	Victorian Responsible Gambling Foundation (VRGF), via correspondence with authors
Health and human services systems	3.6%	1.2%	0.4%	% of Victorian population with gambling problems with 'wellbeing issues' who have potentially accessed services provided by the health and human services sector in Victoria. % PGSI group potentially accessing health and human services estimated as an average between % well-being issues (lower estimate, those experiencing depression, attempted suicide, or experiences of violence due to gambling). Assumption 33% go on to receive treatment.	Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10 and 11) national survey dataset – % experiencing depression, violence, attempted suicide due to gambling (see Appendix 2 of this report) Sane Australia (2016) – one-third of people with mental illness receive treatment Victorian Gambling and Health Study 2014 weighted dataset Hare 2015) – 2014 prevalence gambling in Victorian population (Table 1)

Item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Prevalence description	Sources
Mental health sector	6.5%	7.3%	10.0%	% of Victorian population who have accessed mental health services in Victoria (approx. 76,600 Victorian clients in clinical care or mental health services) who have gambling problems. PGSI group potentially accessing mental health services estimated by number experiencing depression, attempted suicide, or experiences of violence due to gambling*; assumption 33% go on to receive treatment (use services).	Victorian Government 2014–15 budget expected outcome of numbers clients in clinical care + accessing mental health services (Victorian Government 2015, p.233–4) Victorian Gambling-Related Harms Study (Browne et al. 2016, Table 10 and 11) national survey dataset – % experiencing depression, violence and attempted suicide due to gambling (see Appendix 2 of this report) Sane Australia (2016) – one-third of people with mental illness receive treatment Victorian Gambling and Health Study 2014 weighted dataset (Hare 2015) – 2014 prevalence gambling in Victorian population (Table 1)
Homelessness services	No estimate	No estimate	18.4%	% homeless in Victoria with gambling-related issues	Homelessness Australia (2012) number homeless in Victoria (sourced ABS 2011 census) Australian Institute of Health and Welfare (AIHW 2009, Table 1b) – % homeless with gambling-related issues

Measurement of cost items

Table 6 summarises the cost estimation method and data sources that were used to determine the average cost of each gambling-related harm cost item. The approach taken was to follow the methodology used by the VCEC (2012) or/and the PC (1999, 2010) and source the costs by item using 2014 data. In cases where this data was unavailable, the estimate from the most recent VCEC (2012) study for 2010–11 costs was inflated from 2010 to 2014 using the Consumer Price Index (ABS 2015c). If a better alternative approach to costing a gambling-related harm was found, it was followed and justification provided. This method also allowed a direct comparison to be made between the current costs of problem gambling calculated in this study and those reported by the VCEC (2012). This comparison is discussed later in this report.

Table 6: Definitions and data sources for cost items

Cost item	Data item	Sources
Financial		
Total opportunity cost of gambling spend	Increased per person spend by PGSI score weighted by increased relative prevalence of financial deprivation harms by PGSI score	Victorian Gambling-Related Harms Study (Browne et al. 2016) national survey dataset – number of financial harms reported Victorian Gambling and Health Study 2008 weighted dataset (Hare 2009) – average expenditure figures by PGSI score
Bankruptcy		
Cost of bankruptcy administration	Cost to the government to administer bankruptcies (per case)	Bankruptcy (Fees and Remuneration) Determination 2014, Section 3.05 (ITSA 2014)
Cost of unpaid debts	Gambling debt per problem gambler gone bankrupt	VCEC (2012, Table J.3) inflated to 2014 price using CPI (ABS 2015c)
Illegal offshore wagering	'Unofficial' industry sector cost of online poker and casinos	Productivity Commission (2010, Figure 1) inflated to 2014 price using CPI (ABS 2015c)
Emotional and psychological		
Depression – emotional distress to the gambler	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Suicide attempts – impact on gambler	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Suicide ideation – emotional distress to the gambler	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Emotional and psychological costs to the gambler	Scaled attributable disability weighting × GDP per capita	Victorian Gambling-Related Harms Study (Browne et al. 2016) national survey dataset – disability weights (Table 23) GDP per capita (World Bank 2016)

Cost item	Data item	Sources
Relationships and family		
Divorce and separation		
Financial cost to the gambler	Federal court application for divorce + average legal fees for uncontested divorce	Court Fees (Family Law). (Family Court of Australia & Federal Circuit Court of Australia 2012) Family Law (Fees) Regulation 2012 (Australian Government 2015, Schedule 1 – Fees, section 2.02)
Emotional distress to the gambler	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Emotional distress to affected others	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Experiences of violence		
Emotional distress to the gambler	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Emotional distress to affected others	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Suicide attempts of gambler – impact on affected others	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Fatality by suicide of gambler – impact on affected others	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Other emotional distress to affected others	Average amount of financial assistance awarded to victims of crime on final determination in 2014–15	VOCAT (2015) Annual Report 2014–15, Table 13
Crime – cost to the Victorian justice system		
Police system cost	Real recurrent expenditure (less revenue from own sources) per person on justice services in Victoria, 2014–15	Report on Government Services 2016. Volume C: Justice sector overview. (Productivity Commission 2016a, Table C.2)
Court system cost	Total recurrent expenditure on courts less income (excluding fines) in Victoria, 2014–15 / total number of lodgements to courts in Victoria, 2014–15 = average expenditure per lodgement to court	Report on Government Services 2016. Volume C: Justice. (Productivity Commission 2016a, Table 7.1, Table 7.2, Table 7.3)
Corrections system cost	Average cost per prisoner (in prison or remand) per month + average cost per offender (serving community correction orders) per month, Victoria 2014–15 × average length of sentence in months (4 months)	Report on Government Services 2016. Volume C: Justice sector overview. (Productivity Commission 2016a, Table C.9)
Productivity loss and work impacts		
Productivity loss to business	Average weekly earnings Victoria – annualised (× 52 weeks)	ABS (2015b, Table 11b. Average Weekly Earnings, Victoria (Dollars) – Trend (Earnings; Persons; Full Time; Adult; Ordinary time earnings; Victoria)

Cost item	Data item	Sources
Cost of job change	Cost of loss of income + cost of job search + employer staff replacement cost + unemployment benefits (transfer)	
Loss of income	Average weekly earnings Victoria – monthly (× 12 months)	ABS (2015b, Table 11b. Average Weekly Earnings, Victoria (Dollars) – Trend (Earnings; Persons; Full Time; Adult; Ordinary time earnings; Victoria)
Job search cost to the gambler	See source notes. Followed approach of PC (1999) and VCEC (2012)	VCEC (2012, Table J.1) 2010–11 cost inflated to 2014–15 price using CPI (ABS 2015c). Note: VCEC inflated their estimate from PC (1999) which used an estimate of $2357 by Dickerson et al. (1998). This was reported as 'approximately half of the cost reported by major job search firms.'
Employer staff replacement costs	Average weekly earnings Victoria – annualised (× 52 weeks)	ABS (2015b Table 11b. Average Weekly Earnings, Victoria (Dollars) – Trend (Earnings; Persons; Full Time; Adult; Ordinary time earnings; Victoria)
Unemployment benefits	Monthly cost of unemployment benefits	Newstart Allowance $527.60 per fortnight (single, no children), sourced Department of Human Services (DHS 2016)
Cost of absenteeism to business	Average annual cost to business per employee of absenteeism	2013 Absence Management Survey (Direct Health Solutions 2013) – $2741 in 2013 converted to 2014 using CPI (ABS 2015c)
Cost of crime to business	Value of money and goods stolen from business per incident	Inflated lower and upper estimates made by VCEC (2012, Table G.2) to 2014–15 prices using CPI (ABS 2015c), taking average of lower and upper estimates
Cost of fatality by suicide	Average annual cost of fatality by suicide = average total cost of fatality by suicide / average years of life lost due to fatality by suicide (average life expectancy SA male – average age of fatality by suicide in SA Construction Industry 2012	Doran et al. (2015) average years of life lost due to fatality by suicide: average age of fatality by suicide (39.5 years, Table 2) and total cost of fatality by suicide ($1,865,302), inflated to 2014 price using CPI (ABS 2015c) 1367.0 – State and Territory Statistical Indicators 2012 (ABS 2012) – average life expectancy SA male (79.5 years)
Cost to Victorian Government		
Policy, regulation, research and treatment		
Victorian Responsible Gambling Foundation (VRGF)	Community Support Fund expenditure 2014–15 on VRGF (under Gaming portfolio)	Department of Treasury and Finance (2015)
Pre-commitment Implementation Project	Community Support Fund expenditure 2014–15 on the Pre-commitment Implementation Project (under Gaming portfolio)	Department of Treasury and Finance (2015)
Policy costs related to problem gambling (DJR)	DJR policy costs related to problem gambling	VCEC (2012, p.56) 2010–11 cost ($1.7m) inflated to 2014 price using CPI (ABS 2015c)

Cost item	Data item	Sources
Cost of regulating problem gambling (VCGLR)	VCGLR total policy costs plus costs of activities to regulate problem gambling. Cost categories include: compliance and audit functions, gambling premises and gambling product approvals, licensing operations and strategic and legal support.	Provided by VCGLR via correspondence with VRGF for the authors, Figures are for the cost of their activity attributed to problem gambling in 2014–15.
Direct costs to local governments in Victoria	Average cost to local Victorian councils of responding to gaming machine applications – submission + hearing attendance + VCAT appeal costs	VCEC (2012, Table C.1) 2010 cost items inflated to 2014 price using CPI (ABS 2015c). Note: VCEC cost item received in a submission by the Municipal Association of Victoria (2012a, p.8)
Health and human services systems	Share of total health and human service expenditure to the Victorian Government due to gambling problems	VCEC (2012) 2010 cost items inflated to 2014 price using CPI (ABS 2015c). VCEC sourced total health and human expenditure (including capital costs) from various sources: DH and DHS expenditure and Report on Government Services (SCRGSP 2012 – cited in VCEC 2012, Table D.2)
Mental health sector	Share of mental health sector expenditure by the Victorian Government due to gambling problems	Victorian Government 2014–15 budget (revised figures) for mental health, as provided by the Department of Health and Human Services (Victorian Government 2015, Table 2.11)
Homelessness services	Total annual offset cost per client, street to home (health and justice services, excludes welfare, children placed in care, and eviction)	Zaretzky et al. (2013, Table 1)

The cost of emotional distress

As shown in Table 6, the 'emotional distress' items for depression and suicide (attempts and ideation) have been sourced from the Victims of Crime Assistance Tribunal's reported compensation schedule for the 'average amount of financial assistance awarded to victims of crime on final determination in 2014–15' (VOCAT 2015). This amounts to a cost of $7,641 per person for emotional distress. VOCAT compensation awards cover costs such as funeral expenses, counselling, medical and safety, loss of and/or damage to clothing, loss of earnings and other expenses which assist the victim.

This approach is consistent with the PC's (1999) use of compensation schedules ($5000 to $15,000) and the VCEC (2012) and The Allen Consulting Group (2011) who inflated the PC's 1999 schedules to 2010 prices ($7200 to $21,500) and 2011 prices ($7208 to $21,623) respectively. The current approach differs in the use of one conservative lower estimate of emotional distress ($7641) using VOCAT's most recent compensation schedule (VOCAT 2015). It is acknowledged that while this may be an unsatisfactory proxy for the cost per person of emotional distress due to gambling-related harms, no alternative estimate was available.

Approach to cost calculations

As described above, the framework adopted in this study for estimating the cost of problem gambling to Victoria (2014–15) largely relies on prevalence figures for a range of gambling-related harms, with respect to PGSI categories (LR, MR and PG). Where harms are able to be costed, an estimate of cost for each item has been sourced and applied to the 2014–15 financial year. Figure 2 illustrates the approach to estimating the cost of gambling problems. The calculations for each

cost item are presented in the results section along with the findings. The basic approach described in Figure 2 had to be altered in the case of two specific cost items –emotional or psychological distress and excessive spend – which are described in the following subsections.

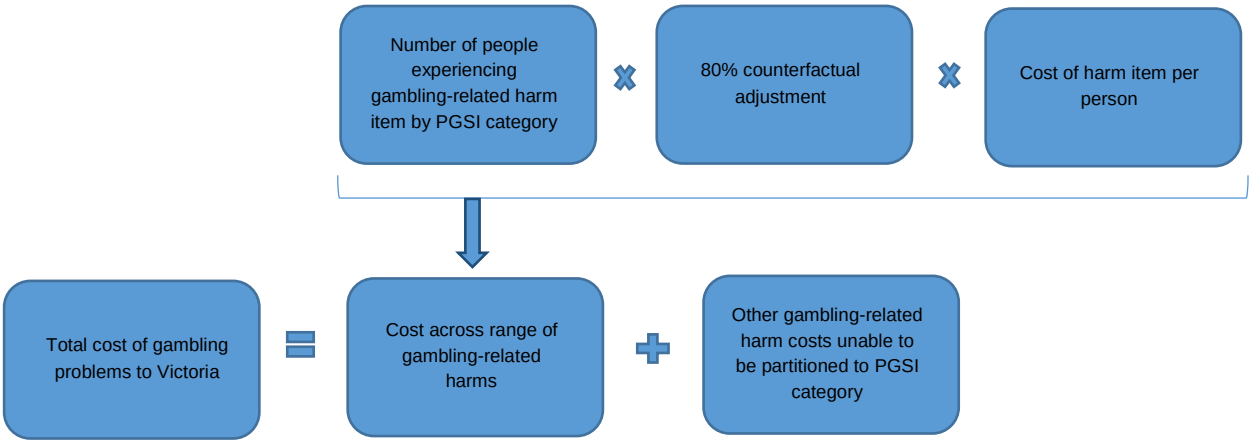

Figure 2: CQU approach to estimating the cost of gambling problems to Victoria

As shown in Figure 2, the cost calculations adopted two adjustment strategies in line with the approach of the Productivity Commission (1999) and the VCEC (2012): adjustments for the counterfactual and double-counting, which are described in the following subsections.

80 per cent counterfactual adjustment

As mentioned in the targeted literature review section of this report, in their cost calculations the Productivity Commission (1999) drew on the judgements of academics and researchers that approximately 20 per cent of gambling-related impacts would occur in the absence of gambling (the counterfactual). The PC (1999) applied a 20 per cent discount to the estimated number of people impacted by gambling-related harm. In the absence of a better estimate the VCEC (2012) used the same approach, labelling it a 'counterfactual adjustment' of 80 per cent. The authors of the current study investigated an alternative counterfactual adjustment which would more accurately factor for direct causality between gambling and the associated harms. However, none of the limited longitudinal studies conducting on gambling have been able to capture data sufficient to establish causality or determine rigorous attributable fractions. Therefore, our approach follows that taken by the PC (1999) and VCEC (2012) in applying an 80 per cent counterfactual adjustment to the number of people experiencing the gambling-related harm.

Double-counting adjustment

A number of gambling-related harm estimates are associated with intangible costs, such as the cost of emotional distress due to suicide ideation, suicide attempts, depression, divorce or separation, experiencing violence, or other emotional or psychological impacts. It is very likely that an individual reporting one of these emotional or psychological harms due to gambling is also experiencing another. For example, someone who has attempted suicide within the last year is very likely to have experienced depression, both attributable to their gambling problems.

Therefore, to avoid double-counting potential comorbid gambling-related harms in estimates of emotional distress, discounts have been applied in the calculations by subtracting the smaller harm/s (by population impacted) from the larger harms. Specifically, these discounts have been applied in the following calculations:

- Number of gamblers experiencing suicide ideation discounted by:
    - number of gamblers attempting suicide
- Number of affected others experiencing emotional distress due to another's gambling discounted by:
    - number of affected others experiencing emotional distress due to gambling-related divorce or separation
    - number of affected others experiencing emotional distress due to gambling-related experiences of violence
    - number of affected others experiencing emotional distress due to gambler's attempted suicide
    - number of affected others experiencing emotional distress due to gambler's fatality by suicide
    - percentage of affected others reporting moderate to major emotional or psychological impact from another's gambling.

For more detail, refer to the detailed cost calculations in the results section.

Emotional or psychological distress dominance analysis and disability weights

Emotional or psychological distress, as an 'intangible' cost to those suffering gambling problems, is inherently difficult to cost using standard methods. For this reason, though it is recognised as a major negative consequence of gambling and has been discussed in detail, it has not been integrated into previous costing studies. However, the recent study by Browne et al. (2016) provides a means to approach such a costing through the application of WHO Burden of Disease (BoD) methodologies. The main objective of that study was to estimate the average disability weight (DW) associated with different categories of problematic gambling.

The DW is a [0,1] bounded metric that reflects the total impact of a condition on a person's quality of life. The DW ranges from none at all (0) – or normal health and wellbeing – to so extreme that life is effectively not worth living (1). Integrated over the course of one year and over individuals, the DW translates to a 'disability adjusted life year' (DALY), which may be understood as a cost in terms of human quality of life. Given that financial resources are generally dedicated to enhancing quality of life, GDP per capita (World Bank 2016) can be used as a surrogate for the economic worth of one person's life year. This method has been applied, for instance, to measure the economic worth of medical research to reduce the incidence of cancer (Murphy & Topel 2010). Browne et al. (2016) gathered data that associated symptomology across all major domains of gambling harm, including emotional or psychological distress, with the estimated DWs. This provides scope to calculate the emotional and psychological distress cost via:

$$C = DALY \cdot GDP \cdot$$

where *W* describes the relative importance of emotional and psychological harm, with respect to other domains of harm (e.g. financial), in contributing to the *DW* of an individual suffering from gambling harm.

To find *W* a regression-based procedure known as *dominance analysis* (Budescu 1993; Azen & Budescu 2003) was applied to assess the relative importance of independent variables in predicting an outcome. Dominance analysis is just one of a number of approaches that acknowledge that there is intrinsic uncertainty in assigning explained variance to predictors when there are multiple co-varying explanatory variables (see e.g. Leamer & Leonard 1983). Another way of describing the goal of dominance analysis is that it aims to partition the total explained variance in an outcome into parts attributable to each individual predictor.

The algorithm used to implement the analysis takes into account covariance among predictors by aggregating information over all possible combinations of predictors. A regression dominance analysis was implemented on Browne et al.'s (2016) dataset of harms reported by 3076 gamblers. The predictor variables were the general questions attached to each domain, e.g. 'Overall how much were you impacted by financial harms?', and the response variable was the estimated DW for that case. DW varied by individual based on the severity of gambling problems.

Table 7 summarises the outcome of this dominance analysis. As shown in Table 7, 25.9 per cent of the DW associated with gambling-related harm can be attributed to emotional or psychological harms, and this served as the estimate of *W* in the current study. The DALY attributable to gambling-related harm was sourced directly from that reported by Browne et al. (2016) and Australian GDP per capita (used as a proxy for Victorian GDP per capita) was sourced by the World Bank (2016).

Table 7: Regression dominance analysis estimation of the relative contribution of emotional or psychological harms to disability weights

Gambling-related harm domain	Relative contribution (%)
Financial harms	26.8%
Emotional and psychological harms	25.9%
Relationship and family harms	15.6%
Health-related harms	16.6%
Work or study harms	7.5%
Other harms (anti-social consequences)	7.5%

Excessive spend by problem gamblers and financial deprivation

Excessive expenditure by those engaging in problematic gambling represents a clear opportunity cost to gamblers, for whom the money would have been better spent on other products and activities. The financial harms identified by Browne et al. (2016), e.g. 'less spending on essential items (e.g. medications, health care and food), essentially probe the occurrence of this opportunity cost of misused funds. In brief, the approach taken by the Productivity Commission (1999) and by the VCEC (2012) was to assume that *on average*, non-problem gamblers were making a rational choice regarding the amount invested in gambling each year so as to maximise their utility. Accordingly, the average amount that problem gamblers spent in excess of this was treated as incurring an opportunity cost to the gambler. The Productivity Commission (1999) gave a lower estimate of $1 billion and an upper estimate of $1.4 billion. The VCEC (2012) report reviews in detail the approach taken by the Productivity Commission to assess excessive expenditure. The AGC and Clubs Australia disputed this approach, suggesting gamblers may in some cases evidence a high spend that remains consistent with rational spending. The VCEC (2012) disagreed with these points and supported the position taken by the Productivity Commission.

The authors of the current study agree with the assessment of the VCEC, that beyond a certain level of expenditure problem gamblers generally do not gain value for money for their spending, while the opportunity costs rise quickly. The average spend amounts by PGSI category would appear to be most valid points at which to set the threshold at which this occurs.

However, the existing case can be strengthened further using data from Browne et al. (2016) by considering the increasing rate of financial harm symptomology with respect to PGSI. These harms directly measure the increasing occurrence of financial deprivation due to opportunity costs of gambling investment, and can be related to PGSI and increasing spend. Low-risk gamblers incur these harms at about 1.5× the rate of non-problem gamblers, moderate risk at 3–4× and PGs at 5–10×. It is possible to address the concerns raised by AGC and Clubs Australia by not costing 100 per cent of excessive spend by problem gamblers, but rather weighting the allocation based on the increased rate of occurrence of financial harms over the non-problem gambling baseline. For PGs, approximately 80 per cent of their spend in excess of non-problem gamblers is treated as a cost. For low-risk gamblers, only about 40 per cent of the excessive spend is treated as a cost. Thus, this approach takes into account the relative increase in spends as well as the relative increase of financial harms as PGSI increases. The costing formula is given as:

$$C = \sum_{\substack{k=1 \\ (\text{PGSI})}}^{15+} N_k \cdot (S_k - S_0) \cdot \left(1 - \frac{H_0}{H_k}\right)$$

where $\left(1 - \frac{H_0}{H_k}\right)$ describes the weight *W*, or the proportion of the excessive spend assumed to incur opportunity costs to the gambler in excess of any entertainment benefit obtained.

The rationale behind this formula can be set out as follows. It is assumed that 100 per cent of the spend S_0 by recreational gamblers is not a 'cost' since it is presumably less than the theoretical consumer surplus obtained by these gamblers. As financial harms *H* increase for non-recreational gamblers with increasing PGSI score *k*, then a relative proportion $\left(1 - \frac{H_0}{H_k}\right)$ of the increased spend $(S_k - S_0)$ by those with non-zero PGSI scores is considered to not provide additional consumer surplus over that enjoyed by recreational gamblers. Therefore, this proportion of the increased spend by those experiencing financial harms is treated as a cost. This approach integrates most recent evidence on the escalating rate of financial deprivation experienced by higher PGSI categories. Nevertheless, it only treats a proportion (<100 per cent) of the spend of those experiencing problems as a cost, this proportion being estimated by the relative increase in self-reported financial harms.

Results

Total costs of gambling problems to Victoria, by gambling category

The total cost of gambling problems in Victoria is estimated to be $7 billion in 2014–15 with over one-third of this total cost attributable to low-risk gambling ($2.45 billion), one-third to problem gambling ($2.36 billion) and one-quarter to moderate-risk gambling ($1.9 billion). Table 8 shows the cost of gambling problems to Victoria in the 2014–15 financial year by PGSI category across cost items.

