Study of the Impact of Caps on Electronic Gaming Machines

FINAL REPORT

Commissioned by:

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Prepared by:

South Australian Centre for Economic Studies

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The Gambling Research Panel ceased operations effective 22 December 2004.

At that time it was actively managing five projects that had been commissioned in recent years. The on-going management of these projects was transferred to the Office of Gaming and Racing in the Department of Justice on 22 December 2004.

This report was commissioned by the Gambling Research Panel and is one of the five projects transferred to the management of the Department of Justice. Funding remains by Government through the Community Support Fund.

Web details: www.justice.vic.gov.au

FOREWORD

This report, Study of the Impact of Caps on Electronic Gaming Machines is from the 2001-02 Research Plan of the Gambling Research Panel.

The study had the primary objective of assessing the impact of the introduction of caps limiting the number of EGMs in five Victorian regions, with a view to determine their effectiveness in reducing the risks to the community associated with this form of gambling.

The researchers engaged with a variety of industry participants, Local Government authorities and Victorian Government departments in seeking relevant data and information to complete this study.

The functions of the Gambling Research Panel ceased on 22 December 2004. Its research that was still continuing at that time was transferred to the administration of the Office of Gaming and Racing, Department of Justice, to oversee its completion.

The Victorian Government continues to be committed to a gambling research program that will inform ongoing policy development. The Responsible Gambling Ministerial Advisory Council (RGMAC) has been established and will advise the Minister for Gaming on priorities for gambling research.

Further information about the RGMAC and an electronic copy of this report is available from the Gaming and Racing section of the Department of Justice website at: www.justice.vic.gov.au

Ross Kennedy
Executive Director
Gaming and Racing

Contents

This report was prepared by the following researchers:
Michael O'Neil, Director
Steve Whetton, Senior Research Economist
Ben Dolman, Research Economist
Marianne Dolman, Research Economist
Voula Giannopoulus, Research Associate

Acknowledgements

The South Australian Centre for Economic Studies has conducted this study over three years and in that time we have received considerable support from members of the Gambling Research Panel,[1] the Secretariat to the GRP, the Office of Gambling Regulation (OGR) and the many hotels and clubs in Victoria that completed surveys and discussed their experience of the caps policy. We would also like to acknowledge the assistance of Tabcorp (Vic) and the AHA (Victoria) over the life of the project. Department of Human Services (DHS) staff kindly assisted with data and responded to our many requests.

Two special mentions are required. Ms Kerrie Hereward (OGR) who provided the data from OGR files, answered our many queries and responded to our many requests to check and re-check data. She was always willing to assist the project and her professionalism reflects well on the Office of Gambling Regulation.

The researchers also gratefully acknowledge the support of the GRP — Associate Professor Linda Hancock, Mr Peter Laver and Mr David Weston — who were untiring in their support, helpful advice and in ensuring the research team had access to the necessary data to complete the project.

A number of researchers provided helpful comments over the life of the project and we acknowledge their input.

The Victorian Government has an enviable record of leadership in gambling policy and independent research to assess the success (or otherwise) of various initiatives. The researchers note that the Minister for Gaming, the Hon. John Pandazopoulos on advice from the GRP, was instrumental in enabling the research team to obtain access to the data necessary to complete the study.

Finally, as the senior author I express my thanks to the research team who maintained a commitment to this project over the three year period.

[1] Correspondence (undated) received by the SA Centre for Economic Studies (on 1 November 2004) from Mr Ross Kennedy, Executive Director – Gaming and Racing, Department of Justice advising that the Victorian Government has established a new body, namely the Responsible Gambling Ministerial Advisory Council which would replace the Problem Gambling Roundtable and in addition, the Gambling Research Panel would be discontinued.

Executive Summary

The study of the Impact of Caps on Electronic Gambling Machines (EGMs) commenced in July 2002 and extended to December 2004. Victoria is the first State to trial regional caps on the number of EGMs, in recognition that EGMs are not distributed evenly across the State and that they potentially, may have adverse impacts on vulnerable communities. While the responses to binding regional caps cannot be predicted *a priori*, due in part to different responses of consumers and the range of possible responses from machine operators and from venue licensees, ultimately the effect of regional caps on gambling behaviour depends critically upon the real impact it has on accessibility of gambling opportunities. This was also the view of the Productivity Commission when they concluded that:

> 'quantity constraints on gaming machines appear either to face implementation problems or lack effectiveness as measures for ameliorating problem gambling'. (1999: p. 15.30).

Structure of the Report

Sections 1 and 2 of this final report outline the terms of reference and provide an overview of trends in gaming machine expenditure in Victoria, including a summary of the caps policy, that required a phased reduction of 406 machines from five designated 'vulnerable communities'. Methodological considerations and the identification of five, matching control regions and potential 'leakage points' (i.e., areas in close proximity to the cap regions) are presented in Section 2.

The cap and control regions are shown in Table E.1 and regional profiles for the five cap and five control regions are included in Appendix 4.

Table E.1

Cap	Control
Greater Dandenong Plus	Monash Minus
Maribyrnong Plus	Hobsons Bay Minus
Darebin Plus	Moreland Minus
City of La Trobe	City of Ballarat
Bass Coast Shire	City of Greater Geelong

Section 3 surveys previous policies to minimise harm from gambling and discusses background issues and research questions as to the likely impact of regional caps. The researchers found that bans on smoking in gaming areas, reconfiguring EGMs to ban note acceptors and limiting access to credit have had some beneficial impacts.

Section 4 examines the likely responses of consumers, machine operators and venue licensees to the caps. Again, the researchers stress that the effect of regional caps on gambling behaviour depends critically on the real impact it has on the accessibility of gambling opportunities. Attempts to limit accessibility may be mitigated by other behaviours.

The assessment of gaming statistics is divided into two sections. Section 5 outlines the data requirements to undertake the analysis, examines observed trends and patterns in gambling expenditure and contrasts the cap and control regions. It includes an assessment of the effectiveness of the caps policy by operators and venue owners (based on their knowledge, experience and observation) and a review of problem gambler numbers. Section 6 continues the analysis; principally this section is devoted to econometric analysis to formally test the effect government policies may have had on gaming activity. Section 6 provides a final overview and conclusions arising from the study.

Research Findings and Conclusions

The **expected** effect of the regional caps was to reduce the level of gaming expenditure at venues in the capped regions following the sequential removal of machines.

To the extent that the caps may have acted to "crowd out" or displace gamblers (and particularly problem gamblers) from those venues that lost machines, then it was **expected** that the regional caps, as a secondary effect, would lead to an increase in the level of gaming expenditure at venues in the identified leakage areas.

Overall, the results were mixed with only a few conclusive findings on the effects that the caps had on gaming expenditure.

In only a few cases can we find evidence that the regional caps reduced the level of gaming expenditure at specific venues in the cap regions. Evidence of a reduction in expenditure in the Bass Coast Shire and Maribyrnong Plus suggests that the actual reduction was of a similar magnitude to the reduction in gaming machines.

However, and importantly, the caveat to this is that if the falls in expenditure were the result of regional caps, then the falls in expenditure should have been greater in the specific venues that lost machines. The fact that we **could not find any consistent evidence** of this linkage raises questions about the interpretation of these results.

Considering the effects that the removal of gaming machines had on individuals venues' gaming expenditure within cap regions, (with the expectation that a fall in gaming machines would result in a fall in gaming expenditure) **we could not conclude**, that within the capped regions those venues that lost a larger share of their machines suffered larger falls in EGM expenditure than those that lost a smaller share of their machines.

Statistical tests do not find significant evidence that by Year 3 of the caps (cumulative impact), the venues from which machines were removed suffered larger falls in gaming machine expenditure than other venues in any of the capped regions.

Statistical tests (Regressions IV to VI) comparing movements in venue-level gaming expenditure in the capped regions with movements in State level gaming expenditure, **do not find support** for the proposition that the imposition of the caps caused a reduction in expenditure that was more significant for the State as a whole.[2]

We find no evidence that the caps affected (displaced) gaming expenditure in the leakage regions.[3]

Estimates of the changes in the other regions were two unreliable, statistically, to be able to infer that the regional caps had any effect on expenditure.

We find no evidence that the regional cap policy had any positive influence on problem gamblers attending counselling, on problem gambler counselling rates or other forms of help seeking behaviour.

The experience of one operator (Tabcorp) and venue owners/managers is that the regional caps policy had no effect on regular or committed gamblers. One important reason for this is that the relatively small quantitative reduction in machine numbers had no real impact on the accessibility of gambling opportunities. Previously idle machines were able to be utilised by gamblers. Perhaps only in the smaller venues in the Bass Coast Shire and in the holiday season might there have been some "crowding out" of gamblers.

Smoking Ban

The ban on smoking **significantly impacted** to reduce gaming expenditure. The estimated effect was a decline of –19.0 per cent in Maribyrnong Plus to –13.4 per cent in La Trobe. The effect appears to be greater in metropolitan areas, but no differences were observed between the cap regions, the comparison regions or the State as a whole.

24 Hour Gaming

In those venues that lost 24 hour trading, gaming expenditure fell by around 3.3 per cent. The estimated effect was statistically significant at the 5 per cent level of confidence.

Size of Venues

While our analysis suggests that in the larger venues, gaming expenditure tended to grow a little faster, the size of the venue does not qualitatively affect the results reported here.

In the Bass Coast Shire, where venues are smaller on average, we estimate the level of gaming expenditure might have been higher if venues were as large as in the Shire of Greater Geelong.

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[2] Technically stated, over the three years while in four of the five regions venue level gaming expenditure fell by more than the State average, the signs of the coefficients are reversed from year to year and are generally not found to be statistically significant. Thus, we cannot reject the possibility that random fluctuations in the data account for this.

[3] Intuitively, this finding supports numerous other studies and research which reports that gamblers do not travel extensive distances to access gambling opportunities.

Population Growth

Overall, population growth rates would need to be quite large to distort our estimates of the effects of the regional caps. In the six metropolitan and comparison regions the adult population grew at similar rates. In the four non-metropolitan cap and comparison regions, different population growth rates (Bass Coast Shire 11.5 per cent and La Trobe 1.6 per cent) relative to the two comparison regions add strength to our findings; that the cap had no effect in La Trobe and contributed to a fall in gaming expenditure in the Bass Coast Shire.

In summary, the quantitative reductions were too small to provide any real impact on accessibility to gambling opportunities. The review of gambling statistics at the venue and the regional level and the testing of hypotheses through statistical analysis provide no consistent support for the caps policy as currently implemented. The experience of the operators and venue managers support the overall findings of the study.

1. Introduction

Summary of Discussion

Section 1 provides an overview of the study including the terms of reference and tasks to be undertaken. The background to the decision to test regional caps and other measures implemented by the Victorian Government are outlined. The five specific cap areas are identified as 'high ranking areas' on measures of vulnerability to the potential harm caused by large numbers of gaming machines. The five regions have a high share of EGMs relative to their percentage share of State income. The actual reduction in the number of machines by area and a review of preliminary trends in net gaming expenditure at the local government area level are considered.

1.1 Introduction

The Victorian Gambling Research Panel (GRP) commissioned the South Australian Centre for Economic Studies in July 2002 to undertake a study on the impact of caps on electronic gaming machines (EGMs). The primary objective of this study is to assess the impact of the introduction of caps limiting the number of EGMs in five Victorian regions, particularly the impact on the 'harms' associated with gaming on these communities. In particular, the study aims to address the impact of these caps — or other policy interventions — on the incidence of problem gambling and the associated social and economic effects. This research project is part of the GRP's annual research plan for 2001-02 although a final report could only be provided sometime after the date on which the last tranche of machines were required to be removed and revenue data from venues was able to be supplied to the researchers.

One example of 'other policy interventions' has been the decision of the Bracks Government to introduce smoking bans in restricted gaming areas. The smoking bans were introduced on September 1, 2002 and by early December 2002, Tabcorp had reported to the Australian Stock Exchange an expectation of lower profits, due to the fall in EGM revenue. An examination of the EGM net gaming revenue across venues and LGA regions, to be undertaken as part of this study, will reveal the extent to which this impact occurred across all regions, the timing of the impact and whether any longer term trends can be observed from the data.

A second example of a policy intervention to reduce 'harms' was the decision to cease 24 hour gaming in licensed venues. This restriction commenced in May 2000 and was to be gradually introduced as each venue applied, at the end of their five year liquor licence, to renew the licence. In short, the reduction in hours was introduced in a staggered fashion.

These announcements and policy interventions made the researchers task more challenging. However, they did not affect our choice of control regions or data requirements for the study.

1.2 Terms of Reference and Critical Tasks

The Terms of Reference and the original reporting timelines are shown in Appendix 1. The objectives for this study did not alter over the time frame in which the study was undertaken although the reporting requirements were altered. This was because the Gaming Machine Control Act (1991) was amended to allow the Office of Gaming Regulation to provide to the researchers information at the venue level. This information was only able to be supplied in August 2004. Preliminary reports from the start of the trial up to several intermediate cut-off points were not possible. The researchers and the Gambling Research Panel negotiated new arrangements that required the research team to:

- conduct a literature review and refine the analytical framework for the study;
- to recommend appropriate regions for inclusion in the control group;
- to review historical gaming data for the cap and control regions; and
- conduct data analysis at the venue, regional and state level to assess the effectiveness of the trial.

All of the above are included in this final report.

Issues such as the nature of problem gambling (see Appendix 2) and the role of caps on electronic gaming machines in limiting risk of harm from EGM use, in the context of other policy options implemented in Australia and overseas, are considered in this report.

This report combines the contents of earlier preliminary reports set out in the research programme for this project, namely the identification of the "control" regions for the study and a summary of historical gaming data for the ten regions to be studied.[4] As discussed in Section 2 (Methodological considerations) "control" regions need to be used as opposed to a time series analysis of the cap regions. Over the course of the study period there were other policy interventions which were likely to affect gambling behaviour, however these are likely to impact reasonably evenly across regions. Using control regions will allow the identification of trends which appear to be peculiar to the cap regions (and therefore potentially influenced by the caps) rather than those which are state-wide and reflect changes in legislation or preferences (such as the introduction of smoking bans).

A series of tasks were undertaken to develop the framework for the study.

The first task was to identify regions that appear to be reasonable matched comparison controls for the cap regions. This was done by conducting econometric analysis on the demographic and regional factors which are correlated with levels of net gaming machine expenditure, and then identifying those regions whose profile in these factors most closely matched that of the cap regions.

[4] See Appendix 1 for reporting structure and timelines.

The second task was to profile each of the regions and provide a brief description of each region, including *inter alia*, population, age, income distribution, tenancy type, marital status and receipt of Commonwealth benefits within the region. Further information on each region was collated from interviews with hotel and venue owners, local councils and other researchers.

The third task was to gather information on machine numbers and venue numbers on each of the regions under study and points in time at which either venue or machine numbers changed. This information has been sourced from the Victorian Office of Gambling Regulation (OGR) for the cap and control regions.

The final task required the approval of the Victorian Government to access venue based data. In this report data is not reported by individual venues for the obvious reason of confidentiality, but is grouped for each region. The delay in the project was due to the time taken to access venue based expenditure data.

1.3 Regional Caps in Victoria

Since the introduction of EGMs into Victoria in the early 1990s, the amount spent on gaming has increased very rapidly, far outstripping growth in the broader economy and representing an increasing share of household income. Figure 1.1 illustrates gaming machine expenditure from $255 million in 1992-93 rising to $2,563 million by 2001-02. Gaming machine expenditure actually fell for the first time in 2002-03, falling by $229 million, down to $2,334 million. The fall largely reflects the impact of the ban on smoking in gaming areas (introduced from 1st September, 2002) with the ban reducing gambling participation and/or duration of gambling.

Prior to the impact of the smoking ban, gaming machine expenditure had grown strongly throughout the 1990s, despite little growth in machine numbers due to the state-wide cap of 27,500 machines in hotels and clubs.

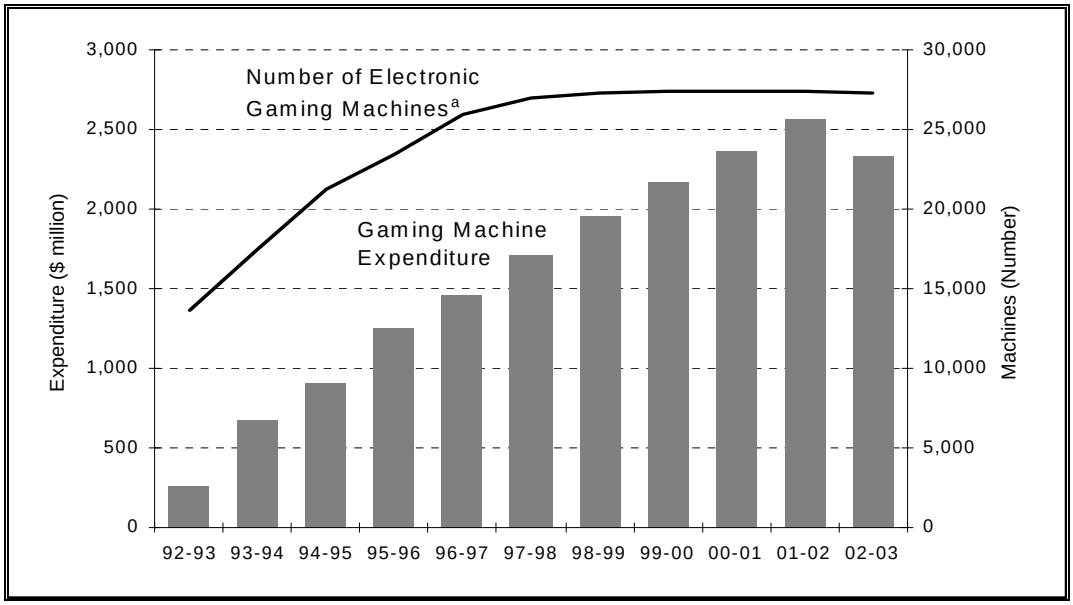
The state-wide cap was introduced by the previous Government in late 1995, whereby the two licensed operators are limited to 13,750 EGMs each. The Casino Control Unit (1991) provides for 2,500 machines within the Crown Casino.

The longer term impact of the smoking ban on gaming machine expenditure is uncertain. One may expect that the ban would have a once-off effect, with growth in gaming machine expenditure eventually resuming it pre-smoking ban course (see Figure 1.1). However, rather interestingly, the latest data indicates that gaming expenditure has remained rather flat in 2003-04. Monthly data from the Office of Gambling Regulation indicates that total expenditure on gaming machines was $2,291 million in Victoria in 2003-04, down $43 million on the previous year.

It appears that the smoking ban may have had a rather significant drawn out impact on gaming machine expenditures. However, it may also be that other factors have played a role in bringing about lower levels of expenditure. These factors would include policy responses designed to reduce harm from problem gambling (see below), and changes in household spending patterns.

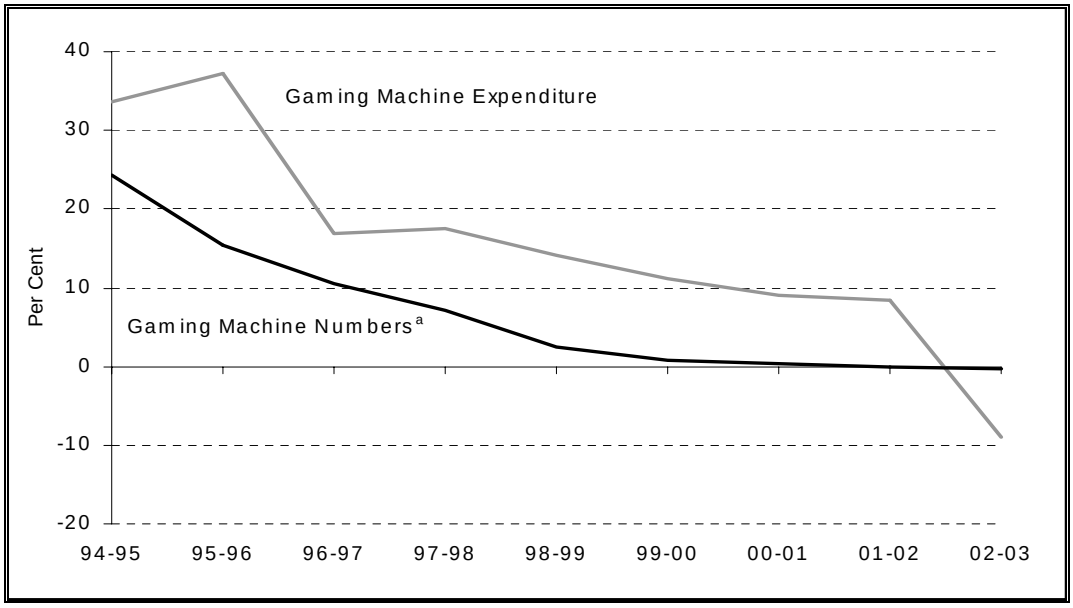
With the stock of machines fixed, it is observed that machines are used more intensively as is illustrated in Figures 1.2 and 1.3. By 2000 the growth in gaming machine numbers had declined to almost zero, while annual growth in total gaming machine expenditure was approximately 10 per cent. Figures 1.3 and 1.4 show that EGM expenditure per machine grew strongly through to 2001-02, but fell sharply in 2002-03 with the introduction of the smoking ban and its impact on gaming activity.

Figure 1.1
Victorian EGM Net Expenditure: 1992-93 to 2002-03



Source: Office of Gambling Regulation; Tasmanian Gaming Commission.

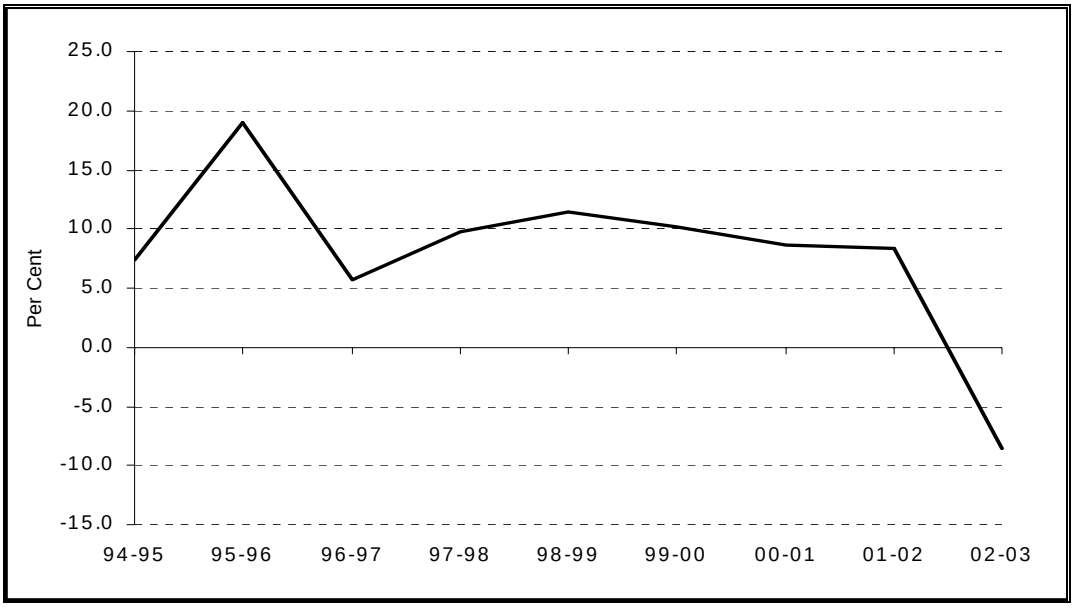
Figure 1.2
Growth in EGM Expenditure and Machine Numbers, Victoria[5]: 1994-95 to 2002-03
(Per cent)



Source: Office of Gambling Regulation; Tasmanian Gaming Commission.

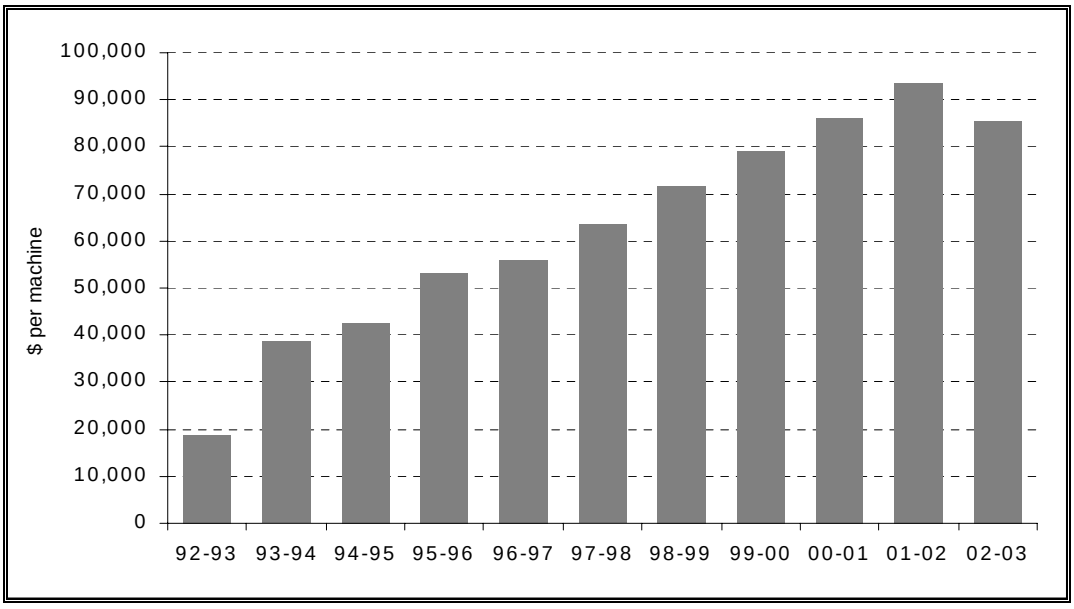
5 Gaming machine numbers based on average of start and end period figures.

Figure 1.3
Growth in EGM Expenditure Per Machine, Victoria[6] 1994-95 to 2002-03
(Per cent)



Source: Office of Gambling Regulation; Tasmanian Gaming Commission.

Figure 1.4
EGM Expenditure per Machine, Victoria: 1994-95 to 2002-03



Source: Office of Gambling Regulation; Tasmanian Gaming Commission.

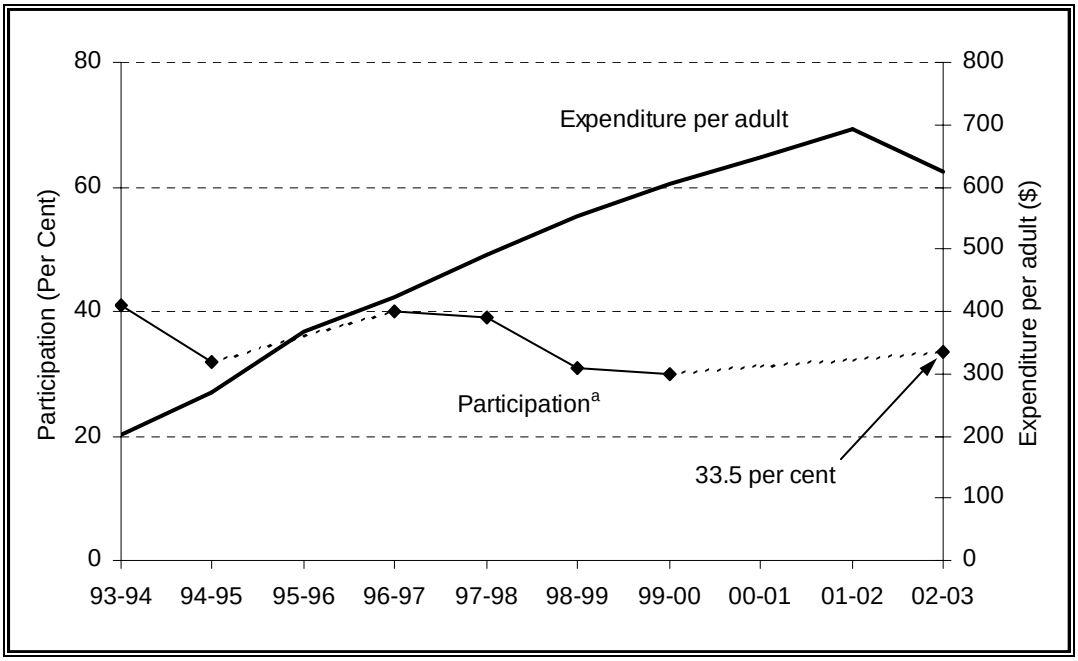
Regional expenditure trends before and after the cap may be a useful guide to the effect on problem gamblers. While we note that it would not be possible from the raw data to determine whether the gamblers being discouraged are those whose gambling is high but controlled, or problem gamblers it does appear that participation rates and expenditure per adult provide some useful insights into the impact of the caps.

[6] Gaming machine numbers based on average of start and end period figures.

Surveys on participation in gambling activities are not particularly meaningful with regards to problem gamblers, as the fluctuations in participation rates appear to be primarily driven by low expenditure 'unattached' gamblers. For example the surveys of Victorian community gambling patterns conducted for the Victorian Casino and Gaming Authority indicated that from 1997 to 1998 participation in non-casino electronic gaming machine gambling fell from 39 to 31 per cent, but expenditure on this type of machine continued to increase at its trend rate. The most recent Victorian Community Survey[7] (April 2004) reported the participation rate at 35.5 per cent, while expenditure continued to climb, until the imposition of the smoking ban in September 2002 and the caps programme commencing in February 2002.

Figure 1.5 draws out this point. Expenditure per adult continued to rise up to September 2002 when smoking bans were introduced and has declined thereafter, while recorded participation rates have trended downwards. That is to say, fewer people indicate they play EGMs over time, yet expenditure per adult has continued to rise. The decline in participation rates by the relatively unattached gamblers over time does not appear to have slowed the upward trend of expenditure per adult.

Figure 1.5
Electronic Gaming Machines:
Participation and Expenditure Per Adult, Victoria



Note: [a] Participation rates are not available for 1995-96, 2000-01 and 2001-02. Data for these years are estimated as a mid point of actual participation rates for most recent years.

Source: Tasmanian Gaming Commission; Victorian Casino and Gaming Authority, *Community Gambling Pattern and Perceptions Surveys* (various), and Gambling Research Panel, *2003 Victorian Longitudinal Community Attitudes Survey*.

This apparently small influence on expenditure by the relatively unattached gamblers does have implications for the study on the usefulness of expenditure data. It would appear to suggest that any noticeable fall in regional expenditure levels (i.e., via caps and or other policy changes) is likely to be due to changes in the behaviour of 'acknowledged

[7] 2003 Victorian Longitudinal Community Attitude Survey, released by the GRP in April 2004.

heavy gamblers' and committed heavy gamblers', the groups into which problem gamblers fit.

1.3.1 Measures Designed to Reduce Harm

Since taking office in late 1999, the Victorian Government has introduced a range of measures designed to reduce the potential for harm from excessive usage of EGMs. These measures have included:

- maintaining a state-wide limit of 30,000 machines (including 2,500 in the Crown Casino);
- introduced in May 2000, when renewing liquor licence 24 hour EGM venues were required to reduce to 20 hours in rural and regional areas outside of the Melbourne Statistical Division (and heightened requirements for impact assessments and justification for extended hours in metropolitan areas);
- informing local governments of applications for gaming venues in their regions and providing the opportunity for local governments to make submissions to the application process;
- regulating lighting in EGM venues and requiring the provision of clocks on all gaming machines; and
- introducing targeted caps on electronic gaming machine numbers in five regions of Victoria.

Other harm minimisation measures announced since the start of this research program, some commencing in January 2003, include:

- a ban on smoking in restricted gaming areas;
- a ban on $100 note acceptors on machines;
- prohibiting the increase of machine spin rates above current levels;
- a ban on autoplay facilities;
- setting a maximum bet limit of $10; and
- displaying information about the odds of winning and the amount of time and money spent by the player.

A limited number of restricted access machines that would require the use of a pin number or some type of smart card to access the machine, are also planned to be introduced. They will enable gamblers to pre-set their expenditure during a given period of time. The number of restricted machines will be 10 per cent or 3,000 of the total number of machines. Further new measures were planned, to cover access to credit, limiting withdrawals from ATMs and EFTPOS and payment of winnings by cheque.

Regional caps on the number of gaming machines in three metropolitan and two country regions of Victoria were introduced in April 2001.[8] The regions that were chosen were those that were considered to be particularly vulnerable to the harm caused by large

[8] It is not clear why only five regions were capped, although we note that the Government has indicated "it will impose additional caps where necessary".

numbers of gaming machines. The statistical criteria used to determine the degree of vulnerability were:

- the accessibility of gaming machines, as measured by the number of EGMs per 1,000 population;
- the average annual player loss per adult on gaming machines; and
- the socio-economic status of particular areas in Victoria as indicated by the Australian Bureau of Statistics' Socio-Economic Indicators for Areas (SEIFA).

The idea behind these measures is that ready access to gaming machines may increase the likelihood that residents will gamble, and low incomes exaggerate the harm caused by gambling as those gambling losses are more likely to affect the quality of life of gamblers and their families. The resulting ranking of the twenty most vulnerable local government areas is displayed in Table 1.1.

Table 1.1
Twenty Vulnerable Local Government Areas

LGA	EGM per capita Rank	Average loss per adult Rank	Socio-economic indicator Rank	Sum of three criteria
Maribyrnong	2	2	1	5
Greater Dandenong	6	3	2	11
La Trobe	4	11	7	22
Bass Coast	3	14	8	25
Darebin	14	9	4	27
East Gippsland	7	25	9	41
Warrnambool	5	15	25	45
Hobsons Bay	12	22	13	47
Ballarat	8	19	21	48
Melbourne	1	1	47	49
Hume	25	13	12	50
Whittlesea	31	4	17	52
Brimbank	33	16	5	54
Greater Geelong	13	23	20	56
Wyndham	15	6	45	66
Moonee Valley	21	8	38	67
Mildura	24	34	10	68
Moreland	35	29	6	70
Greater Shepparton	27	28	16	71
Monash	16	5	50	71

Source: Premier announces first regional gaming caps, Minister for Gaming, 8 February 2001.

In practice, the five principal regions in which caps were imposed were those with the highest ranking, taken as the sum of the rankings against these three criteria. However, three of the regions were extended to cover areas of similar vulnerability beyond a single

local government area (though the exact criteria for these expansions is not clear).[9] The five regions selected were:

1. The City of Maribyrnong plus the adjoining postcodes 3015, 3020 and 3031 ("Maribyrnong Plus");
2. The City of Greater Dandenong plus the adjoining postcodes of 3170, 3177 and 3803 ("Greater Dandenong Plus");
3. The City of Darebin plus the adjoining postcodes 3058, 3060, 3061, 3074 and 3081 ("Darebin Plus");
4. The City of La Trobe; and
5. Bass Coast Shire.

EGM statistics by Local Government Area are shown in Tables 1.2a and 1.2b, while the following figure (Figure 1.6) depicts net EGM expenditure from 1992-93 to 2002-03 in the five selected LGAs. It can be observed in Figure 1.6 that the five LGA regions experienced a decline in EGM net expenditure commencing in 2002. A ban on smoking in dining areas was introduced in Victoria in July 2001 while a ban on smoking in gaming areas was introduced in September 2002.

Tables 1.2a and 1.2b provide a snapshot comparison of the 5 LGA regions,[10] metropolitan and country Victoria and all Victoria for 2 years — Table 1.2a 2000-01, the baseline year for the selection of the cap regions and Table 1.2b for 2002-03. The latter covers a 9 month period of smoking ban, a 16 month period of first machine withdrawals and a 4 month period of second machine withdrawals. The respective impact are not disaggregated in these "global, LGA tables".

In all areas except Bass Coast Shire EGM net expenditure declined from 2001-02 to 2002-03. In the City of Maribyrnong and the City of La Trobe the number of venues declined by one respectively, contributing to a fall in the ratio of venues per 1,000 adults; in the five control regions and Melbourne metropolitan, country Victoria and all Victoria the ratio of EGMs per 1,000 adults declined with the largest fall in Bass Coast Shire followed by Maribyrnong.

However, the picture in terms of net expenditure per EGM was more mixed. For Melbourne metro, the Cities of Darebin and Greater Dandenong and all Victoria, net expenditure per EGM declined. In Maribyrnong, country Victoria, Bass Coast and La Trobe expenditure per EGM actually increased. This suggests that the remaining machines, following the two rounds of removal of machines, were played more intensively. If this result is due to recreational gamblers "crowding out" problem gamblers then net welfare is likely to have increased, through entertainment enjoyed by recreational gamblers and the partial exclusion of problem gamblers. If on the other hand, the increase in the intensity of gambling is due to problem gamblers then this would be welfare reducing. These issues are taken up in Section 6.

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[9] There has been some criticism that areas of significant socio-economic disadvantage adjacent to declared regions were excluded. See Livingston, May 2001.

[10] In Tables 1.2a, 1.2b and Figure 1.6 we show the LGA regions not including "the plus" components as a preliminary overview of potential trends.

Table 1.2a: Electronic Gaming Statistics by Selected Local Government Areas: 2000-01

	EGM Net Expenditure 2000-01 ($)	2001 Population Aged 18+	EGM Venues	EGMs	EGM Net Expenditure per Adult ($)	Venues per 1000 Adults	EGM per 1000 Adults	Net Expenditure per EGM ($)
Melbourne Metro	1,878,046,121	2,664,449	341	20,006	704.85	0.13	7.51	93,874
City of Darebin	89,668,795	105,328	16	986	851.33	0.15	9.36	90,941
City of Greater Dandenong	102,078,087	101,937	16	1,164	1,001.38	0.16	11.42	87,695
City of Maribyrnong	60,443,905	52,164	14	789	1,158.73	0.27	15.13	76,608
Country Victoria	487,970,463	974,017	196	7,438	500.99	0.20	7.64	65,605
Bass Coast Shire	16,176,344	19,141	8	261	845.11	0.42	13.64	61,978
City of La Trobe	41,969,258	51,743	16	660	811.11	0.31	12.76	63,589
All Victoria	2,366,016,584	3,638,466	537	27,444	650.28	0.15	7.54	86,212

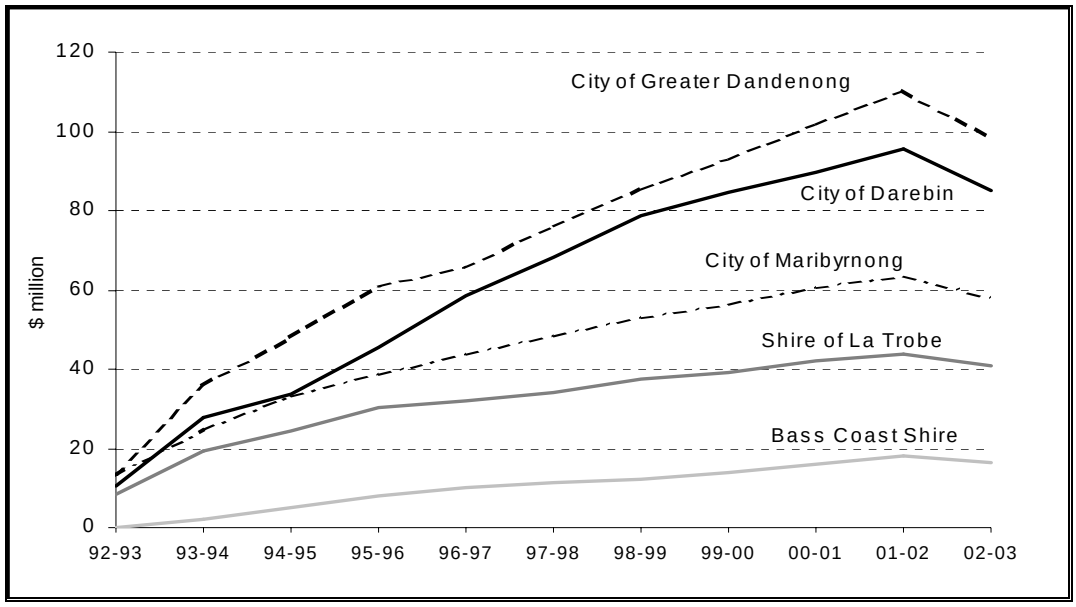
Note: LGA areas, excludes the "plus component" at this time.
Source: Victorian Office of Gambling Regulation.

Table 1.2b: Electronic Gaming Statistics by Selected Local Government Areas: 2002-03

	EGM Net Expenditure 2002-03 ($)	2003 Population Aged 18+ Projection	EGM Venues[a]	EGMs[a]	EGM Net Expenditure per Adult ($)	Venues per 1000 Adults	EGM per 1000 Adults	Net Expenditure per EGM ($)
Melbourne Metro	1,847,321,200	2,727,267	340	19,921	677.35	0.12	7.30	92,732
City of Darebin	85,200,825	106,736	16	986	798.24	0.12	9.24	86,411
City of Greater Dandenong	98,192,823	102,424	16	1,131	958.69	0.16	11.04	86.819
City of Maribyrnong	58,217,999	54,078	13	734	1,076.56	0.24	13.57	79,316
Country Victoria	486,973,314	993,290	192	7,339	490.26	0.19	7.39	66,354
Bass Coast Shire	16,376,077	20,020	8	237	817.99	0.40	11.84	69,097
City of La Trobe	41,050,535	52,459	15	615	782.53	0.29	11.72	66,749
All Victoria	2,334,294,514	3,720,630	532	27,260	627.39	0.14	7.33	85,631

Note: [a] Number as at June.
LGA areas, excludes the "plus component" at this time.
Source: Victorian Office of Gambling Regulation.

Figure 1.6
Victorian EGM Net Expenditure by Selected Local Government Area



Source: Victorian Office of Gambling Regulation.

1.3.2 Phased Withdrawal by Region

In four of the five regions, the Victorian Gaming and Casino Authority directed the gaming operators (Tabcorp and Tattersall's) to reduce the number of gaming machines over the course of the following three years. In determining the extent of reductions, the Minister for Gaming, The Hon. John Pandazopolous, specified that the number of gaming machines per person in these regions must be reduced until it is not higher than the level of the ninth decile of local government areas (i.e. a level of 11.7 EGMs per 1,000 adults, as in Ballarat). Further, the Minister stated that the government may prescribe caps on further regions, or modify the boundaries of the existing regions in the future. The required reductions will avoid altering the proportions of EGMs held by Tabcorp versus Tattersall's and in hotels versus clubs. A total of 406 were required to be withdrawn over a three year period to February 2004 as in Table 1.3, to achieve a maximum permissible number of 5,088 machines at the end of three years. Table 1.4 illustrates the required reductions by each operator in four regions. In Darebin Plus there was no requirement to remove machines.

Notice that while the Treasury has identified vulnerable regions on the basis of these three criteria mentioned:

- accessibility of gaming machines, measured by the number of EGMs per 1,000 population (density);
- average annual player loss per adult; and
- socio-economic status of particular areas;

the policy instrument only directly addresses one of these dimensions — the density of EGMs. While the density of EGMs is closely correlated with the average loss per adult, this does not mean that the effect of a reduction of the former is obvious. In particular, some communities contain more people interested in gambling. This demand

determines the profitability of stationing EGMs in the area, largely determining both the number of machines operators choose to station in a particular area and the total loss experienced by consumers. While the accessibility of gaming opportunities is likely to influence the level of gaming undertaken, this effect is more subtle and cannot be inferred from the aggregate data. It is only possible to meaningfully comment on this link by considering the characteristics of the communities involved or by examining the outcomes of the exogenous change in EGM numbers resulting from a policy decision (such as the regional cap).

Table 1.3
Required Phased Reduction of EGM Numbers in Selected Regions

	Initial number as at 30 June 2000	Cumulative reductions in machine numbers required by		
		14 February 2002	14 February 2003	14 February 2004
Greater Dandenong Plus[1]	1687	29	88	147
Maribyrnong Plus	1329	32	94	157
Darebin Plus	1554	0	0	0
La Trobe	663	13	37	61
Bass Coast Shire	261	8	24	41
Total	**5494**	**82**	**243**	**406**

Note: [1] Greater Dandenong Plus was 1,687 with licence revoked for 5 machines subsequent to Minister's direction and prior to end of June 2000, so that 1,682 were in actual operation as at end June. Darebin Plus was 1,553 with one licence revoked during month of June.

Source: Regional caps policy implemented, Minister for Gaming, 5 April 2001.
Direction of the Victorian Casino and Gaming Authority requiring compliance with regional limits (Tabcorp), 5 April 2001.
Direction of the Victorian Casino and Gaming Authority requiring compliance with regional limits (Tattersall's), 5 April 2001.

Table 1.4
Required Phased Reduction of EGMs by Operator

	Tattersall's		Tabcorp	
	EGMs as at 30/6/2000	Reduction	EGMs as at 30/6/2000	Reduction
Greater Dandenong Plus	807	70	880	77
Maribyrnong Plus	643	74	686	83
La Trobe	362	33	301	28
Bass Coast Shire	150	24	111	17
Total Reduction		201		205

Source: Government Gazette, 5 April 2001, Chairman VLGA, 406 machines to be removed by 14 February 2004.

It is interesting to note that the City of Darebin has the 9th highest level of losses per adult but only the 14th highest density of EGMs, suggesting that the machines in Darebin are being used quite intensively. It is possible then that this region would have been most affected by a reduction in machine numbers. However, because of the lower density of EGMs, no cuts will be enforced in Darebin Plus. By contrast, the Bass Coast Shire has a high density of EGMs per capita but a much lower ranking in terms of loss per adult.

The state-wide cap will not be adjusted in line with the removal of machines from the designated regions. As both Tabcorp and Tattersall's have long-term commitments from the State Government to operate 13,750 machines, the machines that are removed are likely to be reinstalled in other communities. Thus, accessibility to gaming machines in some communities will increase, though the intention is that the communities affected are less vulnerable than those communities from which the machines are withdrawn.

Even before an evaluation of the impact of the caps was commenced, Victorian researchers and others were expressing views on the likely impact of the caps. Livingstone (May, 2001) considered that "reducing the number of machines in a local area is likely to reduce losses, which is the best available measure of the impact that gambling has on a local area". While expressing concern about the regions chosen and the criteria or rationale to decide upon the extension of several regions ("the plus", i.e., what was included and what was excluded), the author expressed at least a preliminary view, that "an effective regime of capping machine numbers is likely to significantly reduce the harm associated with poker machines".

Doughney (2002) quotes a representative of the licensed operators suggesting "the cutbacks would not be effective", (p. 23). He offers several reasons "to believe that, even in capped areas the policy will do nothing to alleviate gambling problems and related socio-economic harm to communities" — specifically, because of the limited number of cap regions, the phase-in of reductions, the withdrawal of machines from smaller and lower performing venues and the ability of operators to engage in compensating or off-setting behaviours, when faced with the prospect of actual reductions in the number of machines.

There was also quite strong criticism by the Victorian Local Government Association (VLGA) of the decision of the Victorian Government to enlarge three regions with a "plus component". In the case of Maribyrnong Plus this effectively diluted the poker machine density by expanding the population base and thereby requiring that fewer machines would be required to be removed to meet the level of the 9th decile of poker machine density (approximately 11.7 machines per 1,000 adults) across the enlarged population region.

Table 1.5 shows the 5 municipal regions (minus "the plus") and changes in the number of venues, EGMs and losses per adult for three time periods. Maribyrnong is somewhat of a special case because while the intention of the policy of removal of machines was to approach the 9th decile of machine density (11.7 machines per 1,000 adults) and would be achieved for "Maribyrnong Plus", for the LGA of Maribyrnong alone, the machine density was 13.1 per 1,000 adults by August 2004, down from 15.7 in September 2001. The other 4 LGA regions were below the 9th decline. And because the average net losses per adult in the LGA of Maribyrnong were 19.6 per cent above the average for the four other LGA regions in August 2004, it may be argued that the binding caps did not 'bite hard enough' in this region.

Table 1.5
Municipal Regions, September 2001, September 2003, August 2004

LGA Region	Period	EGMs	Venues	EGMs per 1,000 adults	Net Losses per adult[1] ($)
Bass Coast	Sept 2001	261	8	14.8	921
	Sept 2003	237	8	11.8	813
	Aug 2004	220	8	10.9	797
Greater Dandenong	Sept 2001	1,144	16	11.6	1,030
	Sept 2003	1,131	16	11.1	962
	Aug 2004	1,078	16	10.6	946
La Trobe	Sept 2001	632	16	12.1	804
	Sept 2003	615	15	11.7	782
	Aug 2004	602	15	11.5	791
Maribyrnong	Sept 2001	784	15	15.7	1,207
	Sept 2003	734	14	13.7	1,085
	Aug 2004	705	14	13.1	1,054
Darebin	Sept 2001	986	16	9.8	892
	Sept 2003	986	16	9.3	803
	Aug 2004	986	16	9.3	855

Source: Local Gaming Data derived from OGR.

In the five LGA regions the EGM density was well above that for non-metropolitan, metropolitan and all Victoria which was 7.7 machines per 1,000 adults in September 2001 declining to 7.3 per cent by August 2004. In each of the regions, it can be seen that as the machine density declined, then net losses per adult generally declined, although La Trobe and Darebin showed a slight increase in net loses per adult in the last period, August 2004. Maribyrnong experienced a 16.5 per cent decline in machine density and 12.7 per cent fall in average net gaming losses. In each of the municipalities the decline in machine numbers was greater than the decline in average net gaming losses per 1,000 adults. In Table 1.5 we have not controlled for the impact of the smoking ban or any other changes.

The caps policy has also received strong criticism in Victorian newspapers, pointing to the perceived failure of the policy to reduce problem gambling and net gaming revenue. Usually accompanied by sensational headlines[11] most articles point to the decline in revenue following the smoking bans but relatively little impact, if any, from the actual reduction in machine numbers. The experience of hotel owners was usually more informative (e.g., Bass Coast Shire — venue lost three machines):

> "It is very rare that all 50 machines are being used at the one time. He said (following reduction of three machines) all it meant was that the other machines took more revenue. He said smoking bans was what made the difference to gambling revenue. It breaks the cycle ... most people that gamble smoke and drink. Smoking bans forced people to pull their money out of machines to go out to have a cigarette, and forced them to think about whether they would go back in ". (*South Gippsland Sentinel Times*, 16 June 2004)

[11] "Pokies Caps fails city", *Preston Leader* (29 June, 2004); "Poking at the Pokies", *South Gippsland Sentinel Times* (16 June, 2004); "Our Pokie Binge", *Geelong Independent* (13 March, 2004).

Banks (2002) expressed some ambivalence about caps as a harm minimisation measure. Importantly, he questioned their effectiveness in limiting the extent of problem gambling, while acknowledging that a zero cap (outside the casino) in Western Australia has clearly had a positive influence on minimising the prevalence of problem gambling. This raises the question of how severe a cut back or imposition of a binding cap needs to be, to produce downward pressure on the rate of problem gambling. Effectively a cap is an effort to constrain supply and in the case of Victoria, state-wide, regional and now location specific caps are a mechanism to achieve 'geographical equity' in the location or placement of machines. Certainly, we know that Victoria has a higher spend per machine and higher expenditure per capita than other States, where the growth in machine numbers was not subject to a ceiling. Banks (2002) concluded that "venue-based caps [were] preferable to state-wide or regional caps" (p. 17).

The South Australian Independent Gambling Authority (IGA)[12] proposed to reduce the number of machines in South Australia by some twenty per cent — from approximately 15,000 down to 12,000 following the recent inquiry into machine numbers. The Inquiry concluded the following:

- "... there is a causal relationship between the accessibility of gaming machines and problem gambling and other consequential harm in the community [p. 2];
- ... both the total number of gaming machines and the number of places where gaming machines are available should be reduced [p. 2]; and
- [with a maximum number of 40 machines permissible] that the number of machines would be reduced to the proposed cap by reducing, for every premises with more than 28 gaming machines, the number of machines by 8. Venues licensed for 21 to 27 machines would be reduced to 20". [p. 3]

1.3.3 Keeping an Open Mind

At the commencement of this project the researchers "expressed no view" in regard to the likely impact of the caps, although we noted that in most States policy proposals had preceded research into the potential impact of binding caps. Based on LGA data alone, what was noted at the commencement of the study was, that the cap regions have a high share of EGMs relative to their percentage share of State income.

To properly assess the impact of regional caps, then venue based revenue data was required (in addition to other micro level data) because of the potential transfer of revenue from venues on which caps are imposed, and within and across regions (intra and inter regional transfers).

Caps may induce diversionary expenditure intra-regionally and inter-regionally. *A priori* the direction and extent of revenue flows cannot be predicted as the industry is able to implement a range of strategies to protect revenues and minimise the potential impact of regional caps.

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12 IGA (2003), Inquiry into management of gaming machine numbers. South Australian Government.

In undertaking this study the researchers were mindful of the considered views of others including, *inter alia*, the industry operators, the venue owners and their representative organisations, government agencies such as Treasury and Human Services, Gamblers Help, local government and researchers (including the Productivity Commission staff) in the field of gambling issues.

2. Methodological Considerations

Summary of Discussion

Section 2 provides an outline of the methodology as originally proposed by the researchers, with some minor refinements based on the literature review. We consider various approaches to program evaluation and outline our reasons for nominating a matched comparisons approach. The steps involved in the Centre's methodology are outlined, including *inter alia*, literature review and on-going consultation with specialist researchers, the selection of control regions, data analysis and annual reviews of available data. The researchers determined that venue level data was required for each region, for the three "plus regions" and potential spillover towns or nearby localities.

The researchers identified critical factors correlated with regional average per capita gaming expenditure and selected five matching regions, a process which included advice from the regions, other researchers and the Victorian GRP.

Econometric analysis was conducted to select control groups or matching regions whose gambling behaviours were as close as possible to the cap regions.

2.1 Approaches to Programme Evaluation

The fundamental objective of programme evaluation is to assess the impacts of a programme. Two pieces of information are essential to make such an assessment: one needs to know what happened to the outcomes of interest for a population under the influence of the programme ("the factual") and what outcomes would have transpired for that population had the programme not existed or existed in some other form ("the counterfactual"). Neither piece of information is more important than the other; the accuracy of the impact assessment depends equally on the factual and the counterfactual.

The collection of data for a counterfactual is typically more difficult than for the factual, the reason for this being that the counterfactual is a hypothetical situation which cannot actually be observed. One needs to hypothesise about its nature. In contrast, the outcomes for the factual can be measured, for instance by analysis of data generated as a consequence of the policy impact or by use of surveys, although there may still be significant costs in undertaking the latter.

In broad terms there are three approaches to modelling a counterfactual, and each has fundamental implications for evaluation design.[13]

2.1.1 Experimental Designs

Experimental designs involve the random assignment of individuals to either a treatment group or a control group. Individuals in the 'treatment' group are offered the programme while those in the control group are not. Outcomes for the two groups are then compared, with the control group being used to represent the counterfactual scenario. This treatment is likely to be reasonable so long as:

[13] The approach here draws on Grossman (1994).

- the sample sizes for the treatment and control are large enough to support robust statistical analysis;
- there are no biases in the assignment; and
- the outcomes for the treatment and control groups are not influenced by each other.[14]

Random assignment approaches are generally agreed in principle to be the best approach to evaluation, but sometimes they will not be possible, for instance because equity considerations require that programme access be universal or because there are unavoidable biases in the selections into the treatment and control groups. In addition, random assignment approaches often take it for granted that a random assignment has actually been achieved, when this is not always the case.

2.1.2 Matched Comparisons

Matched comparisons involve the selection of a comparison group with similar composition to the treatment group. The key point of distinction is that there is not random assignment to the two groups, and it is therefore possible that differences in outcomes for the two groups will arise from non-programme influences, thus contaminating the evidence regarding the programme impact. This *quasi-experimental* procedure introduces a degree of subjectivity, in that the evaluator needs to choose what is a suitable similar group for use as control, and to this extent is less reliable than a pure *experimental* approach. However, analysts of social programmes are often forced to use analysis of this type, and a large amount of work has been carried out to identify how matched comparisons may best be implemented. Even though analysts are forced to use non-randomised treatment and control groups, they can use model specifications which make allowance for these differences and use statistical tests to reject specifications which do so inadequately. While there will always be a degree of subjectivity in the choice of control, it may still be possible to use inference techniques to make an objective rejection of some candidates (in this case some regions) for the comparison group.

2.1.3 Before-and-After Comparisons

Before-and-after comparisons use a 'treatment' group's (or in this case a treatment region's) pre-treatment characteristics as a control group. The main problem with such an approach is that the outcomes of the policy change may differ from earlier outcomes because of factors other than the policy change. For instance, the experience of a group of unemployed under a new programme will be affected by the business cycle, changes in personal characteristics which are unrelated to the new programme (e.g., lifecycle effects), changes in the institutional environment which are separate to the programme, and the programme itself. In practice it can be very difficult satisfactorily to strip out

[14] This last point is very important where one seeks to draw population wide inferences from the outcome of an experiment on a sub-population. Suppose, for instance, that we are considering the impact of a cricket training program on the prospects of selection in the national team. In an experiment with random assignment to treatment and control groups we may indeed find that prospects of national selection are higher for those in the treatment group. But it would be misleading to infer from this that extension of the program to the full population can increase everyone's chances of selection – it cannot, because there is a defined number of slots in the team. (Of course the program might improve the performance of the national team.) Maglen (1991) raises this issue in a consideration of the impact of education on earnings in Australia.

these other influences. The task is made easier where there are observations for a substantial number of time periods in the pre- and post-treatment analysis. In some instances it is possible to select a panel across a cross-section of the relevant non-treatment influences (e.g. regional income, machine and venue density), and let the panel data speak about the impact of those factors. Moffitt and Ver Ploeg (1999) say of the before-and-after evaluation method that:

> A before-and-after design uses roughly the same data strategy as a monitoring study, namely, the collection of data on outcomes before and after a policy change. However, in a before-and-after design the family and individual outcomes in the "after" phase are intended to be causally related to the policy. A design of this type can be distinguished from a monitoring study if it includes a strong analysis of the influence of alternative, simultaneously occurring forces, such as social and economic trends (e.g., changes in the unemployment rate) that may have been contributing to the trends in outcomes as well as policy. (Because this separation of policy effects and the effects of other forces is so difficult, before-and-after designs are one of the least desirable types of evaluation methodologies …) [p. 20, emphasis added]

2.2 Approach Adopted

The approach proposed by the Centre for Economic Studies for this task (accepted by the GRP) was to use a matched comparison approach. Obviously, given the areas for the regional caps were determined by the Minister, and as there are a relatively small number of regions in Victoria, an experimental design was not possible. The use of a before and after comparison within the cap regions was not regarded as satisfactory as there have been significant fluctuations in regional net gaming revenue in the past (as well as significant changes in machine numbers and distribution) and the small number of cap regions meant that it was unlikely that this could be adjusted for in a manner that was statistically significant.

The Centre also recognised, that given the presence of unobservable characteristics of persons and regions, and unobservable responses to policy shocks it is not possible to rely solely on inferential analysis in the evaluation of public policy of this type. Instead we adopt a triangulated approach, attempting to use both quantitative analysis of the available data, but also making extensive use of qualitative research, both to cover issues for which data does not exist, and to assist in clarifying the results of the data analysis, particularly the direction of causation.

There were a number of steps involved in the Centre's methodology for evaluating the effectiveness of caps on electronic gaming machine numbers as a method of controlling problem gambling.

1. Review of the literature, and consultations with other researchers, to highlight the various methods used in other States and countries to control problem gambling.
2. Selection of five 'control' regions to study alongside the five trial regions, as well as identifying one town or nearby localities for each of the five trial regions where it is thought that gaming activity may be displaced.

3. Construction of data review outlining trends in net gaming machine revenue in each of the ten regions. Where possible data gathered through the Victorian Community Attitude studies would also be analysed at the regional level.

4. Consultation in each of the 10 regions to provide the Centre with ongoing feedback from local community organisations which deal with the impact of gaming machines, and provide data on issues such as the number of persons accessing counselling/support services, the area of origin of gamblers in selected venues and their behaviour in the venue.

5. Annual review of data for five trial regions and control regions. Data will be evaluated at the region level, for towns/suburbs within the region and at the venue basis. At the town/suburb level data for one town in the trial region will also be compared with data for a neighbouring town identified as a possible 'overflow' destination for displaced gamblers from the trial region. Gaming data will also be evaluated on a 'time of day basis',[15] as any changes in the patterns of expenditure may be indicative of the type of game that is being displaced by the caps.

6. Drawing together results of literature review, consultations and data research.

It was originally proposed to conduct an annual survey and consultation with a range of stakeholders once each in 2002, 2003 and 2004. Our intention was to gather data directly from persons participating in gambling (2 venues per region, to be matched in character between matching regions, and two establishments in each of the towns identified as likely 'overflow' destinations). The survey was intended to cover issues such as post code of residence, distance travelled to access venue, the frequency of attendance at venue, and the amount of time spent there per visit. The second planned purpose of these visits was to seek feedback from key stakeholders, such as local community/counselling organisations, local councils, local venue operators, as to the impact of the cap. Data would also be sought as to the number of persons accessing counselling/assistance services as a result of problem gambling. However, a consequence of data problems for this stage of the analysis was that the 'overflow' establishments were not able to be identified for the purposes of consultations and interviews during the course of the study. This was because data analysis at the venue level could not be used to identify venues which have apparently benefited from diversions from venues which have had their machine numbers reduced. As the reductions within regions have not been pro-rata, the 'overflow' venues are as likely to be within the region as they are to be in a neighbouring region. This made it impossible to use regional consultations to assist in determining overflow venues as had originally been planned. However, the Centre did conduct the following:

- survey of hotels/clubs and their experience as a result of the caps policy;
- analysis of counselling organisations data; and
- interviews with various stakeholders at the local community level and one operator[16] to gauge their experience and assessment of the caps policy.

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[15] Subsequently this data was not able to be supplied to the research team by either the OGR or the operators.

[16] Tattersall's was invited to interview but advised it was listing on the Australian Stock Exchange and was constrained by the Corporations Act "in relation to disclosure of any matters that may be material to the listing process".

Thus, there were on-going exercises in qualitative analysis, information gathering and review over the life of the project.

2.3 Annual Data Review

2.3.1 Proposed Methodology and Progress Reports

It was originally intended, that an annual data review, together with the regional consultations and surveys within gaming venues would form the basis for annual progress reports. The data proposed to be updated was that outlined in the initial data review, namely regional, town/suburb and venue level for each of the 10 regions. However, it was not possible to do this until the revenue data became available in August 2004. Two additional analyses were conducted to identify factors not readily apparent from the general data.

The first was to identify whether or not gaming expenditure in the capped region declines, and also identify whether there has been a net decrease in expenditure by residents in the capped region, or whether gaming expenditure has just been transferred to neighbouring uncap regions. In order to try and address this concern the Centre did, in its local consultations within the trial regions, seek information as to whether there are neighbouring towns, suburbs or venues where residents of the trial area are believed to gamble. This was an aid in identifying the potential leakage points shown in Appendix 3, Tables A3.11 to A3.13. The expenditure in these venues was analysed to determine if it spikes upwards after the commencement of the trial indicating a geographical displacement of gaming activity, rather than a reduction in expenditure.

The OGR alerted the researchers to the potential importance of the phase out of 24 hour gaming — they found in some initial checks they ran that venues lost about 12 per cent of revenue when they switched from 24 to 20 hour trading. This reinforced the importance of having access to venue level data as the impacts of this could potentially distort regional level data, if the current proportion of venues in each region with 24 hour trading, and the rate at which venues lose 24 hour trading, are not perfectly symmetrical.

