

# CASINO GAMING IN MASSACHUSETTS:

## AN ECONOMIC, FISCAL & SOCIAL ANALYSIS

Commissioned by the  
Greater Boston Chamber of Commerce

Conducted by  
UHY Advisors FLVS, Inc.



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## **EXECUTIVE SUMMARY**

### **A. Foreword**

In October 2007, Governor Deval Patrick proposed legislation that would legalize commercial casino gaming in the Commonwealth of Massachusetts. The draft legislation proposed by the Governor would allow for the development of up to three large destination-style casinos in different regions of the state. The Governor's proposal also specified the process by which casino developers would be selected and the minimum amount of licensing fees to be paid to the state by the developers.

Following the announcement of the proposal, the Greater Boston Chamber of Commerce engaged UHY Advisors FLVS, Inc ("UHY") to conduct an independent analysis of the potential casino developments. Specifically, UHY was asked to examine the potential gross gaming revenues, new jobs created and the socioeconomic impacts associated with the legalization of casino gambling.

### **B. Methodology**

The analysis in this study took place on three levels. First, UHY developed economic models of the demand for casino gaming and state tax revenues from ongoing casino operations. The model of gaming demand was based on casino patronage and expenditure patterns in other New England states. Given the potential revenues from the casino developments, UHY then developed projections of annual gaming tax revenues that would accrue to the Commonwealth. Second, UHY reviewed research by academics and government concerning the socioeconomic impact of the introduction of casino gaming. Third, UHY performed field research by interviewing policymakers and stakeholders to gather additional information and perspectives on issues concerning the legalization of casino gaming.

## **C. Findings**

### *1. Gambling in Massachusetts*

Commercial casinos, racinos and tribal casinos currently operate in thirty seven states. While casino gaming is not available in the Commonwealth, Massachusetts residents have access to gaming in-state through the lottery, four racetracks, and charitable gaming events.<sup>1</sup> Gaming revenues from these three in-state sources averaged \$290 per adult resident in 2006. Massachusetts ranks 26th among the 50 states in gaming revenues per adult and 1st among states without casino gaming. A significant portion of the gaming revenues at the Connecticut and Rhode Island casinos are from Massachusetts residents.

This report assumes that all new casino development takes place within the framework established by the draft legislation and that only three casinos are developed in Massachusetts. Tribal authorities have additional options for casino development that may be open to them. There are two federally recognized Indian tribes in Massachusetts. In Massachusetts there are issues concerning the ability of tribes to pursue developments that are not located on tribal lands. Depending on the outcome of the legislation and the licensing process, it may be the case that one or both of the recognized tribes pursue the development of a casino outside of the framework in the draft legislation. Given the complex nature of the tribal gaming question, this report is confined to developments pursuant to the Governor's draft legislation.

### *2. Economic Impact of the Governor's Proposal*

#### *a. Casino Revenues*

Revenues reported by the casino industry are typically reported in terms of gross gaming revenues ("GGR"). This is equal to the amount wagered at the casino less total winnings paid out. This study estimates that the current demand for casino gaming in Massachusetts is between 2.0 and 2.3 billion dollars of GGR. The study also conservatively estimates that \$500 to \$550 million of this total will be derived from out-of-state patrons. A significant portion of the

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<sup>1</sup> Horizon's Edge Casino Cruises operates in Lynn, MA. The cruise offers casino gaming when the ship is located in international waters (more than 3 miles from the coast) and therefore is not subject to regulation by the Commonwealth of Massachusetts.

Massachusetts casino revenues will be from the recapture of expenditures that residents currently make at casinos outside of the state. According to a national survey by Harrah’s, 31 percent of Massachusetts residents report having engaged in casino gambling in the past year. This is similar to the levels reported in states that have already legalized the operation of commercial casinos. Massachusetts residents spend an estimated \$800 million on casino gaming in Connecticut and Rhode Island. Since casino patrons generally prefer to visit casinos that are closer, a large proportion of these revenues would be recaptured by the Massachusetts casino developments. Additionally, casino facilities are often designed to draw patrons from outside of the region. This is known as the destination effect. The destination effect is generally greater for large, upscale casino developments and lower for riverboat casinos, slot parlors and card rooms. The destination effect is also stronger if a region possesses complementary man-made or natural resources to attract patrons from outside the region. Because of the larger draw of patrons from outside of the region, destination casinos tend to have the smallest negative impacts on local non-casino business per dollar of GGR generated.

**Massachusetts Casino Gross Gaming Revenue Estimates  
Amounts in \$million**

Source of Demand	Low Estimate	High Estimate
Massachusetts Residents	\$1,500	\$1,750
Northern New England	\$200	\$200
Outside New England (approximately 15% of total GGR)	\$300	\$350
Gross Gaming Revenues	\$2,000	\$2,300

*b. Job Creation*

This study estimates that permanent employment at the three proposed casinos will be between 17,000 and 21,000 based on a mid-point estimate of \$2.15 billion in gaming revenues. The estimate of employment at the three Massachusetts casinos is based on employment and GGR at other large casino developments. Because of the large concentration of casino resorts in Nevada and Atlantic City, developments in these two locations may not be comparable to the potential Massachusetts developments. Therefore, this study estimates the number of jobs at the potential developments using two sets of benchmark facilities. One set of benchmarks includes Nevada and Atlantic City casinos while the other does not.

**Employment at Hypothetical Massachusetts Casinos**  
**Gross Gaming Revenues of \$2.15 billion**

**Benchmark Casinos Including & Excluding Atlantic City, NJ & Nevada Casinos**

<b>Region</b>	<b>Hypothetical Casino Revenue (Millions)</b>	<b>Employees (without NV &amp; NJ data)</b>	<b>Employees (with NV &amp; NJ data)</b>
Greater Boston	\$1,075	9,657	9,831
Southeastern, MA	\$645	4,399	6,477
Western, MA	\$430	2,933	4,318
<b>Total</b>	<b>\$2,150</b>	<b>16,989</b>	<b>20,626</b>

Estimates of construction labor requirements were derived from the cost of large, recent casino development projects. Construction labor inputs may be measured in terms of the total amount of labor necessary to complete a project or in terms of the average number of people employed during the project lifecycle. The former is expressed in worker-years while the latter is in terms of jobs. The projected total labor requirement for the initial construction is between 30,100 and 34,400 worker-years of labor. The lower and upper ends of the range are derived from different assumptions concerning the amount of labor used relative to the cost of construction. Dividing labor requirements measured in worker-years by a three year construction period results in an estimate of 10,000 to 11,500 construction jobs during development. The estimates are based on

construction costs of approximately \$4.3 billion and do not include additional jobs that would be created in the transportation sector or in the building material industry.

### **Construction Employment Projections**

**Average Employment Levels Assuming a Three Year Construction Period**

<b>Region</b>	<b>Hypothetical Capital Expenditure (Millions)</b>	<b>7 wkr-yrs/\$1M in Construction Spending</b>	<b>8 wkr-yrs/\$1M in Construction Spending</b>
Greater Boston	\$2,150.00	5,017	5,733
Southeastern, MA	\$1,290.00	3,010	3,440
Western, MA	\$860.00	2,007	2,293
<b>Total</b>	<b>\$4,300.00</b>	<b>10,033</b>	<b>11,467</b>

#### *c. Earnings and Wage Levels*

Employee earnings at casinos vary with the level of responsibility and degree of interaction with customers.<sup>2</sup> Overall, casino workers in Massachusetts could be expected to earn an average of \$36,000 to \$44,000 per year, with considerable variation between job categories. Few positions in the gaming industry require advanced training beyond a high school diploma or GED. Casino workers generally receive benefits, including health insurance.

#### *d. Regional Economic Impacts*

This study surveys the academic research on the regional economic impact of casino developments. The research supports the proposition that casino development has positive economic effects, although there are varying estimates of the size of the impact. The most significant impacts concern employment. Local employment levels increase and unemployment falls following the development of a new casino. Research on the regional impact of casino

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<sup>2</sup> Information on casino employee earnings comes from the United States Bureau of Labor Statistics

development also documents a decrease in welfare participation and transfer payments in the area hosting a new casino development.

### *3. Impact on State Revenues*

The experience of other states indicates that the minimum \$200 million up-front license payment in the Governor's proposal should not be a barrier to bidders. Illinois recently auctioned a license for a casino in the Chicago area. The highest of the seven bids was over \$500 million. Experience with the competitive award of licenses in Pennsylvania also indicates a willingness of developers to pay in excess of the amounts specified in the Governor's proposal. A competitive award process may raise other issues for consideration by policymakers. The experience of other jurisdictions reveals that the award of licenses based on financial and non-financial criteria may give rise to litigation and delays in the award of licenses. Disputes may arise if the party that submits the bid with the highest payments is not awarded the license.

Gaming tax payments (referred to as "operating license payments" in the Governor's proposal) provide an annual source of state revenues from casino developments. The Governor's proposed minimum gaming tax rate of 27 percent of gross gaming revenues will result in a net increase in state gaming revenues after accounting for shrinkage in lottery proceeds. The gaming tax model developed herein accounts for the effect of economic growth, population growth, inflation and lottery mitigation on casino GGR and gaming tax revenues. Assuming that the casinos enter service in 2012, by that time the size of the market for casino gaming will have grown to an estimated \$2.7 billion in GGR. The model allows for one-time, permanent declines in lottery revenues of 5 and 10 percent from the casino developments. With a 5 percent decrease in lottery revenues, the casino developments will generate \$429 million in general purpose funds (\$375 million in 2007 dollars). The Governor's proposal allocates half of these funds to transportation infrastructure and half to tax relief. With a 10 percent decrease in lottery revenues, the casino developments will result in \$376 million of general purpose funds (\$330 million in 2007 dollars). These figures are net of the amount allocated under the Governor's proposal to lottery, public health, and local impact mitigation.

**Gaming Taxes and State Funding Allocation in 2012 (\$ million)**

	5% Decrease in Lottery Revenues	10% Decrease in Lottery Revenues
Gaming Tax Payments (27% of GGR)	729	729
Less: Local Impact Mitigation (2.5% of GGR)	-67	-67
Less: Public Health Mitigation (2.5% of GGR)	-67	-67
Net State Revenues from Casino Development	594	594
Less: Lottery Mitigation	-165	-217
General Purpose Funds	429	376

The level of the gaming tax is another area of consideration for policymakers. The proposed gaming tax of 27 percent of GGR is high relative to the rates in states that have large destination casino developments. This higher gaming tax means that fewer funds will be available to the casino operator to support capital investment, marketing, and the requirements that the proposed legislation mandates. While a high gaming tax can enhance state revenues, it may conflict with other objectives of the proposal such as job creation and the sustainable economic health of the operators.

**Summary of Economic and Fiscal Impacts**

- GGR of \$2.15 billion based on current conditions
- Projected GGR of \$2.7 billion in 2012
- Projected additional general purpose funds of \$376 to \$429 million in 2012
- 17,000 to 21,000 permanent jobs at casino developments
- 10,000 to 11,500 construction jobs over a three-year period

#### *4. Social Impact*

The two leading surveys of problem and pathological gaming estimate that approximately 1.3 percent of the population in a given year experience behaviors consistent with problem or pathological gambling. Most estimates of the percentage of the population that have had gambling problems at any point in their lifetime range are between 2 and 5 percent. Researchers hypothesize that there is a link between an increase in gaming availability and the prevalence of problem gaming, crime and personal bankruptcy rates. Estimates of the size of the effect vary among studies with some finding little or no impact and others finding a significant impact. However, in no instance did a study find a reduction in problem gambling, crime or personal bankruptcy rates following the introduction of casino gaming.

The Governor's proposal provides for the transfer of 2.5 percent of gross gaming revenues to mitigate the public health impact of the developments. At the mid-point estimate of \$2.15 billion in GGR, the casinos would contribute an additional \$54 million a year to problem gambling abatement. Under the Governor's proposal, the 2.5 percent of GGG will also go to mitigate the increased cost of public services (i.e., public safety, schools, etc.) in communities near the site of the casino developments.

While generally highlighting the negative impacts of casino gaming, the research also mentions certain positive public health aspects of casino development in the immediate area. The enhancement of employment opportunities from casino development may lead to improvements in public health outcomes as individuals that have steady jobs have improved physical and mental health outcomes and a higher probability of access to healthcare than unemployed or intermittently employed individuals.

#### *5. Additional Issues*

Should legislation allowing the development of commercial casinos in Massachusetts be enacted, there are a number of important issues that need to be studied and evaluated on a case by case basis. Many questions can only be addressed once the location, scale and type of facility have

been determined. Some of the issues for additional and ongoing study include: the impacts of the casinos on local businesses and labor markets, the impacts on the value of housing and requirements for education spending, the oversight of the casino businesses, and community-level impacts.

## **I. INTRODUCTION**

### **A. Genesis of Report**

In October 2007, Governor Deval Patrick proposed legislation that would legalize casino gaming in the Commonwealth of Massachusetts. The legislation, titled An Act Establishing and Regulating Resort Casinos in the Commonwealth (“draft legislation”) would establish a process that could lead to the creation of three large destination casinos. As of the date of the publication of this report, the draft legislation was under consideration by the Joint Committee on Economic Development and Emerging Technologies of the Massachusetts General Court.

The Greater Boston Chamber of Commerce has retained UHY Advisors’ Forensic, Litigation & Valuation Services (“UHY”) to conduct an examination of the potential costs and benefits from the legalization of casino gaming. This report contains the results of that analysis.

The purpose of this report is to provide an objective, third-party analysis of the effects of the implementation of the draft legislation. This report addresses the impacts of the development of the casinos on the Massachusetts economy, state finances and societal well-being. This study’s analysis relies on data available in the public domain and databases that are readily available. The assumptions and data used in compiling the results are documented throughout the report and appendices that explain the calculations are included at the end of the report. UHY has no current or contemplated future interests in resort casino developments.

This report has six sections. The remainder of this section is a summary of the proposed legislation.

Section II provides an overview of the casino gaming industry in the United States. In this section, our study addresses the strategic and operational issues regarding the development and operation of a resort casino and provides detailed statistics on the size and growth of the gaming industry in the United States, as well as in the Northeast.

Section III examines the economic impact of the draft legislation. This section contains estimates of the potential demand for casino gambling and employment impacts of legalization on the Commonwealth. Estimates were developed for both the number of permanent casino jobs and temporary jobs created in the construction sector. This includes employment estimates for each of the three potential developments.

Section IV presents an overview of the impact of the casinos on state revenues. This section contains estimates of the revenues to the Commonwealth from the casino gaming tax. Also examined are the experiences of other jurisdictions with the award of casino licenses through competitive processes. This study provides estimates of the revenue impact including an allowance to account for any effects on revenues from the state lottery.

Section V presents a review of the research concerning the prevalence of problem gambling, the impact of casino gaming on personal bankruptcy rates and the impact of casino gaming on crime. The costs and benefits of casino gaming have also been an important area of inquiry. Therefore, this study focuses on the existing bodies of scholarly research in this area.

Finally, Section VI identifies several topics that are beyond the scope of this study's analysis. This includes a listing of issues concerning the economic and community impact that can only be addressed in the context of a particular development as well as issues relating to oversight and governance of the casinos.

## **B. Draft Legislation**

The draft legislation contains provisions that specify the type of casinos to be developed, the minimum size of the developments, and the minimums for the initial and annual licensing fees for the facilities. The draft legislation also contains provisions concerning the expenditure of funds for mitigating the impact of the casino developments on public health, area communities, and lottery revenues. The remainder of this section summarizes the elements of the legislation that directly relate to the economic and fiscal impact of the casino development.

### *1. Location of the Casino Developments*

The proposed legislation specifies the locations of the casino developments. The draft legislation divides the state into three regions.<sup>3</sup> One license is to be awarded in each region. Region 1 consists of Essex, Middlesex and Suffolk counties. Region 2 consists of Norfolk, Bristol, Plymouth, Nantucket, Dukes and Barnstable counties. Region 3 consists of Worcester, Hampshire, Hampden, Franklin, and Berkshire counties.

### *2. Employment and Capital Expenditures*

The Governor estimates that 20,000 new permanent jobs will be created by the casino developments.<sup>4</sup> The draft legislation contains provisions that require that prospective developments be on a large scale. One selection criteria applied to casino proposals is the number of new jobs created. The draft legislation specifies that each casino development creates at minimum 5,000 jobs either directly or through service providers.<sup>5</sup> The draft legislation also requires that before commencing operations, developers invest at least \$1 billion in the facility exclusive of the purchase or lease cost of the land.<sup>6</sup>

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<sup>3</sup> Draft legislation, SEC. 6, Ch 12B, Section 6(b).

<sup>4</sup> Letter from Governor Deval L. Patrick to the Senate and House of Representatives of the Commonwealth of Massachusetts, October 11, 2007, available at [http://www.mass.gov/Agov3/docs/Legislation/2007\\_10\\_11\\_resort\\_casino\\_bill.pdf](http://www.mass.gov/Agov3/docs/Legislation/2007_10_11_resort_casino_bill.pdf).

<sup>5</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(vii).

<sup>6</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(b)(2).

### *3. Licensing Fees and Gaming Tax Revenues*

Applicants for casino licenses are required to specify the payments to be made by the casino operators to the Commonwealth. The primary sources of state revenues are the initial licensing fee and the gaming tax payments. The minimum level of the initial license payment is \$200 million. Bidders may propose a larger initial license payment. Bidders also specify what percentage of the gross gaming revenues of the facility will be paid to the Commonwealth in the form of a gaming tax. The gaming tax must be at least 27 percent of the gross gaming revenues of the facility or \$100 million, whichever is higher.<sup>7</sup>

The legislation calls for the establishment of several trust funds to mitigate costs that may arise from the casino developments. Two and one-half percent of the annual gaming tax will be reserved for a community mitigation trust fund, to pay for increases in the costs of public services such as police, fire and water in communities hosting the casino developments.<sup>8</sup> A second public health trust will be established “to meet increased demand for social service and public health programs resulting from gaming, including but not limited to gambling prevention and addiction services...”<sup>9</sup> The amount of funds contributed to this trust will also be equal to 2.5 percent of the annual gross gaming revenues of the casino developments. As the profitability of the state’s lottery system may suffer from the proposed casinos, another trust will be established to help account for differences in deposits to the state lottery fund.<sup>10</sup>

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<sup>7</sup> In the gaming industry, gross gaming revenues are the difference between the amount wagered by bettors and the amount paid out to bettors by the operator of the game. This is also commonly referred to as the house ‘win’. Gross gaming revenues are measured before taking account of the cost of operating the game.

<sup>8</sup> The draft legislation released on October 11, 2007 states that the local impact and public health mitigation trust funds are each allocated 2.5 percent of “all operating license payments”. Other sources indicate that the intent of the legislation is to allocate 2.5 percent of the gross gaming revenues of the casinos to each of the local impact and public health mitigation trust funds. This study assumes that the intent is to allocate 2.5 percent of gross gaming revenues to each of the two trust funds. Compare Draft legislation, SEC. 6, Ch 12B, Section 10(b)(1) and 10(b)(2) (referring to operating license payments) versus The Commonwealth of Massachusetts Executive Department, “Governor Patrick Files Resort Casino Legislation”, press release, October 11, 2007, available at [http://www.mass.gov/?pageID=pressreleases&agId=Agov3&prModName=gov3pressrelease&prFile=071011\\_casino\\_legislation.xml](http://www.mass.gov/?pageID=pressreleases&agId=Agov3&prModName=gov3pressrelease&prFile=071011_casino_legislation.xml) (referring to gross gaming revenues).

<sup>9</sup> Draft legislation, SEC. 6, Ch 12B, Section 12(b).

<sup>10</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(3).

The remaining funds are available for other state purposes, and can be referred to as “general purpose funds.” The draft legislation allocates them towards two specific purposes. Half of the funds would be allocated to the general fund for the purposes of financing property tax credits for homeowners.<sup>11</sup> The remainder would be deposited into a transportation improvement and maintenance fund to help improve infrastructure across the state.<sup>12</sup>

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<sup>11</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(4).

<sup>12</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(5).

## II. THE CASINO GAMING INDUSTRY

### A. Casino Gaming in the United States

#### 1. Overview of Casino Gaming Today

Nevada was the first state to authorize casino gaming in 1931. Nevada was the only state with casino gaming until 1976 when New Jersey legalized casino gaming in Atlantic City. Beginning in the late-1980s, a number of states considered the legalization of casino gaming as a means to expand employment opportunities and to realize additional tax revenues.<sup>13</sup> Soon afterwards there would be movements to legalize casino gaming in many other states. Nine more states legalized casino gaming in some form between 1989 and 1996. Eleven states legalized casino gaming at racetrack locations (“racinos”) between 1992 and 2006. The expansion of tribal gaming accelerated in the late-1980s, in part as a result of the Supreme Court’s *Cabazon* decision and the tilt in federal policy towards encouraging tribal gaming as a means to stimulate economic activity on Indian reservations.<sup>14</sup>

Today there are 37 states with some form of casino operating within their borders. There are 454 commercial casinos, 37 racetrack casinos and 372 tribal casinos operating in 11, 12, and 28 states, respectively.<sup>15</sup> The number of commercial casinos, racinos and tribal casinos in each state is provided in Table II.1. Nevada has the highest concentration of commercial casinos (274), followed by Mississippi (27) and Louisiana (16).<sup>16</sup> Oklahoma and California have the most tribal casinos, with 79 and 58, respectively.

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<sup>13</sup> Cathy H. C. Hsu, “History, Development, and Legislation of Riverboat and Land-Based Non-Native American Casino Gaming” in *Legalized Casino Gaming in the United States*, ed. Cathy H. C. Hsu (Binghamton, NY: Haworth Hospitality Press, 1999), 63.

<sup>14</sup> William Evans and Julie Topoleski, “The Social and Economic Impact of Native American Casinos” working paper (University of Maryland, 2002), 8. The authors review important events in the development of tribal gaming law and policy. In the 1987 *Cabazon* decision, the Supreme Court ruled that only the federal government has the authority to prohibit gambling operations on Indian reservations and provided Indian tribes the greatest possible ability to operate casinos. *California v. Cabazon Band of Mission Indians*, 480 U.S. 202, (1987).

<sup>15</sup> American Gaming Association, *2007 State of the States*, Washington, DC, 2007, available at <http://www.american-gaming.org>; Casino City Inc., *North American Gaming Almanac*, 2007-2008 ed.

<sup>16</sup> Colorado has 46 casino locations, however, the majority offer limited-stakes gaming. American Gaming Association, *2007 State of the States*.

**Table II.1: Number of Commercial and Tribal Casinos per State**

State	Commercial Casinos			Tribal Casinos	Total All Casino Types
	Casinos	Racinos	Total		
Alabama				3	3
Alaska				3	3
Arizona				23	23
Arkansas					
California				58	58
Colorado	46		46	2	48
Connecticut				2	2
Delaware		3	3		3
District of Columbia					
Florida		2	2	8	10
Georgia					
Hawaii					
Idaho				6	6
Illinois	9		9		9
Indiana	11		11		11
Iowa	13	3	16	1	17
Kansas				5	5
Kentucky					
Louisiana	13	3	16	3	19
Maine		1	1		1
Maryland					
Massachusetts					
Michigan	3		3	15	18
Minnesota		1	1	20	21
Mississippi	27		27	2	29
Missouri	11		11	1	12
Montana				24	24
Nebraska				3	3
Nevada	274		274		274
New Hampshire					
New Jersey	11		11		11
New Mexico		5	5	21	26
New York		8	8	7	15
North Carolina				2	2
North Dakota				6	6
Ohio					
Oklahoma		3	3	79	82
Oregon				9	9
Pennsylvania		2	2		2
Rhode Island		2	2		2
South Carolina					
South Dakota	36		36	11	47
Tennessee					
Texas				1	1
Utah					
Vermont					
Virginia					
Washington				32	32
West Virginia		4	4		4
Wisconsin				24	24
Wyoming				1	1
Total	454	37	491	372	863
States	11	12	21	28	37

Sources: American Gaming Association, 2007 State of the States; Casino City North American Gaming Almanac  
 Note: Number of casinos excludes racinos.

Massachusetts does not allow casino gaming other than for charitable purposes. One casino cruise ship operator, Horizon's Edge Casino Cruises, operates out of Lynn, MA. Gambling on the cruise ship does not take place until the craft is in international waters. Since gambling does not take place within the state, revenues from the cruise ship are not included in this study's analysis or in the discussion of the status of gaming in Massachusetts.<sup>17</sup>

In 2006, casino gaming establishments in the U.S. produced gross gaming revenues of \$59.85 billion. Revenue totals for each state and from each type of casino – commercial and tribal – are provided in Table II.2. The five largest casino markets in the United States are Nevada, California, New Jersey, Louisiana, and Indiana; together these states generated 2006 revenues of approximately \$31 billion. Nevada's market is the largest and its 2006 revenues totaled \$12.6 billion. Second is California, whose tribal casinos generated revenues of \$7.7 billion in 2006.<sup>18</sup>

Casinos are part of a larger set of gaming activities that include charitable gaming, card rooms, video poker, video lottery, race and sports wagering, and lotteries. Revenues in 2006 for the entire gaming industry were \$91.64 billion. The five largest markets for overall gaming are Nevada, California, New Jersey, New York, and Louisiana. These five states account for roughly 43 percent of all revenues. Lottery is the most common form of legalized gambling and in 2006 lotteries generated \$22.0 billion in revenues.<sup>19</sup> The only two states that do not offer any form of legalized gambling are Hawaii and Utah.

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<sup>17</sup> The passenger capacity, number of slot machines and number of gaming tables on the Horizon's Edge cruise ship is small relative to the number of visitors and gaming facilities of the typical destination casino. Therefore, this study does not consider the impact of the cruise ship in the analysis of the economic or fiscal impacts of casino gaming.

<sup>18</sup> American Gaming Association, *2007 State of the States; Casino City, North American Gaming Almanac*.

<sup>19</sup> *Ibid.*

**Table II.2: Gross Gaming Revenues from All Forms of Gaming in 2006**  
**Amounts in \$ million**

State	Casinos	Card Rooms, Video Poker, Video Lottery	Charitable Gaming	Lotteries	Race/Sports Wagering	Total	Ranking by State GGR
Alabama	0.00	0.00	0.00	0.00	21.05	21.05	48
Alaska	0.00	0.00	94.36	0.00	0.00	94.36	45
Arizona	2,071.20	0.00	0.00	225.77	69.43	2,366.40	12
Arkansas	0.00	0.00	0.00	0.00	86.63	86.63	46
California	7,714.80	793.75	0.00	1,709.23	857.52	11,075.30	2
Colorado	782.10	0.00	0.00	180.12	35.60	997.82	27
Connecticut	2,498.10	0.00	24.54	393.58	56.93	2,973.15	10
Delaware	651.73	0.00	0.00	62.31	67.02	781.06	29
District of Columbia	0.00	0.00	0.00	121.03	0.00	121.03	44
Florida	1,621.34	0.00	0.00	1,669.01	349.47	3,639.82	6
Georgia	0.00	0.00	5.63	1,398.52	0.00	1,404.15	24
Hawaii	0.00	0.00	0.00	0.00	0.00	0.00	50
Idaho	156.20	0.00	2.88	57.59	4.59	221.26	40
Illinois	1,923.56	0.00	210.97	858.85	213.07	3,206.45	8
Indiana	2,577.43	0.00	65.94	342.70	38.22	3,024.29	9
Iowa	1,418.31	0.00	0.00	277.28	34.30	1,729.89	18
Kansas	205.40	0.00	10.65	109.87	18.66	344.58	37
Kentucky	0.00	0.00	89.32	309.25	306.33	704.90	31
Louisiana	2,961.90	707.34	59.15	168.95	82.81	3,980.15	5
Maine	37.52	0.00	20.05	90.22	13.67	161.46	42
Maryland	0.00	0.00	0.00	670.49	122.07	792.56	28
Massachusetts	0.00	0.00	32.15	1,306.02	108.84	1,447.01	23
Michigan	2,248.80	0.00	130.45	919.90	62.95	3,362.10	7
Minnesota	1,536.23	0.00	233.00	189.51	15.65	1,974.39	16
Mississippi	2,570.88	0.00	23.73	0.00	0.00	2,594.61	11
Missouri	1,591.86	0.00	23.63	362.29	0.00	1,977.78	15
Montana	15.40	400.99	0.00	20.78	2.06	439.23	35
Nebraska	0.00	0.00	17.85	100.68	23.43	141.96	43
Nevada	12,621.41	0.00	0.00	0.00	0.00	12,621.41	1
New Hampshire	0.00	0.00	0.00	117.88	46.69	164.57	41
New Jersey	5,217.88	0.00	0.00	1,049.76	334.68	6,602.32	3
New Mexico	993.61	0.00	12.06	73.44	36.88	1,115.99	25
New York	1,426.15	0.00	83.88	2,722.62	1,032.23	5,264.88	4
North Carolina	0.00	82.38	6.17	165.83	0.00	254.38	38
North Dakota	160.80	0.00	52.60	11.91	17.62	242.93	39
Ohio	0.00	0.00	0.00	925.51	92.73	1,018.24	26
Oklahoma	2,045.67	0.00	0.00	142.74	23.07	2,211.48	13
Oregon	578.50	809.51	19.72	132.15	13.03	1,552.91	20
Pennsylvania	31.57	0.00	0.00	1,340.36	78.29	1,450.22	22
Rhode Island	406.50	0.00	0.00	107.23	10.92	524.65	32
South Carolina	0.00	0.00	0.00	471.72	0.00	471.72	33
South Dakota	204.63	0.00	0.00	240.59	1.27	446.49	34
Tennessee	0.00	0.00	0.00	362.35	0.00	362.35	36
Texas	0.00	0.00	165.94	1,474.01	109.27	1,749.22	17
Utah	0.00	0.00	0.00	0.00	0.00	0.00	50
Vermont	0.00	0.00	0.00	40.26	0.00	40.26	47
Virginia	0.00	0.00	101.44	607.97	38.68	748.09	30
Washington	1,385.80	354.66	44.59	190.53	27.43	2,003.01	14
West Virginia	975.99	381.36	43.04	90.72	159.07	1,650.18	19
Wisconsin	1,214.50	0.00	18.45	227.95	13.71	1,474.61	21
Wyoming	0.00	0.00	0.00	0.00	4.25	4.25	49
<b>Total</b>	<b>59,845.77</b>	<b>3,529.99</b>	<b>1,592.19</b>	<b>22,039.48</b>	<b>4,630.12</b>	<b>91,637.55</b>	

Sources: Casino City North American Gaming Almanac; Casino City Indian Gaming Almanac; American Gaming Association

Notes:

Commercial Casino GGR includes revenues from racinos.

