8 The link between accessibility and problems

Box 8.1 **Key messages**

- Establishing a link between accessibility of gambling and problem gambling is of central concern for policy, because the existence of a link would suggest a need for caution in liberalising access to gambling.
- Accessibility is not just about proximity; it is also about: the mass appeal and ease of use of a gambling form; any conditions on entering gambling venues, and the initial outlay required to gamble.
- Among current major forms of gambling, gaming machines and lotteries are the most accessible, followed by TABs and lastly by casino gambling.
- Of these, greater accessibility to gaming machines has increased the risks of problem gambling the most.
- Problem gambling prevalence rates tend to be highest in areas where accessibility to non-lottery gambling is highest — such as Victoria and New South Wales — and lowest where accessibility is lowest — such as Tasmania and Western Australia.
- Help seeking by problem gamblers is also strongly associated with accessibility, although the direction of causality may vary.
- Changing patterns in problem gambling — particularly the much greater representation by women suffering from problems controlling their use of gaming machines — are particularly strong evidence of a link between accessibility and overall problem gambling rates.
- Using one methodology, the Commission estimates that there would be an *additional* 10 500 problem gamblers in Western Australia (or about 110 per cent more than current levels) were gaming machines to be liberalised to the same extent, and under the same conditions, as eastern states.
- Overseas evidence echoes that of Australia, but is less conclusive.
- While causation is hard to prove beyond all doubt, there is sufficient evidence from many different sources to suggest a significant connection between greater accessibility — particularly to gaming machines — and the greater prevalence of problem gambling.

8.1 Why is the link at issue?

A central question relevant to policy is the existence and strength of any link between the liberalisation of gambling and the creation of either new problem gamblers or more severe problems among people with existing difficulties. Many community groups maintain that such a link exists, and that it provides a basis for restrictions on the availability of gambling. For example, the Queen of Hearts study by Brown and Coventry (1997, p. ii) argues:

> Ultimately, reducing access to gaming facilities must be the cornerstone of any strategy to meet the needs of women with gambling problems.

Many experts also accept a link. For example, Wildman (1998) summarising the literature on gambling, argues:

> This would appear to be the question to which we can give the clearest answer in this unclear area … Exposure to gambling leads to increased levels of involvement in this activity … So the answer is "yes", increased legalisation of gambling will lead to an increase in the prevalence of pathological gambling, and its attendant effects… (p. 263).

It may seem obvious that greater liberalisation of gambling would have to increase the number of problem gamblers, so that there is little point in examining the question. However, not everyone agrees with the link between accessibility of legalised gambling and problem gambling. The American Gaming Association (1999) argues that there is:

> ... a small, but relatively constant percentage of the population that exists independently of gaming availability, which demonstrates that areas with gaming do not have higher rates of problem gambling than those without gaming. Some states have even experienced decreases in problem gambling rates after the expansion of gambling: 2.7% in 1991 to 1.2% in Connecticut's estimated current pathological gambling, in spite of the opening of the largest casino in the US.

A number of possible conjectures are advanced about why the link between gambling accessibility and problems may be weak.

First, it is sometimes argued that problem gamblers can always gamble on illegal forms (back street casinos, card games, mahjong), so that liberalisation deflects them from illicit (and potentially more harmful) gambling to legal forms, without altering the number of actual problem gamblers. People who once hid their problem because of its connection to an illegal activity may also be more willing to seek help, and that, with the greater visibility of help services, might explain why numbers reporting problems had increased.

Second, in the case of Australia, the recent path of liberalisation has not been from gambling prohibition to liberalisation, but from a liberal regime — where legal

gambling in many forms was widely available (TAB, lotteries, bingo) — to a more liberal regime, with an expanded set of gambling opportunities. It could be that gambling opportunities were already extensive enough that all (or nearly all) people with a potential for problem gambling had developed it, prior to the phase of liberalisation that occurred in the 1990s.

How can this debate about the connection between liberalisation and gambling problems be resolved? There are a number of strategies, including examining:

- the varying levels of problem gambling prevalence by Australian jurisdictions or over time, and correlating these to measures of accessibility;
- the differential use of help services in different Australian jurisdictions;
- micro data on patterns of gambling in Australia to see if they reveal an association between accessibility and problems;
- the epidemiological foundations of risk and the degree to which these vary by states in Australia; and
- overseas data and trends, which may make patterns clearer because variations between jurisdictions (or over time) are greater than in Australia.

This chapter examines evidence about all of these, which help to resolve the nature of the link between gambling problems and accessibility. As a first step, however, it is important to understand what accessibility to gambling means.

8.2 What are the dimensions of accessibility?

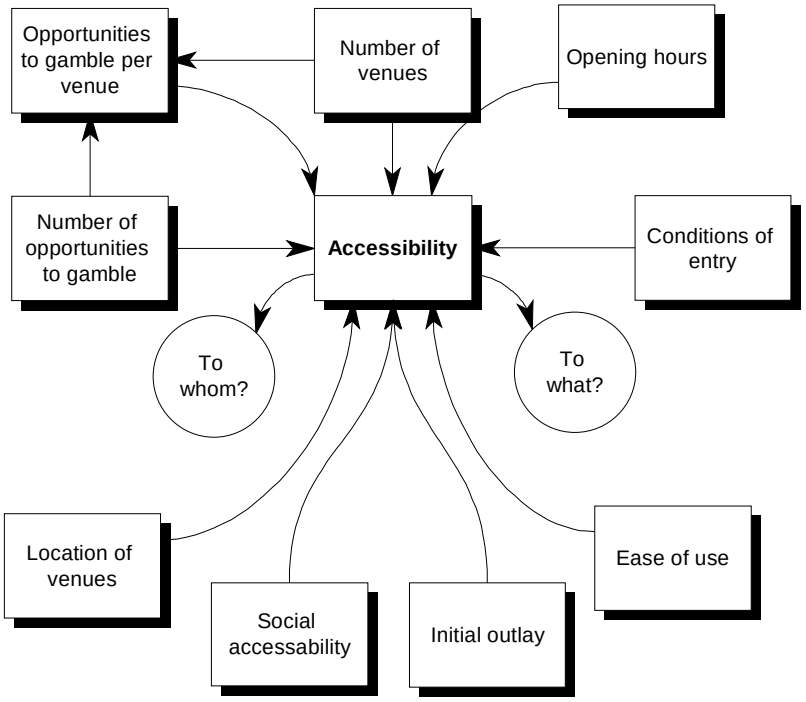
As noted by the Interchurch Gambling Task Force (sub. 165), accessibility has a number of dimensions, which may affect problem gambling in different ways (figure 8.1).

The most obvious form of accessibility is the *total number* of opportunities to gamble in any particular gambling form (such as the number of gaming machines or the number of blackjack tables) — however, a given number of machines may be distributed among venues or 'spatially'. If opportunities are limited, then there will be congestion and patrons would find it difficult to gamble for long or even moderate periods — affecting their use and expenditure. Caps on machines in Victoria, for instance, are intended to meet community concerns about accessibility in this way.

How gambling opportunities are arranged *spatially* is very important to accessibility because it determines the average proximity to gambling opportunities.[1] Blaszczynski (1998, p. 16) draws this link between proximity of gambling and problem gambling:

> A further consideration is ease of access to gambling facilities. People are less likely impulsively to go to an off-course betting office if it is located several miles away. The inconvenience of travel and/or parking vehicles is sufficient to cause them to reconsider the strength of their urge. This is precisely the reason why casinos in some countries require twenty-four hours' notice of intent to gamble or are located in non-metropolitan areas ... Accessibility is important in terms of time as well as location.

Figure 8.1 **Multiple dimensions of accessibility**



The number and distribution of gambling opportunities

Phone betting on the TAB makes this form of gambling currently the most spatially accessible. If most Australians eventually have home internet access and could gamble on this medium, then every home (and workplace) would become a gambling outlet.

[1] A counsellor indicated to the Commission that staff members of gambling venues had elevated risks of problem gambling compared to others — and this too may reflect their strong familiarity with and proximity to gambling.

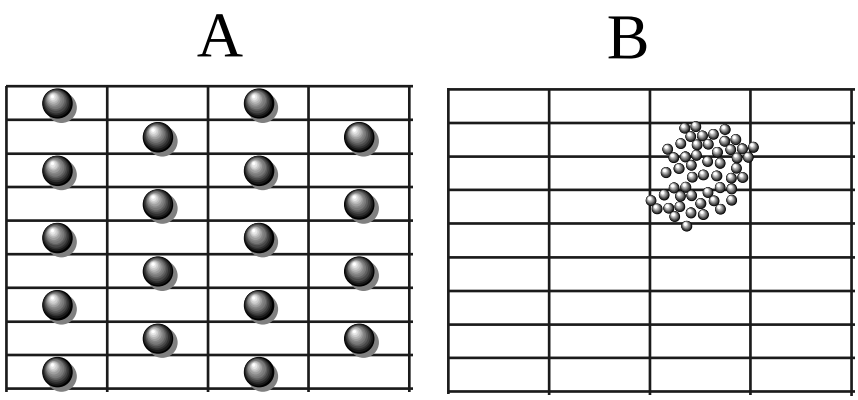
Most Australians (with the exception of Western Australia for gaming machines) are in close proximity to outlets for gaming machines, TAB and lotteries. As noted by one social worker:

> On every corner you've got your Tabarets and the pokies are in every pub. You hear women constantly say 'How do I escape that? How am I supposed to give it up yet it's in my face the whole time? (cited in Brown, Johnson, Jackson and Wynn 1999, p. 21).

