What Do Gaming Regulations Regulate?

A Public Health Perspective on Disordered Gambling & Regulation

Howard J. Shaffer
Richard LaBrie

The Division on Addictions
Harvard Medical School
Managing business, practicing law & working as an academic are very different.

You might be wondering why two academics are here at G2E.

We don’t really have much in common.

In business, it’s dog-eat-dog.

In law, it’s dog-eat-dog.

In academics, it’s just the other way around.

- dog-eat-dog.
Every Level of Activity Involves Regulation

- Individual
  - Ego & superego help to regulate behavior
- Small group
  - Power & pecking order help to regulate behavior
- Society
  - Institutions regulate behavior
    - Criminal justice, internal revenue, schools, etc.
“The government’s view of the economy could be summed up in a few short phrases…”

“If it moves, tax it.”

“If it keeps moving, regulate it.”

“And if it stops moving, subsidize it.”

Ronald Reagan (presidential address, August 15, 1986, to the White House Conference on Small Business)
Objectives

- Examine the purpose of regulation
  - Consider the epidemiology of gambling
  - What is moving?
- Define the object of gambling regulation
  - Consider models of disordered gambling
- Present regulatory activities from a public health perspective
  - Consider the epidemiology of regulations
- Suggest the need and implications for model driven regulations
“Ideas have consequences.”

Richard Weaver
What Gambling Events are “Moving”?

- Growth of gambling?
- Growth of Gambling related problems?
- Increase in number of newly disordered gamblers (incidence)?
- Increase in proportion of disordered gamblers (prevalence)?

- Each of these events reflects the epidemiology of gambling
Gambling Related Events that Encourage Regulation

- Increase in the social **perception** that gambling is a problem?
- **Social perception** of gamblers as unable to regulate themselves—as if they have an addiction?
- **Perception** of the gaming industry as unable to regulate itself?
Dr. Richard LaBrie

Associate Director, Research & Methods

Division on Addictions at Harvard Medical School
Gamblers: Rates of Gambling Participation

Source: National Gambling Impact Study
Casino Gambling Industry: Number of States with Casinos

Source: National Gambling Impact Study
Growth in National Gross Gambling Revenue

Source: Christiansen Capital Advisors, American Gaming Association
Levels of Gambling

- **Level 0**
  - No gambling

- **Level 1**
  - Prevalence of Asymptomatic Gambling

- **Level 2**
  - Prevalence of Symptomatic Gambling

- **Level 3**
  - Prevalence of Gambling Disorder

*Adapted from Shaffer & Hall, 1996*
## Comparing Past Year Adult Estimates

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1</strong></td>
<td>97.0</td>
<td>96.0 (95.04 – 97.04)</td>
<td>96.7 (94.82 – 97.26)</td>
<td>97.1</td>
<td>95.8</td>
<td>94.5/96.5</td>
</tr>
<tr>
<td><strong>Level 2</strong></td>
<td>2.2</td>
<td>2.8 (1.95 – 3.65)</td>
<td>2.2 (1.72 – 3.37)</td>
<td>2.0</td>
<td>3.6</td>
<td>3.6/2.2</td>
</tr>
<tr>
<td><strong>Level 3</strong></td>
<td>0.7</td>
<td>1.1 (.90 – 1.38)</td>
<td>1.1 (.92 – 2.01)</td>
<td>.9</td>
<td>.6</td>
<td>1.9/1.3</td>
</tr>
</tbody>
</table>

- 1997 Harvard data represents unweighted means & 95% confidence intervals
- 2000 Harvard data represents Andrews Wave M-estimator & 96% confidence intervals
- ** Welte et al., *Journal of Studies on Alcohol*, Buffalo Research Institute on Addictions, using SOGS/DIS-IV
## Past Year International Estimates