Does not include \$1,049.5 in GGR from tribal gambling that the Casino City Indian Gaming Almanac lists as being spread among 9 states.

Table II.3 contains gross gaming revenues per adult and gross gaming revenues as a percentage of personal income. The revenues used in the creation of this table are from all forms of gaming. This analysis considers the adult population to be all persons over the age of 18. Panel A of Table II.3 ranks states by GGR per adult resident. Massachusetts ranks 26th and spent \$290.05 per adult resident on all forms of gaming available in-state in 2006. This amount per capita is higher than any other state without a casino. Panel B of Table II.3 ranks states by gross gaming revenues relative to personal income. According to this measure, gross gaming revenue in Massachusetts is equal to 0.49 percent of total personal income. This is below the national average of 0.93 percent.<sup>20</sup> Massachusetts ranks 30th in terms of gross gaming revenues relative to personal income. However, among the states that do not have casino gaming of any form, Massachusetts ranks second, behind Kentucky.

Casino formats vary, and can take the form of land-based, racetrack, dockside and riverboat properties. Many states limit the types of developments allowing only riverboat or dockside developments. Tribal casinos are generally land-based. Table II.4 provides the casino formats in states that have legalized commercial casino gaming or gaming at racetrack locations. Racetrack casinos (or “racinos”) are available in eleven states. A racino is a gaming establishment that incorporates pari-mutuel betting on horse racing, dog racing or jai alai, with casino games. Racinos are often subject to limitations on their gaming offerings and in most states only offer slot machine gaming.

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<sup>20</sup> The average GGR/Income is 0.93 percent when Nevada, Utah and Hawaii are excluded from the calculation. Las Vegas, Nevada’s role as a resort destination results in an extremely high GGR/Income (12.96 percent); Utah and Hawaii do not offer any forms of gambling. The average has been calculated without these three states to remove extreme observations.

**Table II.3: State Rank by GGR per Adult and GGR/Income  
All Forms of Gaming**

**Panel A: Rank by Gross Gaming Revenues per Adult**

Rank	State	GGR per Adult	Casino State?	Commercial Casinos?
1	Nevada	6779.64	Yes	Yes
2	Louisiana	1244.31	Yes	Yes
3	Mississippi	1206.30	Yes	Yes
4	Delaware	1202.56	Yes	Yes
5	West Virginia	1155.99	Yes	Yes
6	Connecticut	1106.01	Yes	No
7	New Jersey	995.73	Yes	Yes
8	Oklahoma	823.82	Yes	Yes
9	New Mexico	772.61	Yes	Yes
10	Iowa	763.28	Yes	Yes
11	South Dakota	759.33	Yes	Yes
12	Indiana	638.69	Yes	Yes
13	Rhode Island	631.65	Yes	Yes
14	Montana	604.65	Yes	No
15	Oregon	546.38	Yes	No
16	Arizona	521.42	Yes	No
17	Minnesota	504.77	Yes	Yes
18	North Dakota	493.60	Yes	No
19	Missouri	447.16	Yes	Yes
20	Michigan	441.09	Yes	Yes
21	Washington	411.53	Yes	No
22	California	411.08	Yes	No
23	New York	356.01	Yes	Yes
24	Wisconsin	347.82	Yes	No
25	Illinois	333.62	Yes	Yes
<b>26</b>	<b>Massachusetts</b>	<b>290.05</b>	<b>No</b>	<b>No</b>
27	Colorado	278.41	Yes	Yes
28	District of Columbia	259.18	No	No
29	Florida	258.62	Yes	Yes
30	Kentucky	219.94	No	No
31	Idaho	206.40	Yes	No
32	Georgia	203.19	No	No
33	Alaska	192.38	Yes	No
34	Maryland	186.44	No	No
35	Kansas	166.44	Yes	No
36	New Hampshire	161.70	No	No
37	Maine	155.24	Yes	Yes
38	Pennsylvania	150.61	Yes	Yes
39	South Carolina	143.64	No	No
40	Virginia	128.12	No	No
41	Ohio	117.03	No	No
42	Nebraska	107.32	Yes	No
43	Texas	102.92	Yes	No
44	Vermont	82.20	No	No
45	Tennessee	78.95	No	No
46	Arkansas	40.93	No	No
47	North Carolina	37.94	Yes	No
48	Wyoming	10.79	Yes	No
49	Alabama	6.05	Yes	No
50	Hawaii	0.00	No	No
51	Utah	0.00	No	No

Sources: U.S. Bureau of the Census, American Community Survey; Bureau of Economic Analysis; Casino City North American Gaming Almanac

Note:

"Casino State" includes any form of casino - tribal, commercial or racino.

"Commercial Casinos" include commercial casino and racino states.

**Table II.3 (continued): State Rank by GGR per Adult and GGR/Income  
All Forms of Gaming**

**Panel B: Rank by Gross Gaming Revenues / Personal Income**

Rank	State	GGR / Personal Income	Casino State?	Commercial Casinos?
1	Nevada	12.96%	Yes	Yes
2	Mississippi	3.31%	Yes	Yes
3	West Virginia	3.23%	Yes	Yes
4	Louisiana	2.96%	Yes	Yes
5	Delaware	2.35%	Yes	Yes
6	New Mexico	1.92%	Yes	Yes
7	Oklahoma	1.91%	Yes	Yes
8	South Dakota	1.76%	Yes	Yes
9	Iowa	1.76%	Yes	Yes
10	Connecticut	1.67%	Yes	No
11	New Jersey	1.63%	Yes	Yes
12	Montana	1.51%	Yes	No
13	Indiana	1.49%	Yes	Yes
14	Rhode Island	1.32%	Yes	Yes
15	Oregon	1.26%	Yes	No
16	Arizona	1.20%	Yes	No
17	North Dakota	1.16%	Yes	No
18	Missouri	1.03%	Yes	Yes
19	Minnesota	0.99%	Yes	Yes
20	Michigan	0.99%	Yes	Yes
21	Washington	0.82%	Yes	No
22	California	0.77%	Yes	No
23	Wisconsin	0.77%	Yes	No
24	Illinois	0.65%	Yes	Yes
25	New York	0.62%	Yes	Yes
26	Kentucky	0.56%	No	No
27	Florida	0.55%	Yes	Yes
28	Colorado	0.53%	Yes	Yes
29	Idaho	0.50%	Yes	No
<b>30</b>	<b>Massachusetts</b>	<b>0.49%</b>	<b>No</b>	<b>No</b>
31	Georgia	0.47%	No	No
32	Maine	0.38%	Yes	Yes
33	South Carolina	0.37%	No	No
34	Alaska	0.36%	Yes	No
35	District of Columbia	0.36%	No	No
36	Kansas	0.36%	Yes	No
37	Maryland	0.32%	No	No
38	Pennsylvania	0.32%	Yes	Yes
39	New Hampshire	0.32%	No	No
40	Ohio	0.27%	No	No
41	Virginia	0.25%	No	No
42	Nebraska	0.23%	Yes	No
43	Texas	0.21%	Yes	No
44	Vermont	0.19%	No	No
45	Tennessee	0.19%	No	No
46	Arkansas	0.11%	No	No
47	North Carolina	0.09%	Yes	No
48	Wyoming	0.02%	Yes	No
49	Alabama	0.01%	Yes	No
50	Hawaii	0.00%	No	No
51	Utah	0.00%	No	No

Sources: U.S. Bureau of the Census, American Community Survey; Bureau of Economic Analysis; Casino City North American Gaming Almanac

Note:

"Casino State" includes any form of casino - tribal, commercial or racino.

"Commercial Casinos" include commercial casino and racino states.

**Table II.4: States with Commercial Casino or Racino Gaming**

State	Commercial Casino Gaming Format	Racinos
Colorado	Land-based	
Delaware		Racinos
Florida		Racinos
Illinois	Riverboat	
Indiana	Riverboat, dockside and land-based	
Iowa	Riverboat and land-based	Racinos
Louisiana	Riverboat and land-based	Racinos
Maine		Racinos
Michigan	Land-based	
Mississippi	Dockside, land-based	
Missouri	Riverboat	
Nevada	Land-based	
New Mexico		Racinos
New Jersey	Land-based	
New York		Racinos
Oklahoma		Racinos
Pennsylvania		Racinos
Rhode Island		Racinos
South Dakota	Land-based	
West Virginia		Racinos

Source: American Gaming Association

Riverboat and dockside casinos generally draw patrons from a limited geographical area.<sup>21</sup> They are typically located in areas that do not naturally attract tourism and generally have limited amenities. This restricts their ability to attract patrons from beyond the immediate region. In 1991, riverboat casinos began operating in Iowa.<sup>22</sup> There are currently 77 riverboat and dockside casinos in the United States.<sup>23</sup>

<sup>21</sup> Studies of the origins of patrons of riverboat casinos find that they primary draw locals. A survey of gamblers at Illinois riverboat casinos found that 85 percent lived within 50 miles of the facility. A survey of gamblers at Kansas City found that 88 percent lived within 45 miles of the casino. Evans and Topoleski, *The Social and Economic Impact of Native American Casinos*, 35.

<sup>22</sup> National Gambling Impact Study Commission, *Final Report*, Washington, DC, June 18, 1999, Ch 2, p.7.

<sup>23</sup> *Casino City*, North American Gaming Almanac, 106.

Destination resort casinos are establishments that offer amenities and entertainment options that extend beyond gaming. The complexes include luxury hotels, high end retail shopping and dining, golf courses, sports arenas and convention facilities. Resort casinos attract tourists and cater to a wide range of clientele.

The modern resort casino demonstrates how the gaming industry has evolved since its inception in Nevada. The findings of a recent survey conducted by the American Gaming Association highlights this change. They found that twice as many Americans said the overall casino experience – the food, shows, entertainment and other activities (49 percent) – is more “fun” for them than the actual gambling (23 percent).<sup>24</sup> The changing patterns of casino revenues among locations on the Las Vegas Strip illustrates the movement from dependence on gaming towards offering an array of attractions of which gaming is only a part. In 1986, revenues from gaming operations comprised 57.6 percent of the revenues of casinos on the Strip.<sup>25</sup> By 2006, that percentage had fallen to 40.4 percent.

Examples of destination resort casinos include the Connecticut establishments, Foxwoods Resort Casino and Mohegan Sun, as well as developments in Scott County, Minnesota and San Diego County, CA. Las Vegas, NV and Atlantic City, NJ are examples of destination resort casino cities. Las Vegas and Atlantic City contain many large scale resort casinos, and are beyond the scope of what is contemplated by the draft legislation. Instead, the proposed casino developments in Massachusetts are expected to be similar to the Mohegan Sun or Foxwoods Resort. They will be stand-alone destination resorts.

## *2. Native American Gaming Regulation*

In an attempt to alleviate some of the economic problems common to Native American reservations, Congress passed the Indian Gaming Regulatory Act of 1988 (“IGRA”). IGRA provides “a regulatory framework for the conduct of gambling on tribal lands.”<sup>26</sup> The legislation

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<sup>24</sup> American Gaming Association, 2007 State of the States, 35.

<sup>25</sup> Center for Gaming Research, “Gaming Abstract: Nevada Gaming Statistics,” University of Nevada, Las Vegas, available at [http://gaming.unlv.edu/abstract/lv\\_revenues.html](http://gaming.unlv.edu/abstract/lv_revenues.html)

<sup>26</sup> National Gambling Impact Study Commission, Final Report, Ch 6 p.8.

allowed Native American Indian tribes to create gaming establishments on tribal lands when the state permitted similar types of gaming for any purpose. While commercial casinos are regulated and taxed by the state where the facility is located, the states have no formal taxing authority over tribal casinos, because they are essentially sovereign nations. As such, tribal casino gaming enjoys a special legal status.

The IGRA categorizes casino games into three classes.<sup>27</sup> A Class I game is considered a social game that is not a game of chance. These games are played solely for prizes of minimal value. Games that are categorized within Class II include games of chance such as bingo, pull-tabs and lotteries. Class II card games are permitted if they “(I) are explicitly authorized by the laws of the State, or (II) are not explicitly prohibited by the laws of the State, but only if such card games are played in conformity with those laws and regulations (if any) of the state regarding hours of periods of operations of such card games or limitations on wagers or pot sizes in such card games.” Class III includes all games not defined in Classes I and II and includes electronic gaming devices with random number generators and house-banked table games. Examples of Class III games include blackjack (21) and slot machine gaming. The IGRA allows for the operation of full scale casinos involving Class III gaming on tribal lands without state regulation if some form of Class III gaming is not specifically prohibited in the state.<sup>28</sup>

Federal courts have ruled that tribes have the right to establish casinos on tribal lands if certain conditions are met. States are not disinterested parties. The IGRA requires that the states and tribes negotiate compacts regarding the casino development. However, regulation and enforcement of the IGRA is left to the federal government. This has led to controversy and criticism of the IGRA by state governments.

States have no taxing authority over the tribal casinos. However, in some instances state governments have benefited by negotiating revenue sharing arrangements with tribal casinos. This is the case with the State of Connecticut. In the early 1990s, the state entered into

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<sup>27</sup> Indian Gaming Regulatory Act, 25 U.S.C. § 2703.

<sup>28</sup> Indian Gaming Regulatory Act, 25 U.S.C. § 2701. Congress found that “Indian tribes have the exclusive right to regulate gaming activity on Indian lands if the gaming activity is not specifically prohibited by Federal law and is conducted within a State which does not, as a matter of criminal law and public policy, prohibit such gaming activity.”

agreements, known as compacts, first with the Mashantucket Pequots of Foxwoods Resort Casino and later with the Mohegan Tribe, owner of Mohegan Sun.<sup>29</sup>

The compacts with both the Mashantucket and Mohegan tribe are very similar in nature. According to the Memorandum of Understanding between the Mashantucket Tribe and the state, the tribe contributes 25 percent of slot machine gross revenues to the state.<sup>30</sup> In exchange for the tribes' contributions, Connecticut prohibits the operation of other casino establishments in the state without the approval of the tribes.

Other states have not been as successful at negotiating compacts with tribal casinos. In Florida, the Seminole Nation operates seven casinos. Full scale Class III casino games are prohibited, but the Seminole casinos have been able to grow their operations. The state of Florida, however, has not benefited from the success of the Seminole's establishments. A policy brief from the Florida House of Representatives indicates "As federal law prohibits state or local taxation of business activity on land, Florida has never received any sales tax revenues from gambling activities on reservations."<sup>31</sup> The Seminoles have pushed for Las Vegas Style Class III slot machines and table games to expand their operations. Until recently, they have faced a great deal of resistance from the state government.

After the United States Department of the Interior announced it would eventually circumvent the state and grant the Seminoles a license to offer Las Vegas style rules on its slots machines, Florida's Governor Charlie Crist took the negotiations upon himself. Governor Crist proceeded without the consent of the legislature and announced an agreement in November 2007. The agreement would allow the Seminoles to "[i]ninstall blackjack tables, baccarat games and Las Vegas-style slot machines on its Hollywood property and other Indian land around the state. In

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<sup>29</sup> The Department of the Interior approved the Tribal-State Compact between the State of Connecticut and the Mashantucket Pequot Tribe on April 10, 1991. The Tribal-State Compact for the Mohegan Indian Tribe was approved by the Department of the Interior on May 17, 1994.

<sup>30</sup> Second Amendment to Memorandum of Understanding between the State of Connecticut and the Mashantucket Pequot Tribe available at <http://www.ct.gov/dosr/cwp/view.asp?a=2031&q=293150&dosrPNavCtr=|42785|#43086>. This amendment was dated April 25, 1994; the original Memorandum of Understanding was dated January 13, 1993.

<sup>31</sup> Florida House of Representatives, Office of the Majority Whip, Whip's Policy Brief, September 24, 2007.

exchange, the tribe agreed to pay the state at least \$375 million over three years, and a minimum of \$100 million annually after that.”<sup>32</sup>

The agreement took effect on January 7, 2008 when it was published in the Federal Register.<sup>33</sup> As part of the compact the State of Florida received a \$50 million initial payment. However, a lawsuit has been filed by Florida’s House Speaker and Senate President.<sup>34</sup> They argue that Gov. Crist does not have the authority to enter into the 25-year compact without legislative consent. The suit was scheduled to be heard by the Florida Supreme Court on January 30th. This same scenario could result in Massachusetts, as the Wampanoag tribe of Mashpee received federal recognition as a sovereign American Indian nation in February of 2007.<sup>35</sup>

### *3. Casino Developments in Progress in New England*

Foxwoods Resort Casino contains 3 hotels, a sports stadium, 11 meeting spaces accommodating up to 2,000 people, 30 restaurants, nearly 20 retail stores, 6 casinos and 340,000 square feet of gaming space.<sup>36</sup> These attractions draw more than 40,000 visitors each day to its location in Ledyard, CT. Already the world’s largest casino, Foxwoods has announced plans for further expansion.

The Mashantucket Pequot Tribe and MGM Grand are in a joint venture to develop a \$700 million addition to the existing Foxwoods facilities.<sup>37</sup> Construction is scheduled to finish in the spring of 2008. The two parties have also formed another company to develop future business enterprises. MGM will provide expertise in resort casino development and management and finance a portion of the Mashantucket’s investments through a \$200 million loan.<sup>38</sup>

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<sup>32</sup> John Holland, Federal judge rejects injunction on gambling compact in Florida: State Supreme Court to rule on gambling. *South Florida Sun-Sentinel.com*, January 5, 2008.

<sup>33</sup> Federal Register, Vol. 73, No. 4, Monday, January 7, 2008, Notices.

<sup>34</sup> Amy Driscoll, “Seminoles pay state \$50 million in casino deal,” *Miami Herald*, January 8, 2008.

<sup>35</sup> David Weber, “Mashpee Wampanoag Indians receive federal recognition,” *The Boston Globe*, February 15, 2007.

<sup>36</sup> Foxwoods Resort Casino, “Home Page,” <http://www.foxwoods.com>.

<sup>37</sup> *Ibid.*

<sup>38</sup> SEC Form 10-K for MGM Mirage. For the fiscal year ended December 31, 2006, filed on 2/28/2007.

In Uncasville, CT, Mohegan Tribal Gaming Authority has plans for the expansion of its Mohegan Sun Casino. Through “Project Horizon” the Mohegan Tribe will expand gaming space with the creation of a new Asian themed gaming area, additional parking facilities, hotel lodging, and dining and entertainment amenities. Expansion costs are estimated at approximately \$925 million.<sup>39</sup>

While Foxwoods and Mohegan Sun are the only full scale casinos in operation in New England, there are racinos in both Rhode Island and Maine. Twin River in Lincoln, RI is undertaking a \$220 million construction project to renovate existing gaming and entertainment space of its facility.<sup>40</sup> Vermont currently has no gaming venues. Recently the New Hampshire Legislature has considered several bills in an effort to introduce casino gaming or expand gaming at the state's racetracks. Of the three bills introduced in 2007, two had been voted down and one remains on the table.<sup>41</sup> In January 2008, legislation was proposed that would establish video gaming in Coos County and build a casino in Berlin.<sup>42</sup> This bill is currently in committee and will be heard in March.<sup>43</sup>

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<sup>39</sup> SEC Form 10-K for Mohegan Tribal Gaming Authority. For the fiscal year ended September 30, 2007, filed on 12/26/2007.

<sup>40</sup> Twin River, “About Us,” Twin River, <http://twinriver.com>.

<sup>41</sup> NH General Court, Bill Status System. The three bills that were voted down were New Hampshire House Bill 520 (“establishing a state-owned casino”); House Bill 510 (“establishing authority for construction and regulation of casinos”) and Senate Bill 225 (“relative to allowing video gaming in Coos county, building casinos in Berlin and Portsmouth, and establishing a fund to assist with the payment of property taxes”).

<sup>42</sup> New Hampshire Senate Bill 306 (“relative to allowing video gaming in Coos county, building a casino in Berlin, and establishing a fund to assist with the payment of property taxes”).-

<sup>43</sup> NH General Court, Bill Status System.

#### *4. Other Casino Developments in Progress*

Outside of New England the casino industry continues to grow. The Las Vegas Convention and Visitors Authority reported that Las Vegas set a new visitation record with 39.2 million visitors in 2007.<sup>44</sup> In addition “Las Vegas also matched its highest occupancy level in history, reaching 90.4 percent for the year.”<sup>45</sup> To keep pace with the increasing number of visitors to the region, there is currently over \$40 billion in construction that is underway or scheduled. If all of these projects are completed, 4.7 million square feet of convention space and over 40,000 hotel rooms will be created between early 2008 and 2012.<sup>46</sup> Casino and resort developers carrying out the largest of these construction projects include Boyd Gaming Corp, Grand Hyatt Las Vegas and MGM Mirage.

### **B. Casino Operations**

#### *1. Casino Gaming Offerings*

The type of games offered varies widely among casino developments. In some cases, state regulation limits the types of games that may be installed. Some states have adopted statutes that impose an upper limit on the amount that may be wagered on a specific bet. Slot machines are relatively capital intensive and usually require some human intervention to collect funds and repair the device. Table games such as blackjack, poker, roulette and dice are more labor intensive requiring casino staff to run the games. A recent development is video table games in which the player interacts with a machine with sophisticated electronically generated images of casino staff members and other players.

The number of slot machines and seats at gaming tables is the most important determinant of the scale of casino operations. In order to maximize profits, facilities must strike a balance between

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<sup>44</sup> Las Vegas Convention Center and Visitors Authority Press Release, “Las Vegas Welcomes Record-Breaking Number of Visitors in 2007” released February 12, 2008, available at <http://www.reuters.com/article/pressRelease/idUS142109+13-Feb-2008+PRN20080213>.

<sup>45</sup> Ibid.

<sup>46</sup> Las Vegas Convention Center and Visitors Authority, Hotel / Casino Development – Construction Bulletin, February 19, 2008, available at <http://visitlasvegas.com/getfile/ConstructionBulletinFeb2008.pdf?fileID=110>.

the number of gaming positions and the demand for them. For instance, Foxwoods Resort Casino in Mashantucket, CT operates nearly 7,500 gaming machines and over 350 tables, whereas many roadside operations in the state of Nevada offer fewer than 20 gaming machines and no tables.<sup>47</sup> As a result, revenues per position vary greatly by type and by region. Table II.5 provides a regional comparison of daily 2006 revenues for the major types of gaming.<sup>48</sup>

## 2. Amenities

The level of GGR has a significant impact on the range and size of amenities a casino is able to offer. A smaller scale operation will not generate a sufficient amount of revenue from gaming to offer and maintain ancillary amenities, which may require more frequent and more costly upgrades and investment. Often casinos will offer promotional marketing programs. Such programs allow patrons who gamble frequently to take advantage of other casino amenities. Based on the amount or frequency of wagering, patrons may be eligible for free or discounted meals, hotel rooms, or merchandise. This places additional pressure on the casino to generate sufficient GGR to support the other amenities and entertainment it offers.

**Table II.5 2006 Daily Revenues Per Device for Selected Regions**

Type of Game	Region		
	<i>Atlantic City</i>	<i>Las Vegas Strip</i>	<i>State of Mississippi</i>
Slot*	\$304	\$198	\$229
Table**	\$2,753	\$3,487	\$1,754
Poker	\$623	\$627	N/A
Racebook	\$2,966	\$4,844	N/A
Sportsbook	N/A	\$8,914	N/A
<b>Total:</b>	<b>\$6,646</b>	<b>\$18,070</b>	<b>\$1,983</b>

Source:

Casino City's Gaming Revenue News, February 2007

Notes:

\* Unweighted average of 5 denominations of Slot Machines

\*\* Unweighted average of all types of Table Games allowed in Region

<sup>47</sup> Casino City, North American Gaming Almanac.

<sup>48</sup> Casino City, Gaming Revenue News, v. 21, n. 2, February 2007, 11, 18.

The types of ancillary amenities offered by the casino affect the overall draw to many commercial and tribal locations. In the United States, non-gaming amenities offered by casinos range from coffee shops to Ferrari dealerships.<sup>49</sup> Generally, most U.S. casino operations offer an array of food and beverage options. Larger casinos often provide conference and meeting spaces, gym and athletic facilities, as well as a myriad of retail shops. The upper echelon of U.S. resort casinos delivers a diverse catalogue of offerings. This includes five-star dining, luxury retail shops, private theaters, comedy clubs, nightclubs, spas, golf courses and headlining entertainers and venues.

### *3. Location*

The location of a casino destination will also have a major impact on the casino's success and the scale of its operations. Surveys of casino patrons show that location is among the most important factors in consumer selection among casino options.<sup>50</sup> A survey conducted in 1996 reported that the two most important factors identified by respondents in deciding to patronize one casino over another were "Favorite place to play" (31.3 percent), and "Closest location" (25.7 percent).<sup>51</sup> The second study, a 2003 survey of Las Vegas locals found similar results.<sup>52</sup> In this instance, the highest rated response of 59.5 percent was "It is an easy drive from where I live." The authors emphasize that the studies are more applicable to riverboat or local casinos rather than destination resort areas. Casinos in Las Vegas face a competitive landscape that is dramatically different than most. Attractions such as shows and other entertainment options play a larger part in attracting patrons.<sup>53</sup> Casinos in the world's largest cities are able to attract world famous entertainers. This is often viewed as a contributing factor to a greater number of gaming patrons and the overall draw of the region.

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<sup>49</sup> Wynn Las Vegas, "Penske/Wynn Ferrari-Maserati," Wynn Las Vegas, <http://www.wynnlasvegas.com>.

<sup>50</sup> Jim Kilby, Jim Fox & Anthony F. Lucas, *Casino Operations Management*, (Hoboken, NJ: John Wiley & Sons, 2005), 280-281.

<sup>51</sup> *Ibid.*

<sup>52</sup> *Ibid.*

<sup>53</sup> *Ibid.*

### **III. ECONOMIC IMPACT OF DESTINATION CASINO DEVELOPMENT**

#### **A. Casino Development and Economic Activity**

The legalization of casino gaming is often viewed as a means to increase the amount of economic activity within a region. The mechanisms by which casinos impact economic activity are complex. Broadly speaking, there are three channels by which casino development affects economic activity within a region. This study classifies these as the destination, recapture and substitution effects. The three effects refer to the potential origins of gaming revenues for the new casino.

*Destination Effect:* The legalization of casino gaming draws visitors from outside of the host region. Spending by casino patrons from outside the region increases the aggregate amount of economic activity within the region.

*Recapture Effect:* The legalization of casino gambling reduces the propensity of residents of the host region to engage in gaming activities outside of the region. Instead, these individuals patronize casino gaming venues within the host region.

*Substitution Effect:* The legalization of casino gaming causes a reallocation of expenditures by individuals within the region. The increased expenditures by residents of the region cause a decrease in expenditures on other forms of consumption or in net savings.

The regional economic effects of casino development are specific to the circumstances of a particular region and the type of development.

##### *1. Destination Effect*

Casino facilities are often designed and marketed to draw patrons from other parts of the country. That is, to create a destination to attract visitors from other places. Of the three effects cited above, the destination effect has the largest positive net impact for the region hosting the casino development. In addition to the gaming and non-gaming revenues that casino developments earn from visitors from outside the region, local business also benefit from spillover effects. Expenditures by visitors from outside the region will create additional jobs at restaurants and bars, hotels and convention facilities, and in the transportation sector. In the context of the

Massachusetts casino developments, the destination effect involves the attraction of patrons from other states and abroad to the casino facilities.

The destination effect is generally greater for large scale casino developments and lower for riverboat casinos, slot parlors and card rooms. Resort casino complexes offer a range of different activities in addition to gaming including rooms, restaurants and convention facilities. The largest destination casinos offer facilities that cater to families and individuals that do not necessarily patronize the gaming facilities at all. These casinos often contract with well-known entertainment acts, creating economic impacts to the region not derived from gaming activity. Destination casinos have the maximum economic impact on a region. A larger fraction of total patrons at destination casinos are drawn from outside of the region than with other forms of casinos. The larger the portion of patrons drawn from outside of the region, the greater the amount of new economic activity and the lower the substitution effect.

The destination effect is also stronger if a region possesses complementary man-made or natural resources to attract patrons from outside of the region. While Atlantic City was experiencing economic decline at the time that casino gambling was legalized in 1978, it also possessed certain advantages as a destination location due to its long history of a resort area and its proximity to the Atlantic Ocean. Other locations that have introduced some form of commercial casino gaming that have long traditions as resort areas include New Orleans, LA; the Mississippi gulf coast and the area around Niagara Falls, NY.<sup>54</sup>

Economic benefits from the legalization of casino gaming have also been important in regions experiencing economic difficulty. The desire to increase economic opportunities on Indian reservations was a primary consideration of Congress in the passage of the Indian Gaming Regulatory Act of 1988.<sup>55</sup> Many regions that have legalized commercial casino gaming such as Detroit, MI; Gary, IN; East St. Louis, IL; Shreveport, LA, Tunica County, MS and Atlantic City,

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<sup>54</sup> The Canadian side of the region includes the Fallsview Casino Resort and Casino Niagara. The Fallsview has 3,000 gaming machines, 30,000 square feet of convention space, 374 rooms, and is the largest casino in Canada by employment (5,000 employees). The Seneca Niagara Casino and Resort, a tribal casino, is located in Niagara Falls, NY. The Seneca Niagara casino has over 4,000 gaming machines, 30,000 square feet of convention space, 604 rooms and employs 3,000. Casino City, *North American Gaming Almanac*.

<sup>55</sup> Indian Gaming Regulatory Act, 25 U.S.C. §2702.

NJ did so because they were experiencing economic difficulty. Such areas have limited options to attract capital or tourist dollars.

## *2. Recapture Effect*

The development of a casino gaming venue will cause some residents that had patronized casinos out of state to shift their expenditures to the new in-state facilities. When given a choice, casino patrons tend to visit casinos that are located closer than further away.<sup>56</sup> Engaging in casino gambling at a more distant venue involves greater expenditures of time and money to travel to the facility. Research on consumer behavior demonstrates that demand for casino gaming decreases with the distance between the casino and a population center and with the availability of local casino gaming alternatives.<sup>57</sup>

The recapture effect results in an economic benefit to the home region. Expenditures on gaming and other services that had been formerly made outside of a region are instead made in the region with the new casino development. The shift in the pattern of gaming activity to the home region results in an increase in employment and income.

In the case of casino development in Massachusetts, the recapture effect refers to the expected shift of Massachusetts residents away from patronizing casinos in Connecticut, Rhode Island and other locations and towards Massachusetts casinos when in-state casino gaming options become available.

## *3. Substitution Effect*

The addition of a casino provides residents of a region with another option for consumption. Some consumers within the region will choose to spend dollars and time at the casino instead of other places. The tendency of individuals within a region to shift their spending to another form of consumption when a new alternative becomes available is referred to as the substitution effect. Increased expenditures on casino gaming by residents of the region may be accompanied by a

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<sup>56</sup> Kilby, Fox & Lucas, *Casino Operations Management*, 280-281.