The other factor which cannot readily be determined from the regional (or even venue level data) is the extent to which any reduction in aggregate expenditure has been due to reduced expenditure by problem gamblers. This is an important factor as the rationale behind caps is to try and ameliorate some of the social problems caused by problem gambling. A reduction in expenditure on gaming by non-problem gamblers is actually welfare decreasing as it is directing expenditure away from the preferred good (gaming) towards some less valued good or service. Reductions in net gaming expenditures by problem gamblers however are welfare increasing as they bring their expenditure patterns closer to their "rational" level. Consequently the goal of policy is generally to reduce problem gambler expenditure with the minimum impact on non-problem gambler expenditure.

Unfortunately the first method proposed by the Centre in its tender response for investigating this issue — examining the changes in gambling patterns by the time of day at which they occur — was not possible as we were advised that data is not collected on this basis in Victoria. However, through customer relationship management data of those gamblers who participate in loyalty card schemes Tattersall's was able to obtain 'performance data by the hour'. Turnover data by time of day/time of play appears to be available. Technically, it appears feasible to monitor this data although the elapse of time since this project commenced reduced the viability of the data. We asked both operators whether "your analysis of the data showed any discernable change in the time of day/time of play as a result of machine removal".[17] Tabcorp responded that they "had not analysed whether the removal of EGMs affected the time of day/time of play. Anecdotally, we do not believe there has been a change".[18] Tattersall's did not respond for the reason already provided. A survey of venue owners (see Section 6) reports on their assessment of whether regular gamblers altered gambling behaviours as a result of both the smoking ban and the reduction in machine numbers.

The second proposed method relied on an analysis of problem gambler services data to assess whether, as a result of the caps policy, this had had an impact in encouraging help seeking, combined with econometric analysis to test whether there had occurred significant falls in gambling expenditure, such as to suggest there had been a significant decline in expenditure by problem gamblers. The Centre combined Gambler Help data, estimates of those who seek counselling relative to the total population of problem gamblers and economic analysis to assess the impact on problem gamblers.

2.3.2 Review of Literature

As well as conducting a review of the available literature on measures that have been introduced in order to reduce the harms associated with problem gambling the researchers also consulted with Australian (and where appropriate overseas based) researchers in this field. The consultations sought feedback on the latest research on harm minimisation policies either just completed or underway, and feedback from professionals as to issues they believe needed to be addressed in the study. This acted as a check to assist in ensuring that the study meets the requirements of potential end users.

2.4 Selection of Matched or Control Regions

The first function of the data analysis conducted was the selection of appropriate 'control' regions. As the approach adopted for the statistical analysis is one of 'matched comparison' it was important that these control regions match the trial regions as closely as possible, otherwise the inferential analysis will not be statistically significant (although it is possible to adjust for small differences in characteristics).

It was decided to adopt a "matched comparison group" approach to the evaluation of this policy. This means that the selection of appropriate "matched" or "control" regions is critical to the ability of the study to deliver meaningful results. This is particularly important in this instance, where the behaviour in question has been expanding rapidly.

[17] Centre correspondence to the two operators, 24 June 2004.
[18] Tabcorp written response to the Centre, 4 August 2004.

An appropriate 'control' group will allow us to make judgements as to whether any changes in gambling (whether in its level or its rate of growth) appear to be due to the trial, or are reflective of broader patterns across the State.

It is important to carefully consider what is meant by a matching region. It would be possible of course to select the 'control' group based on similarity of gambling expenditure and one or two socio-demographic characteristics (perhaps the SEIFA index). However, in this case it is critical to select matching regions whose gambling behaviour is as close as possible to the "cap" regions. Consequently we have started out with no a-priori views on which factors may be statistically significant in the case of Victoria, and used econometric analysis to determine which factors are correlated with higher levels of net gaming expenditure, and to select the regions on the basis of these factors.

The Productivity Commission in its report 'Australia's Gambling Industries' (1999) conducted econometrics on the relationship between regional income and net gaming revenue. This econometrics found evidence of concentration of gaming machines in lower socio-economic areas. In particular they found an inverse relationship between a region's income and the total amount spent on gaming machines. It could just as easily be the case that expenditures and income are both related to some other factor, such as age.

The Centre was interested in testing the factors which influence the differences in net gaming revenue between different areas in an attempt to determine if there was a link between low incomes and electronic gaming machine revenue, or whether it was other factors which were influential. The regression technique used was ordinary least squares (OLS) regression, and the dependant variable chosen was average net gaming revenue per adult.

At the time of the econometric analysis, the provisions of the Gaming Machine Control Act, 1991 regarding release of data, meant that information on Net Gaming Expenditure could only be supplied by the Victorian Office of Gambling Regulation at the local government region level. Not all of Victoria's local government regions were included in the analysis, as the following regions contained no venues with electronic gaming machines located in them:

- Shire of Buloke;
- Shire of Gannawarra;
- Shire of Golden Plains;
- Shire of Hindmarsh;
- Shire of Indigo;
- Shire of Loddon;
- Shire of Moyne;
- Shire of Pyrenees;
- Shire of West Wimmera; and
- Shire of Yarriambiack.

Even at the local government region level, data could only be released where the local government region contains more than three venues licensed with electronic gaming machines. Consequently the following regions could not be included in the analysis as the OGR only released their data aggregated with one or more neighbouring regions:

- Alpine Shire;
- Borough of Queenscliffe;
- City of Moorabool;
- Rural City of Ararat;
- Shire of Central Goldfields;
- Shire of Corangamite;
- Shire of Moira;
- Shire of Mount Alexander;
- Shire of Murrindindi;
- Shire of Southern Grampians;
- Shire of Strathbogie;
- Shire of Towong; and
- Surf Coast Shire.

The local government region of Melbourne was also excluded from the econometric analysis because its venues were regarded as existing more for the purposes of services persons who work in the Melbourne CBD, or visit it to access its entertainment facilities, than for its residents. This means that the impact of the residents of this region is likely to be "drowned out" by the impact of visitors. Consequently it is not possible to identify the impact of the characteristics of its residents on gaming expenditure, rendering statistical analysis of this region meaningless.

Due to the exclusions of a number of local government regions, the econometric analysis on the factors correlated with per adult net gaming expenditure was undertaken on the basis of the 54 local government regions for which meaningful net gaming revenue data was available.

The SA Centre for Economic Studies conducted an analysis of this type for South Australian local government regions in 2001 in a report for the South Australian Provincial Cities Association examining whether there were regional differences in the 'harms' caused by gaming. In that study the following demographic factors and regional characteristics were found to be significantly correlated with regional per capita net electronic gaming machine expenditure levels (SACES, 2001):

- the number of venues per square kilometre (positively correlated);
- the number of electronic gaming machines per 1,000 adults (positively correlated);
- average personal after tax income (positively correlated);
- unemployed persons as a proportion of adults (positively correlated);

- persons of an Aboriginal or Torres Straits Islander background as a proportion of the population (positively correlated); and
- the proportion of the population resident in Housing Trust accommodation (positively correlated).

Of course a variable being significant for South Australia does not mean that it will necessarily be significant for Victoria. Consequently the following potential explanatory variables were included in our analysis for this study:

- the number of gaming venues in the region (Office of Gaming and Regulation data);
- the number of gaming venues per km^2 (Office of Gaming and Regulation data and ABS data);
- if the region is part of the Melbourne metropolitan area (ABS data);
- the population density of the region ;
- the number of machines per 1,000 adults (Office of Gaming and Regulation and ABS Census data);
- median income per adult, or the proportion of adults with weekly incomes below $300, between $1,001 and $1,500, and above $1,501 (ABS census data);
- disability pensioners as a proportion of the adult population (based on Centrelink benefit recipient data and ABS census data);
- new-start allowance recipients as a proportion of the adult population (based on Centrelink benefit recipient data and ABS census data);
- sickness benefit recipients as a proportion of the adult population (based on Centrelink benefit recipient data and ABS census data);
- aged pensioners as a proportion of the adult population (based on Centrelink benefit recipient data and ABS census data);
- sole parent pension recipients as a proportion of the adult population (based on Centrelink benefit recipient data and ABS census data);
- the proportion of adults who are sole parents (ABS census data);
- the proportion of residents aged 18 to 25, or the proportion of residents aged 18 to 30 (ABS census data);
- the proportion of residents aged 55+, or the proportion of residents aged 60+, or the proportion of residents aged 65+ (ABS census data);
- the proportion of private dwellings rented from a Housing Authority or community organisation (ABS census data);
- the proportion of private dwellings owned outright (ABS census data);
- the proportion of private dwellings being purchased (ABS census data);
- the proportion of the adult population who have never been married (ABS census data);
- the proportion of the adult population who are divorced (ABS census data);
- the proportion of the adult population who are separated (ABS census data);

- the proportion of the adult population who are from a non-english speaking background; and
- the proportion of the adult population who identify themselves as Aboriginal or Torres Straits Islander.

2.4.1 Econometric Results

As outlined above, the initial data analysis was undertaken using ordinary least squares regression, with the dependant variable being average net gaming revenue per capita. The results of this initial analysis suggested that the following factors were statistically significant (although the degree of significance varied):

- No. of machines/1,000 adults;
- per cent of population who their own home;
- per cent of adults divorced/separated;
- per cent of adults from a non-English speaking background;
- per cent population aged 15 to 30;
- per cent of population aged over 55;
- per cent of population with household income below $301/week;
- per cent of population with household income above $1,501/week.

Initial tests of the significance of the model appeared to suggest that it was a good model of the factors influencing the level of Net Gaming Expenditure per adult in Victoria, with significant values for Adjusted R^2 and the F-statistic. Adjusted R-squared is the most commonly used measure of significance for OLS regressions, measuring the proportion of the actual variation in the dependant variable explained by the estimated equation, with 1 indicating that the model perfectly explains the pattern of the data. The F-test statistic is a measure of the overall significance of the coefficients in the equation, hence the 'Probability F' is the probability that all of the coefficients other than the intercept are zero (hence a low prob. F — in the case of this specification 0.0000 — indicates that the coefficients are meaningful, supporting the model specification).

There was, however, another test needed before these results could be used in identifying potential "matching" regions for those areas in which the cap on machine numbers had been introduced — a test for simultaneity bias. Simultaneity bias exists when one of the explanatory variables is endogenously with the dependant variable, that is, the level of one of the explanatory variables is determined by the other explanatory variables. If simultaneity bias is present the coefficients estimated for the model are not reliable, and OLS regression cannot be used.

In the case of this model of net gaming revenue, the concern is that either venue managers, or gaming machine operators would decide how many machines to install based on their estimate of likely net gaming expenditure per capita in their area; and that this estimate would be produced using a similar range of factors as the model for net gaming revenue. Given the structure of the Victorian electronic gaming machine industry, where (at least historically) Tabcorp and Tattersall's have had considerable

freedom to shift machines between venues to maximise revenue, simultaneity bias would seem likely.

Consequently simultaneity bias was tested for, for the variable 'electronic gaming machines per 1,000 adults', using a version of the Hausman test.[19] The results of this test showed that simultaneity bias **was** present for this factor, and hence that the results of the modelling were not robust.

As the ordinary least squares regression was not statistically valid, an alternative estimation technique was required. The technique chosen was Two-Stage Least Squares regression, as it is possible to control for simultaneity bias. The first stage of this technique is to develop a list of the factors which determine the endogenously determined explanatory variable from the initial equation (in this case the number of electronic gaming machines per 1,000 adults). This process had already been undertaken for the Hausman test, with the results summarised in Table 2.1.

Table 2.1
Variables Correlated with the No. of Electronic Gaming Machines per 1,000 Adults
(Instrumental Variables)

	Coefficients	Standard Error	t Stat	P-value
Intercept*	2.735	1.154	2.37	0.02
Venue Numbers*	0.220	0.056	3.95	0.00
% adults receiving Aged pension*	0.285	0.079	3.61	0.00
Population density*	-0.003	0.001	-5.12	0.00
Venues per km²*	22.780	5.001	4.54	0.00

* Significant at the 5 per cent level
** Significant at the 10 per cent level

Adjusted R^2: 0.697
F-statistic: 16.245
Prob. F: 0.0000

These results indicate that, all other factors being equal, a higher population density region will have lower electronic gaming machine numbers. Factors correlated with higher numbers of electronic gaming machines per 1,000 adults are the number of venues, the proportion of adults in receipt of the aged pension, and the number of venues per square kilometre.

These variables which are correlated with the number of electronic gaming machines per 1,000 adults, were then entered into the estimation as instrumental variables, and the initial model specification was re-tested. The use of two-stage least squares meant that several variables, which had previously appeared to be correlated with net gaming expenditure, were now no longer statistically significant. The results of this modelling are shown in Table 2.2. As can be seen from the table, this revised range of explanatory

[19] Davidson, R and JG MacKinnon (1989), "Testing for Consistency using Artificial Regressions," *Econometric Theory*, 5, pp. 363–384.

variables appears to be a good model for regional net gaming expenditure per capita in Victoria, with an adjusted R^2 of 0.82, and an F-Statistic of 56.46 (prob. F = 0.0000).

Table 2.2
Variables Correlated with Net Gaming Expenditure per Adult in Council Areas
Two-Stage Least Squares Estimates

	Coefficients	Standard Error	t Stat	P-value
Intercept*	-2,535.40	637.53	-3.98	0.000
Electronic Gaming Machines/1,000 adults*	70.82	5.31	13.35	0.000
% Adults who own home*[20]	12.09	4.05	2.99	0.004
% population aged 15 to 30*	68.65	12.11	5.67	0.000
% of population aged 55+*	15.55	6.62	2.35	0.023

* Significant at the 5 per cent level
** Significant at the 10 per cent level

Adjusted R^2: 0.820
F-statistic: 56.463
Prob. F: 0.0000

Given the size of the coefficients relative to the values of the explanatory variables, each of the first three factors (excluding the intercept) accounts for about 25 to 35 per cent of the variation in expenditure, with the last factor accounting for about 10 per cent. The regional net gaming expenditure per adult is only correlated with a relatively small number of factors, this is in large part due to the fact that machines (at least prior to recent requirements for regional impact statements) were transferred freely between venues and regions in order to maximise the return to the venue operators. This means that the explanatory power of the variable "machines per 1,000 adults" is not only a factor of increased accessibility, but also acts as a proxy for those physical and demographic factors which influence machine location decisions (see Table 2.1). The significance of the proportion of adults who own their own home as an explanatory variable may suggest that wealth is a more significant influence on expenditure than income (which was not significant).

The significance of the proportion of the population who are aged 15 to 30 is expected as a number of epidemiological studies on problem gambling have suggested that young people account for a disproportionate share of 'problem gamblers'. For example, a meta-analysis of 106 USA and Canadian studies on the prevalence of pathological gambling (Shaffer et al., 1997) found that the lifetime prevalence rates of pathological gambling[21] differed significantly between different segments of the population. Lifetime prevalence rates were 3.88 for adolescents and 4.67 for College students, compared with 1.60 for the general adults population.[22] Given that a significant share of net electronic gaming

[20] A variable calculated by combining the proportion of adults who own their own home outright, and the proportion purchasing their own home.

[21] Termed 'Level 3' gambling in the study, to be assessed as being a pathological gambler means that the individual has fulfilled the clinical criteria set out in the American Psychiatric Association's Diagnostic and Statistical Manual IV (DSM-IV, 1994). It should be noted that this is only a sub-set of those considered to be 'problem gamblers' in Australian literature on gambling.

[22] 95 per cent confidence intervals for these results were 2.33-5.43 per cent for adolescents; 3.44-5.90 per cent for College students; and 1.35-1.85 per cent for the general adults population. This study also highlighted the extent of

machine revenue comes from problem gamblers it is not surprising that the share of a region's population in this age group is positively correlated with expenditure. It is also possible that persons in this age groups are able to devote a greater proportion of their income to all forms of entertainment (including gambling) because they face fewer fixed expenditures (such as mortgages, or the costs of children).

The significance of the proportion of adults aged over 55 is likely to be driven by a range of factors. Possible reasons for its significance as a factor increasing regional net gaming expenditure could include higher potential spending on entertainment by this age group due to relatively high wealth levels and lower savings needs (although lower income levels), and the general absence of dependents. It could also reflect an age related change in preferences away from some other recreational activities towards gaming, or a lack of alternative opportunities for social contact. The often high wealth levels (relative to future expenditure and savings needs) could also mean that those older persons who experience problem gambling have the scope to lose larger amounts of money, consuming their retirement savings and the equity in their house.

2.5 Identification of Matching Regions

Having identified the critical factors which are correlated with regional average per capita gaming expenditure, the next stage of the analysis was to identify 'control' regions that match the cap regions as closely as possible. As discussed previously, the trends in net gaming expenditure in these "control" regions were then compared to those in the cap regions. This allowed the analysis to take account of other changes to the regulatory environment facing the electronic gaming machine industry (such as the ban on 24 hour gaming, and the restrictions on smoking) to identify the changes that are a result of the introduction of the caps, rather than due to other policies.

As the three metropolitan cap regions each include a number of neighbouring post codes, this selection could not be undertaken on the basis of local government regions. Therefore, the data used to identify potential 'control' regions was adjusted for the transfers into the cap regions, producing "plus" and "minus" regions. The transfers into the original cap regions as at April 2001 are detailed below.

Maribyrnong "Plus", is the local government region of Maribyrnong, with additional areas transferred from:

- Hobsons Bay (the 96.5 per cent of postcode 3015 in this LGA; including 1 venue and 66 machines);
- Brimbank (the 98.3 per cent of postcode 3020 in this LGA; including 6 venues and 280 machines);
- Melbourne (the 25.1 per cent of postcode 3031 in this LGA; including 1 venue and 100 machines); and
- Moonee Valley (the 74.9 per cent of postcode 3031 in this LGA; including 2 venues and 79 machines).

co-morbidity of pathological gambling with other social problems, with the lifetime prevalence rate of problem gambling amongst adults in treatment for substance abuse or psychiatric disorders being 14.23 per cent.

Greater Dandenong "Plus", is the local government region of Greater Dandenong, with additional areas transferred from:

- Monash (all of postcode 3170; including 3 venues and 308 machines); and
- Casey (all of postcodes 3177 and 3803; including 2 venues and 195 machines).

Darebin "Plus", is the local government region of Darebin, with additional areas transferred from:

- Moreland (all of postcodes 3058 and 3060; including 4 venues and 227 machines);
- Hume (all of postcode 3061; which contained no currently licensed venues);
- Whittlesea (all of postcode 3074; including 1 venue and 105 machines); and
- Banyule (all of postcode 3081; which contained no currently licensed venues).

These transfers into the cap regions produce noticeable changes to the demographics of both the cap regions and the neighbouring regions from which areas were transferred. The profile (on four key factors and population) of the regions affected by these transfers is compared in Table 2.3.

Table 2.3
Changes to the Profile of Metropolitan Areas*

	Local Government Regions					'Cap' Regions				
	Pop. ('000)	Venues No.	EGMs No.	EGMs/ 1,000 adults	median income ($/week)	Pop. ('000)	Venues No.	EGMs No.	EGMs/ 1,000 adults	median income ($/week)
Maribyrnong	58.5	16	804	17.2	324	117.1	23	1,324	14.3	323
Greater Dandenong	124.5	16	1,187	12.5	278	165.2	21	1,697	13.5	307
Darebin	122.7	17	1,006	10.2	347	204.7	22	1,338	8.3	335
Hobsons Bay	81.4	11	618	10.0	433	67.2	10	552	10.9	435
Brimbank	145.4	15	880	8.2	286	115.4	9	600	7.1	287
Melbourne	59.2	16	904	17.3	392	55.6	15	804	16.3	410
Moonee Valley	108.1	15	757	8.8	392	97.3	13	678	8.8	397
Monash	154.4	16	1,223	9.9	336	132.5	13	915	8.6	323
Casey	177.3	11	801	6.6	415	158.5	9	606	5.6	421
Moreland	130.0	16	795	7.6	347	88.3	12	568	7.9	356
Hume	129.8	13	746	8.3	394	124.3	13	746	8.7	400
Whittlesea	138.7	9	616	7.6	393	90.6	8	511	7.9	377
Banyule	116.3	11	610	6.8	417	102.2	11	610	7.8	399

Note: * The population and income data is drawn from the 2001 census, and the data on the number of venues and electronic gaming machines as from OGR data as at June 2000, that being the most recent data available prior to the reductions in machine numbers occurring in the cap areas. This means that the two sets of data do not perfectly match, but as the machines has already begun to be moved by June 2001 to comply with the cap, and as "cap" regions were selected on the basis of numbers as at June 2000 it was thought that data as at June 2000 was the most appropriate for this table.

Source: ABS 2001 Census, OGR, calculations, SACES.

The transfers between regions had the most significant impact on Maribyrnong, with Maribyrnong Plus having twice the population and half again as many venues as the local government region (from 16 to 23 venues).

In total, the transfers of post codes resulted in a total increase in the population of the cap regions of 181,000, or slightly over fifty per cent, and an additional 17 venues (just over a third). The net effect of this was to reduce the overall concentration of machines in the cap regions, although both Maribyrnong Plus and Greater Dandenong Plus still have significantly higher numbers of machines per resident than their neighbours. The demographic characteristics of the transferred areas (at least in terms of income) seems to be fairly similar to the regions they have been transferred into. For example, despite its population being double that of the local government region, Maribyrnong Plus has virtually the same median income ($323 per week instead of $324).

Due to the size of these transfers, the analysis undertaken to identify potential control regions used the areas as adjusted for the cap. As net gaming expenditure is not one of the explanatory variables, all of the local government regions in which electronic gaming machines are located were able to be included in the analysis to identify potential matching regions. As discussed previously, the region of "Melbourne Minus" was excluded from this analysis because of its unusual characteristics.

The potential matching regions which emerged from the data analysis are shown in Table 2.4. Unfortunately because of their unusual demographics (particularly the extreme concentration of machines, and relatively high levels of relative disadvantage) there were no regions which closely matched the profile of "Maribyrnong Plus" or "Greater Dandenong Plus". The two or three regions which appear to most closely match each of the five "cap" regions (**bolded** in Table 2.4) are listed with the cap region they are thought to most closely match. In this process metropolitan regions were only matched with other metropolitan regions, and rural and regional areas with other rural and regional areas.

Feedback was sought as to which of the potential matching regions were regarded as most appropriate for each of the cap regions. Advice from the GRP member group and other researchers was provided to the Centre. As data is not available on all factors which may be thought of as relevant to this selection, the closest match in terms of predicted expenditure may not be the best matching region. For example, it may be thought that because of differences in preference sets and behaviour patterns within Melbourne it may be more appropriate to match a region in the western suburbs with another region in the western suburbs.

Based on the statistical analysis, and the feedback received, the following control regions were identified:

Cap Region	**Selected Control Region**
For "Greater Dandenong Plus"	"Monash Minus";
For "Maribyrnong Plus"	"Hobsons Bay Minus";
For "Darebin Plus"	"Moreland Minus";
For the City of La Trobe	The City of Ballarat;
For the Bass Coast Shire	The City of Greater Geelong.

Table 2.4
Potential "Matching" Regions for Each Cap Region
Selected Characteristics

Region	Predicted EGM exp. per adult ($)*	EGMs/1000 adults	% who own their own home	% of pop. aged 15 to 30	% of pop. aged 55+
Greater Dandenong Plus	**1,156**	**13.45**	**70.54**	**22.41**	**22.33**
City Of Maroondah	940	10.65	77.51	21.05	21.80
Monash Minus	926	8.64	73.51	22.60	26.36
Maribyrnong Plus	**1,100**	**14.28**	**60.83**	**22.55**	**21.90**
City Of Maroondah	940	10.65	77.51	21.05	21.80
Monash Minus	926	8.64	73.51	22.60	26.36
Hobsons Bay Minus	831	10.87	73.77	20.03	21.22
Darebin Plus	**828**	**9.59**	**66.81**	**21.71**	**24.81**
Hobsons Bay Minus	831	10.87	73.77	20.03	21.22
Moonee Valley Minus	825	8.81	72.60	21.64	23.98
Moreland Minus	824	7.94	64.01	23.96	24.34
City of La Trobe	**1,045**	**13.89**	**74.90**	**19.82**	**20.88**
City Of Ballarat	984	11.24	69.43	22.50	22.05
City Of Warrnambool	948	12.63	67.02	20.84	22.54
Bass Coast Shire	**845**	**14.13**	**72.13**	**14.23**	**33.45**
City Of Warrnambool	948	12.63	67.02	20.84	22.54
City Of Greater Geelong	840	10.09	74.16	20.21	24.13
Shire Of Central Goldfields	824	12.39	78.86	14.84	31.93

Note: * This is the level of per adult net electronic gaming machine expenditure predicted by the statistical model detailed in Table 4.2. Because a statistical model can never fully explain human behaviour this will not precisely coincide with actual expenditure levels, instead it could usefully be though of as an index of "risk factors" related to net gaming expenditure levels.
Source: ABS 2001 Census, OGR, calculations, SACES.

There was a potential concern in matching the Bass Coast Shire with the City of Greater Geelong in that they are regions of very different population size (which would suggest that Geelong may well have better levels of amenities, and consequently more alternative forms of entertainment) and that the Bass Coast Shire has more seasonal employment patterns than Geelong, suggesting that expenditure may be more variable through the year. Consequently we also monitored data for the City of Warrnambool — which is closer to the Bass Coast Shire on these factors — so that it could be used as an alternative control should Geelong prove inappropriate.

In Appendix 4 we provide a regional profile of the characteristics of the population, including age, income distribution, housing, marital status and other indicators. Descriptive data is provided for each of the cap and control regions, including a summary of the trends in machine numbers and venues.

3. Previous Policies and Results to Minimise Harm from Gambling

Summary of Discussion

State and Territory governments are responding in a variety of ways to the incidence of problem gambling and general community concern in relation to gambling issues. Caps on the number of gaming machines are one such policy. The gaming industry has established voluntary measures through Codes of Practice in each State/Territory. Harm minimisation and responsible gaming practices represent the key policy frameworks under which a host of mandatory regulations, Ministerial decisions, and industry programs have been introduced. Much of this is new and untried, some is borrowed from experience overseas, some is the result of research, some is the result of the application of technology.

There is a very extensive list of intervention strategies, including *inter alia*, smoking bans, limitations on the way winnings are paid, the introduction of clocks and improved lighting, economic and social impact tests, restrictions on the hours of opening, self-exclusion programs, controls on advertising, better information to gamblers, improved counselling access, bans or limits on note acceptors, improved training for gambling staff, and state-wide and regional caps.

In this section we consider the introduction of smoking bans in gaming areas, use of credit cards and ATM usage, the role of advertising and product warnings and the potential impact of reconfiguring gaming machines. A more complete summary of harm minimisation measures in the various States/ Territories is included in Report B: Evaluation of Self-exclusion Programs and Harm Minimisation Measures (October 2002) completed by the Centre for the Victorian Gambling Research Panel.

Policies that appear to have had some positive impact on problem gambling include smoking bans, a ban on note acceptors, limiting access to credit, reducing the maximum bet on machines and providing information to players 'in real-time'.

3.1 Bans on Smoking in Gaming Areas

The Victorian Government introduced a ban on smoking in gaming areas of licensed premises from 1st September 2002. Under the legislation, a person must not smoke:

- "in a gaming machine area in an approved venue that consists of only one room"; or
- "in a gaming room in an approved venue that consists of two or more rooms".[23]

The purpose of the smoking ban is to improve health outcomes by reducing exposure to environmental tobacco smoke (i.e., passive smoking). One benefit of the smoking ban is that it addressed the well known relationship "that high smoking rates exist in problem and pathological gamblers seeking treatment" (Griffiths, et al, 1998; see also Rodda, et al, 2004; Smart et al, 1996) and so was likely to have an impact on participation and/or time spent gambling. Recent Australian research "found significant linear relationships between problem gambling, measured by SOGS, and the likelihood of participants reporting smoking and nicotine dependence scores. Negative affect (anxiety) was linked to problem gambling and smoking status and may possibly be a causal factor for the maintenance of both activities" (Rodda, 2004, p. 77). While it was expected that the ban

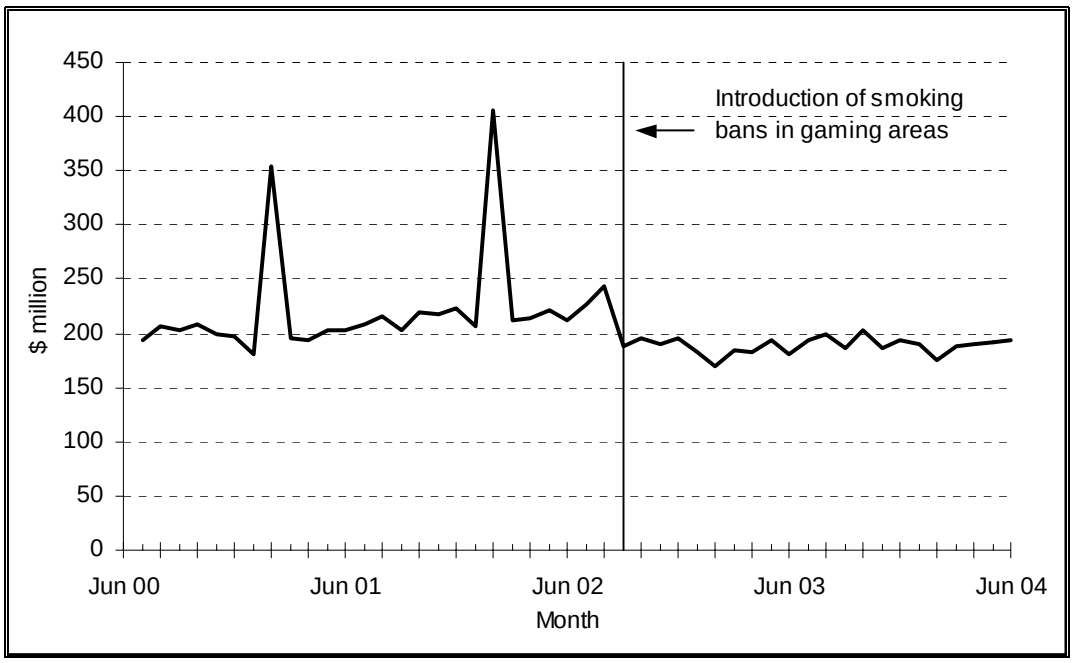
[23] Victoria. 1987. *Tobacco Act 1987*, No. 81 of 1987.

would lead to a drop in gaming revenue because of the association between smoking and gambling, this was not at all certain nor was the scale of the decline anticipated. The following section considers the impact of the smoking ban on gambling activity.

3.1.1 Impact on Gambling Expenditure

The impact of the smoking ban on gambling activity is demonstrated by Figure 3.1, which shows monthly expenditure on EGMs for Victoria. Prior to the introduction of the bans on 1st September 2002, monthly expenditure on EGMs was running above $200 million. Following the introduction of the ban average monthly expenditure fell below the $200 million mark, and has remained below or at this level since this time.

Figure 3.1
Net Monthly Expenditure on Electronic Gaming Machines in Victoria



Source: Office of Gambling Regulation.

More specifically, average monthly expenditure for the year to August 2002 — i.e., the year prior to the smoking ban — was $234 million per month compared to $188 million per month for the year after the introduction of the smoking ban. Average monthly expenditure was thus almost 20 per cent lower in the year after the ban on smoking in gaming areas was introduced.

The impact of the smoking ban is perhaps better illustrated by the annual EGM expenditure data presented in Figure 3.2. Annual expenditure rose strongly up until 2001-02, but then fell by $229 million or 8.9 per cent in 2002-03, and by a further $43 million or 1.9 per cent in 2003-04. The actual impact of the smoking ban on gambling activity would be higher than these figures indicate since the trend in expenditure prior to the ban suggests that expenditure would have continued to rise in 2002-03 and 2003-04 in the absence of the ban, albeit at a slower pace than in previous years.

Other policy responses introduced by the Victorian Government over recent years (see Section 1.3.1 for a list of policy measures) may also have contributed to weaker

expenditures in recent years. However, these measures are likely to have had only a slight impact on gambling expenditure and do not explain the sharp fall in expenditure in 2002-03. The monthly data presented in Figure 3.1 confirms this with the dip in expenditures coinciding strongly with the introduction of the ban on smoking.

Figure 3.2
Net Annual Expenditure on Electronic Gaming Machines in Victoria

Source: Office of Gambling Regulation, Tasmanian Gaming Commission.

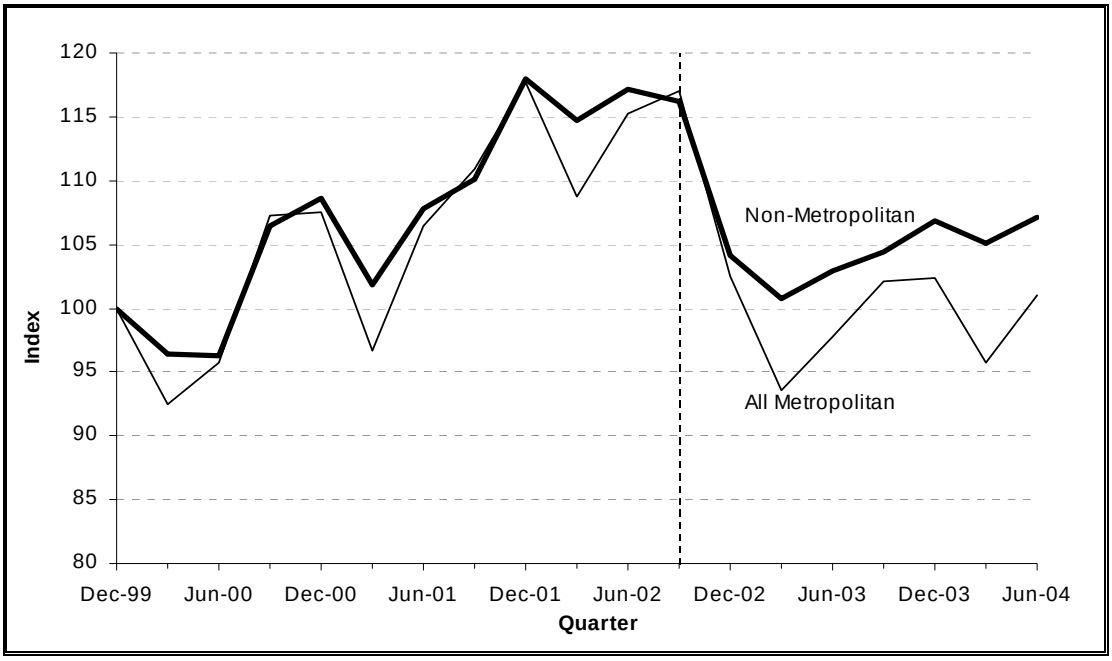
Regional data indicates that the impact of the smoking ban on gambling activity was geographically widespread. Expenditure data from the Office of Gambling Regulation for 60 regional areas indicates that 58 (97 per cent) of these regions experienced falls in EGM expenditure in 2002-03.[24] Only the Shire of Cardinia and City of Casey had a higher expenditure in 2002-03. The fall in expenditure in 2003-04 was also widespread, though more narrowly so, with 44 (73 per cent) of the regions having a lower EGM expenditure in 2003-04 relative to the previous year.

One noticeable difference in the impact of the smoking ban is shown in Figure 3.3, comparing metropolitan and non-metropolitan local government areas. Non-metropolitan areas were less affected by the ban than metropolitan areas. Metropolitan areas experienced a 25 per cent fall in expenditure within the first two quarters after the introduction of the smoking ban, while non-metropolitan areas experienced a 21 per cent fall. Over the first full year of the ban, expenditure fell by 19 and 17 per cent in metropolitan and non-metropolitan areas respectively. Another interesting factor that can be observed from Figure 3.3 is that while Victorian non-metropolitan average net gaming revenue was very close to the metropolitan average prior to the ban on smoking in gaming venues, during the recovery phase the non-metropolitan average was consistently above the metropolitan average. Clearly, one possible explanation for this difference is that non-metropolitan areas that include a rural hinterland, have a lower ratio of smokers among EGM players than metropolitan areas. Higher rates of

[24] The regions are mostly made up of individual Local Government Areas (LGAs) with the remainder being composed of amalgamations of LGAs.

cardiovascular disease and premature death from lung cancer are observed in Maribyrnong (8.9 years lost), Greater Dandenong (6.2 years) and Darebin (7.1 years) relative to the average for non-metropolitan regions and the five wealthiest LGAs (4.6 years lost).[25] It is well documented that smoking and EGM play are frequently associated and that smokers spend more per capita than non-smokers.

Figure 3.3
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
All Metropolitan and Non-Metropolitan Regions



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

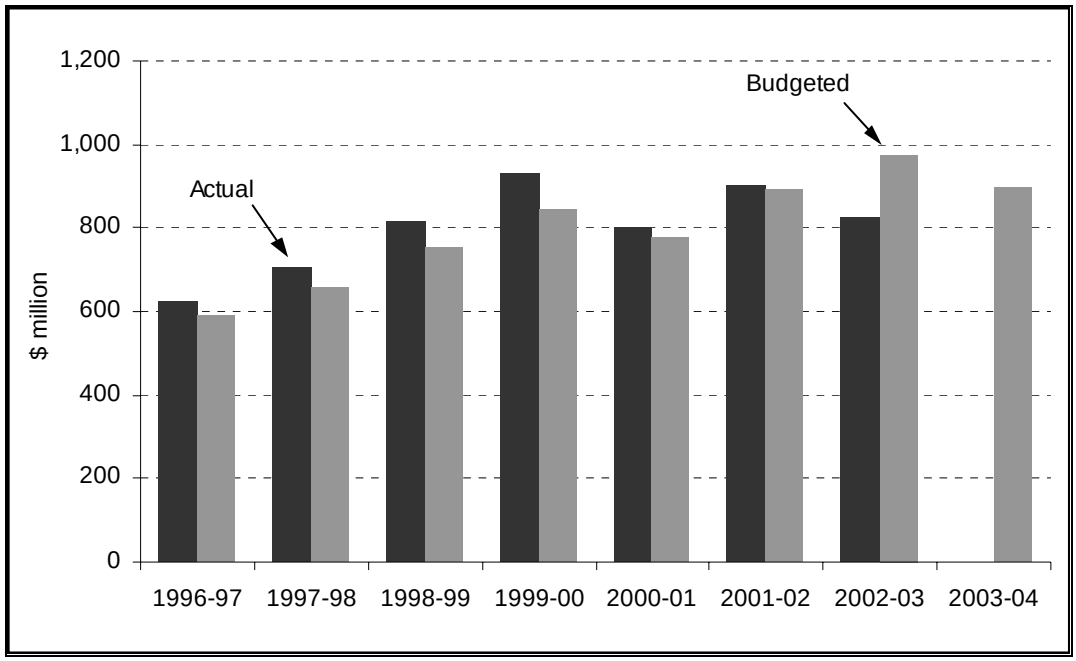
It also appears to be the case, that following the introduction of the smoking ban the Casino was not as affected as the local hotel or club. A major reason for this is that smoking areas are available in the Casino in close proximity to banks of EGMs. A second and important reason is that, in the Casino a player can interrupt play and transfer credit to a card whereas cards are used less in hotels/clubs. In these venues, to interrupt play the player wishing to take a break had to 'cash out' and receive coins. The receiving of coins rather than notes (or the transfer of credit to a card) and the physical interruption to play appears to have provided a stronger psychological incentive to cease play.

[25] Victorian Department of Human Services, "Burden of Disease", October 2000.

3.1.2 Impact on Taxation Revenue

The impact of the smoking ban on expenditure means there has also been a direct impact on State taxation revenue derived from EGMs. This is illustrated by Figure 3.4, which shows for each financial year actual EGM taxation revenue versus the original budgeted amount as forecast by the Department of Treasury and Finance.

Figure 3.4
Victorian Taxation Revenue from EGMs: Budgeted and Actual



Source: Department of Treasury and Finance, Annual Financial Reports and Annual Financial Statements, various issues.

Actual taxation revenue derived from EGMs in 2002-03 was $826 million, which was $77 million (8.5 per cent) lower than EGM taxation revenue collected in the previous year. Significantly, actual taxation revenue for 2002-03 was $147 million (15 per cent) lower than originally budgeted. Prior to 2002-03, budgeted taxation revenue from EGMs was consistently lower than the eventual actual amount (at least for the years shown), indicating that gambling activity tended to grow more strongly than anticipated. These outcomes tend to indicate that the impact of the smoking ban on expenditure and taxation revenue was unexpected or at least much greater than expected.

Whether the impact of the smoking ban on taxation revenue was in the order of 15 per cent is debatable. The actual impact of the ban on revenue depends on whether the original treasury forecast represents an accurate measure of the true counterfactual scenario (i.e., what would have happened in the absence of the smoking ban). This is difficult to determine given the uncertainties of evolving household expenditure patterns and the impact of other policy responses on gambling expenditure and hence taxation revenue.

Nevertheless, it is interesting to consider that the Department of Treasury and Finance had forecast that taxation revenue from EGMs in 2003-04 would be $896 million, which is some $70 million or 8.4 per cent higher than total actual revenue in 2002-03. Given that recent data indicates that total expenditure on gaming machines actually fell again

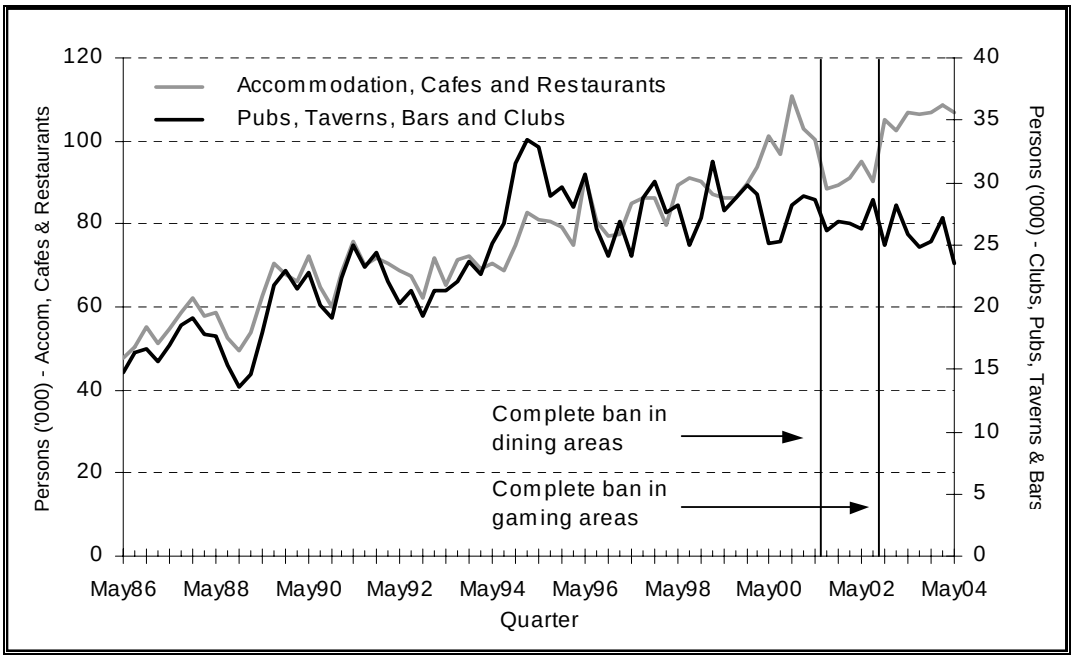
in 2003-04 (by $43 million/1.9 per cent), this suggests that the forecast for 2003-04 will be an over estimate. This outcome suggests that the smoking ban has had a more prolonged impact than originally expected, or that other policy measures may also have had an impact on gambling activity. It could also reflect that the pace of growth in EGM expenditure would have slowed anyway in the absence of the smoking ban and other policy measures, but this is highly speculative. Whatever the case, the Department of Treasury and Finance expects that gambling behaviour will return to normal in 2004-05:

> "…it is expected that gambling behaviour has now adjusted to the impact of the smoking ban and will now grow in line with the economy as revenue did prior to introduction of the smoking ban ".[26]

3.1.3 Impact on Employment

Another dimension of the smoking ban is the impact on employment in relevant venues. Given that the ban has had a significant impact on gambling behaviour, at least temporarily, one may expect that this may have translated into a decrease in employment at gaming venues.

Figure 3.5
Introduction of Smoking Bans and Total Employment in Pubs, Taverns, Bars and Clubs and Accommodation, Cafes and Restaurants
Victoria– May 1986 to May 2004



Source: ABS, AusStats, Labour Force (Cat. No. 6291.0).

The impact of the smoking ban on employment can be gauged from Figure 3.5, which shows for Victoria the path of employment in pubs, taverns, bars and clubs and accommodation, cafes and restaurants i.e., the broader sector to which pubs, clubs, etc., are classified in the Australian Bureau of Statistics industrial classification. Since the data is derived from a sample survey and for a detailed industrial level, it needs to be

[26] Department of Treasury and Finance, *Statement of Finances 2004-05*, Pg. 128.

treated with caution since movements from quarter to quarter may reflect changes due to sampling error rather than true movements in the characteristics of the population.

The employment data does not strongly support the view that employment in gaming venues fell following the introduction of the smoking ban. Average employment in pubs, clubs, taverns and bars over the 4 quarters after the smoking ban was introduced (i.e. to August quarter 2003) was only 1.2 per cent lower than average employment for the 4 quarters prior to the ban. Meanwhile, employment in the broader accommodation, cafes and restaurants sector actually rose strongly following the introduction of the smoking ban. It is tempting to conclude that this outcome reflects a scenario whereby consumers have shifted expenditure from gaming venues to other venues in the hospitality sector (e.g., cafes and restaurants). However, in the absence of specific data on expenditure patterns, and given the imprecise nature of the data, one cannot make such a conclusion.

That employment in Victorian pubs, taverns bars and clubs and accommodation, cafes and restaurants fell following the introduction of a ban on smoking in dining areas could be argued to support the view that the smoking ban may have led to a reduction in employment. However, the employment experience of other States following the introduction of smoking bans — which has been quite mixed (see Table 3.1) — tends not to support such a view. Table 3.1 summarises the activity bans and date of introduction in the six States and their impact on retail trade and on employment in accommodation, cafes and restaurants for the four quarters immediately following the introduction of the activity bans.

One reason why the smoking ban may not have had a significant impact on employment in gaming venues is that the intensity of employment associated with gambling expenditure is quite low. This is demonstrated by data presented in Table 3.2. The table shows employed persons by occupation and venue income by source for Victorian pubs, taverns, bars and clubs with gambling facilities and those without gambling facilities in 2000-01. Allocating income to certain occupations means one can estimate the intensity of employment associated with particular venue activities. In this case, income from "sale of liquor and other beverages" is allocated to "bar staff and bar managers", "gambling income" to "gaming staff and cashiers", and "takings from meals and food sales" to "catering staff". While the estimates have a degree of imprecision (e.g., not all staff are allocated to income sources while staff can perform more than one activity and service different areas), the data should nevertheless provide a good indication of the relative employment intensity associated with various venue activities.

The results indicate that $1 million of gambling income (including income from sources other than EGMs) is associated with 3.2 jobs, which is significantly lower than the number of staff associated with the sale of liquor and other beverages (8.3 persons employed per $1 million of income) and takings from food meals and sales (20.2 persons per $1 million). Such a low level of employment intensity would largely explain why the fall in gambling expenditure has not translated into a significant fall in employment in gaming venues. It is even possible that the reduction in expenditure on EGMs induced by the smoking ban may have resulted in a net increase in employment if expenditure has been diverted to other areas of gaming venues or other activities that are more job intensive.

Table 3.1
Changes in Retail Trade and Employment Following Enactment of Smoking Bans

	Activity Ban	Date of Introduction	Change in Real Terms Retail Trade: Hospitality and Service Industries*	Change in Employment: Accommodation, Cafes and Restaurants**
New South Wales	Ban on smoking in dining areas	Commenced September 6th 2000 Completed September 6th 2001	+1.3 per cent (4 qtrs to Sept '00 to 4 qtrs to Sept '02)	+8.0 per cent (4 qtrs to Aug '00 to 4 qtrs to Aug '02)
Victoria	Ban on smoking in dining areas	Commenced and completed July 1st 2001	+9.8 per cent (4 qtrs to June '01 to 4 qtrs to June '02)	- 10.3 per cent (4 qtrs to May '01 to 4 qtrs to May '02)
Victoria	Ban on smoking in gaming areas	Commenced and completed September 1st 2002.	- 0.6 per cent (4 qtrs to Sept '02 to 4 qtrs to Sept '03)	+14.7 per cent (4 qtrs to Aug '02 to 4 qtrs to Aug '03)
Queensland	Ban on smoking in dining areas	Commenced and completed May 31st 2002	+11.7 per cent (4 qtrs to June '02 to 4 qtrs to June 03)	- 6.7 per cent (4 qtrs to May '02 to 4 qtrs to May '03)
South Australia	Ban on smoking in dining areas	Commenced and completed January 4th 1999.	+5.0 per cent (4 qtrs to Dec '98 to 4 qtrs to Dec '99)	+1.4 per cent (4 qtrs to Nov '98 to 4 qtrs to Nov '99)
Western Australia	Ban on smoking in dining areas	Commenced and completed March 29th 1999	- 3.6 per cent (4 qtrs to March '99 to 4 qtrs to March '00)	- 10.8 per cent (4 qtrs to Feb '99 to 4 qtrs to Feb '00)
Tasmania	Ban on smoking in dining areas	Commenced and completed September 3rd 2001.	- 5.9 per cent (4 qtrs to Sept '01 to 4 qtrs to Sept '02)	- 0.3 per cent (4 qtrs to Aug '01 to 4 qtrs to Aug '02)

Note: * Year annual retail trade in seasonally adjusted terms.
** Year average employment in original terms.
Source: ABS, AusStats, Labour Force and Service Industries.

Table 3.2
Pubs, Taverns, Bars and Clubs: Jobs per $million of Income
Victoria – 2000-01

	With gambling facilities	Without gambling facilities
Occupation of persons employed:		
Managers and administrative staff	13,922	2,650
Bar managers and bar staff	49,064	11,865
Gaming staff and cashiers	18,866	
Catering staff	23,125	4,486
Other	21,356	3,815
Total	126,332	22,816
Sources of total income:		
Sale of liquor and other beverages	5,885	1,203
Gambling income	5,957	
Takings from meals and food sales	1,145	227
Other	689	198
Total	13,676	1,628
Persons employed per $ million of income:		
Sale of liquor and other beverages	8.3	9.9
Gambling income	3.2	
Takings from meals and food sales	20.2	19.7

Source: ABS, Clubs, Pubs, Taverns and Bars, Australia (Cat. No. 8687.0).

3.1.4 Impact on Problem Gambling

Data on EGM expenditure and taxation revenue indicates that the smoking ban has had a significant impact in terms of reducing gambling activity. However, the direct mechanism through which the reduction in activity has taken place is unknown. For instance, it may reflect that people frequent gaming venues less often, or that patrons spend more time in those areas of a licensed premises where they can smoke at the expense of time in gaming areas, or that patrons spend less time gambling as they decide to leave the venue after interrupting a gambling session to smoke. In all likelihood the reduction in gambling activity reflects a combination of these three factors.

However, what is unknown is the extent to which the smoking bans have eased gambling activity by problem gamblers. Determining this impact is beyond the scope of this report, and little research has so far been conducted into the impact of the smoking ban on problem gambling. Nevertheless, it is likely that the smoking ban has had some modest impact on problem gambling activity.

One reason why the ban would be expected to reduce problem gambling activity is that smoking appears to be higher among problem gamblers. For instance, in a survey of their clients with a personal gambling problem, the South Australian branch of Relationships Australia found that 68 per cent were smokers, which is significantly higher than the proportion of the South Australia adult population (24.7 per cent) that were current smokers in 2001 as indicated by the National Health Survey.[27]

[27] Relationships Australia (SA), (2002) *A Submission to the Independent Gambling Authority Enquiry*, and ABS, National Health Survey, 2001, (Cat No. 4364.0)

Significantly, 61 per cent of the clients interviewed indicated they would "spend less time gambling" if smoking was not permitted in gaming rooms, while 35 per cent would "spend the same amount of time gambling". The results need to be treated with some degree of caution given the small sample size involved (28 persons), while clients' expectations may not carry over into practice given the difficulty of breaking a gambling addiction.

There is also evidence that smokers tend to spend more on gambling. Data for Victoria indicates that smokers in Victoria spend $30.39 per capita on EGMs compared to $13.93 for non-smokers.[28] Part of the reason for this appears to be that smoking plays an important psychological role in sustaining gambling activity. A confidential report commissioned by Tattersall's stated that "smoking is a powerful reinforcement for the trance-inducing rituals associated with gambling".[29] On this basis, it is likely that the smoking ban has contributed to some reduction in problem gambling activity. However, the extent of the impact and whether it is significant remains unknown.

3.2 Access to Finance – Credit Card and ATM Usage

Ready access to finance can assist problem gamblers in spending beyond their means and it is for this reason that gaming machine operators are prohibited from extending credit to players. Nevertheless, some believe that restrictions on access to finance should be extended.[30]

Automatic teller machines (ATMs) provide ready access to additional cash for gambling. Of particular concern is the ability of gamers to obtain credit for gaming via credit cards. For this reason, codes of responsible gaming and best practice guidelines generally require ATMs to be off the gaming floor or in another room such as in the reception area (IPART, 1998). This is intended to give the problem gambler more time to ponder the implications of increasing her/his expenditure. Nevertheless, in some cases this may still be just metres from gaming machines.

Credit card debt represents a relatively small 4.2 per cent of household debt (the major components are for housing), although it has grown strongly over the last decade and in the most recent five year period to December quarter 2002 (20.9 per cent annual average growth rate compared to all household debt at 14.7 per cent[31]). It is not possible to estimate the proportion of gambling debts in total credit card debt. However, we do know that credit card debt is a significant cause of financial hardship, as reported by problem gamblers to gambling counsellors and financial counsellors.

Increasingly, general financial counselling service providers are assisting clients whose financial situation is (in part at least) due to an underlying gambling problem. In the Centre's recent survey of general financial counsellors in three States the proportion of those with an 'underlying gambling problem' was approximately one-third of all clients

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28 Matterson, H. 2003, "Revenue up in smoke", *The Australian*, 1st September, p 12.

29 Millar, R. 2003, "Tatts targets the vulnerable", *The Age*, 19th March, [Online]. Available: http://www.theage.com.au/articles/2003/03/18/1047749770709.html

30 By way of example, the Adelaide Central Mission (South Australia) has called for tougher banking laws restricting supply of cash to gambling areas and requiring more rigorous credit checks before issuing credit cards (Sunday Mail, 28/10/2001).

31 Reserve Bank of Australia (RBA), (2003), "Household Debt. What the Data Shows", March.

in Victoria and South Australia where EGMs are more accessible than compared to Western Australia where the proportion with a gambling problem was much less, as shown here in Table 3.3.

Table 3.3
Total Clients and Those With Underlying Gambling Problems
General Financial Counselling

	Total Clients Per Month	Gambling Problem	Per cent
Western Australia	497	99	19.9
Victoria and South Australia	2,223	748	33.6
Total	2,720	847	31.1

Source: SACES commissioned survey, 2003.

Credit cards and over-commitment using credit cards was the most often reported 'cause' of financial hardship. It may be more correct to suggest, that uncontrolled or excessive use of credit cards led to financial obligations beyond the capacity to pay thus contributing to crisis situations. Consumer lending policies coupled with excessive reliance on credit possibly combine to entrap individuals. Notwithstanding, it is significant that misuse of credit cards and ease of access to ATMs nearby to gaming facilities, is contributing to the severity of problem gambling. Most financial counsellors in Victoria and South Australia for instance, recommend the 'removal of ATMs, reduction in poker machine numbers and ability to limit losses' as important harm minimisation strategies.

There is some evidence that restricting access to ATMs may disproportionately affect problem gamblers compared to recreational gamblers. The Productivity Commission's (1999) survey of gambling patterns and behaviours provided 'some compelling support for action on ATMs'.[32] Problem gamblers and those experiencing severe difficulties reported accessing ATMs often (approximately 60 per cent of this group) compared to only 5 per cent of recreational gamblers.

Blaszczynski (2001) found some evidence that problem gamblers in NSW were more likely than recreational gamblers to make use of ATMs (though the difference was only significant in the hotel sub-sample, not in the larger sample of clubs). A study by Volberg (1996) found that 32 per cent of problem gamblers surveyed in New York had made cash withdrawals from credit card accounts compared to just 3 per cent of the population of non-problem gamblers. Similarly, over 5 per cent of problem gamblers had reached their card's credit limit compared to less than 0.5 per cent of non-problem gamblers.

In the United States, the National Gambling Impact Study Commission found, among other social problems:

> "a widespread perception among community leaders that indebtedness tends to increase with legalised gambling, as does youth crime, forgery and credit card theft" (NGISC, 1999).

[32] Banks, G., (2002), "The Productivity Commission's Gambling Inquiry: 3 years on", p. 15.

It also cites gaming industry evidence that 40 to 60 per cent of money bet in casinos in the United States is not brought onto the premises by the gambler. The Commission also found that nineteen percent of bankruptcies in the State of Iowa involved gambling-related debt. Bankruptcies in Iowa increased at a rate significantly above the national average in the years following the introduction of casinos. Nine of the 12 Iowa counties with the highest bankruptcy rates in the state had gambling facilities in or directly adjacent to them.

In support of the NGISC review, the National Opinion Research Centre (1999) conducted a survey on communities in randomly chosen cities (with over 10,000 people) situated within 50 miles of at least one casino containing 500 or more gaming devices. All but one of the ten communities surveyed reported an increase in debt problems and/or bankruptcies. The most likely explanation found for this was that people gamble on their credit cards and take out cash advances at ATMs in or near the casinos.

Most jurisdictions have investigated the possibility of restricting access to Automatic Teller Machines. Legislation came into effect in South Australia from January 1 2002 restricting ATM and EFTPOS facilities to withdrawals of $200 per transaction,[33] with withdrawals to be restricted to $200 per day per card at a date yet to be determined and prohibiting the use of credit cards anywhere in the venue where staff could reasonably be expected to know that use was for gambling. Similarly, cash withdrawals at gaming venues are restricted to debit cards in Queensland, while in Tasmania cash via EFTPOS services are only provided where staff are reasonably satisfied that the patron is not experiencing gambling problems. The Victorian Government has requested that the Federal Government investigate using banking control powers to restrict credit withdrawals at club and hotel ATMs.

Nevertheless, there are numerous problems with implementing such a policy; limits on a single transaction may encourage multi-transactions, many gamers hold multiple cards, and many non-gamers have a genuine need for access to cash, particularly in rural areas where local hotels, through ATMs, serve as major providers of banking services to the local community.

3.3 Advertising and product warnings

Gaming advertising raises many issues. As noted in Appendix 2, section 2.3.4, there is a common misperception regarding the randomness of gaming machines, difficulty understanding the chances of winning large prizes and a lack of pricing information on which consumers can base their decisions. Some believe that gambling advertising exacerbates unrealistic consumer expectations. The Department of Health and Aged Care (1999) suggested that:

> "experience shows that preventive approaches need to be wide ranging. These would include informing the consumer as to the realistic chances of winning (including regulating advertising), and the potential outcomes of problem gambling, including impacts on their immediate family, etc;"

[33] Victorian Government recently announced the intention to do likewise as well as prohibit cash withdrawals from credit accounts from ATM and EFTPOS facilities at gaming venues.

Firstly, there is a perceived need to control the advertising of gaming opportunities by venues/operators to:

- ensure that gambling is portrayed accurately, not unreasonably portraying the chances of success (though accepting that it is the nature of advertising to portray the product in a favourable light); and
- limit the extent to which persuasive advertising can introduce potential problem gamblers, particularly minors.

EGMs are by no means the largest perceived problem with respect to the first point, with lotteries and instant scratch games using advertising extensively to alter the communities perception of the chances of success. Nevertheless, some would argue that the risk of developing gambling problems, and the magnitude of such problems, is greater with EGMs due to the more interactive nature of the game, wide availability and rapidity of gambling. The gaming industry in Victoria has responded to concerns, with, for example, the Victorian Gaming Machine Industry Advertising Code of Ethics stating that advertising shall not be false or misleading, shall be in good taste and shall not target minors. This code has been endorsed by the gaming operators, venue associations and the casino operator.

Secondly, there is a perceived need to more appropriately inform consumers of the odds of winning and the mechanics of the EGM. The Productivity Commission (1999) noted that while the minimum payout ratio is regulated, the actual payout ratio is not indicated on machines, nor is this information readily apparent to the consumer from playing the game since the inherent randomness of the machines means that the actual payout from any gambling session will tend to differ significantly from the long-run average. The variability of payouts, that is the proportion of the required payout ratio paid in small frequent prizes compared to large infrequent prizes, is similarly difficult to assess. This may be important, as a "low variability" machine provides a higher chance of breaking even on a single session (a commensurately lower chance of winning or losing large amounts compared to the amount bet). As a result, most players have only a vague understanding of the expected financial cost of playing and financial differences between machines, and some may make decisions to play (or abstain) that they would not make if better informed.

Moreover, there appears to be confusion as to the random nature of successive reel spins, and the player's ability to influence the outcome. As mentioned above, in studies cited by Walker (1992), slot machines induced more irrational thinking in all players than other games; and when slot machine players were playing their preferred machine the level of irrational thinking was higher than anticipated.

While gaming industry participants have been receptive to requests to provide information[34], the largest obstacle is finding a vehicle by which to make the wealth of abstract statistics understandable. Moreover, the Australian Gaming Machine Manufacturers' Association queried whether price disclosure would make any difference, noting that while player return was advertised on machines when initially introduced to the ACT, machine play rates "mirrored results obtained on identical NSW

[34] Publications such as the "Player Information Booklet" produced by the Australian Gaming Machine Manufacturer's Association (2000) are readily available.

machines without such signage" (Australian Gaming Machine Manufacturers' Association 1999). The Productivity Commission concluded that providing player returns in percentages was probably not adequate.

In Victoria, the recently passed *Gaming Machine Control (Responsible Gaming Information) Regulations 2002* requires all gaming venues to display player information posters in gaming areas, "talkers" on gaming machines, and make brochures available from December 1, 2002. These advertisements contain messages like:

> *"Every time you play the odds against you are the same",*

as well as Gambler's Help contact information. From January 1, 2003, all new machines must display player expenditure, credits won or lost, the time of day and length of playing session.

Thirdly, there is a perceived need to require gaming venues to advertise the risks associated with gaming and the help available for those with gaming problems. In the United States, the NGISC (1999) recommended that warnings regarding the dangers and risks of gambling, as well as the odds where feasible, should be posted in prominent locations in all gambling facilities.

However, the effectiveness of warning signs is questionable. McGowan (2001) argues that there is no apparent difference between the sales profiles of lotteries conducted in Wisconsin (established in 1988) and Minnesota (established in 1990) despite the requirement for warnings at lottery sale venues in Minnesota.

Evidence from the alcohol and tobacco industries is mixed. Borland (1997) explored whether the introduction onto cigarette packs of larger and more prominent health warnings led to an increase in noticing warnings, thoughts about the effects of smoking, and consequent behaviours of not smoking a planned cigarette and/or stubbing out one already lit. Also, evidence was sought linking these effects to smoking cessation. The findings included that 66 per cent of smokers at least sometimes noticed the health warnings (compared with 37 per cent who had noticed the old health warnings) and 14 per cent reported that they had refrained from smoking on at least one occasion as a result (compared with 7 per cent previously). While the effects on aggregate consumption of cigarettes may not be large, they are probably non-trivial. From an alternative perspective, the effectiveness of warning labels on tobacco products is demonstrated by the tobacco industry's reluctance to embrace this method of informing consumers (Chapman and Carter, 2002).

