STATE OF ALABAMA
OFFICE OF THE ATTORNEY GENERAL

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August 23, 2013

The National Indian Gaming Commission
1441 L Street NW, Suite 9100
Washington, DC 20005

Dear Commission Members:

Thank you for the opportunity to provide comment to the National Indian Gaming Commission concerning the Commission's "proposed reinterpretation of an agency decision regarding the classification of server based electronic bingo system games that can be played utilizing only one touch of a button ('one touch bingo')." *See* 25 C.F.R. Part 502. On February 11, 2011, I urged you to use your comprehensive review of existing regulations to "make clear that Native American Indian tribes located in Alabama cannot engage in gambling activities that are patently illegal under Alabama law." In April of 2012, I urged you to draw a clear distinction between technological aids that may be used with Class II bingo and Class III slot machines, which require a compact. I now urge you not to adopt the "proposed reinterpretation."

Your proposal moves in the wrong direction. Your proposal would repeal the NIGC's only good-faith attempt in the last decade to meaningfully distinguish between technological aids and slot machines. Instead of clarifying this important area of the law, it would further blur the line between the kinds of gambling that states have the right to control and the kinds they do not. This proposal is regrettable. It is also arbitrary and capricious. If adopted, the proposal would violate the Indian Gaming Regulatory Act ("IGRA") and your congressional mandate. Accordingly, I urge you to abandon this proposal and to replace it with a proposal to strengthen and further demarcate the line between Class II and Class III gambling.

As you know, slot machines cannot be operated by a Native American Indian tribe on land located in a state like Alabama that has not agreed to a compact with that tribe. When Congress enacted the IGRA it envisioned two distinct types of gaming – the traditional game of bingo on the one hand and casino halls filled with slot machines on the other. That is why IGRA

distinguishes between "technological aids" that may be used with Class II games like bingo, which can be operated without a compact, and Class III games such as "slot machines," which cannot be operated without a compact. In fact, IGRA expressly provides in no uncertain terms that "'class II gaming' does not include . . . electronic or electromechanical facsimiles of any game of chance or slot machines *of any kind*." 25 U.S.C. § 2703(7)(b)(2) (emphasis added).

After IGRA was enacted, slot machine manufacturers and tribes went to great lengths to conflate Class III slot machines with *bona fide* "technological aids" used to play the traditional game of Class II bingo. By 2006, this Commission was rightly "concerned that the industry is dangerously close to obscuring the line between Class II and III" altogether. *See* Proposed Rule, 25 CFR Part 502 and 546, Classification Standards, Class II Gaming, Bingo, Lotto, et al., 71 Fed. Reg. 30238 (May 25, 2006). For that reason, the Commission proposed a package of reforms designed to enforce the statutory distinction between Class II and Class III games. *Id*. For that reason, as well, the former NIGC Commissioner issued a series of rulings that held that slot-machine terminals were not "technological aids" to play "bingo" if players were not at least required to press a button three times. *See* Disapproval Letter from Commissioner Philip Hogen to Mayor Karl S. Cook at 7 (June 4, 2008). Unfortunately, the Commission abandoned any effort to enforce the statutory line between "technological aids" and "facsimiles" of games of chance through a meaningful regulation and, since that time, has simply "assume[d] that such a line already exists." Withdrawal of Classification Standards for Bingo, Lotto, Other Games Similar to Bingo, Pull Tabs and Instant Bingo as Class II Gaming When Played Through an Electronic Medium Using ''Electronic, Computer, or Other Technologic Aids," 73 Fed. Reg. 60523 (Oct. 10, 2008).

Although the Commission promised to address "classification issues through a combination of training, technical assistance, and enforcement actions," it has completely failed to do so. *See* 73 Fed. Reg. 60490, 60491 (Oct. 10 2008). Instead of enforcing the law, the Commission has allowed regulated entities to run roughshod over its interpretation of Class II gaming. As far as I can ascertain, the Commission has done absolutely nothing to ensure compliance with its longstanding interpretation that "one touch" gambling devices are illegal for tribes to operate without a compact. After reviewing all of the Commission's enforcement actions since 2006 on the Commission's website, my office has not uncovered a single action related to the difference between Class II and Class III games or the use of "technological aids."

In light of this background, this new proposal is especially troubling. Instead of enforcing its existing interpretation of Class II bingo, the Commission's new proposal is to overturn that interpretation and effectively eliminate any difference between "technological aids" and "slot machines." I

fully agree with the comment letter filed by Attorney General Bill Schuette of Michigan, and I have four additional comments on this deeply misguided proposal.

First, these "one touch electronic bingo machines" are not, in the words of the Senate Report, "readily distinguishable from . . . electronic facsimiles in which a single participant plays a game with or against a machine." S. Rep. No. 100-446 at p. A-9. There is no difference from a player's perspective between playing an acknowledged slot machine and a one-touch "electronic bingo" machine. At the touch of a single button, both gambling devices simply tell the player whether he or she has won a prize through spinning reels, sound effects, and blinking lights. Because this kind of equipment automatically, electronically automates the play of the game and the players' participation in the game, the electronic equipment cannot be characterized as merely an aid. Player attention, discretion, and interactions have been automated by the equipment. As detailed in my amended complaint in *State of Alabama v. PCI Gaming Authority et al.*, 2:13-cv-00178-WKW-WC (M.D. Ala), tribal gambling facilities in Alabama are currently operating one-touch "electronic bingo" games that are openly marketed as acknowledged slot machines in other jurisdictions like Las Vegas and Atlantic City. *See* Amended Complaint (attached as **Exhibit 1)**. There is no "readily distinguishable" difference between the two types of gambling machines.

By further conflating "technological aids" with acknowledged slot machines, the Commission will only add to the public's and regulated community's confusion about what is legal and what is not. Most states that allow the game of bingo define it much more narrowly than the Commission proposes to do. *See, e.g.*, *Barber v. Cornerstone Community Outreach, Inc.*, 42 So. 3d 65 (Ala. 2009); *Citation Bingo, Ltd. v. Otten*, 910 P.2d 281, 283, 286–88 (N.M. 1995); FLA. STAT. § 849.0931(1)(a); KAN. STAT. ANN. § 79-4701(f)(4); DEL. CODE ANN. tit. 28, § 1102(1). Similarly, the common definition of a slot machine—including the definition in the federal Johnson Act—encompasses devices like so-called "one-touch electronic bingo" machines. *See, e.g.*, Ala. Code 13A-12-20(10)(defining slot machine as "[a] gambling device that, as a result of the insertion of a coin or other object, operates, either completely automatically or with the aid of some physical act by the player, in such a manner that, depending upon elements of chance, it may eject something of value."); *MDS Investments, L.L.C. v. State*, 65 P.3d 197, 203 (Idaho 2003) ("Considering the technological changes, a slot machine is a gambling device which, upon payment by a player of required consideration in any form, may be played or operated, and which, upon being played or operated, may, solely by chance, deliver or entitle the player to receive something of value, with the outcome being shown by spinning reels or by a video or other representation of reels."). Alabama citizens are understandably confused when Indian tribes are

allowed to call their Class III slot machines "bingo," but gambling promoters within the state's jurisdiction cannot use the same trick. The solution to this confusion is *not* for the NIGC to officially repudiate the difference between Class II and Class III; the solution is for the Commission to strictly enforce federal law.

Second, the Commission's proposal exceeds the Commission's authority under IGRA because it authorizes a "kind" of slot machine in states that do not have compacts. *See* 25 U.S.C. § 2703(7)(b)(2). Your proposed reinterpretation relies primarily on a series of court decisions about MegaMania bingo. *See United States v. 162 MegaMania Gambling Devices*, 231 F.3d 713 (10th cir. 2000); *United States v. 103 Gambling Devices*, 223 F.3d 1091 (9th Cir. 2000). Those cases were wrongly decided. But, even had they been properly decided, they concerned devices very different from the types of "one-touch" bingo that your proposed reinterpretation would authorize. In those cases, the Tenth and Ninth Circuits considered electronic, computerized player stations that connected a minimum of 12 players and displayed bingo cards and bingo balls. Each game on those stations was a group activity that took *from two to three minutes to play*. And those courts were careful to note that their conclusions were limited to the specific facts of those cases. *See MegaMania*, 231 F.3d at 725.

Third, by authorizing tribes to use slot-machine-style machines without a compact, the Commission will create more addicted gamblers and impose substantial costs on the states. Slot machines and their identical twin "one-touch electronic bingo machines" are specifically designed to use sounds and lights to exploit players and increase their gambling. *See* Dixon MJ et al, *The Impact of Sound in Modern Multiline Video Slot Machine Play,* JOURNAL OF GAMBLING STUDIES (2013); Dixon MJ et al., *Losses disguised as wins in modern multi-line video slot machines*, ADDICTION (2010) (attached jointly as **Exhibit 2**). Unlike slow-paced traditional bingo games or even the kinds of games addressed in the MegaMania bingo decisions, slot machines use these gimmicks to trick players into believing that they have won more frequently and more money than they actually have. *Id*. Slot machines also speed up gambling activity so that gamblers can play many rounds in a quick succession. Accordingly, it should come as no surprise to you that recent studies show that up to 41% of slot-machine losses, and between 25% and 50% of casino revenue, comes from problem or addicted gamblers. *See* Alexandra Berzon & Mark Maremont, *Researchers Bet Casino Data Can Identify Gambling Addicts*, WALL STREET JOURNAL at A1 (August 3, 2013) (attached as **Exhibit 3**). These kinds of addicted gamblers (and the other ill effects of slot-machine gambling, such as organized crime) impose substantial costs on the community surrounding a slot-machine casino. *See, e.g.*, John Warren Kindt, *The Costs of Addicted Gamblers: Should the States Initiate Mega-Lawsuits Similar to the Tobacco Cases?,* 22

MANAGERIAL & DECISION ECON. 17 (2001) (attached as **Exhibit 4**). By authorizing tribes to conduct slot-machine-style gambling without the need for a compact, you will have eliminated any means by which states can recoup the serious societal costs of such gambling. You will also have made it impossible for the people of the states to determine whether they want to allow this kind of gambling for themselves.

Finally, the Commission's decision appears driven by unusually perverse financial and regulatory incentives. Because the Commission is funded by the aggregate amount of Class II gambling, growth in Class II gambling necessarily increases the Commission's funding. *See* 25 U.S.C. § 2717a. Moreover, unlike the case with Class III gambling, the Commission does not share regulatory authority over Class II gambling with the states. Accordingly, by construing "technological aid" to allow for gambling devices materially identical to acknowledged slot machines, the Commission is merely aggregating additional regulatory authority to itself in contravention of the role of the states in regulating this kind of gambling activity. This will have a very real and negative effect on state sovereignty: tribes will no longer need a state's permission to fund and build multi-story slot-machine casinos. In contravention of Congress's intent, the Commission, not the states, will have the power to make those decisions.

In conclusion, I agree with the Commission that the status quo is unacceptable. But the answer is not to ignore Congressional mandates. The answer is for the Commission to enforce the bright line between Class II and Class III gambling that already exists in federal law.

If the Commission needs any further comment or information related to this matter, do not hesitate to contact my office.

Respectfully submitted,

Luther Strange

LUTHER STRANGE
ATTORNEY GENERAL

LS/alb
Encl.

Exhibit 1

IN THE UNITED STATES DISTRICT COURT
FOR THE MIDDLE DISTRICT OF ALBAMA
NORTHERN DIVISION

STATE OF ALABAMA	)	
	)	
Plaintiff,	)	
	)	
v.	)	
	)	
	)	
PCI GAMING AUTHORITY,	)	
BUFORD ROLIN, STEPHANIE BRYAN,	)	**Civil Action No.**
ROBERT MCGHEE, DAVID GEHMAN,	)	**2:13-CV-00178-WKW-WC**
ARTHUR MOTHERSHED,	)	
SANDY HOLLINGER, GARVIS SELLS,	)	
EDDIE TULLIS, KEITH MARTIN,	)	
BRIDGET WASDIN,	)	
MATTHEW MARTIN, BILLY SMITH,	)	
TIM MANNING,	)	
	)	
	)	
Defendants.	)	

FIRST AMENDED COMPLAINT

COMES NOW, the State of Alabama, by and through Attorney General Luther Strange via the undersigned counsel, and respectfully moves this Honorable Court for declaratory and injunctive relief to abate a public nuisance of unlawful gambling, pursuant to Ala. Code § 6-5-120 based on the following :

JURISDICTION

1. Defendants removed this case on the grounds that this Court has subject matter jurisdiction under 28 U.S.C. § 1331.

2. This Court has jurisdiction over the parties.

3. Defendants have no tribal or sovereign immunity that would bar the declaratory and injunctive relief requested in this Complaint. As explained in more detail below, by openly and notoriously operating their casinos in violation of state law, Defendants have exceeded any purported authority they may have to conduct gambling under state or federal law.

PARTIES

4. Plaintiff is the State of Alabama by and through Attorney General Luther Strange, who has standing to bring this action on behalf of the State. *See* Ala. Code § 36-15-12.

5. Defendant PCI Gaming Authority is a commercial enterprise owned and operated by the Poarch Band of Creek Indians ("PBCI").

6. Defendants Buford Rolin, Stephanie Bryan, Robert McGhee, David Gehman, Arthur Mothershed, Keith Martin, Sandy Hollinger, Garvin Sells, and Eddie Tullis are members of the PBCI Tribal Council and officials of PBCI sued in their official capacity.

7. Defendants Keith Martin, Bridget Wasdin, Matthew Martin, Billy Smith and Tim Manning are members of the PCI Gaming Authority and tribal officials sued in their official capacity.

VENUE

8. Venue is appropriate in this Court. This action was filed in state court in Elmore County, Alabama, and removed to this Court by Defendants. Elmore County is within the Middle District of Alabama.

GENERAL ALLEGATIONS

9. Defendants operate, administer, and control three casinos on purported Indian lands in Alabama: the Creek Casino in Wetumpka, the Wind Creek Casino in Atmore, and the

Creek Casino in Montgomery. At each of these casinos, Defendants operate hundreds of slot machines and other gambling devices in open, continuous, and notorious use.

10. Gambling is generally illegal in Alabama, and slot machines are particularly so. The State's general prohibition on gambling is so fundamental that the People enshrined it in the Constitution. *See* ALA. CONST. art. IV, §65. The Legislature has specifically criminalized possession of slot machines and other gambling devices. ALA. CODE §13A-12-27. Nevertheless, because of the immense profits associated with organized gambling, the industry frequently has tried to "evade[]" these prohibitions, as the Alabama Supreme Court put it in *Barber v. Jefferson Cnty. Racing Ass'n*, 960 So. 2d 599 (Ala. 2006), by asserting that "loophole[s]" in Alabama law were much larger than they in fact were. *Id.* at 614. For example, in 2006, the Alabama Supreme Court rejected the industry's attempt to pass off what were really slot machines as machines that were playing a legal "sweepstakes." *Id.* at 603-15. The Alabama Supreme Court held that substance is more important than legal technicality; accordingly, gambling devices are illegal if they "look like, sound like, and attract the same class of customers as conventional slot machines." *Id.* at 616. *See also Ex parte State*, No. 1120498, __ So. 3d ___, 2013 WL 765747 (Ala. Mar. 1, 2013); *Barber v. Cornerstone Comm. Outreach,* 42 So. 3d 65 (Ala. 2009); *State ex rel. Tyson v. Ted's Game Enterprises*, 893 So. 2d 376, 380 (Ala. 2004).

11. Gambling on "Indian Lands" is governed by the Indian Gaming Regulatory Act ("IGRA"). By enacting IGRA, Congress intended that Indian tribes be able to conduct gambling only "within a State which does not, as a matter of criminal law and public policy, prohibit such gaming activity." 25 U.S.C. § 1701(5). Accordingly, IGRA expressly provides that, "for purposes of Federal law, all State laws pertaining to the licensing, regulation, or prohibition of gambling, including but not limited to criminal sanctions applicable thereto, shall apply in Indian

country in the same manner and to the same extent as such laws apply elsewhere in the State." 18 U.S.C. § 1166(a).

12. IGRA also expressly distinguishes between "technological aids" that may be used with class II games like bingo without a State's consent, and class III games such as "slot machines," which cannot be operated without a State's consent. IGRA expressly provides that "'class II gaming' does not include . . . electronic or electromechanical facsimiles of any game of chance or slot machines *of any kind*." 25 U.S.C. § 2703(7)(b)(2) (emphasis added). Nonetheless, slot machine manufacturers and Indian tribes have gone to great lengths to conflate Class III slot machines with "technological aids" used to play the game of bingo. By 2006, the National Indian Gaming Commission admitted "that the industry is dangerously close to obscuring the line between Class II and III" altogether. *See* Proposed Rule, 25 CFR Part 502 and 546, Classification Standards, Class II Gaming, Bingo, Lotto, et al., 71 Fed. Reg. 30238 (May 25, 2006).

13. Defendants' gambling devices play like acknowledged slot machines and facsimiles of games of chance. Someone who wants to play one of Defendants' gambling devices can insert money directly into the face of the machine or load money onto a swipe card that the player inserts into the machine. The player then presses a button to bet a certain amount of money. Once the bet is in, the player presses a button or pulls a slot-machine arm or handle to start the spinning of slot reels that appear on the gambling devices. For some machines, the slot reels are digital; for others, the slot reels are mechanical. Approximately six seconds later, the machine displays the game's result. If the customer wins, then his or her credits go up; if not, the credits go down. The player can then either play again or cash out to receive credit for any money he or she has remaining.

14. All it takes to operate some of the gambling devices at Defendants' casinos is a single touch of a button or pull of a handle. With a single touch or pull, the machines both initiate a game and bring that game to conclusion. On information and belief, other of Defendants' gambling devices require two actions by the player: one touch or pull to initiate the spinning slot reels and a second touch or pull to stop the spinning slot reels.

15. Defendants' devices display a small "bingo card" to the side, below, or above the slot reels. On most of the machines, the "bingo" display is 1.5 inches by 1.5 inches. The predominant display on all Defendants' gambling devices is a large, digital or mechanical representation of "reels" commonly seen on acknowledged slot machines.

16. Defendants' gambling devices replicate a game of chance in an electronic format. There is no interaction between players. There is no competition to be the first person who covers a bingo card. No player must call out "bingo." There is no holder of a bingo card who covers randomly drawn numbers on the card. No player can "sleep a bingo" or forfeit a prize based on his or her failure to recognize a predetermined winning pattern. The player does not need to pay attention, listen to alphanumeric designations drawn one-by-one, or match them up to a bingo card. Instead, the player presses a single button, watches slot-machine reels spin, and is told whether he or she has won by the gambling device.

17. Some of Defendants' gambling devices are operated as acknowledged slot machines in other jurisdictions. For example, on information and belief, "Red Hot Fusion," "Quick Hit," "Hot Shot Blazing 7s," and "Wheel of Fortune" are openly, notoriously, and continuously played at Defendants' casinos. These games are marketed as both "bingo" and acknowledged slot machines. Publicly available marketing materials for "Red Hot Fusion,"

"Quick Hit," "Hot Shot Blazing 7s," and "Wheel of Fortune" are attached as **Exhibit A** to this Amended Complaint.

18. Defendants' gambling devices play like, look like, sound like, and attract the same class of customers as acknowledged slot machines. Attached as **Exhibit B** to this Amended Complaint are publicly available photographs of some of the gambling devices in open, continuous, and notorious use in Defendants' casinos.

COUNT I – PUBLIC NUISANCE UNDER STATE LAW

19. The State incorporates paragraphs 1 through 18 as if fully stated in Count I.

20. Devices being used at Defendants' casinos do not play the game "commonly known as bingo" as defined by Alabama law. *See Barber v. Cornerstone Comm. Outreach,* 42 So. 3d 65 (Ala. 2009).

21. Devices being used at Defendants' casinos are prohibited gambling devices, as defined in Alabama Code § 13A-12-20(5). They are machines or equipment used in the playing phases of gambling activity between persons or machines. *Id.*

22. Devices being used at Defendants' casinos are slot machines or readily convertible to slot machines, as defined in Alabama Code § 13A-12-20(10). As a result of the insertion of an object, Defendants' devices operate with the aid of a physical act by the player to eject something of value based on the element of chance.

23. Defendants do not have legal authority to operate, advance, or profit from unlawful gambling activity in violation of Article IV, Section 65 of the Alabama Constitution (1901) and Ala. Code § 13A-12-20 *et seq*.

24. Defendants have an obligation to comply with Alabama's gambling laws for at least two reasons. First, federal law does not authorize Defendants to engage in "class III"

gambling or otherwise use "electronic or electromechanical facsimiles of any game of chance *or slot machines of any kind*." 25 U.S.C. § 2703(7)(B) (emphasis added). Instead, as to this kind of gambling, "for purposes of Federal law, all State laws pertaining to the licensing, regulation, or prohibition of gambling, including but not limited to criminal sanctions applicable thereto, shall apply in Indian country in the same manner and to the same extent as such laws apply elsewhere in the State." 18 U.S.C. § 1166(a) & (c). The term "'all State laws' includes both state statutory and case law." *United States v. Santee Sioux Tribe*, 135 F.3d 558, 565 (8th Cir. 1998).

25. Second, on information and belief, Defendants' casinos are not located on properly recognized "Indian Lands" such that they would even be governed by IGRA. The Indian Reorganization Act of 1934 ("IRA") allows the Interior Department's Bureau of Indian Affairs to take land into trust for Native Americans. But the U.S. Supreme Court in *Carcieri v. Salazar*, 555 U.S. 379 (2009), has ruled that the Secretary of Interior has never been authorized to take land into trust for Indian tribes that were not "under federal jurisdiction" and recognized prior to 1934. Upon information and belief, PBCI was not under federal jurisdiction and recognized prior to 1934.

26. The continued operation of slot machines and unlawful gambling devices by Defendants is a public nuisance. *See* Ala. Code § 6-5-120 *et seq*.; Restatement (Second) of Torts § 821B; *Try-Me Bottling Company, et al v. State of Alabama*, 178 So.231 (Ala. 1938).

27. The continued operation of slot machines and unlawful gambling devices by Defendants works hurt, inconvenience, or damage to the public interest.

28. The public policy of Alabama is emphatically against lotteries or any scheme in the nature of a lottery.

29. The State has an interest in the welfare of the people within her domain and, of consequence, in enforcement of the State's declared public policy against lotteries or gift schemes.

30. Defendants' operation of lotteries and their use of slot machines and unlawful gambling devices are enjoinable in suit by the State by virtue of this Court's equity jurisdiction to abate a public nuisance. *See Try-Me Bottling Company, et al v. State of Alabama*, 178 So. 231 (Ala. 1938).

COUNT II – PUBLIC NUISANCE UNDER FEDERAL LAW

31. The State incorporates paragraphs 1 through 30 as if fully stated in Count II.

32. Defendants' activities constitute a public nuisance under Alabama law.

33. Alabama statutes and judicial precedents, such as Article IV, Section 65 of the Alabama Constitution (1901), Ala. Code § 13A-12-20 *et seq*, and *Try-Me Bottling Company, et al v. State of Alabama*, 178 So. 231 (Ala. 1938), are "State laws pertaining to the licensing, regulation, or prohibition of gambling." 18 U.S.C. § 1166(a).

34. Defendants are engaged in "class III" gambling as defined by the Indian Regulatory Gaming Act.

35. Defendants have no authority to conduct "class III" gambling or use "electronic or electromechanical facsimiles of any game of chance *or slot machines of any kind*." 25 U.S.C. § 2703(7)(B) (emphasis added).

36. Defendants' "class III" gambling activities are enjoinable under federal law pursuant to 18 U.S.C. § 1166(a) & (c).

37. The State of Alabama, through its Attorney General, is a proper party to file an action to enjoin the public nuisance of unlawful gambling on Indian lands.

REQUEST FOR RELIEF

WHEREFORE, PREMISES CONSIDERED, the State of Alabama respectfully requests this Honorable Court enter an Order

1) declaring that the gambling activities being conducted by or through the Defendants is a public nuisance;

2) permanently enjoining such unlawful gambling activities; and

3) ordering such other and further relief as this Court deems appropriate.

Respectfully submitted,

LUTHER STRANGE (STR003)
ATTORNEY GENERAL

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CERTIFICATE OF SERVICE

I hereby certify that I electronically filed the foregoing with the Clerk of the Court using the CM/ECF system and service will be perfected upon the following counsel of record on this day the 11th of April, 2013:

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/s/ Andrew L. Brasher
OF COUNSEL

Exhibit A

Red Hot Fusion® Sizzling 7® Bingo

BENEFITS AND FEATURES

- Created for players who enjoy Multi-Level Progressives and bonus wheel action
- Anticipation builds as players collect points during the Free Games bonus towards additional active wheel pointers for the Meltdown bonus spin
- Players can win up to two of the five progressive levels with one wheel spin
- Thrilling fireballs shoot from the base game to the top box wheel during the Free Games bonus
- Plays on the *Red Hot Fusion* Multi-Level Progressives series of games

GAME DETAILS	
Reel Configuration	5 Reel
Payline Configuration	25 Paylines
Payback %	80% - 94%
Maximum Bet	125 Credits
Top Award	Progressive
Base Game Hit Frequency with Maximum Paylines Played*	54%*
Bonus Hit Frequency (High/Medium/Low)	Medium
Volatility (High/Medium/Low)	Medium
Multi-Denomination	Yes

*Approximation only based on 90% payback

Game outcome is determined by bingo game play only. Reel display and bonus game play have no effect on game outcome.

For more information on specific game configurations available in your jurisdiction, contact your IGT Account Manager, or visit **www.IGT.com**.

IGT Las Vegas
Corporate Global
Headquarters
6355 South Buffalo Drive
Las Vegas, NV 89113-2133
702-669-7777

Turn up the heat with Red Hot Fusion™ Multi-Level Progressives.

Building on the success of *Red Hot Jackpots®* Multi-Level Progressives (MLP), *Red Hot Fusion™* MLP intensifies the gaming experience with *MLD®* technology, five progressive levels and a virtual bonus wheel your lower-denomination players will love.

NGT

Red Hot Fusion™ Multi-Level Progressives

Virtual Wheel

adds new dimension to MLP experience.

Highlights

- Created for lower-denomination players who enjoy multi-level progressives and bonus wheel action
- Anticipation builds as players collect points during Free Games bonus towards additional active pointers for the virtual wheel and Meltdown bonus spin
- Players can win credits and up to two of five progressive amounts during the virtual wheel spin
- Top progressive awarded during base or bonus game play with five top award symbols lined up
- Keep players entertained with fun animation features such as fireballs traveling from the base game to the wheel in the top box during the Free Games bonus
- Max bet must be played to be eligible for progressive values

Features

- 5 reels, 25 paylines, 125-credit maximum bet
- Five progressive levels

Base Games Available at Release

- *Double Bursting 7s™*
- *Double Sizzling 7s®*
- *Sizzling 7s®*
- *Spin-Ferno™*

Land-Based Games

Premium (MegaJackpots)
- Multi-Level Progressive
- Wide-Area Progressive
- Stand-Alone
- Bonusing Concepts

Core
- Video Reel
- Spinning Reel
- Video Poker
- Multi-Game (Game King)
- Game Families
- Game Hardware Series

Central System
- Bingo (Class II)
- CDS

Multi-Player
- Electronic Table
- Virtual Racing

Other Gaming
- Illinois Video Gaming
- Online & Mobile (Interactive)

Online & Mobile Games

Online
- MegaJackpots
- Slots
- Table Games
- Fixed Odds
- Video Poker
- Bingo & Keno

Mobile
- Slots
- Table Games
- Video Poker

WHEEL OF FORTUNE® BINGO - BIG MONEY™ MULTI-LEVEL PROGRESSIVES

AVP-Bingo: 5-Reel, 30-Line, 400-Credit +20 Side Bet

Overview

Image Gallery

GAME MATRIX PROGRAMS MARKETING KIT

GAME MATRIX

Login to view secured content.

Login

Land-Based Games

Premium (MegaJackpots)
- Multi-Level Progressive
- Wide-Area Progressive
- Stand-Alone
- Bonusing Concepts

Core
- Video Reel
- Spinning Reel
- Video Poker
- Multi-Game (Game King)
- Game Families
- Game Hardware Series

Central System
- Bingo (Class II)
- CDS

Multi-Player
- Electronic Table
- Virtual Racing

Other Gaming
- Illinois Video Gaming
- Online & Mobile (Interactive)

Online & Mobile Games

Online
- MegaJackpots
- Slots
- Table Games
- Fixed Odds
- Video Poker
- Bingo & Keno

Mobile
- Slots
- Table Games
- Video Poker

WHEEL OF FORTUNE® BINGO - BIG MONEY™ MULTI-LEVEL PROGRESSIVES

AVP-Bingo: 5-Reel, 30-Line, 400-Credit +20 Side Bet

Overview

- Appeals to players with a strong brand, dynamic game play, and vibrant graphics
- The Wheel of Fortune® Big Money™ bonus is initiated with bonus symbols on reels 2, 3 and 4, and can be triggered on a tumble
  - Players pick a symbol that may award a wheel spin and an extra wheel pointer
  - With max bet, players can earn a bonus wheel spin with eight wheel pointers
- The first Wheel of Fortune® game to feature Tumbling Reels®, where winning symbol combinations disappear and new symbols fall into place for repeated wins
- Wheel of Fortune® is the original wheel game with high player appeal

Game outcome is determined by bingo game play only. Reel display and bonus game play have no effect on game outcome.

Image Gallery

GAME MATRIX PROGRAMS MARKETING KIT

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Land-Based Games

Premium (MegaJackpots)
- Multi-Level Progressive
- Wide-Area Progressive
- Stand-Alone
- Bonusing Concepts

Core
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- Spinning Reel
- Video Poker
- Multi-Game (Game King)
- Game Families
- Game Hardware Series

Central System
- Bingo (Class II)
- CDS

Multi-Player
- Electronic Table
- Virtual Racing

Other Gaming
- Illinois Video Gaming
- Online & Mobile (Interactive)

Online & Mobile Games

Online
- MegaJackpots
- Slots
- Table Games
- Fixed Odds
- Video Poker
- Bingo & Keno

Mobile
- Slots
- Table Games
- Video Poker

WHEEL OF FORTUNE® VIDEO REEL - BIG MONEY™

Wheel of Fortune® Special Edition™ > Wheel of Fortune

Overview

Wheel of Fortune® Big Money™ Multi-Level Progressives bring a completely new *Wheel of Fortune*® experience to players. Players familiar with DaVinci Diamonds® Video Slots will love this game.The Tumbling Reels® action lets players win again and again. As symbols that are part of winning combinations disappear, new symbols drop in. Bonus symbols can tumble in to initiate the bonus, too.

The latest in the Wheel of Fortune® family combines the excitement of multi-level progressives with the chance to spin the wheel that can lead to progressive wins, too. Players are guaranteed at least one progressive award win when eight pointers are activated. High bonus frequency is designed to keep players engaged.

Also available as: Select Game

GAME MATRIX PROGRAMS MARKETING KIT

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Hot Shot Progressive - Blazing 7s

Game Description
Class II 5 Reels, 20 Lines, 100/200 Credits Max Bet

Available Denominations
1¢, 2¢, 3¢, 4¢, 5¢, 6¢, 7¢, 8¢, 9¢, 10¢, 25¢, 50¢, $1, $2, $5

Progressive Options
Five Level Internal/ External

Bonus Features
Game In Game (GIG) Feature

Top Award
10,000 Credits x Total Max Bet

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Hot Shot Progressive Blazing 7s

Game Description
5 Reels, 20 Lines, 1,000 Credit Max Bet

Available Denominations
1¢, 2¢, 3¢, 4¢, 5¢, 10¢, 25¢, 50¢

Progressive Options
Internal/External Progressive

Bonus Features
Game In Game (GIG) Bonus Feature

Top Award
10,000 Credits x Denomination x Total Bet

Overall Hit Frequency
79.66%

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Quick Hit - Triple Blazing 7s, Black Gold Wild, Black & White Sevens, Stars & Bars

Game Description
Class II 3 Reels, 5 Lines, 50 Credits

Available Denominations
5¢, 10¢, 25¢, 50¢, $1, $2, $5

Progressive Options
Five Level Internal/ External

Top Award
2,500 Credits x Total Bet

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Quick Hit (3R) Black Gold Wild, Black & White Sevens, Stars & Bars, Triple Blazing 7s

Game Description
3 Reels, 9 Lines, 45 Credits Max Bet

Available Denominations
5¢, 10¢, 15¢, 20¢, 25¢, 50¢, $1, $2, $5, $10, $25, $50, $100

Progressive Options
Five level Internal/External

Bonus Features
Free Games. Three Free Games appearing on or within one position of the first payline triggers the Free Games Bonus feature.

