



The **SOCIAL IMPACTS** of Legalized Gambling

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Executive Summary

This evaluation is based on scientifically valid and reliable secondary research published in peer reviewed scientific journals and primary research conducted and published by or for government commissions.

The research addresses five primary questions:

- What are the social costs or impacts of legalized gambling on individuals and communities?
- Does the availability of legalized gambling increase the number of problem or pathological gamblers?
- What are the causes of problem and pathological gambling?
- What is the current, best estimate of the prevalence of problem and pathological gambling?
- Are some forms of gambling more problematic than others?

What are the social costs or impacts of legalized gambling on individuals and communities?

Problem and pathological gamblers, compared to low risk and non-gamblers, exhibit higher rates of suicidal tendencies, job loss, mental and physical health problems, divorce and marital instability, bankruptcy and financial difficulties, and involvement in crime, arrest and incarceration. However, we currently do not know what is cause and what is effect. Research to date has not been able to conclusively address if gambling disorders precede (cause) or are subsequent to (are caused by) these circumstances.

The challenge of determining cause and effect is substantially exacerbated by the confounding influences of comorbidity i.e., the co-occurrence of gambling disorders with drug/alcohol abuse, major depression, antisocial personality disorder, phobias, and a variety of other mental health problems. However, quite recent research indicates that gambling disorders appear to follow the onset of a variety of other comorbid disorders, leading to the tentative conclusion that many of the negative circumstances exhibited by individuals with gambling disorders may in fact be caused by and/or heavily influenced by other disorders.

The most accurate conclusion regarding impacts on communities that is supported by existing, scientifically valid research is that there is no significant relationship between casino gambling and crime, bankruptcy, unemployment and suicide.

In terms of assessing the economic costs of problem and pathological gambling, the data indicate that the costs (estimated at \$5 billion per year in the U.S.) are roughly 4% to 5% of the costs of drug abuse, 3% of the costs of alcohol abuse and 4% of the costs of overweight and obesity.

Finally, there is no systematic, scientific basis for the assertion that casino gambling contributes to the moral decay of society or that it "preys on the poor."

Does the availability of legalized gambling increase the number of problem or pathological gamblers?

Currently, there is no conclusive, scientifically reliable evidence indicating that the availability of casino gambling causes pathological or problem gambling or creates pathological or problem gamblers. There is no consistent, scientifically reliable research that supports the argument that the proliferation of casino gambling in the U.S. has led to increases in the prevalence of problem and pathological gambling.

What are the causes of problem and pathological gambling?

Scientific research is not conclusive regarding the etiology of pathological and problem gambling. There are multiple "root causes" of problem and pathological gambling, including quite common comorbidity with other behavioral problems such as personality disorders, substance abuse, and mood disorders. As indicated above, there is no scientific basis for asserting that availability of casino gambling causes gambling disorders.