<sup>57</sup> Richard Thalheimer and Mukhtar M. Ali, "The Demand for Casino Gaming," *Applied Economics*, 35 (2003): 907-919.

decrease in other forms of leisure spending such as spending at local bars, restaurants and entertainment venues.

The effect of the increased expenditures on casino gaming may also impact other forms of consumption spending. This impact is hard to measure given that even a very large casino is usually only a small part of overall consumer spending in a region. The substitution of casino gaming for other forms of local consumption represents a shift in economic activity to the casino from local businesses. In general, casino gaming formats that are designed to attract local patrons—such as riverboat and dockside casinos—have the largest negative impact on local business per dollar of gaming revenues generated. Because of the larger draw of patrons from outside of the region, destination casinos tend to have the smallest negative impacts on local non-casino business per dollar of GGR generated.

The introduction of casinos expands the alternatives available to consumers in a region. Economic theory suggests that consumers choose to purchase the set of goods and services that allows them to derive the highest level of enjoyment. If a new consumption possibility is added, consumers will only expend dollars on that activity to the extent that the benefits that they derive exceed the benefits from their next best alternative.<sup>58</sup>

## **B. The Massachusetts Market for Casino Gaming**

### *1. In-State Demand for Casino Gaming*

A large portion of the revenues that are generated by the three proposed casino developments in the Commonwealth will come from patrons that are Massachusetts residents. Estimates of the level of demand for casino gaming by Massachusetts residents are based on data on gaming expenditures by residents of Connecticut at its two large destination casinos to estimate the size

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<sup>58</sup> This assumes that consumers are making a rational expenditure decision. Section V discusses the impact and prevalence of problem and pathological gaming.

of the market for casino gaming in Massachusetts. These estimates are based on data from 2006, the most recent year for which data is available.<sup>59</sup>

This study's analysis of the size of the gaming market focuses on the level of expenditures on gaming by consumers. Household expenditures on gaming may be thought of as the flip side of the revenues derived from casinos and other providers of gaming entertainment. The net amount that gaming providers take in is equivalent to the net amount that players lose. Since the discussion of the supply side of the gaming market is in terms of GGR of operators, the same terminology is retained in the discussion of the demand for casino gaming and other forms of gaming.

Consumer expenditures on casino gaming vary with economic, demographic and cultural factors. A useful benchmark for the level of expenditures by Massachusetts residents is the current level of expenditures by Connecticut residents on casino gaming and other forms of gambling. Connecticut and Massachusetts have similar demographic, economic and cultural characteristics.<sup>60</sup> The populations of both states have higher average levels of per capita income and educational attainment as compared averages in the United States. Both states are densely populated, highly urbanized and have similar racial and ethnic composition.

The set of gaming choices that are currently available to Connecticut residents is similar to the set of choices available to Massachusetts residents should the casino facilities outlined in the draft legislation be developed. Connecticut residents also have access to the state lottery and sports wagering.<sup>61</sup> Charitable gaming is also allowed in Connecticut. Connecticut does not allow video poker or the operation of card rooms with the exception of those at the two tribal casinos. The primary difference between the two states' gaming patterns is the expenditure on

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<sup>59</sup> In Section IV the study adjusts the revenue estimates for inflation, population and economic growth. The estimates appearing in Section III may be considered to be the size of the market and employment levels if the casino developments were currently in place.

<sup>60</sup> For instance, in 2005, Connecticut and Massachusetts ranked 3<sup>rd</sup> and 5<sup>th</sup> among the 50 states in median household income and 1<sup>st</sup> and 2<sup>nd</sup> in the percentage of the population aged 25 and over with a bachelor's degree. U.S. Census Bureau, "Statistical Abstract of the United States", <http://www.census.gov/compendia/statab/rankings.html>.

<sup>61</sup> There are two greyhound racing tracks in Connecticut—Shoreline Star Greyhound Track and Plainfield Greyhound Park. Connecticut also allows off track betting on sporting events.

casino gaming. Connecticut has two large casino developments while Massachusetts currently has none.

Studies of the origin of patrons at Foxwoods and Mohegan Sun can be used to estimate the level of expenditures of Connecticut residents on gaming.<sup>62</sup> Patron origin analyses at the Foxwoods and Mohegan Sun casinos have been performed by the University of Massachusetts at Dartmouth Center for Policy Analysis. The most recent origin analysis estimated that 33.3 percent of patrons at the Foxwoods casino and 52.7 percent of patrons at Mohegan Sun were from Connecticut.<sup>63</sup> Using the Center for Policy Analysis' estimates and the GGR of each facility, this study estimates that Connecticut residents account for a total of \$1.08 billion of the GGR at these two facilities.<sup>64</sup>

Table III.1 contains estimates of GGR from all forms of gaming in Connecticut and Massachusetts. Panel A contains GGR by type of gaming. Panel B contains GGR per adult.<sup>65</sup> Aside from casino gaming, the pattern of gaming expenditures of Connecticut and Massachusetts residents is similar. Connecticut expenditures per adult resident on racetrack betting and charitable gaming are very close to the level of expenditures of Massachusetts residents. Massachusetts residents spend about \$116 more per adult per year on the lottery than Connecticut residents.<sup>66</sup> Given the estimate of in-state expenditures by Connecticut residents at

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<sup>62</sup> Rachel A. Volberg, Dean R. Gerstein, Eugene M. Christiansen, John Baldrige, "Assessing Self-Reported Expenditures on Gambling" *Managerial and Decision Economics* 22, (2001), 77-96.

Ideally, one would like household data concerning expenditures on gaming as well. However, the conduct of household surveys of gaming expenditures is difficult and subject to biased reporting by survey respondents.

<sup>63</sup> Clyde W. Barrow, *Taking the Gamble in Massachusetts?*, undated, available at [http://www.umassd.edu/cfpa/gaming\\_reports.cfm](http://www.umassd.edu/cfpa/gaming_reports.cfm); Clyde W. Barrow, *New England Casino Gaming Update*, 2007, (Center for Policy Analysis, University of Massachusetts Dartmouth, 2007), available at [http://www.umassd.edu/cfpa/docs/gaming\\_update\\_2007.pdf](http://www.umassd.edu/cfpa/docs/gaming_update_2007.pdf)

<sup>64</sup> The GGR of Foxwoods was \$1,166 million in 2006. The estimated GGR from Connecticut residents at the Foxwoods facility is 33.3 percent x \$1,166 million or \$388 million. The GGR of Mohegan Sun was \$1,302 million in 2006. The estimated GGR from the Mohegan Sun facility is 52.7 percent x \$1,302 million or \$686 million. The total revenue from Connecticut patrons at these two facilities is \$388 million + \$686 million or \$1,075 million.

<sup>65</sup> This study defines adults to be residents of age 18 and over. State law determines the minimum age for the participation in different forms of gaming. The minimum age to play the Connecticut and Massachusetts lotteries is 18. The minimum age for play at casino games in Connecticut is 21. To simplify the calculations, this study defines the adult population to be the population 18 and over in each state.

<sup>66</sup> Note that the levels of lottery expenditures appear in Table III.1 are not the total amount wagered or the amount that is available for state purposes. In fiscal year 2005, the total amount wagered in the Massachusetts lottery was \$4.48 billion however \$3.21 billion was paid out in winnings. Thus, from the standpoint of consumers, their net expenditure on the Massachusetts lottery was \$4.48 billion minus \$3.21 billion or \$1.27 billion.

Foxwoods and Mohegan Sun, Connecticut residents spend on average \$400 per adult on casino gaming at these two facilities. Total expenditures by Connecticut residents on in-state gaming are \$576 per adult per year. For Massachusetts residents, the average is \$290 per adult per year.

**Table III.1: Estimated Expenditures on In-State Gaming in Massachusetts and Connecticut**

**Panel A: Gross Gaming Revenues by Type of Gaming, 2006  
Amounts in \$millions**

Type of Gaming	Connecticut	Massachusetts
Charitable Gaming	25	32
Lotteries	394	1,306
Race/Sports Gaming	57	109
Casino Gaming	1,075	0
Total	1,550	1,447

Source: Casino City North American Gaming Almanac, University of Massachusetts Dartmouth Center for Policy Analysis, Patron Origin Analysis.

**Panel B: Gross Gaming Revenues Per Adult, 2006  
GGR in dollars per capita**

	Connecticut	Massachusetts
<b>Population</b>		
Adults 18 and Over	2,688,189	4,988,825
<b>GGR Per Capita</b>		
Charitable Gaming	9	6
Lotteries	146	262
Race/Sports Gaming	21	22
Casino Gaming	400	0
Total	576	290

Source: Panel A and U.S. Census Bureau.

Given the similarities between Connecticut and Massachusetts, it is reasonable to assume that the level of expenditures on gaming in Massachusetts will be similar to the level in Connecticut if

casinos are legalized.<sup>67</sup> A conservative estimate on casino gaming expenditures by state residents after the legalization of gaming is approximately \$300 per adult. This is roughly the difference between the current level of in-state expenditures per adult in Connecticut and those in Massachusetts. Given the adult population of Massachusetts, the low estimate of total spending on casino gaming by Massachusetts residents at the three casino developments is approximately \$1.5 billion.<sup>68</sup> Gaming expenditures in Massachusetts could also be higher than in Connecticut. Massachusetts has a well established state lottery while Connecticut does not. As shown in Panel B of Table III.1, lottery expenditures per adult in Massachusetts are double that of Connecticut. If the casino developments in Massachusetts are as attractive as the developments in Connecticut, Massachusetts residents' expenditures on all forms of gaming could exceed that of Connecticut residents. The higher end of this study's range assumes that Massachusetts residents spend \$350 per person on casino gaming per year. At \$350 of expenditures per adult per year, the annual GGR of the casino developments from state residents is \$1.75 billion.<sup>69</sup>

The actual experience of the casino developments will be a result of factors in addition to the level of demand within the region. As previously discussed, research on casino patronage patterns suggests that people tend to visit a casino more frequently if it is nearby. In the case of the Connecticut casinos, the facilities are located in areas outside the state's largest urban centers. However, the draft legislation envisions the location of the casino in Region 1 in or close to a major urban area. Regions 2 and 3 also contain large urban areas. If the Massachusetts casinos are located closer to major urban areas, it is likely that their GGR from in-state sources could exceed the levels experienced by the Connecticut casinos. Other factors that affect the level of patronage in casino facilities are the general aesthetics of the facility to potential casino patrons, the success of the casino marketing efforts, the array of games available

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<sup>67</sup> The implicit economic assumption behind the low estimate is that individuals set an annual budget for gaming expenditures. Although actual budgets will vary between individuals, this study assumes that the average budget for casino gambling is the same among individuals in Massachusetts and Connecticut.

<sup>68</sup> \$1.5 billion is the product of the difference in expenditures per adult on gaming in Connecticut (\$300) times the number of adult residents of Massachusetts (approximately 5.0 million).

<sup>69</sup> \$1.75 billion equals \$350 per adult resident times the number of adult residents of Massachusetts (approximately 5.0 million).

and the other amenities offered.<sup>70</sup> If developed, actual GGR will depend on the success of the facilities in marketing and attracting customers.

## *2. The Destination Effect—Capturing Patrons from Outside of Massachusetts*

Destination casino developments draw patrons from a wide area. Large, upscale casino developments in Massachusetts will attract patrons from the other New England states, New York, and abroad. The success of Massachusetts casino destinations at attracting out of state patrons depends on their success in marketing outside of Massachusetts and in creating an attractive facility. Nevertheless, data on patron origins provide some indication of the potential revenues that the Massachusetts casinos may derive from out-of-state patrons.

### *a. Northern New England*

The three states of Northern New England have relatively undeveloped gaming markets. Maine has two small gaming facilities—a small slot parlor in Bangor and a high stakes bingo parlor in Old Town. New Hampshire has four racetracks with limited gaming facilities. Vermont has no commercial or tribal casino facilities. In all three states, GGR per adult are substantially below the level in Massachusetts.<sup>71</sup>

Data on patronage at the Connecticut and Rhode Island casinos by residents of Maine, New Hampshire and Vermont are available from the Center for Policy Analysis. The center estimates that residents of Northern New England accounted for just over \$100 million in GGR at facilities in Connecticut and Rhode Island with \$98.8 million at Foxwoods and Mohegan Sun (Table III.2) and \$1.2 million at the two Rhode Island casinos (Table III.3).

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<sup>70</sup> Kilby, Fox & Lucas, *Casino Operations Management*, 276-281. Section IV discusses the portions of the draft legislation that specify the amount of revenues to be received by the state.

<sup>71</sup> Table II.3. GGR from in-state sources per adult resident in 2006 was \$161.70 in New Hampshire; \$155.24 in Maine and \$82.20 in Vermont. This compares to \$290.05 in Massachusetts in 2006.

**Table III.2: Origin of Casino Patrons at CT Casinos  
Foxwoods and Mohegan Sun Combined  
Distribution of Gross Gaming Revenues by State of Origin**

State	Slot Win	Other Gaming	Total	Percentage
Massachusetts	476,042,225	202,019,943	678,062,168	27.47%
Rhode Island	155,749,297	66,280,785	222,030,082	8.99%
Connecticut	755,607,768	319,047,636	1,074,655,404	43.53%
New Hampshire	43,674,443	18,527,482	62,201,925	2.52%
Maine	17,959,864	7,620,750	25,580,614	1.04%
Vermont	7,754,716	3,285,983	11,040,699	0.45%
New York	203,821,487	86,062,820	289,884,307	11.74%
New Jersey	38,360,190	16,219,946	54,580,136	2.21%
Other	35,506,337	15,031,533	50,537,870	2.05%
Outside New England	277,688,014	117,314,299	395,002,313	16.00%
Northern New England	69,389,023	29,434,215	98,823,238	4.00%

Source: Center for Policy Analysis.

Notes:

Outside New England is comprised of NY, NJ and Other.

Northern New England is comprised of NH, VT and ME.

**Table III.3: Casino Gaming in Rhode Island  
Distribution of Gross Gaming Revenues by State of Origin**

State	Lincoln Park	Newport Grand	Total	Percent
Massachusetts	133,392,565	33,787,170	167,179,735	41.27%
Rhode Island	190,372,599	40,189,761	230,562,360	56.93%
Connecticut	1,976,186	1,619,933	3,596,119	1.28%
New Hampshire	658,729	154,279	813,008	0.20%
Maine	329,364	77,140	406,504	0.10%
Vermont	0	0	0	0.00%
New York	658,729	308,559	967,288	0.26%
Other	1,646,822	385,698	2,032,520	0.50%
Outside New England	2,305,551	694,257	2,999,808	0.74%
Northern New England	988,093	231,419	1,219,512	0.30%

Source: Center for Policy Analysis.

Notes:

Outside New England is comprised of NY, NJ and Other.

Northern New England is comprised of NH, VT and ME.

Models of patronage patterns generally assume that the number of visits to a casino declines relative to the distance to the facility.<sup>72</sup> The number of trips is based on the ratio of the square of the distance.<sup>73</sup> That is, if a casino is located half as far as a competing casino, the number of trips to the closer casino will be more than double that of the more distant facility. Prospective casino facilities in Massachusetts would be closer to population centers in Vermont, New Hampshire and Maine than existing Connecticut and Rhode Island casinos. Given the proximity of the Massachusetts casinos to potential patrons in Northern New England, it is reasonable to assume that patronage at the Massachusetts casinos will be larger than at the existing casinos in Connecticut and Rhode Island. Given that the number of visits drops off more rapidly than the increase in distance, a conservative assumption is that the Massachusetts casinos will accrue GGR that are twice as large as the revenues the Connecticut and Rhode Island casinos currently obtain from patrons in these three states. Therefore, \$200 million is added to both the low estimate and the high estimate to account for patronage at Massachusetts casinos from Northern New England. Given that Connecticut and Rhode Island already have casino facilities in some form, to be conservative, this study does not assume that the Massachusetts casinos will derive any gaming revenues from patrons in the Southern New England states.

*b. Outside of New England*

As destination venues, the Massachusetts casino developments will attract patrons from outside of New England. Patterns of patron origin from existing destination casino facilities provide some indication of the potential draw the Massachusetts casino developments. The most successful destination casinos in terms of their draw from outside of the region are in Nevada and Atlantic City. Large gambling and entertainment hubs of this sort exceed the scope of the facilities under consideration in the draft legislation.<sup>74</sup> Patron origin data is available from certain smaller destination casino locations. Data on patron origin for the Connecticut casinos from the Center for Policy Analysis indicates that 16 percent of casino patrons at Mohegan Sun

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<sup>72</sup> Thalheimer and Ali, Demand for Casino Gaming, 907-919.

For example, consider a situation in which there are two otherwise similar casinos located 25 and 50 miles from ones home. Models of travel patterns suggest that a consumer will patronize the casino located 25 miles away more than twice as often as the casino located 50 miles away. So-called gravity models are commonly used to size the market for casinos and other types of business that cater to consumers.

<sup>73</sup> Cummins Associates, "Casinos' 'Gravity' According to Reilly – Amended" (Paper delivered at the 13th International Conference on Gambling and Risk Taking, Reno, NV, May 25, 2006).

<sup>74</sup> The draft legislation does not place an upper bound on the size of the facility however by granting only one license per region, it effectively preempts the development of large complexes with multiple casinos.

and Foxwoods are from outside of New England. The Mississippi Gaming Commission collects information on patron origins from casino operators. Table III.4 contains the distribution of patrons by state and area of origin for the Mississippi casinos. Mississippi casinos draw three fourths of their patrons from outside of the state and one fourth of which come from outside of the region.<sup>75</sup> This study defines that region as Mississippi and the states that it borders.<sup>76</sup>

**Table III.4: Casino Gambling in Mississippi  
Distribution of Gross Gaming Revenues by State of Origin**

State	Total	Percent
Alabama	1,009,142	9.60%
Arkansas	937,664	8.92%
Florida	881,018	8.38%
Georgia	453,798	4.32%
Illinois	178,652	1.70%
Indiana	73,008	0.69%
Louisiana	1,358,838	12.93%
Missouri	234,135	2.23%
Mississippi	2,743,912	26.10%
North Carolina	58,773	0.56%
Ohio	58,747	0.56%
Oklahoma	86,567	0.82%
Tennessee	1,514,698	14.41%
Texas	226,072	2.15%
Other	696,520	6.63%
<hr/>		
MS Only	2,743,912	26.10%
Border States	4,820,342	45.86%
Outside Region	2,947,290	28.04%
<hr/>		
Total	10,511,544	100.00%

Source: Mississippi Gaming Commission.

Notes:

Casinos visitors in the third quarter of 2007.

Border States is comprised of Alabama, Arkansas, Louisiana and Tennessee.

Outside Region is comprised of all areas listed except Mississippi and its four border states.

The proportion of patrons at Connecticut casinos from outside of New England provides a starting point for the consideration of the potential level of patronage from outside of New

<sup>75</sup>This study defines the region to The Mississippi casinos are in three areas of the state. The highest proportions of visitors from outside of the region are among the casinos on the gulf coast.

<sup>76</sup> The region is defined as Mississippi, Alabama, Arkansas, Louisiana and Tennessee.

England. Relative to the Connecticut casinos, the Massachusetts casino in Region 1 would benefit from its location in Greater Boston. The Greater Boston area offers access to complementary facilities including the convention center, hotel and restaurant venues and sporting facilities. The Boston area casino would also benefit from access to Logan International Airport and from the already large base of foreign visitors to the area. Massachusetts and Boston rank among the top ten states and cities in the number of foreign visitors.<sup>77</sup> The Travel Industry Association estimates that spending by international travelers in Massachusetts is six times the level in the state of Connecticut.<sup>78</sup>

The Connecticut casinos would continue to capture out-of-state visitors from New York City and other southern states that arrive by automobile. The Connecticut casinos are closer to New York City than the casinos in regions 1 and 2 and would also be for region 3 unless that casino is located west of Springfield. The casino in Western Massachusetts may have a competitive advantage relative to the Connecticut casinos in attracting visitors from Upstate New York. Because Logan Airport is located in region 1, the Massachusetts casino in region 1 should be in a better position than the Connecticut casinos to attract patrons from outside of the region that arrive by air.

Certain factors that are associated with greater potential patronage from outside of New England favor the Massachusetts casinos (airport access, access to complimentary facilities, number of international travelers). Other factors favor the Connecticut casinos (travel time by land from states outside of New England). Therefore, in the analysis of potential GGR of the facilities, this study assumes that approximately 15 percent of the Massachusetts casino GGR is derived from visitors from outside of New England.

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<sup>77</sup> In 2006, Massachusetts ranked sixth among the states and Boston, MA ranked tenth among major metropolitan areas in the number of foreign visitors. United States Department of Commerce, International Travel Agency, Office of Travel and Tourism Industries.

<sup>78</sup> The Travel Industry Association of America estimates that in 2004, expenditures by international travelers in Massachusetts were \$1,432.0 million compared to \$219.3 million in Connecticut. Statistical Abstract of the United States, Washington, DC, at Table 1239: Impact of International Travel on States' Economies, 2004.

### *3. Sizing the Market for Casino Gaming in Massachusetts*

The analysis above considers three sources of gaming patrons—state residents, residents of the other New England states, and patrons from outside of New England.<sup>79</sup> This study estimates that the GGR from Massachusetts residents would be on the order of \$1.5 - \$1.75 billion based on analysis of in-state expenditure patterns of Connecticut residents. Patrons from the three Northern New England states would account for approximately \$200 million in additional GGR. The study estimates the potential patronage from out of the region using data on the Connecticut casinos. Given the strengths and weaknesses of the potential Massachusetts developments relative to the Connecticut casinos, estimates of GGR assume that 15 percent will come from outside of New England. As discussed above, these estimates do not include any patrons from Connecticut or Rhode Island given that residents of those states already have access to casinos in-state.

Table III.5 summarizes the components of the demand for casino gaming. Overall, this study finds that the total demand for casino gaming is in the range between \$2.0 billion and \$2.3 billion. Henceforth, the analysis uses the midpoint estimate of \$2.15 billion to evaluate the economic and fiscal impacts of the casino developments. These estimates assume that the Massachusetts casinos develop an attractive facility and successfully market it to potential casino patrons.

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<sup>79</sup>The analysis here is subjective. The number of destination casino locations is still relatively small and each area has unique characteristics—location, population density, transportation infrastructure. Therefore, this study derives its results using data from the most similar facilities in the region rather than a national sampling of destination casino resorts.

**Table III.5: Massachusetts Casino Gross Gaming Revenue Estimates  
Amounts in \$million**

Source of Demand	Low Estimate	High Estimate
Massachusetts Patrons	1,500	1,750
Patrons from Northern New England	200	200
Patrons from outside New England (approximately 15% of total GGR)	300	350
Gross Gaming Revenues	2,000	2,300

*4. How Much of the Revenues are from the Recapture of Out of State Spending?*

If casino gaming is legalized, the spending by residents at Massachusetts casinos can be partitioned into (i) gaming demand that was previously met through trips to casinos that are outside of the region (the recapture effect) and (ii) gaming demand that was previously unmet (the substitution effect). Only the substitution effect represents new spending by consumers on casino gaming. The recapture effect is spending that was done outside of the state that is now done at in-state gaming venues. The greater the spending out-of-state at the time of legalization, the larger the potential revenues that can be recaptured when casino gaming is legalized. The recapture effect is beneficial to local economies because it involves the transfer of gaming jobs and income from formerly-patronized out-of-state casinos to in-state facilities.

As discussed above, the substitution effect involves the displacement of existing consumption by casino patrons. From the standpoint of the economic interests of the state, the substitution effect is of greatest concern because it represents the potential for the displacement of other forms of economic activity. Data on patterns of casino patronage by Massachusetts residents provides some indication of the size of the potential recapture effect. Surveys by Harrah's provide an

indication of the relative frequency of casino visits by Massachusetts residents.<sup>80</sup> Data on the proportion of state residents that participate in casino gaming and the number of visits per year appears in Table III.6. Casino patrons are defined as respondents that gambled in a casino in the past 12 months. The Harrah's survey found that 31 percent of Massachusetts residents had participated in casino gaming in the past 12 months. The participation rate of Massachusetts residents in casino gaming is similar to that of residents of the other states with commercial casino gaming. This analysis excludes Nevada because of the widespread availability of casino gaming in that state.<sup>81</sup> The average participation rate among gamblers in these ten states was also 31 percent. This study also compares the rate of participation in casino gaming among Massachusetts residents with the rates in the other New England states. The participation rate was 40 percent among Connecticut residents, 36 percent among Rhode Island residents and 20 percent among New Hampshire residents.

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<sup>80</sup> Data appearing in Table III.6 is from Harrah's 2003 survey. The survey was conducted by mail. The company reports that there were 67,575 respondents to its 2003 survey. Harrah's also conducted a survey of casino participation however the public report did not contain state by state figures on participation and number of visits. Surveys of casino gaming may contain biases if respondents are more likely to have engaged in casino gaming than non-respondents. The analysis compares the relative frequencies reported in the Harrah's survey across states rather than examining the absolute frequency. Cross state comparisons are less prone to non-response bias.

<sup>81</sup> Over half of all commercial casinos in the United States are located in Nevada.

**Table III.6: Casino Gaming Participation Rates and Casino Visits States with Commercial Casino Gaming and New England States**

State	Participation Rate	Average Trip Frequency Per Year
<i>Massachusetts</i>	31%	4.1
<i>Commercial Casino Gaming States</i>		
Colorado	34%	6.0
Illinois	28%	5.9
Indiana	22%	4.3
Iowa	26%	6.5
Louisiana	39%	8.6
Michigan	32%	5.4
Mississippi	35%	8.9
Missouri	30%	7.8
Nevada	40%	24.3
New Jersey	36%	5.6
South Dakota	32%	5.0
Average Casino Gaming States (Excluding Nevada)	31%	6.4
<i>New England States</i>		
Connecticut	40%	5.7
Rhode Island	36%	6.2
New Hampshire	20%	4.4
Average New England States	32%	5.4

Source: Harrah's 2004 Survey of the American Casino Gambler.

Note: Harrah's indicates that the sample size for Maine and Vermont is small and did not report average trip frequency for these two states.

The number of casino visits by Massachusetts residents was below the levels of the states with legalized casino gaming and the other New England states. On average, patrons from Massachusetts made 4.1 trips per year to a casino. This compares to an average of 6.4 trips in states with legalized casino gaming and 5.7 and 6.2 trips per year among Connecticut and Rhode Island casino patrons.

The results indicate that Massachusetts residents frequently visit casinos out of state. The proportion of state residents that reported they had engaged in casino gaming in the past twelve months was the same as that of residents of states that already legalized casino gaming. The

number of casino trips reported by Massachusetts residents was two-thirds as high as the states with legalized casino gaming. Given the large proportion of state residents that already patronize casinos out of state, the amount of revenues that can be recaptured is potentially large.

Data from the Center for Policy Analysis allow for the estimation of the gaming expenditures of state residents in Connecticut and Rhode Island casinos. The center estimates that Massachusetts residents account for \$678 million in GGR in Connecticut (Table III.2) and \$167 million in Rhode Island (Table III.3), a total of \$854 million.

The development of the three Massachusetts casinos outlined in the draft legislation should allow for the recapture of much of these revenues. Surveys of casino patron location choice indicate that important attributes in the selection of a casino are: (i) distance to the casino; (ii) availability of games; (iii) hospitality; (iv) amenities including the availability of restaurants; and (vi) site-specific attributes including cleanliness and safety.<sup>82</sup>

Proposed casino developments in Massachusetts would be located closer to major state population centers than comparable developments out of state. Therefore, most potential Massachusetts patrons will find it more convenient to patronize in-state casinos. Table III.7 contains driving distance and drive times from major population centers in Massachusetts to casino locations in Connecticut and Rhode Island. The Connecticut casinos are located almost two hours from Boston by car. Twin River in Lincoln, RI is one hour from Boston. All large Massachusetts metropolitan areas are over a one drive from the Connecticut casinos and 40 minutes or more from Rhode Island locations. The Massachusetts casinos have not been sited. There are potential locations in regions 2 and 3 that would provide easy access from Connecticut and Rhode Island population centers and thereby maximize their patronage from out-of-state sources.

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<sup>82</sup> Kilby, Fox & Lucas, *Casino Operations Management*, 280-281.

**Table III.7: Distance and Travel Times to Casino Locations from Metropolitan Areas in Massachusetts**

<b>Metropolitan New England City and Town Area</b>	<b>Mohegan Sun Uncasville, CT</b>	<b>Foxwoods Ledyard, CT</b>	<b>Twin River Lincoln, RI</b>
Boston-Cambridge-Quincy, MA	105.98 miles 1 hour, 49 min	99.61 miles 1 hour, 49 min	51.88 miles 58 minutes
Springfield, MA-CT	70.18 miles 1 hour, 14 min	73.24 miles 1 hour, 23 min	80.17 miles 1 hour, 25 min
Worcester, MA-CT	66.80 miles 1 hour, 9 min	60.42 miles 1 hour, 8 min	34.30 miles 43 minutes
Barnstable Town, MA	137.32 miles 2 hours, 32 min	123.18 miles 2 hours, 19 min	84.14 miles 1 hour, 32 min
New Bedford, MA	87.59 miles 1 hour, 44 min	78.68 miles 1 hour, 29 min	37.50 miles 43 minutes
Leominster-Fitchburg-Gardner, MA	89.10 miles 1 hour, 32 min	82.72 miles 1 hour, 32 min	56.88 miles 1 hour, 7 min
Pittsfield, MA	124.83 miles 2 hours, 14 min	127.89 miles 2 hours, 23 min	126.17 miles 2 hours, 12 min

Source: Mapquest.com

Notes:

Metropolitan New England City and Town Areas are defined by the Office of Management and Budget. The NECTAs listed are the seven most populous in Massachusetts according to the 2000 census.

The proposed casino developments in Massachusetts would offer casino patrons a wider range of gaming options and amenities than some potential out-of-state destinations. The draft legislation does not limit the types of games that could be offered by the Massachusetts casinos. Based on their current configuration, the Massachusetts casinos would offer a wider range of gaming options and amenities than the Rhode Island casinos. The Twin River casino has slot machines and bingo and offers electronic forms of table games.<sup>83</sup> The Newport Grand casino offer slot machines but no other games. Both Rhode Island casino complexes include restaurants. Twin River and Newport Grand do not have hotels. Connecticut casino locations include a wide range of gaming opportunities and amenities. Data on patron origins also indicate that the incentives to

<sup>83</sup> Jenna Russell, "Looking a lot like a casino in R.I.: Transformation of former Lincoln Park draws crowds, reaps profits," *Boston Globe*, January 14, 2008.

patronize more distant casinos are low when local gaming options are available. The patron origin analysis of the Rhode Island casinos indicates that a very low percentage of patrons at Twin River and Newport Grand are from Connecticut (1.28 percent). The relatively low patronage from Connecticut indicates that gamblers will be more likely to remain at local venues.