Overall Hit Frequency
Black Gold Wild - 30.64%
Black & White Sevens - 30.71%
Stars & Bars - 39.54%
Triple Blazing 7s - 30.71%

Par Sheet
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Exhibit B


100Wolves
100Wolves
100Wolves

Exhibit 2

J Gambl Stud
DOI 10.1007/s10899-013-9391-8

ORIGINAL PAPER

The Impact of Sound in Modern Multiline Video Slot Machine Play

Mike J. Dixon · Kevin A. Harrigan · Diane L. Santesso · Candice Graydon · Jonathan A. Fugelsang · Karen Collins

Abstract Slot machine wins and losses have distinctive, measurable, physiological effects on players. The contributing factors to these effects remain under-explored. We believe that sound is one of these key contributing factors. Sound plays an important role in reinforcement, and thus on arousal level and stress response of players. It is the use of sound for positive reinforcement in particular that we believe influences the player. In the current study, we investigate the role that sound plays in psychophysical responses to slot machine play. A total of 96 gamblers played a slot machine simulator with and without sound being paired with reinforcement. Skin conductance responses and heart rate, as well as subjective judgments about the gambling experience were examined. The results showed that the sound influenced the arousal of participants both psychophysically and psychologically. The sound also influenced players' preferences, with the majority of players preferring to play slot machines that were accompanied by winning sounds. The sounds also caused players to significantly overestimate the number of times they won while playing the slot machine.

Keywords Slot machines · Sound · Reinforcement · Arousal · Skin conductance · Heart rate

Introduction

Sound has always been an integral component of slot machine play. Since the early 1900s, slot machine winning combinations have been accompanied by a ringing bell; a design characteristic that is still present in most machines today. Up until about the early 1990s, sound changed little from the early days, on average featuring about fifteen sound effects; whereas, today slot machines average about 400 sound effects (Rivlin 2004). Winning

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sounds are particularly important to the popularity and attraction of the machines, and losing sounds are rarely heard. Indeed, winning sounds are carefully constructed to be heard over the ambient noise of the environment, in order to draw attention to the machines and to raise the self-esteem of the player, who then becomes the centre of attention on the floor (Griffiths and Parke 2005). Often, the winning music contains high-pitched, major mode songs, which has a tendency to increase the perception of urgency (Haas and Edworthy 1996).

Casino ambience is an important contributor to gambling behaviour (Griffiths and Parke 2005; Dixon et al. 2007; Marmurek et al. 2007; Noseworthy and Finlay 2009; Spenwyn et al. 2010). The flashing lights, the visual design of the space, and in particular the use of loud sounds serves to create feelings of excitement that distract the player by increasing cognitive load (see Kranes 1995; Skea 1995) and, critically, give the impression that winning is much more common than losing. Griffiths and Parke (2005) hypothesized that background sounds and music might increase confidence of the players, increase arousal, help to relax the player, help the player to disregard previous losses, and induce a romantic state leading them to believe that they may win.

Although these previous studies suggest that sound influences players' experience and behaviour, we do not know how significant a factor sound is on the arousal response to slot machines, or whether this response differs in recreational and problem gamblers. We investigate this issue in the current paper by measuring gamblers' physiological response to various slots outcomes when paired with and without sound during slot machine play.

Physiological Response to Sound

Researchers have conjectured that winning sounds may provide a form of second-order conditioning that is reinforcing (Schull 2005; Parke and Griffiths 2006). Studies measuring changes in skin conductance levels as participants listen to music date back to at least the 1940s (e.g., Dreher 1947; Traxel and Wrede 1959), but often have contradictory findings due to the varied conditions in which the studies took place. For example, Smith and Morris (1976) found that stimulating music increased worry and anxiety, whereas Rohner and Miller (1980) found that music had no influence on anxiety levels. Pitzen and Rauscher (1998) and Hirokawa (2004) more recently found that stimulating music increased skin conductance responses but not heart rate.

Previous studies have typically examined the physiological effect of music in isolation of other sensory modalities. In slot machines, however, sounds are invariably paired with images. In modern multiline slot machines, there is a perceptual onslaught of sights and sounds that accompany the win. In the visual domain, the symbols responsible for the win are often animated, causing them to stand out from the non-winning symbols. In addition, for multiline games, the winning line is highlighted for the player by a coloured line that joins the symbols responsible for the win. Advertising research suggests that image and sound, when used congruently tend to amplify each other (e.g., Iwamiya 1994; Bullerjahn and Güldenring 1994; Bolivar et al. 1994). As such, studies into the response to sound in slot machines must take into consideration the amplifying effect of the visual stimuli.

Perhaps the closest corollary to modern slot machines is video games. Previous research into the physiological response to playing video games has shown that sound has a considerable effect on physiological arousal in video games. Hébert et al. (2005) found that playing video games with music/sound on led to higher cortisol levels than playing the same games with the sound off. Jørgensen (2008) as well as Lipscomb and Zehnder (2004) tested the effects of having sound on and off during video game play using verbal

self-reporting (think-aloud and verbal scales), and showed that sound influenced players' perceptions of play. Shilling et al. (2002) showed that playing video games with the sound on led to reductions in body temperature, but increases in heart rate and skin conductance levels compared to play with the sound off; a result also supported by Sanders and Scorgie (2002). Wolfson and Case (2000) found that colour and volume of sound impacted heart rate in videogame play.

In a short pilot study, Grimshaw et al. (2008) explored psychophysiological measurement (ECG, EMG, EEG and SCRs) to a customized version of the video game *Half Life 2*. While those results were largely inconclusive, the same authors followed up with a second study (Nacke et al. 2010), in which they tested psychophysiological response to sound on versus off in video games. Neither electrodermal activity (EDA) nor facial electromyography (EMG) were influenced by the sounds of the game. It should be noted, however, that only tonic measurements (changes over the entire sound on and off epochs) were recorded. It is possible that physiological responses to sound may have occurred for specific events within the game. In this same study, Nacke et al. found that the subjective reactions of the players, as measured by the Game Experience Questionnaire (GEQ; IJsselsteijn et al. 2008), were significantly influenced by the presence of sound. Their finding that sound impacted the subjective reactions of players, but not their physiological reactions led the authors to conclude that there may have been too many factors for an accurate psychophysiological response. They suggested "a more promising approach to psychophysiological analysis in digital games might be the focus on phasic psychophysiological player responses in digital games and the alteration of a single game event" (p. 343).

The sounds that accompany slot machines have been much less researched than those of video games. One study by Loba et al. (2001) provided empirical support for the contention that the sounds can lead to an overall increase in arousal. The authors contrasted a condition in which the speed of slots play was increased and the sound was on, with a second condition where the speed of play was slower than normal and the sound was turned off. Pathological gamblers rated the slow speed-no sound condition as being both less enjoyable and less exciting than higher speed play with sound. While this experiment suggests that sound may play a role in arousal and enjoyment, sound and speed of play were confounded, making it difficult to unambiguously link sound to arousal.

Arousal Response to Slot Machines

During slot machine play our pupils may dilate, our heart rate may increase and our palms sweat, elevating our skin conductance level, indicating how arousing slot machine play can be. Brown (1986) suggested that arousal was *the* major reinforcer of regular gambling behaviour, and Anderson and Brown (1984) documented that problem gamblers showed much higher arousal than non-problem gamblers at a casino. The patterns of arousal may depend on wins and losses: Coventry and Constable (1999) and Coventry and Hudson (2001) documented substantial heart rate increases for players who won, compared to negligible changes for those who lost.

Skin conductance responses (SCRs) are often used to measure event-related phasic (moment to moment) changes in arousal linked to the processing of emotionally-laden stimuli. In the gambling domain, Dixon et al. (2010) investigated the physiological reactivity of players to wins and losses as they played a commercially available slot machine. Wins led to significantly larger SCRs than losses. In a different study using a slot machine simulator, Dixon et al. (2011), showed that the amplitude of the SCRs for wins was tightly titrated to the size of the win; the larger the win, the larger the SCR. Similar findings have

been shown by Lole et al. (2011). Moment-to-moment changes in heart rate can also be used as an index of arousal during slot machine play. Dixon et al. (2010, 2011) showed a temporary slowing of heart rate (heart rate deceleration) followed winning outcomes in slot machines. For slots play on both actual slot machines and on slot machine simulators, winning outcomes led to significant heart rate deceleration, whereas losing outcomes did not.

A particularly intriguing aspect of modern multiline slot machines involves the capability of players to bet on more than one line at a time. Consider for example a player who bets 10 cents on each of nine lines, for a total wager of 90 cents per spin. When they spin and lose their entire wager, the machine goes into a state of quiet in both the visual and auditory domain. When they spin and win more than their wager (e.g., they wager 90 cents and win $1.80), they receive both visual and auditory feedback (e.g., the winning symbols animate and the pay line is highlighted, and credits are counted up with a rolling sound. Thus, there is a stark contrast between winning outcomes filled with 'celebratory' win-related feedback, and losing outcomes characterized by a state of quiet. On a substantial proportion of spins, however, the payback is less than the spin wager (e.g., the player bets 90 cents, and wins 40 cents back on one of the lines). Despite the fact that the player actually loses money on this spin, (e.g., in the example above they lose 50 cents) the machine highlights the "win" with animated symbols and celebratory songs. These outcomes have been referred to as losses disguised as wins or LDWs (Dixon et al. 2010; Jensen et al. 2013; Harrigan et al. 2012). In modern slot machines, there are counters that clearly show the total spin wager, and other counters that show how much the player won on a given spin. Despite this information, novice slot machine players tend to ignore the information on these counters and focus on the exciting elements of the games (the animated symbols and celebratory songs) to inform them if they have won or lost. Indeed, the majority of novice players when exposed to LDWs indicate that these were winning spins, even though they lost money on these outcomes (Jensen et al. 2013). Furthermore, after a playing session, if players are asked to estimate on how many spins they won more than they wagered, players tend to markedly overestimate the number of wins (the LDW overestimation effect), likely because they either misinterpret LDWs as wins, or because they conflate LDWs and wins in memory.

In sum, the auditory feedback that accompanies slot machine outcomes may make for a more exciting playing experience (Loba et al. 2001), but may also serve as a secondary reinforcer that could in part underlie the arousal responses that may make slots so addictive. In addition, they may also serve as an important part of the disguise in LDWs.

The Current Study

In this study, participants played two sessions on a realistic multiline slot machine simulator. In one session (SOUND-ON), wins and LDWs were accompanied by visual celebratory feedback in addition to custom-created rolling sounds and winning jingles. These sounds were composed to sound similar to existing slot machines, but ensuring that players would not be familiar with the exact sounds used. In a second session (SOUND-OFF), the sounds were turned off, and only the visual celebratory feedback (identical to session one) occurred. Both skin conductance responses and heart rate deceleration were recorded for each outcome. At the end of play, we asked players which session they preferred (and why). We also asked them to estimate how many times they won more than they wagered on each session. We predict that sound contributes to enjoyment and excitement during play such that players will rate excitement and enjoyment higher and have increased

physiological response measures during play with sound. We also predict that players will overestimate the number of times they won during slots play (the LDW overestimation effect) when playing with the sound on.

Method

Participants

A total of 96 slot machine players (52 males, mean age = 48.96) were recruited to participate in this study. A minority (n = 22, 13 males, mean age = 42.15; 9 females, mean age = 42.11) were recruited using the online classified ads (www.kijiji.com), and tested in a laboratory at the University of Waterloo, while the majority (n = 74, 39 males, mean age = 49.25; 35 females, mean age = 52.91) were recruited at the entrance to an Ontario slots venue, and tested in a meeting room at the slots venue upstairs from the slots floor. Gambling severity level, as assessed by the Problem Gambling Severity Index (PGSI) of the Canadian Problem Gambling Index (CPGI) (Ferris and Wynne 2001), ranged from 0 to 22. Slot machine gambling frequencies were assessed using the CPGI and ranged from (0–365) times within the last year. There were 46 (18 female) non-problem gamblers (PGSI scores from 0 to 2), 31 (15 female) Moderate-Risk gamblers (PGSI scores from 3 to 7) and 19 (11 female) problem gamblers (8 or over on the PGSI). The non-problem gamblers were subdivided into two groups based on their slot machine gambling frequency. There were 26 (11 female) low-frequency non-problem gamblers (who gambled less than 12 times per year) and 20 (7 female), high-frequency non-problem gamblers who gambled at least once per month). Participants were excluded if they had a history of heart disease or abnormality, had hearing difficulties, were taking stimulant or depressant medication, or were currently in treatment for problem gambling.

Apparatus

Physiological Measurements

Skin conductance and heart rate changes were acquired using an eight channel, ADinstruments Powerlab (model 8/30). The Powerlab system amplified the ECG signal from three disposable electrodes attached below each clavicle and above the left hip (ground). Skin conductance levels were recorded using non-gelled electrodes attached to the upper phalanges of the middle and index fingers of the left hand. The simulator sent an event marker to the Powerlab indicating the type of outcome (win, LDW or loss). The marker was sent as soon as the fifth reel stopped spinning (i.e., as soon as the outcome was known to the gamblers). Using these markers enabled us to time-lock simulator events (commencement of feedback on wins, LDWs and losses) to participants' changes in heart rates and skin conductance levels.

Slot Machine Simulator (Game Planit Interactive Corp)

A nine-line realistic simulator was used to simulate slot machine play (see Fig. 1). This game had a visual and sonic musical instrument theme. The simulator had counters that showed the number of lines played, the amount bet per line, and the total bet per spin. As in

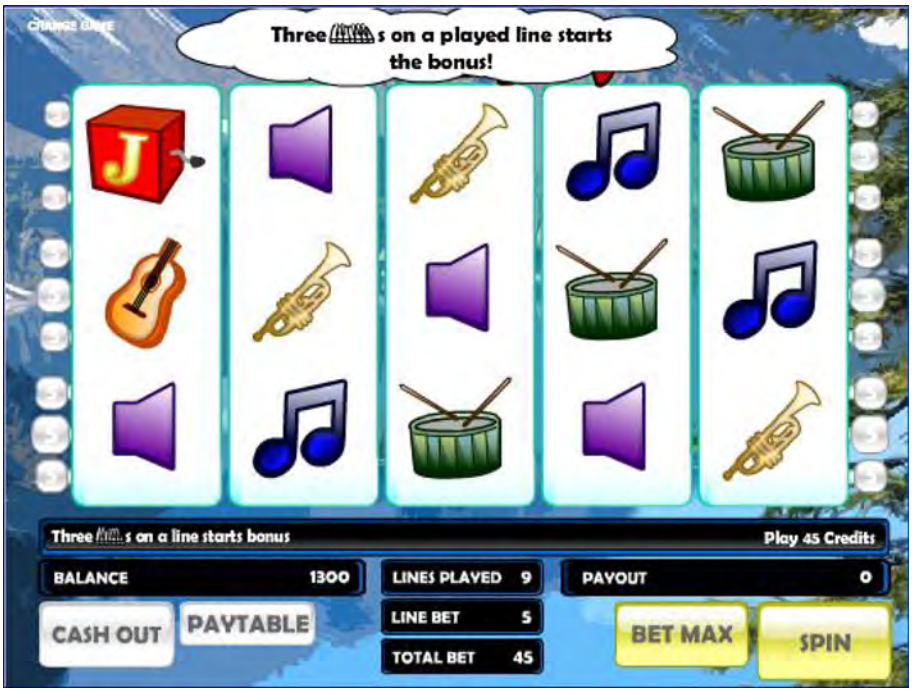

Fig. 1 Screen shot from slots machine simulator

commercially available slot machines, during multiline play, the amount of credits that the player gained on that spin was shown upon outcome delivery. For regular losses the "payout" counter showed 0, for LDWs and wins the payout counter sequentially flashed rising digits culminating in the amount of credits won on that spin. In addition, the combination of symbols responsible for the line win was shown by a line connecting the symbols. Credit gains were accompanied by winning jingles whose lengths ranged from 1.5 s to a maximum of 12 s. Also like commercially available machines, the bigger the win the longer the song. A simulator was used rather than an existing slot machine because it allowed for several levels of customization and control beyond what could be achieved using an actual slot machine. Most importantly, it afforded the ability to equate the number of wins, LDWs and losses in the SOUND-ON and SOUND-OFF conditions.

Self-report Measures

The *Canadian Problem Gambling Index* (CPGI; Ferris and Wynne 2001) was used to assess demographic information (age, gender) and the types of gambling players engaged in (slots, cards etc.). The frequency of slot machine play was assessed using the CPGI question which asked players to indicate "In the past 12 months how often did you bet or spend money on slot machines in a casino?" The PGSI component of the CPGI was used to assess gambling severity. A number of other questionnaires (The BIS/BAS scale (Carver and White 1994), the DASS21 (Lovibond and Lovibond 1995), the PANAS (Watson et al. 1988), and the BIS 11 (Patton et al. 1995) were administered for purposes peripheral to the current study).

The *Game Experience Questionnaire* (GEQ) (IJsselsteijn et al. 2008) was originally designed for video game play (typically, first-person shooter games) to assess seven components of game play experience: sensory and imaginative immersion, competency, negative affect, positive affect, flow, challenge and tension. We used the 14 item in-game component designed for repeated assessments of game experience (two questions per component). The GEQ asks participants questions concerning their game experience e.g., "I had to put effort into it" (assesses the "challenge" component), and participants are presented with "Not at all", "Slightly", "Moderately", "Fairly", "Extremely" as response options. These categorical responses are converted to a 0–4 scale, and the total component score is based on the average of the two questions tapping that component. The sensory and imaginative immersion component could not be assessed as one of the questions pertains to the "story" of the game. The wording of the two immersion questions were altered to fit slots play (to retain the 14 item structure), but the immersion component was not analyzed.

Arousal and Pleasantness Questions

To assess how arousing and pleasant the players found the slot machine simulator, they were given the following items: using the GEQ format (1) "I found this playing session arousing/exciting"; (2) "I found this playing session pleasant". Following each item, players were given the options "Not at all", "Slightly", "Moderately", "Fairly", and "Extremely".

Win Estimate, and Game Preference Questions

After playing a block of spins with sound, and without sound, players were given the following items: (1) "Thinking of the FIRST block of 200 spins you played, estimate the number of times you won more than you wagered. Give a number between 1 and 200"; (2) "Thinking of the LAST block of 200 spins you played, estimate the number of times you won more than you wagered. Give a number between 1 and 200". Next, they were asked which block of spins they preferred (block 1 or block 2), and then asked an open-ended question why they preferred that block of spins.

Procedures

All participants were asked to participate in a research study (recruited through either an ad on Kijiji or a poster at the slots venue). Upon showing an interest in participating, participants read an information synopsis of the study and informed consent was obtained. After giving consent, players filled out the Gambling involvement section of the CPGI, then the PGSI. As described above, participants filled out a number of questionnaires peripheral to the purpose of this study. Players were informed that they would be given $25 for participating (slots participants received a gift card), and that they would be able to win up to an additional $20.00 dollars (in cash) depending on their winnings. Players started with 1,500 credits at the beginning of a slots session, and ended up with 1,110 credits. Since outcomes were fixed, all participants actually won $11.10 per session. The possibility of winning extra funds was used to combat the artificiality of the experience (see Anderson and Brown 1984). Players then played two slots sessions on the simulator in which players bet 1 credit on each of nine lines.

Participants played two blocks of 200 spins each (SOUND-ON and SOUND OFF were counterbalanced across participants). Each block was composed of 144 losses, 28 LDWs, and 28 wins. In each block, participants wagered 1,800 credits (9 credits per spin × 200 spins). The simulator paid out a total of 1,605 credits for a payback percentage of 89.17 % (comparable to the payback percentages used in slot machines in Ontario). The LDWs formed two separate bins with 14 spins in each bin. One bin consisted of credit "wins" of 2–4 credits (net losses of 5–7 credits). The second LDW bin comprised "wins" of 5–8 credits (net losses of 1–4 credits). Actual wins were any spin outcome over 9 credits. Wins were arranged into 4 bins: there were 8 spins yielding credit gains of 10–17; 9 spins yielding credit gains of 18–50 credits, 8 spins yielding credit gains of 51–99 credits, and 3 spins yielding credit gains of between 100 and 130 credits. Each of the two blocks involved the same series of 200 outcomes (but the sequential order of the outcomes was reversed across blocks).

The spin rate was constrained. Following the outcomes, the spin button was disabled for 3 s (on wins this duration was partially filled by the winning songs). After 3 s participants could initiate the next spin. This was done in order to effectively measure heart rate deceleration.

Results

Heart Rate Deceleration

HRD was measured using inter-beat intervals, which refers to the temporal distance (in ms) between R-waves of consecutive heartbeats. The pre-outcome IBI was the temporal distance between the two heartbeats just prior to outcome delivery. Post-outcome IBIs were separated into four bins: IBI 1 comprised the temporal distance between the first and second heart beats following outcome delivery; IBI 2 comprised the distance between beats 2 and 3 post-outcome; IBI 3 comprised the distance between beats 3 and 4; and IBI 4, the distance between beats 4 and 5. Heart beat trains were scanned and filtered to minimize artefacts typically due to movements. Two participants dropped out prior to completing both conditions (both were moderate risk gamblers; 4 and 7 on the PGSI). For 9 participants, the ECG signals were too noisy to analyze (optimal filtering still led to hundreds of artefacts), or other technical problems prevented us from analyzing the data. For the remaining 85 participants, R-waves were labelled, and the pre-outcome IBI, and 4 post-outcome IBIs were analyzed. Prior to calculating averages for each person, the IBIs were submitted to the Van Selst and Jolicoeur (1994) observation-dependent outlier elimination procedure. This ensured that any artefacts not detected by the scanning protocol were removed prior to the main analysis.

The outlier-free data was analysed using a 2 × 7 × 5 × 4 mixed-model ANOVA with Sound Condition (SOUND-ON, SOUND-OFF), Outcome (losses, 2–4 credits, 5–8 credits, 10–17 credits, 18–50 credits, 51–99 credits, 100–130 credits) and IBI (pre-outcome IBI, IBI1, IBI2, IBI3, IBI4) as the within factors, and with Gambling Status Group, (Lo-freq NPG, Hi-freq NPG, Moderate-Risk, PG) as the between factor. For comparisons where Mauchly's test of Sphericity was found to be significant, a Greenhouse-Geisser correction was applied, prior to calculating the probability values cited below.

This analysis revealed no main effects, but a significant Outcome by Gambling Status Group interaction $F(18, 486) = 1.904$, $p = .033$. There was also an Outcome by IBI interaction $F(24, 1{,}944) = 2.103$, $p = .045$. Importantly there was neither a main effect of

Sound, nor any other higher order interactions involving this variable. Figure 2 shows the Outcome by Gambling Status Group interaction. This interaction appears to be caused by an overall reduction in the heart period of the low-frequency non-problem gamblers at the largest win sizes compared to the moderate-risk group. This interaction was not predicted, does not involve sound, and therefore was not decomposed further.

Figure 3 shows the patterns of HRD for the different outcomes, and reveals that heart rate deceleration is absent for the losses (the dashed line in Fig. 3) but can be seen for all credit gains (wins as well as LDWs). The largest heart rate deceleration is for wins from 100 to 130 credits. Although heart rate deceleration appears to differentiate wins from losses, there was no support for the prediction that sounds would increase heart rate deceleration.

Skin Conductance Response (SCR) Amplitudes

SCRs were calculated for losses, and credit gains of 2–4 credits, 5–8 credits, 10–17 credits, 18–50 credits, 51–99 credits, 100–130 credits. SCRs were calculated by first defining a 2-s window that occurred 1 s after outcome delivery (the final reel stopping). To calculate the SCR, the skin conductance level at the beginning of the window was subtracted from the peak skin conductance level within the window. To reduce the potential skew of SCRs, a square root transformation was applied to these difference scores (Dawson et al. 2000).

For each participant, seven mean SCRs were calculated based on the outlier-free averages of that participant's SCR amplitudes for that outcome within a specific sound condition. Since the numbers of observations for each outcome were very different (e.g., there were 144 losses, but only 3 wins above 100 credits) prior to calculating the means, outliers were eliminated using the procedures of Van Selst and Jolicoeur (1994), which uses a sliding criterion based on the number of observations in the particular cell.

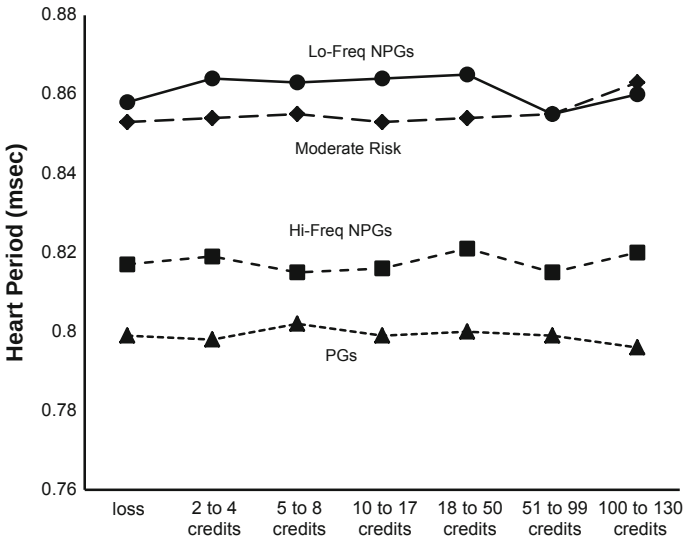

Fig. 2 Average inter-beat intervals for the four gambling groups for each of the slot machine outcomes. *Lo-Freq NPGs* low frequency non-problem gamblers, *Hi-Freq NPGs* high frequency non-problem gamblers, *Moderate-Risk* moderate risk gamblers, *PGs* problem gamblers

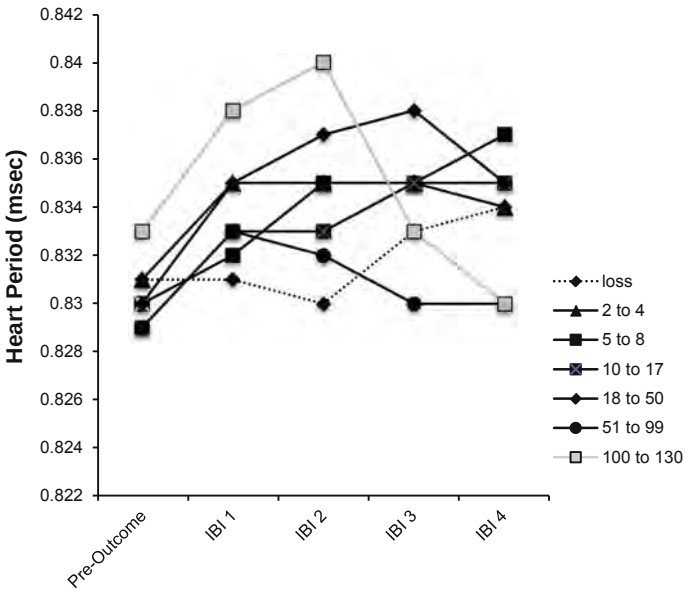

Fig. 3 The heart-period for the inter-beat intervals just prior to outcome delivery, and for the four interbeat intervals following outcome delivery

Of the 96 participants, 2 dropped out prior to completing both conditions (as noted above), and 6 could not be analyzed due to technical problems. In addition, prior to conducting this analysis one low-frequency non-problem gambling participant with extremely high SCRs (over 3 standard deviation units) across multiple outcome conditions was eliminated. SCRs on the remaining 87 participants were analyzed using an Outcome (losses, 2–4 credits, 5–9 credits, 10–17 credits, 18–50 credits, 51–99 credits, 100–130 credits) by Condition (SOUND-ON, SOUND-OFF) repeated measures ANOVA with Gambling Status Group (Lo-freq NPGs, Hi-freq NPGs, Moderate-Risk, PGs) as a between subjects variable.

In this preliminary analysis, there was neither a main effect nor any interactions involving Gambling Status. In order to get more stable estimates of error variance, the Outcome by Sound condition ANOVA was re-run without this Gambling Status variable. For comparisons where Mauchly's test of Sphericity was found to be significant, a Greenhouse-Geisser correction was applied to the degrees of freedom prior to calculating probability values.

The analysis without the Gambling Status variable revealed a main effect of Sound $F(1, 84) = 4.597$, $p = .035$. SCRs in response to the outcomes were significantly higher in the SOUND-ON condition compared to the SOUND-OFF condition. This main effect can be seen in Fig. 4 by comparing the solid line (depicting the SCRs to loss/LDW/win outcomes with the SOUND–ON condition) to the dotted line (SOUND-OFF condition). There was also a main effect of Outcome $F(6, 504) = 6.207$, $p < .001$. As predicted there was a strong linear trend to the data $F(1, 84) = 14.146$, $p < .001$) with SCRs increasing in amplitude as win size increased. The Sound by Condition interaction was not significant $F(6, 504) = .956$, n.s.

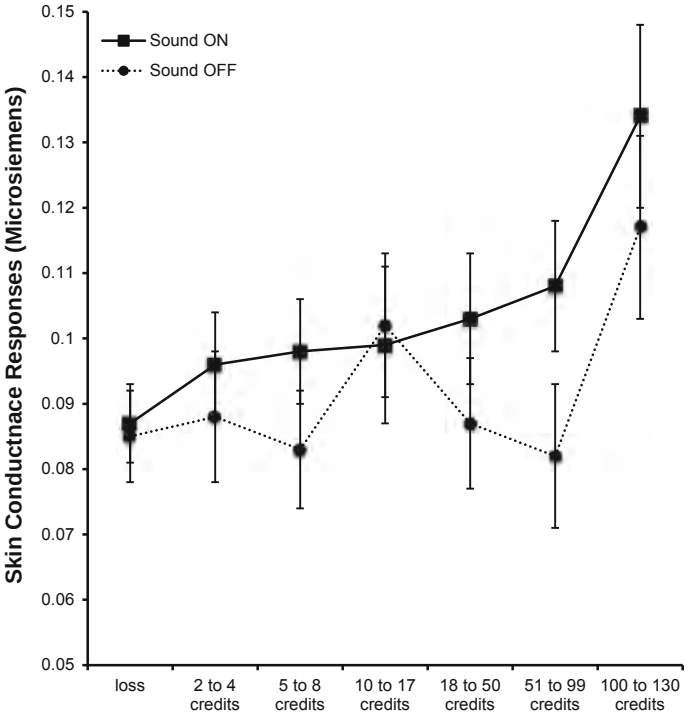

Fig. 4 Skin conductance response amplitudes for slot machine outcomes in the SOUND-ON and SOUND-OFF conditions as a function of outcome delivery

Game Experience Questionnaire

Six components of the Game Experience Questionnaire were assessed: competence, negative affect, flow, positive affect, challenge and tension. Each component was evaluated as a dependent variable using a repeated measures analysis of variance with sound condition (SOUND-ON/SOUND-OFF) as the repeated measure and gambling group as the between subjects variable. There were no significant main effects of Sound, or Gambling Status Group or any significant interactions for any of the core components of the Game Experience Questionnaire.

Arousal and Pleasantness

The subjective feelings of arousal and pleasantness for the SOUND-ON and SOUND-OFF blocks were compared using repeated measures Analyses of Variance with Sound (SOUND-ON, SOUND-OFF) as the repeated variable, and Gambling Status Group (Lo-freq NPGs, Hi-freq NPGs, Moderate-Risk, PGs) as a between-subjects variable. For pleasantness, there was no main effect of Sound condition, no main effect of Gambling Status, and no interaction between these variables. For arousal there was no main effect of Gambling Status $F(3,88) = 1.4$, n.s., but there was a main effect of Sound condition $F(1,88) = 4.4$, $p = .039$ caused by gamblers rating the SOUND-ON condition (M = 1.0) as more arousing than the SOUND-OFF condition (M = .815).

Preference for the Session with Sounds

Ninety-one participants gave an answer to the question of whether they preferred the SOUND-ON or the SOUND-OFF block of spins. Of these 91 participants, 66 (72.5 %) preferred the game with sounds, ($p < .001$, One-Sample Binomial Test). Of the 66 participants who preferred the SOUND-ON block over the SOUND-OFF block, 42 explicitly mentioned the sounds as the reason for their preference. An additional five participants mentioned that they thought they won more during the session with winning sounds (even though the two sessions were equated for the amount won).

Win Estimates

In order to determine if the presence of sound influenced the gamblers' perception of how often they won, a repeated measures ANOVA with Sound condition and Gambling Status was conducted. There was a main effect of Sound condition $F(1,88) = 5.600$, $p = .020$. As can be seen in Fig. 5, the main effect of Sound condition is caused by gamblers reporting greater numbers of wins in the SOUND-ON than the SOUND-OFF condition.

There was also a main effect of Gambling Status $F(3,88) = 2.775$, $p = .046$. As can be seen in Fig. 6, this main effect was attributable to moderate–risk and problem gamblers having higher win estimates than the non-problem gamblers. *Post hoc* analyses (least significant differences test) indeed revealed that the moderate-risk and problem gamblers did not differ in their win estimates, nor did the high and low frequency non-problem gamblers, but the moderate-risk and problem gamblers both reported significantly higher win estimates than the low and high frequency non-problem gamblers. There was no Gambling Status by Sound condition interaction $F(3,88) = 2.311$, n.s.