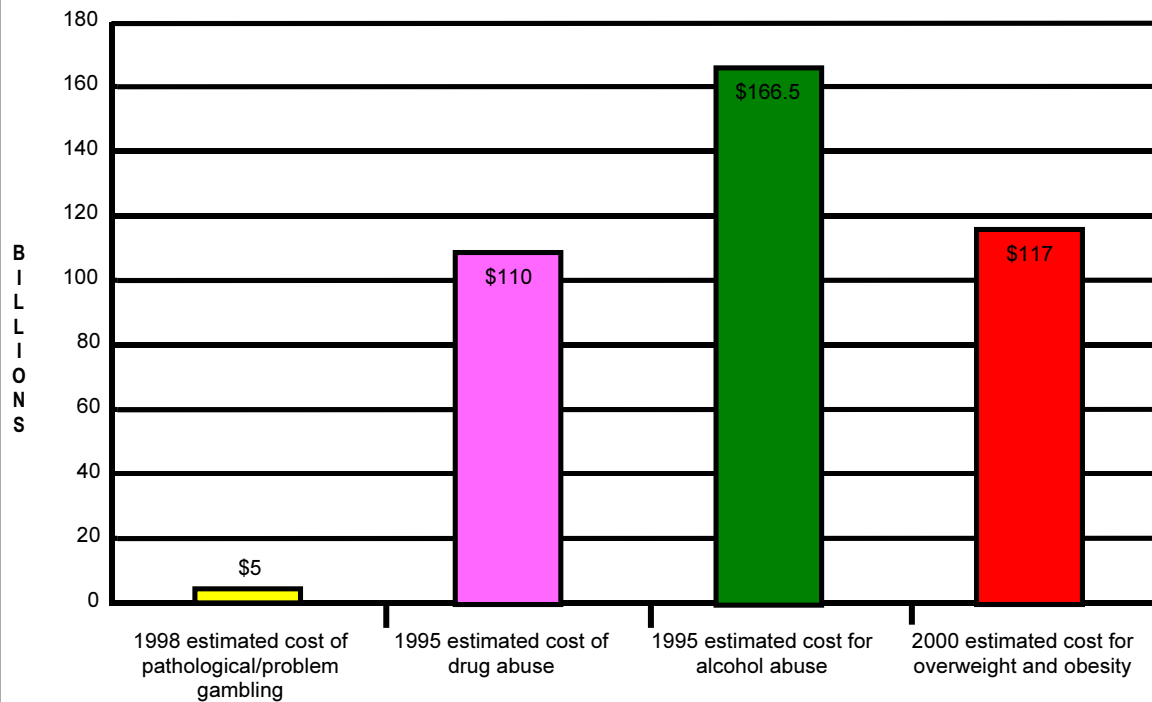
What is the current, best estimate of the prevalence of problem and pathological gambling?

Based on research on all types of gambling, the best current estimates of the percent of the general population with problem and pathological gambling disorders are 1.3% for "last year" and 2.7% for "ever in lifetime." Comparative estimates for alcohol abuse and dependence are 9.7% ("last year") and 23.5% ("lifetime"); drug abuse and dependence estimates are 3.6% ("last year") and 11.9% ("lifetime"); the percent of the general population that is overweight is estimated at 65%; the comparable figure for obesity is 30%.

Are some forms of gambling more problematic than others?

Research is beginning to address this question and current evidence indicates that video lottery terminals (VLTs) may be especially troubling in terms of particular addictive properties that may have a linkage with problem and pathological gambling. There is also significant concern expressed by NGISC (the National Gambling Impacts Study Commission) (1999) regarding internet gambling, including unregulated access, lack of economic benefits, and a higher potential for abuse.

Social Costs of Problem and Pathological Gambling Compared to Other Disorders in the U.S.



Sources: The drug and alcohol estimates are reported in NORC and the overweight and obesity estimates are reported by the Centers for Disease Control and the United States Surgeon General.

**BIOGRAPHY of
William R. Kelly, Ph.D.**

This report was prepared and written by William R. Kelly Ph.D. Dr. Kelly is currently Professor of Sociology and Director of the Center for Criminology and Criminal Justice Research at the University of Texas at Austin. He has been a professor at the University of Texas for the past twenty-six years. Kelly is also a Senior Research Associate at M. Crane & Associates, Inc., a strategic market and opinion research firm located in Austin.

Dr. Kelly has extensive experience and expertise in sociological, crime and criminal justice research, quantitative research methodology and survey design, statistical design and analysis, impact and policy evaluation, and evaluation of a variety of mental health and substance abuse treatment programs.

He has served as an expert for a number of governmental agencies including the United States Department of Justice and the Texas Department of Criminal Justice, among others. He has also served as Associate Editor of the American Sociological Review (the leading sociological research journal), Deputy Editor of Demography (the leading demographic research journal), as well as a peer reviewer for numerous social science research journals and the National Institute of Justice.

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The Social Impacts of Legalized Gambling

William R. Kelly, Ph.D.