## **C. Job Creation at the Proposed Casino Developments**

### *1. Scale of the Prospective Casino Developments*

Given the size of the gaming market, this study estimates the scale of the casino operations that could be supported in each of the three regions specified in the draft legislation. This includes estimates of employment as well as the physical plant of the prospective casino developments. The estimates are based on the characteristics of existing, large casinos in the United States. This study also controls for the size of the facility to account for potential economies of scale in the operation of casino facilities.

The draft legislation specifies that one casino license is to be awarded in each of three regions of the state. As discussed above, access is one of the factors that consumers consider in choosing among potential casino destinations. Region 1, which includes much of the Boston metropolitan area, has the largest total population of the three regions and therefore would likely support the largest casino development. This analysis examines the level of recreation and hospitality employment in the three regions as a proxy for the distribution of spending on leisure activities in those areas.<sup>84</sup> Table III.8 contains data on the distribution of population among the three regions in columns [3] and [4] and data on the distribution of employment in the recreation and hospitality sectors in columns [5] and [6]. Region 1 accounts for roughly 50 percent of the population and employment in the recreation and hospitality sectors in Massachusetts, while Regions 2 and 3 account for approximately 30 percent and 20 percent, respectively.

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<sup>84</sup> High levels of tourism spending may be a result of the presence of complementary recreation and leisure offerings in the area for casino patrons such as golf courses, other resorts, etc.

**Table III.8: Regional Markets for Casino Gaming  
Population Distribution and Distribution of Economic Activity  
Economic Activity Includes Arts, Entertainment and Recreation (NAICS 71)  
and Accommodation and Food Service (NAICS 72)**

Region [1]	County [2]	Population over Age 18 Total [3]	Pct of State [4]	NAICS 71 & 72 Employment Employees [5]	Pct. Of State [6]	Average Pct [7]
Region 1						
	Suffolk	548,025	11.02%	55,342	19.18%	
	Middlesex	1,142,805	22.99%	60,755	21.05%	
	Essex	554,176	11.15%	27,395	9.49%	
	Total--Region 1	2,245,007	45.16%	143,492	49.72%	47.44%
Region 2						
	Norfolk	503,505	10.13%	27,005	9.36%	
	Bristol	417,760	8.40%	23,200	8.04%	
	Plymouth	369,230	7.43%	19,452	6.74%	
	Nantucket	8,243	0.17%	628	0.22%	
	Dukes	12,412	0.25%	826	0.29%	
	Barnstable	183,225	3.69%	11,897	4.12%	
	Total--Region 2	1,494,376	30.06%	83,008	28.76%	29.41%
Region 3						
	Worcester	594,239	11.95%	27,817	9.64%	
	Hampshire	127,534	2.57%	5,645	1.96%	
	Hampden	347,693	6.99%	17,136	5.94%	
	Franklin	57,458	1.16%	2,380	0.82%	
	Berkshire	104,500	2.10%	9,108	3.16%	
	Total--Region 3	1,231,424	24.77%	62,086	21.51%	23.14%
State Total		4,970,806	100.00%	288,586	100.00%	

Sources:

[3]: U.S. Bureau of the Census, 2006 Population Estimates.

[5] & [6]: U.S. Bureau of the Census, County Business Patterns, 2005.

Notes:

[7]: Average of [4] and [6]

The analysis of the employment at the prospective casinos assumes that the casinos in regions 1, 2 and 3 account for the same percentage of GGR. Using a mid-point estimate of \$2.15 billion on the GGR from casino developments, the analysis assumes that the GGR of the casino in region 1 is \$1.075 billion, in region 2 is \$645 million and in region 3 is \$430 million.

This study develops estimates of employment and physical plant at the potential Massachusetts casinos using data on large tribal and commercial casinos in other states. Data on employment, gaming machines and tables, casino square footage, among other indicators was obtained from

*Casino City's North American Gaming Almanac*.<sup>85</sup> The draft legislation contains provision that require that at least \$1 billion be spent on the development of each casino. This effectively rules out the development of a small facility. The study identifies large facilities by searching the Casino City database for U.S. commercial and tribal casinos employing more than 2,000 people. The resulting list included 87 U.S. casinos. The largest casino by number of employees (12,000) is the Foxwoods Resort Casino in Mashantucket, CT.

Annual revenue figures are not available from the Casino City Almanac. For each casino, this study either obtains or estimates GGR in the year 2006.<sup>86</sup> GGR for most large tribal casinos were determined as a percentage of total state tribal gaming revenues based on a particular casino's share of total gaming machines in that state or region. Revenue estimates for Las Vegas casinos were computed based on an average of three estimates; annual revenue per square foot of casino gaming space, daily revenue per hotel room, and daily revenue per gaming device.<sup>87</sup> The methodology used to estimate the GGR of the Las Vegas casinos appears in Appendix A.

The set of benchmark casinos consists of the 29 U.S. casinos with estimated GGR in excess of \$300 million. Casinos are partitioned into large and very large casino groupings. Twenty six of the 29 casinos are in the 'large' group with 2006 GGR between \$300 million and \$700 million. Only three casinos were considered 'very large' with 2006 estimated gaming revenues greater than \$700 million.<sup>88</sup> Because employment and quantity of gaming machines and tables vary with casino revenues, to enable a comparison with the benchmark casino group, employment and physical plant measures are standardized by dividing the number of employees, gaming machines, gaming tables, poker tables, rooms and casino floor space by GGR. Ratios are expressed in employees or other attributes per million dollars of GGR. Determining the amount of inputs per million dollars of GGR allows for the construction of hypothetical casino facilities of different sizes.

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<sup>85</sup> The Casino City North American Gaming Almanac contains an electronic database with casino level characteristics and identifiers.

<sup>86</sup> Data on revenues for commercial casinos in many states are were available from the website of The Innovation Group, a consulting firm, <http://www.theinnovationgroup.net/>.

<sup>87</sup> Nevada Gaming Commission, "2006 Annual Abstract", Nevada Gaming Commission, <http://gaming.nv.gov/>. Data for revenue per square foot and per hotel room were provided by the Nevada Gaming Commission; Casino City's Gaming Revenue News, Pg. 11-18. Data for gaming revenue per device was provided by Casino City's Gaming Revenue News.

<sup>88</sup> Foxwoods Resort Casino (CT), Mohegan Sun Hotel & Casino (CT), and Borgata Hotel Casino & Spa (NJ)

This study also controls for the location of the casino. Casinos in Nevada and New Jersey may be systematically different from large destination casinos in the rest of the United States. Nevada and Atlantic City contains the largest concentrations of casino facilities in the United States along with large amount of convention space and other visitor amenities. Given the extensive casino development in these two regions, the configuration of the area casinos may not be representative of the types of casino facilities developed in Massachusetts. Therefore, this study develops two samples of benchmark casinos. One sample includes large casinos in Nevada and Atlantic City while the other does not.

Tables III.9 and III.10 contain the name, location and characteristics of large casino facilities. Panel A includes very large facilities with over \$700 million in GGR. Panel B contains large casinos with \$300 to \$700 million in GGR. Tables III.9 and III.10 contain the amount of gaming machines, gaming tables, poker tables, room and casino square footage and number of employees per million dollars of GGR. In general, casinos in Nevada and Atlantic City employ more workers per million dollars of GGR than large casinos in other parts of the country. For instance, among casinos with \$300 million to \$700 million in GGR, the average number of workers per million dollars of GGR is 9.66 when Nevada and Atlantic City casinos are included in the sample but only 6.82 when they are excluded.<sup>89</sup> The difference is in part due to the greater provision of non-gaming amenities at casinos in these two regions.

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<sup>89</sup> Compare the group average in Table III.9, Panel B with the group average in Table III.10, Panel B.

**Table III.9 Benchmark Casinos Grouped by Size, Including Nevada & New Jersey Casinos**

**Panel A: Very Large Casinos (Gross Gaming Revenues over \$700 million)**

Property	City	State	2006 Revenue Estimate (millions)	Gaming Machines/ \$1M	Table Games/\$1M	Poker Tables/ \$1M	Rooms/\$1M	Casino Sq. Footage/\$1M	Employees/\$1M
Mohegan Sun Hotel and Casino	Uncasville	Connecticut	1,302.20	4.76	0.23	0.00	0.90	230.38	7.68
Foxwoods Resort Casino	Mashantucket	Connecticut	1,166.40	6.34	0.31	0.07	1.64	294.92	10.29
Borgata Hotel Casino and Spa	Atlantic City	New Jersey	739.30	5.51	0.24	0.11	2.71	169.08	9.47
<b>Group Average:</b>			<b>1,069.30</b>	<b>5.54</b>	<b>0.26</b>	<b>0.06</b>	<b>1.75</b>	<b>231.46</b>	<b>9.15</b>

Source: Casino City North American Gaming Almanac, UHY Calculations

**Panel B: Large Casinos (Gross Gaming Revenues of \$300 million to \$700 million)**

Property	City	State	2006 Revenue Estimate (millions)	Gaming Machines/ \$1M	Table Games/\$1M	Poker Tables/ \$1M	Rooms/\$1M	Casino Sq. Footage/\$1M	Employees/\$1M
Bally's Atlantic City	Atlantic City	New Jersey	677.30	7.97	0.31	0.03	2.59	333.32	8.67
Caesars Atlantic City	Atlantic City	New Jersey	555.20	5.64	0.24	0.04	2.06	224.64	7.92
Trump Taj Mahal Casino Resort	Atlantic City	New Jersey	529.20	7.03	0.24	0.17	2.36	304.23	17.01
Harrah's Atlantic City	Atlantic City	New Jersey	509.10	7.34	0.16	0.05	3.20	288.90	6.52
MGM Grand Detroit Casino	Detroit	Michigan	489.60	5.72	0.15	0.00	0.00	153.19	4.49
Argosy Casino and Hotel - Lawrenceburg	Lawrenceburg	Indiana	475.00	5.05	0.17	0.04	0.64	157.89	4.63
MotorCity Casino	Detroit	Michigan	468.70	5.59	0.19	0.02	0.00	160.02	N/A
Tropicana Casino and Resort	Atlantic City	New Jersey	464.20	8.42	0.33	0.09	4.58	301.03	8.83
Horseshoe Casino Hammond	Hammond	Indiana	432.20	4.63	0.13	0.02	0.00	98.50	5.78
Showboat Atlantic City	Atlantic City	New Jersey	423.10	8.63	0.18	0.06	3.20	302.48	5.88
MGM Grand Las Vegas	Las Vegas	Nevada	398.98	6.52	0.37	0.09	12.64	426.09	20.55
Seneca Niagara Casino & Hotel	Niagara Falls	New York	393.23	10.91	0.25	0.04	1.54	375.32	7.63
Greektown Casino	Detroit	Michigan	345.00	6.96	0.23	0.06	0.00	217.39	6.96
Harrah's New Orleans Casino	New Orleans	Louisiana	338.40	6.21	0.27	0.07	1.33	339.83	7.02
Caesars Indiana Casino	Elizabeth	Indiana	337.70	6.12	0.30	0.10	1.49	275.39	6.22
Mandalay Bay Resort & Casino	Las Vegas	Nevada	333.98	6.02	0.37	0.03	12.97	404.22	23.95
Thunder Valley Casino	Lincoln	California	332.78	8.11	0.30	0.00	0.00	0.00	6.01
Atlantic City Hilton	Atlantic City	New Jersey	321.40	7.03	0.36	0.07	2.52	207.22	10.26
Harrah's St. Louis Casino & Hotel	Maryland Heights	Missouri	321.00	8.88	0.23	0.07	1.56	373.83	6.33
Cache Creek Casino Resort	Brooks	California	319.75	8.13	0.34	0.04	0.63	233.68	7.82
Bellagio	Las Vegas	Nevada	313.15	7.68	0.40	0.18	12.56	319.34	31.45
Venetian Resort Hotel Casino	Las Vegas	Nevada	309.96	5.63	0.43	0.13	12.99	387.15	14.52
L'Auberge du Lac Hotel & Casino	Lake Charles	Louisiana	309.60	5.31	0.20	0.00	2.42	96.90	7.11
Viejas Casino	Alpine	California	307.45	8.13	0.21	0.07	8.83	683.04	7.16
Grand Casino Resort - Tunica	Tunica Resorts	Mississippi	303.04	7.92	0.26	0.05	4.47	461.99	8.41
San Manuel Indian Bingo & Casino	Highland	California	302.53	6.61	0.33	0.11	0.00	1586.61	9.92
<b>Group Average:</b>			<b>396.60</b>	<b>7.01</b>	<b>0.27</b>	<b>0.06</b>	<b>3.64</b>	<b>335.08</b>	<b>10.04</b>

**Table III.10 Benchmark Casinos Grouped by Size, Excluding Nevada & New Jersey Casinos**

**Panel A: Very Large Casinos (Gross Gaming Revenues over \$700 million)**

Property	City	State	2006 Revenue Estimates (millions)	Gaming Machines/ \$1M	Table Games/ \$1M	Poker Tables/ \$1M	Rooms/ \$1M	Casino Sq. Footage/ \$1M	Employees/ \$1M
Mohegan Sun Hotel and Casino	Uncasville	Connecticut	1,302.20	4.76	0.23	0.00	0.90	230.38	7.68
Foxwoods Resort Casino	Mashantucket	Connecticut	1,166.40	6.34	0.31	0.07	1.64	294.92	10.29
<b>Group Average:</b>			<b>1,234.30</b>	<b>5.55</b>	<b>0.27</b>	<b>0.03</b>	<b>1.27</b>	<b>262.65</b>	<b>8.98</b>

Source: Casino City North American Gaming Almanac, UHY Calculations

**Panel B: Large Casinos (Gross Gaming Revenues of \$300 million to \$700 million)**

Property	City	State	2006 Revenue Estimates (millions)	Gaming Machines/ \$1M	Table Games/ \$1M	Poker Tables/ \$1M	Rooms/ \$1M	Casino Sq. Footage/ \$1M	Employees/ \$1M
MGM Grand Detroit Casino	Detroit	Michigan	489.60	5.72	0.15	0.00	0.00	153.19	4.49
Argosy Casino and Hotel - Lawrenceburg	Lawrenceburg	Indiana	475.00	5.05	0.17	0.04	0.64	157.89	4.63
MotorCity Casino	Detroit	Michigan	468.70	5.59	0.19	0.02	0.00	160.02	N/A
Horseshoe Casino Hammond	Hammond	Indiana	432.20	4.63	0.13	0.02	0.00	98.50	5.78
Seneca Niagara Casino & Hotel	Niagara Falls	New York	393.23	10.91	0.25	0.04	1.54	375.32	7.63
Greektown Casino	Detroit	Michigan	345.00	6.96	0.23	0.06	0.00	217.39	6.96
Harrah's New Orleans Casino	New Orleans	Louisiana	338.40	6.21	0.27	0.07	1.33	339.83	7.02
Caesars Indiana Casino	Elizabeth	Indiana	337.70	6.12	0.30	0.10	1.49	275.39	6.22
Thunder Valley Casino	Lincoln	California	332.78	8.11	0.30	0.00	0.00	0.00	6.01
Harrah's St. Louis Casino & Hotel	Maryland Heights	Missouri	321.00	8.88	0.23	0.07	1.56	373.83	6.33
Cache Creek Casino Resort	Brooks	California	319.75	8.13	0.34	0.04	0.63	233.68	7.82
L'Auberge du Lac Hotel & Casino	Lake Charles	Louisiana	309.60	5.31	0.20	0.00	2.42	96.90	7.11
Viejas Casino	Alpine	California	307.45	8.13	0.21	0.07	8.83	683.04	7.16
Grand Casino Resort - Tunica	Tunica Resorts	Mississippi	303.04	7.92	0.26	0.05	4.47	461.99	8.41
San Manuel Indian Bingo & Casino	Highland	California	302.53	6.61	0.33	0.11	0.00	1,586.61	9.92
<b>Group Average:</b>			<b>367.37</b>	<b>6.87</b>	<b>0.23</b>	<b>0.05</b>	<b>1.64</b>	<b>372.40</b>	<b>6.82</b>

Source: Casino City North American Gaming Almanac, UHY Calculations

## *2. Employment Estimates for Hypothetical Destination Casinos*

Estimates of the total level of employment and other casino attributes were derived from the large and very large casino averages in Tables III.9 and III.10. This study examines the level of employment given a midpoint estimate of \$2.15 billion in total GGR at the three facilities. The study further assumes that the GGR of the three casinos are split 50/30/20 among the three regions.

Table III.11 contains estimates of employment, hotel rooms and gaming facilities for the three hypothetical Massachusetts casinos. In Panel A, the benchmark casinos include casinos in Atlantic City and Nevada. At \$2.15 billion, the total employment of the three Massachusetts casinos is projected to be 20,626. In Panel B, benchmark casinos do not include casinos in Atlantic City or Nevada. Estimates of total employment at the three hypothetical casino facilities excluding Nevada and Atlantic City casinos is 16,989. Of this total, 9,657 jobs will be at the casino in region 1, 4,399 at the casino in region 2, and 2,933 at the casino in region 3.

The model used by this study also allows for projections of the size of the physical plant of the casino facilities. The number of projected gaming machines does not vary significantly with the inclusion or exclusion of Nevada and Atlantic City data. For the casino in region 1, total gaming machines is projected around 5,900 machines in Region 1, 4,500 in Region 2, and 3,000 in Region 3. The number of estimated table games also does not vary greatly by including or excluding the Nevada and New Jersey data. Given \$2.15 billion in GGR, over 550 table games could be supported with roughly 285 tables in Region 1, 160 in Region 2, and about 110 in Region 3.

Like employment projections, estimates for the physical size of the proposed Massachusetts casinos vary greatly with the inclusion or exclusion of Nevada and Atlantic City statistics. Casino spaces in those two states tend to be more condensed and thus skew the projections in that direction. Additionally, the initial physical gaming space is often a function of overall space available to casino developers and not necessarily a function of current or future gaming revenues.

Estimates of employment and physical plant at lower or higher levels of gaming revenues may be constructed from the data contained in Tables III.9 and III.10 by varying the GGR of hypothetical facilities and multiplying by the group averages in Panels A and B.

**Table III.11 Employment and Physical Plant at Hypothetical Massachusetts Casinos  
Gross Gaming Revenues of \$2.15 billion**

**Panel A: Benchmark Casinos Include Atlantic City & Nevada Casinos**

Region [1]	Weight [2]	Hypothetical Casino Revenue (Millions) [3]	Employees [4]	Rooms [5]	Casino Sq. Footage [6]	Gaming Machines [7]	Table Games [8]	Poker Tables [9]
1	50.00%	1,075	9,831	1,883	248,820	5,954	280	66
2	30.00%	645	6,477	2,347	224,775	4,520	173	40
3	20.00%	430	4,318	1,564	149,850	3,013	115	26
<b>Total</b>	<b>100.00%</b>	<b>2,150</b>	<b>20,626</b>	<b>5,794</b>	<b>623,445</b>	<b>13,487</b>	<b>569</b>	<b>132</b>

Notes:

[3]: [2] x \$2.15 billion

[4] to [9]: [3] x ratios from Table III.9

**Panel B: Benchmark Casinos Exclude Atlantic City & Nevada Casinos**

Region [1]	Weight [2]	Hypothetical Casino Revenue (Millions) [3]	Employees [4]	Rooms [5]	Casino Sq. Footage [6]	Gaming Machines [7]	Table Games [8]	Poker Tables [9]
1	50.00%	1,075	9,657	1,368	282,351	5,969	292	37
2	30.00%	645	4,399	986	240,198	4,484	153	28
3	20.00%	430	2,933	657	160,132	2,989	102	19
<b>Total</b>	<b>100.00%</b>	<b>2,150</b>	<b>16,989</b>	<b>3,011</b>	<b>682,680</b>	<b>13,442</b>	<b>548</b>	<b>84</b>

Notes:

[3]: [2] x \$2.15 billion

[4] to [9]: [3] x ratios from Table III.10

### *3. Construction Employment*

Two types of construction jobs are created by introducing casinos to a region. First, there are jobs that are created in the initial construction of the facility. Second, casino facilities have ongoing capital expenditure projects. This involves, in part, the redesign of the facility and the gradual expansion to accommodate rising demand.<sup>90</sup> This section examines the number of construction jobs from the initial construction of the facilities.

This study also reviewed relevant academic and news articles to gauge the number of new construction jobs created by \$1 million in casino capital expenditures. A number of studies have developed estimates of the labor requirements for casino construction projects. One of the shortcomings of this work has been that labor input requirements are not consistently defined. This study uses “worker-years” to refer to the total amount of labor required to complete a project and “jobs” to refer to the average number of people employed on the project at any given time. A worker-year is one construction worker working on a project for one year. Both a single worker working on a project for three years and three workers working on a project for one year represent three worker-years.

Estimates of labor requirements in this study were drawn from recent economic studies of casino development projects by different consulting firms. The set is limited to studies that were completed since and clearly state that the labor requirements for the project are measured in worker-years. The studies are listed in Appendix B. The estimates of labor requirements in these studies range from 8 to 9 worker-years per million dollars of capital expenditure. The amount of labor is reduced by 15 percent to account for the additional costs of construction in Massachusetts. On this basis, the amount of labor required for the casino developments proposed by the draft legislation ranges from 7 and 8 worker-years of labor per \$1 million in capital expenditure.<sup>91</sup> To obtain the average number of construction jobs created, the total amount of labor used is divided by the number of years required to complete the construction project.

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<sup>90</sup> Appendix C of Section IV contains a discussion of changes in the demand for casino gaming over time.

<sup>91</sup> RS Means, Square Foot Costs, (Reed Business Information: New York, NY, 2007).

Construction cost analysis reveals that on average, for every \$1 in GGR, casino developers spend roughly \$2 in up-front capital expenditures. Table III.12 includes three large metropolitan casino developments and their construction costs relative to their GGR. At a mid-point estimate of GGR, this analysis assumes the three casino developments will total \$4.3 billion in total capital expenditures. Assuming total capital investment of \$4.3 billion in Massachusetts and a construction period of 3 years, Table III.13 projects the number of construction jobs for each region. The low end of the range, 7 worker-years per \$1 million invested, shows a total of about 10,000 construction jobs to the Commonwealth. At the high end of the range, 8 worker-years per \$1 million invested, nearly 11,500 construction jobs will result from the development of casinos in Massachusetts.

**Table III.12 Construction Costs to Gross Gaming Revenue Comparison**

Project [1]	Location [2]	Construction Cost [3]	Year Opened [4]	2007 Construction Cost [5]	2006 Gross Gaming Revenue [6]	Construction Cost/GGR [7]
Borgata	Atlantic City, NJ	\$1,100,000,000	2003	\$1,364,929,577	\$739,000,000	1.85
Greektown	Detroit, MI	\$475,000,000	2000	\$657,721,468	\$345,000,000	1.91
MGM Detroit	Detroit, MI	\$1,000,000,000	2007	\$1,000,000,000	\$490,000,000	2.04
<b>Average:</b>		<b>\$858,333,333</b>		<b>\$1,007,550,349</b>	<b>\$524,666,667</b>	<b>1.93</b>

Notes:

[5]: Construction costs adjusted to 2007 using RS Means construction cost indices.

[7]: [5]/[6]

**Table III.13 Construction Employment Projections**

Region [1]	Weight [2]	Hypothetical Capital Expenditure (Millions) [3]	7 worker-years /\$1M [4]	8 worker-years /\$1M [5]
1	50%	\$2,150.00	5,017	5,733
2	30%	\$1,290.00	3,010	3,440
3	20%	\$860.00	2,007	2,293
<b>Total</b>	<b>100%</b>	<b>\$4,300.00</b>	<b>10,033</b>	<b>11,467</b>

Notes: Assumes a Three Year Construction Period

[4]: (7 x [3]) / 3 Yrs

[5]: (8 x [3]) / 3yrs

#### 4. Casino Job Attributes

The casino industry is one of the fastest growing industries in the country. Over the next decade, jobs in the amusement, gambling, and recreation industry are projected to increase by roughly 470,000.<sup>92</sup> Casino jobs look to outpace the overall growth of the U.S. economy; growing by 23 percent between 2006 and 2016.<sup>93</sup> Additionally, the U.S. Bureau of Labor Statistics *Occupational Outlook Quarterly* lists Gaming Surveillance Officers/Investigators as one of the fastest growing occupations in the country.<sup>94</sup>

Employment opportunities in the casino industry are widely sought after. Generally, casino jobs pay well and most carry benefit plans. Table III.14 details the average 2006 wages for nine various casino jobs. Dealers represent a large proportion of casino workers. Research shows that half to two-thirds of casino dealers' income is derived from tips.<sup>95</sup> Using national data, a weighted average of nine casino jobs shows employees earn \$31,023 if half of casino dealers' income comes from tips, \$38,278 if two-thirds of their income comes from tips.<sup>96</sup> Annual earnings of workers were adjusted to account for differentials between earnings of hospitality industry workers in Massachusetts and average levels in the United States. Massachusetts hospitality worker earnings are 15 percent above the national average.<sup>97</sup> That 15 percent premium was utilized to estimate the earnings level of Massachusetts casino workers. Utilizing hospitality industry indicators, this study computed a 15 percent premium on Massachusetts wages over the national average. The final column of Table III.14 contains estimates of the wages of Massachusetts casino workers. Assuming that half of dealer earnings are from tip

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<sup>92</sup> U.S. Department of Labor, Bureau of Labor Statistics, "Tomorrow's Jobs" Reprinted from the Occupational Outlook Handbook, 2008-2009 ed., 4. The Bureau of Labor Statistics estimates that 595,000 jobs will be created in the Leisure and Hospitality Industry. Within that industry, 79 percent (about 470,000) are estimated to be in Amusement, Gambling, and Recreation.

<sup>93</sup> U.S. Department of Labor, Bureau of Labor Statistics, "Service Occupations: Cleaning, Food, and Personal," Reprinted from the Occupational Outlook Handbook, 2008-2009 ed., 35.

<sup>94</sup> U.S. Department of Labor, Bureau of Labor Statistics, "Occupational Employment" *Occupational Outlook Quarterly*, Fall 2007, 13

<sup>95</sup> Howard Stutz, "Wynn Alters Rules on Tips," *Las Vegas Review-Journal*, August 23, 2006. Experienced dealers in some luxury casinos on the Las Vegas strip make upwards of \$100,000 a year.

<sup>96</sup> Weights were computed using a percentage of total casino employment by job type for the United States as a whole.

<sup>97</sup> Average earnings of Massachusetts workers in three hospitality industry occupations were compared to the national average earnings in the same occupations. Massachusetts workers in these occupations earned 15 percent more than the national average. Data on wages was obtained from the U.S. Bureau of Labor Statistics.

income, average earnings of Massachusetts casino workers are projected to be approximately \$36,000 per year. If two-thirds of dealer income is derived from tips, projected average earnings of casino workers in Massachusetts are projected to be approximately \$44,000 per year.

**Table III.14 Casino Wages**

**Panel A: National Data (w/ 2x Dealer Tips)**

<b>Job Type</b>	<b>Percent of Casino Employees</b>	<b>Average National Annual Wage</b>	<b>Massachusetts Adjusted Annual Wage</b>
Gaming Manager	1.71%	\$67,340	\$77,441
Floor Supervisor	12.27%	\$42,390	\$48,749
Surveillance Officer	4.35%	\$30,470	\$35,041
Slot Attendant	6.91%	\$25,300	\$29,095
Cage Attendant	9.24%	\$24,170	\$27,796
Change Clerk	13.73%	\$21,470	\$24,691
Service Person	N/A	\$24,110	\$27,727
Sports Book Writer	9.14%	\$20,850	\$23,978
Dealer (w/ 2x tips)	42.65%	\$34,020	\$39,123
<b>Weighted Average (with Dealer tips):</b>		<b>\$31,023</b>	<b>\$35,677</b>

**Panel B: National Data (w/ 3x Dealer Tips)**

<b>Job Type</b>	<b>Percent of Casino Employees</b>	<b>Average National Annual Wage</b>	<b>Massachusetts Adjusted Annual Wage</b>
Gaming Manager	1.71%	\$67,340	\$77,441
Floor Supervisor	12.27%	\$42,390	\$48,749
Surveillance Officer	4.35%	\$30,470	\$35,041
Slot Attendant	6.91%	\$25,300	\$29,095
Cage Attendant	9.24%	\$24,170	\$27,796
Change Clerk	13.73%	\$21,470	\$24,691
Service Person	N/A	\$24,110	\$27,727
Sports Book Writer	9.14%	\$20,850	\$23,978
Dealer (w/ 3x tips)	42.65%	\$51,030	\$58,685
<b>Weighted Average (with Dealer tips):</b>		<b>\$38,278</b>	<b>\$44,019</b>

Source: U.S. Bureau of Labor Statistics

Note: Massachusetts wages are adjusted to reflect higher earnings among Massachusetts hospitality industry workers.

These averages are less than the \$47,340 mean income for all full-time Massachusetts workers.<sup>98</sup> Very few positions in the gaming industry require advanced training beyond a high school diploma or GED.<sup>99</sup> Casino employees are subject to state licensure requirements and background checks. Most large casinos provide in-house training programs for employees. Dealers often acquire their skills by attending dealer schools which provide instruction in the rules and procedures of games and on laws and regulations concerning gaming.

According to one industry analyst, casinos have one of the best records for hiring a diverse workforce committed to internal training and development.<sup>100</sup> The opening of some tribal casinos has proven to have widespread regional employment effects. Thirty six percent and 38 percent of Wisconsin and Michigan tribal casino workers, respectively, reported being unemployed prior to employment at casinos.<sup>101</sup> Similar effects have been noted in the levels of people receiving public assistance. In Michigan, 34 percent of casino workers had been welfare recipients prior to employment, whereas 13 percent of the Wisconsin workers reported being on some form of public assistance prior to being hired by the casino.<sup>102</sup>

Casino jobs have certain requirements. Large casino facilities are often open 24-hours a day and jobs at casinos may involve odd or lengthy hours. In addition, many casino jobs require that the employee stand for many hours or be exposed to noise from gaming machines.<sup>103</sup> Certain jobs require extensive customer contact. Casinos may require prospective dealers to audition as part of the employment screening process.<sup>104</sup>

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<sup>98</sup> U.S. Bureau of Labor Statistics, "State Statistics for Massachusetts; All Occupations," Occupational Employment Statistics, [http://www.bls.gov/oes/current/oes\\_ma.htm](http://www.bls.gov/oes/current/oes_ma.htm).