Table 8: Cost of gambling problems to Victoria (2014–15)

Cost item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Estimated Victorian population (of 4,390,438)	391,206	122,667	35,415	549,289
Financial				
Total opportunity cost of gambling spend	$315,582,939	$318,811,285	$427,186,784	$1,061,581,009
Bankruptcy				
Total cost of bankruptcy administration	$0	$2,841,023	$7,930,772	$10,771,795
Total cost of unpaid debts	$0	$15,853,528	$44,255,438	$60,108,966
Illegal offshore wagering	No estimate	No estimate	No estimate	$215,634,140
Sub-total financial costs	***$315,582,939***	***$337,505,836***	***$479,372,995***	***$1,348,095,911***
Emotional and psychological				
Depression – emotional distress to the gambler	$52,358,703	$64,672,516	$59,775,675	$176,806,894
Suicide attempts – impact on gambler	$45,694,868	$5,427,064	$16,137,785	$67,259,718
Suicide ideation – emotional distress to the gambler	$150,793,065	$17,909,312	$53,254,692	$221,957,069
Emotional and psychological costs to the gambler	$566,286,653	$389,181,066	$171,465,281	$1,126,933,000
Sub-total emotional and psychological costs	***$815,133,289***	***$477,189,959***	***$300,633,433***	***$1,592,956,680***
Relationships and family				
Divorce and separation				
Financial cost to the gambler	$9,844,221	$5,261,280	$9,081,796	$24,187,297
Emotional distress to the gambler	$45,694,868	$24,421,789	$42,155,848	$112,272,505
Emotional distress to affected others	$73,111,789	$160,679,868	$384,126,043	$617,917,699
Experiences of violence				
Emotional distress to the gambler	$15,231,623	$9,949,618	$21,517,047	$46,698,288
Emotional distress to affected others	$24,370,596	$15,919,389	$34,427,276	$74,717,260
Suicide attempts of gambler – impact on affected others	$274,169,209	$32,562,386	$96,826,713	$403,558,307
Fatality by suicide of gambler – impact on affected others	$18,277,947	$2,170,826	$6,455,114	$26,903,887
Other emotional distress to affected others	$129,124,853	$334,844,790	$418,671,785	$882,641,428

Cost item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Sub-total relationship and family costs	***$589,825,106***	***$585,809,945***	***$1,013,261,621***	***$2,188,896,672***
Crime – cost to the Victorian justice system				
Police system cost	$758,516	$878,349	$1,180,862	$2,817,727
Court system cost	$1,225,794	$1,419,448	$1,908,322	$4,553,563
Corrections system cost	$24,984,393	$28,931,500	$38,895,824	$92,811,717
Sub-total crime costs	***$26,968,703***	***$31,229,297***	***$41,985,008***	***$100,183,007***
Productivity loss and work impact				
Productivity loss to business	$22,865,648	$111,255,846	$188,937,938	$323,059,432
Cost of job loss				
Loss of income	$0	$39,028,720	$74,099,158	$113,127,878
Job search cost to the gambler	$0	$6,155,901	$11,687,472	$17,843,373
Employer staff replacement costs	$0	$11,938,197	$22,665,625	$34,603,821
Unemployment benefits	$0	$3,716,082	$7,055,280	$10,771,362
Cost of absenteeism to business	$16,672,788	$12,541,171	$17,143,961	$46,357,920
Cost of crime to business	$5,556,647	$8,249,363	$9,731,943	$23,537,953
Cost of fatality by suicide	$19,409,339	$2,305,198	$6,854,681	$28,569,219
Sub-total productivity loss and work impact costs	***$64,504,422***	***$195,190,478***	***$338,176,056***	***$597,870,956***
Cost to Victorian Government				
Policy, regulation and research (including treatment costs)				
Victorian Responsible Gambling Foundation (VRGF)	No estimate	No estimate	No estimate	$43,347,000
Pre-commitment Implementation Project	No estimate	No estimate	No estimate	$2,337,600
Policy costs related to problem gambling (DJR)	No estimate	No estimate	No estimate	$1,858,342
Cost regulating problem gambling (VCGLR)	No estimate	No estimate	No estimate	$4,390,000
Direct costs to local governments in Victoria	No estimate	No estimate	No estimate	$262,557
Health and human services systems	$554,072,776	$181,144,400	$60,506,235	$795,723,411
Mental health sector	$80,175,048	$94,101,625	$103,567,341	$277,844,014
Homelessness services	No estimate	No estimate	$19,714,636	$19,714,636
Sub-total cost to Victorian Government	***$634,247,824***	***$275,246,025***	***$183,788,212***	***$1,145,477,560***

Cost item	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Total cost of gambling to Victoria[5]	**$2,446,262,283**	**$1,902,171,540**	**$2,357,217,325**	**$6,973,480,788**

Cost of gambling problems to Victoria, by cost category and PGSI

As shown in Table 9, just under one-third of the total costs of gambling problems are accounted for by the costs to relationships and family ($2.2 billion) and two-fifths of this the cost ($883 million) is borne by persons harmed by the gambler in the form of 'other emotional distress' (not including from divorce or separation, suicide attempts, fatality by suicide or experiences of violence). In fact, the total of all emotional distress costs on affected others accounted for over one-quarter ($2 billion, 28.8 per cent) of the total cost to Victoria, slightly higher than the emotional and psychological cost born by the gambler ($1.6 billion, 22.8 per cent of total costs). The financial and emotional and psychological costs (excluding those counted under the relationship and family category) accounted for approximately 20 per cent each of the total costs ($1.3 billion and $1.6 billion respectively). These findings are consistent with the research by Browne et al. (2016), which found that relationship, emotional and psychological and financial harms aggregated accounted for 60 per cent of the healthy years of life lost to the Victorian adult population, using the same 2014 population estimates as the current analysis.

The authors note that the health harms domain in this study accounted for another 20 per cent of the healthy years of life lost, and the harm items of depression and attempted suicide were categorised within this health domain (Browne et al. (2016). In the current costing, depression and attempted suicide are counted in the emotional and psychological (for gambler) and relationship and family (for affected others) cost categories. Suicide ideation is only counted as an emotional cost to the gambler. Fatality by suicide is costed separately as a relationship and family cost (on affected others) and productivity loss and work impacts (to the community and government).

The cost to the Victorian Government to fund gambling-related policy, regulation, research, treatment, local government and health and social services (including mental health and homelessness) accounted for another 16.4 per cent of the estimated total cost ($1.1 billion). Interestingly, just over half of these costs were associated with low-risk gamblers ($635 million).

Productivity loss and other impacts to work (absenteeism, job loss, crime and fatality by suicide) cost just under $598 million (8.6 per cent of the total costs), followed the cost of crime to the Victorian justice system at $100 million (1.4 per cent of total costs).

[5] Total combined costs for low-risk, moderate-risk and problem gamblers do not add to the overall total of gambling problems due to some cost items unable to be costed for all three groups: policy, regulation, research and treatment costs to Victorian Government, direct costs to local Government, illegal offshore gambling, and homelessness services.

Table 9: Cost of gambling problems to Victoria (2014–15) by cost category and PGSI

Cost category		Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Financial impacts	Cost	$315,582,939	$337,505,836	$479,372,995	$1,348,095,911
	% total	4.5%	4.8%	6.9%	19.3%
Emotional and psychological	Cost	$815,133,289	$477,189,959	$300,633,433	$1,592,956,680
	% total	11.7%	6.8%	4.3%	22.8%
Relationships and family	Cost	$589,825,106	$585,809,945	$1,013,261,621	$2,188,896,672
	% total	8.5%	8.4%	14.5%	31.4%
Crime	Cost	$26,968,703	$31,229,297	$41,985,008	$100,183,007
	% total	0.4%	0.4%	0.6%	1.4%
Productivity loss and work impacts	Cost	$64,504,422	$195,190,478	$338,176,056	$597,870,956
	% total	0.9%	2.8%	4.9%	8.6%
Costs to Victorian Government	Cost	$634,247,824	$275,246,025	$183,788,212	$1,145,477,560
	% total	9.1%	3.9%	2.6%	16.4%
Total cost of gambling to Victoria	**Cost**	**$2,446,262,283**	**$1,902,171,540**	**$2,357,217,325**	**$6,973,480,788**
	% total	**35.1%**	**27.3%**	**33.8%**	**100%**

Cost of gambling problems to Victoria, by bearer of cost and PGSI

Aggregating the costs by the group bearing the costs has gamblers themselves accounting for just over 45 per cent of the total costs ($3.2 billion), followed by affected others ($2.0 billion), the Victorian Government ($1.3 billion) and the community ($472 million). The two groups which accounted for the higher share of the overall costs were low-risk gamblers (17.2 per cent of the total, $1.2 billion) and others affected by problem gamblers (13.8 per cent of the total, $963 million).

See Table 10 for a breakdown of these costs. For a summary of cost items by bearer of costs, refer to the gambling cost framework in Table 3.

Table 10: Cost of gambling problems to Victoria (2014–15) by bearer of cost and PGSI

Cost category		Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Gambler	Cost	$1,201,486,940	$880,818,552	$886,361,538	$3,184,301,170
	% total	17.2%	12.6%	12.7%	45.7%
Affected others[6]	Cost	$519,054,394	$554,104,022	$962,634,649	$2,035,793,065
	% total	7.4%	7.9%	13.8%	29.2%
Community (businesses)	Cost	$54,799,752	$153,063,940	$264,034,525	$471,898,218
	% total	0.8%	2.2%	3.8%	6.8%
Government	Cost	$670,921,196	$314,185,026	$244,186,612	$1,281,488,334
	% total	9.6%	4.5%	3.5%	18.4%
Total cost of gambling to Victoria	**Cost**	**$2,446,262,283**	**$1,902,171,540**	**$2,357,217,325**	**$6,973,480,788**
	% total	**35.1%**	**27.3%**	**33.8%**	**100%**

The next section of results summarises the costs by category and subcategory items, giving a more in-depth look at the individual costs of gambling-related harms and the cost to the Victorian Government.

Financial costs

Gambling expenditure in Victoria

In 2014–15 gambling expenditure in Victoria was approximately $5.8 billion and, as shown in Figure 3, it continues to increase each year. This expenditure (or player loss) covers casinos, EGMs, instant lottery, keno, lotteries, lotto and pools. Minor gaming (e.g. bingo, raffles), interactive gaming and illegal offshore gambling are excluded from this figure. Of this revenue, in 2014–15 a total of $1.6 billion in taxes and levies were paid into the Consolidated Fund (VCGLR 2015). The majority of the revenue was from EGMs located in hotels and clubs ($961.6 million). Approximately 8.3 per cent of revenue from EGMs in Victorian hotels in 2014–15 ($110 million) went directly into the Community Support Fund programs which support community-orientated expenditure and the Victorian Responsible Gambling Foundation (VCGLR 2015; DTF 2015).

[6] The cost of unpaid debts was divided equality among affected others and the community, as per the description of who bears the costs in Table 3.

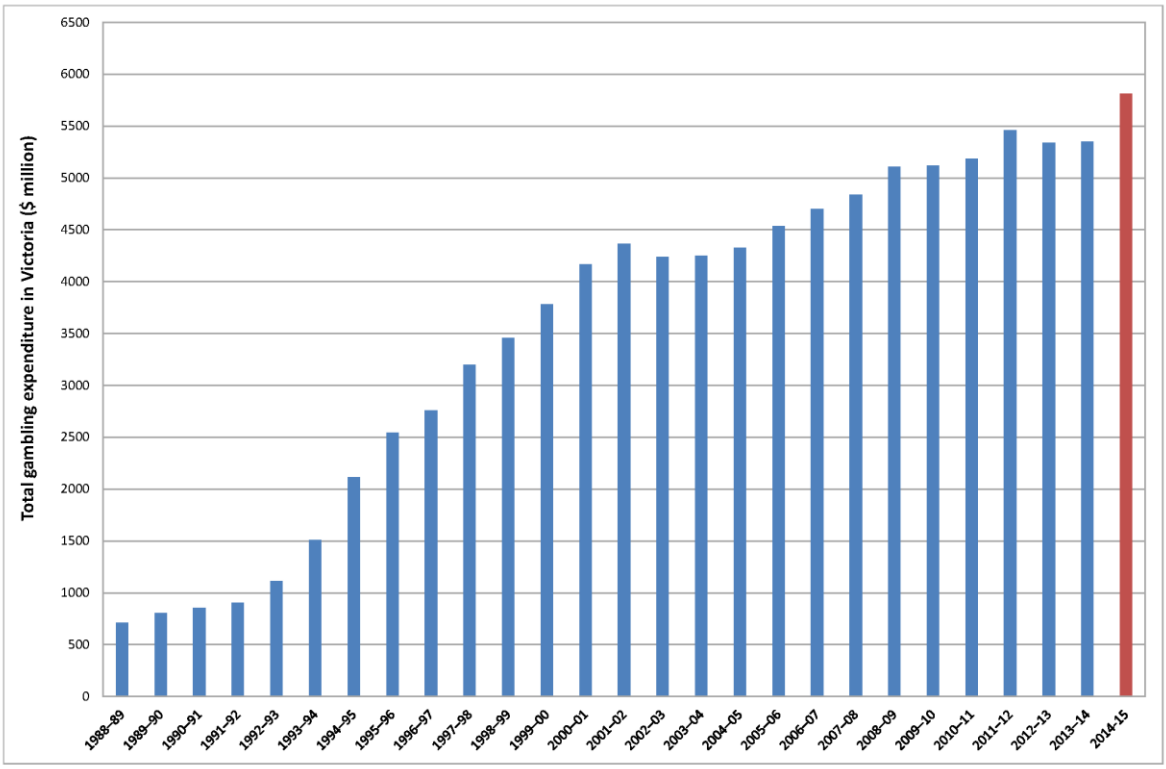

Figure 3: Victorian gambling expenditure ($ million)
Source: Australian Gambling Statistics (AGS) 2013–14 figures (Queensland Treasury 2015) and Victorian Commission for Gambling and Liquor Regulation for 2014–15 figure (VCGLR 2015).

Table 11 summarises the total expenditure on gambling activities in Victorian 2014–15 by player problem gambling severity level (PGSI). As per the VCEC approach, this expenditure was calculated from the estimated percentage share of the total expenditure, calculated from the average expenditure on the gambling activity that the gambler spent the most money on. This is organised by PGSI category weighted to the Victorian population (sourced from the 2008 Victorian Gambling and Health Study weighted dataset, Hare 2009). The percentage share by PGSI category was then applied to the reported 2014–15 player loss revenue for five types of gambling activities in Victoria (VCGLR 2015).

In total, the population with some degree of gambling problems accounted for $4.5 billion of the $5.8 billion spent in Victoria in 2014–15 (76.7 per cent of the total). The largest proportion of the total was attributed to problem gamblers expenditure on EGMs ($1.3 billion, or 22.9 per cent of the total). However, expenditure from the non-problem, low-risk and moderate-risk gamblers on EGMs in 2014–15 was still substantial ($695 million, $817 million, and $878 million respectively).

Table 11: Share of gambling expenditure by problem gambling severity, Victoria (2014–15)

PGSI group	Non-problem gamblers (PGSI 0)	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling expenditure
Victorian adult gambling population (n)	2,528,381	391,206	122,667	35,415	3,077,669
Electronic gaming machines (EGMs)[7]	18.7%	22.0%	23.6%	35.8%	100.0%
	$695,680,506	$817,064,723	$877,966,785	$1,330,922,521	$3,721,634,536
Table games (Melbourne Casino)[8]	6.9%	15.3%	19.1%	58.7%	100.0%
	$49,316,292	$109,211,547	$136,566,617	$419,597,039	$714,691,495
Wagering – racing (totalisator), football, trackside and sports betting	33.2%	55.8%	7.5%	3.5%	100.0%
	$284,518,449	$478,926,442	$64,070,698	$30,384,411	$857,900,000
Lotteries	64.0%	17.6%	13.2%	5.1%	100.0%
	$320,442,866	$88,258,236	$66,282,654	$25,616,244	$500,600,000
Keno[9]	18.7%	22.0%	23.6%	35.8%	100.0%
	$3,121,710	$3,666,395	$3,939,679	$5,972,216	$16,700,000
Total gambling expenditure	**23.3%**	**25.8%**	**19.8%**	**31.2%**	**100.0%**
	$1,353,079,824	**$1,497,127,343**	**$1,148,826,433**	**$1,812,492,432**	**$5,811,526,031**

Expenditure on gambling that generates consumer surplus and does not generate harm should not be included in an accounting of costs. Also, the authors recognise that gambling, problematic or otherwise, provides benefits to the Victorian economy and community in terms of employment and tax revenue. The scope of the present study is to assess the *costs* of gambling, not to measure the benefits, which is a separate and non-trivial task. For example, economic benefits must be compared to a counterfactual scenario in which expenditure not diverted to gambling is presumably diverted to other services and products. As described in the methodology section, there is a consensus that excessive expenditure on gambling represents an opportunity cost to the gambler (PC 1999, 2010; VCEC 2012). The implementation of a conservative method to assess this item is reported in the next section.

[7] Total EGM expenditure (player loss) at hotels, clubs and Melbourne Casino is estimated at $3,721,634,536 from the VCGLR data (2015), with the assumption that EGMs account for approximately 61.7 per cent of Melbourne Casino gambling revenue and 38.3 per cent from table games (calculated from Australian Gambling Statistics 31st edition – Queensland Treasury, 2015).

[8] Total casino table games expenditure (player loss) at Melbourne Casino is estimated at $714,691,495 from the VCGLR data (2015), with the assumption that approximately 38.3 per cent of Melbourne Casino gambling revenue is generated from table games (calculated from Australian Gambling Statistics 31st edition – Queensland Treasury, 2015).

[9] Percentage share of Keno for problem gamblers (PGSI 8+) is 0 per cent due to insufficient average expenditure data for this group (Victorian Gambling and Health Study 2008 weight dataset, Hare, 2009). Current calculations have therefore used the EGM expenditure share percentages as a proxy for Keno.

Cost of excessive spend by gamblers

As described in the method section, our costing formula for this item is given as follows:

$$C = \sum_{k=1}^{15+}{}_{\text{(PGSI)}} N_k \cdot (S_k - S_0) \cdot \left(1 - \frac{H_0}{H_k}\right)$$

where $\left(\mathbf{1} - \frac{\boldsymbol{H_0}}{\boldsymbol{H_k}}\right)$ describes the weight *W* applied to the excessive spend. This yields an estimate of $1.06 billion, at the lower end of the Productivity Commission's range.

Table 12 illustrates the implementation of this formula by PGSI score. Excessive spend per capita (*S*^=*S*–$670.31) is weighted according to the increased prevalence of gambling-related harm (*H*) over non-problem gamblers, scaled by the Victorian population weighted *N*. This is summarised again in Table 13 by PGSI category.

Though prevalence of gamblers in each category varies greatly, the aggregate cost of excessive spend is approximately equal across gambling categories. For comparison, it is interesting to consider an entirely different approach, whereby financial harms are costed with respect to the attributable fraction of DALYs estimated for gambling by Browne et al. (2016) – i.e. as was done for costing emotional and psychological distress. Using this entirely different DW-based estimation method, the cost of financial harms due to excessive gambling expenditure is estimated as $996 million – which, in relative terms, is very close to the proposed estimate of $1.06 billion. The strong correspondence in these two cost estimates, based on very different but entirely congruent assumptions, increases confidence in the estimate given by both approaches.

Table 12: Details of calculations to infer excessive spend leading to financial deprivation or opportunity costs by PGSI category*

PGSI score	Estimated number persons in Victoria (N)	Average spend per person (S)	Average number financial harms (H)	Discount weight (W)	Aggregate excessive spend (W*S^)
0	2581154.1	$670	0.5	0.0	$0
1	164659.9	$978	0.9	0.4	$61,166,039
2	64080.5	$10,702	0.8	0.4	$254,416,899
3	40739.4	$2744	1.5	0.7	$73,088,209
4	24329.1	$6053	2.2	0.8	$111,612,057
5	14889.6	$7010	2.1	0.8	$77,805,250
6	8410.2	$1,995	2.6	0.8	$13,421,034
7	6367.5	$8,238	2.9	0.8	$42,884,733
8	6627.0	$3,649	3.3	0.8	$20,323,495
9	5562.5	$25,141	3.4	0.8	$117,980,852
10	2924.8	$39,408	3.6	0.9	$98,639,827
11	1097.6	$7,921	3.6	0.9	$7,440,857
12	719.2	$10,152	3.5	0.9	$6,214,311
13	1691.9	$13,209	4.1	0.9	$19,453,120

PGSI score	Estimated number persons in Victoria (N)	Average spend per person (S)	Average number financial harms (H)	Discount weight (W)	Aggregate excessive spend (W*S^)
14	1240.4	$6,352	4.6	0.9	$6,969,076
15+	8409.0	$19,671	5.7	0.9	$150,165,243
Total					**$1,061,581,009**

**** Prevalence and spend data sourced from Victorian Gambling and Health Study (2008). Refer to Table 11 for details.***

Table 13: Cost of excessive spend by gamblers, Victoria (2014–15)

PGSI group	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Victorian population	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Average spend per person	$670	$3663	$4539	$16,715
Share of total cost	29.7%	30.0%	40.2%	100%
Total cost	**$315,582,939**	**$318,811,285**	**$427,186,784**	**$1,061,581,009**

Cost of bankruptcy and unpaid debts

At the extreme end of financial harms from gambling problems is bankruptcy, which results in the direct costs of unpaid debts and the administration fees for declaring bankruptcy. The method we used for costing bankruptcy due to gambling problems was consistent with that employed by the (PC 1999) and VCEC (2012), and included estimates of:

- number of bankruptcies due to gambling by PGSI category (Browne et al. 2016) × 80 per cent counterfactual
- cost to administer bankruptcies to the government per case (ITSA 2014)
- average cost of unpaid debts from the gambler per bankruptcy to affected others (family, friends etc.) and the community (such as businesses) (VCEC 2012 estimated inflated to 2014; ABS 2015c)

The number of bankruptcies by PGSI category was calculated from the National Gambling-Related Harms study for the percentage of respondents whose gambling contributed to or caused bankruptcy during a 12-month period (Browne et al. 2016). This figure was projected onto the estimated Victorian population by PGSI category from the 2014 Victorian Gambling and Health Study weighted dataset (Hare 2015).

Administration costs to the government per bankruptcy were $4000, as sourced from the fee paid to the Insolvency Trustee Service Australia to administer a bankruptcy (ITSA 2014). It was not possible to obtain a current estimate of average unpaid debt per gambler. Therefore the VCEC (2012) 2010–11 estimate of $20,419 per gambler was used and inflated from 2010 to 2014 ($22,321) using the CPI (ABS 2015c).