The purpose of this report is to provide a concise, objective assessment of what valid, reliable scientific research indicates about legalized gambling. The research addresses five primary questions:

- What are the social costs or impacts of legalized gambling on individuals and communities?
- Does the availability of legalized gambling increase the number of problem or pathological gamblers?
- What are the causes of problem and pathological gambling?
- What is the current, best estimate of the prevalence of problem and pathological gambling?
- Are some forms of gambling more problematic than others?

This assessment relies on a variety of sources, including assessments of prior research by government commissions and agencies, primary research conducted for government commissions and agencies, and research published in peer reviewed scientific journals or relied upon by government agencies and commissions. In most instances, the research published in peer reviewed scientific journals that is referenced in this report was published subsequent to the publication of the major government commission and agency reports (i.e., subsequent to the National Gambling Impact Study Commission Report of 1999 and the General Accounting Office Report of 2000).

The National Gambling Impact Study Commission (NGISC) contracted with the National Research Council of the National Academy of Sciences and with the National Opinion Research Center at the University of Chicago (NORC) to assist with accomplishing the goals of the Commission's charge. The National Research Council (NRC) was given the responsibility to review and evaluate existing, secondary research on the prevalence of gambling disorders and the impacts of gambling. NORC was charged with conducting original, primary research to address these same issues. The NORC research consisted of, among other things, a telephone survey of 2,417 adults ("adult survey"), and interviews with 530 adults in twenty-one U.S. gambling facilities ("patron survey"). NORC also conducted a sophisticated statistical multi-level time series analysis of 100 different communities in the U.S. (the "100 community study") to assess the impacts of casino gambling on those communities.

The General Accounting Office Report relied on the NGISC Report and the research conducted by the NRC and NORC, as well as a case study of Atlantic City, N.J.

The criteria that guided the research results reported herein included, but were not limited to, reviewing and evaluating:

- research conducted by objective researchers, agencies, and commissions; as such, this analysis excluded (when known) research and interpretations of research provided by "interested parties" such as pro and anti- gambling organizations
- research published in peer reviewed scientific journals or books, or that was reviewed by credible academic or government agencies and commissions
- research that meets general scientific standards of appropriate research design and sampling protocol, use of statistical controls, and generalizability of results (this criterion generally precluded substantial reliance on case studies, anecdotal information, and testimonial evidence), and appropriate interpretations and conclusions

As with any research project, there are limits of time and cost. For these reasons, there surely are research studies and sources that were not consulted in the course of conducting this evaluation. However, the goal was not to be exhaustive, but to be objective in assessing recent, representative, valid scientific research in addressing the questions posed herein.

The Social Impacts of Gambling on Individuals and Communities

The following is an evaluation of the scientific research addressing specific social impacts of gambling. We begin with what scientifically reliable research indicates about the impacts of pathological and problem gambling on individuals and families.

We then turn to an assessment of what scientifically reliable research tells us about the impacts of gambling on places and communities. The information presented below also differentiates, when possible, between impacts of gambling in general and, more specifically, impacts of pathological and problem gambling on places and communities.

Question:

What are the social impacts of pathological and problem gambling on individuals and families?

Pathological gamblers experience a variety of negative life circumstances or life events, and these circumstances or events also affect their families and relationships with others. In fact, the DSM-IV criteria for diagnosing pathological gambling include events such as loss of a job or a significant relationship, financial difficulties, and engaging in illegal acts. Thus, by definition, pathological gambling can and does involve negative life events.

The NRC study undertook the task of assessing what scientific research indicates about the magnitude and extent of adverse life circumstances or life events for pathological gamblers. In so doing, however, the NRC cautions that since most of the research in this area is based on treatment populations, small samples, and rarely includes control groups, the results regarding magnitude and extent should be interpreted with considerable caution.

Relying on research reviewed and evaluated by NRC and a variety of other sources, as well as the NORC survey commissioned by the NGISC, there is reasonable scientific evidence to indicate that problem and pathological gamblers experience higher rates of the following:

- suicidal tendencies
- job loss
- mental and physical health problems
- divorce and marital instability
- bankruptcy and financial difficulties
- involvement in crime, arrest and incarceration

It is important to underscore that in addition to scientific concerns about the use of small and selected (i.e., treatment) samples, and varying definitions of problem and pathological gambling, research to date has not been able to effectively address the issue of cause and effect. For example, current research is unable to determine if gambling disorders precede (cause) or are subsequent to (are caused by) these negative circumstances. The challenge of determining cause and effect is substantially exacerbated by the confounding influences of comorbidity.