<sup>99</sup> U.S. Department of Labor, Bureau of Labor Statistics, "Gaming Services Occupations," Occupational Outlook Handbook, <http://www.bls.gov/oco/ocos275.htm>.

<sup>100</sup> Clyde W. Barrow, *Taking the Gamble in Massachusetts?*

<sup>101</sup> *Ibid.*

<sup>102</sup> *Ibid.*

<sup>103</sup> Tate, Patricia, "Casino Gaming Occupations; A Jackpot for Job Seekers," *U.S. Bureau of Labor Statistics Occupational Outlook Quarterly*, Summer 2001, 29.

<sup>104</sup> Occupational Outlook Handbook, <http://www.bls.gov/oco/ocos275.htm>.

## **D. Studies of the Regional Impact of Casino Development**

The legalization of casino gambling is often cited as a means to stimulate economic development. The research on casinos and economic development is extensive. Some work has focused on particular case studies evaluating the economic impact resulting of a particular project. Other studies have examined the impact of a particular type of gaming, such as tribal casinos or lotteries. After reviewing a wide range of research, this analysis selected studies conducted by either the federal government or by academics.<sup>105</sup> These studies incorporate large samples and examine the impact of casino developments across many jurisdictions (with the exception of the GAO report). More so than case studies, the studies selected allow for more sophisticated controls over the effect of external influences on economic outcomes. Table III.15 contains the six studies selected, and summarizes their methodologies and primary findings.

Research methods for the studies range from regression analysis of panel data to a meta-analysis of over 100 different research sources. The latter was conducted by Adam Rose and Associates on behalf of the National Gambling Impact Study Commission (NGISC). Many academic studies have utilized a database compiled by the University of Chicago's National Opinion Research Center (NORC) for NGISC.<sup>106</sup> The United States General Accounting Office (GAO) report reviews the 1999 NGISC Report and also provides a case study of the economic impact of the legalization of casino gaming on Atlantic City, New Jersey.

Each of the six studies finds net economic benefits to the region hosting a new casino development. The largest positive impacts are from the introduction of tribal casinos.<sup>107</sup> The larger net benefit from tribal gaming is not surprising given the limited economic opportunities on many reservations. The two studies that examine destination casino developments, GAO

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<sup>105</sup> Much of the work in this area has been funded or performed by developers or casino opponents. Research by academics or federal government sources is less likely to be subject to biases.

<sup>106</sup> The NORC database included an extensive set of economic and social indicators for 100 counties in the United States. Casino gaming facilities were developed in 40 of these counties. The NORC dataset covers the years 1980-1997.

<sup>107</sup> Jonathan B. Taylor, Matthew B. Krepps and Patrick Wang, *The National Evidence on the Socioeconomic Impacts of American Indian Gaming on Non-Indian Communities* (Harvard University, John F. Kennedy School of Government, 2000).

(2000) and Baxandall and Sacerdote (2005), both find evidence of positive economic benefits from destination casino development.<sup>108</sup>

Findings regarding the impact of casinos on employment (or unemployment) are particularly robust. The NGISC (1999) found that a new casino reduces unemployment by 12 percent. Evans and Topoleski (2002) later found that there is an increase in the number of jobs per adult in counties where a new tribal casino is located, as well as in counties that are located within 50 miles of a new tribal casino development. Baxandall and Sacerdote (2005) find that the number of people reporting full or part-time employment increased 6.7 percent in counties with casinos, compared to those without.<sup>109</sup> The GAO examined unemployment in its case study on Atlantic City, reporting declines in unemployment following the introduction of casino gaming. However, the GAO also found that unemployment rates in Atlantic City have remained above the state average.

The studies also show a positive impact with regard to income maintenance programs and welfare participation. The NORC study concluded that the introduction of a casino is associated with a statistically significant decline in welfare and unemployment insurance.<sup>110</sup> Examination of certain areas where casino gaming has been introduced suggests that the introduction of casino gaming is accompanied by a reduction in welfare rolls. The GAO's study of Atlantic City found that there was a reduction in welfare rolls in the period following the introduction of casino gaming.<sup>111</sup>

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<sup>108</sup> U.S. General Accounting Office, *Impact of Gambling: Economic Effects More Measurable Than Social Effects*, GGD-00-78, April 2000; Phineas Baxandall and Bruce Sacerdote, "The Casino Gamble in Massachusetts," working paper, (Harvard University, John F. Kennedy School of Government, 2005), 2.

<sup>109</sup> Baxandall and Sacerdote, *The Casino Gamble in Massachusetts*, 6.

<sup>110</sup> *Gambling Impact and Behavior Study (1999)* p. 71.

<sup>111</sup> U.S. General Accounting Office, *Impact of Gambling*, 18.

**Table III.15 Major Studies of the Regional Impact of Casino Development**

Title	Author	Methodology	Findings
The Regional Economic Impacts of Casino Gambling: Assessment of the Literature and Establishment of a Research Agenda, prepared for the National gambling Impact Study Commission (1998).	Rose, Adam	Meta-analysis of over 100 studies, books and articles concerning the economic impacts of casino gambling.	<b>Overall Impact:</b> Generally positive effects in the host region: “a new casino, of even limited attractiveness and placed in a market that is not already saturated, will yield positive economic benefits on net to its host economy” (p. 31)
Gambling Impact and Behavior Study, prepared for the National Gaming Impact Study Commission (1999).	National Opinion Research Center at the University of Chicago	Panel of 100 communities from 1980 to 1997. Casinos opened in 40 of these communities.	<b>Overall Impact:</b> “The net picture in the economic and crime data is on the positive side but not in an overwhelming way.” (p. 71). <b>Employment Impact:</b> Decrease in the percentage of the labor force that is unemployed and a decrease in the level of welfare and unemployment insurance payments (p. 70). No change in overall per capita income. (p. 70-71);
Impact of Gambling: Economic Effects More Measurable than Social Effects, GAO/GGD-00-78, (2000).	U.S. General Accounting Office	Review of the NGISC Report and a case study of Atlantic City, NJ.	<b>Employment Impact:</b> Casino development led to an increase in private sector employment in Atlantic City (p. 17); jobs created by the casino industry led to a decrease in welfare caseload (p. 18) although other factors also contributed to this outcome (p. 19). Unemployment and in particular seasonal unemployment remains a problem in Atlantic City (p. 20).
The National Evidence on the Socioeconomic Impacts of American Indian Gaming on Non-Indian Communities, Working Paper PRS 00-1, Harvard Project on American Indian Economic Development, Harvard University, John F. Kennedy School of Government, (2000)	Taylor, Jonathan B., Matthew Krepps and Patrick Wang	Analysis of 24 communities in the 1999 NORC database that experienced the introduction of a non-Indian casino, and 16 communities where an Indian casino was introduced.	<b>Overall Impact:</b> “[W]hile total income is statistically unchanged by casinos, the reductions in unemployment and welfare income lend some credence to the widely held notion that casinos are a useful economic development strategy for reducing poverty.” (p. 14) and “Indian casinos have substantial beneficial economic and social impacts on surrounding communities” (p. 1). <b>Employment Impact:</b> Reduction of unemployment rates in communities within 50 miles of a new casino. <b>Income Maintenance/ Transfer Payments Impact:</b> “Casinos generally could be expected to have a 6% decrease in payments from income maintenance programs, whereas Indian casinos precipitate a more profound 32% decline” (p. 22).

**Table III.15 Major Studies of the Regional Impact of Casino Development**

Title	Author	Methodology	Findings
The Social and Economic Impact of Native American Casinos, Working Paper, University of Maryland (2002).	Evans, William N. and Julie H. Topoleski	Using a difference-in-differences method, the authors compare the resulting impact from tribal casinos. Used county-level data on bankruptcy from 1989 - 1999 for 2,222 with controls for counties hosting a casino or counties within 50 miles of a casino.	<p><b>Overall Impact:</b> "These casinos appear to have changed the economic climate on reservations considerably. Four or more years after a casino is opened, population increased by 11.5%, employment rose by 26%, the employment to population ratio increased by 12%, and the fraction unemployment and working but poor fell by 14%" (p. 46).</p> <p><b>Employment Impact:</b> Statistically significant increase in number of jobs per adult following the opening of a casino (p. 69).</p>
The Casino Gamble in Massachusetts, Working Paper, Rappaport Institute for Greater Boston, Harvard University, John F. Kennedy School of Government, (2005).	Baxandall, Phineas and Bruce Sacerdote	Conducted regression analysis to focus on the county-level impact of Indian-owned casinos. Employed data from 365 Indian casinos in 156 counties across the country (excluding casinos in states that have both Indian casinos and commercial casinos). Data was divided into six sets defined by population and casino size. One of the sets included three counties with large resort destination casinos similar to those proposed in MA.	<p><b>Overall Impact:</b> "The introduction of a casino does appear to produce a few modestly positive effects, a few modestly negative impacts, and, in several areas, no statistically significant effects at all" (p. 2).</p> <p><b>Employment Impact:</b> "For all counties, the introduction of a casino did not cause statistically significant differences in unemployment compared to counties without casinos...the unemployment rate dropped by 1.2% in the nine counties with large populations and large casinos" (p. 7). Two counties with mega-casinos experienced a downward shift of 0.5% in unemployment rate; the other remained roughly the same. All three mega-casino counties showed improvements in the relative employment rates.</p>

#### **IV. FISCAL IMPACT OF DESTINATION CASINO DEVELOPMENT**

The development of additional revenue for the Commonwealth is one of the reasons cited by Governor Patrick for the legalization of casino gaming.<sup>112</sup> The draft legislation involves both an initial licensing and annual ongoing gaming tax from casino operators. The draft legislation also specifies the use to which fee revenues are to be put. This study focuses on the revenues received by the Commonwealth from the legalization of casino gaming.<sup>113</sup> However, the study also computes the amounts that would be utilized for different public purposes given the allocation mechanism specified in the draft legislation.

In this section, the study first briefly summarizes the fee structure proposed in the draft legislation and the portions of the legislation that specify the amounts earmarked for mitigating the impact of casinos on public health, local services and the state lottery. Second, the study presents the results of a simple model of the effect of the legalization of casino gaming on revenues from all sources of gaming as well as the impact on lottery revenues. Third, the study addresses the relationship between revenue and economic development goals that arise in the context of commercial destination casino development.

##### **A. Revenue Components of the Draft Legislation**

The draft legislation involves the allocation of the three casino license through a proposal process. As part of their proposals, developers must specify the level of fees to be paid to the Commonwealth subject to certain minimum fee requirements. These requirements apply to each of the three regional casino developments. The fees have two components. One component is an initial licensing fee. The initial licensing fee must be at least \$200 million.<sup>114</sup> The second component is an annual gaming tax. The gaming tax is a percentage of the GGR of the facility.

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<sup>112</sup> Transmission Letter from Deval L. Patrick to the Massachusetts Senate and House of Representatives, October 11, 2007: "In addition to economic development and job creation, this bill provides that millions of dollars of additional revenue will be used annually to provide immediate property tax relief and to make badly needed road, bridge and other transportation infrastructure repairs."

<sup>113</sup> For instance, the study does not address issues concerning whether casino revenues would be the best way to fund expenditures of the sort outlined in the Patrick proposal.

<sup>114</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(ii) and draft legislation, SEC. 6, Ch 12B, Section 6(f)(1).

The minimum gaming tax is 27 percent of the GGR or \$100 million per year, whichever is greater.<sup>115</sup>

Casino development proposals are evaluated based on a range of criteria in addition to the proposed level of fee payments. The additional criteria include the overall economic benefit to the Commonwealth,<sup>116</sup> whether the developer is a Native American tribe,<sup>117</sup> the number of jobs to be created,<sup>118</sup> aesthetic and environmental considerations<sup>119</sup> and the extent of the use of organized labor in the construction of the facility.<sup>120</sup> Given the range of criteria utilized in the selection of the casino, the draft legislation allows the authority to reject a proposal that maximizes total state fee income and instead accept a proposal judged superior on the basis of other criteria.

The draft legislation also contains provisions concerning the use of funds received from the casino developer. The initial license fee is to be placed into a gaming license fee trust fund. The draft legislation does not specify how the funds in the gaming license fee trust fund are to be used. Funds received from the gaming tax payments are to be placed in a separate fund, the gaming tax trust fund. Funds in the gaming tax trust fund are to be allocated in the following order:

- (i) An amount equal to 2.5 percent of the GGR of the casinos is to be allocated to the community mitigation trust fund.<sup>121</sup> The community mitigation trust fund is established to assist communities in the vicinity of the resort casinos with the added costs of providing local services.

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<sup>115</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(ii) and draft legislation, SEC. 6, Ch 12B, Section 6(f)(1).

<sup>116</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(i).

<sup>117</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(v).

<sup>118</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(vii).

<sup>119</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(x).

<sup>120</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(xi).

<sup>121</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(1). The draft legislation states that the amount allocated to the community mitigation trust fund is 2.5 percent of the operating license payments. It is assumed herein that the intent of the legislation is to allocate 2.5 percent of *gross gaming revenues* from the casino to the community mitigation trust fund. The Commonwealth of Massachusetts Executive Department, "Governor Patrick Files Resort Casino Legislation", press release, October 11, 2007, available at [http://www.mass.gov/?pageID=pressreleases&agId=Agov3&prModName=gov3pressrelease&prFile=071011\\_casino\\_legislation.xml](http://www.mass.gov/?pageID=pressreleases&agId=Agov3&prModName=gov3pressrelease&prFile=071011_casino_legislation.xml).

(ii) An amount equal to 2.5 percent of the GGR of the casinos is to be allocated for the public health trust fund.<sup>122</sup> These funds are to be used to mitigate the effects of the casino on public health including gambling prevention and addiction services.

(iii) Funds are to be allocated to the state lottery fund. The draft legislation contains a formula for the determination of the amount deposited in the state lottery fund. The amount is the difference between the average amount deposited in fiscal years 2003 to 2007 increased by 3 percent each year after 2007 and the amount deposited in the lottery fund in future years.<sup>123</sup>

(iv) The remaining funds are to be divided equally between the general fund and the transportation improvement and maintenance fund.<sup>124</sup>

## **B. Contribution of Destination Casino Development to State Revenues**

### *1. Initial License Fees*

The proposal process for the selection of the developer involves the submission of competitive proposals. The proposals specify an initial license fee, a gaming tax and a range of attributes of the development not related to the licensing fees. To identify issues that arise in the implementation of a bidding process of the sort outlined in the draft legislation, this study searched for recent instances in which casino licenses were awarded through a competitive process. The analysis identified one instance where a casino license was awarded through a competitive bidding process similar to that specified in the draft legislation. This involved the award of a casino license in the state of Illinois.

Pennsylvania also recently conducted the sale of licenses for casino gaming facilities. The Pennsylvania bidding process involved only the specification of the attributes of the facility. The initial license fee and gaming tax rate were determined by legislation. Nevertheless, in the Pennsylvania case, the non-price terms of the bids included offers to undertake projects that would be of public benefit in addition to the casino. The value of these additional items provides some insight into the amount of value that casino developers would be willing to transfer to

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<sup>122</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(2). The draft legislation states that the amount allocated to the public health trust fund is 2.5 percent of the operating license payments. Based on discussions with state officials, it is assumed that the intent of the legislation is to allocate 2.5 percent of *gross gaming revenues* from the casino to the public health trust fund.

<sup>123</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(3).

<sup>124</sup> Draft legislation, SEC. 6, Ch 12B, Sections 10(b)(4) and 10(b)(5).

public entities in exchange for a casino license. This study discusses the Illinois competition and briefly discusses the Pennsylvania case. Discussion of issues that arose in an auction involving the award of a casino licenses in one South American Country is also included.

*a. License Auction in Illinois*

Illinois gaming law allows the state to issue no more than 10 licenses for the operation of riverboat casinos. Nine of the ten licenses are in use. The tenth license, issued to Emerald Casino Inc, remained dormant from July 29, 1997 pending a Gaming Board's decision on whether to permit the operator to renew its license and possibly relocate its operations.<sup>125</sup> After continually failing to meet licensing requirements, the Board announced in 2001 that it would not allow Emerald to renew its license.<sup>126</sup> In 2003 Emerald filed a plan of reorganization in federal bankruptcy court.

After revoking the license from Emerald, the Illinois Gaming Board oversaw a bankruptcy court directed auction for the rights to the state's 10th casino license. Selection requirements were not based solely on the highest bid for an initial licensing fee, but considered other aspects of each proposal such as job creation and the anticipated tax revenues to be generated from GGR. Table IV.1 contains the 7 corporate entities and their respective proposals that were submitted during the initial round of bidding.

The Illinois Gaming Board selected three finalists. After negotiating a second round of proposals and bids from the finalists, the Board ultimately awarded Isle of Capri Corporation the license. Bidding \$518 million, Isle of Capri proposed to complete their construction of a casino in Rosemont, IL, within eight months or pay daily fines until the casino became operational.<sup>127</sup> Their proposal also estimated that 1,400 jobs would be created.<sup>128</sup>

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<sup>125</sup> Illinois Gaming Board, 1999 Annual Report, 5-8.

<sup>126</sup> Illinois Gaming Board, 2001 Annual Report, 7.

<sup>127</sup> Illinois Gaming Board, 2004 Annual Report, 9.

<sup>128</sup> Illinois Gaming Board "Chicago Board to Designate Three Final Bidders on February 25th 2004," press release, February 19, 2004.

Illinois' 10th and final casino license generated an initial fee more than twice as much as the minimum amount specified by the draft legislation. As indicated in Table IV.1 the initial bids ranged from \$205 million - \$506 million. A \$20 million bid was also submitted by Mandalay Hyatt LLC. This proposal, however, consisted of a highly unusual tax structure which entitled Illinois 66 percent of the proposed casino's adjusted net profit. Using the Illinois auction as an example, this study evaluates some of the primary factors that may influence the bidding:

The Illinois auction held in 2004 was for the final license in a state with a riverboat casino market that was over 10 years old and contained 9 other established participants. This contrasts with Massachusetts, where developers would be bidding for one of no more than three licenses. The lower number of licenses in the draft legislation may increase the price developers are willing to pay for the initial licensing fee. However, other provisions of the draft legislation such as preference to tribal entities and increased construction requirements may serve to limit bidding prices.

Illinois casino operations are restricted to riverboats that are to "permanently moor at docksides, without conducting cruises on the water."<sup>129</sup> Riverboat casinos are generally smaller and offer a more limited range of amenities than the resort destination casinos proposed for Massachusetts. This means that developers in Massachusetts will need to make larger capital investments to develop the casinos, which may limit their willingness to pay a higher initial licensing fee.

In Illinois, there are entrance taxes charged for each guest entering the facilities as well as taxes levied on casino GGR. Taxes levied on GGR range from a rate of 15 percent, for operations with gross revenues up to \$25 million, to a tax of 50 percent for gaming operations in excess of \$200 million.<sup>130</sup> These tax rates are significantly higher than the minimum tax rates proposed in the draft legislation. All else equal, a developer would be willing to pay a higher upfront fee in order to develop a casino in a jurisdiction with a lower annual tax rate.

The Illinois Board also received final bids of \$520 million and \$476 million, for proposals in Waukegan and Des Plaines, submitted by Harrah's and Midwest, respectively.<sup>131</sup> The Board's vote led to public discontent over the awarding of the 10th casino license to the Isle of Capri's proposal for a development in Rosemont.<sup>132</sup> The state's attorney general publicly criticized and

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<sup>129</sup> Illinois Gaming Board, 2005 Annual Report, 7.

<sup>130</sup> Illinois Gaming Board, 2006 Annual Report, 8.

<sup>131</sup> Illinois Gaming Board, 2004 Annual Report, 9.

<sup>132</sup> Ibid.

questioned the Board over the fairness of the bidding procedures and the suitability of Isle of Capri as the winner of the license.

*b. Pennsylvania*

Pennsylvania conducted an auction for 14 casino licenses. The licensing structure involved a flat \$50 million initial fee from successful bidders and the payment of a gaming tax on GGR.<sup>133</sup> The criteria for the evaluation of bids included economic development and operational considerations. The bidding process led to significant controversy because the subsequent sale of certain establishments provided supporting evidence that the state could have earned much more from the sale of licenses through a competitive auction. Hooke and Firey (2006) use the sale of the Meadows racetrack in Pittsburgh as an example. They estimate the implied value of the license to be \$245 million, which is “to equal (a) the sale price...plus (b) the license fee to be paid to the State of Pennsylvania minus (c) the estimated \$30 million value of the track’s tangible assets, such as land buildings.”<sup>134</sup> Critics of the process argued that even if this value estimate is high, it is clear the state forfeited significant revenues through its use of the fixed initial licensing fees.<sup>135</sup>

Proposals for the rights to Pittsburgh’s slots also provide some indication of the price developers are willing to pay to obtain a license. For example, Isle of Capri Casinos proposed to build a \$290 million arena for the Pittsburgh Penguins, while Harrah’s offered to undertake neighborhood revitalization developments in addition to developing a \$512 million casino.<sup>136</sup>

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<sup>133</sup> Scott Van Voorhis, “Casino licensing process could have costly pitfalls for state,” *The Boston Globe*, September 19, 2007.

<sup>134</sup> Hooke, Jeffrey C. and Thomas A. Firey, New York State’s \$2 Billion Trifecta: NYRA, VLTs & OTB: Competitive Auctioning of Racing Assets Could Narrow NYS Budget Gap, Maryland Tax Education Foundation 2006, 11

<sup>135</sup> Allegheny Institute for Public Policy, Bargain Basement Price for Slot Machine Licenses, *Policy Brief*, v. 5, n. 47, 2006.

<sup>136</sup> “Harrah’s eyes \$512M Pittsburgh casino,” *Pittsburgh Business Times*, January 23, 2006.

**Table IV.I: Auction for Illinois' 10th Casino License**

**Panel A: Proposals and Bids Submitted During Initial Round of Bidding**

<b>Bidder and Location</b>	<b>Proposed Amount Bid</b>	<b>Facility Size</b>	<b>Estimated Jobs and Construction Time</b>	<b>Additional</b>
Caesars Entertainment Rosemont, IL	\$205 million	40,000 square feet	1,300 9 months	Adopted Rosemont's plan to share revenue with 71 other communities.
Harrah's Entertainment Waukegan, IL	\$375 million	50,000 square feet 250 - 500 hotel rooms	1,500 - 2,000 15 months	Facility will be a permanently moored barge.
Isle of Capri Casinos, Inc. Rosemont, IL	\$351 million	40,000 square feet	1,400 9 months	Adopted Rosemont's revenue sharing plan.
Midwest Gaming and Entertainment LLC Des Plaines, IL	\$360 million	40,000 square feet 300 - 500 hotel rooms	1,700 15 months	Positioned as a destination casino.
Penn National Gaming Rosemont, IL	\$506 million	2 food courts, buffet and 1 specialty restaurant	Not provided	Financed with \$50 million in cash and \$711 in debt. Intends to sell 80% of the business back to the state, in return for a 20-year management contract.
Southland Development Group Near the intersection of Interstates 57 and 80	\$250 million	45,000 square feet	2,925 directly 1,728 in related industries	Construction of a destination resort casino with various amenities. A second phase calls for the construction of a convention center.

Source:

Illinois Gaming Board Press Release (Feb 19, 2004): Gaming Board to Designate Three 'Final Bidders' on February 25th, 2004.

Note: A \$20 million dollar bid was also submitted by Mandalay Hyatt LLC for a proposed development in Summit, IL. The initial fee was unusually low, because the developer proposed a tax structure entitling the state to 66% of adjusted net profit.

**Panel B: Proposals and Bids Submitted During Final Round of Bidding**

<b>Bidder and Location</b>	<b>Proposed Amount Bid</b>	<b>Additional</b>
Harrah's Entertainment Waukegan, IL	\$520 million	Agreed to construct a casino within twelve months of receiving the Gaming Board's approval to operate a casino. They agreed to pay a \$500,000 daily penalty for each day the casino was not operational at the end of the 12-month period.
Isle of Capri Rosemont, IL	\$518 million	Agreed to construct a casino within eight months or pay a \$500,000 a day penalty for each day the casino was not operational at the end of the eight-month construction period.
Midwest Gaming and Entertainment LLC Des Plaines, IL	\$476 million	Not provided.

Source:

Illinois Gaming Board 2004 Annual Report

### *c. International Experience with Casino License Auctions*

The previous examples illustrate the exposure gaming regulatory bodies may face when licenses are awarded based on a number of different (and sometimes qualitative and subjective) criteria and not the highest bid. The country of Chile's Gaming Commission also faced criticism and scrutiny through its selection process, which similar to the process specified in the draft legislation.<sup>137</sup> Chile's Gaming Commission was brought to court by two different developers: Thunderbird of San Diego, CA and the Spanish firm Cirsa.<sup>138</sup> The Commission eventually won both cases at the Supreme Court level, but this emphasizes the increased exposure and risk of litigation such a selection process may generate. These risks can produce delays in the awarding of licenses and the amount of time before a development is operational, and thus the time before tax revenue is received by the state.

### *2. Revenues from Gaming Tax Payments*

The Commonwealth will also realize revenues from the annual gaming tax once the facilities enter service. The gaming taxes are assessed as a percentage of the GGR of the facility. The net effect on state revenues from gaming may differ from the revenues raised solely from the casino gaming tax. Currently, Massachusetts conducts a state lottery which raises significant amounts for public purposes. The legalization of casino gaming will present residents with an expanded access to gaming. If casino patrons shift their gaming expenditures away from lottery play, state revenues from the operations of the state lottery will be diminished. Thus, the revenues received from the gaming tax payments would overstate the net change in gaming revenues after legalization of casino gaming.

This analysis models state revenues from gaming activities. The model allows for the incorporation of different assumptions concerning the impact of casinos on state lottery revenues. The model also assumes that casino revenues will grow in future years at the same rate as personal income in the state of Massachusetts. An important assumption of the model is

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<sup>137</sup> Marcelo Cajueiro, "Surprise selections rock Chile's licensing process", *International Gaming & Wagering Business*, September, 2006.

<sup>138</sup> Marcelo Cajueiro, "Chile in the air: Chile's 15 new casino licensees seek to overcome court issues, construction delays," October 2007.

that the only casino developments in Massachusetts are the three allowed under the draft legislation. The development of tribal casinos would result in lower revenues than model projections if the terms of revenues sharing agreements between the Commonwealth and the tribes involved an effective gaming tax rate below the 27 percent minimum in the draft legislation. Appendix C contains a detailed discussion of this model.

Research on patterns of gambling expenditures demonstrates that there is some degree of substitution in consumer expenditures between casino gambling and lottery play. Increases in casino gambling expenditures are associated with lower expenditures on lottery tickets.<sup>139</sup> The academic work on the pattern of gaming activity documents the direction of the effect but does not provide insight into its magnitude. Academic studies tend to focus on the average impact across all states and the marginal rate of substitution between different forms of gaming.<sup>140</sup> To evaluate the net impact of the introduction of casino gaming, one would want to examine the total impact of casinos on lottery revenues rather than the impact on the last dollar of lottery play.

There are a number of studies that have specifically addressed the impact of the introduction of casino gaming on revenues from the Massachusetts lottery. These studies include:

1. A 2003 study by Christiansen Capital Advisors of the impact of the introduction of video lottery terminals on the lottery.<sup>141</sup> The study concluded that lottery revenues would decline by 7.4 percent but then recover to previous levels within five years.<sup>142</sup>

2. A 2007 study by the Center for Policy Analysis at University of Massachusetts Dartmouth. The study contained an estimate that the maximum impact from the

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<sup>139</sup> Douglas M. Walker and John D. Jackson, Do U.S. Gambling Industries Cannibalize Each Other? *Public Finance Review*, forthcoming; University of Massachusetts Dartmouth Center for Policy Analysis, Comparative Lottery Analysis: The Impact of Casinos on Lottery Revenues & Total Gaming Revenues, Prepared for State Senate of Rhode Island, May 2004; Donald Siegel and Gary Anders, The Impact of Tribal Casinos on State Lotteries: A Case Study of Arizona, *Public Finance Review*, v. 29, n. 8, (March 2001), 139-147; Stephen Fink and Jonathan Rork, The Importance of Self-Selection in Casino Cannibalization of State Lotteries, *Economic Bulletin*, v. 8, n. 10, (2003), 1-8.

<sup>140</sup> State conditions vary considerably both in terms of lottery operations (games offered by the state lotteries, efforts at marketing and distribution, level of market saturation) and in terms of gaming substitutes (casinos, pari-mutual wagering, video lottery terminals).

<sup>141</sup> A video lottery terminal is similar to a slot machine. While a slot machine offers a random payoff, the payoff of a video lottery terminal is determined by a central computer system.

<sup>142</sup> Eugene Christiansen, Analysis and Recommendations for the Massachusetts Lottery, January 13, 2006, 136..

legalization of casino gaming and the development of three destination resort casinos would be an 8 percent decline in lottery revenues.<sup>143</sup>

3. A 1996 report by the Gaming Strategy Group that predicted a 9.9 decline in lottery sales from a single large casino in Southeastern Massachusetts and a 13 percent decline from a large casino in Southeastern Massachusetts combined with 2,800 slots at four racetrack locations.<sup>144</sup>

4. A 2006 report by the Massachusetts House Committee on Economic Development. The report reviewed findings of other studies and concluded that the introduction of casino gaming would cause a reduction of at least 15 percent in lottery sales.<sup>145</sup>

This study develops a model of state revenues from gaming sources that accounts for the effect of casino gaming on revenues from the state lottery. The model assumes the revenue impact to be a one-year, permanent reduction of 5 or 10 percent in the level of lottery revenues. The study also assumes that all three casino developments come online at the beginning of fiscal year 2012.<sup>146</sup> Further, the analysis assumes that the gaming tax payments are 27 percent of casino GGR.<sup>147</sup> This is the minimum level allowable under the draft legislation.

The model assumes different growth rates for revenues from casino operations and the state lottery. Estimates of the size of the market in Section III are based on 2006 data on gaming revenues in other states. By the time the casino developments enter service, the level of demand for casino gaming will be larger as a result of economic growth and population growth. Projections of casino revenues in future periods should also account for the effect of inflation. In recent years, the increase in commercial casino GGR in the United States has generally been at or above the rate of growth of personal income. In contrast, the growth rate of revenues of the Massachusetts lottery has lagged behind the rate of economic growth in the Commonwealth.

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<sup>143</sup> Clyde W. Barrow, *Maximum Bet: A Preliminary Blueprint for Casino Gaming and Economic Development in Massachusetts*, Center for Policy Analysis, University of Massachusetts Dartmouth, August 2007, 7.