It is acknowledged that bankruptcy has other indirect gambling-related harm costs, such as costs to relationships (e.g. emotional distress, divorce) and use of government services (e.g. housing assistance, welfare payments). To avoid double-counting these indirect costs, other gambling-related harm items have been excluded from the cost of bankruptcy.

Table 14 shows the estimated cost of bankruptcy to Victoria by PGSI category. In total, the cost of bankruptcy was $70.1 million in 2014–15, with more than half due to unpaid debts from gambling at problematic levels ($44.3 million). Note that no costs are reported for the low-risk gambler group due to a 0 per cent prevalence of bankruptcies reported in the gambling-related harms survey (Browne et al. 2016).

Table 14: Cost of bankruptcy due to gambling problems, Victoria (2014–15) – administration and unpaid debts

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% gambling contributed to or caused bankruptcy	a	0.0%	0.7%	7.0%	4.7%
Number of bankruptcies in Victorian population due to gambling	b = a × n = 80%	0	710	1,983	2,693
Administration cost per bankruptcy	c	$4,000			
Unpaid debt per gambler	d	$22,321			
Sub-total admin cost	***e = b × c***	***$0***	***$2,841,023***	***$7,930,772***	***$10,771,795***
Sub-total unpaid debts	***f = b × d***	***$0***	***$15,853,528***	***$44,255,438***	***$60,108,966***
Total cost	**e + f**	**$0**	**$18,694,551**	**$52,186,211**	**$70,880,762**

Cost of illegal offshore gambling

Legalised forms of gambling in Australia are subject to taxation and levies that flow back into the Australian economy and which may then be directed towards community-orientated expenditure. Illegal gambling, such as offshore online gambling, generates no direct benefits to the Australian economy, with all proceeds going to international companies. The expenditure data on illegal offshore gambling is scarce but the following points are salient:

- Australian expenditure on gambling in the 'unofficial sector' (online poker and online casinos) has been estimated at $790 million (PC 2010), which is approximately $197 million for Victoria, which accounts for 25 per cent of the Australian population.
- In a 2015 review, the Department of Social Services reported that the cost of illegal offshore wagering in 2014 was between $63.9 million (source: Global Betting and Gaming Consultants) and $400 million (source: H2 Gambling Capital).

The current study took a conservative approach in estimating illegal offshore gambling, inflating the Productivity Commission's 2010 estimate to 2014 prices using CPI (ABS 2015c) and applying the percentage share of the Victorian population in June 2015 (25 per cent – ABS 2015a) to give $215,634,140.

Emotional and psychological harms

The emotional and psychological harms experienced due to gambling problems are well established in gambling research (Shaffer & Korn 2002; Abbott et al. 2014). In their framework of gambling-related harms, Langham et al. (2016) identified emotional and psychological distress as a significant harm domain which covered feelings of worthlessness, failure, extreme distress, hopelessness, vulnerability, anger, shame and regret and thoughts of escape. These impacts were evident not only for the gambler but also for others affected by the gambler (family, friends and colleagues).

Using the gambling-related harms framework to quantify the years of healthy life lost due to gambling in Victoria, Browne et al. (2016) found that 18.6 per cent of the years of healthy life lost in Victoria due to gambling harm could be attributed to emotional or psychological harms.

The entirety of the cost of emotional and psychological distress due to gambling is difficult to quantify, but this study has included the following harms:

- the cost of depression due to gambling
- the cost of suicide attempts and suicide ideation due to gambling
- the cost of other emotional and psychological distress to the gambler.

The 'emotional distress' items for depression and suicide (attempts and ideation) have been costed per person at $7641, sourced from the Victims of Crime Assistance Tribunal's reported compensation schedule for the 'average amount of financial assistance awarded to victims of crime on final determination in 2014–15' (VOCAT 2015). For more detail on the rationale for using this as a cost proxy for emotional distress, refer to the methodology subsection 'The cost of emotional distress'.

The costs detailed in this section pertain only to those costs incurred by the gambler. The costs of emotional and psychological distress experienced by others affected by a gambler are reported on in the 'Relationship and family' cost category in the next section.

Cost of depression

Depression has been established as being highly correlated with gambling problems, with a bi-directional causality (Dussault et al 2011; Haw 2009; Holdsworth, Haw & Hing 2011; Quigley et al. 2015), which makes attributing the cost of depression due to gambling a challenging task.

The Productivity Commission's 1999 estimation of the cost of depression due to problem gambling used survey data from the *National Gambling Survey* of regular gamblers who 'often' or 'always' suffered from depression in the last 12 months as a result of their gambling. Numbers reporting suicide ideation were subtracted from those 'always' suffering depression to avoid double-counting and the overall figure was adjusted by 80 per cent for causality (PC 1999). The VCEC (2012) calculated the number of gambling-related depression cases from the PC (1999) rate of depression from the *Survey of Clients of Counselling Agencies*, annualising it by the average period of gambling reported by the PC (8.9 years).

There are issues with using data for the prevalence of gambling from the above approaches:

1. the PC data is outdated

2. the VCEC calculation is based on PC data which is both outdated and from an unrepresentative sample of persons seeking counselling services

3. neither data source differentiates levels of problem gambling severity.

The current study then reviewed depression data from the most recent 2014 Victorian Gambling and Health Study (Hare 2015). This study asked moderate-risk and problem gamblers on whether they had ever been diagnosed with depression by a medical professional, but did not ask the level of their depression brought about by their gambling. As this data lacked any attribution of gambling to depression or an estimate for low-risk gamblers, the decision was made not to use it.

The National Gambling-Related Harms study (Browne et al. 2016) asked all respondents whether they had experienced an increase in depression due to their gambling (in a 12-month period). Since this data was recent and covered all PGSI categories, this data was used with an adjustment made for causality.

In the current approach, the number of persons in Victoria experiencing depression due to gambling problems by PGSI category was estimated as follows:

- The percentage experiencing increased depression due to their gambling by PGSI category (National Gambling-Harms Study, Browne et al. 2016) was multiplied by the estimated Victorian population by PGSI category.

- Taking into consideration that the above estimate is based on self-reported data, an adjustment of 55 per cent was applied to account for the percentage of self-reported depression that is diagnosed (Gwynn et al. 2008), resulting in costs (e.g. treatment). In this instance the 80 per cent counterfactual was not applied.

- The emotional distress cost proxy of $7641 (VOCAT 2015) was used in the cost calculations of depression due to gambling.

Table 15 shows the estimated cost of depression to the gambler in Victoria by PGSI category. The total cost of depression due to gambling problems in 2014–15 is estimated at $176 million, with each level of gambling problems representing $50–65 million of the aggregated cost.

Table 15: Cost of depression due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% who experienced increased depression due to their gambling	a	3.2%	12.5%	40.2%	
Number who experienced depression due to gambling (diagnosed)	b = a × n = 55%	6,852	8,464	7,823	23,139
Cost of depression	c	$7,641			
Total cost	**b × c**	**$52,358,703**	**$64,672,516**	**$59,775,675**	**$176,806,894**

Cost of suicide attempts and ideation

Suicide attempts and ideation due to gambling problems incur a social cost on both the gambler and society. In this section, the 2014–15 cost of suicide attempts and ideation due to gambling problems are costed as emotional distress to the gambler.

The approach to costing suicide attempts was similar to costing depression. The number of Victorians by PGSI attempting suicide due to gambling problems was sourced from the National Gambling-Harms Study data for those who reported that gambling contributed or caused them to attempt suicide in a 12-month period (Browne et al. 2016).

As shown in Table 16, approximately 7.5 per cent of problem gamblers had attempted suicide due to their gambling, followed by smaller percentages for moderate- and low-risk gamblers. The emotional distress cost proxy of $7641 (VOCAT 2015) was used as the cost per attempted suicide, bringing the total cost to Victorian gamblers of attempted suicide to $67.3 million.

The cost of emotional distress to the gambler due to suicide ideation in Victoria 2014–15 was approximately $289 million, calculated using the following approach:

- Estimate the number of gamblers by PGSI with suicide ideation by applying a ratio of suicide attempts to suicide ideation of 1 to 4.3, as estimated from VCEC (2012) numbers.
- To avoid double-counting costs, subtract the number of suicide attempts from the total suicide ideations.
- Multiply the adjusted figures for suicide ideation by the emotional distress cost proxy of $7641 (VOCAT 2015) per incidence.

Table 16: Cost of suicide attempts and ideation due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Cost of attempted suicide					
% gambling contributed to or caused them to attempt suicide	a	1.9%	0.7%	7.5%	
Number of attempted suicides	b = a × n = 80%	5,980	710	2,112	8,802
Cost of suicide attempts	c	$7,641			
Sub-total cost of attempted suicide	***d = b × c***	***$45,694,868***	***$5,427,064***	***$16,137,785***	***$67,259,718***
Cost of suicide ideation					
Number for whom gambling contributed to or caused suicide ideation	e = b × 4.3	25,715	3,054	9,082	37,851

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Cost of suicide ideation	f	$7,641			
Sub-total cost of suicide ideation	***g = (e – b) × f***	***$150,793,065***	***$17,909,312***	***$53,254,692***	***$221,957,069***
Total cost	**d + g**	**$196,487,933**	**$23,336,376**	**$69,392,477**	**$289,216,787**

Costing emotional and psychological distress to the gambler

Emotional and psychological distress to individuals is considered in terms of its impact on their health and wellbeing. In isolation (i.e. excluding consequent issues such as increased reliance on services), this impact can be considered an 'intangible' cost, in that it is not realised as a financial burden. However, these intangibles should arguably be included in any costing, since emotional and psychological harm or distress represents one of the major impacts of gambling. Therefore, the current study considered the impact of this component on the individual's quality of life, as indicated by the Disability Weights (DWs) estimated by Browne et al. (2016) for the PGSI.

DWs are bounded on a 0–1 scale and describe an impact on an individual's quality of life from none at all (0) to so extreme such that life is not worth living (1). DWs can be converted into disability adjusted life years (DALYs) and then into monetary terms using median Australian GDP per capita (VCEC 2012). The VCEC (2012) notes that DALYs provide a clear method to determine the costs of harm based on the impact on an individual's quality of life. However, they also state that a degree of subjectivity is required in determining key inputs. The approach of Browne et al. (2016) to estimate DWs is data driven and arguably represents the community consensus regarding the typical harm impact associated with a given degree of gambling problems.

Browne et al.'s (2016) dataset contains 3076 cases, and associates self-reported harm from six domains with DW scores inferred from administration of the PGSI. One of the harm domains is 'emotional and psychological'. Accordingly, the authors aimed to determine the proportion of variance in DW that could be attributed to emotional and psychological distress. Lindeman, Merenda and Gold (1980) describe a method for partitioning an R^2 for correlated predictors by averaging over models specifying all possible orders of predictors. The method is implemented by the package *relaimpo* (Groemping 2006) in the R statistical programming environment (Team 2013). Applying this to Browne et al.'s (2016) data, 29.3 per cent of gambling DW variance could be attributed to emotional and psychological harms, 25.9 per cent to financial deprivation, 15.9 per cent to health, 15.8 per cent to relationships, 6.7 per cent to socially deviate consequential behaviour and 6.3 per cent to work or study issues. A year of life spent in Australia spent in optimal health and wellbeing was costed at $37,828.25 based on available 2014 International Monetary Fund data[10]. Using this model, costing the fraction of life lost to emotional and psychological harms disability attributable to gambling problems is given by the following equation:

$$C = \text{GDP per capita} \cdot \text{attributable fraction} \cdot \text{DALY}$$

[10] Sourced from https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx

or

$$C = \$37{,}825.85 \cdot .293 \sum_{k} DW_k \cdot N_k$$

which was calculated at $1,126,932,884.

See Table 17 for the cost of emotional and psychological harms to gamblers by PGSI category.

Table 17: Cost of emotional and psychological harms to gamblers, Victoria (2014–15)

PGSI group	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
Victorian population	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Share of the total cost	50.3%	34.5%	15.2%	100.0%
Total cost	**$566,286,653**	**$389,181,066**	**$171,465,281**	**$1,126,933,884**

Importantly, the emotional and psychological harm domain, as measured by Browne et al. (2016), excludes depression and suicide ideation, which is assessed under the health domain. Therefore, the dominance analysis described in the methodology attributes a proportion of the variance in DWs to emotional and psychological harms excluding these issues. This avoids double-counting issues arising from comorbidity between these harms.

Relationships and family harms

The relationships between persons with gambling problems and affected others (including family, friends and community) has been identified as a prominent harm domain centred around relationship disruption, conflict and breakdown (Langham et al. 2016; Browne et al. 2016). The quantifiable gambling-related relationship harms in the current costings are the financial and emotional distress costs of divorce and separation, and the emotional distress costs of experiences of violence (gambler and affected others), gambler suicide attempts and fatality by suicide to affected others, and 'other' emotional distress to affected others.

As with the emotional and psychological harm items costs, all 'emotional distress' items were costed at $7641 per person, sourced from VOCAT's (2015) compensation schedule for the 'average amount of financial assistance awarded to victims of crime on final determination in 2014–15'.

The method of estimating the number of affected others for a cost item is described in each subsection.

Cost of divorce and separation

Three costings of the impacts of gambling-related divorce and separation were estimated:

- the financial cost of divorce and separation to the gambler ($24.2 million)
- the cost of emotional distress from divorce and separation to the gambler ($112.3 million)

- the cost of emotional distress from divorce and separation to affected others ($617.9 million).

The number of persons divorced or separated due to gambling problems by PGSI category was calculated from the National Gambling-Related Harms study for the percentage of respondents whose gambling contributed to or caused the actual separation or ending of a relationship during a 12-month period (Browne et al. 2016), projected onto the estimated Victorian population from the Victorian Gambling and Health Study dataset (Hare 2015).

The number of others affected by gambling-related divorce or separation was calculated by multiplying the estimated number of gamblers impacted by divorce or separation within each PGSI category (after the 80 per cent counterfactual adjustment) by the average number of affected others in the household (1.6 people). The latter was estimated by using a proxy of the average Australian household size (2.6, sourced from 2011 Census – ABS 2015d) minus the gambler, assuming conservatively that divorce or separation will impact the immediate family and others living in the household.

Consistent with the methodology of the PC (1999) and VCEC (2012), the financial cost per divorce or separation was quantified as $1646 in 2014–15, which combines the costs of:

- $845 for court fees associated with the application for divorce (Family Court of Australia & Federal Circuit Court of Australia 2012, inflated to 2014 price)
- $801 as the average legal fee related to divorce (Australian Government 2015).

The emotional distress cost proxy of $7641 was used in the cost calculations of the emotional distress of divorce and separation to the gambler and affected others separately.

Table 18 shows the estimated cost of divorce/separation in Victoria by PGSI category. The total cost of divorce and separation in Victoria due to gambling problems in 2014–15 was estimated at $754 million. Over 80 per cent of the cost ($618 million) is attributable to the emotional distress experienced by affected others, and of that more than half ($384 million) relates to the impact on affected others by problem gamblers. This is not surprising considering that divorce and separation impact strongly upon the immediate family and even wider networks of friends and the community (Dowling et al. 2014; Dowling et al. 2015; Holdsworth et al. 2013).

Table 18: Cost of divorce and separation due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% gambling contributed to or caused divorce or separation	a	1.9%	3.3%	19.5%	
Number divorced or separated	b = a × n × 80%	5,980	3,196	5,517	14,693
Financial cost of divorce or separation to gambler					

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Financial cost of divorce or separation	c	$1,646			
Sub-total financial cost to gambler	***d = b × c***	***$9,844,221***	***$5,261,280***	***$9,081,796***	***$24,187,297***
Cost of emotional distress from divorce or separation to the gambler					
Emotional cost of divorce or separation	e	$7,641			
Sub-total cost of emotional distress to gambler	***f = b × e***	***$45,694,868***	***$24,421,789***	***$42,155,848***	***$112,272,505***
Cost of emotional distress from divorce or separation to affected others					
Average number of persons per household, excluding gambler – affected others impacted	g	1.6			
Number of others affected by gambling-related divorce or separation	h = b × g	9,568	21,029	50,272	80,869
Emotional cost of divorce or separation	i	$7,641			
Sub-total cost of emotional distress to affected other	***j = h × i***	***$73,111,789***	***$160,679,868***	***$384,126,043***	***$617,917,699***
Total cost of divorce and separation	**d + f + j**	**$128,650,878**	**$190,362,937**	**$435,363,687**	**$754,377,502**

Cost of experiences of violence

Gambling problems have shown to contribute to experiences of violence (whether as the perpetrator or the victim), such as family or intimate partner (domestic) violence (Langham et al. 2016; Dowling et al. 2014; Suomi et al. 2013). Two costings of the impacts of gambling-related experiences of violence were estimated:

- the cost of emotional distress from experiences of violence to the gambler ($46.7 million)
- the cost of emotional distress from experiences of violence to affected others ($74.7 million).

In the National Gambling-Related Harms study, gamblers were asked whether their gambling problems had caused or contributed to experiences of violence (including family and domestic violence) during a 12-month period (Browne et al. 2016). Table 19 shows that nearly 10 per cent of problem gamblers reported experiences of violence, followed by 1.3 per cent for moderate-risk and less than 1 per cent for low-risk gamblers, showing that violence increased by gambling severity. The number of people in the Victorian population in 2014 with experiences of violence due to

gambling problems by PGSI was calculated with an 80 per cent counterfactual adjustment applied, giving a result of approximately 6110 people. Applying the average number of affected others in the household (1.6 people) by PGSI category, the estimated number of affected others impacted by gambling-related experiences of violence was 9778.

The emotional distress proxy of $7641 for the cost of experience of violence per person per year was applied to both gamblers and affected others, estimating the total cost at $121 million in 2014–15, just less than half being borne by problem gamblers ($55.9 million).

It is noted that while the cost of family violence *to gamblers* due to gambling problems has been costed previously by the VCEC (ranging from $3 million to $8 million), no attempt was made to cost the emotional distress of gambling-related violence to *affected others*. To our knowledge, the current study is the first attempt to do so.

Table 19: Cost of experiences of violence due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% gambling contributed to or caused experiences of violence (including family and domestic violence)	a	0.6%	1.3%	9.9%	
Number who experienced violence due to gambling	b = a × n × 80%	1,993	1,302	2,816	6,112
Emotional distress from experiences of violence to the gambler					
Cost of experiences of violence	c	$7,641			
Sub-total cost of violence to the gambler	***d = b × c***	***$15,231,623***	***$9,949,618***	***$21,517,047***	***$46,698,288***
Emotional distress from experiences of violence to affected others					
Average number of persons per household, excluding gambler – affected others impacted	e	1.6			
Number of others affected by gambling-related experiences of violence	f = b × e	3,189	2,083	4,506	9,778
Cost of experiences of violence	g	$7,641			
Sub-total cost of violence to affected others	***h = f × g***	***$24,370,596***	***$15,919,389***	***$34,427,276***	***$74,717,260***
Total cost of experiences of violence	**d + h**	**$39,602,219**	**$25,869,006**	**$55,944,323**	**$121,415,548**

Cost of suicide attempts and fatality by suicide to affected others

The previous ‘Emotional and psychological harms’ section covered the cost of suicide attempts as an emotional distress to the gambler themselves, and the cost of fatality by suicide as loss of

productive years the gambler would have lived. However, suicide attempts and fatality by suicide have a much wider cost as they also impact others close to the gambler, such as family, friends, colleagues and the community. On average, it is estimated that each suicide impacts at least 6 other people close to the person (Beautrais 2004; ConNetica 2016).

One limitation of previous costings by the PC (1999, 2010), ACG (2011) and VCEC (2012) was the absence of costing for fatality by suicide due to gambling problems, and therefore an attempt has been made to quantify this cost in this study.

The emotional distress cost estimates of a gambler's suicide attempt and of fatality by suicide on affected others are shown in Table 20 to be approximately $430 million in Victoria in 2014–15. Two-thirds of that costs ($292.4 million) is attributable to low-risk gamblers who are greater in number and therefore impact a greater number of people. The approach to estimating this cost were as follows:

- Estimate the number of fatalities by suicide due to gambling problems by PGSI category by dividing the number of attempted suicides (after 80 per cent adjustment) by the ratio of suicide attempts to fatality by suicide (15 suicide attempts per 1 fatality by suicide, as cited by Doran et al. 2015).
- Multiply the number of gambler attempted suicides and fatality by suicide (after 80 per cent counterfactual adjustment) by 6 to get the number of affected others impacted by the attempted suicide and fatality by suicide of a gambler.
- Sum the total number of others affected by attempted suicide and fatality by suicide, then multiply for each PGSI category by the emotional distress proxy of $7641 for the cost per person.

Table 20: Cost of attempted suicide and fatality by suicide due to gambling problems on affected others, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Emotional distress from attempted suicide of gambler to affected others					
% gambling contributed to or caused them to attempt suicide	a	1.9%	0.7%	7.5%	
Number who attempted suicide	b = a × n × 80%	5,980	710	2,112	8,802
Average number of other persons impacted by suicide	c	6			
Number of others affected by gambler attempted suicide	d = b × c	35,881	4,262	12,672	52,815

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Cost of emotional distress of affected others by gambler attempted suicide	e	$7,641			
Sub-total cost of attempted suicide to affected others	***f = d × e***	***$274,169,209***	***$32,562,386***	***$96,826,713***	***$403,558,307***
Emotional distress from fatality by suicide by gambler to affected others					
Number of gambler fatalities by suicide	g = b / 15	399	47	141	587
Number of others affected by gambling-related fatality by suicide	h = c × g	2,392	284	845	3,521
Cost of emotional distress of affected others by gambler's fatality by suicide	i	$7,641			
Sub-total cost of fatality by suicide to affected others	***j = h × i***	***$18,277,947***	***$2,170,826***	***$6,455,114***	***$26,903,887***
Total cost	**f + j**	**$292,447,156**	**$34,733,211**	**$103,281,827**	**$430,462,194**

Cost of other emotional distress to affected others

The emotional distress to affected others due to another's gambling problems extend into a multitude of experiences other than those that have already been costed (divorce and separation, experience of violence, and the impact of the gambler's attempted suicide or fatality by suicide). Previous research suggests that the same types of emotional and psychological harms that gamblers experience are also experienced by affected others, such as depression, feelings of vulnerability, shame, feelings of hopelessness, anger, worthlessness and being a failure (Langham et al. 2016; Browne et al. 2016), although the precise mix of symptomology may vary according to whether one is the gambler or the affected other. To calculate the cost of 'other emotional distress' to affected others, we must first estimate the total population in Victorian who are impacted by another with gambling problems.

The Productivity Commission (1999) suggested that a gambler in Australia affects between 5 and 10 other individuals. Though this figure has been cited often in the literature and in non-academic communications, no evidence has been offered to support this statement. A similarly non-precise estimate of 'at least 10 people' has been attributed to Ladouceur (1993, as cited in Ferland et al. 2008).

