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An Analysis of the Impact of Introducing Video Lottery Terminals in Maryland

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An Analysis of the Impact of Introducing Video Lottery Terminals in Maryland

Foreword

The research for this report was undertaken within the Maryland Institute for Policy Analysis and Research (MIPAR) at the University of Maryland, Baltimore County (UMBC) during the late summer and early fall of 2008. Dr. Judith Shinogle (MIPAR) was the principal researcher and the principal author of this report. Drs. Robert Carpenter and Scott Farrow of the UMBC Department of Economics and I (MIPAR and the UMBC Department of Public Policy) provided assistance to Dr. Shinogle. Anne Roland (MIPAR) and Public Policy graduate research assistants Evan Perlman and David Gearhart provided further valuable support.

This project came about as the result of a request from StopPredatoryGambling.org, an organization that describes itself as one “that seeks to educate the public about the economic, social and public health impacts of predatory gambling in the United States”, that MIPAR conduct a study of the probable benefits and costs of slot machine gambling if such were introduced into Maryland under the terms of Senate Bill 3 (2007 Special Session).

MIPAR staff met with representatives of StopPredatoryGambling.org and agreed to undertake the research that is reported herein under certain conditions. First, because MIPAR is a research unit at a public research university in Maryland, we would take no position regarding the desirability of slot machine gambling in the state. Instead, and to the best of our ability, we would conduct an impartial and objective study of the probable consequences or benefits and costs of slot machine gambling in the state. Second, StopPredatoryGambling.org would have no role in the design of the research effort. This would be the sole province of MIPAR researchers. Third, StopPredatoryGambling.org would have no editorial or other role in affecting the substance of the report based on that research. This, too, would be the sole province of MIPAR.

During our conversation with the representatives of StopPredatoryGambling.org, I made clear that we would not engage in “advocacy” research, but instead would conduct a fair and balanced study based on the best evidence available. StopPredatoryGambling.org agreed to this approach. I further asked whether StopPredatoryGambling.org would accept the results of our findings if the findings differed from the organization’s position on slots in Maryland. I was assured that it would.

It was under these conditions and understandings that we entered into a contract with StopPredatoryGambling.org for this study, that we conducted the study and that we provide this report. Any questions regarding the research methodology, data, analysis, or findings of this study should be directed to Dr. Shinogle at shinogle@umbc.edu. Any questions regarding other aspects of the study should be directed to me at norris@umbc.edu or 410-455-1080.

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An Analysis of the Impact of Introducing Video Lottery Terminals in Maryland

Executive Summary

The implementation of Senate Bill 3, *Maryland Educational Trust Fund – Video Lottery Terminals* (2007 Special Session) will create a new source of revenue for Maryland through the return of revenues from video lottery terminals to the state. This analysis examines the impact of video lottery terminals (VLTs, also known as slots) in Maryland. The report first reviews the current estimate provided by Department of Legislative Services (DLS) and provides a sensitivity analysis of the revenue estimates. The report also examines a range of social benefits and costs associated with slots.

The “working estimate” used by the legislature and provided by DLS projects gross revenues of \$1.361 billion, with \$660 million slated for the Education Trust Fund. Using alternate assumptions, we project a range of between \$687 million and \$1.375 billion in gross revenues, and \$333 million to \$667 million in funds to the Education Trust Fund. To collect gross revenues at the high end of the estimates Maryland would need to capture all revenues currently spent by Marylanders at VLT sites outside the state, as well as generate dollars from new gambling (current players spending more and new players) at a rate of nearly 150 percent above current levels.

This revenue from slots will come at a cost to the state’s budget outside of the transfer of slots revenues from players to the state. These impacts include declines in lottery sales and a reduction in sales taxes. These transferred revenues are not likely to be offset by increases in the sales tax on new sales of food and drink from establishments near VLT sites. There could also be significant social costs, particularly from increased costs of addiction treatment and increases in debt.

Benefits to citizens include more satisfaction from closer access to VLT sites. However, there is little evidence that VLTs will generate more or better jobs.

An Analysis of the Impact of Introducing Video Lottery Terminals in Maryland

Introduction

The goal of this report is to provide an estimate of the impact of the proposed program to establish video lottery terminals (VLTs, also referred to as slot machines) in Maryland. The analysis follows the program outlined in Senate Bill 3, *Maryland Educational Trust Fund – Video Lottery Terminals* (2007 Special Session). Senate Bill 3 sets out the framework for regulating and operating VLTs in Maryland, and is contingent upon the ratification of a proposed constitutional amendment (HB 4, Chapter 5, Acts of 2007 Special Session) in the November 4, 2008 Presidential General Election that authorizes up to 15,000 VLTs in the state.

Information in this report is from Department of Legislative Services (DLS) estimates, as well as a range of published research papers. The report first reviews the current (DLS) estimate of the revenue impact of VLTs and discusses the assumptions within this estimate. Next, the report presents several alternative estimates. The next section discusses other potential benefits for VLTs. This is followed by a discussion of related costs and benefits associated with the implementation of gambling outlets and how those may impact Maryland residents, businesses and government. The final section discusses the uncertainties around the estimates presented here as well as the longer term impacts of this proposal to adopt VLTs in Maryland.

Revenue Impact of Slots in Maryland

Review of Maryland Education Trust Fund – Video Lottery Terminals, Senate Bill 3

This section describes the VLT program outlined in Senate Bill 3. This bill authorizes up to 15,000 video lottery terminals (VLTs) at five locations – Anne Arundel County (4,750 VLTs); Baltimore City (3,750 VLTs); Worcester County (2,500 VLTs); Cecil County (2,500 VLTs); and Allegany County (1,500). The proposal has an initial license fee of at least \$3 million for every 500 VLTs for 15-year licenses. The nine member State Lottery Commission will provide oversight and will own/lease the VLTs and the central control system.

The gross revenue generated by the VLTs will be divided in the following manner:

- 1.5 percent to small, minority, and women-owned, business investment accounts;
- 2 percent to the State Lottery for administrative costs (remaining administrative costs to come from general funds);
- 5.5 percent to local governments in which lottery facility is operating;
- No more than 33 percent to video lottery operation licensees for operations;
- 7 percent to purse dedication accounts to enhance horse racing purses and funds for horse breeding industry (not to exceed \$100 million annually);
- 2.5 percent for an eight-year period to a Racetrack Renewal Fund (not to exceed \$40 million annually);
- Remainder (48.5 percent) to the Education Trust Fund for first eight years.

This proposal also establishes a Problem Gambling Fund of approximately \$6.4 million annually, funded by a \$425 annual fee per VLT terminal to be paid by the VLT licensee. This fund will be administered by Maryland Department of Health and Mental Hygiene (DHMH). DHMH will conduct a problem and pathological gambling prevalence study.

The proposal also has several restrictions as a means of consumer protection. These include restrictions on free food, and the “general” prohibition of free alcoholic beverages. The proposal does not state specifics. In addition, consumers will be prohibited from cashing paychecks, and several aspects of automated teller machines (ATMs) will be limited, including their numbers, locations, and maximum withdrawal amounts.

DLS Revenue Estimates

In this section, we present a review of the current DLS estimate (DLS Fiscal and Policy Note Revised, Senate Bill 3) and a discussion of how the DLS developed these figures. This section is followed by a discussion of DLS estimates of associated expenditures. We conclude this section with a list of components not estimated by DLS and concerns regarding the DLS estimate.