In contrast, casino gambling is spatially the least accessible gambling mode as there is usually only one available in any given metropolitan area (Southern Queensland with two being an exception).

The number of venues offering gambling clearly puts a limit on the spatial distribution of gambling opportunities, but it is largely an independent aspect of accessibility. This is illustrated in figure 8.2, which represents two cities.

Figure 8.2 **Does spatial distribution affect accessibility? Two cases**



In one (A) there are only a few large venues, but they are dispersed such that every part of the city has ready access to a gambling venue. In the other (B) there are many more venues offering gambling, and in that *local* area, accessibility to gambling is higher. But in general, city B represents a far less accessible gambling regime than A, because most venues are concentrated in one location. If, however, all the venues in B were spatially dispersed as in A then accessibility would be greater in that city. All Australian jurisdictions have restrictions on the types of venues which are licensed to sell gambling products. Nevertheless, most gambling forms are readily available in hundreds, and sometimes thousands, of venues in most jurisdictions.

Other dimensions of vicinity

The number of opportunities to gamble in any given venue (for example, more staff in a TAB agency, more machines in a hotel or club) — which is related to the

number of venues and the aggregate number of gambling opportunities — may also affect accessibility.

- Limited opportunities to gamble in any given venue can influence gamblers' behaviour. Gambling is less anonymous, and it also signals that gambling is an auxiliary rather than a major feature of the venue concerned. This may in turn convey a sense of social ambivalence or disapproval about gambling which could reduce participation rates.
- On the other hand, harm minimisation strategies, which act to reduce the impact of greater accessibility, may sometimes, paradoxically, be more cost effective in venues where accessibility is greatest — an issue explored in greater depth in chapter 16. This is because some harm minimisation strategies have high fixed costs and could only be implemented by a venue which has many gambling opportunities (for example, a casino).

As examined in chapter 13, different Australian jurisdictions have varying approaches to limits on gambling opportunities in venues. Victoria and South Australia, for example, have ceilings on the number of gaming machines per venue, as does New South Wales for hotels and the casino (but not for clubs).

Opening hours. Many gambling venues now operate for 24 hours a day, 7 days a week, so that there is no time at which they cannot be accessed.

Conditions of entry. In European casinos entry is more heavily restricted (Thompson 1998). In Australia, clubs typically have higher dress standards and more restrictive entry than hotels.

Ease of use of the gambling form. For example, gaming machines do not require skill — or even interpersonal contact — compared with blackjack or betting on the races, and so are more accessible.

Initial outlay required. Casino table games, such as blackjack and roulette, often involve relatively high stakes per game (of around $5), reflecting the costs of providing personalised gambling services. Machine based gambling economise on such costs, as do lotteries. The cost of a single game on a poker machine can be as low as one cent (although effectively this will involve spending a dollar to purchase a credit bank of 100 credits). Low outlay games are obviously more accessible to people on lower incomes than high outlay games.

Social accessibility. This is the sense in which a venue provides a non-threatening and attractive environment to groups who might otherwise feel excluded. This is not an undesirable feature of venues, but it does affect the extent to which new groups of people may be recruited into gambling, with adverse consequences for some of

them. For example, casinos are clearly non-threatening and attractive to Australians from an Asian background and, in the Northern Territory, to Aboriginal and Torres Strait Islanders (who are said to be tacitly discouraged from gambling in clubs and pubs). And many clubs or hotels with gaming machines are now seen as safe and socially acceptable places for women, when they were not previously:

> If you go back fifty years ago ... you'd be too busy washing your clothes [to gamble]. And I think too ... that years ago it wasn't acceptable for women to go into hotels (Family support worker cited in Brown, Johnson, Jackson and Wynn 1999, p. 21).

Some implications

The above nine dimensions determine the level of exposure people have to a gambling form. They also imply that a single measure to control accessibility — such as a global cap on machines — is unlikely to have much effect by itself, if other aspects of accessibility are high.

Among current major forms of gambling, gaming machines and lotteries are the most accessible, followed by TABs and lastly by casino gambling (table 8.1).

Table 8.1 **Accessibility varies across major gambling modes**

	Gaming machines[a]	*TAB*	*Casino*	*Lottery*
Number of opportunities to gamble	Very high ('0 000s of machines)	High ('000s of outlets and phone betting)	Low	Very high
Spatial distribution	Dispersed widely	Dispersed widely	Single location	Dispersed widely
Number of venues	Large number per capita	Large number per capita	One per city	Large number per capita
Opportunities per venue	High is NSW, restricted in SA and VIC	Determined by staffing[b]	Typically large	Determined by staffing[b]
Opening hours	Often 24 hours	Around 12 hours	Mostly 24 hours	Business hours
Conditions of entry	Very easy in hotels, easy in clubs/casinos	Very easy	Easy	Very easy
Ease of use	Very easy	Moderate	Hard for many	Easy
Initial outlays	Very low	Low	High	Low
Social accessibility	High for women	Low for women	High for women, Asians (and ATSIs in NT)	High
Overall accessibility	Very high	Medium	Low	Very high

[a] Excluding WA, which has no gaming machines outside Burwood Casino. [b] If there are few staff in a venue then that constrains the number of bets made or tickets sold.

Whether exposure matters for problem gambling is also going to depend on:

- *who* is exposed. Some groups are more vulnerable than others. Accessibility to people in deprived socioeconomic circumstances is more likely to lead to

increased problems (because affordability is linked to problems and because poorer people may be more likely to be look to gambling as a solution to financial problems); and

- *the gambling mode*. As noted in chapter 6, continuous forms of gambling, such as gaming machines, pose bigger risks than lotteries.

Liberalisation in gambling in Australia has (so far) mainly manifested itself as the legalisation of gaming machines and casinos. However, given the characteristics of casino games, and their location, casino liberalisation has represented a relatively modest increase in accessibility to gambling. By contrast, gaming machine liberalisation has represented a very significant increase.

8.3 Australian population surveys: what light do they shed?

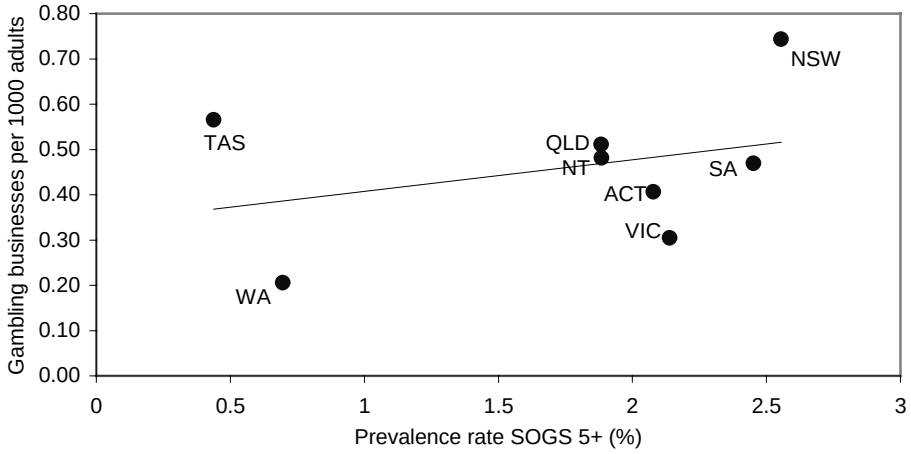
In theory, if greater accessibility (exposure) leads to more gambling problems, then regions (or times) where access is low should have a lower prevalence rate of problem gambling than ones where access is high. However, testing this link is not very easy because accessibility is a multi-dimensional concept.

It is clear, for example, that there is only a slightly positive (and statistically insignificant) link between the number of gambling businesses per 1000 adults and the problem gambling prevalence rate (figure 8.3). For example, Tasmania has far more businesses per person than Western Australia, but a smaller problem gambling prevalence rate.

However, gambling businesses per adult captures only some aspects of accessibility — it does not indicate *what* gambling is accessible (eg TABs, gaming machines etc), how *much* gambling can take place at each venue (eg it ignores venue caps on machines in some venues and jurisdictions), or aspects of the *technology* that may constrain or facilitate gambling (such as phone betting, denomination controls or restrictions on the types of machines that are available).