However, cigarettes are a very different product from gambling in so much as any level of cigarette consumption appears to be related to negative health consequences and hence any reduction in cigarette consumption by any consumer is seen to be a positive outcome. However, consumption of gambling in moderate quantities, as practiced by the overwhelming majority of gamblers, does not have damaging effects. Only when consumed excessively do the effects become harmful. Hence, reduction in consumption of gambling is only viewed as positive if it occurs within the group of problem gamblers.

In this respect, gambling is closer to the alcohol industry. The majority of drinkers do so in moderation the majority of the time, and warning labels will only be successful if they discourage excessive consumption (alcoholism, or spells of binge drinking). Hence, it is more pertinent to consider the effectiveness of warning labels on alcoholic drinks.

The best evidence comes from the US, where warning labels have appeared on alcoholic beverages for over a decade. The following warning label is found on alcohol containers in the United States:

> *US GOVERNMENT WARNING:*
> *(1) According to the Surgeon General, women should not drink alcoholic beverages during pregnancy because of the risk of birth defects.*
> *(2) Consumption of alcohol impairs your ability to drive a car or operate machinery, and may cause health problems.*

Research indicates that public support for alcohol warning labels is extremely high and that awareness of the label's content has increased substantially over time. On the other hand perception of the described risks was high before the labels appeared and has not generally increased, and the labels do not appear to have had important effects on hazardous behaviour, although certain effects may be indicative of the early stages of behavioural change. One study of pregnant women found that after the label appeared, alcohol consumption declined among lighter drinkers but not among those who drank more heavily (NIAAA, 1996). Mosher (1997) found that there was no conclusive verdict on the effects of health warning labels with "only limited evidence of a positive impact on consumer knowledge, attitudes and behaviour." Hence, the effectiveness of warning labels on alcohol containers at reducing consumption among target problem groups is unclear.

More generally, responsible gambling practices including industry codes of practice, have a much wider application than advertising and product warnings. They include harm minimisation strategies such as the location of ATMs and caps, treatment and counselling, and specific initiatives to inform consumers such as product warnings, gambling responsibly and finally, consumer protection (information, odds of winning and losing, advertising practices). To our knowledge there has been no evaluation (i.e., real measure of effectiveness) of responsible gambling programs[35] and codes of practices.[36]

Banks (2002) reported three years on from the Productivity Commission study that:

> "none of the codes contained processes for independent monitoring of their implementation or the collection of independent evidence of compliance rates, and few contained processes for periodic independent review and evaluation". (p. 12)

[35] One notable exception is the Victorian GRP commissioned evaluation of Self-exclusion programs in that State.
[36] Hing, N and Dickerson, M., (2002), "Responsible Gambling: Australian Voluntary and Mandatory Approaches".

3.4 Reconfiguring Gaming Machines

Government regulation can change the mechanical performance requirements of EGMs so that it is physically more difficult to bet large amounts of money in short spaces of time. Increasingly, many jurisdictions are modifying machines in an attempt to reduce the risk of problem gambling. The pertinent question is whether these changes will affect problem gamblers disproportionately, or whether recreational gamblers will be unnecessarily inconvenienced.

As we noted earlier, the Victorian Parliament recently passed the Gaming Legislation (Amendment) Act 2002 requiring that all new EGMs introduced from 1 January 2003 incorporate design changes that:

- ban $100 note acceptors on machines;
- prohibit the increase of machine spin rates above current levels (2.14 seconds);
- ban autoplay facilities;
- set a maximum bet limit of $10; and
- display information about the odds of winning, and the amount of time and money spent by the player.

The idea of modifying the performance of electronic gaming machines to reduce harm to problem gamblers has recently been debated in NSW following the NSW Liquor Administration Board's recommendation that certain structural characteristics of electronic gaming machines should be altered. Blaszczynski, *et al* (2001) analysed the likely effects of the changes on behalf of the Gaming Industry Operators Group. The three changes assessed were:

- the prohibition of high-value note acceptors ($50 and $100 notes), with consideration to banning note acceptors outright;
- slowing the speed of games by a few seconds. Specifically, the Board recommended a minimum 3.5 second wheel spin and a minimum of 1.5 seconds idle between spins; and
- reducing the maximum bet limit on stand-alone machines from $10 to $1 on a trial basis.

It seems likely that problem or heavy gamblers are likely to use high-value note acceptors more often, play more rapidly and place higher bets, and these were the (qualified) conclusions.

The removal of high-value note acceptors has received attention in many states, with, for example, the Queensland Government banning note acceptors from taking $50 and $100 notes from December 1, 2001. There has also been support from various community organisations to removing note acceptors. The Uniting Church (2000), amid suggestion of many measures to reduce the rate of loss on each EGM, including *inter alia*, reduce ready access to cash in gambling venues, positively influence cognitive decisions by the gambler and curb further increases in EGM related problem gambling, suggested that the level of problem gambling is lower in the states without note acceptors.

An additional concern, as voiced by the IPART Inquiry (1998) is that, while convenient for the gambler, machines fitted with note acceptors reduce the need for patrons to seek change and so may reduce the potential for gaming venue staff to observe problem gambling characteristics. IPART concluded that the effect of note acceptors on average expenditure and problem gaming habits warrants greater monitoring. Perhaps not surprisingly, gaming venue operators reported that machines with note acceptors have the highest gaming revenue (IPART, 1998).

In particular, the Blaszczynski, *et al* (2001) study found that, of the 514 participants for whom data was available, 13 per cent used high denomination bill acceptors at least once (10 per cent of recreational versus 22 per cent of problem gamblers as measured by a SOGS score of 5 or more). Also, limiting bill acceptors to $20 denominations affected expenditure more than any other individual modification, reducing take by 42 per cent.

The Blaszczynski, *et al* (2001) study also analysed the effects of modifying machines such that the reel spin was set at 3.5 seconds or 5 seconds. Again, proportionally more problem gamblers played with a rate faster than 5 seconds (14.7 per cent of problem gamblers versus 12 per cent of recreational gamblers). However, using anecdotal evidence, the study concluded that, not only would it be unlikely that slower reel spin speed would reduce problems associated with EGMs, it may actually result in a increase in indirect social/family harm associated with problem gambling for a small proportion of gamblers would adjust to some extent by spending more time at the machines.

The third machine modification assessed in the Blaszczynski *et al* (2001) study was reducing the maximum bet on machines to $1. Here it was found that 7.5 per cent of problem gamblers placed maximum bets of more than $1, compared to just 2.3 per cent of recreational gamblers. The study concluded that the number of credits wagered (which relates to the bet size) was a consistent predictor of problems with gambling and severity of problems. However, the Centre for International Economics (2001) in a report prepared for the NSW Gaming Industry Operations Group found that the effects on gaming revenue would be substantial finding that, on average, 17 per cent of club and 39 per cent of hotel machine revenue would be at risk with the introduction of a maximum bet size of $1.

There is some international experience with reconfiguring the design features of EGMs. Four responsible gaming features were added to new video lottery terminals in Nova Scotia starting in 2001. The features include ways to slow and interrupt play and provide reality checks to players. Specifically, the features include: a permanent clock; a pop-up reminder advising players how long they have been playing, which also asks if they want to continue; showing amounts wagered in dollars rather than credits; and a mandatory cash out whereby players will be forced to cash out their winnings after a prescribed time frame. Research in the Province of Nova Scotia identified many features that regular players associated with problem play including:

- difficulty keeping track of time;
- difficulty keeping track of money spent during a gambling session; and
- the mesmerising lights and sounds of the machines.

However, those interviewed did not feel that the availability of a 'stop' button to speed up play (by interrupting the full reel spin cycle, though not influencing the outcome) contributed to gambling problems (Nova Scotia Alcohol and Gaming Authority, 1999). At the same time, the Government permitted the new machines to accept notes as well as coins.

3.5 Review of Voluntary Measures and Mandatory Regulations

Hing and Dickerson (2002) conducted a review of responsible gambling measures for the industry sponsored by the Australian Gaming Council. The conclusions they reached after documenting responsible gaming practices, 'stewardship processes' (such as codes of conduct, self-exclusion deeds), and examining the implementation of various programs were that:

- **on responsible gaming practices:** "no research has been conducted to date that provides conclusive evidence on the *effectiveness of responsible gaming practices*";
- **on mandated practices:** "no research has been published, nor does evidence exist, of the effectiveness of existing mandatory responsible gambling practices"; and
- **on voluntary programs:** "no programs have been evaluated for their effectiveness in addressing problem gambling or in promoting responsible gambling".[37]

What is obvious and it is equally claimed by government, industry, independent researchers, industry sponsored research and service providers is that approximately 90 to 95 per cent of all gamblers gamble responsibly. However, it is the 5 to 10 per cent — those who spend in excess of their means, the at risk gambler, the pathological gambler, the problem gambler, those who are at risk because they tend to engage in continuous forms of gambling, especially EGMs — for whom either few if any strategies exist or "no strategies target this group". And what does exist is comparatively "soft" and/or has not been evaluated for its effectiveness.

Relative to the increasing sophistication of computerised devices, with random number generators, the capacity to provide small but frequent programmed reinforcement to continue play, machines with multi-sound capacity that are designed to provide intermittent reinforcement to encourage continuous play, then the current array of voluntary measures including, *inter alia*, the "soft" interventions or warnings, lag far behind.

[37] An exception to this is the GRP sponsored "Evaluation of the Victorian Self-exclusion Program".

3.6 Conclusion

The introduction of the smoking ban in gaming areas has had a clearly identifiable impact on slowing gaming losses although the exact impact on the gambling activity of problem gamblers is unknown. It is likely that the smoking ban has had some modest impact on problem activity (as it is well documented that smoking rates are high for problem gamblers). Restrictions on credit card and ATM usage are also likely to have had a positive impact — again, because problem gamblers have a higher propensity than recreational gamblers to make use of these facilities to continue gambling.

Overall, the lack of evaluation of the effectiveness of programs and practices (either mandatory or voluntary) and the lack of strategies to target problem gamblers is a matter for serious concern. The true test of effectiveness of policy interventions is that social costs from problem gambling are further minimised — thus widening the gap between benefits and costs. Smoking bans legislated by governments have been the most substantive intervention to date. The most obvious gap in our view is that industry regulators and government are lagging well behind technological advances and growth strategies pursued by a highly sophisticated machinery design industry, and are failing to utilise the very same technologies to address the social and economic impact of problem gambling.

4. Caps on Electronic Gaming Machines

Summary of Discussion

There are significant variations in the degree of regulation of gaming machine numbers. Victoria has imposed an overall state-wide cap and is the first State to trial regional caps, in recognition that EGMs are not distributed evenly across the State, that there are vulnerable communities and that taxation of EGMs is highly regressive.

Responses to binding caps cannot be predicted *a priori*, due in part to different *responses of consumers*, the range of possible responses from machine operators and from venue licensees. The effect of regional caps on gambling behaviour depends critically upon the real impact it has on the accessibility of gambling opportunities. The responsiveness of gamblers to small changes in the gambling environment needs to be examined. Some argue that small reductions in machine numbers will be ineffective, that the impact will largely be felt by casual or recreational gamblers and that problem gamblers will be least sensitive to change in machine numbers (as with price changes).

In this section we consider background issues and research questions related to the imposition of regional caps to guide our research and data collection.

4.1 The Australian Gambling Environment

The Australian gambling environment is markedly influenced by State and Territory legislation rather than the Commonwealth. The Commonwealth's involvement in gambling is restricted to legislation governing the regulation and supervision of on-line gambling through the Interactive Gambling Act 2001 (IGA). Effectively this legislation is designed to prohibit access to interactive gaming sites through the platform of the internet. Table 4.1, drawn from the Tasmanian Gaming Commission 2003 data, provides an overview of the types of gambling that are legally permitted by Australian residents in the States and Territories. The major differences between the jurisdictions are that Western Australians do not have access to gaming machines outside of a single site casino, nor access to Keno.

Table 4.1
Types of Gambling by State Territory

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania	ACT	Northern Territory
Racing	✓	✓	✓	✓	✓	✓	✓	✓
Sports betting	✓	✓	✓	✓	✓	✓	✓	✓
Lotteries	✓	✓	✓	✓	✓	✓	✓	✓
Gaming machines	✓	✓	✓	✓	✗	✓	✓	✓
Casino gaming	✓	✓	✓	✓	✓	✓	✓	✓
Keno	✓	✓	✓	✓	✗	✓	✓	✓^
Football pools	✓	✓	✓	✓	✓	✓	✓	✓
Interactive gaming*	✗	✗	✗	✗	✗	✗	✗	✓
Minor gaming	✓	✓	✓	✓	✓	✓	✓	✓

Note: * Australian residents are not permitted to access interactive gaming sites under the Commonwealth Interactive gambling Act 2001 that came into effect in August 2001.
^ Keno is permitted in Clubs, Hotels and Casinos in Northern Territory.

Legislation governing the regulation, supervision and control of gaming activities in the various jurisdictions is extensive covering lotteries, racing, totalisator, gaming machines, casinos, tax rates and so on. In New South Wales there are up to twelve relevant pieces of legislation, Western Australia eleven, and in Queensland there are seven.

Accessibility to gaming and wagering opportunities, the scale and scope of the various sectors providing gaming services, the structure of the respective sectors (i.e., ownership, number of venues, type of venue, extent of competition, etc.), are controlled by State and Territory legislation.

Table 4.2 summarises the location and number of machines by venue type for each State/Territory and Table 4.3 shows the total number of machines and adult population and thereby, the ratio of machines per adult population.

Table 4.2
Estimated Number of Gaming Machines in Australia by Venue Type by State/Territory
2001-02, Number

Location	In Clubs	In Hotels	In casino(s)	Total Machines
New South Wales	76,830	24,628	1,500	102,958
Victoria	13,671	13,729	2,500	29,900
Queensland	19,280	17,013	3,238	39,531
South Australia	1,690	12,957	850	15,497
Western Australia	na	na	1,318	1,318
Tasmania	193	1,842	1,153	3,188
Australian Capital Territory	4,910	60	0	4,970
Northern Territory	633	238	610	1,481
Total	117,207	70,467	11,169	198,843

Note: Australian Casino Association Annual Report (2004) shows Queensland's casinos held 3,691 machines, Tasmania 1,158 and the Northern Territory 635, a total of 11,652 in 2004.
Source: State/Territory Gaming Authority Annual Reports (2001-02), Australian Casino Association 2002, *Annual Report 2001-02*.

Table 4.3
Estimated Number of Gaming Machines in Australia
Total Machines, Machines Per capita (Adult)
by State/Territory, 2001-02

Location	Total Machines	Adult Population (million)	Machines per 1,000 (adults)
New South Wales	102,958	5.031	20.5
Victoria	29,900	3.714	8.1
Queensland	39,531	2.769	14.3
South Australia	15,497	1.169	13.3
Western Australia	1,318	1.442	0.9
Tasmania	3,188	0.354	9.0
Australian Capital Territory	4,970	0.243	20.4
Northern Territory	1,481	0.138	10.7
Total	198,843	14.860	13.4

Source: State/Territory Gaming Authority Annual Reports (2001-02), Australian Casino Association 2002, *Annual Report 2001-02*, Australian Bureau of Statistics and industry interviews.

An area of the current gambling environment that needs to be empirically researched, is whether it is in fact the number of machines per venue that are causing the harm or the convenience of *where* they are available, as is illustrated in Table 4.4. Gambling today has become widely accessible. One can go to almost any club or hotel to play the pokies.

What is unmistakable is that Western Australia has the lowest rate of problem gambling in Australia and the most restricted availability of continuous forms of gambling, it does not permit EGMs in hotels or clubs and it has restricted EGMs to a single casino site. Problem gambling issues in Western Australia principally derive from wagering and table games (for males) and lotto and EGMs at the casino for women.

Table 4.4
Venues with Gaming Machines in Australia by State/Territory
2001-02, Number

State	Clubs	Hotels	Casinos	Total
New South Wales	1,388	1,828	1	3,217
Victoria	293	251	1	545
Queensland	610	748	4	1,362
South Australia	87	505	1	593
Western Australia	0	0	1	1
Tasmania	12	94	2	108
Australian Capital Territory	69	6	0	75
Northern Territory	36	29	2	67
Total	2,495	3,461	12	5,968

Table 4.5 shows the capped number of gaming machines by venue for each State and Territory.

Table 4.5
Capped Numbers of Gaming Machines by Venue, 2003

Location	Gaming Machines in Clubs (Per Venue)	Gaming Machines in Hotels (Per Venue)	Gaming Machines in Casinos (Per Venue)	State-wide Cap (Machines)
New South Wales	450	30	1,500	104,000
Victoria	105	105	2,500	30,000
Queensland	280	40	3,238	[b]
South Australia	40	40	850	[c]
Western Australia	na	na	1,318	1,318
Tasmania	40	30	1,153	No Cap
Australian Capital Territory[d]	No Cap	13	0	5,200
Northern Territory	45	10	610	[a]

Notes: [a] Total number of gaming machines in clubs and hotels must not exceed 55% of the national average of gaming machine numbers per capita.
[b] State-wide cap of 18,843 gaming machines in hotels, but no restriction for clubs.
[c] A freeze on the number and location of gaming machines in South Australia was imposed with effect from 7 December 2000. This freeze was placed on applications and, hence, any backlog of applications placed prior to this date may still be processed. Hence, the number of gaming machines was not capped. Current proposal to reduce number of machines by 3,000 and cap at 12,000 state-wide.
[d] In the ACT taverns may have 2 machines.

Source: SACES, compiled from AGS note, AGC, and data requests.

In all jurisdictions except the ACT, gaming machines operate in casinos. All jurisdictions have at least some form of cap on the number of gaming machines, although there are significant variations in the degree of regulation of gaming machine numbers. For example, Victoria and New South Wales have determined maximum gaming machine numbers for clubs, hotels and casinos (both state-wide and per venue) as well as an overall, state-wide cap. Alternatively, South Australia, while having a venue cap of 40 machines, has set no state-wide cap for total machine numbers in hotels and clubs and the main form of state-wide restrictions was a freeze on applications for gaming machines. The South Australian Parliament is currently considering a recommendation of the Independent Gambling Authority (SA) that "3,000 gaming machines be removed from the system and that there be a limit on the maximum number of gaming machines in South Australia, fixed initially at 12,000 (down from the present 15,000)".[38] (See earlier discussion in Section 1.3.2.). Further to this, in non-metropolitan regions it has been argued there was a special need to address the disproportionate number of gaming machines and venues.

4.2 Regional Issues

The introduction of regional caps in Victoria, which is the principal focus of this study, comes amid pressure from many councils and community groups concerned with the impact that the proliferation of gaming machines is having on their local population. A number of public submissions in response to the Victorian Government's "Responsible Gaming Consultation Paper" in 2000, including those from Maribyrnong City Council and the Victorian Local Governance Association, were very supportive of the imposition of targeted caps.

The amendment to the Victorian *Gaming Machine Control Act 1991* in 2000 required that the Victorian Casino and Gaming Authority must not grant an application for approval of premises as suitable for gaming, or for additional gaming machines unless it is satisfied that the net social and economic impact of approval will not be detrimental to the community of the municipal district in which the venue is located. This has given a greater role to local councils in influencing applications for gaming licenses, and a number of Councils have sought to use this power to petition against applications for expansion of gaming in the region. For example, the Macedon Ranges Shire Council passed a motion that no further poker machine venues should be permitted into the municipality. There has also been further pressure placed on the Victorian government to reform electronic gaming machine regulations, with, for example, the Knox City Council's Responsible Gambling Policy urged the State government to remove note acceptors from machines and other policies designed to reduce harm.

The Shire of Yarra Ranges' Responsible Gambling Policy seeks to restrict any new venues or additional machines; the key objective of the policy is "to reduce the negative social and economic impacts of poker machines gambling on the community".[39] The Council notes the potential for adverse social and economic impacts and believes that any benefits of the industry are likely to be outweighed by negative impacts. The

[38] Inquiry into management of gaming machine numbers, IGA (2003), p. 3.
[39] Shire of Yarra Ranges: Responsible Gambling Policy.

Council's policy is based on community attitudes that consider EGMs do more harm than good and that there should be no further increase in existing numbers.

The perceived need for restricting EGM numbers at a regional level stems from an appreciation that gaming losses are not evenly distributed across regions, nor are all regions equally capable of sustaining gaming losses. The Productivity Commission (1999) identified a concentration of EGMs in lower socio-economic areas and an inverse relationship between average regional incomes and the amount spent on gaming machines. The South Australian Centre for Economic Studies (2001) showed that the density of gaming venues per square kilometre and the density of EGMs per adult in local council areas were both positively correlated with gaming expenditure per adult in South Australia. Other socio-economic indicators such as the rate of unemployment, the extent of housing trust housing and the proportion of the population identifying as Aboriginals or Torres Strait Islanders were all found to be positively correlated with gaming expenditure (after controlling for variation in income).

This relationship between net gaming revenue (i.e., losses) and machine density has been confirmed by other researchers. In a study on the distribution of electronic gaming machines (EGMs) and gambling related harm in metropolitan Adelaide (Delfabbro, 2002), it was reported that "there is a very high correlation between the density of EGMs in SLAs and net revenue (or the amount lost). The number of EGMs was also very highly correlated with the number of venues' (p. 100). Interestingly, and similarly as is the case in Victoria, it was concluded that there was a clear positive association between problem gambling clients and EGM density. These findings give voice and support to the conclusions of other researchers (PC 1999; SACES 2001) illustrating again why capping and/or removal of machines may have some importance as a public policy intervention tool.

Gambling taxation is readily identified as a flow of income out of the local community, which may have the effect of stifling consumer spending and economic activity in the regions affected. This in turn would act to reduce employment and increase unemployment in the area. Moreover, there is concern that gambling taxes, and taxation of EGM revenue in particular, is highly regressive, with lower income households remitting a much larger share of their income to government through EGMs than higher income groups. Smith (1999) argues that the effect of gaming taxation will vary significantly from region to region, noting that where

> "low income populations and heavy gambler populations coincide in the same geographic area, the adverse social and economic impact of gambling will be heavily concentrated in particular localities".

Of course, just as gaming taxation represents a leakage out of the regional economy, governments return this money to the population in the form of better quality infrastructure, better funded government and community services and/or lower State taxes. However, it is difficult to identify which areas are the major beneficiaries. It is common for gaming revenue to be directed into the governments general revenue pool rather than being earmarked for specific projects. Indeed, some researchers have expressed concern that some governments have used gaming revenues in place of "*more equitable, but perhaps more politically contentious taxes and to defer necessary reform to the taxation and federal finance system*" (Smith, 1999). The implication is that in some cases

communities in lower socio-economic regions may have suffered a net loss of income to other regions when compared to the tax system that would have been implemented in the absence of gaming revenue.

NIEIR (1999) estimated on the basis of assumptions relating to the distribution of revenue and employment throughout the community, and assuming that government expenditure is distributed evenly throughout Victoria on a per capita basis that some of the regions with lower incomes suffered a net fall in economic activity in the area as a result of EGMs (assuming no losses due to the incidence of problem gamblers). In particular, they identified negative net regional impacts (calculated as the present value of the impact over the next five years): Darebin (-$83 million), Mornington Peninsula (-$34 million), Maribyrnong (-$35 million) and La Trobe (-$2.3 million), Bass Coast (-$1.4 million), Central Goldfields (-$1.7 million).

The impacts of the proliferation of electronic gambling machines on the local community will depend upon the socio-economic characteristics of the residents, the size and culture of the area. Moreover, the impacts are likely to be quite different in metropolitan areas compared to country areas. The different impact on rural and metropolitan communities was highlighted by a 1998 study commissioned by the New South Wales Community Charitable Benefit Fund. It found that men and women in country NSW gamble more frequently and spend more than respondents in the city. Moreover, the local club is often the focal point of social activity, placing a larger proportion of the community in the near vicinity of gaming machines, and there is some concern that access to gambling support services may be more difficult in some regional areas (IPART (1998)).

However, a glance at Table 4.6 which shows the cumulative losses for country Victoria and metropolitan Melbourne reveals that cumulative losses per adult since 1992-93 (adjusted to 2003 dollars) were $4,132 and $5,709 per adult respectively. A simplifying, 'back of the envelope' calculation shows the average loses per venue calculated from 1992-93 in metropolitan Melbourne[40] are twice that of country Victoria (i.e., metro $45m : non-metro $21.4m) and per machine $780,000 : $560,840 or approximately 1.4 times the country per machine loss average. It may be that the local club in New South Wales plays a more significant role within the community than the equivalent structure in Victoria, or that the role of hotels in Victoria is quite different to those across the border. Notwithstanding, men and women in country Victoria spend less than their counterparts in the city. In terms of problem gambling however, the critical indicator is expenditure relative to income (or average incomes) where average incomes tend to be lower in non-metropolitan centres relative to the metropolitan area.

In a study commissioned by the Victorian Casino and Gaming Authority, Hames Sharley Consultants (1997) found (using qualitative and quantitative research) that there were firm perceptions in the rural areas surveyed that, EGMs lead to more bankruptcies and that, the proliferation of gaming has resulted in less money being available for retail expenditure. They found that, because a proportion of family budgets is now devoted to gaming, retail spending has tended to be directed towards low cost budget items at the expense of quality. This had resulted in decreased employment opportunities in retail and other leisure/entertainment venues competing against EGMs. These effects were

[40] Total loss divided by number of venues as at September 2003 and equivalent for machines. Simplifying assumption here is that number of venues and machines was relatively constant over the time period.

also seen — if somewhat diluted — in small rural communities without EGMs since there was a perception that loss of gaming expenditure to "out of town" venues led to loss of employment opportunities in retail and leisure/entertainment venues competing against out of town EGM venues.

The survey picked up a strong perception that the most vulnerable sections of society, including low income groups, single mothers and potential problem gamblers are the most likely to be negatively affected by the introduction of EGMs. Further, a majority of participants considered that there had been an increase in the incidence of minor crimes since the introduction of EGMs. Overall, for all communities, the study found increased demand for government funded social services requiring a compensating increase in funding and social and family problems arising from increased incidence of gambling.

A second study commissioned by the Victorian Casino and Gaming Authority considered the social and economic effects of EGMs on non-metropolitan communities (Deakin Human Services *et al* (1997)). It found that (as pointed out earlier), as a proportion of income, taxation of EGM use is highly regressive — much higher proportions of personal and household income are gambled and taxed by low income respondents than by high income respondents, although the pattern is not linear. One point three per cent of survey respondents in five regional areas of Victoria reported that managing their gambling had been a problem for them and around 80 per cent of all respondents said that gambling does 'more bad than good' (including 77 per cent of gamblers and EGM gamblers).

In a further report — also commissioned by the Victorian Casino and Gaming Authority — The Melbourne Institute of Applied Economic and Social Research *et al* (1997) conducted a survey in four municipalities in the inner north and west of Melbourne. Once again, when expenditure was expressed as a proportion of both individual and household income there was a strong regressive pattern. About 62 per cent of respondents indicated that they had ever used EGMs (compared to 68 per cent in the non-metropolitan study). About 70 per cent said that gambling does 'more harm than good'.

More recently, national and local surveys consistently confirm community concern about the expansion of gambling. The Productivity Commission *National Gambling Survey* found widespread involvement in gambling but that 71 per cent of all Australians, including a majority of regular gamblers considered gambling does "more harm than good".

The 2003 Victorian *Longitudinal Community Attitudes Survey* found that Victorians continue to hold negative views towards gambling, in particular EGM gambling. They also have negative perceptions of the effects of gambling on the community.
The main findings were as follows:

- A substantial majority of Victorians (85.1 per cent) consider that gambling is a serious social problem in Victoria.
- Similarly, both non-gamblers (87.3 per cent) and gamblers (74.2 per cent) agreed that gambling is too widely accessible in Victoria.

- Victorian residents (gamblers 85.5 per cent and non-gamblers 93.7 per cent) are significantly more inclined to prefer an overall reduction in the number of EGMs/gaming machines than was indicated in the 1999 survey (73 per cent), which suggests robust community support for policy change.

This last finding suggests some support for the Victorian Government's regional caps trial and certainly for the binding cap of 30,000 machines, although many would like to see a reduction in this number.

In fact, the Community Attitude Survey (2003) reported that the majority of respondents were in favour of reducing the number of EGMs located in Victoria:

- support for a reduction in the number of EGMs in Victorian hotels was highest at 91.4 per cent;
- 88.4 per cent of Victorians agreed that the number of EGMs in Victorian clubs should be reduced;
- 63.7 per cent agreed that the number of EGMs in Crown Casino should be reduced.

On average, Victorian residents are less convinced than Australians were in 1999 as to one of the advantages most cited in relation to gambling — increased recreational enjoyment (43.4 per cent of gamblers and 60.8 per cent of non-gamblers disagreed with the statement). Non-gamblers (88.5 per cent) strongly disagreed and gamblers (68.8 per cent) disagreed that gambling has improved the social life in their suburb or local community.

The presence of machines may damage many local businesses by directing funds out of the community. For example, in Victoria, it would appear that the gaming machine operators (Tabcorp and Tattersall's) take almost half of net after-tax gaming machine revenue (ACIL Consulting, 2001). Much of this goes into costs of supply (maintenance, marketing, accounting, etc.) and cost of purchasing machines, most of which is spent outside of the local community. In those communities with low levels of wealth and share ownership, the resulting corporate profits will also tend to be directed out of the local community. A significant share of the gaming revenue also goes to the State government in taxation, and the dispersal of expenditure of these additional funds among the various council districts may not reflect the pattern of collection.

Table 4.6 reports the cumulative losses commencing in 1992-93 for the five cap regions although they are reported here by the LGA area ("minus the plus"). The cumulative losses are shared between the venues, the operators, the government, GST payments and the 8.33 per cent community support fund levy on hotels. Not shown here is a levy of $1,533 on each EGM payable by the operators which raises $46 million per annum, which is allocated to the Hospitals and Charities Fund. Notwithstanding, and we stress that cumulative losses or more particularly the government tax take in column two[41] cannot be simply evaluated against one source of earmarked funding, and while it is difficult to estimate "who are the beneficiaries" it is not axiomatic, that government expenditure

[41] Victorian average tax rates of 24.24 per cent is based on average tax rate paid by two operators, but not including levies.

offsets the basic regressive nature of gambling taxation. Communities may indirectly benefit from expenditure in areas such as the arts, sport and recreation.

Table 4.6
Cumulative Gaming Losses and Tax Take by EGMs for 5 LGA Regions
(2003 dollars)

LGA Regions	Cumulative Losses Since 1992-93 (million)	Government Tax Take (million)	Losses per Adult ($)
Maribyrnong City	554.0	134.3	10,327
La Trobe City	396.0	96.0	7,549
Greater Dandenong City	884.0	214.3	8,660
Darebin City	756.0	183.3	7,124
Bass Coast Shire	126.0	30.5	6,253
Country Victoria	**4,116.0**	**997.7**	**4,132**
Metro Victoria	**15,539.0**	**3,766.7**	**5,709**
Total Victoria	**19,655.0**	**4,764.4**	**5,286**

Source: VLGA Gambling Indicators for Local Areas 2003 and Community Support Fund, Victoria Government.

The local businesses that receive most of the benefits of EGMs are hoteliers and local clubs. Indeed, in a number of states EGMs have been legalised with the benefits to these enterprises in mind, particularly where there are problems with revenue flowing across state boundaries, such as in southern Queensland, to northern NSW, and Canberra, to clubs in Queanbeyan. These local businesses have responded by employing more staff and directing funds to improving facilities and potentially also funding local community activities. But one downside of this is that opportunities for local fundraising by way of bingo tickets and raffles are reduced (Marshall, 1998).

4.3 Responses to binding caps

Caps on gaming machine numbers will only influence gambling behaviour where they bind. For many years, some states including Victoria held caps on EGM numbers well above current number of machines. In some other states, accessibility was influenced by limiting the number of machines per venue.

Undermining the efficacy of the regional caps is the likely response (change in behaviour) of gamers and machine operators to the imposition of the caps. The Productivity Commission (1999) has warned that:

> "Quantity constraints on gaming machines appear either to face implementation problems or lack effectiveness as measures for ameliorating problem gambling". (p15.30).

Part of the problem is that, while the number of machines will be restricted, the effects on accessibility of gambling opportunities may be mitigated by travel to alternate venues or the introduction of higher yielding machines in the cap regions.

The most obvious response to a reduction in the number of EGMs is that the remaining machines will be used more intensively, increasing average revenue per machine more noticeably in the cap regions than in the rest of Victoria. The design of gaming machines is such that, even if players needed to wait longer or travel further to access a machine, they could choose to 'make up' for any time lost and spend just as much money by playing multiple lines or increasing their bets. This partly explains why machines in Victoria generally produce much higher levels of revenue than similar machines in New South Wales where there is a much higher concentration of machines per capita.

The ***response of consumers*** to the reduced availability of machines may take many forms depending upon individual circumstances.

- Queues at busy times would see EGMs remain idle for shorter periods between players. This will disproportionately act to discourage those who place a low value on their time waiting.
- In an effort to avoid crowds, players with more flexible schedules may gamble at less popular times, avoiding busier periods. As such, we would expect to see a wider distribution of gaming revenue by time of day.
- Some players may choose to play less preferred machines to avoid queues for the more popular versions.
- Crowds may encourage some gamblers to search for quieter venues in the cap regions where they have greater access to the machines they prefer, increasing the revenue of previously less popular venues in the regions.
- Similarly, some players may choose to travel out of the cap regions to gamble, to convenient venues. This would be implied by unusually rapid increases in gaming revenue in venues near the boundaries of the cap regions or perhaps on major commuting routes from the cap regions. If this were occurring, it would encourage employment and economic growth in surrounding areas, at the expense of employment in the cap regions. This would be particularly concerning as the cap regions were chosen from among the more economically vulnerable communities in the State.
- Some gamblers may modify their gambling behaviour to shorten the length of time spent gambling, perhaps in response to time constraints (given time already spent queuing) or due to pressure from venue management or fellow gamers.

The Productivity Commission cites Nova Scotia evidence that problem gamblers tend to choose a venue close to home, and the fifth community gambling patterns survey report (VCGA, 1997) suggests that 60 per cent of recreational gamblers and 71 per cent of problem gamblers last gambled within 5km of their homes. Moreover, problem gamblers were quite willing to shift locations, and were much more likely to play at more than one location in a given day.

If the availability of machines drops sufficiently (especially if demand continues to increase) then gamblers may be more likely to visit gambling venues outside of the designated regions. In particular, there might be an increase in gambling revenue at venues near the designated regions, and perhaps on major commuting routes to those regions. Nevertheless, Roy Morgan Research (2000) find that more than half of all

players travel less than 5kms to an EGM venue (non-casino) and around four in five travel to an EGM venue from home. The most recent VCGA community impact study reported that most people who use poker machines, play within 2.5 kilometres of their home. This pattern may change with the introduction of caps.

The ***EGM operators*** (Tabcorp and Tattersall's) do have an ability to move machines between venues to try to increase their total revenue. Moreover, where revenue per machine is significantly lower at a particular venue than the Victorian average, the operators have contractual ability to remove a number of machines from these venues.

The regional caps may be expected to elicit a range of responses from machine operators (Tabcorp and Tattersall's).

- Movement of higher yielding machines into the area and removal of low-yielding machines. This may take many forms, such as introducing machines that are simply more popular, machines that are more profitable, machines with higher payout ratio or machines with higher minimum bets.
- EGM operators would prefer to be able to move some of the limited number of EGMs out of lower performing venues. The direction of the VCGA is to evenly spread the percentage reductions in EGM numbers across venues within the regions; this may seem to limit their ability to remove machines from lower performing venues. It is not clear whether this has to occur for each of the three years or is the final result at the end of the three year period of phased reductions. However, it seems likely that subsequent to the removal of machines to meet the caps, the operators could further reallocate machines within the regions subject to their contractual arrangements with venue licensees.

All gaming machines in clubs and hotels in Victoria are supplied by either Tattersall's or Tabcorp. These large suppliers have significant control over the numbers and types of gaming machines that go into particular venues. As such, it is possible that these operators may respond to the limits on numbers of gaming machines by replacing some of the existing machines with games that are higher yielding. Moreover, if there is significant spill-over of demand into neighbouring regions, these operators are in a position to supply more machines to these areas (subject to approval of the VCGA) or different types of machines.

The regional caps may be expected to elicit a range of responses from ***venue licensees***, including the expectation that venues may apply to extend hours of operation where possible (though noting that the introduction of specific restrictions on 24 hour gaming in Victoria may make this more difficult). Moreover, since all of the venues in the cap regions will be competing on the basis of gaming revenue to maintain their number of a decreasing total number of available machines, it is possible that some venues may allocate fewer resources to the reduction of problem gambling.

All of these responses mean that the actual effect on the community in the designated regions seems likely to be small, at least in the immediate term. However, the longer term effects may be more significant. Reducing the availability of machines may reduce the number of people introduced to gambling. How many of these may have developed

harmful addictions? The decreased pleasure obtained from gambling at the more crowded venues (or travelling further to gamble) may discourage some gamblers. How effectively and in what manner will addicted gamblers be impacted compared to recreational gamblers?

Research findings and insights into these issues will bear directly on the policy choice between targeted regional caps and broad state-wide caps, and other policy instruments.

4.4 Accessibility and regional caps

The effect of regional caps on gambling behaviour depends critically upon the real impact it has on the accessibility to gambling opportunities.

The Productivity Commission (1999) identifies many dimensions of accessibility to gambling opportunities, including:

- Number of venues;
- Location of venues;
- Opportunities to gamble per venue;
- Opening hours;
- Conditions of entry;
- Minimum outlay
- Ease of use; and,
- Social accessibility.

Some of these dimensions have been addressed by other policies, such as restricting the number of 24 hour venues in regional areas. The implementation of the regional caps is expected to only reduce the number of EGMs per venue.

The regional caps implemented in Victoria have been structured so as to not disproportionately disadvantage any of the groups involved with providing gaming services. In particular, the government has specified that the reductions in machine numbers in the cap regions will fall evenly across clubs and hotels, and across the two EGM operators Tabcorp and Tattersall's. Further, in the four regions where reductions in machine numbers were required, the VCGA directed the operators that the reduction in machine numbers must be evenly spread across licensed venues as far as is possible. (The exception is where a venue voluntarily reduces or ceases its gaming operations, though there is little reason to believe that the cap would motivate this decision).

In particular, the Productivity Commission argues that how gambling opportunities are arranged spatially is important in determining accessibility to gambling opportunities. In particular, it has regard to the average distance to the nearest gambling opportunity. This dimension is not affected by the regional caps.

Nevertheless, the number of EGMs at a given venue may be expected to impact upon gambling behaviour as it provides less anonymity and may reduce the tacit social

support provided by being surrounded by similarly motivated players. In particular, the greater prominence of other activities at the venue may affect the role of gambling in the venue vis-a-vis dining, playing pool etc.

4.5 Accessibility and gambling behaviour

The Productivity Commission (1999) considered the link between accessibility to gambling opportunities via a range of data sources. In particular, they identified only a weak positive correlation between state level data on gambling businesses per capita and prevalence of problem gamblers (defined to be those rating over 5 on the SOGS). Nevertheless, the relationship between numbers of EGMs per adult (or gaming machine expenditure per adult) and the prevalence of problem gamblers appeared to be more robust. Similarly, there appears to be a positive correlation between numbers of gaming machines per capita and the number of clients seeking help from counselling services. This is consistent with international research. For example, Campbell and Lester (1999) find that the number of Gamblers Anonymous groups per capita in the 64 Louisiana parishes was somewhat correlated with the number of video poker machine venues per capita and the per capita spending on video poker (though there was no significant correlation with number of poker machines per capita). By contrast, the number of Gambler Anonymous groups per capita was not significantly correlated with the per capita spending on the lottery.

The Commission rightly highlights the need to be cautious in interpreting these data to mean that accessibility causes gambling problems. Problem gamblers have high levels of gambling expenditure, such that the existence of a higher level of problem gamblers in an area will tend to increase the average expenditure per capita. In the absence of restrictions on gaming machine numbers this will encourage EGM operators to station a larger number of machines in the regions with higher levels of demand because they are more profitable. Where a binding cap applies at the state level, such as in Victoria, these discrepancies across regions would be exaggerated because operators would need to remove machines from other regions to accommodate the expansion in the high-demand regions.

In relation to gambling in general, the Commission concludes that it is likely that higher per capita expenditure, as a proxy for accessibility, causes an increase in problem gamblers (that is, the relationship is unlikely to be wholly attributable to the differing distribution of problem gamblers between states).

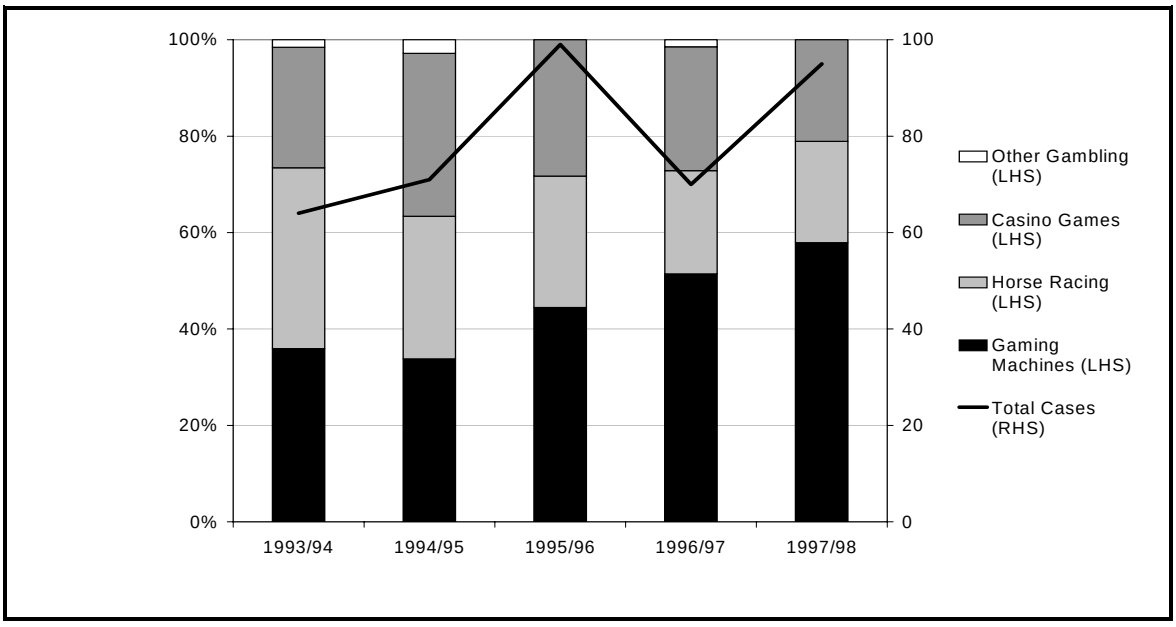
Nevertheless, the Productivity Commission drew the conclusion that:

> "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". (Productivity Commission 1999. p8.31)

The Commission considered that the emergence of new segments of problem gamblers following the introduction of electronic gaming machines to be the most persuasive evidence of a causal link between accessibility and number of problem gamblers.

Firstly, the Commission cites data from Relationships Australia (1999) that the proportion of problem gambling cases in the Gold Coast that were linked to EGM usage increased markedly over the years following the introduction of EGMs in 1992. This would be quite a strong argument but for the very small numbers of cases involved (see Figure 4.1) and short time span of data, thus failing to dispel the hypothesis that the effect of EGMs in this case was simply to shift the proportions of problem gamblers reporting problems due to EGM usage rather than other forms of gambling. The sceptic might attribute the increase in cases to more effective advertising of their services following the set-up of the Gold Coast operation in 1993.

Figure 4.1
Preferred form of gambling as reported by clients (Break Even Gold Coast)
1993-94 — 1997-98



Source: Relationships Australia Queensland, 1998

Secondly, the Commission cites evidence implying that the groups of gamblers that have problems with EGMs is, at least partially, distinct from other groups of problem gamblers. In particular, the Commission cites data from BreakEven Problem Gambling Services Victoria[42] that more females have gambling problems linked to EGM usage then any other forms of gambling. Data for the period 1999-2003, shows that over 85 per cent of female problem gamblers registering with Gamblers Help in Victoria normally used EGMs. Moreover, 56 per cent of EGM-related problem gamblers were female, compared to just 23 per cent for other forms of gambling. Jackson *et al* (2000) qualify these conclusions by noting that gaming staff in clubs and hotels may be particularly aware of the Gamblers Help services following the adoption of the Responsible Gaming Code of Practice and that, among all problem gamblers, women are disproportionately likely to

[42] Now known as Gamblers Help Services.

turn to counselling services. Moreover, the share of problem gamblers that are female has increased only moderately over recent years.

Table 4.7
Gaming by type and gender

Type	Male	Female	Total	Female (Per cent)
EGMs	841	1076	1917	56
Racing (TAB)	275	14	289	5
Card games	83	13	96	14
Lotto/lottery/pools/keno	41	35	76	46
Racing (On-course)	53	10	63	16
Bingo	14	36	50	72
Numbers	32	1	33	3
Other	18	7	25	28
Internet/on-line	2	0	2	0
Not known	84	63	147	
Total	1443	1255	2698	47

Source: Jackson, et al (2000).

Table 4.8
Counselling Services By Gender and Year of Registration

Year	Male	Female	Total	Female (Per cent)
1995-96	623	672	1295	51.9
1996-97	883	904	1787	50.6
1997-98	1416	1669	3085	54.1
1998-99	1300	1600	2900	55.2
1999-2000	1537	1879	3416	55.0

Source: Jackson, et al (2000).

More compelling is the fact that Western Australia not only has no EGMs outside of the Burswood Casino, it also has an incidence of problem gambling around half that of other states. At a more detailed level, the Productivity Commission's (1999) survey of problem gambling counselling agencies reveals that 30 per cent of clients in Western Australia were female and 20 per cent of clients had problems linked to EGM usage. By contrast, 47 per cent of clients in Victoria were female[43] and 69 per cent of clients had problems linked to EGM usage. Similarly, Abbot and Volberg (1999) cite studies in jurisdictions with highly accessible EGMs (Montana, Oregon and South Dakota) showing that roughly half of all problem gamblers are female. As the Productivity Commission observed, the existence of separate groups of potential problem gamblers that are only apparent where a form of gambling is readily accessible is persuasive evidence that greater accessibility does cause an increased incidence of problem gambling.

[43] Gamblers Help data for 2001 shows 65 per cent are female using this counselling agency.

International evidence is similarly persuasive but not conclusive. An extensive meta-analysis of problem gambling in the United States and Canada (Shaffer, Hall and Vander Bilt, 1997) showed that the prevalence of gambling related problems both in the past year and over a lifetime have increased significantly since 1977 in line with the increased opportunities to gamble presented. Volberg (1994) shows that the prevalence of problem gambling in jurisdictions which had legalised gambling more than twenty years ago were three times as high as in jurisdictions that had legalised gambling within the past ten years. Ladouceur, Jacques, Ferland & Giroux (1999) conducted two prevalence studies seven years apart, during which gambling activities had increased, and found that the number of pathological gamblers had increased by 75 per cent. However, the data is not clear cut. Surveying fifteen replication studies measuring problem gambling across North America, Abbot (2001) reports that in only seven cases the repeat survey obtained a higher rate that the initial baseline survey and in eight the repeat estimate was lower. Emerson and Laundergan (1996) demonstrate a substantial increase in gambling problems in Minnesota between 1990 and 1994, a period which saw increased accessibility to gambling in the form of lotteries, high-stakes bingo and Native American casinos. The National Opinion Research Center (1999) found that proximity to a casino was a strong determinant of the prevalence of problem gambling — being within 50 miles of a casino was accompanied by a doubling of the prevalence of problem gambling.

4.6 Responsiveness of Gamblers

The critical issue is whether gamblers, and particularly problem gamblers, are responsive to small changes in the gambling environment.

Even if a causal relationship between accessibility and the incidence of problem gambling is accepted, it is difficult to find hard evidence that a small reduction in accessibility to EGMs will cause a noticeable reduction in the incidence of problem gamblers in a context in which there are thousands of machines. As previously discussed, the five cap regions held 5,494 EGMs across 95 venues at 30 June 2000, and the total reduction in machine numbers by 14 February 2004 is 406, or 7.4 per cent. The largest percentage reduction will occur in the Bass Coast Shire where machine numbers will fall by 15.7 per cent. In descending order, the percentage reductions to occur were then Maribyrnong Plus 11.8 per cent, Greater Dandenong Plus 8.1 per cent; La Trobe 7.2 per cent and Darebin Plus 1.4 per cent.

Some researchers believe that reductions in machine numbers of these orders of magnitude will be ineffective. Symond (2000) argues that there is no firm evidence to support imposing caps on gaming machine numbers at the state level in a bid to reduce the incidence of problem gambling. In particular, Symond argues that, despite a much higher concentration of EGMs per capita, the incidence of problem gambling is not higher in New South Wales than in Victoria. Surveys undertaken as part of the Productivity Commission's (1999) study revealed that the prevalence of problem gambling (SOGS 5+) in New South Wales was a little over 2.5 per cent of the adult population compared to a little over 2 per cent of the adult population in Victoria. At the same time, the density of EGMs per capita in New South Wales was two to three times higher than in Victoria. However, the EGMs in Victoria appeared to be used more intensively (greater expenditure per machine) in response to the binding state-wide cap.

Similar suggestions were made by the Australian Hotels Association (Victoria) (1999) submission to the PC inquiry.

There have been a small number of studies in Australia considering the impact of regional policies on the regions concerned.

A report by ACIL Consulting (2001), commissioned by Tattersall's, considered the impact of local caps on gaming machine numbers on the Ballarat community. In particular, they argued that a restriction on the number of machines in the Ballarat region, if successful in halving the level of gaming expenditure, would cause a loss in gamer welfare worth $28.9 million. On the other hand, if a removal of the state-wide cap on gaming machine numbers saw expenditure rise by 17.6 per cent (i.e. assuming that current expenditure is at 85 per cent of potential) it would see consumer welfare increase by $1.5 million. The social costs of problem gaming were subsequently subtracted based upon the national estimates produced by the Productivity Commission (1999).

However, the estimated benefits of EGM usage made by ACIL Consulting appear to be unduly high due in part to the assumption that demand for gaming is quite unresponsive to changes in price (without considering that problem gamblers may be less price sensitive than recreational gamblers). This results in excessive estimates of the consumer benefit of gambling, particularly for large changes from the current level of gambling. For example, they estimated that Ballarat consumers were willing to pay $347 million for the current level of wagering on EGMs of $47 million, implying that a ban on gaming machines would decrease consumer welfare by $300 million. By contrast, Pinge (2001) scales down the national estimates of consumer welfare from EGM usage provided by the Productivity Commission (1999) for the level of usage in Ballarat, suggesting that a ban on EGMs would reduce the level of gross consumer welfare by between $9 and $13 million. Even assuming that all consumption by problem gamblers is a gain only doubles these figures. ACIL Consulting's estimate of the effects on employment in the region are much less significant, estimated at a reduction of 12 jobs in the event of a regional halving in gaming revenue or an increase of 13 jobs following the lifting of the state-wide cap.

Perhaps more importantly for the analysis of the current policy of regional caps, the ACIL Consulting study does not estimate the impact of a reduction in EGMs on EGM revenue, nor does it estimate the effects of these reductions on the share of gamblers with problems.

Banks (2002) challenges the regional benefits from EGM gaming asserted by ACIL and the Productivity Commission re-assessed the ACIL study. What they found was that instead of net gains in the millions, "when the Productivity Commission's analytical framework was consistently applied, the outcome for Ballarat ranged from a net *loss* of $19 million to a maximum gain of only $8 million — well short of the $¼ billion gain produced by ACIL".[44] This led Banks (2002) to stress the necessity of independent research to guide public policy in 'this complex and highly contentious area'.

[44] Banks (2002), "The Productivity Commission's gambling inquiry: 3 years on", p. 6.

Some light may be shone on the responsiveness of gamblers to small changes in accessibility by studies of their responsiveness to price changes. In the case of gambling, the price is the expected loss per play, as determined by the payout ratio. Policies that decrease slightly the availability of gambling opportunities are not that different than a small change in the payout ratio. Restrictions on gambling machine numbers may cause a few gamblers to choose not to gamble, rather than travel a couple of extra kilometres to play the machines they want, because the higher cost now outweighs the enjoyment they gain from playing. These same gamblers may be the first to leave if the payout ratio fell.

In the case of EGMs this might occur, for example, by reducing the payout ratio (increasing the expected loss per play) or by decreasing the number of machines in the local area, thus increasing the cost of waiting to play on a preferred machine, causing consumers to play on less preferred machines or causing consumers to travel outside of the capped region.

Reducing accessibility may be expected to have a larger impact on the behaviour of casual gamers than on existing problem gamers. For example, a research study in Nova Scotia found that regular players engaged in video lottery gaming more than half the time they were in a video lottery terminal site for 'other' reasons, such as having a drink or playing pool. However, problem players are more likely to go to a video lottery terminal site with the express purpose of playing VL games (Nova Scotia Alcohol and Gaming Authority, 1999) If reducing access to gambling opportunities has a greater effect on the initiation of problem gamblers than on existing problem gamblers, then the effect of reducing EGM numbers will be spread over a much longer period of time. For existing problem gamblers, addressing the causes and effects of problem gambling behaviour stretch out over considerable lengths of time, with estimates of the average duration of the problem ranging from 6.5 years in Louisiana (Moore and Volberg, 1999) to 8 to 11 years in New Zealand (Abbott, 2001) and 9 years in Australia (Productivity Commission, 1999, see Table 4.9). Reducing accessibility and any positive effect this might have on reducing initiation to problem gambling would need to be studied over time.

Table 4.9
The duration of problems amongst clients of counselling services

	Share of problem gamblers (per cent)
Less than one year	3.1
One to two years	16.5
Over 2 years to 5 years	27.9
Over 5 years to 7 years	12.4
Over 7 years to 10 years	9.8
Over 10 years to 15 years	11.6
Over 15 years	18.6

Source: PC Survey of Clients of Counselling Agencies.

The Productivity Commission (1999) found that recreational gamblers are likely to be more sensitive to changes in the price of gambling products. For these consumers, gambling is just one of a range of recreational activities and thus it is reasonable to

consider that they could more readily shift to alternatives if the price of gambling increased. This category would thus have a higher price elasticity of demand than other gamblers (see Table 4.10).

Table 4.10
Estimated price elasticities of demand for gambling

	Low demand elasticity	High demand elasticity
Recreational gamblers	-0.8	-1.3
Moderate problem gamblers	-0.6	-1.0
Severe problem gamblers	-0.3	-1.0

Source: Productivity Commission, 1999.

Moderate problem gamblers are considered to be less sensitive to price changes. Such gamblers report some problems with control of their gambling activity, and thus a lower price elasticity is assumed for this group.

Severe problem gamblers are a more difficult category. They could be expected to be the least sensitive to price changes, as the need to continue gambling is so great. But some may already be gambling with all the money that they have at their disposal, thereby constraining their ability to respond to price changes. It is likely, however, that this situation only arises at the extreme end of the problem gambling spectrum. The Commission therefore assumed that severe problem gamblers are the least sensitive to changes in the price of gambling products.

In New Zealand, Business and Economic Research Ltd. (1997) estimated the elasticity of demand for gaming machines and casinos to be -0.8 (somewhat unresponsive to price). While this estimate is subject to the same caveats applying to other econometric studies, anecdotal evidence tends to suggest that demand for gaming machines may be somewhat unresponsive to price, albeit less so than for lotteries.

Following on from the Productivity Commission's conclusions on price elasticity of demand for different types of gamblers, some extrapolations can be made on different types of gamblers' responsiveness to changes other than price (eg travelling distance to nearest EGM, queue or waiting time for EGM in more crowded hotel/club etc). It would be expected that, once again, recreational gamblers would be more responsive to changes in these costs (travelling costs, waiting costs, loss of anonymity costs) while moderate and severe problem gamblers would be less responsive. Thus, regional caps may have limited impact on reducing the number of current problem gamblers and may more severely reduce the number of current recreational gamblers. However, as discussed earlier, this may still have benefits in the longer term as less people are exposed to EGMs and the incidence of problem gambling declines.

4.7 Conclusion

In all jurisdictions in Australia there is some form of cap to limit the number of gaming machines, to provide for an allocation to the casino sector and to ensure geographical coverage between metropolitan and non-metropolitan areas. Various forms of restricting supply or quantity constraints can be viewed as a response to a hardening of community attitudes against the availability of EGMs; while the effectiveness of restrictions is contested by many commentators it is well to be reminded that the ultimate restriction in force in Western Australia has been successful in moderating the surge in problem gamblers.

Quantitative restrictions potentially give rise to different responses by consumers, EGM operators and venue owners. A critical issue is whether gamblers, especially problem gamblers, are responsive to small changes in the gambling environment.

Even if problem gamblers are found not to be responsive to small changes in machine numbers, the regressive nature of EGM taxation, the realisation that gaming losses are not evenly distributed across regions, the net impact on economic activity in a region and the possible imbalance between the pattern of taxation collection and dispersal of expenditure may be reasons to implement a policy of regional caps on machine numbers. The longer term benefit of a restriction policy such as capping is that less people may be exposed to gambling, thus contributing to a lower incidence of problem gambling.

5. Assessment of Gaming Statistics: Phase One

Summary of Discussion

Section 5 provides a summary of findings based on an assessment of gaming statistics combined with information provided by helping agencies, operators and gaming venues.

Comprehensive data sets on venues, machine numbers and revenue by venue were supplied by the OGR in August 2004. The data supplied to the researchers, a summary table of changes in machine numbers and venues (see Table 5.1), an outline of the methodology for data analysis and our initial assessment of the impact of the caps and the views of industry and venues are considered in this section.

It is important to note that as all of the caps (state-wide, regional, local, hotel/club, and casino) are binding, the decline in machine numbers at any venue as a result of the regional caps will result, eventually, in an increase in the number of machines elsewhere in Victoria. For this reason the researchers required data for all Victorian venues to examine trends in the five cap regions, the control regions, the selected 'leakage points' and also 'growth regions' that experience an increase in the number of machines.

Preliminary Findings

- there are clear trends and cyclical patterns of consumer expenditure on EGM gambling, on an annual basis and over the longer term;
- the introduction of the smoking ban in gaming areas in September 2002 created a 'structural break' in gaming expenditure although the trend in gaming expenditure there after resumed at a lower level;
- all metropolitan cap and control regions in the period March 2002 to June 2004 experienced a loss of revenue in the range –6.2 to –8.8 per cent (the all metropolitan average was –6.1 per cent) and did so whether or not they lost machines. This (and other evidence) reinforces our view that other factors were more important than the relatively small reduction in machine numbers;
- the removal of 24 hour gaming did reduce gaming expenditure at the effected venues;
- an important finding is, that whether or not machine reductions occurred, machines were used more intensively in both the cap and control regions and were used more intensively in cap regions where machines were removed;
- we find no evidence that the regional cap policy had any positive influence on problem gambler counselling rates or other forms of help seeking behaviour;
- Tabcorp reported that it considered that the regional cap policy had relatively little or no impact at all on problem gamblers in large part because utilisation rates of machines were able to increase;
- venue owners/managers generally reported that the regional caps policy had no effect at all on regular or committed gamblers; and
- while 87 per cent of venues did not believe the smoking ban had assisted in reducing problem gambling, they did indicate the ban was successful in providing interruptions to play. The decline in expenditure following the introduction of the ban supports a decline in gambling participation, although most venues considered problem gamblers were largely unaffected.

The ban on smoking in gaming areas and the reduction in 24 hour trading both contributed to a reduction in gaming expenditure in all regions.

5.1 Introduction

For the purposes of analysis the Office of Gaming Regulation (OGR) provided the researchers with detailed tables of the number of electronic gaming machines by venues for the five "cap" regions on a monthly basis from March 1999 to July 2004 (the most recent data available). Similar data was also provided for the five control regions and for all of Victoria.

Detailed tables listing the five cap regions, the five control regions and three potential spillover or 'leakage points' for the three LGA "plus" regions are presented in Appendix 3, Table A3.1 to A3.13. Those tables summarise the areas under study and include a list of venues by name, the number of venues and machine numbers over the period March 1999 to March 2004. June 2000 is the base month used by the Office of Gambling Regulation to calculate the number of machines to be withdrawn, to commence during February 2002 and then in that same month in 2003 and 2004. The end of the month is the final cut-off date for each monthly total. Selected months are shown in these tables, although the researchers econometric analysis is based on the more extensive monthly data set.

Table 5.1 provides a summary of regional level data for the baseline year of June 2000 and then February-March periods thereafter. The actual starting month for the econometric analysis was March 1999. Whilst this summary data is much easier to follow, its presentation in aggregate form masks some of the changes that have occurred.

5.2 Explanation of Data Requirements

Following the successful resolution of the issue to provide venue based revenue data on a confidential basis, the researchers submitted a request to the OGR to access this data. As all of the caps (state-wide, regional, local, hotel/club, and casino) are binding, the decline in machine numbers at any venue as a result of the regional caps will result, eventually, in an increase in the number of machines elsewhere in Victoria. To confirm the hypothesised impact of regional caps, namely to *reduce the costs of problem gambling to the Victorian community*, it was recognised that it would be just as important to prove:

1. That the regional caps have reduced electronic gaming machine gambling in the capped regions and that this has led to a reduction in problem gambling in these regions; as it would be to prove that,
2. The costs of more machines, more gambling and more problem gambling in the rest of the State are smaller than the benefits in the capped regions.

Table 5.1
Electronic Gaming Machine Numbers and Venues, For Cap Regions and Control Regions

Name	Mar-99	Jun-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Greater Dandenong Plus										
Total EGM Numbers	1,650	1,682	1,681	1,682	1,631	1,631	1,598	1,599	1,540	1,540
Number of Venues	20	21	21	21	21	21	21	21	21	21
Monash Minus										
Total EGM Numbers	865	918	918	918	917	918	918	918	918	918
Number of Venues	12	13	13	13	13	13	13	13	13	13
Maribyrnong Plus										
Total EGM Numbers	1,310	1,329	1,324	1,324	1,299	1,297	1,235	1,232	1,172	1,172
Number of Venues	26	24	24	24	23	23	23	23	23	23
Hobsons Bay Minus										
Total EGM Numbers	533	552	552	552	518	518	518	517	518	518
Number of Venues	10	10	10	10	9	9	9	9	9	9
Darebin Plus										
Total EGM Numbers	1,535	1,553	1,539	1,538	1,532	1,532	1,534	1,532	1,531	1,532
Number of Venues	27	25	24	24	24	24	24	24	24	24
Moreland Minus										
Total EGM Numbers	499	567	548	548	548	548	548	548	547	548
Number of Venues	10	11	11	11	11	11	11	11	11	11
City of La Trobe										
Total EGM Numbers	673	663	663	663	628	628	615	615	602	602
Number of Venues	17	16	16	16	15	15	15	15	15	15
City of Ballarat										
Total EGM Numbers	681	684	684	683	674	674	674	674	674	673
Number of Venues	16	16	16	16	16	16	16	16	16	16
Bass Coast Shire										
Total EGM Numbers	244	261	260	261	253	253	237	237	220	220
Number of Venues	8	8	8	8	8	8	8	8	8	8
City of Greater Geelong										
Total EGM Numbers	1,317	1,392	1,392	1,392	1,392	1,392	1,395	1,390	1,392	1,391
Number of Venues	27	27	27	27	27	27	27	27	27	27

* = Base Month
Source: Office of Gambling Regulation.

