



Submission to Statutory Review of the Gaming Machines Act 2001

July 2007

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INTRODUCTION

This submission has been prepared by Judith Stubbs BSW PhD and Mr John Storer BE (Civil) Grad Dip (Econ) of Judith Stubbs and Associates. The submission has been prepared in response to an invitation to SIA Panel Members by the NSW Office of Liquor, Gaming and Racing to provide comments on the SIA process to assist the review of the Gaming Machines Act 2001. The submission is based on primary research undertaken by the authors for this purpose, and builds on previous research undertaken in the preparation of a submission to the *IPART Review of Gambling Harm Minimisation Measures* in 2003.

The submission considers the impact of changes in the regulatory environment regarding the distribution of electronic gaming machines (**EGMs**) supported by empirical evidence in relation to the indicators of:

- Expenditure on EGMs per adult
- Profit per EGM
- Density of EGMs per adult

With reference to the *Statutory Review of the Gaming Machines Act 2001- Discussion Paper – Office of Liquor, Gaming and Racing, June 2007*, this paper comments on the following areas:

- Part 1 and particularly harm minimisation,
- Part 2 and particularly the freeze on gaming machine numbers in NSW, and
- Part 4 and particularly the SIA approval process,

Commenting on the likely effects of changes to the regulatory regime in the light of empirical evidence of the impact of historical changes in regulatory regime in NSW.

Our conclusions are based on an analysis of empirical data. In summary, the removal of the SIA process, the forfeiture rule and the freeze on gaming machine numbers is likely to result in increasing numbers of gaming machines and a corresponding proportional increase in community expenditure on gaming machines. The negative impacts of that increase will be felt disproportionately across local government areas (LGAs).

Maintenance of the freeze and the forfeiture rules in a regime of free trade in gaming machine entitlements is likely to result in a reducing number of gaming machines in NSW, but with no change or perhaps a slight increase in dollars spent per adult (measured in real terms) on gaming, resulting in an overall increase in community expenditure on gaming machines from growing population. While across NSW the impacts will be neutral, with no net change in gaming machine expenditure per adult, negative impacts will be felt disproportionately across local government areas. This is because of varying densities of gaming machines and varying socio-economic indicators and indicators of problem gambling across LGAs.

Maintenance of the Class 1 SIA threshold at ten gaming machines will have a similar impact to those described in the previous paragraph, however the rate of change will be decreased.

Maintenance of the Class 2 SIA process will ensure that differential negative impacts across LGAs will be considered and mitigated when considering the approval of large transfers of gaming machines.

BACKGROUND

Indicators are considered for the period 1996 to 2006 and are assessed at Local Government Area (**LGA**) level for NSW. Changes in the indicators are compared to changes in the Regulatory Framework listed below.

Table 1: Key Regulatory Events

Mid 1997	Introduction of EGMs into Hotels.
Mid 1998	Extension of number of EGMs permitted in Hotels.
2001	Introduction of State caps on EGM numbers and the SIA process.
Mid 2005	Class 1 SIA threshold for EGMs raised from four to ten.

These indicators are considered at the state and LGA scale.

Issues of equity across geographical areas are then considered by comparing Expenditure on EGMs compared to total and disposable household income for a number of selected LGAs.

The analysis is based on EGM data supplied to Judith Stubbs and Associates (**JSA**) by the Department of Gaming and Racing as a member of the assessment panel for Class 2 SIAs.

IMPACTS ON NSW IN TOTAL

This section considers trends at the scale of the state of NSW.

Table 2: Gross indicators 1997-2006

Year	Total profit (\$millions)	CPI	CPI adjusted profit (\$millions)	Total EGMs	Adult Population	CPI adjusted Profit/adult (NSW)	EGMs/adult (NSW)	Adults/ EGM	CPI adjusted \$/EGM
96/97	\$2,429	1.25	\$3,041	82,040	4,469,245	\$680	0.01836	54.5	\$29,606
01/02	\$4,307	1.11	\$4,791	100,130	4,793,771	\$999	0.02089	47.9	\$43,014
02/03	\$4,459	1.08	\$4,814	99,469	4,840,328	\$995	0.02055	48.7	\$44,832
04/05	\$4,915	1.03	\$5,053	98,737	4,942,754	\$1,022	0.01998	50.1	\$49,780
05/06	\$5,024	1.00	\$5,024	98,534	4,980,000	\$1,009	0.01979	50.5	\$50,983

Notes:

- 1) Population based on census or linear interpolation of census data, figure is for people over 18 years of age.
- 2) All dollars are adjusted to 2006 by Consumer Price Index (CPI) published by the Australian Bureau of Statistics.
- 3) Profit is EGM profit in accordance with the *Gaming Machine Tax Act 2001*.