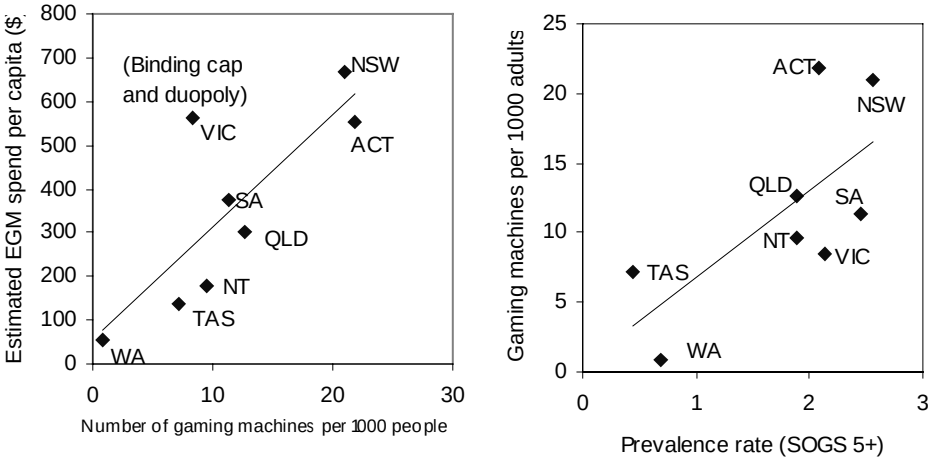
Gaming machines are the prime source of problem gambling (chapters 6 and 17). Here there appears to be a statistically significant positive relationship between the number of machines per adult in a jurisdiction and the overall problem gambling prevalence rate (figure 8.4).

Figure 8.3 **The link between the problem gambling prevalence rate and the number of gambling businesses per 1000 adults**



Data source: Based on the number of gambling businesses at the end of June 1998 as reported by the ABS, 1999, *1997-98 Gambling Industries Australia*, Cat. No. 8684.0, adult population data and prevalence rates from the PC *National Gambling Survey*. See note in figure 8.6 regarding South Australia.

Figure 8.4 **The link between gaming machine spending, machine numbers[a] and problem gambling**

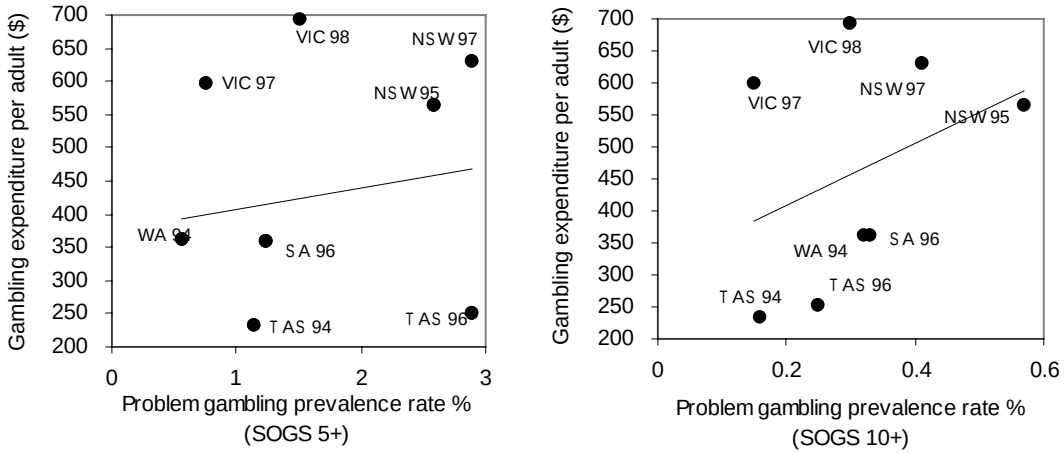


a The graph on gaming expenditure and machine numbers is only indicative because of data limitations. The WA gaming machine spending was estimated at 20.3 per cent of 1997-98 casino gaming revenue (based on the share reported in the 1997 Burswood Annual Report). Moreover, the Tasmanian Gaming Commission data subsume gaming machine expenditure in casinos in the total spending of casinos. The ABS, *1997-98 Gambling Industries Australia* (Cat. no. 8684.0) reports that gaming machine revenue accounts for 32.3 per cent of total casino revenue in Australia. As an approximation, this share was applied to each jurisdiction's 1997-98 casino revenue (bar WA and the ACT) to estimate gaming machine revenue due to casinos. A figure of zero was used for the ACT as its casino is not allowed gaming machines. The imputed figure for casino gaming machine revenue was then added to gaming machine revenue from clubs and pubs, and then converted to a per capita basis. The machine numbers were the latest estimates available to the Commission.

Figure 8.4 also reveals a relatively close relationship between gaming machine numbers and gaming machine expenditure — with the notable exception of Victoria where a binding cap and duopoly suppliers are unique in Australia. This suggests that, more generally, per capita gambling expenditure might be a reasonable summary measure for gambling accessibility. This would reflect the plausible assumption that high levels of demand lead to more sources of supply, and that greater avenues for supply (and features that encourage higher intensity gambling) also have a feedback effect on demand and expenditure.

The prevalence rates of problem gambling in Australia appears to be generally higher in states with higher per capita (non-lottery) gambling expenditure (figures 8.5 and 8.6). New South Wales, for example, has consistently higher levels of problem gambling than other states, and Western Australia, where gaming machines are effectively barred, has a much lower level. The non-SOGS measure — HARM, which was developed in chapter 6 — is also higher in states where gambling intensity is higher, so that the results here are not vulnerable to any deficiencies in the SOGS.

Figure 8.5 **Problem gambling prevalence rates and gambling expenditure**[a]
Past Australian studies

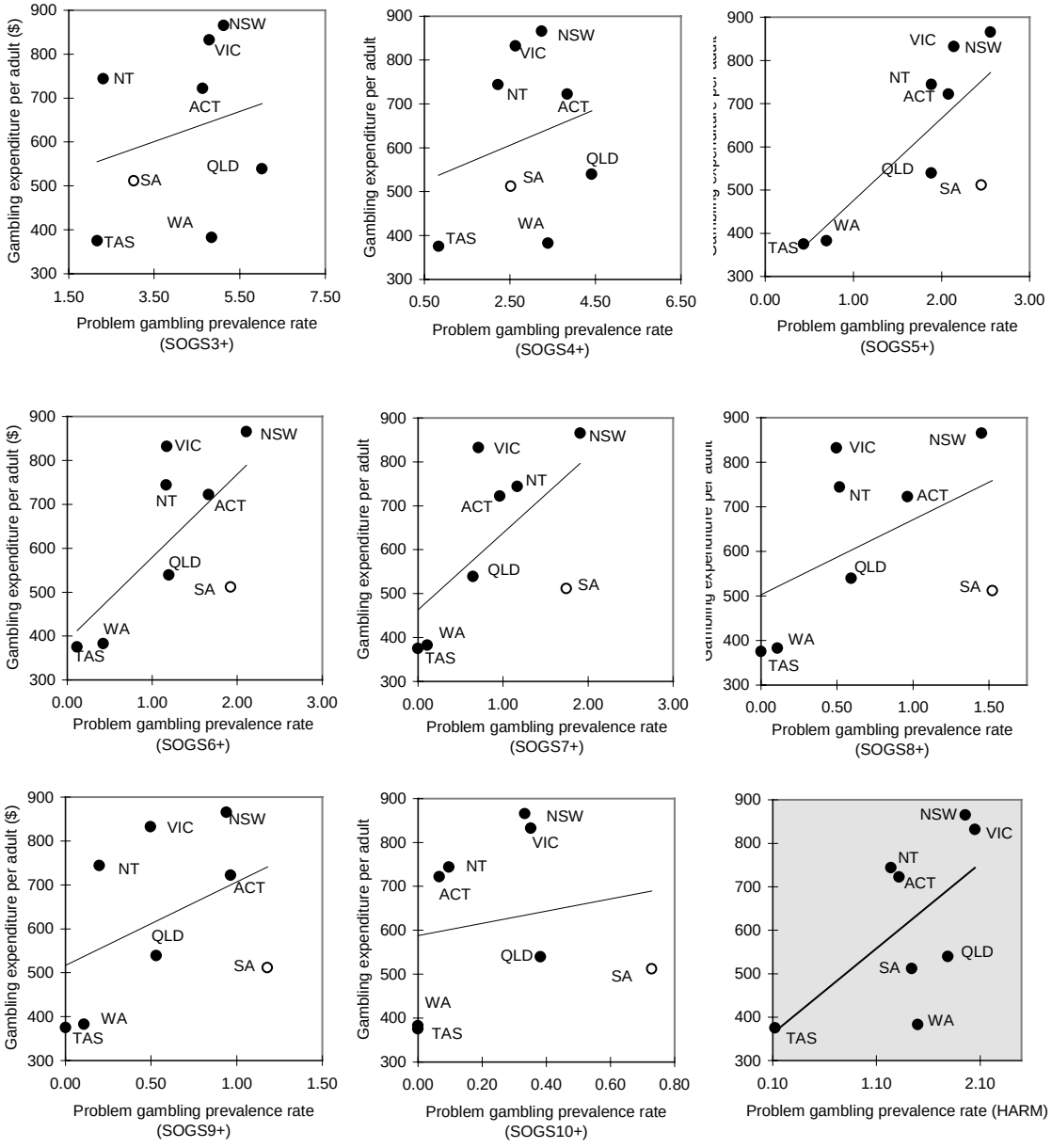


a Based on the VCGA studies for Victoria in 1997 and 1998, two NSW studies for 1995 and 1997, and single studies for Western Australia, Tasmania and South Australia. The spending is real per capita gambling expenditure (1989-90 prices) where gambling includes racing, gaming machines and casino gambling, but not lotteries or other minor forms of gambling.

Data source: The spending data is from Tasmanian Gaming Commission (1999) dataset, while the prevalence data are from the major past Australian prevalence studies, reviewed in chapter 6.