<sup>144</sup> The Commission for the Study of the Potential Expansion of Legalized of Casino Gaming, *Expanded Gaming in Massachusetts: A Presentation of Gaming Regulation, Economic, Development Impact, Fiscal Impact and Social and Cultural Impact*, December 31, 2002, 27

<sup>145</sup> James C. Kennedy, *Rolling the Dice: The Economic Reality of Expanded Gambling in the Commonwealth*, Massachusetts House Committee on Economic Development, March 21, 2006.

<sup>146</sup> The timing of the developments is a simplifying assumption. It may take longer than four years for the projects to be completed. However, it may also be the case that certain portions of the casino projects enter service at an earlier date.

<sup>147</sup> This study assumes that for all three casinos, the operating license payment exceeds \$100 million. If not, the average rate would exceed 27 percent.

This study's estimate of lottery revenues in future periods is based on the historical growth rate of lottery revenues relative to the rate of personal income growth. The study uses projections of economic growth, state population growth and changes in the price level from federal agencies. The economic assumptions of the revenue model are discussed in greater detail in Appendix C.

Results of the analysis appear in Table IV.2. The GGR of the three casino developments are projected to grow from \$2,150 million to \$2,698 million by 2012. After the transfers of 2.5 percent of GGR for local impact mitigation and 2.5 percent for public health mitigation, the additional revenues available to the state from the casino gaming tax is projected to be \$594 million in the first full year of casino operations. A 5 percent and 10 percent reduction in lottery revenues in 2012 would have the effect of reducing state revenues from the lottery by \$52 million and \$104 million respectively. Net of the loss of lottery revenue, total revenues to the state from all gaming sources in 2012 are projected to be \$542 million higher if the introduction of casino gaming reduces lottery revenues by 5 percent, \$490 million higher if there is a 10 percent reduction in lottery revenues. After accounting for changes in the price level, revenues from gaming sources are \$474 million higher in 2007 dollars with a 5 percent reduction in lottery revenues, \$428 million higher in 2007 dollars with a 10 percent reduction.

**Table IV.2: Projected Gaming Tax Revenues  
Estimates in FY 2012, Amounts in \$Million**

	Revenues from Casino Development	
	5% Decrease in Lottery Revenues	10% Decrease in Lottery Revenues
<i>Gaming Tax and Allocation of Funds</i>		
Gross Gaming Revenues	2,698	2,698
Gaming Tax Payments (27% of GGR)	729	729
Local Impact Mitigation (2.5% of GGR)	-67	-67
Public Health Mitigation (2.5% of GGR)	-67	-67
Gaming Tax Revenues less Local Impact and Public Health Mitigation	594	594
Lottery Mitigation	-165	-217
General Purpose Funds	429	376
<i>Net Revenue Impact</i>		
Gaming Tax Revenues less Local Impact and Public Health Mitigation	594	594
Casino Impact on Lottery Revenues	-52	-104
Net Additional Revenue from Casino Development	542	490

This study also allows for the determination of the amount of reduction in lottery revenues that would be necessary for the introduction of casino gaming to have no effect on state revenues from gaming. At that point, the decrease in revenues from the lottery would just equal the increase in revenues from the introduction of casino gaming. In 2012, the initial year of casino operations, a 57 percent decrease in lottery revenues would result in no net gaming revenues for the Commonwealth from the introduction of casino gaming.<sup>148</sup> A decline in lottery revenues of less than 57 percent would result in a net increase in gaming revenues. The size of the reduction in lottery revenues that would yield zero net revenues is larger in later years. For instance, in

<sup>148</sup> Based on results of the project model appearing in Appendix C, Tables C.5 and C.6. Projected gaming tax revenues from the casino developments is \$594 million after accounting for transfers for public health and local impact mitigation. Without the casino developments, projected lottery revenues in 2012 are \$1,041 million. The size of the reduction in lottery revenues that would result in not net revenues for the Commonwealth is \$594 million/\$1,041 million or 57 percent.

2016, there would have to be a 65 percent reduction in lottery revenues for the introduction of casino gaming to have no effect on gaming revenues.<sup>149</sup>

### **C. Comparison with Gaming Taxes in Other States**

The draft legislation refers to a number of policy objectives to be accomplished through the legalization of casino gaming in Massachusetts. One of these objectives is to realize additional revenues for public purposes. A second objective is job creation. These policy objectives may involve certain tradeoffs. Higher casino gaming tax rates tend to make it more difficult to support destination casino developments. However, destination casino developments are more likely to draw patrons from outside and thus expand the overall level of economic activity in the region where the casino is located.

Casinos are cash businesses. The total amount wagered by patrons that are not paid out in the form of winnings go to either meet the operating costs of the facility; to provide a return to owners or to pay taxes and fees to government entities. The higher the level of tax levied on casino revenues, the lower the amount that is available to be paid out to owners as a return on capital or to be paid out to patrons in the form of winnings. This may also have an impact on initial license bids. Evidence on consumer choice in the gaming industry suggests that casino patrons consider both the amenities offered by a facility and the payout rate in choosing among potential casino gaming facilities.<sup>150</sup>

A reduction in the return to owners lowers the return on initial investment in the facility. Destination casino developments are capital intensive. They typically involve capital investments in a wide range of amenities to offer patrons access to both gaming and to non-gaming attractions. The draft legislation requires that bidder commit to expend at least \$1 billion

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<sup>149</sup> \$700 million/\$1,071 million or 65 percent. Gaming tax revenues from the casino developments are projected to grow more rapidly than lottery revenues. Therefore, the percentage of lottery revenues displaced at the point where the net change in revenues is zero increases over time.

<sup>150</sup> Kilby, Fox & Lucas, *Casino Operations Management*, 279-281. The authors discuss the importance of amenities in attracting patrons. Casino patrons are also sensitive to payout rates. William R. Eadington, *The Economics of Casino Gambling*, *Journal of Economic Perspectives*, v. 13, n. 3, (1999) 173-192.

to develop the facility.<sup>151</sup> As discussed in Section II, destination casinos also require ongoing investments in new amenities and updating the facility to continue to attract patrons seeking variety. Upfront investments in advertising and marketing are also necessary to raise awareness of the facility and its attractions. Lower returns to owners from the operation of the facility make it more difficult to attract capital. Therefore, higher tax rates tend to discourage the development of destination casinos and shift development towards less capital intensive venues that focus on gaming activities and offer fewer non-gaming attractions.<sup>152</sup> Facilities that offer fewer attractions in turn create fewer jobs and are more likely to cater to local rather than out-of-state patrons.

States that have legalized commercial casino gaming use a variety of different levies to obtain tax and fee revenue from casino operations. All states levy fees based on the GGR of commercial casinos. Additional taxes and fees include the use of taxes on GGR levied by local government, the levy of per patron entrance fees, and licensing fees for each slot machine or gaming table. In many states the tax on gaming revenues is a function of the level of revenues of the facility. Larger casinos, with higher level of GGR, are subject to a higher gaming tax rate.

To ensure that tax rates are comparable across states, this study analyzes taxes paid by a casino facility that has \$500 million in GGR. This is approximately the size of the facility that would be created under the draft legislation. Table IV.3 contains estimates of gaming taxes paid by a casino with \$500 million in GGR in the eleven states with commercial casino gaming. Also included in Table IV.3 are the two New England states with large casinos.<sup>153</sup> The tax rate in Connecticut is based on the terms of the compacts between the State of Connecticut and the tribes that control Foxwoods and Mohegan Sun. These compacts include a levy of 25 percent on GGR from slot machines. No levy is applied to other forms of gaming at these two developments. Rhode Island applies a 60 percent levy to casino GGR. This analysis also includes Massachusetts in Table IV.3 assuming that the casino gaming tax payments are at 27

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<sup>151</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(b)(2). The minimum investment of \$1 billion does not include the purchase or lease price of the land.

<sup>152</sup> Christiansen Capital Advisors, *The Impacts of Gaming Taxation in the United States*, 2005.

<sup>153</sup> This study did not examine the effective tax rates on gaming for Tribal casinos located outside of New England. The tax rates are specified in compacts between the state and the Native American tribes. The amounts received by the state vary among compacts. There is a small slot parlor in Bangor, Maine. Given the size and remote location of the facility, this analysis did not consider it to be a competitor to the facilities considered in the draft legislation.

percent, the minimum level in the draft legislation. The highest effective tax rates are in Rhode Island and the Midwestern states of Illinois, Iowa and Indiana. Given the minimum tax rate schedule in the Draft legislation, a \$500 million casino facility in Massachusetts would have the fifth highest effective tax rate.

This study examines whether there is a relationship between the effective tax rates on casino gaming and the development of destination casino facilities. Table IV.4 partitions the thirteen states into those with effective gaming tax rates higher and lower than 27 percent. Column [2] contains the effective gaming tax rate on a casino with \$500 million in GGR. Column [3] contains the gaming format in each state.<sup>154</sup> The analysis also constructs a measure of the number of facilities in each state that may be considered to be destination-style resort casinos. There are no standard criteria for the classification of a facility as a destination casino, however, destination casinos are generally considered to be larger complexes that offer amenities beyond gaming. This could include hotel accommodations, high-end restaurants or recreational facilities such as golf courses. This study uses the number of hotel rooms at the facility as an indicator of whether the development could be considered to be a destination casino. Columns [4] to [6] contain the number of facilities in each state by room count. Most facilities with hotel accommodations are in states with relatively low gaming tax rates. Among casino developments with more than 500 rooms, 96 are located in states with an effective gaming tax rate below 27 percent while four are located in states with a gaming tax rate in excess of 27 percent. The higher gaming tax rate would place Massachusetts casino developments at a cost disadvantage relative to facilities that are located in states with lower gaming tax rates.

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<sup>154</sup> Riverboat and dockside casino development with hotel rooms are generally structured with the hotel facility located on shore and the casino gaming facility located on a boat or barge.

**Table IV.3: Gaming Tax Rates in States With Commercial Casino Gaming with RI & CT  
Hypothetical \$500 GGR Casino**

State [1]	Description [2]	Rate (@\$500M) [3]	GGR (millions) [4]	Tax on Gaming Revenues [5]	Admissions Tax (millions) [6]	Non-License Device Tax (millions) [7]	Total Revenue to State (millions) [8]	Effective Tax Rate [9]	Rank [10]
Colorado	20% tax on GGR above \$15 million	20.00%	\$500	\$100.00			\$100.00	20.00%	9
Connecticut	25% of GGR from slot machines	25.00%	\$500	\$87.50			\$87.50	17.50%	10
Illinois	Graduated (15% - 50%) tax on GGR	50.00%	\$500	\$250.00	\$12.61		\$262.61	52.52%	2
Indiana	Graduated (15% - 40%) tax on GGR	35.00%	\$500	\$175.00	\$16.00		\$191.00	38.20%	3
Iowa	Graduated (5% - 36%) tax on GGR	36.00%	\$500	\$180.00	\$4.66		\$184.66	36.93%	4
Louisiana	Greater of 21.5% of GGR or \$60M	21.50%	\$500	\$107.50			\$107.50	21.50%	8
Massachusetts*	Proposed: Greater of 27% of GGR or \$100M	27.00%	\$500	\$135.00			\$135.00	27.00%	5
Michigan	24% of GGR	24.00%	\$500	\$120.00			\$120.00	24.00%	6
Mississippi ‡	Graduated on 1st \$134,000 monthly GGR, then 8% (+ 4% Local)	12.00%	\$500	\$60.13			\$60.13	12.03%	11
Missouri	20% on GGR	20.00%	\$500	\$100.00	\$16.67		\$116.67	23.33%	7
Nevada ‡	Graduated on 1st \$134,000 monthly GGR, then 6.75% (+ 1% Local)	6.75%	\$500	\$38.82		\$1.19	\$40.01	8.00%	13
New Jersey	8% tax on GGR	8.00%	\$500	\$40.00			\$40.00	8.00%	14
Rhode Island	60% of VLT Revenue	60.00%	\$500	\$300.00			\$300.00	60.00%	1
South Dakota	8% tax on GGR	8.00%	\$500	\$40.00		\$7.19	\$47.19	9.44%	12

\* Proposed

‡ Maximum Local Tax Rate Assumed

Sources:

Colorado Department of Revenue, Illinois Gaming Board, Indiana General Assembly, Iowa Gaming Association, Louisiana Gaming Control Board, Michigan Gaming Control Board, Mississippi Gaming Commission, Missouri Gaming Commission, Nevada Gaming Commission, New Jersey Casino Control Commission, State of Rhode Island General Assembly, South Dakota Gaming Commission

Notes:

Connecticut tax assumed to be levied on slot machines alone.

[5]: [3] x [4]

[8]: [5] + [6] + [7]

[9]: [8] / [4]

**Table IV.4: Gaming Format and Number of Destination-Style Developments  
States with Commercial Casino Gaming, Connecticut and Rhode Island**

State	Effective Tax Rate on 500M GGR Casino	Casino Gaming Formats	Number of Casino Developments by Room Count		
			Over 500 Rooms	250 to 499 Rooms	100 to 249 Rooms
<i>Effective Tax Rate Above 27%</i>					
Rhode Island	60.00%	Racetrack, land-based	0	0	0
Illinois	52.52%	Riverboat	0	1	4
Indiana	38.20%	Riverboat, dockside and land-based	3	5	2
Iowa	36.93%	Riverboat, racetrack and land-based	1	1	5
<i>Proposed</i>					
Massachusetts	27.00%	Land-based	N/A	N/A	N/A
<i>Effective Tax Rate Below 27%</i>					
Michigan	24.00%	Land-based	0	0	0
Missouri	23.33%	Riverboat	1	2	2
Louisiana	21.50%	Riverboat, racetrack and land-based	4	4	2
Colorado	20.00%	Land-based	0	0	5
Connecticut	17.50%	Tribal Casinos	2	0	0
South Dakota	9.44%	Land-based	0	0	2
Mississippi	8.01%	Dockside, land-based	10	4	10
New Jersey	8.00%	Land-based	11	0	0
Nevada	7.00%	Land-based	68	30	37
<i>Total</i>			<i>100</i>	<i>47</i>	<i>69</i>

Source: American Gaming Association; Casino City North American Gaming Almanac

#### **D. Other Revenue Impacts**

The casino developments will have other impacts on state and local revenues beyond revenues from licensing fees. The impact of these fees is likely to be of smaller magnitude than the licensing fees. One source of revenues will be from occupancy taxes levied on hotel rooms rented at the casino facilities. Another source of income will be sales taxes from retail, recreation and restaurant operations at the casino resorts. One study estimated that the additional revenues from meals and occupancy taxes at three destination-style casinos would be on the order of \$10 million.<sup>155</sup> The state could also benefit from additional revenues derived from expenditures by out-of-state casino patrons at hotels, restaurants and entertainment facilities that are not connected with the three resort-casinos.

The development of casinos would also cause a decline in state revenues from other sources. The availability of casino gaming will cause some state residents to shift expenditures from other items to gaming. This is the substitution effect discussed in Section III. The reduction of expenditures on other items will cause a decline in sales tax revenues to the extent that these items are subject to tax. The reduction in sales tax revenues from the shift in consumption will also be small compared to the revenues raised by the gaming tax.<sup>156</sup>

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<sup>155</sup> Clyde W. Barrow, *Maximum Bet: A Preliminary Blueprint for Casino Gaming & Economic Development in Massachusetts*, Center for Policy Analysis, University of Massachusetts Dartmouth, August 2007.

<sup>156</sup> For example, assume that one third of the GGR of casinos represents a shift in consumption of Massachusetts residents from other forms of consumption towards casino gaming. This represents a shift of approximately \$700 million in household consumption. Assuming that approximately half of this amount is subject to sales and given the current five percent sales tax rate, the reduction in sales tax revenues would be approximately \$17 million.

## **V. SOCIETAL EFFECTS OF THE INTRODUCTION OF CASINOS IN MASSACHUSETTS**

Along with potential economic and fiscal benefits that the legalization of casino gambling offers the Commonwealth, there is the opportunity to obtain certain social benefits as well as the threat of societal costs. Generally the costs to society receive more attention, as the introduction of casinos is hypothesized to be associated with increases in crime, problem gambling and bankruptcy. In this section the analysis addresses both potential costs and the potential benefits of the legalization of casino gaming. The study begins with a discussion on the prevalence of problem and pathological gambling, providing an overview of the prominent research available on the topic. The analysis then summarizes numerous studies related to the effect of the legalization of casino gambling on measures of social welfare. Specifically, the analysis focuses on research related to gambling's impact on crime and bankruptcy. The review of this research is intended to provide the reader with a qualitative sense of the direction and magnitude of the effects. The quantification of the impact of casino gaming on measures of social health is difficult and varies with the circumstances surrounding the introduction of casino gaming.

### **A. Prevalence of Problem or Pathological Gambling**

Pathological gambling is at the most severe end of the scale of gambling problems and may be diagnosed by a qualified and experienced clinician. Problem gambling is used to describe individuals whose gambling habits are sub-clinical. Some of the traits problem and pathological gamblers exhibit include a preoccupation with gambling; irritability when they stop gambling; a loss of control with their ability to stop gambling; and lying to family members and others about the extent of their gambling. This may cause a problem or pathological gambler to jeopardize significant relationships or work related opportunities.

Gambling problems have been the subject of research in the social and medical sciences. The purpose of this study is not to present a comprehensive review of the research on gaming problems. Rather, the study focuses on a few large comprehensive works. The two prevalence studies discussed below incorporated the largest sample size of any study of problem gambling. Both were undertaken by the University of Chicago's National Opinion Research Center.

## *1. 1999 Report to the National Gambling Impact Study Commission*

In 1996, Congress created the National Gambling Impact Study Commission (“NGISC”). The NGISC was created to conduct a comprehensive study of the social and economic consequences of gambling in the United States.<sup>157</sup> As part of its work, the NGISC commissioned a study of the economic and social impact of gambling. The report was based in part on a telephone survey of 2,417 adults and a face-to-face survey of 530 patrons at different types of gaming venues. The survey was conducted by the National Opinion Research Center (“NORC”) of the University of Chicago. The NORC also constructed a 100 community database consisting of economic and social indicators of communities in which casino gambling had been introduced in some form between 1980 and 1996. The 1999 NGISC Report is acknowledged as a landmark work in the study of problem gaming behavior.

The NORC surveys found past-year prevalence rates of 0.7 percent for problem gambling and 0.6 percent for pathological gambling. That is, approximately 1.3 of the population in the past year experienced some form of circumstance or behavior that is consistent with gambling problems. The NORC surveys found lifetime prevalence rates of 1.5 percent for problem gambling and 1.2 percent for pathological gambling.

## *2. 2006 California Problem Gambling Prevalence Survey*

More recently, the State of California Department of Alcohol and Drug Programs engaged the NORC to do a similar survey of gambling problems among California residents.<sup>158</sup> As part of the 2006 California study, the NORC conducted random telephone surveys and interviews to a sample of 7,121 adults across the state making this the largest study of problem gambling to date.<sup>159</sup> The NORC also asked questions relating to the extent and degree with which California residents participated in gambling activities.

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<sup>157</sup> Public Law 104-169, available at <http://govinfo.library.unt.edu/ngisc/c-law.html>.

<sup>158</sup> California Department of Alcohol and Drug Programs, Office of Problem and Pathological Gambling, *2006 California Problem Gambling and Prevalence Survey, Final Report*, Sacramento, CA, 2006.

<sup>159</sup> *Ibid.*

According to the 2006 California study, 83 percent of adults in California have gambled at one point.<sup>160</sup> The California study found past-year prevalence of problem gambling of 0.9 percent and pathological gambling of 0.4 percent. Lifetime prevalence rates from the California survey were 2.2 percent for problem gambling and 1.5 percent for pathological gambling.<sup>161</sup>

Problem and pathological gamblers also exhibit a stronger tendency to consume alcohol, tobacco, or illicit drugs than the general population in California, according to the survey. The California study concludes, “[i]n addition to substance use, problem and pathological gambling is significantly correlated with higher rates of past year and lifetime depression as well as mental and physical impairment, including hearing and vision loss.”<sup>162</sup>

The 2006 California study contained a survey of the research concerning the prevalence of problem gambling and access to casino gaming venues. The study concludes “[m]ajor reviews ... have, with varying degrees of qualification, concluded that research findings are generally consistent with the view that increased availability leads to more gambling and problem gambling.”<sup>163</sup> The authors emphasized that while there appears to be a link between availability and the prevalence of problem gambling, that linkage is not well understood. For instance, over time, the research suggests that gambling participation decreases despite an increase in the number of gambling options and venues.<sup>164</sup> The authors also cite other studies that have attempted to link gambling availability and prevalence rates. “Replication surveys in several U.S. states and Canadian provinces as well as a large, national replication survey in New Zealand have all identified significant decreases in gambling participation – particularly in weekly gambling – despite substantial increases in casino and gaming machine numbers and expenditures.”<sup>165</sup>

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<sup>160</sup> Ibid, 30.

<sup>161</sup> Ibid, 30.

<sup>162</sup> Ibid, 4.

<sup>163</sup> Ibid, 15.

<sup>164</sup> Ibid, 54.

<sup>165</sup> Ibid.

Interviews with stakeholders, undertaken by this study, also provide some evidence of a linkage between the availability of gambling and the pattern of gambling problems. In Massachusetts, individuals reporting gambling problems stemming from lottery play constitute the largest share of callers to gambling hotlines. Casino gaming is second. In Connecticut, individuals reporting problems stemming from casino gaming are the largest proportion of callers while lottery play ranks second.

## **B. Research Related to the Impact on Social Welfare**

Work on the societal costs and benefits of gambling have generally taken two approaches. The first examines data from individual respondents to determine the prevalence and costs of gambling problems in the general population. A second level of analysis addresses broader regional effects of the introduction of casino gaming. Broader regional studies allow for an analysis of the net effect of casino gaming on the socioeconomic health of communities. It should be noted that many of the effects of casino gaming are partially offsetting. For instance, if one considers regional bankruptcy rates, problem gaming may exacerbate the financial problems of some residents; however, improved job employment opportunities are likely to improve the financial condition of others.

### *1. Obstacles to the Measurement of the Social Costs of Casino Gaming*

The effect and impact the legalization of casinos has on society is difficult to measure.<sup>166</sup> Unlike counting the number of jobs created or tax dollars generated, many of the costs to society are less tangible. Therefore, the results of the various studies focused on the societal costs of gambling should be viewed with some appreciation of the limitations to this type of research. For instance, many of the costs associated with gaming are borne within the household (additional stress on family members) rather than borne by non-family members (as is the case in bankruptcy or

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<sup>166</sup> The General Accounting Office concludes: "Measuring the social effects of gambling upon communities is difficult, primarily because of the limited amount of quality data on the social effects and the complexity of establishing a cause-effect relationship between gambling from other factors, such as substance abuse and personality disorders that cause social problems." United States General Accounting Office, *Impact of Gambling: Economic Effects More Measurable than Social Effects*, GAO/GGD-00-78, 2000, 26.

crime). As a result, studies tend to focus on costs associated with job loss, divorce and home foreclosures.

Another obstacle to the measurement of the effect of the introduction of casino gaming is that access to gaming in the period before legalization is often not well specified.<sup>167</sup> For instance, casino patrons may formerly have gambled illegally. Studies of the social costs of legalized gambling tend to ignore the costs that are incurred under alternative legal regimes. There are also social costs that arise from the prohibition of gambling. In some cases, problem gamblers may be better off as a result of the legalization of gaming since these activities no longer take place underground and gaming operators are subject to regulation. As a result, from a social cost perspective, the measurement of the costs and benefits associated with the legalization of casino gaming are hard to measure.

The diverse number of available gaming options further impedes the ability to measure the social costs associated with gambling. Given the variety of forms of gambling that are available in addition to casinos such as lotteries, race or sports betting, internet gaming and the potential to engage in gaming outside of the jurisdiction it is often difficult to attribute gambling addiction to any one form of gaming activity.

Finally, persons with gambling addiction also often suffer from other forms of maladies such as substance abuse, spousal abuse or emotional disorders.<sup>168</sup> It is difficult to attribute observed differences in outcomes specifically to gambling. For instance, in its study prepared for the NGISC, NORC observed that the rate of personal bankruptcy among problem gamblers is approximately twice the rate of the general population.<sup>169</sup> However, the GAO points out that this

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<sup>167</sup> Smith, Hodgins and Williams (2007) in Research and Measurement Issues in Gambling Studies, write “there have been relatively few studies that have specifically examined illegal gambling.” They also make reference to the challenge of estimating the extent of illegal gambling, given its “hidden nature” (p. 548).

<sup>168</sup> National Gambling Impact Study Commission, Gambling Impact and Behavior Study, 1999, 29-30.

<sup>169</sup> Problem gamblers and pathological gamblers have elevated rates of bankruptcy relative to non-gamblers. Survey research by the University of Chicago’s National Opinion Research Center indicated that 10.3 percent of problem gamblers and 19.2 percent of pathological gamblers have reported filing for bankruptcy, compared to 4.2 percent of non-gamblers. *Ibid*, 46.

could be attributable to differences between compulsive gamblers and the general population rather than gambling per se.<sup>170</sup>

## *2. Social Benefits*

The social benefits that result from the introduction of legalized gambling are overshadowed by the research and research focused on the social costs. Some may argue that the most obvious benefit is that consumers have another recreation option available to them. Consumers tend to use their disposable income to either save or to purchase the goods and services that they desire most. That individuals freely choose to spend money on gambling activities suggests they prefer it to other alternatives.

There are also societal benefits that are derived from the increase in employment opportunities. Evans and Topoleski (2002) point out that increases in income and improvements in one's employment situation is correlated with improvements in health outcomes.<sup>171</sup> To the extent that casino introduction improves employment and earning opportunities, it should also have positive health impacts at least for those individuals that are employed at the development.

## *3. The Effect of Casinos on Crime*

The issue surrounding the development of commercial casinos and their effect on crime has long been debated. This analysis reviews research on the effect of the introduction of casino gaming on crime rates. Various theories have been offered for how casino introduction may lead to an increase in crime rates. One possibility is that criminal activity is a means by which problem and pathological gamblers obtain money to satisfy their gambling habits. Another possibility is that the nature of casino gaming attracts the type of individuals that are more predisposed to commit crimes. Other theories link crime to the increased level of activity around casinos. Casino gambling typically involves cash and casinos are usually crowded and bring in individuals from outside the area. The use of cash and large number of visitors may increase the returns from

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<sup>170</sup> The GAO states that “[w]e also were not able to clearly identify the social effects of gambling from other factors and finding conclusive evidence on whether or not gambling increased social problems” U.S. General Accounting Office, 2000, 28.

<sup>171</sup> Evans and Topoleski, *The Social and Economic Impact of Native American Casinos*, 45

engaging in criminal activity. Other theories suggest that casino gaming may have societal effect that lead to a decrease in crime rates as a result of expanded employment opportunities as a result of the casino opening.

This study reviews recent academic studies to obtain an indication of the net effect of casino development on crime rates. Table V.1 details the areas affected, the methodologies, and the findings of twelve selected studies done on the gaming industry over the past decade<sup>172</sup>.

A number of methodologies were employed to gauge the connection between casino introduction and street crime. Most of the research involves the use of econometric models analyzing the change in crime rates after a casino is introduced into a region. These regression models utilized sample sizes as small as five individual towns to a national study examining all 3,165 U.S. counties. Other studies have utilized interviews or surveys to gather data on the connection between crime and casino development. Subjects of the interviews and surveys included law enforcement officials, key casino personnel and casino patrons. Finally, a small number of studies chose to critically review the casino-crime academic research done to date. Many of these studies found critical oversights in the assumptions made by previous researchers but offered little primary research or findings of their own.

As a general matter, the academic research done to date does little to substantiate any sort of trend in casino-crime patterns. Time series evidence using national data fail to show a link between the legalization of casino gaming and crime rates. The incidences of most categories of crime have fallen since the early 1990s. This coincides with the expansion of commercial and tribal gaming from two to 37 states. Work using crime rates at the regional level are subject to methodological limitations. Crime rates are measures by the number of incidents relative to a population. Since casinos typically draw in large numbers of visitors, researchers have debated whether crime rates should be measured relative to the resident population of the region with a casino or the population including tourists. Many studies done prior to 2000 suggest that adjusting crime rate data for the influx of tourists, rather than relying on per-resident data, shows

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<sup>172</sup> Studies were selected by searching academic databases and selected studies done by the federal government.

a significant decrease in crime rates<sup>173</sup>. However, no study shows that the raw number of crime incidents decrease after the advent of a casino development.

Many studies report an increase in overall crime statistics. These studies point toward root causes that vary from the sheer influx of people to the free alcoholic beverages offered by some gaming establishments.<sup>174</sup> One study noted that crime typically would increase with the introduction of any activity drawing a large number of visitors.<sup>175</sup> Another comprehensive national study found that crime and casinos become increasingly statistically connected over time.<sup>176</sup>

Finally, one study suggests that crime statistics can often prove unreliable if a disconnect exists between many casino security bodies and their respective law enforcement agencies.<sup>177</sup> As an example, tribal casinos do not have the same reporting requirements as state regulated casinos. Some forms of petty criminal activity may be dealt with by the casino's security staff and as a result not appear in official crime statistics.

Overall research on casinos and crime show that the number of reported incidents tends to increase after the development of a casino. The development of a casino, however, also alters the population within a given region. Casinos tend to cause an influx of visitors. Social scientists have debated whether the more appropriate measure of population is the number of residents or the number of individuals (residents plus visitors) in the region. The effect of casino introduction on crime rates depends on the definition of population used. Policing efforts and budgets, the relationship between casino security and local law enforcement, as well as many

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<sup>173</sup> Albanese, J., The Effect of Casino Gambling on Crime, *Federal Probation*, 1985; Chiricos, T., Casinos and Crime: An Assessment of the Evidence, *Unpublished Manuscript*, 1994; Coman, D and Scarpitt, F, Crime in Atlantic City: Do Casinos Make a Difference?, *Deviant Behavior*, 1991.

<sup>174</sup> Davis, Casinos, Crime, and the Costs of Criminal Justice, *Resorting to Casinos, The Mississippi Gambling Industry*, 2006, 149. Davis; Casinos, Crime, and the Costs of Criminal Justice, 147

<sup>175</sup> Miller & Schwartz, Casino Gambling and Street Crime, 127.

<sup>176</sup> Earl Grinols & David Mustard, Casinos, Crime, and Community Costs, *The Review of Economics and Statistics*, 2006.

