

Gambling problems amongst the Indigenous population of the Northern Territory

Report prepared for the Community Benefit Fund, Department of Justice, NT Government.

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Preface

This report represents the 2009 contribution to the Indigenous gambling research program conducted by the School for Social and Policy Research's (CDU) Gambling Research Team. It is explicitly concerned with the effects of gambling on the Indigenous population of the NT (NT). The previous report in this series, *Indigenous Gambling Scoping Study*, submitted to the Community Benefit Fund (CBF) in 2006 highlighted the paucity of recent evidence about the effects of participation by the Indigenous population in both regulated (licensed) and unregulated (card games) gambling. The current report goes some way to filling this gap. In it, we review the literature specifically about regulated and unregulated gambling by Indigenous people in the NT and summarise recent NT Government policies relating to Indigenous gambling. We subsequently present two analyses of Australian Bureau of Statistics (ABS) survey data. The first analysis identifies the relationships between reported gambling problems and measures of a person's emotional and social wellbeing (specifically the Negative Life Events Scale (NLES) developed by the ABS). The second analysis presents estimates of reported gambling problems for all states and territories (stratified by remoteness) for the Indigenous and general population. It also identifies key individual and community characteristics that are associated with reported gambling problems. Based on the results of these analyses, we present some implications for policy formulation. While this research goes some way in providing evidence for informed policy making, we suggest that further research is required in several areas. These include the interaction between unregulated and unregulated gambling, the extent to which monies from unregulated gambling in remote communities are and being spent in larger regional centres in regulated gambling venues, and the impacts of gambling on child health and community wellbeing.

Acronyms

ABS	Australian Bureau of Statistics
ACT	Australian Capital Territory
CBF	Community Benefit Fund
CI	Confidence Interval
EGM	Electronic Gaming Machine (pokies)
ESWB	Emotional and social wellbeing
GSS	General Social Survey
HICH	Housing Improvement and Child Health in Aboriginal Communities in the NT
NATSISS	National Aboriginal and Torres Strait Islander Social Survey
NATSIHS	National Aboriginal and Torres Strait Islander Health Survey
NLES	Negative Life Events Scale
NSW	New South Wales
NT	Northern Territory
NTG	Northern Territory Government
OR	Odds Ratio
QLD	Queensland
WA	Western Australia

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Executive Summary

Research aims

Both the *Little Children are Sacred* report and the NT Government *Closing the Gap on Indigenous Disadvantage* policy document identified a need for more evidence on Indigenous participation in regulated and unregulated gambling activities as well as the associated negative impacts.

To address this evidence gap, we conducted a literature review, supplemented by an analysis of available ABS data on reported gambling problems using a representative sample of the Indigenous population of the NT. The analyses addressed the following questions:

1. What does the past research tell us about gambling by Indigenous people?
2. What negative life events are most closely associated with people reporting gambling problems for themselves or someone in their family and social networks?
3. What are estimates of reported gambling problems for Indigenous people living in remote and non-remote locations of the NT, and how do these compare to the general population in the NT and with other jurisdiction across Australia?
4. What are the independent correlates of reported gambling problems for the Indigenous and general population of the NT?

Literature review: Indigenous people and gambling in the NT

While research on gambling by Aboriginal people is limited in the NT, there are consistent trends that may be identified:

- The hypothesis proposed by Foote (1996) that gambling participation by Indigenous people in regulated (commercial) gambling was increasing is supported by all studies.
- Electronic gambling machines (EGMs) or pokies are the most popular form of regulated gambling by Indigenous people. EGM gambling is seen as problematic by many Indigenous people, predominantly due to a net outflow of money from communities.
- With the exception of two studies, unregulated community card games were generally viewed as unproblematic in the 1980s in the research literature. However, studies in 1998, 2005 and 2007 were more explicit in detailing the negative consequences of card games.
- Negative consequences of card games included: emotion and physical neglect of children; reduction in school attendance; child under-nutrition caused by gambling losses; and increased family and community stress.
- Positive elements of card games included the recreational benefits of passing time, socialising with family, and the possibility of winning money.

Reported gambling problems and negative life events

- We analysed 11 items of the *Negative Life Events Scale* (NLES), a scale that measures 'stressors' or 'negative life events' of which 'gambling problems' are one item. Other items included 'alcohol or drug related problems', 'witness to violence', 'abuse or violent crime', 'trouble with the police', 'divorce or separation', 'not able to get a job', 'lost job', 'made redundant or sacked', 'death of family member or close friend', 'serious illness or disability', and 'serious accident by family member'.
 - The items in the NTLES grouped together in a similar pattern for both the Indigenous and general populations. Three groupings of NLES items were extracted in the

analysis that represented items relating to *social transgressions*, *income related relationship breakdown*, and *grief and trauma*. ‘Gambling problems’ were most strongly associated with NLES items relating to *social transgressions*. The table below lists each NLES item by the domain in which it was associated.

Social transgressions	Income related relationship breakdown	Grief and trauma
Gambling problems	Divorce or separation	Death family member or close friend
Alcohol or drug related problems	Not able to get a job	Serious illness or disability
Witness to violence	Lost job, made redundant, sacked	Serious accident
Physical abuse or violent crime		
Trouble with the police		

- Overall, estimates for NLES items were 1.2 to 4.5 times higher for the Indigenous population living in remote areas compared with the non-remote Indigenous population.
- Similar magnitudes of difference were observed when comparing the Indigenous non-remote population with the total non-remote population.
- ‘Gambling problems’ were reported by 28% of the NT adult Indigenous population. The percentage reporting ‘gambling problems’ was nearly three times higher for Indigenous people living in remote locations (32%), compared with those living in non-remote (11%) settings (i.e. Darwin and Alice Springs).
- Other NLES items that displayed a similar trend to ‘gambling problems’ for the Indigenous population were ‘alcohol or drug related problems’ (37% in remote *cf.* 20% in non-remote), and ‘being a witness to violence’ (34% in remote *cf.* 9% in non-remote).

Estimates of gambling problems for states and territories by remoteness

- The estimates of reported gambling problems refer not to problem gambling prevalence, but to the extent to which gambling-related problems affects individuals and their social and family networks.
- In relation to the rest of the country, the NT estimates for the Indigenous population were the highest in both 2002 (25%) and 2004/5 (27%).
- Reported gambling problems were three times higher for Indigenous people living in remote localities (32%), compared with people living in urban areas (11%) of the NT (i.e. Darwin and Alice Springs).
- Compared with other states, estimates of reported gambling problems for Indigenous people in the NT most closely resemble those in Queensland and South Australia.
- Indigenous people living in non-remote locations reported a three-fold absolute difference in reported gambling problems compared with the general population living in non-remote locations of the NT.

Correlates of gambling related problems

For the NT Indigenous population, the following variables were associated with a significant increase in reported gambling problems:

- people living in houses with three or more families;
- people involved in a community interest group and those attending a sporting carnival (i.e. social connectedness);
- people who reported community problems (i.e. youth gang and family violence);

- people who were a victim of threatened or physical violence; and those that reported their health to be very good or fair.

Key implications for policy and program development

- Gambling as an activity is enmeshed within the broader social and physical contexts in which it exists. Therefore, effective gambling harm minimisation measures need to take a multidimensional approach in addressing gambling related harm.
- Given gambling related problems are part of a broader spectrum of individual, family and community problems, policies aimed at improving community cohesion and safety may go some way in reducing negative consequences of excessive gambling.
- Further reductions in gambling related problems may be achieved by addressing the social determinants of health. Specifically these include improved living conditions through reductions in crowding, improved outcomes in education, and increased employment and training opportunities.
- The marked differences between gambling outcomes in remote versus non-remote locations suggest these are highly context sensitive (as are the forms of gambling) suggesting that harm minimisation policies would need to be context sensitive (i.e. remote versus urban) and specific to the type of gambling (i.e. cards versus pokies).
- Given the relationship between gambling problems and attendance at community or sporting events suggests that places/events may represent useful places for public education campaigns about the negative consequences of excessive gambling, as well as promoting other counselling services (e.g. mental health, financial management, alcohol and drug).

Future CDU research

Three pieces of research are planned for the coming year, contingent on the availability of data.

1. A replication of the analyses presented in this report using ABS data to be released during 2010. This will allow for assessment of trends in reported gambling problems and other items in NLES, as well as determining if the stability of the independent correlates.
2. An analysis of the Housing Improvement and Child Health study (HICH) which collected information on carers, householders and child health, as well as housing and hygiene condition and community level factors across ten remote Aboriginal communities in the NT. An analysis of this data set will determine the relationship between reported gambling problems in a house and child health, while controlling for community and housing contexts, and carer and householder attributes.
3. A simulation of cash flow across people or 'agents' arising from playing card games in a theoretical community using a modelling approach known as agent-based modelling (ABM) to test various card playing scenarios. This modelling will be used to examine the effects of gambling on income distribution adjusting for parameters such as the presence of a few more skilled players and the leakage of winnings from larger stake games.

Chapter 1: Background and aims of report

1.1 Recent policy developments

The *Little Children are Sacred* report made over 90 recommendations aimed at reducing the incidence of child abuse and neglect in remote Aboriginal communities in the NT (Wild & Anderson, 2007). In this report the word ‘gambling’ was used 36 times and, in every instance but one, the term was used in conjunction either with alcohol and drug abuse or pornography. Gambling was clearly positioned in a ‘discourse of vice’ and this placed gambling (and related problems) as a key public health concern, one that could endanger the well-being of children. In response, the NT Government released the *Closing the Gap on Indigenous Disadvantage: A Generational Plan of Action* report (Northern Territory Government, 2007). This document outlined a number of gambling-specific responses that correlated with specific recommendations by Wild and Anderson (listed in Table 1.1).

Table 1.1: Recommendations from the Wild and Anderson (2007) and the NT Government (2008) response in the Closing the Gap report.

No.	Recommendation	NTG Response
88	Undertake an education campaign targeting the impacts and risk of gambling and especially the risk posed to children who are unsupervised while parents are gambling.	The NTG will undertake a wide-spread education campaign around the negative impact of gambling, including the risks to children and families. <ul style="list-style-type: none"> • <i>Additional Cost: \$1.25m over 5 years</i> [shared with pornography education campaign]
89	That options for delivering gambling counselling to Aboriginal communities be explored and implemented including consideration of visiting counsellors for smaller communities and resident counsellors for larger communities.	The NTG will investigate the extension of current gambling counselling programs to cover more Indigenous communities (Recommendation 90).
90	That further research be carried out on the effects of gambling on child safety and wellbeing, and that consideration be given to the enactment of local laws to regulate gambling as part of the community safety plans to be developed pursuant to recommendation 79 [see below]. <ul style="list-style-type: none"> • Undertake further research on the effects of gambling on child safety and wellbeing. • Enact local laws to regulate gambling as part of the community safety plans. 	The NTG will undertake further research on the impact and management of gambling on Indigenous communities by June 2008. This research will include the: <ul style="list-style-type: none"> • effect of gambling on child safety and wellbeing, • adequacy and enforcement of current laws regulating gambling, and • potential for effective gambling counselling programs.