From the above, the researchers needed to identify every venue in Victoria in which the number of machines has increased or decreased since March 1999. Because of this requirement, along with other possible changes (e.g., changes in trading hours, re-location of machines for other than cap requirements, closure/opening of venues), the need to construct capped rather than LGA regions (e.g., three regions are LGA's + plus) and the actual number of cap and control regions, the following uniform data set was requested for March 1999 out to July 2004:

- list of all venues with revenue data at monthly intervals; and
- list of all venues, with the number of EGMs at monthly intervals from March 1999.

The two data sets, by month since March 1999, are hereafter referred to as the:

- venue by revenue data set; and
- venue by number of EGMs data set.

The provision of the two data sets enabled the researchers to construct the cap regions (the LGAs + "plus"), to examine leakage points, to compare with the Victorian aggregate, to compare with selected matched comparison or control regions and to incorporate (and fully understand) other changes that may impact on the trial of cap regions.

The researchers were concerned to track gambling in areas which were closely accessible to residents of the capped regions, the 'leakage points'. The researchers constructed these leakage points from the two data sets. There was no need to choose 'leakage points' for the control regions, since there was no constraint in these regions from which to have leakage.

In addition, it would not have been possible to comment on intra-regional flows following the progressive withdrawal of EGMs nor would it have been possible to comment on inter-regional flows to nearby localities (i.e., potential spillover regions) without access to venue based data.

5.2.1 Data Request — venue by revenue data set

The venue by revenue data set for Victoria was required for the reasons already outlined, including to facilitate constructing regional aggregates. For example, the researchers needed to know the level of gambling expenditure and total number of gaming machines for every venue in each of the capped regions 'Greater Dandenong Plus', 'Maribyrnong Plus' and 'Darebin Plus' for every month since March 1999. The venue-level data was required to construct the region aggregates as these differed from LGA regions. The City of La Trobe and the Bass Coast Shire were existing LGA regions.

It was also important to know the level of gambling expenditure and total number of gaming machines for every venue in the control regions 'Monash Minus', 'Hobsons Bay Minus' and 'Moreland Minus' for every month since March 1999. The venue data enabled the construction of the region aggregates, the level of gambling expenditure and

the total number of gaming machines for the control regions 'City of Ballarat', the 'City of Greater Geelong' and the 'City of Warrnambool'[45] for every month since March 1999.

The venue by revenue data set is subject to confidentiality constraints and no revenue per venue is identified in this report.

5.2.2 Data Request — venue by number of EGM data set

The following venue by number of EGM data set was requested from the OGR:

- the total number of gaming machines in Victoria for every month from March 1999;
- the number of machines by venue in Victoria for every month from March 1999 up to July 2004; and
- venues by LGA level.

These data were a matter of public record, so they were not subject to any confidentiality constraints. The venue by number of EGM data set was required for the reasons already outlined, including to facilitate constructing regional and cap region aggregates and to construct the potential leakage points lying just outside the cap regions.

5.3 Trends and Cyclical Patterns

Table 5.2 compares the December and March quarters (1999 to 2004) and provides a partial insight into the cyclical pattern of EGM expenditure. The trend pattern can be summarised as follows:

- EGM revenues peak in December and into January and then consistently decline in February and March, ensuring that the March quarter represents the trough in each cycle;
- from April through to November expenditure gradually rise over the months; and
- the cycle of the peak (December-January) and the trough (February-March) is repeated.

Over the long-run the major influence on gambling expenditure appears to be related to two factors:

- firstly that consumer expenditure peaks in the holiday period December/ January associated with Christmas shopping and holiday spending; and
- having completed holiday spending, most probably adding to credit card debt, then recreational spending is curtailed and February and March are the months when debts and credit card are paid off and gambling expenditure is restrained.

[45] This additional control region, while not used in this report was established should one of the other control regions not be suitable.

Table 5.2
Change from End December to End March Quarters
All Victoria, 1999-2004 (Per cent)

	Metropolitan (Per cent)	Non-Metropolitan (Per cent)	All Victoria (Per cent)
Yearly Change in Expenditure			
December 1999 – March 2000	-7.1	-3.5	-6.4
December 2000 – March 2001	-9.8	-6.2	-9.1
December 2001 – March 2002	-7.6	-2.8	-6.6
December 2002 – March 2003	-8.2	-3.0	-7.1
December 2003 – March 2004	-6.0	-2.0	-5.2
Average Change in Revenue (5 years)	**-7.8**	**-3.5**	**-6.9**

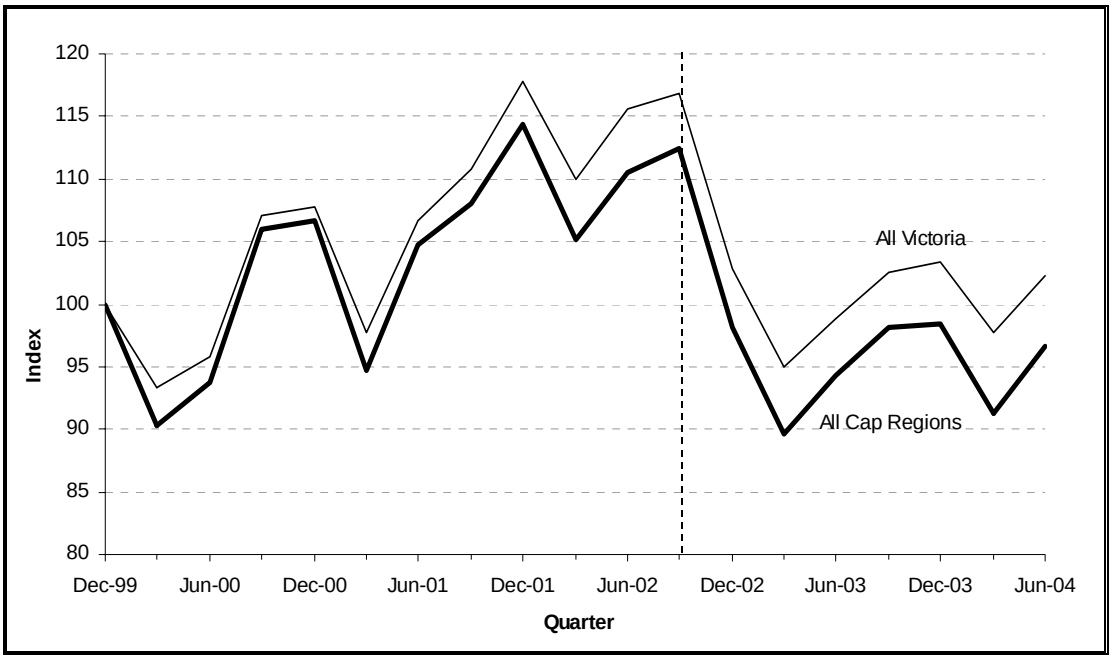
Source: SACES calculations based on OGR data (2004).

The same aggregate pattern for all Victoria is repeated in the cap metropolitan and non-metropolitan regions with the rise in expenditure in December-January, decline in the full March quarter and resumption of growth to a higher peak. In each of the Figures 5.1, 5.2 and 5.3 for metropolitan and non-metropolitan areas, the cap regions and all Victoria, this cyclical pattern can be observed, prior to, and after the smoking ban in gaming venues. Then, as in each of the Figures, the smoking ban provides a structural break but the trend in gaming expenditure resumes at a lower level.

Figure 5.1 compares the 5 cap regions with the trend for all Victoria before and after the ban on smoking in gaming areas. Net gaming revenue from the cap regions contributed quite strongly to total Victorian revenue. The share of total net gaming revenue for the cap regions was 19.7 per cent in 2001 and had declined to 19.3 per cent at the time of the smoking ban, and further declined to 19.2 per cent by 2003. The almost identical scenario can be observed for metropolitan Victoria and the three metropolitan capped areas shown in Figure 5.2 where the net gaming revenue for the 3 metropolitan cap regions declined from 16.9 per cent in September 2002 to 16.3 per cent by the first quarter of 2003. The declining shares contributed by the three cap metropolitan regions could indicate a change in expenditure as a result of smoking bans, the caps policy or that other regions had grown more strongly and increased their relative shares of NGR. We consider this in Section 6, Assessment of Gaming Statistics: Phase Two, that involves more formal econometric tests of the effects of regional caps on expenditure at venues in the capped regions.

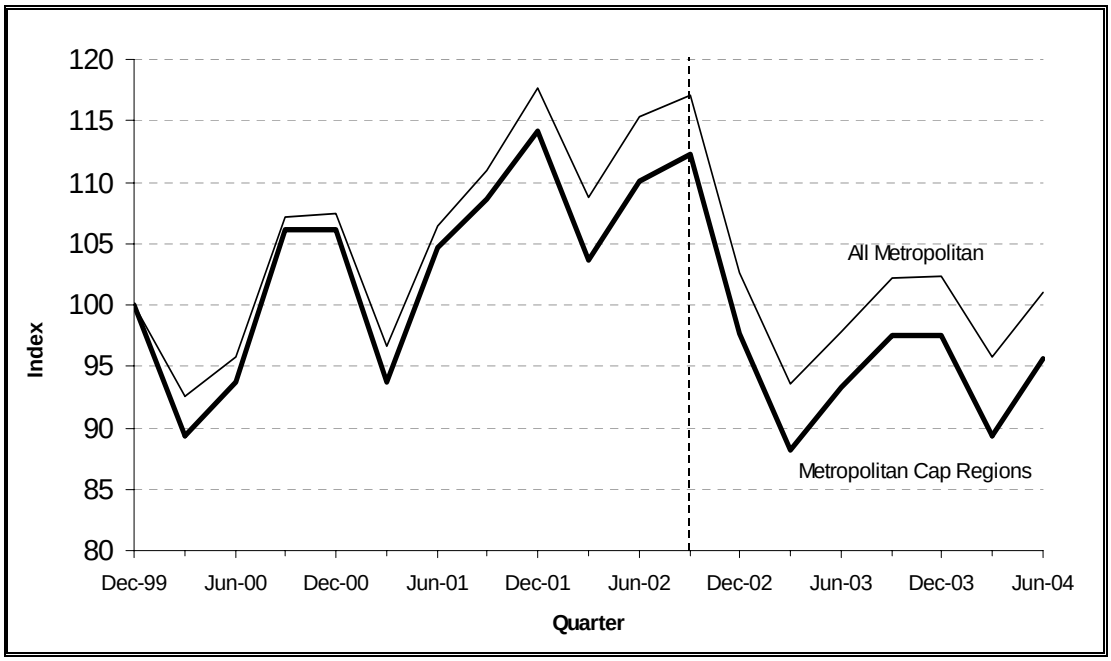
The pattern of gambling expenditure in non-metropolitan Victoria is influenced by a variety of seasonal factors, holiday destinations and the mobility of the population. These issues are considered in more detail in the discussion on the Bass Coast Shire.

Figure 5.1
Index of Average Quarterly Net Gaming Revenue
All Victoria and All Cap Regions: 1999-2004
(Base: Oct–Dec 1999 = 100)



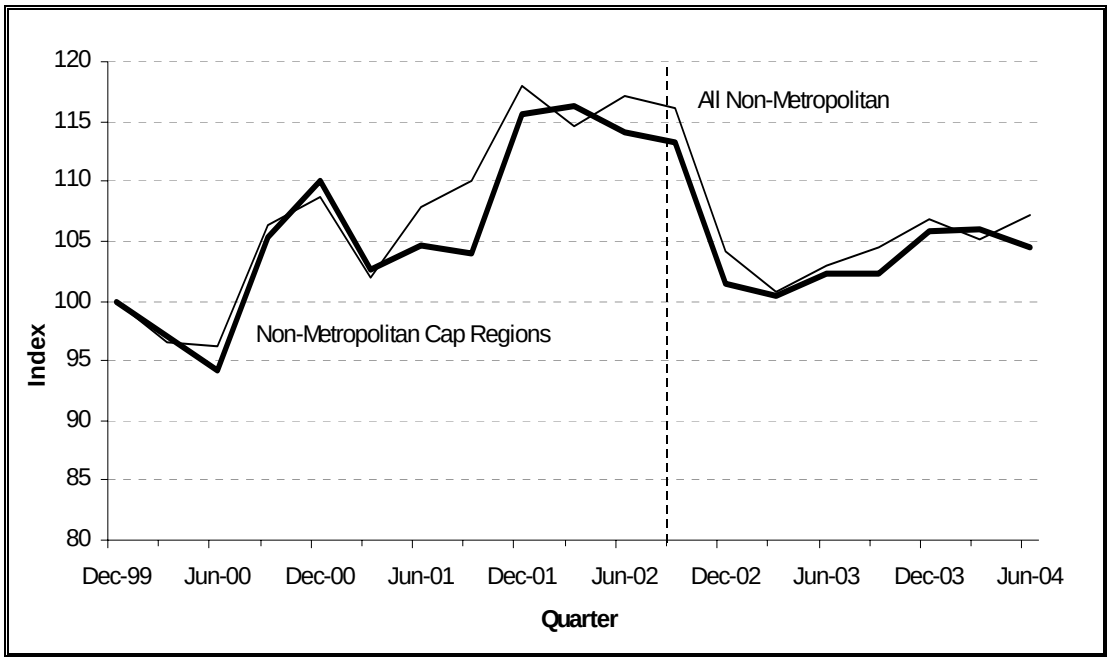
Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.2
Index of Average Quarterly Net Gaming Revenue
Cap Metropolitan to All Metropolitan: 1999-2004
(Base: Oct–Dec 1999 = 100)



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.3
Index of Average Quarterly Net Gaming Revenue
Cap Non-Metropolitan to All Non-Metropolitan: 1999-2004
(Base: Oct–Dec 1999 = 100)



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

5.3.1 Trends in Revenue Per Machine

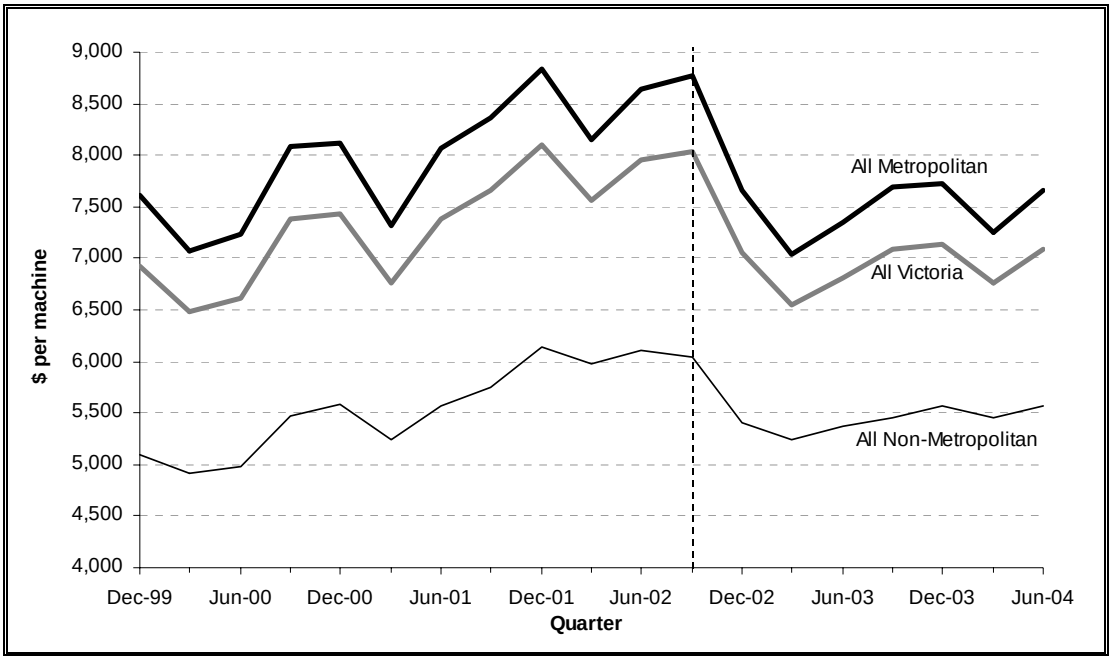
Another possible way to assess whether the cap policy may have contributed to a reduction in problem gambling is to examine whether there had been a statistically significant change in revenue per machine. In this section we examine trends in revenue per machine[46] which will be contrasted with the experience of each of the cap regions in Section 5.4.

Metropolitan regions have consistently provided a higher net gaming revenue per machine than for Victoria as a whole, while non-metropolitan regions have been consistently below the Victorian average as is illustrated in Figure 5.4.

Table 5.3 provides a summary of the average quarterly revenue per machine and number of machines commencing in the December quarter 1999 and concluding in the June quarter 2004. The data is for metropolitan LGAs, non-metropolitan LGAs and for all Victoria. The March quarter is shown as this period includes the first month after the removal of machines is 2002, 2003 and 2004. The long term aggregate trend is that revenue per machine declines over the December to March quarters as shown in Table 5.3 and rises in the June quarter, rising again in the September and December quarters, with the exception of the September to December 2002 quarter following the smoking ban.

[46] Note: the following analysis is based on aggregate revenue and aggregate number of machines in each of the regions and represents the average of all machines, average revenue over three months and the percentage change in revenue and machine numbers for regions and all Victoria.

Figure 5.4
Average Quarterly Net Gaming Revenue per Machine
All Metropolitan, All Non-Metropolitan to All Victoria: 1999-2004



Source: Calculated from data supplied to the researchers by OGR (2004).

The peak in revenue per machine occurred in December 2001 — $8,832 per machine in metropolitan Victoria and $6,140 in non-metropolitan regions. A careful study of the data for the four quarters of 2002 reveals that the two peaks referred to above would have been exceeded by December 2002, except for the introduction of the smoking ban that caused net gaming revenue to decline for the first time ever in the September to December quarter (see Table 5.3).

In metropolitan regions the number of machines increased by 104 in the period December 1999 to June 2004, an increase of 0.5 per cent while the revenue per machine increased by 0.6 per cent. In non-metropolitan regions machine numbers declined by –1.8 per cent while revenue per machine increased by 9.1 per cent. These changes are shown in Table 5.4.

Table 5.5 summarises the change in net gaming revenue and machine numbers for the cap and control regions and all Victoria, all metropolitan and all non-metropolitan regions. The potential impact of the first round of machine removals would be felt in March 2002 and throughout the time period covered here. The time period also captures the impact of the smoking ban commencing in September 2002.

Table 5.3
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Metropolitan, Non-Metropolitan, All Victoria:

Quarter	Metropolitan		Non-Metropolitan		All Victoria	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999						
December	7,616	19,675	5,099	7,510	6,920	27,185
2000						
March	7,072	19,604	4,921	7,507	6,476	27,111
June	7,230	19,835	4,973	7,414	6,616	27,249
September	8,089	19,861	5,478	7,438	7,377	27,299
December	8,117	19,841	5,589	7,446	7,427	27,287
2001						
March	7,322	19,779	5,244	7,439	6,754	27,218
June	8,061	19,784	5,568	7,416	7,381	27,200
September	8,364	19,872	5,748	7,335	7,659	27,207
December	8,832	19,967	6,140	7,358	8,107	27,325
2002						
March	8,158	19,971	5,971	7,355	7,569	27,325
June	8,636	20,000	6,100	7,350	7,955	27,350
September	8,764	20,018	6,047	7,357	8,034	27,375
December	7,666	20,046	5,413	7,363	7,061	27,409
2003						
March	7,038	19,919	5,248	7,350	6,556	27,270
June	7,352	19,922	5,370	7,339	6,818	27,261
September	7,688	19,908	5,447	7,340	7,084	27,248
December	7,720	19,876	5,569	7,350	7,139	27,226
2004						
March	7,257	19,775	5,459	7,372	6,768	27,147
June	7,657	19,779	5,562	7,377	7,088	27,157

Note: Number of machines and revenues is the average of the preceding three months (i.e., October, November and December) recorded as the December quarter.
Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.4
Change in Revenue Per Machine and Machine Numbers
Metropolitan, Non-Metropolitan, All Victoria
December 1999 – June 2004

	Metropolitan (Per cent)	Non-Metropolitan (Per cent)	All Victoria (Per cent)
Percentage Change in Machine Numbers			
December 1999 – June 2004	0.5	-1.8	-0.1
Percentage Change in Revenue			
December 1999 – June 2004	0.6	9.1	2.4

Source: SACES calculations based on OGR data (2004).

Table 5.5
Change in Revenue and Machine Numbers
All Victoria, Metropolitan and Non-Metropolitan, Cap and Control Regions:
March 2002 to June 2004

		Change in Revenue (Per cent)	Change in Machine Numbers (Per cent)
	All Victoria	-6.4	-0.6
	All Metropolitan	-6.1	-1.0
	All Non-Metropolitan	-6.9	0.3
Cap Regions	Greater Dandenong Plus	-8.3	-5.8
	Maribyrnong Plus	-8.1	-10.6
	Darebin Plus	-6.9	0.0
	La Trobe	-3.7	-4.3
	Bass Coast Shire	-23.7	-14.1
Control Regions	Monash Minus	-8.8	0.0
	Hobsons Bay Minus	-8.5	0.0
	Moreland Minus	-6.2	0.0
	Ballarat	3.3	-0.1
	Greater Geelong	-6.9	0.0

Source: SACES calculations based on OGR data (2004).

The first comparison in the period under study is that for all Victoria there was a decline in revenue of –6.4 per cent and a small reduction in machine numbers of –0.6 suggesting that other factors apart from the decline in machine numbers contributed to the fall in revenue. In the 5 control regions there was virtually no reduction in machine numbers, while the change in revenue varied between a 3.3 per cent increase in Ballarat to a fall of –8.8 per cent in Monash Minus. Again, this suggests other factors are important. For the cap regions, the change in machine numbers varied: no change in Darebin Plus but revenue fell by –6.9 per cent, machine numbers fell by –10.6 per cent in Maribyrnong Plus and revenue declined by –8.1 per cent; and Bass Coast Shire the change in machine numbers was –14.1 per cent and the fall in revenue was –23.7 per cent.

Compared to all metropolitan areas change in revenue of –6.1 per cent, all metropolitan cap and control regions exceeded this figure (range: -6.2 to –8.8) but did so whether or not they lost machines. This reinforces our view that other factors were more important than the reduction in machine numbers.

5.3.2 Impact of Reduction in Opening Hours

An additional change that occurred during the phased removal of machines was that 25 venues in the cap regions were required to cease 24 hour trading. All 25 venues were in the cap regions of Greater Dandenong Plus, Maribyrnong Plus and Darebin Plus. While this change is unlikely to have had an impact on the extent of problem gambling we report the change in net gaming revenue and revenue per machine following the reduction in trading hours. These 25 venues in the three regions ceased 24 hour trading, reducing to 20 hours, and nineteen venues did so after February 2002. Table 5.6 shows the gross impact (i.e., incorporates smoking ban for

those hotels that reduced hours after the introduction of the ban) with no net change in machine numbers. The "actual" month (Col. 1) refers to the month in which the reduction in hours took place relative to the previous month and the "following" month (Col 2) refers to the month after the changes took place. The last column refers to exactly one year after the change.

Table 5.6
Reduction in Trading Hours: Average Change in Net Gaming Revenue

	Actual Month (Per cent)	Following Month (Per cent)	One Year On (Per cent)
Change in NGR	-1.5	-6.6	-11.1
Change in NGR per Machine	-1.3	-6.7	-9.7

Source: SACES calculations based on OGR data (2004).

In the actual month in which the reduction occurred, 16 of the 25 venues experienced a decline in revenue and nine experienced an increase in revenue. For all 25 hotels, the average change in net gaming revenue was a decline of –1.5 per cent. By the end of the following month, the average decline in revenue was –6.6 per cent (19 hotels declined, 6 increased revenue) and one year on, the average reduction in net gaming revenue was –11.1 per cent (18 hotels declined, 7 increased revenue). On a per machine basis, revenue had declined by an average of almost 10 per cent (from $10,497 to $9,476 per machine) one year on from the reduction in trading hours. It is clear that the removal of 24 hour gaming did reduce gaming expenditure at the affected venues. It is not possible to determine whether the reduction in hours impacted more on the committed gambler or the recreational gambler.

5.4 Assessment of the Cap and Control Regions

In this section we discuss the comparison of gaming trends in each of the five cap and control regions. The similarity to be observed in the data and figures confirms the researchers original selection of appropriate matched control groups, with the exception of Bass Coast Shire and Greater Geelong, where the former displays somewhat of a "counter cyclical" pattern. The reasons for this are considered in the section headed Bass Coast Shire.

In what follows, the data and analysis for each of the cap and the matched control groups is presented using average quarterly data for net gaming revenue, revenue per machine and number of machines.

In each of the regions there are presented two figures and one table. The "Index of Net Gaming Revenue" plots the trend in total revenue from December 1999 quarter to June 2004 quarter. The base value is set to an index value of 100 (October – December 1999) and each successive quarter measures the change over time.[47] The second figure, showing Net Gaming Revenue Per Machine illustrates the change over time on a dollar per machine basis.

[47] Index or percentage relative: current value divided by base value x 100.

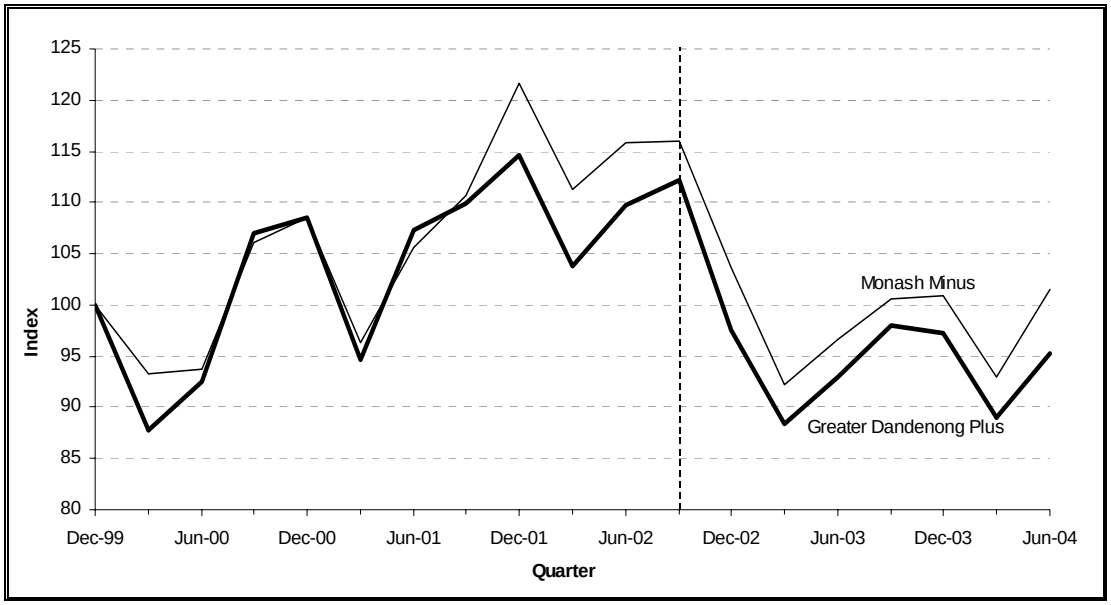
5.4.1 Cap Region: Greater Dandenong Plus

The cap region is Greater Dandenong Plus matched to the control region of Monash Minus. Greater Dandenong Plus lost 147 machines to achieve the target number of 1,540 while the Monash Minus remained at 918 machines for the entire period. Net gaming revenue in Greater Dandenong Plus and its comparison region of Monash Minus track each other closely with the only notable difference being the surge in revenue in Monash Minus in December 2001 (see Figure 5.5).

The baseline comparison is to recall that total net gaming revenue for all metropolitan Victoria declined by –6.1 per cent in the period March 2002 to June 2004. Comparatively, Greater Dandenong Plus and Monash Minus experienced a decline of –8.3 per cent and –8.8 per cent respectively over the same period. The decline in machine numbers was –5.8 per cent and zero respectively. As Figure 5.6 illustrates, revenue per machine increased in Greater Dandenong Plus so that it exceeded that for Monash Minus from September 2002 and thereafter. This implies that the number of machines lost (-5.8 per cent) was higher than the net gaming revenue lost per machine (-2.6 per cent: March 2002 to June 2004), which indicates that the remaining machines were used more intensively.

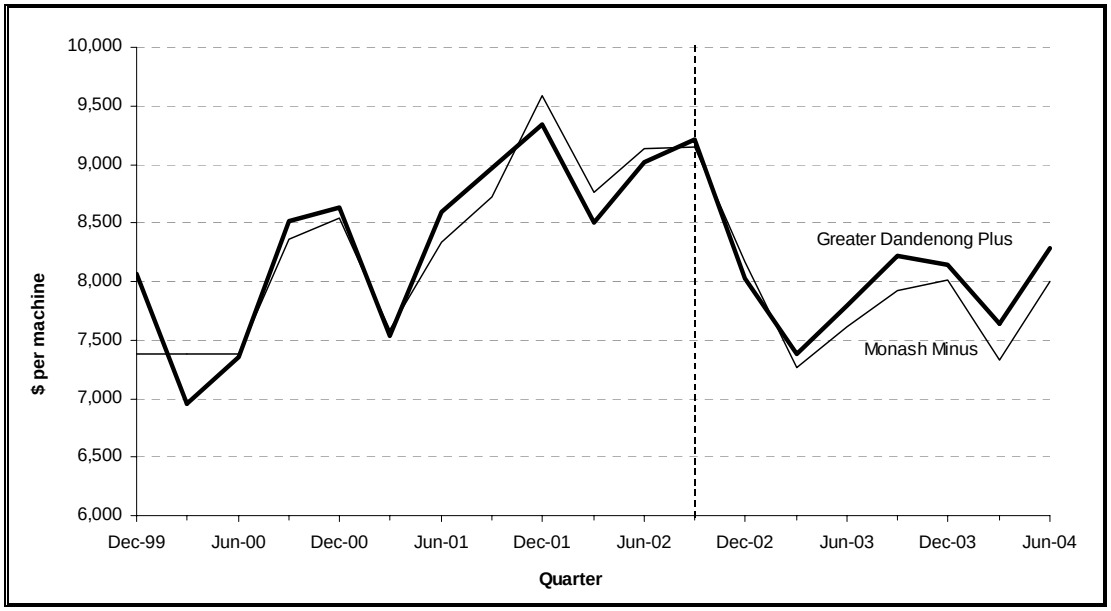
The fact that revenue declined in both regions in the period under study, and did so whether or not there was a change in machine numbers — in Monash Minus machine numbers remained constant but NGR fell more significantly than in Greater Dandenong Plus — confirms to us that other factors were more important than the reduction in machine numbers. It is obvious that the remaining machines were used more intensively in the cap region.

Figure 5.5
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Greater Dandenong Plus and Monash Minus



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.6
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Greater Dandenong Plus and Monash Minus



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.7
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Greater Dandenong Plus and Monash Minus

Quarter	Greater Dandenong Plus		Monash Minus	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	8,062	1,661	7,384	921
2000				
March	6,952	1,692	7,384	920
June	7,357	1,684	7,384	918
September	8,521	1,682	8,367	918
December	8,634	1,683	8,548	918
2001				
March	7,538	1,682	7,590	918
June	8,593	1,672	8,330	918
September	8,969	1,642	8,717	918
December	9,347	1,642	9,587	918
2002				
March	8,508	1,635	8,766	918
June	9,015	1,631	9,130	918
September	9,208	1,632	9,148	918
December	8,021	1,629	8,167	918
2003				
March	7,375	1,605	7,267	918
June	7,789	1,599	7,618	918
September	8,222	1,597	7,927	918
December	8,142	1,598	8,012	918
2004				
March	7,640	1,559	7,329	918
June	8,286	1,540	7,996	918

Source: Calculated from data supplied to the researchers by OGR (2004).

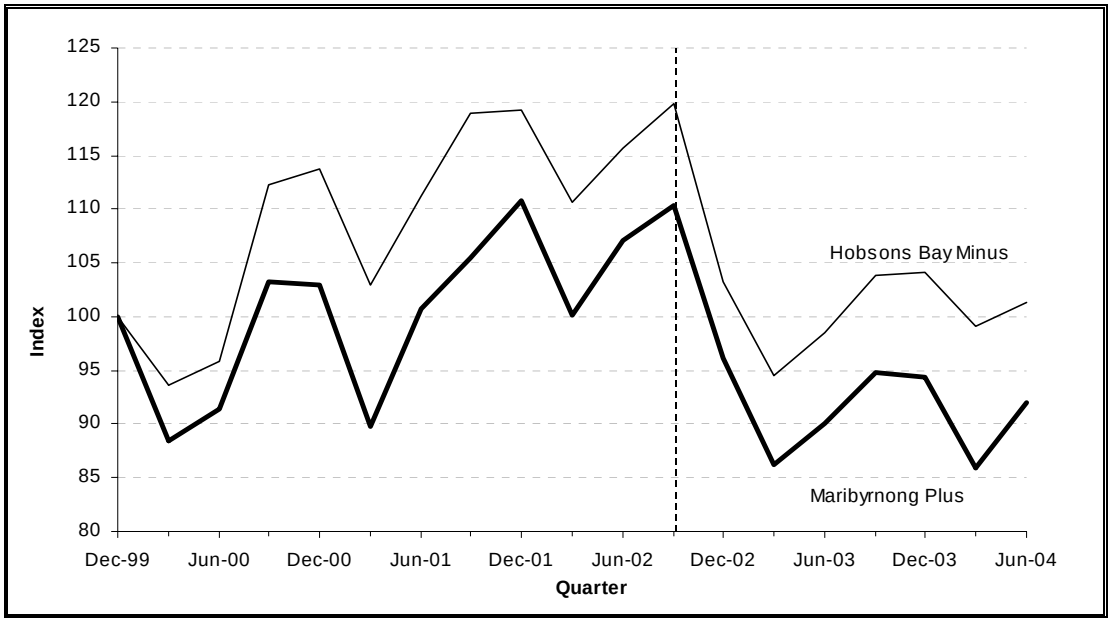
5.4.2 Cap Region: Maribyrnong Plus

The cap region is Maribyrnong Plus matched to the control region of Hobsons Bay Minus. The index of net gaming revenue summarised in Figure 5.7 for both areas under study illustrates the same trend with the distinguishing features that the troughs in the December to March quarters are "deeper" for Maribyrnong Plus than the control regions and the impact of the smoking ban was felt more strongly in Hobsons Bay Minus.

The baseline comparison is to recall that total net gaming revenue for all metropolitan Victoria declined by –6.1 per cent in the period March 2002 to June 2004. Comparatively, Maribyrnong Plus and Hobsons Bay Minus experienced a decline of –8.1 per cent and –8.5 per cent respectively over the same period. The decline in machine numbers was –10.0 per cent and zero respectively. As Figure 5.8 illustrates, revenue per machine increased in Maribyrnong Plus so that it consistently exceeded that for Hobsons Bay Minus from September 2002 and thereafter. This implies that the number of machines lost (-10.0 per cent) was higher than the net gaming revenue lost per machine. In fact, in Maribyrnong Pus revenue per machine actually increased by 2.1 per cent from March 2002 to June 2004, confirming that the remaining machines were used more intensively.

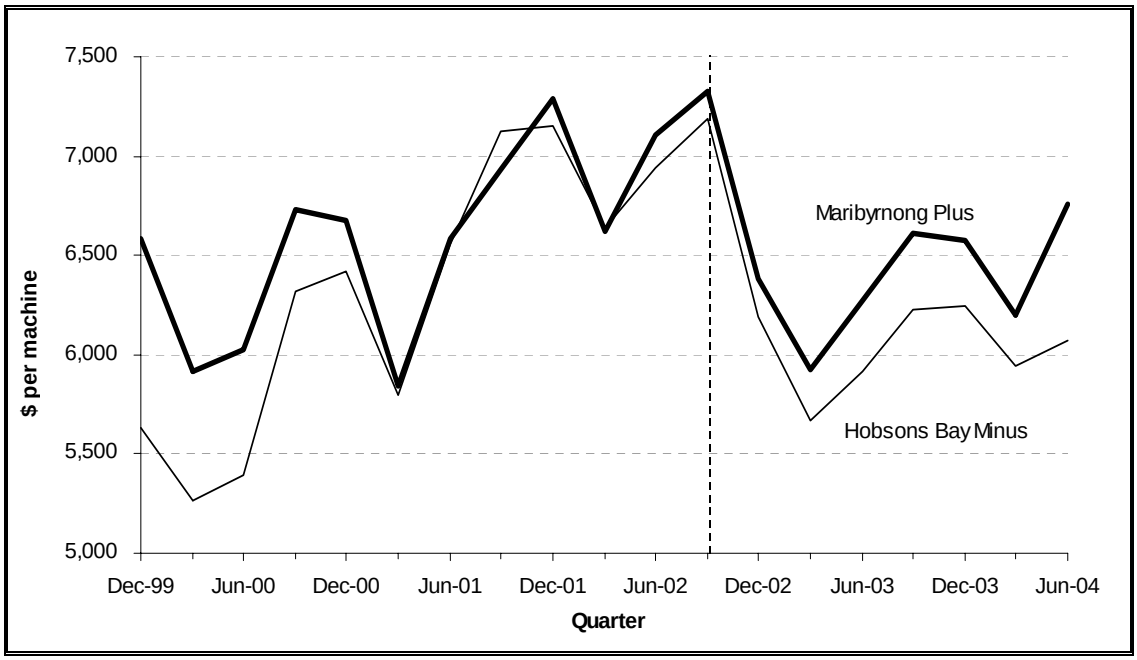
Once again, in the control region machine numbers remained constant while in the cap region they declined, yet NGR fell by more in the control region of Hobsons Bay Minus. It would again appear that other factors were more important than the reduction in machine numbers.

Figure 5.7
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Maribyrnong Plus and Hobsons Bay Minus



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.8
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Maribyrnong Plus and Hobsons Bay Minus



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.8
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Maribyrnong Plus and Hobsons Bay Minus

Quarter	Maribyrnong Plus		Hobsons Bay Minus	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	6,581	1,308	5,628	552
2000				
March	5,916	1,287	5,265	552
June	6,025	1,302	5,393	552
September	6,732	1,329	6,316	552
December	6,676	1,327	6,415	551
2001				
March	5,838	1,323	5,794	552
June	6,581	1,317	6,556	527
September	6,929	1,309	7,126	518
December	7,288	1,309	7,150	518
2002				
March	6,619	1,302	6,638	518
June	7,105	1,297	6,938	518
September	7,330	1,296	7,188	518
December	6,380	1,297	6,189	518
2003				
March	5,921	1,253	5,668	518
June	6,276	1,234	5,919	517
September	6,609	1,234	6,232	518
December	6,575	1,235	6,248	518
2004				
March	6,201	1,193	5,945	518
June	6,755	1,172	6,073	518

Source: Calculated from data supplied to the researchers by OGR (2004).

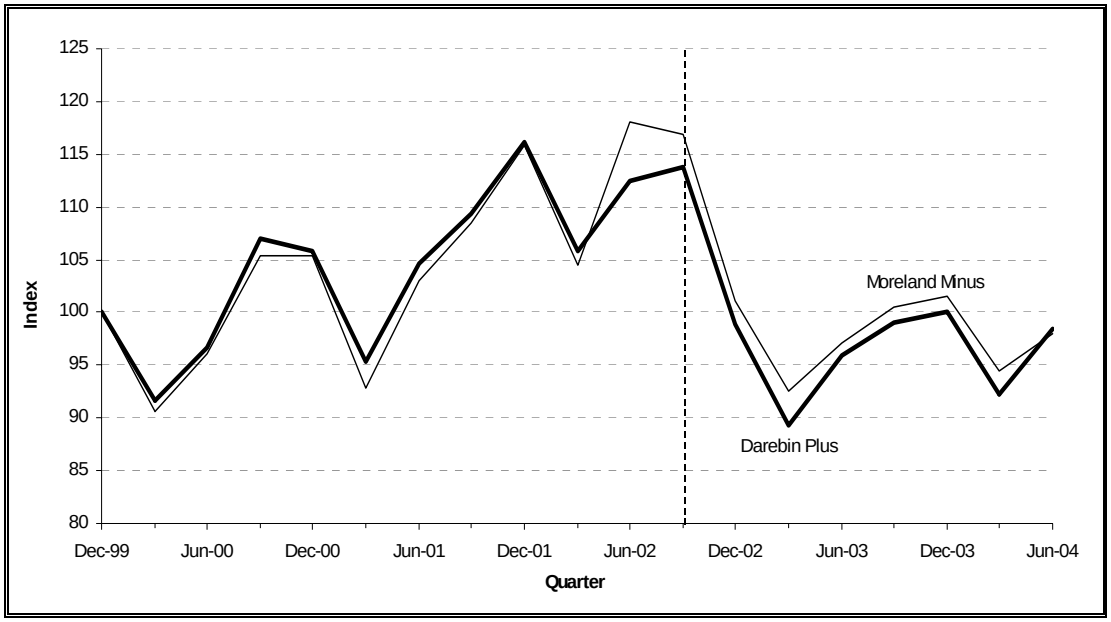
5.4.3 Cap Region: Darebin Plus

The cap region is Darebin Plus matched to the control region of Moreland Minus. Figure 5.9, the index of net gaming revenue in the cap region of Darebin Plus and its control region of Moreland Minus illustrates similar trends in expenditure over time.

The baseline comparison is to recall that total net gaming revenue for all metropolitan Victoria declined by –6.1 per cent in the period March 2002 to June 2004. Comparatively, Darebin Plus and Moreland Minus experienced a decline of –6.9 per cent and –6.2 per cent respectively over the same period. There was no change in machine numbers in this period. As Figure 5.10 illustrates revenue per machine declined in both Darebin Plus and Moreland Minus from March 2002 to June 2004. In both the cap and control regions where machine numbers were unchanged the most significant impact was the smoking ban as shown in Figure 5.10. In Darebin Plus revenue per machine declined by –13.5 per cent and in Moreland Minus by –16.9 per cent following the smoking ban and out to June 2004.

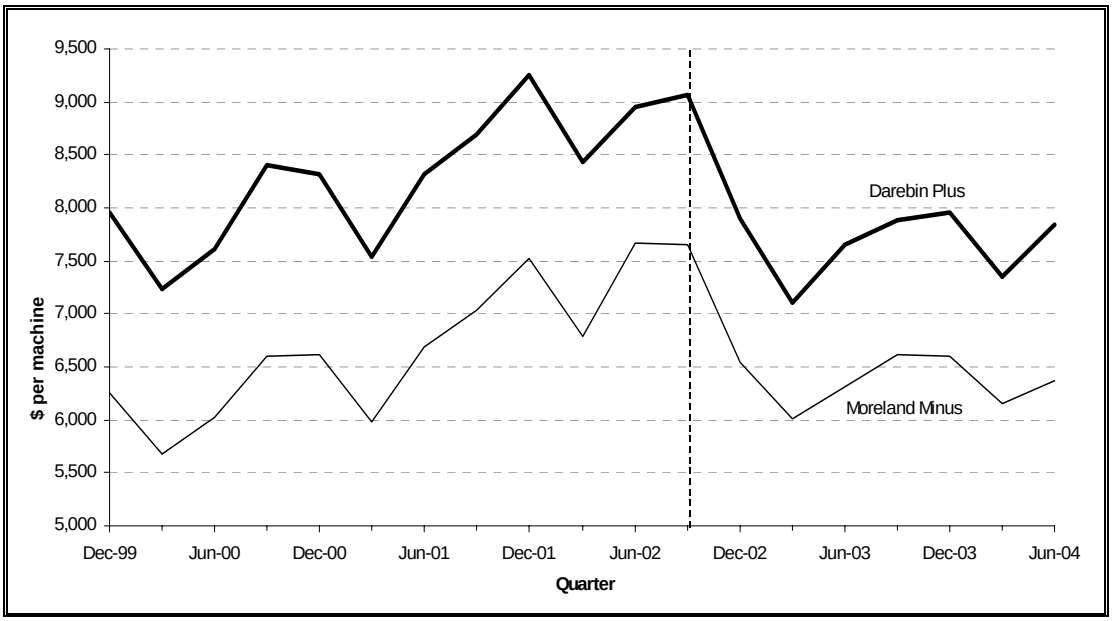
In summary, in the cap region of Darebin Plus, with no change in machine numbers, revenue declined most sharply following the introduction of the smoking ban as was also the situation in the control region of Moreland Minus.

Figure 5.9
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Darebin Plus and Moreland Minus



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.10
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Darebin Plus and Moreland Minus



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.9
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Darebin Plus and Moreland Minus

Quarter	Darebin Plus		Moreland Minus	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	7,962	1,533	6,253	569
2000				
March	7,231	1,548	5,675	568
June	7,613	1,549	6,022	568
September	8,406	1,554	6,606	568
December	8,318	1,553	6,621	566
2001				
March	7,544	1,543	5,974	553
June	8,324	1,535	6,686	548
September	8,697	1,534	7,037	548
December	9,259	1,530	7,526	548
2002				
March	8,430	1,532	6,789	548
June	8,957	1,532	7,671	548
September	9,069	1,532	7,660	545
December	7,893	1,529	6,548	548
2003				
March	7,106	1,533	6,012	548
June	7,649	1,531	6,311	548
September	7,891	1,532	6,617	544
December	7,963	1,534	6,597	548
2004				
March	7,350	1,531	6,148	547
June	7,846	1,532	6,367	548

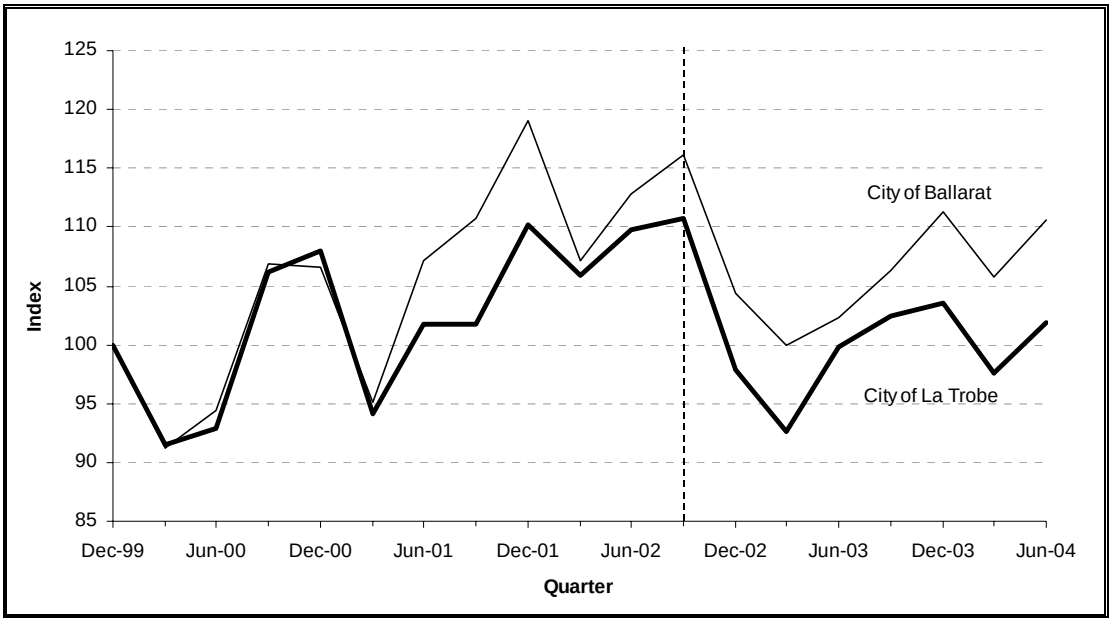
Source: Calculated from data supplied to the researchers by OGR (2004).

5.4.4 Cap Region: City of La Trobe

The cap region is the City of La Trobe, matched to Ballarat, which are both non-metropolitan regions in Victoria. One of the distinguishing features of both the City of La Trobe and Ballarat is that the decline in net gaming revenue following the smoking ban was relatively small — -4.1 and –4.6 respectively, although none the less significant (see Figure 5.11).

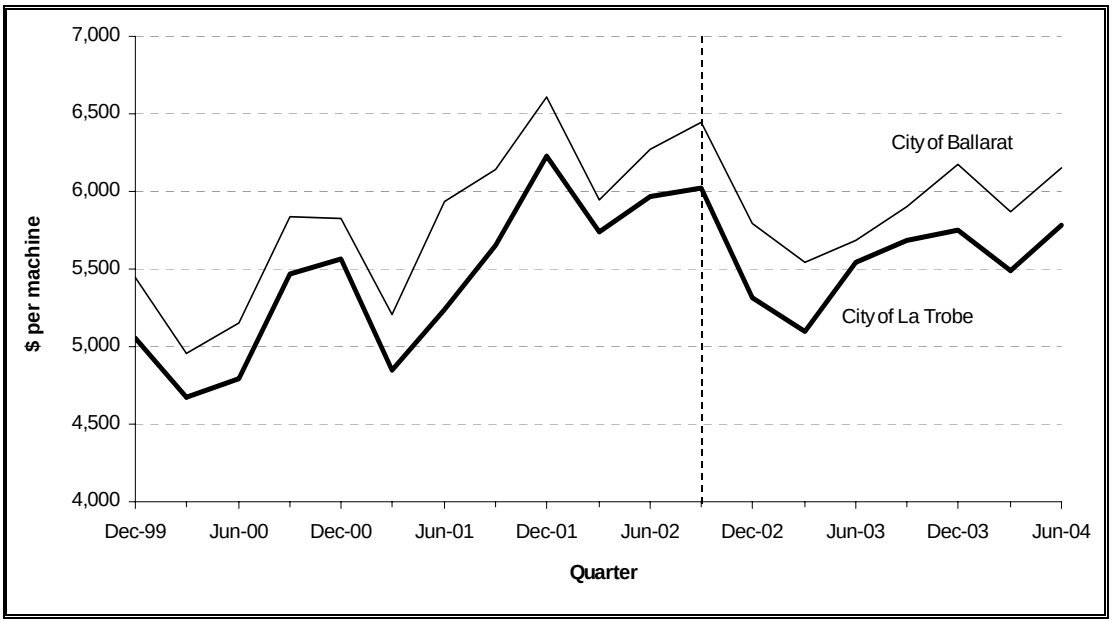
The baseline comparison is to recall that total net gaming revenue for all non-metropolitan Victoria declined by –6.9 per cent in the period March 2002 to June 2004. Comparatively, the City of La Trobe experienced a decline of –3.7 per cent while total net gaming revenue in Ballarat actually increased by 3.3 per cent. The decline in machine numbers was –4.3 per cent and 0.1 respectively. As Figure 5.12 illustrates revenue per machine in both regions is rapidly approaching the pre-smoking ban levels. The number of machines withdrawn (-4.3 per cent) was higher than the net gaming revenue lost per machine (0.6 per cent: March 2002 to June 2004), which indicates that the remaining machines were used more intensively.

Figure 5.11
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
City of La Trobe and City of Ballarat



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.12
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
City of La Trobe and City of Ballarat



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.10
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
City of La Trobe and City of Ballarat

Quarter	City of La Trobe		City of Ballarat	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	5,056	675	5,442	687
2000				
March	4,674	668	4,952	689
June	4,795	661	5,156	685
September	5,462	663	5,842	684
December	5,562	663	5,827	684
2001				
March	4,844	663	5,207	684
June	5,236	663	5,930	676
September	5,650	614	6,143	674
December	6,226	604	6,608	674
2002				
March	5,741	629	5,945	674
June	5,694	628	6,273	673
September	6,021	628	6,446	674
December	5,321	628	5,793	674
2003				
March	5,099	619	5,548	674
June	5,539	615	5,680	674
September	5,689	614	5,901	674
December	5,750	615	6,179	674
2004				
March	5,490	606	5,871	674
June	5,778	602	6,149	673

Source: Calculated from data supplied to the researchers by OGR (2004).

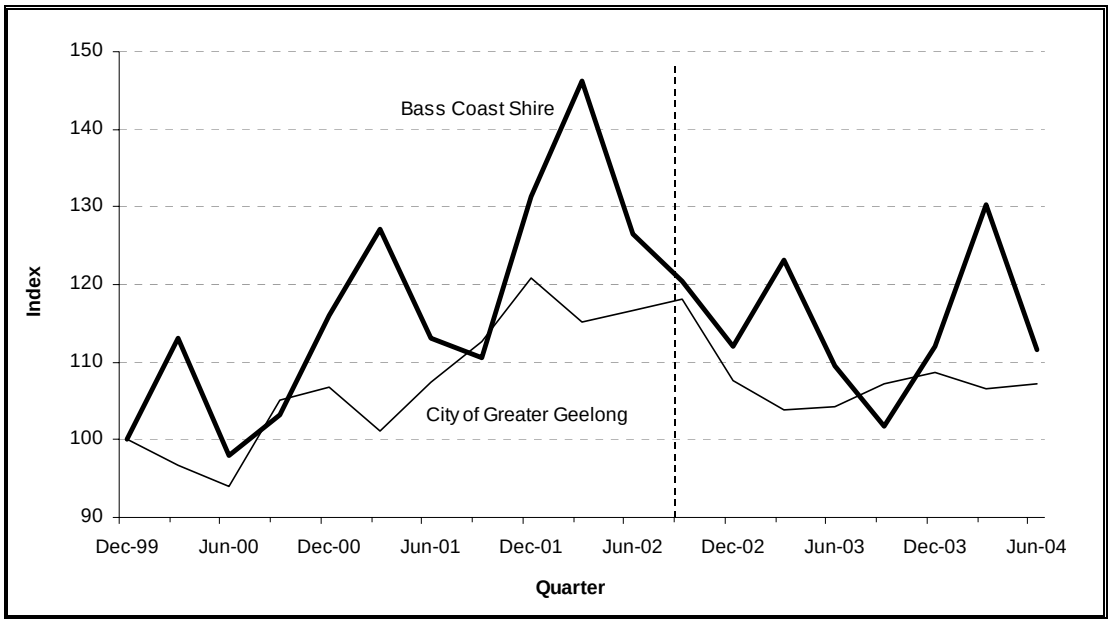
5.4.5 Cap Region: Bass Coast Shire

The cap region of Bass Coast Shire matched to Greater Geelong which are both non-metropolitan regions of Victoria. As indicated earlier, there was a potential concern in matching Bass Coast Shire with the City of Greater Geelong as they are regions of very different population size and Bass Coast has a more seasonal employment pattern which suggested that expenditure patterns may be more variable. The two regions actually provide an interesting contrast in expenditure patterns because they differ as holiday destinations. The Bass Coast Shire provides an insight into the impact of tourism on participation in electronic gaming machine gambling. The Bass Coast region including the very popular summer, beachside holiday location of Phillip Island and Venus Bay areas receives a considerable number of holidaymakers in the December-February period. The resident population of Bass Coast was 24,075 in the 2001 Census. However the Shire is characterised by 50 per cent of its housing being non-permanently occupied. When all holiday accommodation in the Shire is occupied, the area's population triples to some 60,000 persons. What can be observed in Figure 5.13 is that the peaks for net gaming revenue occur in each of the first quarters (January-March) in contrast to the less popular tourist destination of Greater Geelong. The exodus of holidaymakers then leads to decline in net gaming revenue in the second quarter (April-June) of each year, creating a rather unique pattern of peaks and throughs, indicating a high seasonal influence on a more volatile pattern of gaming revenue.

Venues in Bass Coast Shire removed in total 8, 16 and 17 machines in February 2002, February 2003 and February 2004 respectively. The size of venues were generally smaller than those in the control group. Net gaming revenue fell in each subsequent period following the machine removal, however the end of holiday season in Bass Coast and therefore exodus of gamblers from this tourist area could readily explain the fall in revenue.

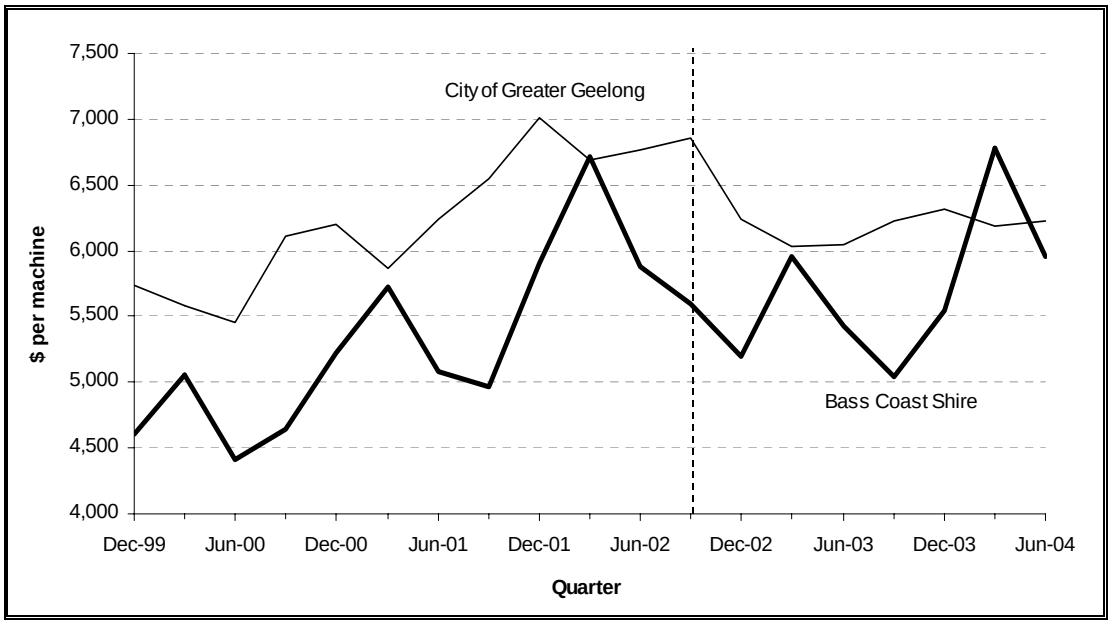
The baseline comparison is to recall that total net gaming revenue for all non-metropolitan Victoria declined by –6.9 per cent in the period March 2002 to June 2004. Comparatively, Bass Coast Shire and Greater Geelong experienced a decline of –23.7 per cent and –6.9 per cent respectively over the same period. The decline in machine numbers was –14.1 per cent and zero respectively. As Figure 5.14 illustrates revenue per machine increases quite strongly in the Bass Coast Shire over each successive March quarter, highlighting the impact of seasonal tourism. With a reduction of 41 machines, in the whole time that Greater Geelong remained stable at 1,392 machines, gaming revenue per machine exceeded that for Greater Geelong by March 2004 (see Table 5.11 and Figure 5.14) so that the remaining machines were used more intensively.

Figure 5.13
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Bass Coast Shire and City of Greater Geelong



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.14
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Bass Coast Shire and City of Greater Geelong



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.11
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Bass Coast Shire and City of Greater Geelong

Quarter	Bass Coast Shire		City of Greater Geelong	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	4,608	255	5,731	1,410
2000				
March	5,052	263	5,585	1,400
June	4,409	261	5,451	1,395
September	4,649	261	6,116	1,390
December	5,221	261	6,200	1,392
2001				
March	5,727	260	5,871	1,392
June	5,083	261	6,241	1,392
September	4,971	261	6,545	1,392
December	5,904	261	7,015	1,392
2002				
March	6,713	256	6,684	1,392
June	5,873	253	6,769	1,392
September	5,591	253	6,854	1,392
December	5,201	253	6,240	1,393
2003				
March	5,961	242	6,027	1,392
June	5,425	237	6,051	1,394
September	5,042	237	6,225	1,392
December	5,550	237	6,314	1,392
2004				
March	6,779	226	6,185	1,391
June	5,956	220	6,224	1,391

Source: Calculated from data supplied to the researchers by OGR (2004).

5.5 Assessment of the Cap and the Leakage Points

The researchers noted in setting out the methodology for this study that implementation of the caps policy may induce diversionary expenditure, intra-regionally and inter-regionally and that, *a priori* the direction and extent of revenue flows cannot be predicted. For this reason, the study identified likely spillover regions for the three metropolitan cap areas. The researchers identified the three "leakage points" or localities/venues as shown in Appendix 3, Tables A3.11 to A3.13 which were constructed from those venues in close proximity to the three cap regions of Greater Dandenong Plus, Maribyrnong Plus and Darebin Plus. The main purpose for the "leakage point" construction was to recognise any possible shift in gambling activities away from venues that fall into the cap regions to the venues that were in close proximity but not under the cap legislation, as gamblers might be more willing to attend venues that are not too crowded. It was not only gamblers who might move. Venues lying approximate, but just outside cap regions, were accessible to the operators to increase the number of machines in these venues (subject to constraints) in a manner which may have been attractive to gamblers (i.e., reduce waiting or queuing times).

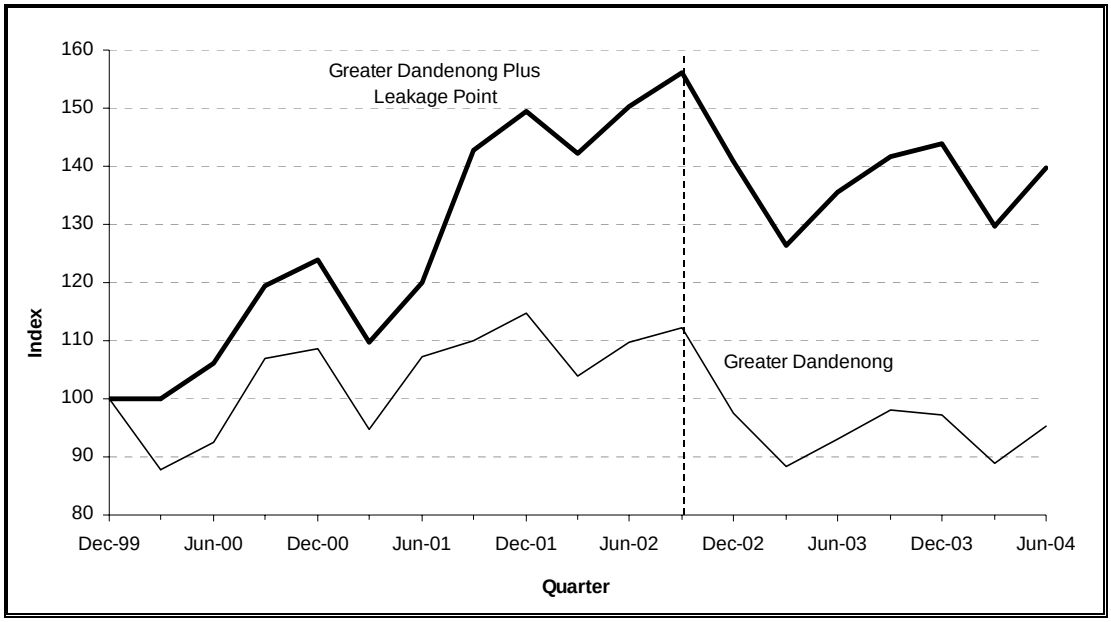
Comparison between the three caps regions, Greater Dandenong Plus, Maribyrnong Plus and Darebin Plus, and their respective leakage points constructed by the Centre reveals that the average quarterly net gaming revenue in leakage points follows the trend observed in caps regions with troughs and peaks being reached approximately at the same time. However, the divergence/convergence of average quarterly net gaming expenditure between caps regions and their leakage points differs from cap to cap area.