Figure 8.6 **Problem gambling prevalence rates and gambling expenditure**[a]

Results from the National Gambling Survey 1999



a The spending is per capita gambling expenditure for 1997-98 where gambling includes racing, gaming machines and casino gambling, but not lotteries or other minor forms of gambling. The South Australian prevalence rates were typically outside expected bounds, given the results in other states. They are included in the graphs — but are likely to reflect random sampling errors rather than the 'true' prevalence rates in South Australia.

Data source: The spending data is from Tasmanian Gaming Commission (1999), while the prevalence data are from the PC *National Gambling Survey*.

Dickerson et al. (1996a), noting the higher prevalence rate of problem gambling in New South Wales compared with Western Australia and Tasmania, point out:

> Given the strong association between SOGS scores and a preference for gaming machines and betting, the restriction of the former to casinos in Tasmania (at that time) and Western Australia may be the single most important factor contributing to the lower prevalence figures found in those States.

While graphs, such a those in figure 8.6, show an apparent link between accessibility (as proxied by expenditure) and problem gambling prevalence, they do not provide a numerical indicator of the degree of the association. To obtain such an indicator of the magnitude of the link, the Commission used a number of simple statistical models (box 8.2). The strength of the relationship between gambling intensity and problems depends on the data used.[2]

If the Commission's *National Gambling Survey* data are used then gambling intensity can explain a significant proportion of the variation in the prevalence of problem gambling. About 60 per cent of the variation in the prevalence of problem gambling[3] across Australian jurisdictions is explained by their varying intensity of gambling.

Another way of assessing the possible connection between gambling intensity and problems is to see if average SOGS scores and self-assessment ratings by regular gamblers are higher in states where gambling expenditure per adult is bigger (figure 8.7). The data reveal a similar relationship to that in figure 8.6.

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2 Ideally, a model of prevalence rates should examine the independent influences of the differing availability of different modes of gambling (such as wagering, casino, gaming machines), the extent to which gambling is dispersed within a state (highly dispersed or not), the time that gambling form have been available (since it takes time for people to develop problems), any rules which restrict access (eg the domination of gaming machines by clubs — which have entry restrictions — in NSW, compared to the domination of gaming machines by hotels — which do not — in Victoria and South Australia) and the degree to which a jurisdiction has implemented harm minimisation strategies. Unfortunately, the few observations available on prevalence rates makes this impossible at present. Following the recommendation by the statistician consulted by ACIL (sub. D233, p. 102), the Commission has concentrated on the prevalence threshold (SOGS 5+) most commonly used in the report.

3 Using the standard SOGS 5+ definition that has been employed elsewhere in the report. Notably, however, the relationship is much poorer if the SOGS 10+ rating is used. In a linear model, the spending level is positively associated with the SOGS 10+ prevalence rate, but it is not statistically significant at the usual significance levels. However, it should be noted that few people satisfy the demanding criterion for SOGS 10+ in the Commission's survey, and the relative standard errors on regional prevalence rates for this SOGS threshold are therefore very high (a point noted in chapter 6). The SOGS 10+ prevalence rate for South Australia appears to be an outlier. If this observation is stripped from the regression, the association between spending and problem gambling is greater and is statistically significant.

Box 8.2 **Gambling spending and prevalence rates in Australia** [a]

The relationship between the prevalence rates of problem gambling (defined as SOGS 5+ as usually used in this report) and per capita non-lottery expenditure was examined using two simple models:

A linear model:

SOGS 5+ = -0.143 +0.00307 SPEND; $\overline{R}^2 = 0.52$, Obs=8
(0.2) (3.9)

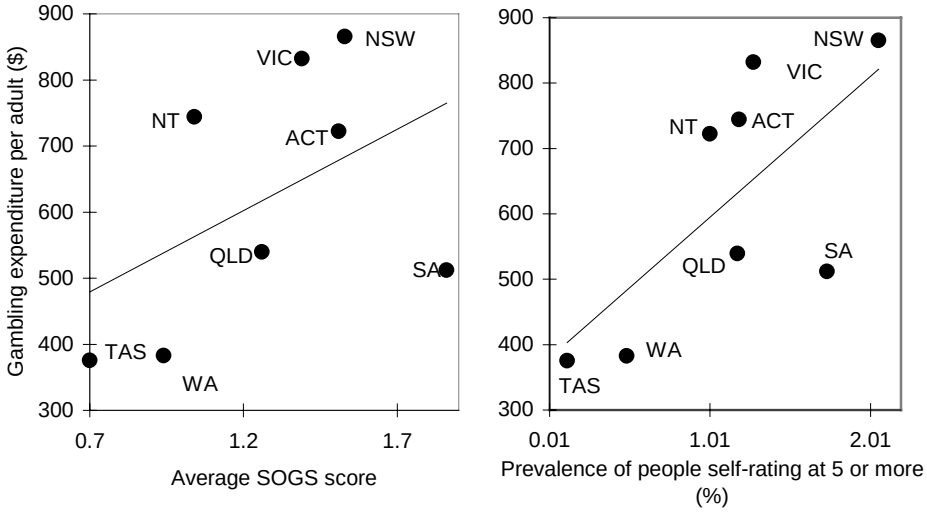
A log model:

ln (SOGS 5+) = -9.76 + 1.595 ln SPEND; $\overline{R}^2 = 0.61$; Obs=8
(4.1) (4.5)

where SOGS 5+ is the prevalence rate (in percentage form) for each jurisdiction and SPEND is non-lottery gambling expenditure per capita. t statistics (in parentheses) are based on White's heteroscedasticity correction.

Source: Commission calculations based on the PC *National Gambling Survey*.

Figure 8.7 **Relationship between average SOGS scores, self-rating scores and gambling expenditure**[a]



a South Australia has been removed from the graphs. The self-rating was based on a 10 point scale, from zero for people who said they had no problem, to 10 for a very severe problem. Expenditure data is as defined in figure 8.6.

Data source: PC *National Gambling Survey*.

Limitations in the simple empirical analysis?

Using expenditure as a proxy for accessibility and then trying to assess how this might affect problem gambling prevalence involves some assumptions. A statistical consultant to the industry questioned the link between accessibility and expenditure:

> … gambling expenditure per adult is equated to accessibility. Why should it be considered to be a proxy for accessibility? It is possible to have very high accessibility and if no one uses the gambling medium, very low gambling expenditure, and vice versa. It is wrong to equate the two (sub. D233, p. 102).

There is, however, no jurisdiction where expenditure is very low and access is very high. The two jurisdictions with the lowest expenditure also have far fewer gaming machines than others. For example, Western Australia has no gaming machines outside of its casino. Nor is there any jurisdiction where expenditure is very high and access is very low. New South Wales, Victoria, South Australia and Queensland have thousands of gaming machines located in numerous venues throughout all regions of their states, as well as many TAB outlets. Because the evidence on accessibility matches closely the picture suggested by expenditure, it appears that, in fact, expenditure captures well the qualitatively different levels of access to gambling in each jurisdiction.

A potentially bigger problem in using expenditure data[4] to impute whether greater accessibility leads to higher prevalence rates of problem gambling is one of causality. Problem gamblers have very high levels of gambling expenditure. Regardless of whether increased prevalence rates are *caused* by increased accessibility, this means that overall expenditure per capita will tend to be bigger in jurisdictions with a higher prevalence rate, thus obscuring any true relationship. The Commission undertook some provisional statistical analysis of the likely magnitude of this bias — and found it could be significant (box 8.3). This suggests caution in interpreting the data relating to expenditure and problem gambling prevalence.

[4] Or even data on measures of accessibility, such as the number and spread of gaming machines.

Box 8.3 **Biases in the estimates of the impacts of accessibility on problem gambling**

A high prevalence rate will tend to increase per capita expenditure, leading to an automatically positive relationship between the two. The Commission examined the possible impacts of the biases resulting, by undertaking some computer simulations. We started by *assuming* that there was no connection between accessibility and problem gambling, and then seeing what consequences this assumption had for estimation outcomes. We supposed that the data generating process was one in which:

- problem gambling prevalence rates in each state were determined as a random fluctuation around a constant (PREV = 0.0165 e^{ε} where ε is distributed as a normal with σ= 0.42). These regional variations might, for example, reflect different numbers of vulnerable people or higher levels of social stress;
- expenditure by problem gamblers also fluctuated around a (high) constant (EPG = 12 000 e^{ε} where ε is distributed as a normal with σ=0.166); and
- expenditure by recreational gamblers fluctuated randomly around a (low) constant (ENPG = 450 e^{ε} where ε is distributed as a normal with σ=0.31).

Values for the means and the standard deviations used in the simulation analysis were selected on the basis of patterns visible in the actual data. In each simulation, it was then possible to calculate per adult spending in the eight jurisdictions and to examine the OLS estimates produced by regressing the prevalence rate against the spending estimates. The analysis showed, not surprisingly, that the feedback from high expenditure by problem gamblers onto the 'independent' variable, biased the coefficient significantly. Indeed, in the *absence* of any genuine causal relationship, the coefficient on spending in the linear model was about 0.002 (or about two thirds of that found in box 8.2). However, in the bulk of cases (about 90 per cent for the log model and 80 per cent for the linear model) the standard t statistics on the spending variable in 20 000 simulations was below that observed for the models estimated on the actual data. This suggests, that though the coefficients are biased, it is unlikely that the results presented in box 8.2 are simply the product of the automatic link between expenditure data and the problem gambling prevalence rate.