Comorbidity is the co-occurrence of multiple disorders. The science is quite clear about the common co-occurrence of gambling disorders with substance abuse disorders, antisocial personality disorders, major depression, schizophrenia, phobias, and somatization disorder, among others. Recent research (Potenza et al (2002) indicates that gambling disorders were found to follow the onset of a variety of other disorders such as antisocial personality disorder, phobias and nonstimulant drug dependency including nicotine, alcohol, and cannabis. This supports the tentative conclusion that many of the negative circumstances exhibited by individuals with gambling disorders may in fact be caused by and/or heavily influenced by other disorders.

In addition, research indicates that legalized gambling can and does have significant benefits. Potenza et al (2002: 724) state that while more research is needed, there can be significant benefits to individuals who gamble.

Gambling involves risk evaluation and decision-making and this procedure has relevance to many aspects of daily functioning... Gambling in older age groups has been described as a form of adult play behavior, not only providing fun, excitement and entertainment, but also possibly enhancing memory, problem solving ability, mathematical proficiency, concentration and coordination. Engaging in certain forms of gambling activities may have desirable interpersonal social benefits...

In short, while scientifically reliable research indicates an association between problem and pathological gambling and selected negative circumstances, the scientific community is not in a position to conclude with certainty that these circumstances are a direct result of or are directly caused by gambling disorders.

Question:

What are the social impacts of pathological and problem gambling on places and communities?

Crime

One of the most often cited negative consequences of casino gambling on communities is increased crime. While a link between gambling and crime rates may seem logical and intuitive, and while there are a number of studies offered in support of such a link, scientifically valid research indicates quite the contrary.

The question at hand is what is the impact of gambling on public safety in communities (i.e., does legalized gambling increase crime rates?) The answer, based on recent scientifically valid research conducted primarily on casinos is that there does not appear to be much support for a link between casino gambling and crime rates.

The NGISC commissioned NORC to conduct a sophisticated multilevel statistical time series analysis of 100 non-tribal communities in the U.S. The primary goal of the research was to assess the statistical relationship between proximity to a gambling casino and a variety of social outcome measures including crime rates. The unique feature of this analysis is that it incorporates variation in crime rates over time (1980 to 1997) and across space (100 different communities). As indicated in the NORC report, this data set is "close to being ideal for this purpose" as it provides a statistical balance in terms of communities with and without proximate casinos. Moreover, since forty casinos were added in the communities in the sample during the 1980 to 1997 time span, the statistical analysis is able to measure and analyze the immediate and well as the longer term impacts of proximity to casinos.

The NORC analysts used a variety of crime rate measures including larceny, burglary, motor vehicle theft, robbery and assault as well as overall measures of the Federal Bureau of Investigation crime index. The results are conclusive -- proximity to a casino has no statistical impact on community crime rates. The NORC researchers conclude (1999: 70):

This is not to say that there is no casino related crime or the like; rather these effects are either small enough as not to be noticeable in the general wash of the statistics, or whatever problems that are created along these lines when a casino is built may be countered by other effects.

The NGISC report cites two other studies, one of which (Albanese, 1999) addresses one of the weaknesses of the NORC study, which was that the NORC study did not include white collar crimes. The Albanese research, which focused on arrests for embezzlement, forgery and fraud in nine of the largest casino communities, found no consistent relationship, though more jurisdictions reported decreases in arrests for these crimes than increases. Another analysis of crime in ten casino jurisdictions (Margolis, 1997) demonstrated essentially no relationship between casinos and crime.

This research led the NGISC to conclude (1999: 7-14): "Taken as a whole, the literature shows that communities with casinos as just as safe as communities that do not have casinos."