There are two clear trends. Following the introduction of EGMs into hotels, there was rapid growth in the number of EGMs, dollars spent per adult on EGMs and profit in real terms. The number of EGMs increased by 22%, EGMs per adult increased by 14%, dollars spent per adult increased by 47% in real terms and total profit increased by 58% in real terms. The increase in total profit was due to an increase in both the adult population (7%) and in dollars spent per adult.

With the introduction of State caps and the SIA process, average density of gaming machines fell steadily, dropping by 5.5% over four years, or 1.4% per annum. This is because the number of EGMs has dropped (probably as a result of the forfeiture rules) and population has increased. At the same time the dollars spent per adult on EGMs has remained relatively static or increased slightly, with an average over the four years of \$1,006 per adult person in the population. Total profit has generally increased in real terms but dropped by 0.6% over the last period. Expenditure on EGMs is strongly correlated with density of EGMs at the LGA level (see discussion below). The reduction in the number of EGMs and the increasing population should

lead to a reduction in dollars spent per adult, however that has not happened. It is likely that increasing densities in some areas are leading to increased expenditure in those areas which offsets the general reduction in the number of EGMs and the growth in the population. The net result is no upward or downward pressure on dollars spent per adult when calculated across the state. It could be that there is an underlying natural rate of expenditure on EGMs leading to relatively static dollars spent per adult, but when dollars spent per adult on EGMs is analysed at the LGA level, there is a wide range of expenditure. Hence this explanation is rejected.

The graph below shows the change in indicators over the time period. Note that scales have been adjusted to allow for comparison of indicators.

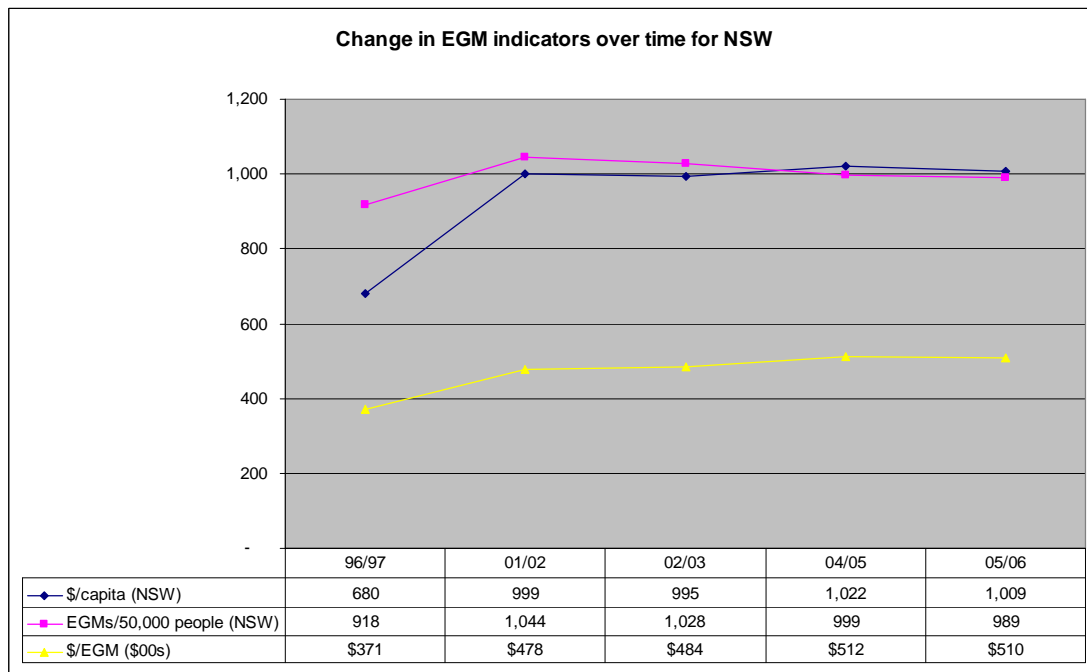


Figure 1: Change in EGM indicators over time for NSW

The majority of the movement in EGM numbers since 2001 is a result of the granting of Class 1 SIAs. Of a total of 10,135 entitlements granted between 2002 and 2006, 82% were for Class 1 SIAs.