Two points need to be made in regards to the NT Government response. First, there is very little empirical evidence about the effects of gambling, either regulated (e.g. casino games, TAB, pokies etc.) or unregulated (e.g. private card games) in Indigenous communities. The research that does exist (described in Chapter 2) paints a mixed and complex picture of gambling, one that has both positive and negative consequences dependent upon many social and contextual factors. Second, the NT policy response focuses on gambling as an independent and discrete phenomenon. However, in practice gambling is a complex phenomenon that is intrinsically intertwined with a range of social and contextual forces (Marshall, 2009; McMillen & Donnelly, 2008). It is unlikely that the harmful effects that arise from gambling can be managed through gambling-specific education and counselling alone, and while this response is necessary, research on gambling suggests that it may not be sufficient in addressing harm associated with excessive gambling (Korn, Gibbens, & Azmier, 2003; Marshall, 2009; McMillen & Donnelly, 2008). The contexts (including social, economic, physical and cultural) in which gambling occurs and how these mediate negative

and positive aspects of gambling need to be understood and incorporated into multidimensional policy responses, if policy is to be consistent with the latest evidence (Marshall, 2009; Raylu & Oei, 2004).

1.2 Aims and objectives

In order to fill some of the gaps in evidence, this report aims to answer the following questions.

1. What does past research tell us about gambling by Indigenous people in the Northern Territory (Chapter 2)?
2. Are gambling related problems associated with other negative life events that may affect people’s emotion and wellbeing (Chapter 3)?
 - Do these differ between the Indigenous and total population of the NT?
3. What are the estimates of reported gambling problems for people and their family and social networks and do these differ between jurisdictions (Chapter 4)?
 - Do these differ between the Northern Territory and total population of the Northern Territory?
4. What demographic, social, and economic characteristics of people show an independent association with reported gambling problems (Chapter 4)?
 - Do these differ between the Indigenous and total population of the NT?

Figure 1 presents a flow chart illustrating the structure of the report.

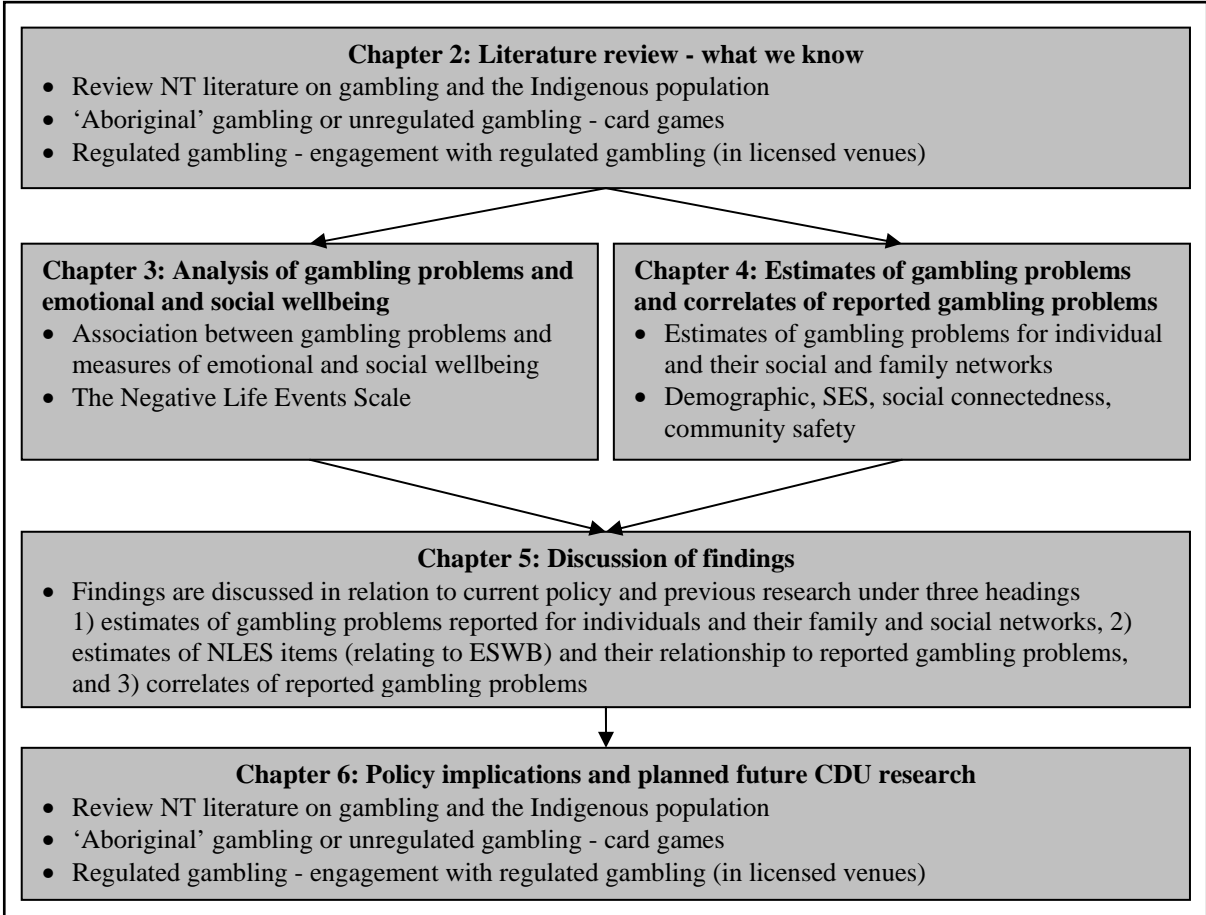


Figure 1.1 Flow diagram depicting structure of report

Chapter 2: Literature review

2.2 'Aboriginal' gambling: Unregulated private card games

Aboriginal people in the NT have been playing card games for 70 years. Studies from the 1940s describe a ubiquitous distribution of card games, although these were less common among central Australian Indigenous populations (Berndt & Berndt, 1946-47). These studies suggest that card games were viewed by Aboriginal people as a means to make money, and money in turn was seen as a way to gain independence from 'white enslavement'. In this respect, gambling allowed for a level of agency for Indigenous people, a level of economic enfranchisement they had not exercised since colonisation. However, card games were concurrently viewed as detrimental to ongoing Indigenous cultural practices, with kinship avoidance relationships tending to take a backseat during card games (for example brother-sister and mother-in-law taboos were ignored) (Berndt & Berndt, 1946-47).

An anthropological study by Tonkinson (1974) in central Australian communities noted that card games were learned by Aboriginal men while working on cattle stations in the 1950s. However, it was not until the late 1950s and early 1960s that the games became a major leisure activity. Nearly all card games occurred on the return to the community of a station worker where money, clothing or other objects were gambled. By the mid 1960s, a small minority of people had adopted gambling as a major activity, and initiated men lamented that gambling would sometimes interfere with rituals and ceremony, an activity that was seen as 'whitefella' business that had no place in the Dreamtime and was a threat to Aboriginal Law. When talking with Indigenous men, Tonkinson (1974) found that many admitted to drinking and gambling when they went to town, but once back in their homeland, retrospectively condemned such activities as making people's heads "no good" and causing them to neglect their family and Law.

Two pieces of anthropological research from the late 1970s and early 1980s have heavily influenced the thinking around card games (Altman, 1985; Goodale, 1987). These studies portrayed the activity as benign - one that allowed Indigenous people to fulfil kinship obligations, distribute or raise money, and engage in a significant leisure pursuit. Altman's (1985) study was conducted in a small outstation community of approximately 30 people located in Arnhem Land in the late 1970s and early 1980s. Two card games were predominantly played. *Bunt* is a fast and exciting game of pure chance. The other, *Kunt* (akin to *Rummy*) is slower paced and incorporates a significant skill component. In addition to the different games, two types of gambling were observed by Altman. Games could be for 'leisure', for example when coins are gambled, or for 'business', where much larger amounts of money are gambled. Altman noted that if individuals or alliances consistently won then *Lambalk*, a good luck charm, was attributed as the cause of this fortunate run of wins. The people on the outstation held a strong anti-surplus ideology, which meant that excess money was often shared or pooled through gambling. Older people never gambled on this outstation and disapproved of it, stating that it interfered with hunting and gathering, could lead to disputes and violence, and undermined secular authority. That is, cards were thought to disrupt traditional aspects of demand sharing through kin lines, although new kin lines were being established for the purpose of gambling. Altman observed that more disputes were about cash associated with gambling (compared with food for example), and that these could lead to violence if drinking bouts occurred concurrently, a finding that highlighted the importance of the social environment in which gambling occurs. Altman also noted that gambling could undermine the authority of Elders. However, despite these contradictions, Altman concluded that gambling did not erode ritualistic functions and contributed to the maintenance of local cultural practices.

Goodale's (1987) study presented an account of the role of card games on the Tiwi Islands during the early 1980s. Again two types of card games were noted: one serious and one less formal and more about sharing winnings and continuing the play. Women were reported to be more serious about and avid in their gambling than men. Some individuals played card in an attempt to raise money for the purchase of their daily beer allotment, and there was a game, *Pirup* that was only played with cans of beer. The following quote by an Aboriginal woman playing cards cited by Goodale highlights the seriousness with which the woman played the game.

Oh my, card playing is HARD [as it appears in the text] work! When I play, I don't hear my children cry for food. I don't hear and I don't see them. I think only about the cards!

(Goodale, 1987, p.6)

In a follow-up study Goodale was informed that Indigenous people from the Tiwi Islands rarely went to the Darwin casino as they had their own card games in Darwin where they could gamble. This is an important point to contrast with a later study (by Foote discussed in the section below) notes significant attendance by Indigenous people in the Darwin casino in the mid 1990s, one that may reflect a transition in the way Indigenous people gamble (Foote, 1996).

More recent research by McMillen and Togni (2000) again noted the ubiquitous nature of card games across the NT. These authors reported that by and large card games appeared unproblematic, except in some instances in Darwin parks where litter was sometimes left behind. Most, but not all, comments on card games viewed them in a positive light, especially because children could be around, in contrast by the separation forced by gambling in EGM venues. In addition, card games provided people in remote communities with something to do, an important point given the proportion of the Indigenous population who are not in paid employment. Negative aspects of card games reported by these authors included people sitting for long periods and not eating properly, children being tired at school (or not attending) because of overnight card games disrupting sleep, and the drain on the financial resources of families.