Recently, population level gambling studies have started to collect data on the impact the gambler has on significant others. The 2014 Victorian Gambling and Health Study (Hare 2015) asked a sample of 15,000 Victorians (gamblers and non-gamblers) whether they had experienced problems because of someone else's gambling in the last 12 months and found that around 2.79 per cent had been impacted (an estimated 122,493 Victorian adults). The authors concluded that this suggests that a problem gambler impacts on average 3–4 persons, but that this is likely an underestimate given the data is based on self-reporting of friends and family who may not be aware that gambling is impacting their lives when the gambler is secretive about their gambling.

Abbott et al. (2014) found that 8 per cent of the New Zealand population were affected by the gambling of someone close to them. Given that the prevalence of problem gambling in New Zealand is estimated to be less than 1 per cent (Devlin and Walton 2012), this figure presumably includes those who are affected by individuals in other PGSI categories.

Goodwin and colleagues (2017) analysed data gathered from Browne et al.'s (2016) national survey which examined gambling-related harm to gamblers and affected others. Gamblers were asked to report the number of people who they believed had been affected by their gambling, and likewise affected others reported the number of people (including themselves) affected by the gambler who affects them. Taking into account both data points, the authors concluded that a typical problem gambler affects 6 others, a moderate-risk gambler affects 3 others, and a low-risk gambler affects 1 other person.

Projecting these ratios of gamblers to affected others onto the Victorian population, the total number of affected others is 971,700 people (low-risk = 391,206; medium-risk = 368,001; problem gambler = 212,493) or 22.1 per cent of the Victorian population. It is theorised by the current authors that:

- Similar to gamblers, a percentage of harm to others would be experienced in the absence of gambling. For consistency, the assumption is again incorporated via a 20 per cent counterfactual discount.

- It is likely that a good percentage of this population would only be experiencing minor harms, not enough to cause a high degree of emotional distress resulting in costs.

Considering the above assumptions, the costs of 'other emotional distress' were calculated as follows:

- The number of persons in Victoria affected by someone else's gambling were calculated by multiplying the prevalence of gambling problem by PGSI category (Victorian Gambling and Health Study 2014 weighted dataset, Hare 2015) to the ratio of gambler to affected others (1:1 for low-risk gamblers, 1:3 for moderate-risk gamblers, and 1:6 for problem gamblers) × 80 per cent counterfactual adjustment.

- To avoid double-counting for emotional distress already costed, the number of affected others by divorce or separation, experience of violence, attempted suicide and fatality by suicide were subtracted (the 80 per cent counterfactual adjustment having already been applied).

- This number was then adjusted to the proportion reporting to experience moderate to major emotional and psychological impacts from another's gambling (Browne et al. 2016) –

6.5 per cent of low-risk gamblers, 16.4 per cent of moderate-risk gamblers and 53.9 per cent of problem gamblers.

- The adjusted number of affected others experiencing moderate to major emotional and psychological impacts due to another's gambling problems was multiplied by the emotional distress proxy of $7641 per person.

As shown in Table 21, the estimated number of affected others (n = 115,514) is in line with the 2014 Victorian Gambling Prevalence Study's estimate (n = 122,493). The total cost of other emotional distress experienced by affected others of persons with gambling problems is estimated at $843 million.

Table 21: Cost of other emotional distress to affected others due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Ratio of other person's gambling problems impact – affected others	a	1	3	6	
Number of others affected by gambling-related problems	b = a × n × 80%	312,965	294,401	169,994	777,360
Divorce or separation – number of affected others	c	9,568	21,029	50,272	80,869
Experience of violence – number of affected others	d	3,189	2,083	4,506	9,778
Suicide attempts – number of affected others	e	35,881	4,262	12,672	52,815
Fatality by suicide – number of affected others	f	2,392	284	845	3,521
% others affected reporting a moderate to major emotional and psychological impact from another's gambling	g	6.5%	16.4%	53.9%	
Estimated number of affected others with moderate to major emotional distress	h = (b – c – d – e – f) × g	16,899	43,822	54,793	115,514
Cost of emotional distress of affected others by another's gambling problems	i	$7,641			
Total cost	**h × i**	**$129,124,853**	**$334,844,790**	**$418,671,785**	**$882,641,428**

Productivity loss and work impact costs

Harms from gambling problems can cross over into a gambler's working life, affecting their employment and their employer. These harms can range from reduced performance at work (i.e. by spending more time preoccupied with gambling), absenteeism, job loss and acts of crime (i.e. stealing from an employer to fund gambling activity) (Langham et al. 2016; Browne et al. 2016).

Using the gambling-related harms framework to quantify the years of healthy life lost due to gambling in Victoria, Browne et al. (2016) found work and study harms attributed to 8.66 per cent of years of healthy life lost in Victoria. While this proportion is small compared to the other harm domains, the financial costs of gambling-related work harms could be considerable.

The costs of gambling problems in Victoria in the work domain have been estimated by covering the following items:

- the cost of loss of work productivity
- the cost of job loss
- the cost of absenteeism
- the cost of crime to business
- the cost of fatality by suicide.

A similar approach to the VCEC (2012) was taken in costing loss of work productivity, job loss (called 'job change' by the VCEC) and the cost of crime to business. To our knowledge, the current study is the first to attempt to quantify the cost of absenteeism due to gambling problems.

Cost of loss of work productivity

Calculating the cost of lost work productivity due to gambling required:

- the number of people experiencing productivity loss at work due to gambling problems by PGSI category
- a cost proxy for the value of lost productivity.

The Productivity Commission's 1999 approach to estimating the number of people included a lower and upper estimate by multiplying the number of people reporting adverse effect on job performance 'sometimes to always' (low estimate of 7000 people) and 'often to always' (high estimate of 49,200 people) by the 'extent of productivity loss' (7.9 per cent as reported from their *Survey of Clients of Counselling Agencies*) and then multiplying this by the value of productivity, using average annual earnings as a proxy (PC 1999). The VCEC (2012) used a mixture of data sources to estimate the lower and upper numbers as 1100 and 7600 respectively, again applying the 7.9 per cent productivity loss adjustment used by the PC and 2010 earnings data.

In the current analysis, the number experiencing lost work productivity due to their gambling was calculated from the National Gambling-Related Harms study for the percentage of respondents experiencing 'reduced performance at work or study as a result of their gambling' during a 12-month period (Browne et al. 2016) projected onto the Victorian population by PGSI category from the 2014 Victorian Gambling and Health Study weighted dataset (Hare 2015).

As per the PC (1999) and VCEC (2012), the cost of lost work productively annually per case was estimated as the average annual earnings in Victoria in 2014 (ABS 2015b).

Table 22 breaks down the costs of lost work productivity to the employer in Victoria by PGSI category. The total cost associated with the lost annual earnings due to lost work productivity is estimated to be $323 million to Victorian businesses in 2014–15, with approximately 60 per cent of this cost being attributable to problem gamblers ($189 million) followed by moderate-risk gamblers ($111 million) and low-risk gamblers ($23 million).

Table 22: Cost of loss of work productivity due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% reduced work productivity due to gambling	a	3.2%	12.5%	30.4%	24.0%
Number with reduced work productivity due to gambling	b = a × n = 80%	9,967	12,311	8,620	30,899
Average annual earnings	c	$72,036			
Total cost	**b × c**	**$22,865,648**	**$111,255,846**	**$188,937,938**	**$323,059,432**

Cost of job loss

Job loss is a gambling-related harm outcome which can result from other harms, such as reduced productivity at work (Langham et al. 2016; Browne et al. 2016). All studies which have costed problem gambling to date have looked at the cost of job change associated with gambling (PC 1999, 2010; ACG 2011; VCEC 2012). The current methodology will follow this precedent, with the exception of defining the cost item as 'job loss' and costing for all gambling severity levels, which includes counting the following impacts:

- the cost of loss of income to the gambler
- the cost of job search to the gambler
- the cost of job search to replace the employee to business
- the cost of unemployment benefits to the government.

The total cost of gambling-related job loss in Victoria in 2014–15 is estimated at $176 million. As per Table 23, the calculation assumption, methods and results for each cost item are as follows:

- The number of persons in Victoria with gambling-related job loss was sourced from prevalence figures from the National Gambling-Related Harms study by Browne et al. (2016), which found that 11.1 per cent of problem gamblers experienced job loss due to their gambling, followed by 1.7 per cent of moderate-risk gamblers and 0 per cent of low-

risk gamblers. A counterfactual adjustment of 80 per cent was applied, the final estimate of job loss in Victoria being 4804 in 2014–15.

- Loss of income
    - The gambler will experience a loss of income from unemployment which will last for a medium duration of 17 weeks, or 3.9 months, as sourced from (ABS 2013).
    - The estimate of cost per person is the average monthly earnings (estimated from average weekly earnings in Victoria – ABS 2015c) multiplied by the median duration of unemployment.
    - The total cost of loss of income to the gambler due to job loss is approximately $113 million.
- Job search
    - The average cost of searching for a new job for the gambler is $3714. Since no recent estimate was available, this figure was inflated from the VCEC 2010–11 estimate of $3398 to 2014 prices using CPI (ABS 2015c). The VCEC estimate was also an inflation of the (PC 1999) estimate.
    - The total cost of job search for persons in Victoria with gambling problems in 2014–15 was $17.8 million.
- Staff replacement costs to the employer
    - There is a cost to the employer of replacing a staff member who has lost their job due to gambling problems, the assumption being that the cost is 10 per cent of the average annual income (PC 1999; VCEC 2012).
    - The average annual income in Victoria for 2014–15 was $72,036 (ABS 2015b).
    - The total cost to the employer of gambling-related staff replacement in Victorian 2014–15 is estimated at $34.6 million.
- Unemployment benefit costs to the government
    - There is a cost to the government of providing unemployment benefits to people who have lost their job due to gambling problems.
    - The assumption is that 50 per cent of people who have lost their job will be eligible to receive unemployment benefits (PC 1999; VCEC 2012).
    - The monthly Newstart Allowance is used as the cost proxy for unemployment benefits (DHS 2016).
    - The total cost of unemployment benefits is calculated as the number of people with job loss due to gambling (after 80 per cent counterfactual applied) × 50 per cent × median duration of unemployment × monthly cost of unemployment benefits. The total is estimated at $10.8 million in Victoria in 2014–15.

Table 23: Cost of job loss due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% job loss due to gambling	a	0.0%	1.7%	11.1%	
Number who lost job due to gambling	b = a × n = 80%	0	1,657	3,146	4,804
Loss of income					
Average duration of unemployment – months	c	3.9			
Average monthly earnings	d	$6,003			
Sub-total loss of income	***b × c × d***	***$0***	***$39,028,720***	***$74,099,158***	***$113,127,878***
Job search					
Cost of job search	e	$3,714			
Sub-total cost of job search	***b × e***	***$0***	***$6,155,901***	***$11,687,472***	***$17,843,373***
Employer costs					
Employer staff replacement costs as percentage of salary	f	10%			
Average annual earnings	g	$72,036			
Sub-total employer costs	***b × f × g***	***$0***	***$11,938,197***	***$22,665,625***	***$34,603,821***
Unemployment benefits					
Proportion of job changes eligible for unemployment benefits	h	50%			
Monthly cost of unemployment benefits	i	$1,143			
Sub-total unemployment benefits	***b × c × h × i***	***$0***	***$3,716,082***	***$7,055,280***	***$10,771,362***
Total cost		**$0**	**$60,838,899**	**$115,507,534**	**$176,346,434**

Cost of absenteeism

To date, no attempts have been made to estimate the cost of gambling-related absenteeism from work to the employer. The present approach in calculating this cost included estimating the number of Victorians by PGSI who were absent from work due to gambling, applying an 80 per cent adjustment, and multiplying this by the annual cost per employee per year to the employer.

The number of gamblers absent from work due to their gambling was calculated from the National Gambling-Related Harms study for the percentage of respondents who ‘experienced an absence from work as a result of their gambling’ during a 12-month period (Browne et al. 2016) projected

onto the Victorian population by PGSI category from the 2014 Victorian Gambling and Health Study dataset (Hare 2015). A causality adjustment of 80 per cent was then applied.

Conducted annually since 2008, the most recent *Absence Management Survey* (Direct Health Solutions 2013) surveyed over 108 organisations in Australia on absenteeism, with businesses reporting the cost per employee per annum as approximately $2741. This figure was inflated from 2013 to 2014 prices using CPI (ABS 2015c) to give $2788, then multiplied by the adjusted number absent from work due to gambling problems to get a total cost of absenteeism.

Table 24 shows the cost of absenteeism to the employer due to gambling problems by PGSI category. In total, absenteeism due to gambling problems cost Victoria an estimated $46 million in 2014–15 and has a similar cost across different levels of gambling problems.

Table 24: Cost of absenteeism due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% absent from work due to gambling	a	1.9%	4.6%	21.7%	
Number absent from work due to gambling	b = a × n = 80%	5,980	4,498	6,149	16,628
Average annual cost per employee	c	$2,788			
Total cost	**b × c**	**$16,672,788**	**$12,541,171**	**$17,143,961**	**$46,357,920**

Cost of gambling-related crime to business

The VCEC (2012) estimated the number of problem gamblers committing gambling-related crimes involving businesses in 2010–11 at 1800 people. Their calculations used the Victorian Gambling and Health Study 2008 weighted dataset (Hare 2009) and Victorian crime statistics data. The 2008 Victorian Gambling and Health Study asked moderate-risk and problems gamblers whether their gambling led them to do something that is technically against the law, with 3 per cent and 15 per cent respectively answering that they had, resulting in an estimate by the VCEC of approximately 4500 people (VCEC 2012). Using findings from Victorian crime statistics that around 40 per cent of burglaries and deception crimes occur to businesses, the VCEC then applied a 40 per cent adjustment to the Victorian Gambling and Health Study number to result in an estimate of 1800 people committing a gambling-related crime against business.

A criticism of the VCEC methodology to cost gambling-related crime is a lack of data which measured a *direct* link of crime to business being committed as a result of gambling. The current study aimed to seek out such data.

First we looked at the most recent 2014 Victorian Gambling and Health Study weighted dataset (Hare 2015), but this was ruled out as a source of gambling-related crime data as it did not ask the same question as the 2008 Victorian Gambling and Health Study. The closest question asked in Victorian Gambling and Health Study 2014 was whether those seeking treatment for gambling problems were prompted into action by legal problems (0.4 per cent of moderate-risk gamblers, 0.8 per cent of problem gamblers). Secondly, studies of gambling-related crime to business were

reviewed, but these studies often surveyed populations who had already been charged or incarcerated for a crime and whether the crimes were committed due to gambling addiction (Abbott & McKenna 2005; Minchin 2006; Westphal & Johnson 2006).

Lastly, gambling-related harm items associated with crime from the National Gambling-Related Harms study were examined (Browne et al. 2016). The study asked respondents four questions about gambling-related crime, one of which asked whether they had 'committed a crime towards government, business, other people (not family or friends) due to their gambling' (over a 12-month period). Around 12.3 per cent of problem gamblers answered that they had, followed by 3 per cent of moderate-risk gamblers and 0.6 per cent of low-risk gamblers.

The research to date on gambling-related crime does not appear to provide a good estimate of the average monetary value of the gambling-related crime per gambler. Most studies have looked at crimes to business which involved a substantial amount of money, such as fraud or theft into the millions of dollars (Warfield 2011 2012). Warfield (2012) studied 89 fraud cases in Australia resulting in prison sentences due to $1 million or more being stolen, and found that more than half (46 cases) had gambling addiction as the motivating factor for the fraud, totalling around $165 million.

In the absence of any available recent estimates of the average cost of crime to business due to gambling problems, we used the same cost estimate per case as the PC (1999) and VCEC (2012) – the estimate of the value of money or goods stolen from the business as a result of problem gambling. While the PC and VCEC used lower and upper estimates of costs, our approach was to take the average of these estimates. VCEC cost estimates per person of $2100 (low) and $3000 (high) were inflated to 2014 prices using CPI (ABS 2015c) and averaged at $2788.

Table 25 shows the estimated cost of gambling-related crime to business by PGSI category. The total cost to Victorian businesses in 2014–15 was estimated at $22.5 million, with the cost due to moderate-risk and problem gamblers being similar ($8.2 million and $9.7 million respectively), followed by low-risk gamblers at around $5.6 million.

Table 25: Cost of gambling-related crime to business, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% who committed a crime towards government, business, other people (not family or friends) due to gambling	a	0.6%	3.0%	12.3%	
Number who committed a crime due to gambling	b = a × n × 80%	1,993	2,959	3,491	8,444
Value of money and goods stolen from business per incident	c	$2,788			
Total cost	**b × c**	**$5,556,647**	**$8,249,363**	**$9,731,943**	**$23,537,953**

Cost of fatality by suicide

One limitation of previous costings by the PC, (1999, 2010), ACG (2011) and VCEC (2012) was the absence of costing for fatality by suicide due to gambling problems. The emotional distress to others close to the gambler has been costed. However, fatality by suicide also has an indirect cost impact due to the year of life lost which would have been productively contributing (financially and otherwise) to the community and economy (government).

An attempt has been made to quantify this cost (see Table 16) using the following steps:

- Estimate the number of fatalities by suicide due to gambling problems by PGSI category by dividing the number of attempted suicides (after 80 per cent adjustment) by the ratio of suicide attempts to fatality by suicide (15 suicide attempts per 1 fatality by suicide, as cited by Doran et al. 2015).
- Estimate the average annual cost of fatality by suicide by dividing the total cost of fatality by suicide by the average years of life lost by suicide (average life expectancy – average age of fatality by suicide), giving $48,684 using the figures below:
    - the total lifetime cost of fatality by suicide: $1,865,302 (Doran et al. 2015), inflated from 2012 to 2014 costs to $1,947,353
    - the average life expectancy for SA males: 79.5 years (ABS 2012)
    - the average age of fatality by suicide for SA males: 39.5 years (Doran et al. 2015)
    - the average years of life lost due to fatality by suicide: 40 years (Doran et al. 2015).
- Multiply the number of fatalities by suicide for each PGSI group by the annual cost of fatality by suicide.

Using this method, the total cost of fatality by suicide due to gambling problems was estimated at $28.6 billion in Victoria in 2014–15.

Table 26: Cost of fatality by suicide due to gambling problems, Victoria (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% gambling contributed to or caused them to attempt suicide	a	1.9%	0.7%	7.5%	
Number who attempted suicide	b = a × n × 80%	5,980	710	2,112	8,802
Number of fatalities by suicide	c = b / 15	399	47	141	587
Average annual cost of fatality by suicide	d	$48,684			
Total cost	**c × d**	**$19,409,339**	**$2,305,198**	**$6,854,681**	**$28,569,219**

Crime-related costs

Cost of crime to the Victorian justice system

Gambling problems can result in the gambler committing crimes to support their gambling and, if they are caught, these crimes generate costs arising from the resulting police investigation, criminal charges and court appearance, or imprisonment (Langham et al. 2016; Browne et al. 2016; Perrone, Jansons & Morrison 2013). The cost of gambling-related criminal activity to the Victorian criminal justice system – that is police, courts and the corrections systems – is estimated in this section.

The total cost of crime to the Victorian justice system in 2014–15 is estimated at $100 million, as shown in Table 27. The calculation assumption, methods and results for each cost item are as follows:

- The number of people in Victoria who committed a crime which could result in police investigation, criminal charges or a conviction was sourced from the National Gambling-Related Harms study (Browne et al. 2016). This study had four items in relation to crime committed due to gambling:
    - petty theft or dishonesty in respect to government, businesses or other people (not family or friends)
    - feeling compelled or forced to commit a crime or steal to fund gambling or pay debts
    - taking money or items from friends or family without asking first
    - being arrested for unsafe driving.
- The first two items above, considered more serious crimes, were used to calculate the total number of Victorians by PGSI category committing a crime due to gambling problems: 1.3 per cent of low-risk gamblers, 4.7 per cent of moderate-risk gamblers and 21.9 per cent of problem gamblers (Browne et al. 2016). These percentages were then applied to the estimated Victorian 2014 population. As per the PC (1999), ACG (2011) and VCEC (2012) methodologies, no counterfactual adjustment of 80 per cent was applied.
- Following the PC (1999), ACG (2011) and VCEC (2012) approaches, the percentage of the total number who committed a crime due to gambling was split out into those resulting in a police investigation, a court appearance and imprisonment.
- Police incidents
    - Approximately 36.5 per cent of crimes committed due to gambling problems result in problems with the police (PC,1999 assumption), which is 0.5 per cent of low-risk gamblers, 1.7 per cent of moderate-risk gamblers and 8 per cent of problem gamblers.
    - The estimated cost per police incident is $417 (Report on Government Services – Productivity Commission 2016b).
    - The total cost of gambling-related crime to the Victorian police system in 2014–15 was $2.8 million.

- Court appearances
    - Approximately 86.3 per cent of the gambling-related crimes investigated by the police result in an appearance in court on criminal charges (PC,1999 assumption), which is 0.4 per cent of low-risk gamblers, 1.5 per cent of moderate-risk gamblers and 6.9 per cent of problem gamblers.
    - The average cost per court matter is $781 (Report on Government Services – Productivity Commission 2016b).
    - The total cost of gambling-related crime to the Victorian court system in 2014–15 was $4.6 million.
- Imprisonment
    - Approximately 40.5 per cent of the gambling-related crimes resulting in the gambler appearing in court on criminal charges lead to a prison sentence (PC,1999 assumption), which is 0.2 per cent of low-risk gamblers, 0.6 per cent of moderate-risk gamblers and 2.8 per cent of problem gamblers.
    - The average prison sentence is 4 months (VCEC 2012).
    - The cost of imprisonment per prisoner or offender per month is $9825 (Report on Government Services – Productivity Commission 2016b).
    - The total cost of gambling-related crime to the Victorian correctional system in 2014–15 was $92.8 million.

Table 27. Cost of gambling-related crime to the Victorian justice system (2014–15)

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% who committed a crime due to gambling	a	1.3%	4.7%	21.9%	
Number who committed a crime due to gambling	b = a × n	4,984	5,771	7,758	18,513
Police system cost					
% who committed a crime which resulted in being investigated by the police	c	0.5%	1.7%	8.0%	
Number investigated by the police	d = c × n	1,819	2,106	2,832	6,757
Cost per police incident	e	$417			
Sub-total cost to police system	***d × e***	***$758,516***	***$878,349***	***$1,180,862***	***$2,817,727***
Court system cost					

Variable	Calculation	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 391,206	n = 122,667	n = 35,415	n = 549,289
% who committed a crime which resulted in police bringing criminal charges and a subsequent court appearance	f	0.4%	1.5%	6.9%	
Number of court appearances	g = f × n	1,570	1,818	2,444	5,831
Cost per court matter	h	$781			
Sub-total cost to court system	***g × h***	***$1,225,794***	***$1,419,448***	***$1,908,322***	***$4,553,563***
Corrections system cost					
% who committed a crime which resulted a court appearance resulting in a prison sentence	i	0.2%	0.6%	2.8%	
Number with prison sentence	j = I × n	636	736	990	2,362
Average sentence (months)	k	4			
Cost per prisoner or offender (per month)	l	$9,825			
Sub-total cost to corrections system	***j × k × l***	***$24,984,393***	***$28,931,500***	***$38,895,824***	***$92,811,717***
Total cost to the Victorian justice system		**$26,968,703**	**$31,229,297**	**$41,985,008**	**$100,183,007**

Cost to the Victorian Government

This section considers the costs of problem gambling to the Victorian state and local governments, covering the costs of:

- policy, regulation, research and treatment services (Victorian Government)
- the Victorian Government health and human services sector
- the Victorian Government mental health sector
- the Victorian Government sector providing homelessness services
- local governments in Victoria.