5.5.1 Greater Dandenong Plus and Leakage Point

There are 8 gaming venues in close proximity to the border of Greater Dandenong Plus that were identified by the researchers as potential leakage points (Table A3.11). It is interesting to note that the number of machines declined by 40 in Greater Dandenong Plus commencing in March 2001 only to then increase by 39 in venues in the leakage point in the September (27 machines) and December 2001 (12 machines) quarters. A comparison of venues in the cap region and venues in the leakage point reveals a divergence in net gaming revenue commencing in the third quarter of 2001 at the time machines were located in venues in the leakage point.

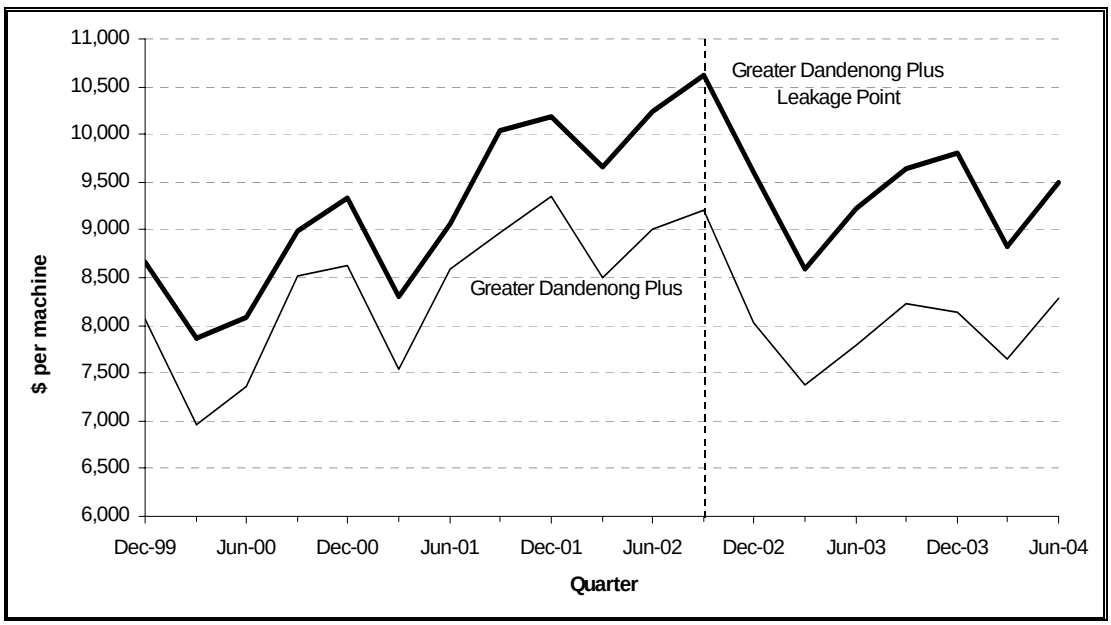
However, there is no evidence to suggest that the caps affected gaming expenditure in either the cap or the control region. In fact as machine numbers decline by –2.4 per cent in 2001, revenue per machine in Greater Dandenong Plus increased by 24 per cent; in comparison, revenues increased by 23 per cent in the control region with an increase in machine numbers in the order of 10.7 per cent. In both regions it appears that machines were used more intensively, and at a later date, only the ban on smoking had a moderating impact on expenditure. We test to verify this conclusion in Section 6.

Figure 5.15
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Greater Dandenong Plus and Leakage Point



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.16
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Greater Dandenong Plus and Leakage Point



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.12
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Greater Dandenong Plus and Leakage Point

Quarter	Greater Dandenong Plus		Greater Dandenong: Leakage Point	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	8,062	1,661	8,657	318
2000				
March	6,952	1,692	7,857	351
June	7,357	1,684	8,087	361
September	8,521	1,682	8,996	366
December	8,634	1,683	8,341	365
2001				
March	7,538	1,682	8,294	365
June	8,593	1,672	9,069	365
September	8,969	1,642	10,045	392
December	9,347	1,642	10,188	404
2002				
March	8,508	1,635	9,661	405
June	9,015	1,631	10,234	405
September	9,208	1,632	10,616	405
December	8,021	1,629	9,598	405
2003				
March	7,375	1,605	8,589	406
June	7,789	1,599	9,219	405
September	8,222	1,597	9,644	405
December	8,142	1,598	9,796	405
2004				
March	7,640	1,559	8,830	405
June	8,286	1,540	9,504	405

Source: Calculated from data supplied to the researchers by OGR (2004).

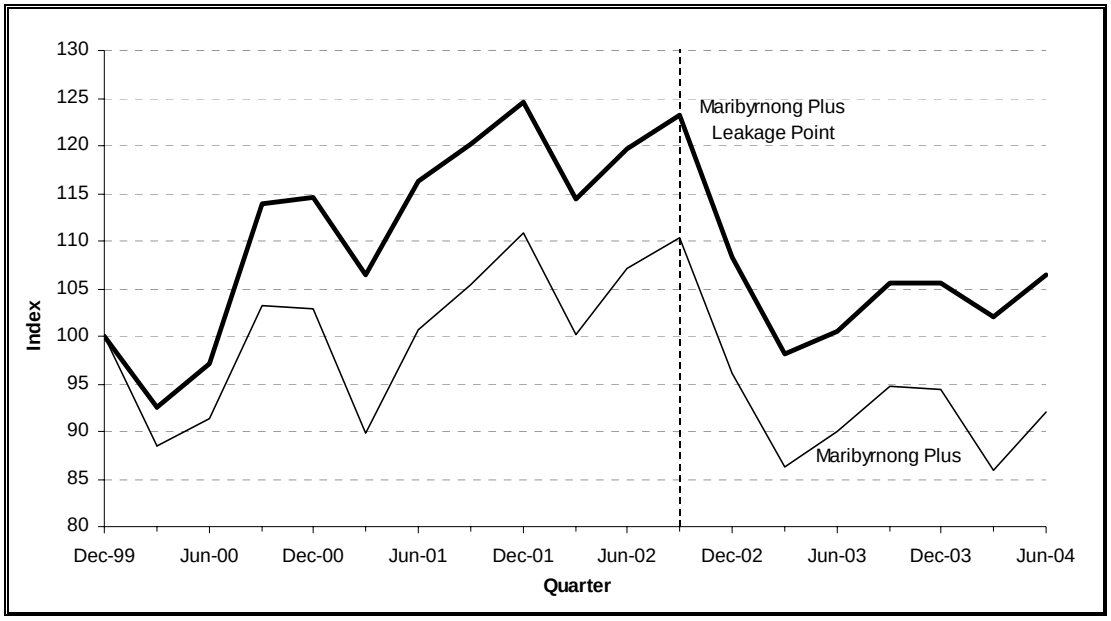
5.5.2 Maribyrnong Plus and Leakage Point

For the leakage points in close proximity to Maribyrnong Plus there was no change in either the number of venues or the number of machines prior to or after the withdrawal process. Machine numbers remained at 515 located in 8 venues.

From the baseline month of June 2000 to June 2004 total revenue increased in Maribyrnong Plus by 0.6 per cent and revenue per machine by 12.1 per cent. The number of machines declined from 1,684 to 1,540 in this period, a decline of –8.6 per cent. In contrast, while the number of machines remained constant in the eight venues comprising the leakage point, total revenue increased by 9.7 per cent and revenue per machine also by 9.7 per cent. In both areas it therefore appears that machines were used more intensively with only the smoking bans having any moderating impact on net gaming revenue. Again, we find no evidence in the data presented here (or at the individual venue level) that regional caps reduced the level of gaming expenditure in the

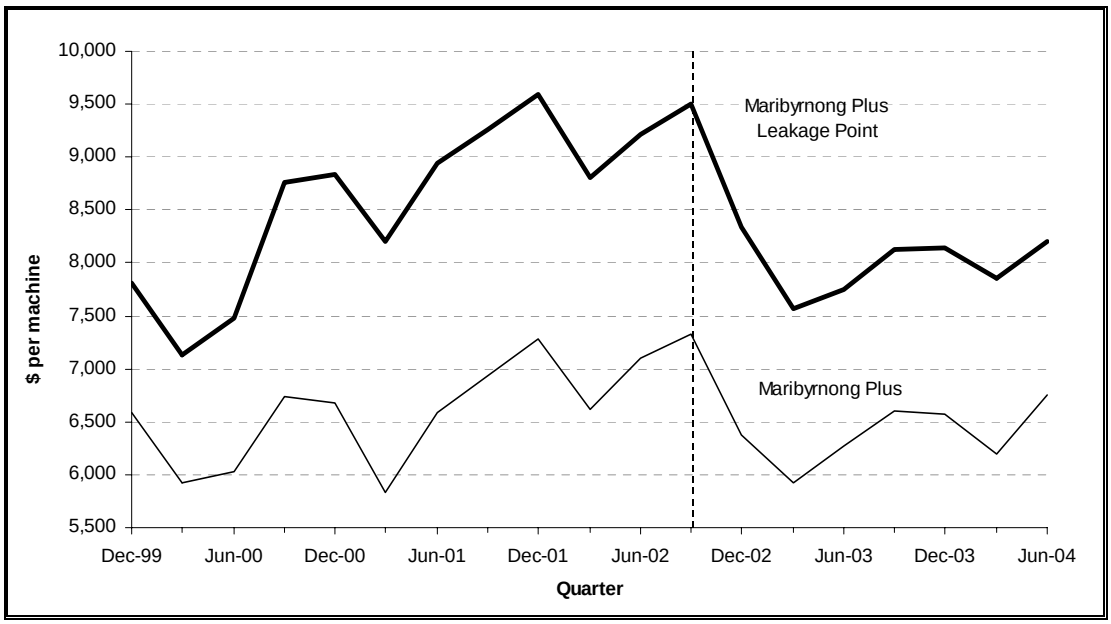
cap regions and no evidence that the caps affected gaming expenditure in the leakage regions. We test to verify this conclusion in Section 6.

Figure 5.17
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Maribyrnong Plus and Leakage Point



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.18
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Maribyrnong Plus and Leakage Point



Source: Calculated from data supplied to the researchers by OGR (2004).

Table 5.13
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Maribyrnong Plus and Leakage Point

Quarter	Maribyrnong Plus		Maribyrnong Plus: Leakage Point	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	6,581	1,308	7,817	507
2000				
March	5,916	1,287	7,133	515
June	6,025	1,306	7,479	515
September	6,732	1,320	8,766	515
December	6,676	1,327	8,835	515
2001				
March	5,838	1,323	8,203	515
June	6,581	1,317	8,947	515
September	6,929	1,309	9,260	515
December	7,288	1,309	9,590	515
2002				
March	6,619	1,302	8,813	515
June	7,105	1,297	9,215	515
September	7,330	1,296	9,495	515
December	6,380	1,297	8,340	515
2003				
March	5,921	1,253	7,563	515
June	6,276	1,234	7,745	515
September	6,609	1,234	8,126	515
December	6,575	1,235	8,137	514
2004				
March	6,201	1,193	7,855	515
June	6,755	1,172	8,200	515

Source: Calculated from data supplied to the researchers by OGR (2004).

5.5.3 Darebin Plus and Leakage Point

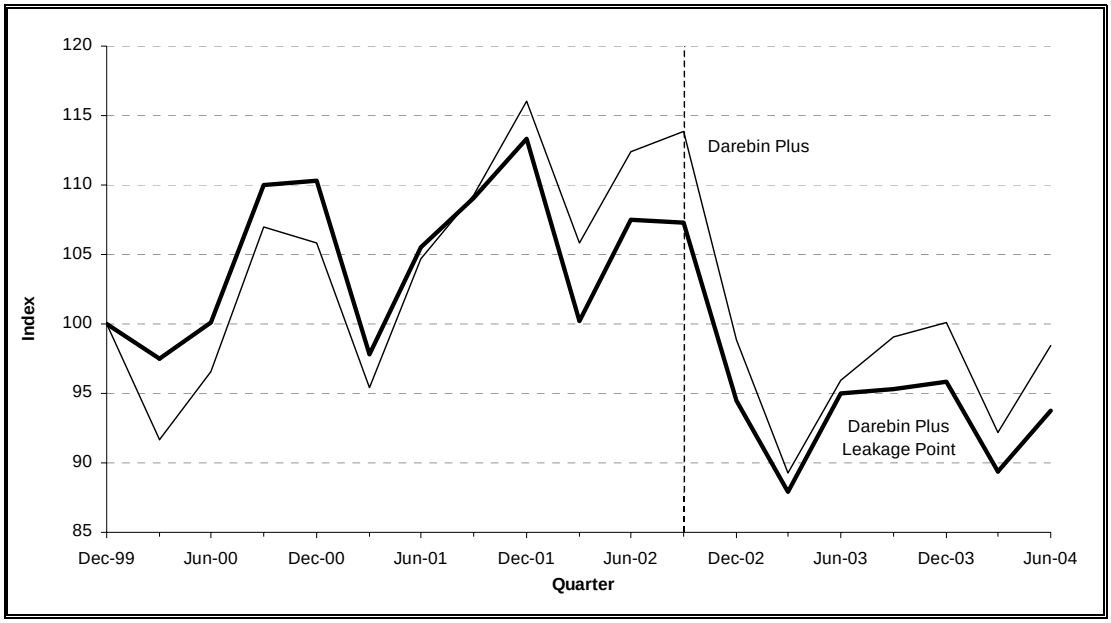
There was no change in the number of machines in Darebin Plus and its corresponding leakage point between February 2002 and February 2004.

In the leakage point there were 5 venues with 286 machines. The 21 machines that were removed from Darebin Plus were removed between December 2000 and December 2001, so both Darebin Plus and the leakage point maintained a stable regime of machine numbers and venues.

There were virtually similar impacts of the smoking ban and changes in revenue over time. In regard to the smoking ban, revenue declined in Darebin Plus by –13.5 per cent and the leakage point by –12.6 per cent respectively (September 2002 to June 2004). With an unchanged number of machines total revenue declined in the caps withdrawal phase in Darebin Plus by –6.9 per cent and the leakage point by –6.5 per cent; revenue per

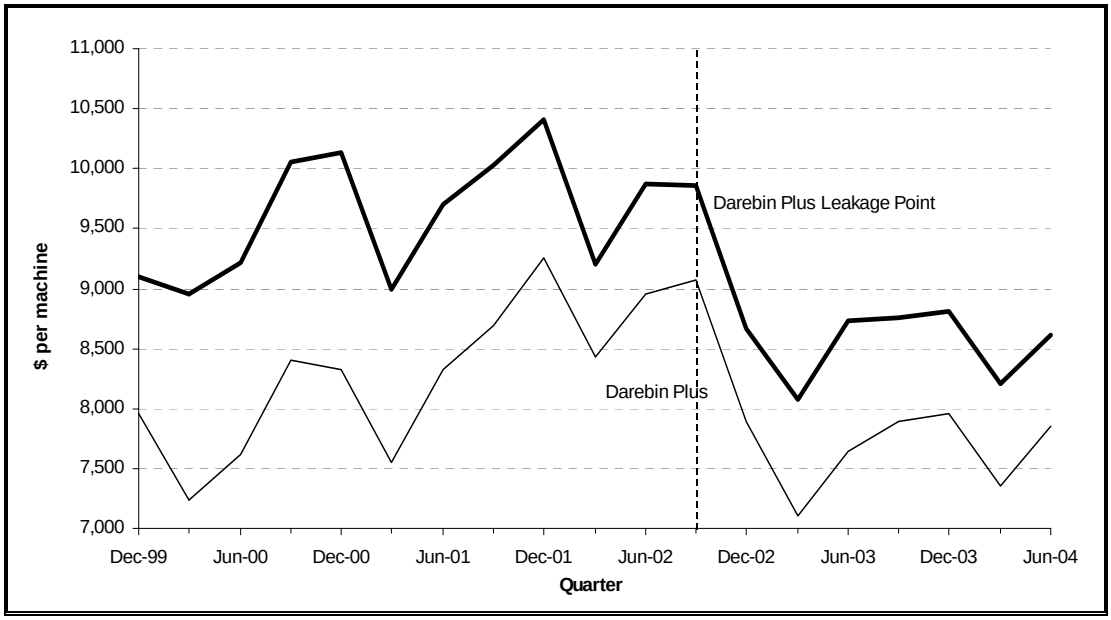
machine declined at virtually exactly the same rate (i.e., -6.9 and –6.5 per cent). These trends are shown in Figures 5.19 and 5.20 where the two regions record identical changes.

Figure 5.19
Index of Net Gaming Revenue: 1999-2004
Quarterly Average (Base: Oct–Dec 1999 = 100)
Darebin Plus and Leakage Point



Note: Graph starts from fourth quarter of 1999 and ends at second quarter of 2004.
Source: Constructed from data obtained from OGR (2004).

Figure 5.20
Net Gaming Revenue Per Machine
Quarterly Average, December 1999 – June 2004 ($ per machine)
Darebin Plus and Leakage Point



Source: Constructed from data obtained from OGR (2004).

Table 5.14
Revenue per Machine and Number of Machines
Quarterly Average, December 1999 – June 2004
Darebin Plus and Leakage Point

Quarter	Darebin Plus		Darebin Plus: Leakage Point	
	Revenue per Machine ($)	Number of Machines	Revenue per Machine ($)	Number of Machines
1999				
December	7,962	1,533	9,093	289
2000				
March	7,231	1,548	8,959	286
June	7,613	1,549	9,214	285
September	8,406	1,554	10,060	287
December	8,318	1,553	10,138	286
2001				
March	7,544	1,543	8,995	286
June	8,324	1,535	9,696	286
September	8,697	1,534	10,024	286
December	9,259	1,530	10,414	286
2002				
March	8,430	1,532	9,208	286
June	8,957	1,532	9,875	286
September	9,069	1,532	9,855	286
December	7,893	1,529	8,661	287
2003				
March	7,106	1,533	8,078	286
June	7,649	1,531	8,727	286
September	7,891	1,532	8,759	286
December	7,963	1,534	8,807	286
2004				
March	7,350	1,531	8,208	286
June	7,846	1,532	8,612	286

Source: Calculated from data supplied to the researchers by OGR (2004).

5.6 Assessment of the Impact on Problem Gamblers

Because machine utilisation rates were nowhere near 100 per cent then *a priori*, it is reasonable to assume that there would be minimal displacement effect or "crowding out" of gamblers, following the removal of 406 machines over the three years. A likely effect of the cap (and what we observed) is, that the utilisation rate of the remaining machines went up, or did not decline as much as machine numbers declined (reflected in higher NGR per machine) as there were fewer machines for recreational and problem gamblers to use. Unfortunately, more precise information on utilisation rates is not available and is not able to be accurately estimated because data was not available on time of day/time of play.

Information on utilisation rates would help to inform whether committed or problem gamblers changed behaviours as a result of the loss of machine. For example, perhaps this latter group shifted the time of play to earlier in the morning or later in the evening to avoid peak times where recreational gamblers were present. The comments of venue owners (see Section 5.8) indicate that they did observe some changes in gambling habits to accommodate the reduction in machines — but it was certainly not that problem gamblers ceased to play. Machines were used more continuously as supported by the increase in net gaming revenue per machine.

Another way to assess the potential impact of the regional cap on problem gamblers is to review the data on those in counselling to observe whether an increase in those participating in counselling was realised. This is at best a proxy measure; in actual fact, the data for those in counselling from the twenty most vulnerable LGAs shows a decline over 2002 and 2003 following the first two periods in which machines were removed. For the five capped regions, those in counselling actually declined from 418 to 230 persons. The total in counselling for all twenty regions and all Victoria also declined as shown in Table 5.15. Participation by problem gamblers in services to assist them is obviously subject to a number of variables. It is noticeable that when advertising campaigns are conducted through radio, television and newspapers that contact with gambler's help services rises quite dramatically and waiting lists extend. The initial contact does not always translate into attendance at formal counselling sessions.

Certainly, we could find no evidence that the regional cap had any positive influence on problem gambler counselling rates or those seeking assistance through Helpline, a gateway into treatment or counselling. Calls to Victorian Helpline over the period 2001-02 to 2003-04 due specifically to gambling problems represented 67 per cent, 69 per cent and 65 per cent respectively. The total number of calls also declined from 16,450 (2001-02) to 12,347 (2003-04) in tandem with those in counselling.

Table 5.15
Problem Gamblers in Counselling in Twenty Most Vulnerable LGAs &Total

Region	2000	2001	2002	2003
Maribyrnong	44	70	59	40
Greater Dandenong	120	135	133	75
La Trobe	80	99	64	41
Bass Coast	13	23	21	11
Darebin	142	194	141	63
East Gippsland	41	37	58	63
Warrnambool	53	79	78	34
Hobsons Bay	78	149	86	59
Ballarat	98	124	123	82
Melbourne	44	66	61	46
Hume	114	168	138	45
Whittlesea	98	172	154	59
Brimbank	107	186	185	129
Greater Geelong	162	214	157	122
Wyndham	59	138	124	71
Moonee Valley	89	180	137	77
Mildura	63	83	61	35
Moreland	147	195	153	66
Greater Shepparton	59	76	80	84
Monash	105	85	133	119
Total	**1,716**	**2,473**	**2,146**	**1,321**
Victorian Total	**3,891**	**5,309**	**4,832**	**3,508**

Source: Victorian DHS (2004).

However, this data needs to be treated with a great deal of caution as individuals may choose other support options in preference to gambling counselling services. As already noted, the timing of statewide and local advertising can influence help seeking behaviour and there is a difference between those actually attending services and those who seek information on problem gambling. This last point is summarised by the Victorian Helpline Services provider:

> "In our experience of providing Helpline services in other health areas and jurisdictions, this "newness" (i.e., relatively recent phenomenon of problem gambling) makes treatment seeking particularly susceptible to community awareness and the level of normalisation around problem identification and help seeking. This is especially the case in an area such as gambling, which is characterised by high levels of isolation, guilt and secrecy. This is also highlighted in the proportion of Helpline callers who call in relation to a well entrenched gambling problem as opposed to earlier identification of potential problems."[48]

[48] Email correspondence. Turning Point Victoria, 27 September 2004.

We stress again that statewide data and data on the cap regions for the take-up of counselling and/or information through Helpline services does not provide any support to the proposition that the regional cap encouraged problem gamblers to seek out counselling, referral or information. It is unlikely that there was an uptake in self-help, private clinical referrals or other treatment methods as a result of the cap. However, we cannot conclude from this that the regional cap had no impact on problem gamblers — it is just not evident in the data reviewed here.

5.7 Industry Assessment of the Impact of the Caps

The researchers wrote to Tabcorp and Tattersall's (June 2004) to invite the two operators to provide their assessment of the impact of the regional caps program. A copy of that letter is included at Appendix 5. A formal interview was held with Tabcorp staff in September 2004 and an outline of the interview schedule is shown at Appendix 5. Tattersall's declined to be interviewed and to respond to the letter of request citing the reason, that the organisation was in the process of preparing to list on the Australian Stock Exchange.

An observation by the industry is that the introduction of the smoking bans was most significant for several reasons. It represented a "shock to the market", forcing a review of the drivers of growth and management of the industry, issues that were perhaps neglected given the strong growth experienced by the industry prior to the introduction of the smoking ban. It encouraged a review of business strategies and customer market trends. One response has been to alter the profile of machines to lower credit value (i.e., 1^c, 2^c machines). Unfortunately, as machines are approved within a range of 1^c to \$1 and the credit value can be altered relatively easily[49], it is not possible to compare the profile of credit values at different points in time.

In written correspondence to the Centre, TABCORP advised the following with respect to the caps policy, industry impact and potential to influence problem gambling:

> "TABCORP has not analysed whether the removal of EGMs affected the time of day/time of play. Anecdotally, we do not believe there has been a change.
>
> We are unable to comment in relation to regional caps having a positive or negative affect on problem gambling. Anecdotally, we believe it is unlikely that there has been an impact.
>
> TABCORP's assessment of credit values on machines is ongoing and occurs in response to changes in customer preferences.
>
> The only significant impact we have observed is a change in customers' ability to play in times of peak demand (i.e., when, in venues where machines have been removed because of the caps, there may not be sufficient machines to satisfy demand in peak times)."

One of the important consequences of the caps is that it slowed the re-allocation of machines that were instructed to be removed from four of the five capped regions. This situation arises because of the process instigated by the VCGR whereby community social impact statements are required and local councils are able to be involved when

[49] Notification of these changes are provided by the operators to the OGR.

considering gaming licence applications. For the operator, the cost of the application, lodgement and legal work and the time taken to process the application imposes delays when shifting machines. Operators are required to give greater consideration to the location of machines in this more complex multi-layered process. To the extent that the regional caps policy forces the removal of machines and/or more municipalities are subject to caps on EGM numbers then further constraints will exist on the placement of EGMs.

The availability of different types of machines and/or games is important, to provide for consumer preferences and industry sustainability. The reality is that operators do seek to provide a broad range of games to attract and retain EGM players. They offer a range of credit values designed to meet player preferences. So while it may seem that regions or municipalities are "over-endowed" with machines numbers, the critical variables are:

- the utilisation rate of machines;
- the playing style of the gambler which influences player losses (i.e., number of lines, credit value, intensity of play);
- hours of opening and access to gaming;
- the pattern of play, including time of day/time of play; and
- the range of credit values and player return rate options.

While net gaming revenues are high in some localities (in total and per capita) they are relatively low when measured against the potential revenue capacity of the machines.

Victorian Treasury concurred with the researchers that the actual number of machines in an area is only one consideration. This is because the current number of machines (in all regions of the state) do not operate at anywhere near their capacity and utilisation rates are relatively low. The researchers estimate that the utilisation rate currently averages less than 20 per cent to 25 per cent across the network. One of the major reasons for the number of machines given their relatively low utilisation rate, is to provide the customer with a range of specific games, credit values and machine options.

5.8 Impact of the Caps: Assessment by Venues

During the course of this study selected venues were visited and surveys were mailed out to assess the perspective of venue owners of the impact of the caps and the smoking ban. Venues in the five cap regions (N=94; 33 per cent response rate), the five control regions (N=77; 42 per cent response rate) and selected venues making up the potential "leakage regions" (N=31; 26 per cent response rate) were sent a mail out questionnaire in September 2004. The interviews and responses of venue owners and gaming area managers to the mail out survey are considered in this section. The survey achieved an overall response rate of 36 per cent and was representative of clubs and hotels, Tabcorp and Tattersall's venues.

Commenting upon the impact of the smoking ban first, 87 per cent of venues did not believe the ban had "assisted in reducing problem gambling", although 97 per cent of all venues reported a decline in gambling participation. The decline in total revenue supports the decline in gambling participation. Observations of staff were quite varied:

> "It has had a greater impact on the recreational gamblers".
>
> "Customers leave the EGM to smoke and quite often don't return. Players do not stay as long".
>
> "It had a greater impact on recreational gamblers. Problem gamblers tend to wait to get the free spins, then they go and have a cigarette whilst the EGM is operating autonomously".
>
> "Problem gamblers will gamble anyway. It has not reduced problem gambling. The keen gamblers seem to be unaffected by the smoking bans and continue to gamble in a similar fashion".

If there was a consensus from hotels and clubs, it was that the problem gambler was largely unaffected (although smokers were affected); however being forced to take breaks, to cash out machines or to change gambling and smoking habits provided an interruption to play and some did not return. Notwithstanding, the significant decline in revenue suggests that many committed gamblers did reduce the amount they gambled, and probably the length of time spent gambling following the introduction of the smoking ban.

The other impact was that 50 per cent of venues reported a decline in employment (or reduction in hours) but significant employment losses are unlikely to be associated with a decline in gambling income as the jobs-to-income ratio is relatively low. Overall, nineteen venues surveyed in the caps regions reported they lost EGMs and this resulted in a combined loss of 26 full-time, part-time or casual positions (most positions were casual positions). The Researchers have previously estimated that for venues (hotels, taverns, bars and clubs) with gaming facilities, the jobs-to-income ratio is as follows:

- for gambling income (3.2 jobs per $1 million of income);
- for sales of liquor and other beverages (8.3 jobs per $1 million of income); and
- for meal and food sales (20.2 jobs per $1 million of income).[50]

This analysis reinforces the idea that reallocating the consumer dollar away from gambling to other goods and services in hospitality venues tends to boost employment levels in the sector, because employment in other areas rises by more than gambling employment falls.

Employment losses could also be associated with a reduction in trading hours, where venues reported a reduction in gaming room operating hours as a result of the restrictions in 24 hour trading.

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[50] SA Centre for Economic Studies (2004), "Consideration of budgetary, employment and welfare effects arising in connection with smoking bans in hospitality venues". Report prepared for the Cancer Council of South Australia.

The views of gaming managers and venue owners were sought on whether, as a result of the caps policy, they noticed 'any change in the pattern of player behaviour', whether for the most regular players a change in behaviour was observed and whether the operators changed or substituted the credit value of machines and/or the type of machine as a result of the caps policy. The results are summarised in Table 5.16.

Table 5.16
Change in the patterns of player behaviour by venue category

	Cap Venues (Per cent)	Control and Leakage Venues (Per cent)
No discernible change	42.0	51.3
Unable to get on machine in peak times	35.5	18.0
Once idle machines used more continuously	25.8	10.3
Play more intensively on machine	25.8	10.3
Change in pattern of time of play/time of day	19.4	18.0
Players queued to access machines	19.4	7.7

Source: SACES Survey of Venues, 2004.

Observations of a change in player behaviour were strongest in those venues that had lost machines; however, it was the recreational or casual gambler who was seen to be most affected particularly in the Bass Coast Shire during the holiday season. Obviously the popularity of a venue will account for "busier times and peak periods"; however, only two venues indicated that several regular gamblers left a venue. Overall, regular players changed their gambling habits such as "they come earlier and stay longer" or they changed the time of day to avoid peak times. The majority response was that the caps policy had no effect at all because the proportion of time in which any gaming room is full is relatively small. Even those venues that lost machines indicated either the machines lost were not popular or "we had sufficient machines to cover most of the requirements".

While both Tattersall's and Tabcorp replace machines and change credit values as a normal part of business operations, the hotels and clubs overwhelmingly responded that more 1 cent and 2 cent EGMs had been installed. Often the change had been at the request of the venue. Newer machines also enable more lines to play and are said to be more popular with gaming customers. However, we find no evidence that an increase in the proportion of 1 cent and 2 cent machines was as a result of the caps policy. The change appears to be a response to consumer preferences, improvements in machine technology, normal business practice to provide variety in the denomination mix to achieve balance within a venue and replacement of older machines that previously allowed $100 note acceptors. And further, while 63 per cent of venues indicated the operators had changed the credit value of machines, this was the same for venues in the caps, control and "leakage' regions. There is no evidence that the type of machine was subject to systematic change. The installation of newer machines with more lines to play and newer machines linked to jackpots represent normal upgrades and deployment of machines. Again, both operators endeavour to maintain a "fresh feel to the product", upgrading machines and games — so older machines were removed, newer machines installed, there was an on-going phase out of the $100 bill note acceptors and this was 'fairly regular business practice'. In fact, we note that 41 per cent of venues in the control

and "leakage" regions had experienced changes to machines, while only 30 per cent of venues in the cap region responded that operators had changed machines. We followed these issues up in our interview with Tabcorp and we were able to confirm that changes in credit value, machine type, the replacement rate of machines were not altered in response to the caps policy.

5.9 Concluding Remarks

An examination of trends and patterns in gaming expenditure, data on revenue per machine, initial comparison of the cap, control and leakage point areas and the impact of policy induced changes such as the ban on smoking and on 24 hour gaming leads to the tentative conclusion that other factors, apart from the reduction in machine numbers, were more important in contributing to a decline in revenue and any potential influence on problem gamblers.

Over the period March 2002 to June 2004, we note that for all Victoria, there was a decline in revenue of –6.4 per cent with an almost negligible reduction in machine numbers (-0.6 per cent) which suggests other factors were at play. In our control regions, with no reduction in machine numbers 4 of the 5 regions experienced a decline in revenue of between –6.2 and –8.8 per cent. Ballarat which actually lost several machines experienced a growth in revenue of 3.3 per cent. All metropolitan cap and control regions (6 regions) experienced a fall in revenue of between –6.2 and –8.8 per cent (compared to the all metropolitan average of –6.1 per cent) but did so whether or not they lost machines.

These observations reinforce our view that other factors were more important than the reduction in machine numbers.

We find at this stage of our analysis that the ban on smoking in gaming areas and phased removal of 24 hour gaming did reduce gaming expenditure. Whether this result was achieved from a reduction in gaming expenditure by problem gamblers is less certain.

6. Assessment of Gaming Statistics: Phase Two

In this section we seek to formally test through econometric analysis, the effects that government policies, and particularly the regional caps, may have had on gaming activity. The preceding discussion (Sections 4 and 5) raised a number of hypotheses regarding the behaviour of gamblers, gaming venues and gaming operators following the introduction of the cap. Specifically we test whether the regional caps reduced gaming machine expenditure in the capped regions by comparing the evolution of expenditure at venues in the capped regions with venues in matched comparison regions.

The results provide evidence that in some regions gaming machine expenditure may have fallen due to the regional caps, but in other regions there is no evidence that the regional caps had any effect. We find no evidence that falls in expenditure in specific venues in the cap regions were more significant than for those venues that did not lose machines.

We also test whether the regional caps had an effect on gaming machine expenditure at venues just outside of the capped regions by diverting gamers to these venues. We find no evidence to support this hypothesis.

We find evidence that two other policies, the banning of smoking in gaming areas and the reduction in gaming hours from 24 hours a day to a maximum of 20 hours a day reduced gaming expenditure in all regions we studied.

6.1 Review of Venue Level Gaming Data

In the following, we describe some features of the data we analysed and the construction of key variables used in the econometric analysis.

Gaming data were obtained for each venue in the capped and comparison regions for each month between November 1999 and July 2004. These data include the number of devices recorded at the end of each month, the total gaming expenditure at that venue (player loss), indicators of whether the venue is a hotel or club and whether the venue's machines are operated through Tattersall's or Tabcorp. In addition, data were obtained for a selection of venues bordering the three capped metropolitan regions to try and identify whether the regional caps caused gaming expenditure to flow out to neighbouring areas. Those venues which were closed prior to the implementation of the regional caps are excluded from the dataset. In total we used 10,655 monthly venue observations on 188 different venues. Key summary statistics are presented in Table 6.1.

Table 6.1
Key Summary Statistics

	Obs.	Number of Venues	Average EGMs per Venue	Average Player Loss per EGM	Number of Hotels and Clubs
Maribyrnong Plus	1,286	23	56	5,885	10
Hobsons Bay Minus	513	9	58	6,075	2
Maribyrnong Leakage	456	8	64	8,154	3
Greater Dandenong Plus	1,196	21	78	7,822	10
Monash Minus	741	13	71	7,885	8
Greater Dandenong Leakage	435	8	51	8,828	6
Darebin Plus	1,368	24	64	7,235	15
Moreland Minus	627	11	50	6,490	5
Darebin Leakage	285	5	57	7,231	3
Bass Coast	456	8	31	4,934	2
Greater Geelong	1,539	27	52	6,098	12
La Trobe	841	15	42	5,377	4
Ballarat	912	16	42	5,586	6
Total	10,655	188	56	6,637	86

Source: SACES from OGR data.

The purpose of our analysis was to look at the effect that the regional caps had on gaming expenditure within Victoria. Our timeframe permits an assessment of trends in gaming expenditure within the selected regions both before and after the introduction of the regional caps in April 2001 and the successive removal of machines on 14 February of 2002, 2003 and 2004. These dates naturally split the analysis into four phases: the phase prior to any required reduction in machine numbers; and three subsequent periods following each required reduction, which we refer to as Year 1, Year 2 and Year 3.

In addition we were able to assess the effects of two other Victorian policies:

- the reduction in gaming hours at some venues from 24 hours per day to a maximum of 20 hours per day; and
- the imposition of smoking bans in gaming areas.

Twenty-four hour gaming was progressively removed from venues outside of the Melbourne Statistical Division beginning in May 2000 as venues renewed their five-year liquor licences. All venues in our data set that had their hours reduced were affected by August 2003. Smoking was banned from all gaming areas in Victorian hotels and clubs from 1 September 2002 and, as discussed earlier, this appears to correspond to a sharp decline in State gaming expenditure.

In all but one of the capped regions — Darebin Plus — the Victorian Government required that the number of machines be reduced. The response to these requirements varied across the capped regions. Most machines were removed from the Maribyrnong Plus and Bass Coast regions only immediately prior to each of the prescribed dates. By contrast, the number of machines in the Greater Dandenong Plus and La Trobe regions fell well ahead of the Government's requirements. In the latter region, the number of

machines fell sharply soon after the implementation of the cap due to the permanent closure of one venue and the temporary closure of another. In Darebin Plus there was no requirement to reduce machine numbers and the number of machines has remained fairly steady since the announcement of the cap, albeit well below the designated cap.

Essential to the analysis is identifying when, and how, each individual gaming venue was affected by the regional caps. The simplest way of identifying the venues affected by the cap was to construct, for each of the three years following the required reductions in machine numbers, a dummy variable to indicate if a venue was in a capped region during this period. However, this is a fairly crude way of identifying the affected venues since in each region and each year of the caps only some of the venues reduced their machine numbers, and the percentage reduction in machine numbers varied considerably from venue to venue. To capture this information we constructed an additional two indicators.

First, we constructed three dummy variables for each venue in the capped regions to indicate whether the cap caused that venue to reduce their number of machines during each of the three years of the policy. In determining whether the regional cap caused the reduction in machines we count only those reductions that occurred in a region in which the Government required a reduction in total machine numbers during that period and where these reductions were maintained until mid 2004. Temporary closures or reductions in machine numbers were ignored. Second, we constructed a measure of the change in machine numbers in the capped regions since the caps were introduced in April 2001, where again we use the same criteria to determine whether a reduction was caused by the regional caps. Tables 6.2-6.5 identify where there have been permanent reductions in machine numbers within the capped regions.

Table 6.2
Permanent reductions and percentage change in machine numbers at each venue in the capped regions: Greater Dandenong Plus

Number of machines permanently removed from venue during:	Year-ending February 2002	Year-ending February 2003	Year-ending February 2004	Total reduction since April 2001 (per cent)
Aces Town And Country Club	0	4	13	17
Albion Hotel	20	0	0	42
Dandenong Basketball Association	0	0	3	6
Dandenong Club	0	0	6	6
Dandenong RSL	0	0	5	7
Dandenong Workers Club	20	0	0	20
Hallam Taverner	0	0	0	0
Hawthorn Football Club - Waverley	0	0	6	6
Keysborough Hotel	0	0	0	0
Noble Park Football Club	0	0	3	6
Noble Park RSL	0	0	2	6
Nu Hotel Dandenong	0	3	0	9
Old Dandy Inn	0	0	3	9
Prince Mark Hotel	0	0	0	0
Sandown Greyhounds	0	0	5	5
Sandown Park Hotel	0	2	0	1
Sandown Racecourse	0	0	5	5
Springvale Hotel	10	20	0	30
Springvale RSL	0	0	3	6
Village Green Hotel	0	0	0	0
Waltzing Matilda Hotel	0	4	5	9
Total machines as at end:	**February 2002**	**February 2003**	**February 2004**	
Actual	1,631	1,598	1,540	
Cap	1,658	1,599	1,540	

Table 6.3
Permanent reductions and percentage change in machine numbers at each venue in the capped regions: Maribyrnong Plus

Number of machines permanently removed from venue during:	Year-ending February 2002	Year-ending February 2003	Year-ending February 2004	Total reduction since April 2001 (per cent)
Anglers Tavern	0	2	1	10
Ashley Hotel	10	0	0	11
Braybrook Taverner	0	12	0	18
Club Leeds	0	0	3	8
Court House Hotel (Footscray)	0	0	0	0
Derrimut Hotel	0	0	0	0
Flemington & Kensington RSL	0	5		100
Footscray Football Club	0	6	4	15
Footscray RSL	0	4	0	14
Highpoint Taverner	0	4	5	9
Italo Australian Social Club	0	0	2	5
Maribyrnong Maidstone RSL	5			100
Melbourne Cup Club - VRC Flemington	2	12	6	20
Newmarket Tavern	0	0	6	8
Newport Family Hotel	0	0	5	8
Powell Hotel	0	6	0	11
Sunshine Baseball Club	0	0	1	5
Sunshine City Club	0	5	2	23
Sunshine RSL	0	0	0	0
Victoria Hotel (Yarraville)	0	2	2	11
Westend Hotel	0	0	12	12
Yarraville & Seddon Bowling Club	0	4	2	15
Yarraville Club	10	0	5	14
Yarraville Cricket Club	0	0	7	7
Total machines as at end:	**February 2002**	**February 2003**	**February 2004**	
Actual	1,297	1,235	1,172	
Cap	1,297	1,235	1,172	

Table 6.4
Permanent reductions and percentage change in machine numbers at each venue in the capped regions: Bass Coast Shire

Machines permanently removed from venue during:	Year-ending February 2002	Year-ending February 2003	Year-ending February 2004	Total reduction since April 2001 (per cent)
Cowes Golf Club	1	0	1	20
Esplanade Hotel	0	0	3	15
Isle Of Wight Hotel	1	0	1	17
Phillip Island RSL	1	5	4	16
Phillip Island Football Club	0	0	4	21
Wonthaggi Club	0	4	0	8
Wonthaggi Golf Club	3	3	0	29
Wonthaggi Workingmans Club	2	4	4	15
Total machines as at end:	February 2002	February 2003	February 2004	
Actual	253	237	220	
Cap	253	237	220	

Table 6.5
Permanent reductions and percentage change in machine numbers at each venue in the capped regions: Shire of La Trobe

Number of machines (and per cent of machines) permanently removed from venue during:	Year-ending February 2002	Year-ending February 2003	Year-ending February 2004	Total reduction since April 2001 (per cent)
Churchill Hotel	28			100
Grand Junction Hotel Traralgon	0	0	0	0
Italian Australian Social Club	0	3	1	9
Moe Hotel	0	4	0	9
Moe Racing Club	0	0	0	0
Moe RSL	0	3	1	9
Morwell Bowling Club	0	0	0	0
Morwell Club Inc.	2	0	2	9
Morwell Hotel Motel	0	0	2	5
Morwell RSL	2	0	3	10
Royal Exchange Hotel	3	0	3	12
Skippers Tabaret	0	0	0	0
Traralgon Bowls Club	0	0	0	0
Traralgon Football Club	0	0	0	0
Traralgon RSL	0	3	1	9
Yallourn Bowls Club	0	0	0	0
Total machines as at end:	**February 2002**	**February 2003**	**February 2004**	
Actual	603	615	602	
Cap	650	626	602	

6.2 Methodology: Testing the Impact of the Caps

In the following discussion we outline conceptually the methodology that we used to analyse these data. We wish to test whether the regional caps have resulted in any significant reduction in gaming machine expenditure at venues in the capped regions and, if so, estimate the size of this effect. In order to do so effectively we need to have in mind a counterfactual: what gaming expenditure would have been at venues in the capped regions in the absence of the caps.

One way to estimate the effect of the regional caps might be to simply choose a venue in a capped region and a venue outside a capped region and compare the levels of expenditure at these two venues at some point in time following the implementation of the regional cap. That is, we might assume that the appropriate counterfactual is the level of gaming expenditure at a venue outside the capped region. The difference between the level of expenditure at these venues would give us an estimate of the effect of the regional cap. Further, we might try and choose the comparison venues so that the regions they are in have similar characteristics to the capped regions. But, despite these efforts, some venues might tend to have higher gaming expenditure than other venues because of characteristics such as location, goodwill and alternative recreational opportunities available nearby. Many of these characteristics cannot readily be observed, but they could bias this estimate of the effect of the regional caps on gaming expenditure.

A second way to estimate the effect of the regional caps might be to choose a venue in a capped region and compare the level of gaming expenditure at that venue during a period before the regional cap is implemented with expenditure during a period after the regional cap is implemented. That is, we might assume that the relevant counterfactual is the level of gaming expenditure that the chosen venue received prior to the implementation of the regional caps. The difference between the level of expenditure at these two points in time would give us another estimate of the effect of the regional cap. However, the popularity of gaming varies over time so that expenditure across most venues in Victoria will change over time. For example, gaming expenditure today is far higher than it was during the mid 1990s. These trends in gaming expenditure over time could bias this estimate of the effect of the regional cap on gaming expenditure.

A better way to estimate the effect of the regional caps is to use a combination of these two methods. Here we assume that, in the absence of the caps, gaming expenditure at the venue in the capped region would have been the expenditure that venue received before the caps, projected forward over time at the same rate of growth as at a comparable venue or benchmark. This is the so-called 'differences-in-differences' approach to policy analysis. It essentially amounts to comparing the difference in expenditure in the capped regions before and after the caps were introduced with the difference in expenditure in the matched comparison group before and after the caps.

The idea behind the differences-in-differences approach is to remove from the data: (i) unobserved venue-specific characteristics that might effect the level of gaming expenditure; and (ii) aspects of the evolution of gaming expenditure over time that are common to both the venues in the capped regions and venues in the matched comparison group. We briefly introduce the theory behind the so-called 'differences-in-differences' approach to policy analysis, based upon the discussion provided in Blundell and Costa Dias (2002) and Meyer (1994).

For a given venue 'i' at a given point in time 't', the level of gaming expenditure, Exp_{it}, is dependent upon a range of region-specific characteristics, which we denote X_i. However, expenditure may also be affected by a wide range of other factors, the cumulative effect of which we label $\underline{U}_{it}$. We refer to this as the 'error' term because it is the component of gaming expenditure that we cannot predict from the observable characteristics of the venue, X_i. The assumed relationship between gaming expenditure, region-specific characteristics and the error term is expressed in the equation below.

$$Exp_{it}(X_i) = f_t(X_i) + U_{it}$$

In this framework, imposing a regional cap on gaming machine numbers will affect venue-level expenditure either through the function f or the error term U_{it}, which we indicate in the following equations.

$$Exp_{it}(X_i) = f_t^1(X_i) + U_{it}^1 \text{ if the venue is in a capped region}$$

$$Exp_{it}(X_i) = f_t^0(X_i) + U_{it}^0 \text{ if the venue is not in a capped region}$$

Then the effect of the regional cap on gaming expenditure at a venue can be written as the difference between observed gaming expenditure and what gaming expenditure would be had the venue not been subject to the regional cap.

$$Effect_{it}(X_i) = \left(f_t^1(X_i) - f_t^0(X_i)\right) + \left(U_{it}^1 - U_{it}^0\right)$$

The problem is that we cannot observe expenditure at a given gaming venue at a given point in time both inside and outside the capped regions. In order to estimate the effect of the caps we must at least observe one venue '*i*' in the capped region and another venue '*j*' in the comparison region, at two different periods of time '*t=1*' after the implementation of the caps and '*t=0*' before the implementation of the caps.

To help in the explanation, we can split the error term U_{it} into a part that is fixed for a given venue over time, ϕ_i, a part that is common to all venues but varies over time, θ_t, and a remaining part that is different for each venue at each point in time, ε_{it}. Defining a variable D_{it} to be 1 if the venue '*i*' is subject to the regional caps at time '*t*' and 0 otherwise allows us to write the level of gaming expenditure at a venue as follows.

$$Exp_{it}(X_i) = f_t^0(X_i) + Effect_{it}(X_i).D_{it} + \phi_i + \theta_t + \varepsilon_{it}$$

Using this expression, we can calculate the difference in gaming expenditure at each venue before and after the implementation of the regional caps. By doing so we immediately remove from the expression the part of the error which is fixed for a given venue over time so that we can ignore unobserved venue-specific characteristics which are fixed over time. For the venue in the region subject to the cap we obtain the first expression below, while for the venue in the comparison region we obtain the second expression.

$$Exp_{i1}(X_i) - Exp_{i0}(X_i) = f_1^0(X_i) - f_0^0(X_i) + Effect_{i1}(X_i) + (\theta_1 - \theta_0) + (\varepsilon_{i1} - \varepsilon_{i0})$$

$$Exp_{j1}(X_j) - Exp_{j0}(X_j) = f_1^0(X_j) - f_0^0(X_j) + (\theta_1 - \theta_0) + (\varepsilon_{j1} - \varepsilon_{j0})$$

Now we can subtract the second of these equations from the first, and importantly note that we chose the comparison region so that it was matched on all relevant observable characteristics '*X*' that influence the level of expenditure. We obtain the following expression for the effect of the regional caps on the level of gaming expenditure at the venue in the capped region at a point in time following the implementation of the cap.

$$Effect_{i1}(X_i) = \left(Exp_{i1}(X_i) - Exp_{i0}(X_i)\right) - \left(Exp_{j1}(X_i) - Exp_{j0}(X_i)\right)$$
$$+ \left((\varepsilon_{j1} - \varepsilon_{j0}) - (\varepsilon_{i1} - \varepsilon_{i0})\right)$$

The first part of the right-hand side is the differences-in-differences expression. That is, it is the difference between venues in different regions of each venue's difference in gaming expenditure over time. The first expression that we gave above for the effect of the caps was of little use because we could not observe expenditure at a given gaming venue both in and outside the capped regions. By contrast, *given a pair of venues* the differences-in-differences expression can be readily calculated from the available data. Section 6.3 of the report on statistical analysis simply describes an efficient way of calculating this differences-in-differences expression using all of the available data, rather than just expenditure at two venues observed at two points in time.

The second part of the right-hand side is also important. Recall that ε_{it} is the part of the error in gaming expenditure that is different for each venue and each point in time. So long as this part of the error changes over time in a similar way for the venue chosen from the capped region and the venue chosen from the comparison region then on

average the second part of the right-hand side will vanish. In this case the first part of the right-hand side alone, the differences-in-differences expression, will provide an unbiased estimate of the effect of the cap.

However, this need not be the case. Venue-specific characteristics may influence the decision of the Government to impose a cap on the region in which the venue lies. We argue that in fact there does not appear to be any significant correlation between the characteristics on which the Government chose the capped regions and the subsequent evolution of regional gaming expenditure.

This suggests that our differences-in-differences expression will be able to provide an unbiased estimate of the impact of regional caps on gaming expenditure at venues in the capped regions. See Appendix 7 for further discussion on the selection of cap regions.

6.3 Statistical Analysis

In applying the differences-in-differences methodology, instead of comparing only a single venue in the capped region with a single venue in the comparison region we consider simultaneously all of the venues in the capped and comparison regions. This allows us to more accurately estimate the effect of the regional caps. We do so using 'fixed-effects' panel regression. In its simplest form this means running the following regression on data on gaming expenditure from venues in both the capped and comparison regions.

$$Exp_{it} = \beta_i^1 + \beta^2 D_t^1 + \beta^3 D_t^1 D_i^2 + \eta_{it}$$

Here: the left-hand side variable is the log of gaming expenditure at venue 'i' at period 't'; $D^1{}_t$ is a variable taking the value 1 if the regional caps have been implemented; $D^2{}_i$ is a variable taking the value 1 if the venue is in the capped region and 0 if the venue is in the comparison region; and η_{it} is the statistical error. The purpose of the regression is to find the coefficients, $\beta^1{}_i$, β^2 and β^3 that best fit the data that we observe. In particular, the coefficients $\beta^1{}_i$ are different for each venue and, roughly, will be estimated to be the average level of expenditure at the venue prior to the implementation of the caps. These are also referred to as 'fixed effects' because they pickup the differences between venue-level expenditure that are fixed over time. The estimate of the coefficient β^2 will indicate the average change in the log of gaming expenditure after the implementation of the regional cap for venues in the comparison region. Of most interest is our estimate of the coefficient β^3. This is our differences-in-differences estimate of the effect that the regional cap had on gaming expenditure at venues in the capped region.

More generally, we construct appropriate variables to estimate the effect on gaming machine expenditure following *each* of the three rounds of reductions in gaming machine numbers. Further, the regression is extended in a straightforward manner to allow us to also assess the effect of the caps on gaming expenditure at venues in the leakage regions.

In these regressions, those venues that we think might be affected by the regional caps are simply indicated by a dummy variable ($D^2{}_i$ above) based on the location of the venues. In an attempt to better identify the effect of the caps we additionally run regressions in which we identify the venues that might be affected by the regional caps

using the other two variables we constructed above: a dummy variable indicating whether the caps have caused a reduction in the number of gaming machines at a particular venue; and the total change in gaming machine numbers since the introduction of the caps in April 2001.[51]

The validity of the estimated effect of the regional cap depends critically upon the choice of the comparison regions. We use two different comparisons for our statistical analysis. First, we compare changes in expenditure in the capped regions with changes in the 'matched comparison' regions. As discussed earlier in this report, we chose these comparison regions carefully to be similar to the capped regions in a range of demographic characteristics that are key drivers of gaming expenditure. Second, as a check on the former method we compare changes in gaming expenditure in the capped regions with changes in expenditure in the whole of Victoria. We would expect that had no cap been implemented the level of expenditure in the capped and control regions would have moved closely over time, while the level of expenditure in the whole State is a cruder means of controlling for trends in tastes. Hence, the effects of the regional caps that we estimate by comparing with State expenditure should be considered less reliable.

All up then, with three different indicators of the venues affected by the cap and two different comparison groups we run a total of six regressions on data corresponding to each of the five capped regions (see Table 6.6).

Two problems were addressed in running these regressions. First, the level of gaming expenditure is seasonal with expenditure in some regions varying over the course of a calendar year in a different manner to other regions. For example, as illustrated above gaming expenditure in the Bass Coast Shire varies over the course of a calendar year in line with the ebb and flow of tourists. This is particularly problematic because we do not have a full-year of data following the third round of gaming machine reductions. In estimation we include a full set of seasonal dummy variables for each region included in the regression (for example, for regressions on data from the capped, comparison and leakage regions we include three full sets of seasonal dummy variables).

Second, even after controlling for seasonal differences in gaming expenditure within years and fixed differences between gaming expenditure at different venues, we found that, for individual venues, the residuals from these regressions were correlated over time. This is perhaps because the level of gaming expenditure at each venue moves in long, slow trends reflecting gradual changes in factors such as the popularity of the venue. Failing to take account of this problem would lead to incorrectly assessing the statistical significance of the estimated effects of the regional caps. To correct this problem, in estimation we allow venue level statistical 'errors' in the revenue data to be correlated with the immediately preceding month's data (an AR(1) error term in technical terminology).

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[51] In constructing these two indicators we only take account of changes in gaming machine numbers that we believe were caused by the regional caps, rather than the normal shuffling of machines between venues over time. The Victorian Casino and Gaming Authority required that the operators ensure that the percentage reductions in gaming machine numbers were the same across venues in the capped regions 'as far as practicable'. With this in mind, we believe it is plausible that these two indicators might be exogenous to the level of gaming expenditure at these venues (that is, the level of gaming expenditure did not drive the reduction in machine numbers). Of course, if these two indicators are not exogenous to the level of gaming expenditure then our estimates of the effects that these reductions in machine numbers had on venue-level gaming expenditure will be biased.

Finally, it is important to note what this methodology does and does not provide. This methodology **does allow** us to reliably estimate the effect that the regional caps had on the level of gaming expenditure at venues in the chosen capped regions. However, these estimates do not necessarily indicate the effect that a similar regional cap might have on gaming expenditure at venues in other regions of Victoria, or indeed other regions of the country. To the extent that other regions differ in ways important to gaming patterns – such as in terms of demography, geography or economic characteristics – the effects of any regional cap in those areas may be quite different than the effects that we estimate here.

6.4 Results: the effects of regional caps on gaming expenditure at venues in the capped regions

Overall the results were mixed, with only a few conclusive findings on the effects that the caps had on gaming expenditure. We ran six regressions on data corresponding to each of the five capped regions, using different indicators of the venues affected by the cap, different comparison groups and, necessarily, different data sets.[52] The differences between these six regressions are summarised in Table 6.6.

Table 6.6
The six different regressions

Regression	Comparison group	Indicator of venues affected by the caps	Data used
I	Matched region	Dummy variables indicating the venue is located in the capped region.	Capped, matched and leakage regions.
II	Matched region	Dummy variables indicating the venue lost machines because of the regional caps.	Capped, matched and leakage regions.
III	Matched region	An indication of the number of machines the venue lost due to the caps.	Capped and matched regions.
IV	Victorian average	n.a.	Capped regions.
V	Victorian average	Dummy variables indicating the venue lost machines because of the regional caps.	Capped regions.
VI	Victorian average	The number of machines the venue lost due to the caps.	Capped regions.

Table 6.7 to 6.11 present the results of these regressions. Here the variables are defined as follows: Smoking Ban takes the value 1 after the ban on smoking in gaming areas was imposed, and the value 0 before; Year 1 takes the value 1 in or after February 2002 and 0 before; Year 2 takes the value 1 in or after February 2003 and 0 before; Year 3 takes the value 1 in or after February 2004 and 0 before; Cap takes the value 1 if the venue is in a capped region and 0 otherwise; Leakage takes the value 1 if the venue was identified as a potential leakage venue and 0 otherwise; Lost Machines in Year take the value 1 at a period in or following that year of the caps and the venue lost machines during that year of the caps; Change in Machines at Venue is the change in the number of machines at a venue that we attribute to the regional caps.

[52] The only exception was Darebin, where we ran only two regressions since the regional caps did not require reductions in machine numbers and hence it was not possible to identify machines removed from venues due to the caps.

The dependent variables are the natural logarithm of gaming expenditure at a venue in a particular month (or for regressions IV, V and VI the difference between the logarithm of gaming expenditure at that venue in a particular month and the logarithm of State gaming expenditure in the same month). The interpretation of the coefficients are in terms of the log of gaming expenditure, and we convert these into percentage changes in gaming expenditure in the discussion below.[53]

The methodology we use will *roughly* estimate the effects of the caps on gaming expenditure at venues in the capped regions as the average of the difference between the percentage change in expenditure at venues in the capped regions and the percentage change in expenditure at venues in the comparison regions. In this way, a 1 per cent fall in gaming expenditure at a small venue is weighted as heavily as a 1 per cent fall in gaming expenditure at a large venue, despite the difference in dollar amounts involved.

[53] Given an effect on the logarithm of gaming expenditure α we can calculate a percentage effect on gaming expenditure as $e^{\alpha}-1$. It can be shown that if the effect on the logarithm of gaming expenditure, α, is very small then it is approximately the same as the percentage effect on gaming expenditure.

Table 6.7
Regression results: Maribyrnong Plus

Regression	I	II	III	IV	V	VI
Dependent Variable	**Log Gaming Expenditure**			**Log Gaming Expenditure – Log State Gaming Expenditure**		
Smoking Ban	-0.211**a** (-10.11)	-0.211**a** (-10.12)	-0.212**a** (-8.53)	-0.040 (-1.25)	-0.040 (-1.24)	-0.040 (-1.25)
Year1	0.105**a** (3.27)	0.105**a** (3.29)	0.107**a** (3.16)	-0.040 (-1.57)	-0.031 (-1.17)	-0.040 (-1.56)
Year2	0.039 (1.14)	0.039 (1.14)	0.039 (1.06)	0.008 (0.28)	0.003 (0.09)	0.008 (0.26)
Year3	0.081**b** (2.10)	0.080**b** (2.11)	0.080**b** (1.98)	0.004 (0.15)	-0.007 (-0.16)	0.004 (0.14)
Year1*Cap	-0.060 (-1.64)	-0.051 (-1.38)	-0.061 (-1.60)			
Year2*Cap	0.001 (0.02)	-0.007 (-0.17)	-0.001 (-0.02)			
Year3*Cap	-0.033 (-0.72)	-0.042 (-0.76)	-0.034 (-0.69)			
Year1*Leakage	-0.004 (-0.09)	-0.004 (-0.09)				
Year2*Leakage	-0.016 (-0.34)	-0.016 (-0.34)				
Year3*Leakage	0.002 (0.04)	0.002 (0.04)				
Lost Machines in Year 1		-0.067 (-1.34)			-0.071 (-1.27)	
Lost Machines in Year 2		0.018 (0.51)			0.012 (0.29)	
Lost Machines in Year 3		0.014 (0.30)			0.017 (0.32)	
Log Change in Machines at Venue			-0.046 (-0.19)			0.003 (0.01)
Venues	40	40	32	23	23	23
Observations	2215	2215	1767	1263	1263	1263
t-statistics in parentheses; a, b, c denote significance at 1, 5 and 10 per cent levels						

Note: In Column III, Row titled "Log Change in Machines at Venue", it was our expectation was that the coefficients would be positive, so that a coefficient of +1 would imply that expenditure fell in step with gaming machine numbers and a coefficient of 0 would suggest that EGM numbers may have no effect on EGM expenditure. In reading Column III, this reads that a 1 per cent change (fall) in the number of gaming machines is associated with a 0.0046 per cent fall in the level of gaming expenditure.

