

**LOWER SEVERITY GAMBLING AND ASSOCIATED SOCIAL, HEALTH AND  
ECONOMIC CORRELATES**

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## **Dedication**

This thesis is dedicated specially to Almighty God, the source of my wisdom and strength. I will also like to dedicate it to my late father, Philip Odeloye, who inspired me to be who I am today. Dad, your legacy for education will be my guide forever.

## **Abstract**

Gambling poses a public health threat due to the harmful effects on individuals, family, and the community at large. Although most of the consequences experienced by problem gamblers are well documented, less is known about the experiences of other group of gamblers such as low severity gamblers. The purpose of this study was to examine the social, health and economic correlates for lower severity gambling (low and moderate risk) and to identify their sociodemographic characteristics. Binary logistic regressions were used to analyse data from the cross-sectional study of 4303 participants in Tasmania. When compared with problem gamblers, low and moderate risk gamblers were more likely to have better quality of life. Furthermore, low risk gamblers were highly educated, older female immigrants, with higher annual income, and less likely to experience problems with drug use, chronic illnesses, finances and life event. These findings have implications for health education and harm minimization.

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## Chapter 1: Introduction

### Overview of the Problem

The expansion of gambling opportunities among adults and adolescents in recent decades has resulted in changing participation and problem gambling prevalence rates world-wide (Williams, Volberg, & Steven, 2012). Gambling participation involves risking something of value with the anticipation of earning something of greater value (Korn, 2000). The common types of gambling include lottery tickets, bingo, poker, sports betting, electronic gaming machines, casino games and internet gambling (Christensen, Dowling, Jackson, & Thomas, 2015). Different factors, such as involvement in different gambling activities, frequency of participation, the amount of money spent, the time invested on gambling, sensation seeking, and loss of gambling control contribute to the development of gambling behaviour (Coventry & Hudson, 2001; McDaniel & Zuckerman, 2003).

**Prevalence.** The legalization of gambling in most of the industrialized parts of the world, such as the United States and Canada, has been linked to the increased prevalence of gambling activities (Ladouceur, Jacques, Ferland, & Giroux, 1999). Furthermore, gambling accessibility, availability of different ways to gamble, and socio-demographic characteristics, among other things, significantly influence prevalence rates (Abbott, Volberg & Ronnberg, 2004; Clarke et al., 2006). In terms of the global prevalence rates, research conducted for the Ontario Ministry of Health indicates that the standardized problem gambling rates across all countries range from 0.5% to 7.6% with an average percentage of 2.3% (Williams, Volberg, & Stevens, 2012). Specifically, the research found that low standardized prevalence rates were observed mainly in Europe (0.5% in

Denmark and 0.5% in the Netherlands), with higher rates experienced in Asia (Hong Kong (5.6%), Macau (6.0%) and Singapore (3.8%)). However, Australia (2.1%) and Canada (2.0%) had intermediate standardized rates (Williams et al., 2012). While little is known about the rate of gambling prevalence in low-income regions such as Africa, there is anecdotal evidence regarding gambling participation in activities such as lotteries, sport betting, and other wagering activities among youths (Dellis, Spurrett, Hofmeyr, Sharp, & Ross, 2013; Salaam, 2014).

### **Gambling Severity Levels**

**Non-problem gambling.** This category of gambling behaviour usually represents the level where there are no perceived harms associated with gambling, as assessed by the different types of gambling severity tools. It can also be referred to as recreation or responsible gambling (Blaszczynski et al., 2011). In terms of gambling prevalence, non-problem gambling represents the largest category among the gambling population (Christensen, Dowling, Jackson, & Thomas, 2015).

**Lower severity gambling.** In this study, lower severity gambling refers to low risk and moderate risk gambling. Lower severity gamblers are not problem or pathological gamblers because they experience minimal, lower or non-apparent levels of gambling consequences (Currie et al., 2006). Furthermore, attempts have been made to define low risk gambling limits in terms of frequency of play, total expenditure, and the percentage of gross income spent on gambling (Currie et al., 2017; Currie et al., 2006). While gambling prevalence studies have found lower severity gamblers to be a larger proportion than higher severity gamblers, the former has not received significant attention, especially on issues related to understanding their gambling exposure and the

associated negative consequences (Christensen et al., 2015; Currie, Hodgins & Cassey, 2013; Rodgers, Caldwell & Butterworth, 2009).

**High severity gambling.** In this study, high severity gambling will refer to problem, pathological gambling or gambling disorders. At this level of gambling participation, significant amounts of money and time are involved, resulting in higher rates of negative consequences (SA Centre for Economic Studies, 2005). Different approaches have been explored to operationalise high risk gambling, such as defining high severity gambling from a medical or mental health approach, on the basis of gambling behavior seen on a continuum, and also by examining high severity gambling from a harm perspective (SA Centre for Economic Studies, 2005).

### **Problem gambling classification systems**

*Medical or mental health perspective.* Primarily, medical or health perspectives are based on the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders criteria for pathological gambling (DSM- IV) or gambling disorders (DSM-V). Similarly, the South Oaks Gambling Screen (SOGS) is also based on this perspective. According to the medical and mental health approach, gamblers are classified as either problem or pathological gamblers or those with a gambling disorder. This has been widely accepted for diagnostic, research and policy making purposes in many countries where gambling is legalised (Volberg, Abbot, Rönnerberg, & Munck, 2008).

*Continuum perspective.* The continuum approach considers gambling to exist in different stages from non-problem gambling through low severity gambling, and the continuum ends with problem and pathological gambling. This is based on the

understanding that gambling behavior involves different levels of participation, and subsequently there are varying degree of accompanying adverse consequences (Dickerson et al., 1997). Non-problem or lower severity gambling represents the stage of the continuum where there are few or no perceived adverse consequences, while problem or pathological gambling have more severe adverse effects both to the gamblers and also to others around them. This approach also suggests that gamblers may move from one level of the continuum to another (Delfabbro, 2013).

*Harm perspective.* Several studies have examined the impact of harms caused by excessive gambling participation (Blaszczynski, Ladoucear, & Shaffer 2004; Room, 2005). People experiencing severe consequences have been referred to as problem or pathological gamblers (Abbott & Cramer, 1993). A significant relationship has been established between excessive gambling participation (higher severity gamblers) and negative consequences, such as addictive behavior, mental health disorders, and reduced quality of life (Blaszczynski, Ladoucear, & Shaffer, 2004; Gainsbury et al., 2014; Room, 2005). When gambling related harm was considered from the gamblers' and their affected others' (in the family) point of view, several domains of harm such as financial, relationship, psychological, physical and mental were identified (Langham et al., 2015; Li et al., 2017). While specific harms (or consequences) have been identified for high severity gambling, lower severity gambling consequences have been measured based on the scoring criteria as assessed by the gambling assessment tools. However, the specific correlates for harm among the lower severity gambling group has rarely been researched, as shown in the literature.

## **Knowledge Gap**

From a public health perspective, the concept of harm and consequently the prevention of gambling related harm can be optimally approached by focusing on the different levels of participation across the general population. This is because all levels of gambling severity are of potential health concern (Korn & Shaffer, 1999). By way of comparison to a similar research area (specifically alcohol research), studies have been extended to examine and understand the varieties of alcohol related harms (such as injury, motor vehicle accidents, partner abuse, impaired function at school and work, alcohol abuse and dependence) across the general population and not only among the chronic alcohol abusers (Currie et al., 2006). However, most current studies on gambling harm focus more on the impact of high severity gambling, leaving out the other stages such as low severity gambling which may also have considerable significance. Since gambling behaviors may be progressive (Delfabbro, 2013; el-Guebaly et al., 2015), it is important to assess its effects at all levels in order to develop strategies that will tackle the impacts at all stages and reduce the gamblers' progression to the more severe gambling stage. This information gap highlights the importance of shifting the focus of gambling research to the broader question of understanding the exposure and harms associated with all levels of gambling participation, rather than focusing only on high severity gamblers such as problem gamblers (Rodgers, Caldwell, & Thomas, 2009).

## **Purpose of Current Study**

As such, the purpose of this thesis was to examine the effect of social, health and economic correlates of lower severity gambling. Furthermore, this thesis also intended to identify the socio-demographic characteristics that influence the correlates for lower

severity gambling. The Tasmania study, which was a cross-sectional study of 4,303 participants, examined the gambling behaviors of adults aged 18 and above using the Problem Gambling Severity Index (PGSI) instrument. This is an archival data from the second social and economic impact study of gambling in Tasmania. This data was used to the examine relationships between lower severity gambling and the identified measures. This study was an exploratory analysis, and there was no detailed prior knowledge about any causal relationship between the measures used in this study and lower severity gambling. This thesis explored two research questions:

1. What are the social, health and economic correlates of lower severity gambling?
2. What sociodemographic factors influence the relationship between lower severity gambling and the above measures?

## **Chapter 2: Review of the Literature**

The literature review is focused on gambling behaviour by addressing it from three different levels of severity, namely non-problem gambling, low severity gambling and higher severity gambling. Other aspects of gambling such as assessment tools, prevalence rates, sociodemographic factors, and other factors affecting the prevalence rates are also addressed. The review also addressed how higher severity gambling has been conceptualized in the literature. In addition, studies of gambling related harm were addressed from four domains: financial, relationship, psychological, physical and mental harms. Unfortunately, studies on lower severity gambling and its associated harms are relatively scarce in the literature. Hence, this chapter outlines the need to shift the focus of gambling research to the broader question of understanding harms associated with lower severity gambling.

### **Gambling Behaviour**

Gambling participation has been a popular activity in human history, a practice that has become more prevalent in recent decades (Kalischuk, Nowatzki, Cardwell, Klein, & Solowoniuk, 2006). While it involves risking something of value with the expectation of gaining something of greater value (Korn, 2000), it also serves as a means of entertainment and social interaction for some participants, as well as source of livelihood for professional players (Gainsbury et al., 2014). Common forms of gambling activities include lotteries, bingo, poker, sports betting, electronic gaming machines, casino games and many more (Christensen et al., 2015). Internet gambling is another form of gambling that has recently attracted the interest of researchers (Holtgraves, 2009; Wood & Williams, 2007).

Conventionally, the role of the various gambling activities in the development of different levels of gambling behavior have been thought to be similar and comparable, implying that findings from one form of gambling activity can be extrapolated to others (Blaszczynski & Nower, 2002). However, in recent studies, it has been shown that different gambling activities attract different populations, and researchers have broadly recognized the unique role of certain types of gambling activities in the development of gambling related harms (Holtgraves, 2009; Petry, 2003). Electronic gaming machines (EGM), for instance, have been closely linked with the development of severe forms of gambling such as problem or pathological gambling in several contexts, while traditional lotteries have been regarded as relatively harmless (Dowling, Smith, & Thomas, 2005; Holtgraves, 2009). The differences in gambling activities are largely due to the level of skills involved, individual experience with the game, the speed of play in relation to the time of reward, the kinds of people that play the games, accessibility and availability to the gambling venue, the structure of the gaming venue and the frequency of play (Holtgraves, 2009). In light of these differences, it is important to understand and not overlook the unique characteristics of various gambling activities. However, it is possible that the harmful potential of some forms of gambling (such as the addictive potential of EGM) has been overestimated by many studies (Mizerski et al., 2002).

Apart from the role of different gambling activities in the development of gambling behaviour, other important factors include: frequency of participation, the amount of money and time spent on gambling, sensation seeking and the loss of gambling control (Coventry & Hudson, 2001; McDaniel & Zuckerman, 2003).

### **Non-problem gambling**

Defining non-problem gambling has been limited by the lack of clear features of what characterises gambling participation at this level. This category represent the largest population among the gambling populations (Christensen et al., 2015). Non-problem gambling usually represent the level of gambling participation where there are no perceived negative consequences as assessed by the different types of survey instruments used in gambling studies. This level of gambling participation is also referred to as recreational or responsible gambling (Blaszczynski et al., 2011). Although responsible gambling lacks empirical clarity regarding how to characterise it, certain guidelines (such as setting a budget for gambling, taking frequent breaks, and not gambling alone) have been proposed to assist in categorising gamblers that belong to this group (see Currie et al., 2006).

### **Lower severity gambling**

For the purpose of this review, low risk gambling, moderate risk gambling and at-risk gambling will be referred to as lower severity gambling. These different terminologies have been employed by various survey instruments used in gambling studies. Generally speaking, lower severity gambling represent the categories of gamblers that are not classified as problem or pathological gamblers because they have experienced minimal, lower or unnoticeable levels of gambling consequences (Currie et al., 2006). Interestingly, data on the prevalence of gambling severity reveals that there are a great number of lower severity gamblers than high severity gamblers, although the former have not received significant attention, especially on issues related to understanding exposure and the negative consequences associated with this level of

gambling participation (Christensen et al., 2015; Currie, Hodgins, & Cassey, 2013; Rodgers, Caldwell, & Butterworth, 2009).

Bear in mind that the way harm is defined by different studies is subjective, as studies differ in the criteria for defining severity sub-groups. In the light of harm endorsement, measures of either no harm, or the experience of one to two gambling problems or harms, are often used in defining gamblers of lower severity (Blaszczynski, Ladouceur, & Shaffer 2004; Currie et al., 2006; Currie, Miller, Hodgins, & Wang 2009; Weinstock, Ledgerwood, & Petry, 2007). For instance, Currie et al (2006), in a cross-sectional survey of a nationally representative sample, used risk curve analysis to define low risk gambling limits based on the frequency of participation in gambling activities, the amount of money wagered and the percentage of gross income spent on gambling in a year. According to Currie et al (2006), gambling between two to three times per month, spending not more than \$501 to \$1000 CAD per year and not wagering more than 1% of the family gross income was considered to be the limit for low risk gambling. Currie et al (2006) hypothesised that any individual endorsing gambling related consequences (assessed by the PGSI) in less than two areas of their lives can be considered a low risk gambler. The threshold of experiencing less than two negative consequences have also been employed in defining low severity participation in other addictive behaviour, such as hazardous drinking (Room, Bondy & Ferris, 1995).

Similarly, Weinstock (2007a) also employed the endorsement of at least one symptom from SOGS in identifying moderate gambling limits. Consistent with their initial study, Currie et al (2017) in a longitudinal study of two independent studies used similar definition of harms in determining low risk gambling limits. The gambling limits

obtained for low risk was a gambling frequency of no more than eight times per month, and spending CAD \$75 per month, as well as 1.7% of gross income (Currie et al., 2017). Possible explanations for differences in the low risk limits observed between the cross sectional (Currie et al., 2006) and longitudinal data (Currie et al., 2017) include higher level of gambling expenditure in the longitudinal data, changes in the gambling behaviour with time, differences in statistical and exclusion criteria, and changes in gambling expenditure assessment.

Although the use of low risk limits is significant in understanding the risk associated with increased gambling participation, Abbott (2017) posits that harm reduction measures will be more effective when all the factors that impact on gambling participation at all levels (individual, community and the society) are examined. While different levels of gambling participation (measured in terms of frequency and the amount of money spent) has been associated with a range of gambling related harms, developing gambling participation limits will require the inclusion of other factors such as different gambling forms and settings, consideration of specific groups or populations (such as youth, indigenous, migrants and past problem gamblers), and the use of comprehensive harm measures (Abbott, 2017; Currie et al., 2017).

### **High severity gambling**

For the purpose of this review, problem, pathological or gambling disorder will be referred to as high severity gambling. Several debates exist in the literature about how problem or pathological gambling should correctly be conceptualised. Nonetheless, it is clear that within a society there are group of gamblers who engage in gambling more intensely in terms of money and time and thereby experience greater consequences in

their gambling. This group are usually high severity gamblers (SA Centre for Economic Studies, 2005). Conceptualizing high severity gambling has been suggested to be a pragmatic approach that will provide an avenue to establish the factors that distinctly characterise this group of gamblers from other groups. Hence, several schools of thought have been attempted to explore what characterises high risk gambling. These include defining high severity gambling from a medical or mental health approach, gambling defined on the basis of gambling behavior as seen on a continuum, and also gambling from a harm perspective (SA Centre for Economic Studies, 2005). Gambling related harms will be examined in the latter part of this literature review. These different perspectives (schools of thought) are not mutually exclusive to each other, but they do reflect the diverse perspectives of different stake holders (Neal, Delfabbro & O'Neil, 2005).

**Medical or mental health perspective.** The American Psychiatric Associations Diagnostic and Statistical Manual of Disorders (DSM) fourth edition, for instance, viewed high severity gambling from a mental health approach and certain criteria (such as recurrent and persistent gambling behavior that results in significant impairment or distress) has to be met to diagnose the gambling behaviour (see American Psychiatric Association, 1994). Furthermore, the most recent edition, DSM (fifth edition) included conditions for classifying gambling disorders based on the level of severity in addition to the criteria for diagnosing gambling disorders (American Psychiatric Association, 2013, Section 312.31, Pages 585-6). Similarly, the SOGS' gambling assessment tool has also been used to classify gamblers, based on a medical perspective, as problem or probable pathological gamblers (Svetieva & Walker, 2008). Researchers and clinicians have

widely accepted this perspective for diagnostic, research and policy-making purposes in many countries where gambling is legal (Abbott & Volberg, 2006; Volberg, Abbott, Ronnberg, & Munck, 2008).

Also, some clinicians and researchers have strongly advocated for the medical model because they believe it helps gamblers to view their problem as a medical illness, thereby avoiding the feeling of guilt that usually accompanies being labelled as a problem or pathological gambler. In the same vein, others have supported the medical perspective for its ability to distinctly characterise high severity gamblers from other impulse control disorders as some problem gamblers may prefer the problem gambling distinction rather than the pathological gambling label as it avoids stigmatizing them (SA Centre for Economic Studies, 2005). Similarly, approaching problem or pathological gambling from a medical perspective affords the goal of intervention to be directed towards therapy (SA Centre for Economic Studies, 2005). Conversely, defining high severity gambling as a homogenous group is a major argument against the medical model made by some researchers. Blaszczynski & Nower (2002) have posited that rather than using simplistic terms such as addiction or lack of impulse control to describe high severity gamblers, there are three distinct pathways that explain the process of being a pathological or problem gambler. Furthermore, the fact that the medical model does not address the needs of lower severity gamblers is another significant drawback (Dickerson et al., 1997).

**Continuum perspective.** From the continuum perspective, gambling is perceived as a behavior that occurs at different levels of participation with accompanying adverse consequences (Dickerson et al., 1997). This approach views gambling participation as existing on a continuum ranging from non-problem gamblers through the low severity

gambling and ending with problem and pathological gamblers (Orford, Wardle, Griffiths, Spronston, & Erens, 2010). The non-problem or lower severity gamblers are characterized by experiencing no or few adverse consequences, while the problem or pathological gamblers have more severe adverse effects both to the gamblers and also to others around them. This approach also implies that gamblers may move from one level of the continuum to another as a result of the number of adverse consequences they experience (Delfrabbro, 2013). Those who support the continuum perspective have embraced it because it provides an avenue broad enough to acknowledge every individual involved in gambling participation (SA Centre for Economic Studies, 2005). Similarly, service providers have embraced the continuum approach because it puts attention on the number of adverse consequences (Tremayne, Masterman-Smith, & Mcmillen, 2001). The major criticism in the past concerning the continuum approach in identifying problem gamblers is that there is no practical evidence to support the gamblers' progression along the continuum (Sharpe, 2002). However, a recent longitudinal study found that a significant amount of transition occurs along the gambling continuum when observed from an individual level rather than the whole population level (El-Guebaly et al., 2015). Nonetheless, limited evidences exist in the literature to support what characterizes other forms of gambling sub types (such as lower severity gambling) in terms of gambling participation and the accompanying adverse consequences. Hence, there is a need to channel gambling research to explore different stages of the gambling continuum and to address the question of gambling related adverse consequences at each level of gambling participation (Rodgers, Caldwell & Thomas, 2009).

## **Gambling Assessment Tools**

There are various assessment tools (psychometric instruments) that have been developed to assess gambling participation. Usually, they have scores on a scale offering a range of values that describe the number of negative consequences for gambling. The most widely used assessment tools include the Diagnostic Statistical Manual (DSM), the South Oaks Gambling Screen (SOGS) and Problem Gambling Severity Index (PGSI). Although there are several other tools used for the identification of gambling behaviors, they all differ slightly based on some factors such as the perspective (school of thought) about problem gambling, the time frame used for gambling assessment, the method of survey administration, and the threshold used both for administering questions and for scoring (Williams et al., 2012). SOGS, for example is a 20-item questionnaire that employs some of the DSM-III criteria (a medical or addiction based model) such as preoccupation, tolerance, withdrawal and loss of control (Svetieva & Walker, 2008). Due to its simplicity, SOGS can be self-administered by a professional or a non-professional (Neal, Delfabbro, & O'Neil, 2005). Scores of three or four on SOGS indicates some problem with gambling, while five and above indicate probable pathological gambling (Svetieva & Walker, 2008). One of the main argument against SOGS is that it was developed and tested in a clinical setting but not with community samples (Gambino & Lesieur, 2006).

Contrary to the SOGS addiction model, the PGSI consists of nine scored items used to quantify gambling behavior based on the problem (harm) centered perspective. The PGSI has become one of the most widely used methods for population-based gambling problem assessment (Holtgraves 2009; McMillen et al., 2004). It has shown

good internal consistency, test and retest reliability with gambling measures, and has been validated in jurisdictions such as Canada, Australia, Europe and China (Currie, Hodgins, & Casey, 2013; Ferris & Wynne, 2001; Loo, Oei, & Raylu, 2011). The PGSI consists of different sections that address information about the type of gambling, frequency of gambling, amount of money spent on gambling and gambling related harm during the past twelve months (Currie, Miller, Hodgins, & Wang, 2009). Scores of one to two on the PGSI indicate low-risk gambling; scores between three and seven indicate moderate-risk gambling and a score of more than seven indicate problem gambling (Smith & Wynne 2002).

Recently, there has been ongoing debate about whether the PGSI measures harm or gambling behavior (Li, Browne, Rawat, Langham & Rockloff, 2017). Interestingly, studies examining the differences and similarities between gambling behavior and gambling harms are relatively scarce in the literature (Li et al., 2017). While the PGSI has been used by many gambling studies, Hodgins, Stea & Grant, (2011) have argued that the PGSI is a screening tool that assesses gambling problems (behavior that indicates a problem) rather than harm. However, the PGSI includes some measures of harms (adverse consequences) and gambling behavior symptoms (such as chasing losses and gambling with larger amounts), which are closely associated with gambling problems (Li et al., 2017). That said, what is important for gambling severity tool is the ability to map out the range of harms resulting from different levels of gambling participation (Blaszczynski 2009; Rodgers, Caldwell & Butterworth, 2009; Abbott, 2017). Other assessment tools that have been used in gambling literature include the Problem and Pathological Gambling Measure (PPGM), the National Opinion Research Centre DSM-

IV Screen for Gambling Problem (NODS), the Gambling Urge Scale (GUS), and the Victorian Gambling Screen (VGS). The PPGM tool assesses both gambling related harm and gambling behavior, while the VGS tool specifically measures gambling related harm. Similarly, the NODS was designed to identify disordered gambling according to the DSM-IV criteria, and to provide a stricter definition than the SOGS (Hodgins, 2004). GUS, on the other hand, was made by adapting the eight-item version used for alcohol urge, to measure the urge to gamble. GUS is suitable for use among clinical and non-clinical gamblers. It is also used to measure treatment outcomes and may predict relapses among problem gamblers (Abbott & Volberg, 2006; Smith et al., 2012).

### **Prevalence**

Outlined below are the findings from gambling prevalence studies that have been conducted in different areas of the world, Canada and Australia.

**Global Prevalence.** The legalization of gambling activities in most industrialized parts of the world such as the United States and Canada, has been found to significantly influence the increased prevalence of problem gambling from the late 1980's for close to ten years (Ladouceur, Jacques, Ferland, & Giroux, 1999). In general, the participation rate of adults in legalized gambling activities are reported at approximately 80% in most western countries (Doran & Young, 2010; St-Pierre et al., 2014; Vasiliadis, Jackson, Christensen, & Francis, 2013). In terms of the global prevalence rates, research conducted by Williams et al (2012) for the Ontario Ministry of Health found that the standardized problem gambling rates range from 0.5% to 7.6%, with an average percentage of 2.3% across all countries. Specifically, the research indicates that low standardized rates occurred mainly in Europe (0.5% in Denmark and 0.5% in the Netherlands). The highest

standardized rates were found in Hong Kong (5.6%), South Africa (6.4%), Macau (6.0%), and 3.8% in Singapore.

Furthermore, intermediate rates of 2.1% and 2.0% were observed in Australia and Canada respectively. It is also estimated that 70 to 90% of adults in North America have either frequently or occasionally participated in some form of gambling activity (Raylu & Oei, 2002). Although little is known about the rate of gambling activities in low-income regions such as Africa, anecdotal evidence suggests increased involvement in lotteries, sport betting, and other wagering activities among the youth (Dellis, Spurrett, Hofmeyr, Sharp, & Ross, 2013; Salaam, 2014).