The estimate from the DLS assumes that five licenses will be awarded to operate a total of 15,000 VLTs. In the first year these will operate at a 50 percent capacity and will reach full capacity one year later. DLS conducted a market analysis to estimate the win per day (WPD), though the associated details of how this analysis was performed were not presented in the fiscal note. The WPD of a slot machine is the amount of money played in the machine after the winnings have been returned to the players. This represents the daily gross revenue of a machine. The following WPD is assumed by DLS:

- Anne Arundel County - \$315
- Baltimore City - \$315
- Cecil County - \$210
- Worcester County - \$150
- Rocky Gap Park (Allegany County) - \$115

The DLS estimate assumed: that the VLTs will operate 365 days a year; Virginia and Washington, DC will not authorize VLT gambling; and Pennsylvania, West Virginia and Delaware will not expand VLTs or authorize casino-style gambling.

The lack of detail about the WPD is a concern, as the WPD is a key assumption in calculating revenues. Another concern is the assumption that other states will not respond to the new Maryland program. In the section on Uncertainty in Estimates we discuss possible state reactions to this proposal.

DLS estimates that approximately one-third of the total revenue (~\$400 million) generated by West Virginia and Delaware VLT facilities come from Marylanders crossing the border to play. In addition, DLS estimates that another \$150 million in VLT revenue goes to local and state governments in these same areas. The estimate claims that not all of these revenues will be

recaptured but does not include a percentage. In fact, it appears that the DLS estimate includes a 100 percent recapture of these dollars. Our estimate will present a sensitivity analysis of the recapture percentage.

DLS estimates that VLTs will cause a permanent reduction in annual lottery revenues of 10 percent of current forecasts. This estimate appears on par with what has been reported in the literature (Walker D, 2008), but the difficulty surrounding it dictates that we provide sensitivity analysis.

According to the DLS estimate, VLT facilities will undertake \$750 million in one-time capital improvements and construction costs. DLS also states that racetrack facilities will spend up to \$40 million in matching funds over eight years and \$1.5 million annually for capital improvements and maintenance to horse racing track facilities. In the estimate DLS does not discuss how these funds will be raised, nor the necessary local level authorization required to levy these expenditures. While these funds are considered opportunity or sunk costs in an economic analysis, politically the funds need to be secured and regulations approved in order for the VLT facilities to exist.

In order to administer the program, the state will need to expend dollars. The bill currently provides for 2 percent of the gross VLT revenues to be dedicated to the administration with any additional amounts being provided by the state budget. DLS estimates that 4.8 percent of VLT gross revenues will be needed for annual operating costs and thus the remaining 2.8 percent or \$38.87 million in FY 2013, will come from general revenue.

The DLS estimate lists other expenditures needed to administer and run the program, including the hiring of two assistant Attorney Generals, a legal secretary, two full-time troopers and police secretary; as well as other equipment and costs. In addition, a prevalence study of problem gambling will be conducted by the Maryland DHMH. The bill requires two studies on the Minority Business Enterprise (MBE) requirements. This totals to \$38.87 million in expenditures in 2013.

Table A presents a summary of the DLS estimate for FY 2013 when the slots will be fully implemented. The first line is the amount of gross revenue from slots. The second line shows revenue from the licensee fees collected for a Problem Gambling Fund. From these revenues, payments to VLT licensees for costs of operation are subtracted, leaving \$918.6 million for the special fund. DLS subtracts revenue lost due to decreased lottery sales of 56.8 million, giving a total revenue impact of \$861.7 million. Expenditures from this revenue include general fund expenditures of \$38 million for administering the program and the dedicated \$918.6 million to the special fund. DLS has already included the Education Trust Fund (ETF) as substitutable, or fungible, dollars as they have subtracted the ETF from expenditures. Thus DLS assumes that the expenditure budget can be reduced by the \$660 million ETF. This leaves a net effect of \$564.6 million.

Table A DLS Estimate	
Revenues	FY 2013
Gross VLT revenue	\$1,361,606,836
Problem Gambling Fund Revenue from licensees	6,340,690
Payment to VLT licensees	-449,330,256
<i>Special Fund Revenue</i>	<i>918,617,270</i>
Lost lottery revenue	-56,840,000
<i>Total Revenue</i>	<i>861,777,270</i>
Expenditures	
General Fund Expenditures	38,874,130
Special Fund Expenditures	918,617,270
General Fund Expenditures reduced due to ETF	-660,379,315
<i>Total Expenditures</i>	<i>297,112,085</i>
Net Effect	564,665,185

Other components not in DLS estimate

DLS discusses other potential costs, such as state and local government infrastructure costs, but does not include them in their estimates. Other social costs that are not included are the costs of addiction treatment, increased crime, alcoholism, and bankruptcy. In this report, we provide estimates of the potential ranges for these unintended consequences of increased gambling availability. For Marylanders that desire slots, this proposal provides a benefit as it lowers the transportation costs to them. We cannot directly estimate this benefit but will discuss its potential.

Another issue discussed in the DLS estimate but not addressed is the effect of VLTs on small businesses. While DLS discussed the effect on the horse racing and farming industries, the DLS estimate only states that some businesses will be harmed and others helped by the increased tourism and use of VLTs. This report will explore this issue in more detail.

Concerns about the DLS estimate

The DLS estimate provides a baseline but several concerns exist regarding assumptions and subsequent estimates. First, the market analysis regarding the calculations for win per day (WPD) needs to be explained. The following information from other states' experiences is derived from the DLS estimate and will be used to evaluate the estimates for Maryland.

First, we examine West Virginia for which Charles Town is the main draw for Maryland players. Charles Town has 5,000 machines translating into gross revenue of \$448 million, which breaks down to a per-machine gross of \$89,600. Assuming 365-day operation results in approximately

\$245 WPD. Next, it can be seen that Delaware grosses \$651 million from 7,291 machines, giving a per-machine gross of \$89,425. Again, assuming 365-day operation results in a WPD of approximately \$245. The DLS estimate utilizes a WPD that is higher for areas with higher population such as Baltimore City and Anne Arundel County (\$315 WPD) but lower for other areas such as Rocky Gap at \$115 WPD.

Looking at Marylanders who travel to these other states, estimates show as much as \$170 million in gross revenue to West Virginia and about \$230 million in gross revenue to Delaware per year. Contribution to Pennsylvania slots is unknown/unreported, but if we assume the same figure, represents another \$150 million. If Maryland recaptures every dollar being spent on slots in those three states, it would get gross revenue of \$550 million (on the low end based on DLS Fiscal Note, SB 3). Concern exists over the estimate of how many people travel out of state to play slots as well as how much they spend. The reliability of counting out-of-state license plates in the other states' slots parking lots, as has been done in some analyses, can include bias such as how many players were in the car; how much the players bet; and depend on date, time that the count occurred and what other entertainment events (such as football, baseball, concerts, etc) are occurring on that day.

Examining per machine revenues, we see approximately \$90,000 in gross revenue per machine in West Virginia and Delaware, whose facilities are both over 10 years old and thus established markets with established clientele. If we assume that figure for Maryland as well, then having 15,000 machines when fully implemented could generate gross revenue of \$1.35 billion gross and yield \$675 million in net revenue. (DLS Fiscal Note, SB 3)

In order to get to the \$1.35 billion in gross revenues, we must add to existing figures. Marylanders are currently playing \$550 million (or more) outside the state. To arrive at \$1.35 billion in gross revenue, all \$550 million must be recaptured and then revenues must be more than doubled based on increased gambling due to greater proximity.

Sensitivity Analysis

In this section we vary some assumptions to present alternative estimates of the fiscal impact of the slots program. First we present a revision to the estimate for the Education Trust Fund. Next we examine how slots will affect other streams of revenue such as lottery and sales tax. Finally we present an overview of the potential incidence of the VLT revenue funding.

Funding for the Education Trust Fund

The first analysis we perform is to determine the range of likely revenues that will go to the Education Trust Fund (ETF). This figure is based on calculating 48.5 percent of the gross total VLT (slot machine) revenue, as specified in the proposed authorizing legislation (SB 3, 2007 Special Session). A one-time deposit of \$90 million from licensing fees will be added to the ETF, but this is not included in the annual revenue projections.¹ Other related revenue changes (such as lost lottery revenues) are not considered in this first analysis.