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LEVEL 1</strong></td>
<td>97.1</td>
<td>96.8</td>
<td>98.0</td>
<td>97.0</td>
<td>98.7</td>
<td>99.3</td>
<td>--</td>
</tr>
<tr>
<td><strong>LEVEL 2</strong></td>
<td>2.2</td>
<td>2.2</td>
<td>1.4</td>
<td>2.2</td>
<td>0.8</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td><strong>LEVEL 3</strong></td>
<td>0.7</td>
<td>1.1</td>
<td>0.6</td>
<td>0.8</td>
<td>0.5</td>
<td>0.7</td>
<td>1.1/1.4♦</td>
</tr>
</tbody>
</table>

*(Kallick, Suits, Dielman, & Hybels, 1979)*  
**(Shaffer & Hall, 2001)**  
***Volberg, Abbott, Ronnberg, & Munck, 2001)  
♦(Bondolfi, Osiek, & Ferrero, 2000)  
♣(Abbott, 2001)  
♠(Sproston, Erens, & Orford, 2000)  
♥(Collins & Barr, 2001, GA 20 Questions/SOGS estimates)
Three Sides to Every Story

- **Gaming industry proponents** tend to focus on population segments with low rates (e.g., 1.6 lifetime for adults)
- **Gambling opponents** tend to focus on population segments with high rates (e.g., 3.9 for youth or 4.7 for college)
- **Scientists** note that no single rate adequately describes the prevalence of disordered gambling
  - For example, a single rate approach exaggerates adults rates while under estimating youth rates
Considering Nevada

- Nevada is America’s most exposed gambling setting (e.g., duration & dose)
- New findings and study characteristics
  - Method
    - Random Digit Dialing Telephone survey
  - Respondents
    - Adults – 2217
    - Youth – 1004
  - Response Rate - Council of American Survey Research Organizations (CASRO)
    - Adult – 24%
    - Youth – 52%
Nevada Study Characteristics

- **Instruments**
  - Adult – SOGS & NODS
  - Youth – SOGS-RA, DSM-IV-MR-J

- **Exclusion screening for comorbid disorders**
  - For example, mania
  - Unclear from report whether any such screening was done
Comparing Adult Past Year Estimates: Considering Nevada

<table>
<thead>
<tr>
<th>Level</th>
<th>NORC NODS 1999</th>
<th>Nevada NODS 2002</th>
<th>Nevada SOGS 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>95.8</td>
<td>97.9</td>
<td>93.6</td>
</tr>
<tr>
<td>Level 2</td>
<td>3.6</td>
<td>1.8</td>
<td>2.9</td>
</tr>
<tr>
<td>Level 3</td>
<td>0.6</td>
<td>0.3</td>
<td>3.5</td>
</tr>
</tbody>
</table>

- Nevada data collected during 2000
### Comparing Past Year Estimates in the Absence of a Gold Standard

<table>
<thead>
<tr>
<th>Level</th>
<th>National Estimates</th>
<th>Nevada Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Kallick et al. 1979</td>
<td>Nevada NODS 2002</td>
</tr>
<tr>
<td></td>
<td>NORC NODS 1999</td>
<td>Kallick et al. 1979</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nevada SOGS 2002</td>
</tr>
<tr>
<td>Level 1</td>
<td>97.1</td>
<td>95.8</td>
</tr>
<tr>
<td>Level 2</td>
<td>2.2</td>
<td>3.6</td>
</tr>
<tr>
<td>Level 3</td>
<td>0.7</td>
<td>0.6</td>
</tr>
</tbody>
</table>

- Nevada data collected during 2000

- Have rates in Nevada declined since 1979?
- Are the NV rates higher or lower than recent national estimates?
- Have Nevada rates changed in proportion to the growth of gambling?
Objectives

- Examine the purpose of regulation
  - Consider the epidemiology of gambling
- Define the object of gambling regulation
  - Consider models of disordered gambling
- Present regulatory activities from a public health perspective
  - Consider the epidemiology of regulations
- Suggest the need and implications for model driven regulations
Considering Models of Disordered Gambling

How we explain gambling determines how we treat and regulate it
“After all, what is reality anyway? Nothin’ but a collective hunch.... reality is the leading cause of stress amongst those in touch with it.”