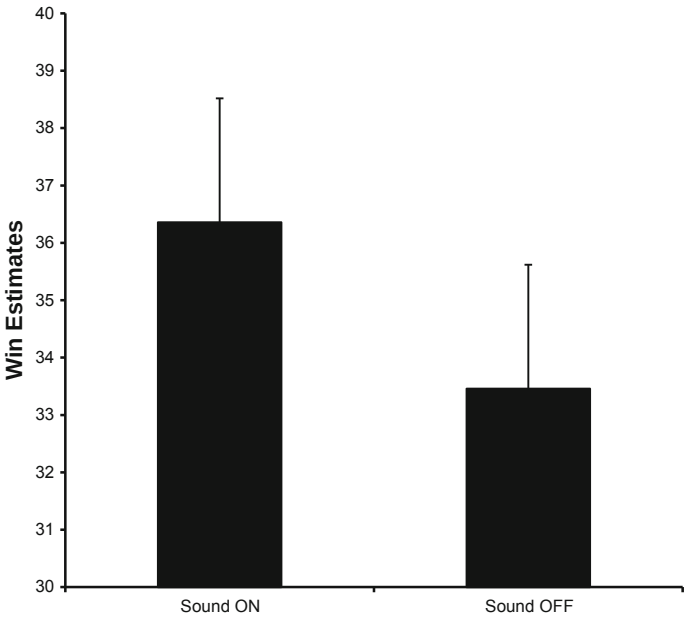

Fig. 5 Gamblers' estimates of how many spins (out of 200) on which they won more than they wagered. The actual number of wins within each of the 200-spin blocks was 28

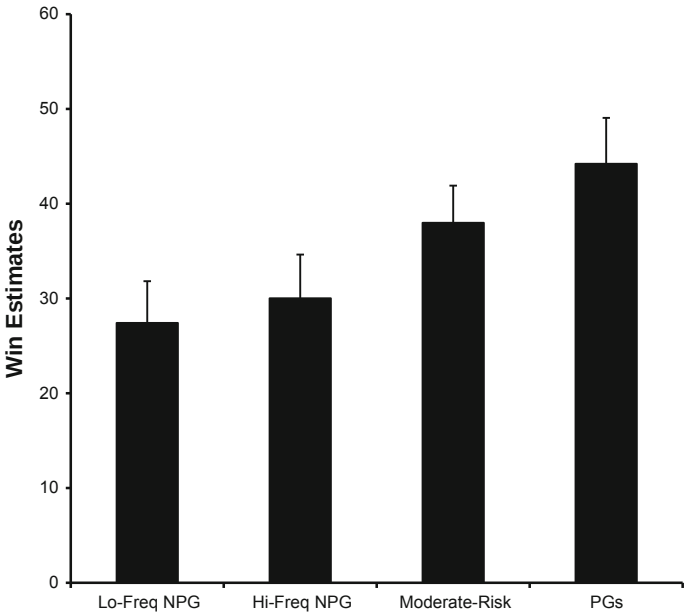

Fig. 6 The average win estimates for low frequency non-problem gamblers (*Lo-Freq NPG*), high frequency non-problem gamblers (*Hi-Freq NPG*), *Moderate-Risk* and problem gamblers (*PGs*)

Discussion

Here we provide converging evidence that sound influences the overall levels of arousal of players playing multiline slot machines, at least as measured by skin conductance and subjective arousal. Skin conductance responses were significantly larger for outcomes in the SOUND-ON condition than in the SOUND-OFF condition. Players also subjectively rated the SOUND-ON condition as being significantly more arousing than the SOUND-OFF condition. Thus both skin conductance responses and subjective reports suggest that winning sounds make the game more arousing.

The vast majority of the players that were tested preferred the playing session where wins were accompanied by sounds. This suggests that not only do sounds make the playing session more arousing, but also that they find this arousal pleasurable. If, as Brown (1986) has suggested, arousal is *the* reinforcer of gambling behaviour, then the results of this study suggest that sounds contribute to the arousing properties of modern multiline slots play and by extension gambling behaviour.

One limitation of the psychophysical data collected in this study involves heart rate deceleration. Here we showed that although HRD appeared to be sensitive to winning versus losing outcomes, it was insensitive to the presence or absence of sound. Sound did not increase the rate of deceleration compared to the SOUND-OFF condition. SCRs on the other hand were sensitive to the presence of sounds, and support the subjective arousal ratings of the participants.

Multiline slots games feature a specific type of loss that at least some players miscategorize as a win. Previously Jensen et al. (2013) have shown that novice players will claim that they have "won" on outcomes where they win back less than they wagered (i.e., claim a win when they actually lost money). When players were asked to estimate the number of

spins on which they won more than they wagered within a playing session, these novice players tend to overestimate these numbers of wins. The degree of overestimation depends on the number of losses disguised as wins that they encounter.

Here, we show that sounds contribute to this overestimation effect. Overall, players overestimated the number of times that they won playing this slot machine simulator. In the SOUND-OFF condition, players on average estimated that they won 33 times when in reality they were only exposed to 28 wins (thus, on average they overestimate by 5 (i.e., 15 %) the number of times they won). Crucially, this propensity to overestimate these wins is exacerbated when sounds accompany the losses disguised as wins. In this SOUND-ON condition, players estimated that they won on average 36 times (an overestimation of 8 (i.e. 24 %)). As such, sounds may be an integral part of the disguise in the losses disguised as wins, causing players to think that they won more often during a playing session than they actually did.

We have argued that losses disguised as wins (LDWs) are a failure of categorization. We propose that the similarity between the sights and sounds of the actual wins and LDWs causes players to miscategorise these outcomes as wins rather than correctly categorize these outcomes as losses. In this study, we showed that sounds contribute significantly to this miscategorization process.

Although sounds impacted the physiological and psychological arousal levels experienced by participants, and influenced their preference, sounds did not impact scores on the Game Experience Questionnaire. Recall that this questionnaire was designed to measure the experiences of video games, with much of the work involving first-person shooter type games with specific stories being an integral part of the game. Indeed, our results seem to suggest the opposite of the results to a first-person shooter—sound induced psychophysiological changes, but no sound induced changes in GEQ scores. One possibility for this discrepancy is that the core dimensions measured by the GEQ do not capture the role of sound in slot machine games. In slot machine games there is no violence, no story and no skill, and it may be that slots games preferentially activate arousal via their variable ratio reinforcement schedules (Haw 2008). For this arousal dimension, players in this experiment indicated that sound played a key role.

There were, of course, some limitations to the study presented here. Anderson and Brown (1984) illustrated the importance of the casino environment in arousal levels of experienced gamblers, suggesting that "doubt is cast on laboratory gambling as a valid analogue of the real gambling situation." Although the majority of the participants were indeed tested at a casino, they were not tested on the casino floor and were thus not immersed fully in the casino environment. Although the casino floor may have provided more accurate results in some respects, it would have required us giving up much experimental control. Indeed, using a separate testing room is particularly beneficial to a study such as this, because we could not expect a casino to turn off the sound of even one (never mind all) of its slot machines, and the sound of winning from other machines may have influenced the outcome here.

Another potential limitation of our study is that in order to control outcomes for our study, we used a slot machine simulator and not a real slot machine. The simulator was designed to be as similar to a real slot machine as possible in terms of its audio-visual content. The slot machine simulator was necessary in order for us to manipulate and test the key variables of interest. Indeed, only by controlling the payback percentage, the number of wins, and the total amounts won at the end of the sound-on and sound-off sessions, for example, can we implicate the importance of sound.

To mitigate the potential limitations of our experiment, we provided subjects with an opportunity to win real money, increasing the realism of wins and losses (Ladouceur et al.

2003; Wulfert et al. 2008). Furthermore, the use of a within-subjects design meant that we could make reasonable assumptions regarding the results. Future research may wish to explore the response of players in real casino settings, perhaps employing ear plugs and noise cancelling headphones to reduce auditory feedback (although it is nearly impossible to completely eliminate sound since we hear through bone conductance in addition to through our ears).

In sum, the sounds that accompanied a multiline video slots game impacted the arousal of participants both psychophysically, and psychologically. The sounds also influenced players' preference such that the majority of players preferred playing slots that were accompanied by winning sounds. Importantly, our research suggests that sound effects may be an integral component to the *disguise* in losses disguised as wins. Players' tendencies to overestimate the number of times they won during a slots session was exacerbated by the sounds that accompanied the losses disguised as wins. Although sounds may have contributed to their enjoyment of the game, sound may also lead to an overestimation of winning. Both of these effects may contribute to the gambling problems, such as misbeliefs about the true chances of winning, and persistence that some players experience when playing slot machines. While we cannot expect casinos to turn off the sound in their slot machines, we believe that altering or removing the sonic disguise of losses disguised as wins may impact the overestimation effect to which sound is a clear contributor.

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Losses disguised as wins in modern multi-line video slot machines

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ABSTRACT

Aims Players can wager on multiple lines of modern slot machines. When they spin and fail to gain any credits, the machine goes into a state of relative quiet. By contrast, when they spin and win, these spins are accompanied by reinforcing sights and sounds. Such reinforcement also occurs when the amount won is *less* than the spin wager. We sought to show that these 'losses disguised as wins', or LDWs, would be as arousing as wins, and more arousing than regular losses. **Measurement and participants** We measured skin conductance response (SCR) amplitudes and heart-rate changes following wins, LDWs and losses for 40 novices playing a multi-line slot machine. **Findings** SCR amplitudes were similar for wins and LDWs—both were significantly larger than for regular losses. **Conclusions** For novice players, the reinforcing sights and sounds of the slot machine triggered arousal on wins, where the number of credits gained was greater than the spin wager, but also on 'losses disguised as wins' where the amount 'won' was less than the spin wager. Despite the fact that players lost money on these spins, these outcomes were more arousing than regular losses where no credits were gained. Although these findings involve novice players, the heightened arousal associated with these losses may have implications for the development of problem gambling, as arousal has been viewed as a key reinforcer in gambling behaviour.

Keywords Arousal, gambling, heart-rate deceleration, skin conductance, slot machines.

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INTRODUCTION

The modern video slot machine is a far cry from the familiar, three-reel, one-armed bandit. In the traditional three-reel slot machine, one puts coins into the slot machine and hopes that the winning symbols will fall on the pay line that falls across the three reels. Hence what you wager, and what you win or lose, are relatively easy to monitor. In modern video slots there are up to five video reels, a myriad of flashing lights and symbols, flashing messages and high-fidelity audio that plays certain songs during spins and other songs during wins. Rather than being limited to wagering on a single line, players can wager on multiple pay lines on every spin, and indeed flashing messages advise the player to do so—'for maximum action play all 15 lines!'. Amid this William Jamesian blooming, buzzing, confusion patterns emerge for the gambler. When players lose, the machine goes into a state of 'quiet' in both the visual and auditory domain. When players win, certain symbols flash and the symbols responsible for the win become joined by a coloured line indicating on which of the played lines the win occurred. Higher-paying symbols have unique sounds that the slot machine plays, and credit gains are all accompanied by the repeated chiming sound as the machine 'counts up' how much you gained on that spin. In video slots games in which the player bets on many lines, however, the majority of these 'wins' are actually less than the spin wager. That is, despite the flashing symbols, despite seeing the outlining of the symbols that led to the 'win' and despite hearing the chiming sound as the machine counts up your winnings, if you subtract the total that you wagered on the spin from the total that you 'won' on that spin the value is negative (i.e. you lost!). We refer to these outcomes as 'losses disguised as wins'.

An analysis of the design documents for multi-line games reveals that losses disguised as wins (LDWs) can occur relatively frequently, with the frequency rising as

Table 1 Using the 259 440 000 possible outcomes of Lobstermania, Table 1 shows the percentage of spins on which there is a regular win (amount gained ≥ wager), losses disguised as wins (LDWs) (amount gained < wager) or loss (gains of zero) as a function of the number of lines wagered. On some spins the regular win or LDW includes gains on multiple lines. For example, the player wagering on two lines may have regular wins on both lines.

Lines wagered	*Regular wins*	*LDWs*	*Losses*
1	5.1%	0.0%	94.9%
2	8.6%	0.0%	91.4%
3	8.1%	3.8%	88.1%
4	10.0%	4.9%	85.0%
5	11.9%	6.0%	82.1%
6	8.7%	10.7%	80.6%
7	10.0%	10.9%	79.1%
8	11.1%	12.4%	76.5%
9	12.2%	13.7%	74.1%
10	13.3%	13.8%	72.9%
11	11.1%	17.1%	71.8%
12	12.1%	17.3%	70.7%
13	12.9%	17.6%	69.5%
14	13.9%	17.7%	68.4%
15	14.2%	18.4%	67.4%

more and more lines are played. This is important when one considers that on some gambling machines one can wager on as many as 100 lines per spin. Wagering on multiple lines is like playing multiple games at once. Through the Freedom of Information Act we obtained the design documents for a game called Lucky Larry's Lobstermania. We analysed all 259 440 000 possible Lobstermania outcomes for players playing from one to 15 lines—the maximum in this game. Table 1 shows the percentage of spins that result in wins, LDWs and regular losses. This table shows that when few lines are played, few LDWs occur. Importantly, when 15 lines are played, the LDWs actually outnumber the wins.

Our central question of interest is how novice players would react physiologically to LDWs. We predicted that the similar sights and sounds that accompany both wins and LDWs would cause players to react physiologically to LDWs as though they were wins. We chose to monitor participants' psychophysiological reactivity to wins, LDWs and regular losses as opposed to their self-reports because of the strong link between gambling, arousal and slot machines that are designed to maximize this arousal. Although our ultimate interest is in the development of problem gambling, in this experiment we tested novice players. We reasoned that more seasoned gamblers might have developed conditioned autonomic responses to the winning sights and sounds of slot machines such as Lobstermania before they entered the laboratory. Given the laws of conditioning this could bias the results unduly in the predicted direction. A more conservative approach would be to see if novice players who had no opportunity to develop such conditioned responses would show equivalent arousal responses to wins and LDWs.

Lobstermania is a typical modern video slot machine. It has five reels with three visible symbols per reel (see Fig. 1). Players can wager on up to 15 different pay lines on any given spin. The first three lines are the horizontal rows in Fig. 1 and the remaining 12 are various zigzag lines traversing the 15 visible symbols. Any three consecutive identical symbols (starting from the left) on any of these lines would result in what the machine calls a 'win'.

This version of Lobstermania is a '5-cent game', which means one credit equals 5 cents. The leftmost box near the bottom ($841.45) shows the player's running total. The box to the right shows the value of each credit ($0.05). The 'lines' box shows the number of lines on which the player has wagered (15 in this example). The 'bet' box shows the number of credits wagered on each line (five credits, or 25 cents in this example). The 'total bet' box (75 credits, or $3.75) is the wager per spin and is calculated as the number of lines (15) multiplied by the 'bet' per line (five credits). The box labelled 'win' shows that the gambler 'won' 25 credits on that spin. Hence Fig. 1 shows a LDW in which the gambler lost 50 credits, or $2.50.

Although LDWs are obviously losses, the myriad of sights and sounds that occur during slots play may serve to camouflage this fact. In Lobstermania, when the spin button is pressed the spin wager is subtracted from the running total, and animated reels begin 'spinning'. As the reels spin the machine plays excerpts from the song 'Rock Lobster' by the B52s. On losing spins, the reels stop and the machine goes into a state of quiet, awaiting the next spin. This state of quiet is markedly different from the feedback associated with 'winning' spins, where a line joins the winning symbols and indicates on which line the winning symbols occurred (the three clams in Fig. 1). If one wins on more than one line, initially all the winning symbols are outlined followed by the sequential flashing of one winning line after another. At the same time, the digits in the 'win' box count up the win. The higher-paying symbols play specific sounds (the lighthouse plays the sound of a foghorn, etc.). Following these sounds, one hears a chiming sound (in game parlance a 'rolling sound') accompanying the counting-up of the win. For larger wins, the rolling sounds merge into a bouncy fetching winning song whose length is tied to the size of the win. For LDWs, as the payout is smaller, the rolling sound duration and the time it takes the digits in the 'win' box to count up is shorter. Also, one is more likely to hear the unique sounds of the higher-paying symbols and see more symbols outlined following wins

Figure 1 Video display of Lucky Larry's Lobstermania showing a loss disguised as a win

than following LDWs. For both wins and LDWs, however, the nature of the feedback is categorically similar; one *always* sees 'winning' symbols outlined, one *always* sees digits counting up in the 'win box' and one *always* hears the rolling sound as the win is counted up. Regular losses, by contrast, are categorically different from wins and LDWs in that no positive feedback occurs. It is this categorical similarity between wins and LDWs that led us to predict similar arousal responses for these outcomes.

Arousal has long been recognized as a rewarding property of playing slot machines [1]. Indeed, Brown [2] cites arousal as the major reinforcer of regular gambling behaviour. During slot machine play our heart rate (HR) may increase and our palms begin to sweat, elevating our skin conductance level (SCL). These bodily reactions indicate how arousing gambling can be for players with gambling problems [3]. Arousal patterns may depend upon wins and losses. Researchers [4,5] have documented substantial heart-rate increases for players who won playing slots, compared to negligible changes for those who lost. In all these studies, researchers measured tonic psychophysiological arousal—changes measured over 2 or 3 minutes' duration. In real slot machine play, gamblers spin about once every 3–6 seconds and either lose or win on each spin. Researchers have yet to show phasic, event-related psychophysical changes accompanying winning spins, and compare these changes to losing spins. More importantly, by measuring phasic responses, we can directly compare reactions to wins, losses and LDWs.

Event-related phasic heart-rate changes are measured typically by comparing the inter-beat intervals (IBIs) prior to a stimulus presentation to the IBIs following the stimulus presentation. Heart-rate deceleration follows exposure to infrequent stimuli. This response has been interpreted as an orientating response [6]. Researchers [7,8] have suggested that such heart-rate deceleration is related to the 'intake' of environmental stimuli. Because wins and LDWs are infrequent, they should be accompanied by an orientating response. Because visual and auditory events are tied to the size of the win we predicted that heart-rate deceleration would be largest for a real win, next largest for an LDW and smallest for a loss.

Event-related skin conductance responses (SCRs) are related directly to the sympathetic nervous system activity that leads to arousal [9]. When brain areas process stimuli that have emotional significance, SCRs are elicited [10]. Skin conductance increases directly with reports of increasing arousal [11]. Based on the contrast between the visual and auditory 'quiet' following a losing spin, with the myriad of visual and auditory reinforcers following either a win or an LDW, we predicted that gamblers' SCRs would be larger for wins and LDWs than for losses.

METHODS

Participants

Forty-six students were recruited from the University of Waterloo (29 females). Ages ranged from 19 to 30 years. Participants were free from any gambling problems; Canadian Problem Gambling Index (CPGI) scores were all either 0 ($n = 40$) or 1 ($n = 6$) out of a possible 27. Participants were recruited from a pool of undergraduates. Novice status was verified based on answering 'zero' to the CPGI question: 'In the past 12 months, how often did you bet or spend money on slot machines in a casino?'.

Apparatus

IBIs and SCRs were acquired using an eight-channel, ADinstruments Powerlab (model 8/30; Powerlab, Colorado Springs, CO, USA). The Powerlab system amplified the signal from three reusable clamp-on electrodes

(with gel added) that were attached to the left and right biceps, and the left wrist (ground). SCRs were recorded using non-gelled electrodes attached to the upper phalanges of the left middle and index fingers. The wiring of a Lobstermania machine was altered so that we could time-lock machine events (commencement of feedback) to participants' IBIs and SCRs.

Procedure

After obtaining consent, participants were fitted with the SCR and heart-rate electrodes and given a tutorial on Lobstermania. Participants were instructed to ('max bet') wager on 15 lines, with five credits per line, for a total wager of 75 credits per spin. They were instructed that each credit was worth 5 cents, so their spin wager would be $3.75. Having participants use the 'max bet' ensured a high percentage of LDWs (because they were wagering on 15 lines), and ensured that wagers were held constant to equate bet sizes across participants and conditions. Participants were told that to gain credits they needed to gain three or more of the same symbols (going from left to right) on any of the 15 lines. They were shown the total bet box, and told that the 'win' box displayed the amount gained per spin, in credits. It was emphasized that this amount was in credits and not dollars. They were also told that they could see their running total, in dollars, in the leftmost box.

Participants were given $200 dollars to insert into the machine and told that they would be paid $10 for participating, but could win up to an additional $20 depending on how well they did on the slot machine during their two 15-minute sessions. They were told to keep their left hand still and to move their right hand only as required to push the 'max bet' spin button. When the machine is waiting for a player to spin, a 'repeat bet' button flashes on and off. Participants were told to spin and wait 'three flashes' (about 6 seconds) after the outcome before spinning again. Participants played for 15 minutes followed by a break followed by a further 15 minutes of play. They were then debriefed and paid.

RESULTS

Players spun on average 138.2 times (range = 106–181). On average players won on 15.6% of spins (range = 7.5–21.1%), had LDWs on 17.1% of spins (range = 11.5–24%) and lost on 67.3% of their spins (range = 60–74%). Entries into the 'bonus' mode were not analysed.

Inter-beat intervals

Of the 46 participants, six had to be removed because of difficulties in signal acquisition and one because of excessive movements. A low-pass filter was applied to the heart-beat trains of the remaining participants to remove clusters of movement artefacts, then artefacts were detected using the default settings of the Heart Rate Variability module of Chart version 7.0, an ADinstruments analysis program. Statistically defined artefacts were removed, and missing R-waves replaced using interpolation. R-waves were then labelled and inter-beat intervals were calculated.

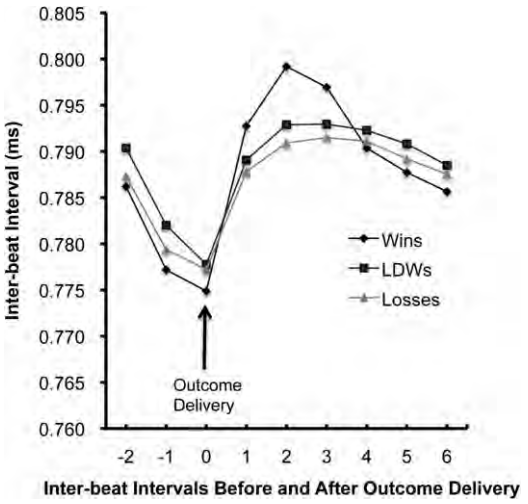

Figure 2 Mean inter-beat intervals (IBIs) before (−2, −1) at the beginning of outcome delivery (IBI 0) and during outcome evaluation (IBIs 1–6). LDWs: losses disguised as wins

For every participant, slightly different numbers of wins, LDWs and losses occurred. For each win, LDW and loss, nine IBIs were analysed: two while the reels were spinning (IBIs −2 and −1 in Fig. 2); one while the outcome delivery was initiated (the outcome delivery arrow in Fig. 2) and six as the outcomes unfolded. For every participant these values were averaged to yield nine IBIs for wins, nine IBIs for LDWs and nine IBIs for losses. Prior to calculating these averages, the raw IBIs were subjected to an outlier removal procedure advocated by Van Selst & Jolicoeur [12] in which the criterion for removal was weighted by the number of observations (this was necessary because regular losses far outnumbered either wins or LDWs). Figure 2 shows the (outlier free) average IBIs for the 39 participants' wins, LDWs and losses. An IBI [9] by condition (wins, LDWs, losses) analysis of variance (ANOVA) revealed a significant interaction between IBI and condition $F_{(16, 608)} = 2.739$, $P < 0.02$, $\eta^2 = 0.067$, with a Greenhouse–Geisser correction for sphericity. Simple main effects of condition calculated at each IBI revealed a significant effect of condition only at IBI 2, $F_{(2, 76)} = 6.409$, $P < 0.01$ $\eta^2 = 0.144$. Figure 2 shows that heart-rate deceleration was greatest shortly after seeing and hearing the sights and sounds of a real win, relative to either LDWs or losses.

Skin conductance responses

Of the 46 participants, six had to be removed (one because of excessive movement, one because of a skin problem that precluded recording, four because they had no meaningful SCRs in one of the outcome conditions). For the remaining 40 participants individual SCR amplitudes were calculated following each win, each LDW and each loss. Amplitudes were calculated using a 3-second window, beginning 1 second after the spin outcome delivery. SCR amplitudes were the difference between the SCR value at the beginning of the window, and the maximum SCR value within the window. Following Dawson *et al.* [10], only meaningful SCRs were analysed (predefined as being ≥0.045 microsiemens).

The SCRs of each individual's wins, LDWs and losses were subjected to the observation-weighted outlier trimming procedure [12]. Following trimming, for each participant average SCR amplitudes were calculated for wins, LDWs and losses (each participant had three SCR values). As recommended by Dawson *et al.* [10], a square root transformation was applied to the SCR data to reduce the skewness of the SCR distribution. Figure 3 shows the average SCRs for wins, LDWs and losses for the 40 participants. An ANOVA showed a main effect of wins, LDWs and losses on SCRs $F_{(2,\ 78)} = 3.31$, $P < 0.05$, $\eta^2 = 0.078$. *Post-hoc* analyses showed that although wins and LDWs were not significantly different from one another, both had significantly higher SCRs than losses (both *P*-values <0.04). One participant was an outlier in all three conditions—removing this participant only strengthened the results $F_{(2,\ 76)} = 4.71$, $P < 0.02$, $\eta^2 = 0.11$ (*post-hoc* *P*-values < 0.02).

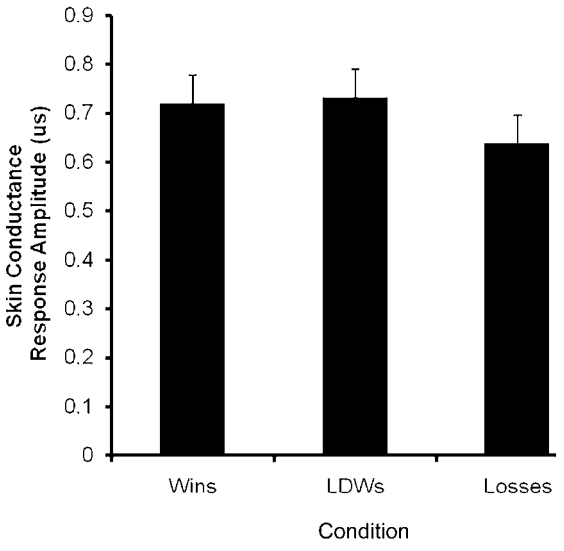

Figure 3 Mean skin conductance response amplitudes (square root of skin conductance response) as a function of wins, losses disguised as wins (LDWs) and losses (bars represent 95% confidence intervals for repeated measures designs)

DISCUSSION

In terms of ecological validity, although participants played an actual slot machine, they were given money to gamble with. This is clearly not the same as gambling with their own money and is an ethically unavoidable limitation of this study. Despite this drawback, participants still displayed different psychophysical reactions to wins, LDWs and losses.

Orientating responses and their accompanying heart-rate decelerations are elicited by infrequent stimuli. In slots games such as Lobstermania, losses are the most frequent outcome (67.3% of all outcomes in our version). By contrast, wins (15.5%) and LDWs (17.1%) were relatively infrequent. One might expect, therefore, that both wins and LDWs would have shown greater heart-rate decelerations than losses. This was not the case—only the real wins showed preferential heart-rate deceleration. Orientating responses have been linked to the intake of perceptual stimuli. For real wins the number of perceptual events is greater than for LDWs in both the visual and auditory domain. On average, more symbols become outlined on real wins than on LDWs. Finally, one is far more likely to hear the infrequent, unique sounds of the higher-paying symbols when they experience a real win than an LDW. Because more visual events followed wins than LDWs, and more unique sounds followed wins than LDWs, it makes sense that real wins led to the greatest heart-rate deceleration.

SCRs are triggered by the sympathetic nervous system and are correlated highly with subjective reports of arousal [11]. Our results show that gamblers become *equivalently* aroused following a win or an LDW, but were less aroused following a loss. Participants' SCRs appear to be sensitive to the absence of positive reinforcement following losses, compared to the plethora of flashing sights and rolling sounds that accompany credit gains on wins and LDWs. In terms of participants' somatic, sympathetically mediated responses, LDWs are treated as a win rather than a loss.

Somatic markers indexed by SCRs have been implicated in complex decision-making [13]. In the context of slot machines and LDWs, we suggest that if it looks and sounds like a win, it will feel somatically like a win and if it feels like a win, it will be interpreted as a win. Thus, the somatic responses to LDWs may make it hard for gamblers to realize that they are in fact losses.

According to Schull [14], game designers are aware of the potential impact of LDWs on players. In an excerpt from interviews with game designers she cites ' "The perception", Randy Adams of Anchor Gaming told me, "is

that you're winning all the time, when you're really not— you're putting 25 in and winning 15 back, 45 in and 30 back, over and over". Nathan Leland of Silicon Gaming put it this way: "Positive reinforcement hides loss" '.

Playing multiple lines essentially amalgamates multiple bets into a single event. It takes (on average) far fewer spins to encounter reinforcement when playing multiple lines than a single line [15]. As shown in Table 1, when playing multiple lines many of these reinforcements occur following LDWs and thus these reinforcements are one way to ensure that 'positive reinforcement hides loss' [14].

CONCLUSIONS

Gambling researchers [4,5] have shown that winning at gambling is more arousing than losing, and that problem gamblers show higher arousal than non-problem gamblers. Brown [2] suggests that arousal is the most important reinforcer in frequent gambling behaviour. Because LDWs are as arousing as wins, it follows that games with a high proportion of LDWs will be more arousing than traditional games. If arousal is the key reinforcer in high-frequency gambling, and LDWs are as arousing as real wins, it suggests that games with many LDWs may be the game of choice for problem gamblers, as they provide more of the reinforcement that they crave. At this stage, as we only tested novice gamblers, the link between LDWs and problem gambling is based upon argument rather than data. That said, all problem gamblers were novices at one time, and the pattern of arousal reactions of novices to real wins, losses and LDWs suggests that despite being losses, LDWs engender the reinforcing arousal that is a key factor in the development of problem gambling.

Game designers indicate that they use positive reinforcement to hide loss [14]. One way that positive reinforcement may hide loss is through arousal—equally arousing outcomes (wins and LDWs) may be lumped mistakenly into the same category. Importantly, even when one recognizes that LDWs are really just a loss in disguise, if arousal itself is what is positively reinforcing one may still find slots games with LDWs more enjoyable (if one is a non-problem gambler), or potentially more addictive if one is a problem gambler. In the sage words of an elderly gentleman who learned the hard way about the allure of LDWs, 'I eventually realized that if I kept on winning, I was going to go broke'. This study provides the first objective evidence that the arousal generated by LDWs is equivalent to the arousal generated by wins, and highlights one means by which positive reinforcement may potentially hide loss from the gambler who plays multi-line slots.

Declarations of interest

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Exhibit 3

U.S. NEWS | Updated August 3, 2013, 7:43 a.m. ET

Researchers Bet Casino Data Can Identify Gambling Addicts

Computerized models can spot and warn people with high risk profiles similar to the way geneticists have invented tests to predict cancer risk

By ALEXANDRA BERZON and MARK MAREMONT

Carl Kiilsgaard for The Wall Street Journal

Kitty Martz says she lost $200,000 gambling in Australia.

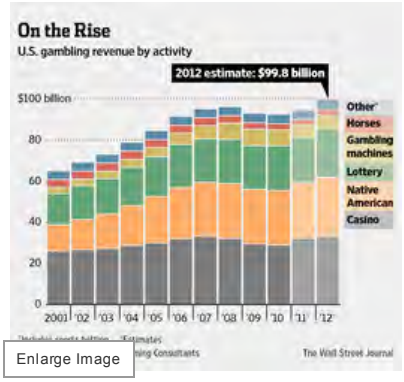
For most of her life, Kim McGuinness was no more than a casual gambler, taking occasional trips with her husband to Atlantic City. But after he died, Ms. McGuinness says her pattern changed dramatically. Suddenly, she was hitting the slot machines hard, often betting through the night.

"I was lonely," says the 56-year-old New Yorker, who says in two years she gambled away more than $1 million, losing all of her husband's life insurance and most of their 401(k) funds.

That was two years ago. And the last place Ms. McGuinness, who is also being sued for past gambling debts, says she would have turned for help would have been the casinos. She says they only encouraged her betting. But now, researchers believe that the very data casinos used to track her—and many customers'—betting habits can be used as a tool to reduce the intractable problem of gambling addiction.

Similar to the way geneticists have invented tests to predict cancer risk, a group of addiction scientists and industry consultants say they can use casino customer-tracking information to create computerized models that can spot and warn people with high risk profiles. The new research essentially turns the industry's own data, often used in connection with loyalty cards to identify and pamper the best customers, on its head.