**Canadian Prevalence.** Compared to other provinces in Canada, higher standardized prevalence rates of gambling and gambling related problems have been observed in Alberta (2.8%), New Brunswick (3.7%), and British Columbia (3.3%), a situation which can be attributed to the growing expansion of the gambling industry in these provinces (Williams et al., 2012). The lowest standardized rates were found in Quebec (1.3%) and Prince Edward Island (1.4%). According to the 2002 study by Marshall & Wynne (2003), about 19 million Canadians are reported to have gambled with about 1.2 million of them classified as at risk for problem gambling. This study also found that the proportion of at-risk gamblers were relatively higher in Manitoba (9.4%) and Saskatchewan (9.3%), which correlates to the fairly high past-prevalence of gambling problems (2.9%) observed in these two provinces by a 2005 study conducted by Cox et al., (2005). Also, an average rate of 2.2% has been observed for the past-year prevalence of low and moderate risk gambling among Canadian youths (ages 15 to 24). Ontario reported the highest rate (2.8%), while the lowest rate was found in British Columbia

(1.4%). Similarly, St-Pierre et al (2014) found that over 85% of Canadians have gambled in their lifetime.

The past-year prevalence of problem gambling in Canada has remained relatively constant in recent years with about 2.0% and 1.8% in 2005 and 2012 respectively (Cox, Yu, Afifi, & Ladouceur, 2005; Williams et al., 2012). While the prevalence of gambling related problems remained relatively low in most provinces in Canada (1% to 3.5%), rates tend to be higher in communities that are newly exposed to gambling opportunities or exposed to new gambling products (Cox et al., 2005; Shaffer & Hall, 2001; Welte, Barnes, Wieczorek, Tidwell, & Parker, 2002). For instance, the prevalence rates of problem gambling in Niagara Falls in Ontario, Canada increased from 2.5% to 4.4% in one year following the introduction of casinos in the community (Turner et al., 1999).

**Australian Prevalence.** Similarly, the rates of problem gambling increased in Australia from the late 1980s to early 1990s, reaching their peak in about a decade. This time frame coincides with the legalization of gaming opportunities in these jurisdictions (Ladouceur et al., 1999). A national survey in Australia found that about 1% to 1.1% of the adult population experiences severe levels and moderate levels of problems with their gambling participation respectively (Productivity Commission, 1999). The 1999 Productivity Commission gambling survey found average prevalence rates for problem gambling and non-problem gambling across states in Australia to be 2.1% and 2.8% respectively. The average standardized problem gambling rates observed in the Australian states appear to be similar, with lowest rates found in Western Australia (0.7%). Others were New South Wales (2.2%), South Australia (2.1%), Victoria (2.4%), and Australian Capital Territory (2.3%), Northern Territory (2.1%), Queensland (2.1%), and Tasmania

(2.0%). Interestingly, a higher standardized past-year problem gambling rate (6.4%) was observed in Tasmania in 1996.

While the prevalence data for low risk and moderate risk gamblers are relatively scarce, The Tasmania prevalence study in 2011 found that compared with problem gamblers, low risk gamblers (5.3%) and moderate risk gamblers (1.8%) were nearly eight and three times greater in proportion respectively (Christensen et al., 2015). Another related study that examined the prevalence of gambling in Victoria found that low risk gamblers (8.91%) and moderate risk gamblers were eleven and four times more in proportion than problem gamblers (0.81%) respectively. Similarly, a 56% increase in low risk gambling proportion was observed among Victorians between 2008 and 2014 (Hare, 2015; Hare, 2009). Furthermore, a longitudinal study observed that 2.7% of low risk gamblers and 14% of moderate risk gamblers transitioned to become problem gamblers after four years (Billi et al., 2014).

In stratifying problem gamblers according to the amount of EGM availability per 1,000 Australian adults, Delfabbro (2008) found that states with a higher concentration of EGMs also had a higher rate of gambling participation and problem gamblers than less concentrated states (Delfabbro, 2008). For instance, gambling survey data analyzed by Livingstone (2001) found that all local government areas in Victoria with high densities of EGMs tends to have higher gambling rates and problems. This situation is also true with the subdivisions of local government jurisdictions in Southern Australia, where the numbers of problem gamblers correlate with the geographical concentration of gambling activities such as EGMs (Livingstone, 2001).

## **Factors Affecting Prevalence Rates**

In general, studies have found that accessibility to gambling facilities, socio-demographic factors, and the type of gambling activities, among other things, contribute significantly to the prevalence of problem gambling (Abbott, Volberg, & Ronnberg, 2004; Clarke et al., 2006).

**Gambling Accessibility.** Recent decades have witnessed persistent increase to access all forms of gambling activities, a situation that is likely due to legalization of gaming opportunities especially EGMs and Casinos (Ladouceur, Jacques, Ferland, & Giroux, 1999). This has made gamblers to easily and frequently engage in different forms of gambling both on the internet as well as land-based gambling venues or casinos. Several accessibility factors that influence gambling prevalence include ease of access to gambling venues, variety of gambling products and awareness of these products (St-Pierre et al., 2014).

In the United States for instance, legalized gambling has been extended from two states in the 1980s to 38 states as of 2001 (Association of American Gaming, 2013). By 2012, about 464 casinos with slot machines operated in seventeen states in the US, with an additional 466 casino designations for Native Americans in 28 states; and 12,000 slots operated by non-casino venues were available in seventeen states (St-Pierre et al., 2014). Also, there has been increasing numbers of both EGM venues and total number of EGMs in most Australian states country (Markham, Doran, & Young, 2014; Young, Markham, & Doran 2012). Consequently, this proliferation has resulted in high rates of EGM gamblers because it can now be accessed in casinos, hotels, pubs and bars (Marshall & Baker, 2002).

Another recent contributor to gambling accessibility is internet gambling. This has made it very easy to access different wagering sports and gaming events on line, although the prevalence of internet gambling rate is relatively low (Wood & Williams, 2007). Furthermore, awareness to gambling sources and their supposed benefits has also increased through the promotion of gambling products in print and electronic media advertisement. As a result, people tend to become more aware of the availability and location of gambling products in communities and also portrays gambling as an acceptable recreational and economic activity, making gambling appealing to the general public. (St-Pierre et al., 2014).

Generally speaking, studies have shown higher prevalence of gambling rate and related problems in populations who have regular and easy access to gambling, a situation that has ignited concerns among researchers, socio-welfare groups, and policy change advocates (St-Pierre et al., 2014; Vasiliadis et al., 2013).

### **Socio-demographic correlates**

Several socio-demographic factors have been associated with non-problematic and problematic gambling behaviors: gender, age, marital status, income, and educational level are among the factors that have been found to mostly influence gambling behavior (Afifi, Cox, Martens, Sareen, & Enns, 2010); Tavares et al., 2010), all of which are reviewed below.

**Gender.** Although both males and females experience gambling behaviors, studies have found that males are more likely than females to be problem gamblers or to be at risk of problem gambling. A national, representative survey of Canadians found that the past-year prevalence rates of problem gambling in 2001 were 4.9% in males as

compared to 2.7% in females (Afifi et al., 2010). A higher prevalence rate was also reported among Finnish men (7.6%) compared to women (3.1% Nordmyr, Forsman, Wahlbeck, Bjorkqvist, & Osterman, 2014). Consistent with other studies, Blanco et al (2006) observed that the life time prevalence rate of pathological gambling was higher among American males compared to females (0.6% versus 0.2%). A similar trend has been observed among at risk or subclinical men compared to women. For instance, Huang & Boyer (2007) have reported a higher rate (3.3%) among Canadian younger males (ages 15 to 24 years) as compared to females (1.1%) for low and moderate risk gambling prevalence. The subclinical pathological gambling rate was also found to be higher among American males (6.8%) versus females (3.3 %) reported by Blanco et al., 2006.

In 2009, Hare found that 60% of Victoria males (Australia) were low risk gamblers. Conversely, the 2015 prevalence survey revealed that 51% of Victoria women (aged 35 to 44) were low risk gamblers (Hare, 2015). However, the gender distribution for moderate risk gamblers has consistently been found to be higher for the male gender, both in the 2009 and 2015 prevalence surveys. In 2012, Williams et al observed that young male Canadians were more likely to progress to become problem gamblers than young Canadian females, a situation consistent with the findings from Marshall & Wynne (2003) in which 8% of the males were at risk of becoming a problem gambler compared to a 5% risk for females. Similarly, Afifi et al (2010) also reported more male youths than female youths at risk of problem gambling. In contrast however, men over 70 years of age are less likely to be at risk of becoming a problem gambler compared to middle-aged women, who are more at risk (Blanco et al., 2006; Echeburua, Gonzalez-Ortega, de Corral, & Polo-Lopez, 2011).

For the purpose of this review, other socio-demographic factors will be discussed in the light of their general differences as well as gender differences. This is because a substantial number of studies in the literature addressed socio-demographic correlates of gambling from a gender difference approach.

**Age.** Although age at onset of participation in gambling is earlier in males compared to females, several relevant studies have reported that females tend to develop gambling related problems at a much faster rate compared to males, a process usually termed the “telescoping effect” in females (Afifi et al.,2010; Nelson, LaPlante, LaBrie & Shaffer, 2006; Nower & Blaszczynski, 2006; Wenzel & Dahl, 2009). Similarly, a particular study found that it took an average of 9.66 years for male gamblers to progress to a gambling addiction compared to the average age of 5.88 years in females. Interestingly, Nordmyr et al (2014) observed that the risk of experiencing problem with gambling is more prominent among males that are between 15 to 29 years compared to 50 to 64 years, but there was no significant difference found among females for these age groups. Furthermore, in terms of the age of participation, the available data shows that low risk gamblers are evenly distributed across the general population, while moderate risk gamblers are more likely to be aged 18 to 24 (Hare, 2015; Hare, 2009; Sproston, Hing & Palankay, 2012).

**Relationship Status.** Findings concerning gender differences as they relate to marital or relationship status in gambling prevalence appears to be very mixed. In a study comparing relationship status among men and women that are problem gamblers, Echeburua et al (2011) observed a greater percentage of single men (51.9%) compared to single women (15.7%). Conversely, the same study revealed a greater number of divorced

women (23.5%) and widowed women (13.7%) than divorced men (5.8%) and widowed men (23.5%). Another study revealed that the husbands in a relationship are more likely to be problem or pathological gamblers than the wives in relationship (Cheung, 2015), possibly explaining the reason why more females or wives are victims of domestic violence as a consequence of gambling problem experienced by their husbands or spouses (Echeburua et al., 2011; Dowling, Rodda, Lubman, & Jackson, 2014). However, Ladd & Petry (2002) have found no difference in marital status in terms of gender. In a study on the marital status among treatment seeking problem gamblers, more females than males were observed to be married or to live as couples. Grant & Kim (2002) have found that in the subclinical problem gambling group females are more likely to be separated, divorced or widowed.

**Level of Income.** A significant amount of studies has suggested that lower income levels and their correlates such as living in a disadvantaged environment are significantly associated with problem or pathological gamblers (Afifi et al., 2010; Buffalo, Welte, & Street, 2006). According to Schissel (2001), gambling can be seen as a regressive taxation system that takes more advantage of the low-income earners than the middle or higher income earners. Furthermore, unemployment or part-time employment, which are predictors of low income earnings have also been linked with problem gambling (Volberg et al., 2008; Massatti, Starr, Frohnapfel-Hasson, & Martt, 2016). Conversely, Hare (2009) has found that low risk and moderate risk gamblers are more likely to have a lower socioeconomic status, low gross personal income per week, and are unable to own a house with a mortgage.

The data on gender differences has shown that men who are problem gamblers are more likely to have a higher income than women. For instance, Afifi et al (2010) has observed that 25% of men who are problem gamblers compared to 13.1% women problem gamblers make \$80,000 or more, while 7.7% of the males as compared to 24% of the females belong to the low or medium socio-demographic level or class. In terms of how money is lost to gambling, a study found that men are more likely to have lost their financial savings as a result of gambling whereas women are more likely to have written bad cheques due to gambling (Grant & Kim, 2002).

**Level of Education.** Several studies have established the association of problem gambling and people with a low level of education, particularly high school education or less (Abbott & Volberg, 2004; Haydock, Cowlshaw, Harvey, & Castle, 2015; Shaffer, Hall, & Bilt, 1997). In terms of gender differences, there seems to be a contrast between the level of education and association with gambling. Echeburua et al (2011) have found that 7.7% of men who are problem gamblers completed a college education compared with 12.0% of women problem gamblers. In contrast, Afifi et al (2010) in a previous study observed that more men (11.4%) completed a university degree compared to women problem gamblers (4.7%). In 2009, Hare observed that low risk and moderate risk gamblers were less likely to have a tertiary education or were employed as managers or professionals. Conversely, a related study observed a reduced level of transition to high severity gambling with higher level of education (McCready, Mann, Zhao, & Eves, 2008).

## **Forms of Gambling**

A significant number of studies have also revealed that gender differences exist in relation to gambling participation and games. As a result of higher gambling participation in males, they tend to report a wider range of gambling involvement compared to females (Marshall & Wynn, 2004; Wenzel & Dahl, 2009). For example, a higher participation rate was reported in males compared to females (7.0% compared to 5.0%) for Video lottery terminals (VLTs) and betting on horse racing (5.0% versus 3.0%). Contrarily, females reported a higher rate (12% compared to 5.0%) for playing bingo (Marshall & Wynn, 2004). In addition to the wider scope of gaming activities or participation, males are more involved in games that require skills such as casino, cards, sport betting and blackjack whereas female are more likely to play games of chance such as bingo, lotteries and VLTs (Grant & Kim, 2002; Hing & Breen, 2001; LaPlante, Nelson, LaBrie, & Shaffer, 2006; Potenza et al., 2001; Wenzel & Dahl, 2009). Nordmyr et al (2014) also report that men engage more in online-based gambling and less land-based gambling participation (62.4 %). In contrast, females engage more in land-based gambling (75.2%) and less online-based gambling.

Furthermore, compared with non-problem gamblers, low risk and moderate risk gamblers have been found to participate and spend more money on activities such as gaming machines, table games, horse race betting and sports betting (Hare, 2015). Similarly, there is evidence of an increased participation in online gambling by low and moderate risk gamblers (Gainsbury, Russell, Hing, Wood, & Blaszczynski, 2013).

Overall, understanding the socio-demographic correlates of problem gambling may potentially help to target measures for gambling prevention, treatment and the

provision of adequate interventions for gamblers seeking help. For instance, problem gamblers compared with non-problem gamblers are found to be younger males, less educated, unmarried, of low income levels, and either unemployed or employed in low paying jobs (Afifi et al., 2010; Tavares et al., 2010). Of interest, what specifically constitutes the prevalent trend and the sociodemographic characteristics of lower forms of gambling behavior is relatively scarce in the literature. Very few studies have attempted to address lower severity prevalence trends as part of larger studies reporting on the higher severity gambling groups. However, going by the continuum model, a more proactive approach would be to understand the prevalence pattern and the socio-demographic correlates of lower severity gambling. This will help in early recognition, target interventions towards this specific group and subsequently prevent their progression into the high severity gambling along the continuum.

### **Gambling Related Harm**

While there are no agreed-upon cohesive definitions regarding gambling related harms, the concept of harm in the field of gambling is well established in the literature. The diversity in gambling related harm definitions is a reflection of the various disciplinary natures of gambling researchers (Langham et al., 2015). Despite this diversity, it has been generally agreed that the problems caused as a result of gambling adversely impact on the health, social and economic well-being of the gambler (Blaszczynski, Ladouceur, & Shaffer, 2004; Gainsbury et al., 2014; St-Pierre et al., 2014). Furthermore, the focus of gambling related harm has been extended to exploring the impact of gambling on others affected in the family, community and the society at large. For instance, Langham et al (2015) in a qualitative study to understand gambling related

harm identified some broadly identical domains of harms that cut across gamblers and their affected others and the community at large. This work was further extended by another study that employed quantitative methods to examine and compare the prevalence and degree of harms identified by Langham et al (Li et al., 2017). The harms identified by these studies include the financial, relationship, psychological, physical and mental domains. The approach towards harm for this thesis was addressed from the perspective of the domains mentioned above.

**Financial Harm.** Similar to other areas affected by harm, financial harms from gambling can impact both the individuals (the gamblers and affected others) and the society at large (Currie et al., 2009). From the gamblers' and affected others' point of view, indicators of financial harms include lack of money for surplus purchases, reduced savings that coincides with spending less on family needs or social activities, engaging in more additional jobs to meet needs, selling household items or goods, accessing more credit lines, and the inability to spend money on needs that have both immediate and non-immediate effects such as payment of insurance, car repairs, food and medication purchases as well as house care services (Langham et al., 2015). In another similar study observing the impact of financial harm, bankruptcy was observed to be the most severe form of harm common to individuals and the affected family (Li et al., 2017). This observation is consistent with studies that have linked bankruptcy with other consequences such as mental health and addiction, being single, suicidal attempts and increased relationship, legal and financial burdens (Grant, Schreiber, Odlaug, & Kim 2010; Hodgins, Mansley, & Thygesen, 2006; Komoto, 2014). While bankruptcy may be severe harm, it may not be a good correlator to gambling related harm at the individual

level because of its low prevalence and also due to being influenced by other factors (Li et al., 2017).

Furthermore, a study observed that low risk gamblers were less likely to spend money on recreational expenses, and they experience a reduction in their savings. According to this study, moderate risk gamblers also experienced similar types of financial harm but more frequently than low risk gamblers (Browne et al., 2016). In terms of gambling limits, evidence has found that low risk and moderate gamblers usually set limits on the amount of money they spend on gambling, but they tend to exceed the limits (Hare, 2015).

In monetary terms, Marshall & Wayne (2003) have observed that 62% of problem gamblers, 43% of at-risk gamblers, and 21% of low risk gamblers were more likely to spend above \$1,000 per year on gambling. Similarly, the estimate of gambling cost per year for an average Canadian more than 18 years of age was found to be \$515 (Marshall, 2011). Also, in United States, the annual cost of gambling social support services is estimated to be about \$5 billion. Although male and female problem gamblers are both affected by financial consequences, studies have shown that males are more likely than females to spend more on gambling (Marshall & Wynne 2003; Marshall, 2011; Wenzel & Dahl 2009). Furthermore, financial losses among problem gamblers has also been connected with shame and guilt (Echeburua et al., 2011; Yi & Kanetkar, 2011).

On a community level, the economic impact of gambling may be positive or negative. The economic burden includes increased numbers of problem gamblers, and an increased rate of unemployment, which in turn heightens unemployment compensation, increases the crime rate, debt, costs associated with criminal justice, as well as therapy

and welfare costs (Marshall & Wayne, 2003; Walker & Kelly, 2011). Specifically, Marshall & Wynne (2003) observed an increase in gambling wagers from \$2.7 billion to \$11.3 billion from 1992 to 2002, the period that coincides with increased gambling prevalence. Conversely, gambling participation has also been linked with economic growth through the provision of employment opportunities and increased wages, improved infrastructure values, and increased tax revenues for the government (Walker & Kelly, 2011; Williams, Rhems, & Stevens, 2011).

**Relationship harm.** The impact of gambling on relationships are sometimes observed as a direct consequence of financial harms through financial strain and unpaid bills (Langham et al., 2015; Marshall & Wynne, 2004). For instance, the stigma and shame from a family member's debts (financial harm) may be traumatic on a relationship (Mathews & Volberg, 2013). Financial loss also impacts negatively on the affected others in a relationship through emotional feelings such as anger, resentment, worrying about the future, shame, guilt and depression (Cheung 2015; Blaszczynski & Farrell, 1998; Dickson–Swift, James, & Kippen, 2005; Hodgins, Shead, & Makarchuk, 2007; Lorenz & Yaffee, 1989). Ciarrochi & Reinert (1993) observed that the effect of emotional pains on the spouse of a gambler may linger for years after the gambler began abstaining from gambling, a situation that may be partially attributed to loss or lack of trust in the relationship (Lee, 2002). Stress related physical health issues also arise as a result of the psychological strain imposed on the gamblers' spouses (Lesieur, 1998). Consequently, the children of problem gamblers are more likely to engage in behaviors that affect their health such as drinking, smoking and drug use (Jacobs et al., 1989). In terms of relationships, compared to non-problem and low risk gamblers, evidence has found

moderate risk gamblers to experience a reduced level of assistance from friends, family or neighbors and spending less time with people they care about. The affected others of moderate risk gamblers are also likely to feel conflict or tension in their relationships as a consequence of gambling (Hare, 2009). Similarly, the affected families of low risk gamblers also reported conflict in the relationship and spending less time at social events.

Furthermore, problem gambling has been linked with other several relationships impacts, including reduced amounts of time spent in relationship, distortion of relationship roles, lack or decreased level of trust, conflicts on the relationships, increased number of disagreements or arguments among partners, infrequent recreational engagement and family breakdown (Black, Shaw, McCormick, & Allen, 2012; Langham et al., 2015). From the affected family members` point of view, the neglect of responsibility in the house appeared to be the most severe relationship harm reported by this group (Li et al., 2017). Also, a heightened rate of child maltreatments and abuse, domestic violence, and victimizations as well as divorce were observed among families affected by problem gambling (Black et al., 2012; Dowling, Jackson, et al., 2014). In terms of relationship harm by gender, studies have found that females or women are more likely than men to report victimization from the gambling of their spouse (Echeburua et al., 2011; Dowling, Jackson, et al., 2014). A similar study that observed the characteristics of help seeking partners of problem gamblers found that most of the spouses seeking help are females who have been impacted in various ways such as by emotional distress, financial problems, and stress related health issues (Dowling, Rodda, et al., 2014).

**Mental and Physical health.** Several studies have revealed extensive association between problem gambling and mental and physical health. Specifically, for most studies that employed both male and female samples, there have been established substance use disorders, suicidal ideations, mood disorders, anxiety, and physical health problems such as headache, stomach ache, hypertension, tachycardia, angina, sleep disturbance and stress related issues (El-Guebaly et al., 2006; Morasco, Vom Eigen, & Petry, 2006; Newman & Thompson, 2007; Polenza, Steinberg, & Wu, 2005). Physical and mental health disorders such as loss of or reduced sleep, overeating, self-harm, suicidal ideations and needing emergency treatments have also been observed among the gamblers` affected others (Li et al., 2017). Contrary to the established literature, Afifi et al (2010b) in a study of Canadian women did not observe a strong association between problem gambling and physical health, except for fibromyalgia and headaches. However, a relationship was observed between women who are problem gamblers and suicidal ideations as well as mental health disorders.

Although further studies may be required to fully understand the underlying mechanism, Afifi et al (2010b) also proposed some mechanisms that may shed some light on the relationship between problem gambling and mental health disorders. These include problem gambling being a direct consequence of mental health disorder or vice versa, genetic predispositions being common to both mental health and problem gambling, and poverty playing a major risk factor for both problem gambling and mental health disorder. Similarly, internet gambling has been linked to poor mental health status among college students (Petry & Weinstock, 2007). Compared with non-problem gamblers, poor mental and physical health status was also found in older adults who are problem gamblers

(Erickson, Molina, Ladd, Pietrzak, & Petry, 2005). While data on mental and physical harm in relation to lower severity gambling is relatively limited, the available evidence suggests that compared with non-problem gamblers, lower severity gamblers appear to experience co-occurring diseases and mental health distress such as depression and anxiety disorders as gambling participation increases (Hare, 2015).

**Emotional or Psychological.** The emotional or psychological harms observed among gamblers, and their affected others include feeling of worthlessness and failure, severe distress, feeling of regret, shame, anger, hopelessness, and lack of safety (Langham et al., 2015; Li et al., 2017). Feelings of regret and hopelessness were considered to be the early emotional trauma signs from gamblers and their affected others, respectively (Li et al., 2017). Legal issues were also recognized as a likely consequence of emotional harm among gamblers and their affected others (Jacobs et al., 1989). Emotional problems have also been identified among parents who have children that are gamblers (Heineman, 1989). From moderate risk gamblers and their affected others' point of view, emotional feelings such as anger, hopelessness, distress, shame and regret have been observed (Hare, 2015).

As highlighted above, several studies have examined the impact of harms caused by excessive gambling participation. Given the significant impact of harm that is experienced by high severity gamblers, it appears that more comprehensive therapeutic interventions will be required for this group of gamblers (Gupta & Deverensky, 2000). Furthermore, harm reduction strategy may be beneficial for lower severity gamblers, by helping to prevent a progression to more severe forms of gambling with adverse consequences (Hodgins & El-Guebaly, 2000). However, what appears to be unknown are

the specific harms (or consequences) that differentiate between lower severity and higher severity gambling across domain of harms and sociodemographic correlates. This calls for a need to explore the consequences that characterize all levels of gambling severity, and identify their socio-demographic correlates.