¹ Whether the \$90 million dollar licensing fee maximizes the states return from slots is an open question and beyond the scope of this analysis. The difference between the value of the licenses and the \$90 million charged for them

DLS Slots Revenue Estimate (Table B)

The DLS estimate of gross annual slot revenues at the point of full implementation – that is, it assumes all 15,000 slot machines are producing a full year’s worth of revenue. This represents the daily gross revenue of a machine. The state estimates that each slot machine will, on average, have a WPD of \$248.69. This is based on the average WPD in neighboring states. A WPD of \$248.69, multiplied by 15,000 machines and 365 days-per-year equals annual gross slot machine revenue of \$1.362 billion. The portion of this figure that would go to the ETF would then be \$667 million, which is consistent with the state’s public statements on the subject (see Fiscal and Policy Note for SB 3). However, this estimate fails to take into account some major factors that can impact the WPD of the slot machines. The \$667 million figure should be considered a simple estimate of potential net slot revenues for the ETF.

Alternate Estimate of Recaptured Slot Machine Dollars (Table B)

The annual gross revenue figure in the baseline estimate, \$1.362 billion, is actually composed of two separate figures. The first component is the amount of money that the state believes Marylanders currently spend on slot machines in other states. This has been estimated at \$550 million: \$230 million in Delaware, \$170 million in West Virginia, and \$150 million in Pennsylvania. In order for Maryland to realize the full slot machine revenues in the baseline estimate, every one of those dollars will have to be recaptured by the state, and there would have to be an increase in players coming into Maryland to play, or new players. That is, we must assume some percentage of Marylanders who currently play slots outside of the state will return to Maryland once slots are fully implemented here. This is termed the recapture rate. While not officially stated, it appears that DLS assumes that 100 percent of dollars spent elsewhere will be recaptured in Maryland.

The DLS also assumes that neighboring states will neither expand their current gambling nor introduce new competition, such as table games (poker, blackjack, etc.). DLS does acknowledge that some of these revenues may not be recaptured from neighboring states. This is possible because some of the facilities may have developed a loyal base of Maryland customers, and because the slot machine operations in Pennsylvania are still expanding rapidly, and can be expected to offer some additional amount of competition for slots dollars. Finally, in the coming years, as competition for slots dollars grows, it is possible our neighbor states will feel more pressure to add casino-style gaming to the current selection of games.

We are not aware of any studies to estimate how much of the existing out-of-state gambling expenditures may fail to return to Maryland if slot machines are legalized. Lacking those, we can only project a reasonable impact that is subject to uncertainty. The only evidence that currently exists is from Dover Downs 2007 financial 10K statement. Dover Downs, located in Delaware, found that the immediate impact of Pennsylvania’s legalization of slots was to draw away only 20 percent of Pennsylvania gamblers from Delaware (Dover Downs 10K, p 22). This implies a recapture rate of only 20 percent, meaning up to 80 percent of revenue remains in Delaware.

represents an additional one-time cost (if the license fee charged is below its market value) or an additional one-time revenue (if the license fee is above its market value). Traditional methods of determining the market value of the license include an analysis of the discounted cash flow (See Carpenter, 2003) or conducting an auction (See Hooke, 2004).

However, that represents only the initial impact. We will not know the full impact until Pennsylvania's slots are fully implemented. If we utilize this estimate that only 20 percent of revenues are recaptured, our Education Trust Fund estimate is actually negative. Thus we estimate the amount of slots revenue recaptured at 100, 75, and 50 percent to calculate the amount of new gross slot machine expenditures.

Alternate Estimates of New Gross Slot Machine Revenues

The other component of the annual gross revenue figure in the baseline estimate is the difference between the amount Marylanders are currently believed to spend on slots (\$550 million) and the total amount they would be spending under the assumptions of the baseline (\$1.362 billion). This difference is \$812 million, using the state's estimate. To be clear, this represents \$812 million of new slot machine spending, above and beyond what Marylanders are already spending in other states, plus some contribution from other states' gamblers that Maryland attracts. Under the state's estimate, existing slots spending by Marylanders must increase by 147 percent to reach the targeted gross revenue that the state has estimated.

With this increase in Marylanders playing slots, they must be decreasing purchases from other areas (often termed a substitution effect). As far as the amount of revenues going to the ETF, it does not matter how much of this is substitution from other economic sectors (though that will be important when we analyze the total effect on the state's revenues as well as impact on other businesses). From the point of view of the ETF, all that matters is that people spend \$812 million more on slot machine gambling in Maryland over and above what Marylanders are currently spending in other states. Again, few studies exist to help us prepare an estimate for this adjustment. However, Grinols (2004) offers a "rule of thumb" – casino demand drops by 30-35 percent every time the distance between gambler and casino doubles. Therefore, if we assume we can invert that rule, we can use the projected change in average distance-to-slots to get a sense of the change in total slot machine expenditures by Marylanders. We estimate a typical figure for the distance-to-slots at about 75 miles. Baltimore City and Columbia, MD are each about 70 miles from the closest facility (Charles Town). Rockville and Bethesda are just less than 60 miles away, while Prince George's County is nearly 90 miles away. Bel Air is 80 miles from Dover Downs, and the new operations near Philadelphia.

We assume that once the Maryland slot facilities are fully implemented, the majority of Marylanders will be no more than 20 miles away from a slots gambling venue (though this figure is skewed toward those living near the state's population centers). If the average distance for Marylanders does decrease from 75 to 20 miles, current expenditures – \$550 million or less, depending on how much old spending is recaptured – will be multiplied by 2.5. From this new estimate of gross expenditures, the amount of recaptured spending is subtracted, to find the amount of *new gross slot* expenditures. Adding this number to the various estimates of recaptured spending gives our three projections of Total Net Revenues for the ETF: high estimate: \$667 million; middle estimate: \$500 million; and low estimate: \$333 million (see Table B).

These figures are mainly dependent on the quality of the DLS estimate of current expenditures on slot machines and the WPD estimate. If Marylanders play more than \$550 million, the estimates we give will be too low; but if Marylanders play less than this amount, the estimate is too high. The other figure that is subject to uncertainty is estimated WPD. As we have no other information, we rely on the current DLS estimate of WPD. This WPD estimate may be too high if competition from other states requires a lower WPD to attract players. In addition, it must be recognized that all funds can be substituted. Thus increases in moneys for ETF may simply mean a decrease in funds that the general funds would otherwise spend for education.

	State's Estimate - No Adjustments Considered	High Estimate, All Current Gambling Recaptured	Middle Estimate - 75% of Current Gambling Recaptured	Low Estimate - 50% of Current Gambling Recaptured
Component				
Current Gambling Recaptured				
<i>Percent of Gambling Recaptured¹</i>	100%	100%	75%	50%
<i>Amount of Gambling Recaptured (Millions \$)</i>	550.00	550.00	413.00	275.00
New Slots Gambling				
<i>Amount of New Gross Slot \$ Projected²</i>	812.00	825.00	619.00	413.00
Total Revenues				
<i>Gross Slots Revenue/Year (Millions \$)³</i>	1,362.00	1,375.00	1,031.25	687.50
<i>ETF's Share (Millions \$)⁴</i>	660.00	667.00	500.00	333.00
<p>¹ We start with the DLS estimate that Marylanders currently gamble \$550 million in neighboring states. The "middle" and "low" estimates assume that competition from those states will reduce the amount of gambling that is available to be recaptured by various amounts.</p> <p>² This is the gross slots revenue per year, minus the amount of gambling recaptured</p> <p>³ Grinols (2004) describes a "rule of thumb" - casino demand drops by 30-35% every time the distance between gambler and casino doubles. We assume the average distance for Marylanders will decrease from 75 to 20 miles, meaning that the current gambling dollars that Maryland can compete for - \$550 million or less - will be multiplied by 2.5</p> <p>⁴ The ETF's revenue share is assumed to be 48.5%, as specified in SB3.</p>				