Early forms of the systems already have been employed by some government-run casinos outside the U.S. and by some online-betting firms. The models vary, but in general they look for risky betting patterns such as intensive play over long periods, significant shifts in behavior, or chasing losses—betting more heavily in an attempt to recoup prior losses. Depending on the system, flagged gamblers may be given education tools or a detailed analysis of their behavior, or in rare cases be barred from playing.



Enlarge Image

Casino executives so far have generally resisted the science, which raises a host of fresh moral, political and legal issues at a time when the opportunity to gamble, through online betting and new casinos, is only growing. They argue no one can predict a gambling addiction, and that they can't be held liable for such behavior in any case.

"I think it's a terrible idea," says Gary Loveman, chief executive at Caesars Entertainment Corp. CZR -2.14% and a former Harvard Business School professor, who pioneered casino data mining for marketing purposes. "Is it McDonald's obligation to decide you have a problem because you have a tendency to eat high-calorie lunches? You could take this to ridiculous extremes."

Although most people can gamble without becoming addicted, an estimated six million to eight million adults in the U.S. alone have a gambling problem, according to the National Council on Problem Gambling, an umbrella organization for state gambling addiction groups. In its most extreme form, excessive gambling is recognized as a behavioral addiction by the American Psychiatric Association.

Audio

Alexandra Berzon and WSJ's Hank Weisbecker look at news way to identify problem gamblers

00:00 | 04:46

In the past, the traditional method for diagnosing gambling addiction relied on individuals answering questions about their emotional dependence on gambling and its effect on their finances and relationships. Now, some researchers say that while no behavioral-tracking system can formally diagnose anyone with a disorder, it can strongly suggest who is at risk.

Much of the latest research was presented recently at a conference on gambling and risk taking at Caesars Palace in Las Vegas. There, with slot machines ringing a floor below, Sarah Nelson, a Harvard Medical School professor, described a mathematical algorithm based on several variables, including how often someone bets and the size of the wagers.

"We're calling this the Sports Bettor Algorithm 1.1," she said, pointing to a screen with a complex equation eight years in the making. "Risk Level = .134*LNfreq + 0.793*LNbpd" was how it started.

For the casinos, one risk from these algorithms is that the findings may indicate that many of their most lucrative customers have potential gambling problems, and that the industry can readily identify them. Casino officials say neither is the case, but

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some studies based on survey questions by gambling researchers have estimated that between 25% and 50% of casino revenue can come from problem gamblers.

In one recent Harvard study, researchers found that people who triggered a "responsible gaming alert" at one large online site lost between eight and 12 times as much money on average as those in a control group. An Australian government commission said in 2010 that just 2.3% of loyalty-card holders at one gambling club produced 76% of holders' slot-machine losses, and estimated that 41% of all slot-machine losses in Australia come from problem gamblers.

Addiction Prediction

The systems researchers have developed for spotting gamblers with potential problems vary, but some things they look for include:

Length of play: When player gambles for long stretches.

Intensity of play: Playing at rapid pace or increase in number of bets placed.

Chasing losses: Attempting to recoup losses by increasing bet size.

Changes in behavior: Gambling with larger stakes, longer periods of time.

Win and loss patterns: Unwillingness to take small losses or small wins.

Time of play: More late-night gambling can be riskier.

Money management: Adding money to account in middle of session.

So far, U.S. courts consistently have rejected arguments that casinos are liable for the behavior of addicted patrons. But some attorneys trying to take on gambling companies say that if behavioral tracking truly can identify potential problem gamblers, the legal tide could turn, similar to the way bar owners have been found partly at fault for serving visibly intoxicated patrons who cause drunken-driving accidents.

"It would be a theory of negligence, the duty of care argument," says Richard Daynard, a Northeastern University law professor who is advising some lawyers on possible litigation against casinos.

For their part, casinos have tried to address gambling addiction by devoting millions of dollars to fund various research projects. Many have instituted limited efforts to address the issue on their properties, including looking for outward signs of distress and allowing patrons to ask the casino to bar them.

At the same time, casinos have developed detailed behavioral profiles of many of their customers, based in part on information gathered though loyalty-card programs that can track slot-machine play and much non-gambling casino activity. The casinos use this information to tailor marketing offerings, particularly to the small minority who make up the bulk of their revenue base. They say none of the information can spot a problem gambler, since some of the heavy bettors and consistent losers may simply be wealthy and enjoy the thrill of wagering.

"You're talking about trying to diagnose a mental health disorder," says Alan Feldman, a spokesman for MGM Resorts International. "I don't know too many nonprofessionals who are trained to do that offhand." Jan Jones Blackhurst, a Caesars spokeswoman, says that while some of the new science may be helpful, claims that troubled gamblers can be identified from their play are "hogwash."

The skepticism is shared by some researchers, who question the science behind some of the models, and by some former problem gamblers. Kitty Martz, a 44-year-old recovering gambling addict with an M.B.A. from Cornell University, says real-time information might be a wake-up call, but would likely be only a "Band-Aid" for many addicts.

Ms. Martz says she lost more than $200,000 in five years after she and her husband moved to Australia, where she discovered that gambling machines, known as "pokies," are ubiquitous. Her husband, from whom she had tried to hide her addiction, ultimately asked for divorce, she says.

"Our own partners, husbands, children and parents can't do anything to impact us to get away from the machines," she says. "It's not due to lack of feedback that compulsive gamblers continue to gamble."

For her part, Ms. McGuinness says a little bit of knowledge could have gone a long way. Following her husband's death in 2007, she says she was in deep mourning, and two years later lost her job during the recession. During sporadic trips she took with friends to Atlantic City, she began to gamble more heavily.

> "Our own partners, husbands, children and parents can't do anything to impact us to get away from the machines."
>
> Kitty Martz

Employees at Harrah's and Showboat casinos, both owned by Caesars, responded swiftly to the change in behavior, she says. As is common among heavy gamblers, Ms. McGuinness was given a casino-employed host who kept careful track of her gambling, knew her personal details and cajoled her into gambling more, she says. Her credit limit was raised to more than $100,000 and a casino-hired limo picked her up most weekends from her Manhattan apartment.

"I feel like there was a target on my back," says Ms. McGuinness, who is being sued by Caesars for $77,000 in past debts. She's disputing the matter; Ms. Jones Blackhurst of Caesars confirmed that Ms. McGuinness lost large sums, but says she "never gave any indication she had a problem."

Ms. McGuiness recalls increasing her frequency of betting, sometimes playing through the night, as well as getting more credit to gamble after losing and betting high —$20 to $60 per slot bet. Researchers say that if her memory is correct, that is the sort of behavior that might trigger alarms of some of the computerized warning systems. "In her case there's a very good chance we would pick her up," says Tony Schellinck, a Canadian marketing professor who co-founded Focal Research Consultants Ltd, a Halifax, Nova Scotia-based firm, which claims it can detect as many as 80% of at-risk gamblers.

Ms. McGuinness' losses were deducted from her bank account automatically, obscuring the harm, she says. Now no longer gambling, but considering selling her home to stay afloat, she says she believes a warning system would have helped. "I would have been mortified and never gone back," she says, adding that at the time of her gambling "my mind was just about making the day go faster."

The algorithms vary, but Mr. Schellinck, an early pioneer of this research, says Focal Research now mines as many as 800 variables. He researched loyalty-card data he acquired from casinos starting in the late 1990s, and says he found, for example, that big spenders at risk of gambling problems more frequently have a favorite machine, and tend not to quit when they have just a small win or small loss.

Two government-run casinos in Saskatchewan, Canada, used a Focal-based system for seven years. When the system detected a problem, it sent an alert to casino staff with the player's location on the floor. Staff could intervene with the gambler, with a gentle check-in or a suggestion to watch a responsible-gambling video. The system triggered about 2,900 such interactions in 2012 out of 70,000 active players-club members.

Although the Saskatchewan casinos stopped using the system earlier this year, to rely on other education tools, a New Zealand operator in July agreed to be the first to use it in a commercial land-based casino, in return for government permission to expand operations.

Such behavior-tracking systems may be less useful in land-based casinos, some

researchers say, in part because they can only use betting data from customers who opt in to loyalty-card systems. But researchers say that a big breakthrough may come from online gambling sites, which collect copious data on every customer, including size of bets, time of day, and much more. Online gambling was considered illegal in the U.S. for many years, but several states have recently passed laws allowing it.

With an algorithm system already in use in Europe, one Internet operator, 888 Holdings 888.LN -1.57% PLC, says it is likely to be the first to put one in place in the U.S., where it is setting up operations for online gambling in Nevada and for lotteries in Delaware. Another leading online player, Bwin.Party Digital Entertainment PLC, which has applied to operate in Nevada and New Jersey, is also planning to roll out a variety of interventions, including a pop-up screen that may tell gamblers how long they have been playing. The company, based in Gibraltar, says it already is using a partial system to counsel problem gamblers, and has been excluding about 100 players a month out of 700,000 customers.

"There's a very strong negative business agenda attached to problem gamblers," says Itai Frieberger, 888's chief operator officer. "It's bad for our reputation and bad for business." Joachim Haeusler, Bwin's responsible gaming manager, agrees, saying the systems can create more sustainable customers. "A player who gets into trouble is a lost customer," he says.

Skeptics say such efforts by the online industry are aimed more at fending off harsh regulation of online gambling, as it seeks to grow, than helping to treat a social problem. Some addiction experts are concerned that the easy access of such betting only increases the risk of gambling addiction.

Robert Williams, a professor at Canada's University of Lethbridge who has studied gambling harm reduction programs, believes behavior- tracking systems are promising, but is concerned that some gambling companies adopting them aren't serious about gambling addiction, and have little incentive to intervene with their most lucrative customers. "A lot of it is window dressing," he says.

Mr. Williams prefers a system like Playscan, used in some European lotteries, which allows players to voluntarily receive alerts but doesn't let gambling companies have any role in the warnings. But along with problems getting gamblers to opt in, Playscan and other companies like it have found that commercial operators largely aren't interested. "I find it frustrating," said Mark Knighton, head of Playscan sales. "Casinos know their revenues are coming from problematic gamblers."

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The Costs of Addicted Gamblers: Should the States Initiate Mega-Lawsuits Similar to the Tobacco Cases?

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INTRODUCTION

In 1999, *The Economist* cited to the critics of gambling activities and raised the spectre that 'there might be a lot of money to be made by suing the entities that knowingly get people addicted to gambling'.[1] This observation paralleled the long-held conclusions among gambling addiction experts such as the former executive director of the Council on Compulsive Gambling of New Jersey, Arnie Wexler, who highlighted the concerns of the gambling interests in 1997:

> 'I think the industry is sitting on its hands nervously looking at what's happening to the cigarette industry', said Wexler, a frequent lecturer about compulsive [i.e., 'pathological'] gambling. 'The stuff that happened to the cigarette industry is going to happen 10–20 years down the road, if not sooner'.[2]

As early as 1996, the Las Vegas gambling industry had a premonition of being saddled with mega-lawsuit problems similar to the tobacco industry, and had developed plans to counter the educational efforts of public interest groups,[3] such as the National Coalition Against Legalized Gambling (NCALG), an organization similar to Mothers Against Drunk Driving (MADD). In 1996, in the heart of Las Vegas, the local paper opined a wake-up call to the gambling industry:

> Gambling and tobacco. Tobacco and gambling.
>
> A leader in the national fight against the spread of legalized gambling is ... attempting to link the tactics of both industries in their separate battles for public relations legitimacy.
>
> 'It is out-and-out lying, and ... [the gambling industry is] in denial', said Tom Grey [executive director of the NCALG].[4]

By 1997, the strategies of anti-gambling groups combined with public interest groups were being readily detailed in the US press.

> Anti-gambling crusaders are borrowing a page from the anti-smoking movement, trying to tar casinos and lotteries with some of the same criticisms leveled against the tobacco industry.
>
> The critics say legalized gambling, too, depends on addiction for profits, runs ads that glamorize its offerings and targets minors for future customers.[5]

Similarly, it became apparent where the gambling industry was trying to focus the public's attention and frame the long-term strategic debate.

> Gambling proponents stress their industry has acted to keep itself out of the same dock as tobacco, by trying to identify its addicted clientele for treatment.
>
> Critics say those efforts are cosmetic, and that the $50-billion-a-year industry's profit margin depends on compulsive [i.e., 'pathological'] gamblers lured by marketing strategies to exploit their addition.[6]

This scenario was reminiscent of several public interest debates involving potentially harmful products—particularly tobacco.

In this context the pro-gambling commissioners on the 1999 National Gambling Impact Study Commission (1999 Gambling Commission) may

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have voted for the 'smoking gun' of gambling liability. This occurred when to protect the big gambling companies' market shares, they joined with the entire Commission and voted unanimously to condemn and recommend a prohibition on 'convenience gambling'. Convenience gambling consists primarily of gambling in convenient locations via electronic gambling devices (EGDs), also known as video gambling machines (VGMs)—which sociologists term the 'crack cocaine'[7] of creating new addicted gamblers.[8] Specifically, recommendation 3-6 of the 1999 Gambling Commission stated that:

> The Commission received testimony that convenience gambling, such as electronic devices in neighborhood outlets, provides fewer economic benefits and creates potentially greater social costs by making gambling more available and accessible. Therefore, the Commission recommends that states should not authorize any further convenience gambling operations, and should cease and roll back existing operations.[9]

In other words, if the pro-gambling commissioners recognized that EGDs/VGMs constituted dangerous products for public use when located in convenience stores, *a fortiori* those EGDs/VGMs constituted dangerous products when crammed into casinos located anywhere.[10] These concerns capped the developing debate of the 1990s regarding the gambling industry and its promotion of gambling-oriented products and mechanisms—particularly as these products and mechanisms paralleled the potential harmful effects charged to other well-known industries.

Throughout the 20th century, the trend in the US was to hold corporations liable for the harm their products caused the general public.[11] Asbestos, lead, and particularly tobacco, were the leading products that raised liability issues.[12] As potentially harmful gambling activities were legalized throughout the 1980s and 1990s, a 1992 Harris Poll indicated that the proliferation of legalized gambling failed to raise concern among a majority of the American public.[13] However, by the mid-1990s, the public's awareness, coupled with US Congressional concerns had increased, and eventually culminated in the 1996 National Gambling Impact Study Commission Act,[14] which was enacted into law on 3 August 1996. This statute established the National Gambling Impact Study Commission, which charged nine commissioners with producing a report within 2 years.[15]

In this context, Tom Grey, the executive director of the NCALG, planned to utilize the public meetings of the 1996–1999 Gambling Commission to voice the concerns of public interest groups. Grey wondered if 'gaming industry executives might commit political suicide and follow the lead of tobacco executives who reportedly lied to members of Congress during hearings on the effects of cigarette smoking'.[16]

This was not an unrealistic expectation, because the gambling industry appeared to be vulnerable to various types of mega-lawsuits, as well as Congressional scrutiny. For example, Law Professor Dan Polsby of Northwestern University, predicted 'an upswing in class-action lawsuits, if lawyers score[d] big with tobacco'.[17] Furthermore, Polsby indicated that there were 'a lot of industries that... [were] ripe for tobacco-settlement kinds of détente',[18] including '[l]iquor, firearms, gambling'.[19]

Retreating into the unexpected posture of gambling as an old 'vice' during the Gambling Commission's hearings, by 1998, the Las Vegas gambling interests evidenced more defensive concerns.

> Of course, the alcohol and cholesterol pushers may have to wait for their turn in the crosshairs. Next up could be gambling. The... federal gaming panel will inevitably lead to meddling in Nevada's primary industry, whether in the form of regulation, taxation or both'.[20]

By focusing on regulation and taxation issues, however, the gambling industry was missing the real threat of mega-lawsuits initiated by the states.

This analysis will compare the gambling industry to the tobacco industry. It predicts that in the future the gambling industry will be held financially liable by the states for the social and economic impact gambling has on US society. Furthermore, this analysis concludes that the gambling industry will be vulnerable to state-initiated mega-lawsuits—even without specific costs being delimited either for individual 'pathological gamblers' or for individual 'problem gamblers'. Thus, definitional debates and academic debates regarding socio-economic costs may be largely irrelevant with regard to the states' mega-lawsuits because the gambling industry's lobbyists at the American Gaming Association (AGA) acting on behalf of the gambling industry, and individual gambling companies have acknowledged that the industry has created *new* pathological and problem gamblers during the 1990s.

DELIMITATION OF PROBLEMS

The Basic Economic and Legal Policy Rules Governing Gambling: The Problem of Public Misperceptions and Government Decision-Making

Owing to the addicted gamblers, bankruptcies, and crime caused by gambling activities, all gambling was criminalized throughout the US and much of the world during the latter half of the 19th century. Consequently, decision-makers had no pressing need to be educated about gambling economics and the associated social issues. With the widespread legalization of various US gambling activities in the 1980s and 1990s, and with the concomitant export of US gambling technology to the international community, the educational need emerged to inform the public, government decision-makers, and even the educational community. Furthermore, as the world's economic leader, the US government needed to establish its strategic economic base (which includes primarily the entire US economy along with its import–export components) as being either primarily a nongambling economy or a 'gambling economy'.[21]

Within the relevant regional market (termed the 'feeder market' by gambling companies), legalized gambling activities do not create net new economic development, or net new jobs because increased demand for gambling is mirrored by decreased demand for other sectors of the relevant market. The illusion of net new economic development and jobs occurs when gambling activities, such as new casinos, are concentrated in a local market, but job losses within the 'relevant regional market', or 'feeder market' are outside the local market. When the entire strategic economy is growing, the transfer of consumer dollars into gambling dollars is largely hidden.

Economic Misperceptions According to Nobel Prize-winning economist Paul Samuelson,[22] it is basic textbook economics that:

> [Gambling] involves simply *sterile transfers of money or goods* between individuals, creating no new money or goods. Although it creates no output, gambling does nevertheless absorb time and resources. When pursued beyond the limits of recreation, where the main purpose after all is to 'kill' time, gambling subtracts from the national income.[23]

Legalized gambling does provide recreation which is a service no different than a concert or a play. However, from a political/economic viewpoint, Professor Jack Van Der Slik has summarized the basic principles emanating from reasoning equivalent to Samuelson's echoing in much of the academic community: '[State-sponsored gambling] produces no product, no new wealth, and so it makes no genuine contribution to economic development'.[24]

Sometimes government officials have difficulty differentiating between the various forms of gambling that might become the subject of state lawsuits. Gambling industry economists have been criticized for taking advantage of uninitiated government officials by obfuscating the issues with analyses that switch between the various types of gambling. Generally, the various types of gambling are irrelevant to government decision-making when viewed in their proper strategic market.[25]

In gambling industry studies, the underlying focus is usually on: (1) how *fast* money can be extracted from the public, and (2) how *efficiently* money can be extracted from the public.[26] The techniques utilized to accomplish these goals usually consist of: (1) new, more and faster gambling technology, and (2) new and more sophisticated marketing.[27]

The speed (and not the *type*) of the gambling is the proper focus.[28] In a focused cost–benefit analysis, socio-economic costs, tax revenues, and other considerations should be calculated as a *function of the degree of gambling* (i.e., 'amounts lost' or 'gross revenues').[29] In this context, lotteries are generally considered the slowest type of gambling because the wagering historically occurred once per time period (such as once per year, or more modernly, once per week). Whereas, gambling via EGDs, particularly as they interface with the Internet, constitute the *fastest* forms of gambling. As the socio-economic negatives associated with gambling activities are a correlated function of the amounts lost, the *speed* with which the money is lost (and not the *type* of gambling) is the proper focus.

Misperceptions by the Public and the Press The US has long had a tradition of gambling,[30] but since the end of the 19th century, the criminalization of US gambling activities had relegated gambling activities to a quasi-romanticized genre of friendly wagers, back alleys, and organized crime. With the trend toward legalizing gambling

activities at the end of the 20th century, the accessibility and acceptability of gambling began to 'hook' new gamblers. One conclusion of a 1997 report by the Harvard Medical School was that the number of US citizens with 'severe gambling disorders' increased by 55%[31] since the advent of Atlantic City gambling in 1977. In addition, 'the number of 'problem' gamblers—those who have lied, cheated, stolen, or suffered anxiety attacks as a result of gambling—[had]... climbed from 4% of the adult population to 7%'.[32] However, the pathological and problem gambling were not only confined to the adult population. Approximately 1.1 million adolescents from the age range from 12 to 18 were identified as pathological gamblers.[33] In addition, in states such as Louisiana, it was reported that one in seven 18–21 year olds had a chronic gambling problem.[34]

Misleading Studies and PR Financed by the Gambling Industry

Another strategy common to both the tobacco and gambling industries appears to be their tendency to be connected to any research project conducted on their respective products. Those familiar with the topics typically agree that it is difficult to find objective research regarding the impact of legalized gambling on communities.[35] In fact, '[m]uch of the research that has been used in government decision making was prepared by researchers with close ties to the gambling industry'.[36]

> 'There isn't one piece of research the industry has funded on the social costs of problem gambling that is academically respectable. It's all self-serving', says scholar Henry Lesieur of the Institute for Problem Gambling in Connecticut. 'It says a lot about the nature of the field that research funded by the industry is going to dominate the dialog for the next few years. That is a sad state'.[37]

A few government officials have recognized this and have expressed their frustration. The chief executive of the Illinois Gaming Board during the 1990s, Mike B. Belletire, noted, in reference to proposed riverboat gambling on the Mississippi River, 'Frankly, the analyses that were done were paid for largely by or on behalf of those who are proponents of this project... There is not a good reference base for me to understand the economic effect of gaming either in the broad economy or the derived revenue to the state'.[38] As the Illinois administration changed in 1998, Belletire went from gambling regulator to the position of chief operating officer of special events at the National Jockey Club, Sportsman's Park racetrack—illustrating the problem of the 'revolving door' for government regulators being hired to become gambling industry advocates, and the need for enactment of the 1999 Gambling Commission's recommended 1-year ban between being a regulator and working for the gambling industry.[39]

The 1990s also witnessed similar attempts by the gambling industry to obfuscate public understanding which was bemoaned by the national press:

> [T]he industry saw opportunity in the narrow and poorly funded area of compulsive gambling research. Through lucrative grants, it has developed its own body of data and undermined studies critical of the industry, triggering a wave of white papers.[40]

In an accurate summary of a frequent gambling industry tactic, Commissioner Richard Leone, of the National Gambling Impact Study Commission, summarized that if the gambling industry can 'keep the focus of the camera tight enough,... [it] can show gains [from gambling]',[41] however, he indicated that the view would change as the camera zoomed out'[42] and the socio-economic negatives would become apparent.

Unlike most other studied public issue areas, gambling industry executives have targeted the academic community for harsh criticisms; for example,

> William Thompson of the University of Nevada at Las Vegas says he has felt the weight [of the gambling industry]. On several occasions after he released studies on gambling's social impact, Thompson says, he picked up the phone only to hear Mirage CEO Steve Wynn screaming profanities.
>
> Wynn's spokesman, Alan Feldman, says Thompson had it coming: 'Some of Mr. Thompson's theories are deserving of that kind of reaction because they're so off the wall'.[43]

Compared with the tobacco industry, these instances from gambling industry scenarios may be less tactfully executed, but the strategies appear to be quite similar.[44]

By comparison, tobacco companies were one of the largest sources of private funding for biomedical research[45] by the mid-1990s. The 1998 *British Medical Journal* revealed a global campaign by the tobacco industry to mold public opinion on passive smoking in Europe, the Far East, the Pacific-Rim (e.g., Australia), and Central and South America.[46] The Philip Morris Company reportedly 'set up a network of scientists throughout Europe who were paid to cast doubt on the risks of passive smoking and highlight other possible causes of respiratory problems'.[47] Furthermore, it was reported that industry 'documents clearly show the industry inventing and orchestrating controversies by buying up scientists and creating influential outlets for tainted science'.[48] One organization formed in 1953 and later known as the Council for Tobacco Research arguably had the purpose of 'sponsor[ing] a public relations campaign which [was]... entirely 'pro-cigarettes'.[49] The National Center for Responsible Gaming (NCRG), which was formed and financed primarily by gambling interests as a non-profit organization, has been similarly criticized by the national media.[50]

It was also revealed that the tobacco industry apparently 'paid people to write articles favorable toward cigarettes and unfavorable toward public health research, and paid them even more when national magazines published their articles'.[51] Academia complained that this type of behavior was all too common among corporations involved in the production of a product that is harmful to society.[52] The web of 'secrecy, deception, and propaganda' was supposedly woven for the mere sake of profits.[53] The US national press has revealed similar tactics by the gambling industry.[54]

CLARIFICATION OF GOALS

The overall goal of all government authorities is well-recognized in common law and customary international law as the maintenance of a favorable legal order. Regarding public issue areas, government officials are charged with promoting the 'public health, safety, and welfare'. In the context of a product or mechanism that is potentially harmful to the public, government entities are ethically charged with at least determining the cost/benefits to society. As indicated during Congressional hearings in 1994 before the US House of Representatives Committee on Small Business, this government shibboleth can be simply illustrated.[55]

> The essence of the gambling debate from an economic perspective can be understood by asking the question: Does America need another form of entertainment so badly that it is willing to add another social problem to the list that it already deals with such as crime, alcoholism, teen pregnancy, illegal drug use and so on?[56]

Purely from a cost/benefit perspective, the issue of legalizing gambling activities should be easy for government authorities to visualize.

> From the Federal Government's perspective, a good analogy might be the following. Imagine if a pharmaceutical company invents a new pharmaceutical. There are already other drugs available for the same purpose. The product works extremely well for 98.5% of the people who use it. However, for 1.5% of the people who use it, the drug completely ruins their life. Would the FDA license this drug?[57]

In this context, it was unfortunate that state governments across the US did not do their homework before legalizing various form of gambling during the 1980s and 1990s. In spasms of neglect, no comprehensive reports were commissioned or conducted by the various states—with the notable exception of Florida during 1994.[58] Interestingly, Florida government officials and the public rejected legalized casino gambling in 1994 after Florida did its reports.

Another primary goal of the states and the US government should be to educate the public with regard to the negative consequences which can occur from legalized gambling activities; specifically, (1) new addicted gamblers, (2) new bankruptcies in the 35-mile feeder markets around concentrated gambling activities, such as casinos, and (3) new crime and corruption, particularly in the 35-mile feeder markets.

Governmental entities should also cease from deceiving the public with regard to educational funding tied to legalize gambling activities. As any grade school library can attest by a quick reference to the 1994 *World Book Encyclopedia Update*,[59] state funding to education has not benefited from the revenues generated by legalized gambling activities.[60] In fact, the definitive study conducted by *Money Magazine*[61] in 1996 proved that in those states with legalized gambling activities, educational funding in real dollars was

substantially less than in those states which were either without legalized gambling activities or which had not tied education funding to legalized gambling revenues.[62]

HISTORICAL BACKGROUND

An Overview of US Legalized Gambling

Legalized gambling began to gain public acceptability particularly after World War II when Nevada became the first state to authorize large-scale legalized casino gambling.[63] By 1999, legalized gambling in various forms was permitted in 47 states and the District of Columbia,[64] approaching $55 billion in gross revenues. As a percentage of personal income, gambling wagers more than doubled between 1974 and 1997.[65] In 1976, US citizens legally wagered $17.3 billion, but by 1997, the amount wagered was $639 billion.[66] By the 1990s, the US legalized gambling industry netted more profit than the combined totals of all US theme parks, cruise lines, the video game industry, the music industry, the movie industry, and professional and amateur sports.[67] In fact, the $600 billion that Americans legally wagered each year was, according to National Commissioner James Dobson of the National Gambling Impact Study Commission, more than the $450 billion Americans spent each year on groceries.[68] It was no surprise to the experts that the number of Gamblers Anonymous (GA) chapters doubled between 1990 and 1999.[69] Furthermore, a Harvard study underwritten by the gambling industry itself revealed that between 1994 and 1997 the increase in the number of US pathological gamblers was between 1.5 million and 2.2 million,[70] which paralleled the spread of US legalized gambling—particularly, casino gambling.

'Opportunity theory proposes that, if opportunities are offered, people take advantage of them'.[71] In the area of gambling, this principle is termed the accessibility principle; that is, as gambling opportunities are made more accessible to people, more people will gamble. Whether gambling per se constitutes an 'opportunity' in an economic sense is irrelevant; what is relevant is the ease of the public's accessibility to the gambling venue.

In any event, the 1990s recognized legalized gambling as one of the fastest growing pastimes in the US.[72] Between 1982 and 1990, for example, what Americans spent on legal gambling activities 'grew at almost twice the rate of income'.[73] During the same time frame, the gambling industry experienced growth rates approximately 2.5 times that of the manufacturing industries.[74] The expansion of the US gambling industry occurred primarily during the 1980s and early 1990s.[75] 'The legalization of slot machines in remote Montana locations (1985), passage of federal legislation for tribal-run gambling (1988), the legalization of Iowa casino riverboats (1991), and the introduction of electronic keno gambling in Oregon (1991) all encouraged the gambling industry in its expansion efforts'.[76] By 1999, there were 37 states (plus Washington, DC) with lotteries, and 28 states with casinos.[77]

The growth of legalized gambling followed predictable sales pitches.[78] To gain entry into new jurisdictions, the gambling industry alleged that: (1) casinos and casino riverboats would appeal to tourists and provide 'family entertainment', (2) gambling would create new jobs, (3) gambling would generate a positive multiplier effect within the local economy,[79] and (4) gambling revenues could be earmarked to support one of the 'Big Es'—education, the environment, the elderly, new employment and/or economic development.[80]

However, the rapid expansion of legalized gambling did not occur without substantial socioeconomic costs.[81] The 'accessibility' of gambling can result in a portion of the public becoming new addicted gamblers with resultant social disorders, medical costs/conditions, and substantial private and public costs.[82] 'Pathological gamblers tend to engage in forgery, theft, embezzlement, drug dealing, and property crimes to pay off gambling debts'.[83] In the study conducted by the University of Chicago's National Opinion Research Center (NORC), a 'low-ball number' of each pathological gambler's costs to society totaled approximately $12000 in lost benefits and the costs of policing during their lifetime.[84] With respect to gambling, Professor David Lester demonstrated that those states permitting 'gambling at casinos, sports betting, jai alai, and teletheaters had a greater per capita number of GA chapters'.[85] GA is an international organization which treats pathological (addicted) gamblers via a 12-step program similar to that used by Alcoholics Anonymous.[86]

Owing to the financial, marital, occupational, and legal problems endemic to pathological

gamblers and their families, pathological gamblers experience the following disorders at levels above the general population: depression, insomnia, migraines, intestinal disorders, anxiety attacks, high blood pressure, cardiac problems, and other stress-related medical conditions.[87] In addition to various medical conditions, pathological gamblers evidence social disorders such as anti-social personality disorder and narcissistic personality disorders.[88] Without attempting to quantify the unique value of every human life, it should be noted that between 12 and 18% of those in GA have attempted suicide, 45–49% have planned to commit suicide, 48–70% have contemplated suicide; and 80% have evidenced a death wish and stated that they 'wanted to die'.[89] Similar to drug addiction, many pathological gamblers who have attempted to quit gambling have been largely unsuccessful.[90] 'In a study of 232 attendees of GA meetings, Stewart and Brown (1988) found that total abstinence from gambling was maintained by only 8 percent one year after their first attendance, and by 7 percent at two years'.[91]

Productive *vis-à-vis* Unproductive Avenues of Liability: The Strategic Historical Overview

An analysis of case law can differentiate between what have been unproductive *vis-à-vis* productive avenues for bringing causes of action against the tobacco industry,[92] and then lead to parallels between causes of action involving the tobacco industry and the gambling industry. In this context, causes of action brought by governments to recover the Medicaid and Medicare types of costs[93] associated with tobacco-related illnesses appeared to be the most successful. Second, causes of action brought on the basis of the Racketeer Influenced and Corrupt Organization Act (RICO)[94] appeared to be headed for successful results in the 21st century. By modeling causes of action against the gambling industry on cases involving the tobacco industry, governments and private litigants had the potential to bring multi-billion-dollar cases against various segments of the gambling industry.

Only limited historical references will be mentioned herein involving some of the classic tobacco cases involving the traditional causes of action against the tobacco industry. This approach was utilized, because the classic cases since the 1950s were largely unsuccessful owing to the theories under which they were brought. These cases tended to become mired in issues involving negligence and product liability as they interfaced with the defenses of contributory negligence, assumption of the risk, and/or a lack of 'cause-in-fact'.