In the most recent research, a qualitative scoping study conducted by McDonald and Wombo (2006) interviewed 64 people working in service provision in Indigenous communities, particularly Aboriginal Medical Services (AMSs). This project was part of the Indigenous gambling research conducted by CDU and previously reported to the CBF. McDonald and Wombo found that card games were still very common and while the views to some degree may reflect the charter of the organisational interviewees (i.e. mainly from health centres), the games were broadly seen in a negative light. These negative impacts flowed from the growth in card games associated with increased cash availability in many communities over the last 20 years accrued from mining royalties and regular government payments. The study made the point that card games were being played for higher stakes and that in some instances large winnings were taken out of community circulation and spent on alcohol and gambling in urban and larger regional centres. This broadly negative appraisal of card games was reiterated by the *Little Children are Sacred* report (Wild & Anderson, 2007). Interviews conducted by Wild and Anderson with key informants suggested that card games are causing harm in some instances, namely that children were being neglected physically and emotionally when their mothers were playing cards for long periods of time, and that families suffered the economic cost of losing money that could be spent on essentials.

2.3 Regulated gambling

Regulated gambling consists of all forms of gambling that fall under fiscal controls of government and is carried out in licensed venues. Gambling activities include casino table games, electronic gambling machines (EGMs), racetrack betting (TAB or online), instant scratch tickets, lotteries and bingo (in some instances). Research on participation by Indigenous people in regulated gambling is limited to a handful of research reports and papers (Foote, 1996; McDonald & Wombo, 2006; McMillen & Togni, 2000; Young, Barnes, Stevens, Paterson, & Morris, 2007; Young, Morris, Barnes, Stevens, & Paterson, 2006). The observation study by Foote carried out over 6 weeks in the Darwin casino in 1996 found that on average 49.6 Aboriginal people were observed attending the casino per day, of which 67% were women (Foote, 1996). The casino area in which Aboriginal people were most likely to be observed was the EGM gaming area, with 76% of all Aboriginal patrons observed in this area. Roulette (8.8%) and keno (7.8%) areas were the next most popular areas. Based on this admittedly limited data Foote suggested that Aboriginal people were going through a gambling transition from unregulated card games to greater participation in regulated forms of gambling. This transition is consistent with two later studies from 1998 and 2005 (McDonald & Wombo, 2006; McMillen & Togni, 2000). These studies both found evidence from interviews with key informants that EGMs were more of a problem compared with card games, and that people were sometimes taking winnings out of the communities to urban and regional pubs, clubs and casinos where they often played EGMs and drank alcohol (McMillen & Togni, 2000).

The McMillen and Togni study also identified differences in the gambling activity preferences of Aboriginal males depending on where they were gambling. Men preferred betting in the TAB in preference to EGMs when visiting regional centres, but when visiting casinos more often gambled on EGMs. The 2005 NT Gambling Prevalence Survey conducted by CDU provided some additional information about gambling and the Indigenous population, although this was limited by the unrepresentative sample of Indigenous respondents obtained (Young, et al., 2007). This research compared the sample of Indigenous respondents captured in the 2005 NT Gambling Prevalence Survey to the 2006 Census data, and found that the sample represented the more affluent urban middle-class Indigenous population of the NT. Within this more affluent group there was evidence of increased participation in regulated gambling venues, with Indigenous people more likely to be monthly EGM players than the general population (23% *cf.* 14%) and play private card games more frequently (Young, et al., 2007). While the studies described above present a highly partial and fragmented perspective, they make clear that the possibility of increased participation by Indigenous people in regulated gambling is an areas worthy of further investigation, because this form of gambling has the potential to cause serious economic and social harm to a generally disadvantaged group of the population.

2.4 Chapter summary

While research on gambling by Aboriginal people is limited in the NT, there are consistent trends that can be drawn from the review of regulated and unregulated gambling participation:

- Unregulated community card games were largely seen as unproblematic in the 1980s (with the exception of two studies). However, studies in 1998, 2005 and 2007 were more explicit in detailing the negative consequences of card games. Negative consequences of card games included:
 - Emotional and physical neglect of children;
 - Reduced school attendance because of all night card games;
 - Reduced child nutrition due to gambling losses; and

- Increased family and community stress around money demands.
- Foote's (1996) argument that Aboriginal participation in regulated (commercial) gambling was increasing is supported by all later studies although this evidence base is admittedly thin and conclusions inevitable qualified.
- EGMs (or pokies) were the most popular form of regulated gambling in a number of studies, and significantly, EGM gambling is seen as problematic by many Indigenous people, predominantly due to the net financial outflow from communities.

Given this context, the research questions we seek to answer in the analyses of Australian Bureau of Statistics (ABS) data are as follows:

- What other 'negative life events' or 'stressors' are gambling-related problems most associated with (Chapter 3)?
- What is the magnitude of gambling-related problems being experienced by Indigenous people and their family and social networks across the NT (Chapter 4)?
- What are the characteristics of people who report gambling-related problems for themselves, family or close friends (Chapter 4)?

Chapter 3: Gambling problems and emotional and social wellbeing

3.1 Introduction

Using survey data from the Indigenous and total NT population, this chapter presents estimates of items of the Negative Life Events Scale (NLES), and then goes onto to identify significant associations between NLES items. Specifically, the factor analysis produces output that groups NLES items according to how people answered the question. This will improve understandings of where in relation to a number of other ‘stressors’ do gambling problems lie.

3.1.1 Negative Life Events Scale

The NLES is a measure of emotional and social wellbeing (ESWB) that is intended as a reliable measure for both the Indigenous and non-Indigenous populations. The scale was developed by the ABS and the items for inclusion in the NLES were guided by a special advisory group. This group comprised experts in Indigenous information, research and cultural issues, whose were nominated “from Indigenous organisations, peak Indigenous information bodies, Commonwealth and state/territory government agencies with Indigenous program responsibilities, and relevant academic research institutions” (Australian Bureau of Statistics, 2004b, p v). When the NLES is operationalised respondents are asked “*Have any of the following [list of stressors shown] been a problem for you, your family or a close friend in the last 12 months?*” Respondents are then presented a list of up to sixteen ‘stressors’ or negative life events to which they answer yes or no. For the current analysis only eleven were similar enough to be compared between the Indigenous and general population and are:

- gambling problems
- alcohol or drug related problems
- witness to violence
- abuse or violent crime
- trouble with the police
- divorce or separation
- not able to get a job
- lost job
- made redundant or sacked
- death of family member or close friend
- serious illness or disability
- serious accident by family member.

The NLES has been used in the 2002 National Aboriginal and Torres Strait Islander Social Survey (NATSISS), the 2004/5 National Aboriginal and Torres Strait Islander Health Survey (NATSIHS), and the 2002 and 2006 General Social Survey (GSS). It was also used in the 2008 NATSISS, but this data is not yet publically available. To our knowledge the NLES has only been used once outside of ABS surveys, in a study examining housing infrastructure and child health (Bailie, et al., 2005; Kowal, Gunthorpe, & Bailie, 2007). The NLES was shown to have good reliability and discrimination validity in a psychometric analysis (Kowal, et al., 2007). A unique feature of the NLES is that it does not measure problems at the individual level, but rather it measures the extent to which individual stressors affect individuals *and* their social and family networks. This broader conception of gambling problems is consistent with the national definition of problem gambling, which states problem gambling “...is characterised by difficulties limiting money and/or time spent on gambling, which leads to adverse consequences for the gambler, others or the community” (Neal,

Delfabbro, & O'Neil, 2005, p125). It is therefore a useful measure of the level of gambling-related harm as more broadly defined.

3.2 Methods

3.2.1 Data sets and survey design

All data were accessed remotely from the ABS using the Remote Access Data Laboratory or RADL (Australian Bureau of Statistics, 2006b). Data sets used included the 2002 NATSISS, and the 2002 GSS. The surveys employed a multistage stratified sampling design, with the scope of the NATSISS including remote and very remote locations. The GSS, however, only includes non-remote locations (i.e. major cities, inner and outer regional areas). In other words, the Indigenous surveys are representative of the whole NT population, while the general population survey is only representative of the non-remote population. For more information see the relevant survey technical manual (Australian Bureau of Statistics, 2003, 2004b, 2006a, 2007). Sample sizes for the two surveys are given in Table 3.1. Ethics clearance was not required as the analyses constitute secondary use of ABS data. However, strict confidentiality restrictions were respected as mandated by the *Census and Statistics Act, 1905*.

Table 3.1 Data sources, sample size and scope for analyses for the NT

Name of survey	Year	Sample size (n) ¹	Geographic scope for analysis
National Aboriginal and Torres Strait Islander Social Survey ²	2002	1,417	Non-remote & remote
General Social Survey (GSS)	2002	1,320	Non-remote

(1) 18 years and over, (2) NATSISS

3.2.2 Statistical analyses

First, estimates for the NT by remoteness are presented for all NLES items for the Indigenous and total non-remote population. To assist in comparisons rate ratios are presented for the remote to non-remote Indigenous estimates and for the Indigenous non-remote to the total non-remote population. Second, the eleven NLES items were subject to factor analysis (principal component method) to determine multivariate associations between items. These were then subject to an orthogonal rotation to improve interpretation, while maintaining independence of factors (Bryant & Yarnold, 2001). This procedure was carried out for the Indigenous population (remote and non-remote combined) and total (non-remote) population of the NT. The 2002 GSS only sampled the non-remote population (i.e. Darwin, Katherine and Alice Springs). The NATSISS survey was unable to be analysed by remoteness due to small numbers and issues with data quality and confidentiality.

3.3 Results

Table 3.2 and Figure 3.1 present estimates of NLES items along with rate ratios by remoteness for the NT Indigenous and total population. Significant differences were determined by calculating rate ratios and 95% confidence intervals. A rate ratio above one where confidence intervals do not overlap one indicates statistical significance at $p \leq 0.05$ and similarly for rate ratios below one. For example a rate ratio of 3.80, observed for 'witness violence' indicates the estimate was 3.8 times higher in remote locations compared with non-remote locations. Similarly, the rate ratio of 0.48 that was observed for 'losing a job' indicates

that the estimate for reported gambling problems is 52% less in non-remote locations compared with remote locations.