Other Distribution of Gross VLT Revenue

In Table C (below) we provide is an analysis of the range of the distribution of revenues that will be allocated for the recipients designated in S.B. 3. This is a straightforward calculation, multiplying the various percentages of revenue (listed in the legislation and in column two) by the four gross revenue estimates derived above. This table demonstrates that besides ETF, the next highest recipient of the revenues are the VLT licensees (at 33 percent), followed by the horse race industry at 7 percent. Utilizing our revenue estimates in Table B, we project the following range of revenues:

Table C Other Recipients of Gross Slot Machine Revenue					
		Revenue Estimates (Millions \$)			
		State's	High	Middle	Low
Gross Revenue from Slots (see Table B)		1,362	1,375	1,031	688
Recipient	Percentage of Revenues				
Business Investment	1.5	20.43	20.63	15.47	10.31
Lottery Administration	2	27.24	27.50	20.63	13.75
Local Governments	5.5	74.91	75.63	56.72	37.81
Horse Racing Purses	7	95.34	96.25	72.19	48.13
Racetrack Renewal Fund	2.5	34.05	34.38	25.78	17.19
Licensees (Operators)	33	449.46	453.75	340.31	226.88

Other Impacts of Slots

Because 100 percent of the gross slot machine revenues is earmarked for various programs and constituencies, they will not have a direct net impact on the state's general fund revenues. Rather, they should be considered as transfers between slot machine gamblers and the ultimate recipients (the ETF, slot licensees, horse racing, etc.). However, implementing slot machine gambling *will* have an impact on the state's budget, outside of the transfer of slot revenues. These effects are presented in Table D.

The first impact is the loss in state lottery revenues. Slot machines are another form of gambling entertainment, and as such, they compete with other forms of gambling in the state.² In the case of Maryland, that means competition against the state lottery. The Lottery Commission estimates that revenues will suffer a permanent 10 percent loss due to the presence of slots. This estimate is similar to what has been seen in other studies (Walker D, 2008) and thus used in this estimate.

The second effect is a substitution of dollars from other purchases to slots. Consumers are faced with a budget constraint and thus if they increase their spending on slots, other purchases must be decreased. Grinols (2004) calls this effect "cannibalization," which is the shifting of dollars from spending on other goods and services into slot machine spending. From the point of view of the state's tax revenue stream, the shift away from spending on one part of the economy to slots represents a transfer of some amount of sales tax revenue into revenues for the recipients of slot machine dollars.

Traditionally, it has been very difficult to project the level of cannibalization or substitution effect. However, Grinols (2004) estimated the average losses in sales revenue given a \$1,000

² Estimates of charity and illegal gambling losses are outside the scope of this report.

increase in casino revenues to be \$381 for businesses within 30 miles of the casino. The effect was found to be negligible outside of 30 miles. While true casinos may have a greater impact on sales taxes than do “racinos” (i.e., race tracks with casinos) and stand-alone slot machine facilities, we use this estimate for our calculations. If \$381 in business revenue is lost and this revenue is taxed at 6 percent, then ~ \$22.86 in sales tax revenue will be lost for every \$1000 of casino revenue. This should be considered as an estimate with a large amount of uncertainty, because of possible differences between Grinols’ (2004) study (casinos in Illinois, and the sales tax rate at that time) and Maryland’s situation (slot machines, and Maryland’s 6 percent sales tax). Nonetheless, these estimates suggest that the loss of sales taxes could be significant, and that to an extent, Maryland will be financing the ETF and other projects using transferred tax revenues.

Another way to think of this substitution effect is to examine the difference in tax rates. Assuming that the payout rate for a slot machine in this area is about 91 percent, the implicit tax rate (i.e., cost to the player) on a dollar of slots is 9 percent, of which the state gets 57.5 percent or 5.175 cent per dollar spent (.09*.5750). The sales tax rate is 6 cents on the dollar, which means that the state is losing 0.825 cents of tax revenue for every dollar spent on slots versus retail sales. This represents 13.75 percent of the sales tax revenues lost by reallocating dollars to slots from general sales.

Finally, we estimate tax revenues from an increase in the amount of food and drink sales above and beyond what will be transferred from previous consumption. A study of Harrah’s Station Square Casino (Sinclair S, 2005) suggests that, ultimately, new sales tax revenues from food and drink will represent roughly 0.18 percent of the gross slot revenues. Applying these figures, we estimate a range of general fund impacts due to implementing slot machine gambling, separate from the gross slot revenues. Note that we do not include in this estimate any potential increase in income tax from slots winnings, as no valid estimate exists.

		Revenue Estimates (Millions \$)			
		<i>State's</i>	<i>High</i>	<i>Middle</i>	<i>Low</i>
Impact	Change				
Lottery Sales Decline ¹	10% of current lottery revenues ²	-56.80	-56.80	-56.80	-56.80
Substitution Effect - Sales Tax Decline	2.5% of gross slot revenues ³	-34.05	-34.38	-25.78	-17.19
Sales Tax on New Food and Drink Expenditures	0.18% of gross slot revenues ⁴	2.45	2.48	1.86	1.24
Net Impact		-88.40	-88.70	-80.73	-72.75

¹ Based on Fiscal Note for HB 293, 2004 Slots Bill
² Based on FY 2008 Net Lottery Revenues of \$568 million
³ Based on "Average Losses by Distance from a Casino," Grinols, 2004, p. 77
⁴ Christiansen Capital Advisers estimate from Harrah's Station Square Casino, adjusted for MD's sales tax rate

Incidence of Tax

Utilizing taxes on “sins” such as smoking, alcohol, and allowing gambling are a popular method for public financing in states that desire not to raise other taxes such as income or sales. Taxing these voluntary activities often places the burden of the tax (or tax incidence) on differing and more difficult to identify populations than sales or income taxes. Previous research has shown that lottery ticket sales place a heavy burden on low income groups as they tend to spend a greater percentage of their income on lottery tickets (Spiro, 1974; Clotfelter CT, Cook PJ, 1987). The incidence of slots and casinos are less studied. Borg et al (1991) utilize surveys from Las Vegas and Atlantic City visitors to examine the incidence of casino gambling and find that lower income, non-whites with lower education are more likely to gamble. They also find casinos to be a regressive tax in Las Vegas, with those making \$10,000 to \$20,000 (1987 dollars) spending 1.63 percent of their income on gambling compared with those with incomes between \$70,000 to \$80,000 spending (1987 dollars) 0.66 percent of their income. The Atlantic City estimates were not as consistent due to strong influence of demographics in their models.

Examining who gambles is another way to examine where the revenues from gambling are being collected. In the 1999 National Opinion Research Center (NORC) study, it was found that 63 percent of the population gambled in the past year. If you examine this population, you find that it is 51 percent male and that the highest percentage is gamblers aged 25 to 44 (46 percent). Other age groups are less likely to have gambled in past year with ages 18 to 24 representing 12 percent, ages 45 to 64 representing 25 percent, and those over 65 only representing 16 percent. A recent study (Carpenter et al., 2008) that examines lottery sales in Maryland finds lottery sales are negatively related to income. This same study finds that lotteries are preferred by African-Americans, those with less than high school education and those over age 65.

Thus, while we cannot define the exact incidence of the VLT tax, we can say that middle age non-white males may be more likely to be gambling and thus the incidence may fall more on this group.