Subsequent research has served to support the conclusion of the NGISC and NORC reports. A quite recent, comprehensive, and statistically sophisticated analysis focuses on the impact of the presence of casinos on crime. This analysis (Stitt, Nichols and Giacomassi, 2003) includes six casino jurisdictions and six matched control jurisdictions (communities without casinos) and investigates crime trends before and after casinos came on line for a wide variety of crimes including homicide, sexual assault, robbery, aggravated assault, burglary, larceny, motor vehicle theft, arson, simple assault, embezzlement, forgery, fraud, liquor law violations, drug violations, family violence, prostitution, sex offenses, drunkenness, disorderly conduct and driving under the influence.

The statistical results across a variety of different jurisdictions and a broad array of serious violent crimes, property crimes, drug and alcohol crimes, white collar crimes, sex offenses, and quality of life crimes indicate few consistent statistical differences in crime trends between the casino jurisdictions and the matched control jurisdictions. As the authors conclude (2003: 282) "This general lack of increased crime in new casino jurisdictions tends to undermine the view of casinos as hot spots..."

Bankruptcy

The NORC multilevel time series analysis of 100 non-tribal communities in the U.S. included bankruptcy as one of the outcomes. The focus is on the impacts of the introduction of casinos as well as proximity to casinos. The NORC analysis showed no significant change in per capita bankruptcy rates in communities where casinos were introduced.

A more recent analysis of the NORC data by the United States Treasury Department supports the conclusion that access to and availability of casino gambling has no impact on bankruptcy rates (de la Vina and Bernstein, 2002). Additional research (Barron, Staten and Wilshusen, 2002) also demonstrated no relationship between national trends in casino gambling and national trends in bankruptcies during the 1990s.

There is no reliable, valid scientific evidence that supports the conclusion that introduction of casino gambling increases local/community bankruptcy rates, or that the trend in increases in legalized casino gambling nationwide has led to national increases in the bankruptcy rate.

Suicide

Both the NGISC report and the GAO report reached comparable conclusions about the impact of gambling on community suicide rates. Both reports indicate that while there is some evidence that seems to support a link, other research refutes an impact of gambling on suicide rates. In turn, both NGISC and GAO conclude that the evidence they reviewed and analyzed is inconclusive at best. Unfortunately, the NORC 100 community research did not include suicide as an outcome.

More recent research (Chew, McCleary, Merrill and Napolitano, 2000) addressed several methodological concerns raised about earlier research and conducted an analysis of the relationship between casino gambling and suicide rates. As the authors conclude (2000: 551):

In the present paper, an analysis of 1995 visitor-suicide rates (incorporating estimates for at-risk population) for 310 large US counties, including places both with and without casinos, yields no evidence to support a gambling-suicide relationship.

Unemployment

The NORC 100 community survey shows significant reductions in unemployment due to the introduction of and proximity to casinos. Moreover, the research also shows significant reductions in income maintenance payments (welfare), unemployment insurance payments, and other transfer payments.

Divorce and Family Problems

We were unable to identify any systematic, scientifically valid research investigating a community level impact of gambling on divorce rates or rates of family problems.

Homelessness

NGISC cites some data on gambling and homelessness (i.e., gambling as a contributing factor to homelessness). Whether homelessness is caused by gambling or by other factors related to addictive behaviors is unclear (NGISC, 2000, 7-27). We were unable to locate any scientific impact analyses focusing on community level homelessness rates.

Summary of Social Impacts of Gambling on Communities

The most accurate conclusion that is supported by existing, scientifically valid research is that there is no systematic effect of gambling, especially casino gambling, on rates of crime, bankruptcy, and suicide. There is an impact on unemployment -- the presence of casinos appears to reduce unemployment rates. Scientific research has yet to adequately address whether there are measurable consequences on divorce and homelessness rates, as well as other potential impacts.

Question:

What are the challenges and limitations to assessing the social impacts of gambling?