Table 6.8
Regression results: Bass Coast Shire

Regression	I	II	III	IV	V	VI
Dependent Variable	**Log Player Loss**			**Log Player Loss – Log State Player Loss per EGM**		
Smoking Ban	-0.157**a** (-8.07)	-0.157**a** (-8.29)	-0.157**a** (-8.06)	-0.015 (-0.29)	-0.017 (-0.34)	-0.015 (-0.29)
Year1	0.088**a** (5.14)	0.093**a** (5.60)	0.088**a** (5.12)	-0.063 (-1.46)	-0.112**b** (-2.07)	-0.049 (-1.05)
Year2	0.053**a** (2.82)	0.052**a** (2.85)	0.053**a** (2.82)	-0.029 (-0.63)	-0.158**a** (-2.97)	-0.014 (-0.28)
Year3	0.050**b** (2.58)	0.050**a** (2.66)	0.050**b** (2.58)	-0.074 (-1.55)	0.083 (1.04)	-0.049 (-0.85)
Year1*Cap	-0.076**b** (-2.38)	-0.130**a** (-3.02)	-0.064**c** (-1.85)			
Year2*Cap	-0.064**c** (-1.86)	-0.191**a** (-4.64)	-0.051 (-1.37)			
Year3*Cap	-0.085**b** (-2.13)	0.075 (1.14)	-0.063 (-1.35)			
Year1*Leakage						
Year2*Leakage						
Year3*Leakage						
Lost Machines in Year 1		0.087**c** (1.80)			0.089 (1.48)	
Lost Machines in Year 2		0.249**a** (5.06)			0.251**a** (4.09)	
Lost Machines in Year 3		-0.210**a** (-2.95)			-0.204**b** (-2.28)	
Log Change in Machines at Venue			0.246 (0.94)			0.281 (0.79)
Venues	35	35	35	8	8	8
Observations	1960	1960	1960	448	448	448
t-statistics in parentheses; a, b, c denote significance at 1, 5 and 10 per cent levels						

Table 6.9
Regression results: Greater Dandenong Plus

Regression	I	II	III	IV	V	VI
Dependent Variable	**Log Player Loss**			**Log Player Loss – Log State Player Loss per EGM**		
Smoking Ban	-0.189**a** (-14.91)	-0.189**a** (-14.95)	-0.189**a** (-13.53)	-0.010 (-0.62)	-0.010 (-0.62)	-0.009 (-0.57)
Year1	0.070**a** (3.76)	0.071**a** (3.84)	0.073**a** (3.98)	-0.002 (-0.13)	0.005 (0.36)	0.000 (0.02)
Year2	0.031 (1.63)	0.031 (1.63)	0.031 (1.64)	-0.017 (-1.14)	-0.032**b** (-2.01)	-0.011 (-0.77)
Year3	0.053**b** (2.53)	0.053**b** (2.55)	0.054**b** (2.59)	-0.014 (-0.94)	-0.008 (-0.36)	-0.005 (-0.35)
Year1*Cap	0.002 (0.09)	0.007 (0.31)	0.002 (0.08)			
Year2*Cap	-0.007 (-0.32)	-0.024 (-0.96)	-0.005 (-0.21)			
Year3*Cap	-0.027 (-1.02)	-0.019 (-0.60)	-0.023 (-0.87)			
Year1*Leakage	0.034 (1.14)	0.034 (1.15)				
Year2*Leakage	0.019 (0.64)	0.019 (0.65)				
Year3*Leakage	-0.015 (-0.44)	-0.015 (-0.44)				
Lost Machines in Year 1		-0.041 (-1.11)			-0.065**b** (-2.11)	
Lost Machines in Year 2		0.068**b** (2.22)			0.066**b** (2.57)	
Lost Machines in Year 3		-0.014 (-0.46)			-0.010 (-0.39)	
Log Change in Machines at Venue			0.095 (0.99)			0.212**a** (2.64)
Venues	42	42	34	21	21	21
Observations	2330	2330	1903	1175	1175	1175
t-statistics in parentheses; a, b, c denote significance at 1, 5 and 10 per cent levels						

Table 6.10
Regression results: Darebin Plus

Regression	I	II	III	IV	V	VI
Dependent Variable	**Log Player Loss**			**Log Player Loss – Log State Player Loss per EGM**		
Smoking Ban	-0.191**a** (-13.23)			-0.007 (-0.46)		
Year1	0.096**a** (4.81)			-0.040**a** (-3.17)		
Year2	0.024 (1.13)			-0.013 (-0.93)		
Year3	0.035 (1.47)			0.004 (0.27)		
Year1*Cap	-0.046**b** (-2.00)					
Year2*Cap	0.002 (0.10)					
Year3*Cap	0.015 (0.53)					
Year1*Leakage	-0.058**c** (-1.70)					
Year2*Leakage	0.045 (1.24)					
Year3*Leakage	-0.009 (-0.22)					
Lost Machines in Year 1						
Lost Machines in Year 2						
Lost Machines in Year 3						
Log Change in Machines at Venue						
Venues	40			24		
Observations	2240			1344		
t-statistics in parentheses; a, b, c denote significance at 1, 5 and 10 per cent levels						

Table 6.11
Regression results: Shire of La Trobe

Regression	I	II	III	IV	V	VI
Dependent Variable	**Log Player Loss**			**Log Player Loss – Log State Player Loss per EGM**		
Smoking Ban	-0.143**a** (-5.03)	-0.144**a** (-5.03)	-0.143**a** (-5.03)	-0.083**c** (-1.94)	-0.082**c** (-1.93)	-0.083**c** (-1.94)
Year1	0.085**a** (2.66)	0.086**a** (2.67)	0.085**a** (2.67)	-0.026 (-0.67)	-0.057 (-1.34)	-0.026 (-0.66)
Year2	0.065**c** (1.94)	0.065**c** (1.95)	0.065**c** (1.95)	0.054 (1.39)	0.071 (1.63)	0.055 (1.31)
Year3	0.009 (0.25)	0.009 (0.26)	0.009 (0.26)	0.009 (0.23)	0.015 (0.29)	0.01 (0.23)
Year1*Cap	0.133**a** (3.03)	0.146**a** (3.16)	0.131**a** (2.97)			
Year2*Cap	-0.090**b** (-1.99)	-0.090**c** (-1.86)	-0.096**b** (-2.04)			
Year3*Cap	0.012 (0.24)	-0.013 (-0.22)	0.006 (0.12)			
Year1*Leakage						
Year2*Leakage						
Year3*Leakage						
Lost Machines in Year 1		-0.065 (-0.89)			0.147**c** (1.76)	
Lost Machines in Year 2		-0.003 (-0.05)			-0.061 (-0.81)	
Lost Machines in Year 3		0.054 (0.80)			-0.012 (-0.16)	
Log Change in Machines at Venue			-0.271 (-0.42)			0.015 (0.02)
Venues	31	31	31	15	15	15
Observations	1722	1722	1722	826	826	826
t-statistics in parentheses; a, b, c denote significance at 1, 5 and 10 per cent levels						

6.4.1 Effect of the regional caps on gaming expenditure

The expected effect of the regional caps was to reduce the level of gaming expenditure at venues in the capped regions following the sequential removal of machines. The regional caps were also expected to increase the level of gaming expenditure at venues in the identified leakage areas.

In fact, in only a few cases can we find evidence that the regional caps reduced the level of gaming expenditure at venues in the capped regions, and no evidence that the caps affected gaming expenditure in the leakage regions. This results holds throughout the range of different specifications attempted.

Regressions I-III: Comparing venue-level gaming expenditure in the cap regions with venues in the matched comparison regions

In **Regression I**, the coefficients on the variable Year 1*Cap provide our estimates of the effect of the regional caps on gaming expenditure at venues in the capped regions following the first year in which machines were removed, and similarly for Year 2 and Year 3. These coefficients are generally not found to be statistically significant, which means that we cannot reliably reject the possibility that our estimated coefficients are different from zero simply due to random fluctuations in the data, rather than deeper causes such as the imposition of the regional caps. The exception is in the Bass Coast Shire where there is some evidence that the regional cap actually did lead to a reduction in venue-level gaming expenditure in the Bass Coast Shire. Our analysis suggests that venue-level gaming expenditure tended to fall in the Bass Coast Shire (relative to the comparison region of Greater Geelong) following each round of required reductions in machine numbers.

Since the full number of machines had been removed by Year 3 of the caps, looking at the cumulative effect of the caps by this time gives us the best chance of detecting significant effects on gaming expenditure. Table 6.12 summarises our estimates of these effects. In two of the regions, Maribyrnong Plus and Bass Coast Shire, the estimated falls were quite large (8.7 per cent and 20.1 per cent respectively)[54] and statistically significant. These were also the regions in which the reduction in gaming machines were the largest. By February 2004 the average venue in Maribyrnong Plus had lost 9.9 per cent of its gaming machines while the average venue in Bass Coast Shire had lost 17.5 per cent of its gaming machines. These two results suggests that the reduction in gaming machine expenditure in these regions was of a similar magnitude to the reduction in gaming machines. Estimates of the changes in the other regions are too unreliable, statistically, to be able to infer that the regional caps had any effect on gaming expenditure.

Table 6.12
Regression I: Cumulative estimated effects of caps on venue-level gaming machine expenditure by Year 3 relative to comparison region (per cent)

Region	Maribyrnong Plus	Bass Coast Shire	Greater Dandenong Plus	Darebin Plus	Shire of La Trobe
Capped	-8.7**c**	-20.1**a**	-3.2	-2.8	+5.7
Leakage	-1.8	n.a.	3.9	-2.2	n.a.
a, b, c denote significance at 1, 5 and 10 per cent levels					

However, the interpretation that the regional caps were responsible for falls in gaming expenditure at venues in some of these regions **would be more compelling** if we were able to show that gaming expenditure fell particularly sharply at the venues from which machines were removed.

[54] In an earlier section (5.3.1), we reported approximate aggregate change in revenue for Maribyrnong Plus was –8.1 per cent and Bass Coast Shire was –23.7 per cent. The difference is due to the time period chosen in the earlier analysis (March 2002 – June 2004), whereas here we consider February 2002 to February 2004 and base calculations on the average venue.

For this reason, **Regression II** seeks to extend the results by allowing the effects of the regional caps on venue-level gaming expenditure to be different for venues from which machines were removed compared to venues that suffered no loss of machines. Our expectation was that venues from which machines were removed would have experienced greater falls in gaming machine expenditure. If this were the case then we would expect the estimated coefficients on the variables 'Lost machines in Year' to be negative. The results do not support this expectation. Only six of the twelve estimated coefficients are negative and they are generally insignificant. **Statistical tests do not find significant evidence that by Year 3 of the caps the venues from which machines were removed suffered larger falls in gaming machine expenditure than other venues in any of the capped regions.**

Similarly, **Regression III** attempts to analyse the effects that the percentage removal of gaming machines had on individual venues' gaming expenditure. Our expectation was that the estimated coefficients on the variable 'Log Change in Gaming Machines' should be positive, so that a fall in gaming machines due to the regional caps resulted in a fall in gaming expenditure (i.e., less than 1, but positive). In fact, only two of our four estimated coefficients are positive, and in all cases we are unable to rule out the possibility that these coefficients were different from zero simply due to random variation in the data rather than due to the effect of the caps. Thus we cannot conclude that within the capped regions those venues that lost a larger share of their machines suffered larger falls in EGM expenditure than those that lost a smaller share of their machines.

Regressions IV-VI: Comparing venue-level gaming expenditure in the cap regions with State level gaming expenditure

While in the first three regressions we compared movements in venue-level gaming expenditure in the capped regions with venues in the matched comparison region, in **Regression IV** we compare movements in venue-level gaming expenditure with movements in State level gaming expenditure. As discussed above, since the capped regions systematically differ from the State as a whole these estimates of the effects of the caps could potentially be biased. With that qualification in mind, in this regression the coefficients on the variables Year 1, Year 2 and Year 3 are our estimates of the effects of the caps on gaming expenditure in venues in the capped regions. These coefficients are generally not found to be statistically significant, which means that we cannot reliably reject the possibility that our estimated coefficients are different from zero simply due to random fluctuations in the data, rather than deeper causes such as the imposition of the regional caps.

Table 6.13 summarises the estimated cumulative effect that the caps had on gaming machine expenditure at venues in the capped regions by Year 3 of the caps. Our analysis reveals that in four of the five regions venue-level gaming expenditure fell by more than the State average. In two of the regions these regions, Bass Coast Shire and Darebin Plus, the differences were large (15.3 per cent and 4.8 per cent respectively) and statistically significant. The latter of these is perhaps surprising since the regional caps required no reduction in machine numbers in the Darebin Plus region.

Table 6.13
Regression IV: Cumulative estimated effects of caps on venue-level gaming machine expenditure by Year 3 relative to State gaming expenditure (per cent)

Region	Maribyrnong Plus	Bass Coast Shire	Greater Dandenong Plus	Darebin Plus	Shire of La Trobe
Capped	-2.8	-15.3**b**	-3.2	-4.8**b**	+3.8
a, b, c denote significance at 1, 5 and 10 per cent levels					

Again we investigate whether we can link these estimated effects more closely to reductions in machine numbers at particular venues in the capped regions. **Regression V** extends these results by including indicators of which venues in the capped regions suffered reductions in machine numbers. A minority of the coefficients on these variables are found to be statistically significant and in two cases where they are significant, Bass Coast Shire and Greater Dandenong Plus, the signs of the coefficients are reversed from one year to the next. Statistical tests **do not find significant evidence** that by Year 3 of the caps the venues from which machines were removed suffered larger falls in gaming machine expenditure than other venues in any of the capped regions.

Similarly, **Regression VI** attempts to analyse the effects that the percentage removal of gaming machines had on individual venues' gaming expenditure. In three of the capped regions the estimated coefficients on the logarithm of changes in gaming machine numbers are not statistically significant. Only in Greater Dandenong Plus is the change in venue-level gaming expenditure found to be linked to the change in gaming machine numbers. But even in this case the coefficient is quite small, just 0.2, suggesting that at venues in that region a 1 per cent reduction in gaming machine numbers due to the cap was associated with a 0.2 per cent reduction in gaming expenditure.

6.4.2 Smoking bans

The effect of the bans on smoking in gaming areas was quite clearly apparent in the data. Table 6.14 summarises the estimated effects on gaming machine expenditure based on pooled data from the capped, comparison and leakage regions. The effect of the smoking bans varied from around 19.0 per cent in Maribyrnong Plus (including comparison and leakage regions) to 13.4 per cent in the Shire of La Trobe (including the comparison region). In particular, the effect appears to have been larger in the metropolitan areas compared to the non-metropolitan areas.

Table 6.14
Regression I: Estimated effect of the smoking bans on venue-level gaming machine expenditure (per cent)

Maribyrnong Plus	Bass Coast Shire	Greater Dandenong Plus	Darebin Plus	Shire of La Trobe
-19.0**a**	-14.5**a**	-17.2**a**	-17.4**a**	-13.4**a**
a, b, c denote significance at 1, 5 and 10 per cent levels				

There was little evidence that the effects of the smoking bans on gaming expenditure were different in the capped regions compared with the effects on gaming expenditure in either the comparison regions or the State as a whole. In Regressions IV, V and VI the coefficient on the variable 'Smoking Bans' is an estimate of the different effect the smoking bans had on expenditure in the capped regions compared to the State as a whole. These coefficients are found generally not to be statistically significant. The exception is for the Shire of La Trobe, where there is some statistical evidence that the smoking bans may have caused expenditure to fall further than in the State as a whole.

6.4.3 Twenty-four hour gaming

The reduction in maximum gaming hours from 24 to 20 hours per day appears to have reduced gaming expenditure at the affected venues. The results of a regression on all five pairs of capped and comparison regions (not shown) suggested that in those venues that lost 24 hour gaming the level of gaming expenditure subsequently fell by around 3.3 per cent, and this estimated effect was statistically significant at the 5 per cent level of significance. This was mainly due to an observed fall in gaming expenditure at hotels from which 24 hour gaming was removed; it was difficult to estimate the effect on clubs due to the small number of venues affected. That said, we were not able to assess whether this resulted in a reduction in total gaming expenditure or simply a movement between venues.

6.5 Confounding factors: size of venues and population growth

In this section we briefly discuss two issues that could have caused gaming expenditure to evolve differently over time at venues in the capped and comparison regions. In general we find little evidence that these factors could qualitatively affect the results we presented in the previous section.

6.5.1 Size of venues

While our comparison regions were chosen to match the capped regions as closely as possible in terms of a range of demographic characteristics, nevertheless individual venues in these areas may differ in a number of ways. One difference that we can quantify is the average size of the venue, which we measure by the number of electronic gaming machines. Table 6.1 illustrated the average number of machines per venue in the capped and comparison regions. Maribyrnong Plus and the Shire of La Trobe have quite similar average venue size to their respective comparison regions. However, Bass Coast Shire has considerably smaller venues on average than the Shire of Greater Geelong, while the average size of venues in Darebin Plus and Greater Dandenong Plus are somewhat larger than the average size of venues in their respective comparison regions.

If gaming expenditure had evolved at different rates in different sized venues over the duration of the regional caps then this could be causing some distortion of our estimated effects of the caps. To explore this possibility, we include in the Regression 'I' specification an additional set of three variables defined to be the number of machines at a venue at a point in times multiplied by the indicators of Year 1, Year 2 or Year 3 of the caps.

Our analysis suggests that in fact gaming expenditure has tended to grow a little faster over this period in larger venues, though these variables only appear to significantly improve the explanatory power of the regression on data for the Bass Coast Shire (results not shown). In this case, the regression results suggest that by Year 3 of the regional caps the level of gaming expenditure might have been around 4 per cent higher had venues in the Bass Coast Shire been as large as those in the Shire of Greater Geelong.

Overall, though the average size of venues does differ between some of our capped regions and their chosen comparison regions, this difference does not appear to qualitatively affect our results.

6.5.2 Population growth

In most areas, a significant portion of gaming expenditure comes from people who live close to the gaming venues. For this reason, regional growth in the adult population is expected to increase gaming machine expenditure.

This could potentially distort our estimates of the effects of the regional caps on gaming expenditure if the population grew at a different rate in the capped regions compared to the comparison regions. In particular, if the adult population grew faster in the comparison region than in the capped region then our estimates above would be biased towards finding that the regional caps reduced gaming expenditure. Conversely, if the adult population grew faster in the capped region than our estimates above would be biased towards finding that the regional caps did not reduce gaming expenditure. However, the difference in population growth rates would need to be quite large to markedly distort our estimates of the effects of the regional caps. This is because some gaming expenditure comes from people living outside of the region in which a venue is located. As a result, we would expect that a 1 per cent increase in the adult population would increase gaming expenditure at venues in the region by less than 1 per cent.

Table 6.15 presents estimated growth in adult populations in the corresponding Local Government Areas over the duration of the regional caps. The data suggest that over the three years of the caps, in Maribyrnong, Greater Dandenong and Darebin the adult populations grew at quite similar rates to the adult populations in their respective comparison regions. These differences are probably too small to affect our estimates of the effect of the regional caps.

However, in the Bass Coast Shire the adult population grew around 6 per cent more over these three years than in the Shire of Greater Geelong. By stimulating growth in gaming machine expenditure, we expect that this might have biased our estimates towards a finding that the regional cap had no effect on gaming expenditure in the Bass Coast Shire. This only adds strength to our previous finding that the regional caps likely caused a fall in gaming expenditure in the Bass Coast Shire. By contrast, in the Shire of La Trobe the adult population grew much less rapidly than the adult population in the Shire of Ballarat. We would expect that this would have biased our estimates towards finding that the regional caps caused gaming machine expenditure to fall in the Shire of La Trobe. This adds weight to our finding above that the regional caps had little effect on gaming machine expenditure in the Shire of La Trobe.

Table 6.15
Estimated Adult Populations and Growth Rates by Local Government Area

	30-Jun-01	30-Jun-02	30-Jun-03	30-Jun-04	Growth from 2001 to 2004
Maribyrnong	49,252	49,377	49,814	50,385	
		0.3%	0.9%	1.1%	2.3%
Hobsons Bay	63,837	64,065	64,319	64,744	
		0.4%	0.4%	0.7%	1.4%
Greater Dandenong	98,785	98,527	98,800	98,830	
		-0.3%	0.3%	0.0%	0.0%
Monash	131,417	130,870	130,825	131,909	
		-0.4%	0.0%	0.8%	0.4%
Darebin	103,556	103,420	103,718	104,845	
		-0.1%	0.3%	1.1%	1.2%
Moreland	109,918	109,903	110,192	111,425	
		0.0%	0.3%	1.1%	1.4%
Bass Coast	19,982	20,955	21,759	22,279	
		4.9%	3.8%	2.4%	11.5%
Greater Geelong	147,311	150,665	152,800	155,072	
		2.3%	1.4%	1.5%	5.3%
La Trobe	51,266	51,607	51,747	52,073	
		0.7%	0.3%	0.6%	1.6%
Ballarat	61,913	63,165	64,317	65,210	
		2.0%	1.8%	1.4%	5.3%
Total	3,649,313	3,701,964	3,762,463	3,816,850	
		1.4%	1.6%	1.4%	4.6%

Source: *Victoria in Future 2004* unpublished data supplied by the Victorian Department of Sustainability and the Environment; SACES calculations.

6.6 Conclusions

The results of our analysis are mixed. There is some evidence that the regional caps could have caused gaming expenditure to fall in the Bass Coast Shire, and some evidence of falls in Maribyrnong Plus and Darebin Plus. Though there remains significant uncertainty over the size of this effect, in the first two cases the fall in gaming expenditure may have been of the same order as the reduction in gaming machine numbers required by the regional caps. These results appear not to be the result of other differences in the regions such as the average size of the venues and the rate of population growth.

However, if the falls in gaming expenditure in the Bass Coast Shire and Maribyrnong Plus were a result of the regional caps, which required the number of machines in these regions to be reduced, then the falls in expenditure should have been greater in the specific venues that lost machines. That we could not find any consistent evidence of this linkage raises question marks about the interpretation of these results.

In the other two regions, Greater Dandenong Plus and the Shire of La Trobe, we are unable to find solid evidence that the regional caps had any effect on gaming machine expenditure.

The regional caps were introduced with the intention of reducing the harm caused by problem gambling, rather than specifically reducing the level of gaming expenditure. Testing these hypotheses relating to gaming expenditure is only a first step in the analysis. Despite evidence that gaming expenditure fell in some of the capped regions it remains to conclude whether this resulted — to some extent — from a reduction in expenditure by problem gamblers. In regions where we were unable to identify a significant fall in gaming expenditure this would suggest that either there has been no significant decline in expenditure by problem gamblers or the (highly) unlikely circumstance, that the change in expenditure by problem gamblers was balanced by an opposing change in the expenditure of recreational gamblers.

On balance, we find no evidence that regional caps had any positive influence on problem gamblers or problem gambling. In venues (and regions) that lost machines and did not experience significant change in population, the evidence is that machine utilisation rates (and NGR per machine) increased following machine reductions. The numbers of "gamblers in counselling" do not indicate any positive impact; most importantly, the experience of venue owners/local managers is that the removal of machines left problem gamblers largely unaffected because previously idle machines were taken up.

The experience and insights of venue owners/local managers is that the smoking ban and the reduction in 24 hour trading did result in a decline in participation and expenditure (observations, again, supported by the data).

Our findings, then, on the effects of the other two policies are clearer. The ban on smoking in gaming areas markedly reduced gaming expenditure in all regions we studied. The successive removal of 24 hour gaming also appears to have reduced gaming expenditure at the affected venues, though by a smaller amount.

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Appendix 1

Impact of Caps on Electronic Gaming Machines
Terms of Reference and Reporting Time Lines

A1.1 Objectives of the Study

The primary objective of this project is to assess the impact of the introduction of EGM caps within five Victorian regions with a view to determining their effectiveness in reducing the risks to the community associated with this form of gambling, including the risk of an increased incidence of problem gambling and its associated social and economic effects.

The project will examine the evidence as appropriate on a venue basis, local government level and community level, and will investigate, amongst other things, the turnover, usage patterns, customer migration, problem gambling service attendance and other relevant indicators over the course of the introduction of the caps policy. The policy required the removal of machines from five specified regions commencing in February 2002 and concluding in February 2004.

A1.2 Terms of Reference

The consultant will conduct research and analysis that evaluates the impact of the imposition of the regional caps on the number of EGMs in relation to reduction of problem gambling and related issues in vulnerable communities. In so doing, the successful tenderer will:

- analyse recent overseas and Australian research on relevant successful problem gambling interventions and the extent to which caps on EGMs of various magnitudes may be a useful policy tool in reducing problem gambling and influencing gambling behaviour;
- consult with relevant researchers, stakeholders and service providers in relation to perceptions of which interventions, including regional caps, may work to reduce the incidence of, and problems related to, problem gambling;
- devise a research design that includes the five regions with caps and five other selected regions, chosen in relation to agreed comparative criteria;
- outline a detailed methodology as to how the study will be conducted. This must include: an analysis on a venue basis, local government level and community level, of EGM turnover and usage patterns, gambling intensity, travel patterns associated with people gambling, problem gambling service attendance and other relevant indicators, over the course of the introduction of caps in the ten Victorian selected regions;
- consult with the researchers conducting other GRP projects as appropriate, consult at least every four months with a steering group, and issue interim reports to the Panel in April 2002, 2003 and 2004, with the final report due by 30 June 2004; and

- evaluate the efficacy of regional caps of various magnitudes on the intensity of gambling and the reduction of the harm associated with problem gambling, taking into account a range of socio-economic, geographic and demographic factors (including race/ethnicity, with particular attention to consideration of ethnic groups for whom English is not the primary language).

A1.3 Outcomes

A detailed final written report was specified in relation to the efficacy of regional caps as a policy tool for protecting vulnerable communities from the harms associated with problem gambling. The report must be of use to government policy makers and the Australian community services sector on the effectiveness of existing and alternative policies.

It was originally planned that three reporting stages associated with the phased reduction in machine numbers would be required. However, as venue data was only made available in August 2004 this was not possible. The reporting structure and timelines were subsequently altered. Draft Preliminary Report 1 and Reports 2 and 3 combined, were supplied to the GRP. The contents of these reports are included in this final report, specifically the review of literature, the methodology and selection of control groups and the analysis of historical gaming data.

The original reporting structure and timelines is set out below for information purposes.

A1.4 Reporting Structure and Timelines

April 2002	Preliminary Report 1: containing the results of the literature review, and a detailed analytical framework
May/June 2002	Preliminary Report 2: the recommendations as to appropriate regions for inclusion in the control group;
July 2002	Preliminary Report 3: a review of the historical gaming data at a regional, town/suburb and venue level for the 10 regions to be studied
April 2003	Preliminary Report 4: reporting the comparative trends in the data for the trial and control regions, from the start of the trial up early 2003, and on the implementation process to date.
April 2004	Preliminary Report 5: reporting the comparative trends in the data for the trial and control regions, from the start of the trial up early 2004, and on the implementation process to date.
May 2004	Draft Final Report: synthesising the results of literature review, consultations and the conclusions drawn from the data analysis to provide feedback on the success or otherwise of the trial in reducing the harm caused to problem gamblers, together with an outline of any unintended consequences resulting from the trial.
June 2004	Final Report: the draft report will be refined incorporating feedback from the Steering Committee and other stakeholder, together with the comments of the academic referee selected by the committee.

Appendix 2

The Nature of Problem Gambling: Particularly with regard to Electronic Gaming Machines

Summary of Discussion

The study into the impact of caps on electronic gaming machines is essentially a study into one intervention strategy to reduce problem gambling and minimise harm to gamblers. It is important to have an understanding, from a psychological point of view, of the likely effectiveness of this intervention strategy. This section considers the ever growing literature on problem gambling and problem gamblers, the definition of problem gambling, conditions associated with problem gambling, theories and classification of problem gamblers and possible intervention strategies, including the likely effectiveness of caps on the number of EGMs.

Recent literature has suggested that there are a number of factors that are likely to interact with each other in the development and maintenance of problem gambling, and that no single element can adequately explain such a complex phenomenon. This has resulted in a biopsychosocial model of gambling, which acknowledges that the contributing and interacting factors may be:

- Psychological
- Biological
- Environmental
- Social

In addition to the use of psychological techniques, this multimodal approach also allows for practical and environmental factors to be incorporated (e.g. financial counselling and harm minimisation measures such as reduction in accessibility, education, self-exclusion and regulation of the gambling environment).

At the commencement of the research program into the impact of the caps on five regions, we might reasonably hypothesise, that isolated interventions (such as capping the number of EGMs) will not alone achieve the desired harm minimisation outcome. It would seem that a comprehensive, multifaceted approach to the treatment of problem gambling may be more effective over time. Notwithstanding, the potential impact of the caps remains an open question.

A2.1 Australian State of Play

While Electronic Gaming Machines[55] were first legalised in NSW clubs in 1956, they have now spread to all states, with only Western Australia severely restricting access to machines by licensing only the Burswood Casino. In all other states and territories, licensed clubs and hotels are permitted to use EGMs, with clubs often receiving preferential treatment in terms of types of machines available (in the ACT), numbers of machines per venue (for example in NSW) and tax rates payable on EGM revenue. Table A2.1 shows the distribution of EGMs by State/Territory and between different types of venues. In 1999/2000, gaming machines accounted for around 58 per cent of all gambling expenditure in Australia (Tasmanian Gaming Commission).

[55] Electronic Gaming Machines (EGMs) tend to be referred to as 'poker machines' or 'pokies' in Australia, 'slot machines' in America, 'video lottery terminals' in Canada and 'fruit machines' in the UK.

Table A2.1
Numbers of Electronic Gaming Machines 1999/2000

	Casinos	Hotels	Clubs	Total
New South Wales	1,500	25,452	74,710	101,662
Victoria	2,500	13,714	13,730	29,944
Queensland	3,238	16,492	19,235	38,965
Western Australia	1,318	Prohibited	Prohibited	1,318
South Australia	824	12,774	1,641	15,239
Tasmania	1,153	1,606	231	2,990
ACT	Prohibited	60	4,939	4,999
Northern Territory	610	221	604	1,435
Australia	11,143	70,319	115,090	196,552

Source: Tasmanian Gaming Commission.

About 80 per cent of adults in Australia have gambled at some stage in their lives. The overwhelming majority gamble responsibly and experience no problems as a result of this form of entertainment. Nevertheless, a significant number do experience problems with, by one estimate, around 1 per cent meeting the criteria for pathological gambling and 2.3 per cent experiencing significant gambling problems (Blaszczynski 2002). This is generally higher than the USA and Canada where access to all forms of gambling, particularly electronic gaming machines (EGMs) is more restricted (Australian Institute of Gambling Research, 1997).

Electronic Gaming Machines have been identified by many community groups and state governments as being of particular concern, because they represent such a large share of all gambling and because they are perceived to be linked to the development of a range of social problems. The Productivity Commission noted a more robust relationship between problem gambling and numbers of EGMs than for other indicators of gambling availability, and this remains persuasive notwithstanding later criticisms.[56] These perceptions appear to be mirrored internationally. The New Zealand Department of Internal Affairs found that gamblers with serious problems were likely to prefer more continuous types of gambling, such as racing, EGMs and casino games. The Responsible Gambling Bill before the New Zealand Parliament classifies electronic machine gaming as class 4 gambling (the highest class, casinos, are regulated separately) warranting strong restrictions on the number of machines per venue (just 9 machines for venues licensed after 17 October 2001). The United Kingdom Home Office distinguishes 'hard' from 'soft' forms of gambling largely upon the ability to bet more frequently, identifying EGM usage in the former category.

While a small proportion of players, the contribution of problem gamblers to industry revenue is significant; the Productivity Commission (1999) estimated that 42.3 per cent of all money spent on EGMs in Australia is by problem gamblers, of which the majority (and 33.7 per cent of the whole) is spent by those with severe problems. The costs to the

[56] Mizerski et al (2001) have disputed the special relationship between problem gambling and EGMs, using the Productivity Commission (1999) survey data to argue that the distribution of machine gaming among consumers is not dissimilar to the pattern associated with most consumer goods and other forms of gambling. There are significant methodological problems to be found in the paper, and hence, the conclusions contained in the paper should be discounted.

problem gambler of time spent gambling can be equally disruptive to their families, friends and career. Jackson, *et al* (2000) report that problem gamblers that normally use EGMs typically play for spells of around 3 hours, an average of 8 times per month.[57]

The effects of problem gambling are compounded by their disproportionate impact on lower socio-economic groups, with lower income households spending disproportionately greater shares of income on gambling. This phenomenon is not unique to Australia, with Korn (2000), for example, citing Canadian data that households with income of less than $20,000 per annum spent 2.2 per cent of income on gambling, while households with incomes of $80,000 or more spent just 0.5 per cent of income on gambling.

A2.2 Psychological Overview

In what follows, we provide a psychological overview of problem gambling, considering in turn a definition of problem gambling, the measurement and characteristics of problem gambling, the conditions most frequently associated with excessive gambling behaviour and the course of problem gambling, with a brief review of the impacts of problem gambling. Debate continues as to the classification of problem gambling. We examine the theoretical models to understand gambling behaviour in Sections A2.3 to A2.8, prior to considering appropriate intervention strategies in Section A2.9. The likely effectiveness of caps on the number of electronic gaming machines is considered in Section A2.10.

A2.2.1 Definition of Problem Gambling

In the literature, the terms 'compulsive', 'pathological', 'disorded', 'excessive' and 'problem' gambling have often been used interchangeably, to describe someone who exhibits an emotional dependence on gambling and impaired control over such behaviour. The term 'problem gambling' is now more generally accepted because it is more neutral and it avoids any implication that there is an underlying disease model to explain the gambling behaviour (Blaszczynski, Walker, Sagris & Dickerson, 1997).

The Australian Institute of Gambling Research (in a report prepared for the Victorian Casino and Gaming Authority) has recommended the following definition of problem gambling:

> 'Problem gambling' refers to the situation when a person's gambling activity gives rise to harm to the individual player, and/or to his or her family, and may extend into the community. *(Australian Institute of Gambling Research, 1997. P2).*

This definition is particularly useful from a public policy perspective as it stresses the presence of harm rather than a list of diagnostic criteria. It also places the individual's gambling problems in a broader context and avoids academic arguments about the causes of problem gambling.

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[57] Estimates vary. Roy Morgan (2001) found that the average time spent playing EGMs by those identified as 'at risk' was 195 minutes per week compared to 27 minutes among all players.

While definitions may vary, problem or disordered gambling appears to be a robust phenomenon that can be reliably identified in many study settings. Shaffer et al (1997) find, on the basis of a survey of 152 papers, that lifetime prevalence of problem or disordered gambling in the US and Canada at between 1.35 per cent and 1.85 per cent. The prevalence of disordered gambling behaviour in the past year is estimated at between 0.90 per cent and 1.38 per cent. They also identify a second group of gamblers, roughly 2 to 3 times as common, who suffer many of the negative consequences of problem or disordered gambling but to a sub-clinical degree. These rates appear to have been increasing over the past two decades.

There appears to be a general consensus within the literature, that the estimate of the number of pathological gamblers combined with those who experience significant gambling problems, ranges between the lower bound of 1.5 per cent to an upper bound of 3.7 per cent in Australia; that the rates are slightly higher for Australian than the USA or Canada (where certainly access to all forms of gambling and particularly EGMs is more restricted); and that a figure of at least one third (Productivity Commission says 42.5 per cent) of all money spent on EGMs is sourced from problem gamblers.

In addition, it must be remembered that the Productivity Commission found that problem gambling was higher among gaming machine gamblers compared to gamblers who favoured other forms of gambling. This finding is consistently confirmed by other survey data, and independent research, and is associated with the preferred form of gambling nominated by gamblers themselves.

The fact is, that gaming machines are played by much larger numbers of people; they represent a continuous form of gambling whereas other forms of gambling are restricted to weekly or several times a week, while gambling at a casino is less accessible to much of the population.

What is often quoted from the Productivity Commission (1999) is their estimate of the extent of problem gambling for all forms of gambling:

- that nationally, 2.1 per cent of the adult population is estimated to have a significant problem with gambling;
- 1 per cent have severe gambling problems; while
- 1.15 per cent have moderate gambling problems.

Equally significantly, but far less spoken of are the following estimates provided by the Productivity Commission:

- 4.67 per cent of all gaming machine gamblers are problem gamblers;
- those States with high concentrations of gaming machines and other forms of gambling have high problem gambling prevalence rates (New South Wales 2.55 per cent, Victoria 2.14 per cent); and
- those States with no gaming machines or limited gaming activity had lower problem gambling prevalence rates (Western Australia 0.7 per cent, Tasmania 0.44 per cent).

A2.2.2 The Measurement of Problem Gambling

The DSM-IV

Pathological gambling was first included as a mental disorder in the Diagnostic and Statistical Manual of Mental Disorders – Third Edition (DSM-III) in 1980. In the latest edition: DSM-IV (American Psychiatric Association, 1994), pathological gambling is categorised as an "Impulse Control Disorder Not Elsewhere Classified" and it appears with other impulse disorders (such as kleptomania and pyromania). According to the criteria, pathological gambling can be diagnosed if at least five of the ten conditions are met. (See Section A2.11)

Some concern has been expressed in the literature about aspects of the DSM-IV criteria for Pathological Gambling. The diagnostic criteria have been criticised as inappropriate for the Australian context, and unable to distinguish between disordered and non-disordered gambling (Australian Institute of Gambling Research, 1997). Some believe that these criteria inappropriately use a 'medical model' for a behaviour that, for some gamblers, may be a socially constructed disorder. (Wedgeworth 1998)

The South Oaks Gambling Screen (SOGS) (Lesieur & Blume, 1987).

This is a screening measure based on the DSM-III (American Psychiatric Association, 1980) criteria for pathological gambling. It asks individuals to describe their gambling habits over their lifetime. (See Section A2.12).

The SOGS has been criticised in the literature as being faulty and inappropriate. A major concern about the use of SOGS is that it is not appropriate for culturally diverse contexts and it is not sensitive to the unique ways in which context determines whether an individual's gambling has harmful effects or not. Nevertheless, the SOGS is the only available screening measure that has been validated and used internationally. (Australian Institute of Gambling Research, 1997).

A2.2.3 Characteristics of Problem Gambling

Although individual profiles may vary, the following are some of the characteristics commonly found in people who have a gambling problem Blaszczynski (2002):

- 90 per cent commence gambling before the age of 20;
- the majority of gamblers are able to gamble at a controlled level until about the age of 25;
- problem gambling persists for about nine to ten years before treatment is sought;
- average age for seeking treatment is 35 years;
- only half the number of people with a gambling problem express an interest in treatment;
- less than 15 per cent of people with a gambling problem are in treatment at any one time;

- the gender ratio for those in treatment is 3:2 males to females;
- 60 per cent commit a non-violent property crime to support their habit;
- about 30 per cent drop out of treatment after one or more sessions;
- the majority enter treatment at a time of crisis or because of family pressures; and
- marital problems and domestic violence arise as a result of anger and loss of trust brought about by repeated deceit and lies that occur in an attempt to avoid detection.

A2.2.4 Co-morbid Conditions

Blaszczynski (2002) notes the following most common co-morbid conditions often found with pathological gambling:

- **Depression:** approximately 75 per cent of people with a gambling problem meet criteria for major depression.
- **Anxiety:** approximately 20 per cent of people with a gambling problem.
- **Suicidal Ideation:** about 40 per cent have clinically relevant suicidal ideation. *"Records of the Melbourne Coroners Court reveal a progressive increase in the number of gambling related suicides, from 2 cases several years ago to 9 cases in the last year."* (Blaszczynski 2002 p4).
- **Substance Abuse:** approximately 40 per cent abuse alcohol or other substances.
- **Antisocial Personality Disorder:** about 14 per cent to 30 per cent of people with a gambling problem display signs of anti-social personality disorder.

The Canadian Centre on Substance Abuse (2001) has identified the condition of problem gambling and co-morbidity with drugs and alcohol. A recent Queensland (2001) study employed the Canadian Problem Gambling Index to identify correlates with problem gambling groups to include, *inter alia*:

- family problems with alcohol, drugs and gambling;
- co-morbidity with alcohol and drugs; and
- pain relief, stress, depression and suicide ideation.

The Queensland Household Gambling Survey (2001) reported on the strong association between "the likelihood of using alcohol/drugs and gambling under the influence of alcohol/drugs increases as gambling problems increase" (p. 22).

A2.2.5 The Course of Problem Gambling

There is considerable literature describing the course of problem gambling. Blaszczynski (2002) summarised the Custer and Milt (1985) four-phase course of problem gambling as follows:

- **Winning:** many gamblers may experience a win when they first start, which establishes the belief that it is possible to win at gambling, and that gambling can be an easy source of income.
- **Losing:** losses will invariably occur because of the laws of probability and the very structure of gambling. Debts begin to accumulate and the gambler may attempt to win back losses, which can lead to spiralling financial difficulties.
- **Desperation:** When gambling funds are exhausted the gambler may turn to illegal sources of funds in order to maintain the gambling activity, in the hope that the large win is imminent.
- **Hopelessness:** The realisation that debts are out of hand may lead the gambler to gamble in an excessive manner, which may in turn bring about the threat of disclosure. This can create a crisis that may include depression and suicidal ideation.

A2.2.6 The Impacts of Problem Gambling

The problems experienced by problem gamblers are both serious and numerous. While the problem gambler suffers, the costs also spill over to the gambler's family members, friends, employers, creditors, and the whole community. The Productivity Commission (1999) estimated that on average, seven people other than the problem gambler are affected by the gambling problem. Some of the possible impacts associated with problem gambling include[58]:

- **Personal** — Gambling problems can be associated with feelings of guilt, low self-esteem, stress and poor health. Gambling problems heighten depression and anxiety in some people, and this depression may sometimes lead to suicide. The Productivity Commission (1999) reports that around half of those surveyed who experienced at least moderate gambling problems had suffered depression as a result of gambling on at least one occasion, one in ten problem gamblers seeking counselling report an attempted suicide, and between 35 and 60 suicides in Australia in 1997 were linked to gambling problems.
- **Interpersonal** — The heightened levels of stress, financial problems and reduced time spent with family (and friends) can lead to arguments, relationship breakdown and in some cases domestic or other violence. The Productivity Commission's (1999) survey revealed that around one-fifth of problem gamblers believe they do not spend enough time with family as a result of their problem, and around one in ten has experienced a relationship break-up linked to their gambling problem. More recent data for Victoria (see Table 2.3) indicates that roughly one-half of problem gamblers seeking help have jeopardised a relationship or employment as a result of their gambling problem. Poor interpersonal relationships may contribute to a sense of isolation.
- **Financial** — The financial losses inevitably associated with gambling problems combined with the ready availability of credit (the availability of credit cards has been singled out by some counsellors) leads to bad debts (and so costs to

[58] This section draws heavily on the work of the Productivity Commission (1999) in Australia, though similar problems are cited by the National Opinion Research Centre (1999) for the United States.

creditors, which often also include family and friends), asset repossessions including the forced sale of houses, financial hardship for the gambler and immediate family, and the consequences of bankruptcy. Children suffer because of the family's poverty; while the family struggles to buy food, luxuries like new clothing and recreation may be overlooked.

- **Legal** — The financial stress and employment problems that many problem gamblers experience makes meeting basic living expenses difficult after gambling expenditure. This provides an incentive to steal – both common theft and employee fraud. At the same time, the social isolation that many people with problems feel reduces the disincentives. A criminal history then exacerbates the difficulty finding work on release. There is evidence from North America that the prison population has a much higher lifetime incidence of problem gambling than the broader community (Shaffer, Hall and Vander Bilt, 1997).
- **Work and study** — Preoccupations with gambling and, in many cases, the associated time spent away from the workplace can result in poor job performance, absenteeism and finally job loss. The Productivity Commission (1999) found that around one-fifth of problem gamblers said they lost time from work or study due to gambling; one problem gambler in 200 indicated that they had been sacked as a result of their gambling. Job loss represents a cost both to the employee, who may require significant time and effort to find new employment, and employer, who will pay hiring and training costs for new staff.
- **Community** — Inevitably, the poverty resulting from excessive gambling losses presents greater need to charitable community organisations for basic support in the form of food and clothing, etc. These community organisations often also provide counselling help to problem gamblers. At the same time, the widespread availability of gambling opportunities means that charitable organisations have greater difficulty raising the money needed to provide these services through raffles and bingo nights. Loss of employment may also lead to social security receipt, adding a burden to the public purse.

Table A2.2 outlines recent data on clients presenting to the Gambler's Help service in Victoria. Around half of those seeking assistance from Gambler's Help reported personal, interpersonal and financial problems. More than one-third reported family problems and more than one-fifth reported work-related problems.

As noted in section A2.2.4, problem gamblers exhibit a range of co-morbid conditions and in many cases would present these problems in the absence of gambling opportunities. Not surprisingly, some gaming industry representatives argue that this is the dominant pathway into problem gambling; that people with problems gamble, rather than gambling causing problems.

Table A2.2
New Clients of Gambler's Help: Problem Gamblers Presenting Problems by Gender
Victoria — 1 July 1999 to 30 June 2000

	Men[1] Clients	Women[2] Clients	Persons[3]	
			Clients	Per cent
Financial issues	735	669	1,404	55.1
Employment and work-related issues	323	219	542	21.3
Leisure use issues	432	414	846	33.2
Interpersonal related	609	588	1,197	47.0
Intrapersonal	686	722	1,408	55.3
Family issues	461	500	961	37.7
Legal issues	149	78	227	8.9
Physical symptoms	97	120	217	8.5
Gambling behaviour	1,214	1,204	2,418	95.0

Notes: [1] n = 1,285
[2] n = 1,261
[3] n = 2,546
Source: Jackson, *et. al.*, 2000.

> *"Q. Do problem gamblers exist?*
> *A. I am yet to be convinced of this, however I fully acknowledge that there are people with problems who gamble. A lot of these people also have other dependencies or addictions."*
> (Mr Windross, Managing Director of the TAB, submission to the Productivity Commission Inquiry into Australia's Gambling Industries.).

There are essentially two dimensions to this argument. Firstly, there is the argument that due to the differing demographic characteristics of problem gamblers they are more likely to experience a range of problems. However, demographic characteristics alone do not appear to explain away the different incidence of these problems; the National Opinion Research Centre (1999) finds that problem gamblers experience other personal, financial and interpersonal problems to a significantly greater degree than otherwise similar gamblers.

The second argument is that the people who are susceptible to developing gambling problems are different in characteristics that are difficult to observe. Among these differences, it is argued, is a raft of personal and interpersonal problems (or propensity to develop these problems). Hence, the argument runs, we should expect to see problem gamblers exhibit a range of other personal problems *even if* gambling problems do not produce these side problems. Nevertheless, there is evidence, as discussed by the Productivity Commission (1999), that some problem gamblers exhibit no significant problems prior to the onset of a gambling problem. Moreover, problem gambling may reinforce pre-existing patterns of destructive behaviour. A person may develop a gambling problem because they are lonely, bored or feeling isolated. By its nature, the gambling problem results in significant financial losses to those affected and may take time away from work, study or family relationships. This exacerbates any pre-existing financial problems and places stress on family relationships and friendships. In

response, the desire to escape (or to recover losses) by playing the EGMs may increase. Many of these linkages are demonstrated by clients of Gambler's Help (Table A2.3). Almost 90 per cent of clients gamble to escape their everyday lives, 80 per cent chase losses, roughly half have jeopardised relationships or employment as a result of their gambling problem and almost one in five have committed illegal acts. While access to gaming machines does not cause the problems, there would be one less means of perpetuating the vicious cycle in the absence of gambling opportunities.

Table A2.3
Problem Gambling Clients of Gambler's Help: Maladaptive Behaviour
Victoria — 1 July 1999 to 30 June 2000

	Men[1] Clients	Women[2] Clients	Persons[3]	
			Clients	Per cent
Preoccupied with gambling	742	717	1,459	62.6
Needs to gamble increasing amounts of money	676	677	1,353	58.1
Has repeated unsuccessful efforts to control gambling	892	924	1,816	78.0
Is restless or irritable when attempting to cut down	646	696	1,342	57.6
Gambles as a way of escaping	986	1,085	2,071	88.9
After losing money, chases losses	992	890	1,882	80.8
Lies to family members, friends and others	846	844	1,690	72.6
Has committed illegal acts	261	165	426	18.3
Has jeopardised relationships, job, education, etc.	714	506	1,220	52.4
Relies on others to provide money	621	601	1,222	52.5

Notes: [1] n = 1,176
[2] n = 1,153
[3] n = 2,329
Source: Jackson, *et. al.*, 2000.

The Productivity Commission (1999) estimated the costs of gambling problems to the affected individual and society as a whole to be between $6,000 and $19,000 per problem gambler per year (Table A2.4). These figures do not include any financial loss from gambling expenditure, as these losses are primarily transfers from the gambler to the gaming operators, venues and state government. The Commission emphasised that a disproportionate amount of the total costs of problem gambling can be attributed to EGM usage because a higher proportion of EGM revenue comes from problem gamblers than for other forms of gambling.

A2.2.7 Problem Gambling as a Mental Disorder

The inclusion of gambling related problems in the DSM – III (1980) encouraged a perception of gambling as a compulsive illness, an addiction, or an uncontrollable impulse.

Table A2.4
Costs Associated with Gambling Problems per Problem Gambler, 1997-1998 ($)

	Low Estimate	High Estimate
Financial		
Bankruptcy	4	4
Productivity and employment		
Productivity loss at work	72	512
Productivity loss outside of work	25	171
Job Change		
Earnings loss	82	82
Employee job search	44	44
Employer staff replacement cost	75	75
Crime and legal		
Cost of police incidents	11	11
Court costs	19	19
Jail costs	17	17
Personal and family		
Emotional distress of family		
Severe problem gamblers only	2,580	10,010
Breakup of a relationship	983	2949
Financial cost of divorce	10	10
Emotional cost of divorce	430	863
Cost of violence	10	28
Depression	788	2362
Thought of suicide	410	816
Attempted suicide	239	399
Impact on family	276	621
Treatment costs		
Gambling counselling services	68	68
TOTAL	**6,143**	**19,065**

Source: Productivity Commission, 1999.

The notion that problem gambling is a type of mental disorder is a matter of significant debate in Australia (Australian Institute of Gambling Research, 1997).

Alternatives to this 'medical model' are the sociological perspectives, which convey the notion that, given the appropriate circumstances, anyone could develop a problem with gambling (Walker, 1992).

A2.2.8 Gambling as a continuum

There is a question as to whether or not problem gamblers are in a separate category from other regular or heavy gamblers, or whether they are all part of the same continuum. Two opposing views have been put forward:

- ***The categorical/disease view*** suggests that problem gamblers are categorically distinct in some way from other gamblers or non-gamblers. This view is espoused by Gamblers Anonymous and those who advocate gambling as an addictive disorder. (Blaszczynski et al., 1997). It describes problem gamblers as having a set of characteristics that place them at risk of gambling excess. In many parts of the world the term 'pathological gambler' is used for this group of individuals. (Blaszczynski et al., 2001).
- ***The Dimensional View*** presents an opposing model and argues that gambling lies on a continuum of involvement ranging from non-gamblers, through to those who gamble excessively. Problem gambling is seen as a matter of degree, whereby if heavy gamblers lose sufficient money to cause major problems in their lives, then they are seen as problem gamblers. According to this model, problem gamblers are not intrinsically different from other heavy gamblers in their genetic make-up or personality (Sharpe & Walker, 2001).

The categorical model emphasises the 'pathological', abnormal nature of the problem and has implications for the treatment of gambling, and for social policy. While the Australian Psychological Society position paper on gambling concludes that:

> *"To date there is no evidence which provides a strong argument in favour of the categorical disease model"* (Blaszczynski et al., 1997, p19),

the danger of the categorical disease model is that it may give the impression to ordinary people that they are not at risk of developing problems. Whereas, in fact, problem gambling is a complex phenomenon with a variety of causal factors, which can affect anyone, given the right circumstances. Submissions to the Productivity Commission (1999) emphasise that a range of community members are affected by problem gambling including accountants, solicitors, doctors, psychologists, footballers, political figures, unemployed people etc. If we were to accept the dimensional view or the continuum model, then the implication would be that every person who is exposed to gambling has the potential to become a problem gambler. It therefore has implications for the ready availability of gambling in the community.

A2.3 Theoretical Models: Towards an Understanding of Gambling Behaviour

Summary of Discussion: Towards a Biopsychosocial Model

As Blaszczynski et al. (2001) have pointed out, it is important to understand the psychological processes involved in the development and maintenance of problem gambling before one can explore the possible mechanisms through which harm from gambling might be reduced.

When attempting to understand why people gamble, we may search for the explanation *within* the person (cognitions, feelings, motives, personality, genetic make-up, physiological reactions) or *outside* the person, in situational contexts exerting control over the person (such as social and economic factors).

On the one hand we could say that people gamble for the pleasure they gain from the activity. On the other hand, we might say that people would not gamble if there were no *opportunities* to gamble. It is of course likely that a joint approach to understanding gambling is more effective than one perspective alone. (Walker, 1992).

Another related question is why some people bet within their means while others develop problem gambling behaviours, betting more than they can afford and thus causing harm to themselves, their relationships or their broader social context.

The Productivity Commission (1999) came to the conclusion that the majority of the adult population gamble in a responsible manner without any harm associated with their level of involvement. Those with a gambling problem, however, are on the extreme end of the continuum, exhibiting a level of involvement that has negative consequences across a diverse range of functions (Blaszczynski et al., 2001).

Problem gambling is a complex issue and a number of theories have been proposed in an attempt to explain this growing phenomenon which is causing a great deal of concern in many sectors of the community. These explanations have centred around learning, behavioural, cognitive, personality, addiction, social and environmental theories.

Recent literature has suggested that there are a number of factors that are likely to interact with each other in the development and maintenance of problem gambling, and that no single element can adequately explain such a complex phenomenon. This has resulted in a biopsychosocial model of gambling, which acknowledges that the contributing and interacting factors may be:

- Psychological
- Biological
- Environmental
- Social

A2.3.1 Learning/Behavioural Theories

Both classical and operant conditioning principles have been used to explain gambling behaviour as a stimulus-response conditioning processes:

- ***Operant conditioning*** explanations view persistent gambling as a conditioned behaviour maintained by intermittent and variable schedules of reinforcement (Delfabbro & Winefield, 1999). Electronic gaming machines, for example, provide infrequent rewards (wins) after varying numbers of responses (bets).

- ***Classical conditioning*** explanations claim that learning occurs directly by association so that the behaviour becomes conditioned to a certain stimulus. For example, it is possible that people continue to gamble because they become conditioned to the excitement or arousal associated with gambling and therefore feel bored and restless when they are not gambling. (Anderson & Brown, 1984). There are reinforcement patterns (eg wins) that maintain the gambling behaviour sufficiently long for associations to develop through classical conditioning. The gambling environment therefore becomes associated with the state of arousal that accompanies gambling and triggers are developed that perpetuate the gambling behaviour. (Sharpe & Tarrier, 1993).

Griffiths & Delfabbro (2001) point out that the above theories are not satisfactory on their own. As with other psychological theories, conditioning theories on their own cannot explain why people exposed to similar stimuli will respond differently by gambling very little or excessively.

A2.3.2 Conditioning Theory

The literature recognises that, even when gamblers are losing money, their behaviour is not extinguished because the gambling response is maintained by one of the most powerful reinforcement schedules: that of intermittent reinforcement. Skinner, (1953), discussing the power of random reinforcement, was able to observe that the efficacy of such schedules is well known to proprietors of gambling establishments. He commented that winning depends on placing a bet, but no particular payoff can be predicted because the ratio is varied by random systems. Thus, the intermittent reinforcement schedule is so effective that the long-term net gain or loss becomes almost irrelevant to the gambler.

Playing the pokies is a prime example of intermittent reinforcement. It operates on a variable ratio schedule with the odds of a winning payout (the reinforcer) being presented after a variable number of non-reinforced responses (button pushes). Elimination of this gambling behaviour is difficult because the response operates on an intermittent schedule. Laboratory studies have shown that variable interval and variable ratio schedules are superior to fixed schedules in maintaining behaviour (Skinner 1953). EGMs pay out small amounts frequently and larger amounts occasionally. As far as the player is concerned, the 'big win' is potentially in the next play of the machine. For some players this prospect is so attractive that they continue to play, losing excessive amounts of money and causing major harm to themselves and other spheres of their life.

Overall, electronic gaming machines are considered to be paradigms of conditioning. They offer continuous play with immediate feedback and they operate on an intermittent reinforcement schedule. It is hardly surprising then, that evidence gathered by the Productivity Commission (1999) suggests that gaming machines are the prime source of problem gambling risk for customers.

Another hypothesis that may help to explain why electronic gaming machines are so attractive, is one that suggests that these machines employ multi-sensory techniques that are very effective no matter what the gambler's preferred sensory modality is. They combine visual cues (colour, graphics, lights), auditory cues (sounds and music), as well as kinaesthetic cues (through pushing the button). The literature from such fields as

learning theory, cognitive psychology and brain research suggests that the use of multi-sensory cues is a very powerful learning technique that engages the learner. (Williams 1986). Blaszczynski et al. (2001) points out that, as yet, there has been little research into the effects of graphics, colour and sound effects. However, he commented that authors have noted the use of primary colours and flashing lights as a way of increasing the impression of fun and excitement, and that:

> *"..it is a well-known phenomenon that players enjoy new machines, presumably because they offer visual and sound effects that increase the enjoyment of the machines…"* (Blaszczynski et al. 2001. P. 39).

On this theme, Stotter (1980) comments that, when players score a win, they are rewarded in a number of ways. Firstly the player is stimulated through the visual senses when a winning combination appears on the dial. Then, the cash drops into a metal container, making a considerable amount of noise and stimulating the player's auditory senses.

Nevertheless, further research is needed into the possible effects of sensory factors. The Productivity Commission (1999) stated that:

> *"The Commission is not aware of persuasive evidence which suggests lighting and sounds seriously enhance the ability of the machine to condition player behaviour. This may need further research".* (p 16.86).

A2.3.3 Cognitive Theories

These theories refer to the beliefs that the gambler holds about the nature of gambling, and interpretation of results. They are in contrast to other theories which argue that gambling is primarily maintained by deep unconscious mechanisms or by excitement.

According to cognitive theory, heavy gamblers have a set of false beliefs, which maintain their gambling despite losses (Walker, 1992). The suggestion is that, fundamental to the process of gambling are illusions of control, irrational thinking, or distorted belief systems (Blaszczynski et al., 1997). This is offered as one of the explanations for why people gamble excessively despite the inevitable economic loss.

A2.3.4 Irrational Thinking and Illusions of Control

Although it is generally acknowledged that electronic gaming machine playing involves no skill[59] and leads to an inevitable loss of money, heavy EGM players privately believe that their special knowledge of machines will provide a winning edge, and that machines can be influenced to make payouts more probable (Walker, 1992).

The Productivity Commission (1999) cites reports of gamblers devising schemes to confuse the machine and influence the reel outcome, thinking that the rhythm of their playing can lead to winnings, or that heating up coins with a lighter will make a difference. Other forms of superstitious behaviour have included rubbing the machine or using lucky charms. (Blaszczynski 2002).

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[59] Some games which require player interaction during the play, such as blackjack and draw poker, do contain an element of skill, though perfect play will still result in financial loss in the long-run.

Walker, (1992) reported extensive anecdotal evidence suggesting that irrational thinking may be very common among slot machine gamblers. This includes players trying a range of machines for short periods to find one that is "paying". Some players talk to their machines and most players become very possessive about 'their' machine, to the point where they zealously guard it while they change money. This type of behaviour suggests that few of these players believe that one machine is as good as the next. (Walker, 1992)

One method of studying the cognitions of gamblers while they play is the 'thinking aloud' method. In such studies, the player is required to say aloud what he/she is thinking while playing. Walker (1992) cites such studies where the results revealed a number of irrational thoughts and a suggestion that most cognition associated with gambling on slot machines are irrational.

Walker (1992) cites research indicating that, in studying the link between irrational thinking and heavy use of slot machines in situ by using the 'thinking aloud" technique, it was found that:

- gamblers whose preferred style of gambling was the slot machine exhibited higher levels of irrational thinking than other groups;
- slot machines induced more irrational thinking in all players than other games; and
- when slot machine players were playing their preferred machine, the level of irrational thinking was higher than anticipated.

The 'Gambler's Fallacy'

One type of erroneous belief is commonly known as the 'gambler's fallacy'.

Many individuals have faulty conceptions of randomisation. In a random sequence of events each event is independent of all events preceding it. However, many gamblers seem to behave as if random events have an internal logic. This is perhaps due to a lack of experience with truly random sequences in everyday life – though the weather is highly variable, knowledge of today's weather provides some information with which to estimate tomorrow's weather.

The "gambler's fallacy" refers to the erroneous belief that in games of pure chance (eg electronic gaming machines) the probability of future events is affected by the history of the game. So, for example, people think that a machine that has not paid out for a while must be ready to pay out very soon, while a machine that has just paid out is not likely to do so again for a while. Gamblers who do not understand that events in gambling are independent, can be led to believe that a *"near miss"* indicates that the machine "must be due to pay out soon". This lack of understanding creates difficulties for people with a gambling problem because they believe that they can recover past losses by playing the machine a bit longer. This type of behaviour only serves to worsen the problem via a downward spiral as more money is lost, relationships are further eroded or the individual reaches crisis point. People who have found themselves in such a vicious cycle of irrational behaviour are in need of therapeutic interventions such as cognitive-

behavioural therapy. It is unlikely that caps on the number of machines alone will assist this group of people who have already developed a gambling problem.

Many people in the community are left wondering how a machine can possibly guarantee a given rate of return if indeed the outcome on each new game is independent of previous games. Most people do not understand that the regulated return rate is naturally achieved by the sheer number of trials that are played (Productivity Commission 1999). This is possibly an area that has implications for educational intervention programs.

Beliefs about Winning

People with a gambling problem often show overconfidence in their ability to win. This can lead them to continue gambling so as not to miss out on a big win, or to "*chase*" their money. This can cause them to lose more than they can afford. (Blaszczynski 2002). Factual information available to the gambler, and available in real-time, could help to address this situation.

Selective Recall

People with a gambling problem often show a strong bias towards recalling their wins and "forgetting" their losses. This plays a role in maintaining the problematic gaming behaviour. (Blaszczynski 2002). A potential policy solution here is to permit EGM plays by use of a card only, which would record the factual information required to inform the gambler about their behaviour and to address the illusions created by selective recall.

Income versus Entertainment

Many gamblers are often confused about whether they are playing for income or pure entertainment (Blaszczynski 2002). This may lead some to believe that they can earn money to pay their bills through gambling rather than through working and saving.

Gambling to Get Out of Debt

Often, those who have developed a gambling problem believe that the only way to make enough money quickly and to repay their debts without being found out, is to win it through gambling. This can of course lead to a vicious cycle of further losses. (Blaszczynski 2002).

A2.4 Personality Factors

In the literature, there do not seem to be any consistent personality differences separating problem gamblers from other subgroups of gamblers (Blaszczynski et al., 1997). Some predisposition factors such as sensation seeking and extraversion have been studied but the results are not conclusive, (Walker, 1992).

The Productivity Commission (1999) rejected the notion that problem gambling is the results of particular personality traits and concluded that gambling problems are multidimensional, emanating from *"a multiplicity of environmental, social and psychological facets"*. (p 6.8). One personality dimension that may be worth exploring, however, is 'locus of control'.

A2.4.1 Locus of control

Locus of control is one of the psychological factors that may provide a useful framework in a discussion of problem gambling.

This theory states that when an individual perceives reinforcement for a behaviour as being under his/her control, this is known as internal locus of control. On the other hand, if an individual perceives the reinforcement for a behaviour as not being contingent upon his/her action but rather a consequence of luck, chance, fate, the control of powerful others or as unpredictable, then this is known as external locus of control. In the latter case, the reinforcement is perceived as being outside the individual's control. (Rotter 1966).

People with an internal locus of control are inclined to take responsibility for their actions. By comparison, people with an external locus of control tend to blame external circumstances for their mistakes and credit their successes to luck rather than their own efforts.

When applied to gambling, an internal locus of control would predispose an individual to take responsibility for their actions and avoid problem gambling, whereas an external locus of control would be congruent with problem gambling behaviour. In four out of eight studies reviewed by Walker (1992), gamblers were found to be high on external locus of control whereas in none of these studies did gamblers have a higher internal locus of control than the comparison group.

Admittedly, the available research is not conclusive and even if it were to show that gamblers have a more external locus of control, we could not be sure whether the external locus of control preceded the gambling.

Overall, however, what little agreement exists in the personality studies, it suggests a difference in locus of control, with high frequency gamblers being more external than low frequency gamblers. (Walker 1992). Even if the available research only provides *weak* support for the hypothesis that gamblers have an external locus of control, it is a framework with vast implications for treatment and harm minimisation measures and therefore it warrants further research.[60]

[60] Research in this area has potential implications for the design of self-exclusion programs, for example.

A2.4.2 Social Learning Theory

Social learning theory refers to the process of learning by observing and imitating others.

Social learning takes place primarily within reference groups and 'significant others' can be particularly influential in shaping behaviour. Thus, the family has been identified as a primary reference group and training ground for gambling behaviours (Walker, 1992). For example, children may first learn about gambling by observing the reactions of their parents. We have already noted other research findings to indicate that a significant proportion of people with gambling problems identify an immediate family member with a problem with alcohol, drugs or gambling. The Canadian Problem Gambling Index identifies family problems with gambling, and with subsequent problem gambling behaviour.

Sociological factors have been shown to be critical in the acquisition of gambling behaviour. Both parents and peers may model gambling, so the family's role needs to be addressed in therapy, and prevention plans should aim to increase the gambler's contact with non-gambling peers (Griffiths & Delfabbro, 2001).

Behaviour can also be influenced by the wider social context and cultural values. Gambling, after all, takes place in a social context. Therefore, attitudes to gambling may also come from advertising and promotions. For example, television and billboards may convey messages about the location of venues, the excitement of gambling and the desirability of the prize.

A2.4.3 Need-State Models & Theories of Addiction

These theories explain gambling as a form of psychological or physiological dependence.