Social Benefits

While the VLTs may affect revenues to the state, other potential benefits also exist. As evidenced by Marylanders crossing borders to West Virginia, Delaware and Pennsylvania, there is a demand for gambling in Maryland. If VLTs proposed for Maryland are less expensive or of higher quality than elsewhere, there will be an increase in use. This demand increase depends on the “price” of gambling in other locations that is affected by payout to players in other states, amenities provided, as well as consumer travel cost. Gamblers are willing to pay more than the expected payout for benefit-enhancing aspects of the experience and risk-loving preferences. A statewide benefit-cost analysis of gambling would generally include changes in citizen satisfaction that may in part be based on reduced distance and cost to gambling sites, as well as changes in government revenues, profits in the state, and in the value of labor or other inputs used (Grinols, 2004). Each will be discussed in turn.

How much satisfaction might people get from these visits to slots machines? Using data from existing gambling locations, Grinols (2004) provides a table (6.4), which we have updated to 2008 dollars, for the average per person satisfaction or consumer surplus from a change in

distance. By adding slots we will change the distance from 75 to 20 miles, which results in an estimate of consumer surplus or personal satisfaction of \$25 per person. Consequently, one estimate of the consumer welfare derived from having both closer and more frequent access is about \$25 million per year. Although the estimate of total gamblers in Maryland is highly uncertain, even if 20 percent gambled at some point in time (the low estimate), the distance benefit would be in terms of millions of dollars. We also present a middle estimate between these two assumptions. This distance benefit is sometimes excluded from studies such as that by Prince George/Optimal Solution as well as DLS.

Increase in Employment/Jobs

As with debates of the degree of substitution between consumer expenditures for gambling and other items, a similar debate exists over the extent, if any, of Maryland benefits as a result of construction and ongoing operation of gambling sites. In most benefit-cost analyses, no secondary benefits from increased jobs exist unless there is less than full employment and new jobs can be demonstrated to be filled by previously unemployed Marylanders. The federal government, in its guidance for benefit-cost analysis, states that no secondary benefits related to jobs are to be included in national analyses (OMB, A-94). If there is reasonably full employment, a job created in one place tends to either replace another job in the economy or result in a minor increment in value above the existing position held by the employee. If there is substantial unemployment and the new jobs draw from that source, then there may be additional local benefits. Grinols (2004) reports a range of benefits per job from zero to \$1,500 (in 2000 dollars) with very little discussion. The value may be zero if the local economy is close to full employment, or significantly positive in times of significant unemployment. Evans and Topelski (2002) examined the effects of Native American Casinos and found that counties that add a new casino significantly increase the jobs-per-adult ratio by 0.021 by the fourth year. At issue is the quality of the jobs that are added. These are generally the lower end service employee positions that pay lower wages with little benefits. The National Compensation Survey (2007) estimates the median hourly wage for gaming service employees at \$6.34 per hour with annual median earnings of \$13,179. The current average annual unemployment rate in Maryland in 2008 is 4.0 percent (4.6 percent in August) (<http://www.dllr.state.md.us/LMI/laus/maryland.shtml>). This is considered near full employment and thus any new jobs created by VLTs may merely be a substitute from other employment.

Social Costs

In a full analysis, we would investigate the social costs as well as the actual costs of introducing slot machine gambling to Maryland. Social costs (or benefits if a positive effect) are the unintended consequences of the effects of slots gambling on those that do and do not gamble. A full analysis of social costs is beyond the scope of this report. In this section, we examine available research and identify a series of potential effects that may occur due to easier access to gambling through the availability of VLTs in Maryland. We present a range of estimates of the impact of gambling on issues such as alcoholism, bankruptcy, lifetime debt (amount of debt accumulated over the life of gambler), crime, divorce, illnesses and suicide. Table E presents the range of these estimates and how they apply to Maryland, both at the state level (last column, “Additional Cost of Impact”) and that of the individual gambler (third column, “Estimate”).

Table E represents estimates of some major components of gambling social cost currently available in studies. These studies vary in methodology and populations assessed and thus the individual components should not be added. Some of these estimates represent dollar or cost impacts while others represent increased events or new incidences (such as increased number of bankruptcy filings).

As seen in this table, a large range exists regarding the estimated impact of gambling on each of these areas. This uncertainty originates from the lack of recent problem gambling prevalence and incidence studies as well as difficulty in estimating the association of gambling with each component. For a review of the literature regarding social costs of gambling as well as the methods to calculate these estimates, see Appendix A.

Table E			
Incidence of Potential Pathological & Problem Gambling in Maryland Upon the Introduction of VLTs			
P&P¹ Gambler-Level Social Costs			
Type	Range	Estimate²	Additional Cost or impact
Abused Dollar Instances	2/3 of P&P Gamblers	2/3	38,566
Cost of Addiction Treatment	\$2,340 to \$7,022 per P&P Gambler	\$2,340 ³	\$135,366,660
Divorces	26% to 30% of P&P Gamblers	28%	16,198
Lifetime Debt	\$25,000 to \$45,000 per P&P Gambler	\$35,000	\$2,024,715,000
Suicide Attempts	12% to 28% of P&P Gamblers	20%	11,570
Missed Work	7.5 to 23.9 hrs per P&P Gambler	9.8 ⁴	566,920
State-Level Social Costs			
Type	Range	Estimate²	Additional Impact
Bankruptcy Filings	0% to 10%	5%	356
Crimes			
Overall	0% to 8%	4%	9,536
Violent Crimes	0% to 10%	5%	1,803
Auto Thefts & Larceny	0% to 10%	5%	637
¹ "P&P" is shorthand for "Pathological and Problem." ² Unless otherwise noted, estimate is the average of values in range. ³ \$2,340 is the average per P&P gambler, regardless of whether or not treatment was obtained, whereas \$7,022 is average of only those who obtained treatment. ⁴ 9.8 hours per month is the estimate for Connecticut, which we feel is the most comparable to Maryland (given its proximity) when compared with Wisconsin, South Carolina, and Nevada.			

In 2003 dollars, the annual cost to society of an additional pathological gambler is \$10,333 and the annual cost to society of an additional problem gambler is \$2,945 (Grinols, 2004), while Walker (2004) estimates annual social costs of a gambler at \$2,049. If the adult population of Maryland in 2006 is 4,253,595 (American Community Survey) then the number of pathological gamblers are 34,029 and the number of problem gamblers is 59,550 (as calculated in Appendix A). VLTs will decrease the distance to casinos which in turn may at the most double the prevalence (NORC, 1999), thus adding 34,029 more pathological and 59,550 problem gamblers. Utilizing the costs from Grinols (2004) this would total to an annual cost in 2008 dollars of

\$418.7 million for pathological gamblers and \$208.8 million for problem gamblers. Utilizing the social costs from Walker (2004), the annual social cost is \$228.3 million. This range (\$228.3 to \$627.5 million) is a higher bound as we estimated a large impact in the number of problem and pathological gamblers. In fact, many pathological and problem gamblers currently exist in our population but are not identified. This estimate utilizes the increased incidence at an extreme end but no other incidence estimates currently exist. Another way to examine the social cost is shown in the summary Table E. This estimates each potential component and the estimated additional cost or incidence of event. Costs of addiction treatment could reach \$135.4 million and increased divorces of over 16,000.

Impacts on Other Business

Developing VLT parlors or “racinos” can have both positive and negative impacts on other local businesses. The current proposal sets aside revenues from VLTs to increase horse racing purses in Maryland. In addition, businesses located near casinos may find an increased demand for their goods and services if tourists or people from the casinos stay at local hotels, eat at local restaurants, or purchase these complementary goods. On the other hand, if the VLT players purchase such goods primarily from the casino and no longer patronize other businesses, local industry could see an aggregate decrease in demand as VLT players substitute away from their businesses. Finally, with another form of gambling readily available, there will be some substitution away from State Lottery purchases. This section explores these issues.