Table 3: Class 1 SIAs approved by year

Year	Class 1	Class1 (cumulative)
2002	962	962
2003	979	1941
2004	1137	3078
2005	2364	5442
2006	2903	8345

The number of Class 1 approvals each year has nearly tripled with the increase in the Class 1 threshold from four EGMs to ten EGMs. The effect of this increase would be only partially seen in Figure 1 due to time lags between granting EGM entitlements and the introduction to and impact on the local market. Based on data to date, the predicted effects of the increase in the Class 1 threshold are likely to be:

- profit per EGM would be expected to increase in real terms, probably because of targeting high profit areas,
- the number of EGMs per adult would decrease statewide due to forfeiture, and
- dollars spent per adult on EGMs would remain stable or increase slightly due to local increases in the number of EGMs per adult.

IMPACTS AT LGA LEVEL

Regression analysis of data

A linear regression analysis was carried out for the number of EGMs per adult and the expenditure on EGMs per adult for each of the years 1996/97, 2001/02, 2002/03, 2004/05 and 2005/06. The results of the analysis are shown below.

Table 4: Linear Regression Analysis results for Density of EGMs per adult as a predictor of dollars spent per adult on EGMs

Year	Coefficient	R ²	Standard Error	p-value
1996/97	\$29,790	0.88	\$838	0.000
2001/02	\$36,889	0.77	\$1,553	0.000
2002/03	\$34,285	0.76	\$1,475	0.000
2004/05	\$37,460	0.77	\$1,663	0.000
2005/06	\$37,157	0.77	\$1,654	0.000

The relationship between density of EGMs and dollars spent per adult on EGMs is very strong as evidenced by high R^2 values and low p values. This relationship has persisted over the period. Expenditure per adult on EGMs in an LGA increases as the number of EGMs per adult increases.

Variation in density of EGMs accounts for around 80% of the variation in dollars spent per adult on EGMs. There is less than a one in one thousand chance that there is no relationship. There is no evidence of maturing markets, that is with increasing densities, a point is reached at which dollars spent per adult plateaus, and the introduction of additional EGMs means a reduction in average profit per EGM as the same income is shared across more EGMs. The relationship holds with EGM densities that are six and seven times the state average. It is extremely likely, based on empirical evidence, that increases in the density of EGMs in a particular area will lead to proportional increases in dollars spent per adult on EGMs.

We make no hypothesis regarding the mechanism of this relationship, other than to accept the relationship as an empirical fact. Possible mechanisms may be based in psychological aspects of EGM gaming associated with compulsive behaviour or the like. The relationship does not appear to be a result of an underlying response to market forces, that is that densities are higher where dollars spent per adult are higher. EGM density has a very poor correlation with EGM profitability. For 2006 data, for example, the R^2 value was 0.016 and the p value was 0.118. This means that variation

in profitability accounted for 1.6% of the variation in EGM density and the likelihood of no relationship was around 12%. Furthermore, the owner of an EGM sees the profit per machine, not the dollars spent per adult so this explanation seems unlikely. Additional evidence against this market based explanation is found in the increasing variation in EGM profitability with time, whereas a response to market forces would lead to reduced variation in EGM profitability as EGMs are moved from low profit areas to high profit areas. This is discussed in more detail below.

Market Forces

It is likely that with a reduced level of regulation, market forces will lead to increasing densities of EGMs in LGAs with high levels of profit per machine.

The LGAs with the highest levels of profit per EGM are Burwood, Fairfield, Canterbury, Kogarah, Baulkham Hills, Liverpool, Parramatta, Holroyd, Blacktown and Bankstown. Profit per EGM in these LGAs ranges from \$94,000 to \$69,000. The table below shows EGM expenditure as a proportion of household income and as a proportion of disposable household income for these LGAs.¹ Other LGAs and areas are shown for the purpose of comparison.

¹ Household income is calculated from the ABS 2006 census. Disposable income is taken as household income less the Henderson poverty line as an indicator of that household income remaining after provision of necessities.