This analysis does not consider in-depth the parallel cases in issue areas other than gambling, such as cases involving gun manufacturers,[95] because these issue areas are beyond the scope of this analysis. It should be noted, however, that from a government-policy perspective the mere threat of tobacco types of cases against industries, such as the firearms industry,[96] have resulted in major policy changes within the industry itself.[97]

The Legal History of the Tobacco Cases

The first two waves of tobacco litigation occurred during the 1950s and the 1980s, respectively, but these litigations were unsuccessful because they were predicated in tort law[98] primarily under theories of negligence, deceit, and breach of express and implied warranties. The second wave also added the litigation theories of strict liability (e.g., product liability) and failure to warn. Success for plaintiffs, however, was found in the 1990s in initiatives that centered on a public health approach.[99]

One of the first significant cases which involved trying to hold tobacco companies liable for the injuries caused by smoking was *Green v American Tobacco Co.*[100] decided during the late 1960s. The *Green* case capped a trend of over 100 unsuccessful cases initiated during the 1950s against tobacco companies.[101] The *Green* case initially held that smokers were entitled to rely on the company's implied assurances that cigarettes were fit for the manufacturer's intended purpose of being smoked by consumers.[102] Furthermore, a consumer's death from smoking cigarettes rendered the tobacco company 'absolutely liable'.[103] However, in 1969 the US Fifth Circuit Court of Appeals overruled *en banc* its own earlier decision, and held that cigarettes were not 'defective' per se.[104]

The next classic case was *Cipollone v Liggett Group, Inc.*,[105] which was filed in 1983 on behalf of Rose Cipollone against three large cigarette manufacturers. The convoluted *Cipollone* case was twice[106] before the US Supreme Court, and the Court basically held that causes of action against

cigarette companies, which were based on a failure to warn consumers of the dangers of cigarette smoking, were preempted by the federal laws regulating warnings by tobacco product manufacturers.[107] However, the net impact of the US Supreme Court's second decision resulted in an apparent victory for the Cipollones,[108] because the Court ruled that the federal acts did not preempt numerous potential causes of action.[109] Even so, the Cipollones' attorneys voluntarily dismissed the case.[110]

Apparently exhausting the Cipollones' attorneys with $5–6 million in legal costs,[111] the tobacco companies 'had adopted the theory of General Patton that rather than spending their own assets, they would force the plaintiffs to spend all of their assets'.[112] By comparison, the Liggett Group reportedly spent more than $75 million.[113] By the mid-1990s, the Cipollone family had dropped all of their legal efforts.[114]

After the Cipollone cases, the next significant case was a 1994 Louisiana class action suit, *Castano v American Tobacco Co.*[115] The 'rifle shot' pleading in *Castano* was a fraud claim against the tobacco companies which alleged that, while knowing the dangers of tobacco use by consumers, the cigarette/tobacco manufacturers had failed to warn consumers that tobacco use was addictive and that tobacco smoke was injurious to smokers (and other people as well).[116] The 'shotgun' claims against the tobacco companies included not only 'fraud and deceit', but also 'negligent misrepresentation, intentional infliction of emotional distress, violation of consumer protection statutes, breach of express warranty, breach of implied warranty, negligence, strict liability, redhibition [avoidance of purchase due to defective product], and equitable relief'.[117] The court highlighted the deceit-addiction *nexus* by stating that the claims of the plaintiffs were predicated 'on their contention that [the] defendants intentionally failed to disclose, and in fact concealed, knowledge that nicotine is addictive and that [the] defendants manipulate nicotine levels in their cigarettes for the purpose of addicting consumers to their products and sustaining that addiction'.[118]

Thus, this third wave of tobacco litigation was predicated largely upon claims that the tobacco industry 'knew, but long hid, their knowledge that nicotine is pharmacologically active and highly addictive; and . . . manipulated nicotine levels in their products to hook unsuspecting smokers'.[119] There are obvious parallels between these deceit-addiction arguments involving the tobacco industry and similar arguments against the gambling industry involving the addictive nature of VGMs which constitute 70–80% of casino revenues.

The Fifth Circuit Court of Appeals ultimately decided that the *Castano* class action complaint should be dismissed.[120] The demise of the 'federal' class-action theory in this tobacco case opened the door for 'statewide' class-action suits in the individual states, and beginning in 1996, many such lawsuits were filed.[121]

The most notable of these class-action cases was a Florida class-action case *R.J. Reynolds Tobacco Co. et al. v Engle*.[122] On 14 July 2000, the jury found for the plaintiff smokers and ordered America's five largest tobacco companies to pay $145 billion in punitive damages.[123] The plaintiffs had asked jurors for an award of $196.8 billion, alleging that this amount was necessary to recompense for 50 years of misconduct and injuries by the tobacco companies to 700000 Florida smokers.[124] The verdict assessed penalties of $145 billion, including $73.96 billion to Phillip Morris, $36.28 billion to R.J. Reynolds, $17.59 billion to Brown & Williamson, $16.25 million to Lorillard, and $790 million to Vector Group (the owners of Liggett).[125] This verdict was by far the largest damage award ever in US history, and dwarfed the former record punitive damages award of $5 billion against Exxon in the *Exxon Valdez* oil-spill.[126] If the penalty ever actually has to be paid, it would bankrupt the industry.[127] The tobacco industry condemned the *Engle* decision and vowed to use every means at its disposal to undo the award.[128] *Pro forma*, the tobacco companies claimed the judgment should be overturned or mitigated because legal errors were made during the trial.[129] The tobacco industry also filed a notice of removal of the case, which would actually transfer the entire case to federal court.[130]

There are obvious parallels between statewide class-action cases against tobacco and potential cases against the gambling industry. For example, in December 1997, the *New York Times* summarized '[c]asino industry executives, who have proven ingenious at marketing their products as harmless adult entertainment, *until recently* had been loath to concede that some gamblers became addicted'.[131] While apologists for the gambling industry,[132] such as William Eadington,[133] have

Ms. Parker:
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Problem Gamblers ↘

Table 1. Percentage of Expenditures by Problem Gamblers for Selected Forms of Gambling by State/Provinces

	Alberta	British Columbia	Nova Scotia	Washington	Louisiana	Iowa	New York	Average
Bingo (%)	43.6	37.3	N/A	44.6	N/A	N/A	39.5	39
Lotto (%)	11.3 lotto; 19.3 instant	11.9 lotto; 14.3 scratch	6.2 lotto; 22.7 scratch	24.2 daily game	17.6 all lotto games	24.4 instant	21.9 lotto; 36 quick draw	14 lotto; 20.6 instant-scratch
Casino (%)	37.2 local; 34.4 card/dice	26.7 resort; 33.1 table	48.7	55.0 card/dice	N/A	38.4 table	41.4	41.8 table games
Slots (%)	19.0	N/A	8.9	N/A	N/A	16.1	N/A	14.7
Video machine (%)	46.9	N/A	50.8	23.9	37.8	N/A	74.6	46.8
All games (%)	32.3	22.6	26.4	24.7	41.2	26.8	39.1	30.4
Horses (%)	54.2 on and off track	29.5 on-track	N/A	25.9	52.7 on-track; 84.9 off-track	48.4	50.0	
Sports (%)	19.0 friends/ co-workers	21.7 sports; 19.7 friends; 15.2 pools	N/A	18.9 pools; 82.7 bookies	62.6	43.9	50.0	
Pull tabs (%)	45.1	20.9	N/A	35.2	N/A	N/A	N/A	
Raffles (%)	10.5	11.1	N/A	N/A	N/A	N/A	N/A	
All (%)	32.3	22.6	26.4	24.7	41.2	26.8	39.1	

Sources: Lesieur (1998, table); 'Measuring the Costs of Pathological Gambling,' Address by Prof Henry R. Lesieur, Illinois State University, at the National Conference on Gambling Behavior, National Council on Problem Gambling, Chicago, Illinois, 3–5 September 1996 (table).
N/A, not applicable.
Added notes of Professor Lesieur:

Pathological gamblers spend an inordinate amount of money on gambling compared to others who gamble (Lesieur, 1998). For example, problem video lottery players in Nova Scotia account for 4% of those who play, yet contribute 53% of net revenue for video lottery playing (Focal Research, 1998). The Australian Productivity Commission (1999) estimated that problem gamblers account for 5.7% of money spent on lottery play, 10.7% of casino table game play, 19% of scratch ticket sales, 33% of wagering on horses and dogs, and 42% of money spent on gaming machine play. Overall, problem gamblers expend 33% of all money spent on gambling in Australia.

Focal Research (1998). *1997/1998 Nova Scotia lottery players' survey*. Prepared for Problem Gambling Services, Nova Scotia Department of Health. Halifax, Nova Scotia: Author.

consistently refused to acknowledge or calculate any costs for pathological gamblers and problem gamblers,[134] the National Gambling Impact Study Commission[135] and other sources have begun the calculations.[136] In 1994, Resolution 430 of the American Medical Association's House of Delegates calculated the US socio-medical costs of pathological and problem gamblers at $40 billion and increasing.[137]

Significantly, as he was about to retire as editor of the *Journal of Gambling Studies* and a leader of the National Council on Problem Gambling (both allegedly heavily-influenced by the financial aura of the gambling industry),[138] Professor Henry Lesieur pointedly calculated the portion of gambling revenues generated by pathological and problem gamblers by the type of gambling.[139] For example, 26.7–55% of casino gambling revenues were calculated as coming from pathological and problem gamblers (Table 1).[140]

The low-profile maintained by the gambling industry from the 1960s through the early 1990s allowed the industry to expand rapidly. However, the high-profile lobbying undertaken by the industry during the mid-1990s probably promoted the establishment of industry anathemas such as the 1999 National Gambling Impact Study Commission and concomitant studies unflattering to the image projection desired by the gambling industry.

The US Theory Which Held the Tobacco Companies Liable: The Applicability to the Gambling Industry

The second theory which eventually cornered the tobacco industry was predicated upon the principle that as the states were incurring significant socio-medical costs to pay for the injuries caused by consumers utilizing tobacco products, the states should be able to sue the tobacco companies directly for those costs without being subrogated to the individual claims of persons injured by tobacco products.[141] States could bring suits against the tobacco companies on their own behalf without being subjected to classic defenses, such as contributory negligence, assumption of the risk, and lack of cause-in-fact.[142] Calculating that the State of Mississippi had spent approximately $1 million in health care costs for the treating and caring for his secretary's cancer, attorney Michael Lewis consulted with Mississippi Attorney General Michael Moore and initiated the first state-sponsored lawsuit[143] against the tobacco companies.[144]

Mississippi's suit was quickly followed by lawsuits filed first by the attorney general of Florida and then by 40 other states.[145] The states' claims were enhanced because the tobacco companies were vulnerable to the classic claim that they were not 'internalizing the externalities' and that, therefore, the tobacco companies were being 'unjustly enriched' at the expense of the taxpayers.[146] In fact, the ideal plaintiff was predicated to be a 'public hospital', because such an institution would have to pay (i.e., 'internalize') all of the costs of treating the diseases and illnesses caused by tobacco products (as well as alcohol products)[147] without receiving any economic benefit whatsoever.[148] As medical centers initiate and/or develop their existing treatment centers for pathological and problem gambling, they should track these specific costs for future reimbursement.

By comparison, a Florida suit filed on 21 February 1995 against the tobacco industry[149] utilized, in part, a 1994 state statute drafted and enacted expressly to eliminate the primary defenses historically utilized by the tobacco industry, such as the smoker's contributory negligence or assumption of the risk. Interestingly, the Florida statute would also apply to other industries such as the gambling industry. Serving as a model statute for other states the Florida statute, the Medicaid Third-Party Liability Act[150] provided that:

> Principles of common law and equity as to assignment, lien, subrogation, *comparative negligence, assumption of risk, and all other affirmative defenses normally available to a liable third party*, are to be abrogated to the extent necessary to ensure full recovery by Medicaid from third-party resources . . .[151]

By 1999, this highlighted language was deleted with the net effect of restoring the traditional defenses to the tobacco industry, but the pre-existing case remained valid and Florida's eventual settlement totalled $11.3 billion to be received over a 25-year period.[152]

TRENDS AND CONDITIONING FACTORS

Gambling Addiction *vis-à-vis* Tobacco Addiction?

Sociologists generally refer to video-gambling machines as the crack-cocaine of creating new

addicted gamblers.[153] 'Pathological gambling' is referenced and specifically delineated in the *Diagnostic and Statistical Manual of Mental Disorders*[154] of the American Psychiatric Association. Technically, pathological gambling is listed as an 'impulse control disorder', but for years, the academic literature was well-trended toward recognizing pathological gambling as an official addiction—until the gambling industry started financing contrary research.[155] Although in 1980, pathological gambling was delimited in the *Diagnostic and Statistical Manual of Mental Disorders*, an 'MGM Mirage spokesman . . . said pathological gambling was largely ignored until 1980'.[156] Perhaps before 1980, the industry could argue ignorance of the problems, but the industry as a whole did not establish or really acknowledge any problem gambling until 1995 or 1996, and even then many gambling companies did not post warnings, take any remedial actions, or fund research.

In 1995, Associate Professor Howard J. Shaffer of the Harvard Division on Additions reported:

> *Gambling is an addictive behavior, make no mistake about it* . . . Gambling has all the properties of a psychoactive substance, and again, the reason is that it changes the neurochemistry of the brain.[157]

Furthermore, during a 1995 conference, 'Shaffer described gambling as an addiction no less potent than drugs or alcohol'.[158]

However, it was not until 21 February 1996 with establishment of the NCRG[159] with nearly $2 million provided mainly by Boyd Gaming Corporation and other gambling interests that there was a general public acknowledgement by the gambling industry that '[t]his is an industry that recognizes that it has a problem and is willing to deal with it in constructive and positive ways'.[160] The lobbying group for the gambling industry, the AGA, headed by Frank Fahrenkopf, announced that part of the AGA's responsibility was '*to develop a clearinghouse* for addressing industry issues, including problem gambling'.[161] In this 'clearinghouse' context concerns were raised about potential conflicts of interest.

> For years, [Howard] Shaffer had voiced some of the harshest warnings in academia against the collateral damage of gambling's growth. No longer, not since he accepted nearly $600000 in grants from the industry in little more than a year.
>
> Through Fahrenkopf's *intervention*, Shaffer was awarded the first grant by the industry-backed research center [NCRG]—$139000 . . .[162]

The content of this first study by Shaffer was criticized,[163] and it also did not report the most important baseline numbers for the 120–152 studies analyzed,[164] which made it impossible for other academics to check and verify.[165] Despite requests dating to 1998,[166] and despite promising to provide these numbers during a 4 May 2000 conference sponsored by the NCRG at the University of Illinois at Chicago Medical Center,[167] by the end of 2000, Associate Professor Shaffer had apparently not provided the requested baseline numbers—a fairly simple procedure.[168]

As summarized by the *Los Angeles Times* in December 1998, 'Shaffer is now working on a new project for the industry's research arm [the NCRG]—of which *he is a board member*—for $465000, more than triple the amount of the first award'.[169] Supposedly concerned with some research issues at the NCRG during this time frame,[170] Professor Henry Lesieur and Dr. Richard Rosenthal terminated their relationship with the NCRG research board.

With regard to the NCRG's research, one criticism is that it is pre-directed:

> 'They have an agenda', says Valerie Lorenz, executive director of the Compulsive Gambling Center Inc. in Baltimore. If the industry can say something is neurologically wrong with a problem gambler, 'then it's not the casinos' responsibility', she says.[171]

In 1998, however, Shaffer did acknowledge the 'increasing trend'[172] of more problem gamblers which among other reasons he attributed[173] to 'easy access to casinos, lotteries and credit'.[174] Interestingly, the NCRG, which had been centered at the University of Missouri at Kansas City (UMKC) since its 1996 inception, announced in 2000 that it was moving to the Harvard Division on Addictions proximate to Shaffer. These types of associations raise questions of conflicts of interest and do not particularly benefit the research, the academics involved, or even the industry's goals.

Regardless of these debates, the individualized problems of gambling addiction are exemplified by one 1998 Chicago, Illinois case where a mother addicted to gambling allegedly killed one and perhaps two of her children in separate instances

to collect $200000 of insurance money so she could continue to gamble.[175] This scenario resulted in a conviction and the subsequent imprisonment of the mother.

State-sponsored gambling as government policy was further criticized in 1997 when it became public that the Colorado lottery was utilizing a 'Mindsort' model which allegedly was designed to appeal to pathological and problem gamblers, and which indicated that consistent gamblers were 'Lower on trial, but *once hooked, hooked*'.[176] A 1997 in-depth survey by the *Chicago Sun-Times* reported that poor people were viewing the 'instant games' of the lottery as 'a source of income',[177] and in a parallel survey it was reported that 51% of the people gambling were trying 'to win money,' instead of gambling for entertainment (34%).[178]

Recognizing that research has reported that 27–55% of casino revenues are coming from pathological gamblers and problem gamblers,[179] concerns have also been raised about appeals to this market segment.

> By purchasing lists from credit-card companies, the casinos know what you buy, and then they can track census data to approximate your home value and income. Then there are the direct-mail lists. One such list from the early 1990s was baldly called the '*Compulsive Gamblers Special*' and promised to deliver *200000 names* of people with 'unquenchable appetites for all forms of gambling'. Another list features 'some *250000 hard-core gamblers*'. Yet another purveys the names of 80000 people who responded to a vacation-sweepstakes-telemarketing pitch.[180]

In addition to this criticism, there exists the allegation that gambling companies are profiling their customers' financial/gambling tendencies via the computerized cards customers are often required to carry in order to gamble.

> Christopher W. Anderson of Chicago, who supervises gambling counselors in St. Louis, has seen such customer profiles because they were subpoenaed in criminal cases. In one, the customer had been arrested at the casino for writing bad checks.
>
> The patron's profile 'shows that casinos know certain individuals have gambling problems but do absolutely nothing to intervene, . . . '.[181]

Apparently, gambling companies have sophisticated marketing knowledge of their customers which can be potentially misused to benefit the companies.[182]

By comparison, in the 1970s it was supposedly, popularly recognized that 'cigarette smokers behave remarkably like heroin addicts . . . [and] that cigarette smoking . . . [constitutes] an addiction'.[183] However, the juries in the tobacco cases generally did not accept the argument that smoking was as addictive as heroin.[184] Given this trend in the tobacco cases, similar 'addiction' arguments in pathological gambling cases (if argued before juries instead of judges) would probably fail until popular sentiment changed—despite the weight of authority which indicated a trend toward recognizing pathological gambling as an addiction.[185]

The Trend Toward Obfuscating the Issues

Juries apparently adopted a libertarian philosophy in the tobacco cases and often accepted the legal defense of assumption of the risk; that is, the plaintiff consumers knew or should have known the risk of smoking, voluntarily began to smoke, and intentionally continued to use tobacco.[186] Such a libertarian philosophy apparently also infected the US public's imagination when dealing with the negative socio-economic consequences of gambling addiction. In other words, the public perception was that if people gambled too much it was their own responsibility.

For decades, the Nevada gambling establishment, in particular, ignored[187] or even denied[188] that there existed such a disorder as 'pathological gambling' or the associated 'problem gambling'. According to one expert '[i]n 1980 they weren't interested in dealing with compulsive (i.e., pathological) gambling and were afraid to deal with it'.[189] Howard Shaffer further confused the issues when he proposed a new nomenclature in 1997 of 'levels' of 'disordered gambling'[190] instead of the generally accepted terms of 'pathological gambling' and 'problem gambling'.

In 1987, however, Harrah's casino company 'began examining the issue'.[191] Critics claimed that the program initiated by Harrah's was largely 'window-dressing' for public relations purposes,[192] but it still constituted the first accepted effort by a casino company to recognize problems involving those who gambled too much, and by 1996 the AGA's Frank Fahrenkopf purported that 'the attitude of the industry has changed'.[193] By comparison, other gambling companies continued to deny that there was much of a problem, if any

problem, until at least the mid-1990s, when a series of articles put the gambling industry on the defensive and highlighted the problems of pathological and problem gamblers.[194]

Trying not to repeat the mistakes of the tobacco industry in denying for decades the problems associated with their product, the lobbying group representing the gambling industry, the AGA, mobilized the gambling industry in the mid-1990s to admit finally some problems, including the problem that a certain percentage of gamblers would develop gambling problems and fall into the categories of 'pathological gamblers' and 'problem gamblers'.[195]

As the US Congress embarrassed the gambling industry with the enactment of the 1996 National Gambling Impact Study Commission Act, the AGA scrambled to document the gambling industry's pre-existing concern for pathological gamblers and problem gamblers. However, the AGA could only produce scant industry examples basically from four US gambling companies and had to resort for examples to four Canadian/government-sponsored examples plus the Washington State Council of the State of Washington.[196] These examples were originally collated in an AGA 1996 loose-leaf binder entitled the 'Responsible Gaming Resource Guide',[197] which instead of emphasizing gambling problems among the adult clientele tended to emphasize casino-employee problems and the prohibitions against underage gambling.[198]

By comparison, one of the favorite defenses of the tobacco industry in a similar context was to deny any cause-in-fact (i.e., 'connection' or *nexus*) between the use of the product and the resultant claimed injury. Attorneys representing the tobacco industry would often flood juries with so many other potential causes for the plaintiffs' injuries that individual juries could not find a preponderance of the evidence indicating that the tobacco product had caused the injury.[199]

Similarly, during the 1990s, the gambling industry began to position itself with alternate theories which obfuscated the classic symptoms associated with pathological gambling, as well as with problem gambling. The gambling industry also allegedly became involved in efforts to change the definitions, and even the terminology involved in delimiting what constituted a 'pathological gambler' and a 'problem gambler'.[200] Another factor which would assist the gambling industry in confusing juries with other cause-in-fact issues involves the comorbidity of pathological gambling with the excessive use of alcohol and tobacco products. In other words, there appears to be some connection between the excessive use of alcohol and/or tobacco and pathological gambling, but the research efforts on these comorbidity issues are still in their infancy.

Despite these considerations, attorneys pursuing the gambling industry under theories involving pathological gambling issues and cause-in-fact will probably not be successful until there is a significant change in public perceptions.

POLICY ALTERNATIVES AND RECOMMENDATIONS

General Policy Alternatives for the US

One generally recognized recommendation involves educating the public with the potential hazards of becoming addicted to various forms of gambling—both legal and illegal. While at first, it would appear that such a goal would be relatively easy to implement, the gambling industry has an obvious self-interest in downplaying any negative consequences associated with gambling activities, and the industry has the financial reserves to promulgate an extensive 'win–win' public relations campaign throughout the public domain.

One of the policies which the states could adopt would involve taking no action with regard to the socio-economic costs and medical costs caused by the gambling industry. This scenario seems unlikely since the success which the states have had in pursuing mega-lawsuits against the tobacco industry have encouraged them to file similar lawsuits against other industries, such as gun manufacturers. The gambling industry will be an obvious target on the list for states to file mega-lawsuits.

At the other end of the spectrum, the states could immediately initiate mega-lawsuits against the gambling industry which were similar to the mega-lawsuits against the tobacco and firearms industries[201] during the 1990s. The gambling industry, however, could argue as a policy defense that the states did not have 'clean hands' because the states legalized gambling, particularly casino-style gambling, during the 1980s and 1990s and should not thereafter be allowed to benefit financially via mega-lawsuits against an industry which the states have promoted.

The states could counter this argument by claiming that they were deceived by the gambling industry with regard to the cost/benefits of introducing gambling into state economies and with regard to the socio-economic negatives accompanying gambling activities, particularly the costs associated with pathological and problem gamblers. Still, the definitive analysis of the various 'studies' utilized to convince legislators of the benefits associated with legalizing various types of gambling, *Legalized Gambling as a Strategy for Economic Development*,[202] was a 1994 report prepared by the Center for Economic Development at the University of Massachusetts. This report revealed that the studies produced and/or financed by the gambling industry were largely 'unbalanced'. In other words, state governments were misled, if not deceived, by the gambling industry. This report's conclusions regarding the obfuscation of the cost/benefit impacts of introducing legalized gambling activities into state economies reflected poorly upon the gambling industry, and these conclusions were also largely confirmed by the *NGISC Final Report*[203] produced by the 1999 National Gambling Impact Study Commission.

Another alternative would be for the states to proceed slowly with their projected mega-lawsuits, while collecting additional data. In this scenario, the states should finance studies analyzing the socio-economic negatives associated with legalized gambling activities; specifically, addicted (pathological) gamblers, bankruptcies, and crime and corruption.

One strategic policy concern for government decisionmakers involves whether the goal is to reduce the public's utilization of the alleged potentially-hazardous product[204] or whether the goal is simply to have the *de facto* imposition of increased costs on the industry—which are then just passed along to consumers in the form of increased prices.[205] Perhaps the fundamental issue is whether governments should be promoting something which is not conducive to the public's health, safety, and welfare. In this context, there is a salient difference between the tobacco industry and the gambling industry—specifically, the tobacco industry has saturated the US public market for centuries, whereas legalized gambling during the 20th century never approached market saturation[206] and constituted a relatively new phenomenon for the beginning of the 21st century. This latter scenario involving gambling means that governments may still maintain gambling's various forms as criminalized—with minimal social consequences or public backlash. By comparison, recriminalizing tobacco would involve a public response reflective of centuries of market saturation (with no history of ever been criminalized in the US).

Mega-lawsuits by the state attorney generals combined with private lawsuits involving class actions might easily prod state legislators into simply increasing taxes on the various forms of legalized gambling. For example, in Canada, all of the casino profits go to the government, and the government merely pays a management fee to the casino companies for managing the casino properties. The result is that all of the profits go to the government. By contrast, the tax rate for casinos in the US fluctuates at approximately 15% of casino revenues to the host state and another 5% to the local municipalities with all of the profits going to the casino companies. Furthermore, Native American casinos theoretically must pay nothing in taxes to their host states (although 'gaming compacts' with the individual states are supposedly negotiated to provide the states with some revenues).

With regard to both Native American casinos and regular non-Indian casinos, the states have been embarrassingly out-negotiated. The net result is that US casinos create minuscule tax revenues for the states compared to the socio-economic costs created by the new pathological gamblers and problem gamblers who are created by the legalization of gambling activities. Even with the Canadian model of all profits going to the government, the socio-economic costs of legalizing gambling activities overwhelm the benefits (i.e., new tax revenues).[207] Furthermore, the Canadian government must necessarily be amused with the ridiculously low tax rates which the US casinos enjoy—particularly since such low tax rates raise a 'red flag' signaling the appearance of corrupt decision-making.

Economic Conflicts of Interest for the States? Not a Bar to Mega-Lawsuits

In the precedent of the tobacco mega-lawsuits, several tobacco-producing states also filed suit against the tobacco companies, and were eventually part of the overall settlement agreements.

This situation demonstrated that the states could have it both ways, and they could encourage tobacco production while filing lawsuits for the Medicaid/Medicare types of costs for tobacco-related illnesses.

There are obvious parallels with those states which have legalized gambling activities. Theoretically, those states which have legalized different gambling activities can also initiate lawsuits for the costs associated with pathological gambling and problem gambling, but they need to be prepared to document treatment costs and associated state costs. The gambling industry appears to be quite vulnerable, and as a potential response has begun to finance 'studies' which somehow seem to report the socio-economic costs of gambling to be at the lower end of the spectrum, while non-industry studies tend to report higher costs.[208]

The fact that the tobacco-producing states had no qualms about suing the tobacco industry 'should not be a surprise considering that the injury and damage caused by cigarettes far exceed[ed] the value of the jobs and income that cigarettes ... [brought] to the state[s]'.[209] With regard to the gambling industry, throughout the 1990s, there was growing evidence substantiating that the socio-economic costs of legalized gambling activities by creating new addicted gamblers, new bankruptcies, and new crime and corruption outweighed the value of the jobs and income to the residents of the states in which the legalized gambling activities were located.

The Gravamen of the Potential Mega-Lawsuits against the Gambling Industry

One of the main issues will be the costs associated with 'pathological gambling' and 'problem gambling'. The tobacco industry has argued that the costs of tobacco-related illnesses are ill-defined and difficult to calculate, but this consideration did not prevent the states from negotiating multi-billion dollar settlements with the tobacco industry. Even more ill-defined and speculative are the costs associated with handguns,[210] but again this appears not to be a bar to several states, cities, and counties filing lawsuits against handgun manufacturers. By comparison, the costs incurred by states in addressing the medical, social and crime costs associated with pathological gamblers and problem gamblers have been calculated in several studies but this area of academic investigation still needs more state-sponsored research.

Prior to the mid-1990s, the medical and social costs associated with treating and remedying the negatives committed by the individual pathological gambler ranged between $13200 and $52000 (unadjusted to present value).[211] The higher numbers were published and/or verified in a reviewed article published in the *Journal of Gambling Studies*.[212] The higher end of the spectrum was given the actual or implied imprimatur of the *Journal*—even though the *Journal* was influenced, to a greater or lesser degree, by the interests of the gambling industry. In particular, William Eadington, a well-known apologist for the gambling industry, became one of the two main editors of the *Journal* when its predecessor, the *Journal of Gambling Behavior*, ran into financial difficulty and needed the support of the gambling industry.

Specifically, the 1989 *Journal of Gambling Behavior* was sponsored by the National Council on Compulsive Gambling, but in Spring 1990:

1. the Journal's name had changed to the *Journal of Gambling Studies*;
2. the name of the National Council on Compulsive Gambling had changed to the National Council on 'Problem' Gambling (a terminology more acceptable to gambling interests);
3. the sponsorship of the *Journal* had changed to include the newly-named National Council on Problem Gambling plus the Institute for the Study of Gambling and Commercial Gaming under the directorship of William Eadington of the University of Nevada at Reno; and
4. William Eadington had joined the initial editor, Professor Henry Lesieur, as co-editor of the newly-named *Journal*.[213]

After 1996, Professor Henry Lesieur retired as editor of the *Journal* and was replaced by Associate Professor Howard Shaffer of Harvard's Division on Addictions.[214]

Since the early 1980s, one of the pre-eminent researchers in the field of pathological gambling has been Valerie Lorenz, PhD, the Executive Director of the Compulsive Gambling Center in Baltimore (formerly the 'National' Compulsive Gambling Center) and a 15-year member of the *Journal's* editorial board. Before the Illinois Gaming Board in May 2000, and in other venues, Dr Lorenz criticized the credibility of studies financed by the gambling industry,[215] including Howard Shaffer's 1997 Harvard Addictions Meta-analysis[216] which obfuscated the issues with the new

proposed terminology of 'disordered gambling'.[217] Perhaps coincidentally, Dr Lorenz was thereafter advised by the *Journal of Gambling Studies*' managing editor Howard Shaffer that her services on the editorial board would no longer be required[218]—although Dr Lorenz had served on the editorial board since the *Journal's* inception 15 years earlier.

Such examples fuel the argument that since the departure of Professor Henry Lesieur as the *Journal's* co-editor after the 1996 issues of the *Journal*, it has become inordinately influenced by gambling interests. This inordinate influence argument is also supported by the fact that primary administrative communication for the *Journal* appears to be between (1) editor Howard Shaffer, (2) the publisher, (3) editor William Eadington (at the University of Nevada at Reno and the Institute for the Study of Gambling and Commercial Gaming), and (4) Keith Whyte a former employee of the AGA and in 2000 the director of the *Journal's* co-sponsor, the National Council on Problem Gambling[219] (which is largely financed by gambling interests).[220]

Another similar venue, which publishes many pro-industry articles, is the self-styled *Gaming Law Review*—which is misleading since it has no university sponsor. Founded in 1997, the *Gaming Review* is vulnerable to being labeled as primarily a gambling industry publication. With a few exceptions, the editorial board for the *Gaming Review* consists of gambling industry consultants, columnists for industry magazines, and lobbyists (such as lobbyist Frank Fahrenkopf, Chief Executive Officer (CEO) of the AGA). Notably, when the *Gaming Review* was first established in spring 1997, a public relations lobbyist for the AGA (Keith S. Whyte) was listed as an editor.

Since the cost estimates ranging up to $52000 per pathological gambler were published and the methodology of determining them verified by the *Journal*, the gambling industry has been trying to lower these cost estimates via promoting new studies.[221] Critics of the gambling industry found it ironic that apologists for the gambling industry had not questioned any of these higher cost estimates throughout the 1980s and early 1990s—although they claimed years of experience in analyzing these issues.[222] Since the mid-1990s, the gambling industry has scrambled to promulgate new cost estimates—which as might be expected, have been lower than the earlier estimates.

One interesting scenario involves the NORC, which performed the cost estimates for the National Gambling Impact Study Commission.[223] The NORC estimated very few of the types of applicable costs and entirely omitted some types of costs. Consequently, these estimates were notoriously low and, therefore, lacked credibility.[224] The methodology utilized by NORC in calculating these estimates has been criticized as being flawed and incomplete—particularly regarding methodology.[225] Other estimates which are at the lower end of the spectrum have been performed by reputable groups, such as the $10000 figure reported by the Wisconsin Policy Research Institute,[226] but it is important to note that these are only *partial* listings of the total costs.[227] Public relations experts for the gambling industry tend to seize on these lower estimates without revealing to the public that they constitute only partial costs.