Cost of policy, regulation, research and treatment

One of the major direct costs of gambling problems borne by the Victorian Government is that of funding gambling policy and regulation, research and treatment services. As shown in Table 28, it is estimated that in 2014–15 the Victorian Government spent at least $52 million on gambling policy, regulation, research and treatment services. However, it should be noted that not all administrative costs are necessarily related to problem gambling. As distinguishing ‘normal’

administrative costs from others is not always possible, some costs in this component may be an overestimate.

The Victorian Department of Justice and Regulation (formerly just called the Department of Justice) outlines three main bodies responsible for gambling policy, regulation, research and treatment support services (DJR 2016):

- The Office of Liquor, Gaming and Racing (OLGR) in the Department of Justice and Regulation is 'the primary government point of references for industry, community and government on gambling matters'. It provides strategic policy advice and support to the Minister for Consumer Affairs, Gaming and Liquor Regulation and is responsible for implementing key policies.

- The Victorian Commission for Gambling and Liquor Regulation (VCGLR) is the Victorian statutory authority responsible for the regulation of all forms of legalised gambling in Victoria. This includes communication with the industry and the public about regulatory practices and requirements.

- The Victorian Responsible Gambling Foundation (VRGF) is an independent statutory authority responsible for fostering a greater understanding of responsible gambling and reducing the impact of gambling on the Victorian community. VRGF funds services for people affected by problem gambling, community education and gambling research.

Where possible, the authors attempted to obtain a cost for each of the above authorities.

The Victorian Responsible Gambling Foundation is mostly funded by the Community Support Fund (CSF) under its *gaming* portfolio; in 2014–15 the funds allocated to the foundation by the CSF were $43,347,000 (DTF 2015). The foundation funded various projects in 2014–15 such as Gambler's Help services, Gambler's Help line and Gambling Help Online, problem gambling treatment services for culturally and linguistically diverse communities, State-wide problem gambling and mental health programs, clinical development programs, Gambler's Help local area marketing grants, local prevention programs, gambling research program grants and a clinical research program (VRGF 2015).

The CSF, which is itself funded by Victorian EGM revenues, also under the *gaming* portfolio, funded the Pre-Commitment Implementation Project for $2.3 million in 2014–15 (DTF 2015). This project is delivered by the Department of Justice and Regulation. By June 2015 YourPlay was being piloted in 10 gaming venues and by December 2015 it had been rolled out to all Victorian venues with EGMs, including Melbourne Casino (DJR 2016). The cost to venues of implementing YourPlay is discussed in the next section of this report.

In their 2010–11 estimates, both the DOJ (Department of Justice, Victoria) and the VCGLR provided the VCEC with estimates of $1.7 million and $5.1 million respectively for the cost of their policy and regulatory activities on problem gambling (VCEC 2012). Cost estimates for 2014–15 were provided by VCGLR, who provided an estimate of $4.39 million attributable to problem gambling measures including strategic and legal support, compliance and audit functions, gambling premises and gambling product approvals and licensing operations. The cost of policy related to problem gambling borne by the Department of Justice and Regulation in 2014–15 was estimated by inflating the VCEC (2012) estimate ($1.7 million) to 2014–15 prices using CPI.

Table 28: Cost of gambling policy, regulation, research and treatment funding to the Victorian Government (2014–15)

Variable	Cost	Source
Victorian Responsible Gambling Foundation (VRGF)	$43,347,000	Department of Treasury and Finance (DTF 2015)
Pre-Commitment Implementation Project (PIP)	$2,337,600	Department of Treasury and Finance (DTF 2015)
DJR policy costs related to problem gambling	$1,858,342	VCEC (2012) 2010–11 cost of the Department of Justice, Victoria (DOJ) problem gambling policy ($1.7m) inflated to 2014 price using CPI (ABS 2015b)
VCGLR cost of policy and regulation of problem gambling	$4,390,000	Provided by VCGLR via correspondence for the cost of their activity attributed to problem gambling in 2014–15
Total cost	**$51,932,942**	

Cost to local governments in Victoria

In 2014–15, Victoria had 79 local councils who, according to VCGLR (2016), played a role in the approval of licences and the administration of gaming, including:

- initiating disciplinary proceedings against licensees who were non-compliant of their licence conditions
- making a submission for assessment of applications for approval of gaming machines, or gaming premises.

The Municipal Association of Victoria (MAV), the legislative body supporting local government councils and councillors in Victoria, identifies gambling and the associated harms as a 'priority issue of concern to local government' in their strategic plan (MAV 2016). In particular, MAV advocates for changes and improvements to be made to the regulatory system of EGMs to reduce the social and economic impacts of EGMs in vulnerable communities. MAV has commissioned numerous research reports into EGMs to inform local government, including a detailed submission in response to the VCEC inquiry into the cost of problem gambling (MAV 2012a) and a response to the subsequent VCEC draft report (MAV 2012b).

In response to VCEC's inquiry, MAV surveyed its members on the costs identified by local councils and found that a significant category of cost was the preparation of submissions to VCGLR in relation to applications by licensed venues for the approval of EGM operation or an expansion of EGMs (MAV 2012a). These submissions by council are appealing the EGM applications on the grounds that they would have an adverse economic and/or social impact on the wellbeing of the community within their municipality. MAV reported the costs of participating in the EGM gambling application process by the 36 local council between 2007 and 2012 as follows:

- Submission to VCGLR: $1000 to $284,000, average cost of $27,630. These costs included the cost of legal advice, expert opinion, community surveys, officer time etc in preparing submissions.
- Participation in VCGLR hearings: $10,000 to $220,000, average cost of $37,203.
- VCAT appeals: average cost of $63,750.

In addition, MAV reported that across 13 councils a range of $20,000 to $288,000 (average $81,667) was spent on the allocation of resources to planning appeals arising from a refusal to approve premises for gaming. Furthermore, councils spent on average $69,333 annually on community activities and support services targeted at assisting those with gambling problems or their families. Finally, MAV noted that 'considerable uncosted staff time is also reported by councils in relation to addressing gambling-related issues' (MAV 2012a, p. 8).

The VCEC (2012) took MAV's average figures on the costs of council responding to EGM applications (written submissions, presentation at hearings and VCAT appeals), multiplied it by the number of incidents in 2010–11 and discounted it by 50 per cent attributable to problem gambling to get a figure of $345,393. The cost of planning appeals, services targeted to problem gamblers and families, and staff time was not costed by VCEC.

MAV's response to the 2012 draft report was that VCEC had 'considerably underestimated the direct costs experienced by local councils in addressing the process for dealing with applications for gambling venues' (MAV 2012b, p. 2) by not including any estimation of staff costs, and discounting the costs of councils in respect to the proportion attributable to problem gambling.

The current approach to estimate the cost to local governments in Victoria for activities related to gambling problems follows the methodology of VCEC (2012) in costing their response to EGM applications. While we acknowledge that it is important to cost the other council expenditure on research and policy development, staff time, community-orientated programs and planning appeals related to gambling, they have been excluded due to lack of available data. However, contrary to the VCEC approach, 100 per cent of the costs of responding to applications are counted towards local governments, rather than just the portion attributable to problem gamblers. The data for local council submissions in response to applications for EGM increases (numbers submitted, presented at hearings and VCAT appeals) were sourced from the Victorian Responsible Gambling Foundation. The average cost per submission, hearing presentation and VCAT appeal was inflated from 2010 to 2014 prices using CPI (ABS 2015c). In total the estimated cost is approximately $262,557 for 2014–15 (see Table 29).

Table 29: Cost to Victorian local government of responding to EGM applications (2014–15)

Variable	Number	Average cost per case	Total Cost
Applications for EGM increases	11		
Written submissions from council	6	$30,204	$181,221
Presented at hearings	2	$40,668	$81,336
VCAT appeals	0	$69,688	$0
Total cost to local government			**$262,557**

Cost to the health and human services system

In lieu of better available data, the VCEC (2012) estimated the cost of problem gambling to the health and human services system in Victoria using a 'bottom-up' approach in which services potentially linked to a population with gambling problems, e.g. drug treatment and rehabilitation and community health care, were combined as the estimated total expenditure for 2010–11, and lower and upper estimates for problem gamblers calculated (see VCEC (2012), Table D.1 and Table D.2).

The first step was to review the figures for 2014–15 Victorian Government expenditure on health and human services that persons with gambling problems are more likely to use, as per the VCEC approach. After reviewing the 2014–15 Victorian Government budget (Victorian Government 2015), the Victorian Department of Health and Human Services annual report 2014–15 (DHHS 2015) and the Report on Government Services for 2014–15 (Productivity Commission 2016c), we found that the expenditure by sector and department were fairly consistent from 2010 to 2014. Therefore, we decided to assume VCEC was reasonably accurate in their estimate of the total health and human services expenditure in 2010–11 and inflated this figure to 2014–15 prices to get $15.3 billion.

The next step was to calculate the number of people with gambling problems in Victoria likely to have used services available in the health and human services sector.

In 2012, the VCEC calculated lower and upper estimates using the following methods:

- Lower estimate: number of problem gamblers with mental wellbeing issues (who are assumed to have had some contact with health and human services) as a proportion of the total Victorian population expenditure ($6.5 million). Wellbeing issues for problem gamblers included depression, attempted suicide, suicide ideation, plus those with experiences of family violence (double-counting adjusted).

- Upper estimate: total number of problem gamblers in Victoria as a proportion of the total Victorian population expenditure × 80% counterfactual ($78.6 million).

Using the same approach as the VCEC (2012), lower and upper estimates of usage of the health and human service system were calculated using ‘wellbeing issues’ as the lower estimate and gambling population as the higher estimate, but these were applied to all three levels of problem gambling severity using 2014 prevalence estimates and an 80 per cent counterfactual adjustment (Victorian Gambling and Health Study 2014 weighted dataset – Hare 2015). Wellbeing issues were defined slightly differently as the combined number experiencing increased depression due to gambling, attempted suicide due to gambling, or experiencing of violence due to gambling with an adjustment of 33.3 per cent applied, assuming one-third will seek treatment services. Suicide ideation was excluded from ‘wellbeing issues’ to avoid double-counting.

As shown in Table 30, the proportion of the Victorian population with gambling problems using government health and human services ranged from 0.4 per cent to 12.5 per cent, with problem gamblers making up the smallest proportion (0.1–0.8 per cent) due to their low baseline prevalence.

Deviating from the VCEC (2012), a third calculation was done: the *average estimate* of the proportion of the Victorian population using the services, which across the three PGSI groups was 5.2 per cent of the population representing a total cost in 2014–15 of nearly $800 million.

Interestingly, the cost attributable to *problem gamblers* in 2014–15 of $60.5 million is towards the higher estimate of $78.6 million for 2010–11 (VCEC 2012), but only accounts for approximately 8 per cent of the current total costs to the sector due to gambling problems. It is the low-risk gamblers who contribute nearly 70 per cent of the cost of gambling problems on the health and human services sector. It is noted that this ‘average’ estimation should be reviewed with the cost assumptions mentioned in mind, and that the lower and upper estimated costs for 2014–15 are $59.7 million to $1.5 billion.

Table 30: Cost of gambling problems to the Victorian health and human services sector (2014–15)

Variable	Calculation	Non-gamblers & non-problem gamblers	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 3,841,149	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Total health and human services expenditure (including capital costs)	a	$15,303,991,812				
Estimated Victorian adult population	b	4,390,438				
Lower estimate of % of population with gambling problems using health and human services						
Number of problem gamblers with wellbeing issues	c	N/A	4,942	5,800	6,384	17,126
% gamblers of total Victorian population with wellbeing issues	d = c / b	N/A	0.1%	0.1%	0.1%	0.4%
Higher estimate of % of population with gambling problems using health and human services						
Estimated number of Victorian population with gambling problems	e	N/A	391,206	122,667	35,415	549,289
% of Victorian population with gambling problems × 80% counterfactual	f = (e/b) × 80%	N/A	7.1%	2.2%	0.6%	12.5%
Average estimate of % of population with gambling problems using health and human services						
% Victoria population with gambling problems and wellbeing issues	g = (d + f)/2	N/A	3.6%	1.2%	0.4%	5.2%
Average estimate of the number of problem gamblers with wellbeing issues	h = b × g	N/A	158,953	51,967	17,358	228,279
Total cost of gambling problems to health and human services	**a × h**		**$554,072,776**	**$181,144,400**	**$60,506,235**	**$795,723,411**

Cost to the mental health sector

Separate to the cost to the health and human services sector is the cost that gambling problems have on the Victorian mental health sector. In 2014–15 the total Victorian expenditure on the mental health sector was $1.2 billion (Victorian Government 2015).

Our approach again followed the 'high estimate' by the VCEC (2012) which estimated the proportion of problem gamblers using the mental health sector as those with 'mental wellbeing issues' (the same number calculated for the health and human services sector) divided by the total estimated number using mental health services in Victoria. In 2014–15, approximately 76,600 persons used mental health services as clinical care clients (64,000) or community mental health support service clients (12,600) (Victorian Government 2015). Our approach applied the cost calculation to all levels of gambling problems in the Victorian population using these mental health services.

As shown in Table 31, the estimated cost of gambling problems to the Victorian mental health sector in 2014–15 was calculated at $278 million or 22.4 per cent of the total costs. Nearly half of these costs were attributable to problem gamblers ($104 million) with low-risk and moderate-risk attributing similar costs ($80 million and $94 million respectively).

Table 31: Cost of gambling problems to the Victorian mental health sector (2014–15)

Variable	Calculation	Non-gamblers and non-problem gamblers	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 3,841,149	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Total expenditure on mental health services in Victoria	a	$1,242,700,000				
Estimated Victorian adult population	b	4,390,438				
Estimated number who used mental health services in Victoria	c	76,600				
Estimated number of Victorian population with gambling problems who used mental health services	d	N/A	4,942	5,800	6,384	17,126

Variable	Calculation	Non-gamblers and non-problem gamblers	Low-risk gamblers (PGSI 1–2)	Moderate-risk gamblers (PGSI 3–7)	Problem gamblers (PGSI 8+)	Total gambling problems
	Victorian population (n)	n = 3,841,149	n = 391,206	n = 122,667	n = 35,415	n = 549,289
Estimated % with gambling problems who used mental health services	e = d / c	N/A	6.5%	7.6%	8.3%	22.4%
Total cost of gambling problems to Victorian mental health sector	**a × e**		**$80,175,048**	**$94,101,625**	**$103,567,341**	**$277,844,014**

Cost of homelessness services

The Australian Institute of Health and Welfare (AIHW) identified that 18.4 per cent of clients of the Supported Accommodation Assistance Program (SAAP) had gambling-related issues as their main reason for seeking accommodation and support (2009). This positions homelessness as a potentially costly gambling-related harm.

In Victoria, the Department of Human Services is responsible for homelessness support services and under their Victorian Homelessness Action Plan 2011–2015 has committed $76.7 million on targeting homelessness via prevention, intervention and continued support to existing services (Victorian Government 2011, cited in Zaretzky et al. 2013). The primary program in Victoria to assist pathways out of homelessness is the Homeless Support Program (HSP, previously known as the SAAP) which is jointed funded by the Commonwealth and Victorian governments under the National Affordable Housing Agreement (NAHA) (Zaretzky et al. 2013).

Our approach to costing homelessness services in Victoria due to gambling problems was as follows:

- Estimate the number of homeless in Victoria.
- Estimate the number of homeless in Victoria due to gambling problems: proportion of Victorian homeless due to gambling problems × number of Victorian homeless × 80 per cent counterfactual.
- Estimate the cost of homelessness per case per year.
- Calculate the total cost: number of homeless in Victoria due to gambling problems × cost per case,

As shown in Table 32, using this approach the estimated cost to the Victorian Government of homelessness services due to gambling problems in 2014–15 was $19.7 million. Note that the cost of ‘street-to-home’ services per client has been used as the cost estimate, as street-to-home programs are funded in Victoria under the NPAH through the Housing and Community Building

division of the Department of Human Services (Zaretzky et al. 2013). The proportion of this cost per client associated with 'welfare and taxation foregone (average wage)' was not included as this is likely already costed under the health and human services sector cost.

The current cost estimate of $19.7 million attributable to problem gamblers' use of homelessness services in Victoria is much higher than the 2010–11 cost of $0.2 to $1.8 million estimated by the VCEC (2012). This difference is explained due to our assumption of a much higher prevalence of problem gamblers in the homeless population seeking homelessness services (VCEC: 0.1–0.8 per cent) and a higher average cost per case (VCEC: $3495).

Table 32: Cost of homelessness services to the Victorian Government due to problem gambling (2014–15)

Variable	Calculation	Data	Source
Estimated number of homeless in Victoria	a	22,789	2011 census, cited by Homelessness Australia (2012)
Prevalence of homelessness in Victoria due to gambling problems	b	18.4%	Australian Institute of Health and Welfare (AIHW 2009)
Estimated number of Victorian homeless due to gambling problems	c = a × b × 80%	3355	Number of Victorian homeless × prevalence of homelessness due to gambling problems × 80% counterfactual
Average annual cost per person for homelessness services	d	$5877	Total annual offset per client, street-to-home (includes health and justice services, excludes welfare and taxation, forgone average wage) – Zaretzky et al. (2013), Table 1
Total cost	**c × d**	**$19,714,636**	

Cost of YourPlay pre-commitment scheme

In 2014 the Victorian Government introduced legislative changes to the *Gambling Regulation Act 2003* under the *Gambling Regulation Amendment (Pre-commitment) Act 2014* which imposed the provision of a pre-commitment scheme for all gaming machines In Victoria from 1 December 2015 (Victorian Government 2014).

As mentioned previously, in the 2014–15 financial year $2.3 million was funded by the Victorian Government's Community Support Fund to the DOJ (now known as the DJR) to set up and pilot the pre-commitment implementation project (PIP) called YourPlay and start its rollout from 1 June 2015 (DTF 2015). As of 1 December 2015, YourPlay was rolled out in all Victorian EGM licensed venues (DOJ 2014).

YourPlay is a card-based pre-commitment system for EGMs which allows players who voluntarily and anonymously participate to have control over their play via features such as setting time and/or money limits, tracking play and receiving annual activity statements. Players monitor their play either via a physical kiosk provided at the venue or via the YourPlay website (DJR 2015b).

In line with the new regulations surrounding pre-commitment schemes, YourPlay requires gaming venue operators to comply with the following (DJR 2015a):

- Install YourPlay hardware and software available for use from 1 December 2015.

- All staff complete online training on YourPlay and how to help players use it.
- Order YourPlay player cards (two types: registered cards and pre-coded casual cards).
- Have YourPlay pre-coded casual cards available for players.
- Display YourPlay information and materials in the venue. These include YourPlay brochures and posters, responsible gambling materials and YourPlay talkers on gaming machines.
- Replace printed responsible gambling materials (Player Information Standards).
- Adhere to the YourPlay branding guidelines (the YourPlay logo is trademarked), such as ensuring that all player cards are branded with YourPlay.
- Have a computer, card readers, encoders and keypad available at the player service point with online access to the YourPlay portal.

This compliance comes at a cost to Victorian gaming venues. Not only are venue operators required to pay for the purchase and installation of player account equipment, from 1 December 2015 venues are charged 74.7 cents per connected EGM per day for the provision of pre-commitment services (DOJ 2014).

The DJR has advised that the cost of YourPlay to the industry will be $197 million over 11 years, which is approximately $18 million per year. This includes the costs of purchasing and installing equipment, player cards, service fees and maintenance of equipment.

Furthermore, non-complying venues are subject to financial penalties which are not covered in this cost.

Comparing the costs of *problem gambling* to the VCEC and Productivity Commission estimates

How do the current estimates of the costs to Victoria of the harm associated with problem gamblers compare to those which have been costed in previous studies when applied to 2014–15? Although our methodology varied in several respects, the final costings are very similar. Table 33 shows the present report's costs of problem gambling for 2014–15 compared to VCEC (2012) and (PC 1999, 2010) estimates applied to the 2014–15 Victorian population.

The current estimate, which incorporates recent gambling-related harms prevalence data while remaining fairly consistent with the cost per harm and methods of calculation used by the VCEC (2012) and PC (1999, 2010), has problem gambling costing Victoria a total of $2.4 billion in 2014–15. In comparison to our updated estimate using VCEC prevalence figures, updated costs per item and methodology, this cost is positioned towards the high estimate of $3 billion for 2014–15. An inflation of PC (1999) Australian estimates proportioned to Victoria (25 per cent of the total) has a cost range of problem gambling between $717 million and $2.2 billion, of which the upper estimate is only slightly lower than the present estimate. Lastly, PC (2010), inflated to Victoria 2014–15, has a range of $1.36 billion to $2.4 billion. Again, the high estimate is close to our own of $2.4 billion.

The caveat to comparing the current estimate of problem gambling costs to the Victorian population to the PC (1999, 2000) inflated estimates is that their prevalence estimates for 'problem

gamblers' varied by cost item, being sourced from the PC's 1999 *National Gambling Survey* for regular gamblers (gambled weekly) or the *Survey of Clients of Counselling Agencies (SCCA)* for sample with SOGS score 10+. The VCEC (2012) also sourced their 'problem gambler' prevalence data from multiple sources, including the *2008 Victorian Gambling and Health Study* (Hare 2009) sample of problem gamblers (CPGI 8+ score) or the PC (1999) figures.

Of importance here is that our incorporation of the costs from the low- and moderate-risk gambler populations added another $4.3 billion to the total estimate of $7 billion in costs to Victoria in 2014–15.