## Chapter 3: Method

### Data Collection

All the participants completed the survey questionnaire through telephone interviews conducted by trained personnel. The questionnaire was adapted from prior gambling surveys used for state and national gambling prevalence (Productivity Commission 1999; South Australian Centre for Economic Studies 2008 National Centre for Social Research 2010). The survey comprised of a representative sample of 4303 people aged 18 years or older living in Tasmania, Australia (Christensen et al., 2015). These populations were drawn randomly from eight local governments (3,041 telephone interviews) and the rest of states samples (1,259 telephone interviews) based on the Social-Economic Indexes for Areas (SEIFA). The survey period was between 7<sup>th</sup> February and 3<sup>rd</sup> March 2011, although a pilot test was conducted between 20<sup>th</sup> and 23<sup>rd</sup> January 2011. A two-hour briefing session was organised for the 61 interviewers and supervisors involved in the administration of the survey. In addition, an in-field quality control procedure which included; end survey debriefing, field team debriefing, interviewers' validation in accordance to ISO 20252 standard, and interview to refusal ratio monitoring was employed. The overall participation rate was 40%, obtained by dividing the completed interviews by total number of participants contacted (both completed interviews and refusals). The major reasons for refusals were lack of interest in the survey, contacts were too busy and in some cases there were no reported reasons.

### Data Management

**Stratification.** Participants for this study were respondents chosen from eight local governments (LGA) and the rest of states samples. The factors that influenced how

these LGA's were chosen include; Social-economic indexes for areas (SEIFA scores) (where 1 is the most disadvantaged and 29 is the least disadvantaged), EGM related factors (LGAs with comparable rates of EGMs per person and LGAs with different rates of EGMs per person), and the chances of using random digit dialling to contact households based on Social Research Centre's (SRC's) experience. The social economic indexes reflect the social-economic status and it was computed based on some census variables such as income level, educational attainment and employment status. The LGAs were classified as either 'low' SEIFA LGA or comparison SEIFA (Table 1). The four LGAs with low socioeconomic status (low SEIFA scores) were Brighton, Break O'Day, Glenorchy, and Devonport, while the comparison LGAs (those with relatively higher SEIFA scores used as comparison) were Circular Head, Launceston Sorell, and Clarence. There were about 400 contacts (equivalent to 10% of the contacted households) in each LGA. The rest of state respondents were randomly selected from the local government apart from the eight LGAs.

**Table 1: Tasmanian Local Government Areas**

LGA	SEIFA rank	Persons aged 18+	People per EGM	Total interviews
Brighton	1	9,548	159	400
Break O'Day	3	4,738	105	342
Glenorchy	8	33,302	123	400
Devonport	9	18,213	79	400
Circular Head	17	5,777	116	301
Launceston	19	47,680	127	400
Sorell	22	8,944	163	401
Clarence	26	37,945	230	400

Source: Allen Consulting Group analysis. Note: Grey area indicates higher socioeconomic status.

**Data Weighing.** The responses of participants from the target LGAs and the rest of the states were weighed based on the two variables (Australian Bureau of statistics

2006b). These variables are the household structure (number of adults in the household) and selected demographic characteristics (age and gender).

**Sample Generation.** A ‘seeding’ process was employed to generate the phone numbers for the target LGAs. This involved the removal of the last two digits of a ten digits number of a randomly chosen Social Research Centre’s (SRC) proprietary landline data base, and the addition of two randomly generated new digits. The seeding process resulted in the generation of new ten digits contact numbers. Non-residential numbers were removed from these new generated contact numbers with the use of an electronic business listings (procedure known as “washing”). A Sampleworx database was employed to randomly choose active landline telephone numbers for the supplementary section of the survey.

**Respondent selection.** Participants used for the interview were adults, aged 18 years and above, residing in the household. In situations where a household has more than one adult, the person with the closest birthday was chosen for the interview (next birthday method). However, if the person with the next birthday was not available for the period scheduled for the survey, such individual was substituted with another adult in the household. The interview was conducted in English Language due to relatively small number of residents with limited English skills in the Tasmanian population.

**Call Procedures.** Several call attempts (up to six calls) were made to establish contacts with the respondents. With the exception of calls made by firm appointment, call attempts were either during the weekdays (period between 4:00pm to 6:00pm or 6:00pm to 8:00pm) or weekends (1:00 am to 5:00pm).

**Sub-sample strategy.** In order to make the best use of the data collected from the sample, sub-sampling strategy was utilized. This involved dividing the survey used for the study into main and supplementary sections. In the main survey (see Appendix A), participants were asked questions pertaining to important issues such as demographics, gambling participation, problem gambling severity, gambling patterns, motives and triggers. In the supplementary survey (Appendix B), a sub-sample (about 47% of the sample) was selected from the participants in the main survey. This sample represented all low risk, moderate risk and problem gamblers. In addition, about one out of three of the non-gamblers and non-problem gamblers were sampled in the supplementary survey (Table 2). Items included in the supplementary survey are; gambling measures (quality of life, substance abuse, life events, physical health, and financial difficulties), age of gambling onset, help seeking and family member problem gambling. The inclusion of the non-gamblers and non-problem gamblers in the supplementary survey was to serve as a comparison groups for the low risk, moderate risk and problem gamblers. The average duration for the survey administration was 16 minutes.

**Table 2: Subsample Survey**

Subsample	Main survey	Supplementary survey
Non-gamblers	N = 1491	1 in 3; N = 461
Non-problem gamblers	N = 2477	1 in 3; N = 814
Low risk gamblers	N = 227	1 in 1; N = 227
Moderate risk gamblers	N = 84	1 in 1; N = 84
Problem gamblers	N = 24	1 in 1; N = 27
Subtotal EGM Gamblers	N = 828	1 in 1; N = 828
TOTAL	N = 4303	N = 2027

Social Research Centre

**Analysis Plan.** A designed analytical plan was employed to reflect the random stratification of samples used for the data collection by employing SPSS (version 23.0) complex sample add on software.

## **Measures**

**Demographic Characteristics and Gambling Behavior.** Respondents investigated in the Tasmania gambling prevalence survey were assessed for socio-demographic characteristics associated with gambling participation and problem gambling severity. The demographic characteristics included were age, gender, occupational status, personal income, country of birth, highest education and house hold structures. The gambling behavior correlates assessed were gambling participation, frequency and expenditure.

**Gambling Severity.** Participants were categorized by gambling severity using the Problem Gambling Severity Index (PGSI; Ferris & Wynne, 2001). The PGSI consists of nine questionnaire items that assess various harms where participants report experiencing harms (such as; Have you bet more than you could afford to lose?) on a four points response scale; “never” = 0, “sometimes” = 1, “most of the times” = 2, “almost all the times” = 3. Higher scores indicate greater severity; score 0 = “non-problem”, 1-2 = “low risk”, 3-7 = “moderate risk”, 8+ = “problem gambling”. The PGSI has been adopted as the preferred measurement tool for population-level research in Australia (Neal et al., 2005). The PGSI has displayed good internal consistency, test-retest reliability, criterion validity with measures of gambling involvement, unitary dimensional structure, item variability, and concurrent validity with measures of problem gambling (Ferris & Wynne, 2001; McMillen et al., 2004; Neal et al., 2005).

**Quality of Life.** The quality of life of participants was assessed by the The World Health Organisation's tool Quality of Life-Bref (WHO-QOL-BREF). This is a 26-item measure that provides an overall total quality of life score and scores on four domains: Physical health (7 items), Psychological health (6 items), Social relationships (3 items), and Environment (8 items). Respondent indicate their responses on a 5-point scale based on their experiences in the past four weeks. The development of the Who-QoL-Bref reported good internal consistency with Cronbach alpha values for each of the four domain scores ranging from .66 to .84, and good discriminant validity (WHO, 2004).

**Substance Use.** Substance use was assessed using the World Health Organization's Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST: Who ASSIST Working Group, 2002). This is an 8-item measure designed to screen for substance use problems in primary health care settings. These items assessed the frequency of use of cannabis, cocaine, other stimulants, inhalants, sedatives, hallucinogens, and opioids. Respondents were asked how often they used the substance in the past three months on a 5 points scale (from Never to Daily or almost daily). The development of the ASSIST has been found it to be reliable, with reported Cronbach alpha ranging from .85 to .91 and test-retest reliability coefficients ranging from .58 to .90. (WHO, 2002). It has also been shown to be a good measure to screen adults with substance abuse problems.

**Alcohol Use.** The Alcohol Use Disorders Identification Test (AUDIT), a 10- item screening instrument has been invented for adults with problematic alcohol use (Babor et al., 1992). However, the third item from the AUDIT (AUDIT-3) was used to indicate how frequently participants have six or more drinks containing alcohol on one occasion

(Gordon et al. 2001). Respondents indicate their responses on a 5-point scale: (0) Never, (1) Less than monthly, (2) Monthly, (3) Weekly, or (4) Daily or almost daily. Gordon et al. (2001) found the AUDIT-3 produced a sensitivity rate of 1.00 and a specificity rate of .51 in identifying hazardous drinkers when compared with an AUDIT score of 8 or higher (Gordon et al. 2001). Non-hazardous drinking are responses of never or less than monthly, while monthly, weekly, daily or almost daily responses are regarded as hazardous drinkers.

**Life Events.** Participants were asked whether they had experienced the eight most stressful events on the Social Readjustment Rating Scale (SRRS: Holmes & Rahe, 1967) in the last 12-months. The SRRS was developed to identify the co-occurrence of stressful events and illness. It correlates well with other measures of stress and access to medical services (Rahe et al., 1970) and it has been used across different cultures (Komaroff et al., 1968).

**Health.** General health questions were asked on disease or disability prevalence including heart or angina attacks, high blood pressure or high cholesterol, diabetes, cancer, stroke or similar, lung conditions (including asthma), and physical disability. In addition, the SF1 general health status question (Ware & Sherbourne, 1992) was asked as a general indicator of self-reported health and wellbeing. For over fifty years, the SFI has been used both nationally and internationally across different settings (Bowling 2005), and it has been found to be an accurate predictor of mortality and morbidity when compared to other clinical and laboratory instruments (Finch et al., 2002; Kalantar-Zadeh et al., 2001; Wyshak, 2003). Respondents indicate their responses on a 5-point scale: (1) Excellent (2) Very good (3) Good (4) Fair and (5) Poor.

**Financial Difficulties.** A series of questions evaluating financial difficulties were asked of respondents. These items were drawn from a range of sources, including the financial difficulty items from the Gambling Treatment Outcome Monitoring System (GAMTOMS; Stinchfield et al., 2007). Other general questions including missed or skipped payments in the previous 12 months on a 5 points scale, behavior designed to obtain additional money in the previous 12 months on a 5 points scale, and gambling related debts with a response of Yes or No for any related debt were assessed.

### **Analytical Techniques**

**Data Cleaning.** The initial data analysis includes checking the assumptions for logistic regression. I ensured there were sufficient number of cases to independent variable, with minimum ratio of at least 10 to 1 for this analysis. Although there was no multivariate outlier, there were two univariate outliers in the expenditure analyses that showed significant influence on data variability. These were removed and the data checked for completeness and accuracy. However, the continuous variables (quality of life scale variables) were examined for skewness. Skewness was observed with quality of life- psychological and social variables and it was rectified by logarithmic-transformation in order to make the data conform more closely to normal distribution. However, the psychological and social variables were not significant in predicting the outcome variables before and after the logarithmic transformation. For each question in the survey, respondents have the options of don't know or refusal, these options comprised the missing values. The missing values for the quality of life (Qol) continuous variables were 4.98% (environment); physical (3.6%); psychological (2.4%) and social (19%). Replacing and not replacing the missing numbers did not affect the level of significance. Hence,

they were excluded from this analysis. No issues of multicollinearity was evident, and there was no statistical significance found among the interaction terms when linearity of logit was assessed.

The Complex Samples add-on module of the Statistical Package for the Social Sciences (SPSS Treatment of missing data 23.0) was used for this data analysis. The complex sample software computes the sample weight by allotting more weight to the observation that is likely to be selected, hence ensuring that the findings represent the population (Bell et al., 2012).

**Subscales.** From the raw data, subscales that comprised several items were also created. These include problem gambling severity scores (PGSI), quality of life scores, gambling motives subscale scores, and gambling triggers subscale scores. For each subscale, respondents with less than 30 percent of response were excluded to maximise statistical analysis.

**Combined dependent variable groups.** The second phase of this analysis combined moderate risk gamblers and problem gamblers in a single group as the reference group. This approach has been employed in previous gambling research simply to increase the sample size for purpose of comparison particularly because problem gamblers' group are quite small (Afifi et al., 2010; Crockford et al., 2008; Jackson, Christensen, Francis, & Dowling, 2016).

### **Study design**

To examine the social, health, financial and sociodemographic correlates of lower severity gambling, an exploratory descriptive design of the cross-sectional data was

employed. Exploratory design was selected because studies examining the impact of the above correlates on lower severity gambling are relatively limited in the literature.

**Initial data analysis.** Preliminary analyses comprised of frequency distribution calculations for each socio-demographic variable. Individual socio-demographic variables were computed for the Tasmanian gambling population and the average estimates were obtained. Further, the average gambling behavior (gambling participation, frequency and expenditure) for the Tasmanian population, (the LGAs and the rest of states) were also assessed. From the complex sample output, tabular data were presented as the weighted percentage of respondents in each cell, standard error of each statistic and frequency.

**Inferential Data Analysis.** Binary Logistic regression was employed to examine the prediction of lower severity gambling by gambling related harm measures (such as quality of life, life events, physical health, substance use, alcohol abuse and financial difficulties). Specifically, binary logistic regression was used because the outcome variable contained only two levels at a time. It predicts a binary (dichotomous) outcome variable that is with predictors that may either be categorical or continuous (non-linear association). The outcome variable in this study was low or moderate risk gamblers compared with problem gamblers (reference group) or low risk gamblers compared with combined group of moderate and problem gamblers as the reference. There were three logistic regression stages in this analysis. It is important to note that the variables were entered into the regression model manually because complex samples software did not provide options such as simultaneous or stepwise entry. The first stage involved predicting the outcome variable with individual socio-demographic factors. The socio-demographic characteristics included in the logistic regression model were:

1. Gender;
2. Age;
3. Children in the household;
4. Living with partner;
5. Currently in paid employment;
6. Annual income;
7. Country of birth; and
8. Secondary school completed.

Each socio-demographic factor was dichotomized for the purpose of ease of comparison (of their effects among the dependent variables) when used as predictors. Age for example was recoded into two groups; 18 to 44 years and 45 years and above. This mid-point age re-grouping helped to ensure significant representation of cases in each gambling severity category such that a group like problem gamblers had eleven cases in the 18 to 44 group and thirteen participants in the 45 and above group. A similar approach was employed with the income variable, however it appears that there were more participants in the \$0 to 64,000 across all the gambling severities. Other factors were dichotomized by bringing similar features together in a single group:

The recoded information for the socio-demographic factors is given below:

1. Gender (Male compared to female);
2. Age (18 to 44 years compared to 45 years and above);
3. Dependent children in the household (dependent children compared to no dependent children);
4. Living with partner (living with partner compared to not living with partner);

5. Currently paid employment (in paid employment compared to not in paid employment);
6. Annual income in AUS dollars (0 to 64,999 compared to 65,000 and above);
7. Country of birth (Australian compared to immigrants);
8. Secondary school completed (secondary school alone compared to additional qualifications)

The second stage involved the prediction of lower severity gambling (low risk or moderate risk compared to problem gambling and low risk compared to the combined group) by the social, economic and health measures. These measures were added individually to the regression model in order to examine their relationships with the outcome variables. Aside from the quality of life subscales, other categorical measures were recoded into dichotomous variables for ease of comparison. The quality of life subscales was added as a covariate, while the categorical variables were used as factors in the SPSS complex sample template.

The final stage involved the addition of the measures used in the second stage and socio-demographic factors. The sociodemographic factors were first added individually to observe the individual contribution (using the p value) along with the measures used in the study to predict the outcome variable. Sociodemographic factors with significant contributions were then combined along with the measures (as a set in the regression model) for the prediction of lower severity gambling. This different stage revealed the individual predicting effect for lower gambling severity.

**Logistic Regression Output.** The outputs from the logistic regression were;

***Pseudo (Nagelkerke) R squared.*** A similar measure that attempt to replicate the linear regression R square. R square explains the proportion of the variation in the dependent variable that is accounted for by the predictor variables.

***Standard error.*** Standard error of the coefficient estimate

***Confidence interval for odds ratio.*** The 95 percent confidence interval for odds ratio, labelled as Lower and Upper

***Categorical variable information.*** Displays the weighted information (count and percentage) for both dependent and independent variables in the regression model.

***Wald statistics.*** Squared ratio of the coefficient divided by its standard error

***Degree of freedom.*** Number of independent scores used to calculate the estimate.

***Odds ratio (ExpB).*** The increase or decrease (if the ratio is less than one) in odds of being in the predicted category when the value of the predictor variable increases by one unit, called the Exp(B) in the logistic regression output. The value of the odds ratio is used in the interpretation of the logistic regression result.

***Significance levels.*** Significance levels was also used to interpret the regression results. It is the level at which the null hypothesis is rejected, meaning the difference did not occur by chance. For this thesis, significance levels will be reported as \* =  $p < 0.05$ ,  $p = 0.025$ , or \*\* =  $p < 0.01$  nomenclature. These imply that there is only a 5%, 2.5% or 1% probability that the difference occurred by chance respectively. For results that are non-significant, there is a greater than five per cent possibility that the difference occurred by chance. Non-significance levels are denoted by (Ns) symbol in this study.

***Overall prediction accuracy (classification table).*** Indicates how good the model is able to produce correct predicted categories based on the values of predictor variable.

However, the prediction accuracy for each predictor variable was not available in complex samples output. Similarly, complex samples logistic regression does not report the result of the model fit.

### **Human Ethics Approval**

The approval for the primary data was given by the University of Melbourne Graduate School of Education Ethics Committee (Submission #'s 1135477.1/1135477.2). The primary researchers of the Tasmania prevalence survey approved the use of the anonymise data for this study. In conformity with the research policy, approval for this study was obtained from the ethics review board of the University of Lethbridge (#2015-085; Appendix D).

## **Chapter 4: Results**

In this chapter, the result of this thesis is presented in three sections. First, I will present the descriptive characteristics of the participants. Next, is the binary logistic regression results for the independent effects of the socio-demographic factors and the individual measures (social, health and economic). Finally, the combined effects of socio-demographic factors and the measures on the dependent variables (lower severity gamblers compared to problem gamblers) are presented.

### **Descriptive Analysis**

Table 1 presents the weighted percentage (average and standard error) and frequency of the demographic categories for the 2011 stratified survey of the Tasmanian population. The gambling population appeared to be evenly split between males and females (51.4% of men and 48.6% of women). Gambling is most common among people in three age groups: 70 or above (11.7%), 18-24 (10.8%) and 40-44 (10.0%) suggesting that both the young, middle and older adults participated in some form of gambling. People living in the household with low incomes (under \$25,000) were the most likely (36.4%) to have gambled in the past year. The most likely to have gambled were people in full time employment (43.3%) with tertiary education (29.1%), while the least were those looking for job (2.3%) and people with only primary school education (1.0%). Further, couples with children at home represent the predominant household structure among the Tasmania population (31.3%).

**Table 3: Participant Demographics**

Variables	Levels	Frequency	% weight (SE)
Gender	Male	2621	51.4 (1.5)
	Female	1682	48.6(1.5)
Age	18-24	245	10.8 (1.1)
	24-29	106	8.5 (1.4)
	30-34	171	8.4 (1.0)
	35-39	249	9.3 (1.0)
	40-44	326	10.0 (0.9)
	45-49	372	9.4 (0.8)
	50-54	426	9.9 (0.8)
	55-59	510	9.5 (0.7)
	60-64	518	6.9 (0.5)
	65-69	433	5.5 (0.5)
	70 or over	947	11.7 (0.7)
Highest Education	Primary school only	97	1 (0.2)
	Some high school	1254	26.8 (1.3)
	Completed high school	707	18.6 (1.2)
	Trade qualifications	743	15.0 (1.1)
	Tertiary education	1051	29.1 (1.5)
	Post graduate	347	7.5 (0.8)
	Other	80	2.1 (0.4)
Income (AUS Dollars)	Less than \$25,000	1525	36.4 (1.6)
	\$25,000 to \$39,000	760	19.0 (1.3)
	\$40,000 to \$64,999	796	23.6 (1.3)
	\$65,000 to \$79,000	343	9.6 (0.9)
	\$80,000 to \$129,000	313	9.1 (0.8)
	\$130,000 or more	89	2.2 (0.4)
Occupational status	Full employment	1510	43.3 (1.5)
	Part time	637	20.4 (1.4)
	Household duties	150	4.9 (0.9)
	Student	110	4.4 (0.8)
	Retired	1453	19.6 (0.9)
	Looking for work	93	2.3 (0.4)
	Unable to work/ Pension	278	4.2 (0.5)
	Other	64	0.8 (0.2)
Country of origin	Australia	3689	90.9 (0.7)
	New Zealand	61	1.1 (0.3)
	United kingdom	328	5.0 (0.5)
	Others	222	3.1 (0.4)

Variables	Levels	Frequency	% weight (SE)
Household structures	Couple without children	473	10.1 (1.0)
	Couple with children at home	1147	31.3 (1.4)
	Couple with children not at home	1182	14.9 (0.8)
	Single person	605	16.4 (1.2)
	Single with children at home	273	14.0 (1.5)
	Single with children not at home	452	9.3 (0.7)
	Group household	103	2.7 (0.5)
	Others	60	1.1 (0.3)

### Problem Gambling Severity Distribution

Problem gambling severity (average and standard error) weighted percentage and frequency assessed by the problem gambling severity index (PGSI) for the Tasmania population is shown in Table 2. The proportion of non-gambler, non-problem gambler, low risk gambler, moderate risk gambler and problem gambler were 34.8%, 57.4%, 5.3%, 1.8%, 0.7% respectively. Similar proportions were observed across the LGAs and rest of state.

**Table 4: Problem Gambling Prevalence**

Variables	Levels	Frequency	% weight
PGSI Categories	Non-gambler	1481	34.8 (1.1)
	Non-problem gambler	2452	57.4 (1.2)
	Low risk gambler	229	5.3 (0.6)
	Moderate risk gambler	85	1.8 (0.4)
	Problem gambler	24	0.7 (0.2)

### Socio-demographic distribution across dependent variables

The socio-demographic distribution across the dependent variables (low risk or moderate risk compared to problem gambler) is shown in Table 3. In addition, the table

also revealed the recoded information for the socio-demographic categories which was used in the logistic regression model.

**Table 5: Demographics (recoded) across low, moderate and problem gambling.**

Variable	Levels	Low risk	Moderate risk	Problem gambling
Gender	Male	148	66	15
	Female	81	19	9
Age	18 – 44	75	26	11
	45+	154	59	13
Income 64,000	0–	176	63	22
	65,000+	32	13	2
Education	Lower	128	51	15
	Higher	95	32	7
Job	Paid	124	47	11
	Nopaid	100	37	13
Marital	Partner	141	61	12
	Nopartner	81	23	10
Children	Dep	78	27	6
	No Dep	144	57	16
Country	Australia	215	73	22
	Others	14	12	2

Note. No Dep = No dependent children; Dep = Dependent children

### **Gambling activities, frequency and expenditure**

The most popular gambling activity was lottery (46%) with nearly half of the population participated in it the previous twelve months (Table 4). Almost one in four (24.3%) of the population purchased scratch cards and played keno games. Similarly, one in five of the population (20.5%) participated in electronic gaming machines (EGM), while bingo had the least participation (1.8%). In terms of gambling frequency, greyhound races (43.03) reported the highest average number of sessions followed by lotteries (26.51) and bingo (21.30). Table 4 also presents the average gambling participation, average annual expenditure on gambling and gambling frequency in the Tasmania population for the past twelve months were \$AUD1033.07 and 45.99 sessions,

respectively. The average expenditure and frequency of gambling in the low social economic status LGAs were generally higher than the comparison social economic status

**Table 6: Average (SE) Gambling frequency and expenditure in previous 12 months**

Variable	Types	Participation	Frequency	Expenditure
Gambling activity	Scratch tickets	24.3 (1.1)	12.66 (0.96)	82 (9)
	EGM	20.5 (1.1)	12.21 (1.4)	767 (140)
	Greyhound races	14.7 (0.9)	43.03 (7.51)	1556 (266)
	Lotteries	46.5 (1.2)	26.51 (1.03)	367 (26)
	Keno	24.3 (1.1)	16.50 (1.48)	255 (34)
	Casino games	5.9 (0.6)	5.01 (0.69)	387 (93)
	Bingo	1.8 (0.3)	21.30 (3.70)	383 (89)
	Sporting events	4.2 (0.5)	22.28 (9.70)	306 (66)
	Private games	3.2 (0.6)	10.38 (2.57)	193 (49)
	Total	64.8 (1.1)	45.99 (2.75)	1044 (102)

Note. SE is Standard Error

### **Prediction of Lower Severity Gambling (Low and Moderate Risk gambling)**

*Socio-Demographic factors.* As shown in Table 5, binary logistic regression was employed to examine the prediction of low and moderate risk by the socio-demographic factors (gender, age, dependent children, occupational status, marital status, personal income, country of birth and education). The factors used in the model were dichotomized (recoded). The results revealed that low risk and moderate risk gambling was not significantly predicted by socio-demographic factors.