Table 3.2 Estimates of NLES items and rate ratios for the NT Indigenous and general population by remoteness

NLES item	2002 NATSISS				2002 GSS	
	Remote % (SE)	Non-Remote % (SE)	Total % (SE)	RR (95% CI) ¹	Non-Remote % (SE)	RR (95% CI) ²
Gambling problem	31.9 (4.1)	11.4 (2.9)	28.4 (3.4)	2.80 (1.59-4.00)	3.2 (0.6)	3.56 (1.34-5.79)
Alcohol/drug related problems	36.9 (4.2)	19.5 (3.5)	33.9 (3.6)	1.89 (1.38-2.41)	8.9 (0.9)	2.19 (1.40-2.98)
Witness to violence	33.9 (3.8)	8.7 (2.7)	29.6 (3.2)	3.90 (1.69-6.11)	5.7 (0.7)	1.53 (0.40-2.65)
Abuse or violent crime	12.9 (2.5)	9.0 (2.8)	12.3 (2.1)	1.43 (0.75-2.12)	5.4 (0.7)	1.67 (0.62-2.71)
Trouble with the police	15.5 (3.1)	12.7 (3.0)	15.0 (2.6)	1.22 (0.92-1.52)	5.3 (0.8)	2.40 (1.23-3.57)
Divorce or separation	9.2 (1.9)	15.0 (3.1)	10.2 (1.7)	0.61 (0.60-0.62)	13.0 (1.0)	1.15 (0.87-1.44)
Not able to get a job	24.1 (4.0)	34.4 (6.2)	25.8 (3.5)	0.70 (0.60-0.80)	12.8 (1.1)	2.69 (2.61-2.77)
Lost job, redundant, sacked	3.8 (1.1)	8.0 (1.9)	4.5 (0.9)	0.48 (0.32-0.63)	6.8 (0.8)	1.18 (0.59-1.77)
Death-family/close friend	55.5 (3.7)	43.7 (5.3)	53.5 (3.2)	1.27 (1.02-1.52)	22.5 (1.5)	1.94 (1.84-2.04)
Serious illness or disability	36.8 (2.2)	24.0 (4.3)	34.7 (2.0)	1.53 (1.03-2.04)	20.9 (1.0)	1.15 (0.98-1.32)
Serious accident	19.6 (2.5)	4.3 (1.9)	17.0 (2.1)	4.56 (0.78-8.34)	5.4 (0.5)	0.80 (0.12-1.47)

1 Rate ratio (Indigenous remote:Indigenous non-remote) and 95% confidence interval. Bold significant at $p \leq 0.05$

2 Rate ratio (Indigenous:total population) and 95% confidence interval for non-remote sample. Bold significant at $p \leq 0.05$

Sources: GSS data tabulated using CURF accessed via RADL (Australian Bureau of Statistics, 2003) and NATSISS data from (Australian Bureau of Statistics, 2004a)

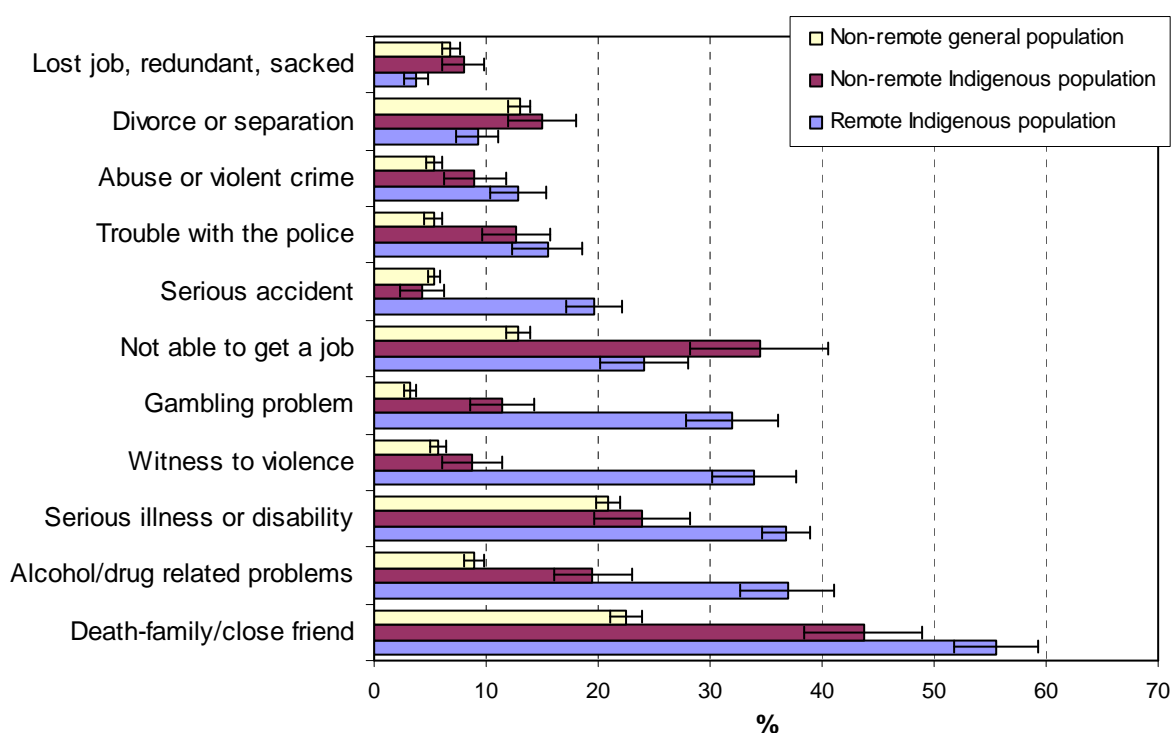


Figure 3.1 NLES estimates for the 2002 Indigenous and general population of the NT by remoteness

Looking at the 2002 Indigenous estimates by remoteness, there were five NLES items reported at significantly higher levels in remote areas compared with non-remote areas. These were witness to violence (rate ratio 3.90 (95% confidence interval, 1.69-6.11)), gambling problems (2.80 (1.59-4.00)), alcohol or drug related problems (1.89 (1.38-2.41)), serious

illness or disability (1.53 (1.03-2.04)) and death of a family member or close friend (1.27 (1.02-1.52)). Three NLES items were reported at significantly lower levels by Indigenous people living in remote areas compared with non-remote areas. These were losing a job or becoming redundant (0.48 (0.32-0.63)), being divorced or separated (0.61 (0.60-0.62)) and not being able to get a job (0.70 (0.60-0.80)). NLES for estimates the non-remote total population of the NT were lower for all items for the Indigenous population (non-remote), except having a family member in a serious accident. Significant differences were observed for gambling problems (3.56 (1.34-5.79)), not able to get a job (2.69 (2.61-2.77)), trouble with police (2.40 (1.23-3.57)), alcohol or drug related problems (2.19 (1.40-2.98)), and death of family member or close friend (1.94 (1.84-2.04)).

Table 3.3 presents rotated factor loading for the Indigenous and total NT population. Factor loadings can be interpreted in much the same way as a correlation coefficient, and they indicate the strength of association between the NLES item and the extracted factor. NLES items with factor scores greater than or equal to 0.40 were considered as located on that particular factor and have been bolded for easy visual inspection. Both the factor analysis for the Indigenous and total (non-remote) NT population show a remarkably similar factor structure with three clearly discernable factors identifying items relating to *social transgressions* (factor 1), *income related relationship breakdown* (factor 2), and *grief and trauma* (factor 3). The 3-factor solution for the Indigenous population explained just less than 48% of the variation in the eleven NLES items, while the total population 3-factor solution explained just over 41% of the variation in NLES items.

Table 3.3 Rotated factor analysis of common NLES items for the NT

NLES item	2002 NATSISS			2002 GSS		
	Factor 1	Factor 2	Factor 3	Factor 1	Factor 2	Factor 3
Gambling problems	0.54	0.27	0.29	0.42	0.00	0.28
Alcohol or drug related problems	0.57	0.34	0.27	0.68	0.16	0.11
Witness to violence	0.72	0.25	0.11	0.73	0.06	0.04
Physical abuse or violent crime	0.69	0.18	-0.04	0.66	0.03	-0.05
Trouble with the police	0.70	-0.17	0.04	0.53	0.23	0.19
Divorce or separation	0.25	0.61	0.06	0.10	0.50	0.16
Not able to get a job	0.12	0.73	0.08	0.15	0.64	0.12
Lost job, made redundant, sacked	0.03	0.55	0.03	0.08	0.72	-0.07
Death family member or close friend	0.21	-0.05	0.64	0.17	-0.15	0.58
Serious illness or disability	-0.03	0.16	0.76	0.03	0.27	0.50
Serious accident	0.33	-0.06	0.46	0.02	0.07	0.68
Rotated Eigen-value	2.32	1.56	1.38	1.96	1.36	1.23
Cumulative % variance explained	21.1%	35.3%	47.9%	17.8%	30.2%	41.4%

NOTE: Factor loadings ≥ 0.4 in bold font.

3.4 Summary: Gambling problems and emotional and social well-being

Estimates for NLES items were 1.2 to 4.5 times higher for the Indigenous population living in remote areas compared with the non-remote Indigenous population. Similar magnitudes of difference were also observed when comparing the Indigenous non-remote population with the total non-remote population. The factor analyses confirmed that the dimensionality of the NLES is the same for the Indigenous and general population of the NT with associations between items on the three extracted factors being consistent. It also showed that gambling problems were clearly associated with the factor including items related to *social transgressions* (factor 1). Table 3.4 lists the NLES items and the particular domain they were

associated with from the factor analyses. For further discussion of the implications of these results refer to Chapter 5.2.

Table 3.4 Rotated factor analysis of common NLES items for the NT

Social transgressions	Income related relationship breakdown	Grief and trauma
Gambling problems Alcohol or drug related problems Witness to violence Physical abuse or violent crime Trouble with the police	Divorce or separation Not able to get a job Lost job, made redundant, sacked	Death family member or close friend Serious illness or disability Serious accident

Chapter 4: Independent correlates of reported gambling problems

4.1 Introduction

Using survey data from the Indigenous and total (non-remote) population, this chapter presents estimates of reported gambling problems for people, their family and close friends for each state/territory by remoteness. Then, using multivariable adjusted logistic regression models, we identify independent correlates of reported gambling problems for the Indigenous population of the NT (remote and non-remote combined) and the total non-remote population.

4.2 Methods

4.2.1 Data sets

Data sets and sample designs have been described previously in Chapter 3.2.1. The dependent variable used in all statistical models is dichotomous and is whether the respondent had reported gambling problems for themselves, family or close friends in the 12 months prior to the survey. There were a large number of explanatory variables available covering socio-demographic, socioeconomic, social networks and culture, community safety, and health domains.

4.2.2 Statistical analyses

First, estimates (and standard errors) of reported gambling problems are presented for each state/territory by remoteness, followed by the multivariable logistic regression modelling using reported gambling problems as the dependent or outcome variable. The modelling allowed for the identification of independent correlates of reported gambling problems. That is, all variables included in final models exert an effect on the reported gambling problems (i.e. the dependent variable) independent of other explanatory variables in the model. To arrive at a final model, we first carried out a bivariate analysis to determine which explanatory variables showed a significant association with reported gambling problems. Where more than one explanatory variable from the same domain had a significant association with reported gambling problems, they were entered into a single logistic regression model and backward elimination procedure applied with removal set at $p > 0.05$. Once this was completed, the remaining significant explanatory variables from all domains were entered simultaneously into a single model and backward elimination again carried out until all variables in final models were significant at $p \leq 0.05$. All standard errors and 95% confident intervals presented account for the survey design and were calculated using a jack-knife resampling procedure with 50 replicate weights (this is the preferred ABS method for calculating confidence intervals). All data were accessed via the Australian Bureau of Statistics RADL (Australian Bureau of Statistics, 2006b) and analysed using Stata v8©. See Table 3.1 for sample sizes.