Source: Commission calculations.

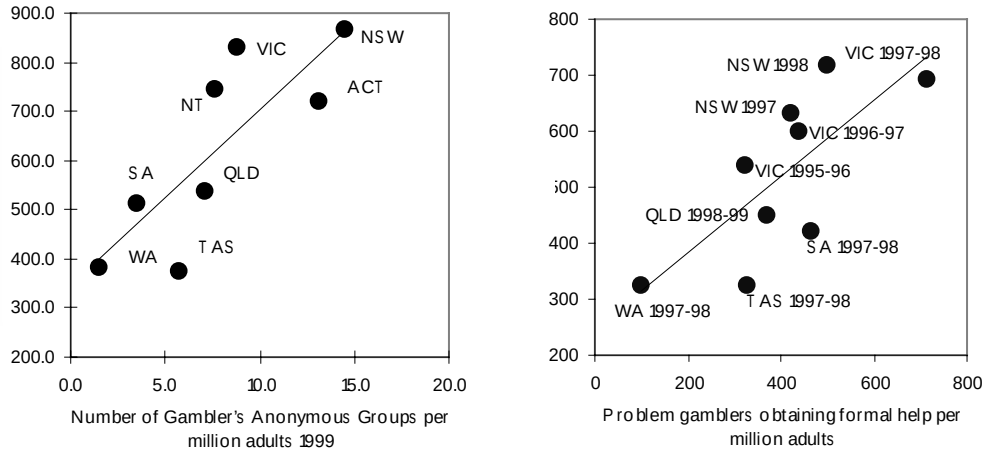
8.4 Variations in the use of help services

All jurisdictions have a variety of help services tailored to problem gambling. Data on the use of such services provides another source of evidence about possible linkages between problem gambling prevalence rates and the intensity of gambling in different areas.

The Commission obtained some data on the number of problem gamblers seeking help in different jurisdictions, and also on the relative number of Gamblers Anonymous Groups (figure 8.8). Again these suggested a link between the level of help-seeking problem gamblers and expenditure per adult — with many more clients per million in New South Wales and Victoria (where per capita gambling expenditure is high, as are almost all aspects of access) than in Western Australia (where spending is low and a limited range of gaming machines are restricted to the casino).

The figure also suggests that as gambling opportunities expanded in New South Wales and Victoria, the share of adults seeking formal counselling help for severe gambling problems increased — though in part, this could reflect increased awareness of services.

Figure 8.8 **The link between gambling intensity and clients of counselling agencies**



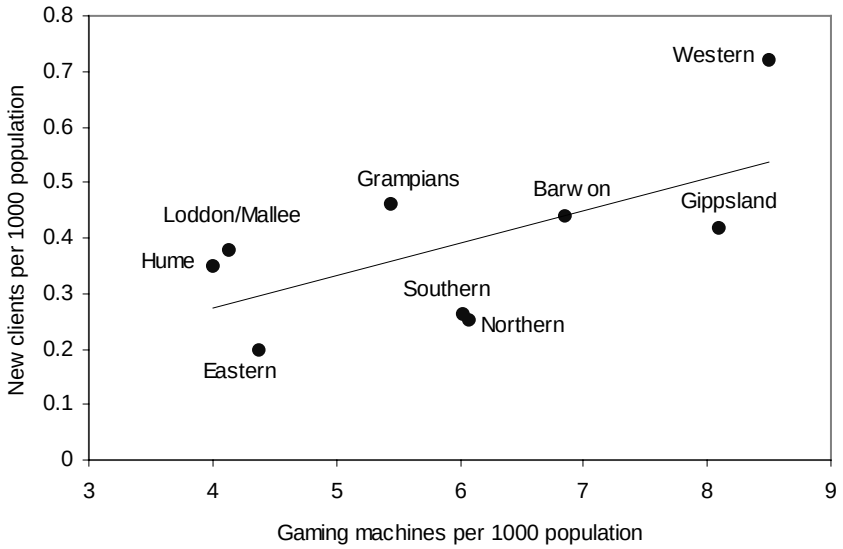
Data source: Expenditure data (excluding lotteries and minor gaming forms) are from the Tasmanian Gaming Commission. The spending data are re-based to 1989-90 constant dollars for the second graph, to take account of the differing dates to which the data relate. The GA data is from www.gamblersanonymous.org/mtgdirAUShtml. The help services data for the second graph is from chapter 17. It is assumed that 70 per cent of the new clients of Tasmanian Break Even services are problem gamblers and that 84 per cent of the Victorian clients in 1995-96 were problem gamblers (as was the case in 1996-97). See chapter 17 for further details.

The Commission also considered evidence on the spatial distribution of help-seekers within jurisdictions. Relationships Australia Queensland (sub. 62) undertook some exploratory analysis of the spatial distribution of their clients and indicated that they tended to be concentrated near to large gaming venues. However, underlying the complexity of inferring connections between accessibility and problem gambling, it may be that the causal connection goes the other way, and that:

- big gambling sites find it economic to locate in communities with a high predisposition to gambling (and not surprisingly these communities would then have a higher number of problem gamblers); or/and
- big gaming venues locate themselves in large population catchments in which case, even for a fixed risk among differing communities, more people would become problem gamblers.

In another study, Jackson et al. (1998) examined data on gaming machine density and help-seeking in nine Victorian regions (figure 8.9).

Figure 8.9 **The link between gaming machine accessibility and new problem gambling clients**
Victoria, 1996-97



Data source: Jackson, Thomas, Crisp, Smith, Ho & Borrell (1998, p. 34).

There appears to be a relationship between the density of gaming machines in an area and the number of new clients of help agencies, suggestive that greater accessibility increases the incidence of problem gambling. The effect explains about 40 per cent of the regional variation in the incidence of problem gambling. However, the results are indicative only — and are strongly influenced by the Western region.

The Commission estimated some simple models based on these data (box 8.4):

- One model (the log model) predicts that for every 10 per cent increase in the number of gaming machines in an area, there would be a 7.4 per cent increase (the log model) in the number of new problem gambling clients.

- The other model (linear model) suggests that this effect varies, depending on the current density of machines — with the effect at around 7.5 per cent (for every 10 per cent increase in machines) when machine densities are low, and around 9.4 per cent when machine densities are high (linear model).

Box 8.4 The apparent link between accessibility and new problem gamblers

The table below indicates the apparent relationship between gaming machine density and the demand for new services. The results are indicative only, as there are only a few observations, but it illustrates the methods which could be used to look at how problem gambling and accessibility are associated. The models can be used to estimate the number of expected new clients per 1000 people as accessibility rises. The relationship is, however, not measured with much precision, so that the actual relationship could be quite different.

	Linear model		*Log Model*	
Gaming machines per 1000 people	Elasticity	Expected new clients per 1000 people	Elasticity	Expected new clients per 1000 people
2	0.75	0.16	0.74	0.17
3	0.82	0.21	0.74	0.22
4	0.86	0.27	0.74	0.28
5	0.88	0.33	0.74	0.33
6	0.90	0.39	0.74	0.37
7	0.91	0.45	0.74	0.42
8	0.92	0.51	0.74	0.46
9	0.93	0.57	0.74	0.50
10	0.94	0.62	0.74	0.55

a Two models were estimated (a linear model and a log model). White's robust t statistics are shown in parentheses below parameter estimates:

CLIENTS = 0.039+0.059 EGMs with R^2=0.39
(0.3) (2.2)

Ln (CLIENTS) = -2.306 + 0.738 ln(EGMs) with R^2=.29
(3.5) (2.0)

The elasticity is the proportionate increase in new problem gambling clients brought about by a proportionate increase in gaming machines.

Source: The results are based on data from Jackson, Thomas, Crisp, Smith, Ho & Borrell (1998, p. 34) for 9 regions of Victoria for 1996-97.

Clearly, these results are preliminary as they are based on a small number of regions. The direction of causality could also be confounded if counselling services were set up and advertised most strongly in regions where gaming machines were the most dense (box 8.5).

There would be benefits in having an Australia-wide database developed as a better way of gauging the magnitude of the connection between accessibility and problem gambling. It should include problem gambling client numbers by region and time, matched by data on variations in the nature of gambling by area (such as gaming machine numbers).

Box 8.5 **What could confound links between spatial variation in help services and gambling intensity?**

The number of problem gamblers seeking help is a function of the provision, accessibility and effective promotion of help services. In theory, some of the variation in prevalence rates of help-seeking problem gamblers may not reflect underlying numbers of problem gamblers, but rather differential service provision. This complicates interpretation of any relationship between problem gambling and accessibility and intensity of gambling.

In some circumstances, it might lead to incorrect causal inferences. For example, more gambling help services might be set up in areas where there are more gaming machines because service providers expect more demand there. If they were to more actively promote their services in such areas or if demand was partly a function of supply then these services would tend to have a greater number of clientele. In this case, as noted by Jackson, Thomas, Crisp, Smith, Ho & Borrell (1998), the direction of causality runs from service provision to counted cases of problem gamblers, rather than the other way.

8.5 Changing patterns of problem gambling

The use of help services

While the cross-sectional data based on expenditure or accessibility measures are suggestive, the changing patterns of problem gambling provides more robust evidence. This evidence strongly suggests that many of the problem gamblers who have emerged in the last few years are the product of liberalised access to gaming machines.