**Table 7: Prediction of lower severity gambling by socio-demographic factors**

Sociodemographic factors	Low Risk (N,OR)	Moderate risk (N,OR)
Gender	Ns(253,0.448)	Ns(109,0.646)
Age	Ns(253,0.541)	Ns(109,0.507)
Household structure	Ns(244,1.208)	Ns(106,1.169)
Occupational status	Ns(248,0.726)	Ns(108,0.833)
Marital status	Ns(244,0.525)	Ns(106,0.848)
Personal income	Ns(232,0.561)	Ns(100,0.438)
Country of origin	Ns(253,0.555)	Ns(109,0.197)
Education	Ns(245,1.444)	Ns(105,1.598)

Note. N = number of cases; OR = Odds ratio; Ns = Non-significant; The reference category is problem gambler

*Quality of Life (Subscale) variables.* As shown in Table 6, results from this study found that relative to problem gamblers, low risk gamblers tend to have a better quality of life in all domains of health- physical health (OR = 1.158), psychological wellbeing (OR = 1.148), social relationships (OR = 1.151) and environment health (1.347). Similar trends were observed with moderate risk gamblers, with the exception of quality of life physical health factors (OR = 0.931). However, these associations were not statistically significant individually. The findings of this study further suggest that the relationship between quality of life and low risk gambling appears to be significantly influenced by sociodemographic characteristics. For instance, older adult (at least 45 years) immigrant women, with higher annual income and a better environmental wellbeing (OR = 1.467, indicating 47 percent increase in environmental wellbeing) were more likely to be low risk gamblers than problem gamblers. A test of the full model with the predictors was statistically significant,  $\chi^2_{(4,N=222)} = 11.7$ ,  $p = 0.016$ , suggesting that these predictors as a set reliably distinguished low risk gamblers from problem gamblers. The variance accounted for was modest with Nagelkerke R squared = 20.3%, while the overall prediction success was good at 87.6%.

**Table 8: Prediction of low and moderate risk gambling by Quality of life (scale)**

Variable	Demographics	Low Risk (N, OR) (CI)	Moderate risk (N, OR) (CI)
QOL Environment	None	Ns (241,1.347) (0.952-1.906)	Ns (104,1.080) (0.809-1.442)
QOL Environment*	Female, 45+, immigrants, \$65000+	( $\chi^2 = 11.742$ )**	Ns (89,1.151) (0.816-1.384)
QOL Physical		Ns (244, 1.159) (0.941-1.429)	Ns (104, 0.931) (0.751-1.155)
QOL Psychological		Ns (247, 1.148) (0.926-1.424)	Ns (103, 1.053) (0.815-1.361)
QOL Social		Ns (207, 1.151) (0.902-1.467)	Ns (81, 1.069) (0.859-1.331)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = Problem gambling; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05, \*\*P < 0.025; \*\*\* P < 0.01

**Quality of life- environment health variables.** Specifically, as shown in Table 7, low risk gamblers compared with problem gamblers seem to more satisfied (74 percent more satisfied; OR = 0.258) with their means of transportation especially for those that earn minimum of AUS\$65,000 and also live with their dependent children;  $\chi^2_{(2,N=221)} = 8.3$ , p = 0.04. The variance accounted for was good (Nagelkerke R squared of 67%) and overall prediction success was 87%. Further, low risk gambling was significantly predicted by high income earning female, that expressed significantly higher satisfaction (80 percent satisfaction expressed as OR = 0.193) with their access to health services;  $\chi^2_{(2,N=231)} = 12.2$ , p = 0.006. The variance accounted for was good, with Nagelkerke R squared of 76%, and the overall prediction success of 86.4%. Similarly, having enough money for needs was also predictive of low risk gambling (p = 0.043, OR

= 0.25). As a set, immigrant with dependent children who earn more and have enough money to meet needs were likely to be low risk than problem gamblers  $\chi^2_{(3,N=223)} = 12.7$ ,  $p = 0.007$ . The variance accounted for was small with Nagelkerke R squared of 15% and the overall prediction success of 84%.

Compared with problem gamblers, low risk gamblers were 92 percent more likely to be satisfied with the available information they need for their daily lives ( $p = 0.025$ ;  $OR = 0.085$ ). Similarly, low risk gamblers were more likely to acknowledge a satisfactory level (94 percent perception of satisfaction) of safety in their daily lives ( $p = 0.001$ ;  $OR = 0.06$ ). Furthermore, high income earning adults (at least 45 years) who live with their partner, and had better level of satisfaction with safety ( $OR = 0.06$ ), were more likely to be low risk gamblers  $\chi^2_{(3,N=222)} = 9.148$ ,  $p = 0.041$ . The variance was small with Nagelkerke R squared of 16.7%, and overall prediction success of 87.3%. Low risk gamblers were also 85 percent more likely to experience a healthy physical environment ( $OR = 0.15$ ;  $p = 0.017$ ). Similarly, high income females who experience healthy physical environment  $\chi^2_{(3,N=232)} = 9.7$ ,  $p = 0.045$  were also more likely to be a low risk gambler. The variance accounted for was small with Nagelkerke R squared of 12% and the overall prediction success of 88%. Other variables such as conditions of living, and leisure opportunity were not significant in predicting low or moderate risk gambling.

**Table 9: Prediction of low and moderate risk gambling by Qol environment**

Variable	Sociodemographic factors	Low risk (N,OR)(CI)	Moderate risk(N,OR)(CI)
Qol Environ. (Dissat. or satisfied)			
Transport	None	(251, 0.258)* (0.072-0.925)	Ns (109,0.407) (0.098-1.691)
	\$65,000+, dependent children	( $\chi^2= 8.342$ )*	Ns
Access to health services	None	Ns (251, 0.280) (0.073-1.081)	Ns (109,0.537) (0.140-2.058)
Access to health Services**	\$65000+, Female,	( $\chi^2= 12.2$ )* **	Ns
Conditions of living		Ns (253, 0.682) (0.106-4.389)	Ns(109,2.95) (0.47-8.20)
Qol Environ. (No or Yes)			
Safety in daily life	None	(252, 0.060)* ** (0.013-0.274)	Ns (109, 0.212) (0.039-1.147)
Safety in daily life***	45 years +, living with partner, 65,000+	( $\chi^2 = 9.2$ )*	Ns
Healthy physical environment		(251, 0.152)** (0.032-0.718)	Ns (109, 0.298) (0.046-1.907)
Healthy physical** environment	Female, 65,000	( $\chi^2 = 9.9$ )**	Ns
Enough money for needs		(252, 0.245)* (0.062-0.964)	Ns (109, 0.633) (0.122 – 3.290)
Enough money***	Dep. Children, 65,000+, immigrant	( $\chi^2 = 12.7$ )* **	Ns
Available info.		(250,0.09)*0.01-0.74)	Ns(108,2.9)(0.03-2.3)
Available info**	Immigrant, female	( $\chi^2 = 7.7$ )*	Ns
Leisure opportunity		Ns (253,0.86).24-3.1	Ns(109,1.57)(.34-6.7)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio. Reference category = Problem gambling, Qol = Quality of life; Dissat = Dissatisfied; Environ = Environment;

CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05, \*\*P < 0.025, \*\*\* P < 0.01.

*Quality of life- Psychological health variables.* As shown in Table 8, moderate risk gamblers relative to problem gamblers were 88 percent likely to enjoy life more (p = 0.02, OR = 0.125). Similarly, moderate risk gambling was predicted by immigrants who enjoyed life;  $\chi^2_{(1,N=109)} = 9.7$ , p = 0.006; R squared of 30% and overall success of 77%. Low risk gamblers also reported that they were 93 percent more likely to appreciate their body image p = 0.006, OR = 0.071). Furthermore, high income female with positive body image were more likely to be low risk gamblers relative to problem gamblers;  $\chi^2_{(2,N=230)} = 7.06$ , p = 0.001. The variance accounted for was small (Nalgelkerke R squared of 17%), and the overall prediction success of 88.2%. Other factors such as perceiving life being meaningful, experiencing negative feelings, and ability to concentrate, was not significant to predict low or moderate risk gambling.

**Table 10: Prediction of low and moderate risk gambling by Qol psychological health**

Variable	Socio-demographics	Low risk (N,OR)(CI)	Moderate risk(N,OR)(CI)
Yourself (Dissatisfied or satisfied)	None	Ns (252, 0.47) (0.126-1.809)	Ns (108, 0.788) (0.147-3.904)
Enjoyed life (No or Yes)	None	Ns (252, 0.254) (0.045-1.427)	(108, 0.125)** (0.021-0.734)
Enjoyed life (No or Yes)***	Immigrant.	Ns	( $\chi^2 = 9.86$ )**
Life is meaningful (No or Yes)		Ns (240, 0.358) (0.078-1.650)	Ns (107, 0.372) (0.076-1.810)
Ability to concentrate (No or Yes)		Ns (245, 0.532) (0.094-3.029)	Ns (107, 0.398) (0.066-2.398)
Negative feeling (Mostly or rarely)		Ns (252, 0.424) (0.117-1.534)	Ns (108, 0.866) (0.204-3.679)
Accepting self- image (No or Yes)		(252, 0.071)*** (0.011-0.466)	Ns (109, 0.368) (0.068-1.989)
Self-image	Female, \$65000+	( $\chi^2 = 7.057$ )*	Ns

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = Problem gambling; Qol = Quality of life; Environ = Environment; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01

**Quality of life- Physical health variables.** As shown in Table 9, moderate risk gamblers were 80 percent more likely to have enough energy to function daily (p = 0.04 OR = 0.2). Similarly, moderate risk gambling was predicted by immigrants with enough daily energy;  $\chi^2_{(1,N=109)} = 8.2$ , p = 0.013, R squared of 14% and overall prediction success of 74%). Low risk gamblers also reported that they were 79 percent more likely to get around well (p = 0.015, OR = 0.21). Furthermore, high income female adults (at least 45 years), who get around with things well more likely to be low risk gamblers;  $\chi^2_{(2,N=232)} = 11.9$ , p = 0.024. The variance accounted for was small (Nalgelkerke R squared of 16%), and the overall prediction success of 88.4%. However,

neither low risk gambling nor moderate risk gambling was predicted by experiencing physical pain, needing medical treatment to function, enjoying sleep, ability to perform daily activities and having capacity for work.

**Table 11: Prediction of low and moderate risk gambling by Qol Physical health**

Variable	Socio-demographics	Low risk(N,OR)(CI)	Moderate risk(N,OR)(CI)
Physical pain (No or Yes)		Ns (253, 0.792) (0.231-2.720)	Ns (109, 2.213) (0.534-8.845)
Medical treatment needed to function (No or Yes)		Ns (253, 0.933) (0.567-2.756)	Ns (109, 1.660) (0.411-6.706)
Enough daily energy (No or Yes)		Ns (253,0.249) (0.046-1.333)	(109, 0.200)** (0.420-0.751)
Enough daily energy No or yes	Immigrants	Ns	( $\chi^2 = 8.2$ )**
Ability to get around (poorly or well)	Female, 65,000+, 45+,	( $\chi^2 = 11.9$ )**	Ns
Ability to get around (Poorly or well)		(253, 0.212)** (0.061-0.753)	Ns (109, 0.448) (0.113-1.776)
Sleep (Dissatisfied or satisfied)		Ns (253, 0.535) (0.152-1.875)	Ns (108, 1.662) (0.413-6.687)
Ability to perform daily activities (dissatisfied or satisfied)		Ns (252, 0.418) (0.104-1.686)	Ns (109, 0.413) (0.098-1.746)
Capacity for work (Dissatisfied or satisfied)		Ns (250, 0.977) (0.285-3.356)	Ns (106, 1.866) (0.446-7.819)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = Problem gambling; Qol = Quality of life; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01

**Quality of life- social health variables.** Compared with problem gamblers, moderate risk gamblers seem to be more satisfied (88% satisfaction) with their personal relationship ( $p = 0.005$ ;  $OR = 0.124$ ). Moderate gambling was also distinguished from problem gambling by adult male, not living with partner, but experienced improved personal relationship;  $\chi^2_{(2,N=104)} = 12.5$ ,  $p = 0.019$ . The variance accounted for was good with Nagelkerke R squared of 40% and the overall prediction success of 81.2%. However, low or moderate risk gambling was not predicted by support from friends and sexual life.

**Table 12: Prediction of low and moderate risk gambling by Qol social health**

Variable	Socio-demographics	Low risk (N,OR)(CI)	Moderate risk (N,OR)(CI)
Qol social variables (Dissatis or satisfied)			
Personal relationship	None	Ns (248, 0.395) (0.108-1.444)	(107, 0.124)*** (0.029-0.53)
Personal relationship***	Male, not living with partner,	Ns	( $\chi^2 = 12.5$ )**
Support from friends	None	Ns (252, 0.276) (0.066-1.149)	Ns (108, 0.379) (0.090-1.594)
Sex life	None	Ns(252, 0.689) (0.173-2.751)	Ns (108, 0.868) (0.166-4.544)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = Problem gambling; Qol = Quality of life; CI = Confidence interval;  $\chi^2$ = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \* $P < 0.05$ ; \*\* $P < 0.025$ ; \*\*\*  $P < 0.01$ .

**Quality of life- Health scale variables in all domain (combined group as reference category).** In the second phase of this analysis, low risk gambling was compared with moderate and problem gambling (combined group as reference category). Low risk gamblers compared to the combined group tend to have a better quality of life in

all domains- physical health, psychological wellbeing, social relationships and environment health. However, this was only statistically significant for quality of life physical (p = 0.007; OR = 1.219) and environment (p = 0.001; OR = 1.272). The relationship between low risk gambling and better quality of life-physical and environment health variables was influenced by the socio-demographic factors (female, at least 45 years of age, live with dependent children, and additional qualification) when used together as a set to predict low risk gambling relative to the combined moderate and problem gambling group. Conversely, quality of life psychological and social health variables was not significant both as individual and as set with sociodemographic factors, to distinguish low risk gamblers from the combined group.

**Table 13: Prediction Low risk gambling by Qol scale variables**

Variable	Socio-demographics	Low risk (N,OR)(CI)
Qol Physical		(325,1.219) *** (1.055-1.408)
Qol Physical	Female**, 45+ additional qualification	(279, $\chi^2 = 12.9$ )*
Qol Psychological		Ns (326, 1.128) (0.965-1.317)
Qol Social		Ns (278, 1.087) (0.950-1.243)
Qol Environment		(322, 1.272)** (1.056-1.532)
Qol Environment***	Female, additional qualification, dependent children*, 45+, \$65,000,	(276, $\chi^2 = 18.6$ )***

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group; Qol = Quality of life; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

*Quality of life- Health individual variables in all domains (combined group as reference).* Compared with combined gambling group, low risk gamblers were

significantly more likely to report safety in daily life ( $p = 0.004$ ), satisfactory body appearance ( $p = 0.015$ ), satisfactory sleep pattern ( $p = 0.017$ ), and ability to get around well ( $p = 0.021$ ) as shown in Table 12. As a set, safety in daily life and sociodemographic factors such as female, minimum 45 years, additional education, Australian, at least \$65,000 annual income, no partner, but with dependent children;  $\chi^2_{(7,N=286)} = 19.4$ ,  $p = 0.015$ . Similarly, immigrants with satisfactory self-image distinguished low risk gambling from the combined group;  $\chi^2_{(1,N=306)} = 10.65$ ,  $p = 0.008$ . Further, Australian who gets around well, and earn at least \$65,000 annually predicted low risk gambling;  $\chi^2_{(2,N=303)} = 9.83$ ,  $p = 0.035$ . Furthermore, low risk gamblers were 63% more likely to experience satisfactory level of sleep ( $p = 0.017$ ; OR = 0.373).

Other variables that did not distinguish low risk gambling from combined group gambling include presence of physical pain, requiring medical help to function, available information for daily life, leisure opportunities, enough money for need, healthy physical environment, conditions of living environment, access to health services, perception of transport system, perception of enjoying or finding meaning to life, ability for daily activities, capacity for work, personal relationship, support from friends and sexual life.

**Table 14: Prediction Low risk gambling by Qol individual variables**

Variable (No or Yes)	Socio-demographics	Low risk (N, OR)(CI)
<b>Qol Physical</b>		
Physical pain		Ns (338, 0.447) (0.193-1.034)
Medical treatment required to function		Ns (338, 0.505) (0.237-1.297)
Enough daily energy		Ns (328, 0.337) (0.103-1.108)
<b>Qol Environment Information</b>		
Leisure		Ns (337, 0.639) (0.222-1.843)
Enough money for needs		Ns (337, 0.337) (0.103-1.108)
Healthy physical environment		Ns (336, 0.317)
Safety in daily life		(337, 0.152)*** (0.043-0.536)
Safety in daily life***	Female, Australian*, additional education, \$65,000+, no partner*, dependent children*, 45 years+	(256, $\chi^2 = 19.4$ )
Conditions of living place		Ns (338, 0.29) (0.061-1.436)
Access to health services		Ns (336, 0.430) (0.156-1.186)
Transport		Ns (336, 0.469) (0.195-1.129)
<b>QOL Psychological</b>		
Self-image		(336, 0.133)** (0.26-0.680)
Self-image***	Immigrant,	(306, $\chi^2 = 10.65$ )***
Enjoyed life		Ns(337, 0.779) (0.168-3.600)
Meaningful life		Ns (333, 0.676) (0.186-2.455)

Variable (Dissatisfied or satisfied)	Socio-demographics	Low risk (Ns, OR)(CI)
Qol Physical		
Sleep		(338, 0.373)**
Ability for daily activities		Ns (338, 0.758)(0.266-2.163)
Capacity for work		Ns (327, 0.619) (0.232-1.654)
Ability to get around (Poorly or well)		(337,0.364)**(0.154-0.858)
Ability to get around***	Australian*, \$65,000+,	(303, $\chi^2 = 9.83$ )*
QOL SOCIAL (Dissatisfied or satisfied)		
Your personal relationship		Ns (331, 1.347)(0.539-3.367)
Support from friends		Ns (336, 0.524)(0.170-1.611)
Sex life		Ns (270, 0.760)(0.290-1.994)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group; Qol = Quality of life; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45+ = at least 45 years; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

**Substance use variables.** In terms of substance use, low risk gamblers compared with problem gamblers were less likely to experience drug or substance use or abuse (Table 13). Specifically, low risk gamblers were almost eight times less likely to use or abuse opioids (p = 0.004; OR = 7.803), six times less likely for sedatives (p = 0.038; OR = 5.949), and five times less likely for cannabis (p = 0.035; OR = 4.835). As a set, non-use of opioids and higher income was predictive of low risk gambling compared with problem gamblers;  $\chi^2_{(1,N=232)} = 7.76$ , p = 0.001. The variance observed was large with Nagelkerke R squared of 67% and overall prediction success of 87%. Furthermore, non-use of sedatives for females was predictive of low risk gambling  $\chi^2_{(1,N=245)} = 11.67$ , p =

0.009. The variance was small with Nagelkerke R squared of 17% and overall prediction success rate of 90%. Similarly, as shown in Table 14, low risk compared with the combined group of moderate and problem gamblers were almost three times less likely to experience opioid (p = 0.016; OR = 2.633), and about five times less likely to experience sedative abuse (p = 0.028; OR = 5.278). Other substances of abuse that were not significant and tends to be less likely experienced by low risk gamblers were cocaine, nicotine, alcohol, and inhalants.

**Table 15: Prediction of low and moderate risk gambling by substance or drug use**

Substances (No or Yes)	Socio-demographics	Low risk(N, OR)(CI)	Moderate risk (N,OR)(CI)
Opioids		(253, 7.803)*** (3.910-9.756)	Ns (109, 9.289) (0.517-12.952)
Opioids***	65,000+	(232, $\chi^2 = 7.756$ )***	Ns
Sedatives		(253, 5.949)* (1.105-7.039)	Ns (109, 1.183) (0.201-6.961)
Sedatives***	Female,	(245, $\chi^2 = 11.67$ )***	Ns
Cannabis		(253, 4.835)* (1.121-7.847)	Ns (109,4.645) (0.962-7.440)

Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = problem gambling group; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income;

\*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

**Table 16: Prediction of low risk gambling by substance or drug use**

Substances of abuse (No or Yes)	Socio-demographics	Low risk (Ns, OR) (CI)
Sedatives	None	(338, 5.278)*(1.194-6.330)
Opioids	None	(338, 12.633)**(5.831-14.482)

Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

**Chronic Illness variables.** As show in Table 15, low risk gamblers compared with problem gamblers or combined group (moderate and problem gamblers) were significantly less likely (91 percent and 97 percent respectively) to experience chronic disease such as stroke (p = 0.013, OR = 0.089 and p = 0.031, OR = 0.037 respectively). A test of full model with two predictors as a set (no stroke, and higher income) was significant in distinguishing low risk gambling from problem gambling;  $\chi^2_{(1,N=244)} = 8.31$ , p = 0.045. The variance accounted for was very high (Nalgelkerke R squared of 90%) and the overall prediction success was 88.9%. Similarly, a test of full model with three predictors as a set (presence of lung disease, lower education and being an immigrant) was significant in distinguishing low risk gambling from problem gambling,  $\chi^2_{(2,N=244)} = 19.06$ , p = 0.001. The variance accounted for was very small (Nalgelkerke R squared of 11.4%) and the overall prediction success was 88.7%. Conversely, low risk and moderate risk gambler were 9 times and 7 times more likely to experience lung disease such as asthma respectively, when compared with problem gamblers (p = 0.004; p = 0.046 respectively). Other chronic conditions that were not statistically significant but tend to be less likely experienced by low or moderate risk gamblers compared to problem gamblers include diabetes, cancer, physical disability, and high blood pressure.

**Table 17: Prediction of low and moderate risk gambling by chronic illness**

Variable (Yes or No)	Low risk/Combined group (N = 338)	Low risk/Problem gambler (N = 252)	Moderate risk/Problem gambler (N = 109)
Stroke (Yes or No)	0.089*(0.01-0.804)	0.037**(0.037-0.498)	Ns 0.19(0.01-3.4)
Stroke***, \$65,000+	Ns	( $\chi^2 = 8.308$ )*	Ns
Lung disease (Yes or No)	Ns 1.802(0.475-6.833)	8.643*** (1.99-12.504)	6.740*(1.039-10.719)
Lung disease**, immigrant, less educated	Ns 1.802 (0.475-6.833)	( $\chi^2 = 12.159$ )*	Ns

Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group or problem gambling group; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income  
 \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

**Financial Difficulties variables.** When compared with problem gamblers as shown in Table 16, moderate risk gamblers were 9.3 times less likely to have experienced overdue or missed bills (p = 0.019; OR = 9.29). Relative to problem gamblers or the combined group, low risk gamblers were 8.7 times and 6.7 times less likely to avoid buying basic home needs such as groceries (p = 0.000 OR = 8.675; p = 0.003 OR = 6.666 respectively). Similarly, low risk gamblers when compared with problem gamblers (p = 0.007 OR = 12.8) or combined groups (p = 0.009 OR = 6.873), were 12.8 times and 6.7 times less likely to avoid paying taxes respectively. Also, compared with problem gamblers and combined group, low risk gamblers were 8.5 times and 6 times less likely to sell their properties respectively (p = 0.023 OR = 8.457; p = 0.020 OR = 5.97), 14 times and 6 times less likely to require welfare respectively (p = 0.003 OR = 14.33; p = 0.019 OR = 6.038). The sociodemographic characteristics that influence in favour of lower severity gambling and financial problem variables were female, at least 45 years old and

minimum AUS\$65,000. Although not statistically significant, other financial measures used in this study revealed that low risk and moderate risk gamblers tend to be less likely affected by inability to pay rent or mortgage, avoiding credit card payment, borrowing money, sought financial help from friend and engage in theft or fraud.