(Wagner, 1986, p. 18; & spoken by Lilly Tomlin in *Search for Signs of Intelligent Life in the Universe*).
The highlighted models are most sensitive to regulatory activity.
Behavioral Model of Gambling: Schedules of Operant Reinforcement

- Fixed Interval
- Variable Interval
- Fixed ratio
- Variable ratio
Variable Ratio Reinforcement

- Reinforcing events occur after a variable or constantly changing number of events or acts (e.g., wagers)
- Reinforcement holds the potential to shape behavior
  - Increases the likelihood of preceding behavior occurring again
- Reinforcement is the psychoactive component of gambling (i.e., the what some think of as “addictiveness’’)

Activities with VRR schedules

- Gambling – regulated by federal & state government
- Investing – regulated by federal government
- Fishing & hunting – regulated by local government
- Golfing – regulated by two international bodies (USGA & R&A)
- Great sex – regulated by ...
- Scientific research – regulated by professional associations (APA)
“All scientific work pays off on a variable ratio schedule of reinforcement. So do hunting, fishing, exploring, prospecting, and so on. You never can tell when you are going to be reinforced, but reinforcements do keep turning up. The dedicated scientist is exactly like a pathological gambler. He's been hooked by a system, but in a way which is profitable for everyone. The scientist is fascinated by what he does, just as the gambler is, but nobody is taking his shirt. He's getting something out of it, and so is society” (B.F. Skinner, August, 1983, p. 39).
Regulation and Theory

- Models of gambling can be either implicit or explicit
- Regulatory activities are not random
  - Regulation is model driven
  - These models often are implicit
- Two important models drive social perception and therefore regulation
  - Exposure
  - Adaptation
- Are these models supported by evidence?
Exposure

Measuring Exposure to Gambling: Novelty and Increasing Rates
Adaptation

Habituation and Decreasing Rates
### Comparing Nevada Youth Past Year Estimates

<table>
<thead>
<tr>
<th>Level</th>
<th>DSM-IV-MR-J</th>
<th>SOGS-RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>94.4</td>
<td>87.9</td>
</tr>
<tr>
<td>Level 2</td>
<td>4.5</td>
<td>9.9</td>
</tr>
<tr>
<td>Level 3</td>
<td>1.1</td>
<td>2.2</td>
</tr>
</tbody>
</table>

- Nevada data collected during 2001
- Age 13-17; N = 1004
## Comparing Nevada Youth Past Year Estimates

<table>
<thead>
<tr>
<th>Level</th>
<th>Nevada</th>
<th></th>
<th>National</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>94.4</td>
<td>87.9</td>
<td>82.7</td>
</tr>
<tr>
<td>Level 2</td>
<td>4.5</td>
<td>9.9</td>
<td>14.6</td>
</tr>
<tr>
<td>Level 3</td>
<td>1.1</td>
<td>2.2</td>
<td>4.8</td>
</tr>
</tbody>
</table>

- Nevada youth ages 13-17; N= 1004
- *Type C, without $100.00 NODS loss requirement
Nevada Youth

- Compared with their counterparts from less gambling exposed settings
  - Nevada youth did not gamble at an earlier age
  - Did not gamble at casinos more
- Will this cohort decrease the prevalence rate of adults when they mature?
- Observers have suggested that higher youth rates means that adult rates will go up – it seems the opposite also should be true!
“That is the essence of science: ask an impertinent question, and you are on the way to a pertinent answer.”

“Is Addiction Addiction?”

“Is Compulsion Compulsion?”

We can add:

Is Pathological Gambling?
Pathological Gambling?

Spectrum Dependence Disorder?