Table 5: Impact on household and household disposable income across LGAs

Area	EGM expenditure per adult 2006	Adult Population	EGM expenditure as a proportion of household income	EGM expenditure as a proportion of disposable household income
NSW	\$1,009	4,980,000	4%	15%
Greater Sydney	Not calculated	Not calculated	3%	11%
Ku-ring-gai	\$72	75,000	0.2%	0.5%
Eurobodalla	\$1,260	27,000	6%	91%
Marrickville	\$1,120	60,000	4%	12%
Burwood	\$1,902	25,000	8%	30%
Fairfield	\$2,484	133,000	13%	78%
Canterbury	\$1,782	99,000	8%	48%
Kogarah	\$1,722	41,000	6%	20%
Baulkham Hills	\$410	117,000	1%	3%
Liverpool	\$773	116,000	3%	14%
Parramatta	\$1,394	115,000	6%	22%
Holroyd	\$1,439	68,000	6%	26%
Blacktown	\$1,003	192,000	4%	15%
Bankstown	\$1,493	126,000	7%	33%

It can be seen, for example, that the economic and social consequences of an increasing density of EGMs (leading to increased dollars spent per adult on EGMs) in Eurobodalla or Fairfield are likely to result in a detrimental impact whereas a similar increase in Ku-ring-gai or Baulkham Hills is much less likely to result in detrimental impacts. This is because of the large proportion of disposable household income already being spent on EGMs. LGAs such as Fairfield and Canterbury are also more

likely to have demographic indicators associated with a propensity for problem gambling compared to LGAs such as Baulkham Hills and Ku-ring-gai.

Variations in distribution of parameters

An analysis has been carried out of the distribution of the three parameters over time across NSW LGAs. For time based parameters, only data for 1996/97, 2001/02 and 2006/07 is shown as these years align with census years. Population figures for other years are based on ABS estimates and these are unreliable, generally overestimating population growth in NSW.

Variations in EGM density

The variation in the distribution of the number of EGMs per adult over time are shown in Figure 2 below.

The effect of the introduction of EGMs into hotels was to decrease the proportion of LGAs with densities less than 0.025 (low to average densities), increase the proportion of LGAs with proportions between 0.025 and 0.045 (high densities) and to decrease the proportion of LGAs with densities greater than 0.045 (very high densities). The effect is a combination of the addition of EGMs and population growth. It is likely that no additional EGMs were introduced into LGAs with very high densities but that densities in these LGAs decreased as a result of population growth. The introduction of EGMs generally into LGAs moved some LGAs from low to average densities into the high density bracket and generally moved LGAs upward within the high density bracket. This effect would have been somewhat ameliorated by population growth.

With the state cap and the SIA regime, there has been an increase in the proportion of LGAs with densities around 0.01, 0.02 and 0.04 and with falls elsewhere. The trend seems to be one of increasing densities within ranges, so LGAs with densities of .005 are moving to 0.01, those with densities of .015 are moving to .02 and those with densities of .035 are moving to 0.04. The proportion of LGAs in the range .025 to .030 is relatively static and the proportion of those with higher densities are falling. LGAs with high to very high densities of EGMs are associated with low to average profit per EGM (see figure 3 below), so it could be that EGMs are being transferred

out of these areas by market forces. This transfer may be sufficient to offset the loss elsewhere caused by the forfeiture rule.