**Table 18: Prediction of low and moderate risk gambling by financial difficulties**

Variable (rarely or often)	Low risk/Combined group N =336, (OR)(CI)	Low risk/Problem gambler; N = 252 (OR)(CI)	Moderate risk/ Problem gambler N = 109(OR)(CI)
Missed Bills	Ns1.22(0.236-5.336)	Ns3.75(0.605-6.255)	9.292**(1.45-10.41)
Avoiding groceries	6.666***	8.675***(4.04-10.098)	Ns
Missed taxes	6.873***	12.8*** (5.02-15.92)	Ns2.64(0.34-5.58)
Taxes**, female, 45years+		( $\chi^2 = 9.14$ )*	
Taxes**, female	( $\chi^2 = 7.225$ )*		
Pawned	5.97**(1.34-7.77)	8.46**(4.36-11.162)	Ns1.68(0.3-9.45)
Pawned***, female, 45 years+, \$65,000+	( $\chi^2 = 19.18$ )***	( $\chi^2 = 11.874$ )**	
Need welfare (rarely or often)	6.038**	14.34*** (7.43-16.63)	Ns4.46(0.67-7.58)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group or problem gambling group; CI = Confidence interval;  $\chi^2$ = wald chi-square for the model, \$65,000+ = at least AUS \$65,000 annual income; 45 + = at least 45 years; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

**Life event variables.** While several life events measures were analyzed in this study, the only measure that was significantly found to predict that low risk gamblers was lack of personal injury. Specifically, low risk gamblers were 2.4 times less likely to report personal injury (p = 0.048; OR = 2.360) when compared with the combined group of moderate and problem gamblers (Table 17). Other life event measures that tend to be less likely but not significantly experienced by low risk or moderate risk gamblers compared

to problem gambler include death of spouse, divorce, imprisonment, death of a close family, marriage problem, dismissal from work, arrest by police or contact with police as a perpetrator.

**Table 19: Prediction of low and moderate risk gambling by life events**

Life events (Nor Yes)	Low risk/Combined group (N = 338)(CI)	Low risk/ Problem gambler (N = 253)(CI)	Moderate risk/problem gambler (N = 109)(CI)
Personal injury	2.360*(1.006-5.539)	Ns2.062(0.59-7.16)	Ns0.828(0.21-3.32)

Note. Ns = Non-significant; N = Number of cases; OR = Odds ratio; Reference category = combined gambling group or problem gambling group; CI = Confidence interval;  $\chi^2$  = wald chi-square for the model; \*P < 0.05; \*\*P < 0.025; \*\*\* P < 0.01.

## Chapter 5: Discussion

**Gambling participation and prevalence.** Among Tasmanians, almost two-third (64.8%) of the population in 2011 took part in some form of gambling activity within the past year. The gambling participation rate represents a continued decline in proportion from the previous years (1994 (72%); 1997 (89%); 2000 (82%); 2005 (85%), 2008 (71.7%); 2011 (64.8% Christensen, Dowling & Jackson., 2014). However, compared to the previous years, problem gambling severity rate in 2011 seems to be relatively stable with the previous years. Differences in the instruments used in assessing the prevalence pattern in Tasmania and differences in the conceptualizations of measures may influence the understanding of these prevalence trends (Christensen et al., 2015).

**Sociodemographic analysis.** Findings from this study suggest that lower severity gamblers were more likely to be older adult (at least 45 years), immigrant females, annual income above AUS\$65,000, higher education level, living with partner and dependent children. While these factors may be relevant, none of them appear to reach statistical significant in predicting lower severity gamblers individually. However, these findings support similar observations from other authors that identified sociodemographic factors to be predictors of lower gambling severity. For instance, being a member of a minority race or ethnicity has been posited to strongly predict at risk or low risk gambling (Levens, 2005). Similarly, a related study also observed that increasing education can decrease the chances of experiencing gambling related harm (McCready, Mann, Zhao, & Eves, 2008). Findings from a related research area (alcohol research) have suggested that middle-aged adults and older adults are more likely to be at-risk alcohol users (Blazer & Wu, 2009). Furthermore, significant findings that examined the demographic correlates of problem

gamblers have identified them to be young males, with less formal education and lower socioeconomic status (Ladouceur et al., 1999; Volberg et al., 2008; Winters, Stinchfeld, & Fulkerson, 1993).

**Quality of life analysis.**

*Transportation, Access to health services and Enough money.* The result of this study indicated that compared with problem gamblers, low risk gamblers were more likely to be satisfied with transportation, and the amount of money they possess to meet needs. As a set, low risk gambling was predicted by female, with high income and better access to health services. Similarly, dependent children, high income level and satisfaction with transport predicted low risk gambling.

The relationship between low risk gambling and high socioeconomic status (enough money for needs) appears to be a significant contributing factor for better transportation and accessibility to health services experienced by low risk gamblers. For instance, a low risk gambler with better socioeconomic state can afford to live in a healthy neighborhood that is accessible to consistent and reliable transportation infrastructure. Also, high level of income provides the means to pay for health services in situations where such services (such as filling prescriptions) cannot be accessed for free. Similarly, the higher level of income coupled with the presence of dependent children likely indicate that such household own a car or share one among multiple family members. Reliable mode of transportation means that low risk gamblers can access their health care providers easily, keep up with doctor's appointment and schedule regular checkups. However, the poor socioeconomic state associated with problem gamblers will impact negatively on their accessibility to transport and health services. A problem

gambler may likely reside in a disadvantaged neighbourhood (Afifi et al., 2010; Buffalo, Welte, & Street, 2006) that may be affected by shoddy transportation system- subways may not service areas on the fringes of a city, transit buses may not be reliable and problem gamblers may be unwilling to use the public mode of transportation due to anticipated or perceived public stigma (Hing & Russell, 2017). Furthermore, financial difficulties may impede a problem gambler from owning or financing a car, spending money for car repair, and accessing health services that are not free. As a result, they are likely to encounter high rates of missed checkups, missed or rescheduled appointments and poor health outcomes.

In a cross-sectional study that examined the barriers to the use of basic health services among women, financial barriers in terms of paying for health services was found to have a strong association with the use of curative health services such as medical treatment (Chiang, Labeeb, Higuchi, Mohamed, & Aoyama, 2013). This study also reported that access to health service was limited by structural barriers, majorly distance and transportation to health care facilities among women that were low and middle-income earners. Similarly, Bostock (2001) reported on the challenges confronted by people with low incomes in relation to transportation. According to the study, public transportation among low income earners is often not affordable, and as such they usually result to walking as a mode of transportation which may in turn restrict access to health care services and social networks. A related survey of adults living at or below the average poverty level also observed that significant proportion of respondents found it “very hard” to find transportation to their health care providers, resulting in missed or rescheduled clinic appointment (Ahmed, Lemkau, Nealeigh, & Mann, 2001). A similar

study on transportation barriers found that transportation challenges have resulted in cancer patients forgoing their treatments (Guidry, Aday, Zhang, & Winn, 1997). Furthermore, a study on low income patients found that those who drove cars for appointments were two times less likely to miss appointments as patients who use the bus (Silver, Blustein, & Weitzman, 2012). These reports could explain or supports the association between high income, low risk gamblers and their satisfaction with both the transport system as well as access to health services.

*Self-image, Ability to get around and Available information.* The result of this study found that low risk gamblers were more likely to experience better self-image, get around well, and have the information they need daily. As a set, low risk gambling was predicted by better self-image in females with high income. Similarly, older female, high income, and getting around well, predicted low risk gambling as a set. Female immigrant with available information were more likely to be low risk gamblers than problem gamblers.

Self-image (self-worth) is a mental perception of self that results in physical or external appreciation (Markwick & Sage, 1997). It is mostly influenced by appraisals from others, comparison of self with others and individual's mental and physical perception of self (Falci, 2011). Relative to problem gambler, low risk gamblers' self-image is likely enhanced through good perception of self and positive appraisal from others, because their level of gambling participation is perceived as being recreational with significantly lower rate of public stigma (Hing, Russell, Gainsbury, & Nuske, 2016). Furthermore, it is also possible that low risk gamblers spend less time on gambling, more time and money on lifestyle habits that reinforce their positive body image such as

spending quality time on regular exercise and recreational activities besides gambling, making healthy food choices, avoiding stress through relaxation, personal hygiene (Markwick & Sage, 1997), understanding and focusing on their strengths. Consequently, this will likely create a channel for information they require daily through learning about their own strengths, appreciating feedback from others, broadening their understanding and potentially encouraging healthy relationships that will promote self-growth and development (Roman, Cuestas, & Fenollar, 2008). With available information at their disposal, accomplishing task and getting around will be much easier.

Conversely, a problem gambler's self-image is likely contingent on their occasional big wins (Volberg, Reitzes, & Boles, 1997), meaning that they are more likely to suffer significantly low self-image with frequent losses. In addition, problem gamblers are more likely to experience poor appraisal from others because of public stigma attached to their gambling participation. Other factors such as poor socioeconomic state, low level of education (Afifi et al., 2010), poor personal hygiene (Markwick & Sage, 1997) may also threaten their self-image. In order to protect self-image, a problem gambler may respond with defensive reactions such as disengaging or dismissing positive feedbacks from people around them and declining support from their social network. Such reactions can create barriers against learning new skills, prevent the acquisition of information needed for daily living, and may also discourage potentially supportive relationships (Vogel, Wade, & Hacker, 2007). Ultimately, failure to learn from difficulty or feedback, coupled with their high rates of hopelessness or regret (Li et al., 2017) may impact on getting around and accomplishing tasks.

To further support these ideas, several studies have researched into factors that impact on self-image and mastery. For instance, a study that explored the association between gambling severities and self-esteem found that relative to non-problem gamblers, problem gamblers experience low scores on self-esteem rating. This study further suggests that factors in the lives of problem gamblers such as early age of gambling onset, substance abuse comorbidity, low level of income and education appear to be the platform for their low self-esteem (Volberg, Reitzes, & Boles, 1997). Another study by Hing & Russell (2017), found that problem gamblers suffer from anticipated self-stigma because the public attach a range of negative labels to people with gambling problem, perceive them as being disorganised, and holds biased impression about them. Consequently, self-stigmatizing beliefs can result in declining social support and help, avoiding or withdrawing from treatment, poor psychological health, difficulties in achieving goals and poor social relationships (Vogel, Wade, & Hacker, 2007). Findings have also identified that persons with low socioeconomic status may experience low self-esteem, reduced self-mastery and increased hostility (Blacksher, 2002). The association between being physically active and self-esteem has also been documented in the literature (McAuley et al., 2005; Sani et al., 2016). In terms of time management and self-image, a study reported a positive correlation and concluded that time management and high level of self-image will ultimately result in better academic performance (Roman, Cuestas & Fenollar, 2008).

***Healthy physical environment, Sleep and Safety.*** The result from this study observed that low risk gamblers were more likely to experience a healthy physical environment, sleep better and have a satisfactory level of safety compared with problem

gamblers. Further, female immigrants with healthy environment, and adults with high-income, who experience satisfactory level of safety were more likely to be low risk gamblers than problem gamblers.

Many aspects of physical environment that can impact on health and safety include air and water quality, physical design of a house, quality heating system, sanitation, access to recreational resources and affordable healthy foods, and the type of neighbourhood (National Research Council and Institute of Medicine of the National Academies, 2013). One possible explanation for this finding is that compared with problem gamblers, low risk gamblers are more likely to invest less time on gambling (Volberg, Reitzes, & Boles, 1997), and consequently more time on practices that impact positively on their environment and health such as maintain a clean environment, regular recycling, conduct home assessments and modifications such as smoke and carbon monoxide detectors, timely and proper disposal of garbage, and awareness of normal bedtime pattern. Similarly, low risk gamblers because of their better socioeconomic state (relative to problem gamblers) are more likely to reside in an quiet and peaceful neighbourhood, with supportive infrastructures such as efficient transportation, access to healthy food choices, access to recreational resources, and streetscapes designed to prevent injury. They are also likely to live in homes with better air quality, functioning heating and cooling system, and proper soundproof to prevent noise. All these measures will likely reduce or eliminate safety hazards, promote healthy sleep at home and ultimately impact positively on their general wellbeing (LaReau, Benson, Watcharotone, & Manguba, 2008).

Contrary to low risk gamblers, problem gamblers because of their low socioeconomic status (Afifi et al., 2010) are more likely to reside in socioeconomically disadvantaged neighborhoods (noisy and violent prone) and houses (or shelters) that lack necessary safety infrastructure such as proper heating and cooling system, good lightning, well-designed house with sufficient space, sound proof for noise control, and functioning smoke and carbon detectors (Buffalo, Welte, & Street, 2006). Also, because problem gamblers spend more time on gambling (Volberg, Reitzes, & Boles, 1997), they tend not to follow a healthy sleep cycle or embrace practices that impact positively on safety. Similarly, problem gamblers' behavior is associated with high rates of smoking, alcohol abuse, drug and substance use, hopelessness, guilt, and stress, that can result in unhealthy air quality, poor personal hygiene, increased safety hazards (such as trip or slip hazards, road accidents), and altered sleep patterns (Ledgerwood & Downey, 2002; Langham, 2015)

***Energy needed to function, Life enjoyment and better personal relationship.***

Relative to problem gamblers, moderate risk gamblers were found to experience better energy level to function, thrive in their relationships and ultimately enjoy life. Immigrants who enjoy life or experience energy to function were more likely moderate risk gamblers. Similarly, better personal relationships for males without partner predicted moderate risk gambling.

Studies have found that when people participate in what they enjoy doing, they experience benefits such as enhanced physical health, better relationships and increased performance or function (Huppert, 2009; Lyubomirsky, King, & Diener 2005). This may possibly be the case for moderate risk gamblers. My assumption is that moderate risk

gamblers engage in gambling activity in a passionate but controllable manner. Such passion produces a source of motivation to engage in gambling activity willingly, without conflicting with other life activities. For moderate risk gamblers, their passion for gambling will likely produce the energy needed during and after their participation in gambling. While they may be at risk of experiencing negative consequences, gambling at the moment is regarded as a happy and enjoyable activity (Lyubomirsky, King, & Diener, 2005). Hence, they tend to enjoy the moment, feel happy and perhaps extend the pleasurable experience to their personal relationships.

To explain the role of passion in regards to engagement in an activity, Vallerand (2012) examined the dualistic model inherent in passion. This model proposes that there are two types of passion, namely harmonious and obsessive. Harmonious passion occurs when an individual participates willingly in an activity that is considered important with a sense of volition and personal endorsement about the activity. With such passion, the activity will be considered significant (in terms of money, time and space given to participate in such activity) but it is not overpowering or uncontrollable. Consequently, the level of participation or engagement in such activity produces positive experiences during and after the task, resulting in psychological wellbeing such as pleasure, fun, enjoyment and healthy relationships. On the contrary, obsessive passion results when an individual engages in an activity in an uncontrollable fashion, because their self-image is attached to it. This leads to persistent urge to engage in the activity, resulting in negative consequences such as poor emotional experiences, decreased energy level, withdrawal from relationships, and conflicts with other important aspects of life.

The above discussion on the dual role of passion appears to match with studies that examined role of passion as it relates specifically to gambling. It was inferred that gamblers with harmonious passion experienced positive effects such as pleasure, fun, and enjoyment. Similarly, harmonious passion was found to be unrelated to problem or pathological gambling. Conversely, those with obsessive passion experienced negative outcomes such as anxiety, guilt, withdrawal from relationships, and gambling related harms (Philippe, Vallerand, & Lavigne, 2009; Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004).

Furthermore, relative to problem gamblers, moderate risk gamblers are more likely to spend more time and money on other aspects of life that makes them feel that life is enjoyable. For instance, a moderate risk gambler who is not living with any partner or who is an immigrant is likely to be more interested in spending time to build significant social network with other people. This network can also serve as a source of inspiration and encouragement whenever they suffer significant gambling consequence (Berkman, Glass, Brissette, & Seeman, 2000; Brummett et al., 2001; Uchino, 2006). However, for problem gamblers, periods of losses (as a result of gambling) will result in negative emotional outcomes, loss of energy and withdrawal from relationships (Hodgins & Kness, 2002). Similarly, a problem gambler is not likely to build significant personal relationships because of the fear of stigmatisation or rejection, and not been able to devote quality time to nurture relationships (Hing, Russell, Gainsbury, & Nuske, 2016).

*Quality of life analysis (combined group as reference category).* Specifically, the results obtained when low risk gamblers were compared with problem gamblers were similar (in terms of the direction of association) with the outcome obtained when low risk

gamblers were compared with the combined group. However, there were differences based on the significant levels. Variables such as having the needed information, having enough money for daily needs, experiencing healthy physical environment, accessibility to health and satisfaction with the transport system were not significant to distinguish low risk gambling from the combined group, although the direction of association or correlations between these variables and low risk was positive. Another major difference is that the strength of relationship was higher when low risk was compared with problem gamblers than low risk compared with the combined group. A possible explanation is that the combined group represent two groups with some similar or different attributes which may in turn influence the strength of relationship as well as the level of significance. The sociodemographic variables common to both quality of life phases of analysis include female gender, at least AUS\$65,000, at least 45 years, and living with dependent children. However, low risk gambling compared to problem gambling was influenced by living with partner and being an immigrant while advanced education, influenced the relationship between low risk gambling and the compared group.

**Substance use analysis.** Results of this study found that low risk gamblers (but not moderate risk gamblers) compared with problem gamblers were less likely to use or abuse opioid, sedative and cannabis. It is possible that gaming machine ergonomics and unhealthy physical environment contributes to the use or abuse of pain medications (opioids) among problem gamblers. The factors that relate to machine ergonomic include prolonged periods of abnormal posture and repetitive movement leading to neck, limb and back pain, wrist and finger pain as a result of pushing the spin button, and eye strain due to regular staring on the screen. Conversely, electronic gaming machines might be a

recreational activity for those with physical pain or mobility issues can engage in (Cousins & Wicher, 2007). Furthermore, increase sedative (sleep medications) use among problem gamblers may be associated with sleep problem (as observed in this study), anxiety and stress, while the use or abuse of cannabis is likely due to its ability to enhance concentration (Bhattacharyya & Schoeler, 2013; Langham et al., 2015)

However, studies have identified several mechanisms to explain the relationship between drug or substance dependence and gambling problem. For example, it has been reported that both gambling problem and substance use disorder tend to share similar trajectory by co-occurring with psychiatric disorders such as depression or anxiety and personality disorders (Wanner, Vitaro, Ladouceur, Brendgen, & Tremblay, 2006), Similarly, both gambling problem and substance use disorder sometimes present together as primary addiction where gambling problem may precede substance abuse problem or vice versa (Potenza, Steinberg, & Wu, 2005). Other studies have suggested that there may be behavioral interaction whereby substance abusers engage in gambling as an alternative (Duhig, Maciejewski, Desai, Krishnan-Sarin, & Potenza, 2007; Stinchfield, Kushner, & Winters, 2005). In another study, some of the reasons for gambling given by participants in a substance abuse treatment centre included using substances such as cannabis to celebrate after a big win from gambling, and making money from gambling to buy drugs (Spunt, Lesieur, Hunt, & Cahill, 1995). A particular study found that individuals with both drug and alcohol problem were more likely to be problem gamblers than those with only alcohol or drug or no drug or alcohol problems (Ledgerwood & Downey, 2002). Similarly, studies have found that substantial number of patients in opioid treatment centres had some level of gambling problem, a situation that may be more statistically

significant among males (Castren, Grainger, Lahti, Alho & Salonen, 2015; Ledgerwood & Downey, 2002). In terms of sociodemographic characteristics of substance and drug abuse, studies have found that substance or drug abuse share similar demographics with problem gambling. Such factors include male sex, younger age, lower education, and lower income have strong correlations with both problem gambling and substance or drug dependence (Afifi et al., 2010; Lamprey, 2005; Swendsen et al., 2009).

**Chronic illness analysis.** Compared with problem gamblers, low risk gamblers were less likely to have experienced stroke. Non-experience of stroke in high income earners also predicted low risk gamblers. Contrarily however, both low risk and moderate risk gamblers were found to experience lung disease more than problem gamblers. Similarly, low risk gambling was predicted by less educated immigrants with lung disease.

A remote possibility is that risk factors for stroke such as high blood pressure, cardiovascular disease such as atrial fibrillation, diabetes, smoking and illicit drug use have been closely linked to problem gamblers, which may predispose them to having stroke. Similarly, physical inactivity and obesity also increase the risk of stroke, and these are common features of gamblers who spends lots of time in front of gaming machines. It is also possible that factors in the physical environment of a problem such as exposure to noise and general poor quality of life can serve as risk factors for stroke occurrence in this population.

To support these ideas, several studies from the literature have identified various modifiable and non-modifiable risk factors for development of stroke, these include; abdominal obesity, coronary heart disease, diabetes mellitus, hypertension, advanced age,

prior stroke, body mass index, von willebrand disease and physical disability (Allen & Bayraktuhan, 2008; Hankey, 2006; Ohira et al., 2006; Simons, Mccallum, Friedlander, & Simons, 1998). Similarly, it has been reported that problem gamblers are at an increased risk of experiencing chronic medical conditions, obesity, and making poor lifestyle choices such as avoiding exercise (Black, Shaw, McCormick, & Allen, 2013). Further, there has been evidence that gambling also contribute to inactive lifestyle and obesity due of its sedentary nature coupled with the physical settings of casinos. For instance, eating in the casinos, availability of free or discount on alcohol beverages and unhealthy food consumption are some of factors in the physical environment that can significantly affect problem gamblers that are obese, with cardiopulmonary or circulatory problems (Algren, Ekholm, Davidsen, Larsen, & Juel, 2015). These risk factors may help explain the stroke outcome reported by problem gamblers compared to low risk gamblers in this sample. Furthermore, evidences have found that night time noise (that may be responsible for problem gamblers' poor sleep patterns) and poor quality of life impact negatively on stroke occurrence and recurrence (Sorensen et al., 201; Wang et al., 2014).

Unexpectedly however, low risk gamblers ( $p = 0.004$ ; OR = 8.643) and moderate risk gamblers ( $p = 0.046$ ; OR = 6.740) were 8.6 times and 6.7 times more likely than problem gamblers to experience lung disease such as asthma, respectively. While this is unexpected, it may be that individuals with lung limitations are more prone to participating in gambling activities that they consider as a form recreation (low risk gambling) because such activities does not require much physical strength. This also suggests that individuals with lung limitations can only engage in short burst of gambling before needing to stop.

Lending support to this idea, Pietrzak (2005) explained that older adults with chronic medical conditions tend to be attracted to gambling because it is a form of recreation that require little physical energy (Piertzak, 2005). While several studies have identified the association between asthma and sleep problems (Choudhary & Choudhary, 2009; Newton, Malik & Lee- Chiong, 2014), the National sleep foundation suggest that that normal sleep may also trigger asthma symptoms. The rationale being that air function decreases during sleep without necessarily altering sleep quality in healthy subjects. This explanation may be particularly relevant in this study as low risk gamblers (who may be otherwise healthy) tend to both experience sleep satisfaction and asthma symptoms.

The sociodemographic characteristics observed with stroke and lung disease are similar in the literature. For example, being married and older age has been identified has risk factors for hemorrhagic and ischemic stroke, while immigrants (non-white) with lower education has been correlated with lung diseases and morbidities (Ahacic, Trygged, & Kareholt, 2012; Collaco et al., 2011).

**Financial problems analysis.** Relative to problem gamblers, low risk gamblers were less likely to experience the indicators of financial problem such as missed bills, avoiding groceries, missed tax, selling properties, and requiring welfare. Similarly, moderate risk gambling was predicted by rarely avoiding bills. The sociodemographic factors such as older adult, female and high income predicted low risk gambling and some of the financial indicator variables.

A possible explanation for the above finding is that when gambling become uncontrollable, the problem gambler will spend even more money attempting and usually failing to win back their losses. Alternatively, problem gamblers may believe that money

is both the cause and solution of their problem so they continue to gamble in spite of their losses, believing they can fix all the problems with just one big win (Orford, Morison, & Somers, 1996).

In support of these suggestions, the literature has identified several indicators of financial problems associated with gambling. Such indicators include lack of money for surplus purchase, reduced savings that coincides with spending less on family needs or social activities, engaging in more additional jobs to meet needs, selling household items or goods, accessing more credit lines and inability to spend money on needs that have both immediate and non-immediate effects such as payment of insurance, car repairs, food and medication purchase as well as house care services (Langham et al., 2015). In another similar study observing the impact of financial consequences from problem gambling, bankruptcy was observed to be the most severe form of harm common to individuals and the affecting family (Li et al., 2017). Similarly, Marshall & Wayne (2003) observed that problem gamblers were three times more likely to spend more on gambling per year.

**Life events analysis.** The only life event measure that predicted low risk gambling was absence of personal injury.

Following on the heels of these reports have been a spate of studies that have linked problem gambling with several life events impacts which include reduced time spent in relationship, distortion of relationship roles, lack or decreased level of trust, conflicts in relationships, increased disagreement or arguments among partners, infrequent recreational engagement and family breakdown (Black et al., 2012; Langham et al., 2015). From the affected family members` point of view, neglect of responsibility

in the house appeared to be the most severe relationship impact reported by this group (Li et al., 2017). Also, heightened rate of child maltreatments and abuse, domestic violence, victimizations as well as divorce were observed among families affected by problem gambling (Black et al., 2012; Dowling, Jackson, et al., 2014). Similarly, studies have found that females or women were more likely than men to report victimization from problem gambling of their spouse (Echeburua et al., 2011; Dowling, Jackson, et al., 2014).