Horse Racing

First, we will examine the effect of slots on nearby states’ horse racing handle (the total amount wagered on an event). While Maryland’s has been declining for some time, Delaware’s has only recently begun to do so. Delaware’s handle did get a temporary boost from slots, while West Virginia’s spiked quite high after slots were introduced, but began to fall off again as of 2004 (Department of Labor, Licensing and Regulation Report, 2007). The Department of Labor, Licensing and Regulation acknowledges that slots will not help to improve the racing handle. Track owners are building bigger purses to have races in front of fewer customers. We can assume there will be at least a small bump in the handle – however, this will fall off over time. It might shore up revenues in the early year or two while slots are getting established. The larger issue with horse racing is whether or not slots revenues should be used to support an undeniably struggling industry. There are likely to be more efficient uses for the money, and claims that the demise of the horse racing industry will lead to a wide loss of open space are questionable. Slots themselves are strong competitors of horse racing, and would only contribute to the racing industry's decline if not for the transfer of revenues from one form of gambling to the other. Another concern is that lost horse farms will result in lost open spaces. One must note that all local municipalities will have to approve and change zoning laws in order for the farms to change into developments.

Lotteries

As discussed in the revenue estimate section, slots are another form of gambling that often competes with lottery sales. Previous studies have demonstrated that the presence of casinos lowers lottery revenues by approximately 10 percent (Walker D. 2008)

Hotel/Entertainment/Restaurants

As noted in our revenue estimate, moneys spent on gambling are generally not all new, but those that were previously spent on other goods and services. This effect was discussed earlier and termed the substitution effect or cannibalization of dollars. A study of Illinois (Grinols, 2004) casinos found that for every \$1,000 of casino revenue, miscellaneous retail and wholesale revenues declined by \$247. On the other hand, this same study found that automotive and filling station sales reported an average gain of \$295. Effects on eating and drinking were not affected but that may be due to countervailing forces. The eating and drinking revenues may have increased within casinos but then decreased at surrounding establishments. More research is needed to determine the overall effect on surrounding establishments.

Other Sources of Uncertainty in Estimates

The estimates within this report assume that the current market conditions remain. As most markets are dynamic, we expect nearby states to respond to the addition of slots in Maryland. Several responses could occur. First, the other states that currently offer slots could increase the payoffs from their machines as a means to entice more visits to their states. Another option for neighboring the states with slots and racetracks is to offer increased amenities such as complementary rooms, or free food or drinks. The current legislative proposal (S.B. 3) specifically states that Maryland slots businesses cannot offer these types of gratuities to attract more clientele. In addition, other states that currently do not have slots, such as Virginia, may decide to develop slots and/or casinos in response to Maryland's new revenue source.

Nearby states with established slots may also add more VLTs or different games to compete with Maryland. Thus, the state has fewer options to make Maryland competitive. With the current legislative proposal the market and locations are fixed. One response is to increase licensing fees to obtain more revenues. Yet, Maryland currently is returning the lowest share of revenue to slots operators at 33 percent, compared to 48 percent in Delaware, 45 percent in Pennsylvania and 42 percent in West Virginia (Reine L, 2008). Further responses would require legislative changes to add more locations or more VLTs or more types of games. In general, the legislative proposal has heavily regulated the structure of the market without any knowledge of the actual demand or geography of demand for gambling within the state.

Another factor to consider is the appropriateness of applying research and data from the past to the current economic climate. Most studies were done in late 1990s or early 2000s when the US economy was growing. As the U.S. heads into a recession and economic activity declines, the consumer dollars will be stretched. It may not be appropriate to assume the level of slots play will be the same.

Another issue of uncertainty regarding VLTs is the local zoning. All local municipalities will have to approve and change zoning laws in order to build these VLT facilities. Political uncertainty exists at the local level for this approval as well as for funding the infrastructure to support the casinos.

Conclusions

The implementation of Senate Bill 3, *Maryland Educational Trust Fund – Video Lottery Terminals* (2007 Special Session) will create a new source of revenue for the state of Maryland through taxation of slots (VLTs) revenues. We demonstrate that great uncertainty exists regarding how much revenue this program will provide the state. As summarized in Table F, gross revenue could range from \$688 million to \$1.375 billion. DLS’s estimate of \$1.362 billion is within this range but at the high end. Further, to reach the DLS estimate will require a significant increase in new gambler (current players playing more and new players) dollars spent in Maryland on slots, nearly 150 percent. Marylanders who no longer drive out of state for slots could improve their welfare by as much as \$25 million.

Table F			
Revenue Summary (in millions \$)			
	<i>High</i>	<i>Medium</i>	<i>Low</i>
Gross Revenue	1,375.00	1,031.00	688.00
ETF Funds	667.00	500.00	333.00
Lost Lottery Revenue	-56.80	-56.80	-56.80
Lost General Sales Tax	-34.38	-25.78	-17.19
Increased Food/Beverage Sales Tax	2.48	1.86	1.24
<small>Note: This table is illustrative of the ranges of costs and benefits associated with slots and is not meant to be a full benefit-cost analysis. Therefore the numbers should not be combined in a benefit-cost calculation.</small>			

These revenues and social benefits will come at a cost. These costs include lost lottery revenues, lost general sales taxes and lost business revenues as consumers substitute spending from their current purchases to slots. Lottery revenues may decline as much as \$56.8 million and lost sales tax revenue could be over \$34 million. In addition, social costs associated with increased problem and pathological gamblers, while uncertain in their estimation, have the potential to be large, over \$627 million (see Table G). All estimates utilized within this analysis are riddled with uncertainty and further study is required in several areas such as the substitution effects, social costs and recapture rates. As policymakers examine potential streams of revenue for the state, they must assess the stability of the funding stream and the unintended consequences associated with the financing chosen.

Table G			
Social Effects Summary (in millions \$)			
Social Benefit	25.00	15.00	5.00
Social Cost	627.50	418.00	228.00
<small>Note: This table is illustrative of the ranges of costs and benefits associated with slots and is not meant to be a full benefit-cost analysis. Therefore the numbers should not be combined in a benefit-cost calculation.</small>			

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Appendix A: Social Costs

In a full analysis, we would investigate the social costs as well as the actual costs of introducing slot machine gambling to Maryland. Social costs (or benefits if a positive effect) are the unintended consequences of the effects of slots gambling on those that do and do not gamble. A full analysis of social costs is beyond the scope of this report. In this section, we examine available research and identify a series of potential effects that may occur due to easier access to gambling through the availability of VLTs in Maryland. We present a range of estimates of the impact of gambling on issues such as alcoholism, bankruptcy, crime, divorce, illnesses and suicide. Table E presents the range of these estimates and how they apply to Maryland, both at the state level and that of the individual gambler. This section provides a review of the literature regarding social costs of gambling as well as the methods to calculate these estimates.

In reporting these estimates, we are compelled to present our underlying assumptions. First, even though our focus is on pathological and problem gamblers, we recognize that most gamblers probably do not fall into these categories. There are undoubtedly those Marylanders whose gambling is relatively infrequent (once per month, for example) and would remain so even upon the introduction of closer gambling venues. Because their gambling activity is limited enough to prevent them from being classified as having a problem, we assume that their aggregate social cost is negligible and exclude them from our calculations. It should be noted that this group of gamblers has been largely omitted from the academic literature, implicitly signifying that other leading researchers agree with this conclusion.