One concept is that people gamble to fulfil a need by escaping unpleasant emotional states such as depression, anxiety or boredom. This perspective is clearly related to one of the DSM-IV (1994) criteria:

> *"gambles as a way of escaping from problems or of relieving a dysphoric mood (eg feelings of helplessness, guilt, anxiety, depression)"* (American Psychiatric Association, 1994. P 618).

There is some evidence that autonomic arousal is associated with gambling-related stimuli and that arousal in problem gambling is cognitively mediated (Sharpe et al 1995). In this study, increases in arousal were generally found to be higher among problem gamblers than control groups. However, increases in arousal were not observed when subjects were distracted by a competing task. This provides some evidence, which suggests that preventing cognitions may serve to prevent arousal in response to conditioned gambling-related stimuli. These findings have implications for the management of problem gambling behaviour, suggesting that an optimal treatment for problem gamblers needs to address not only the arousal factors but also the cognitions of the gamblers.

Not all researchers agree that need-state motivations necessarily point to a physiological addiction but some would agree that gambling can become a psychological addiction. (Griffiths & Delfabbro (2001). In particular, Griffiths &Delfabbro (2001) point out that the difficulty is that it is not possible to determine whether the mood state (e.g., depression) preceded the gambling or whether it arose as a consequence of the gambling (the result of financial pressure caused by gambling losses, for example).

Gambling has been conceptualised as an addictive disorder by some researchers, as a way of explaining why people gamble excessively to the point where they cause personal, financial and social problems. However, while some gamblers may experience high arousal associated with gambling, there is no ingestion of a substance and there have not been any studies which conclusively demonstrate the presence of tolerance or physical withdrawal. Therefore, the notion of a *gambling addiction* is different from the traditional meaning of *addiction*.

- Jacobs (1986), in his general theory of addiction, argued that the development of gambling problems can be influenced by personality characteristics and life events (such as negative childhood experiences) interacting with abnormal physiological states of arousal. However, Walker (1992) reviewed the literature and concluded that the available evidence did not support Jacob's theory.
- Shaffer (1999) suggests that the notion of pathological gambling as an addiction needs to be approached with scepticism because we do not even have a simple definition of what constitutes an addiction.

The notion that problem gambling is an addiction is still a matter of debate in Australia (Australian Institute of Gambling Research, 1997). Nevertheless many workers in the gambling field accept that those who have impaired control over their gambling behaviour may be suffering from a strong psychological dependency (Blaszczynski et al., 1997).

A2.5 Biological Factors

There is a growing body of literature suggesting that biological factors may have a role in the development of problem gambling.

There seems to be some preliminary evidence with a tentative hypothesis linking receptor genes and neurotransmitter dysregulation in impulsivity, arousal and problem gambling. Studies in the genetics field have suggested that pathological gamblers are much more likely to have the D2A1 allele for the Dopamine D2 receptor gene than control groups, and that the D2A1 allele may therefore be a significant risk factor in pathological gambling. (Blaszczynski 2000 cites a number of studies from the field of genetics and neurotransmitter systems).

However, Blaszczynski (2001) has suggested that the data from the genetic field is still in its infancy and no firm conclusions can be drawn yet. Ibanez et al (2002) acknowledge that there is a growing literature about the role of biological factors in pathological gambling, but argue that further research is required.

A2.6 Psychoanalytic Theories

Psychoanalytic explanations for gambling were amongst the earliest to be used. These were based on the premise that mental illness can be traced back to the relationships formed in the early years of development, and that all behaviour is motivated by the need to fulfil instinctual drives. Walker (1992) reviewed the psychoanalytic literature with regard to gambling, and concluded that it fails to provide evidence, which either supports or refutes psychoanalytic theories.

A2.7 A Biopsychosocial Theory of Gambling: A Comprehensive Model

In recent years, there seems to have been a move towards an eclectic or multifaceted explanation of problem gambling which is known as the biopsychosocial model (e.g., Griffiths 1999, Griffiths & Delfabbro 2001, Sharpe 2002).

Griffiths (1999) stated "*Gambling behaviour is a biopsychosocial process and must therefore be explained in biopsychosocial terms using the best theoretical strands of contemporary psychology, biology and sociology….It is probable that sociological, psychological, and biological processes are involved in an interactive and complex fashion in its etiology*" (p 444). Griffiths quite rightly notes that no single, simple explanation will ever be sufficient on its own to explain all cases of gambling.

Sharpe (2002) also states that "*Evidence now exists that biological, psychological, and social factors are all relevant to the development of problematic levels of gambling*" (p1). She argues that behavioural, arousal or cognitive theories on their own cannot fully explain the acquisition of gambling behaviour, the development of problematic levels of gambling, and the maintenance of these behaviours to the point where people jeopardise important aspects of their lives. Sharpe therefore moves towards a comprehensive, biopsychosocial model of pathological gambling.

A2.7.1 Some Biopsychosocial Factors

Psychological Factors: Personality traits, cognitive distortions, attitudes, early experiences, impulsivity, may all contribute. Schedules of reinforcement offered by gambling experiences and the conditioning of behaviour are also important psychological variables.

Sociological Factors: This includes elements such as attitudes and habits of parents, friends, peer group; availability of gambling opportunities; or lack of viable alternatives to gambling.

Biological, Physiological and Genetic Factors: There is now some evidence to suggest that there may be a genetic vulnerability to pathological gambling, possibly related to neurotransmitters such as dopamine. Further, this vulnerability may be associated with psychological traits such as impulsivity.

The advantage of the biopsychosocial model is that it is able to integrate seemingly contradictory theories into one comprehensive model that is able to deal with the development as well as the maintenance of gambling behaviours. This model is also able to explain why some gamblers play in a controlled fashion while others develop problematic gambling behaviours.

Although Delfabbro & Winefield (1999) acknowledge the complexity of gambling behaviour, they also point out that there is a danger inherent in the biopsychosocial model because it makes it difficult to distinguish between the factors which increase or decrease the probability of further gambling. In other words, under the biopsychosocial theory it becomes possible to explain persistent gambling under almost any circumstance, without making it possible to differentiate and predict under which circumstances persistence is most likely. For example, how does one identify which reinforcer (social, monetary, physical) is important in encouraging or maintaining gambling?

The Productivity Commission (1999) summarised problem gambling as possibly emanating from a mixture of such elements as:

- Gambler characteristics and behaviour
- Accessibility
- Game features
- Venue features
- Industry behaviour
- Government policy

A2.8 Pathways into Problem Gambling (Blaszczynski 2000)

Blaszczynski (2000) argues that there seem to be fundamental difficulties with all singular theories of gambling, in particular:

- learning theories on their own do not explain why *not all* gamblers suffer from the impaired control that can arise from operant conditioning;
- cognitive theories have not demonstrated that irrational beliefs *cause* problem gambling; and
- the validity of the addiction model is still being debated, especially by those who believe in socio-cognitive approaches.

Blaszczynski (2000), unlike other researchers who assume that gamblers are a homogenous population, identifies three subgroups of problem gamblers: the group of "normal" problem gamblers who do not have pre-existing psychopathology, the emotionally vulnerable group and the pathological group with biologically based impulses. Blaszczynski (2000) believes that his model integrates biological, personality, developmental, cognitive, learning theory, and environmental factors. *All three groups are exposed to common influences such as*:

- public policy that promotes availability and access to gambling facilities;
- the conditioning effects of the gambling environment that are so resistant to extinction and can result in an habitual pattern of gambling which can be described as an 'addiction'; and
- irrational cognitive structures which lead gamblers to the erroneous belief that they can recoup their losses through further gambling, even though they know that gambling led them into financial problems in the first place.

The "normal" problem gamblers who do not have pre-existing psychopathology. They may be preoccupied with gambling, chase losses and suffer from depression and anxiety, but these responses are seen as *results* of the financial pressures caused by gambling losses, not as the *cause* of excessive gambling. These individuals are placed at the lower end of the problem gambling scale and they are more motivated to seek treatment and achieve controlled levels of gambling.

The vulnerable group of gamblers whose participation in gambling is motivated by a need to relieve emotional states or deal with psychological needs. This group is characterised by a predisposing psychological vulnerability. They may have a history of negative developmental experiences, neurotic personality traits, adverse life events or a family history of pathological gambling. This sub-group of gamblers has a higher level of pre-existing psychopathology such as depression, anxiety, substance dependence and an inability to cope with external stress. They may see gambling as a way of achieving emotional escape through dissociation. In therapy, this group may be considered too fragile to maintain controlled gambling, and abstinence may be the goal.

Group with biologically based impulses. This group may have a neurological or neurochemical dysfunction reflected in impulsivity and attention deficit features and it is likely that these traits predate the onset of pathological gambling. Genetic studies have reported that pathological gamblers are more likely than controls to have the D2A1 allele for the dopamine D2 receptor gene. It is argued that these gamblers have a biologically based impulsivity, they are unable to delay gratification and they have a diminished response to punishment. Therefore, they fail to modify their behaviour even when the consequences of their actions are painful. Gambling in this group may commence at an early age and quickly escalate in intensity and severity. These gamblers are less motivated to seek treatment and respond poorly to any form of intervention.

The strength of the above pathways model is that it integrates a number of factors (genetic, biological, psychological and environmental) that can contribute to the development of problem gambling. At the same time, it takes into account that there are groups of non-disturbed gamblers. The different typologies discussed above could have implications for identifying the most appropriate type of intervention or treatment.

A2.9 Intervention Strategies For Problem Gambling: the current state of knowledge on the efficacy of various intervention strategies for problem gambling

Summary of Discussion: Multimodal Approach to Treatment

Although the treatment of problem gambling is an area that is still developing, a review of empirical outcome data from interventions used for gambling problems yields encouraging results, which suggest that problem gambling is a treatable behaviour. *"It is not uncommon for two-thirds of treated cases to be reported as abstinent or controlled"* (Lopez Viets & Miller 1997. p 697).

A variety of approaches have been used in the treatment of problem gambling, including psychodynamic, cognitive, behavioural, cognitive-behavioural, pharmacotherapeutic, multimodal and 12-step approaches (Gamblers Anonymous).

Psychodynamic therapies have minimal documentation of their outcomes, and pharmacotherapies have been limited to case studies. Gamblers Anonymous may be the most widely available help, but it has not been tested through controlled studies.

Cognitive and behaviour therapies have been evaluated through a number of studies, with mainly favourable results. (Lopez Viets & Miller 1997). One of the problems, however, is that many reported treatments have been multimodal, which makes it impossible to determine which elements have the specific efficacy.

Overall, the treatment literature to date, (although it has limitations) suggests that the cognitive-behaviour therapies are effective for the treatment of problem gambling. (Lopez Viets & Miller 1997, Blaszczynski 2002).

Given that, in recent years, there seems to have been a move towards an eclectic or multifaceted explanation of problem gambling which is known as the biopsychosocial model (eg Griffiths 1999, Griffiths & Delfabbro 2001, Sharpe 2002), it would seem appropriate to also follow this eclectic/multimodel approach for the treatment of problem gambling. This approach allows the intervention to match the typology of the gambler. In addition to the use of psychological techniques, this multimodal approach also allows for practical and environmental factors to be incorporated (e.g. financial counselling and harm minimisation measures such as reduction in accessibility, education, self-exclusion and regulation of the gambling environment).

The literature suggests that the treatment of problem gambling is an area that is still developing. The Australian Psychological Society's position paper on gambling states:

> *"There is limited knowledge as to the best counselling and clinical strategies that should be applied for the management of problem gambling. There is a need … to carry out controlled treatment outcome studies to develop 'best practice' approaches in the management of problem gambling"* (Blaszczynski et al. 1997, p23)

The Productivity Commission (1999) concurred with the above. In view of uncertainties surrounding the effectiveness of the various treatment approaches, the Commission recommended follow-up assessments of clients and longitudinal research on client outcomes.

Lopez Viets & Miller (1997) commented that despite the growing prevalence of pathological gambling internationally, there is a lack of consensus on the best ways to treat the disorder.

Shaffer (1999) is of the view that: *"With few outcome studies available, the efficacy of treatments for disordered gambling remains to be determined".* (p 1447).

However, despite differences of opinion in the literature regarding the acquisition, maintenance and appropriate treatment of problem gambling, there seems to be a consensus that it is a treatable condition. Lopez, Viets & Miller (1997) state clearly that *"As a whole, the literature indicates that pathological gambling can be treated with highly successful outcomes"* (p. 689).

The following are some of the main treatment approaches discussed in the literature:

A2.9.1 Behavioural Therapies

As gambling behaviour is viewed by behaviourists as a learned behaviour that is initiated and maintained through stimulus –response conditioning processes, a number of behaviour modification approaches have consequently been tried as methods of extinguishing problematic gambling behaviours (by diminishing the gambler's response to gambling cues).

- *Aversion therapy* has been used in the past, in an attempt to break the positive associations by pairing gambling cues with unpleasant stimuli such as an electric shock. Lopez et al (1997) report a number of studies that used aversion therapy with both inpatient and outpatient populations with some reported success, but conclude that a number of these findings may have been influenced by other simultaneous interventions such as attendance at Gamblers Anonymous. In any case, aversion therapy has now largely been abandoned as a treatment. It is unpleasant to administer and receive, there are ethical issues involved and it has often proved inferior to other interventions. (Department of Human Services-Victoria 2000).
- *In vivo desensitisation* involves pairing gambling cues with no gambling behaviour, and boredom. The gambler is taken to the gambling location and stands by without gambling while the therapist suggests that the whole situation is boring.
- *Imaginal desensitisation* the gambler imagines the gambling cues while pairing them with a competing response such as boredom.
- *Cue-exposure/Response prevention* is considered to be synonymous with desensitisation therapy, whereby the gambler is exposed to the gambling cue without engaging in the gambling behaviour.
- *Relaxation therapy* the gambler is trained in relaxation techniques that can be used when the urge to gamble arises.

The Human Services - Victoria (2000) review of the literature indicates that desensitisation and cue-exposure/response prevention therapies have shown encouraging outcomes. Petry (2002) comments that some beneficial effects have been noted through the use of behavioural therapies, but many studies had small sample sizes and limited follow-up.

A2.9.2 Cognitive Therapy

Cognitive therapy is based on the premise that heavy gamblers have a set of inaccurate beliefs and attitudes about gambling, which develop and maintain their problem gambling behaviour. (Walker, 1992). Therapy aims to challenge these inaccurate cognitions with a view to modifying the gambler's behaviour. Lopez Viets & Miller (1997) reviewed three studies and reported some success with the use of:

- education on the probabilities of gambling outcomes;
- cognitive restructuring of inaccurate verbalisations (such as having control over the game); and
- challenging gamblers' belief systems (regarding the accuracy and effectiveness of their betting system, and the magnitude of their losses).

Given the nature of Electronic Gaming Machines, this type of intervention seems appropriate for those who have developed problem gambling on these machines because the emphasis of cognitive therapy is on challenging inaccurate beliefs, and it has been suggested that EGMs induce more irrational thinking than other games (Walker, 1992).

A2.9.3 Cognitive-Behaviour Therapy

Cognitive and behavioural approaches are combined for greater efficacy. The main emphasis of this therapy is to achieve changes in beliefs, attitudes and the actual behaviour. It is an intervention that combines systematic discussion and carefully structured behavioural activities to help people modify problematic thinking patterns and behaviours. Cognitive Behaviour Therapy does not consist of a single set of procedures, it can include a range of techniques and strategies.

Lopez Viets & Miller (1997) reviewed a number of studies that successfully combined a variety of strategies. Some of the combinations included:

- relaxation training, imaginal and in vivo exposure, and cognitive restructuring;
- self-monitoring, exposure, response prevention, social skills training and relapse prevention; and
- information about gambling, cognitive restructuring, problem-solving training, social skills training and relapse prevention.

Blaszczynski (2002) comments that Cognitive Behaviour Therapy *"is one of the few treatments that randomised controlled treatment outcome studies have shown to be highly effective"* (p12).

A2.9.4 Multimodal Approaches

Some treatment programs have successfully combined an even broader range of techniques such as a combination of:

- group therapy;
- education;
- participation in Gamblers Anonymous; and
- a discharge plan.
  (Lopez Viets & Miller 1997)

A2.9.5 Psychodynamic Therapy

This was one of the earliest treatments for pathological gambling. It is typically based on the theory that pathological gambling arises out of early losses, deprivation or childhood conflicts. However, psychoanalytic work has been largely reported as narrative case studies without outcome and follow-up data, and this makes it difficult to assess the results. (Lopez Viets & Miller 1997)

A2.9.6 Gamblers Anonymous (GA)

GA is a self-help group, which is modelled on Alcoholics Anonymous, follows a 12-step plan, and therefore advocates abstinence. Although GA was among the first therapeutic interventions applied to problem gambling, there is very little research on its efficacy and it is therefore difficult to comment on this intervention (Petry 2002).

A2.9.7 The Process of Change and Motivational Interviewing

A process of achieving change through the use of cognitive-behavioural processes at the appropriate stage of client readiness, has been devised by Prochaska & DiClemente (1986) and used in the addictions field.

Motivational interviewing is related to the change model and is widely used in the addictions field. Its major goal is to help the client see the discrepancy between the advantages and disadvantages of the addiction behaviour and to raise ambivalence about the problem behaviour (Miller and Rollnick, 1991).

The Human Services - Victoria (2000) review of the literature indicates that the use of motivational interviewing has achieved positive outcomes for alcohol, marijuana and heroin users, but is yet to be trialled in research studies with gamblers.

A2.9.8 Pharmacotherapy

There are reports in the literature of medication being used for a psychiatric condition that coexists with the gambling problem. Some coexisting problems might be depression, anxiety, and obsessive-compulsive disorder. Reports indicate that such use

of medication for a coexisting condition has been known to reduce or discontinue the gambling behaviour. (Lopez Viets & Miller 1997).

Blaszczynski et al. (2001) suggest that medication aimed at reducing impulsivity through its calming effects may be effective, but more controlled trials are needed before the benefits of medication can be established with confidence.

Blaszczynski (2002) reports that recent randomised double blind trials have suggested that the use of Clomipramine and some selective serotonin reuptake inhibitors (antidepressants) may be effective in reducing gambling behaviour. However, it is unclear whether this is due to a reduction in depressive mood, obsessive-compulsive elements, or impulsivity.

Grant & Kim (2002) indicate that, although the use of pharmacotherapy in the treatment of problem gambling is expanding, the current literature is still relatively limited and pharmacological treatment of problem gambling is still in its infancy.

A2.9.9 Education

As sociological factors seem to play an important part in the acquisition of gambling behaviour, prevention needs to be aimed at the social and situational antecedents (Griffiths & Delfabbro 2001). This can be done at the individual, family, school, and social policy level.

Awareness raising regarding the dangers of gambling can be aimed at children, adolescents, parents, teachers and the broader community. This type of education program can focus on:

- The true odds and unprofitability of gambling
- The negative consequences of gambling
- Alternative activities to gambling

However, (Griffiths & Delfabbro 2001) have pointed out that such programs need to be applied with caution so that they do not have the unintended effect of increasing people's knowledge of how to gamble.

A2.9.10 Self-Help Methods

This method would typically involve the use of a self-help manual or other written material. Petry (2002) cites an Australian study that used a manual based on the principals of cognitive-behavioural therapy, and reports that there was some success with this method. However, there were difficulties with this study, principally because it did not evaluate a control group.

A2.9.11 Financial Counselling

The literature suggests that financial pressure can act as a major stressor triggering further episodes of gambling. As the frequency and duration of gambling sessions increases and expenditure goes beyond disposable income, then the gambler may use household money, credit card advances and multiple loans. At this stage, gamblers may perceive gambling as the only way of finding sufficient funds quickly enough to solve their problems, which then leads to the downward spiral of gambling. Thus begins a vicious cycle of more losses and more loans, which can lead to embezzlement and other offences, depression or even suicide. For these reasons, financial counselling and advice *in conjunction with* psychological intervention are seen as essential elements of the treatment process (Blaszczynski et al 1997).

A2.9.12 Matching the Intervention to the Typology of the Gambler

A successful intervention needs to be matched to the needs of the client and it needs to be relevant to environmental, cultural and contextual factors.

In relation to the three typologies of gamblers identified by Blaszczynski (2000), he suggests that the following interventions may be relevant to each group:

- ***The "normal" problem gamblers***: Require minimal interventions, counselling and support services. Self-help educational materials and self-help groups such as Gamblers Anonymous can be effective. They may resume controlled gambling after intervention.
- ***The vulnerable group of gamblers***: Require more psychotherapeutic interventions directed towards resolving internal conflict. This could include stress management and problem-solving skills as well as strategies to enhance self-esteem.
- ***Group with biologically based impulses***: May require intensive cognitive behavioural interventions aimed at impulse control. Genetic vulnerability is unlikely to be amenable to harm minimisation strategies. (Blaszcsynski et al., 2001). Medication can be considered, with a view to reducing impulsivity through its calming effects. However, more controlled trials are needed before the benefits of medication can be established with confidence.

A2.10 Implications for the Likely Effectiveness of Caps on Electronic Gaming Machines

A2.10.1 The Nature of Gambling Behaviour

Current thinking on the acquisition and maintenance of problem gambling seems to be moving away from a pure mental disorder or addiction theory. More recent theories seem to be moving towards a comprehensive approach that emphasises a complex interaction of many elements including psychological, biological and sociological/ environmental factors (Griffiths 1999, Griffiths & Delfabbro 2001, Sharpe 2002). There is, therefore, an implication that, given the appropriate circumstances, it is possible that a much broader sector of the community can develop a gambling problem than would be

suggested by a mental disorder or addiction theory. Therefore, social policy and harm minimisation measures, such as the capping of gaming machine numbers, deserve serious consideration.

The Australian Institute of Gambling Research (1997) suggested that the presence of harm rather than a symptom count should be used to define 'problem gambling'. Following from this definition of problem gambling that emphasises 'harm', if we accept that it is the amount of money lost by players that is the immediate cause of gambling problems, then, as Blaszczynski et al (2001) pointed out, *any modification that reduces loss of money has the potential to curb the level of gambling problems*.

Theoretically, this would include capping of EGMs if the strategy proved to be effective. However, the difficulty with the current cap on numbers of gaming machines is that we do not yet have evidence to suggest that the proposed level of reduction will affect availability to the degree that spending (and therefore harm) will be reduced. It is possible that a cap on the number of machines combined with other strategies, such as the use of individualised smart cards that constantly feed back information to the gambler, thus addressing the 'problem of illusion' may together be effective.

A tendency to "chase losses" has been put forward as one explanation for the development of problem gambling. It is possible that people with a gambling problem, who find themselves in an 'irrational' cognitive state, may be willing to travel further, wait in a queue, or play another machine in an effort to recoup their losses. We do not currently have evidence to suggest that capping the number of gaming machines will assist in these situations.

Some studies have suggested that gamblers are more likely to have an external rather than an internal locus of control (Walker 1992). From this we could be tempted to hypothesise that gamblers may be more affected by external mechanisms of control, such as controls over the availability of machines. However, given the current widespread and easy availability of EGMs in all Australian states except Western Australia, there is no evidence to suggest that the current level of capping, involving the displacement of 1.5 per cent of EGMs from five regions, is likely to deter existing gamblers. That is to say, to impact through the 'external locus of control mechanism' may require a very significant reduction in the number of machines and/or combined with efforts to restrict access to and the availability of, machines in total.

A2.10.2 Implications for Social Policy

Electronic gaming machines operate on an intermittent reinforcement schedule and offer opportunities for continuous play. According to behavioural theory this is a very powerful conditioning schedule and the behaviours that become reinforced via such a schedule show a strong resistance to extinction.

In line with this understanding, in recent years, there seems to have been a move towards a multifaceted explanation of problem gambling (e.g. Griffiths 1999, Productivity Commission 1999, Griffiths & Delfabbro 2001, Sharpe 2002), it would seem appropriate for the treatment of problem gambling to also follow this multimodal

approach that addresses psychological, biological, as well as social/environmental factors such as:

- public education programs;
- the gambling environment;
- game features and design;
- appropriate counselling and other interventions;
- individual characteristics and needs of the gambler.

The Productivity Commission (1999) concluded that gambling problems are multidimensional, emanating from *"a multiplicity of environmental, social and psychological facets"*. (p 6.8). This view would suggest that dealing with gambling problems is not just a matter of individual responsibility, but one that clearly has broader implications for social policy. The Productivity Commission (1999) and other parties [such as welfare organisations and the Australian Psychological Society (Blaszczynski et al. 1997)] have therefore flagged a range of potentially effective harm minimisation measures aimed at making the gambling environment safer: The following list summarises some of the suggested measures, but it must be emphasised that the majority of these still require rigorous testing to determine their effectiveness:

- School-level education programs on probability theory, for children and adolescents. [It has been pointed out that such programs need to be applied with caution so that they do not have the unintended effect of increasing people's knowledge of how to gamble. (Griffiths & Delfabbro 2001)].
- Education regarding the potential hazards associated with gambling.
- Promotion of responsible gambling behaviour through public education regarding the nature of randomisation and probability.
- Promotion of accurate information on the odds of winning.
- Player and public information about how gaming machines operate and the true cost of playing.
- Provision of treatment services that are freely available to gamblers and other significant people in their lives.
- Information about the availability of counselling support.
- Financial counselling.
- Signage promoting responsible gambling.
- Banning of misleading advertising that over-emphasises wins.
- Limitation on the number of available gaming machines.
- Gaming machines that show actual amounts spent.
- Modification of machine design characteristics.
- Payment of large wins by cheque.
- Restrictions on the availability of cash and credit facilities.

- Banning of ATMs in close proximity to gaming areas.
- Limits placed on total expenditure per session.
- Reduction of trading hours.
- Warning signs on terminals.
- Effective self-exclusion procedures.

The Victorian Government has implemented some of the suggested measures and has recently announced new measures to apply to all new gaming machines introduced after January 1, 2003, (e.g., ban $100 note acceptors, ban autoplay facilities, set maximum bet limit of $10, information improvements for the individual player). Additional new measures to be introduced over the next twelve months include, *inter alia*, limiting access to ATM and EFTPOS facilities to $200 per transaction, prohibition on cashing cheques, the payment of winnings in excess of $2,000 by cheque. Through the Codes of Practice, the industry has also introduced new measures relating to advertising, information provision, staff training and self-exclusion practices.

Given the complexity of gambling behaviour, it would be reasonable to hypothesise that it would be very difficult to change the behaviour of those who have developed problem gambling on EGMs by a simple reduction in a region's gaming machine numbers. At this stage of the research program into the impact of the caps on five regions, we might reasonably hypothesise, that isolated interventions (such as capping the number of EGMs) will not alone achieve the desired harm minimisation outcome. It would seem that a comprehensive, multifaceted approach to the treatment of problem gambling may be more effective over time. Notwithstanding, at this early stage of our research the potential impact of the caps remains an open question.

Further systematic research is required in this field, in order to clarify the efficacy of the various strategies that have been suggested. Blaszczynski et al. (2001) have emphasised:

> *"A review of the literature reveals a paucity of empirically derived information describing effective harm minimisation strategies that may inform and guide policy makers. While many strategies have been proposed, very few have been systematically evaluated. …There is an imperative need for governments and industry to develop a co-ordinated national strategic plan to carry out systematic independent research on proposed harm minimisation interventions". (p11).*

In this study of the Impact of Regional Caps on EGMs, the Victorian Gambling Research Panel (GRP) has taken up the challenge to 'systematically evaluate' the capping policy and its impact on harm minimisation.

A2.11 DSM-IV Diagnostic criteria for Pathological Gambling

Impulse – Control Disorders Not Elsewhere Classified

Pathological Gambling

Diagnostic criteria for Pathological Gambling

A. Persistent and recurrent maladaptive gambling behaviour as indicated by five (or more) of the following:

1) is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
2) needs to gamble with increasing amounts of money in order to achieve the desired excitement
3) has repeated unsuccessful efforts to control, cut back, or stop gambling
4) is restless or irritable when attempting to cut down or stop gambling
5) gambles as a way of escaping from problems or of relieving a dysphoric mood (eg feelings of helplessness, guilt, anxiety, depression)
6) after losing money gambling, often returns another day to get even ("chasing" one's losses)
7) lies to family members, therapist, or others to conceal the extent of involvement with gambling
8) has committed illegal acts such as forgery, fraud, theft, or embezzlement to finance gambling
9) has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
10) relies on others to provide money to relieve a desperate financial situation caused by gambling

B. The gambling behavior is not better accounted for by a Manic Episode.

Source: Diagnostic and Statistical Manual of Mental Disorders. (4th ed). Washington American Psychiatric Association. (1994). P618.

A2.12 The South Oaks Gambling Screen (SOGS)

1. Please indicate which of the following types of gambling you have done in your lifetime. For each type, mark one answer: "not at all", "less than once a week", or "once a week or more".

	Not at all	Less than once a week	Once a week or more	
a.	___	___	___	Played cards for money
b.	___	___	___	Bet on horses, dogs, or other animals (in off-track betting, at the track, or with a bookie)
c.	___	___	___	Bet on sports (parlay cards, with a bookie, or at jai alai)
d.	___	___	___	Played dice games (including craps, over and under, or other dice games) for money
e.	___	___	___	Went to casino (legal or otherwise)
f.	___	___	___	Played the numbers or bet on lotteries
g.	___	___	___	Played bingo
h.	___	___	___	Played the stock and/or commodities market
i.	___	___	___	Played slot machines, poker machines, or other gambling machines
j.	___	___	___	Bowled, shot pool, played golf, or played some other game of skill for money

2. What is the largest amount of money you have ever gambled with on any one day?

___ Never have gambled
___ $1 or less
___ More than $1 up to $10
___ More than $10 up to $100
___ More than $100 up to $1.000
___ More than $1,000 up to $10.000
___ More than $10,000

3. Do (did) your parents have a gambling problem?
___ Both my father and mother gamble (or gambled) too much
___ My father gambles (or gambled) too much
___ My mother gambles (or gambled) too much
___ Neither one gambles (or gambled) too much

4. When you gamble, how often do you go back another day to win back money you lost?
___ never
___ some of the time (less than half the times) I lost
___ most of the time I lost
___ every time I lost

5. Have you ever claimed to be winning money gambling but weren't really? In fact you lost?
___ never (or never gamble)
___ yes, less than half the time I lost
___ yes, most of the time

6. Do you feel you have ever had a problem with gambling?
   ___ no
   ___ yes, in the past, but not now
   ___ yes

7. Did you ever gamble more than you intended to?	___ Yes	___ No
8. Have people criticised your gambling?	___ Yes	___ No
9. Have you ever felt guilty about the way you gamble or what happens when you gamble?	___ Yes	___ No
10. Have you ever felt like you would like to stop gambling but didn't think you could?	___ Yes	___ No
11. Have you ever hidden betting slips, lottery tickets, gambling money, or other signs of gambling from your spouse, children, or other important people in your life?	___ Yes	___ No
12. Have you ever argued with people you live with about how you handle money?	___ Yes	___ No
13. (If you answered "yes" to question 12): Have money arguments ever centred on your gambling?	___ Yes	___ No
14. Have you ever borrowed from someone and not paid them back as a result of your gambling?	___ Yes	___ No
15. Have you ever lost time from work (or school) due to gambling?	___ Yes	___ No

If you borrowed money to gamble or to pay gambling debts, who or where did you borrow from? (check "yes" or "no" for each)

		No	Yes
a)	from household money	( )	( )
b)	from your spouse	( )	( )
c)	from other relatives or in-laws	( )	( )
d)	from banks, loan companies or credit unions	( )	( )
e)	from credit cards	( )	( )
f)	from loan sharks (Shylocks)	( )	( )
g)	you cashed in stocks, bonds or other securities	( )	( )
h)	you sold personal or family property	( )	( )
i)	you borrowed on your cheque accounts (passed bad cheques)	( )	( )
j)	you have (had) a credit line with a bookie	( )	( )
k)	you have (had) a credit line with a casino	( )	( )

Scoring

Scores on the South Oaks Gambling Screen itself are determined by adding up the number of questions that show an "at risk" response:

Questions 1, 2, and 3 are not counted

___	Question 4:	most of the time I lost, or every time I lost
___	Question 5:	yes, less than half the time I lost, or yes, most of the time
___	Question 6:	yes, in the past but not now, or yes
___	Question 7:	yes
___	Question 8:	yes
___	Question 9:	yes
___	Question 10:	yes
___	Question 11:	yes

Question 12 not counted

___ Question13: yes
___ Question14: yes
___ Question15: yes
___ Question16a: yes
___ Question16b: yes
___ Question16c: yes
___ Question16d: yes
___ Question16e: yes
___ Question16f: yes
___ Question16g: yes
___ Question16h: yes
___ Question16i: yes

Questions 16j and 16k not counted

Total = ___ (20 questions are counted)

5 or more = probable pathological gambler

Source: Lesieur & Blume (1987) p1187-1188.

Appendix 3

Gaming Machine Numbers by Venue

Table A3.1
Gaming Machine Numbers by Venue: The Five Cap Regions
Greater Dandenong Plus (Venues = 21 as at Base Month – June 2000)

Name	Mar-99	Jun-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Aces Sporting Club	105	100	100	100	100	100	96	96	83	83
Albion Hotel	50	48	48	48	28	28	28	28	28	28
Club DBA (Dandenong Basketball Assoc)		50	50	50	50	50	50	50	47	47
Dandenong Club	100	100	100	100	100	100	100	100	94	94
Dandenong RSL Club	70	70	70	70	70	70	70	70	65	65
Dandenong Workers Social Club	99	100	100	100	80	80	80	80	80	80
Hallam Taverner	92	92	92	92	92	92	92	92	92	92
Hawthorn Football Club - Waverley	100	100	100	100	100	100	100	100	94	94
Keysborough Hotel	103	100	100	100	100	100	100	100	100	100
Noble Park Football Social Club	51	51	51	51	51	51	51	51	48	48
Noble Park RSL	35	35	35	35	35	35	35	35	33	33
Nu Hotel Dandenong	35	35	34	35	35	35	32	32	32	32
Old Dandy Inn	35	35	35	35	35	35	35	35	32	32
Prince Mark Hotel	105	103	103	103	102	103	103	103	103	103
Sandown Greyhound Racing Club	105	105	105	105	105	104	105	105	100	100
Sandown Park Hotel	105	100	100	100	100	100	97	98	98	98
Sandown Racecourse	105	105	105	105	105	105	105	105	100	100
Springvale RSL Club	50	50	50	50	50	50	50	50	47	47
Springvale Hotel	100	100	100	100	90	90	70	70	70	70
Village Green Hotel	105	103	103	103	103	103	103	103	103	103
Waltzing Matilda Hotel	100	100	100	100	100	100	96	96	91	91
Total	1,650	1,682	1,681	1,682	1,631	1,631	1,598	1,599	1,540	1,540
Venue Numbers	20	21	21	21	21	21	21	21	21	21

* = Base Month (June 2000).

Table A3.2
Gaming Machine Numbers by Venue: Five Control Regions
Monash Minus, control for Greater Dandenong Plus (Venues = 13 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Century City Entertainment	75	75	75	75	75	75	75	75	75	75
Clayton RSL	80	80	80	80	80	80	80	80	80	80
Foresters Arms Hotel	59	59	59	59	59	59	59	59	59	59
Leighoak	105	100	100	100	100	100	100	100	100	100
L'Unico Bar & Bistro	35	35	35	35	35	35	35	35	35	35
Matthew Flinders Hotel	104	105	105	105	105	105	105	105	105	105
Monash Hotel	70	60	60	60	60	60	60	60	60	60
Mountainview Hotel	93	100	100	100	100	100	100	100	100	100
Mulgrave Country Club	105	105	105	105	105	105	105	105	105	105
Oakleigh Junction Hotel		60	60	60	59	60	60	60	60	60
Oakleigh RSL Sub-Branch	22	22	22	22	22	22	22	22	22	22
Waverley RSL Club	67	67	67	67	67	67	67	67	67	67
Wheelers Hill Hotel	50	50	50	50	50	50	50	50	50	50
Total	865	918	918	918	917	918	918	918	918	918
Venue Numbers	12	13	13	13	13	13	13	13	13	13

* = Base Month (June 2000).

Table A3.3
Gaming Machine Numbers by Venue: The Five Cap Regions
Maribyrnong Plus (Venues = 24 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Anglers Tavern	34	29	29	29	29	29	27	27	26	26
Ashley Hotel	75	90	90	90	80	80	80	80	80	80
Australian Croatian Association	20									
Braybrook Hotel	80	68	68	68	68	68	56	56	56	56
Club Leeds		40	40	40	40	40	40	40	37	37
Court House Hotel	40	40	40	40	40	40	40	40	40	40
Derrimut Hotel	55	55	55	55	55	55	55	55	55	55
Flemington & Kensington Bowling Club	5									
Flemington & Kensington RSL	5	5	5	5	5	5				
Footscray Football Club	60	65	65	65	65	65	59	56	55	55
Footscray RSL Club	29	29	29	29	29	29	25	25	25	25
Highpoint Tavern	105	105	100	100	100	100	96	96	91	91
Italo Australian Social Club	40	40	40	40	40	40	40	40	38	38
Maribyrnong Maidstone RSL	5	5	5	5						
Medway Golf Club	5									
Melbourne Cup Club VRC Flemington	105	100	100	100	100	98	86	86	80	80
Newmarket Tavern	76	74	74	74	74	74	74	74	68	68
Newport Family Hotel	66	66	66	66	66	66	66	66	61	61
Powell Hotel	60	53	53	53	53	53	47	47	47	47
Sunshine Baseball Club	20	20	20	20	20	20	20	20	19	19
Sunshine City Club - The	30	30	30	30	30	30	25	25	23	23
Sunshine RSL Club	35	35	35	35	35	35	35	35	35	35
Victoria Hotel	35	35	35	35	35	35	33	33	31	31
Westend Hotel	100	100	100	100	100	100	100	100	88	88
Yarraville & Seddon Bowling Club Inc	20	40	40	40	40	40	36	36	34	34
Yarraville Club	105	105	105	105	95	95	95	95	90	90
Yarraville Cricket Club	100	100	100	100	100	100	100	100	93	93
Total	1,310	1,329	1,324	1,324	1,299	1,297	1,235	1,232	1,172	1,172
Venue Numbers	26	24	24	24	23	23	23	23	23	23

* = Base Month (June 2000).

Table A3.4
Gaming Machine Numbers by Venue: Five Control Regions
Hobsons Bay Minus, Control for Maribyrnong Plus (Venues = 10 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Altona Bowling Club	37	37	37	37	37	37	37	37	37	37
Altona RSL	58	58	58	58	58	58	58	58	58	58
Altona Workers Sports Club	83	83	83	83	83	83	83	82	83	83
Carlton Cricket & Football Social Club		60	60	60	60	60	60	60	60	60
Customs House Hotel	24	24	24	24						
Kooringal Golf Club	49	49	49	49	49	49	49	49	49	49
Millers Inn Hotel	70	70	70	70	70	70	70	70	70	70
Rifle Club Hotel	70	59	59	59	59	59	59	59	59	59
Spotswood & Kingsville RSL Club	30									
Vic Inn Williamstown	70	70	70	70	60	60	60	60	60	60
Williamstown RSL	42	42	42	42	42	42	42	42	42	42
Total	533	552	552	552	518	518	518	517	518	518
Number of Venues	10	10	10	10	9	9	9	9	9	9

* = Base Month (June 2000).

Table A3.5
Gaming Machine Numbers by Venue: The Five Cap Regions
Darebin Plus (Venues = 25 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Albion Charles Hotel	65	64	65	65	65	65	65	65	65	65
Coburg RSL Sub Branch	5									
Cramers Hotel	100	100	100	100	100	100	100	100	100	100
Croxton Park Hotel	100	100	100	100	100	100	100	100	100	100
Drums Coburg Hotel	93	87	87	87	85	85	87	85	85	85
Edwardes Lake Hotel	100	100	100	99	100	100	100	100	100	100
Excelsior Hotel	105	105	105	105	105	105	105	105	105	105
Fairfield Alphington RSL	30	30	30	30	30	30	30	30	30	30
Fawkner RSL	35	35	35	35	35	35	35	35	35	35
First & Last Hotel	59	70	70	70	70	70	70	70	70	70
Club Fogular Furlan	52	52	52	52	52	52	52	52	52	52
Junction Hotel	40	46	46	46	46	46	46	46	46	46
Meadow Inn Hotel - The	55	85	85	85	85	85	85	85	84	85
Northcote RSL Club	56	56	56	56	56	56	56	56	56	56
Olympic Hotel	80	80	80	80	80	80	80	80	80	80
Preston Bowls Club	23	15								
Preston Club - The	50	50	50	50	45	45	45	45	45	45
Preston Football Club Social Club	5									
Preston Hotel	45	41	41	41	41	41	41	41	41	41
Preston RSL	20	20	20	20	20	20	20	20	20	20
Reservoir Bowling Club	23	23	23	23	23	23	23	23	23	23
Reservoir Services Club RSL	68	68	68	68	68	68	68	68	68	68
Rose Shamrock & Thistle	60	60	60	60	60	60	60	60	60	60
Summerhill Reservoir Complex	100	100	100	100	100	100	100	100	100	100
Summerworld Hotel	35	35	35	35	35	35	35	35	35	35
Sylvania Hotel	100	100	100	100	100	100	100	100	100	100
West Heidelberg RSL	31	31	31	31	31	31	31	31	31	31
Total Machines	1,535	1,553	1,539	1,538	1,532	1,532	1,534	1,532	1,531	1,532
Total Venues	27	25	24	24	24	24	24	24	24	24

* = Base Month (June 2000).

Table A3.6
Gaming Machine Numbers by Venue: Five Control Regions
Moreland Minus, Control for Darebin Plus (Venues = 11 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Abruzzo Club	57	59	59	59	59	59	59	59	58	59
Court House Hotel	30	30	25	25	25	25	25	25	25	25
Glenroy RSL	40	40	40	40	40	40	40	40	40	40
Lyndhurst Club Hotel	52	48	48	48	48	48	48	48	48	48
Moreland Hotel		70	70	70	70	70	70	70	70	70
Northcote Park Football Club	100	100	85	85	85	85	85	85	85	85
Pascoe Vale Hotel	50	51	51	51	51	51	51	51	51	51
Pascoe Vale RSL	35	34	35	35	35	35	35	35	35	35
Reggio Calabria Club	40	40	40	40	40	40	40	40	40	40
The Brunswick Club	50	50	50	50	50	50	50	50	50	50
Zagame's Brunswick Club Hotel	45	45	45	45	45	45	45	45	45	45
Total	499	567	548	548	548	548	548	548	547	548
Number of Venues	10	11	11	11	11	11	11	11	11	11

* = Base Month (June 2000).

Table A3.7
Gaming Machine Numbers by Venue: The Five Cap Regions
City of La Trobe (Venues = 16 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Churchill Hotel Motel	28	28	28	28						
Skippers Tabaret	33	25	25	25	25	25	25	25	25	25
Grand Junction Hotel	44	43	43	43	43	43	43	43	43	43
Italian Aust Sport & Social Club Gippsland	38	47	47	47	47	47	44	44	43	43
Merton Rush Hotel										
Mid City Tavern (Moe)	15									
Moe Hotel	43	43	43	43	43	43	39	39	39	39
Moe Racing Club (Turfside Tabaret)	74	75	75	75	75	75	75	75	75	75
Moe RSL Sub Branch	43	43	43	43	43	43	40	40	39	39
Morwell Bowling Club Recreation Centre	45	45	45	45	45	45	45	45	45	45
Morwell Club	43	43	43	43	41	41	41	41	39	39
Morwell Hotel	40	40	40	40	40	40	40	40	38	38
Morwell RSL Club	51	51	51	51	49	49	49	49	46	46
Royal Exchange Hotel (Traralgon)	50	50	50	50	47	47	47	47	44	44
Traralgon Bowls Club	26	35	35	35	35	35	35	35	35	35
Traralgon Football Club	33	25	25	25	25	25	25	25	25	25
Traralgon RSL Club	39	45	45	45	45	45	42	42	41	41
Yallourn Bowling Club	28	25	25	25	25	25	25	25	25	25
Total	673	663	663	663	628	628	615	615	602	602
Venue Numbers	17	16	16	16	15	15	15	15	15	15

* = Base Month (June 2000).

Table A3.8
Gaming Machine Numbers by Venue: Five Control Regions
City of Ballarat, Control for the City of La Trobe (Venues = 16 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Ballarat & District Trotting Club	45	45	45	45	45	45	45	45	45	45
Ballarat Golf Club	28	28	28	28	28	28	28	28	28	28
Ballarat Leagues Club	45	45	45	45	45	45	45	45	45	45
Ballarat RSL	10	10	10	10	10	10	10	10	10	10
Blue Bell Hotel	48	48	48	48	48	48	48	48	48	48
Buninyong Golf Club	34	29	29	29	29	29	29	29	29	29
Craig's Royal Hotel	27	27	27	27	27	27	27	27	27	27
George Hotel	40	40	40	40	40	40	40	40	40	40
Golf House Hotel	20	20	20	20	20	20	20	20	20	20
Midlands Golf Club	32	32	32	31	32	32	32	32	32	32
North Ballarat Sports Club	100	100	100	100	90	90	90	90	90	90
Red Lion Hotel	45	45	45	45	45	45	45	45	45	45
Sebastopol Bowling Club	42	50	50	50	50	50	50	50	50	49
Sportspark Gaming & Entertainment Centre	35	35	35	35	35	35	35	35	35	35
The Grand Hotel	25	25	25	25	25	25	25	25	25	25
Zagame's Ballarat Club Hotel	105	105	105	105	105	105	105	105	105	105
Total	681	684	684	683	674	674	674	674	674	673
Venue Numbers	16	16	16	16	16	16	16	16	16	16

* = Base Month (June 2000).

Table A3.9
Gaming Machine Numbers by Venue: The Five Cap Regions
Bass Coast Shire (Venues = 8 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Cowes Golf Club	10	10	10	10	9	9	9	9	8	8
Esplanade Hotel	20	20	20	20	20	20	20	20	17	17
Isle Of Wight Hotel	12	12	12	12	11	11	11	11	10	10
Phillip Island Football Club	23	20	19	20	20	20	20	20	16	16
Phillip Island RSL	55	63	63	63	62	62	57	57	53	53
Wonthaggi Club - The	50	50	50	50	50	50	46	46	46	46
Wonthaggi Golf Club	21	21	21	21	18	18	15	15	15	15
Wonthaggi Workmen's Club	53	65	65	65	63	63	59	59	55	55
Total	244	261	260	261	253	253	237	237	220	220
Venue Numbers	8	8	8	8	8	8	8	8	8	8

* = Base Month (June 2000).

Table A3.10: Gaming Machine Numbers by Venue: Five Control Regions
City of Greater Geelong (Venues = 27 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Australian Croatian National Hall	30	30	30	30	30	30	30	30	30	30
Barwon Heads Hotel	30	29	29	29	29	29	29	29	29	29
Bell Park Sport & Recreation Club	28	28	28	28	28	28	28	28	28	28
Clifton Springs Golf Club	40	40	40	40	40	40	40	40	40	40
Gateway Hotel	60	60	60	60	60	60	60	60	60	60
Geelong Combined Leagues Club	105	105	105	105	105	105	105	105	105	105
Geelong Football Club	18	100	100	100	100	100	100	100	100	100
Geelong Golf Club	30	30	30	30	30	30	30	30	30	30
Geelong RSL	42	42	42	42	42	42	42	42	42	42
Great Western Hotel	40	40	40	40	40	40	40	40	40	40
Grovedale Hotel	70	70	70	70	70	70	70	69	70	69
Jokers on Ryrie	50	50	50	50	50	50	50	50	47	47
Lara Hotel	20	20	20	20	20	20	20	20	20	20
Lara Sporting Club	50	50	50	50	50	50	50	50	50	50
Leopold Sportsman's Club	35	35	35	35	35	35	35	35	35	35
Lord of the Isles Tavern	60	60	60	60	60	60	60	60	60	60
St George Workers Club	35	35	35	35	35	35	35	35	35	35
Norlane Hotel	105	105	105	105	105	105	105	105	105	105
North Shore Sports Club	48	48	48	48	48	48	48	48	48	48
Ocean Grove Bowling Club	55	45	45	45	45	45	45	45	45	45
Peninsula Hotel	55	55	55	55	55	55	55	55	55	55
Portarlington Golf Club	55	55	55	55	55	55	55	54	55	55
Shell Club	95	100	100	100	100	100	100	100	100	100
Sphinx Hotel	55	60	60	60	60	60	63	60	63	63
Waurn Ponds Hotel Motel	35	35	35	35	35	35	35	35	35	35
White Eagle House	41	35	35	35	35	35	35	35	35	35
Wool Exchange Hotel	30	30	30	30	30	30	30	30	30	30
Total	1,317	1,392	1,392	1,392	1,392	1,392	1,395	1,390	1,392	1,391
Venue Numbers	27	27	27	27	27	27	27	27	27	27

* = Base Month (June 2000).

Table A3.11
Gaming Machine Numbers by Venue: Potential "Leakage Points"
Greater Dandenong Plus (Venues = 7 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Chelsea Heights Hotel					40	40	40	40	40	40
Clayton Bowls Club	29	29	29	29	29	29	29	29	29	29
Hampton Park Tavern	65	65	65	65	65	65	65	65	65	65
Highett RSL Club	38	41	41	41	42	41	41	41	41	41
Kelly's Motor Club Hotel	70	70	70	70	70	70	70	70	70	70
Riviera Hotel	45	45	45	45	45	45	45	45	45	45
Sands Taverner		70	70	70	70	70	72	70	70	70
The Cove Hotel On The Marina	45	45	45	45	45	45	45	45	45	45
Total	292	365	365	365	406	405	407	405	405	405
Venue Numbers	6	7	7	7	8	8	8	8	8	8

* = Base Month (June 2000).

Table A3.12
Gaming Machine Numbers by Venue: Potential "Leakage Points"
Maribyrnong Plus (Venues = 8 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Deer Park Club	49	49	49	49	49	49	49	49	49	49
Junction Tabaret	80	80	80	80	79	80	80	80	80	80
Kealba Views Hotel	70	86	86	86	86	86	86	86	86	86
Keilor East RSL	25	25	25	25	25	25	25	25	25	25
Moonee Valley Racing Club (MV Tabaret)	105	105	105	105	105	105	105	105	105	105
North Suburban Sports Club	59	50	50	50	50	50	50	50	50	50
St Albans Hotel	50	50	50	50	50	50	50	50	50	50
Waterloo Cup Hotel	70	70	70	70	70	70	70	70	70	70
Total	508	515	515	515	514	515	515	515	515	515
Venue Numbers	8	8	8	8	8	8	8	8	8	8

* = Base Month (June 2000).

Table A3.13
Gaming Machine Numbers by Venue: Potential "Leakage Points"
Darebin Plus (Venues = 5 as at Base Month – June 2000)

Name	Mar-99	June-00*	Feb-01	Mar-01	Feb-02	Mar-02	Feb-03	Mar-03	Feb-04	Mar-04
Bundoora Bowling Club	29	20	20	20	20	20	20	20	20	20
Bundoora Taverner	100	100	100	100	100	100	100	100	100	100
Ivanhoe Hotel	100	99	100	100	100	100	100	100	100	100
Lalor Bowling Club	36	36	36	36	36	36	36	36	36	36
Park View Hotel	35	30	30	30	30	30	30	30	30	30
Total	300	285	286	286	286	286	286	286	286	286
Venue Numbers	5	5	5	5	5	5	5	5	5	5

* = Base Month (June 2000).

Appendix 4

Machine, Venue Numbers and Regional Profiles

In what follows, the researchers draw together the changes in the cap and control regions and provide a discussion of the characteristics of the population, including age, income distribution, tenancy type for housing, marital status and receipt of pensions and allowances. The same descriptive data is provided for each of the control regions. The discussion is set out as follows:

- changes in venue and/or machine numbers in the cap and control region; and
- regional profiles with the cap region considered first followed by the relevant control or matched region. The first two regions considered are Greater Dandenong Plus matched with Monash Minus.

A4.1 Greater Dandenong Plus and Monash Minus

Cap: Greater Dandenong Plus:

- EGM numbers peaked in December 1999 at 1,694 and declined to 1,682 in June 2000 (the baseline month) and have since declined to 1,540 by March 2004;
- No venues have ceased to be licensed in the period since March 1999; and
- One venue which was not licensed for machines in March 1999 is now licensed.

Control: Monash Minus:

- EGM numbers peaked in December 1999 at 923, before declining by 5 machines to their current level of 918 by June 2000 and have remained at that level to February 2004;
- No venues have ceased to be licensed in the period since March 1999; and
- One venue which was not licensed for machines in March 1999 is now licensed.

Regional Profile: Greater Dandenong Plus

The cap region of "Greater Dandenong Plus" is based on the City of Greater Dandenong local government region. The City of Greater Dandenong is located approximately 35 kilometres southeast of the Melbourne CBD, and includes the suburbs of Springvale, Dingley, Keysborough, Noble Park, and Dandenong.[61] The local government region was extended for the purposes of regional caps, to the north by adding the suburbs of Mulgrave, Mulgrave East & Mulgrave North (3170) from the City of Monash; and expanded to the east by adding the suburbs of Doveton & Eumemmerring (3171) and Hallam & Lynbrook (3803) from the City of Casey.

[61] All information on local government region boundaries, and suburbs is drawn from the publication: Victorian Department of Infrastructure (1998), "Patterns in Local Government: A guide to Victoria's Councils".

"Greater Dandenong Plus" is an ethnically very diverse region, with 47 per cent of its residents speaking a language other than English at home, compared to the Melbourne average of 26 per cent of the population. The City of Greater Dandenong website claims that the council has residents who have migrated from 140 different countries. The proportion of the population of Greater Dandenong Plus who are from an Aboriginal or Torres Straits Islander background is identical to the Melbourne average of 0.4 per cent.

The age profile as shown in Table A4.1 of the region of "Greater Dandenong Plus" is very similar to that of Melbourne as a whole, although is has a slightly higher proportion of residents aged 50 to 64, and a slightly lower proportion aged 30 to 49.

Table A4.1
Population Distribution by Age, Greater Dandenong Plus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Greater Dandenong Plus	31,940	37,012	47,744	28,492	19,989
	19.3	22.4	28.9	17.2	12.1
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS 2001 Census data, calculations SACES.

"Greater Dandenong Plus" has a significantly higher proportion of residents on low incomes that the Melbourne average, particularly of residents earning less than $200 per week. The proportion of residents in each of the income categories above $700 per week is below average, with a proportion of residents earning over $1,500 per week that is 1/3rd of the Melbourne average (see Table A4.2).

Table A4.2
Population Distribution by Income, Greater Dandenong Plus
Number and Per Cent

	< $200	$200 to $399	$400 to $699	$700 to $999	$1,000 to $1,499	$1,500 +
Greater Dandenong Plus	43,334	27,039	31,850	12,761	4,904	1,613
	35.7	22.3	26.2	10.5	4.0	1.3
Melbourne Total	713,279	507,397	584,861	336,934	195,146	123,018
	29.0	20.6	23.8	13.7	7.9	5.0
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS 2001 Census data, calculations SACES.

The proportions of households in each tenancy type for "Greater Dandenong Plus" in Table A4.3 are broadly in line with the Melbourne average, although the proportion renting from a housing authority is slightly above average, as is the proportion who fully

own their home. The slightly older age of the population accounts for the higher rate of home ownership.

Table A4.3
Household Distribution by Tenancy Type, Greater Dandenong Plus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Greater Dandenong Plus	56,712	32,265	4,071	22,017	2,507	2,310
	47.3	26.9	3.4	18.4	2.1	1.9
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS 2001 Census data, calculations SACES.

Residents of "Greater Dandenong Plus" aged 15 and over are somewhat less likely to have never been married than the Melbourne average, and consequently the proportions in each of the states of marriage (married, separated, divorced and widowed) are above average.

Table A4.4
Population Distribution by Marital Status, Greater Dandenong Plus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Greater Dandenong Plus	41,249	8,590	9,406	4,789	69,203
	31.0	6.4	7.1	3.6	51.9
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS 2001 Census data, calculations SACES.

The proportion of adults in "Greater Dandenong Plus" receiving Commonwealth 'income' benefits as shown in Table A4.5 is higher than the Melbourne average for every benefit type other than Sickness Allowance. The most significant difference is for the proportion in receipt of Disability support pensions, which is almost 40 per cent above the average. Higher rates of disability support have historically included those who have been forced to retire early, and some who are hidden unemployed but qualify for disability support.

Table A4.5
Victorians in Receipt of Commonwealth Benefits, Greater Dandenong Plus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Greater Dandenong Plus	17,931	7,169	7,428	4,279	118
	14.2	5.7	5.9	3.4	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS 2001 Census and Centrelink data, calculations SACES.

Regional Profile: Monash "Minus"

The region "Monash Minus" is based in the City of Monash with the suburbs of Mulgrave, Mulgrave East and Mulgrave North removed, having been transferred to the cap region of "Greater Dandenong Plus". The transfer of the postcode 3,170 reduces the region's population by 22,000 and transfers three venues with 308 machines (as at June 2000) reducing the machine density of the region. "Monash Minus" is located approximately 20km East South East of the Melbourne CBD, and includes the suburbs of Ashwood, Burwood, Chadstone, Clayton, Glen Waverly, Huntingdale, Mount Waverly, Oakleigh, Syndal, Westall, and Wheelers Hill.

"Monash Minus" is a reasonably ethnically diverse region with 34 per cent of its residents speaking a language other than English at home (compared to the Melbourne average of 26 per cent), although it is not quite as diverse as its neighbour to the south, Greater Dandenong Plus. The proportion of the population from an Aboriginal or Torres Straits Islander background, at 0.2 per cent, is half the Melbourne average.

Table A4.6
Population Distribution by Age, Monash Minus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Monash "Minus"	21,609	29,953	37,102	23,666	20,213
	16.3	22.6	28.0	17.9	15.2
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS census data, calculations SACES.

The age profile of the region "Monash Minus", as shown in Table A4.6 indicates that the region is slightly older than Melbourne as a whole with 33 per cent of its population aged over 50 compared with 27.5 per cent for Melbourne. The region has a slightly older population (65+) than Greater Dandenong Plus region.

Monash Minus has a slightly different income profile than Melbourne as a whole, with more persons on low (less than $200/week) and high (over $1,000/week) and fewer on middle incomes. The region has a higher proportion of residents on high incomes, earning more than $1,000 per week than Greater Dandenong Plus.

Table A4.7
Population Distribution by Income, Monash Minus
Number and Per Cent

	< $200	$200 - $399	$400 - $699	$700 - $999	$1,000 - $1,499	$1,500 +
Monash "Minus"	31,009	20,953	22,950	14,052	8,897	5,455
	30.0	20.3	22.2	13.6	8.6	5.3
Melbourne Total	645,515	451,924	523,572	303,793	176,116	113,653
	29.1	20.4	23.6	13.7	8.0	5.1
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS census data, calculations SACES.

Rates of home ownership in the region of Monash Minus are broadly similar to those of Melbourne as a whole, however the proportion of households who own their own home outright is well above average. The other notable difference from the pattern of Melbourne as a whole is the very low proportion of households renting from a housing authority.

Table A4.8
Household Distribution by Tenancy Type, Monash Minus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Monash "Minus"	54,458.2	23,412.4	1,513.8	17,849.3	1,759.2	3,258.4
	53.3	22.9	1.5	17.5	1.7	3.2
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS census data, calculations SACES.

The proportion of residents of "Monash Minus" aged over 15 who have never been married is broadly similar to the Melbourne average, but of those who have married, a significantly higher proportion are still married with only 7.5 per cent separated or divorced compared with the Melbourne average of 10 per cent.

Table A4.9
Population Distribution by Marital Status, Monash Minus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Monash "Minus"	35,641	7,144	5,832	2,427	59,884
	32.1	6.4	5.3	2.2	54.0
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS census data, calculations SACES.

Not surprisingly given its higher proportion of residents aged over 50, an above average proportion of Monash Minus' residents are in receipt of the Aged Pension. The proportion in receipt of the other major benefits is well below the Melbourne average.

Table A4.10
Victorians in Receipt of Commonwealth Benefits, Monash Minus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Monash "Minus"	14939	3171	2407	1398	54
	14.1	3.0	2.3	1.3	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS census and Centrelink data, calculations SACES.

A4.2 Maribyrnong Plus and Hobsons Bay Minus

Cap: Maribyrnong Plus:

- EGM numbers peaked in March 2000 at 1,329, before declining by 30 machines to 1,299 in February 2002 and further to 1,172 by March 2004;
- Five venues that were licensed for EGMs in March 1999 no longer have them; and
- Four venues which were not licensed in March 1999 are now licensed for EGMs.

Control: Hobsons Bay Minus:

- EGM numbers peaked in June 1999 at 583 machines (50 machines above the level for March 1999), before declining by 65 machines to their current level of 518 machines by March 2002;
- Two venues that were licensed for EGMs in March 1999 no longer have them; and
- One venue which was not licensed in March 1999 is now licensed for EGMs.

Regional Profile: Maribyrnong Plus

The cap region of Maribyrnong Plus is based on the local government region of the City of Maribyrnong. The City of Maribyrnong is located in inner eastern Melbourne and includes the suburbs of: Footscray, West Footscray, Braybrook, Maidstone, Maribyrnong, Kingsville, Seddon, Tottenham and Yarraville. The City of Maribyrnong is regarded as highly disadvantaged, being ranked as the most disadvantaged metropolitan local government region in Australia according to the ABS' Socio-Economic Index for Areas (SEIFA).[62] It also has the highest unemployment rate of any council in Melbourne (12.8 per cent), and the second highest for any SLA in Melbourne.[63]

The cap region was expanded to the south through the addition of the suburbs of Kingsville South, Newport and Spotswood (3015) from the City of Hobsons Bay; to the west through the addition of the suburbs of Albion, Glengara, Sunshine, Sunshine North, and Sunshine West (3020) from the City of Brimbank; and to the northeast through the addition of the suburbs of Flemington and Kensington from the City of Melbourne, and Flemington and Newmarket from the City of Moonee Valley (all post code 3031).

Although not as ethnically diverse as "Greater Dandenong Plus", 43 per cent of residents of "Maribyrnong Plus" speak a language other than English at home, still significantly higher than the Melbourne average of 26 per cent. The proportion of the population of "Maribyrnong Plus" who are from an Aboriginal or Torres Straits Islander background is identical to the Melbourne average of 0.4 per cent.

As with "Greater Dandenong Plus", the age distribution of "Maribyrnong Plus" is broadly similar to that of Greater Melbourne, although it has fewer residents aged under 15 and more aged over 65 as shown in Table A4.11.

"Maribyrnong Plus" has an above average proportion of its residents on low incomes, with the proportion earning less than $400 per week 15 per cent higher than the Melbourne average (see Table A4.12). The proportion of the population earning greater than $1,500 per week, whilst higher than that in "Greater Dandenong Plus", is still roughly half that for Melbourne as a whole.

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62 ABS data quoted on the City of Maribyrnong website at: http://infowest.maribyrnong.vic.gov.au/council/demographics/disadvantage.htm

63 Department of Employment and Workplace Relations (2002), "Small Area Labour Markets – Australia – June Quarter 2002."

Table A4.11
Population Distribution by Age, Maribyrnong Plus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Maribyrnong Plus	20,739	26,413	38,008	15,729	16,228
	17.7	22.6	32.5	13.4	13.9
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS 2001 Census data, calculations SACES.