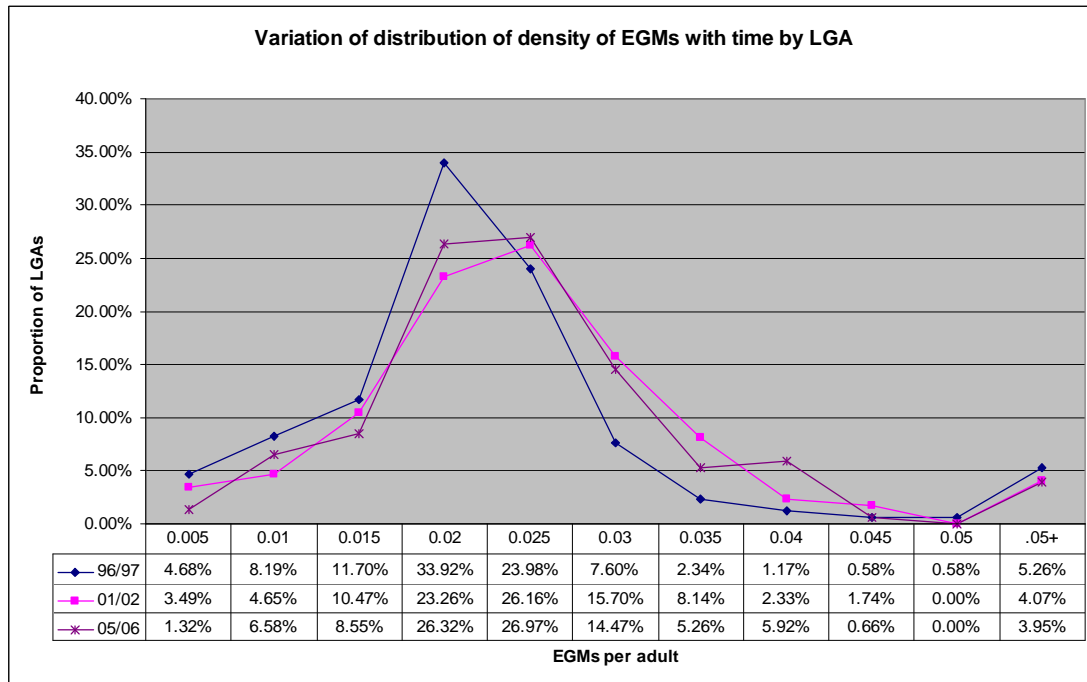


Figure 2: Variation of distribution of EGMs per adult with time by LGA

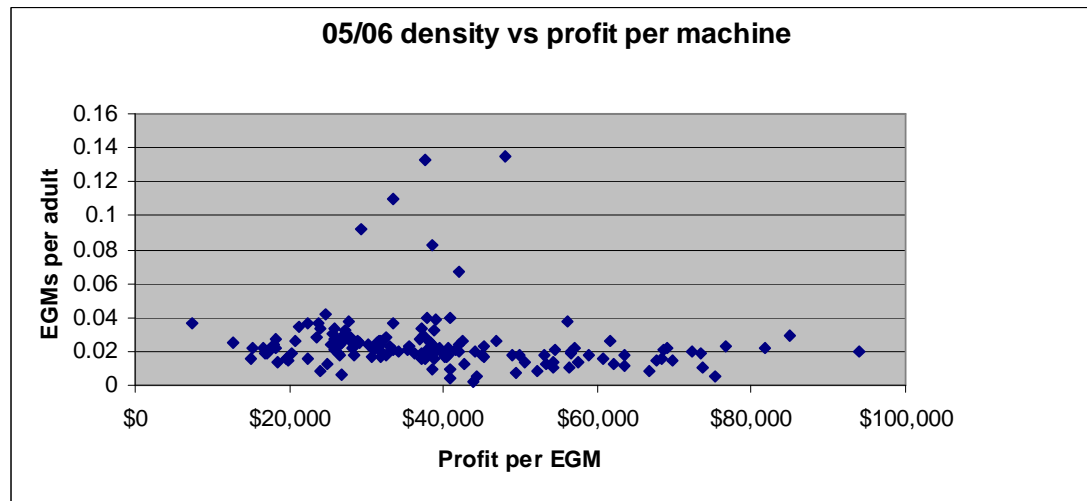


Figure 3: Relationship of EGMs per adult and profit per EGM for 2005/06

Variation in EGM profitability

The variation in the distribution of EGM profitability over time is shown in Figure 4 below.

The effect of the introduction of EGMs into hotels was to increase profitability measured in 2006 dollars. The proportion of LGAs with low profitability (under

\$30,000) per EGM decreased, probably as a result of an increase in dollars spent per adult and an increasing population. The number of LGAs with high levels of profitability (above \$60,000 per EGM) increased, probably for the same reasons. The trend has continued, with average profit per EGM increasing but at a slower rate. As shown in figure 4, the data does not support a model of EGMs being relocated to maximise profit in an environment of constant dollars spent per adult. If this were the case one would expect relocation of EGMs from areas of low profitability to areas of high profitability. Given constant dollars spent per adult, the result should be a reduction in EGMs with high and low earnings, and an increased clustering around the mean. In fact the opposite is seen, with an increase in the spread of EGM profitability across LGAs. This may be a result of the density effect noted previously, where relocating machines from areas of low profitability leads to a further decrease in profitability as dollars spent per adult falls in response to a decrease in density. This density effect may also be combined with historical inertia, whereby organisations retain machines in areas where they are traditionally established even though the area may have low takings per EGM. This would be particularly likely with clubs, where the motivation is one of service to members rather than maximisation of profit.