Table 33: Cost of problem gambling to Victoria (2014–15) compared to VCEC and PC (1999) updated estimates

Cost item	CQU cost 2014–15 (PGs only)	VCEC 2010–11 cost updated to 2014–15 (PGs or regular gamblers)		PC 1997–98 cost inflated to 2014–15 (regular gamblers)	
		Low	High	Low	High
Estimated Victorian population (4,390,438)	35,415	35,415		25% of Australian figure	
Financial					
Total opportunity cost of gambling spend	$427,186,784	$1,093,142,272	$1,530,399,181	No estimate	
Bankruptcy					
Total cost of bankruptcy administration	$10,771,795	$750,527	$8,443,429	$518,060	
Total cost of unpaid debts	$60,108,966	$4,188,105	$47,116,177		
Illegal offshore wagering	$215,634,140	No estimate		No estimate	
Sub-total financial costs	***$479,372,995***	***$1,098,080,904***	***$1,585,958,788***	***$518,060***	
Emotional and psychological					
Depression – emotional distress to the gambler	$59,775,675	$668,981	$1,997,651	$92,055,224	$275,767,164
Suicide attempts impact on gambler	$16,137,785	$15,583,200	$26,092,800	$27,895,522	$46,625,373
Suicide ideation – emotional distress on gambler	$53,254,692	$25,972,000	$51,944,000	$47,820,896	$95,243,284
Emotional and psychological costs to the gambler	$171,465,281	No estimate		No estimate	
Sub-total emotional and psychological costs	***$300,633,433***	***$42,224,181***	***$80,034,451***	***$167,771,642***	***$417,635,821***
Relationship and family					

Cost item	CQU cost 2014–15 (PGs only)	VCEC 2010–11 cost updated to 2014–15 (PGs or regular gamblers)		PC 1997–98 cost inflated to 2014–15 (regular gamblers)	
		Low	High	Low	High
Divorce and separation					
Financial cost to gambler	$9,081,796	$1,352,525		$1,115,821	
Emotional distress to gambler	$42,155,848	$20,473,206	$40,946,413	$50,211,940	$100,822,388
Emotional distress to affected others	$384,126,043	$47,088,375	$94,176,750	No estimate	
Experiences of violence					
Emotional distress to the gambler	$21,517,047	$3,546,281	$10,589,590	$1,115,821	$3,307,612
Emotional distress to affected others	$34,427,276	No estimate		No estimate	
Suicide attempts by gambler – impact on affected others	$96,826,713	$22,972,992	$51,966,812	$32,279,104	$72,528,358
Fatality by suicide of gambler – impact on affected others	$6,455,114	No estimate	No estimate	No estimate	No estimate
Other emotional distress to affected others	$418,671,785	$387,278,961	$1,356,821,476	$301,271,642	$1,168,822,388
Breakup of a relationship	No estimate	No estimate		$114,770,149	$344,310,448
Sub-total relationship and family costs	***$1,013,261,621***	***$482,712,341***	***$1,555,853,566***	***$500,764,478***	***$1,690,907,015***
Crime – cost to the Victorian justice system					
Police system cost	$1,180,862	$817,726		$1,275,224	
Court system cost	$1,908,322	$1,443,099		$2,231,642	
Corrections system cost	$38,895,824	$26,934,674		$2,032,388	
Sub-total crime costs	***$41,985,008***	***$29,195,499***		***$5,539,254***	
Productivity loss and work impacts					
Productivity loss to business	$188,937,938	$7,340,968	$50,719,416	$11,237,910	$79,701,493
Cost of job loss					
Loss of income	$74,099,158	$16,570,301		$9,564,179	
Job search to the gambler	$11,687,472	$2,613,591		$5,180,597	

Cost item	CQU cost 2014–15 (PGs only)	VCEC 2010–11 cost updated to 2014–15 (PGs or regular gamblers)		PC 1997–98 cost inflated to 2014–15 (regular gamblers)	
		Low	High	Low	High
Employer staff replacement costs	$22,665,625		$5,068,563		$8,767,164
Unemployment benefits	$7,055,280		$1,577,725	No estimate	
Cost of absenteeism to business	$17,143,961	No estimate		No estimate	
Cost of crime to business	$9,731,943	$4,845,682	$6,922,402	No estimate	
Cost of fatality by suicide	$6,854,681	No estimate		No estimate	
Sub-total productivity loss and work impact costs	***$338,176,056***	***$38,016,829***	***$83,471,998***	***$34,749,851***	***$103,213,433***
Cost to Victorian Government					
Policy, regulation, research					$7,970,149
Victorian Responsible Gambling Foundation (VRGF)	$43,347,000	N/A		N/A	
Pre-commitment Implementation Project	$2,337,600	N/A		N/A	
DJR policy costs related to problem gambling	$1,858,342		$1,858,342	No estimate	
Cost regulating problem gambling (VCGLR)	$4,390,000		$4,390,000	No estimate	
Direct costs to local governments in Victoria	$262,557		$377,564	No estimate	
Health and human services systems	$60,506,235	$8,197,063	$98,759,797	No estimate	
Mental health sector	$103,567,341	$4,802,078	$38,150,386	No estimate	
Homelessness services	$19,714,636	$218,628	$1,967,656	No estimate	
Sub-total cost to Victorian Government	***$235,983,731***	***$58,103,655***	***$183,763,724***	***$7,970,149***	

Cost item	CQU cost 2014–15 (PGs only)	VCEC 2010–11 cost updated to 2014–15 (PGs or regular gamblers)		PC 1997–98 cost inflated to 2014–15 (regular gamblers)	
		Low	High	Low	High
TOTAL cost of gambling to Victoria[11]	**$2,409,412,824**	**$1,748,333,410**	**$3,030,400,142**	**$717,313,433**	**$2,225,783,731**

Comparing the costs of gambling to the cost of alcohol, tobacco and illicit drug use

Collins and Lapsley (2008) examined the costs of tobacco, alcohol and illicit drug abuse to Australian society in 2004–05. The study was carried out using methods specified in the *International Guidelines for Estimating the Costs of Substance Abuse, 2nd edition* (Single et al. 2003). Table 34 provides a summary of their key findings (inflated to 2014–15 dollars). The total cost of drug abuse is estimated at $71.8 billion, with tobacco accounting for 57 per cent ($41.2 billion), alcohol 28 per cent ($20 billion) and illicit drugs 15 per cent ($10.7 billion). Tangible costs comprised 54 per cent of the total ($38.9 billion) and intangible costs 46 per cent ($32.9 billion). Considering Victoria accounts for around 25 per cent of the Australian population, 25 per cent of the total cost estimates is equivalent to just under $18 billion ($10.3 billion for tobacco, $5 billion for alcohol and $2.7 billion for illicit drugs).

Table 34: Total cost of drug abuse in Australia (inflated to 2014–15 dollars)

	Alcohol ($m)	Tobacco ($m)	Illicit ($m)	All drugs ($m)
Tangible	$14,139	$15,702	$9,029	$38,870
Intangible	$5,861	$25,407	$1,664	$32,932
Total	**$20,000**	**$41,109**	**$10,693**	**$71,801**
Estimated total for Victoria (25%)	**$5,000**	**$10,277**	**$2,673**	**$17,950**

A more recent study conducted by Laslett et al. (2010) made the first attempt to quantify the range and magnitude of harms that alcohol causes to others in Australia. Similar to gambling, the consumption of alcohol can adversely affect not only the user but a number of others. The impacts of a drinker's drinking on others can range from nuisance and inconvenience, such as street noise or petty costs from damaged property, to severe harms, such as child abuse, physical violence and death from assaults. Laslett et al. (2010) used a general population survey, routinely collected social response agencies' data and standard costing methods to quantify different aspects of alcohol's harm to others.

Together, Collins and Lapsley (2008) and Laslett et al. (2010) provide a more accurate assessment of the social cost of alcohol. Although both studies use a different methodology with different data sources and assumptions, these two studies represent the first real attempt to understand the true extent of alcohol harm.

[11] For the purposes of direct comparison with other costing studies, the cost of policy, regulation and research to the Victorian Government and direct costs to local governments in Victoria have been included in the total costs.

Table 35 provides an overview of alcohol cost estimates derived for each study using key categories. The total social cost of alcohol is estimated at $40 billion, double that of the original Collins and Lapsley (2008) study that considered the cost of alcohol abuse, predominantly to the drinker. Assuming Victorians have the same level of exposure to alcohol harms as other states, the alcohol cost to Victoria can be estimated at just over $10 billion.

Table 35: Cost of alcohol use to drinkers in Australia (Collins & Lapsley 2008) and others (Laslett et al 2010)

	Collins & Lapsley (2008)		Laslett et al. (2010)			
	Tangible	Intangible	Tangible			Intangible
Categories (used in Collins and Lapsley)						
Labour costs	$4,619					
Healthcare costs	$2,581					
Road accidents costs	$2,875	$462				
Crime	$1,859					
Resources used in abusive consumption	$2,205					
Loss of life		$5,399				
Categories (used in Laslett)			**Out of pocket expenses**	**Cost of time lost/spent**	**Child protection costs**	**Lost quality of life costs**
Child protection system					$734	
Effects of drinking of household or family member or friend with most effect			$462	$9,840		$8,050
Property damage by stranger's drinking			$1,239			
Counselling, advice, treatment expenses			$120			
Subtotal	***$14,139***	***$5,860***	***$1,821***	***$9,840***	***$734***	***$8,050***
Total	**$40,444.74**					

The current study estimates the total cost of gambling to be close to $7 billion, which is of the same order of magnitude but substantially lower than the $10 billion quantified for alcohol (Collins & Lapsley 2008; Laslett et al. 2010). A similar comparison can be made to Collins and Lapsley's (2008) $10 billion estimate for tobacco. In spite of methodological caveats, this is a startling finding, given that tobacco is the single most preventable risk factor for disease in Australia.

Discussion

In many respects, the methodology presented here closely followed previous efforts. For example, the general framework applied was similar, and similar counterfactual weights and cost value assumptions were applied. However, the present study addressed some issues identified in previous costings. This included a better costing of 'intangibles', including financial deprivation and emotional or psychological distress caused by gambling. We incorporated information from both the increasing rate of spend and the increasing rate of harm caused by financial deprivation, with respect to PGSI category, to arrive at a conservative estimate of the opportunity cost of misspent funds to the gambler. This estimate is conservative because it allows for the possibility that at least some of the extra money spent by gamblers with problems – over and above the typical rate of non-problem gamblers – is money 'well spent' in terms of generating recreational utility for the gambler which doesn't create problems. At the time prior costings were conducted, no information was available to allow costing of 'intangibles' – most notably the typical impact of gambling problems on individuals' quality of life (QoL). The present analysis makes use of data and knowledge reported in recent gambling harms surveys to provide a reasonable estimate of the impact of the psychological and emotional component of QoL. Notably, similar calculations done for financial deprivation yield a similar estimate when compared to the reported figures based on excessive spend.

The present study incorporated findings from recent surveys of gambling-related harm, which demonstrated a non-negligible incidence of harms occurring to low- and moderate-risk gamblers. These groups contribute approximately $4.2 billion to the total cost estimate. Accordingly, the present cost estimate is markedly larger than previous costings, due to incorporating costs arising from non-problem gamblers. Previous costings relied on sometimes poor-quality sources of prevalence data in general. In particular, prior prevalence data often did not explicitly link the costed incident (e.g. divorce) to gambling. Furthermore, until recently, prevalence information for harms arising from non-problem gamblers were not available, contributing to the neglect of costs arising from these groups.

A key feature of the present costing is that it incorporates recent large-sample survey data for determining the prevalence of most cost items. The present work costed a wider variety of harms than previous studies, such as fatality by suicide in terms of loss of earnings, and absenteeism and emotional distress from experiences of violence by affected others. Whilst the Productivity Commission (2010) discussed illegal offshore gambling but did not cost the net loss of income to the economy, the present study did cost this item. Finally, in the absence of a strong evidence base, prior studies assumed that costs to affected others amounted to distress only to immediate family and relatives. We applied more recent findings that directly investigated the number of affected others per problem gambler. This takes into account the varying number of affected others by problem gambling category and does not assume that affected others are limited to immediate family.

Limitations

In common with previous studies, there were some negative impacts of gambling that we were unable to cost. These included: harm to children (i.e. neglect), physical health (i.e. comorbid smoking, sleep deprivation, unhealthy diet, alcohol use, stress, neglecting medical needs, sedentary lifestyle), crime prevention, welfare, cultural harms, community harms, costs to local government other than submissions appealing against EGM applications, and other gambling-

related costs by non-government agencies (e.g. business, non-for-profit) such as money spent on gambling prevention, education, treatment and regulation compliance.

In severe cases, excessive gambling spend results in long-term legacy and intergenerational costs due to ongoing debt, lost family assets and major disruption to family networks. However, data that can provide a basis for estimating the extent and severity of these costs is not available and accordingly they do not feature in the present costing. In common with previous economic costings, there is still a lack of data on the monetary costs of some specific gambling-related impacts, resulting in the need to substitute with proxies.

The likely effect of the issues mentioned above is that our findings are an underestimate.

A separate issue is making inference on the direction of causality between gambling problems and harms. Although the present study largely relied on surveys that specifically queried whether incidents occurred as a result of gambling, it is possible that respondents may have overestimated the role that gambling had in a given negative event. Unfortunately, resolving the issue of causality beyond any doubt is only possible via long-term and costly longitudinal surveys. A more cost-effective way of capturing these data would be to include gambling behaviour and outcomes in extant longitudinal studies such as the Australian Longitudinal Study of Women's Health, Ten to Men, the Longitudinal Study of Australia's Children and the Longitudinal Study of Indigenous Children, which already capture information on smoking and alcohol consumption.

A related issue concerns the assumptions regarding attributable fractions of the costs of the harm to assign to gambling problems. In the absence of better information, we have followed precedents of prior studies (e.g. 80 per cent counterfactual weighting). However, this is a clear source of uncertainty in the total costing. Unfortunately, like causality, issues to do with comorbidity are not easy to resolve without major research effort. The lack of screening for gambling in health services precludes the use of administrative data used in other public health areas. Furthermore, the contribution of gambling to mortality is difficult to estimate as gambling is not included in the contributing factors on registrations for reasons of perception and stigma.

A final limitation is due to our handling of certain items for which current costs were not available. In these cases we relied on inflation of previous cost estimates, sometimes back to the 1999 Productivity Commission report. However, these cost items were generally quite small and in most cases unlikely to vary markedly from year to year. Therefore, they should have had minimal impact on the cost estimates presented.

The conclusion to Phase 2 is incorporated in the overall study conclusion which follows.

Conclusion

Gambling in Victoria involves a cost of $7 billion per annum, which is less than but on a similar scale to costs previously estimated for alcohol ($10 billion) and tobacco ($10.3 billion). However, this cost is large with respect to the size of the gambling industry ($5.8 billion gross revenue), especially when compared to the size of the liquor industry ($8.3 billion). Gambling generates costs of about 70 per cent to that of alcohol, which corresponds closely to the relative per annum years of life lost to disability (YLD), which is approximately 69 per cent that of alcohol (Browne et al. 2016). The cost of gambling largely stems from the redistribution of wealth from low-risk, moderate-risk and problem gamblers to other people – including interests within government and industry. This is reflected in our finding that about 75 per cent of the total cost of gambling is borne by gamblers, their families and their social networks. The immediate cost is primarily felt in terms of financial deprivation due to the opportunity cost of funds spent on gambling. Financial deprivation leads to significant further costs in terms of quality of life to both gamblers and affected others. Major cost items include relationship and family breakdown and emotional and psychological suffering.

Gambling is not the only industry or recreational pursuit that involves costs. For example, road transportation involves a yearly toll not just in the economic costs of vehicles and infrastructure, but also a high human cost in death and injury due to accidents and other impacts. However, these costs are arguably dwarfed by the critical role of the transport industry to the economy. Recreational watersports such as SCUBA diving or surfing involve an intrinsic risk of severe events such as drowning, but these are infrequent enough to not call into question the value of the activity. The costs of gambling appear to be of a different magnitude, when both prevalence and severity are considered, and when evaluated relative to the presumed benefits of the activity or the scale of the industry itself. For example, Victorians are projected to spend $10 billion in 2018 on other forms of digital entertainment such as filmed entertainment or television programming; the reasonably defined ‘negative consequences’ of these activities approach zero cost. Judgements about whether gambling is ‘worth the cost’ are beyond the scope of this report. However, our conclusion is that gambling generates costs that appear to be out of proportion in relation to the scale of the industry, the tax revenue generated, and any generous assumptions about the likely recreational value of the activity to Victorians.

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Appendix 1: Summary of systematic literature review

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
1	Black, Shaw, Brett, McCormick & Allen (2012)	USA	To examine negative consequences of pathological gambling on families and marriages.	Interviews conducted between 2005 and 2010 with 95 pathological gamblers and 91 community controls to assess marital and family variables and indices of childhood maltreatment. The Family Assessment Device (FAD) was used to evaluate family functioning.	All gambling	Individual Affected others • Relationships	Severity of gambling was positively correlated with divorce, childhood maltreatment and greater family dysfunction.	No data reported on the social costs of gambling.
2	Brown, Dickerson, McHardy & Taylor (2012)	UK	To investigate the association between the use of credit at the individual and household levels and gambling.	Pooled data from the seven UK Expenditure and Food Surveys (EFS) conducted annually between 2001 and 2007. Gambling expenditure, use of credit (loans, hire purchases, credit club payments) and household characteristics were analysed.	Total gambling expenditure derived from gambling activities: football 'pools', bingo, book-makers, lottery, and scratch cards.	Individual Community • Financial	The positive association between gambling and credit was stable across household income. There was strong intra-household correlation in both gambling activity and the use of credit, with stronger relationships in lower income households.	Study reports on the association between the financial costs (credit use) and gambling expenditure (also a financial cost). Does not report on data on actual monetary costs from the EFSs. Keywords: risk-taking, gambling, credit, debt.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
3	Cheng, Smyth & Sun (2014)	China	To examine determinants of participation in and expenditure on the illegal lottery among rural-urban migrants in China.	Conducted a literature review of international research on lotteries and the illegal lottery in China. Data from the 2006 Survey of Rural-to-Urban Migrant Workers in the Pearl River Delta in China was analysed descriptively and via econometric methods. Factors associated with rural-urban migrants' participation in and expenditure on illegal gambling were analysed.	Legal and illegal lottery Mahjong and other card games	Individual • Crime	Workers who were male, in their twenties or thirties, had relatively high income, were religious, came from larger households, work in the formal sector and play mahjong and cards were more likely to participate in the illegal lottery. Having a network of female friends was negatively correlated with participation in the illegal lottery.	Evidence of gambling participation association with crime – participation in the illegal lottery. No data reported on the social costs of gambling. Keywords: China, Pearl River Delta, migrant workers, gambling, illegal lottery, *liuhecai.*
4	Cheung (2014)	China	To examine the association between gambling, substance use and delinquency among Chinese adolescents.	Analysed data from a cross-sectional questionnaire survey of a stratified, random sample of 4734 high school students aged 12–23 years in Hong Kong.	All gambling	Individual (youth) • Health • Delinquency (including crime)	The prevalence of gambling pathology, frequency and attitudes showed statistically significant ($p<.001$), positive and consistent relationships with tobacco use, alcohol use and delinquent acts.	No data reported on the social costs of gambling. Keywords: gambling, tobacco, alcohol, delinquency, comorbidity, self-control, Chinese.
5	Cotti & Walker (2010)	USA	To test whether there is a relationship between the spread of casinos and the number of alcohol-related fatal traffic accidents.	Analysed USA data from 1990 to 2000 (during which the majority of casinos opened) on alcohol-related fatal accidents (ARFAs), comparing ARFAs in 131 counties with casinos and 1437 without casinos.	Casino	Individual	Alcohol-related fatal accidents increased by about 9.2% for casino counties. The relationship between ARFAs and casino presence was negatively related to county population.	Makes tenuous links between casino location and ARFA data. No data reported on the social costs of gambling. Keywords: alcohol, casinos, drunk drinking, traffic fatalities.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
6	Gainsbury, et al. (2014)	Australia	To report on the prevalence and correlates of problem gambling in Australian adults, with a focus on the impact of interactive gambling.	Nationally representative sample of Australian adults (n = 15,006) interviewed via telephone in late 2011, including 2010 interactive gamblers. Data was collected for measures such as gambling participation, problem gambling, substance use, psychological distress and help-seeking. Statistical analyses were conducted to compare these variables by gambler type (interactive vs non-interactive) and other variables of interest.	All gambling	Individual • Health • Emotional and Psychological distress	The prevalence of problem gambling among interactive gamblers was 3 times higher than for non-interactive gamblers. However, problem and moderate-risk interactive gamblers were most likely to attribute problems to EGMs and land-based gambling. 60% of both interactive and non-interactive moderate-risk/problem gamblers had sought help for their gambling: self-help (57.5% IG, 55% NIG), family/friends (18.4% IG), self-exclusion from land-based venues (30% NIG, 15% IG).	No data reported on the social costs of gambling. This study was the first national PG prevalence study conducted in Australia since 1999. Keywords: prevalence, problem gambling, internet gambling, addiction, public health policy, risk factors.
7	Grote & Matheson (2014)	USA	To determine if the presence of casinos and state lotteries have contributed significantly to the increase in bankruptcy filings.	The annual data from 1982 to 2010 on casino gambling, lottery participation and personal and business bankruptcy filings at the state level was examined, controlling for other variables impacting on the decision to file for bankruptcy. Results report on rates of bankruptcy, not the costs of bankruptcy.	Lottery and casino	Individual Community • Financial	States that adopted lotteries and casinos prior to 1995 experienced significantly higher personal bankruptcy rates, while this effect post-1995 is non-existent.	No data reported on the social costs of gambling. Although implied, doesn't review the direct relationship of gambling problems to bankruptcy.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
8	Hayatbakhs et al. (2012)	Australia	To examine the socio-demographic characteristics of young adults' gambling and its association with mental health and substance use behaviour.	Data was obtained for 3512 young adults aged 18–24 years for whom data from the Mater-University of Queensland Study of Pregnancy (MUSP) were available on self-report gambling, gambling expenditure, Achenbach's Young Adult Self Report and substance use at the 21-year follow-up of the MUSP.	All gambling	Individual • Emotional or psychological distress • Health	Individuals who are involved in gambling are more likely to report cigarette smoking, alcohol consumption and use of illicit drugs, and exhibit high levels of externalising behaviour than non-gamblers. Recommends that substance abuse and mental health services consider comorbid gambling problems in treatment-seeking patients.	No data reported on the social costs of gambling. Keywords: young adult, gambling, problem gambling, mental health, substance use.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
9	Hing, Breen, Buultjens & Gordon (2012)	Australia	To examine gambling behaviour, gambling motivations, gambling-related problems, impacts of gambling and help-seeking among a sample of Indigenous Australians.	The survey was administered face-to-face to 277 Indigenous Australian adults at the 2011 Saltwater Freshwater Festival in New South Wales. Data was collected on gambling participation, frequency, duration and expenditure; gambling motivations; consequences of own gambling; help-seeking for gambling-related problems; erroneous gambling beliefs; demographics; and PGSI. Descriptive statistical analyses were conducted.	All gambling	Individual Affected others Community • Financial • Relationships • Emotional or psychological distress	Several negative impacts were reported, including financial problems and subsequent reliance on relatives or friends, going without, not paying or putting off bills. Gamblers reported that gambling had led to household arguments, depression and violence. Substantial minorities reported obtaining emergency help, begging, getting an advance, selling possessions, borrowing money or obtaining money illegally. The study found intensive card gambling, with prize pools as high as $2500 reported, along with some people typically playing for 8–24 hours and spending more than $300 per fortnight on this activity.	No data reported on the social costs of gambling other than average expenditure by gambling activity.
10	Humphreys & Soebbing (2014)	USA	To examine the relationship between the presence of video lottery terminals (VLTs) and casino gambling in Albert (USA) and crime.	Data from the Statistics Canada Uniform Crime Reporting Survey (UCRS) was used to analyse the relationship between access to legal gambling and crime in Alberta between 1977 and 2008. Article 'does not attempt to estimate the monetary value of the benefits and costs of crime.' (pp. 99).	VLTs and casinos	Community • Criminal activity	The analysis revealed a weak association between the presence of VLTs and casinos and crime in Albert. However, some positive and negative crime-specific associations with casinos and VLTs were found (e.g. negative association of prostitution and shoplifting with the presence of VLTs).	No data reported on the social costs of gambling.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
11	Kerber et al. (2015)	USA	To describe the mental, social and economic health impacts of disordered gambling on older adults recovering from pathological gambling.	Data from 40 older adults (M=65.7 years) recovering from pathological gambling was analysed descriptively. Social health impact was measured by examining: others' complaints of the participant's gambling, missed work to gamble, job loss related to gambling, divorce related to gambling, and distance travelled to gamble. Economic health measures: still having a gambling debt, money owed to pay off gambling debt, individual income, and largest amount lost in one day.	All gambling	Individual • Financial • Relationships • Reduced performance work or study • Crime	57.3% had a gambling debt. Job loss was a key indicator of a significant gambling disorder. Financial loss due to gambling was the most frequent motivator to seek treatment.	No data reported on the social costs of gambling.
12	Larsen, Curtis & Bjerregaard (2013)	Denmark	To investigate (a) the association between lifetime problem gambling and harmful alcohol use as well as frequent use of marijuana and (b) the prevalence of cross-addictive behaviour among Greenland Inuit.	Data from the Inuit Health in Transition Greenland Survey was collected among Greenland Inuit adults aged 18+ years from 2006 to 2010 via face-to-face interviews (n = 2415) and a follow-up self-administered questionnaire (n = 2189). Lifetime problem gambling, harmful alcohol use and frequent use of marijuana were measured through the self-administered questionnaire and were analysed.	All gambling	Individual • Health	For lifetime problem gamblers, the gambling problems were more often combined with harmful alcohol use, frequent use of marijuana or both, especially among men.	No data reported on the social costs of gambling. Keywords: problem gambling, indigenous health, social pathologies, addictive behaviour, Inuit.
13	Lee, Kang & Reisinger (2010)	USA & South Korea	To examine whether residents' socio-demographic variables were related to their community attachment and whether residents'	**Data collection** South Korea: Face-to-face interviews (n = 604) conducted in 2007. USA: Self-completed mail surveys in 3 communities (n = 380), collected in 2004.	Casino	Community • Financial • Relationships • Health • Cultural harm	PCA extracted six factors for perceptions: 1) Negative social impact with direct gambling costs, 5 items: bankruptcy, gambling addition, speculative betting, destruction of	No data reported on the social costs of gambling. Article is about *perceptions* of negative and positive benefits of casino gaming