If a gambling form that was once unavailable (either legally or illegally) is made available, and people start to report cases of problem gambling associated with it, this is prima facie evidence of a link between accessibility and problems. For example, on the Gold Coast the demand for help for gambling problems stemming from gaming machines has more than doubled over the four years from 1993-94 to 1997-98. Gaming machines now account for more than half the demand for counselling services (figure 8.10).

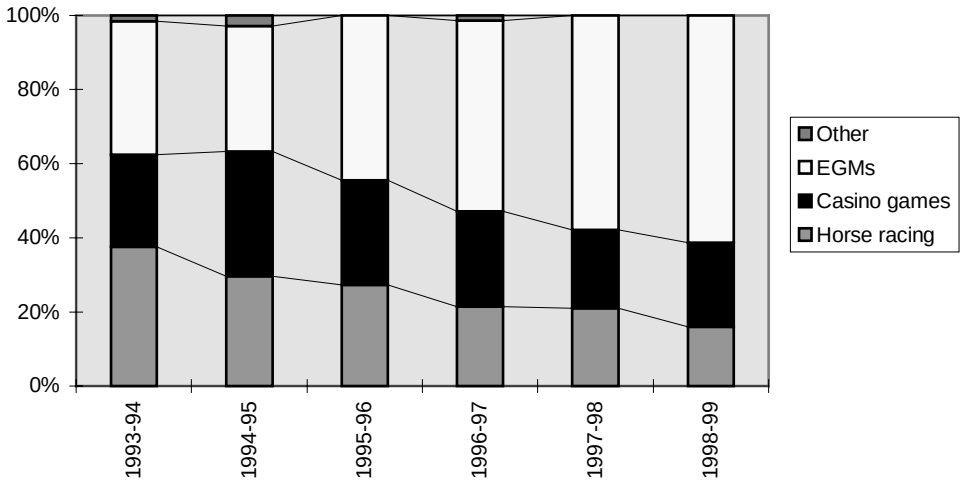
A statistical consultant to the industry, however, considered that these data provided dubious evidence about any link between gaming machine availability and problems:

> Gaming machines have been available from February 1992 and the data runs from 1993 to 1999. The introduction took place prior to the beginning of the data. Unless some further mechanism is proposed about the rate of uptake, it means nothing (sub. D233, p. 103).

There are, however, two mechanisms that are highly likely candidates for the increase over time in the incidence of problems associated with gaming machines, even after machines were first introduced:

- First, people do not develop gambling problems immediately and the period taken to develop problems varies between people (as evidenced from the *Survey of Clients of Counselling Agencies*). This would suggest that cases would increase over time after the introduction of the machines;
- Second, accessibility, as measured by the aggregate number of machines and the number of venues offering them, has also increased over the period.

Figure 8.10 **Pattern of demand for counselling services, Gold Coast, Queensland**[a]



a Gaming machines have been available in the Northern NSW area of the Gold Coast since 1956, and on the Queensland area of the coast from February 1992.

Source: Relationships Australia Queensland (sub. 62, p. 5).

Another important issue here, however, is that of displacement. Gambling opportunities are always available — even under complete prohibition. It is *theoretically* possible (as some industry advocates argue) that problem gamblers are people who would always have problems with gambling — legal or otherwise —

and that the impact of increased accessibility may be to switch their allegiance from one problematic gambling form to another. However, in the case of the Queensland data, the number of cases of problems associated with racing did not fall as cases associated with gaming machines rose — therefore, it does not seem that the increase in gaming machine problems displaced other gambling modes as sources of problems, suggesting that the displacement argument is of limited relevance.

The feminisation of problem gambling

The socio-demographic nature of problem gamblers has changed. As noted in chapter 6, problem gambling used to be a male dominated phenomenon, but has been feminised with the advent of gaming machines. When Dickerson et al. (1996) conducted a major survey in 4 states in 1991, they found that 14 per cent of problem gamblers were female. Now around forty percent of problem gamblers are female (based on the PC *National Gambling Survey*), and, overwhelmingly, these problems are associated with gaming machines.[5] Data from counselling agencies in jurisdictions where there are gaming machines report that about half their clients are female, and these clients overwhelmingly have problems with gaming machines (table 8.2). Western Australia, where the only gaming machines are video card machines in the casino, reports a much lower prevalence of problems associated with gaming machines and a much lower share of problem gamblers who are female (figure 8.11).

Table 8.2 **The source of problems for gamblers in counselling**

Data by gender

Game	*Males*	*Females*	*Total*	*Males*	*Females*	*Total*
	Number	Number	Number	%	%	%
Lottery games	49	39	88	3.9	3.4	3.7
Racing	350	25	375	27.8	2.2	15.6
Gaming machines	681	970	1651	54.1	85.2	68.9
Bingo	8	56	64	0.6	4.9	2.7
Casino table games	107	14	121	8.5	1.2	5.0
Other kinds	18	9	27	1.4	0.8	1.1
Not known	46	25	71	3.7	2.2	3.0
Total	1259	1138	2397	100.0	100.0	100.0

Source: Jackson et al. (1999b, p. 27).

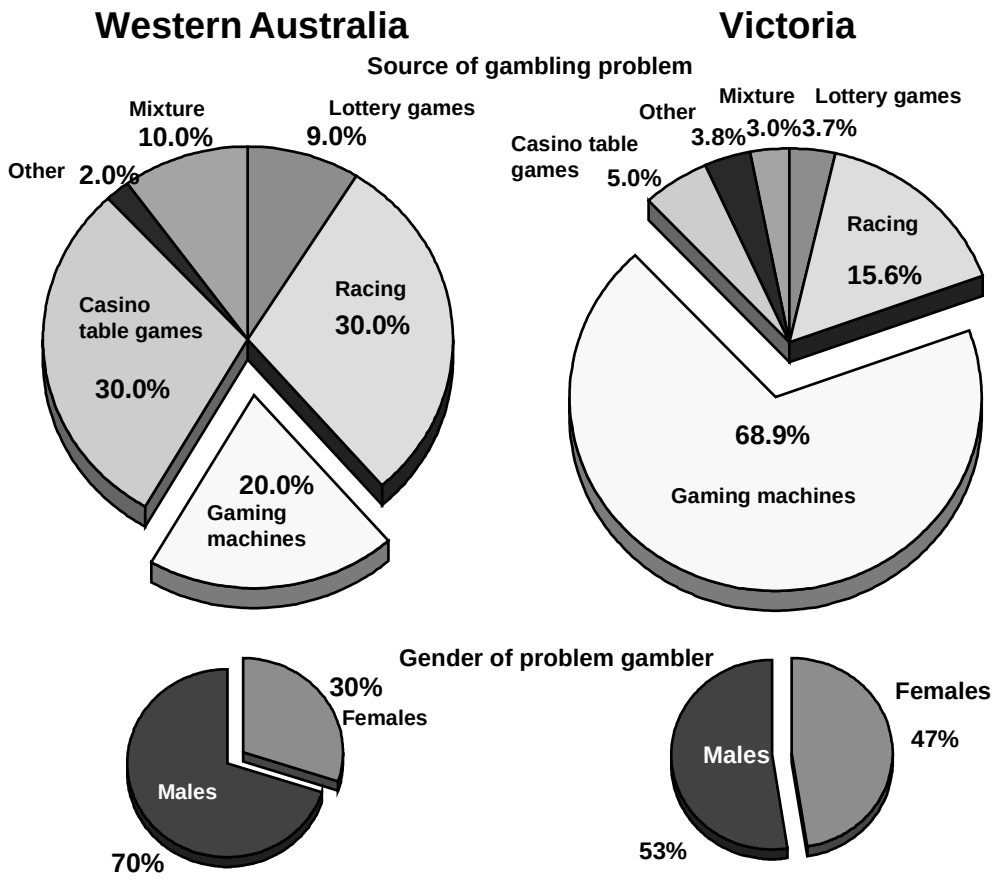
[5] The Sunshine Coast Community Services (sub. D220, p. 1) also cited increasing feminisation associated with gaming machine problems. Over a 4 year period they found that the female share of problem gamblers doubled (to 50 per cent), and problems attributable to gaming machines increased from 31 per cent to 80 per cent.

Any notion that people with problems associated with legal forms of gambling would also have had problems with illegal forms looks suspect in the face of the gender-based data. It is hard to explain how so many of the almost exclusively male population of problem gamblers of a decade ago changed sex!

The duration data discussed in chapter 6 is also consistent with the view that liberalisation of gaming machines led to a whole new group of female problem gamblers. It is hard to think of any other process which could explain the formation of this group, other than the availability of the machines.

The Commission considers this the most powerful evidence in favour of a connection between problem gambling and the availability of gaming machines.

Figure 8.11 **Source of problem gambling in Western Australia[a] and Victoria**



a Data from the Western Australian Government also suggested a similar gender split of 75 per cent males (based on data on clients from July 1997 to June 1998).

Source: PC *Survey of Counselling Agencies* and table 8.2.