Manic Episodes

Pathological Gambling

Personality Disorder

Depression

Other Unknown Disorders
“Misery acquaints a man with strange bedfellows”

(The tempest, act 2, scene 2)
Paul Gauguin

- In his last years—he died in 1903—Gauguin was destitute and stricken with eczema and syphilis.

- Though stricken, in a letter to a friend, Gauguin (1897) wrote:
  - “I sit at my door, smoking a cigarette and sipping my absinthe, and I enjoy every day without a care in the world.”
### Comparing Revised One-Year Prevalence Rates of Mental Disorders

<table>
<thead>
<tr>
<th>Disorder (18 Years &amp; Older)</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anorexia Nervosa</td>
<td>0.1</td>
</tr>
<tr>
<td>Schizophrenia</td>
<td>1.0</td>
</tr>
<tr>
<td>Kleptomania</td>
<td>1.1</td>
</tr>
<tr>
<td>Level 3 Gambling*</td>
<td>1.1</td>
</tr>
<tr>
<td>Panic</td>
<td>1.4</td>
</tr>
<tr>
<td>Antisocial Personality</td>
<td>1.5</td>
</tr>
<tr>
<td>Dysthymia</td>
<td>1.6</td>
</tr>
<tr>
<td>Level 2 Gambling*</td>
<td>2.1</td>
</tr>
<tr>
<td>Obsessive-Compulsive</td>
<td>2.1</td>
</tr>
<tr>
<td>Agoraphobia</td>
<td>2.1</td>
</tr>
<tr>
<td>Major Depression</td>
<td>4.0</td>
</tr>
<tr>
<td>Any Alcohol</td>
<td>5.2</td>
</tr>
<tr>
<td>Any Substance Use Disorder</td>
<td>6.0</td>
</tr>
<tr>
<td>Any Anxiety</td>
<td>11.8</td>
</tr>
<tr>
<td>Any Mental</td>
<td>14.9</td>
</tr>
</tbody>
</table>


Regulation & Comorbidity

- It is not possible to regulate comorbid psychiatric disorders with public policy.
- It **might** not be possible to regulate disordered gambling if it is a “true” impulse disorder with biogenetic origins.
Public Health Perspectives on Gambling

From Costs & Benefits to Regulatory Opportunities
Public Health Framework to Understand Gambling

- No Gambling
- Healthy Gambling
- Unhealthy Gambling

Gambling Problems:
- none
- mild
- moderate
- severe

Public Health Interventions:
- primary prevention
- secondary prevention
- tertiary prevention or harm reduction
- brief treatment
- intensive treatment
Assessing the Impact of Gambling

- Costs
- Benefits
Potential Costs

- Gambling disorders
- Family problems
- Suicide
- Psychiatric Conditions
- Alcohol & Drug Problems
- Youth Gambling
- Crime
- Financial Problems
Vulnerable Population
Segments

- Socio-economically disadvantaged
- Homeless
- Ethnic minority groups
- Youth
- Elderly
- Casino employees
Comparing Youth Estimates

<table>
<thead>
<tr>
<th>Past Year</th>
<th>Harvard</th>
<th>NRC</th>
<th>NORC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1/Type A+B*</td>
<td>82.7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 2/Type C*</td>
<td>14.6</td>
<td>13.9</td>
<td>15.0*</td>
</tr>
<tr>
<td>Level 3/Type D+E</td>
<td>4.8</td>
<td>6.1</td>
<td>3.0</td>
</tr>
</tbody>
</table>

- NORC Classification System
- Unweighted Means & 95% Confidence Intervals
- *Type C, without $100.00 NODS loss requirement
## Lifetime Estimates of “Special” Populations