<sup>177</sup> Davis, Casinos, Crime, and the Costs of Criminal Justice, *Resorting to Casinos, The Mississippi Gambling Industry*, 2006, 149. This study suggests that casino security personnel often take their own disciplinary action toward misconduct and rarely report incidences to local law enforcement. Some believe casino personnel deliberately keep local police out of the matter to maintain a positive public image for the casino.

other environmental factors weigh heavily on the effect that casino developments play on a public safety.<sup>178</sup>

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<sup>178</sup> Davis; Casinos, Crime, and the Costs of Criminal Justice

**Table V.1 Literature Concerning the Impact of Legalized Gambling on Crime**

Title	Author	Methodology	Findings
Casino Gambling and Street Crime, <i>Annals of the American Academy of Political and Social Science</i> (1998)	Miller & Schwartz	Critical review of most academic study to date.	Review of nearly all casino crime related studies done to date in the U.S.; argues that casinos may not have an effect particularly different from that of other tourist attractions. Authors report that they find nothing unique about casinos that cause an increase in street crime in the surrounding areas; noting an increase in street traffic will likely lead to an increase in raw crime numbers.
Gambling Impact and Behavior Study; prepared for the <i>National Gambling Impact Study Commission</i> (1999)	Gerstein, et al; National Opinion Research Center (NORC)	Statistical time series measuring crime observations in counties over as many as 18 years; (1980-1997).	The study finds that the casino effect is not statistically significant for any crime outcome measures. The study suggests that this may not mean there is no casino-related crime, rather, the effects are either small enough as to not be noticeable or that whatever problems that are created may be countered by other effects.
Effects of Casino Gambling on Crime and Quality of Life in New Casino Jurisdictions, Final Report <i>U.S. Department of Justice</i> (2000)	Stitt	Large empirical, three pronged analysis: (1) Site visits and community official interviews, (2) 2,768 telephone interviews, (3) Official data compilation with comparisons to similar control communities	Findings state that casinos do not appear to have any general or dramatic effect on crime, especially in communities that do not have a high concentration of casinos. The data indicate that minor crimes are more likely to increase in casino communities than are the index offenses, although there is little consistency in types of crimes that significantly change when all the new jurisdictions are compared.
Casino Gambling and Crime: A Panel Study of Wisconsin Counties, <i>Managerial and Decision Economics</i> (2001)	Gazel, Rickman, & Thompson	Regression analysis of panel data (FBI Index & Non-Index offenses) for all Wisconsin counties is used to examine whether crime increased with the introduction of casino gambling. Model allowed for each individual type of crime to be analyzed.	The results show that the existence of a casino within the boundaries of a Wisconsin county led to an increase in the county's crime rates. The results also suggest that a strong spillover effect took place across counties, with counties adjacent to casino-counties experiencing higher crime rates.

**Table V.1 Literature Concerning the Impact of Legalized Gambling on Crime**

Title	Author	Methodology	Findings
The Social and Economic Impact of Native American Casinos; <i>Working Paper</i> , (2002)	Evans & Topoleski	Analysis of the FBI's annual Uniform Crime Report (UCR) statistics from 1985 to 1998 including Native American casinos. The analysis monitors both county-level crime as well as state-specific time trends.	Time series analyses are separated into two groupings; the 4 years immediately after a casino opens and after the fourth year of casino operations. Generally, the study finds that auto thefts, larceny, violent crimes and bankruptcies are all up by about 10% four or more years after a casino opens in a county. The findings also show a slow build-up in criminal activity over the first four years a casino is open is consistent with their hypothesis that casinos encourage pathological gambling and that these people eventually turn to crime to feed their habits. Four or more years after a casino is open, the study finds that the increases in property crime are not statistically significant, however, the increase in violent crime is.
Casinos and Crime, <i>Connecticut General Assembly; Office of Legislative Research</i> (2002)	O'Connell	Case Study: Statistical analysis of annual Uniform Crime Report statistics ("actual offenses") for five Connecticut towns (those receiving impact grants). The report covers 1983 - 2000; '83 - '91 - pre-casino years, '92 - '95 Foxwoods, '96-'00 - Foxwoods & Mohegan Sun	Uniform Crime Reports data from Connecticut show that since the casinos opened, serious crimes have increased overall in Ledyard, Montville, Norwich, North Stonington, and Preston combined. "The increase in these crimes occurred primarily on casino premises."
Crime and Disorder, and House Sales and Prices Around the Casino Sites in Windsor, Ontario, Canada, <i>The Canadian Geographer</i> (2004)	Phipps	Statistical analysis of two sets of time-series data before and after (1993-2001) the existence of a casino; (1) calls to the police about three types of offences, (2) mean monthly house prices through the Multiple Listing Service in two neighborhoods near	Only two types of offences increased in number nearer to a Windsor, Ontario (CAN) casino site. The conclusion is labeled as "premature" that opening or closing of a casino will have benign effects on offences and house prices.

**Table V.1 Literature Concerning the Impact of Legalized Gambling on Crime**

Title	Author	Methodology	Findings
An Assessment of Crime Volume Following Casino Gaming Development in the City of Detroit, <i>UNLV Gaming Research &amp; Review Journal</i> (2005)	Moufakkir	Case Study: Uniform Crime Report comparison over a seven year span for a single city (1996-2002); three years before the casinos opened and three years after. Controls for state, county, tri-county, and city data were employed.	Findings indicated that total Index Crime offenses (murder, rape, robbery, aggravated assault, and property crimes) in Detroit did not increase. However, it appeared that the volume of certain types of crime slightly increased while others decreased. Based on the analysis, this paper concluded that there is no alarming indication to suggest that the volume of crime has increased when the casinos opened in the city.
Casinos, Crime, and the Costs of Criminal Justice; <i>Resorting to Casinos, The Mississippi Gambling Industry</i> (2006)	Chapter by: Davis	Analysis of the crime statistics in four Mississippi casino areas. Interviews with local law enforcement.	Finds that research done to date has proven inconclusive. The study goes on to suggest that one area of analysis that needs to be improved is the link between casino security reports and local law enforcement.
Casinos, Crime, and Community Costs, <i>The Review of Economics and Statistics</i> (2006)	Grinols & Mustard	Statistical sampling and regression analysis of the FBI's Uniform Crime Report for all 3,165 U.S. counties from 1977 to 1996. U.S. Census Bureau data used for demographic controls.	The nationwide results suggest that the effect on crime is low shortly after a casino opens, and grows over time. Roughly 9% of property crime and 13% of violent crime in casino counties whose casino has been operating for 5 years was attributable to the existence of that casino. Simple regression analysis shows that there is a large, statistically significant elevated crime rate for counties with operating casinos.
Casinos: Social Impact and Regeneration; An International Case Review, <i>Casino Advisory Panel Research on Casino Development</i> (UK) (2006)	Lee	Review of case studies and surveys done throughout the globe concerning the development and demand for casinos.	Examining crime rates (normalized by the population at risk), only two types (burglary and drug violation) appear to have significantly increased; The results from the research indicate that there can be no conclusive statement regarding the effect casinos have on crime. The results are mixed and suggest the there may be circumstantial factors that affect the crime rates in certain communities.

**Table V.1 Literature Concerning the Impact of Legalized Gambling on Crime**

Title	Author	Methodology	Findings
Gambling and Crime; <i>Research and Measurement Issues in Gambling Studies</i> (2007)	Smith, Hodgins, & Williams (Gambling & Crime Chapter by: Campbell & Marshall)	Review and discussion of the various academic studies done to date. Analysis of potential loopholes in their methodologies, etc.	Generally, due to overwork and understaffing, casino crime tends to be under-reported by policing bodies. A closer relationship between officials and researchers need to be developed in order to gain a complete understanding of all types of crime and their effects on both legal and illegal gambling.

#### *4. The Effect of Casinos on Bankruptcy*

The potential for a rise in personal bankruptcy rates is one of the factors often cited as a negative consequence of the legalization of casino gaming. The rise in personal bankruptcy filings during the 1990s along with a wave of casino openings across the country prompted a number of researchers to examine the relationship between these two events. This study reviews existing research on the subject and compiles the findings from 9 different studies in Table V.2.

Several methodologies and datasets were utilized by researchers to test the linkage between casino introduction and personal bankruptcy. The majority of the studies were conducted utilizing on county-level bankruptcy filings for counties hosting casinos as well as those located within a certain radius of a casino development. Other studies focused on the city/town level of casino operation and one examined state-level filings exclusively. Research methodologies employed consisted of econometric analysis and empirical testing of bankruptcy data, surveys and questionnaires, and impact evaluation such as the difference-in-difference method.

At the national level, the general consensus of the research is that the introduction of casinos across the country did not cause a rise in nationwide personal bankruptcies. However, the effect of casino openings at the local level produced mixed results. Of the eight studies which examine a casino's impact on bankruptcy at a local level, four reported results which indicated that casinos resulted in a statistically significant impact on personal bankruptcy filings; four reported that the introduction of a casino did not produce an impact on bankruptcy rates that was statistically significant.<sup>179</sup> The ninth study reviewed concluded that resort casinos actually export bankruptcy in the states where the tourists visiting the destination casinos reside.

Survey and questionnaire results concluded that pathological gamblers were more likely to declare bankruptcy than low-risk or non-gamblers counterparts.<sup>180</sup> Research conducted by the United States Department of the Treasury concluded that individuals gambling in high-risk venues tend to have a higher probability to declare bankruptcy.<sup>181</sup> Also of important note to this

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<sup>179</sup> See Table V.2.

<sup>180</sup> National Gambling Impact Study Commission, *Gambling Impact and Behavior Study*, 1999.

<sup>181</sup> United States Department of the Treasury, *A Study of the Interaction of Gambling and Bankruptcy*, July 1999.

topic is that the commonly identified factors in declaring bankruptcy – unemployment, significant health or medical problems, divorce – are often faced by individuals that are problem or pathological gamblers.<sup>182</sup> Lastly, evidence suggests that the problems and dilemmas faced by problem or pathological as well as number of individuals classified as such, are likely to the increase parallel to the availability of casinos.<sup>183</sup>

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<sup>182</sup> Goss, Ernie and E. Morse. The Impact of Casino Gambling On Individual Bankruptcy Rates from 1990 to 2002, Creighton University (17).

<sup>183</sup> The 2006 California Problem Gambling Prevalence Survey (August 2006) by NORC cites a number of studies that examine the link between gambling availability and prevalence rates. These studies include Abbott & Volberg, 1999; Shaffer, Hall & Vander Bilt, 1997; and Wildman, 1998.

**Table V.2 Literature Concerning the Impact of Legalized Gambling on Personal Bankruptcy**

Title	Author	Methodology	Findings
Gambling Impact and Behavior Study, prepared for the National Gaming Impact Study Commission (April 1999).	National Opinion Research Center at the University of Chicago	Conducted national surveys in 1998 of 2,417 adults over the phone, 530 adults at gaming venues, and 534 adolescents over the phone. Also conducted a multilevel time-series analysis of a database consisting of 100 communities either hosting casinos or within 50 miles.	Pathological and problem gamblers are more likely than other gamblers or nongamblers to have been on welfare, declared bankruptcy, and to have been arrested or incarcerated. The percentage of pathological gamblers reporting having declared bankruptcy was 19.2%, versus 5.5% for low-risk gamblers, and 4.2% for nongamblers. In communities proximate to newly opened casinos, per capita rates of bankruptcy are not significantly changed.
A Study of the Interaction of Gambling and Bankruptcy (July 1999).	The United States Department Of The Treasury	Regression analysis of state-level bankruptcy data from 1960 - 1998 for New Jersey Nevada and Mississippi and county-level data from the NORC database.	Using state-level data no connection between state bankruptcy rates and either the extent of or introduction of casino gambling. At the county-level, casinos had no statistically significant effect. Individuals who gamble in high-risk settings have a higher probability to file bankruptcy.
Casino Gambling and Bankruptcy in New United States Casino Jurisdictions (2000).	Nicholas, Mark W., Grant Stitt and David Giacomassi	Compared 8 communities with casinos to control communities using 15 demographic, social, and economic variables. Communities were in Iowa, Missouri, Illinois and Mississippi, using county-level bankruptcy rates for 1989 - 1998.	In 7 out of 8 communities there was an increase in bankruptcy; in 5 out of 7 communities the increase was statistically significant.
The Social and Economic Impact of Native American Casinos, Working Paper, University of Maryland (August 2002).	Evans, William N. and Julie H. Topoleski	Using a difference-in difference method, the authors compare the resulting impact from tribal casinos. Used county-level data on bankruptcy from 1989 - 1999 for 2,222 with controls for counties hosting a casino or counties within 50 miles of a casino.	Four years after a casino opens, bankruptcy rates are up 10% in counties with a new casino and 7% percent in counties within 50 miles of a casino. However, the increase in casino openings does not explain the increases in total bankruptcy filings seen at the national level.
The Impact of Gambling on Personal Bankruptcy Rates, The Journal of Socio-Economics (March 2002).	de la Vina, Lynda and David Bernstein	Investigates the impact of casinos on county bankruptcy rates using the NORC database of 100 counties. The authors incorporated community unemployment rates and pari-mutuel gambling into the econometric model they developed.	Evidence does not support the hypothesis that the introduction of gambling has impacted county bankruptcy rates. The unemployment rates appear to be more closely related to the bankruptcy rate than the introduction of casino gambling.

**Table V.2 Literature Concerning the Impact of Legalized Gambling on Personal Bankruptcy**

Title	Author	Methodology	Findings
The Impact of Casino Gambling on Personal Bankruptcy Filing Rates, Contemporary Economic Policy Vol 20, No. 4 (October 2002).	Barron, John M., Michael E. Staten, and Stephanie M. Wilshusen	Empirically tests a model of bankruptcy choice using county-level panel of over 3,000 counties for the period of 1993 - 1999.	Authors found increases at the county level in the number of personal bankruptcy filings due to the introduction of a casino. They note that the local impact of casino gambling is far more pronounced than its influence on national bankruptcy filing rates. Furthermore, they estimate if casinos were to be removed, the surrounding counties would experience a 5% decline in filing rates, and a 1% decline in national filing rates if casinos gambling was eliminated altogether.
The Relationship of Pari-Mutuel Wagering and Casino Gaming to Personal Bankruptcy. Appeared in Contemporary Economic Policy Vol 22, No 3. (July 2004).	Thalheimer, Richard and Mukhtar M. Ali	Creates an econometric model utilizing a panel of 398 counties over 1990 - 1997 in the riverboat gaming states of Illinois, Iowa, Missouri and Mississippi.	Personal bankruptcy filings were found to be positively related to the availability of casino gaming and to the availability of pari-mutuel wagering. However, in each case the results were not statistically significant. The degree of availability for each type of gaming was measured as a function of distance to gaming facility from the county center. The authors also estimated that averaging over all counties in the same period, personal bankruptcy rates would decline by 0.40% in the absence of casinos, and 0.68% in the absence of pari-mutuel wagering.
The Impact of Casino Gambling On Individual Bankruptcy Rates from 1990 to 2002, Working Paper, Creighton University, (2005).	Gross, Ernie, and Edward A. Morse	Conducted regression analysis on a sample of a casino and the bankruptcy rate. Sample consisted of host counties that introduced casino gaming (commercial and tribal) during 1990 - 2002; did not include New Jersey and Nevada.	The addition of casinos during the time period had a positive and statistically significant impact on individual bankruptcy rates in the first year of operations. From thereafter the impact is lower until the casino's ninth year of operations. After the 13th year of operations the estimated bankruptcies are 6.7 per 1,000 people for counties that added casinos, and 5.2 per 1,000 people for counties that did not.

**Table V.2 Literature Concerning the Impact of Legalized Gambling on Personal Bankruptcy**

Title	Author	Methodology	Findings
Do Casinos Export Bankruptcy?, Working Paper, The Federal Reserve Bank of St. Louis (March 2005).	Garret, Thomas A., and Mark W. Nichols	Using an empirical model the authors test the hypothesis that visits to destination resort casinos in Nevada, New Jersey, and Mississippi increase bankruptcy rates in the states where the tourists visiting reside.	Mississippi resort casinos were found to have a statistically significant influence on bankruptcies in other states. Casino resorts in wealthier regions are significantly less likely to export bankruptcy.

## **VI. ADDITIONAL ISSUES**

This report examines the economic, fiscal and social effects of the legalization of casino gaming in Massachusetts. Given the state of policy development, the work is necessarily focused on the critical questions concerning the prospective developments. While there is a substantial amount of available data to estimate the increase in gross gaming revenue that may be achieved, there is limited objective data to ascertain the potential costs directly associated with obtaining that revenue. Should the Legislature move forward with the plan outlined in the draft legislation, there are a number of additional factors that may need to be addressed. Some of the additional factors are listed below:

### **A. Economic Issues**

#### *1. Casino Impact on Local Businesses*

The introduction of a casino development into a region can have both positive and negative effects on non-casino businesses. To the extent that casinos draw visitors from outside the region, local business may benefit from spillovers from the casino developments if casino patrons also purchase goods and services from local businesses. The spillover effects should be particularly strong for local businesses that cater to visitors. Local business may also benefit if they are a supplier of goods and services to the casino developments. The legalization of casino gaming may also reduce demand for goods and services from local businesses. To the extent that residents of the area substitute expenditure on gambling for other forms of consumption, local businesses will experience a reduction in demand. All else equal, the net benefits to local businesses will be greatest for destination casinos and lowest for casino developments that draw primarily from a local clientele.

Casino developments tend to have positive employment effects on a region. However, the increased demand for workers at the casino developments can have an impact on non-casino businesses in the region. The increase in labor demand from the casino increase wages paid and labor costs for regional non-casino businesses. Development of casinos may also cause non-

casino businesses to experience greater difficulty in locating suitable workers in a tighter labor market. The Cape Cod Chamber of Commerce has highlighted concerns about the potential tightening of labor markets as a result of casino developments.<sup>184</sup> As discussed in Section III, studies of regional economies around the time of casino development find evidence of a decrease in unemployment and/or an increase in labor force participation rates. This evidence is consistent with a tightening of labor markets around new casino developments. It should be noted that while tighter labor markets may increase costs for local businesses, increased demand for labor may also provide individual workers with greater job opportunities, job security and higher income.

## *2. The Character of the State or Region Hosting the Development*

It has been suggested that casino development will alter the character of the state or region hosting a casino. Some visitors may find that the introduction of casino gaming makes the state and the casino region a more desirable destination. Other visitors may find that the introduction of casino gaming makes the state or the casino region a less desirable destination. This report does not address whether the legalization of casino gaming will change the perception of the State of Massachusetts nor the areas hosting the casino developments.

## *3. Impact on the Value of Housing and Education Resources*

Casino developments may impact the value of property in the area hosting the facility. Increased employment opportunities and higher earnings for area residents will increase demand for housing. Home values will rise in response to the increase in demand. However, it is also argued that casino developments may stigmatize a region and cause demand and home values to fall. Professors Baxandall and Sacerdote provide evidence of the impact on home values of large casino developments.<sup>185</sup> They find that in counties hosting a new, large casino that the change in home prices around the time of casino introduction are not systematically higher or lower than for the state as a whole. However, the authors find that in the case of home prices around the

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<sup>184</sup> Cape Cod Times, Cape Chamber Opposes Casinos: The Business Group Worries About Labor Shortage, Tourism, January 1, 2008.

<sup>185</sup> Baxandall and Sacerdote, The Casino Gamble in Massachusetts, 12-13.

Foxwoods and Mohegan Sun casinos, the increase in home values were substantially greater than the average statewide gain.

Local education resources may be impacted with casino developments. Depending on the number and ethnicity of workers who migrate from out of the area, schools may have to address issues such as additional space requirements, language barriers and special needs students. These concerns can not be addressed until the casino is actually developed and the actual impact known.

## **B. Fiscal and Community Impact Issues**

### *1. Location of the Casino Developments*

The draft legislation requires that casinos be located in one of three regions of the Commonwealth. The process for the evaluation of bids will address issues concerning the location of the facility. The location of the facility near certain transportation hubs or facilities may increase the economic value of the facility. Such locations may, however, adversely affect transportation quality through the increase in congestion or other consequences. For instance, while location in the vicinity of a major airport may provide easy access for visitors, such locations may also be subject to building height restrictions or limitations on outdoor display. Detailed study of each proposal will be necessary to identify the impact on regional infrastructure.

### *2. Use of Casino Revenues to the State*

The draft legislation contains provisions concerning the use of the revenues from the casino developments.<sup>186</sup> The funds are to be allocated to (i) payments to the state lottery fund; (ii) payments to the general fund for the purposes of reimbursing the homeowners tax credit and (iii) payments to the transportation improvement and maintenance trust fund. This report does not

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<sup>186</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(3)-(5).

address the need for additional funds for these uses or whether the need for funding in these areas is more pressing than for other applications to which casino revenues could be put.

### *3. Community Impact*

The draft legislation apportions 2.5 percent of the GGR of the casino developments to the community mitigation trust.<sup>187</sup> Further study concerning the likely community impacts would be useful once that the specific sites for the prospective developments have been considered. The extent of the necessary local infrastructure improvements is one of the factors that will be considered in the evaluation of the bids of prospective casino developers.<sup>188</sup> Costs to consider include the costs of construction and maintenance of roadways, the additional costs of community services such as public works, costs related to legal fees borne from zoning issues, and the costs of extra police enforcement (in particular the costs of detention and patrolling for drivers under the influence of drugs or alcohol).<sup>189</sup>

## **C. Oversight and Public Safety Issues**

### *1. Casino Oversight*

The draft legislation creates the Massachusetts Gaming Control Authority.<sup>190</sup> The Gaming Control Authority is empowered to award casino licenses, to determine the types of conduct performed by the license holders and to monitor the conduct of licensees. An alternative structure would be to split the licensing and oversight functions into separate bodies.<sup>191</sup> An area

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<sup>187</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(1).

<sup>188</sup> Draft legislation, SEC. 6, Ch 12B, Section 5(c)(4)(iii).

<sup>189</sup> Studies done in the Towns in Ledyard, Preston, & North Stonington, CT document these additional costs. The town of Preston estimates it incurred a one time cost of \$7.4 million brought upon by the advent of both the Foxwoods and Mohegan Sun casinos. The study from Ledyard, CT estimates the town incurred additional costs of \$2.2 million in just infrastructure improvements. The town of North Stonington estimates similar numbers. North Stonington (CT) Board of Selectmen, *Casino Impacts on North Stonington*, mimeo, December 2001; Wesley J. Johnson, *Fiscal Impacts of Foxwoods Casino on the Town of Ledyard, Connecticut*, mimeo, December, 2001; Preston (CT) Board of Selectmen, *Casino Related Impacts on Preston, CT*, mimeo, undated.

<sup>190</sup> Draft legislation, SEC. 6, Ch 12B.

<sup>191</sup> Boston Globe, *Tough Questions on Gambling*, August 9, 2007.

for further analysis would be the consideration of the merits of different regulatory structures for casino gaming.

## *2. Public Safety Issues*

The maintenance of order at casino developments often involves different layers of law enforcement. Most casinos provide security on the premises. The state police and local police may also have authority on roadways to the facility and, in the case of local police, at the facility itself. The operation of the destination resort facilities will require a delineation of authority among the various types of law enforcement. An important policy issues for law enforcement is the determination of the appropriate allocation of authority at the casino developments.

## *3. Adequacy of Funding for Public Health Mitigation*

The draft legislation allocates 2.5 percent of the GGR of the facilities to the public health trust fund.<sup>192</sup> Currently, the Commonwealth allocates approximately \$1 million to programs concerning gambling related problems. The Massachusetts State Lottery also provides funds for public awareness programs concerning problem gambling. Further analysis would be necessary to determine the adequacy of the funding for public health mitigation in the draft legislation and the optimal method for the delivery of treatment services for problem gamblers (public agencies, private or non-profit-providers).

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<sup>192</sup> Draft legislation, SEC. 6, Ch 12B, Section 10(b)(2).

## **APPENDIX A: REVENUE ESTIMATES FOR LAS VEGAS CASINOS**

### **A. Revenue per Square Foot of Gaming Space**

Estimates for revenues per square foot of gaming space were determined by averaging the two largest casino subsets provided by the Nevada Gaming Commission.<sup>193</sup> The two subsets include Las Vegas casinos with more than \$72 million in revenue (47) and Publicly Owned casinos with more than \$12 million in revenue (80).<sup>194</sup> Statistics for casino revenue per square foot are comprised of revenues from four separate casino areas: pit revenues (including bingo and keno), coin operated device revenues, poker and pan revenues, and Racebook and Sportsbook revenues. 2006 totals per square foot for the two subsets of casino types were \$1,987 per square foot for casinos with more than \$72 million in revenue and \$1,722 per square foot for publicly traded casinos, with an average of \$1,855 per square foot for the two subsets. Multiplying this average by each casino's gaming square footage provides the first estimate for total annual gaming revenues to large Las Vegas strip casinos.

### **B. Revenue per Hotel Room**

As with revenues per square foot, revenues per hotel room were estimated by averaging the two largest subsets of casinos provided by the Nevada Gaming Commission. Total casino revenue per hotel room is comprised of revenues from two general casino areas; pit revenue and slot revenue. 2006 totals for revenue per hotel room for the two subsets were \$251.30 per room per day for casinos with more than \$72 million in revenue and \$244.04 per room per day for publicly traded casinos, with an average of \$247.67 per room per day for the two. Multiplying this average by each casino's total number of hotel rooms provides the second estimate for total annual gaming revenues.

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<sup>193</sup> Nevada Gaming Commission, Nevada Gaming Abstract, 2006.

<sup>194</sup> The Nevada Commission provides data by casino type but does not provide data on individual casino results. This study selects data on two casino subsets: (i) casinos with more than \$72 million in GGR and (ii) casinos with more than \$12 million in GGR that are publicly owned.

### C. Revenue per Gaming Device

The third method of estimation for Las Vegas strip casino revenues involved utilizing revenue per device figures from Casino City's Gaming Revenue News. Gaming devices were grouped by Casino City into three categories; slot, table, and other.

Slot machines were further categorized based on denomination. Revenues per day for 5 Cent, 25 Cent, 1 Dollar, 5 Dollar, and Multi-Denomination slots were provided. The revenues ranged from \$131.00 per day for 5 Cent machines to as high as \$334.00 per day for the 5 Dollar machines.

Casinos, with varying levels of demand, patronage and other factors, will have varying mixtures of slot denominations. As a result, assumptions were made in order to group the Las Vegas strip casinos into three tiers. The assumptions determining the overall composition of an individual casino's slot machines were based on size, brand name, proximity to the intersection of South Las Vegas Avenue and Flamingo Road, and other factors. Of the 32 large casinos on the Las Vegas strip,<sup>195</sup> six (6) fall under 'Tier 1', eleven (11) fall under 'Tier 2', and fifteen (15) fall under 'Tier 3'. The following table, Table A.1, provides the assumed composition of total slot machines for the three tiers.

**Table A.1 Slot Machine Mixture Assumptions:**

Casino Classification	5 Cent	25 Cent	1 Dollar	5 Dollar	Multi
"Tier 1"	5%	25%	25%	25%	20%
"Tier 2"	10%	30%	30%	15%	15%
"Tier 3"	25%	35%	25%	10%	5%

Source: UHY Calculations

Once the number of each denomination of slot machine was estimated for each casino, slot revenues using the daily statistics could be compiled.

<sup>195</sup> Casinos with over 60,000 square feet of gaming space. Casino City, North American gaming Almanac.

The major types of table games classified by Casino City's Gaming Revenue News include 21(Blackjack), Craps, Roulette, 3 Card Poker, Baccarat, Caribbean Stud, Let it Ride, Keno, and Poker. Table revenues per day were determined by taking an average of eight types of table gaming (excluding Poker). These games ranged in revenue per day of \$1,627.00 for "Let it Ride" to \$10,697.00 for Baccarat. The average daily revenue of all eight types of table games for 2006 was \$3,487.38. This average was then multiplied by the total number of gaming tables (excluding Poker) at each casino.

Poker revenue per day was determined by multiplying \$627.00, the daily revenue total explicitly computed for poker tables, by the number of poker tables at each of the 32 large Las Vegas strip casinos.

Similarly, revenue per day for Sportsbooks and Racebooks were compiled by taking the daily revenue figures, \$8,914.00 and \$4,844.00 respectively, and adding the amount to the overall device total if each particular casino had either a Sportsbook or Racebook. Of the 32 large Las Vegas strip casinos, only one (Tuscany Suites) did not have a Racebook; all 32 had Sportsbooks.

Once these device subtotals were computed, total daily gaming revenues for each casino were determined by adding Slot, Table, Poker, Sportsbook, and Racebook revenues together. Total daily revenues were then annualized to determine the third estimate of total gaming revenues to the large Las Vegas strip casinos.

The three revenue estimates: per square foot of gaming space, per hotel room, and per device were then averaged to provide a detailed 2006 gaming revenue estimate for the 32 large Las Vegas strip casinos. A spreadsheet listing the various revenue estimates can be found in Table A.2. The estimates range from \$82.9 Million for the Tuscany Suites & Casino to \$399.0 Million for the MGM Grand Las Vegas. Revenue estimates for these large Las Vegas casinos were then incorporated into the list of 87 large U.S. casinos.