The spectre of intimidated academics has also been raised as in the case of the NORC estimates. When the academics from NORC were giving their preliminary report to the National Gambling Impact Study Commission, they were severely criticized by the gambling industry representatives sitting on the Commission. One commissioner representing the gambling industry even threatened the academics with legal action, claiming that their methodology and data collection methods were flawed.[228] Skeptics noted that the NORC final report thereafter reported very conservative estimates involving both the costs of pathological gamblers and the prevalence of pathological gamblers in the general population. The NORC also changed the definitional approach to calculating the prevalence of pathological gamblers but significantly, these changes were never incorporated into the academic literature by the general academic community. It is common practice when introducing new measures or statistics to calculate the old as well as the proposed new ones on the same data to provide a comparison or benchmark. NORC provided no such comparison/benchmark.

Strategic Concerns Involving Mega-Lawsuits

Some legal theorists have opined that governments have brought their actions against the tobacco and firearms industries without the bona fide intent of ever taking those cases to their ultimate conclusions in full-fledged trials. In other

words, instead of the tobacco industry utilizing its General Patton strategy of wearing down the opposition of individual plaintiffs,[229] the states were paradoxically wearing down the tobacco industry by coordinating the actions of state attorney generals with a strategy which increased dramatically the downside risks of any litigation which went to its ultimate conclusion. However, given the history of the tobacco litigation throughout previous decades, it appeared unlikely that the tobacco industry would be impressed with this type of legal strategy if the industry did not indeed believe that the state attorney generals would take their causes of action to their ultimate conclusions in the court system.

By comparison, questions arise as to what should be the ultimate goals of the states in bringing mega-lawsuits against the gambling industry. One question involves whether it is necessary for the states to theorize the substantive content of any potential settlement with the gambling industry. This question would also involve whether or not settlements would need to be negotiated with the various market segments of the gambling industry such as lottery suppliers, off-track betting parlors, casinos, providers of electronic gambling devices, and other various groups. However, the payment of damages for government expenses occasioned by gambling addiction, including personal financial hardship, and parallel socio-economic costs do not necessarily have to have a close *nexus* to the relief requested by the states in their underlying complaints against the industry. Furthermore, it should be noted that actions based on the RICO statutes can ask for treble damages.[230]

As judicial approval of settlements is required in government cases involving federal class-action suits,[231] government attorneys may wish to note that these lawsuits do not need to be brought as class actions per se. However, the net effect of these types of lawsuits often resembles class-action cases, particularly since large elements of the public are represented by the attorneys seeking the redress. By comparison, RICO actions brought as civil suits[232] against the industry can be brought by private attorneys (who can receive reasonable attorneys' fees), but the subject class of plaintiffs must be approved by judicial decision-making.

Another issue involves the potential settlement monies. In any potential settlement involving the gambling industry, a fundamental concern for those states recovering damages would be how those damages should be utilized. By comparison, there was substantial criticism of the ways in which settlement monies from the tobacco industry were utilized by the various states.[233] In Illinois, for example, most of the settlement monies ($350 million) that were initiated from the tobacco industry were given as property tax rebates to the Illinois taxpayers.[234] While this scenario may have ingratiated those officials then in office to the electorate, particularly since the property tax rebates were received by the electorate approximately 30 days before the election on 7 November 2000, strategic policymakers, including Illinois Attorney General James Ryan, voiced concerns about the long-term impacts of these types of policies.[235] The net effect appeared to be a 'backdoor' tax hike on the tobacco companies with the costs passed along to smokers and without any significant government commitment to reduce smoking.[236]

A familiar criticism of the tobacco settlement is that as it was structured it would not make any substantive changes in the regulation of the tobacco industry.[237] The settlement employed control and performance-based regulations which would impose specific requirements on tobacco companies and tell those companies what must be accomplished, but leave them to decide the mechanisms.[238] Alternatively, suggestions for incentive-based regulation would be arguably more effective and force the firms to internalize the total costs of their activities.[239] Perhaps this latter policy approach should also be utilized regarding the gambling industry and any potential settlement.

The Pitfalls of Delayed State Action: Test Cases by Gambling Interests to Promote and Protect the Gambling Industry

During an October 2000 conference, three potential causes of action rendering the gambling industry vulnerable during the 21st century were addressed and highlighted by Tim Kelly, the former Executive Director of the National Gambling Impact Study Commission. These causes of action included: (1) lawsuits based on the active or passive misrepresentation of the gambling industry directed at vulnerable audiences, (2) public nuisance actions against governmental entities for creating harm to the public, and (3) *qui tam*

actions, in which a private citizen could sue as a private attorney general via an action which the state did not bring, but should have.[240]

However, regardless of any potentially-productive legal theories which would support state mega-lawsuits against the gambling industry, the attorney generals of the various states needed to become more educated on the issues and informed of the trends. In addition to the gambling industry's trend toward financially dominating the direction of the research, the legal landscape was also being challenged via test cases favored by gambling interests.

One example consists of the former restrictions on the US advertising of gambling activities, and the gambling industry's reversal of those restrictions via a test case. This issue area was exemplified by regulations in Puerto Rico, restricting the advertising of gambling activities. Under Puerto Rico's Games of Chance Act of 1948,[241] certain forms of gambling were allowed but the legislation provided that 'no gambling room shall be permitted to advertise or otherwise offer their facilities to the public of Puerto Rico'.[242] In the US Supreme Court case *Posadas de Puerto Rico Assoc. v. Tourism Co. Puerto Rico*,[243] the constitutionality of that statute was held valid.[244] The net effect of *Posadas* was to restrict or prohibit the advertising of actual gambling activities in the US. However, *Posadas* was limited by *Greater New Orleans Broadcasting Assoc. Inc. v. US*[245] and challenged by a parallel Nevada test case[246] supported by gambling industry lobbyists to allow for nationwide advertising of gambling activities—just the effective opposite of the ban on the television advertising of tobacco products.

The Interface of Gambling-Financed Research and the US Supreme Court: Brief *Amicus Curiae* for the AGA in Support of Petitioners, *Greater New Orleans Broadcasting Association, Inc. v. US* (*US Supreme Court, October Term* 1998, *No.* 98-387)

The cases involving the advertising of gambling also highlight other issues. For example, is it misleading to the US Supreme Court for an *amicus* brief to substantiate most of its arguments by referencing studies which were paid for by the lobbyists filing the brief—without specifically highlighting to the US Supreme Court that those studies were financed by the lobbyists?

In its *amicus* brief for the *Greater New Orleans* case, the AGA stated specifically 'The AGA therefore offers this Court an overview of the more current and reliable studies of the social and economic impacts of the commercial casino industry'.[247] Furthermore, the AGA's *amicus* brief claimed 'the conclusion reached in *Posadas* will not shield §1304 from constitutional attack unless the government can satisfy its burden to present credible evidence of the deleterious effects of casino gaming'.[248] To support its argument, the AGA cited as its primary exhibit (designated as 'AGAL 1')[249] *Casinos and Crime: An Analysis of the Evidence* (December 1997) by Jeremy Margolis.[250] This exhibit, for example, was the most frequently cited so-called 'authority'.[251] However, it was financed by the AGA[252] and during 1997, Jeremy Margolis was registered on the Illinois 1997 Lobbyist List[253] as representing casinos, which was his situation throughout most of the 1990s.[254] Throughout the 1990s, Margolis was a registered Illinois lobbyist for several gambling interests such as Harrah's; Hilton; Caesar's World; Circus, Circus; and the Jo Daviess Riverboat Corporation.[255]

Regardless of these issues, the *Greater New Orleans* case was decided in favor of the gambling interests' practical concerns to eliminate restrictions on the advertising of gambling, and nebulous gambling-financed research was being utilized to substantiate industry claims.

In summary, it was apparent to the *Los Angeles Times*, that 'the industry . . . [was] waging a multi-million dollar campaign to discredit critics and blunt the work of . . . [the] national commission exploring the human cost of legalized wagering'.[256] Apparently, this was a 'carefully crafted effort—backed by the . . . casinos and other powerful Las Vegas interests . . .'.[257]

CONCLUSION

According to Tom Grey, the Executive Director of the NCALG (1999),

> The NGISC report will act like the Surgeon General's 1964 report on smoking and health—a wake-up call for America on the dangers of gambling. This report makes it very clear that gambling is not just another form of recreation—it is a very addictive and destructive activity. In fact, the hazards of gambling are so severe that the

commission called on schools from elementary levels through college to wake-up and warn students 'of the dangers of gambling'. In short, gambling is the next tobacco.[258]

Owing to costs created by new addicted gamblers, bankruptcies, and crime once gambling is legalized, some have argued that gambling establishments should be held liable for the costs they place on society.[259] Legal experts have suggested that there might be a lot of money made by suing the entities that get people addicted to gambling.[260] This trend is evidenced by the tobacco mega-lawsuits that have reached into the billions of dollars.[261] Upon close inspection, there are many parallels in the behavior of the tobacco industry *vis-à-vis* the gambling industry. These similarities are evidenced in similar tactics involving political contributions and lobbying efforts, as well as industry-sponsored studies attempting to obfuscate, or even negate, legitimate research. Furthermore, the marketing techniques of the gambling industry largely parallel those of the tobacco industry—which can be visualized when the Joe Camel of the 1990s becomes the Joe Casino of the 21st century.[262] As one commentator rhetorically quizzed the public: 'If you thought Joe Camel was bad, what would you think about an industry that entices kids to play slot machines?'.[263]

Considering that teenagers during the 1990s were already evidencing double the pathological and problem gambling rate of the adult population, the problem of addicted gamblers and the associated cost factors are projected to continue to increase in the future as more legalized gambling activities spread to new jurisdictions. Accordingly, the states would be well advised to calculate their socio-economic costs involving gambling using calculation methods comparable to the costs involving tobacco. According to the NGISC *Executive Summary*, 'it is conceivable that someday gambling enterprises may be franchised and, at least in parts of the country, become as common as fast food outlets are today'.[264] Therefore, with market saturation via legalized gambling a definite possibility whereby portions of the country could parallel the saturated effects of a market such as the Mississippi Gulf Coast, Nevada, or Atlantic City, states will need to project their costs into the future—which means billions of dollars paralleling the tobacco settlements.

Acknowledgements

To conform with this *Journal's* format, the style of these citations was changed. These citations originally conformed with *A Uniform System of Citation*, published by the Columbia Law Review Association, the Harvard Law Review Association, the *University of Pennsylvania Law Review*, and the *Yale Law Journal*. Tamer Tullgren and Marius Andreason provided valuable assistance in updating, editing, and cite-checking this article.

NOTES

1. Gambling on the future. *The Economist*, 26 June 1999, pp. 27, 28 (hereinafter Future, *Economist*).
2. Associated Press (1997, p. M9) (hereinafter *New vice*). For the official designation of 'pathological gambling' see American Psychiatric Association (1994) ('pathological gambling').
3. Berns (1996).
4. *Ibid.*
5. *New vice*, supra note 2, p. M9.
6. *Ibid.* Some editions of this Associated Press report stated that the profit margin for the gambling industry was '$500-billion-a-year', but this was an obvious typographical error, because the 'gross revenues' in 1997 were approximately $50 billion.
7. See, e.g., Novak (1998, p. 58) (hereinafter Novak).
8. Address by Tom Grey, Executive Director, NCALG (1999) (hereinafter Tom Grey Speech).
9. National Gambling Impact Study Commission, Executive Summary 30, rec. 3–6 (June 1999) (NGISC, 1999a; hereinafter NGISC Exec. Summary).
10. Tom Grey Speech, supra note 8.
11. See Padgett (1999) (hereinafter Padgett) and Dagan and White (2000) (hereinafter Dagan and White).
12. See Dagan and White, supra note 11, p. 354 and Motley and Kearse (1999), p. 46 (hereinafter *Secrets*).
13. Gross (1998, pp. 203, 205) (hereinafter Gross).
14. Public Law No. 104-169, 104th Congress, 1st Session (signed into law 3 August 1996).
15. *Ibid.* §§ 3(a)-(b)(1), 4(b).
16. Berns (1996, p. D2). See generally, Regulation of Tobacco Products: Hearings before the Subcommittee on Health and the Environment of the House Committee on Energy and Commerce, 103rd Congress, 2nd Session (1994).
17. Hamilton and Springen (1998, p. 12).
18. *Ibid.*
19. *Ibid.*
20. After tobacco, what's next? Perhaps your vice will be targeted. *Las Vegas Review Journal*, 25 May 1998 (www.lvrj.com/lvrjhome/1998/May-25-1998).
21. For an introduction to these issues, see Kindt (1995c), reprinted in *National Gambling Impact and Policy Commission Act: Hearing on H.R. 497 before the House Committee on the Judiciary*, 104th Congress, 1st Session 528 (29 September

1995); Program in Arms Control, Disarmament, and International Security, University of Illinois (1996).
22. Paul Samuelson won the Nobel Prize in Economics in 1970.
23. Samuelson (1976). Significantly, by the mid-1990s, apparently more than half of gamblers (51%) were gambling for money, while only 34% (according to one survey) were gambling for entertainment. Thus, Samuelson's observation would apply to much of gambling, but not all of it. See footnote 178, *infra* and accompanying text.
24. Van Der Slik (1990, p. 30). This particular article was printed in a publication directed toward employees of the state of Illinois. Illinois is a leading state developing different legalized gambling venues.
25. See, e.g., Statement of Professor John Warren Kindt (1998) (hereinafter US and International Costs).
26. *Ibid.*
27. *Ibid.*
28. *Ibid.*
29. *Ibid.*
30. Gambling: socio-economic impacts and public policy. *The Wilson Quarterly*, Autumn 1998, p. 141.
31. When the wheels won't stop. *The Economist*, December 1997, p. 22 (hereinafter Stop, *Economist*). For the specific analysis financed by the gambling industry, see Division on Addictions, Harvard Medical School, *Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-Analysis* (Shaffer *et al.*, 1997) (hereinafter Harvard Addictions Meta-analysis); Press Release of Harvard Division on Addictions (1997) (From 0.84% in 1993 'the prevalence rate for 1994–1997 grew to 1.29% of the adult population') (hereinafter Harvard Division on Addictions Press Release).
32. Stop, *Economist*, supra note 31, p. 22.
33. Drinan (1999, p. 17) (hereinafter Drinan).
34. Gambling with gaming. *First Things: Journal of Religion and Public Life*, August 1999, p. 87.
35. Gross, supra note 13, p. 204.
36. *Ibid.*
37. Ferrell and Gold (1998, pp. A1, A24) (hereinafter *Casino Industry Fights*).
38. Gross, supra note 13, p. 206.
39. NGISC Exec. Summary, supra note 9, p. 32, recommendation 3-17. For a classic article on the revolving door from gambling regulator to gambling industry employee, see Pulley (1998, p. A1).
40. *Casino Industry Fights*, supra note 37, pp. A1, A24.
41. Future, *Economist*, supra note 1, p. 28.
42. *Ibid.*
43. *Casino Industry Fights*, supra note 37, pp. A1, A24.
44. Dyer (1998, p. 1555) (hereinafter Dyer).
45. Cohen (1996, p. 488).
46. Dyer, supra note 44, p. 1555.
47. *Ibid.*
48. *Ibid.*
49. *Secrets*, supra note 12, p. 46. The Council for Tobacco Research was the focus of a federal investigation which gained new impetus in 1997. Kelder and Daynard (1997, pp. 63, 82) (hereinafter Kelder and Daynard).
50. *Casino Industry Fights*, supra note 37, pp. A1, A24.
51. Hanson and Kysar (1999, pp. 1422, 1491) (hereinafter *Behavioralism*). For an analysis of comparable gambling industry tactics, see Wheeler (1999, pp. A17–A18) (hereinafter *Research Financed by Industry*).
52. *Secrets*, supra note 12, p. 46.
53. *Ibid.*
54. For a classic article, see *Casino Industry Fights*, supra note 37, pp. A1, A24.
55. The National Impact of Casino Gambling Proliferation: Hearing before the House Committee on Small Business, 103rd Congress, 2nd Session 8 (1994) (testimony of Economics Professor Earl Grinols, University of Illinois) (hereinafter *Congressional Gambling Hearing 1994*).
56. *Ibid.*
57. *Ibid.*
58. Florida Office of the Governor (1994). See also Florida Department of Law Enforcement (1994) and Florida Department of Commerce (1994).
59. *World Book Encyclopedia* (1994, pp. 391, 398-400).
60. *Ibid.*
61. Keating (1996, p. 142).
62. *Ibid*, pp. 142–149.
63. Miller and Schwartz (1999, pp. 124, 125)
64. Future, *Economist*, supra note 1, p. 27.
65. *Ibid.*
66. Drinan, supra note 33, p. 17.
67. Future, *Economist*, *supra* note 1, p. 27.
68. Rolling the dice. *American Enterprise*, July 1999, p. 17.
69. Drinan, supra note 33, p. 17.
70. Harvard Addictions Meta-analysis, supra note 31; Harvard Division on Addictions Press Release, supra note 31.
71. Campbell and Lester (1999, p. 126) (hereinafter Campbell and Lester).
72. Gross, supra note 13, p. 203. For an analysis of the extremely sophisticated tracking of frequent gamblers, see Binkley (2000, p. A1) (hereinafter Binkley).
73. Gross, supra note 13, p. 203.
74. *Ibid.*
75. *Ibid.*
76. *Ibid.*
77. NGISC Exec. Summary, supra note 9, pp. 4–5.
78. Gross, supra note 13, p. 205.
79. *Ibid.*
80. See, *ibid.*, pp. 205–206.
81. *See* Lesieur (1998, pp. 153, 154) (hereinafter *Costs and Treatment*).
82. *Ibid.* The 'studies show that the prevalence of problem and pathological gambling has increased

in states where the *availability* of gambling has increased as well'. *Ibid.* (emphasis added). For a comparison with Australia, a country with the most gambling venues and concomitant extensive socio-economic costs, see Australian Productivity Commission (1999).

83. Gross, supra note 13, p. 210.
84. Future, *Economist*, supra note 1, p. 27.
85. See Campbell and Lester, supra note 71, p. 126.
86. *Costs and treatment*, supra note 81, p. 158.
87. *Ibid.*, p. 156.
88. *Ibid.*, p. 158.
89. *Ibid.*
90. *Ibid.*, pp. 160–162.
91. *Ibid.*, p. 159; Stewart and Brown (1988, p. 284).
92. See generally, Rabin and Sugarman (1993) (hereinafter Rabin and Sugarman).
93. Medical Care Recovery Act, 42 USC § 2651 *et seq.*; Medicare Secondary Payment Provisions of the Social Security Act, 42 USC § 1395y.
94. 18 USC § 1961 *et seq.* For the classic federal RICO case, see US v. Philip Morris Inc., 2000 US Dist. LEXIS 14211; 2000 Daily Journal DAR 10757 (Civil Action No. 99-2496 (GK)) (D.C. Cir. 28 September 2000).
95. For some in-depth discussions of the legal theories supporting states' lawsuits against the firearms industry, see Kopel (2000, p. 1213) (hereinafter Kopel); Vernick and Teret (2000, p. 1193).
96. For a discussion of the theory of liability based on nuisance in tort law, see Note (2000, p. 1521) (hereinafter *Nuisance Abatement*). For tables comparing the comparative dangers of guns and cars, see Kopel, supra note 95, pp. 1220–1221.
97. For an example of the conflict between the US Government and firearms manufacturers, see Butterfield and Lacey (2000, p. A1). See also *Nuisance Abatement*, supra note 96, p. 1521. For a copy of one firearms/government agreement, see www.smith-wesson.com/misc/agreement.html.
98. Rabin and Sugarman, *supra* note 92, p. 110.
99. *Ibid.*, p. 111.
100. 391 F.2d 97 (5th Cir. 1968), rev'd, 409 F.2d 1166 (5th Cir. 1969). For an overview of the interface between culture and the government/public policies involving the tobacco industry, see Rabin and Sugarman, supra note 92. See generally Kluger (1996) (hereinafter Kluger).
101. For a historical discussion of these cases, see Schemmel (1994, p. 657, 665–666). See also Symposium (1999, p. 693) (hereinafter *Torts and Tobacco*). For an interesting discussion suggesting that moral condemnation should occur via democratic deliberation in the political process instead of via tort litigation, see Nagareda (1998, p. 1121).
102. 391 F.2d 99, 100–101. For marketing of gambling opportunities, see Binkley, supra note 72, p. A1.
103. 391 F.2d 99, 100–101.
104. Green v. American Tobacco Co., 409 F.2d 1166 (5th Cir. 1969) *rev'g* 391 F.2d 97 (5th Cir. 1968). Since this case, the alleged/proven health hazards associated with tobacco usage have been documented in such tomes as *Ashes To Ashes*. This book gives a detailed account of the tobacco industry and the effects of smoking. Nearly a quarter of all Americans over 18 are smokers (*i.e.*, 50 million people). Kluger, supra note 100, at xii. In Asia, Africa and Eastern Europe, the tobacco industry was growing during the 1990s owing to advertisements portraying smokers as wealthy and sophisticated. *Ibid.* The tobacco industry was portrayed as reassuring its customers, disarming its enemies, befriending decision-makers, and minimizing government regulation in its business. *Ibid.*, p. xvii. Of all smokers, 90% apparently started before the age of 20. *Ibid*, p. xviii. Cigarette smoke was cited as causing 'deeply conditioned behavior and a corrosive effect on human tissue'. *Ibid.*
105. See Cipollone v. Liggett Group, Inc., 593 F.Supp. 1146 (D.N.J. 1984), *modified* 789 F.2d 181 (3d Cir. 1986). For historical/societal context, see generally Dagan and White supra note 11; Vandall (1991, p. 405) (hereinafter *Costs of Smoking*).
106. 499 US 935 (1991), *aff'd in part, rev'd in part*, 505 US 504 (1992).
107. 505 US 504, 524.
108. *Ibid.* p. 504.
109. For more analysis, see Gangarosa *et al.* (1994, pp. 81, 130).
110. *Ibid.* For background context, see *Smith v. R.J. Reynolds*, 9.4 Tobacco Prods. Litigation Rep., 2.105–2.106 (N.J. Superior Ct. App. Div. 1993) (hereinafter Litigation Rep.).
111. See Vandall (1998, pp. 473, 475) (hereinafter Vandall); Litigation Rep., supra note 110, 2.106 ($3–4 million in costs).
112. Vandall, supra note 111, p. 475 n.14. See generally, Townsley and Hanks (1988, p. 275) (one lawyer for the tobacco industry puffing that instead of making the tobacco companies spend all their money they would make 'that other son-of-bitch spend all of his').
113. Vandall, supra note 111, p. 475 n.15.
114. Litigation Rep., supra note 110, 2.105.
115. 870 F.Supp. 1425 (E.D. La. 1994); *rev'd and remanded* 84 F.3d 734 (5th Cir. 1996). An interesting parallel case was *Broin v. Philip Morris*, 641 So.2d 888 (Fla. 1994) (class action by nonsmoking flight attendants).
116. 870 F.Supp. 1425, *et seq.* (E.D. La. 1994).
117. *Ibid.*, p. 1430. See Vandall, supra note 111, p. 475 n.19. In 2000, Dr. Scott Tomar at the Center for Disease Control and Prevention reported a new study linking half of the nationwide cases of severe gum disease to cigarette smoking. Associated Press (2000b, p. A3).
118. 870 F.Supp., pp. 1425, 1430; see Vandall, supra note 111, p. 475 n.19.
119. Kelder and Daynard, supra note 49, p. 72.
120. Castano v. American Tobacco Co., 160 F.R.D. 544 (E.D. La. 1995), *rev'd*, 84 F.3d 734, 751–752 (5th Cir. 1996).

121. For an excellent summary of these cases, see Kelder and Daynard, supra note 49, p. 73.
122. 750 So.2d 781, 2000 Fla. App. LEXIS 1716, 25 Fla L. Weekly D 477 (Fla. Dist. Ct. App. 3d Dist. 2000); *see* Engle v. R.J. Reynolds, 11.1 Tobacco Prods. Litigation Rep. 3.1 (1996).
123. Connor (2000).
124. *Ibid.* See also Geyelin and Fairclough (2000, p. A1); Lavelle and Cannon (2000, p. 26).
125. Cohen (2000a, p. 44).
126. *Ibid.*
127. Fairclough and Geyelin (2000, p. A3).
128. *Ibid.*
129. Loney (2000).
130. *Ibid.*
131. Pulley (1997, p. A1).
132. See, e.g., Simurda (1994, pp. 36, 38) ('Eadington, by the way, makes money off the industry running training sessions for casino managers and sponsoring an international gambling conference that draws from industry and academia'.)
133. *S.704—The Gambling Impact Study Commission, Hearing before the Senate Comm. on Governmental Affairs*, 104th Cong., 1st Sess., 156-61 (testimony and prepared statement of William Eadington, arguing against the establishment of the Nat'l Gambling Impact Study Comm'n) [hereinafter *Hearing before Governmental Affairs 1995*]. Even so, the National Gambling Impact Study Commission was signed into law 3 August 1996. Public Law No. 104–169, 104th Congress, 1st Session (signed into law 3 August 1996).
134. During at least one conference's panel discussion, William Eadington of the University of Nevada at Reno declined to estimate the socio-economic costs associated with pathological gamblers. When challenged by Tom Grey, the Executive Director of the NCALG, William Eadington refused to give any estimates or numbers. Panel of the 'Impact of Legalized Gambling on Historic Communities', 50th National Preservation Conference, National Trust for Historic Preservation, Chicago, IL, 18 October 1996 (hereinafter 50th Conf.). Tom Grey was incredulous that William Eadington and the University of Nevada had been studying gambling over 20 years and yet Eadington 'could not even estimate the cost of a pathological gambler'. *Ibid.* (exchange between William Eadington, Dir., Inst. For the Study of Gambling and Commercial Gaming, Univ. Nev.-Reno, and Tom Grey, Exec. Dir., Natl. Coalition Against Legalized Gambling).
    In another example, when William Eadington was questioned during a panel discussion at a 1999 conference, he again declined to admit that there were any direct or indirect costs caused by pathological and problem gamblers. Panel Discussion, Conf. on 'Betting on the Future: Taking Gaming and the Law into the 21st Century', Benjamin N. Cardozo School of Law, 15–16 November 1999.
135. NGISC (1999b, chapter 7) (hereinafter NGISC Final Report).
136. Some of the first cost 'summaries' with citations may be found at *Congressional Gambling Hearing 1994*, supra note 55, at 77, *et seq.* (statement of Prof. John W. Kindt) (summarizing studies between $13000 and $52000 per pathological gambler in 1994). With regard to 1.5 million new pathological gamblers between 1994–1997, the costs would be from $19.5 billion to $78 billion before adjusting to current dollars. Public Memorandum, 'Harvard Study', Prof. William Thompson, UNLV, Dec. 6, 1997. Using an estimated population base of 200 million in 1997, Prof. Thompson calculated 2.6 million total pathological gamblers at a 'low' cost of $9400 per year equals $24 billion per year. Adjusted for a population rate of the U.S. Bureau of the Census at 268 million, the numbers are 3.5 million total pathological gamblers at $9400 per year equals $33 billion per year. 'Now actually the $9400 figure is a low one; I have not seen a lower one', according to Professor Thompson. *Ibid.* '[A]pply Thompson's ... numbers to the Harvard University estimate of the entire number of ... [pathological] gamblers in the United States, that's a $40 billion price tag, more than double the $16.8 billion in taxes ... from legalized gambling'. Nesbitt (1998, pp. A1, A4). By comparison, Harvard Division on Addictions reports 4.4 million total pathological gamblers and at Thompson's figure of $9400 per year, this equals $41 billion. Harvard Addictions Meta-Analysis, supra note 31, at 51, Table 16. Alcohol and Drug Abuse Administration, Maryland Department of Health and Mental Hygiene, *Task Force on Gambling Addiction in Maryland* pp. 59–61 (Valerie C. Lorenz & Robert M. Politzer, Co-chairs, 1990). '[A]t an average cost of $30000, pathological gambling cost society about $80 billion in 1998'. *Ibid.* at 59. In 2000 dollars, the average cost would be approximately $40000 with total U.S. socio-economic costs of $107 billion. Bur. Labor Statistics, U.S. Dept. Labor 2000.
137. American Medical Association (1994).
138. See, e.g., Gold (1998, p. A1) (hereinafter Gold); *Casino Industry Fights*, supra note 37, p. A1.
139. 'Measuring the Costs of Pathological Gambling', Address by Prof. Henry R. Lesieur, Illinois State University, at the Nationall Conference on Gambling Behavior, National Council on Problem Gambling, Chicago, IL, 3–5 September 1996 (hereinafter 'Measuring the Costs').
140. *Ibid.*
141. Vandall, supra note 111, p. 478. See generally *Torts and Tobacco*, supra note 101.
142. Vandall, supra note 111, p. 479.
143. Moore v. American Tobacco, 9.2 Tobacco Prods. Litigation Rep. 3.45–3.46 (Miss Chan. Ct. 1994) (suit in equity before a judge without a jury, claiming restitution for unjust enrichment). See generally, *Torts and Tobacco*, supra note 101; Vandall, supra note 111, p. 478. Mississippi's complaint in the case was drafted by a law firm

specializing in asbestos litigation: Ness, Motley, Loadholt, Richardson & Poole of Charleston, South Carolina.

144. Apparently bowing to the political clout of the tobacco companies, Governor Kirk Fordice of Mississippi brought a separate lawsuit to negate Attorney General Moore's suit by claiming that Moore needed gubernatorial permission before filing his case, but Moore persisted and eventually settled Mississippi's claims for $3.2 billion. See Holland (1997, p. A2). For this historical discussion, see Vandall, supra note 111, p. 480.
145. For an excellent summary of cases, see Kelder and Daynard, supra note 49, pp. 73–75.
146. This theory of litigation was refined by several attorneys: Susan Nial of Barnwell, South Carolina, as well as Richard Scruggs and Steve Bozeman of Pascogoula, Mississippi. Other significant contributors were Dr Ray Gangarosa and Northeastern University Law Professor Richard Daynard.
147. Gangarosa *et al.*, supra note 109, p. 85 n.19.
148. *See ibid.* p. 85.
149. Florida v. American Tobacco, 10.1 Tobacco Prods. Litigation Rep. 3.1–3.5 (Florida Circuit Court, 1995).
150. Florida State Ann. §409.910(1).
151. *Ibid.* (emphasis added).
152. *Ibid.* (as amended 1998 Florida Laws c. 98–411, §3); Rhee (1997, p. A1). See also Vandall, supra note 111, pp. 480–481.
153. See, e.g., Novak, supra note 7, p. 58.
154. American Psychiatric Association (1994) ('pathological gambling').
155. See endnotes 51–54, 103–140 infra and accompanying text.
156. Hodge (2000) (hereinafter Hodge). The first significant article on pathological gambling and problem gambling to be printed in the gambling industry's trade magazine, *International Gaming and Wagering Business* was not published until 1996. Buntain (1996, p. 1) (focusing on pathological gambling as it affected casino employees) (hereinafter *Problem*).
157. Turner (1995, p. 1) (citing article in the *Union-News* (Springfield, Massachussets), 10 May 1995) (emphasis added) (hereinafter Turner).
158. Tofani (1998, p. A1) (hereinafter *Companies bet*).
159. The NCRG's parent group is the Gaming Entertainment Research and Education Foundation. See, e.g., Hodge, supra note 156.
160. Alm (1996).
161. Gaming Association acts as clearinghouse, *Reno Gazette-Journal* (Reno, Nevada), 27 October 1996, p. B5 (emphasis added). The NCRG 'is the first national organization to serve as a clearinghouse for information concerning problem and underage gambling'. Ruud (1996, p. 3) (apparently from a press release of the National Center for Responsible Gaming) (hereinafter Ruud). It was reported that the NCRG's Advisory Board 'will have *control over the research agenda* and *findings*'. Ruud, infra, p. 3 (emphasis added).
162. *Casino Industry Fights*, supra note 37, p. A1 (emphasis added).
163. *Ibid.*; *see Companies bet*, supra note 158.
164. Harvard Addictions Meta-analysis, supra note 31, Appendix 2.
165. For criticisms of Howard Shaffer's association with the gambling industry, see, e.g., *Casino Industry Fights*, supra note 37, p. A1 (a classic series in the *Los Angeles Times*); *Companies bet*, supra note 158; *Research Financed by Industry*, supra note 51, p. A17. Young (2000) (hereinafter Young).
166. See, e.g., US and International Costs, supra note 25.
167. Speaker's Question and Answer Session with Assoc. Professor Howard Shaffer, 'Understanding Gambling and Its Potential Health Consequences', Medical Center, University of Illinois, Chicago, 4 May 2000 (registration through the National Center for Responsible Gaming).
168. See, e.g., Letter from University of Illinois Research Associate, to Associate Professor Howard Shaffer, 10 May 2000 (requesting baseline numbers); Letter from Associate Professor Howard Shaffer to University of Illinois Research Associate, 31 May 2000 (stating uncertainty and declining to provide the numbers).
169. *Casino Industry Fights*, supra note 37, p. A1 (emphasis added).
170. See generally, *ibid.*
171. Young, supra note 165.
172. Associated Press (1998, p. 16).
173. *Ibid.*
174. Hodge, supra note 156.
175. Simpson (1998, pp. 1–2).
176. Mindsort (1996, p. 15) (emphasis added). See Conte (1998) (discussing the Colorado lottery's Mindsort marketing and other advertising concerns involving gambling).
177. Novak and Schmid (1997, pp. 1, 24–25).
178. See Mississippi State University (1995) Gambling Group, Social Science Research Center, National Gambling Survey, summarized in Division on Addictions, Harvard Medical School, *The Wager*, 17 March 1998.
179. See, e.g., 'Measuring the Costs', supra note 139, Table. See generally, Gosker (1999, p. 185).
180. Gwynne (1997, pp. 68, 69) (emphasis added).
181. Young, supra note 165.
182. *Ibid.*
183. Brecher (1972, pp. 226–227).
184. Vandall, supra note 111, pp. 473, 477. See generally, Kluger, supra note 100.
185. For a discussion of the societal impacts of these types of cases, see Cohen (2000a, p. 22).
186. See, e.g., Levin (1987, pp. 195, 222–223).
187. See *Problem*, supra note 156, p. 40.
188. *Ibid.*, p. 41; see Sion (1996, p. A1). See also endnotes 131–137 supra and accompanying text.
189. *Problem*, supra note 156, p. 41.
190. See generally, Harvard Addictions Meta-analysis, supra note 31.