### Unweighted Means & 95% Confidence Intervals

<table>
<thead>
<tr>
<th>Level</th>
<th>College Students</th>
<th>Adults in Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N = 8,918</td>
<td>N = 6,590</td>
</tr>
<tr>
<td>Level 1</td>
<td>86.66 (80.90 – 92.42)</td>
<td>71.54 (62.90 – 80.18)</td>
</tr>
<tr>
<td>Level 2</td>
<td>9.28 (4.43 – 14.12)</td>
<td>15.01 (8.94 – 21.07)</td>
</tr>
<tr>
<td>Level 3</td>
<td>4.67 (3.44 – 5.90)</td>
<td>14.23 (10.70 – 17.75)</td>
</tr>
</tbody>
</table>
## Homeless Treatment Seekers

<table>
<thead>
<tr>
<th>Level</th>
<th>N</th>
<th>Valid Percent</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>134</td>
<td>81.7</td>
<td>81.7</td>
</tr>
<tr>
<td>Level 2</td>
<td>21</td>
<td>12.8</td>
<td>94.5</td>
</tr>
<tr>
<td>Level 3</td>
<td>9</td>
<td>5.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>164</td>
<td>100.0</td>
<td></td>
</tr>
<tr>
<td>Missing</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td></td>
<td></td>
</tr>
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</table>

Shaffer, Freed & Healea, 2002
Gambling & Drinking Among Casino Workers: A Longitudinal View*

<table>
<thead>
<tr>
<th>Observation period</th>
<th>Level 1 Gambling</th>
<th>Level 1 Drinking</th>
<th>Level 2 Gambling</th>
<th>Level 2 Drinking</th>
<th>Level 3 Gambling</th>
<th>Level 3 Drinking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All respondents</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time 1 (N = 6,067)</td>
<td>74.5</td>
<td>88.1</td>
<td>21.2</td>
<td>7.1</td>
<td>4.3</td>
<td>4.8</td>
</tr>
<tr>
<td>Time 2 (N = 3,174)</td>
<td>82.8</td>
<td>91.1</td>
<td>15.1</td>
<td>5.8</td>
<td>2.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Time 3 (N = 1,176)</td>
<td>85.2</td>
<td>94.5</td>
<td>13.0</td>
<td>4.0</td>
<td>1.8</td>
<td>1.6</td>
</tr>
</tbody>
</table>

Respondents participating in all three assessments (N = 1,176)

| Time 1     | 77.2 | 89.3 | 18.4 | 6.9  | 4.4  | 3.8  |
| Time 2     | 86.2 | 92.1 | 11.8 | 5.8  | 2.0  | 2.2  |
| Time 3     | 85.2 | 94.5 | 13.0 | 4.0  | 1.8  | 1.6  |

*Past year prevalence
Potential Benefits

- Adult play
  - Reduces anxiety & stress
- Cardiovascular stimulation
  - Similar to sex or wine
- Social integration
  - Relevant for the elderly
- Economic development
Neither NGISC nor our Atlantic City case study was able to clearly identify the social effects of gambling for a variety of reasons. The amount of high quality and relevant research on social effects is extremely limited. While data on family problems, crime, and suicide are available, tracking systems generally do not collect data on the causes of these incidents, so they cannot be linked to gambling...
“... while studies have shown increases in social costs of pathological gamblers, it is difficult to isolate whether gambling is the only factor causing these problems because pathological gamblers often have other behavior disorders” (General Accounting Office, 2000, p. 3).
While ...some testimonial evidence that gambling, particularly pathological gambling, has resulted in increased family problems..., crime, and suicides, NGISC reached no conclusions on whether gambling increased family problems, crime, or suicide for the general population. Similarly, we found no conclusive evidence on whether or not gambling caused increased social problems in Atlantic City" (General Accounting Office, 2000, p. 3).
Objectives

- Examine the purpose of regulation
  - Consider the epidemiology of gambling
- Define the object of gambling regulation
  - Consider models of disordered gambling
- Present regulatory activities from a public health perspective
  - Consider the epidemiology of regulations
- Suggest the need and implications for model driven regulations
Regulating Gambling & Its Consequences