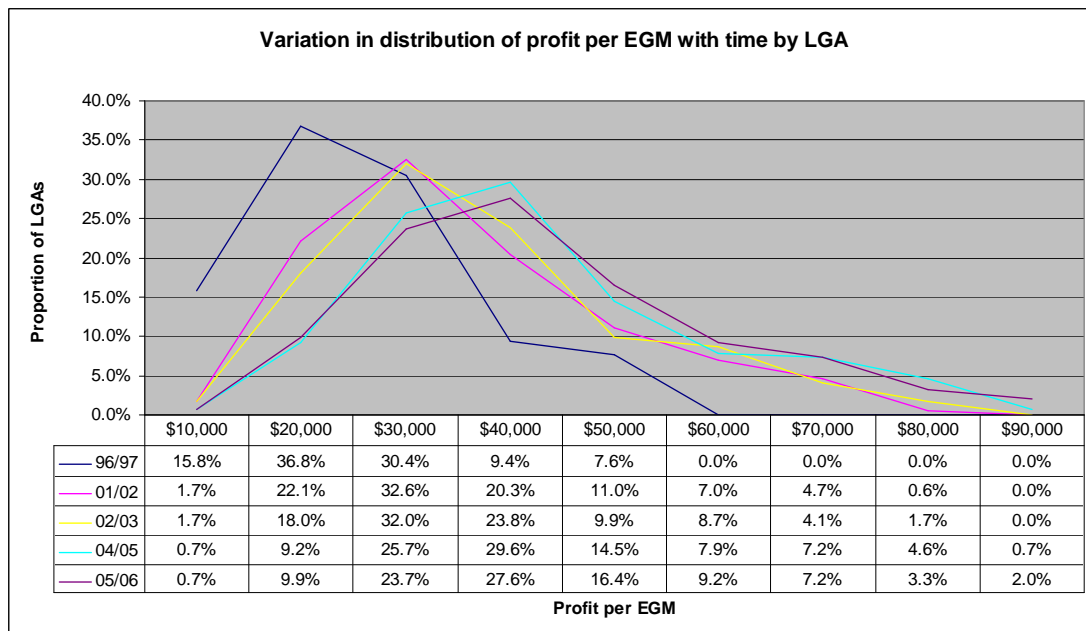


Figure 4: Variation in distribution of profit per EGM with time across LGAs

Variation in dollars spent per adult

The variation in the distribution of dollars spent per adult over time is shown in Figure 5 below.

The effect of the introduction of EGMs into hotels was a general increase in dollars spent per adult. The marked peak around \$500 per adult moved to a less marked peak around \$700 per adult and a less distinct maximum around \$900 moved to a marked maximum around \$1,500 per adult. The further effect of the relocation of EGMs under the cap and the SIA approval process has been a movement of one peak from \$700 per adult to \$800 per adult and an increase in the \$1,500 peak from 12% of LGAs to 16% of LGAs.