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
			community attachment affected their perceived impacts, benefits, and support for casino gaming development by comparing communities in two rural gaming locations: Colorado, USA and Gangwon Province, South Korea.	**Data analyses** Descriptive statistics summarising the data. Principal component analysis (PCA) of perceptions, community attachment, benefits and support for gambling development was conducted. Regression analyses to examine relationship between(a) residents' social-demographic characteristics and their community attachment level,(b) community attachment level to perceptions, benefits and support factors.		• Criminal activity	families, brining usury to a community 2) Negative environmental impact, 6 items: noise, water pollution, traffic congestion, environmental degradation, crowding 3) Negative social impact with indirect gambling costs, 5 items: alcohol and drug problems, crime, divorce, prostitution, corruption 4) Positive social impact, five items: traditional/cultural preservation, community spirit, residents' pride, educational environment, historical/cultural preservation 5) Positive economic impact, 5 items: tourists' spending, employment, investments and businesses, tax revenues, income 6) Negative economic impact, 2 items: tax burden, cost of living PCA extracted one factor for these 3 measures: community attachment (5 items), benefits (4 items), and support (5 items).	development, not the actual impacts. Key words: community attachment, casino gaming, Colorado, South Korea, rural gaming development.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
							Residents' community attachments were significantly different between the two locations and influenced residents' perceptions of, benefits, and support for gaming development. Highly community-attached individuals viewed the benefits of casinos more positively and supported them more strongly, than individuals with less community attachment.	
14	Lindberg, Fernie & Spada (2011)	UK	To investigate the relationship among metacognitions, anxiety, depression and gambling in a sample of problem gamblers.	Data collected via self-completion survey with adults attending gambling treatment services (n = 91). Measures: Metacognitions Questionnaire (MCQ-30), Hospital Anxiety and Depression Scale (HADS), South Oaks Gambling Scale (SOGS), demographic. Analyses: descriptive, correlation, regression.	All gambling	Individual • Emotional or psychological distress	Anxiety, depression and metacognitions were significantly positively correlated with gambling consequences and behaviour.	No data reported on the social costs of gambling Keywords: anxiety, depression, gambling, metacognitions, problem gambling.
15	Maierova, Charvat & Miovsky (2014)	Czech Republic	To describe the key stages of gamblers' lifecycle and the associated consequences from clinical, social, economic and time perspective.	SOGS questionnaire and semi-structured interview administered to 139 men living in residential care and diagnosed with gambling problems.	All gambling	Individual • Financial • Relationships • Emotional or psychological distress • Health • Work or study	Family and relationship problems, loss of employment debt, psychopathological comorbidity with such problems as substance abuse, affective disorders (anxiety, depression), suicidal thoughts and/or attempts.	No data reported on the social costs of gambling Keywords: consequences of gambling, gambling careers, pathological gambling, SOGS.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
16	Markham, Young & Doran (2014)	Australia	To test the hypothesis that electronic gaming machines (EGMs) expenditure predicts gambling harm at the level of the venue.	Cross-sectional data collected from adult population in the Northern Territory via a self-completed mail survey (n = 7049) on venue visitation and gambling behaviour across 62 EGM venues. Measures: • Gambling-related harm (PGSI 2+ items endorsed) • EGM expenditure at venue level (sourced from local licensing authorities) Analyses: prevalence of gambling-related harm among patrons aggregated at the venue level with the estimated mean EGM expenditure for each adult resident in the venue's service area using a Huff model, correlation analysis and multivariate binomial regression.	Electronic gaming machines (EGMs)	Individual • Harm type not specified, PGSI used as proxy.	An increase in mean per capita monthly EGM expenditure from A$10 to A$150 was associated with a doubling in the prevalence of gambling-related harm from 9% to 18%.	No data reported on the social costs of gambling. Keywords: electronic gaming machines, gambling expenditure, gambling-related harm, slot machines, total consumption theory, gambling venues.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
17	Moellman & Mitra (2013)	USA	To explore how Indian gaming impacts local communities in Oklahoma, USA.	Empirical analysis conducted using data collected from the US Census Bureau, the FBI's Uniform Crime Reporting Program, the Bureau of Labor Statistics, the 500 Nations Indian gaming website, and phone interviews with various gaming centres. Four metrics were used to determine the relationship between gaming (number of gaming machines and tables) and community welfare: median household income, unemployment level, violent crime, and property crime.	Gaming machines Gaming tables	Community • Financial • Work or study • Criminal activity • Gaming venue characteristics association with measures of harm, problem gambling causing harm	On average as the number of gaming tables increases median household income increases and the levels of unemployment, violent crime and property crime decrease. Opposite findings are shown for the number of gaming machines: as the number of gaming machines increases, the median household income decreases and the levels of unemployment, violent crime and property crime increase. This difference may be due to the number of gaming tables being more correlated with larger gaming operations (e.g. casinos), whereas it is possible to have a fairly large number of gaming machines in smaller gaming operations (e.g. a pub).	No data reported on the social costs of gambling Keywords: economic development, Indian gaming, regional economics, cultural economics.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
18	Najavits, Meyer, Johnson & Korn (2011)	USA	To compare pathological gambling (PG), post-traumatic stress disorder (PTSD) and their co-occurrence.	Data was collected for three groups: 36 with current PTSD, 35 with current PG, and 35 with current PTSD and PG via in-person assessment and interviews. Measures: socio-demographics, psychopathology (e.g., dissociation, suicidality, comorbid Axis I and II disorders), functioning, cognition, life history, problem gambling severity and PTSD.	Not applicable; only problem gambling severity data collected.	Individual • Emotional or psychological distress	Overall, the PG group reported better psychological health and higher functioning than the PTSD or BOTH groups; across the sample many reported a family history of substance use disorder (59%) and gambling problems (34%), highlighting intergenerational impact.	No data reported on the social costs of gambling Keywords: problem gambling, pathological gambling, PTSD, posttraumatic stress disorder, trauma, comorbidity.
19	Pickernell et al. (2013)	Australia	To explore issues of accessibility as they relate to electronic gaming machines (EGMs) in Victoria, Australia.	EGM survey data for 62 local government areas (LGAs) in Victoria were sourced from the Victorian Government Department of Justice website (2006) and the ABS[12] census (2006) website. Measures: EGM location, EGMs per venue/locality, EGM spend per person, spend per EGM, socio-economic-cultural environment (income, unemployment, mean age, number of tourists), and volunteering as proxy for social capital. Data analyses: interactions between the location of and demand for EGM products.	Electronic gaming machines (EGMs)	Community • Financial • Work or study • Volunteering	EGMs per 1000 adults negatively related to unemployment rates and income, and positively related to number of visitors to Victoria. Expenditure on EGMs per adult positively related to EGM access (number of EGMs per adult and venue size) and unemployment. Social capital (volunteering) potential two-way relationship with access to EGMs: negatively related to EGM venue size, unemployment, income; positively related to age and tourist areas.	No data reported on the social costs of gambling Keywords: electronic gaming machines, gambling revenues, social capital, Australia.

[12] Australian Bureau of Statistics.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
20	Svensson, Romild & Shepherdson (2013)	Sweden	To examine the health, social support and financial situations of concerned significant others (CSOs)[13] in Sweden.	Data sourced from the 2008/9 Swedish Longitudinal Gambling Study – Swelogs (n = 15,000), specifically for CSOs (n = 8165). Measures: health (problem gambling – PGSI 3+, good health, mental health (Kessler 6) – risky alcohol behaviour (AUDIT), sick leave); social support (practical help, able to share feelings, violence) and fear of losing employment, financial hardship (difficulty paying bills, receive social welfare), other life events (more arguments with someone close, work problems, legal problems, divorce/separation, worse/better economy, death of someone close), and social-demographic factors.	All gambling	Affected others • Financial • Relationships • Emotional or psychological distress • Health • Work or study	18% of Swedish population CSOs. Gambling problems do not only affect the gambling individual but also the wider social network. Negative consequences included poor mental health, risky alcohol consumption, economic hardship and arguments with those closest to them.	No data reported on the social costs of gambling Keywords: problem gambling, family, relatives, concerned significant others, longitudinal.

[13] Concerned significant others: someone close to them currently or previously had problems with gambling.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
21	Tu, Gray & Walton (2014)	New Zealand	To investigate changes in gambling behaviour, experiences of harm related to gambling, and the association with economic deprivation.	Data sourced from the 2008, 2010, and 2012 Health and Lifestyle Surveys (HLS), conducted face-to-face with national NZ sample 15+ years. Measures: gambling participation, attitudes and knowledge of harm minimisation, gambling problems, gambling-related harm at individual and household level, economic deprivation and demographics. Gambling-related harm defined within last 12 months:(a) experienced some argument about time/money spent on betting/gambling in family/household,(b) someone in family/household going without something needed or bill not paid because of too much money spent on gambling by another person.	All gambling	Individual Affected others • Financial • Relationships	2012 prevalence of gambling-related harm in NZs 15+ years: 10.9%. Increased from 2010 (6.4%) and 2008 (6.0%). In 2010 and 2012, gambling-related harm significantly related with socio-economic deprivation – people living in most deprived areas 4–5 times more likely to experience gambling-related arguments or money problems than those living in the least deprived areas.	No data reported on the social costs of gambling. Keywords: New Zealand, gambling, public health, vulnerable populations, social harm.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
22	Walker, Abbott & Gray (2012)	New Zealand	To describe survey findings which measure broader gambling harms and provide benchmark data to evaluate an awareness and education program to minimise harm. To assess ethnic and socio-economic disparities of gambling harms.	The 2006/7 Gaming and Betting Activities Survey (GBAS) was conducted face-to-face with a random probability sample of adults (n = 1774) and 15–17-year-olds (n = 199). Māori (NZ's indigenous people), Pacific and Asian peoples, and people in areas of deprivation, were oversampled for analysis purposes. Measures: gambling participation (type and frequency of gambling activities), form of gambling (non-continuous, continuous), socio-economic status, ethnicity, knowledge of gambling harms, and experience of gambling harms. Gambling harms defined within last 12 months:(a) experienced some argument about time/money spent on betting/gambling in family/household,(b) someone in family/household going without something needed or bill not paid because of too much money spent on gambling by another person.	All gambling	Individual Affected others • Financial • Relationships	Self-reported knowledge of the signs of gambling harm was high. Arguments about gambling and people going without/unpaid bills provided two indicators of broader gambling harm. Around one-sixth of New Zealanders experienced each of these harms. Impacts were greatest for low-income groups, Māori, and Pacific peoples. The proportion of New Zealander's experiencing broader gambling harms was much higher than the prevalence for problem gambling. Results show the flow-on impacts of problem gambling – on family, friends and communities.	No data reported on the social costs of gambling. Keywords: public health, problem gambling, nationwide survey, gambling harm, New Zealand.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
23	Wan (2012)	China	To investigate the social, economic and environmental consequences of casino gaming in Macao since casino license liberalisation in 2002.	Data was collected via in-depth qualitative interviews with 17 key community leaders who: represented an industry affected by casino gaming, had an interest in casino gaming development/improvement of the industry, and were widely recognised by local people as knowledgeable and reputable in the field. They were asked 4 questions on their views on the social, economic and environmental impacts of casino gaming and suggestions on minimising negative impacts. Two questions were asked about their views of community acceptance levels of gaming development and reasons attributed to levels, and periods of change in residents' attitudes on gaming and the causes. The aim was to understand whether social exchange theory (SET) or social disruption theory (SDT) explained residents' attitude toward gaming. Content analysis was employed to examine the relationship between identified categories and themes.	Casino	Community • Study is about community leaders' perceptions and opinions, not actual gambling-related harm data.	The community leaders suggest that although casino gaming does make positive social, economic and environmental contributions to the community, negative consequences such as the changing values of teenagers, the high student drop-out rate, problem gambling and crime, changing family relationships, increasing tension between public needs and casino land requirements, traffic congestion, and air and noise pollution need to be dealt with. Macao residents' acceptance level of the further development of casino gaming is found to be high, and their perceptions of its impact can be explained by the social exchange theory, rather than by social disruption theory.	No data reported on the social costs of gambling. Keywords: casino gaming impacts, community leaders' perceptions, Macao, China.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
24	Wolfe et al. (2012)	USA	To examine the relationship between household income and the health of tribal casino gaming on American Indians.	Annual data from 1988–2003 on tribal gaming, health care access (from the Area Resource File) and individual health and socioeconomic characteristics data (from the Behavioral Risk Factors Surveillance System) was used in the analysis. Measures: income, tribal gaming 2+ years, health risk behaviours (smoking, drinking), health indicators (e.g. obesity, diabetes), health care utilisation (e.g. health plan), mental health, household income, employment status, and other demographics.	Casino	Community • Income • Health • Emotional or psychological distress • Work or study	Identified estimates of the positive effect of gaming on American Indian income and on several indicators of American Indian health, health-related behaviours and access to health care.	No data reported on the social costs of gambling. Keywords: income gradient, health, American Indian health, social determinants.
25	Young, Lamb & Doran (2011)	Australia	To examine the ways in which EGMs redistribute resources to and from three remote towns in the Northern Territory, Australia.	Gambling in three remote towns in the Northern Territory (Nhulunbuy, Katherine and Tennant Creek) was discussed to give contextual background to these case studies. Exploratory analysis was then conducted for each case study, with focus on EGM expenditure levels at venue level (2006–07 financial year), local EGM markets and racially-based alcohol regulations, and examining the outcomes of resource redistribution mechanisms designed to redistribute a proportion of local EGM profits.	Electronic gaming machines (EGMs)	Community • Financial	Two venues in Nhulunbuy had over $100,000 expenditure each per EGM for 2006–07 from a total of 55 EGMs. EGMs only permitted in venues licensed to serve alcohol. Coupled with alcohol restrictions in the NT targeted at impoverished Aboriginal drinkers, authors argue anecdotally that this is an attempt to govern the Aboriginal consumer patterns and correlates with EGM and venue use. In NT, clubs are not formally required to redistribute EGM revenue to the community, meaning money often goes back into club	No data reported on the social costs of gambling. Keywords: gambling, electronic gaming machines, remote towns, racial economy, Northern Territory.

N	Author/s (year)	Country	Objective	Method	Gambling type	Gambling harm level and types	Key findings	General comments
							membership to the benefit of patrons and the broader community (e.g. sporting and recreational facilities). Hotels are required to contribute 10% of EGM revenue to the Community Benefit Fund (CBF) which is created to improve the negative social consequences of gambling in the NT (via gambling research and support programs for PG). Summary: 'The suburban clubs are likely to develop social capital and amenity for a select group of beneficiaries, while their most disadvantaged patrons, particularly if they are Aboriginal and live outside town, may receive very little.' (p. 69).	

Appendix 2: Understanding gambling harms questionnaire (Browne et al, 2016)

The gambling-related harms questionnaire presented in this appendix was administered by Browne et al (2016) via an online survey to an Australian sample of 3076 gamblers impacted by their gambling and 2129 non-gamblers affected by a gambler they have a close relationship with ('affected others'). The questionnaire collected data on gambling-related harm for 72 harm items across six domains: financial, work and study, health, emotional and psychological, relationship, and other harms such as crime and child neglect. Problem gambling status was measured via the nine-item Problem Gambling Severity Index (PGSI, Ferris & Wynne, 2001), self-reported by gamblers and reported by 'affected others' for the gamblers affecting them.

The current report utilised the gambling-related harm items from the national gambling-harm survey data, specifically the aggregate percentages of gamblers experiencing the harm item due to their gambling during a 12-month period by PGSI category: low-risk gamblers (n = 157), moderate-risk gamblers (n = 829) and problem gamblers (n = 1972). For these figures, refer to Table 5 of this report and Tables 9, 10 and 11 of the Browne et al. report (2016). The following gambling-related harm items were used for estimating the cost of gambling in this report:

Group A questionnaire: Gamblers

- Q5a_4: Bankruptcy
- Q8a_11: Depression
- Q8b_3: Attempted suicide
- Q7a and Q7b series: Emotional and psychological harms
- Q6b_2: Divorce or separation
- Q9a_1: Reduced performance at work or study
- Q9b_1: Lost job
- Q9a_3: Absent from work or study
- Q10b_4: Experiences of violence
- Q10b_1: Petty theft or dishonesty in respect to government, business or other people (not family/friends)
- Q10b_2: Felt compelled or forced to commit a crime or steal to fund gambling or pay debts

Group B questionnaire: Non-gamblers ('affected others')

- Q7c: Level of emotional or psychological impact from being affected by someone else's gambling

Understanding gambling harms: questionnaire

This survey will ask you to reflect on gambling experiences. When you think about gambling you should consider lottery tickets, instant scratch tickets or raffles along with all other types of gambling such as poker machines, card games, racing, sports betting, day trading, bingo and casino games.

Q1: Has there been a time when <u>your gambling</u> has caused problems in your life, no matter how minor?

1. Yes
2. No

If answer = 2 skip to Q1a

When Group A quota filled all respondents will skip immediately to Group B

Group A – Gamblers

Section 1: Your gambling experiences

The next few questions will ask you to reflect on a time in your life when your gambling caused you the most problems. We'd like you to think about the approximate 12 month period around this time.

Q2: Approximately how long ago was this period of time?

Less than 1 year ago

Enter number of years 1–65

Q3: Thinking about this 12 month period, what form of gambling were you <u>betting the most money</u> on?

1. Electronic gambling machine (Pokies, Slot Machine, Fruit Machine or VLTs)
2. Sports betting
3. Race betting
4. Poker
5. Casino table games (not including Poker)
6. Keno
7. Lottery tickets
8. Other (please specify)

Q3b. How and where did you <u>most often</u> bet on this form of gambling?

1. Mobile phone
2. Tablet/iPad
3. Computer/laptop
4. Casino
5. Pub/hotel
6. RSL club
7. Sports club/bar

8. Betting shop (e.g., TAB or newsagent)
9. Other (please specify)

Q4: For the next few questions please continue to reflect on the <u>12 month period during which your gambling was causing you the most problems</u>.

1. At this time, did you bet more than you could really afford to lose?
2. At this time, did you need to gamble with larger amounts of money to get the same feeling of excitement?
3. At this time, when you gambled, did you sometimes go back another day to try to win back the money you lost?
4. At this time, did you borrow money or sell anything to get money to gamble?
5. At this time, did you feel that you might have a problem with gambling?
6. At this time, did gambling cause you any health problems, including stress or anxiety?
7. At this time, did people criticize your betting or tell you that you had a gambling problem, regardless of whether or not you thought it was true?
8. At this time, did your gambling cause any financial problems for you or your household?
9. At this time, did you feel guilty about the way you gamble or what happens when you gamble?

Response options

0. Never
1. Sometimes
2. Most of the time
3. Almost always

Q4b: How often did you gamble at this time?

1. Monthly or less
2. 2 to 4 times a month
3. 2 to 3 times a week
4. 4 to 5 times a week
5. 6 or more times a week

Q4c: How much time did you spend gambling on a typical day in which you gambled at this time?

1. Less than 30 minutes
2. More than 30 min but less than 1 hour
3. More than 1 hours but less than 2 hours
4. More than 2 hours but less than 3 hours
5. More than 3 hours

Q4d: How often did you spend more than 2 hours gambling (on a single occasion) at this time?

1. Never
2. Less than monthly
3. Monthly
4. Weekly
5. Daily or almost daily

Section 2: Financial impact

Please continue to consider the 12 month period of time that you nominated above, when your gambling was **causing the most problems***. We would like you to think about how your gambling may have impacted upon your* ***finances*** *during this time.*

Q5a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Reduction of my savings
2. Reduction of my available spending money
3. Increased credit card debt
4. Sold personal items
5. Took on additional employment
6. Late payments on bills (e.g. utilities, rates)
7. Less spending on recreational expenses such as eating out, going to movies or other entertainment.
8. Less spending on beneficial expenses such as insurances, education, car and home maintenance
9. Less spending on essential expenses such as medications, healthcare and food
10. I did not experience any of these issues as a result of my gambling

Q5b: During this time, did your gambling contribute to or cause you to experience any of the following situations?