Table A4.12
Population Distribution by Income, Maribyrnong Plus
Number and Per Cent

	< $200	$200 to $399	$400 to $699	$700 to $999	$1,000 to $1,499	$1,500 +
Maribyrnong Plus	30,294	18,972	18,865	10,436	5,451	2,317
	35.1	22.0	21.9	12.1	6.3	2.7
Melbourne Total	713,279	507,397	584,861	336,934	195,146	123,018
	29.0	20.6	23.8	13.7	7.9	5.0
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS 2001 Census data, calculations SACES.

"Maribyrnong Plus" has a lower home ownership rate than the Melbourne average, and consequently a greater proportion of households rent their place of residence from either housing authorities (more than twice the Melbourne average) or private landlords. Housing authority rental is exactly twice the rate prevailing in Greater Dandenong Plus region.

A significantly higher proportion of "Maribyrnong Plus" residents aged over 15 have never been married than the Melbourne average. Of those who have been married at some point, an above average proportion are currently divorced or separated (19 per cent of those who have married compared with the Melbourne average of 15 per cent).

Except for 'Sickness allowance', a greater proportion of adults in "Maribyrnong Plus" receive Commonwealth 'income support' benefits than the average for Melbourne, as shown in Table A4.15. The most significant difference is with NewStart Allowance or unemployment benefit receipt, with more than twice as many adults in "Maribyrnong Plus" receiving this benefit than average.

Table A4.13
Household Distribution by Tenancy Type, Maribyrnong Plus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Maribyrnong Plus	35,780	20,604	5,902	20,422	1,803	2,263
	41.2	23.7	6.8	23.5	2.1	2.6
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS 2001 Census data, calculations SACES.

Table A4.14
Population Distribution by Marital Status, Maribyrnong Plus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Maribyrnong Plus	36,281	7,022	7,634	3,867	41,563
	37.6	7.3	7.9	4.0	43.1
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS 2001 Census data, calculations SACES.

Table A4.15
Victorians in Receipt of Commonwealth Benefits, Maribyrnong Plus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Maribyrnong Plus	14,622	5,927	7,259	3,589	84
	15.8	6.4	7.8	3.9	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS 2001 Census and Centrelink data, calculations SACES.

Regional Profile: Hobsons Bay "Minus"

The region "Hobsons Bay Minus" is based on the City of Hobsons Bay in Melbourne's inner west, with the suburbs of Kingsville South, Newport and Spotswood removed,

having been transferred to the cap region of "Maribyrnong Plus". This transfer of postcode 3015 reduces the region's population by 14,000 and transfers one venue with 66 machines (as at June 2000) slightly increasing the machine density of the region. "Hobsons Bay Minus" is located approximately 10 km West South West of the Melbourne CBD on Port Phillip Bay, and includes the suburbs of Altona, Altona East, Altona Meadows, Kingsville, Westona, Williamstown, and Williamstown North.

"Hobsons Bay Minus" is a reasonably ethnically diverse region with 32 per cent of its residents speaking a language other than English at home (compared to the Melbourne average of 26 per cent and Maribyrnong Plus with 43 per cent of residents). The proportion of the population from an Aboriginal or Torres Straits Islander background at 0.3 per cent is below the Melbourne average.

The age profile of the region "Hobsons Bay Minus" is broadly in line with the Melbourne average, although it has an above average proportion of its population aged below 15 and between 30 and 49, suggesting that adults with children aged below 15 is a more common than average household type.

Table A4.16
Population Distribution by Age, Hobsons Bay Minus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Hobsons Bay "Minus"	13,917	13,463	21,357	10,178	8,314
	20.7	20.0	31.8	15.1	12.4
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS census data, calculations SACES.

"Hobsons Bay Minus" has an above average proportion of its population on low incomes, and a below average proportion on high incomes. This is similar to the matched region of Maribyrnong Plus. In particular the proportion of persons earning over $1,500 per week is 25 per cent below the Melbourne average.

Rates of homeownership in "Hobsons Bay Minus" are slightly above average, with a significantly above average proportion owning their home outright. The proportion of households renting their accommodation from a housing authority is average for Melbourne, but a below average proportion rent from private landlords.

Table A4.17
Population Distribution by Income, Hobsons Bay Minus
Number and Per Cent

	< $200	$200 - $399	$400 - $699	$700 - $999	$1,000 - $1,499	$1,500 +
Hobsons Bay "Minus"	15,134	9,934	11,781	6,558	3,588	1,886
	31.0	20.3	24.1	13.4	7.3	3.9
Melbourne Total	645,515	451,924	523,572	303,793	176,116	113,653
	29.1	20.4	23.6	13.7	8.0	5.1
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS census data, calculations SACES

Table A4.18
Household Distribution by Tenancy Type, Hobsons Bay Minus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Hobsons Bay "Minus"	23,736.0	13,739.0	1,326.0	7,872.0	959.0	831.0
	49.0	28.3	2.7	16.2	2.0	1.7
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS census data, calculations SACES.

A below average proportion of the population of "Hobsons Bay Plus" aged over 15 have been married at some point. Of those who have been married a slightly above average proportion (16 per cent of those who have been married compared with an average of 15 per cent) are currently divorced or separated.

Table A4.19
Population Distribution by Marital Status, Hobsons Bay Minus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Hobsons Bay "Minus"	16,335	3,309	3,871	1,956	27,846
	30.6	6.2	7.3	3.7	52.2
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS census data, calculations SACES

A slightly above average proportion of the residents of Hobsons Bay Minus are in receipt of the major Commonwealth benefit payments, particularly the Aged Pension.

Table A4.20
Victorians in Receipt of Commonwealth Benefits, Hobsons Bay Minus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Hobsons Bay "Minus"	7453	2413	2150	1529	40
	14.7	4.7	4.2	3.0	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS census and Centrelink data, calculations SACES

A4.3 Darebin Plus and Moreland Minus

Cap: Darebin Plus:

- EGM numbers peaked in June 2000 at 1,553 machines before declining to 1,539 in February 2001, but have remained at 1,532 since the cap process was initiated;
- Three venues that were licensed for EGMs in March 1999 no longer have them; and
- Two venues which were not licensed in March 1999 are now licensed for EGMs.

Control: Moreland Minus:

- EGM numbers increased to 567 in the baseline period of June 2000 and declined to 548 by February 2001, thereafter remaining at that level; and
- one venue not licensed in March 1999 is now licensed for EGMs.

Regional Profile: Darebin Plus

The region of Darebin Plus is based on the local government area of the City of Darebin. The City of Darebin is located approximately ten kilometres north of the Melbourne CBD, and includes the suburbs of Northcote, Alphington, Fairfield, Thornbury, Preston, Reservoir Ruthven, and Kingsbury. The cap region was expanded to the west through the addition of the suburbs of Batman, Coburg, Coburg East, Coburg North, Merlynston, Moreland & Newlands (3058) and Fawkner and Gowrie (3060) from the City of Moreland; to the east through the addition of the suburbs of Heidelberg Heights & Heidelberg West (3081) from the City of Banyule; to the north through the addition of the suburb of Thomastown (3074) from the City of Whittlesea; and to the North East through the addition of the suburb of Campbellfield (3081) from the City of Hume.

Like "Greater Dandenong Plus", "Darebin Plus" is very ethnically diverse with 46 per cent of its residents speaking a language other than English at home, compared to the Melbourne average of 26 per cent. The proportion of "Darebin Plus's" population who are from an Aboriginal or Torres Straits Islander background at 0.8 per cent is double the Melbourne average.

"Darebin Plus" is somewhat older that Melbourne as a whole, with a below average proportion of its population in every age category except for 65s and over. The share of its population aged over 65 at 15.6 per cent of the total population is almost a third above average.

Table A4.21
Population Distribution by Age, Darebin Plus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Darebin Plus	36,039	44,429	62,097	30,166	31,951
	17.6	21.7	30.3	14.7	15.6
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS 2001 Census data, calculations SACES.

As is the case with the other metropolitan 'cap' regions, "Darebin Plus" has an above average proportion of low income earners. The proportion of its population who earn over $1,500 per week is less than half the Melbourne average.

Table A4.22
Population Distribution by Income, Darebin Plus
Number and Per Cent

	< $200	$200 to $399	$400 to $699	$700 to $999	$1,000 to $1,499	$1,500 +
Darebin Plus	53,886	36,716	35,281	17,116	8,296	3,110
	34.9	23.8	22.8	11.1	5.4	2.0
Melbourne Total	713,279	507,397	584,861	336,934	195,146	123,018
	29.0	20.6	23.8	13.7	7.9	5.0
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS 2001 Census data, calculations SACES.

The overall proportion of households in "Darebin Plus" who own their own home is slightly lower than average, although the proportion who own their own home outright is above average.

Table A4.23
Household Distribution by Tenancy Type, Darebin Plus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Darebin Plus	78,022	30,141	7,290	32,418	3,361	3,247
	50.5	19.5	4.7	21.0	2.2	2.1
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS 2001 Census data, calculations SACES.

A slightly higher proportion of "Darebin Plus" residents aged over 15 have never been married than the Melbourne average. Of those who have been married at some point in time, a much higher proportion are widowed (25 per cent above the Melbourne average), most likely because of the high proportion of residents aged 65 and over.

Table A4.24
Population Distribution by Marital Status, Darebin Plus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Darebin Plus	59,688	12,760	11,029	5,714	79,446
	35.4	7.6	6.5	3.4	47.1
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS 2001 Census data, calculations SACES.

As with the other two metropolitan cap regions, excluding Sickness Allowance, an above average proportion of "Darebin Plus'" adult residents are in receipt of Commonwealth 'income support' benefits. The difference is most significant for the proportion in receipt of the Disability Support Pension which is 70 per cent above the Melbourne average, with persons in receipt of NewStart Allowance and the Age Pension also disproportionately high (50 and 44 per cent above average respectively).

Table A4.25
Victorians in Receipt of Commonwealth Benefits, Darebin Plus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Darebin Plus	28,923	11,253	9,296	4,638	179
	17.9	7.0	5.7	2.9	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS 2001 Census and Centrelink data, calculations SACES.

Regional Profile: Moreland "Minus"

The region "Moreland Minus" is based in the City of Moreland in Melbourne's northern suburbs, with the suburbs of Batman, Coburg, Coburg East, Coburg North, Fawkner, Gowrie, Merlynston, Moreland and Newlands removed, having been transferred to the cap region of "Darebin Plus". This transfer of postcodes 3058 and 3060 significantly reduces the region's population by 42,000 (from 130,000 to 88,000) and transfers four venues with 227 machines (as at June 2000) slightly increasing the machine density of the region. "Moreland Minus" is located approximately 10 km North of the Melbourne CBD, and includes the suburbs of Brunswick, Brunswick East, Brunswick West, Fawkner West, Glenroy, Gowanbrae, Moonee Vale, and Pascoe Vale.

"Moreland Minus" is an ethnically diverse region with almost 40 per cent of its residents speaking a language other than English at home (compared to the Melbourne average of 26 per cent and Darebin Plus at 46 per cent of its residents). The proportion of the population from an Aboriginal or Torres Straits Islander background is in line with the Melbourne average of 0.4 per cent.

The age profile of the region "Moreland Minus" is slightly different to the Melbourne average, with a significantly smaller proportion of its population aged below 15 a significantly above average proportion aged 65 plus.

The distribution of incomes in "Moreland Minus" is slightly below the average for Melbourne as a whole, with the proportion of its population reporting incomes in each of the categories above $399/week being below average.

Table A4.26
Population Distribution by Age, Moreland Minus
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Moreland "Minus"	14,274	21,147	26,907	11,723	14,206
	16.2	24.0	30.5	13.3	16.1
Melbourne Total	660,526	731,026	1,028,587	515,383	403,829
	19.8	21.9	30.8	15.4	12.1
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS census data, calculations SACES.

Table A4.27
Population Distribution by Income, Moreland Minus
Number and Per Cent

	< $200	$200 - $399	$400 - $699	$700 - $999	$1,000 - $1,499	$1,500 +
Moreland "Minus"	21,017	16,183	15,301	8,963	4,744	1,947
	30.8	23.7	22.4	13.2	7.0	2.9
Melbourne Total	645,515	451,924	523,572	303,793	176,116	113,653
	29.1	20.4	23.6	13.7	8.0	5.1
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS census data, calculations SACES.

A below average proportion of the households in Moreland Minus own their own home (although an above average proportion own it outright), and consequently the proportion of the population renting from non-Housing Authority landlords is significantly above average.

Table A4.28
Household Distribution by Tenancy Type, Moreland Minus
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Moreland "Minus"	32,219.8	13,572.9	1,842.9	18,271.5	1,366.8	1,025.4
	47.2	19.9	2.7	26.8	2.0	1.5
Melbourne Total	1,087,099	730,653	63,930	439,599	48,193	65,441
	44.6	30.0	2.6	18.1	2.0	2.7
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS census data, calculations SACES.

Significantly more residents of Moreland Minus have never been married than is average for Melbourne; and of those who have been married at some point, a significantly below average proportion are currently married.

Table A4.29
Population Distribution by Marital Status, Moreland Minus
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Moreland "Minus"	28,291	5,311	4,983	2,328	33,065
	38.2	7.2	6.7	3.1	44.7
Melbourne Total	891,964	160,285	181,092	84,313	1,361,105
	33.3	6.0	6.8	3.1	50.8
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS census data, calculations SACES.

The proportion of residents of Moreland Minus in receipt of the Age Pension is half again as much as the state average. Proportions in receipt of the Disability Support Pension and NewStart Allowance are also well above average, although receipts of the Single Parent's Pension are below average.

Table A4.30
Victorians in Receipt of Commonwealth Benefits, Moreland Minus
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Moreland "Minus"	12,853	3,904	3,949	1,637	63
	18.0	5.5	5.5	2.3	0.1
Melbourne Total	314,896	104,143	95,733	63,809	2,513
	12.4	4.1	3.8	2.5	0.1
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS census and Centrelink data, calculations SACES

A4.4 City of La Trobe and City of Ballarat

Cap: City of La Trobe:

- EGM numbers were at their peak in March 1999 with 673 EGMs, and subsequently declined by 45 machines by March 2002 and declined still further to 602 in March 2004;
- Two venues that were licensed for EGMs in March 1999 no longer have them.

Control: City of Ballarat:

- EGM numbers peaked in December 1999 at 689 machines (8 machines above the level for March 1999), before declining by 16 machines to reach their current level of 673 machines by March 2004; and
- There have been no changes in licensed venues over the period from March 1999 to February 2004.

Regional Profile: City of La Trobe

The City of La Trobe is medium sized regional council (1,395 km^2) located east of Melbourne in the La Trobe Valley, with its population concentrated in the towns of Traralgon, Morwell and Moe.

Whilst it is much less ethnically diverse than Melbourne, a higher proportion of the City of La Trobe's residents speak a language other than English at home than the average for regional Victoria (6.7 per cent compared to 4.7 per cent). The proportion of "the City of La Trobe's" population who are from an Aboriginal or Torres Straits Islander background at 1.1 per cent is slightly above the average for regional Victoria of 1 per cent.

The distribution of its population by age for the City of La Trobe is broadly in line with the average for regional Victoria, although it is slightly younger with 73 per cent rather than 69 per cent of the population aged under 50.

Table A4.31
Population Distribution by Age, City of La Trobe
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
La Trobe	15,344	13,110	19,506	10,288	7,897
	23.2	19.8	29.5	15.6	11.9
Regional Total	283,112	232,295	364,227	210,390	181,583
	22.3	18.3	28.6	16.5	14.3
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS 2001 Census data, calculations SACES.

The income distribution of the City of La Trobe compared to the average for regional Victoria is a little more mixed that those of the metropolitan cap regions. Whilst an above average proportion of its population earn under $200 per week, the share of its population with incomes above $1,000 per week are also above average (see Table A4.32).

Table A4.32
Population Distribution by Income, City of La Trobe
Number and Per Cent

	< $200	$200 to $399	$400 to $699	$700 to $999	$1,000 to $1,499	$1,500 +
La Trobe	16,553	11,914	9,271	4,798	3,308	1,202
	35.2	25.3	19.7	10.2	7.0	2.6
Regional Total	283,259	241,710	220,849	96,219	49,753	20,921
	31.0	26.5	24.2	10.5	5.5	2.3
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS 2001 Census data, calculations SACES.

The City of La Trobe has a home ownership rate that is broadly similar to the average for regional Victoria. Of those households renting their accommodation, a higher proportion than average rent them from housing authorities.

Table A4.33
Household Distribution by Tenancy Type, City of La Trobe
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
La Trobe	20,861	14,726	2,343	5,806	831	1,446
	45.3	32.0	5.1	12.6	1.8	3.1
Regional Total	416,935	259,249	31,781	129,447	24,699	34,962
	46.5	28.9	3.5	14.4	2.8	3.9
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS 2001 Census data, calculations SACES.

The proportion of persons aged 15 and over in the City of La Trobe who have never been married is slightly above the average for regional Victoria. Of those who have been married at some point, an above average proportion are currently divorced or separated (17 per cent of those who have married compared with the average for regional Victoria of 14 per cent).

The proportion of adults in the City of La Trobe in receipt of the Age Pension was slightly below the average for regional Victoria, perhaps reflecting the region's younger age profile. The proportion in receipt of the other major 'income support' benefits was significantly above average.

Table A4.34
Population Distribution by Marital Status, City of La Trobe
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
La Trobe	15,370	3,612	3,820	2,067	25,937
	30.3	7.1	7.5	4.1	51.1
Regional Total	281,965	71,992	68,258	33,831	532,443
	28.5	7.3	6.9	3.4	53.9
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS 2001 Census data, calculations SACES.

Table A4.35
Victorians in Receipt of Commonwealth Benefits, City of La Trobe
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
La Trobe	7,264	3,459	2,842	2,240	78
	15.3	7.3	6.0	4.7	0.2
Regional Total	147,515	50,999	39,252	32,020	2,062
	15.9	5.5	4.2	3.4	0.2
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS 2001 Census and Centrelink data, calculations SACES.

Regional Profile: City of Ballarat

The City of Ballarat is medium sized regional council (740 km^2) located west of Melbourne with most of its population located in the major regional centre of Ballarat, but stretching north and west of the city.

The City of Ballarat is very linguistically homogenous, with only 2.9 per cent of its population speaking a language other than English at home, compared to an average of 4.7 per cent for Regional Victoria and 26 per cent for Melbourne. The proportion of the City of Ballarat's population who are from an Aboriginal or Torres Straits Islander background at 0.9 per cent is slightly below the average for regional Victoria of 1 per cent.

The population distribution of the City of Ballarat is slightly skewed when compared to the average for regional Victoria, with a significantly higher proportion of its population aged 15 to 29, and below average proportions in every other age group.

Table A4.36
Population Distribution by Age, City of Ballarat
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Ballarat	17,420	18,282	22,575	11,930	11,036
	21.4	22.5	27.8	14.7	13.6
Regional Total	283,112	232,295	364,227	210,390	181,583
	22.3	18.3	28.6	16.5	14.3
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS census data, calculations SACES.

The City of Ballarat has disproportionate numbers of people on low incomes, with above average proportions of its population earning less than $400 per week, and a below average proportion earning over $700.

Table A4.37
Population Distribution by Income, City of Ballarat
Number and Per Cent

	< $200	$200 - $399	$400 - $699	$700 - $999	$1,000 - $1,499	$1,500 +
Ballarat	18,810	15,669	14,341	6,227	3,121	1,162
	31.7	26.4	24.2	10.5	5.3	2.0
Regional Total	351,023	297,184	282,138	129,360	68,783	30,286
	30.3	25.6	24.3	11.2	5.9	2.6
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS census data, calculations SACES.

A below average proportion of households in the City of Ballarat own their own homes, and of these a disproportionately large number currently have mortgages rather than owning their home outright. The proportion renting their home from a housing authority is over a third higher than for Regional Victoria as a whole, and the proportion renting from other types of landlords is 20 per cent above average.

The proportion of residents of Ballarat aged over 15 who have never been married is significantly higher than the average for Regional Victoria. Of those who have been married at some point, the proportion who are currently divorced is noticeably higher in Ballarat, as is the case for the City of La Trobe.

Table A4.38
Household Distribution by Tenancy Type, City of Ballarat
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Ballarat	24,348.8	17,270.5	2,718.0	10,056.3	906.0	2,834.1
	41.9	29.7	4.7	17.3	1.6	4.9
Regional Total	416,935	259,249	31,781	129,447	24,699	34,962
	46.5	28.9	3.5	14.4	2.8	3.9
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS census data, calculations SACES

Table A4.39
Population Distribution by Marital Status, City of Ballarat
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Ballarat	21643	4711	4698	2242	30527
	33.9	7.4	7.4	3.5	47.8
Regional Total	281,965	71,992	68,258	33,831	532,443
	28.5	7.3	6.9	3.4	53.9
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS census data, calculations SACES.

The proportion of Ballarat residents in receipt of Commonwealth government income replacement payments other than the Aged Pension is noticeably above the average for Regional Victoria. Once again, this is broadly similar to the City of La Trobe.

Table A4.40
Victorians in Receipt of Commonwealth Benefits, City of Ballarat
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Ballarat	9284	3608	2959	2300	48
	15.5	6.0	4.9	3.8	0.1
Regional Total	147,515	50,999	39,252	32,020	2,062
	15.9	5.5	4.2	3.4	0.2
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS census and Centrelink data, calculations SACES

A4.5 Bass Coast Shire and City of Greater Geelong

Cap: Bass Coast Shire:

- EGM numbers peaked in December 1999 at 264 machines (20 machines above the level for March 1999), before declining by 11 machines to 253 machines by March 2002 and declining by 23 machines to 220 by March 2004; and
- There have been no changes in licensed venues over the period from March 1999 to September 2002.

Control: City of Greater Geelong

- EGM numbers were 1,317 in March 1999 and increased by 75 machines to 1,392 by the baseline year, June 2000, whereafter they have remained stable; and
- the number of venues remained unchanged at 27.

Regional Profile: Bass Coast Shire

The Bass Coast Shire is located southeast of Melbourne bounded to the west by Western Port (and including Phillip Island) and to the south by Bass Strait. Its major population centres are the towns of Wonthaggi and Inverloch on the mainland, and Cowes on Phillip Island.

The Bass Coast Shire is relatively homogenous ethnically, with only 3.7 per cent of its residents speaking a language other than English at home, compared to the average for regional Victoria of 4.7 per cent. The proportion of its population who are from an Aboriginal or Torres Straits Islander background, at 0.5 per cent, is half the average for regional Victoria.

The Bass Coast Shire is significantly older than average for regional Victoria, with the proportion of its population aged 65 and over almost fifty per cent above average.

Table A4.41
Population Distribution by Age, Bass Coast Shire
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Bass Coast	4,670	3,428	6,287	4,626	5,075
	19.4	14.2	26.1	19.2	21.1
Regional Total	283,112	232,295	364,227	210,390	181,583
	22.3	18.3	28.6	16.5	14.3
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS 2001 Census data, calculations SACES.

The income distribution in the Bass Coast Shire is skewed towards low incomes compared to the average for regional Victoria, with an above average proportion of the population having incomes below $400 per week, and below average proportions in each of the income categories above $399 per week.

Table A4.42
Population Distribution by Income, Bass Coast Shire
Number and Per Cent

	< $200	$200 to $399	$400 to $699	$700 to $999	$1,000 to $1,499	$1,500 +
Bass Coast	5,701	5,363	3,909	1,327	621	287
	33.1	31.2	22.7	7.7	3.6	1.7
Regional Total	283,259	241,710	220,849	96,219	49,753	20,921
	31.0	26.5	24.2	10.5	5.5	2.3
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS 2001 Census data, calculations SACES.

The proportion of households in the Bass Coast Shire who own their own homes is broadly in line with the average for regional Victoria, however an above average proportion own their own home outright. The proportion of households in the Bass Coast Shire who rent from private landlords is almost identical to the average for regional Victoria, but the supply of 'housing authority' housing is almost half the average.

Table A4.43
Household Distribution by Tenancy Type, Bass Coast Shire
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Bass Coast	9,084	4,243	332	2,425	545	469
	53.1	24.8	1.9	14.2	3.2	2.7
Regional Total	416,935	259,249	31,781	129,447	24,699	34,962
	46.5	28.9	3.5	14.4	2.8	3.9
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS 2001 Census data, calculations SACES.

Significantly fewer persons aged 15 and over in the Bass Coast Shire have never been married compared to the average for regional Victoria. Of those who have been married at some point, an above average proportion are currently divorced or separated (16 per cent of those who have married compared with the average for regional Victoria of 14 per cent), although the proportion who are currently married is still above average.

Table A4.44
Population Distribution by Marital Status, Bass Coast Shire
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Bass Coast	4,612	1,731	1,623	768	10,681
	23.8	8.9	8.4	4.0	55.0
Regional Total	281,965	71,992	68,258	33,831	532,443
	28.5	7.3	6.9	3.4	53.9
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS 2001 Census data, calculations SACES.

A significantly higher proportion of adults in the Bass Coast Shire are in receipt of the Aged Pension than the regional average (40 per cent above). The proportions receiving the other three major 'income support' benefits is close to the average for regional Victoria as is illustrated in Table A4.45.

Table A4.45
Victorians in Receipt of Commonwealth Benefits, Bass Coast Shire
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Bass Coast	4,099	1,050	793	663	46
	22.2	5.7	4.3	3.6	0.3
Regional Total	147,515	50,999	39,252	32,020	2,062
	15.9	5.5	4.2	3.4	0.2
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS 2001 Census and Centrelink data, calculations SACES

Regional Profile: City of Greater Geelong

The City of Greater Geelong is Victoria's most populous local government region with a population of 184,000 (ABS 2001 Census), with most if its population located in Geelong, Victoria's largest regional city which is situated South West of Melbourne on Port Phillip Bay. The council encompasses an area of 1,240 km^2, stretching to the Little River in the north, Barwon Heads in the South, and including all of the Bellarine Peninsula.

The City of Greater Geelong, whilst not as ethnically diverse as Melbourne, is much more heterogeneous linguistically than the average for Regional Victoria with 9.8 per cent of its population speaking a language other than English at home, compared to an average of 4.7 per cent for Regional Victoria. The proportion of the City of Ballarat's population who are from an Aboriginal or Torres Straits Islander background, at 0.7 per cent, is slightly below the average for Regional Victoria of 1 per cent.

The age distribution of Greater Geelong is somewhat younger than that of Regional Victoria as a whole, although it also has a disproportionately high number of persons aged 65 and over.

Table A4.46
Population Distribution by Age, City of Greater Geelong
Number and Per Cent

	0-15	15-29	30-49	50-64	65+
Greater Geelong	37,958	37,222	52,393	29,125	27,459
	20.6	20.2	28.5	15.8	14.9
Regional Total	283,112	232,295	364,227	210,390	181,583
	22.3	18.3	28.6	16.5	14.3
Victorian Total	943,639	963,321	1,392,814	725,773	585,411
	20.5	20.9	30.2	15.7	12.7

Source: Unpublished ABS census data, calculations SACES.

The distribution of incomes in Greater Geelong is somewhat different from the average for Regional Victoria with a disproportionate number of people on both very low (under $200/week) and high (over $700/week) incomes.

Table A4.47
Population Distribution by Income, City of Greater Geelong
Number and Per Cent

	< $200	$200 - $399	$400 - $699	$700 - $999	$1,000 - $1,499	$1,500 +
Greater Geelong	43,085	34,157	30,132	15,606	8,828	3,598
	31.8	25.2	22.3	11.5	6.5	2.7
Regional Total	351,023	297,184	282,138	129,360	68,783	30,286
	30.3	25.6	24.3	11.2	5.9	2.6
Victoria Total	996,538	749,108	805,711	433,153	244,899	143,939
	29.5	22.2	23.9	12.8	7.3	4.3

Source: Unpublished ABS census data, calculations SACES

Rates of home ownership by households in Greater Geelong are very high, with almost 80 per cent owning their own home (either outright or with a mortgage). The proportion of households renting their accommodation is also above average for Regional Victoria, as a significantly below average proportion report that their living arrangements fit the categories 'Other tenure type' and 'Tenure not applicable'.

Table A4.48
Household Distribution by Tenancy Type, City of Greater Geelong
Number and Per Cent

	Fully owned	Being purchased	Rented: Housing Authority	Rented: Other	Other Tenure type	Tenure not applicable
Greater Geelong	61,390	40,946	5,152	20,293	328	1,000
	47.5	31.7	4.0	15.7	0.3	0.8
Regional Total	416,935	259,249	31,781	129,447	24,699	34,962
	46.5	28.9	3.5	14.4	2.8	3.9
Victorian Total	1,504,034	989,902	95,711	569,046	72,893	100,402
	45.1	29.7	2.9	17.1	2.2	3.0

Source: Unpublished ABS census data, calculations SACES

A slightly above average proportion of residents of Geelong aged over 15 have never been married compared to Regional Victoria as a whole. Of those who have been married at some point a slightly below average proportion are currently married.

Table A4.49
Population Distribution by Marital Status, City of Greater Geelong
Number and Per Cent

	Never married	Widowed	Divorced	Separated	Married
Greater Geelong	43,621	10,758	10,348	5,032	76,439
	29.8	7.4	7.1	3.4	52.3
Regional Total	281,965	71,992	68,258	33,831	532,443
	28.5	7.3	6.9	3.4	53.9
Victorian Total	1,173,929	232,278	249,350	118,143	1,893,549
	32.0	6.3	6.8	3.2	51.6

Source: Unpublished ABS census data, calculations SACES.

The proportion of Geelong residents in receipt of the Age Pension, NewStart Allowance and the Single Parent's Pension are all above average for Regional Victoria, although the proportion in receipt of the Disability support pension is slightly below average.

Table A4.50
Victorians in Receipt of Commonwealth Benefits, City of Greater Geelong
Number and Per Cent

	Age Pension	Disability Support Pension	NewStart Allowance	Parenting Payment Single	Sickness Allowance
Greater Geelong	23,890	7,259	6,116	4,690	142
	17.3	5.3	4.4	3.8	0.1
Regional Total	147,515	50,999	39,252	32,020	2,062
	15.9	5.5	4.2	3.4	0.2
Victorian Total	462,411	155,142	134,985	95,829	4,575
	13.3	4.5	3.9	2.8	0.1

Source: Unpublished ABS census and Centrelink data, calculations SACES.

A4.6 Three Leakage Points

The three "leakage points" or localities/venues shown in Appendix 3, Tables A3.11 to A3.13 were constructed from those venues in close proximity to the three cap regions of Greater Dandenong Plus, Maribyrnong Plus and Darebin Plus.

In proximity to the cap region of Greater Dandenong Plus but lying outside the region as one of our control areas, the number of machines in the base year, June 2000, in 7 venues was 365 machines. In February 2002, the time at which machines had first to be removed from capped Greater Dandenong Plus, an additional venue was opened nearby and the number of machines increased to 406 (increase of 41 machines) declining thereafter by 1 machine to total 405 by March 2004.

In the case of Maribyrnong Plus there was no change in either the number of venues or the number of machines prior to or after the removal process. Machine numbers were 515 located in 8 venues.

In the case of Darebin Plus, the number of venues lying proximate but just outside the capped region remained at 5 and the number of machines remained steady at 286 in the period June 2000 to February 2004.

Appendix 5

Contact with Tabcorp and Tattersall's

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

Mr Michael O'Neil, Director
Telephone: (+61-8) 8303 4545 Facsimile: (+61-8) 8232 5307
Email: michael.oneil@adelaide.edu.au http://www.adelaide.edu.au/saces

24 June, 2004

Mr John Harris
Manager
Corporate and Public Affairs
Tattersall's
Level 2, 615 St Kilda Road
MELBOURNE VIC 3004

Dear Mr Harris,

Some time ago I met with you to discuss the Victorian Gambling Research Panel (GRP) sponsored study into Regional Caps,[64] which the South Australian Centre for Economic Studies had been commissioned to undertake. We met briefly again to discuss the outcomes of the study into Self-exclusion in the middle of 2003. In regard to the Regional Caps study both Tattersall's and TABCORP were unable to provide revenue data for the hotels and clubs within the cap regions and in venues nearby to those regions. This was perfectly understandable.

However, since that time the Victorian Government has changed the relevant legislation to allow the Centre to receive the data we require to assess the overall impact of the caps. The process of machine withdrawal commenced in February 2002 and the process was to be completed by 14 February 2004. A total of 406 machines were to be removed with the actual number of machines removed being 428 by the end date.[65]

In continuing our open and transparent process of the release of discussion papers, invitations for peer review and invitations for relevant stakeholders to contribute to studies that the Centre undertakes in this area, I am writing seeking the views of Tattersall's on the effectiveness of the regional caps policy.

It is important to recall that the Centre is conducting an evaluation of the policy, not a research program based on the testing of an hypothesis.

I assume that your organisation has made a series of business decisions relating to the removal of machines based on a diversity of information, some of which is strategic and internal to the company. You have also had the advantage of being able to monitor the impact of the removal of machines from any particular venue and to assess the actual impact.

64 In February 2001 the Minister for Gaming determined five regions in Victoria to be subject to caps on gaming machine numbers.

65 Information supplied by the OGR.

Accordingly, I invite you to comment on the following and any other items you may wish the researchers to consider:

- outline the principal reasons for removal of machines from selected venues and the basis of the decisions (aside from conforming with the Minister's instructions);
- you assessment of the revenue impact on those venues from which machines were removed (i.e., immediate impact, longer term impact);
- your assessment of the revenue impact on those venues (external to the caps regions) where machines may have been located;
- the assessment of the impact of regional caps relative to the introduction of the smoking ban;
- whether your analysis of the data showed any discernible change in the time of day/ time of play as a result of machine removal;
- whether any of the five regions[66] exhibited any differences in the response to the removal of machines;
- whether in your assessment, the regional caps policy has had an effect (+, -, no effect) on reducing the incidence of problem gambling;
- whether in your assessment, the regional caps policy has had any influence on gambling behaviour (i.e., EGM turnover, usage patterns, gambling intensity);
- specifically, can you indicate any measures which would indicate a reduction (or change) in the intensity of gambling; and
- you may wish to comment in advance on any specific venue/s that to your knowledge underwent refurbishment or investment that may have changed gambling revenue patterns and which cannot be attributed to the caps policy.

There may be other items which you care to comment on and I invite you to do so.

Following your response I will contact your office to arrange a time to discuss the project and to discuss your written response.

I appreciate the time and effort you are able to contribute to the response and the study on regional caps. I believe both Tattersall's and TABCORP have a legitimate and important role in assisting in the framing of public policy to address problem gambling and I look forward to receiving your response.

Yours sincerely,

Michael O'Neil
Director

P.S. John, I will be sending a second letter regarding a study into community impacts in Western Australia and Victoria that relate to the operation of X-lotto/Tattslotto.

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[66] Maribyrnong Plus, Great Dandenong Plus, Darebin Plus, Bass Coast, and La Trobe.

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
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Mr Michael O'Neil, Director
Telephone: (+61-8) 8303 4545 Facsimile: (+61-8) 8232 5307
Email: michael.oneil@adelaide.edu.au http://www.adelaide.edu.au/saces

24 June, 2004

Mr Mohan Jesudason
Chief Executive – Gaming
TABCORP Holdings Limited
GPO Box 1943R
MELBOURNE VIC 3001

Dear Mr Jesudason,

Some time ago I met with your colleague, Mr David Elmslie, to discuss the Victorian Gambling Research Panel (GRP) sponsored study into Regional Caps,[67] which the South Australian Centre for Economic Studies had been commissioned to undertake. In regard to the Regional Caps study both Tattersall's and TABCORP were unable to provide revenue data for the hotels and clubs within the cap regions and in venues nearby to those regions. This was perfectly understandable.

However, since that time the Victorian Government has changed the relevant legislation to allow the Centre to receive the data we require to assess the overall impact of the caps. The process of machine withdrawal commenced in February 2002 and the process was to be completed by 14 February 2004. A total of 406 machines were to be removed with the actual number of machines removed being 428 by the end date.[68]

In continuing our open and transparent process of the release of discussion papers, invitations for peer review and invitations for relevant stakeholders to contribute to studies that the Centre undertakes in this area, I am writing seeking the views of TABCORP on the effectiveness of the regional caps policy.

It is important to recall that the Centre is conducting an evaluation of the policy, not a research program based on the testing of an hypothesis.

I assume that your organisation has made a series of business decisions relating to the removal of machines based on a diversity of information, some of which is strategic and internal to the company. You have also had the advantage of being able to monitor the impact of the removal of machines from any particular venue and to assess the actual impact.

Accordingly, I invite you to comment on the following and any other items you may wish the researchers to consider:

- outline the principal reasons for removal of machines from selected venues and the basis of the decisions (aside from conforming with the Minister's instructions);
- you assessment of the revenue impact on those venues from which machines were removed (i.e., immediate impact, longer term impact);
- your assessment of the revenue impact on those venues (external to the caps regions) where machines may have been located;

---

67 In February 2001 the Minister for Gaming determined five regions in Victoria to be subject to caps on gaming machine numbers.

68 Information supplied by the OGR.

- the assessment of the impact of regional caps relative to the introduction of the smoking ban;
- whether at the time removing machines changes in credit value of remaining machines were introduced;
- whether your analysis of the data showed any discernible change in the time of day/ time of play as a result of machine removal;
- whether any of the five regions[69] exhibited any differences in the response to the removal of machines;
- whether, in your assessment, the effect of removal had any differential impacts in the follow year 1, year 2 and year 3 or no discernible difference could be charted across time;
- whether in your assessment, the regional caps policy has had an effect (+, -, no effect) on reducing the incidence of problem gambling;
- whether in your assessment, the regional caps policy has had any influence on gambling behaviour (i.e., EGM turnover, usage patterns, gambling intensity); and
- specifically, can you indicate any measures which would indicate a reduction (or change) in the intensity of gambling.

There may be other items which you care to comment on and I invite you to do so.

Following your response I will contact your office to arrange a time to discuss the project and to discuss your written response.

I appreciate the time and effort you are able to contribute to the response and the study on regional caps. I believe both Tattersall's and TABCORP have a legitimate and important role in assisting in the framing of public policy to address problem gambling and I look forward to receiving your response.

Yours sincerely,

Michael O'Neil
Director

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[69] Maribyrnong Plus, Great Dandenong Plus, Darebin Plus, Bass Coast, and La Trobe.

Interview with Industry Questions

1. Estimate machines are used to what extent of their capacity and time.

2. Caps: created machine outflow, with barrier to inflow, need council approval.

3. Seek opinion (and any data) whether machine reduction had
   a) impact on duration of gambling (time spent, time off day)
   b) participation in gambling ("crowding out", unattached gambler).

   This is, wider distribution of revenue by time of day/time of play (to offset potential crowding out).

4. Reference to Tables 1.2a, 1.2b, EGMs per 1,000 adults fell but expenditure increased in (LGA's only)

   Maribyrnong (15.13 → to 13.57, but expenditure up)

   Bass Coast (13.64 → to 11.84)

   La Trobe (12.75 → to 11.72)

   Suggests (a) remaining machines were played more intensively
   — if due to PG – then welfare reducing
   — if due to recreation gamblers crowding out PG then welfare increasing.

5. In each of the 5 LGA regions (alone) the decline in machine numbers was greater than the decline in average net gaming losses per 1,000 adults. What does this suggest to you?

6. Most obvious response is that *remaining* machines are used more intensively, thereby increasing average revenue per machine?
   Did they do any analysis; in cap region relative to Victoria?

7. Are there particular characteristics of communities that suggest high propensity for EGM gambling.

   Darebin has 9th high level of losses, but 14th highest density, which suggest use more intensively

   Bass Coast high density of EGMs, but much lower ranking in terms of losses per adult.

8. Machine placement: are there regions in which NGR increased with relocation of machines?

9. Withdrawal of machines from smaller and lower performing venues. (N = 105). What if any analysis?

10. Was there an increase in revenue in localities close to boundary of cap regions implied by a universally rapid increase in machine numbers and/or average revenue?

11. PG more likely to switch venues, play different venues in the one day (either inter/intra regionally).

12. Average age of machines change?
Replacement rates faster/no change?

13. Replace existing machines with higher yielding machines?

14. Had to remove machines (evenly spread, % reduction of EGMs) across venues:
    - how was this achieved, equal share for venues;
    - worst performing machines;
    - at time of upgrade of old to newer machines.

Appendix 6

Survey of Venues in Cap, Control and Leakage Regions

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

Mr Michael O'Neil, Director
Telephone: (+61-8) 8303 4545 Facsimile: (+61-8) 8232 5307
Email: michael.oneil@adelaide.edu.au http://www.adelaide.edu.au/saces

6 September, 2004 **CAP REGION**

«hotel»
«address_1»
«address_2»

Dear Licensee/Manager,

The South Australian Centre for Economic Studies is finalising its research study into the impact of regional caps on 5 regional areas in Victoria, namely

- Maribyrnong Plus: includes parts of Brimbank and Hobsons Bay Councils;
- City of Greater Dandenong Plus: includes parts of Casey and Monash Councils;
- City of La Trobe;
- Bass Coast Shire; and
- Darebin Plus: includes parts of Whittlesea and Hume Councils.

Your venue is one of those that lies within a cap region established for this study and we are seeking your assistance and response to the brief survey enclosed. The Centre is currently analysing machine numbers and revenue data, but the focus of the survey is **your experience** in response to the questions we have posed.

The actual cap program involved the two operators — Tabcorp and Tattersall's — being required to remove a total of 406 machines from the cap regions at three times — February 2002, 2003 and 2004 and to do so in a way that did not unnecessarily impact on any single venue.

Your answers are **confidential** and will be aggregated with other responses from 95 venues across the 5 cap regions.

The code number box located in the bottom right hand corner of the survey, identifies your venue to the researchers in order that we are able to follow-up non-respondents. No identification of your venue appears on the survey form and you are not required to identify your venue. We would appreciate the completed survey being returned by **Friday, 17th September** in the envelope provided.

Yours sincerely,

Michael O'Neil
Director

Encl...

Venue in a Cap Region
(For Period February 2002 to February 2004)

Capital Investment

1. Has your venue made any significant capital investment since February 2002 to the following (*please provide total amounts for each*):

- gaming room Capital Value $_____
- eating/food service Capital Value $_____
- public bar areas Capital Value $_____
- wagering facilities Capital Value $_____
- in response to smoking bans Capital Value $_____

Smoking Bans

2. Following the introduction of smoking bans in September 2002, what impact did your venue experience in regard to:

	No Change	Declined	Increased	Unsure
• employment	❑	❑	❑	❑
• restaurant clientele	❑	❑	❑	❑
• gaming participation	❑	❑	❑	❑
• other parts of the venue	❑	❑	❑	❑

3. Do you believe the introduction of smoking bans has assisted in reducing problem gambling? Please comment (*in what way*):

.....
.....
.....
.....

Operating Hours

4. Has your venue changed gaming room operating hours since February 2002? (Please ✓ one box).

Yes ❑ **No** ❑

Caps and Player Participation

5. Did your venue lose EGMs under the caps program? **Yes** ❑ **No** ❑

If ***yes***, did this result in a reduction in employment and how many persons? (*Number in box*)

Nil [ ] ***Full-time*** [ ] ***Part-time*** [ ] ***Casual*** [ ]

6. In your experience, did you notice any change in the patterns of player behaviour (please tick and comment).

- play more intensively on fewer machines **Yes** ❑ **No** ❑

.....

- players were unable to get on machines in peak times **Yes** ❑ **No** ❑

.....

- once idle machines were more continuously used **Yes** ❑ **No** ❑

.....

- players queued at busy times to access machines **Yes** ❑ **No** ❑

.....

- change in the pattern of time of play/time of day **Yes** ❑ **No** ❑

.....

- no discernable change **Yes** ❑ **No** ❑

.....

7. Thinking of your most **regular** players, in your experience did the caps policy impact in any discernable way?

Yes ❑ **No** ❑

Please comment: .....

.....

.....

Caps Policy, Credit Value and Machine Type

8. Did the operators change the credit value of machines in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

9. Did the operators change the type of machine in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

Thank you for completing the survey.
It would be appreciated if you could return the completed survey, in the envelope provided, by Friday, 17th September 2004

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

Mr Michael O'Neil, Director
Telephone: (+61-8) 8303 4545 Facsimile: (+61-8) 8232 5307
Email: michael.oneil@adelaide.edu.au http://www.adelaide.edu.au/saces

12 October, 2005 **CONTROL REGION**

«hotel»
«address_1»
«address_2»

Dear Licensee/Manager,

The South Australian Centre for Economic Studies is finalising its research study into the impact of regional caps on 5 regional areas in Victoria, namely

- Maribyrnong Plus: includes parts of Brimbank and Hobsons Bay Councils;
- City of Greater Dandenong Plus: includes parts of Casey and Monash Councils;
- City of La Trobe;
- Bass Coast Shire; and
- Darebin Plus: includes parts of Whittlesea and Hume Councils.

Your venue is one of those that lies within a control region established for this study and we are seeking your assistance and response to the brief survey enclosed. The Centre is currently analysing machine numbers and revenue data, but the focus of the survey is **your experience** in response to the questions we have posed.

The actual cap program involved the two operators — Tabcorp and Tattersall's — being required to remove a total of 406 machines from the cap regions at three times — February 2002, 2003 and 2004 and to do so in a way that did not unnecessarily impact on any single venue.

Your answers are **confidential** and will be aggregated with other responses from 77 venues across the control regions.

The code number box located in the bottom right hand corner of the survey, identifies your venue to the researchers in order that we are able to follow-up non-respondents. No identification of your venue appears on the survey form and you are not required to identify your venue. We would appreciate the completed survey being returned by **Friday, 17th September** in the envelope provided.

Yours sincerely,

Michael O'Neil
Director

Encl...
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Venue in a Control Region
(For Period February 2002 to February 2004)

Capital Investment

1. Has your venue made any significant capital investment since February 2002 to the following (*please provide total amounts for each*):

- gaming room Capital Value $_____
- eating/food service Capital Value $_____
- public bar areas Capital Value $_____
- wagering facilities Capital Value $_____
- in response to smoking bans Capital Value $_____

Smoking Bans

2. Following the introduction of smoking bans in September 2002, what impact did your venue experience in regard to:

	No Change	Declined	Increased	Unsure
• employment	❑	❑	❑	❑
• restaurant clientele	❑	❑	❑	❑
• gaming participation	❑	❑	❑	❑
• other parts of the venue	❑	❑	❑	❑

3. Do you believe the introduction of smoking bans has assisted in reducing problem gambling? Please comment (*in what way*):

.....
.....
.....
.....

Operating Hours

4. Has your venue changed gaming room operating hours since February 2002? (Please ✓ one box).

Yes ❑ **No** ❑

Caps and Player Participation

5. Following the introduction of the caps policy in the 5 regions referred to, but not in your area:

- did your venue increase the number of machines? **Yes** ❑ **No** ❑

6. Did you notice any change in the patterns of player behaviour (please tick and comment).

- play more intensively on machines **Yes** ❑ **No** ❑

.....

- players were unable to get on machines in peak times **Yes** ❑ **No** ❑

.....

- once idle machines were more continuously used **Yes** ❑ **No** ❑

.....

- players queued at busy times to access machines **Yes** ❑ **No** ❑

.....

- change in the pattern of time of play/time of day **Yes** ❑ **No** ❑

.....

- no discernable change **Yes** ❑ **No** ❑

.....

7. Thinking of your most **regular** players, in your experience did the caps policy impact in any discernable way?

Yes ❑ **No** ❑

Please comment: .....

.....

.....

Caps Policy, Credit Value and Machine Type

8. In your experience, did you believe your venue benefited from players or new regulars now preferring to come to your venue?

Yes ❑ **No** ❑

Please comment: .....

.....

.....

9. Did the operators change the credit value of machines in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

10. Did the operators change the type of machine in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

Thank you for completing the survey.
It would be appreciated if you could return the completed survey, in the envelope provided, by Friday, 17th September 2004

SOUTH AUSTRALIAN
CENTRE FOR ECONOMIC STUDIES
ADELAIDE & FLINDERS UNIVERSITIES

Mr Michael O'Neil, Director
Telephone: (+61-8) 8303 4545 Facsimile: (+61-8) 8232 5307
Email: michael.oneil@adelaide.edu.au http://www.adelaide.edu.au/saces

12 October, 2005 **LEAKAGE REGIONS**

«hotel»
«address_1»
«address_2»

Dear Licensee/Manager,

The South Australian Centre for Economic Studies is finalising its research study into the impact of regional caps on 5 regional areas in Victoria, namely

- Maribyrnong Plus: includes parts of Brimbank and Hobsons Bay Councils;
- City of Greater Dandenong Plus: includes parts of Casey and Monash Councils;
- City of La Trobe;
- Bass Coast Shire; and
- Darebin Plus: includes parts of Whittlesea and Hume Councils.

Your venue is one of those that lies within a 'leakage point region (i.e., your venue lies close to or just outside one of the 5 capped regions referred to above) established for this study and we are seeking your assistance and response to the brief survey enclosed. The Centre is currently analysing machine numbers and revenue data, but the focus of the survey is **your experience** in response to the questions we have posed.

The actual cap program involved the two operators — Tabcorp and Tattersall's — being required to remove a total of 406 machines from the cap regions at three times — February 2002, 2003 and 2004 and to do so in a way that did not unnecessarily impact on any single venue.

Your answers are **confidential** and will be aggregated with other responses from 31 venues across the 'leakage point' regions lying just outside the 5 cap regions.

The code number box located in the bottom right hand corner of the survey, identifies your venue to the researchers in order that we are able to follow-up non-respondents. No identification of your venue appears on the survey form and you are not required to identify your venue. We would appreciate the completed survey being returned by **Friday, 17th September** in the envelope provided.

Yours sincerely,

Michael O'Neil
Director

Encl...
u:\projects\VicDT&Fgambling-caps\LettertoVenuesLeakagePointRegionwithsurvey.doc\D²

Venue in a "Leakage Point" Region
(For Period February 2002 to February 2004)

Capital Investment

1. Has your venue made any significant capital investment since February 2002 to the following (*please provide total amounts for each*):

- gaming room Capital Value $_____
- eating/food service Capital Value $_____
- public bar areas Capital Value $_____
- wagering facilities Capital Value $_____
- in response to smoking bans Capital Value $_____

Smoking Bans

2. Following the introduction of smoking bans in September 2002, what impact did your venue experience in regard to:

	No Change	Declined	Increased	Unsure
• employment	❑	❑	❑	❑
• restaurant clientele	❑	❑	❑	❑
• gaming participation	❑	❑	❑	❑
• other parts of the venue	❑	❑	❑	❑

3. Do you believe the introduction of smoking bans has assisted in reducing problem gambling? Please comment (*in what way*):

.....
.....
.....
.....

Operating Hours

4. Has your venue changed gaming room operating hours since February 2002? (Please ✓ one box).

Yes ❑ **No** ❑

Caps and Player Participation

5. Following the introduction of the caps policy in the 5 regions referred to, but not in your area:

- did your venue increase the number of machines? **Yes** ❑ **No** ❑

6. Did you notice any change in the patterns of player behaviour (please tick and comment).

- play more intensively on machines **Yes** ❑ **No** ❑

.....

- players were unable to get on machines in peak times **Yes** ❑ **No** ❑

.....

- once idle machines were more continuously used **Yes** ❑ **No** ❑

.....

- players queued at busy times to access machines **Yes** ❑ **No** ❑

.....

- change in the pattern of time of play/time of day **Yes** ❑ **No** ❑

.....

- no discernable change **Yes** ❑ **No** ❑

.....

7. Thinking of your most **regular** players, in your experience did the caps policy impact in any discernable way?

Yes ❑ **No** ❑

Please comment: .....

.....

.....

Caps Policy, Credit Value and Machine Type

8. In your experience, did you believe your venue benefited from players or new regulars now preferring to come to your venue?

Yes ❑ **No** ❑

Please comment: .....

.....

.....

9. Did the operators change the credit value of machines in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

10. Did the operators change the type of machine in any way? **Yes** ❑ **No** ❑

Please comment: .....

.....

.....

Thank you for completing the survey.
It would be appreciated if you could return the completed survey, in the envelope provided, by Friday, 17th September 2004

Appendix 7

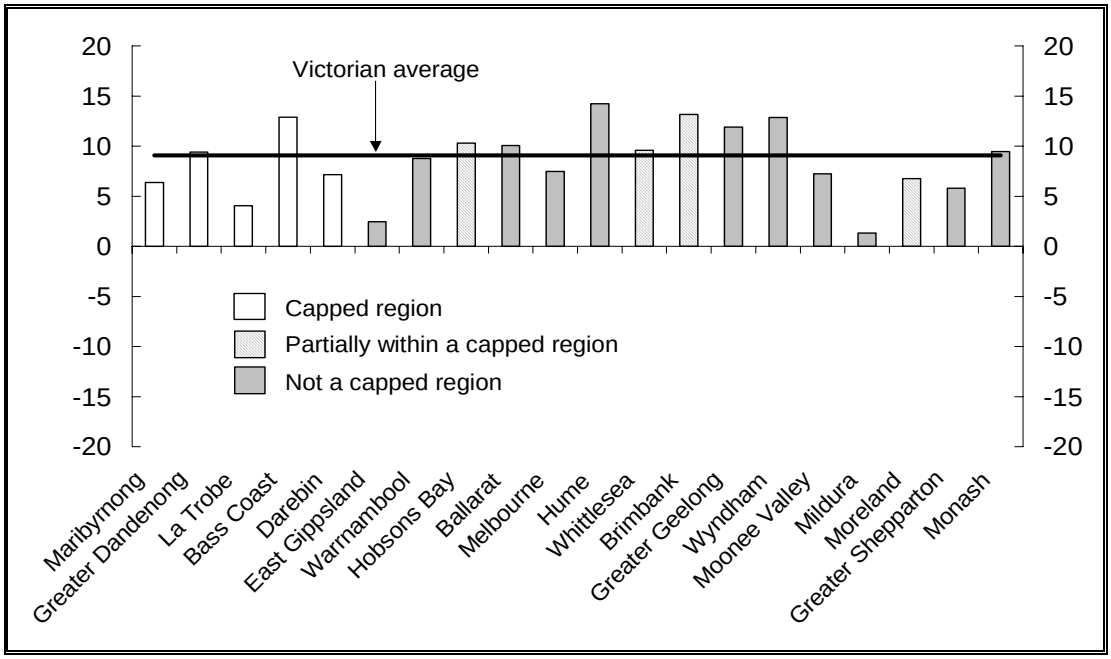
Is the capping of regions independent of trends in gaming machine expenditure?

As discussed in Section 6.2, the success of our differences-in-differences estimate of the effect of the regional caps depends upon the assumption that the Victorian Government imposed these caps in a manner that was independent of the future time-path of gaming expenditure in these regions.

This need not be the case because the Victorian Government did not randomly choose the regions. As discussed earlier in this report, the Minister for Gaming identified the local government areas to be capped on the basis of their ranking relative to other Victorian local government areas against three criteria: the number of electronic gaming machines per adult; the level of gaming expenditure per adult; and the Socio-Economic Indicator for Areas calculated by the Australian Bureau of Statistics.

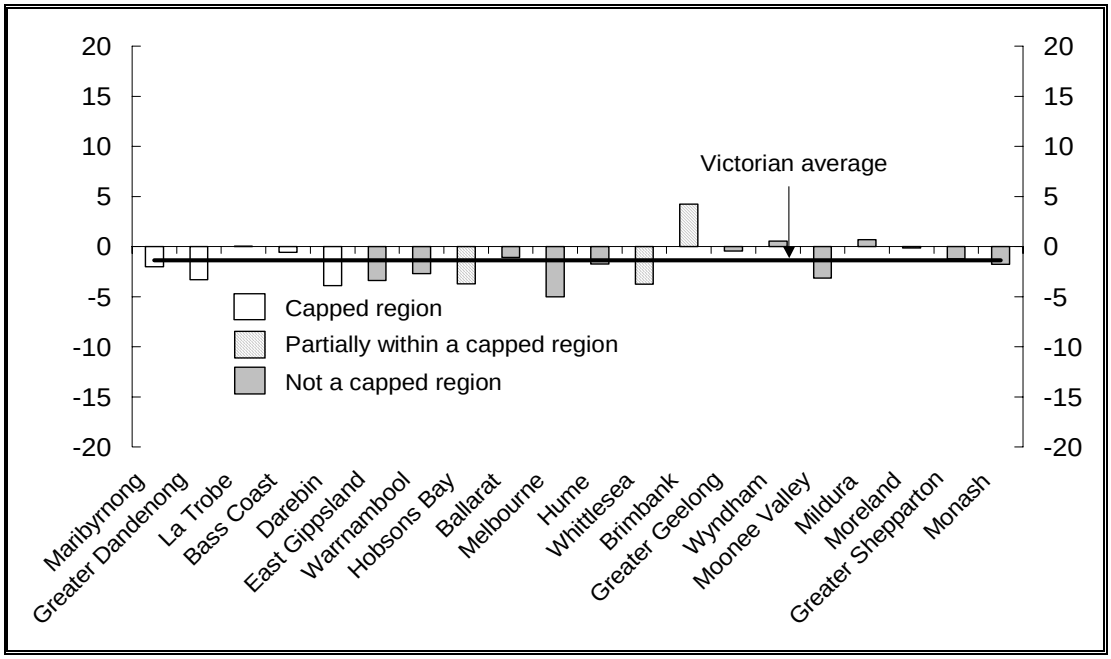
Our ability to attribute to the caps any differences-in-differences in gaming expenditure would be undermined if the time-path of gaming expenditure depended upon the criteria used to choose these regions. For example, it could be the case that the regions chosen to be capped experienced unusually strong falls in EGM expenditure after the announcement of the caps, perhaps because of some change in preferences within the types of communities that were chosen. One way to assess this is to look at the movements in gaming machine revenue in *other* regions that were also high on the ranking of vulnerable communities. Figures A7.1, A7.2 and A7.3 show the annual growth in gaming machine revenue in twenty vulnerable regions for the years-ending February 2002, February 2003 and February 2004. There is little correlation apparent between the 'vulnerability' of a community and the subsequent growth in gaming machine expenditure in that community.

Figure A7.1
EGM Expenditure in Twenty Vulnerable Communities
Annual percentage change – Year-ending February 2002 on Year-ending February 2001



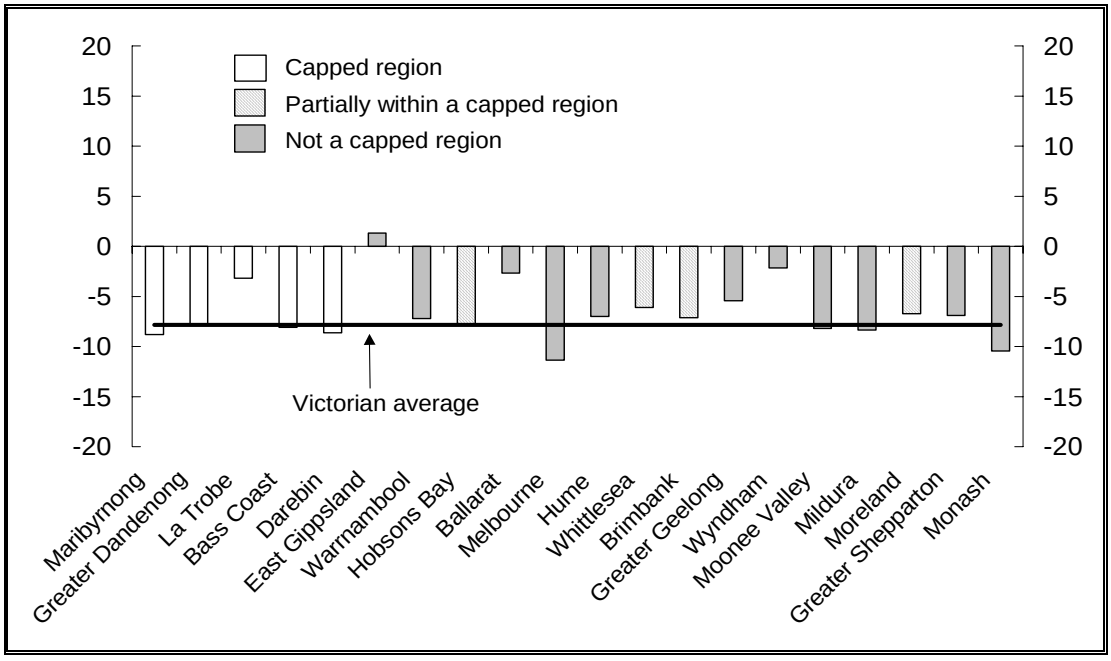
Source: SACES calculations based on data supplied by the Victorian Office of Gambling Regulation.

Figure A7.2
EGM Expenditure in Twenty Vulnerable Communities
Annual percentage change – Year-ending February 2003 on Year-ending February 2002



Source: SACES calculations based on data supplied by the Victorian Office of Gambling Regulation.

Figure A7.3
EGM Expenditure in Twenty Vulnerable Communities
Annual percentage change – Year-ending February 2004 on Year-ending February 2003



Source: SACES calculations based on data supplied by the Victorian Office of Gambling Regulation.

To formally test the hypothesis that the changes in EGM expenditure in these additional vulnerable regions is similar to the rest of the State we run the following regression using ordinary least squares.

$$\Delta \exp_{it} = \alpha_0 + \alpha_1 \Delta vic \exp_t + \alpha_2 d_{2002} rank_i + \alpha_3 d_{2003} rank_i + \alpha_4 d_{2004} rank_i + e_{it}$$

Here: the left-hand side variable is the annual log change in EGM expenditure ('expenditure growth') in each of the fifteen additional regions over each of three years (ending February 2002, February 2003 and February 2004); $\Delta exprev$ is the log change in State-wide revenue in each of these three years; d_{vuln} is a dummy variable that takes the value 1 if the region is one of the 'twenty vulnerable regions'; the d_{200x} are dummy variables taking the value 1 if the year is 200x and 0 otherwise; *rank* is the ranking on the Victorian Treasury's table of vulnerable communities (taking values between 6 and 20); and e_{it} is an error term that we assume satisfies all of the standard regression assumptions. In particular, if EGM revenue for this group of vulnerable communities moves in the same way as for the State as *a whole then we would expect that* α_0=0 and α_1=1. While if EGM revenue among these vulnerable communities was unaffected by *their 'vulnerability' rank then we would expect that* α_2= α_3= α_4=0.

Regression results are displayed in Table A7.1. Movements in State revenue growth over time explain a significant portion of the variation in revenue growth in these vulnerable communities, with the regression as a whole explaining a little over four-fifths of variation in revenue growth within these regions. None of the other variables are individually significant in explaining variation in revenue growth in these regions. Wald tests (not shown) of our two hypotheses find that there is no evidence that the variations in revenue growth in these regions differ from variations in Victoria as a whole, nor is there evidence that these variations in revenue growth vary with the

region's 'vulnerability' rank. That is to say, vulnerable regions 16 to 20 could have been chosen in preference to the 5 cap regions chosen.

These results suggest that it is reasonable to assume that the Victorian Government imposed these caps in a manner that was independent of the future time-path of gaming expenditure in these regions. This suggests that our differences-in-differences expression will be able to provide an unbiased estimate of the impact of the regional caps on gaming expenditure at venues in the capped regions.

Table A7.1
Regression Results for Net Gaming Revenue

Variable	Coefficient	t-statistic
Constant	0.0091	0.601
$\Delta vicrev$	0.7735	3.559**a**
d_{2002}*rank	0.0004	0.236
d_{2003}*rank	-0.0008	-0.622
d_{2004}*rank	-0.0012	-0.688
R^2	0.8117	168 observations
a, b, c denote significance at 1, 5 and 10 per cent levels		