4.3 Results

Estimates for reported gambling problems for each state and territory by remoteness are presented in Tables 4.1 and 4.2, and graphically in Figures 4.1 to 4.4. Figure 4.1 shows estimates from the 2002 NATSISS by remoteness and for the 2002 and 2006 GSS for non-remote locations. For the NT Indigenous population, estimates in remote locations (32%) were nearly three times higher than in non-remote locations (11%). Both Queensland and Western Australia also had a three or more fold higher estimates for gambling problems in remote locations, compared with non-remote locations. Western Australia and ACT/Tasmania

had the lowest estimates of reported gambling problems, while the NT, Queensland and South Australia had the highest estimates. Estimates of reported gambling problems for the general population were the lowest in Western Australia in 2002 and 2006, while the highest estimate in 2002 was in Sydney and the NT in 2006.

Table 4.1 Estimates of reported gambling problems by jurisdiction for the 2002 Indigenous and general population and the 2006 general population

	2002 NATSISS ¹			2002 GSS ²	2006 GSS ²
	Remote % (SE)	Non-remote % (SE)	Total % (SE)	Non-remote % (SE)	Non-remote % (SE)
NT	31.9 (4.1)	11.4 (2.9)	28.4 (1.4)	3.0 (0.6)	4.7 (0.9)
Western Australia	13.2 (2.9)	3.6 (1.2)	8.1 (1.5)	1.3 (0.2)	1.6 (0.4)
New South Wales	8.7 (2.3)	10.3 (1.3)	10.2 (1.2)	4.1 (0.4)	3.3 (0.6)
Victoria	-	13.3 (1.6)	13.3 (1.6)	3.7 (0.4)	3.1 (0.4)
Queensland	37.1 (10.7)	10.7 (1.6)	17.4 (2.9)	3.2 (0.4)	3.7 (0.5)
South Australia	19.3 (5.4)	16.5 (2.3)	17.2 (2.2)	3.7 (0.5)	3.8 (0.5)
ACT/Tasmania ¹	-	7.9 (1.1)	7.9 (1.1)	3.2 (0.3)	3.1 (0.3)
Australia	26.4 (3.2)	10.2 (0.7)	14.6 (1.0)	3.5 (0.2)	3.2 (0.2)

1 NATSISS estimates sourced from Australian Bureau of Statistics publications (data cubes), except for ACT/Tasmania which were derived from the NATSISS CURF accessed via the ABS RADL.

2 GSS (2002 and 2006) estimates obtained from customised Australian Bureau of Statistics tables

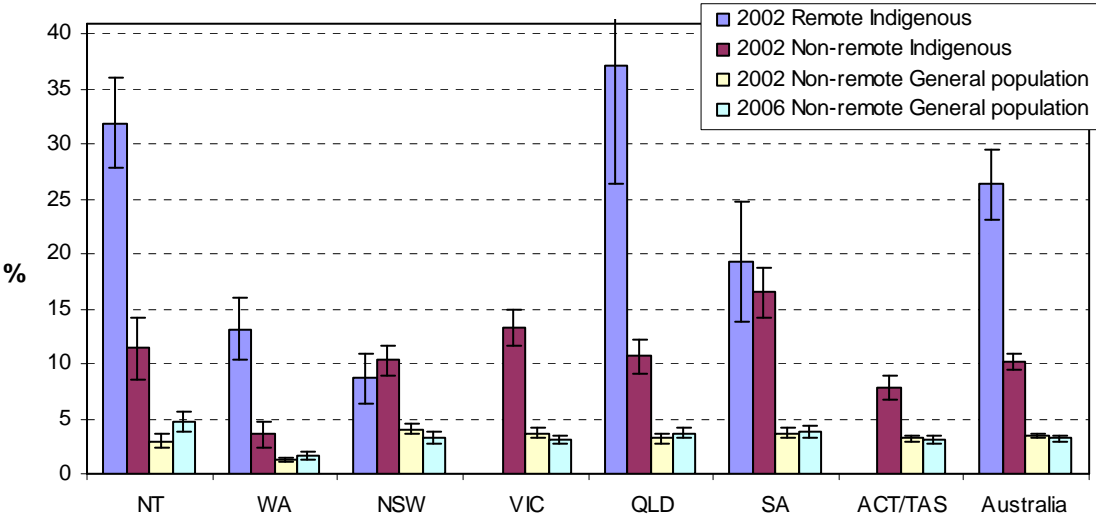


Figure 4.1 Estimates (and standard error) of reported gambling problems by jurisdiction and remoteness for the 2002 Indigenous and general population and the 2002 general population

Results from the 2004/5 NATSIHS (Table 4.2 and Figure 4.2) are not directly comparable to those obtained from the 2002 NATSISS and 2002 and 2006 GSS's (Table 4.1 and Figure 4.1) due to the differing content in these surveys. However, estimates from the NATSIHS showed a reasonable level of consistency with the estimates observed in the 2002 NATSISS. The NT again had the highest levels of reported gambling problems, though this was again dominated by very high levels in remote locations (three times higher). Victoria and New South Wales recorded the lowest reported gambling problems for the Indigenous population in 2004/5.

Table 4.2 Estimates of reported gambling problems by jurisdiction for the 2004/5 Indigenous population

	2004/5 NATSIHS ²		
	Remote % (SE)	Non-remote % (SE)	Total % (SE)
NT	27.5 (3.1)	8.3 (2.5)	24.5 (2.6)
Western Australia	10.1 (2.1)	12.3 (3.5)	11.1 (2.0)
New South Wales	6.0 (1.0)	11.1 (1.6)	10.8 (1.5)
Victoria	-	8.3 (1.5)	8.3 (1.5)
Queensland	18.7 (3.1)	12.3 (1.7)	14.0 (1.5)
South Australia	21.3 (3.5)	14.1 (2.1)	15.8 (1.8)
ACT/Tasmania ¹	-	8.4 (1.4)	8.4 (1.4)
Australia	19.4 (1.6)	11.2 (0.8)	13.5 (0.7)

¹ NATSIHS estimates obtained from customised Australian Bureau of Statistics tables

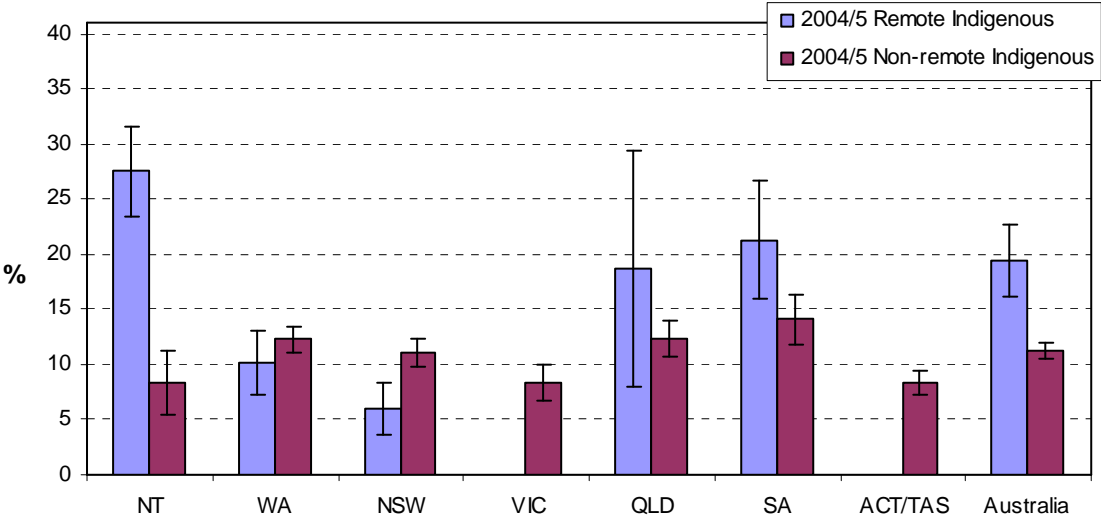


Figure 4.2 Estimates (and standard error) of reported gambling problems by jurisdiction and remoteness for the 2004/5 Indigenous population

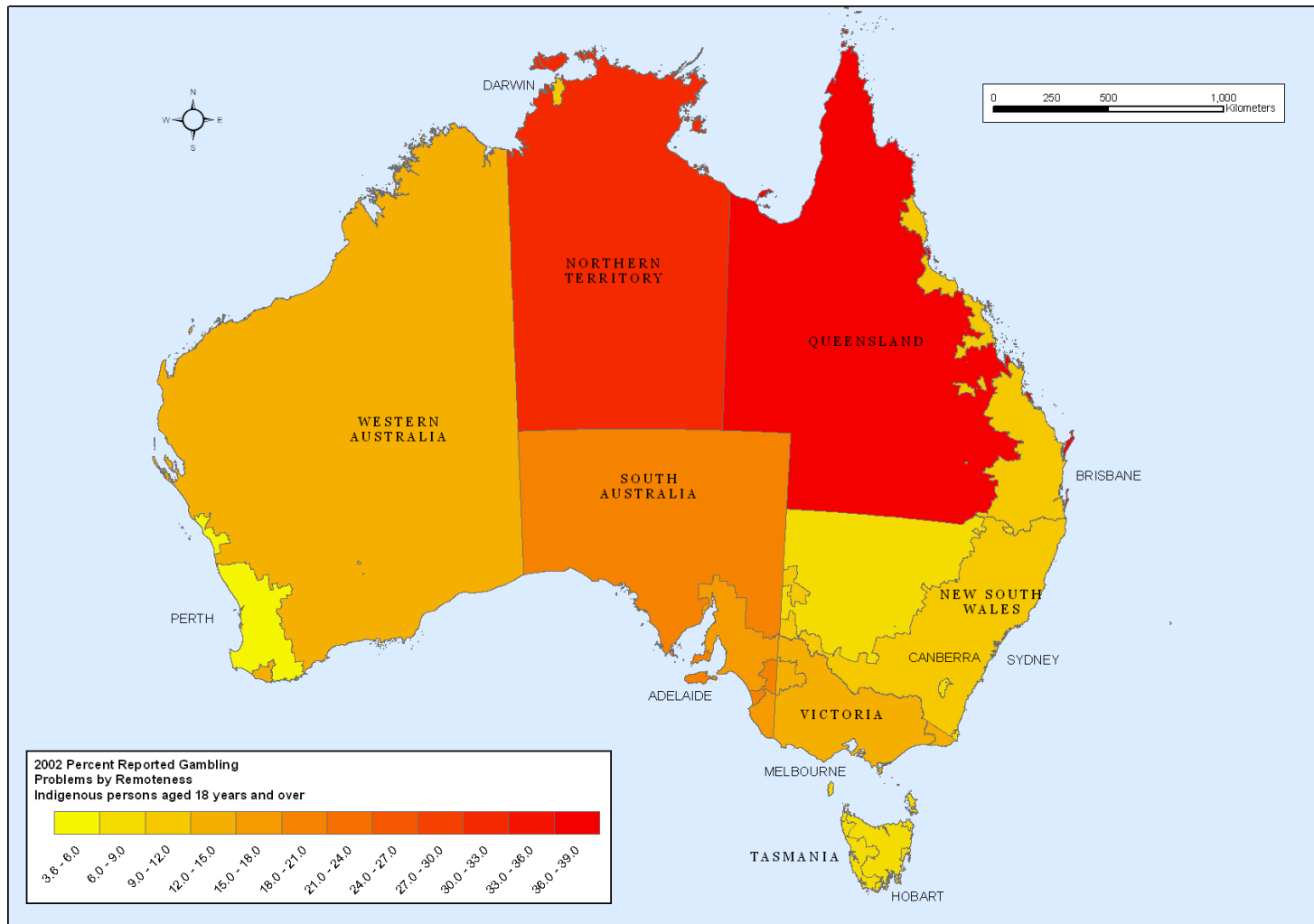


Figure 4.3 Mapped estimates of reported gambling problems for the 2002 Indigenous population by jurisdiction and remoteness