8.6 The epidemiological foundations of risk

The epidemiological perspective focuses on risk factors that may vary between environments. People have to be exposed to a risk to develop problems, and this exposure varies by jurisdiction. Regular gamblers appear to be the risk-prone group. Does increased accessibility increase the numbers in this group, especially among higher risk gambling forms, such as gaming machines (chapter 6)? One methodology explores the prevalence of problem gambling (due to gaming machine playing) as the multiple of three factors:

- the ratio of gaming machine players to adults — this would rise were gaming machine availability to be increased;
- the ratio of regular gaming machine players to all gaming machine players; and
- the ratio of problem gamblers to regular players (assuming that these are the high risk group — which from chapter 6 appears borne out by evidence. Australian data suggest that in jurisdictions which have 'proper' gaming machines (ie excluding the card machines in Western Australia), problem gamblers account for between 15 and 30 per cent of regular gaming machine gamblers (table 8.3).

Table 8.3 **Gambling problems and regular gaming machine players**[a]

	Share of regular GM players who have problems	*Share of GM players who are regular players*	*Share of adults who are GM players*	*Share of adults who are regular GM players*
	%	%	%	%
NSW	24.9	14.6	38.7	5.6
VIC	27.2	10.2	44.6	4.5
QLD	14.7	9.9	41.5	4.1
SA	14.6	8.8	41.4	3.7
WA	0.0	3.7	16.4	0.6
TAS	15.9	2.0	35.9	0.7
NT	39.5	8.8	33.1	2.9
ACT	18.5	12.4	37.3	4.6
Australia excluding WA	22.9	11.4	41.0	4.7

a Problem gambling is here based on a SOGS score of 5+.

Source: PC *National Gambling Survey*.

This suggests that an increase in the availability of gaming machines would, all other things being equal, increase the proportion of regular gaming machine players in the adult population, and accordingly, increase the number of problem gamblers. Dickerson and Maddern (1997, pp. 14, 66) applied this methodology to predicting the consequence of further liberalisation of gaming machines in Tasmania. Their survey results suggested that a further 6300 adults would play regularly, of which

around 1250 to 1880 would be new problem gamblers — or an increase in problem gambling of between 13 and 19 per cent.

The major *potential* drawback in this methodology is the assumption that the share of gaming machine players who have problems is fixed, when it might decline as more people become regulars. However, as noted in box 8.6, if anything, the number of problem gamblers among regulars *increases* as the number of regular adult players rises.

Box 8.6 **Is the share of regular gaming machine players who are problem gamblers constant?**

The underlying assumption in the predictive model used by Dickerson and Maddern (1997) is that the share of problem gamblers in regular gaming machine players is a meaningful measure of risk. However, the fact that the share is high is, by itself, no evidence about the riskiness of regular gambling on gaming machines. For example, imagine a counterfactual in which problem gambling numbers were *fixed* in a population. It would not be surprising to still find a high share of problem gamblers among regular players, simply because problem gamblers tend to all be regular gamblers. But, by definition, it would be incorrect in this case to predict more problem gamblers, were there to be an increase in the number of regular adult gaming machine players — rather, the share of problem gamblers among regular gaming machine players would fall.

Considering this counterfactual case suggests a way of examining whether the share of problem gamblers among regular gaming machine players is a meaningful parameter — examine the correlation between the share of problem gamblers among regular gaming machine players and the share of regular gaming machine players in the adult population. If it is sufficiently negative, then it undermines the case for using this parameter for epidemiological prediction. In fact, for the data obtained from the PC *National Gambling Survey* it is significantly *positive* — not negative or zero (ρ, the correlation coefficient, is 0.47). This suggests that as access to gaming machines is liberalised, there are two effects. First, the share of regular gaming machine players increases as a share of adults; and second the share of problem gamblers among regulars increases — possibly reflecting changes in the nature of the micro gambling environment that occurs for regular players (for example, bigger, more busy venues, greater promotion of gambling as competition intensifies).

Using this methodology suggests roughly the increase in problem gamblers that could be expected in Western Australia, were the Government to liberalise access. Given an adult population of 1.4 million, and assuming that:

- the problem gambling share of regular gaming machine players would rise to the median (for Australia as a whole, excluding Western Australia);

- as would the share of regular gaming machine players among adults[6], then

there would be an *additional* 10 500 problem gamblers in Western Australia (or about 110 per cent more than current levels).

8.7 Some overseas evidence

As in Australia, relatively little research has been conducted in other countries about the connection between accessibility and problem gambling. However, some assessments have been undertaken. Eadington (1989) and Lesieur (1992) have suggested a causal link between US problem gambling rates and increased accessibility, but others have doubted this (for example, Harrah's Entertainment Inc, sub. D243, p. 2). The Committee on Problem Gambling Management in New Zealand note a range of other international studies showing a link between gambling problems and greater accessibility:

> The [Capitol Gaming Taskforce] reported a 500% increase in problem gamblers seeking help between 1991 and 1994, the years when riverboat and electronic gaming machine gambling expanded rapidly in the state (Laborde, 15 July 1994). In New Jersey, it was noted that compulsive gambling helpline calls jumped from 1,200 a year to 32,000 after casinos were introduced (McGetigan, 1995). An increase in numbers of problem gamblers receiving treatment has been noticeable in Germany since 1984. Meyer (1992) in reviewing the German literature on gambling, concluded that there had been an increase in the prevalence of problem gamblers as a consequence of increased availability of legalised opportunities for gambling. Remmers (1995) suggests the increase in compulsive gambling in Holland occurred as a result of electronic gaming machines (EHMs) and the introduction of casinos. The Jellinek Addiction Centre reported 400 visitors in 1986 — the year gaming machines were introduced. Six years later this had risen to 6,000 per year (1998, pp. 16–17).

A detailed study of the social impacts of a new casino, the Casino Niagara in Canada, provides some insights into the micro social impacts from increased accessibility to gambling (Room, Turner and Ialomiteanu 1998). In 1996, about one in ten Niagara Falls residents said they gambled in a non-charity casino, jumping to one in two a year after the casino had been in operation. By comparison, roughly one in ten Ontario residents in general had gambled in such casinos, increasing to

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[6] In the case of Western Australia this would reflect a likely increase in the number of adults who played gaming machines (currently, they play card machines, which are not regarded as entertaining as genuine gaming machines), as well as an increase in the number of regular players among gaming machine players. In this context, it is interesting to note that in Queensland a survey by AIGR and LIRU (1995, p. 6) found that 29 per cent of indigenous gamblers had not gambled at all prior to the introduction of gaming machines, which suggests that accessibility to new forms of gambling does create completely new consumers — and new problem gamblers.

one in five in 1997, suggesting that Niagara Falls gambling participation had increased as a result of the new casino. The proportion of people reporting gambling problems rose from 2.5 per cent to 4.4 per cent. The proportion of respondents reporting family members with gambling problems increased from 5 per cent to 7.5 per cent, and those reporting friends with problems rose from 14 per cent to 20.5 per cent.

However, much of the existing research literature on links between accessibility and gambling problems is based on either studies of a state or country observed over a very few time periods, or comparisons between two jurisdictions with differing gambling intensities. Such studies may be useful in understanding the processes that might generate additional recruitment into gambling and increased problem gambling, but they cannot provide systematic evidence about the link between gambling problems and accessibility. For example, Hill (1997, p. 6) cites the American state of Iowa where problem gambling rates appeared to increase significantly following liberalisation of gambling. Hill also inferred that the introduction of legal gambling in Georgia had led to substantial problems, though the absence of a baseline study makes this conjectural (sub. D243, p. 2). In other states, such as Connecticut, the opposite pattern appears to have held. Whyte (1997, p. 5) from the American Gaming Association notes:

> Contrary to the rhetoric of gaming opponents, increased availability of gaming does not lead automatically to an increase in problem gambling... the actual survey evidence is mixed, as some problem gambling rates have slightly increased or stayed the same, and some have actually declined after the expansion of gambling. For example, a recent Connecticut survey showed a decrease in pathological gambling from 2.7% in 1991 to 1.2 per cent in 1996, similar to a South Dakota survey, which found a decrease in prevalence from 1989 to 1991. In both cases there were major expansions in gambling availability between the survey dates.[7]

Two studies of problem gambling in Alberta, Canada, add a further twist (AADAC 1998). The 1994 study found a prevalence rate of 5.4 per cent 'problem' gamblers (based on SOGS 3+), which fell to 4.8 per cent in the replication study in 1998. However, the prevalence of what was termed 'probable pathological gambling' (based on SOGS 5+) increased from 1.4 per cent to 2 per cent.

Studies of a single jurisdiction based on only a few time points do not provide enough reliable information. More time periods or more jurisdictions are needed to average out confounding factors and statistical noise in the prevalence estimates.

[7] Rachel Volberg in a communication to the Commission indicated that she urged 'caution in interpreting the results' from the South Dakota and Connecticut studies, since the baseline and replication studies applied different methods, the time gaps examined were small, as were the sample sizes.

Furthermore, in the United States — where the most research into the prevalence of problem gambling has been conducted — much gambling centres on casinos, which tend to be located along state borders to attract interstate visitors. This complicates the task of assessing the connection between regional variation in problem gambling and gambling intensity.