Overall, findings from this study suggests that a number of factors related to the social, economic and health wellbeing are likely to be of general benefit for low risk gamblers compared to problem gamblers. Such factors include better quality of life, improved financial status, and reduced likelihood of experiencing life events, chronic illness and substance use problems. However, most measures used did not found statistical significant difference between moderate gamblers and problem gamblers. It is also important to note that different sociodemographic factors influenced the relationship between the variables and gambling severities.

### **Limitations and Strengths**

Despite the important findings presented in this study, there are a number of limitations that need to be acknowledged. In addition to the limitations, this section also outlined recommendations for future direction.

With regard to its methodological approach, the study was cross-sectional in nature. While this design may be relatively quick and easy to conduct, there should be caution when inferring causality from the result. A potential solution for future research is to conduct a longitudinal study that will examine the relationship between lower severity

gambling and problem gambling with the measures used in this report. In such a study, follow-up outcomes would suggest the stability or changes of the measures with time. Although several measures such as quality of life, drug use, alcohol use, smoking, financial problems, chronic illness and life events were used in this study, other important measures such as level of income and types of games played were not assessed. Also, this study did not include analysis on harms from societal levels. It is recommended that future research be conducted to investigate further the significance of such measures in order to better understand their relationship with lower severity gambling.

Notable were the differences in the time frame for the measurement of the variables used in this study. For instance, quality of life factors was assessed based on the experience of the respondents in the past four weeks, substance use was assessed in the past three months, while other measures were in the past twelve months. It is possible that differences in time frame may have influenced the outcome of the study. Similarly, there were differences in the responses to each variable used as questions. For example, in a quality of life-physical domain question “Do you have enough energy for everyday life” (Appendix C), responses were framed as (completely, mostly, moderately, a little or not all). However, a different physical domain question “To what extent do you feel that physical pain prevents you from doing what you need to do” (Appendix C) was framed with response as (extremely, very much, a moderate amount, a little or not at all). This suggests that questions were not equivalent, so comparison between questions need to be made with caution. Although there were number of analysis conducted, the relative number of significant results was low. Therefore, a Bonferroni correction seems not

necessary. Furthermore, there was no objective instrument to assess honesty, recall ability and understanding of questions.

It is also important to note that the problem gamblers (control group) prevalence rate compared to other groups was quite small. This might have affected the statistical power, resulting in potential type 2 error. Similarly, moderate risk and problem gambler categories were combined into a single category to increase statistical power. Concerns about false negatives and false positives have been raised with this approach (McCready & Adlaf, 2006). Furthermore, socio-demographic factors and some of the responses provided by respondents were recoded into dichotomous variables. This was done primarily for the ease of comparison. However, this approach may have introduced bias, thus it is important to interpret this result with caution. I should also stress that the presence of some missing values that were not replaced may have influenced the outcome of this study.

Also, in this study, analytical options such as stepwise or simultaneous variable entry was not available with SPSS complex sample software for logistic regression. In the light of this limitation, the predicting factors (independent variable) were added manually and individually to observe the effects on dependent variable. Hence more time was required to carry out the analytical process. It is also important to emphasize that this analysis examined only gamblers experiencing some risk. Non-gamblers and non-problem gamblers were excluded as they were not the focus of this thesis.

A major analytical strength in this study is the use of complex sample analytical software that took into account the complex sample structure of the survey used in this study and also computed the sample weight. The estimation of sample weight helped to

ensure that parameter estimates are not biased and findings from the study will likely represent the larger population.

### **Implications**

The outcomes of this study have implications for prevention, research and treatment, which may be useful for low risk, moderate risk and problem gamblers. Based on the results obtained from this study, these implications have been discussed in two subsections, namely gambling participation and consequences, and sociodemographic determinants of gambling.

**Gambling participation and consequences.** Results from this study have identified important social, economic and health correlates across the different categories of gambling participation. For instance, low risk gambling relative to problem gambling was found to be associated with enhanced general health and wellbeing, reduced substance or drug use and abuse, low rates of financial difficulties, chronic illnesses and life events. Moderate risk gambling on the other hand was not significantly different from problem gambling, however there were few exceptions such as better energy level, enhanced personal relationships, perception of life to be enjoyable, and low rates of missed bills. All these results suggest that problem gambling is correlated with high rates of general poor health, substance or drug abuse as well as financial difficulties. Consequently, the findings from this study on correlates (social, health and financial) imply that the degree of gambling severities can be measured along a continuum of gambling participation, with low risk representing the healthy end of the continuum where the potential benefits outweigh the risk. As the intensity of gambling participation increases (from moderate to problem gambling), the negative outcomes start to outweigh

the potential benefits (Messerlian, Derevensky, & Gupta, 2005). Furthermore, the prevalence rate from this study also found that low risk gamblers (5.3%) were three times more in proportion than moderate risk gamblers, while the moderate risk gamblers (1.8%) were nearly three times that of problem gamblers (0.7%). Taking together, these findings further emphasize the importance of approaching gambling behavior from a continuum perspective. This will help to identify and target different forms of public health interventions to address each category of gambling severity. Hence, interventions for low risk gamblers must increase their awareness towards the risk associated with excessive gambling in order to maintain their participation at the healthy end of the continuum and subsequently prevent their progression and the onset of moderate risk gambling behavior. Similarly, appropriate interventions must proactively target moderate risk gamblers to prevent their progression into the problem gamblers, while improving the accessibility and availability of problem gamblers to the needed support and treatment.

Specifically, results from this study found that low risk gamblers are more tertiary educated, and they have available information they need for their daily lives. These findings suggest that low risk gamblers' group can be easily reached by health education or communication interventions. Health education may help to increase their awareness about the risk associated with excessive gambling participation. This can be achieved through educational forums and conferences on the consequences of excessive gambling participation, developing educational resources that will increase problem solving skills among low risk gamblers, engaging in educational campaign in the mass media, outreach programs and gaming venue information centres.

To be effective however, health education strategies must be integrated within the bigger scope of an environment that support behavioral change (Messerlian, Derevensky, & Gupta, 2005). Such enabling environment can be achieved through policy development that will regulate marketing structure and advertisement of gambling products and venues, as well as increase the age of exposure to gambling. Regulating the age of gambling exposure in preventing the onset of gambling harms is particularly important, given that findings from this study observed that lower severity gamblers (low or moderate risk) were more likely to be older adults, while problem gamblers have been found at a higher rate in younger people (Afifi et al., 2010).

Furthermore, health information should be delivered consistently and regularly because of the addictive and chronic nature of problematic gambling (Wakefield, Loken & Hornik, 2010). Health communication can also address the social norms about gambling by disseminating awareness to the general population, not gamblers experiencing some risk. Extending health education awareness to others within the social network of a low risk gambler (through educating the general population) may empower them with the useful tools that heighten awareness regarding indications of increasing harm, protective factors, and where to get support. For example, low risk gamblers' reported better well-being (compared with problem gamblers) were related to protective factors such as exposure to gambling at a latter age (older adults) and higher level of education. Similarly, directing gambling education to the general population (such as gamblers' family members) may also inform their support for responsible gambling through encouraging low risk gamblers to limit time and amount spent on gambling.

Practically, findings from this study could have implications to support responsible gambling guidelines (Currie et al., 2006). For example, quality of life factors (such as better self-image, healthy physical environment, accessibility to health, having enough money for needs, and satisfaction with sleep) have been possibly linked to spending less time and money on gambling (as highlighted in the discussion section). While responsible guidelines (include setting budgetary and time limits on gambling) exist, there has not been empirical findings to support these guidelines (Currie et al., 2006). Observations from this study could provide some empirical support for responsible gambling by informing gamblers (especially low risk gamblers) of the benefits of setting limits in terms of time and money and the potential risk of exceeding limits. Similarly, the possible association between setting limits (time and money) on gambling and low risk gamblers' health and wellbeing could potentially complement studies on derived low risk gambling limits. It may be more pragmatic to emphasize on the social, health and financial benefits (as found in this study) that low risk gamblers may experience if they participate in gambling by setting limits on the frequency of play, amount of money invested on gambling per month, and the percentage of gross income spent on gambling (see Currie et al, 2006; Currie et al., 2017 for low risk gambling limits) than merely the financial costs from gambling.

Moderate risk gambling group represents the category of gamblers who have not met the criteria of being a problem gambler but may be experiencing few gambling related consequences (Messerlian, Derevensky & Gupta, 2005). Findings from this study further suggests that moderate risk gamblers are more likely to be at-risk of developing gambling problems. Hence, the need for interventions such as educational programs and

training for professionals such as physicians, counsellors and social workers. Such training will equip professionals with the needed knowledge for assessment, recognition of early signs for gambling problem, and referral. Because of the greater risk of developing gambling problem in this group, measures such as developing educational resources and programs for moderate risk gamblers to improve their problem-solving and coping skills, and promoting existing telephone help-lines may be useful. Similarly, similarities observed between moderate risk and problem gamblers on multiple features including sociodemographic characteristics suggest the potential need to channel a similar intervention (such as harm minimisation interventions) for both moderate and problem gamblers. Furthermore, there may be a need to review the grouping (into gambling categories) or scoring threshold adopted by assessment tools such as problem gambling severity index (PGSI) in-order to ensure that the unique characteristics of each gambling category is properly assessed.

Subsequently, from this study, problem gamblers represent the group already experiencing higher rates of general poor health, life events, substance abuse and financial difficulties. Hence, the need to increase their accessibility to support and treatment, and promote harm minimisation strategies. Increasing accessibility to treatment is further supported by the evidence found in this study that low risk gamblers experience satisfactory level of accessibility to health services. This intervention can be achieved through professional training for gambling harm recognition and referral services, development of standard of care at the primary care centres and hospitals, and confidential help lines that are easily accessible. Harm minimisation interventions that can benefit both moderate and problem gamblers include reduction in maximum number

of lines and bet per spin, limiting the number of electronic gaming machines, reduction of cash insert and smoking ban (Jackson, Christensen, Francis, & Dowling, 2016).

Furthermore, results from this study also found that problem gamblers are more likely to experience problem with substance or drug use. The relationship between problem gambling and substance abuse have been well established in the literature. Hence, any effort that seeks to address problem gambling treatment should also target the use of drugs or substances of abuse (integrated system) because both problem behaviour are more likely to coexist (Vitaro, Ferland, Jacques, & Ladouceur, 1998).

**Sociodemographic determinants of gambling.** In addition to the social, economic and health correlates of gambling severity, this study also identified the sociodemographic characteristics that influenced the different gambling categories. The sociodemographic factors that influenced low risk gambling relative to problem gambling were higher level of income (at least AUS\$65,000), older adults (at least 45 years) immigrant females, living with dependent children and partner, and are tertiary educated. Moderate risk gamblers were more likely to be older adult (at least 45 years) immigrant males, less educated, with no paid job, living with dependent children but not with partner. From the literature, problem gamblers were found to be younger male, less educated, unmarried, of low income levels, unemployed or employed in low paying jobs (Afifi et al., 2010; Tavares et al., 2010). These sociodemographic characteristics are similar to what was found in this study.

Important to note is the impact sociodemographic determinants that have been identified to be of benefits in promoting general wellbeing among low risk gamblers, such as higher level of income and education, presence of dependent children and partners.

The sociodemographic determinants of problem gamblers, and the financial difficulties experienced by this group (as found in this study) suggest that interventions addressing problem gambling should be broad enough to include measures that will improve socioeconomic status and support a positive social network. For instance, funds realised through gambling legalisation can be channeled (through government fiscal policies) towards provision of skill acquisition programs that will improve problem gamblers' socioeconomic state, promote educational upgrading, subsidize the cost of education and housing, and provision of job opportunities for problem gamblers. Another potential intervention is the role positive social network can play in regulating problem gambling behavior (as seen in the result found on low risk gamblers). This can be potentially achieved by identifying key members in their immediate or extended family that are not gamblers (such as children or partners) but can serve as source of practical support, encouragement, and reminders. Positive social network can serve as backup support to accomplish best practices such as leaving cards and credits at home and limiting time and money spent on gambling.

In terms of generalization of findings, similarities exist in gambling behaviour between Tasmania (Australia) and other industrialized jurisdictions. To illustrate, I will compare two similar but different western jurisdictions: Tasmania and Alberta (Canada). Gambling participation rates in most western countries such as Australia and Canada have been estimated to be about 80% (Doran & Young, 2010; St-Pierre et al., 2014). Similarly, standardized problem gambling prevalence rates appeared to be similar in Canada (2.0%) and Australia (2.1% Williams et al., 2012). Furthermore, Tasmania and Alberta appear to be similar in other aspects such as ancestry, occupation (mining, agriculture and forestry)

as well as tourism. These suggest that generalisation of findings from this study to other western jurisdictions have some face validity.

(Tasmania Demographics: <https://en.wikipedia.org/wiki/Tasmania#Demography>;

Alberta Demographics: <https://en.wikipedia.org/wiki/Alberta>).

However, there are differences in the regulation and structure of commercial gambling industries across the world. For example, Alberta (Canada) operates a charitable gambling model where government through the Alberta Gambling and Liquor Commission (AGLC) licence gambling activities, gambling facilities, develops policy and ensures compliance with policies and regulations. In addition, AGLC own and maintain slot machines, video lottery terminals and electronic bingo. In line with the charity model, the casino operator provides gambling facility, materials and expertise, while the licensed charitable organisations run casino and bingo events, and receive money from these events. Further, the Albertan government regulates the industry and own the electronic gaming machines (EGM). The above situation is different in Tasmania where gaming industry is regulated by the government, but the electronic gaming machines are privately owned, and charitable organisations receive money directly from the government, not from casino and bingo events. All these factors must be considered when generalising findings from Tasmania to other western parts of the world such as Canada.

(Alberta regulations: <http://www.cprg.ca/Digests/ViewCards>; Tasmania regulations:

<http://www.treasury.tas.gov.au/Documents/TLGCOperatingStatement>)

## **Conclusion**

To the best of my knowledge, I am not aware of any study that has examined the social, economic and health correlates of lower severity gambling using the specific variables that was used in this study. In summary, the results of this study identified a number of predictors of low risk gambling including sociodemographic factors. The factors include better quality of life especially in the physical and environmental health domain, lower rates of substance abuse problem, chronic illnesses, life events, and better financial status. The sociodemographic factors with greatest influence include female gender, at least 45 years of age, immigrants, and annual higher income. Others are presence of dependent children and higher educational attainment. Furthermore, with the exception of quality of life scale variables, all the individual (categorical) variables predicted low risk gambling both independently, and as a set when combined with sociodemographic factors. Similar results were obtained when low risk gamblers were compared to problem gamblers, and when low risk gamblers were compared to moderate and problem gamblers combined group. However, the strength of association was higher with low risk compared to problem gamblers. What was unexpected in the result was that low risk compared to problem gamblers were more likely to experience lung disease such as asthma.

This result also shed light on the relationship between moderate risk gamblers and problem gamblers. For most of the measures, moderate risk gamblers were not significantly different from problem gamblers, except for better energy level, satisfaction with life and relationships, and low rates for missed bills. Sociodemographic factors that influenced moderate gamblers mostly were older male immigrant, less educated level, no

paid job, living with children but not with partner. Similar to low risk gambling, moderate risk gambling was also predicted by the individual categorical variables, when used independently, and as a set with sociodemographic factors. Taken together, these findings provide important information on the attributes (social, financial and health correlates) and the sociodemographic characteristics of lower severity gamblers. These findings further suggest that multiple interventions that address different range of measures and sociodemographic factors must be in place to prevent the development and treatment of gambling related problems.

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Appendix A

**Questionnaire structure: Main survey**

<b>Section</b>	<b>Topic</b>	<b>Questions</b>
<b>A</b>	<b>Screener demographics</b>	
	Locality	A1, A2, QV
	Age	A4, A5,
	Gender	A6
<b>B</b>	<b>Gambling participation</b>	
	Forms of gambling participated in in last 12 months	B1a-j
<b>C</b>	<b>EGM Gambling</b>	
	Frequency and duration and location of EGM gambling	C1, C2
	Spend on EGMs	C3
	Importance of features of EGM gambling venues	C4
	Distance from EGM venue	C5
	EGM styles of play	C6a-l
	Machine denomination/lines played/credit played	C7, C8, C9
	Awareness of exclusion scheme/ whether taken out exclusion	C10, C11
	Implemented harm minimisation measures: awareness	C12a-h
	Implemented harm minimisation measures: impact	C13a-h
	How often use new EGMs	C15
	Implemented harm minimisation measures: potential impact	C14a-c
	Proposed harm minimisation measures: Impact	C16a-i

<b>Section</b>	<b>Topic</b>	<b>Questions</b>
<b>D</b>	<b>Non-EGM gambling activity</b> Participation and spend in other forms of gambling during the last 12 months	D1-D9
<b>E</b>	<b>Problem gambling severity</b> PGSI questions	E1a-I
<b>F</b>	<b>Gambling motives</b> Reasons for Gambling Questionnaire	F1a-o
<b>G</b>	<b>Gambling triggers</b> How often gambled in trigger situations	G1a-k
<b>H</b>	<b>Patterns of gambling</b>  Increase or decrease of spend last during 12 months Self-diagnosis of binge gambling	H1  H2

**Source: PGRTC and SRC**

## Appendix B

### Questionnaire Structure: Supplementary Survey

Section	Topic	Questions
<b>I</b>	<b>Quality of life</b> WHO Qol-Bref	I1, I2, I3, I4, I5, I6, I7
<b>J</b>	<b>Substance use</b> Substance use in the last three months (ASSIST items) Alcohol abuse: AUDIT-3	J1a-i J1j
<b>K</b>	<b>Life events</b> Most frequent major life events: Social Readjustment Rating Scale Contact with criminal justice system	K1a-g K1h-i
<b>L</b>	<b>Physical Health</b> Short Form(SF) Health Survey item Health/health conditions experienced during last 12 months Body mass index: height and weight	L1 L2 L3, L4
<b>M</b>	<b>Financial difficulties</b> Financial problems experienced during the last 12 months Negative actions taken due to gambling debts Gambling debt/amount	M1a-g M2 M3/M4
<b>N</b>	<b>Age of onset</b> How old when first bet	N1

<b>Section</b>	<b>Topic</b>	<b>Questions</b>
<b>O</b>	<b>Family member problem gambling</b>	
	Family problem with gambling problem during last 12 months	O1
<b>P</b>	<b>Help seeking</b>	
	Sought any form of help for gambling during last 12 months	P1
<b>Q</b>	<b>Demographics</b>	
	Household type	Q1
	Occupational status	Q2
	Income	Q3
	Country born	Q4
	Language spoken at home/cultural group	Q5/Q5a
	Education	Q6
<b>T</b>	<b>Future research</b>	
	Participate in future surveys	T1
	Participate in future focus groups	T2
	Contact details	T3/T4

**Source: PGRTC and SRC**

## Appendix C

# Questionnaire

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### Screening and introduction

\*(PHONE ANSWERER)

S1 Good afternoon / evening. My name is (...) and I am calling on behalf of the Tasmanian Government from the Social Research Centre. Today we are conducting a survey on social issues within the state to help the Government prioritise resources. In order to ensure we get a good mix of responses, may I please speak to the youngest male in the household aged 18 or over? (IF NO MALES) In that case, may I please speak to the youngest female in the household aged 18 or over?  
(IF NECESSARY: The information from this survey will be used by the Tasmanian Government to prioritise resources and assist in planning for various social issues which we will cover in the questionnaire. The specific topics will be revealed throughout the survey.)

1. Continue with same respondent (GO TO S3)
2. Continue with new respondent (GO TO S2)
3. Stop interview, make appointment
4. Household refusal (ATTEMPT CONVERSION / RECORD REASON) (GO TO RR1)
5. Household LOTE – (no language follow up) (GO TO ALOTE)
6. Queried about how telephone number was obtained (DISPLAY PTEL)
7. Back to SMS

\*(NEW RESPONDENT) (IF S1=2)

S2 Good afternoon / evening. My name is (...) and I am calling on behalf of the Tasmanian Government from the Social Research Centre. Today we are conducting a survey on social issues within the state to help the Government prioritise resources.  
(IF NECESSARY: The information from this survey will be used by the Tasmanian Government to prioritise resources and assist in planning for various social issues which we will cover in the questionnaire. The specific topics will be revealed throughout the survey.)

1. Continue (GO TO S3)
2. Stop interview, make appointment (ARRANGE CALL BACK, RECORD NAME OF SELECTED PERSON)
3. Respondent refusal (ATTEMPT CONVERSION / RECORD REASON) (GO TO RR1)
4. Respondent LOTE – (no language follow up) (GO TO ALOTE)
5. Queried about how telephone number was obtained (DISPLAY PTEL)

\*(QUERIED HOW TELEPHONE NUMBER WAS OBTAINED)

PTEL Your telephone number has been chosen at random from all possible telephone numbers in your area. We find that this is the best way to obtain a representative sample of all Tasmanians for our research.

1. Snap back to previous question

\*(SELECTED RESPONDENT)

S3 The information and opinions you provide will be used only for research purposes. In particular, all contact details will be removed from the data before it is provided to

Government and your responses will be combined with those from other participants in this research.

While we'd prefer that you answer all questions, if there are any questions that you'd rather not answer, that's fine, just let me know.

The interview today is in two components, a screener survey then an additional set of questions. The screener survey will only take from 10-15 minutes, depending on your answers. If you qualify for the additional questions, this will take another 15 to 17 minutes.. Are you able to continue?

1. Yes, continue (GO TO S4)
2. Stop interview, make appointment (ARRANGE CALL BACK)
3. Respondent refusal (ATTEMPT CONVERSION / RECORD REASON) (GO TO RR1)

\*(SELECTED RESPONDENT)

S4 My supervisor may monitor this interview for quality assurance purposes. Please tell me if you do not want this to happen.

1. Monitoring allowed
2. Monitoring not permitted

## **\*PART 1: MAIN SURVEY**

### **\*SECTION A: SCREENER DEMOGRAPHICS**

\*(ALL)

A1 Thank you. I am going to start by asking you a couple of questions about yourself, to help us group your responses with other people. First, what is the postcode where you live?  
POSTCODE FROM SAMPLE: (DISPLAY POSTCODE FROM SAMPLE) (POSTCODE NOT ON LOOKUP LIST TERMINATE)

1. Postcode correct as displayed
2. Postcode incorrect / not displayed (SPECIFY) (RANGE 7000 TO 7923) (GO TO QV)
3. (Don't know) (GO TO A2) (PROGRAMMER NOTE – USE SAMPLE POSTCODE FOR QV)
4. (Refused) (GO TO TERM1)

\*(DON'T KNOW POSTCODE) (A1=2)

A2 That's OK, which suburb or locality do you live in and we will look it up?

1. Suburb/locality (SPECIFY)
2. (Don't know) (GO TO TERM1)
3. (Refused) (GO TO TERM1)

\*(HIDDEN) (ALL)

QV QUOTA VARIABLE

\*(PROGRAMMER NOTE – LOOKUP LIST TO BE PROVIDED, OR DRAW FROM SAMPLE MARKET IF NO MATCH)

1. Brighton
2. Break O'Day
3. Glenorchy
4. Devonport
5. Circular Head

6. Launceston
7. Sorell
8. Clarence
9. Rest of state

\*(ALL)

A4 What is your age in years?

\*(PROGRAMMER NOTE: IF MORE THAN 90, DISPLAY "UNLIKELY RESPONSE – CONFIRM")

1. Under 18 (GO TO TERM2)
2. Age given (Specify) (RANGE 18 TO 120)
3. (Refused)

\*(REFUSED AGE) (A4=2)

A5 Which age group are you in?

1. 18 to 24 years
2. 25 to 29 years
3. 30 to 34 years
4. 35 to 39 years
5. 40 to 44 years
6. 45 to 49 years
7. 50 to 54 years
8. 55 to 59 years
9. 60 to 64 years
10. 65 to 69 years
11. 70 years or over
12. (Refused) (GO TO TERM1)

\*(ALL)

A6 RECORD GENDER

1. Male
2. Female

\*(ALL)

TS1 TIMESTAMP 1

## \*SECTION B: GAMBLING PARTICIPATION

\*(ALL)

B1 For the first section of this survey we will be asking some questions about gambling. I am going to start by reading a list of popular gambling activities and find out if you have played them FOR MONEY in the previous 12 months. In the last 12 months, have you ...(READ OUT)?

\*(STRING TEXT a-i) In the last 12 months, have you ...(READ OUT)?