Source: Australian Bureau of Statistics customised table - map prepared by Charles Darwin University, Institute for Advanced Studies, School for Social and Policy Research

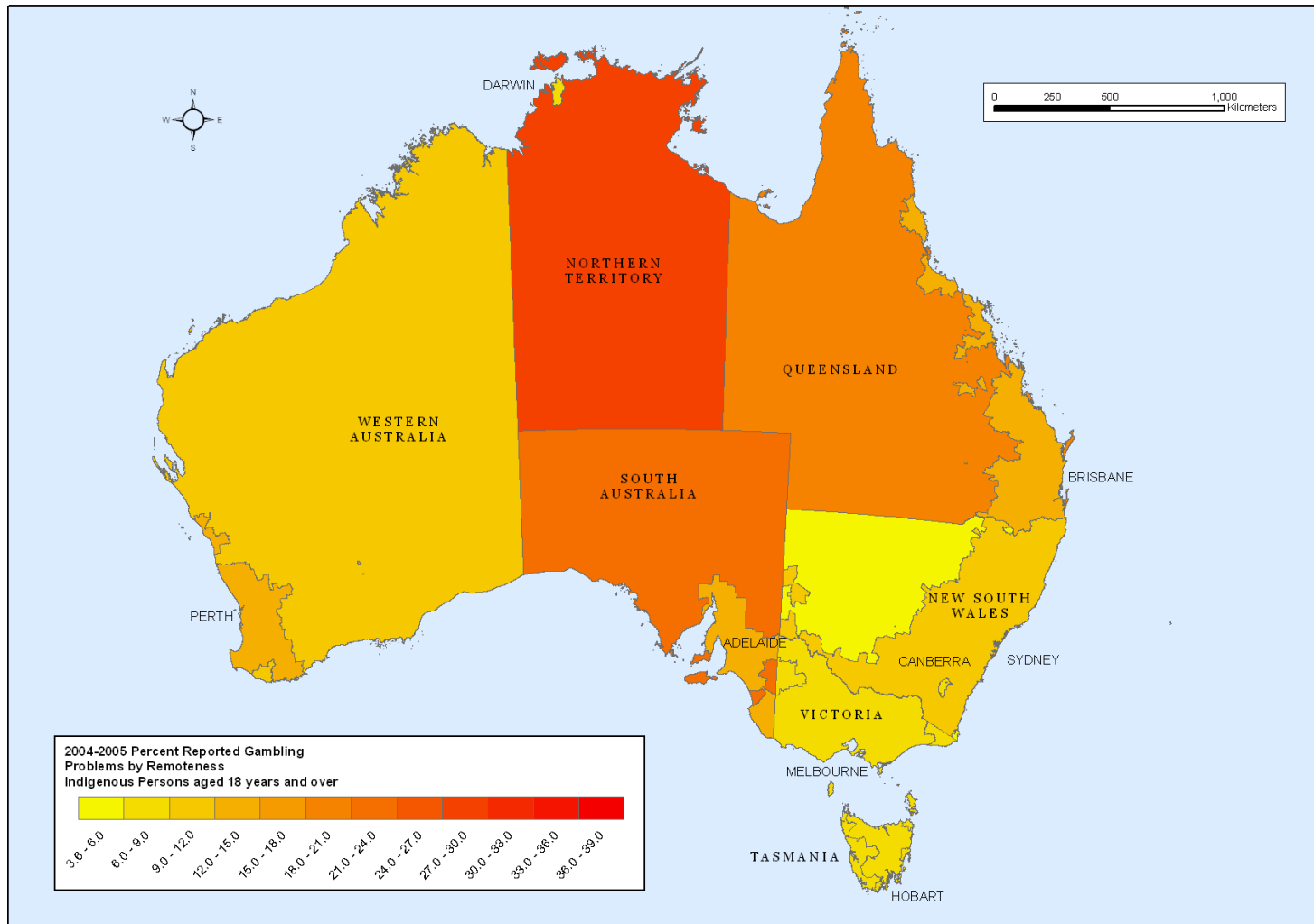


Figure 4.4 Mapped estimates of reported gambling problems for the 2004/5 Indigenous population by jurisdiction and remoteness

Source: Australian Bureau of Statistics customised table - map prepared by School for Social and Policy Research, Charles Darwin University.

Table 4.3 presents final models for the Indigenous population (both remote and non-remote included) and the total non-remote population of the NT. Effect sizes for significant variables are reported using odds ratios (and 95% confidence intervals). For significant variables, the percentage of respondents reporting gambling problems is also shown to assist in interpretation of associations and for comparison between the NATSISS and GSS analyses. Odds ratios can be interpreted in a similar way to rate ratios except the ratio refers to the odds rather than the probability or prevalence at which something occurs. Ninety-five percent confidence intervals not overlapping one indicate statistical significance for that category of variable when compared with the reference category, which is given by 1.00.

First, the model for the Indigenous population of the NT included explanatory variables from socio-demographic, social networks and culture, community and individual safety and health domains. Lone person Indigenous households reported less gambling problems (odds ratio 0.22 (95% confidence interval 0.07-0.76) than one-family households, and three-family households were marginally non-significant in reporting my gambling problems (1.78 (0.94-3.37)) compared with one-family households. Variables from the social networks and culture domain included being involved in a community special interest group (1.94 (1.26-3.00) and attending a sport event as a spectator, both of which were associated with increased reporting of gambling problems. Three, community safety variables, namely having youth gang problems (2.22 (1.57-3.14)), family violence problems (3.32 (2.25-4.89)), and being a victim of threatened or physical violence (1.77 (1.09-2.89) were associated with increased reporting of gambling problems. Lastly, respondents' self-reported health was associated with gambling problems, with Indigenous people in very good (2.99 (1.56-5.73)) or fair (3.52 (1.30-9.51)) health reporting significantly more gambling problems than those with excellent health.

Now, looking at the model for the total non-remote population (i.e. Indigenous and non-Indigenous), there were significant independent associations for variables from socioeconomic, social networks, and individual safety. Using a variable representing household equivalised income people reported significantly less gambling related problems in the 3rd (0.21 (0.07-0.60)) and 4th (0.32 (0.11-0.94)) quintiles compared with the lowest income quintile, while the highest quintile was marginally non-significant (0.44 (0.20-1.01)). People who ran out of money for essentials in the twelve months preceding the survey were also more likely to report gambling problems (2.97 (1.24-7.11)) compared with those who didn't run out of money. Lastly, respondents that were a victim of threatened or physical crime were more likely to report gambling problems (3.24 (1.48-7.07)) compared with those that were not a victim.

Two variables exhibited differential associations between the Indigenous and general population of the NT. These were household equivalised income and self-reported health. Indigenous households had the highest reported gambling problems in households in the 2nd and 3rd income quintiles and the unknown household income category, while for the general population the highest reports of gambling problems were in the lowest income category. For the general population of the NT, the highest reported gambling problems were for people with poor health, while for the Indigenous population it was those that reported very good or fair health that reported the most gambling problems.

Table 4.3 Multivariable models of reported gambling problems amongst the 2002 NT population

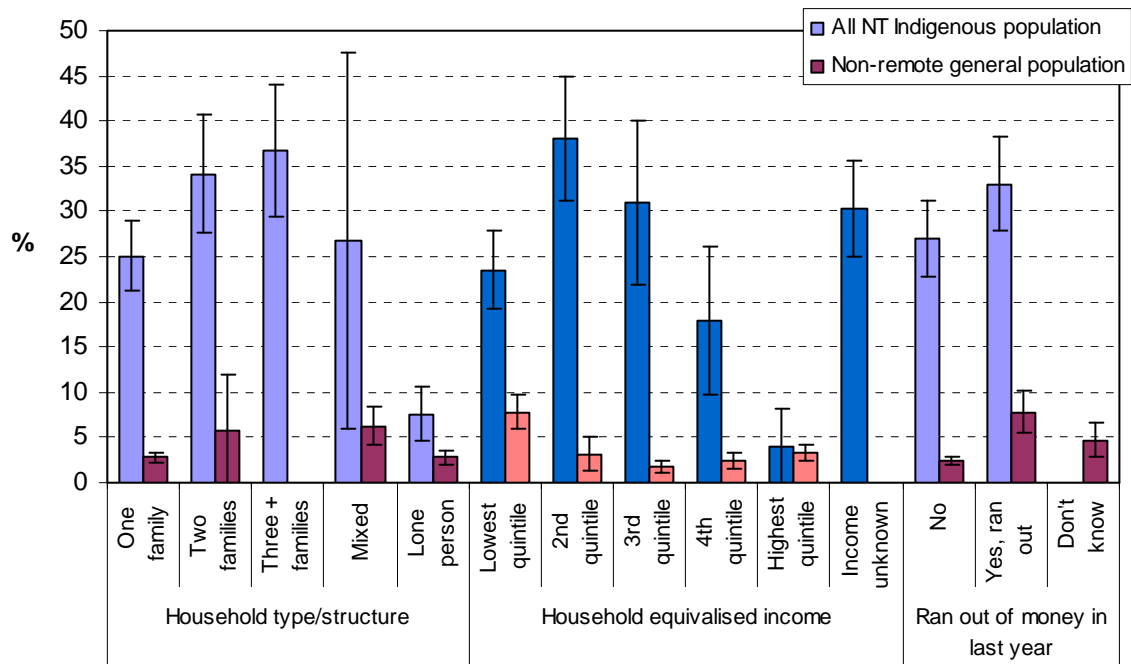
Explanatory variables	NATSISS: All NT		GSS: Non-remote NT	
	OR (95% CI)	Gambling problems % (SE)	OR (95% CI)	Gambling problems % (SE)
Overall Northern Territory	-	28.4 (1.4)	-	3.0 (0.6)
<i>Socio-demographic</i>				
Household type/structure				
One family	1.00	25.1 (3.8)	ns	2.8 (0.5)
Two families ¹	1.17 (0.68-2.03)	34.1 (6.5)	ns	5.7 (6.2)
Three or more families	1.78 (0.94-3.37)	36.7 (7.3)	ns	na
Mixed family and group ²	0.77 (0.05-10.7)	26.7 (20.8)	ns	6.3 (2.2)
Lone person	0.22 (0.07-0.76)	7.6 (3.0)	ns	2.8 (0.8)
<i>Socioeconomic</i>				
Household equivalised income				
Lowest income quintile ²	ns	23.5 (4.3)	1.00	7.8 (1.9)
2 nd quintile	ns	38.1 (6.9)	0.43 (0.10-1.89)	3.2 (1.8)
3 rd quintile	ns	31.0 (9.1)	0.21 (0.07-0.60)	1.7 (0.7)
4 th quintile	ns	17.9 (8.2)	0.32 (0.11-0.94)	2.4 (0.9)
Highest income quintile	ns	3.9 (4.2)	0.44 (0.20-1.01)	3.3 (0.9)
Highest income unknown	ns	30.3 (5.3)	na	-
Ran out of money in last year ¹				
No	ns	26.9 (4.2)	1.00	2.4 (0.5)
Yes, ran out	ns	33.0 (5.2)	2.97 (1.24-7.11)	7.8 (2.3)
Don't know	na	na	1.26 (0.29-5.37)	4.7 (1.9)
<i>Social networks & culture</i>				
Recreational or cultural activity ¹				
Did not participate in	ns	24.0 (2.6)	1.00	2.2 (0.5)
Participated in	ns	33.1 (5.1)	3.25 (1.61-6.57)	6.4 (1.7)
Community special interest group ¹				
Was not involved	1.00	21.1 (2.4)	ns	2.6 (0.7)
Involved	1.94 (1.26-3.00)	47.5 (6.4)	ns	6.1 (0.9)
Spectator at sports carnival ¹				
Was not a spectator	1.00	17.7 (3.2)	ns	2.1 (0.7)
Was a spectator	2.22 (1.35-3.64)	37.8 (4.3)	ns	4.1 (0.9)
<i>Community safety</i>				
Community youth gang problems				
No problems	1.00	16.2 (2.2)	na	-
Problems	2.22 (1.57-3.14)	45.4 (4.8)	na	-
Community family violence problems				
No problems	1.00	17.1 (2.8)	na	-
Problems	3.32 (2.25-4.89)	52.4 (4.6)	na	-
Victim of threatened/physical violence ¹				
Not a victim	1.00	26.5 (3.7)	1.00	2.2 (0.5)
Was a victim	1.77 (1.09-2.89)	41.1 (4.5)	3.24 (1.48-7.07)	8.9 (1.8)
<i>Health</i>				
Self-assessed health ²				
Excellent	1.00	17.2 (3.2)	ns	3.0 (1.0)
Very good	2.99 (1.56-5.73)	42.1 (5.3)	ns	2.9 (0.8)
Good	1.49 (0.88-2.52)	25.1 (4.2)	ns	2.6 (1.1)
Fair	3.52 (1.30-9.51)	34.9 (8.2)	ns	4.6 (1.9)
Poor	2.26 (0.82-6.28)	22.6 (8.9)	ns	11.3 (6.0)