**Table A.2: Estimated 2006 Revenues by Casino  
Major Las Vegas Strip Casinos (60,000+ Square Feet)**

Casino	Estimated Annual Revenue - Rooms [1]	Estimated Annual Revenue - Sq Feet [2]	Estimated Annual Revenue - Device [3]	Average [4]
Bally's - Las Vegas	\$250,899,616.80	\$123,077,601.50	\$150,186,240.00	\$174,721,152.77
Bellagio	\$350,670,999.60	\$185,450,000.00	\$403,318,215.00	\$313,146,404.87
Caesars Palace	\$297,798,408.00	\$239,230,500.00	\$271,510,290.00	\$269,513,066.00
Circus Circus Hotel Casino - Las Vegas	\$347,728,680.00	\$187,834,887.00	\$161,054,280.00	\$232,205,949.00
Excalibur Hotel and Casino	\$355,842,349.20	\$185,450,000.00	\$232,747,875.00	\$258,013,408.07
Flamingo Las Vegas	\$317,859,678.00	\$142,796,500.00	\$230,786,388.00	\$230,480,855.33
Gold Coast Hotel and Casino	\$63,393,613.20	\$160,599,700.00	\$198,513,315.00	\$140,835,542.73
Harrah's Las Vegas Casino & Hotel	\$244,569,171.60	\$168,650,084.50	\$207,482,166.00	\$206,900,474.03
Imperial Palace Hotel & Casino	\$235,385,568.00	\$139,087,500.00	\$92,886,327.00	\$155,786,465.00
Las Vegas Hilton	\$263,560,507.20	\$163,196,000.00	\$177,454,845.00	\$201,403,784.07
Luxor Hotel and Casino	\$393,022,569.60	\$222,540,000.00	\$246,956,220.00	\$287,506,263.20
Mandalay Bay Resort & Casino	\$424,050,667.20	\$250,357,500.00	\$327,545,280.00	\$333,984,482.40
MGM Grand Las Vegas	\$449,729,092.80	\$315,265,000.00	\$431,935,920.00	\$398,976,670.93
Mirage	\$271,406,692.80	\$185,857,990.00	\$320,520,015.00	\$259,261,565.93
Monte Carlo Resort and Casino	\$286,474,935.60	\$189,529,900.00	\$205,051,905.00	\$227,018,913.53
New York - New York Hotel & Casino	\$180,373,107.60	\$155,778,000.00	\$237,651,885.00	\$191,267,664.20
The Orleans	\$168,158,023.20	\$250,357,500.00	\$191,665,575.00	\$203,393,699.40
Palace Station Hotel & Casino	\$91,836,036.00	\$155,778,000.00	\$237,233,277.00	\$161,615,771.00
Palms Casino Resort	\$37,447,704.00	\$176,177,500.00	\$366,531,435.00	\$193,385,546.33
Paris Las Vegas	\$259,994,059.20	\$157,632,500.00	\$253,832,265.00	\$223,819,608.07
Planet Hollywood Resort & Casino*	\$228,876,800.40	\$250,357,500.00	\$292,773,960.00	\$257,336,086.80
Red Rock Casino, Resort & Spa	\$36,912,736.80	\$161,341,500.00	\$216,852,120.00	\$138,368,785.60
Rio All-Suite Hotel & Casino	\$222,903,000.00	\$222,540,000.00	\$112,254,921.00	\$185,899,307.00
Riviera Hotel and Casino	\$200,969,344.80	\$189,715,350.00	\$148,345,398.00	\$179,676,697.60
Sahara Hotel and Casino	\$153,357,264.00	\$157,632,500.00	\$150,476,940.00	\$153,822,234.67
Stratosphere Casino Hotel & Tower	\$217,909,972.80	\$185,450,000.00	\$209,943,675.00	\$204,434,549.27
Suncoast Hotel and Casino	\$38,517,638.40	\$148,360,000.00	\$298,250,460.00	\$161,709,366.13
Treasure Island	\$257,230,062.00	\$166,905,000.00	\$207,946,953.00	\$210,694,005.00
Tropicana Resort & Casino	\$167,444,733.60	\$113,124,500.00	\$86,858,784.00	\$122,476,005.87
Tuscany Suites and Casino	\$63,839,419.20	\$111,270,000.00	\$73,477,080.00	\$82,862,166.40
Venetian Resort Hotel Casino	\$359,052,152.40	\$222,540,000.00	\$348,279,075.00	\$309,957,075.80
Wynn Las Vegas	\$242,161,819.20	\$205,849,500.00	\$365,491,575.00	\$271,167,631.40
<b>TOTAL:</b>	<b>\$7,479,376,423.20</b>	<b>\$5,889,732,513.00</b>	<b>\$7,455,814,659.00</b>	<b>\$6,941,641,198.40</b>

Note: [4] = Average of [1], [2], & [3]

## APPENDIX B: CONSTRUCTION EMPLOYMENT

Estimates of the number of construction jobs created by the casino development were derived from economic studies of other recent developments.<sup>196</sup> Because of regional differences in construction requirements, the set of comparable project was limited to those in northern states. Table B.1 contains projections of construction labor requirements for nine projects including six expansion projects and three casino developments. The labor requirements per million dollars of capital expenditures were lower for the expansion projects than the development projects. Therefore, the set of comparable project were limited to the three development projects. The three development projects are all located in Pennsylvania. The construction labor requirements of the projects range from approximately 8 to 9 worker-years per million dollars of capital expenditures. Construction costs vary over time and by location. Estimates of labor requirements per million dollars of capital expenditures were adjusted for the effects of increases in construction costs and differences in cost between Pennsylvania and Massachusetts locations.<sup>197</sup> These adjustments reduced the estimate of labor requirements to 7 to 8 workers per million dollars of capital expenditures.

Estimates of construction labor requirements per million dollars of capital expenditures were then used to determine total labor requirements for the casino developments. Calculations appear in III.12. Total capital expenditures for the three developments were estimated to be \$4.3 billion based on the GGR of the facilities. Dividing the \$4.3 billion in capital expenditure by 7 and 8 worker-years per million dollars of capital expenditure results in the estimates of aggregate construction labor requirements. At 7 worker-years per million dollars of capital expenditure, total labor requirements for \$4.3 billion of construction activity would be 30,100 worker-years. At 8 worker-years per million

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<sup>196</sup> The studies selected expressed labor requirements in terms of worker-years of labor.

<sup>197</sup> RS Means, Square Foot Costs. The costs of construction in Philadelphia and Pittsburgh in 2006 were compared to the costs of construction in Massachusetts locations. The most recent data from RS Means concerned costs in 2007. Costs were adjusted to 2008 levels assuming the rate of increase from 2007 to 2008 is the same as 2006 to 2007.

dollars of construction activity, total labor requirements would be 34,400 worker-years. Details of the construction labor projections appear in Table III.13.

**Table B.1 Construction Worker-Years per \$1M in Investment - Recent Projects**

<b>Project</b>	<b>Cost (millions)</b>	<b>Type</b>	<b>Year of Cost Projection</b>	<b>2007 Cost (millions)</b>	<b>Worker-Years Required</b>	<b>Worker-Years/\$1M in 2007 Cap Exp</b>
Argosy Casino - Sioux City	\$22.00	Expansion	2005	\$24.52	110	4.49
Praire Meadow Racetrack & Casino - Altoona	\$60.00	Expansion	2005	\$66.86	150	2.24
Bluffs Run Casino & Greyhound Park - Council Bluffs	\$85.00	Expansion	2005	\$94.72	300	3.17
Rhythm City Casino - Davenport	\$43.00	Expansion	2005	\$47.92	400	8.35
Isle of Capri - Bettendorf	\$40.00	Expansion	2005	\$44.57	300	6.73
Isle of Capri - Marquette	\$12.60	Expansion	2005	\$14.04	47	3.35
Harrah's Station Square - Pittsburgh	\$500.00	Development	2006	\$525.72	4,348	8.27
Riverwalk - Philadelphia	\$224.00	Development	2006	\$235.52	2,174	9.23
Majestic Star - Pittsburgh	\$410.00	Development	2006	\$431.09	4,000	9.28
<b>Average:</b>						<b>6.12</b>
<b>Average (Expansion Projects):</b>						<b>4.72</b>
<b>Average (Development Projects):</b>						<b>8.93</b>
<b>Development Construction Jobs/\$1M from Above:</b>		<b>8.93</b>				
<b>Indexed for Massachusetts Costs:</b>		<b>7.77</b>				

\* Sources: Iowa Gaming Commission, Spectrum Gaming, PITG Gaming, RSMMeans

## **APPENDIX C: ECONOMIC ASSUMPTIONS OF THE GAMING REVENUE MODEL**

This Appendix outlines the methodology and assumptions used to estimate impact of the legalization of casino gambling on revenues available to the Commonwealth. Separate projections of casino gaming tax revenues and lottery revenues are developed. Lottery revenues are then adjusted account for the impact of casino developments. The lottery impact is modeled as a one-time, permanent drop in the level of lottery revenues. It is assumed that the casino developments come online in fiscal year 2012. Results of the projection model appear at the end of this Appendix.

### **A. Lottery and Casino Revenues**

The casino gaming tax rate and the allocation of state funds from the casino developments is specified in the draft legislation. In the revenue projections, it is assumed that the gaming tax rate is 27 percent of GGR, the minimum amount allowed under the draft legislation. The transfers to the mitigation trust funds are then subtracted from gaming tax revenues. It is assumed that 2.5 percent of GGR are allocated to public health mitigation and 2.5 percent of GGR are allocated to local impact mitigation. Transfers to the general fund for lottery mitigation are determined via the formula outlined in the draft legislation. The remainder would be available to the Commonwealth for other purposes.<sup>198</sup>

Revenues from the lottery are an important revenue stream for the state. In fiscal year 2007, transfers from the lottery to the state totaled \$983,478,000.<sup>199</sup> Table C.1 contains the annual amounts transferred from the lottery to the general fund over the past eleven fiscal years and the growth rates over the past ten. The rate of growth of the lottery transfer has slowed in recent years. Over the past ten years, the average annual increase

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<sup>198</sup> The draft legislation states that the remainder is to be utilized for property tax relief and infrastructure.

<sup>199</sup> The Commonwealth of Massachusetts, “Financial Reports”, The Commonwealth of Massachusetts, <http://www.mass.gov>. The analysis of the revenue impact of gaming focuses on the contribution of the lottery to the state rather than GGR. GGR is measured before accounting for the costs of operating the game—in the case of the lottery this would include both agent commissions and administrative costs at the state level.

in the lottery transfer was 2.10 percent per year. In the past five years, the growth rate has averaged 0.23 percent per year. The last five years include two fiscal years in which the amount transferred from the lottery to the state declined. The slow rate of growth of lottery revenues has been attributed to the lottery reaching a point of maturity and the difficulty in finding new forms of lottery games to increase sales.<sup>200</sup>

**Table C.1 Massachusetts Lottery Revenues  
Transfers to General Fund**

Fiscal Year [1]	Lottery Transfers to General Fund [2]	Annual Change in Funds Transferred [3]
1997	\$803,835	
1998	\$838,106	4.26%
1999	\$886,032	5.72%
2000	\$924,319	4.32%
2001	\$937,386	1.41%
2002	\$976,354	4.16%
2003	\$940,918	-3.63%
2004	\$1,000,113	6.29%
2005	\$1,019,795	1.97%
2006	\$1,034,373	1.43%
2007	\$983,478	-4.92%
Average (FY 1998-2007)		2.10%
Average (FY 2003-2007)	\$995,735	0.23%

Source: Commonwealth of Massachusetts Consolidated Annual Financial Statements.

Note: The average change is the arithmetic average of annual growth rates over the periods from FY 1998 to FY 2007 and FY 2003 to FY 2007.

Consumer expenditures on gaming will vary over time with changes in income levels and the size of the economy. All else equal, if income rises over time, consumers will have more resources to spend on all forms of consumption, including casino gaming and lottery play. The same is true for expansion in the size of the population. Population growth increases the total level of demand for lottery and casino gaming. This study

<sup>200</sup> Remarks of Massachusetts State Treasurer Timothy Cahill before the Greater Boston Chamber of Commerce, May 24, 2007 available at [www.masslottery.com/news/Cahill%20Remarks%205.24.07.doc](http://www.masslottery.com/news/Cahill%20Remarks%205.24.07.doc).

develops projections lottery and casino revenues based on estimates of personal income and population growth in the Commonwealth of Massachusetts.

**Table C.2: Massachusetts Personal Income**

Fiscal Year	Personal Income (\$ million)	Annual Change
[1]	[2]	[3]
1997	184,433	
1998	196,471	6.53%
1999	209,712	6.74%
2000	228,385	8.90%
2001	247,028	8.16%
2002	249,249	0.90%
2003	250,326	0.43%
2004	260,102	3.91%
2005	273,163	5.02%
2006	289,860	6.11%
2007	306,978	5.91%
Average Annual Growth (FY 1998-2007)		5.26%
Average Annual Growth (FY 2003-2007)		4.28%

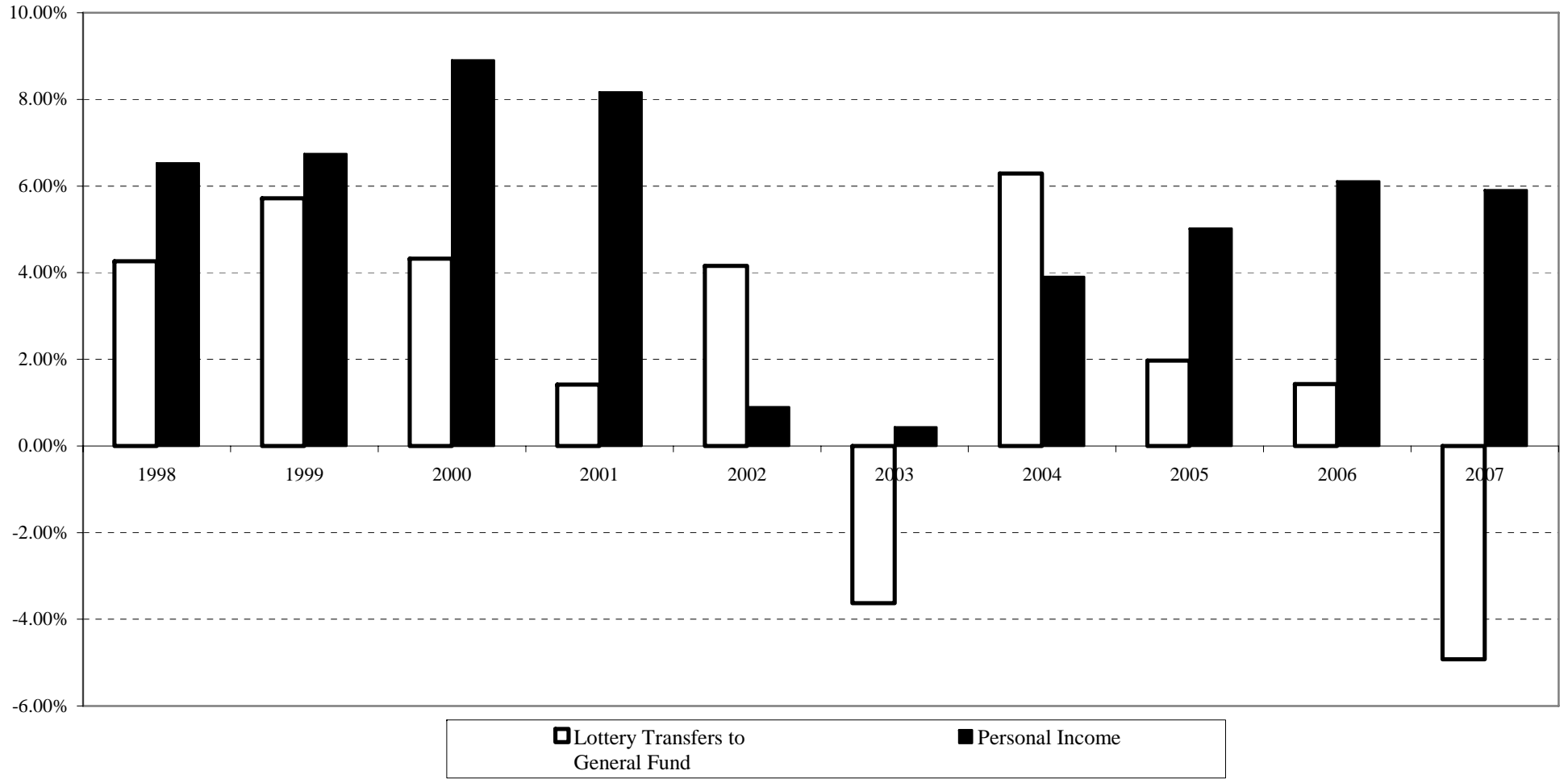
Source: Bureau of Economic Analysis

Notes:

[1]: Average of Quarterly State Personal Income adjusted to coincide with the fiscal year used by the Commonwealth of Massachusetts (July through following June)

Table C.2 contains estimates from the Bureau of Economic Analysis of aggregate personal income of Massachusetts residents over the period corresponding to the eleven fiscal years from 1997 to 2007. Figure C.1 compares the annual growth in revenues from the state lottery with the rate of growth of personal income in the state of Massachusetts. Lottery revenues lagged behind the growth in personal income in eight of the past ten years. Over the period between 1997 and 2007, the average annual growth in personal income was 5.26 percent while the average annual growth rate in revenues from the lottery was 2.10 percent—a difference of 3.16 percent. In the five year period from 2003 to 2007, the average annual growth rate in personal income was 4.28 percent while the average growth rate of revenues from the lottery was 0.23 percent—a difference of 4.05 percent.

**Figure C.1: Annual Growth Rates of  
MA Lottery Revenue and State Personal Income**



Projections of lottery revenues in future periods are based on the growth rate of personal income. The growth rate of the lottery transfer in future periods is assumed to be 3.50 percent below the growth rate of personal income in Massachusetts. The 3.50 percentage point differential is approximately the average of the difference between the growth rate of the lottery transfer and state personal income in the previous ten years (3.16 percent) and the previous five years (4.05 percent).

The growth rate in casino revenues should also be tied to the growth rate of personal income. This study examines casino activity from 1996 through 2006. The latest year for which data on commercial casino gaming revenues is available from the American Gaming Association is 2006. The level and annual growth rate of commercial casino GGR and U.S. personal income appear in Table C.3. Over the past five years, the growth rate of commercial casino gaming revenues has been similar to the growth rate in personal income. The average growth rate of commercial casino GGR from 2002 through 2006 was 4.77 percent. This is slightly higher than the 4.73 percent average growth rate of personal income over the same period. Over the ten year period from 1996 to 2006, the average growth rate of commercial casino GGR exceeded the growth rate of US personal income.<sup>201</sup> In the projections of casino revenues in future periods, this analysis assumes that the growth rate of commercial casino gaming revenues in Massachusetts grows at the same rate as the growth rate of aggregate personal income.

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<sup>201</sup> Of the eleven states that have legalized commercial casino gaming, the last to do so was Michigan in 1996. The higher rate of growth in the first half of the sample may be due in part to permitting and construction lags in states introducing commercial casino gaming.

**Table C.3 Commercial Casino Revenue Growth Rates**

Year	US Commercial Casino GGR (\$ billion)	GGR Annual Growth Rate	US Personal Income (\$ billion)	Personal Income Growth Rate
[1]	[2]	[3]	[4]	[5]
1996	17.10		6,521	
1997	18.20	6.43%	6,915	6.05%
1998	19.70	8.24%	7,423	7.34%
1999	22.20	12.69%	7,802	5.11%
2000	24.50	10.36%	8,430	8.04%
2001	25.70	4.90%	8,724	3.49%
2002	26.50	3.11%	8,882	1.81%
2003	27.02	1.96%	9,164	3.17%
2004	28.93	7.07%	9,727	6.15%
2005	30.37	4.98%	10,301	5.90%
2006	32.42	6.75%	10,983	6.62%
<hr style="border-top: 1px dashed black;"/>				
Average (1997-2006)		6.65%		5.37%
Average (2002-2006)		4.77%		4.73%

Sources:

[2]: American Gaming Association State of the States

[4]: Bureau of Economic Analysis

**B. Macroeconomic Assumptions**

Projections of personal income growth rates in the revenue model are based on estimates of wage and population growth rates from federal agencies.<sup>202</sup> The growth rate in aggregate personal income can be approximated by the annual growth rate in population plus the growth rate in personal income per capita. This study derives estimates of the future population growth rate from estimates of the population Massachusetts as of 2010, 2015 and 2020 from the U.S. Bureau of the Census.<sup>203</sup> Long term projections of wage growth rates are available from the Social Security Administration. The projection model uses estimates of wage growth rate for the intermediate economic growth case from the 2007 report of the Trustees of the Social Security Administration as a proxy for the

<sup>202</sup> Personal income includes both wages and income from other sources. Since wages are a large component of personal income, growth rates in personal income and wage rates are closely related.

<sup>203</sup> U.S. Bureau of the Census, Total Population for Regions, Divisions, and States: 2000 to 2030, available at <http://www.census.gov/population/projections/PressTab6.xls>.

growth rate in personal income per capita.<sup>204</sup> The growth rate in wages in Massachusetts in future years is assumed to be the same as the projected growth rate in wages for the United States. The model uses estimates of the growth rate of the Consumer Price Index from the Social Security Administration to deflate projections of future revenues to 2007 dollars. Table C.4 summarizes the macroeconomic inputs into the revenue projection model.

**Table C.4: Macroeconomic Assumptions**

Year [1]	Projected Mass. Population Growth Rate [2]	Projected US Wage Growth Rate [3]	MA Personal Income Growth Rate [4]	Projected CPI Annual Change [5]	CPI Price Index [6]
2007	0.40%	4.60%	5.00%	1.90%	1.000
2008	0.40%	4.60%	5.00%	2.40%	1.024
2009	0.40%	4.30%	4.70%	2.70%	1.052
2010	0.40%	4.20%	4.60%	2.80%	1.081
2011	0.33%	4.10%	4.43%	2.80%	1.111
2012	0.33%	4.20%	4.53%	2.80%	1.142
2013	0.33%	4.00%	4.33%	2.80%	1.174
2014	0.33%	3.80%	4.13%	2.80%	1.207
2015	0.33%	3.90%	4.23%	2.80%	1.241

Sources:

[2]: Census Bureau

[3], [5]: Social Security Administration, 2007 Annual Report of the Trustees of the Federal Old-Age and Survivor's Insurance and Federal Disability Trust Funds

Notes:

[2]: Reflects the geometric average of the population growth rate over 5 year intervals.

[4]: [2] + [3]

[6]: Cumulant of [5], 2007 = 1.00.

### C. Revenue Projection Model

This study models the revenues from casino gaming and the state lottery assuming that all three of the casino developments come online in 2012. Table C.5 contains the results of the model assuming that lottery revenues fall by 5 percent in 2012 and the decrease in lottery revenues are permanent. Table C.6 contains the result of the model assuming that the drop in lottery revenues is 10 percent in 2012 and that the drop is permanent. It is

<sup>204</sup> US Social Security Administration, The 2007 Annual Report of the Board of Trustees of the federal Old-Age and Survivors Insurance and Federal Disability Insurance Trust Funds, 2007, Washington, DC.

assumed that the percentage decline in the transfer to the general fund is the same as the decline in lottery revenues.

The model begins with estimated GGR of the casino developments based on current market conditions.<sup>205</sup> The estimate of GGR of \$2.15 billion appears in the column “Base FY 2007”. In each succeeding year, the casino revenues increase by the projected rate of personal income growth appearing in Table C.4. Row [b] of Tables C.5 and C.6 contain the gaming tax from the casino at the 27 percent minimum rate. Rows [c] and [d] contain the amounts set aside by the state for public health and local impact mitigation. The amount remaining from the gaming tax after mitigation is in row [e]. Row [f] contains this amount expressed in 2007 dollars.

Evaluation of the effects of the legalization of casino gaming requires projections of the lottery transfers with and without the change in gaming policy. Row [g] contains the lottery transfer assuming that casino gaming is not legalized. The projection in row [g] assumes that the annual growth in the transfer from the lottery to the general fund is 3.50 percent below the rate of personal income growth. Row [h] adjusts for the impact of casino development. Lottery projections in row [h] assume a one-time, permanent decrease of 5 percent (Table C.5) and 10 percent (Table C.6) in 2012, the date that the casino developments are assumed to enter service. The change in the lottery transfer resulting from the casino developments is in row [i].

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<sup>205</sup> This estimate was developed in Section III of the report.

**Table C.5: Model 1: 5% Reduction in Lottery Revenues in 2012**  
**Amounts in Millions**

		Base FY 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b><i>Projected Casino Operating License Revenues</i></b>											
Casino Gross Gaming Revenues	[a]	2,150	2,257	2,363	2,472	2,582	2,698	2,815	2,931	3,055	3,183
Gaming Tax Payments	[b]	581					729	760	791	825	859
Less: Local Mitigation	[c]	54					-67	-70	-73	-76	-80
Less: Public Health Mitigation	[d]	54					-67	-70	-73	-76	-80
Net After Local and Public Health Mitigation	[e]	473					594	619	645	672	700
Net After Local and Public Health Mitigation (2007 dollars)	[f]	473					520	527	534	542	549
<b><i>Lottery Mitigation</i></b>											
Lottery Revenues (No Casino Impact)	[g]	983	998	1,010	1,021	1,031	1,041	1,050	1,056	1,064	1,071
Lottery Revenues (with Casino Impact)	[h]	983	998	1,010	1,021	1,031	989	997	1,004	1,011	1,018
Casino Impact	[i]	0	0	0	0	0	-52	-52	-53	-53	-54
Baseline	[j]	996	1,026	1,056	1,088	1,121	1,154	1,189	1,225	1,261	1,299
Lottery Mitigation	[k]						165	192	221	250	281

**Table C.5 (continued): Model 1: 5% Reduction in Lottery Revenues in 2012**  
**Amounts in Millions**

		Base FY 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<i>Net Fiscal Impact</i>											
Total State Gaming Revenues	[l]	983	998	1,010	1,021	1,031	1,583	1,617	1,649	1,683	1,718
Net Increase from Casino Gaming	[m]						542	567	592	619	647
Funds Available for Other State Purposes	[n]						429	428	424	422	419
Total State Gaming Revenues (2007 Dollars)	[o]	983	975	961	945	927	1,385	1,377	1,365	1,356	1,347
Net Increase from Casino Gaming (2007 Dollars)	[p]						474	483	490	499	507
Funds Available for Other State Purposes (2007 Dollars)	[q]						375	364	351	340	328

[a]: Mid-point estimate of GGR. Adjusted over 2008 to 2015 by estimated growth in state personal income.

[c], [d]: 2.5% of [a]

[e]: [b]+[c]+[d]

[f]: [e]/CPI

[g]: 2007 lottery revenues. Projected growth rate 3.50% below the growth in state personal income.

[h]: [g] with a 5% reduction in lottery revenues 2012.

[i]: [h]-[g]

[j] 2007 lottery revenues adjusted upward by 3.0 percent per year.

[k]: [j]-[h]

[l]: [e]+[h]

[m]: [e]+[i]

[n]: [e]-[k]

[o], [p] and [q]: [l]/CPI; [m]/CPI & [n]/CPI

**Table C.6: Model 2: 10% Reduction in Lottery Revenues in 2012**  
**Amounts in Millions**

		Base FY 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<b><i>Projected Casino Operating License Revenues</i></b>											
Casino Gross Gaming Revenues	[a]	2,150	2,257	2,363	2,472	2,582	2,698	2,815	2,931	3,055	3,183
Gaming Tax Payments	[b]	581					729	760	791	825	859
Less: Local Mitigation	[c]	54					-67	-70	-73	-76	-80
Less: Public Health Mitigation	[d]	54					-67	-70	-73	-76	-80
Net After Local and Public Health Mitigation	[e]	473					594	619	645	672	700
Net After Local and Public Health Mitigation (2007 dollars)	[f]	473					520	527	534	542	549
<b><i>Lottery Mitigation</i></b>											
Lottery Revenues (No Casino Impact)	[g]	983	998	1,010	1,021	1,031	1,041	1,050	1,056	1,064	1,071
Lottery Revenues (with Casino Impact)	[h]	983	998	1,010	1,021	1,031	937	945	951	958	964
Casino Impact	[i]	0	0	0	0	0	-104	-105	-106	-106	-107
Baseline	[j]	996	1,026	1,056	1,088	1,121	1,154	1,189	1,225	1,261	1,299
Lottery Mitigation	[k]						217	244	274	304	335

**Table C.6 (continued): Model 2: 10% Reduction in Lottery Revenues in 2012**  
**Amounts in Millions**

		Base FY 2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
<i>Net Fiscal Impact</i>											
Total State Gaming Revenues	[l]	983	998	1,010	1,021	1,031	1,531	1,564	1,596	1,630	1,665
Net Increase from Casino Gaming	[m]						490	514	539	566	593
Funds Available for Other State Purposes	[n]						376	375	371	368	365
Total State Gaming Revenues (2007 Dollars)	[o]	983	975	961	945	927	1,340	1,332	1,322	1,313	1,305
Net Increase from Casino Gaming (2007 Dollars)	[p]						428	438	447	456	465
Funds Available for Other State Purposes (2007 Dollars)	[q]						330	320	307	297	286

[a]: Mid-point estimate GGR. Adjusted over 2008 to 2015 by estimated growth in state personal income.

[c], [d]: 2.5% of [a]

[e]: [b]+[c]+[d]

[f]: [e]/CPI

[g]: 2007 lottery revenues. Projected growth rate 3.50% below the growth in state personal income.

[h]: [g] with a 10% reduction in lottery revenues 2012.

[i]: [h]-[g]

[j] 2007 lottery revenues adjusted upward by 3.0 percent per year.

[k]: [j]-[h]

[l]: [e]+[h]

[m]: [e]+[i]

[n]: [e]-[k]

[o], [p] and [q]: [l]/CPI; [m]/CPI & [n]/CPI

The amount of funds allocated to lottery mitigation in the draft legislation is the difference between the actual lottery transfer and the historical amount of the lottery transfer increased at 3 percent per year. This study refers to the latter as the “baseline” level of lottery revenues. The average amount transferred from the lottery to the general fund in FY 2003 to FY 2007 is \$996 million (Table C.1). Row [j] contains the baseline level in future periods. Row [k] contains then difference between actual and baseline lottery transfer. This is the amount of casino revenues that the state would transfer to make up for the shortfall in the lottery. The lottery transfer falls below the baseline level regardless of whether the casinos are developed or not. This occurs because even in the case without the introduction of casino gaming, projected lottery revenue growth lags behind the 3 percent annual rate of growth of the baseline. As a result, only a portion of the transfer to the lottery fund is a result of the introduction of casino gaming.<sup>206</sup> Much of the transfer is simply due to slow growth of lottery revenues.

The bottom portion of Tables C.5 and C.6 summarize the impact of the legislation on state gaming revenues. Row [l] contains the aggregate gaming revenues received by the state from the lottery and the casino gaming tax payments. This row does not reflect any initial licensing payments associated with the developers proposals. Row [m] contains the increase in states revenues from the introduction of casino gaming. This is the increase in revenues from the gaming tax (after public health and local impact mitigation) less the shrinkage in the lottery transfer due to casino introduction. Row [n] contains the amount of funds available to the commonwealth for other purposes. Rows [o] through [q] adjust for changes in the consumer price level. Note that the net increase in gaming revenues in future periods is increasing over time. Measured in 2007 dollars, the net increase in state revenues as a result of the introduction of casino gaming in 2012 in Model 1 is projected to be \$474 million increasing to \$507 million by 2016. In Model 2,

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<sup>206</sup> In Model 1, which assumes a 5 percent impact, roughly one-third of the transfer to the lottery fund is due to the introduction of casino gaming, two-thirds is a result of slow growth in lottery revenues. In Model 2, which assumes a 10 percent impact, roughly half is due to the impact of casino gaming and half due to slow growth in lottery revenues.

which assumes a 10 percent decrease in lottery revenues, the net increase in state revenues from casino gaming measured in 2007 dollars is projected to increase from \$428 million in 2012 to \$465 million in 2016. Funds available for other purposes are declining in real terms over this period. The difference in the trend between these two entries arises because lottery revenue growth in the model is always below the 3 percent growth in the baseline. Increasing transfers to the lottery fund, not underperformance by the casino, causes the decline in funds available for other purposes over time.

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The FLVS Team consists of Certified Public Accountants, Economists, Certified Fraud Examiners, valuation experts and other professionals with advanced degrees in finance, law, business and economics.

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