(STATEMENTS) (RANDOMIZE a-i)

- a. Played poker machines or electronic gaming machines
- b. Bet on horse or greyhound races (excluding sweeps such as for Melbourne Cup)
- c. Purchased instant scratch tickets
- d. Played a lottery (INTERVIEWER NOTE: such as Tattslotto, Powerball, the pools, \$2 Jackpot lottery, Tatts 2, or Tatts Keno)

- e. Played Keno
- f. Played casino table games such as blackjack, roulette or poker
- g. Played bingo
- h. Bet on sporting events or other events such as TV show results, election results
- i. Bet on informal private games (e.g. cards, mah-jong, snooker), (INTERVIEWER NOTE: also online or offline computer games, board games, sports)
- j. Participated in any other gambling activity that I haven't mentioned (excluding raffles or sweeps)? (SPECIFY)

(RESPONSE FRAME)

- 1. Yes
- 2. No
- 3. (Don't know)
- 4. (Refused)

\*(PROGRAMMER NOTE: CREATE DUMMY VARIABLES)

\*(HIDDEN) (ALL)

DV0 Gambling Status

- 1. (IF ANY STATEMENT B1 = 1) Gambler
- 2. (ALL STATEMENTS B1 = 2 OR 3 OR 4) Non Gambler

\*(HIDDEN) (ALL)

DV1 EGM Gambling Status

- 1. (IF B1a = 1) EGM Gambler
- 2. (IF B1a = 2-4) NOT EGM Gambler

\*(HIDDEN) (GAMBLERS) (DV0 = 1)

DV2 Gambling Activities (MULTIPLE RESPONSE ALLOWED)

- 1. (IF B1a = 1) Poker machines or electronic gaming machines
- 2. (IF B1b = 1) Horse or greyhound races (excluding sweeps)
- 3. (IF B1c = 1) Instant scratch tickets
- 4. (IF B1d = 1) Lotteries
- 5. (IF B1e = 1) Keno
- 6. (IF B1f = 1) Casino table games
- 7. (IF B1g = 1) Bingo
- 8. (IF B1h = 1) Sporting events or other events
- 9. (IF B1i = 1) Informal private games
- 10. (IF B1j = 1) [INSERT SPECIFY FROM B1J]

\*(ALL)

TS2 TIMESTAMP 2

### **\*SECTION C: EGM GAMBLING**

PREC1 IF DV1= 1 (EGM GAMBLER) CONTINUE, OTHERS GO TO PRED1a

\*(EGM GAMBLER) (DV1 = 1)

C1 I am now going to ask you some questions specifically about your poker machine gambling. In the last 12 months, how many times per week, per month or per year have you played POKER MACHINES...(READ OUT)?

(INTERVIEWER NOTE: This refers to number of sessions of playing poker machines, NOT number of individual machines played)

(INTERVIEWER NOTE, RECORD NUMBER OF TIMES IN APPROPRIATE CODE – ONLY NEED TO ENTER IN ONE NUMBER DEPENDING ON HOW THEY ANSWER)

(STATEMENTS)

- a. In a club or hotel
- b. In a casino

(RESPONSE FRAME)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(EGM GAMBLER) (DV1 = 1)

C2 In the past 12 months, how much time ON AVERAGE did you spend playing poker machines during EACH VISIT to a poker machine venue?

(IF NECESSARY: You can specify hours and/or minutes, whichever is easiest)

(INTERVIEWER NOTE: Each time equals one session (i.e., betting during a discrete period of time EXCLUDING BREAKS at one location) | If under an hour record in minutes option. If more than an hour record in hours option with decimal. 0.5 = half an hour)

1. Enter hours (SPECIFY) (ALLOWABLE RANGE 1.00 TO 24.00 HOURS – ALLOW DECIMALS) \*(DISPLAY “UNLIKELY RESPONSE” IF >15)
2. Enter minutes (SPECIFY) (ALLOWABLE RANGE 1 TO 60 MINUTES)
3. (Don't know)
4. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C3 In the past 12 months, how much money, ON AVERAGE, did you SPEND on poker machines during EACH VISIT to a poker machine venue? By SPEND we mean the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and what you had left when you finished playing (INTERVIEWER NOTE: Each visit = one session (i.e., betting during a discrete period of time at one location) | Spend – doesn't include counter meals etc.)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY “UNLIKELY RESPONSE” IF >5000)
2. (Don't know)
3. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C4 I am now going to ask you about different features of poker machine gambling venues (such as hotels, clubs, or casinos) that may influence where you decide to gamble. In your decision about where to gamble, how important is (INSERT STATEMENT)? Would you say... (READ OUT RESPONSE FRAME)?

(INTERVIEWER NOTE: NO MID POINT BECAUSE IF THEY DON'T CARE IT IS UNIMPORTANT)

\*(STRING TEXT) In your decision about where to gamble, how important is (INSERT STATEMENT)? Would you say... (READ OUT RESPONSE FRAME)?

(STATEMENTS) (RANDOMIZE)

- a. the venue being easy to get to
- b. the venue having extended opening hours
- c. easy access to an ATM in the venue
- d. the venue having adequate gambling facilities so you don't have to wait
- e. it for you to be able to gamble privately in the venue without feeling watched
- f. not being interrupted at the venue whilst gambling
- g. the venue having a large number of poker machines
- h. the layout of poker machines in the venue allowing privacy

(RESPONSE FRAME)

1. Very important
2. Somewhat important
3. Unimportant
4. Not important at all
5. (Don't know)
6. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C5 Roughly, how many kilometres FROM YOUR HOME is the poker machine venue at which you MOST REGULARLY play?

(INTERVIEWER NOTE: IF THEY HAVE MORE THAN ONE VENUE THAT THEY SPEND EQUAL TIME AT, GET THEM TO SPECIFY KMS FROM HOME OF THE VENUE THEY LAST WENT TO)

1. 1 km or less
2. 1.1 to 5 km
3. 5.1 to 10 km
4. more than 10km
5. I don't have a regular poker machine venue
6. (Don't know)
7. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C6 \*(STRING TEXT) In the past 12 months, how often have you...\*(PROGRAMMER INSERT STATEMENT)? (READ OUT) Would you say always (100% of the time), most of the time (more than 50% of the time to less than 100%), sometimes (25% to 50% of the time), rarely (1% to 25% of the time) or never (0%)?

(STATEMENTS) (RANDOMIZE)

- a. gambled on poker machines alone?
- b. spent all the money you had available, including winnings, during a session playing poker machines?
- c. drunk alcohol while you were playing the poker machines?
- e. drunk alcohol after you had played the poker machines?
- g. played for bonus features (e.g.free spins or free games)?
- h. used the "gamble" or "double up" feature of poker machines?
- j. played on poker machines that have linked jackpots? (INTERVIEWER NOTE: a jackpot that has multiple poker machines linked to it. All linked poker machines contribute to the jackpot prize pool and any of them can win the jackpot prize)
- j. taken a break when you were playing poker machines to smoke, drink, eat, go to toilet or talk with friends?

- k. withdrawn extra money for your gambling from a venue ATM or EFTPOS facility during a session playing poker machines?
- l. used a loyalty or rewards card when you gambled on poker machines?

(RESPONSE FRAME)

- 1. Always (100% of the time)
- 2. Most of the time (more than 50% of the time)
- 3. Sometimes (25% to 50% of the time)
- 4. Rarely (1% to 25% of the time)
- 5. None of the time (0%)
- 5. (Don't know)
- 6. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C7 We would now like you to think specifically about the type of poker machines you have played in the last 12 months. There are six different types of machines, one cent, two cent, five cent, ten cent, twenty cent and one dollar. Which type of poker machine do you usually play? (READ OUT 1-6 IF NECESSARY)  
(INTERVIEWER NOTE: IF THEY USUALLY PLAY MORE THAN ONE TYPE, RECORD TYPE LAST PLAYED)

- 1. one cent machines
- 2. two cent machines
- 3. five cent machines
- 4. ten cent machines
- 5. twenty cent machines
- 6. \$1 machines
- 7. (Don't know)
- 8. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C8 When playing poker machines, you can play just one line, or a number of lines per spin. Thinking about your use of poker machines in the last 12 months, how many lines do you usually play?

(INTERVIEWER NOTE: THIS REFERS TO NUMBER OF LINES PER SPIN, NOT NUMBER OF LINES PLAYED IN TOTAL OVER THE LAST 12 MONTHS)

- 1. Response given (SPECIFY) (ALLOWABLE RANGE 1 TO 50)
- 2. Don't have a usual number of lines that I play
- 3. (Don't know)
- 4. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C9 Poker machines also allow you to play just one credit or multiple credits per spin. Thinking about your use of poker machines in the last 12 months, how many credits per line do you usually play?

(INTERVIEWER NOTE: THIS REFERS TO NUMBER OF CREDITS PER SPIN, NOT NUMBER OF CREDITS PLAYED IN TOTAL OVER THE LAST 12 MONTHS)

- 1. Response given (SPECIFY) (ALLOWABLE RANGE 1 TO 25)
- 2. Don't have a usual number of credits that I play
- 3. (Don't know)

4. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C10 Are you aware of the Tasmanian Gambling Exclusion Scheme that allows you to exclude yourself from gambling in a venue?

1. Yes
2. No (GO TO TS3)
3. (Don't know) (GO TO TS3)
4. (Refused) (GO TO TS3)

\*(HEARD OF GAMBLING EXCLUSION SCHEME) (C10 = 1).

C11 Have you ever taken out an exclusion?

1. Yes
2. No
3. (Don't know)
4. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

TS3 TIMESTAMP 3

\*(EGM GAMBLER) (DV1 = 1)

C12 The Tasmanian Government has introduced a range of measures that aim to reduce the harm caused by excessive poker machine gambling. I am going to read out some of these measures and for each can you please let me know if you were aware of this before today. Do you know about (READ OUT)?

\*(STRING TEXT) Do you know about (READ OUT)?

(STATEMENTS) (RANDOMIZE)

- a. the ban on ATMs in hotels and clubs with poker machines
- b. the limit on the number of poker machines in each club and hotel
- c. the limit on gaming facilities to operate for a maximum of 20 hours
- d. the ban on note acceptors on poker machines located in pubs and clubs
- e. the ban on smoking in gaming areas
- f. the reduction in the maximum number of lines on new poker machines
- g. the reduction of the maximum bet per spin on new poker machines
- h. the reduction in the amount of cash you can insert into the note acceptors of new poker machines located in casinos

(RESPONSE FRAME)

1. Yes
2. No
3. (Don't know /not sure)
4. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

TS3a TIMESTAMP 3a

PREC13 IF ANY C12a-h = 1 CONTINUE, OTHERS GO TO PREC14a

\*(EGM GAMBLER AWARE OF ANY MEASURE IN C12) (DV1 = 1 AND ANY C12a-f =1)

C13 I would now like you to think about these measures you are aware of and how they have impacted on your poker machine gambling with regards to the amount you spend and your enjoyment.

\*(PROGRAMMER NOTE – RANDOMIZE C13A TO C13H – Need to keep pre-instruction attached to each)

PREC13 IF C12a = 1 CONTINUE, OTHERS GO TO PREC13b

\*(EGM GAMBLER AWARE OF MEASURE A) (DV1 = 1 AND C12a=1) n=11

C13a Has the ban on ATMs in hotels and clubs with poker machines increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines?
- b. your ENJOYMENT of poker machines?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure /not applicable)
5. (Refused)

PREC13B IF C12b = 1 CONTINUE, OTHERS GO TO PREC13c

\*(EGM GAMBLER AWARE OF MEASURE B) (DV1 = 1 AND C12b =1)

C13b Has the limit on the number of poker machines in each club and hotel increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13C IF C12c = 1 CONTINUE, OTHERS GO TO PREC13d

\*(EGM GAMBLER AWARE OF MEASURE C) (DV1 = 1 AND C12c =1)

C13c Has the limit on gaming facilities to only operate for a maximum of 20 hours increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased

4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13D IF C12d = 1 CONTINUE, OTHERS GO TO PREC13e

\*(EGM GAMBLER AWARE OF MEASURE D) (DV1 = 1 AND C12d =1)

C13d Has the ban on note acceptors on poker machines in pubs and clubs increased, not changed, or decreased (INSERT STATEMENT)  
(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13E IF C12e = 1 CONTINUE, OTHERS GO TO PREC13f

\*(EGM GAMBLER AWARE OF MEASURE E) (DV1 = 1 AND C12e =1)

C13e Has the ban on smoking in gaming areas increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13F IF C12f = 1 CONTINUE, OTHERS GO TO PREC13g

\*(EGM GAMBLER AWARE OF MEASURE F) (DV1 = 1 AND C12f =1)

C13f Has the reduction in the maximum number of lines on new poker machines increased, not changed, or decreased (INSERT STATEMENT)  
(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13G IF C12g = 1 CONTINUE, OTHERS GO TO PREC13h

\*(EGM GAMBLER AWARE OF MEASURE G) (DV1 = 1 AND C12g =1)

C13g Has the reduction of the maximum bet per spin on new poker machines increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

PREC13H IF C12h = 1 CONTINUE, OTHERS GO TO C15

\*(EGM GAMBLER AWARE OF MEASURE H) (DV1 = 1 AND C12h =1)

C13h Has the reduction in the amount of cash you can insert into the note acceptors of new poker machines located in CASINOS increased, not changed, or decreased (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increased
2. No change
3. Decreased
4. (Don't know /not sure/not applicable)
5. (Refused)

\*(AWARE OF CHANGES TO NEW POKER MACHINES) (C12f, g or h = 1)

C15 You indicated that you were aware that there were some changes to new poker machines. New poker machines have a reduced maximum number of lines, a reduced maximum bet limit per spin, and reduced cash input limits. How often do you use these new poker machines? (READ OUT INCLUDING %)

1. Always (100% of the time)
2. Most of the time (more than 50% of the time)
3. Sometimes (25% to 50% of the time)
4. Rarely (1% to 25% of the time)
5. None of the time (0%)
6. (Don't know /not sure)
7. (Refused)

PREC14A IF C12f = 2-4 CONTINUE, OTHERS GO TO PREC14b

\*(EGM GAMBLER NOT AWARE OF MEASURE F) (DV1 = 1 AND C12f =2-4)

C14a Would reducing the maximum number of lines on poker machines be likely to increase, not change, or decrease (INSERT STATEMENT)?

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines
- b. your ENJOYMENT of poker machines

(RESPONSE FRAME)

- 1. Increase
- 2. No change
- 3. Decrease
- 4. (Don't know /not sure)
- 5. (Refused)

PREC14B IF C12g = 2-4 CONTINUE, OTHERS GO TO PREC14c

\*(EGM GAMBLER NOT AWARE OF MEASURE G) (DV1 = 1 AND C12g =2-4)

C14b Would reducing of the maximum bet per spin on poker machines be likely to increase, not change, or decrease (INSERT STATEMENT)?

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines
- b. your ENJOYMENT of poker machines

(RESPONSE FRAME)

- 1. Increase
- 2. No change
- 3. Decrease
- 4. (Don't know /not sure)
- 5. (Refused)

PREC14C IF C12h = 2-4 CONTINUE, OTHERS GO TO PREC16

\*(EGM GAMBLER NOT AWARE OF MEASURE H) (DV1 = 1 AND C12h =2-4)

C14c Would reducing the amount of cash you can insert into the note acceptors on poker machines located in CASINOS be likely to increase, not change, or decrease (INSERT STATEMENT)?

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines
- b. your ENJOYMENT of poker machines

(RESPONSE FRAME)

- 1. Increase
- 2. No change
- 3. Decrease
- 4. (Don't know /not sure)
- 5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

TS3c TIMESTAMP 3c

\*(EGM GAMBLER) (DV1 = 1)

C16 A range of measures have been PROPOSED to minimise the harm from excessive poker machine gambling. I am going to run through these and would like to know how you think these measures MIGHT impact on the way you play poker machines with regards to the amount you spend and your enjoyment.

(IF NECESSARY: Please note that these are only proposed measures/hypothetical, they aren't necessarily going to be introduced).

\*(PROGRAMMER NOTE – RANDOMIZE C16A TO C16I)

\*(EGM GAMBLER) (DV1 = 1)

C16a Would allowing only socially responsible advertising of gambling be likely to increase, not change, or decrease (INSERT STATEMENT)  
(INTERVIEWER NOTE: advertising that takes the adverse impacts of gambling into account)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16b Would limiting gambling vouchers and banning alcohol vouchers be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16c Would introducing player loyalty programs that provide player activity statements, detailed information, and limited rewards be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16d Would reducing the amount you can withdraw from venue EFTPOS facilities, casino ATMs, and cheque cashing facilities be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

- 1. Increase
- 2. No change
- 3. Decrease
- 4. (Don't know /not sure)
- 5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16e Would restricting the payment of cash for poker machine payouts be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

- 1. Increase
- 2. No change
- 3. Decrease
- 4. (Don't know /not sure)
- 5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16f Would providing adequate lighting in poker machine areas be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

- 1. Increased
- 2. No change
- 3. Decreased
- 4. (Don't know /not sure)
- 5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16g Would not serving food or alcohol to poker machine players in the evening be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16h Would locating highly visible clocks on the walls of poker machine areas be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(EGM GAMBLER) (DV1 = 1)

C16i Would providing signage about legal matters, responsible gambling, and chances of winning be likely to increase, not change, or decrease (INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. the amount you SPEND on poker machines ?
- b. your ENJOYMENT of poker machines ?

(RESPONSE FRAME)

1. Increase
2. No change
3. Decrease
4. (Don't know /not sure)
5. (Refused)

\*(ALL)

TS4 TIMESTAMP 4

**\*SECTION D: NON-EGM GAMBLING ACTIVITY FREQUENCY/EXPENDITURE**

PRED0 IF DV2 NOT 2-10 (DON'T UNDERTAKE ANY OTHER GAMBLING) GO TO E1, OTHERS CONTINUE

PRED0A IF DV1=1 (EGM GAMBLER) AND DV2=2-10 (OTHER GAMBLING) CONTINUE, OTHERS GO TO PRED0B

(EGM GAMBLERS WHO UNDERTAKE OTHER GAMBLING ALSO) (DV1=1 AND DV2=2-10)  
D0a We would now like to ask you some questions about some other gambling activities.

PRED0B IF DV1=2 (NOT EGM GAMBLER) AND DV2=2-10 (OTHER GAMBLING ACTIVITY) CONTINUE, OTHERS GO TO PRED0B

(EGM GAMBLERS) (DV1=1)

D0b We would now like to ask you some questions about your gambling activities.

PRED1a IF DV2=2 CONTINUE, OTHERS GO TO PRED2a

\*(BET ON HORSE OR GREYHOUND RACES) (DV2=2)

D1a In the last 12 months, how many times per week, or per month or per year have you bet on HORSE OR GREYHOUND RACES (excluding sweeps)... (READ OUT)?

(STATEMENTS)

- a. At a racetrack
- b. At an off-course venue (such as TAB, TOTE, club, hotel or casino)
- c. By telephone
- d. Over the Internet (includes computer, betting apps, mobile internet for money)

(RESPONSE FRAME)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(BET ON HORSE OR GREYHOUND RACES) (DV2=2)

D1b In the past 12 months, approximately how much money, on average, did you spend during EACH SESSION of betting on horse or greyhound races?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >5000)
2. (Don't know)
3. (Refused)

PRED2a IF DV2=3 CONTINUE, OTHERS GO TO PRED3a

\*(BUY INSTANT SCRATCH TICKETS) (DV2=3)

D2a In the last 12 months, how many times per week or per month or per year have you purchased INSTANT SCRATCH TICKETS?

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)

\*(BUY INSTANT SCRATCH TICKETS) (DV2=3)

D2b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH TRANSACTION of purchasing instant scratch tickets?

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >50)
2. (Don't know)
3. (Refused)

PRED3a IF DV2=4 CONTINUE, OTHERS GO TO PRED4a

\*(PLAY LOTTERIES ETC) (DV2=4)

D3a In the last 12 months, how many times per week, or per month, or per year have you played A LOTTERY?

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)

\*(PLAY LOTTO ETC) (DV2=4)

D3b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH TRANSACTION of playing a lottery?

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >100)
2. (Don't know)
3. (Refused)

PRED4a IF DV2=5 CONTINUE, OTHERS GO TO PRED5a

\*(PLAY KENO) (DV2=5)

D4a In the last 12 months, how many times per week, or per month, or per year have you played KENO... (READ OUT)?

(STATEMENTS)

- a. In a club or hotel
- b. In a casino
- c. In a newsagent or Tattersalls outlet
- d. Over the Internet (includes computer, betting apps, mobile internet for money)

(RESPONSE FRAME)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(PLAY KENO) (DV2=5)

D4b In the past 12 months, how much money, on AVERAGE, did you SPEND during EACH SESSION of playing Keno?

(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >500)
98. (Don't know)
99. (Refused)

PRED5a IF DV2=6 CONTINUE, OTHERS GO TO PRED6a

\*(PLAY TABLE GAMES) (DV2=6)

D5a In the last 12 months, how many times per week, or per month, or per year have you played... (READ OUT)?

(STATEMENTS)

- a. Poker tournaments at a club, hotel, or casino
- b. Other casino table games (e.g. blackjack, roulette, poker) at a casino
- c. Any casino table games (e.g. Blackjack, roulette, poker) over the Internet (includes computer, betting apps, mobile internet for money)

(RESPONSE FRAME)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(PLAY TABLE GAMES) (DV2=6)

D5b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH SESSION you played casino table games?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing – Can be internet or in person)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >5000)
2. (Don't know)
3. (Refused)

PRE6a IF DV2=7 CONTINUE, OTHERS GO TO PRED7a

\*(PLAY BINGO) (DV2=7)

D6a In the last 12 months, how many times per week, or per month, or per year have you played BINGO?

(SINGLE RESPONSE)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(PLAY BINGO) (DV2=7)

D6b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH SESSION of playing bingo?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >500)
2. (Don't know)
3. (Refused)

PRED7a IF DV2=8 CONTINUE, OTHERS GO TO PRED8a

\*(BET ON SPORT EVENTS) (DV2=8)

D7a In the last 12 months, how many times per week, or per month, or per year have you bet on SPORTING EVENTS or other events ... (READ OUT)?

(STATEMENTS)

- a. At an off-course venue (such as TAB, TOTE, club, hotel or casino)
- b. Over the Internet (includes includes computer, betting apps, mobile internet for money)
- c. Over the telephone

(RESPONSE FRAME)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)
6. None

\*(BET ON SPORT EVENTS) (DV2=8)

D7b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH SESSION of betting on sporting events or other events?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >5000)
2. (Don't know)
3. (Refused)

PRED8a IF DV2=9 CONTINUE, OTHERS GO TO PRED9a

\*(BET ON PRIVATE GAMES) (DV2=9)

D8a In the last 12 months, how many times per week, or per month, or per year have you bet on INFORMAL PRIVATE GAMES FOR MONEY (e.g. cards, mah-jong, snooker, online or offline computer games, board games, sports)?

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)

\*(BET ON PRIVATE GAMES) (DV2=9)

D8b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH SESSION of betting on informal private games for money?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >5000)
2. (Don't know)
3. (Refused)

PRED9a IF DV2=10 CONTINUE, OTHERS GO TO TS5

\*(OTHER GAMBLING ACTIVITIES) (DV2=10)

D9a You said that you have bet on (INSERT DV2 CODE 10 TEXT). In the last 12 months, how many times per week, or per month, or per year, have you bet on this activity?  
(INTERVIEWER NOTE, RECORD NUMBER OF TIMES IN APPROPRIATE CODE)

1. Enter times per week (SPECIFY) (ALLOWABLE RANGE 1 TO 14 times)
2. Enter times per month (SPECIFY) (ALLOWABLE RANGE 1 TO 62 times)
3. Enter times per year (SPECIFY) (ALLOWABLE RANGE 1 TO 730 times)
4. (Don't know)
5. (Refused)

\*(OTHER GAMBLING ACTIVITIES) (DV2=10)

D9b In the past 12 months, how much money, ON AVERAGE, did you SPEND during EACH SESSION of playing this gambling activity?  
(INTERVIEWER NOTE: Each session means betting during a discrete period of time at one location | Spend = the difference between what you took with you (including any additional money withdrawn or borrowed during the period of play) and had left when you finished playing)

1. Enter money spent (SPECIFY) (ALLOWABLE RANGE 0 TO 100000) \*(DISPLAY "UNLIKELY RESPONSE" IF >5000)
2. (Don't know)
3. (Refused)

\*(ALL)

TS5 TIMESTAMP 5

**\*SECTION E: PROBLEM GAMBLING SEVERITY (PGSI)**

PREE0 IF DV0=1 (GAMBLER) GO TO E1, OTHERS CONTINUE

\*(NOT GAMBLERS) (DV0=2)

E0 We recognize that you say that you haven't gambled in the past 12 months, however we need to ask everyone the next series of questions just in case one of them happens to relate to you. Please bear with me and I will go through it as quickly as possible for you.

\*(ALL)

E1 For this next series of questions, please try to be as accurate as possible. Thinking about the last 12 months ... (PROGRAMMER SET UP SO IT INSERTS STATEMENT)?  
Would you say...

(STATEMENTS) (RANDOMIZE)

- a. how often have you bet more than you could really afford to lose?
- b. how often have you needed to gamble with larger amounts of money to get the same feeling of excitement?
- c. how often have you gone back another day to try to win back the money you lost?
- d. how often have you borrowed money or sold anything to get money to gamble?
- e. how often have you felt that you might have a problem with gambling?
- f. how often have people criticized your betting or told you that you had a gambling problem, whether or not you thought it was true?
- g. how often have you felt guilty about the way you gamble or what happens when you gamble?
- h. how often has your gambling caused you any health problems, including stress or anxiety?
- i. how often has your gambling caused financial problems for you or your household?