1: Similar association between gambling problems and explanatory variable for the NATSISS and GSS

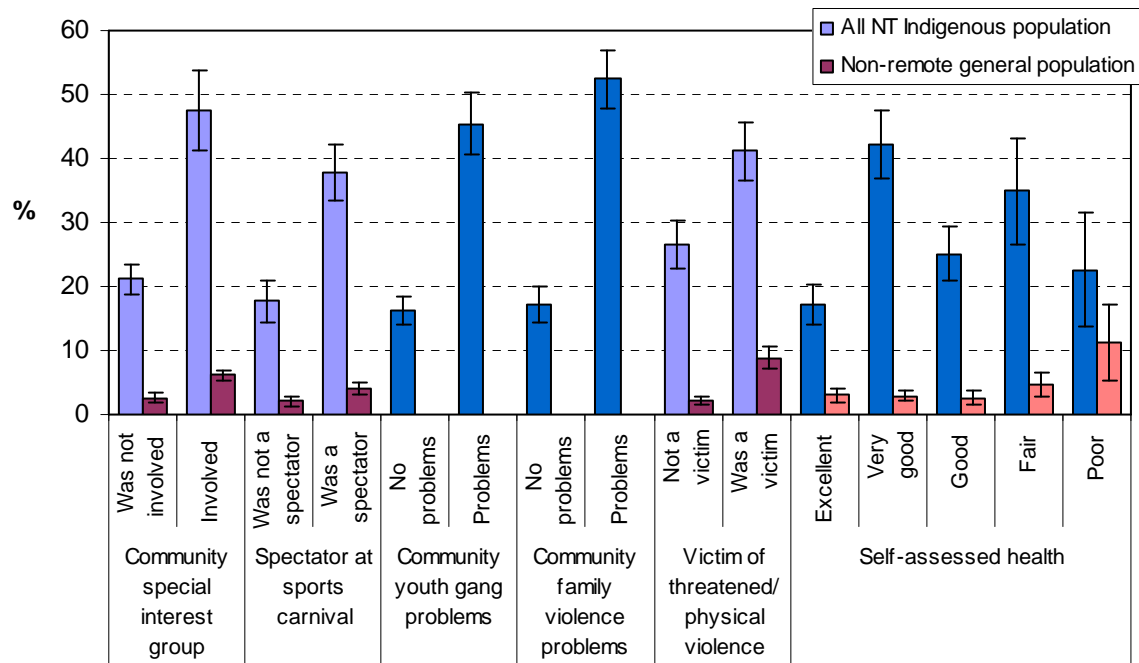
2: Different association between gambling problems and explanatory variable for the NATSISS and GSS

ns: Not significant (dropped out in backward selection)

na: Not applicable (variable not contained in the GSS)



(a)



(b)

Figure 4.5 Significant independent correlates of reported gambling problems for the 2002 Indigenous and general population of the NT

NOTE: Community problems were not collected in the 2002 GSS

4.4 Summary: estimates and independent correlates of reported gambling problems

- Estimates of reported gambling problems for the NT Indigenous population were the highest of all jurisdictions in 2002 (28%) and 2004/5 (27%), compared with other jurisdictions across Australia.

- Reported gambling problems were approximately three times higher for Indigenous people living in remote localities, compared with Indigenous people living in non-remote areas (i.e. Darwin and Alice Springs) of the NT.
- Indigenous people living in non-remote locations in the NT reported gambling problems were approximately three times higher than the general (mostly non-Indigenous) population living in non-remote locations of NT. This trend was similar in all states and territories
- Estimates of reported gambling problems for Indigenous people most closely resemble those in Queensland and South Australia compared with other states.
- Estimates of reported gambling problems for Indigenous people living in non-remote locations (11%) of the Northern Territory were nearly four times higher than the general population (3 %) and ten times higher in remote locations (32%).

The following variables were associated with *higher* levels of reported gambling problems:

- Living in a house with three or more families (crowding)
- Participating in community special interest groups
- Attending sports carnivals as a spectator
- Living in a community with perceived youth gang problems
- Living in a community with perceived family violence problems
- Being a victim of physical or threatened violence
- Self-reported health as very good or fair

The following variables were associated with *lower* levels of reported gambling problems:

- Living in a lone person house (i.e. only one person in house)
 - Not participating in community special interest groups
 - Not attending sports carnivals as a spectator
 - Living in a community with no perceived community problems
 - Not being a victim of physical or threatened violence
 - Self-reported health as excellent
- Differences in the direction of association between reported gambling problems between the Indigenous and general population in the NT were observed for household equivalised income (highest in the lowest income quintile for the general population, and highest in the 2nd and 3rd income quintiles for the Indigenous population), and self-reported health (general population highest for those reporting poor health, while for Indigenous people it was highest for people reporting very good or fair health).

Chapter 5: Discussion

5.1 Prevalence of gambling related problems in the NT

The NT estimates of reported gambling problems for the Indigenous population were the highest in the country both in 2002 (28%) and in 2004/5 (25%). These problems were highest in remote areas of the NT where they were nearly three times higher than those of non-remote locations (2002: 32% *cf.* 11% and 2004/5: 28% *cf.* 8%). These results are consistent with other recent evidence that gambling is a source of significant problems for Indigenous people in the NT (Fogarty, 2008; Foote, 1996; McMillen & Togni, 2000; Stevens & Young, 2009; Wild & Anderson, 2007; Young, et al., 2007). The elevated estimates for people living in remote locations is of particular interest given the reduced accessibility to regulated gambling in these areas, suggesting that card-playing can be problematic. However, the current data does not distinguish between regulated gambling and card-games, so conclusions are qualified.

However, the very high levels of reported gambling problems both in remote and non-remote localities points to both regulated and unregulated (i.e. card games) gambling as issues. We know from previous studies that Indigenous people (as do non-Indigenous people) have a preference for playing EGMs (Foote, 1996; McMillen & Togni, 2000; Young, et al., 2007). This form of gambling is most closely associated with problems gambling in the NT and Australia-wide (Productivity Commission, 2009; Young, Abu-Duhou, et al., 2006; Young, Stevens, & Morris, 2008). In the case of unregulated gambling, the *Little Children are Sacred* report identified card games as a reason for child emotional and physical neglect (Wild & Anderson, 2007). To determine the effect of card games, it is instructive to consider the case of Western Australia which is the only jurisdiction not to license EGMs in pubs and clubs. In WA estimates of gambling problems were the lowest for the non-remote areas for both the Indigenous and general populations. However, estimates of gambling problems were three times higher for the Indigenous remote population compared with the Indigenous non-remote population suggesting that card-games are the most likely source of the gambling problems (2002 NATSISS estimates). In fact the differences between levels of reported gambling problems for the remote Indigenous population compared with the non-remote Indigenous population were quite consistent for all states and territories except NSW. This suggests that some kind of regulation or public education campaign on the negative impacts that gambling (card games) can cause is required, and further research on what constitutes a 'safe' card game.

5.2 Gambling problems and emotional and social well-being

Reported gambling problems were clearly associated with a cluster of NLES items relating to social transgressions for both the Indigenous and total non-remote (non-Indigenous) NT population. Specifically, gambling problems were associated with:

- alcohol and drug related problems
- witness to violence
- being abused or in a violent crime
- being in trouble with the police.

This pattern of association is consistent with that observed for the general population of the NT and national levels (Stevens & Young, 2009). The clustering of gambling problems with other items relating to social transgression is consistent with research on problem gambling which shows problem gamblers have increased likelihood of also having alcohol and drug related problems (Bolt & Donato, 2003; Cottler, 2003; Grant, Kushner, & Kim, 2002) and is

consistent with associations drawn to in the Wild and Anderson *Little Children are Sacred* report (Wild & Anderson, 2007). In other words, gambling problems tend to cluster with other problems around alcohol and violence, much as suggested by the *Little Children are Sacred* report.