A number of (US) studies have attempted to look more closely at accessibility and prevalence using bigger datasets or more novel methods. Volberg (1994) compared prevalence rates of problem gambling among five US states with differing levels and histories of accessibility, and found that those with a longer history of legally available gambling had higher levels of problem gambling. More recently, the National Research Council (1999) examined replications studies in the United States as has AADAC (1998, p. II-4ff) in North America as a whole. The National Research Council (1999, p. 82) noted that:

> There are very few studies that permit an assessment of whether the prevalence of problem and pathological gambling is associated with changes in the availability of legal gambling. The nature of the changes observed in those studies, however, was consistent with the view that increased opportunity to gamble results in more pathological and problem gambling.

However, it is apparent from these studies (table 8.4) that measured prevalence rates do not always increase with greater exposure to gambling, or stay constant in the absence of significant changes to accessibility. However, with the relatively small sample sizes used, the differing nature of gambling in each jurisdiction, the possibility of gamblers hopping state boundaries, plus other confounding variables, the studies, by themselves, are inconclusive about the links between access and problems.

Meta-analysis of 34 studies of gambling problems among adults in North America from 1977 to 1997 (Shaffer, Hall and Vander Bilt 1997) suggested that problem gambling has increased over time as gambling opportunities have multiplied in the US. This is suggestive of a link between accessibility and problems (figure 8.12), but other factors may also played a part.

On the other hand, there was no evidence that problem gambling among adolescents, college students or people in prisons (and other institutionalised settings) had increased. The discrepancy between these groups is not altogether surprising. Adults in the general population are more sensitive to social sanctions against behaviours, such as gambling, which the community sees in an ambivalent way. As gambling became more acceptable and accessible, adults gambled more, and further numbers of them developed gambling problems.

In contrast, adolescents, college students and institutionalised people are relatively less concerned about such social sanctions, and so the trend to greater acceptability did not really have a marked impact on their already high participation in (often illegal) gambling (Shaffer, Hall and Vander Bilt 1997, p. 57). Furthermore, many young people would not have been able to readily play some of the newly liberalised forms of gambling (such as gaming machines or casino table games) because of age limits and so their exposure over time to liberalised forms of gambling has been less than adults. In this sense the contrary results for adults compared with others increases the credibility of a link between gambling problems and accessibility, rather than undermining it.

Table 8.4 **Replication studies of problem gambling in North America**[a]

Jurisdiction	*Study dates*	*Magnitude*	*Change*
	Years	%	%
Those jurisdictions where gambling access is increased substantially			
Iowa	1988-1995	0.1 to 1.9	+1.8
Minnesota	1990-1994	0.9 to 1.2	+0.3
Connecticut	1991-1996	2.7 to 1.2	- 1.5
Manitoba	1993-1995	..	+ 0.6
Alberta	1994-1998	1.4 to 2.0[b]	+0.6
Those jurisdictions in which gambling access did not increase substantially			
Nova Scotia	1993-1996	4.8 to 5.5[c]	+0.7
Texas[d]	1992-1995	1.3 to 1.8[e]	+0.5
South Dakota	1991-1993	1.0 to 0.9[f]	-0.1
New York	1986-1996	1.4 to 2.6	+1.2
New Brunswick	1992-1996	..	+0.8

a The Commission's preferred measure of problem gambling for comparisons between jurisdictions is the current level of what US researchers refer to as 'probable pathological gambling' (ie matches the Commission's concept of SOGS 5+). Our concern is that definitions of problem gambling based on lower test thresholds tend to have too high a level of false positives. Also lifetime measures are probably less suited than current measures for trying to measure the impact of current accessibility arrangements. Unfortunately, the most consistent data set is on a lifetime basis, and so the Commission has cited these numbers where possible, or indicated the nature of the data where it is otherwise derived. **b** This is the *current* 'probable pathological gambling' prevalence rate. **c** This is the lifetime gambling prevalence rate based on the lower threshold test (and therefore not ideal). No other estimate was available (AADAC 1998, p. II-5). **d** Some consider the introduction of a state lottery to have been a major change in the gambling environment. **e** The current 'probable pathological' gambling prevalence rate stayed constant at 0.8 per cent. **f** The current 'probable pathological' gambling prevalence rate also fell by 0.1 percentage points from 0.6 per cent to 0.5 per cent.

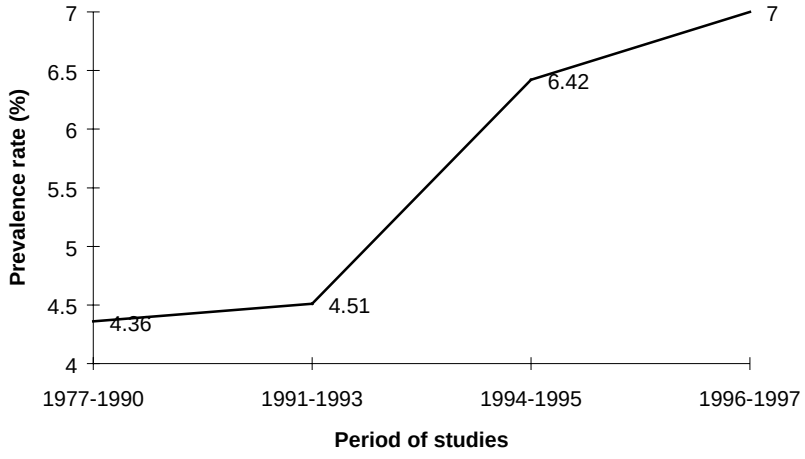
Source: National Research Council (1999, pp. 82-4); AADAC (1998, pp. 4-5).

The final report of the US National Gambling Impact Study Commission (Gerstein et al. 1999) used a large micro dataset to examine the link between location and the

prevalence of problem gambling (table 8.5).[8] They found that the availability of a casino within 50 miles (versus 50 to 250 miles) is associated with about double the prevalence rate of problem and 'pathological' gambling. But while this pattern was apparent for the combined dataset, quite the contrary pattern was obtained for the telephone survey for the key 'pathological' gambling measure. Overall then, these data provide rather tentative evidence about the link between proximity to casinos and gambling problems.

Campbell and Lester (1999) found a positive and significant link between a measure of the prevalence of problem gambling in parishes in Louisiana and the density of video poker machines.[9] At best, however, their simple models explained only about 17 per cent of the variation in problem gambling.

Figure 8.12 **Prevalence of gambling problems for adults over time**[a]
North America 1977–1997



a The prevalence rate is the sum of what Shaffer et al. refer to as level 2 and level 3 gambling (which will extend to people with SOGS scores as low as 3). This explains why the prevalence rates are so high.

Data source: Shaffer, Hall and Vander Bilt (1997, p. 44).

8 Senator Paul Simon (1995, p. 8) also suggested a more extreme association between proximity and gambling problems in the US. He claimed that while less than 1 per cent (0.77 per cent) of the population are compulsive gamblers, that number increases two to seven times when enterprises are located near a population.

9 Unfortunately, the measure of problem gambling used was the number of Gambling Anonymous Groups in each parish, which is only a proxy for the number of problem gamblers in an area.

Table 8.5 **Prevalence rates of problems by proximity to casinos**[a]
United States 1998

	Telephone survey			*Telephone & patron survey*		
	At risk (n=183)	*Problem (n=30)*	*Pathological (n=21)*	*At risk (n=267)*	*Problem (n=56)*	*Pathological (n=67)*
	%	*%*	*%*	*%*	*%*	*%*
0 to 50 miles	6.7	1.6	0.5	7.4	2.3	2.1
51 to 250 miles	8.7	1.3	0.7	8.5	1.2	0.9
250+ miles	6	1	1.2	5.5	1.2	1.3

a This has a number of limitations as a test of the link between accessibility and problem gambling, because it ignores proximity to gambling venues other than casinos.

Source: Gerstein et al. (1999).

Finally, a unique natural experiment into the effect of gaming machines on gambling problems was provided by the experience of South Dakota. The South Dakota Supreme Court ordered that all of the state's video gambling machines be shut down in August 1994 (as they were technically illegal). Other gambling forms, which were widely available, were not affected. This led to a 3 month lull in playing video games before a referendum legalised the games in November 1994. Inquiries to four problem gambling treatment centres in South Dakota fell dramatically from 68.1 per month (in the eleven months prior to the temporary ban), to 9.7 per month during the ban, before rising to 24 per month in the three months after the lifting of the ban (Carr et al. 1996). This is highly suggestive of a link between availability of certain gambling forms and the incidence of gambling problems.

8.8 Summing up

The potential link between accessibility and problem gambling is a key policy issue, since it determines whether constraints on access are likely to have any impact on problem gambling. The Commission examined evidence on the possible link from a variety of sources — including variations in problem gambling prevalence rates, the use of help services, the changing pattern of counselling demand and overseas evidence.

It is hard to capture all of the multi-dimensional aspects of accessibility in single measures, complicating assessments of its association with problem gambling. There are also sometimes problems associated with establishing the direction of causality. The cross-sectional information in particular, has limitations that makes it, in isolation, inconclusive as evidence for a link.

However, as a whole, the evidence is highly suggestive of a positive link between availability of legalised gambling — especially gaming machines — and the incidence of gambling problems. In particular, the feminisation of problem gambling appears strongly associated with the spread of gaming machines.

Overall, the Commission considers that there is sufficient evidence from many different sources to suggest a significant connection between greater accessibility — particularly to gaming machines — and the greater prevalence of problem gambling.