191. *Problem*, supra note 156, p. 40.
192. See, e.g., Gold (1998, p. A1).
193. *Problem*, supra note 156, p. 42.
194. See, e.g., note 58 supra and accompanying text (3 classic Florida Government reports). See also Kindt (1994a) (hereinafter *Economic Impacts*); Kindt (1994b), Kindt (1995a) (hereinafter *Gambling Subsidized*).
195. *Casino Industry Fights*, supra note 37, p. A1.
196. American Gaming Association (1996) (hereinafter 'AGA Guide'). Underage gambling regulations for Atlantic City provided for some more examples.
197. *Ibid.*
198. See, e.g., *ibid.* Appendices V, VII, VIII and IX.
199. *Costs of Smoking*, supra note 105, pp. 428–429. See also, Vandall, supra note 111, p. 477.
200. For a discussion of the differing methodologies, see NORC (1999, pp. 13–21). This NORC Report touted 'The eclipse of the South Oaks Gambling Screen' (SOGs) which was the majority standard utilized by practically all of the 152 previous studies, and the NORC proposed its own new standard based on the *Diagnostic and Statistical Manual of Mental Disorders* (4th edn. 1994) (i.e., DSM-IV). As of 2000, however, the NORC's proposed new standard was not being utilized in any other significant studies and the SOGs, as modified, was still retained and adhered to by the majority of academicians.
201. See, e.g., Siebel (1999).
202. Goodman (1994).
203. See generally, NGISC Final Report, supra note 135.
204. If curtailing tobacco usage is the government goal, some evidence suggests that increases in tobacco prices reduces underage consumers. See Chaloupka and Grossman (1996). As legalized gambling involves 'money as the product', it would be complex to draw parallel conclusions to Chaloupka and Grossman. The co-mingling of money as money raises interesting questions regarding traditional issues of 'price sensitivity'—although the 'administrative costs' and the 'consequential costs of illegal play' could be increased.
205. For an analysis of the interface between government policies which ignore consumer concerns and punish smokers, see O'Brien and Levy (2000, p. A35).
206. See generally, Kindt (1995b).
207. For detailed discussions of tax issues, see *Gambling Subsidized*, supra note 194.
208. See, e.g., *Casino Industry Fights*, supra note 37, pp. A1, A24; *Research Financed by Industry*, supra note 51, pp. A17–A18.
209. Vandall, supra note 111, p. 481.
210. It should be noted that although they are sometimes ill-defined, the large socio-economic costs associated with injuries resulting from firearms have prompted government entities, in particular, to initiate lawsuits against the firearms industry. See Kopel (2000); Vernick and Teret (2000). Vernick and Teret utilize the annual editions of *The World Almanac* to provide current statistics. By comparison, the literature establishing the socio-economic costs of legalized gambling activities has developed more baselines for cost estimates. See, e.g. *Economic Impacts*, supra note 194, Tables 1–3; U.S. and International Costs, supra note 25, Tables 1–14.
211. For a summary of the socio-economic costs as of 1994, see *Congressional Gambling Hearing 1994*, supra note 55, pp. 77, 79–80 and nn.9–12.
212. See, e.g., Politzer *et al.* (1985). The *Journal of Gambling Behavior* changed its name to the *Journal of Gambling Studies* beginning with the Spring 1990 issue.
213. Compare Editorial Page, *Journal of Gambling Behavior* (Winter 1989), with Editorial Page, *Journal of Gambling Studies* (Spring 1990).
214. Compare *Journal of Gambling Studies* (1996), with *ibid.* (1997).
215. Compare Statement of Valerie Lorenz, PhD, Executive Director, Compulsive Gambling Center, Baltimore, Maryland, to the Illinois Gaming Board, Chicago, Illinois, 3 May 2000, with Statement of Frank Fahrenkopf, AGA, to the Illinois Gaming Board, Chicago, Illinois, 3 May 2000.
216. Harvard Addictions Meta-analysis, supra note 31.
217. See generally, *ibid.*
218. Letter from Howard Shaffer, editor, *Journal of Gambling Studies* to Valerie Lorenz, PhD, Executive Director, Compulsive Gambling Center, Baltimore, Maryland, 14 August 2000 (a 'public' letter).
219. *Ibid.*
220. *Casino Industry Fights*, supra note 37, p. A1; Gold, supra note 138, p. A1.
221. See generally *Research Financed by Industry*, supra note 51, p. A17. See also, *Casino Industry Fights*, supra note 37, p. A1.
222. See, e.g., *Hearing before Governmental Affairs 1995*, supra note 133, pp. 156–157 (2 November 1995) (testimony of William Eadington). 'I have been involved in gambling-related research for the past 25 years'. *Ibid.* 'I have written over 50 scholarly studies, edited a number of books and scholarly journals on gambling . . . '. *Ibid.*
223. NORC (1999) (sections on costs of gambling, which have sparse footnotes/references). Based on the NORC Report, the NGISC Final Report devotes only two pages to the socio-economic costs associated with adult pathological and problem gambling. NGISC Final Report, supra note 135, pp. 4–13, 4–14.
224. *Ibid.*
225. *Ibid.*
226. Thompson *et al.* (1995, pp. 41–42).
227. See, e.g., *ibid.*
228. Berns (1998, p. D1).
229. See Vandall, supra note 111, p. 475, n. 14.
230. Racketeer Influenced and Corrupt Organizations Act, 18 USC § 1964(c).

231. Fed. R. Civ. P. 23(e). See generally, Fed. R. Civ. P. 23(a)–(f).
232. See Racketeer Influenced and Corrupt Organizations Act, 18 USC § 1964(c).
233. Stout (1999, p. A12) (hereinafter Stout). Of 46 states participating in the $206 billion tobacco settlement, only six were committed to reducing the public's use of tobacco. *Ibid.*
234. Associated Press (2000a, p. A8).
235. *Ibid.*
236. Compare *ibid.* with Stout, supra note 233, p. A12.
237. Hanson and Logue (1998, p. 1173).
238. *Ibid.*, p. 1174.
239. *Ibid.*
240. Address by Kelly (2000).
241. Games of Chance Act of 1948, Act No. 221 of 15 May 1948, § 1 *as amended* Puerto Rico Laws Ann., Title 15, § 77 (1972).
242. *Ibid.* § 8.
243. 478 US 328 (1986).
244. *Ibid.*, p. 330.
245. 527 US 173, 119 S.Ct. 1923 (1999).
246. Valley Broadcasting Co. v. US, 107 F.3d 1328 (D.C. Nev. 1997).
247. Brief *Amicus Curiae* for the American Gaming Association in Support of Petitioners, *Greater New Orleans Broadcasting Association, Inc. v. US*, US Supreme Court, October Term 1998, No. 98–387, p. 2.
248. *Ibid.*, p. 7.
249. See, e.g., *ibid.*, p. 8, n. 3, and 9.
250. *Ibid.*, p. 9.
251. *Ibid.*, p. v.
252. See, e.g., Palermo (1997) ('study by former Illinois State Police director Jeremy Margolis, paid for by the American Gaming Association').
253. Office of the Illinois Secretary of State (1997, pp. 5, 35) (e.g., Harrah's).
254. See, e.g., Office of the Illinois Secretary of State (1992, p. 44), (1994, p. 7), (1995, p. 8), and (1996, pp. 6, 38).
255. *Ibid.*
256. *Los Angeles Times* (special), as reprinted in, Casinos wage war on critics of gaming, *The Honolulu Advertiser*, 7 January 1999, p. A1; *Casino Industry Fights*, supra note 37, p. A1.
257. *Ibid.*
258. Press release of the NCALG (1999).
259. Future, *Economist*, supra note 1, p. 28.
260. *Ibid.*
261. Padgett, supra note 11, p. 34.
262. Edwards (2000).
263. *Ibid.* See also, *New vice*, supra note 2, p. M9.
264. NGISC Exec. Summary, supra note 9, p. 2.

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APPENDIX A

Table A1*. 1.5 Million People or 0.5% of U.S. Population Became *New Pathological* Gamblers in 3 Years from 1994–1997 (Division on Addictions, Harvard Medical School)

U.S. population (1994 → 1997)[1]	Increase in addicted gamblers[2] 0.84% (1994) → 1.29% (1997)	New addicted gamblers (1994 → 1997)	New costs to U.S. taxpayers per year** (1998)
262 million → 268 million	2.2 million[3] → 4.4 million[4] (Harvard Addictions)	1.5 million[5]	$22.5 billion per year[6] Comparison: U.S. drug abuse costs = $70 billion per year[7]

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A2*. 3.5 Million People or 2% of U.S. Population Became *New Problem* Gamblers in 3 Years from 1994–1997 (Division on Addictions, Harvard Medical School)

U.S. population (1994 → 1997)[1]	Increase in problem gamblers[2] 2.93% (1994) → 4.88% (1997)	New problem gamblers (1994 → 1997)	New costs to U.S. taxpayers per year** (1998)
262 million → 268 million	7.6 million[3] → 11 million[4] (Harvard Addictions)	3.5 million[5]	$17.5 billion per year[6] Comparison: U.S. drug abuse costs = $70 billion per year[7]

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A3*. 1.5 Million People or 0.5% of U.S. Population Became *New Pathological* Gamblers in 3 Years from 1994–1997 (Division on Addictions, Harvard Medical School)

U.S. population (1994–1997)[1]	Increase in pathological gamblers[2] (1994–1997) 0.84% → 1.29%	New pathological gamblers (Est.) (1994–1997)	Total new costs (Est.)** (1994–1997)
262 million → 268 million	2.2 million → 4.4 million	1.3 million → 2.2 million (Shaffer)[3]	Would not estimate?
		1.5 million (Kindt)[4]	$22.5 billion
		2.6 million → 3.5 million (Thompson)[5] (total path. & prob. ?)	$24 billion → $41 billion
		American Medical Association[6] (total 1994 adjusted to 1997 $) (socio-medical costs)	$40 billion → $61 billion
		Goodman 1998[7] (Total path. & prob. ?)	$40 billion → $50 billion
		Eadington 1996 → 1999[8]	Would not estimate?
		Lorenz[9] (1988 adjusted to 1997 $)	$40 billion → $88 billion
		Range of new socio-economic costs:	$24 billion → $88 billion
		Probable range (partial costs):	$40 billion → $50 billion

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A4*. Bankruptcy Costs—Costs of 1.5 Million *New Pathological* Gamblers[1] 1994–1997**

Socio-economic costs category	Average cost	Average cost (adjusted[2] to current $)**	Population creating new problem	Total new costs** (1998)
21% filed bankruptcies[3]	$113 640[5] (1995)			
> 20% (SMR research)[4]				
23% (Wis., Thompson)[6]				
28% (Quebec)[6]				
Costs per bankruptcy[7] (SMR) (WEFA: $33 308)[8]	$29 650 (1997)	$29 650		
Legal costs[8]	$505 → $1000 (1997)	$505 → $1000		
Court costs[8]	$418 → $837 (1997)	$418 → $837		
Admin. costs[9] (Thompson: 'too low')	$100 ? (1995)			
> 10% (projected to 15%) of total bankruptcy costs[10] of $40 billion per year[11] and 1.35 million filings[11] per year				

Pathological gamblers = 75% of total gambling/bankruptcy problem[12]
Problem gamblers = 25% of total gambling/bankruptcy problem[12]

Annual Range: ?
Total new bankruptcy costs due to pathological gamblers, 1994–1997: ?

Note: Usually ignored by bankruptcy attorneys, it was historically required that anyone filing for bankruptcy indicate money and assets lost because of gambling during the year, including 'dates, names, and places, and the amounts of money ... lost'. 11 U.S.C. Appendix, Bankruptcy Rules, Form 7, in I. Nelson Rose, Gambling and the Law 46 (1986).

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$\ \text{Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$\ \text{Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A5*. Bankruptcy Costs—Costs of 3.5 Million *New Problem* Gamblers[1] 1994–1997**

Socio-economic costs category	Average cost	Average cost (adjusted[2] to current $)**	Population creating new problem	Total new costs** (1998)
31% filed bankruptcies[3] (10% Kindt Conservative No.)[4]	$40 066 (1995)			
Costs per bankruptcy[5] (SMR) (WEFA: $33 308)[6]	$29 650 (1997)	$29 650		
Legal costs[6]	$505 → $1000 (1997)	$505 → $1000		
Court costs[7]	$418 → $837 (1997)	$418 → $837		
Admin. costs[7] (Thompson: 'too low')	$100 ? (1995)			
> 10% (projected to 15%) of total bankruptcy costs[9] of $40 billion per year[9] and 1.35 million filings[9] per year				

Pathological gamblers = 75% of total gambling/bankruptcy problem[10]
Problem gamblers = 25% of total gambling/bankruptcy problem[10]

Annual Range: ?
Total new bankruptcy costs due to pathological gamblers, 1994–1997: ?

Note: Usually ignored by bankruptcy attorneys, it was historically required that anyone filing for bankruptcy indicate money and assets lost because of gambling during the year, including 'dates, names, and places, and the amounts of money ... lost'. 11 U.S.C. Appendix, Bankruptcy Rules, Form 7, in I. Nelson Rose, Gambling and the Law 46 (1986).

* Footnotes at end of this Article.

** Numbers may easily be adjusted to current dollars by visiting the "Consumer Price Index (All Urban Consumers)" of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$\ \text{Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$\ \text{Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A6*. Crime Costs—Costs of 1.5 Million *New* Pathological Gamblers,[1] 1994–1997 (Fla. Gov's Off. Rep't & Division on Addictions, Harvard Medical School)**

Socio-economic costs category	Average cost (reported)	Average cost (adjusted[2] to current $)**	Population creating new problem	Total new costs**
Probation[3]	$1624			
Community control[3]	$858			
Incarceration[3] (75% Average)	$19 987			
Postsecondary release supervision[3]	$363			
Total	$22 832		1.5 million	$34.2 billion (1998)

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A7*. Crime Costs—Directly Because of Legalized Gambling, 1.5 Million People or 0.5% of U.S. Population Became *New Criminals* in 3 Years from 1994–1997 (Division on Addictions, Harvard Medical School)[1]**

Socio-economic costs category	Average cost (reported)	Average cost (adjusted[2] to current $)**	Cumulative new costs to U.S. taxpayers per year** (1998)
Crime[3] & regulatory costs[4] (adjusted to entire population of pathological gamblers per year)[5]	$8,000 → $10 000		$12 billion → $15 billion
Average amounts stolen are not included, since economics argue these amounts are mere transfers of wealth (but these amounts are still transfers from the business community to the criminal community)			$4 billion per year → $5 billion per year
			Comparison: total U.S. tax revenues from gambling = $17.1 billion[6]

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A8*. Crime Costs—Partial (Incarceration) Costs of 1.5 Million *New* Pathological Gamblers,[1] 1994–1997**

	Socio-economic costs category	Average cost (reported)	Average cost (adjusted[2] to current $)**	Population creating new problem[10]	Total new costs**
80%	Admit committing civil offenses[3]				
70%	Steal for money[4] 100% (Lorenz, 1992)[5] 61.5% admit illegal acts[3] 44% stole from employer[6] 37% stole money[3]				
33%	Wrote bad checks[3]				
28%	Delinquent in taxes[3]				
25%	Involved in auto accidents[3] 47.3% admit speeding to gamble[3]				
25%	Indicted[4] 25% (Lorenz, 1992)[5] 18% gambling related arrests[6]				
20%	Admit forgery[3]				
12.5%	Serve time[4] 13%→15% (Lorenz)[8] 20–30% pre-existing prisoners = pathological gamblers[9] (Looney, 1998)	$20 225[7]			

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A9*. Average Regulatory and Corrections Costs per Year Calculated as a Function of the Total Number of Pathological Gamblers**

Recurring costs per year		Average cost (reported)	Average cost (adjusted[1] to current $)**
Police/regulatory oversight costs			
State police[2]		$763→$1801	
Local police/fire[3]		$207	
Regulatory[4]		$1018→$1545	
Prosecutorial/incarceration costs			
District attorney[5]		$291→$418	
Costs to courts[6]		$191→$272	
White collar crime costs[7]		$4123 per year	
One-year fixed costs			
Intermediate incarceration[8]	$2100 per year		
New prisons (fixed cost)[9]	+$1092		
	$3192/Path. Gamb.		
Long-term incarceration costs		$2225 per year	
$18 000→$25 000 (Looney, 1997)[10]			
$25 000 (Lorenz, 1992)[11]			
$20 224.65 (Corrections Yearbook)[12]			
		$8818→$10 591	

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A10*. Number of U.S. Pathological Gamblers and Problem Gamblers (Division on Addictions, Harvard Medical School)[1]

Population base			1997 U.S. totals
U.S. 1997 268 million	1997 Pathological gamblers Adults (> 20 years) 2.2 million	Adolescents (10-19 years) 2.2 million	4.4 million
	1997 Problem gamblers Adults (> 20 years) 5.3 million	Adolescents (10-19 years) 5.7 million	11 million
	1997 Combined P&P Adults (> 20 years) 7.5 million	Adolescents (10-19 years) 7.9 million	15.4 million
	Total:	Range of estimates: Central estimate:	11.2→23 million 17.1 million

* Footnotes at end of this article.

Table A11. Since 1991 Legalized Gambling has Destabilized the 'Readiness' of U.S. Military Personnel by a 66% Increase in Pathological Gambling[1]

Number of U.S military personnel[2]	0.5→1.35% increase in pathological gamblers 1994–1997				2→5.6% increase in problem gamblers			
	2% (1991)[1]	Straight 0.5% increase[3] 1994–1997	Proportional increase[4] 1994–1997	Total**	5.1% (1991)[1]	Straight 2% increase[6] 1994–1997	Proportional increase[7] 1994–1997	Total**
1.5 million	30 000	7500	20 250		78 000[5]	30 000	84 000	

All pathological and problem gamblers destabilize military 'readiness'.
Nota Bene: Since 1991, these problems have doubled.
** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A12*. Addictions Costs—Costs of 1.5 Million New Pathological Gamblers[1] 1994–1997 Insurance Industry**

	Socio-economic costs category	Average cost (reported)	Average cost (adjusted[2] to current $)**	Population creating new problem	Total new costs**
47%	Insurance fraud (33% of total ins. fraud)[3] 47% of male pathological gamblers 32% false claim/auto accident 21% stole/ins. co. paid 16% false claim (not fire/theft) 15% faked burglary/property theft 15% staged claim (not fire/theft) 11% engaged in/profited from arson 8% caused loss to insurance co. 8% created/staged accident	$65 468 (1987)			$6.6 billion[3,4] (Est. 1997)
52%	Surrendered policies[3] Health Costs Costs of Suicides	$13 200 (1987)			$13.2 billion[3] (Est. 1997)

* Footnotes at end of this article.
** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A13*. Addictions Costs—Costs of 1.5 Million New Pathological Gamblers[1] 1994–1997**

Socio-economic costs category		Average cost	Average cost (adjusted[2] to current $)**	Population creating new problem	Total new costs**
44%	Steal from employer[3]				
34%	Fired from or quit work[3] Ave. wage $33 410 (Looney)[4] Ave. wage $35 000 (Minn. Rpt.)[5]				
26%	Divorced or separated[3] 59% considered separating[6] 26% Divorced or Separated[6] 17% Divorced[7] 10% Separated[7]				

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Table A14*. Addictions Costs—Costs of 1.5 Million New Pathological Gamblers,[1] 1994–1997**

Socio-economic cost category		Suicides			
		Average cost (reported)	Average cost (adjusted to current $)[2]**	Population creating new problem	Total new costs**
79%	Wanted to die[3]				
66%	Contemplated suicide[4] 67% (Looney)[3] 47.5% (Frank)[5]				
49%	Had definite plan to kill themselves[4]				
16%	Had attempted suicide[4] 25% (Thompson) 18% (Looney)[3] 13% (Frank, Lester, & Wexler)[5] 1.1% in general population[5]				
0.1%	Completed suicides				
	In debt to business	$75 262[10] $29 000[9] $28 315[4] $27 850[6]			
	Ave. wage: lost productivity	$23 000[9] $30 000[7] $33 410[4] $35 000[8]			

'Increase in legalized gambling ... may be leading to a significant increase in suicide rates among both residents of and visitors to communities where casinos are thriving....' Study links suicide increase to gambling, N.Y. Times, Dec. 16, 1997.[11]
http://webservl.startribune.com/cgi-bin/StOnLine/article?thisSlug = suic16 >

	Of all deaths[11]	
	Suicides by out-of-state visitors	
	Nongambling community	Gambling communities
	0.97%	4.28% (Las Vegas) 2.31% (Reno) 1.87% (Atlantic City)

* Footnotes at end of this article.

** Numbers may easily be adjusted to current dollars by visiting the 'Consumer Price Index (All Urban Consumers)' of the U.S. Bureau of Labor Statistics at http://stats.bls.gov/ and utilizing the following formula example:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000 \ (1983) \times \frac{166.6 \ (1999)}{99.6 \ (1983)} = \$6690763 \ (1999)$$

Consumer Price Index—All Urban Customers*

U.S. Bureau of Labor Statistics (http://stats.bls.gov/)

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Annual
1971	39.8	39.9	40.0	40.1	40.3	40.6	40.7	40.8	40.8	40.9	40.9	41.1	40.5
1972	41.1	41.3	41.4	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4	42.5	41.8
1973	42.6	42.9	43.3	43.6	43.9	44.2	44.3	45.1	45.2	45.6	45.9	46.2	44.4
1974	46.6	47.2	47.8	48.0	48.6	49.0	49.4	50.0	40.6	51.1	51.5	51.9	49.3
1975	52.1	52.5	52.7	52.9	53.2	53.6	54.2	54.3	54.6	54.9	55.3	55.5	53.8
1976	55.6	55.8	55.9	56.1	56.5	56.8	57.1	57.4	57.6	57.9	58.0	58.2	56.9
1977	58.5	59.1	59.5	60.0	60.3	60.7	61.0	61.2	61.4	61.6	61.9	62.1	60.6
1978	62.5	62.9	63.4	63.9	64.5	65.2	65.7	66.0	66.5	67.1	67.4	67.7	65.2
1979	68.3	69.1	69.8	70.6	71.5	72.3	73.1	73.8	74.6	75.2	75.9	76.7	72.6
1980	77.8	78.9	80.1	81.0	81.8	82.7	82.7	83.3	84.0	84.8	85.5	86.3	82.4
1981	87.0	87.9	88.5	89.1	89.8	90.6	91.6	92.3	93.2	93.4	93.7	94.0	90.0
1982	94.3	94.6	94.5	94.9	95.8	97.0	97.5	97.7	97.9	98.2	98.0	97.6	96.5
1983	97.8	97.9	97.9	98.6	99.2	99.5	99.9	100.2	100.7	101.0	101.2	101.3	99.6
1984	101.9	102.4	102.6	103.1	103.4	103.7	104.1	104.5	105.0	105.3	105.3	105.3	103.9
1985	105.5	106.0	106.4	106.9	107.3	107.6	107.8	108.0	108.3	108.7	109.0	109.3	107.6
1986	109.6	109.3	108.8	108.6	108.9	109.5	109.5	109.7	110.2	110.3	110.4	110.5	109.6
1987	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	113.6
1988	115.7	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	118.3
1989	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0	125.6	125.9	126.1	124.0
1990	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6	132.7	133.5	133.8	133.8	130.7
1991	134.6	134.8	135.0	135.2	135.6	136.0	136.2	136.6	137.2	137.4	137.8	137.9	136.2
1992	138.1	138.6	139.3	139.5	139.7	140.2	140.5	140.9	141.3	141.8	142.0	141.9	140.3
1993	142.6	143.1	143.6	144.0	144.2	144.4	144.4	144.8	145.1	145.7	145.8	145.8	144.5
1994	146.2	146.7	147.2	147.4	147.5	148.0	148.4	149.0	149.4	149.5	149.7	149.7	148.2
1995	150.3	150.9	151.4	151.9	152.2	152.5	152.5	152.9	153.2	153.7	153.6	153.5	152.4
1996	154.4	154.9	155.7	156.3	156.6	156.7	157.0	157.3	157.8	158.3	158.6	158.6	156.9
1997	159.1	159.6	160.0	160.2	160.1	160.3	160.5	160.8	161.2	161.6	161.5	161.3	160.5
1998	161.6	161.9	162.2	162.5	162.8	163.0	163.2	163.4	163.6	164.0	164.0	163.9	163.0
1999	164.3	164.5	165.0	166.2	166.2	166.2	166.7	167.1	167.9	168.2	168.3	168.3	166.6
2000	168.7	169.7	171.1	171.2	171.3	172.3	172.6	172.7					

* To update to current dollars the following formula example should be utilized:

$$\$ \text{ Former Year} \times \frac{\text{CPI Current Year}}{\text{CPI Former Year}} = \$ \text{ Current Year}$$

Example:

$$\$4000000\ (1983) \times \frac{166.6\ (1999)}{99.6\ (1983)} = \$6690763\ (1999)$$

Visit http://stats.bls.gov/ to update this table.

Footnotes for Table A1

1. U.S. Bur. Census, U.S. Dep't Com. (1997).
2. Div. on Addictions, Harvard Medical Sch., Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gamblers] for 1994–1997 grew to 1.29 percent of the adult population'.). Since the Harvard Addictions Meta-analysis did not include the calculations for essential elements, some reasonable estimates and conclusions consistent with the data need to be drawn.
3. Multiplying the prevalence percentage of 0.84% for 1994 with the yearly population number from the U.S. Bureau of the Census yields this baseline number of 'pathological gamblers' for 1994. Using the classic standard baseline of 0.77% established by the 1976 U.S. Commission on Gambling (which resulted in an estimated 1.1 million pathological gamblers in 1976), there would be a 0.52% increase in pathological gamblers from 1994 to 1997. U.S. Comm'n on the Rev. of a Nat'l Pol'y Toward Gambling, Gambling in America 73 (U.S. Gov't Printing Off. 1976) [hereinafter U.S. Comm'n on Gambling].
4. Without showing calculations, Table 16 of the Harvard Addictions Meta-analysis gives 4.4 million pathological gamblers in 1997, with a range between 2.9 and 5.8 million. Harvard Addictions Meta-analysis, supra note 2, at 51, Table 16.
5. Multiplying the prevalence percentage for 1997 with the yearly population number from the U.S. Bureau of the Census yields 3.5 million for an increase of 1.3 million new pathological gamblers. However, the Harvard Addictions Meta-analysis concludes that there were 4.4 million pathological gamblers in 1997, which would yield 1.3–2.2 million new pathological gamblers. Since the Harvard Addictions Meta-analysis did not include its calculations, 1.5 million new pathological gamblers is conservative. Harvard Addictions Meta-analysis, supra note 2, at 43, Table 13 & 51, Table 16.
6. Experts estimating just the 'partial' costs per year of a pathological gambler range from $10000 (Thompson, 1997) to over $60000 (Politzer, Better Gov't Assoc. Chi.; adjusted for inflation). A fairly conservative $15000 per year is utilized at this juncture. Since in 1998 the average salary was approximately $30000 per year and since by definition pathological gamblers lose their productivity, the cost of $15000 per year is quite reasonable. U.S. Bur. Labor Statistics, U.S. Dep't Labor (1997).
7. *Medical Marijuana Referenda in America: Hearing before the Subcomm. on Crime of the House Comm. on the Judiciary*, 105th Cong., 1st Sess. (Oct. 1, 1997) (Statement of General Barry R. McCaffrey, Dir., U.S. Off. of Nat'l Drug Control Policy).

Footnotes for Table A2

1. U.S. Bur. Census, U.S. Dep't Com. (1997).
2. Div. on Addictions, Harvard Medical Sch., Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gamblers] for 1994–1997 grew to 1.29 percent of the adult population'.). Since the Harvard Addictions Meta-analysis did not include the calculations for essential elements, some reasonable estimates and conclusions consistent with the data need to be drawn.
3. Multiplying the prevalence percentage of 2.93% for 1994 with the yearly population number from the U.S. Bureau of the Census yields this baseline number of 'problem gamblers' for 1994. Using the classic standard baseline of 2.33% established by the 1976 U.S. Commission on Gambling would yield a 2.55% increase in problem gamblers from 1994 to 1997. U.S. Comm'n on the Rev. of a Nat'l Pol'y Toward Gambling, Gambling in

America 73 (U.S. Gov't Printing Off. 1976) [hereinafter U.S. Comm'n on Gambling].

4. Without showing calculations, Table 16 of the Harvard Addictions Meta-analysis gives 11 million problem gamblers in 1997, with a range between 7.1 and 14.9 million. Harvard Addictions Meta-analysis, supra note 2, at 51, Table 16.
5. Multiplying the prevalence percentage for 1997 with the yearly population number from the U.S. Bureau of the Census yields 13 million for an increase of 5.4 million new problem gamblers. However, the Harvard Addictions Meta-analysis concludes that there were 11 million problem gamblers in 1997, which would yield 3.4–5.4 million new problem gamblers. Since the Harvard Addictions Meta-analysis did not include its calculations, 3.5 million new problem gamblers is conservative. Harvard Addictions Meta-analysis, supra note 2, at Tables 13, 16.
6. A socio-economic cost figure of $5000 per problem gambler per year is probably too conservative considering that the average problem gambler is earning well over the average 1997 annual salary of approximately $30000 per year which is further increased since most problem gamblers are super-achievers, Type-A personalities. For a costs table see, John W. Kindt, *The Economic Impacts of Legalized Gambling Activities*, 43 Drake L. Rev. 51, 90–91, Table 3 (1994).
7. *Medical Marijuana Referenda in America: Hearing before the Subcomm. on Crime of the House Comm. on the Judiciary*, 105th Cong., 1st Sess. (Oct. 1, 1997) (Statement of General Barry R. McCaffrey, Dir., U.S. Off. of Nat'l Drug Control Policy).

Footnotes for Table A3

1. U.S. Bur. Census, U.S. Dep't Com. (1997).
2. Div. Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; Press Release of Harvard Medical School, 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84% in 1993 'the prevalence rate for 1994–1997 grew to 1.29 percent of the adult population'.) [hereinafter Harvard Division on Addictions Press Release].
3. *Id.*
4. *The National Impact Of Casino Gambling Proliferation: Hearing before the House Comm. on Small Business*, 103d Cong., 2d Sess. (1994) (statement of Prof. John W. Kindt) ($13000–52000 per pathological gambler in 1994) [hereinafter *Congressional Gambling Hearing 1994*]. With regard to 1.5 million new pathological gamblers the costs would be $19.5–78 billion before adjusting to 1997 dollars.
5. Public Memorandum, 'Harvard Study', Prof. William Thompson, UNLV, Dec. 6, 1997. Using an estimated population base of 200 million, Prof. Thompson calculates 2.6 million total pathological gamblers at a 'low' cost of $9400 per year equals $24 billion per year. Adjusted for a population rate of the U.S. Bureau of the Census at 268 million, the numbers are 3.5 million total pathological gamblers at $9400 per year equals $33 billion per year. 'Now actually the $9400 figure is a low one; I have not seen a lower one', according to Professor Thompson. *Id.* '[A]pply Thompson's ... numbers to the Harvard University estimate of the entire number of ... [pathological] gamblers in the United States, that's a $40 billion price tag, more than double the $16.8 billion in taxes ... from legalized gambling'. Jim Nesbitt, *Costs of gambling might be economic as well as social*, Detroit Free Press, Apr. 5, 1998, at A1, A4 [hereinafter *Costs of gambling*]. By comparison, Harvard Division on Addictions reports 4.4 million total pathological gamblers and at Thompson's figure of $9400 per year, this equals $41 billion. Harvard Addictions Meta-analysis, supra note 2, at 51, Table 16.
6. Am. Medical Assoc., House of Delegates Resolution 430 (A-94) (1994).
7. *Costs of gambling*, supra note 5, at A4.
8. During at least one conference's panel discussion, William Eadington of the University of Nevada at Reno declined to estimate the socio-economic costs associated with pathological gamblers. When challenged by Tom Grey, the Executive Director of the National Coalition Against Legalized Gambling, Eadington refused to give any estimates or numbers.