(RESPONSE FRAME)

1. Almost always
2. Most of the time
3. Sometimes
4. Never
5. (Don't know)
6. (Refused)

\*(PROGRAMMER NOTE: CREATE DUMMY VARIABLES)

\*(HIDDEN) (ALL)

DV3 PREVALENCE ESTIMATE

1. (IF E1a-i ALL = 4-6) Non Problem Gambling OR Not Gambler
2. (IF E1a-i ANY = 1-3) Some Problem Gambling

\*(HIDDEN) (NON PROBLEM/NOT GAMBLERS) (DV3=1)

DV4 IF DV3=1, ASSIGN RANDOM NUMBER

(PROGRAMMER ENSURE EVEN DISTRIBUTION – NEED 1/3 IN GROUP 1)

1. Group 1
2. Group 2
3. Group 3

\*(ALL)

TS6 TIMESTAMP 6

## **\*PART 2: SUPPLEMENTARY SURVEY**

### **\*SECTION F: GAMBLING MOTIVES**

PREF1 IF DV0=1 (GAMBLER) CONTINUE, OTHERS GO TO PREI

\*(GAMBLER) (DV0 = 1)

F1 The questions that follow refer to reasons that some people have given about why they take part in gambling activities.

Do you almost always, most of the time, sometimes or never take part in gambling activities...(INSERT STATEMENT)

(STATEMENTS) (RANDOMIZE)

- a. for the chance of winning big money
- b. because it's fun
- c. as a hobby or a past-time
- d. to escape boredom or to fill your time
- e. because you're worried about not winning if you don't play
- f. to compete with others (e.g. bookmaker, other gamblers)
- g. because it's exciting
- h. for the mental challenge or to learn about the game or activity
- i. because of the sense of achievement when you win
- j. to impress other people
- k. to be sociable
- l. because it helps when you're feeling tense
- m. to make money
- n. to relax
- o. because it's something that you do with friends or family

(RESPONSE FRAME)

1. Almost always
2. Most of the time
3. Sometimes
4. Never
5. (Don't know)
6. (Refused)

\*(GAMBLER) (DV0 = 1)

TS7 TIMESTAMP 7

### **\*SECTION G: GAMBLING TRIGGERS**

\*(GAMBLER) (DV0 = 1)

G1 I am now going to read out examples of circumstances where some people gamble and ask you how often you have gambled in each situation.

(STRING TEXT) In the past 12 months, how often have you gambled ...(INSERT STATEMENT)?

Would you say....?

(STATEMENTS) (RANDOMIZE)

- a. in situations involving difficulties with other people (INTERVIEWER NOTE: e.g. when you had an argument with a friend or when there were fights at home)

- b. in situations where you were worried about debt (INTERVIEWER NOTE: e.g. when people were pressuring you to come up with money or when you were worried about your debts)
- c. in situations involving unpleasant or sad or bad feelings (INTERVIEWER NOTE: e.g. when you were depressed or when you felt bad about yourself)
- d. in situations involving testing your control over your gambling (INTERVIEWER NOTE: e.g. when you wanted to prove that you could make a few bets without going too far or when you decided to try to limit your gambling)
- e. in situations involving temptations to gamble (INTERVIEWER NOTE: e.g. when you had money in your pocket or when you saw something that reminded you of gambling)
- f. in situations where you were under social pressure to gamble (INTERVIEWER NOTE: e.g. when someone encouraged you to bet or when people around you expected you to gamble)
- g. in situations where you were feeling confident about your skills (INTERVIEWER NOTE: e.g. when you felt confident about your gambling skills or when you felt you could profit from careful gambling)
- h. in situations where you were winning (INTERVIEWER NOTE: e.g. when you were winning and wanted to keep on winning or when you almost won and felt that you could win very soon)
- i. in situations involving pleasant or happy or good feelings (INTERVIEWER NOTE: e.g. when you wanted to celebrate or when everything was going well)
- j. in situations where you were experiencing a need for excitement (INTERVIEWER NOTE: e.g. when you felt like taking a risk or when everyday life seemed boring)
- k. in situations when you were drinking alcohol

(RESPONSE FRAME)

- 1. Almost always
- 2. Most of the time
- 3. Sometimes
- 4. Never
- 5. (Don't know)
- 6. (Refused)

\*(GAMBLER) (DV0 = 1)  
TS8   TIMESTAMP 8

**SECTION H: PATTERNS OF GAMBLING**

\*(GAMBLER) (DV0 = 1)

H1   Please think about the gambling activity on which you have spent the most money in the past 12 months. Compared to the 12 months previous, would you say that your gambling on this activity stayed the same, increased or decreased in the last 12 months? (IF INCREASED OR DECREASED, PROBE TO CLARIFY: Is that a lot or a little?)

- 1.       Increased a lot
- 2.       Increased a little
- 3.       Stayed much the same
- 4.       Decreased a little, or
- 5.       Decreased a lot
- 6.       (Don't know)
- 7.       (Refused)

\*(GAMBLER) (DV0 = 1)

H2 Still thinking about the gambling activity on which you have spent the most money in the past 12 months. Binge gambling is occasional excessive gambling in between periods of not gambling. Would you describe your gambling on this activity in the past 12 months as binge gambling?

(INTERVIEWER NOTE: Occasional excessive gambling is characterised by feeling out of control, rapid spending of money on gambling, and negative consequences as a result of gambling. Periods of not gambling characterised by an absence of preoccupation with gambling or urges to gamble)

1. Yes
2. No
3. (Don't know/not sure)
4. (Refused)

\*(GAMBLER) (DV0 = 1)  
TS9   TIMESTAMP 9

**\*SECTION I: QUALITY OF LIFE**

PREI1 IF DV4=1 OR DV3=2 OR DV1=1 CONTINUE, OTHERS GO TO Q1

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

I1 Thank you for helping us so far, we really appreciate it. You have been selected to complete the additional component of this survey. This will only take another 10 minutes or so.

(INTERVIEWER NOTE: If they refuse, make an appointment to continue)

The next questions ask how you feel about your quality of life, health, or other areas of your life. Please keep in mind your standards, hopes, pleasures and concerns. We ask that you think about your life specifically IN THE LAST 4 WEEKS?

How would you rate your quality of life on a one to five scale where one is very poor, two is poor, three is neither good nor poor, four is good and five is very good...

1. Very poor
2. Poor
3. Neither good nor poor
4. Good
5. Very good
6. (Don't know)
7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

I2 The next questions ask about how much you have experienced certain things in the LAST FOUR WEEKS. For each, please use the scale extremely, very much, a moderate amount, a little or not at all.

(STATEMENTS) (RANDOMIZE)

- a. To what extent do you feel that physical pain prevents you from doing what you need to do? (INTERVIEWER NOTE: ASKING ABOUT DEGREE OF IMPAIRMENT, NOT FREQUENCY)
- b. How much have you needed any medical treatment to function in your daily life? (INTERVIEWER NOTE: THE KEY IS FUNCTIONING, SO IT CAN INCLUDE THINGS SUCH AS ASPRIN IF THEY CAN'T FUNCTION WITHOUT IT)
- c. How much have you enjoyed life?

- d. To what extent do you feel your life is meaningful?
- e. How well have you been able to concentrate?
- f. How safe have you felt in your daily life?
- g. How healthy has your physical environment been (INTERVIEWER NOTE: I.E., IS YOUR LIVING AND WORKING ENVIRONMENT CLEAN, SAFE, AND STABLE?)

(RESPONSE FRAME)

- 1. Extremely
- 2. Very much
- 3. A moderate amount
- 4. A little
- 5. Not at all
- 6. (Don't know)
- 7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- I3 The next questions ask about how you were able to do certain things in the LAST FOUR WEEKS. For each of these questions, please answer using the scale: completely, mostly, moderately, a little or not at all.

(STATEMENTS) (RANDOMIZE)

- a. Do you have enough energy for everyday life...?
- b. Are you able to accept your bodily appearance...?
- c. Have you enough money to meet your needs...?
- d. How available to you is the information that you need in your day-to-day life?
- e. To what extent do you have the OPPORTUNITY for leisure activities?  
(INTERVIEWER NOTE: we don't expect them to have leisure activities all the time, just whether they ever have the 'opportunity' to undertake them)

(RESPONSE FRAME)

- 1. Completely
- 2. Mostly
- 3. Moderately
- 4. A little
- 5. Not at all
- 6. (Don't know)
- 7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- I4 In the last four weeks, how well have you been able to get around? Would you say...

- 1. Very poorly
- 2. Poorly
- 3. Neither well nor poor
- 4. Well
- 5. Very well
- 6. (Don't know)
- 7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- 15 I am now going to read out a number of statements and ask how satisfied or dissatisfied you are with each. Please use a scale of one to five where 1 is very dissatisfied, 2 is dissatisfied, 3 is neither, 4 is satisfied and 5 is very satisfied \*(PROGRAMMER: USE AS STRING) Using this scale of 1 to 5, how satisfied or dissatisfied are you with (INSERT STATEMENT)

(IF NECESSARY: 1 is very dissatisfied, 2 is dissatisfied, 3 is neither, 4 is satisfied and 5 is very satisfied)

(STATEMENTS) (RANDOMIZE)

- a. your health?
- b. your sleep?
- c. your ability to perform your daily living activities?
- d. your capacity for work?
- e. yourself?
- f. your personal relationships?
- g. the support you get from your friends?
- h. the conditions of your living place?
- i. your access to health services?
- j. your transport?

(RESPONSE FRAME)

1. Very dissatisfied
2. Dissatisfied
3. Neither satisfied nor dissatisfied
4. Satisfied
5. Very satisfied
6. (Don't know)
7. (Refused)
8. (Not applicable)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- 16 If you prefer not to answer the following question, that's fine. Using this scale of 1 to 5 how satisfied or dissatisfied are you with your sex life? (READ OUT IF NECESSARY)

1. Very dissatisfied
2. Dissatisfied
3. Neither satisfied nor dissatisfied
4. Satisfied
5. Very satisfied
6. (Don't know)
7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- 17 How often in the last 4 weeks, have you had negative feelings such as a blue mood, despair, anxiety, or depression? Would you say....

1. Always (100% of the time)
2. Most of the time (more than 50% of the time)
3. Sometimes (25% to 50% of the time)
4. Rarely (1% to 25% of the time)
5. None of the time (0%)

6. (Don't know)
7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS10 TIMESTAMP 10

**\*SECTION J: SUBSTANCE USE**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

J1 I am now going to ask you some questions about your experience of using tobacco products and other drugs over the past 3 months. Please be assured that the information you provide will be treated as strictly confidential.  
In the PAST THREE MONTHS, how often have you... (INSERT STATEMENT)?  
Would you say .....

(IF NECESSARY: We don't need to know about medications that are used as prescribed. However, if you've taken medications for reasons other than prescription, or taken them more frequently or at higher doses than prescribed, please let me know).

(INTERVIEWER NOTE: If they say 'Never', code as 'Not in the last 3 months')

(STATEMENTS) (RANDOMIZE)

- a. used tobacco products (INTERVIEWER NOTE: cigarettes, chewing tobacco, cigars, etc.)
- b. used alcoholic beverages (INTERVIEWER NOTE: beer, wine, spirits, etc.)
- c. used cannabis (INTERVIEWER NOTE: marijuana, pot, grass, hash, etc.)
- d. used cocaine (INTERVIEWER NOTE: coke, crack, etc.)
- e. used amphetamine type stimulants (INTERVIEWER NOTE: speed, ice, g, diet pills, ecstasy, etc.)
- f. used inhalants such as glue, petrol or paint thinner (INTERVIEWER NOTE: also nitrous,)
- g. used sedatives or sleeping pills (INTERVIEWER NOTE: Valium, Serepax, Rohypnol, etc – NOT AS PRESCRIBED)
- h. used hallucinogens such as LSD, mushrooms or special K (INTERVIEWER NOTE: also acidPCP)
- i. used opioids such as heroin or methdone (INTERVIEWER NOTE: alsomethadone, codeine)
- j. had 6 or more drinks containing alcohol on one occasion

(RESPONSE FRAME)

1. Daily or Almost Daily
2. Weekly
3. Monthly
4. Less than monthly
5. Not at all in the last 3 months
6. (Don't know)
7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS11 TIMESTAMP 11

**\*SECTION K: LIFE EVENTS**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

K1 Now I'd like you to think about things that happened in your life during the past 12 months. Which of the following life events have you experienced in the past 12 months?

(STATEMENTS) (RANDOMIZE)

- a. Death of a spouse
- b. Divorce/marital separation
- c. Imprisonment
- d. Death of a close family member
- e. Personal injury or illness
- f. Marriage
- g. Dismissal from work
- h. Arrested by police
- i. contact with police as a perpetrator of an offence

(RESPONSE FRAME)

1. Yes
2. No
3. (Don't know)
4. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS12 TIMESTAMP 12

#### **\*SECTION L: PHYSICAL HEALTH**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

L1 Over the past 12 months, would you say that in general your physical health has been... (READ OUT)

1. Excellent
2. Very good
3. Good
4. Fair, or
5. Poor
6. (Don't know)
7. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

L2 Which of the following health conditions have you experienced in the previous 12 months? (READ OUT)

(INTERVIEWER NOTE: if they are taking medication for it then it counts as a yes)

(STATEMENTS) (RANDOMIZE)

- a. a heart condition, including heart/angina attacks
- b. high blood pressure or high cholesterol
- c. diabetes
- d. cancer
- e. stroke or similar
- f. lung conditions including asthma

- g. a physical disability that affects your day-to-day life

(RESPONSE FRAME)

1. Yes
2. No
3. (Don't know)
4. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- L3. What is your approximate height without shoes?  
(INTERVIEWER NOTE: If respondent is taking a 'wild guess' code as Don't know)

1. Response given in centimetres (Specify \_\_\_\_\_) (ALLOWABLE RANGE 100 TO 250 CENTIMETRES) \*(DISPLAY "UNLIKELY RESPONSE" IF <120 or >200)
2. Response given in feet & inches (Specify feet \_\_\_\_\_) (ALLOWABLE RANGE 3 TO 8 FEET) (Specify inches \_\_\_\_\_) (ALLOWABLE RANGE 0 TO 12 INCHES) \*(DISPLAY "UNLIKELY RESPONSE" IF <4 or >7 FEET)
3. (Don't know)
4. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- L4. What is your approximate weight with light clothing?  
(INTERVIEWER NOTE: If respondent is taking a 'wild guess' code as Don't know)

1. Response given in kilograms (SPECIFY KILOGRAMS \_\_\_\_\_) (ALLOWABLE RANGE 30 TO 260 KILOGRAMS) \*(DISPLAY "UNLIKELY RESPONSE" IF L4 kg = <40 or >200)
2. Response given in stones & pounds (RECORD STONES \_\_\_\_\_) (ALLOWABLE RANGE 3 TO 30 STONE) (RECORD POUNDS \_\_\_\_\_) (ALLOWABLE RANGE 0 TO 14 POUNDS) \*(DISPLAY "UNLIKELY RESPONSE" IF <6 STONES)
3. Response given in pounds only (RECORD POUNDS) (ALLOWABLE RANGE 40 TO 420 POUNDS) \*(DISPLAY "UNLIKELY RESPONSE" IF <88)
4. (Don't know)
5. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS13 TIMESTAMP 13

**\*SECTION M: FINANCIAL DIFFICULTIES**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

- M1 Moving on now to think about finances.  
In the past 12 months, how often have you MISSED, SKIPPED, OR AVOIDED PAYMENT for ... (INSERT STATEMENT)?  
Would you say....?

(STATEMENTS) (RANDOMIZE STATEMENTS a TO k)

- a. rent or mortgage
- b. bills, such as electricity, gas, car registration or phone
- c. credit cards or other loans (INTERVIEWER NOTE: bank/financial institution credit card such as Visa or Mastercard, or store credit card such as Myer)
- d. food, groceries, or small household items

- e. medical expenses (e.g. doctor, dentist, medicine)
- f. Taxes or fines (e.g. speeding, parking, tolls)
- g. money borrowed from family or friends (INTERVIEWER NOTE: that is, not been able to pay them back when you said you would)

(RESPONSE FRAME)

- 1. Very often
- 2. Often
- 3. Sometimes
- 4. Rarely
- 5. Never
- 6. (Not applicable)
- 7. (Don't know)
- 8. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

M2 In the past 12 months, how often have you... (INSERT STATEMENT)?  
Would you say....

(STATEMENTS) (RANDOMIZE STATEMENTS a TO f)

- a. pawned or sold something?
- b. sought financial assistance or food from a welfare organisation?
- c. sought financial help from family and friends?
- d. borrowed money from family members or friends without their knowledge?
- e. engaged in acts of theft, embezzlement, fraud, or forgery?
- f. Relied upon credit cards and other forms of credit to meet household expenses?  
(INTERVIEWER NOTE: Other forms of credit may include store cards and accounts, or short term lenders)

(RESPONSE FRAME)

- 1. Very often
- 2. Often
- 3. Sometimes
- 4. Rarely
- 5. Never
- 6. (Not applicable)
- 7. (Don't know)
- 8. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

M3 Do you have any gambling related debts at this time?

- 1. Yes
- 2. No (GO TO TS14)
- 3. (Don't know) (GO TO TS14)
- 4. (Refused) (GO TO TS14)

\*(GAMBLING DEBTS) (M3 = 1)

M4 Can you please tell me what you would estimate your gambling debt to be?

- 1. Less than \$5,000
- 2. \$5,000 - \$10,000

3. \$10,001 - \$30,000
4. \$30,001 - \$50,000
5. \$50,001 - \$100,000
6. \$100,001 - \$200,000
7. \$200,001 - \$500,000
8. \$500,001 - \$1million
9. More than \$1million
10. (Don't know)
11. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS14 TIMESTAMP 14

#### **\*SECTION N: AGE OF ONSET**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

N1 How old were you when you first bet or gambled for money (excluding sweeps)?

1. (RECORD AGE – 3 DIGITS) (ALLOWABLE RANGE 1 TO A4/1 DIGIT OR UPPER END OF A5 CODE)\*(DISPLAY “UNLIKELY RESPONSE” IF <15)
2. Never bet or gambled for money
3. (Don't know)
4. (Refused)

#### **\*SECTION O: FAMILY MEMBER PROBLEM GAMBLING**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

O1 In the past 12 months, has a family member had an issue with gambling?

1. Yes
2. No
3. (Don't know)
4. (Refused)

#### **\*SECTION P: HELP-SEEKING**

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

P1 In the past 12 months, have you tried to get any sort of help, including informal help from a friend or more formally from a help professional, for...

(STATEMENTS) (RANDOMIZE)

- a. problems related to your gambling?
- b. problems related to someone else's gambling?

(RESPONSE FRAME)

1. Yes
2. No
3. (Don't know)
4. (Refused)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

TS15 TIMESTAMP 15

**\*SECTION Q: DEMOGRAPHICS**

\*(ALL)

Q1 Which of the following best describes your household? (READ OUT)  
(INTERVIEWER NOTE: IF JOINT CUSTODY COUNT AS CHILDREN LIVING AT HOME)

1. Couple with no children
2. Couple with children still at home
3. Couple with children not living at home
4. Single person household (no children)
5. Single with children still at home
6. Single with children not living at home
7. Group or shared household
8. In some other arrangement
9. (Don't know)
10. (Refused)

\*(ALL)

Q2 What is your current occupational status?

1. In paid employment full time (35 hours/week or more)
2. In paid employment part time/casual
3. Primarily household duties
4. Student
5. Retired
6. Looking for work
7. Unable to work / pension
8. Other (SPECIFY)
9. (Don't know)
10. (Refused)

\*(ALL)

Q3 Could you please tell me your approximate annual PERSONAL income BEFORE TAX. Is it...

1. Less than \$25,000
2. \$25,000 to \$39,999
3. \$40,000 to \$64,999
4. \$65,000 to \$79,999
5. \$80,000 to \$129,999
6. \$130,000 or more
9. (Don't know)
10. (Refused)

\*(ALL)

Q4 In what country were you born?

1. Australia
2. New Zealand
3. United Kingdom (INTERVIEWER NOTE: Includes England, Scotland, and Northern Island – Other Ireland goes into Other specify)

4. Vietnam
5. Other (SPECIFY)
6. (Don't know)
7. (Refused)

\*(ALL)

Q5 What is the main language spoken at home?

1. English
2. Arabic
3. Cantonese Chinese
4. Greek
5. Italian
6. Mandarin Chinese
7. Spanish
8. Turkish
9. Vietnamese
10. Chinese
11. Other (SPECIFY)
12. (Don't know)
13. (Refused)

\*(ALL)

Q5a With which cultural group do you identify? (PROBE IF NECESSARY)

1. Australian
2. English
3. Arabic
4. Chinese
5. Greek
6. Italian
7. Spanish
8. Turkish
9. Vietnamese
10. Other (SPECIFY)
11. (Don't know)
12. (Refused)

\*(ALL)

Q6 What is the highest level of education or trade qualifications you have completed?  
(INTERVIEWER NOTE: If less than year 12, probe for trade qualifications)

1. Primary school only
2. Secondary school: not completed year 12
3. Year 12
4. Trade qualifications
5. Tertiary education / University undergraduate degree
6. Post graduate qualification
7. Other (SPECIFY)
8. (Don't know)
9. (Refused)

\*(ALL)

TS16   TIMESTAMP 16           01:00

**\*SECTION T: FUTURE RESEARCH**

PRET1 IF DV4=1 OR DV3=2 OR DV1=1 CONTINUE, OTHERS GO TO CLOSE)

\*(RANDOM GROUP 1 OR PROBLEM GAMBLER OR EGM GAMBLER) (DV4=1 OR DV3=2 OR DV1=1)

T1 We would really appreciate the opportunity to contact you again in the future to participate in a similar survey. Would it be ok to call you to see if you are available to participate in future similar surveys?

1. Agree to participate
2. Refused

PRET2 IF DV1=1 (EGM GAMBLER) CONTINUE, OTHERS GO TO T3N

\*(EGM GAMBLER) (DV1 = 1)

T2 We would like to run some focus groups to get some more detailed information. We would provide you with a \$50 gift voucher as compensation for your time. Would you be interested in participating?

1. Agree to participate
2. Refused (GO TO T4)

PRET3N IF T1=1 OR T2=1 (AGREE TO PARTICIPATE) CONTINUE, OTHERS GO TO PRET4

\*(AGREED TO BE RECONTACTED) (T1 = 1 OR T2 = 1)

T3n Could I please record your name

1. Name given (SPECIFY)
2. Refused name

\*(AGREED TO BE RECONTACTED) (T1 = 1 OR T2 = 1)

T3tel Could I confirm the best number to call you on:  
NUMBER FROM SAMPLE: (DISPLAY NUMBER FROM SAMPLE)

1. Number from sample is best number
2. Collect other number (SPECIFY TEN DIGIT NUMBER)

\*(AGREED TO BE RECONTACTED) (T1 = 1 OR T2 = 1)

T3alt Are there other numbers or a mobile for future contact?

1. Yes (SPECIFY TEN DIGIT NUMBER))
2. No

PRET4 IF DV3=2 CONTINUE, OTHERS GO TO CLOSE

\*(PROBLEM GAMBLERS) (DV3=2)

T4 IF NECESSARY: I was wondering whether you may be interested in some free confidential support from the Gamblers Help Line. Would you like their number?

1. Number is... 1800 156 789

\*(ALL)

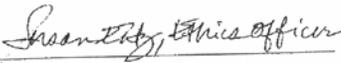
CLOSE That is all the questions that I have for you. Thank you very much again for your assistance and time. A reminder that my name is (...) from the Social Research Centre. This research has been conducted on behalf of the Tasmanian Government

## Appendix D

CERTIFICATE OF HUMAN PARTICIPANT RESEARCH  
University of Lethbridge  
Human Subject Research Committee

PRINCIPAL INVESTIGATOR: Odedeji Odeleye  
ADDRESS: Faculty of Health Sciences  
University of Lethbridge  
4401 University Drive  
Lethbridge, AB T1K 3M4  
PROJECT TITLE: Lower Severity Gambling and Associated Harms in the  
Tasmanian Population  
INTERNAL FILE: 2015-085  
INFORMED CONSENT: No (waived – secondary analysis of de-identified data  
without access to key)  
DATE APPROVED: December 15, 2017  
FINAL REPORT DUE: On or before April 30, 2018

The Human Subject Research Committee, having reviewed the above-named proposal on matters relating to the ethics of human research, approves the procedures proposed and certifies that the treatment of human participants will be in accordance with the Tri-Council Policy Statement and University policy.

  
Human Subject Research Committee

December 15, 2017

\_\_\_\_\_  
Date