1. Needed assistance from welfare organisations (foodbanks or emergency bill payments)
2. Loss of supply of utilities (electricity, gas, etc.)
3. Loss of significant assets (e.g. car, home, business, superannuation)
4. Bankruptcy
5. Needed emergency or temporary accommodation
6. I did not experience any of these issues as a result of my gambling

Q5c: Overall, what level of impact did your gambling have upon your financial security during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 3: Impact to relationships

Please continue to consider the 12 month period of time when your gambling was **causing the most problems**. *We would like you to think about how your gambling may have impacted upon your* ***relationships*** *during this time.*

Q6a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Spent less time with people I care about
2. Got less enjoyment from time spent with people I care about
3. Neglected my relationship responsibilities
4. Spent less time attending social events (non gambling related)
5. Experienced greater tension in my relationships (suspicion, lying, resentment, etc)
6. Experienced greater conflict in my relationships (arguing, fighting, ultimatums)
7. Felt belittled in my relationships
8. I did not experience any of these issues as a result of my gambling

Q6b: During this time, did your gambling contribute to or cause you to experience any of the following situations during this time?

1. Threat of separation or ending a relationship/s
2. Actual separation or ending a relationship/s
3. Social isolation (felt excluded or shut-off from others)
4. I did not experience any of these issues as a result of my gambling

Q6c: Overall, what level of impact did your gambling have upon your personal relationships (family, friends, spouse, partner, etc) during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 4: Emotional or psychological impact

Please continue to consider the 12 month period when your gambling was **causing the most problems***. We would like you to think about how your gambling may have impacted upon your* ***emotional or psychological wellbeing*** *during this time.*

Q7a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Felt distressed about my gambling
2. Felt ashamed of my gambling
3. Felt like a failure
4. Felt insecure or vulnerable
5. Felt angry about not controlling my gambling
6. Felt worthless
7. Had regrets that made me feel sorry about my gambling
8. I did not experience any of these issues as a result of my gambling

Q7b: During this time, did your gambling contribute to or cause you to experience any of the following situations?

1. Feelings of hopelessness about gambling
2. Feelings of extreme distress
3. Thoughts of running away or escape
4. I did not experience any of these issues as a result of my gambling

Q7c: Overall, what level of impact did your gambling have upon your emotional or psychological wellbeing during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 5: Health impacts

Please continue to consider the 12 month period of time when your gambling was **causing the most problems***. We would like you to think about how your gambling may have impacted upon your* ***health*** *during this time.*

Q8a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Reduced physical activity due to my gambling
2. Stress related health problems (e.g. high blood pressure, headaches)
3. Loss of sleep due to spending time gambling
4. Loss of sleep due to stress or worry about gambling or gambling-related problems
5. Neglected my hygiene and self-care

6. Neglected my medical needs (including taking prescribed medications)
7. Didn't eat as much or often as I should
8. Ate too much
9. Increased my use of tobacco
10. Increased my consumption of alcohol
11. Increased experience of depression
12. Increased use of health services due to health issues caused or exacerbated by my gambling
13. Committed acts of self harm
14. I did not experience any of these issues as a result of my gambling

Q8b: During this time, did your gambling contribute to or cause you to experience any of the following situations?

1. Unhygienic living conditions (living rough, neglected or unclean housing, etc)
2. Required emergency medical treatment for health issues caused or exacerbated by gambling
3. Attempted suicide
4. I did not experience any of these issues as a result of my gambling

Q8c: Overall, what level of impact did your gambling have upon your physical or mental health during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Q8d: During this time, how much sleep did you typically get on a week night or work night?

ENTER NUMBER OF HOURS

Q8e: During this time how much sleep did you typically get on a weekend or non-work night?

ENTER NUMBER OF HOURS

Section 6: Work or study impacts

Please continue to consider the 12 month period of time when your gambling was **causing the most problems**. *We would like you to think about how your gambling may have impacted upon your* ***work or study performance*** *during this time.*

Q9a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Reduced performance at work or study (i.e. due to tiredness or distraction)
2. Was late for work or study
3. Was absent from work or study

4. Hindered my job-seeking efforts
5. Used my work or study time to gamble
6. Used my work or study resources to gamble
7. Lack of progression in my job or study
8. Conflict with my colleagues
9. I did not experience any of these issues as a result of my gambling

Q9b: During this time, did your gambling contribute to or cause you to experience any of the following situations?

1. Lost my job
2. Excluded from study
3. I did not experience any of these issues as a result of my gambling

Q9c: Overall, what level of impact did your gambling have upon your work or study performance during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 7: Other problems

Please continue to consider the 12 month period of time when your gambling was **causing the most problems***. We would like you to think about how your gambling may have impacted upon* ***other areas of your life*** *during this time.*

Q10a: Please review the following list and indicate whether you have experienced any of these issues as a result of your gambling during this time.

1. Left children unsupervised
2. Didn't fully attend to needs of children
3. Took money or items from friends or family without asking first
4. Promised to pay back money without genuinely intending to do so
5. Arrested for unsafe driving
6. Reduced my contribution to religious or cultural practices
7. Felt less connected to my religious or cultural community
8. Felt that I had shamed my family name within my religious or cultural community
9. I have not experienced any of these issues as a result of my gambling

Q10b: During this time, did your gambling contribute to or cause you to experience any of the following situations?

1. Petty theft or dishonesty in respect to government, businesses or other people (not family/friends)
2. Felt compelled or forced to commit a crime or steal to fund gambling or pay debts

3. Outcast from religious or cultural community due to involvement with gambling
4. Had experiences with violence (include family/domestic violence)
5. I did not experience any of these issues as a result of my gambling

Q10c: Overall, what level of other impacts did your gambling have upon you during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Q11: Did you experience any other negative impacts or harms during this time as a result of your gambling that we haven't mentioned? If so, please comment below.

Q12: Thinking about this time in your life, did you usually see a solution to problems and difficulties that other people find hopeless?

1. Yes, usually
2. Yes, sometimes
3. No

Q13: Thinking about this time in your life, did you feel that your daily life was a source of personal satisfaction?

1. Yes, usually
2. Yes, sometimes
3. No

Q14: Thinking about this time in your life, did you usually feel that the things that happen to you in your daily life were hard to understand?

1. Yes, usually
2. Yes, sometimes
3. No

Section 8: Impact to others

Q15a: Considering all the issues raised earlier, how many <u>other people</u> would you estimate were affected by your gambling during this period of time?

ENTER NUMBER 0>

Q15b: And how many of these people would you estimate were affected by your gambling <u>AS MUCH as you were or more</u>, during this period of time?

ENTER NUMBER 0>

Q15c: What was your relationship with the person/people affected by your gambling?

1. Spouse, de facto or romantic partner
2. Close friend

3. Parent
4. Sibling
5. Child
6. Family member
7. Co-worker/colleague
8. Other, please specify

Q16a: Still thinking about the same period of time, were you affected by <u>anybody else's gambling</u> during this time?

1. Yes
2. No > skip to demographics Q17

Q16b: How many other people affected you, due to their gambling, during this time?

ENTER NUMBER 1>

Q16c: What was your relationship with the person/people who affected you due to their gambling?

1. Spouse, de facto or romantic partner
2. Close friend
3. Parent
4. Sibling
5. Child
6. Family member
7. Co-worker/colleague
8. Other, please specify

GROUP A: Proceed to demographics

Group B – Non-gamblers

Q1a: Have you had a close relationship* with a person whose gambling has caused problems in your life, no matter how minor?

**When we talk about a close relationship we are referring to a personal relationship with someone that you care about and have regular communication with.*

1. Yes
2. No

If answer = 2 respondent is not eligible to complete the survey

Q1b: How would you describe your relationship with this person? If there is more than one person, think about the person with gambling problems whom you are closest to.

1. Person is/was my spouse, de facto or romantic partner
2. Person is/was my close friend
3. Person is my parent
4. Person is my sibling
5. Person is my child
6. Person is other close family member
7. Person is a close co-worker/colleague
8. Other, please specify

Section 1: Gambling experiences of others

*The next few questions will ask you to reflect on the time **when this person's gambling caused them the most problems**. We'd like you to think about the approximate 12 month period around this time.*

Q2: Approximately how long ago was this period of time?

Less than 1 year ago

Enter number of years 1–65

Q3a: Thinking about this 12 month period, what form of gambling was this person betting the most money on?

1. Electronic gambling machine (Pokies, Slot Machine, Fruit Machine or VLTs)
2. Sports betting
3. Race betting
4. Poker
5. Casino table games (not including Poker)
6. Keno
7. Lottery tickets
8. Other (please specify)
9. Don't know

Q3b. To the best of your knowledge, how and where did they most often bet on this form of gambling?

1. Mobile phone
2. Tablet/iPad
3. Computer/laptop
4. Casino
5. Pub/hotel
6. RSL club
7. Sports club/bar
8. Betting shop (e.g., TAB or newsagent)
9. Other (please specify)
10. Don't know

Q4: For the next few questions please continue to reflect on the <u>12 month period in which the person's gambling was causing the most problems</u>.

1. At this time, did you feel that the person bet more than they could really afford to lose?
2. At this time, did you feel that the person needed to gamble with larger amounts of money get the same feeling of excitement?
3. At this time, when the person gambled, did they sometimes go back another day to try to win back the money they lost?
4. At this time, did the person borrow money or sell anything to get money to gamble?
5. At this time, did the person ever suggest that they might have a problem with gambling?
6. At this time, did gambling cause the person any health problems, including stress or anxiety?
7. At this time, did people criticize the person's betting or tell them that they had a gambling problem, regardless of whether or not they thought it was true?
8. At this time, did the person's gambling cause any financial problems for them or their household?
9. At this time, did the person feel guilty about the way they gambled or what happens when they gamble?

Response options

0. Never
1. Sometimes
2. Most of the time
3. Almost always
4. Don't know

Q4b: To the best of your knowledge, how often did the person gamble at this time?

1. Monthly or less
2. 2 to 4 times a month
3. 2 to 3 times a week
4. 4 to 5 times a week
5. 6 or more times a week
6. Don't know

Q4c: To the best of your knowledge, how much time did the person spend gambling on a typical day in which they gambled at this time?

1. Less than 30 minutes
2. More than 30 min but less than 1 hour
3. More than 1 hours but less than 2 hours
4. More than 2 hours but less than 3 hours
5. More than 3 hours
6. Don't know

Q4d: To the best of your knowledge, how often did the person spend more than 2 hours gambling (on a single occasion) at this time?

1. Never
2. Less than monthly
3. Monthly
4. Weekly
5. Daily or almost daily
6. Don't know

Section 2: Financial impact

*Please continue to consider the 12 month period of time that you nominated above, when this person's gambling was causing the most problems. We would like you to think about how their gambling may have impacted upon **your finances** during this time.*

Q5a: Please review the following list and indicate whether <u>you</u> experienced any of these issues as a result of this person's gambling during this time.

1. Reduction of <u>my</u> savings
2. Reduction of <u>my</u> available spending money
3. Increased credit card debt
4. Sold personal items
5. Took on additional employment
6. Late payments on bills (e.g. utilities, rates)
7. Less spending on recreational expenses such as eating out, going to movies or other entertainment.

8. Less spending on beneficial expenses such as insurances, education, car and home maintenance
9. Less spending on essential expenses such as medications, healthcare and food
10. I did not experience any of these issues as a result of this person's gambling

Remember, for these questions we want you to think about the impact that the person's gambling had on YOU, not how it might have impacted them.

Q5b: During this time, did this person's gambling contribute to or cause you to experience any of the following situations?

1. Needed assistance from welfare organisations (foodbanks or emergency bill payments)
2. Loss of supply of utilities (electricity, gas, etc.)
3. Loss of significant assets (e.g. car, home, business, superannuation)
4. Bankruptcy
5. Needed emergency or temporary accommodation
6. I did not experience any of these issues as a result of this person's gambling

Q5c: Overall, what level of impact did the person's gambling have upon your financial security during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 3: Impact to relationships

*Please continue to consider the 12 month period of time when this person's gambling was causing the most problems. We would like you to think about how their gambling may have impacted upon your **health** during this time.*

Q6a: Please review the following list and indicate whether you experienced any of these issues as a result of this person's gambling during this time.

1. Spent less time with people I care about
2. Got less enjoyment from time spent with people I care about
3. Neglected my relationship responsibilities
4. Spent less time attending social events (non gambling related)
5. Experienced greater tension in my relationships (suspicion, lying, resentment, etc)
6. Experienced greater conflict in my relationships (arguing, fighting, ultimatums)
7. Felt belittled in my relationships
8. I did not experience any of these issues as a result of this person's gambling

Q6b: During this time, did this person's gambling contribute to or cause <u>you</u> to experience any of the following situations?

1. Threat of separation or ending a relationship/s
2. Actual separation or ending a relationship/s
3. Social isolation (felt excluded or shut-off from others)
4. I did not experience any of these issues as a result of this person's gambling

Q6c: Overall, what level of impact did this person's gambling have upon your personal relationships (family, friends, spouse, partner, etc) during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 4: Emotional or psychological impact

*Please continue to consider the 12 month period when this person's gambling was causing the most problems. We would like you to think about how their gambling may have impacted upon **your emotional or psychological wellbeing** during this time.*

Q7a: Please review the following list and indicate whether <u>you</u> have experienced any of these issues as a result of this person's gambling during this time.

1. Felt distressed about their gambling
2. Felt ashamed of their gambling
3. Felt like a failure
4. Felt insecure or vulnerable
5. Felt angry about not controlling their gambling
6. Felt worthless
7. I did not experience any of these issues as a result of this person's gambling

Q7b: During this time, did this person's gambling contribute to or cause <u>you</u> to experience any of the following situations?

1. Feelings of hopelessness about their gambling
2. Feelings of extreme distress
3. Thoughts of running away or escape
4. I did not experience any of these issues as a result of this person's gambling

Q7c: Overall, what level of impact did this person's gambling have upon <u>your</u> emotional or psychological wellbeing during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 5: Health impacts

*Please continue to consider the 12 month period of time when this person's gambling was causing the most problems. We would like you to think about how their gambling may have impacted upon **your health** during this time.*

Q8a: Please review the following list and indicate whether <u>you</u> have experienced any of these issues as a result of this person's gambling during this time.

1. Reduced physical activity due to their gambling
2. Stress related health problems (e.g. high blood pressure, headaches)
3. Loss of sleep due to spending time with the person gambling
4. Loss of sleep due to stress or worry about their gambling or gambling-related problems
5. Neglected my hygiene and self-care
6. Neglected my medical needs (including taking prescribed medications)
7. Didn't eat as much or often as I should
8. Ate too much
9. Increased my use of tobacco
10. Increased my consumption of alcohol
11. Increased experience of depression
12. Increased use of health services due to health issues caused or exacerbated by their gambling
13. Committed acts of self harm
14. I did not experience any of these issues as a result of this person's gambling

Q8b: During this time, did this person's gambling contribute to or cause <u>you</u> to experience any of the following situations?

1. Unhygienic living conditions (living rough, neglected or unclean housing, etc)
2. Required emergency medical treatment for health issues caused or exacerbated by their gambling
3. Attempted suicide
4. I did not experience any of these issues as a result of this person's gambling

Q8c: Overall, what level of impact did this person's gambling have upon <u>your</u> physical or mental health during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Q8d: During this time, how much sleep did you typically get on a week night or work night?

ENTER NUMBER OF HOURS

Q8e: During this time how much sleep did you typically get on a weekend or non-work night?

ENTER NUMBER OF HOURS

Section 6: Work or study impacts

Please continue to consider the 12 month period of time when this person's gambling was causing the most problems. We would like you to think about how your gambling may have impacted upon ***your work or study performance*** *during this time.*

Q9a: Please review the following list and indicate whether <u>you</u> have experienced any of these issues as a result of this person's gambling during this time.

1. Reduced performance at work or study (i.e. due to tiredness or distraction)
2. Was late for work or study
3. Was absent from work or study
4. Hindered my job-seeking efforts
5. Used my work or study time to attend to issues caused by their gambling
6. Used my work or study resources to assist with matters arising from their gambling
7. Lack of progression in my job or study
8. Conflict with my colleagues
9. I did not experience any of these issues as a result of this person's gambling

Q9b: During this time, did this person's gambling contribute to or cause <u>you</u> to experience any of the following situations?

1. Lost my job
2. Excluded from study
3. I did not experience any of these issues as a result of this person's gambling

Q9c: Overall, what level of impact did this person's gambling have upon <u>your</u> work or study performance during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Section 7: Other problems

*Please continue to consider the 12 month period of time when this person's gambling was causing the most problems. We would like you to think about how their gambling may have impacted upon **other areas of your life** during this time.*

Q10a: Please review the following list and indicate whether you have experienced any of these issues as a result of this person's gambling during this time.

1. Left children unsupervised
2. Didn't fully attend to needs of children
3. Took money or items from friends or family without asking first
4. Promised to pay back money without genuinely intending to do so
5. Arrested for unsafe driving
6. Reduced my contribution to religious or cultural practices
7. Felt less connected to my religious or cultural community
8. Felt that my family name had been shamed within my religious or cultural community
9. I have not experienced any of these issues as a result of this person's gambling

Q10b: During this time, did the person's gambling contribute to or cause you to experience any of the following situations?

1. Petty theft or dishonesty in respect to government, businesses or other people (not family/friends)
2. Felt compelled or forced to commit a crime or steal to fund their gambling or pay debts
3. Outcast from religious or cultural community due to their involvement with gambling
4. Had experiences with violence (include family/domestic violence)
5. I did not experience any of these issues as a result of this person's gambling

Q10c: Overall, what level of other impacts did this person's gambling have upon you during this time?

1. No impact
2. Minor impact
3. Moderate impact
4. Major impact

Q11: Did you experience any other negative impacts or harms during this time as a result of this person's gambling that we haven't mentioned. Please comment below.

Q12: Thinking about this time in your life, did you usually see a solution to problems and difficulties that other people find hopeless?

1. Yes, usually
2. Yes, sometimes
3. No

Q13: Thinking about this time in your life, did you feel that your daily life was a source of personal satisfaction?

1. Yes, usually
2. Yes, sometimes
3. No

Q14: Thinking about this time in your life, did you usually feel that the things that happen to you in your daily life were hard to understand?

1. Yes, usually
2. Yes, sometimes
3. No

Section 8: Impact to others

Q15a: Considering all the issues raised earlier, how many other people would you estimate were affected by this person's gambling during this period of time?

ENTER NUMBER 0>

Q15b: And how many of these people would you estimate were affected by this person's gambling AS MUCH as you were or more, during this period of time?

ENTER NUMBER 0>

Q15c: What was the relationship to the gambler of the other person/people affected?

1. Spouse, de facto or romantic partner
2. Close friend
3. Parent
4. Sibling
5. Child
6. Family member
7. Co-worker/colleague
8. Other, please specify

Q16a: Still thinking about the same period of time, were you affected by anybody else's gambling during this time?

1. Yes
2. No > skip to demographics Q17

Q16b: How many other people affected you, due to their gambling, during this time?

ENTER NUMBER 1>

Q16c: What was your relationship with the other person/people who affected you due to their gambling?

1. Spouse, de facto or romantic partner
2. Close friend
3. Parent

4. Sibling
5. Child
6. Family member
7. Co-worker/colleague
8. Other, please specify

Group A and Group B

Section 9: Demographics

We will end the survey with a few general questions about you.

Q17: What is your gender?

1. Male
2. Female

Q18: In what year were you born?

Q19: What is your present marital status?

1. Single (never married)
2. Widowed
3. Divorced/Separated
4. Married
5. De facto
6. Other (please specify)

Q20: In which country were you born?

1 Australia

2 Other (please specify)

Q21: Do you identify yourself as Aboriginal and/or Torres Strait Islander?

1 Yes

2 No

Q22: What is the highest level of education you have completed?

1. No schooling
2. Year 8/equivalent or below
3. Year 9/equivalent
4. Year 10/equivalent
5. Year 11/equivalent
6. Year 12/equivalent
7. Technical studies, Trade Certificate, etc

8. Tertiary studies, Diploma, Advanced Diploma
9. Tertiary studies, Bachelor degree
10. Tertiary studies, Graduate Diploma, Diploma
11. Tertiary studies, Postgraduate including Masters, PhD
12. Other (please specify)

Q23: What is your current MAIN employment status?

1. Employed full-time (typically more than 35 hours per week)
2. Employed part-time
3. Employed casual
4. Self-employed (full-time equivalent)
5. Self-employed (part-time equivalent)
6. Self-employed (casual equivalent)
7. Unemployed
8. Home duties
9. Student
10. Retired
11. Pensioner
12. Other (please specify)

Q24: What is your approximate personal income level? Not including the income of a spouse, partner or family member (include income from all sources before taxes and any spending).

1. Negative/Nil income
2. $1–$199 weekly ($1–$10,399 per year)
3. $200–$299 weekly ($10,400–$15,599 per year)
4. $300–$399 weekly ($15,600–$20,799 per year)
5. $400–$599 weekly ($20,800–$31,199 per year)
6. $600–$799 weekly ($31,200–$41,599 per year)
7. $800–$999 weekly ($41,600–$51,999 per year)
8. $1,000–$1,249 weekly ($52,000–$64,999 per year)
9. $1,250–$1,499 weekly ($65,000–$77,999 per year)
10. $1,500–$1,999 weekly ($78,000–$103,999 per year)
11. $2,000–$2,499 weekly ($104,000–$129,999 per year)
12. $2,500–$2,999 weekly ($130,000–$155,999 per year)
13. $3,000–$3,499 weekly ($156,000–$181,999 per year)
14. $3,500–$3,999 weekly ($182,000–$207,999 per year)
15. $4,000–$4,999 weekly ($208,000–$259,999 per year)

16. $5,000 or more weekly ($260,000 or more per year)
17. I'm unsure/I'd rather not say

Q25: What is the total income level of ALL people living in your household? Including any other household member (include income from all sources before taxes and any spending).

As above

Q26: Do you currently live in an urban area (major city), a regional town/city or a rural area?

1. Urban
2. Regional town or city
3. Rural

Q27: Please enter the postcode of your current usual place of residence.

That brings us to the end of the survey. Thank for you taking the time to participate. If you would like to add any comments please do so below.

If you are experiencing discomfort you can contact Gambler's Help on 1800 858 858 or www.gamblinghelponline.org.au. These are free and confidential telephone/online help services that operate 24 hours a day, 7 days a week.

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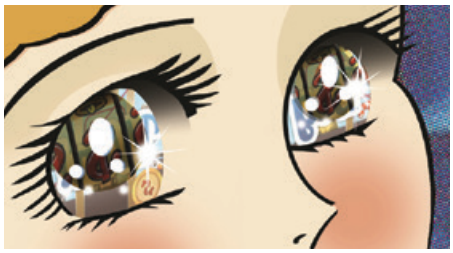

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