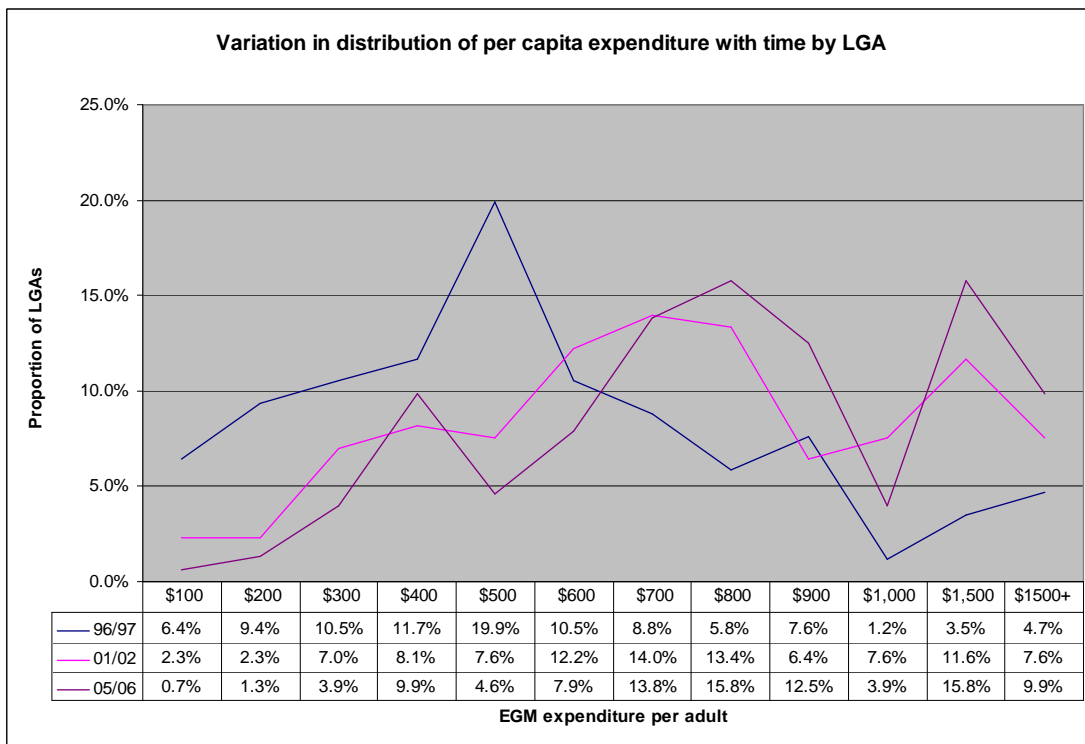


Figure 5: Variation in distribution of dollars spent per adult with time across LGAs

CONCLUSION

At a statewide level, the introduction of EGMs into hotels led to an increase in the number and density of EGMs, and rapid growth in EGM profit and EGM expenditure per adult. The SIA approval process led to a decrease in the number and density of EGMs, however EGM profitability has increased and dollars spent per adult on EGMs has remained relatively static or increased slightly. This is most probably because of increasing densities in some LGAs offsetting the general reduction in density.

At the LGA level, the introduction of EGMs into hotels (coupled with population growth), led to a decrease in the proportion of LGAs with low to average and very high densities of EGMs and an increase in the proportion of LGAs with high densities of EGMs. The state cap and SIA approval process led to a general increase in the proportion of LGAs with higher densities accompanied by a reduction in densities in LGAs with very high densities of EGMs. These LGAs with high densities of EGMs typically have low profitability per machine and may be acting as a reservoir of EGMs, offsetting a general reduction in density as a result of the forfeiture rule.

The effect of the introduction of EGMs into hotels was to increase profitability per machine and to increase the range of profitability per EGM across LGAs. This trend has continued under the state cap and SIA approval process. This does not support a model of EGMs being relocated to maximise profit in an environment of constant dollars spent per adult on EGMs. This is possibly a result of the density effect or perhaps historical inertia, particularly by clubs.

The effect of the introduction of EGMs into hotels was to increase dollars spent per adult across LGAs. This trend has continued under the state cap and SIA approval process. There seem to be two moving peaks, one currently at an expenditure level of \$800 per adult and the other at a level of \$1,500 per adult.

There is strong empirical evidence that dollars spent per adult on EGMs increases with increasing number of EGMs per adult. This does not support the hypothesis of “mature” gaming markets, whereby placing additional EGMs into an area will result in a reduction of profit per EGM while dollars spent per adult on EGMs remains constant. Accordingly, it is likely that the introduction of additional EGMs into an LGA resulting in an increase in density of EGMs, will lead to an increase in dollars spent per adult on EGMs.

The effect of introducing additional EGMs into an LGA is dependant on the current dollars spent per adult on EGMs, the general wealth of the LGA and the propensity of the LGA to problem gambling (as evidenced by certain socio-demographic characteristics).

In summary, the various factors leading to the prediction of social and economic detriment in a particular LGA are quite complex. The class 2 SIA process ensures that these various complex variables are assessed to determine whether there will or will not be an overall detrimental or beneficial social or economic impact.