Panel of the 'Impact of Legalized Gambling on Historic Communities', 50th Nat'l Preservation Conf., Nat'l Trust for Historic Preservation, Chicago, Ill., Oct. 18, 1996.
Tom Grey was incredulous that Eadington and the University of Nevada had been studying gambling over 20 years and yet Eadington 'could not even estimate the cost of a pathological gambler'. *Id.* (exchange between William Eadington, Dir., Inst. for the Study of Gambling and Commercial Gaming, Univ. Nev.-Reno, and Tom Grey, Exec. Dir., Nat'l Coalition Against Legalized Gambling).
In 1999 even after the conclusion of the 1999 National Gambling Impact Study Commission, Eadington was still declining to report any numbers involving social costs or to give any estimates. Question and Answer Panel Discussion with William Eadington, Conf. on 'Betting on the Future: Taking Gaming and the Law into the 21st Century', Benjamin N. Cardozo School of Law, Nov. 15–16, 1999 [hereinafter Cardozo Law School Conf., Panel Discussion].

9. Alcohol & Drug Abuse Admin., Md. Dep't Health & Mental Hygiene, Task Force on Gambling Addiction in Maryland 59–61 (Valerie C. Lorenz & Robert M. Politzer, Co-chairs 1990). '[A]t an average cost of $30000, pathological gambling cost society about $80 billion in 1988'. *Id.* at 59. In 1997 dollars, the average cost would be approximately $40000 with total U.S. socio-economic costs of $107 billion. Bur. Labor Statistics, U.S. Dep't Labor 1997 (for 1997 dollar estimates).

Footnotes for Table A4

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. 'Measuring the Costs of Pathological Gambling', Address by Prof. Henry Lesieur, Ill. St. U., at the Nat'l Conf. on Gambling Behav., Nat'l Coun. on Problem Gambling, Chi., Ill., Sept. 3–5, 1996. The sample group consists of pathological gamblers.
4. SMR Research Corp., The Personal Bankruptcy Crisis, 1997, 118 (1997) (commissioned by the banking/credit community, Am. Bankers Assoc.) [hereinafter Bankruptcy Crisis]; Business Wire, *New national study shows correlation between gambling growth and the significant rise in personal bankruptcies*, Business Wire Features, June 27, 1997 [hereinafter *Correlation between gambling growth and bankruptcies*]. The sample group consists of pathological gamblers.
5. These costs are passed along to consumers. Bankruptcy Crisis, supra note 4, at 118. The Gamblers Anonymous (G.A.) mean average lifetime debt was $215406 but since current activity is more relevant to the present analysis the G.A. mean average current debt of $113640 is utilized. See, *id.* The amounts given for 'problem gamblers' in the report (on page 119) should not be confused with the amounts for G.A. members which equate to *pathological gamblers*. *Id.* at 118–119.
6. *Id.* at 124.
7. These costs are passed along to consumers. See generally, *id.* at 116–130. See also *Correlation between gambling growth and bankruptcies*, supra note 4.
8. WEFA Group, The Financial Costs of Personal Bankruptcy, at 1, 15, 19 (Feb. 1998) [hereinafter Costs of Bankruptcy].
9. See Ricardo Gazel, Dan Rickman, & William N. Thompson, 'Casino Gambling As An Economic Development Tool: Export Activity-Import Substitution Or Business Cannibalization And Perverse Income Redistribution? the Evidence From Wisconsin', paper presented to the W. Regional Sci. Assoc., 35th Ann. Mt'g, Napa, Ca., Feb. 28, 1996 (background research raised the administrative cost issue of bankruptcies).
10. Bankruptcy Crisis, supra note 4, at 123–124.

11. *Correlation between gambling growth and bankruptcies*, supra note 4. Costs of Bankruptcy, supra note 8, at 19 (total costs $44.3 billion and 1.33 million total filings).
12. See Bankruptcy Crisis, supra note 4, at 123–124.

Footnotes for Table A5

1. The calculation of 2% of the U.S. population or 3.5 million new problem gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. To be extremely conservative, 10% is used instead of 31%.
4. SMR Research Corp., The Personal Bankruptcy Crisis, 1997, 119 (1997) (commissioned by the banking/credit community, Am. Bankers Assoc.) [hereinafter Bankruptcy Crisis]. Federal regulations require that bankruptcy cases must report the impact of gambling losses on the bankruptcy filing, but this requirement is often forgotten. However, SMR Research confirms a 1995 Minnesota study where 52% of bankruptcy filers claimed gambling losses, and the average total debt was $40066 which surpassed their average annual income of $35244 (but perhaps not all of this debt should be attributed to gambling). Professor Lesieur reported that at least 21% of pathological gamblers file for bankruptcy. This conclusion would be a reasonable conjecture when credit card debt (the second leading cause of bankruptcies) is factored into the analysis. This is also consistent with the casinos' reporting that 40–60% of the money wagered is not carried onto the premises and suggesting that ATMs and credit be readily supplied to players; for example, including credit card machines directly at the card tables as approved by New Jersey regulators in September of 1996. *Id.* at 127; Robyn Taylor Farets, *Cash advances*, Int'l Gaming & Wagering Bus., Sept. 1996, at S8 ('In fact, about 40% to 60% of the cash now wagered in a casino is not carried onto the property in customer wallets....'). SMR Research concluded in 1997 that legalized gambling: (1) was the fourth leading cause of bankruptcies, (2) was the fastest growing cause, (3) carried a 'hidden cost' per household of $408, and (4) carried a U.S. total cost of $40 billion per year. See generally, Bankruptcy Crisis, infra, at 116–130; Business Wire, *New national study shows correlation between gambling growth and the significant rise in personal bankruptcies*, Business Wire Features, June 26, 1997 [hereinafter *Correlation between gambling growth and bankruptcies*]. Another survey by the University of Minnesota Medical School in April 1996 found results which roughly paralleled the 1995 Minnesota study, but the 1996 survey does not appear to distinguish as specifically the results in categories differentiating between pathological and problem gamblers. *Id.* at 119.
5. See generally, Bankruptcy Crisis, supra note 4, at 116–130. See also *Correlation between gambling growth and bankruptcies*, supra note 4.
6. WEFA Group, The Financial Costs of Personal Bankruptcies, at 1, 15, 19 (Feb. 1998) [hereinafter Costs of Bankruptcy].
7. See Ricardo Gazel, Dan Rickman, & William N. Thompson, 'Casino Gambling As An Economic Development Tool: Export Activity-Import Substitution Or Business Cannibalization And Perverse Income Redistribution? the Evidence From Wisconsin', paper presented to the W. Regional Sci. Assoc., 35th Ann. Mt'g, Napa, Ca., Feb. 28, 1996 (background research raised the administrative cost issue of bankruptcies).
8. Bankruptcy Crisis, supra note 4, at 123–124.
9. *Correlation between gambling growth and bankruptcies*, supra note 4.
10. See Bankruptcy Crisis, supra note 4, at 123–124.

Footnotes for Table A6

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. Fla. Gov. Off., Casinos in Florida: An Analysis of the Economic and Social Impacts 72 (1994).

Footnotes for Table A7

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. According to the authoritative Compulsive Gambling Center in Baltimore, Maryland, virtually all pathological gamblers commit crimes (one Australian study concludes 70%), but only 12.5–15% are incarcerated. Most pathological gamblers commit *multiple* property-acquisition crimes. Therefore, *over* 1.5 million new crimes were committed from 1994 to 1997.
4. See detailed chart on 'Average Regulatory and Corrections Costs', infra. For the most authoritative report in this issue area, see Fla. Off. Gov., Casinos in Florida: An Analysis of the Economic and Social Impacts 67–76 (1994).
5. Obviously, every pathological gambler does not initially commit a property-acquisition crime in every year, but by definition, pathological gamblers will eventually engage in such crimes, although these crimes are often overlooked by family members and close associates. See, e.g., the citations in John W. Kindt, *Increased Crime and Legalizing Gambling Activities: The Impacts on the Socio-Economics of Business and Government*, 30 Crim. L. Bull. 538, 550–552 (1994).
6. Int'l Gaming & Wagering Bus. (Survey 1997).

Footnotes for Table A8

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. U.S. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. Alcohol & Drug Abuse Admin., Md. Dep't Health & Mental Hygiene, Task Force on Gambling Addiction in Maryland 61 (Valerie C. Lorenz & Robert M. Politzer, Co-chairs 1990) [hereinafter Maryland Report].
4. Australian Study reported at 10th Int'l Conf. on Gambling & Risk Taking, Montreal, Canada, May 31–June 4, 1997. For more detailed analyses, see, e.g., Henry Lesieur,

Compulsive Gambling: Documenting the Social and Economics Costs, Table 2, at 21 (1991), published in part as Henry Lesieur, *Compulsive Gambling*, Society, May–June 1992, at 42. See also Henry Lesieur & Kenneth Puig, *Insurance Problems and Pathological Gambling*, 3 J. Gambling Behav. 123 (1987).

5. According to the Compulsive Gambling Center, virtually all pathological gamblers commit crimes, but generally, 75% of pathological gamblers are not caught or the criminal charges are dropped. This latter situation is usually because pathological gamblers initially commit their crimes against family members or close associates. Interview with Dr. Valerie Lorenz, Exec. Dir., Compulsive Gambling Ctr., Inc., Baltimore, Md., Dec. 10, 1992 [hereinafter cited as Lorenz Interview]; Maryland Report, supra note 3, at 28. For general discussions of the interface between compulsive gambling and resultant criminal behavior, see Brown, *Pathological Gambling and Associated Patterns of Crime: Comparisons With Alcohol and Other Drug Addictions*, 3 J. Gambling Behav. 98 (1987); Henry R. Lesieur, *Gambling, Pathological Gambling, and Crime*, in The Handbook of Pathological Gambling (T. Galski ed. 1987). See generally J. Livingston, Compulsive Gamblers: Observations on Action and Abstinence (1974); Henry R. Lesieur, *Female Pathological Gamblers and Crime*, in Gambling Behavior and Problem Gambling 495 (1993) [hereinafter *Gamblers and Crime*]. See generally, John W. Kindt, *Increased Crime and Legalizing Gambling Operations: The Impact on the Socio-Economics of Business and Government*, 30 Crim. L. Bull. 538, 550–552 nn.61–69 (1994).
6. 'Measuring the Costs of Pathological Gambling', Address by Prof. Henry Lesieur, Ill. St. U., at the Nat'l Conf. on Gambling Behavior, Nat'l Coun. on Problem Gambling, Chicago, Ill., Sept. 3–5, 1996 [hereinafter cited as 'Measuring the Costs'].
7. Crim. Justice Inst., The Corrections Yearbook 1997, 223 (eds. Camile Graham Camp & George M. Camp 1997).
8. Lorenz Interview, supra note 5; John W. Kindt, *The Economic Impacts of Legalized Gambling Activities*, 43 Drake L. Rev. 51, 94 n.285 (1994) (referencing Dr. Valerie Lorenz, Compulsive Gambling Ctr.); see Maryland Report, supra note 3, at 28. 'Research on the connection between pathological gambling and crime is still in its infancy'. *Gamblers and Crime*, supra note 5, at 495.
9. N.J. Coun. on Compulsive Gambling, Legislative Guide For Responsible Gaming In Your State 2 (Jan. 25, 1997).
10. Of 1.5 million new pathological gamblers, this analysis reduces to 6.25% the lowest expert rate of those gamblers who serve time which is 12.5%. This extremely conservative estimate would indicate that 93750 new pathological gamblers served time between 1994 and 1997 (or an additional 31250 prisoners per year).

Footnotes for Table A9

1. Bur. Labor Statistics, U.S. Dep't Labor (1997).
2. To provide 'before' and 'after' estimates of the impact of pervasive legalized gambling activities, this range of costs was extrapolated from Illinois analyses which were subjected to in-depth academic and public scrutiny. See, e.g., Speech by Terrance W. Gainor, Dir. Ill. St. Police, at the Ann. IAODAPCA Luncheon, May 8, 1992, at 10 (for 'police services alone') [hereinafter cited as Dir. Ill. St. Police]; Chicago Crime Comm'n, *Analysis of Key Issues Involved in the Proposed Chicago Casino Gambling Project* 21 (1992). The range of projected increases to the budget of the Illinois state police was between $42 and 100 million, but since the Director frequently utilized the more cautious estimate of $100 million, this is the estimate utilized. Although delimited in budgetary terms, these estimates apparently parallel the $41–100 million increased costs calculated by interfacing 'the incidence of index crime and the subsequent cost to the criminal system to handle those crimes'. Ill. Crim. Just. Info. Authority, Casino Gambling and Crime in Chicago 46 (1992) [hereinafter cited as Crim. Just. Info.]. These cost estimates did not include increased costs for (1) regulation; (2) victimization impact; (3) prosecution of organized crime; (4) additional facilities for system workload; or (5) 'response to non-index crimes, such as DUI, fraud, extortion,

embezzlement, prostitution, and drug offenses'. Crim. Just. Info., infra, at 46 & 47. See also Ill. Crim. Just. Info. Authority, Riverboat Gambling and Crime in Illinois 2, 3 (1994) (referencing the $41–100 million in costs as specifically related to 'Chicago'). The lack of uniform categories of costs in many reports makes comparisons difficult.

Government policymakers frequently argue that the burden of proof should be on the legalized gambling interests to refute any cautious projections by state agencies – particularly law enforcement agencies. On the other hand, proponents of increased legalized gambling activities often argue that law enforcement bureaucracies tend to inflate the costs to the criminal justice system to increase their budgets. See generally, John W. Kindt, *Increased Crime and Legalizing Gambling Operations: The Impact on the Socio-Economics of Business and Government*, 30 Crim. L. Bull. 538, 539, nn.2–3, 546 n.42 (1994) [hereinafter *Increased Crime and Legalizing Gambling*]. See generally Ill. St. Police, Div. Crim. Investigation, Intelligence Bur., *How Casino Gambling Affects Law Enforcement* (Apr. 16, 1992) [hereinafter cited as Ill. St. Police Report]. The laundering of money by legalized gambling operations appears to be a common problem. During 1992, for example, 'Atlantic City's casinos ... [were] under investigation for laundering drug money'. Roeser, *Chicago Casino Plan Gambles City Future*, Wall St. J., Aug. 12, 1992, at A10 [hereinafter cited as Roeser]. Less than two years after being initiated, the Illinois State Police Director, Terrance Gainor, reported that investigations were 'being conducted into suspected laundering of illegal drug profits through the riverboats' in Illinois. Urbanek, *Probe Creating Fears for Riverboats' Image*, Daily Herald (Arlington Heights, Ill.), Nov. 21, 1992, § 1, at 4; *Laundering on Riverboats*, News-Sun (Waukegan, Ill.), Nov. 20, 1992, at 1.

For analyses by the Chicago Crime Commission opposing the introduction of land-based casino gambling to Chicago, see *Report of the Chicago Crime Commission on Organized Crime in Chicago* (J. Conlon, Pres. 1990). For analyses by the N.Y. Attorney General's office opposing the introduction of land-based casino gambling to New York State, see R. Abrams, *Report of Attorney General Robert Abrams in Opposition to Legalized Casino Gambling in New York State* (May 1981). For analyses of the impacts of land-based casino gambling on Atlantic City, New Jersey, see O'Brien & Flaherty, *Regulation of the Atlantic City Casino Industry and Attempts to Controls Its Infiltration by Organized Crime*, 16 Rutgers L.J. 721 (1985).

For examples of the parallel costs of pathological gambling activities and other medical treatment costs (such as for alcoholics), see Politzer, Morrow, & Leavey, *Report on the Societal Cost of Pathological Gambling and the Cost-Benefit/Effectiveness of Treatment* (5th Nat'l Conf. on Gambling and Risk Taking 1981) [hereinafter cited as Politzer, Morrow, & Leavey]. 'Studies demonstrate that there is a high degree of overlap among pathological gambling, alcoholism and drug addiction'. Lesieur, *Female Pathological Gamblers and Crime*, in Gambling Behavior and Problem Gambling 495, 497 (1993) [hereinafter cited as Gamblers and Crime].

3. To provide a 'before' and 'after' estimate, these local police and fire costs were extrapolated from the conservative estimates prepared by proponents themselves of a $2-billion casino complex for Chicago.

   See Chicago Gaming Commission, *Economic and Other Impacts of a Proposed Gaming, Entertainment and Hotel Facility* 236–241 (May 19, 1992) (report prepared by Deloitte & Touche, Chicago, Ill.) [hereinafter cited as *Proposed Gaming Facility Report*]. Editorial, *Economically, casinos are a good bet*, Chicago Tribune, May 24, 1992, § 4, at 2 [hereinafter cited as *Economically*]. 'Deloitte & Touche also projects the loss of 2300 jobs and $126 million in sales downstate, $65 million in casino regulatory costs and $11.4 million in annual costs for police and fire protection'. *Id.* at 2. For the actual estimates, see *Proposed Gaming Facility Report*, infra, at 234–245. For a comparison of the administrative costs of state lotteries, see DeBoer, *The Administrative Costs of State Lotteries*, 38 Nat'l Tax J. 479 (1985).
4. The low-range regulatory costs were averaged and extrapolated from the costs per year for New Jersey casino regulator efforts. The high-range estimate was a 1989 estimate

by Professor William Thompson given in the context of regulating future casinos. For a continuum of New Jersey regulatory costs, see seriatim editions of St. N.J., Comprehensive Annual Financial Report. Compare, *id.* with the 1992 estimates of *Increased Crime and Legalizing Gambling*, supra note 2, at 545–546. See, e.g., St. N.J., Comprehensive Annual Financial Report 238 (1992) ($56–57 million for casino regulatory costs); N.J. Casino Control Comm'n, 1992 Annual Report 23 (1992) ($57 million for casino regulatory costs in 1992, $62 million in 1991). Slight decreases in regulatory costs may occur over time. See, e.g., N.J. Governor's Adv. Comm'n on Gambling, Report and Recommendations 65 (1988) ($66.4 million regulatory costs and 1,362 regulatory employees in 1986 for 'all' gambling activities, and $76.6 million regulatory costs in 1987); see N.J. St. Budget, FY 1986–1987; N.J. St. Budget, FY 1991–1992. See also, Roeser, note 2 supra, at 10 ($59 million for casino regulatory costs in 1992). In 1989, the regulatory costs for Atlantic City were also estimated at $85 million per year. Statement of William Thompson, Prof. Mg't & Pub. Admin., UNLV, before the Ill. Sen. Comm. regarding S.B. 572 on Riverboat Gambling, Sept. 27, 1989. See generally Lee & Chelius, *Government Regulation of Labor-Management Corruption: The Casino Industry Experience in New Jersey*, 42 Indus. & Lab. Rel. Rev. 436 (1989); Ill. St. Police Report, note 2 supra.

5. Timothy P. Ryan, Patricia Connor, & Janet F. Speyrer, The Impact of Casino Gambling in New Orleans 46–47 (1990) [hereinafter Gambling Impact in New Orleans]. These calculations were apparently analyzed and considered to be 'balanced' and valid. Robert Goodman, Legalized Gambling As A Strategy For Economic Development 85–87 (Ctr. for Econ. Dev., U. Mass.-Amherst 1994); Ill. St. Police Report, note 2 supra, at 9; Dir. Ill. St. Police, note 2 supra, at 9–10. These costs do not include many 'indirect costs' to the criminal justice system. For analyses of other 'criminal law' issues, see generally Gaines, *Criminal Law: Florida's Legal Lotteries*, 9 U. Fla. L. Rev. 93 (1956).
6. Gambling Impact on New Orleans, supra note 5, at 46–47. For a parallel analysis of these costs, see *Increased Crime and Legalizing Gambling*, supra note 2, at 547–548.
7. Politzer, Morrow, & Leavey, supra note 2, at 18–20. For parallel analyses of these costs, see John W. Kindt, *The Economic Impacts of Legalized Gambling Activities*, 43 Drake L. Rev. 51, 89–93 at Table 3, n.282 (1994) [hereinafter *Economic Impacts*]; *Increased Crime and Legalizing Gambling*, supra note 2, at 550.
8. Politzer, Morrow, & Leavey, supra note 2, at 9, 18–20. For parallel analyses of these costs, see *Economic Impacts*, supra note 7, at 89–93 at Table 3, n.283; *Increased Crime and Legalizing Gambling*, supra note 2, at 550. For uniformity, the number of $21000 per year is reduced to $2100 per pathological gambler to reflect a 10% incarceration rate.
9. To provide 'before' and 'after' estimates of the impact of pervasive legalized gambling activities, this cost was extrapolated from Illinois analyses which were subjected to in-depth academic and public scrutiny. See, e.g., Interview with Ill. Gov. James Edgar, on *Crossfire*, Cable News Network, Jan. 6, 1993. For a parallel analysis of this cost, see *Increased Crime and Legalizing Gambling*, supra note 2, at 546–547.
10. N.J. Comm. on Compulsive Gambling, Legislative Guide For Responsible Gaming In Your State, at 2 (Jan. 25, 1997).
11. *Economic Impacts*, supra note 7, at 94 n.285 (referencing Dr. Valerie Lorenz' 1992 estimates of $25000 per year for young prisoners and $50000 per year for older prisoners with medical costs). Crim. Justice Inst., The Corrections Yearbook, 1997 75 (eds. Camille Graham Camp & George M. Camp) (365 days multiplied by the healthcare 'average daily cost per confined inmate in 1996' of $54.25 equals $19801) [hereinafter Corrections Yearbook, 1997].
12. Corrections Yearbook, 1997, supra note 11, at 223 (365 days multiplied by the 'overall average cost per prisoner per day' of $55.41 equals $20224).

Footnotes for Table A10

1. It is significant that for the first time in decades the 1997 study by Professor Howard Shaffer attempted to redefine the American

Psychiatric Association's term 'pathological gambling' (or addicted gambling) as 'level 3 gambling' and 'problem gambling' as 'level 2 gambling'. Critics of the Shaffer meta-analysis noted that the analysis was entirely funded by a $140000 grant from the gambling industry to reanalyze the 120–152 existing studies documenting the prevalence of pathological gamblers and problem gamblers. The 'meta-analysis' resulted in: (1) new PR-conscious terms such as 'level 3 rates of gambling', (2) an attempt to redefine the 0.77% baseline for pathological gambling established by the 1976 National Commission on Gambling in America at 0.84% (which critics opined could operate to the PR benefit of the gambling industry), and (3) omission of the *most important numbers* of the 120–152 existing prevalence studies – specifically the rates of pathological gamblers and problem gamblers. See, e.g., Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 51 (Table 16) and 107 (App. 2) (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.). Compare U.S. Comm'n on the Rev. of a Nat'l Pol'y Toward Gambling, Gambling in America 73 (U.S. Gov't Printing Off. 1976), with Harvard Addictions Meta-analysis, infra at 43, Table 13.

Footnotes for Table A11

1. Nat'l Tech. Information Serv., U.S. Dep't Com., 1992 Worldwide Survey Of Substance Abuse And Health Behaviors Among Military Personnel 12–14 to 12–30 [hereinafter Military Personnel].
2. U.S. Dep't Defense (1997). In 1991, U.S. military personnel totaled 2 million but this force strength was subject to drawdown. See, e.g., Military Personnel, supra note 1, at 12–14 to 12–20. By 1996–1997, U.S. military personnel numbered 1.5 million. U.S. Dep't Defense (1997). To simplify comparisons between years, a 1991 base population of 1.5 million is utilized.
3. Div. on Addictions, Harvard Medical Sch., Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gamblers] for 1994–1997 grew to 1.29 percent of the adult population'.). Since the Harvard Addictions Meta-analysis did not include the calculations for essential elements, some reasonable estimates and conclusions consistent with the data need to be drawn.
4. A proportional increase is calculated as 2% military personnel 1991/0.77% general public 1991 equals 3.35% military personnel 1997/1.29% general public 1997 – for an increase of 1.35% from 1991 to 1997. See, *id.*
5. The 78000 military personnel are not precisely 5.1% since the 78000 was the calculation in the report. Military Personnel, supra note 1, at 12–14 to 12–20.
6. Using the classic standard baseline of 2.33% established by the 1976 U.S. Commission on Gambling would yield a 2.55% increase in problem gamblers from 1994 to 1997. U.S. Comm'n on the Rev. of a Nat'l Pol'y Toward Gambling, Gambling in America 73 (U.S. Gov't Printing Off. 1976) [hereinafter U.S. Comm'n on Gambling].
7. A proportional increase is calculated as: 5.1% military personnel 1991/2.33% general public 1991 equals 10.68% military personnel 1997/4.88% general public 1997 – for an increase of 5.6% from 1991 to 1997. See, note 3, supra.
8. In 1997, the socio-economic costs of a civilian pathological gambler ranged between a partial estimate of $10000 and an in-depth estimate of $60000 per year. This analysis should incorporate a cost per year to reflect the life/death responsibilities inherent in military service.

One accident can and has caused the loss of multi-million dollar equipment and lives.

9. A socio-economic cost figure of $5000 per problem gambler per year which is utilized in this context is probably too conservative considering that the average civilian problem gambler is earning well over the average 1997 annual salary of approximately $30000 per year which is further increased since most problem gamblers are super-achievers, Type-A personalities. For a costs table see, John W. Kindt, *The Economic Impacts of Legalized Gambling Activities*, 43 Drake L. Rev. 51, 90–91, Table 3 (1994).

Footnotes for Table A12

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. Henry R. Lesieur & Kenneth Puig, *Insurance problems and pathological gambling*, 3 J. Gambling Behavior 123, 125–127 (1987) [hereinafter *Insurance and gambling*].
4. The National Insurance Crime Bureau estimates that annually the total U.S. cost of 'property/casualty-based insurance fraud' is $20 billion. Nat'l Insurance Crime Bur., 'Insurance Fraud: The $20 Billion Disaster', Chi., Ill. (1996) [hereinafter Insurance Fraud $20 Billion]. Adjusting Professor Lesieur's most conservative 1987 numbers of $3.3 billion in fraud and $6.6 billion in surrendered policies to 1997 dollars equals approximately $6.6 billion in fraud and $13.2 billion in surrendered policies (without adjusting for population increases). *Insurance and gambling*, supra note 3, at 133–134. Interestingly, these numbers conform to current numbers that place total insurance fraud at $20 billion when in 1987 Professor Lesieur indicated that 33% of insurance fraud is committed by pathological gamblers which equals $6.6 billion (the same as the adjusted 1987 estimate). Compare *id.* at 134 ('[P]athological gamblers could account for almost a third of the industry loss' from fraud.), with Insurance Fraud $20 Billion, infra, at 1.

Footnotes for Table A13

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. Lesieur citing G.A. It only takes one employee to destroy an entire company. In 1995, Barings Bank lost $1 billion and went bankrupt because of the unauthorized use of funds by just one employee – the very type of employee (Type-A personality) most likely to become a pathological gambler. In a similar situation one employee's unauthorized use of funds cost Daiwa Bank of Japan $1.1 billion. Laura Proctor, *The Barings Collapse: A Regulatory Failure Or A Failure Of Supervision?*, 22 Brook. J. Int'l L. 735, 735, 738 (1997); see also *id.* at 752 n.155. In another example in Iowa one pathological gambler embezzled $4.5 million. Debra Illingsworth Greene, *Gambling: Wins & Losses*, The Lutheran, Dec. 1997, at

46, 47 ($4.5 million embezzled). In Illinois one employee embezzled $580000 – more than was ever spent on all treatment of pathological gamblers in Illinois. Speech of Henry R. Lesieur, Dir., Inst. for Problem Gambling, 10th Int'l Conf. on Gambling and Risk Taking, Montreal, Canada, July 1997.
4. N.J. Coun. on Compulsive Gambling, Legislative Guide For Responsible Gaming In Your State (Jan. 25, 1997) (appended news release of Mar. 20, 1996).
5. See SMR Research Corp., The Personal Bankruptcy Crisis, 1997 119 (1997) (confirming a 1995 Minnesota Study).
6. Alcohol & Drug Abuse Admin., Md. Dep't Health & Mental Hygiene, Task Force on Gambling Addiction in Maryland 61 (Valerie C. Lorenz & Robert M. Politzer, Co-chairs 1990).
7. 'Measuring the Costs of Pathological Gambling', Address by Prof. Henry R. Lesieur, Ill. St. U., at the Nat'l Conf. on Gambling Behav., Nat'l Coun. on Problem Gambling, Chicago, Ill., Sept. 3–5, 1996 [hereinafter cited as 'Measuring the Costs'].

Footnotes for Table A14

1. The calculation of 0.5% of the U.S. population or 1.5 million new pathological (addicted) gamblers created by legalized gambling between 1994 and 1997 comes from: Div. on Addictions, Harvard Medical School, Estimating the Prevalence of Disordered Gambling Behavior in the United States and Canada: A Meta-analysis, at 43, Table 13 & 51, Table 16 (Howard J. Shaffer, Matthew N. Hall, & Joni Vander Bilt, Dec. 15, 1997) [hereinafter Harvard Addictions Meta-analysis]; see Press Release of Harvard Medical Sch., 'Harvard Medical School Researchers Map Prevalence of Gambling Disorders in North America', Dec. 4, 1997 (From 0.84%, 'the prevalence rate [for pathological gambling] for 1994–1997 grew to 1.29 percent of the adult population'.).
2. U.S. Bur. Labor Statistics, U.S. Dep't Labor (1997).
3. N.J. Coun. on Compulsive Gambling, Legislative Guide For Responsible Gaming In Your State (Jan. 25, 1997).
4. Measuring the Costs of Pathological Gambling', Address by Prof. Henry R. Lesieur, Ill. St. U., at the Nat'l Conf. on Gambling Behav., Nat'l Coun. on Problem Gambling, Chicago, Ill., Sept. 3–5, 1996 [hereinafter cited as Measuring the Costs].
5. M.L. Frank, D. Lester, & Arne Wexler, *Suicidal behavior among members of Gamblers Anonymous*, 7 J. Gambling Studies 249 (1991).
6. Henry R. Lesieur & Kenneth Puig, *Insurance problems and pathological gambling*, 3 J. Gambling Behavior 123 (1987).
7. U.S. Bur. Labor Statistics, U.S. Dep't Labor (1997).
8. SMR Research Corp., The Personal Bankruptcy Crisis, 1997 123–124 (1997) (commissioned by the banking community, Am. Bankers Assoc.) (reporting a 1995 Minnesota study).
9. Better Gov't Assoc., Staff White Paper: Casino Gambling in Chicago (1992) (a comprehensive and classic analysis) (citing Politzer, et al.). See also Robert M. Politzer, James S. Morrow, & Sandra B. Leavey, *Report on the Societal Cost of Pathological Gambling and the Cost-Benefit/Effectiveness of Treatment*, presented at Fifth Nat'l Conf. on Gambling & Risk Taking, at 8–10 (1981); Robert M. Politzer, James S. Morrow, & Sandra B. Leavey, *Report on the Cost-Benefit/Effectiveness of Treatment at the Johns Hopkins Center for Pathological Gambling*, 1 J. Gambling Behav. 131 (1985).
10. Alcohol & Drug Abuse Admin., Md. Dep't Health & Mental Hygiene, Task Force on Gambling Addiction in Maryland 2, 59–61 (1990).
11. *Study links suicide increase to gambling*, N.Y. TIMES, Dec. 16, 1997, < http://webservl.startribune.com/cgi-bin/stOnLine/article?thisSlug = suic16 > . For the complete study, see David P. Phillips, Ward Welty, & Marisa M. Smith, *Elevated Suicide Levels Associated with Legalized Gambling*, Suicide & Life-Threatening Behavior, Dec. 1997, at 373; see Press Release of the U. Calif. at San Diego, 'Increase In Legalized Gambling Is Linked To Higher Suicide Rates in UCSD Study', Dec. 15, 1997; Shaun McKinnon, *Study links gambling, suicide*, Las Vegas Rev.

J., Dec. 17, 1997. See generally, Sandra Blakeslee, *Suicide Rate Is Higher In 3 Gambling Cities: Study Shows Risks as Betting Rises in U.S.*, N.Y. Times, Dec. 16, 1997, at A10. See also Stephen Braun, *Lives Lost in a River of Debt*, L.A. Times, June 22, 1997, at A1, A14–A15. This extensive article reports how coroner's subpoenas had to be issued to Illinois casinos to discover the $100000s of dollars lost gambling by several suicides, and these problems were not reported as such in the local news until after this *L.A. Times* article was printed on page one. See Braun, infra. See generally, Art Nadler, *Nevada suicide rate No. 1 in U.S.*, Las Vegas Sun, Aug. 29, 1997.