However, while gambling problems are inter-related with a range of what we may loosely term 'social breakdown/transgression' issues, we were unable to assign causation due to the cross-sectional nature of the data. Further research using longitudinal data or through detailed ethnographic research is required to understand the relationships between stressors and their broader structural determinants. More broadly, the associations reinforce the importance of community contexts in mediating the potentially harmful effects of gambling. By this we mean that local circumstances and forms of social organisation may influence the degree to which gambling is 'problematic'. For example, in a large remote community in the Top End of the NT, Paterson noted that card games are highly socially regulated. In other words, particular rules and social norms govern card games and their participants, and this usually unrecognised form of regulation can ameliorate potential problems with play (Paterson, 2006). Indeed, Paterson, in this paper, suggests that improved (and more culturally appropriate) harm minimisation frameworks may be achieved through the consideration of local, informal, systems of gambling regulation and control.

Our analysis of the NLES also made clear significant differences between remote and non-remote Indigenous populations for individual items. Gambling problems (rate ratio 2.80), alcohol and drug related problems (RR 1.89) and abuse or violent crime (RR 3.90) were all significantly higher in remote locations, as were death of a family member or close friend (RR 1.27) and serious illness or injury (RR 1.53). The higher rates for these NLES items is not surprising given the significantly poorer social, economic and environmental circumstances in remote communities (Australian Bureau of Statistics, 2004a, 2008; Bailie & Runcie, 2001; Bailie, et al., 2005). Results from the 2008 NATSISS will be available in 2010 and will provide estimates of reported gambling problems that are directly comparable to the Indigenous estimates reported herein. However, these results emphasise that reported gambling problems are but one part of a complex of disadvantage for remote Indigenous people.

A useful comparison to these NLES results is provided by a previous study that employed the NLES in ten remote Aboriginal communities across the NT (Bailie, et al., 2005; Kowal, et al., 2007). This study found similar levels for NLES items, although reported slightly gambling problems were 36% compared with the 32% of the 2002 NATSISS (a difference possible caused by either real-world variations, differences in survey methodology, or a combination of both). Regardless of the differences between these two NT surveys, they both emphasise the finding that levels of reported gambling problems among the remote Indigenous population are significantly higher than either the general NT population or the non-remote Indigenous population. To understand these differences we need to consider the differences in living circumstances between remote and urban environments. The former have are characterised by high levels of crowding, unemployment, poor living conditions, and poor health outcomes (Bailie & Runcie, 2001; Bailie, et al., 2002; Bailie, et al., 2005). These differences inevitably shape the context in which gambling occurs and the social consequences of gambling (Fogarty, 2008; McKnight, 2002; Paterson, 2007; Phillips, 2003; Wild & Anderson, 2007).

5.3 Demographic, social and economic correlates of reported gambling problems

Significant independent associations were observed between gambling problems and variables representing demographic, socioeconomic, and social connectedness/cohesion

domains. For the NT Indigenous population (i.e. analysis of the 2002 NATSISS), the following variables were associated with increased reporting of gambling problems:

- three or more family households;
- involvement in community special interest group;
- attending a sporting carnival;
- community youth gang and family violence problems;
- being a victim of threatened or physical violence; and
- self-reported health of very good or fair.

There was overlap in one variable with the general population multivariable model (i.e. analysis of GSS) for variables representing social connectedness through participation in recreational or cultural activities. Other variables in the GSS analysis to show a significant independent association with gambling problems were the socioeconomic variables of household income (lowest equivalised income quintile positively associated with reported gambling problems) and whether the respondent had cash flow problems in the last year.

5.3.1 Household structure

The association between household structure (multi-family households) and gambling problems illustrates the high prevalence of multi-family dwellings and high levels of crowding present in many Indigenous communities (Australian Bureau of Statistics, 2004a). The housing shortfall amongst the Indigenous population, particularly in remote communities has been known about since the early 1990s (Jones, 1994, 1999; Neutze, Sanders, & Jones, 2000). This is significant because crowded living conditions have been associated with physical and mental health (Bailie, et al., 2005; Evans, 2003; Gove, 1979). The *Little Children are Sacred* report also drew attention to overcrowding and poor living conditions, along with gambling, alcohol and drug abuse and pornography in relation to neglect and abuse of children (Wild & Anderson, 2007), which prompted the commonwealth to intervene in the management of Aboriginal communities in the form of the NT Emergency Response (NTER). As part of this, \$671 million is being made available to build 750 new homes which, if successful, may go some way to alleviating the chronically overcrowded living arrangements in remote communities. The key point we wish to make is that crowding is a serious problem, one that is associated with a range of secondary problems (including gambling problems). Addressing the housing shortage will lead on to reduced gambling and other problems.

5.3.2 Social connectedness: Attendance and participation in community events

The association between gambling problems and attendance and participation in community and sports events is less clear cut. People who attend such events may have better access to gambling opportunities and are therefore more likely to gamble. Alternately, people attending these events may have larger social and family networks and are therefore more likely to know someone with a gambling related problem (these question measured gambling problems in social networks not just the individual). Another difficulty in understanding this association is we do not know the specific of the 'gambling problem'. For example, a gambling problem may describe food shortages or may relate to a child being kept up late by a card game and not attending school. The type of problems will, to a large degree, dictate the requirement for policy response, and we require more research in this area before we can suggest specific initiatives. In reality the association described in this section is most likely due to combination of explanations. In any case, it does suggest that the places where people gather for events

(sport, cultural, recreational etc.) may be good places to start with gambling public education campaigns and promotion of counselling services.

5.3.3 Community and individual safety

The association between community problems and gambling problems again emphasise the enmeshed nature of gambling in the social and physical contexts in which it is played (Marshall, 2009; McMillen & Togni, 2000; Paterson, 2006, 2007). This finding is also consistent with the NLES analysis which showed a strong association between gambling problems and other social problems. Indeed, all NLES items relating to social transgressions were higher in remote compared with non-remote Indigenous populations, although the significant variation between communities across a range of social and physical contexts must be acknowledged (Bailie, et al., 2002; Young, et al., 2007).

There are several pieces of research from various Indigenous communities (see Chapter 2) around Australia that provide insight into this association between community problems and gambling problems (Altman, 1985; Hunter & Spargo, 1988; Martin, 1993; McKnight, 2002). We may present the contrast between Altman's (1985) study in Arnhem Land which found that gambling was mostly non-problematic, and the studies by McKnight (2002), Martin (1993) and Hunter and Spargo (1988) (in WA and Qld) who documented a range of negative impacts of card games. In the Altman study alcohol was *not* a community problem whereas it was in the studies by McKnight (who specifically noted the interaction between gambling problems and alcohol problems) and Martin (1993) (who noted that large winnings were often taken out of the community via the charter of a plane to purchase alcohol). Again this emphasises the point that gambling is related to other social issues, and that it needs to be addressed as part of the general complex of disadvantage that Indigenous people experience in the NT. Some of the gambling-specific effects were identified by Hunter and Spargo were increased anxiety amongst male gamblers verse non-gamblers, as well as a range of negative consequences particularly for children including emotional and physical neglect and missing school (Hunter, 1993; Hunter & Spargo, 1988). These findings suggest that programs to improve community wellbeing and safety may go some way to alleviating problems associated with gambling.

Chapter 6: Conclusions and issues for considerations

6.1 Issues for consideration in minimising gambling related harm

- Gambling is enmeshed within the broader social and physical contexts in which it exists. Therefore, effective gambling harm minimisation measures need to take a multidimensional approach in addressing gambling related harm. Specifically, approaches need to consider improving aspects of the overall community environment including reducing crowding, ensuring community safety is maintained (e.g. through increased policing), and public education on the negative impacts of gambling, and on what constitutes a safe card game.
- Reductions in gambling related problems would be expected by addressing the social determinants of health. Specifically these include improved living conditions through reductions in crowding, improved outcomes in education, and increased employment and training opportunities.
- The different contexts in which gambling occurs between remote and non-remote locations (as well as the different games played) need to be considered when developing policies and programs aimed at reducing harm. For example, the nature of any ‘harm’ may be different in card games (in which case things like child-minding centres may assist) compared with regulated gambling (e.g. in which case better training of staff to identify problem gamblers with appropriate follow-up may be of benefit). We need to conduct more research into the nature and distribution of gambling-related harm as well as the gambling type and contextual associations before we can present more specific suggestions.
- The finding that people who attended community or sporting events (i.e. those more socially connected) reported more gambling problems suggests that places where people gather would be good places for public education campaigns about the negative consequences of excessive gambling, as well as promoting (gambling, mental health, financial management, alcohol and drug) counselling services.
- Given the association between gambling problems and items relating to social transgressions (i.e. witness to violence, abuse or violent crime, alcohol or drug problem, and trouble with the police) and the independent association between gambling problems and other community problems (youth gang and family violence problems), gambling problems at a community level, for both Indigenous and non-Indigenous populations, may be addressed by initiatives that increase social function and wellbeing.

6.2 Planned future research at CDU

Three pieces of research are currently planned for 2010 that will go some way to filling evidence gaps identified in this report. First, data from the 2008 NATSISS will be available from the ABS some time in 2010 and we will replicate the analyses carried out in this report. This will allow for assessment of trends (i.e. change over time) in reported gambling problems and other items in the NLES. It will also determine the stability of the independent correlates of gambling problems over time giving us a better idea of the key social contexts that require policy attention.

The second piece of research will utilise a rich source of data from a study of housing and child health in remote Indigenous communities, known as the HICH study (Bailie, et al., 2005). This study covered ten remote communities from north to south in the NT and contains information on child health, carer/householder characteristics, dwelling characteristics, and

other community information. Importantly, the data set contains the NLES which will allow for the replication of the analyses contained in this report. Importantly, the HICH data contains carer report of child health, allowing for the investigation of the association between reported gambling problems and childhood illness, while controlling for a broad spectrum of potential confounding variables.

The third piece of research is explorative and will mathematically model cash flow in community card games over a set period of time. The purpose here is to examine the effects of card games on resource distribution under various scenarios. An approach known as *agent-based modelling* will be used to test various scenarios (Bonabeau, 2002). The technique allows for different sets of rules to be applied to different agents which are then set in motion to see how cash flow is re-distributed between agents as they come into contact with each other. This system will be modelled over a theoretical two-week (or longer) period. The models will allow us to monitor cash flow between agents within the hypothetical community. It will also allow us measure the amount of money leaving the community when various agents have an increased propensity to remove large winnings from the community.

Together, these three planned pieces of research will provide trends in estimates of reported gambling problems over time (Indigenous and total NT), a detailed examination of the relationship between reported gambling problems and child health outcomes for remote communities, a more detailed understanding of the independent correlates of reported gambling problems, and an improved understanding of cash flows within and out of communities resulting from card games.

Further questions we would still like to see answered more fully are as follows:

- What proportion of the winnings from community card games flows out of communities into the regulated gambling system?
- To what extent, in which venues, and to what consequence do Indigenous people uptake EGM gambling?
- What individual and community factors provide resilience to problems associated with gambling?
- What is the efficacy of current treatment programs when used with Indigenous people?
- What are the specific problems (and benefits) of gambling in the Indigenous population by gambling type and which groups are most at risk of any negative effects?
- What constitutes a safe card game for Indigenous people living in communities?

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