Our second assumption has to do with the relationship between the different types of gamblers. It would be expected that since the behavior of a pathological gambler centers around gambling more than that of a problem gambler, the former would incite a relatively greater social cost than the latter. Because the academic literature does not seem to separate its concluding estimates, we will make a judgment call as to the relative social cost of the types of gamblers in order to apply these estimates to Maryland. To do so, we use the American Psychiatric Association (APA) criteria (presented in more detail later). Under this methodology, an individual is classified as a pathological gambler if he/she meets five of the 10 criteria, and a problem gambler if between two and four of the criteria are satisfied. Although the criteria bounds of being a pathological gambler are 2.5 times that of being a problem gambler (10/4 and 5/2), we conservatively assume that the former is responsible for 1.5 times the social cost of the latter. In translating the academic estimates, we use this ratio to create figures representing the number of equivalent pathological gamblers brought on by the introduction of VLTs to Maryland.

Finally, we perform our own calculations to generate the numbers of pathological and problem gamblers that will originate due to the introduction of closer gambling. An NORC (1999) report finds that prevalence of both pathological and problem gamblers doubles when a casino opens within 50 miles (versus the 50 to 250 miles away where most other gambling venues outside of Maryland are located). As previously mentioned, we believe that the majority of Marylanders will be located within 20 miles of one of the proposed gaming sites. This means that the amount of new gamblers, both pathological and problem, in Maryland, will double. Using the NORC (1999) prevalence rates of 0.8 percent and 1.4 percent, respectively, as well as the American Community Survey population estimate of 4,253,595 Maryland adults, we obtain figures of

34,029 pathological and 59,550 problem gamblers. It is important to clarify that these figures are not the total number of gamblers in Maryland, but instead represent only those current non-gamblers who would develop a gambling problem upon the introduction of VLTs. Similarly, at the overall level, the social costs noted are those that would arise only when gambling was introduced.

Problem and Pathological Gambling

As stated previously, the APA uses ten criteria to define pathological gambling (five of ten is pathological gambling while two to four of ten is problematic gambling):

- Preoccupation with gambling
- A need to increase the excitement produced by gambling
- Restlessness or irritability when unable to gamble
- Repeated unsuccessful efforts to control, cut back, or stop gambling
- Gambling in an effort to get back money lost during gambling on a previous day
- Gambling in an effort to escape a dysphoric mood
- Lying to cover up gambling
- Jeopardizing a significant job, relationship, or educational opportunity by gambling
- Engaging in illegal activity to finance gambling
- Going to someone else to relieve a desperate financial situation produced by gambling

Problem and/or pathological gambling is the primary concern when access to VLTs increases. The most recent estimate, 1999, is that approximately 2.5 million adults in the U.S. are pathological gamblers and that another 3 million are problem gamblers (NORC, 1999). This same study finds that pathological, problem and at-risk gambling are proportionately higher among African-Americans and other ethnic groups. It is also noted that problem and pathological gamblers are more likely than low-risk gamblers to have been on welfare, declare bankruptcy, and to have been arrested or incarcerated. Social costs such as these will be examined in this section.

Both Breen and Zimmerman (2002) and Breen (2004) find that machine or slots gamblers have a quicker transition into pathological gambling (1.09 year versus 3.58-3.89 years) compared with other forms of gambling. Further research is needed to investigate the implications on social costs of such an early transition.

Other studies have attempted to quantify the total social costs of gambling. Schwer et al. (2003) survey 99 Gamblers Anonymous (GA) members living in the Las Vegas, NV Metropolitan Area. They estimate the annual total social cost per problem gambler to be \$19,085, which can be broken down into \$6,017 in employment costs (\$1,740 in missed work, \$2,813 in productivity losses/quit jobs, \$1,423 in productivity losses/fired, and \$41 in unemployment compensation), \$10,291 in bad debts and civil court costs (\$9,556 in bankruptcy debt loss and \$735 in civil court costs for bankruptcy debt and divorce), \$2,341 in criminal justice system costs (\$1,819 for theft, \$99 for arrests, \$89 for trials, \$84 for incarceration, and \$250 for probation), and \$436 in treatment and social services costs (\$286 for treatment, \$93 for welfare, and \$57 for food stamps). This cost translates to an annual gambling-related social cost of between \$300 million and \$470 million for Southern Nevada alone.

Yet, the methodology utilized for these estimates is often criticized and the estimates are riddled with uncertainty. For example, for the figures above, Walker (2007) does a recalculation based on his arguments and comes up with an annual social cost of only \$2,049 per gambler. This translates to an annual cost for Southern Nevada of between \$32 million and roughly \$50 million.

The following are areas often discussed in social costs of gambling. This literature review presents a range of estimates as well as issues in utilizing these figures. The areas often discussed include abused dollar, addiction treatment, alcoholism, bankruptcy, crime, divorce or family costs, illness, and suicide.

Abused dollar

Abused dollar is a term applied to dollars that are lost gambling that the gambler acquires through family, employers or friends under false pretense. In the GA survey by Schwer et al. (2003), over two-thirds of respondents indicated they had gone to others for money to gamble, including their spouse (52 – 57.7 percent) and children (27 – 30 percent). Others had sold personal property (54 – 60 percent), cashed in securities (50 – 55.5 percent), passed bad checks (57 63.3 percent), used casino credit (31 – 34.4 percent), and/or used bookies (15 – 16.7 percent). Some (17 – 18.5 percent) even used social security funds to pay for their addiction.

There are some concerns over estimating abused dollars as a social cost. Walker and Barnett (1999) identify abused dollars as a transfer of wealth regardless of whether or not the transfer is voluntary. Thus, they do not include abused dollars as a social cost since overall wealth in society does not change and no inefficiencies are created. On the other hand, Grinols (2004) states that abused dollars are a social cost as the rest of society loses in terms of real goods and services that could have been purchased with these dollars.

Addiction treatment

Pathological and problem gamblers seek treatment through various facilities including inpatient or outpatient psychiatric facilities, specified addition or rehabilitation centers or through GA. Insurance coverage for addiction treatment is often not on par with physical health treatment and thus often requires the patient to cover most of the treatment through their own funds. In their GA survey, Schwer et al. (2003) discover that 13 of 87 were hospitalized, 20 incurred outpatient care for a variety of physical and emotional problems related to their gambling, and 58 of 88 (65.9 percent) noted suffering from other addictions as well. Treatment costs for 29 of 70 averaged \$7,022 (translates to average of \$2,340 for all 87 respondents). Seven of 33 reported paying these costs out-of-pocket, while 10 were fully covered by insurance, 8 used a combination and 8 simply did not pay.

While treatment may be expensive and often not covered by insurance, researchers do find the treatment to be beneficial. Politzer et al. (1985) observes 102 pathological gamblers at the Johns Hopkins Center for Pathological Gambling and concludes that the treatment there has a benefit-cost ratio of 20:1 (when using abused dollars as the unit of measure), making pathological gambling one of the least costly illnesses to treat. Yet, abused dollars may not be the most appropriate cost to include in this ratio.

Alcoholism

Alcohol use is associated with increased risk taking (Chesher and Greely, 1989) but the relationship is too complex to disentangle causality. There are several unobserved variables or characteristics that are correlated both with problem drinking and problem gambling such as risk preferences, sensation seeking, and peer effects. French et al (2008) utilized two different methods to examine if alcohol and gambling are compliments or substitutes. They find that the two behaviors are complements and that weekly or more frequent drinking increases the probability of any problem gambling by 3.6 to 6.5 percentage points. As the drinking problem increases in intensity to drinking to intoxication or dependence, the results increase in magnitude. While this does not show that increased availability of gambling increases probability of alcoholism, the correlation of the two behaviors appears strong and the estimated impact of increased alcoholism and its social costs (drunken driving, health effects, and children health effects) remain concerns.