Primary Objects of Regulation
Public Health Regulatory Targets

- People & Groups
  - Population of gamblers
  - Gaming industry
- Gambling activities
  - Exposure & access to gambling
- Gambling settings
  - Industry growth
  - Activities within gambling setting
  - Activities around gambling setting
Primary Products of Regulatory Efforts

- Hotlines & help lines
- Advertising
- Alcohol service
- Credit
- Employee training
- Loss limits
- Marketing & direct mail
- Signage
- Public awareness
- Self-exclusion
- Treatment funding

Source: American Gaming Association (March 2002). Statutes and regulations in commercial casino states concerning responsible gaming.
Lewis Carroll’s Alice in Wonderland: The Queen’s Croquet Ground

“I don’t think they play at all fairly,” Alice began, in rather a complaining tone, “and they all quarrel so dreadfully one can’t hear oneself speak - and they don’t seem to have any rules in particular; at least, if there are, nobody attends to them - and you’ve no idea how confusing it is...” (1865, p. 98)
Classifying the Objects of Regulatory Activities

- Initiation
  - Awareness
  - Prevention
  - Advertising/Marketing

- Gambling & gambling-related activities
  - Signage
  - Employee training – pathological gambling & education
  - Alcohol service
  - Credit restrictions
  - Loss limits

- Consequences of Gambling
  - Self-exclusion
  - Helpline
  - Treatment
Regulatory Activities 2002

Natural History of Gambling: Targets of Statutes & Regulations in Casino States (2002)

Targets of Regulatory Activities 2002

Explaining Regulatory Patterns

- Perhaps regulatory activities are a function of duration of legalized gambling.
- We can compare the regulations of Nevada & New Jersey with other states to test this idea.
- They have similar or fewer regulations.
  - So we conclude that duration does not explain state differences.
Objectives

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  - Consider the epidemiology of gambling
- Define the object of gambling regulation
  - Consider models of disordered gambling
- Present regulatory activities from a public health perspective
  - Consider the epidemiology of regulations
- Suggest the need and implications for model driven regulations
On Public Policy

“Bad laws punish many people and deter few.

“Good laws punish few people and prevent many.”

- Norman E. Zinberg
Efforts to Regulate can have Many Different Effects

- Increase gambling related problems
- Decrease gambling related problems
- Be independent of gambling related problems
- Influence gambling related problems through another independent factor
Regulation and Theory

- Regulatory activities are not random
  - The model driving regulatory activities is not readily apparent
- Models can be either implicit or explicit
  - To advance a science of regulation, we encourage developing explicit models
Regulatory Consequences of Exposure & Adaptation Models

- Two models influence social perception and therefore regulatory activities:
  - Exposure
  - Adaptation

- Exposure
  - If accurate, is associated with a slow regulatory response, or under-reaction given the “incubation” of disease following exposure

- Adaptation
  - If accurate, suggests that there is regulatory over-reaction since the population tends to adjust for the presence of the toxic agent
Available Resources & Links

- [www.hms.harvard.edu/doa](http://www.hms.harvard.edu/doa)
  - This presentation will be available in the library and archives section of our Harvard web site

- [www.thewager.org](http://www.thewager.org)

- These sites were featured in the *New York Times* technology section on March 29, 2001
Acknowledgements

- Debi LaPlante
- Rachel Kidman
- Chrissy Thurmond
- Chris Reilly
- Matthew Hall
- Joni Vander Bilt
- Chris Freed
- The National Center for Responsible Gaming
Rethinking Addiction:
How gambling and other behavioral addictions are changing the concept and treatment of alcohol and substance use disorders

3 p.m., Sunday, Dec. 8 – Noon, Tuesday, Dec. 10, 2002
The Mirage Hotel-Casino
Las Vegas, Nev.

Sponsors:
The Institute for Research on Pathological Gambling and Related Disorders,
Harvard Medical School’s Division on Addictions
National Center for Responsible Gaming
Nevada Council on Problem Gambling