Bankruptcy

As problem and pathological gambling increases, the chances for bankruptcy may also increase. Again, the causality of this is difficult to establish and the evidence is mixed. Lesieur (1998) notes that in a survey of GA members, the amount of current gambling-related debt ranged from an average of \$38,664 in Wisconsin, with a median of \$20,000 (Thompson, Gazel, and Rickman, 1996), to an average of \$113,640 in Illinois, with a median of \$18,000 (Lesieur and Anderson, 1995). Lifetime figures are even higher, ranging from an average of \$61,000 in Wisconsin (median of \$25,000) to an average of \$215,406 in Illinois (median of \$45,000). The author recalls the fact that between 21 percent and 36 percent of gamblers in treatment or in GA lost a job due to their gambling (Ladouceur et al., 1994; Meyer, Fabian, and Peter, 1995; Lesieur and Anderson, 1995; Thompson, Gazel, and Rickman, 1996). Another study that focuses on Native American casinos finds that after the construction of a casino, bankruptcies increase by 10 percent in the surrounding community (Evans and Topoleski, 2002).

In their Las Vegas-based GA survey, Schwer et al. (2003) find that of 90 respondents indicating lifetime losses, 18 estimated them to be in excess of \$250,000 (1 reported over \$1 million in losses), while the median was between \$50,000 and \$100,000, and the mean was \$112,400. To put this in perspective, median losses in Connecticut and Wisconsin were \$82,500 and \$45,000, respectively, while average losses in South Carolina were \$79,434. Of 94 respondents, current debt was more than \$250,000 for six, and \$1.6 million for one. The median was \$24,500 while the mean was \$78,105/\$57,160. In order to deal with a median debt of \$38,750, 44 respondents (45.4 percent) had filed bankruptcy. The average/trimmed average of debt was \$121,646/\$85,551. In comparison, bankruptcy rates are only 23 percent and 26 percent of respondents in both Wisconsin and Connecticut, and South Carolina, respectively. In addition to bankruptcy court, 14 respondents were involved in civil suits. The Schwer study only selects on people self-identified as pathological gamblers and does not examine the effect of increased access due to new casinos or slots on bankruptcy rates. Other studies have found no effects of casinos on actual bankruptcy. The 1999 NORC report found that in communities proximate to newly opened casinos bankruptcy rates are unchanged.

Crime

An aspect of problem gambling is the potential need for quick cash. Researchers hypothesize that this need increases the number of crimes, such as auto thefts, burglary, etc., in areas where casinos are located. The evidence on this has been mixed as it is difficult to separate out causality due to many casinos opening in economically depressed areas. Evans and Topoleski (2002) find that after the construction of a Native American casino, violent crimes, and auto thefts and larceny each increase by 10 percent in the surrounding community. Grinols and Mustard (2004) examine all U.S. casinos outside of Nevada, and find that around 8 percent of crime in counties with casinos was attributable to those casinos. On the other hand, the 1999 NORC report found that violent crimes in communities proximate to newly-opened casinos are unchanged. It should be pointed out that the NORC study was unable to examine nonviolent or minor crimes, which tend to be more associated with gambling.

Divorce/Family Costs

Problem gambling can also lead to family and social issues such as divorce. A federal study of the social and economic implications of gambling in the United States, conducted by a special commission in the late 1990s under authority of Congress, found that problem gamblers divorce their spouses. More than 53 percent reported having been divorced compared to 18.2 percent of nongamblers (Nichols, Stitt, and Giacomassi, 2004). Another study by Lesieur (1998) notes that 26 to 30 percent of GA members have gone through gambling-related divorces or separations (Lesieur and Anderson, 1995; Thompson, Gazel, and Rickman, 1996). Again, the causality of these estimates is difficult to determine as unobserved characteristics could be related to both tendency to gamble and relationship issues (sensation seeking, risk preferences, etc).

Illness

A 1999 study by the NORC found that the presence of a gambling facility within 50 miles roughly doubles the prevalence of problem and pathological gamblers. In this same study they estimated that the prevalence of pathological gamblers is 0.8 percent and the prevalence of problem gamblers is 1.3 to 1.5 percent. The NORC study found that problem gamblers suffer from mental disorders, including abusive behavior. Studies by the National Research Council estimated between one-fourth and one-half of the spouses of compulsive gamblers have been abused. On the other hand, the 1999 NORC report found that in communities located near newly opened casinos, health indicators remain unchanged. Cunningham-Williams et al (1998) utilize the St. Louis Area Catchment Survey and find that problem gamblers are more likely to have major depression, substance abuse, phobias, alcoholism and antisocial personality disorders than non-gamblers. This study also finds that recreational gamblers were more likely to have these conditions than non-gamblers as well.

Suicide

In their literature review, Nichols, Stitt, and Giacomassi (2004) note that Phillips, Welty, and Smith (1997) find suicides account for 0.97 percent of all visitor deaths in non-gambling counties. This proportion jumps to 4.28 percent in Las Vegas, 2.31 percent in Reno, and 1.87 percent in Atlantic City, all of which are known for their gambling facilities. They also reference work by Specker et al (1996) that finds suicide attempts range from between 12 percent and 24 percent of the pathological gamblers surveyed. In their own study, the authors compare eight

gambling communities to eight similar communities without it and find that suicide rates are not statistically different.

Yet if one selects those self identified as problem gamblers, such as Schwer et al (2003) did, they may find a high incidence of suicide attempts. For instance, in this study, 60 of 91 had planned suicides as a result of gambling. The associated figures were 71 percent, 55 percent, and 44 percent in South Carolina, Wisconsin, and Connecticut, respectively. Twenty-six of 94 (27.7 percent) reported actual suicide attempts, compared with 30 percent in South Carolina, 24 percent in Wisconsin, and 17 percent in Connecticut. Nower and Blazczynski (2008) examine gamblers who self exclude themselves from Missouri casinos, comparing a series of outcomes by age groups. They find that older problem gamblers prefer nonstrategic games (including slots) and the primary reason for their self-exclusion was fear of suicide.

Other Effects

In addition, the Schwer et al. (2003) Las Vegas, Nevada survey showed that 50 of 89 (56.2 percent) reported having missed an average of 17.22 hours of work each month due to gambling. Averaging this over the 89 respondents translates to 9.67 hours per month, or 116.1 hours per year (5.8 percent of 2,000 hour work-year). Respondents in Wisconsin, Connecticut, and South Carolina reported 7.5, 9.8, and 23.9 hours of work lost per month, respectively. 22 of 96 (22.9 percent) indicated they quit work because of gambling problems, averaging 18.77 months of unemployment. Another 21 of 89 (24 percent) reported having been fired, averaging 11.57 months of unemployment. In Wisconsin, 21 of 98 lost jobs, while it was 19 of 70 in South Carolina, and 25 of 112 in Connecticut.

Summary

In 2003 dollars, the annual cost to society of an additional pathological gambler is \$10,333 and the annual cost to society of an additional problem gambler is \$2,945 (Grinols, 2004), while Walker (2004) estimates annual social costs of a gambler at \$2,049. If the adult population of Maryland in 2006 is 4,253,595 (American Community Survey) then there are 34,029 pathological gamblers and 59,550 problem gamblers (as calculated earlier). VLTs will decrease the distance to casinos which in turn may at the most double the prevalence (NORC, 1999), thus adding 34,029 more pathological and 59,550 problem gamblers. Utilizing the costs from Grinols (2004) this would total to an annual cost in 2008 dollars of \$418.7 million for pathological gamblers and \$208.8 million for problem gamblers. Utilizing the social costs from Walker (2004), the annual social cost is \$228.3 million. This range (\$228.3 to \$627.5 million) is a higher bound as we estimated a large impact in the number of problem and pathological gamblers. In fact, many pathological and problem gamblers currently exist in our population but are not identified. This estimate utilizes the increased incidence at an extreme end but no other incidence estimates currently exist. Another way to examine the social cost are in the summary Table D. This estimates each potential component and the estimated additional cost or incidence of event. Costs of addiction treatment could reach \$135.4 million, with an increase in divorces of over 16,000.



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