There are substantial challenges and limitations to assessing the individual-level and community-level social impacts of gambling. Nevertheless, these challenges and limitations have not deterred many from registering claims about the negative social impacts of legalized gambling. The goal here is to determine what valid, objective scientific research tells us about these social impacts.

For a variety of reasons, the primary conclusion from an overall assessment of the scientific research on the social impacts of gambling is that we do not know very much with certainty. The primary reasons for this conclusion involve methodological, statistical, measurement, and data related limitations. At the top of the list of the research related limitations is the failure to adequately statistically control for comorbidity (disorders that tend to co-occur with pathological gambling).

There are a variety of psychological and psychiatric disorders that tend to co-occur with problem and pathological gambling. From a research perspective, the problem is the inability to sort out how much of any social impacts are due to problem and pathological gambling, while statistically controlling for other competing causes or explanations. For example, as the GAO report acknowledges (2000: 26):

Measuring the effects of gambling upon communities is difficult, primarily because of the limited amount of quality data on the social effects and the complexity of establishing a cause-effect relationship between gambling and social problems, due to the difficulty of isolating gambling from other factors, such as substance abuse and personality disorders, that cause social problems.

Further underscoring the importance of the comorbidity issue, the NGISC report states the conclusions reached by the NRC review of the scientific literature (1999: 7-3, emphasis added):

Reviews of the literature indicate that substance use disorders, mood disorders such as depression, suicidal thoughts, antisocial personality disorder, and attention deficit, hyperactivity disorder may often co-exist with pathological gambling. To the extent that researchers can isolate the effects of pathological gambling on, for example, marital stability, from the effects of co-existing conditions like drug abuse, researchers can determine the net negative effects of pathological gambling on marriages. This task is challenging. Evaluating studies of conditions that co-occur with pathological gambling requires careful formulation of research questions, such as: Does gambling precede the onset of other disorders? Do certain disorders exacerbate pathological gambling? Is there a pattern of symptom clustering? Is the severity of one disorder related to the other? And is a standard assessment instrument used to collect data for both gambling and comorbid conditions.

Very few pathological gambling studies have addressed even one of these questions.

More recent research on comorbidity has attempted to measure the extent of the co-occurrence of pathological and problem gambling with other addictive and personality disorders (for example, Potenza, Fiellin, Heninger, Rounsaville and Mazure, 2002; Petry, 2000, 2001; Kausch, 2003; Grant and Kim, 2003; Toneatto and Brennan, 2002; Cunningham-Williams, Cottler, Compton, and Spitznagel, 1998; Cunningham-Williams, Cottler, Compton, Spitznagel and Ben-Abdallah, 2000; Balszcynski and Steel, 1998; Steel and Balszcynski, 1998). While much of this research utilizes a variety of measurement instruments and is based on specialized populations, such as treatment seeking individuals, it does provide some initial estimates of the extent of comorbidity, and thus the importance of the issue of comorbidity in the body of research investigating the social impacts of gambling.

Large sample studies, such as the St. Louis Epidemiologic Catchment Area study (Cunningham-Williams, Cottler, Compton, and Spitznagel, 1998) indicate quite high rates of comorbidity between substance abuse and gambling disorders, as well as high rates of mental health problems, including major depression, schizophrenia, phobias, and antisocial personality disorder. Moreover, research focusing on the temporal ordering of co-morbidity of gambling disorders and other disorders (e.g., Cunningham-Williams, Cottler, Compton, Spitznagel and Ben-Abdallah, 2000; Potenza et al, 2002) suggests that the onset of gambling disorders is subsequent to the onset of antisocial personality disorder, phobias, and alcohol and cannabis dependence.

Question:

What is the scientific basis for the assertion that casino gambling contributes to the moral decay of society and that gambling "preys on the poor?"

There is no systematic, valid scientific research that supports the assertion that casino gambling causes the moral decay of society. Moreover, socioeconomic data for non-gamblers, low risk gamblers, at risk gamblers, problem gamblers, and pathological gamblers (NGISC) show no significant differences in terms of household income. In short, the data do not support the claim that gambling systematically "preys on the poor."

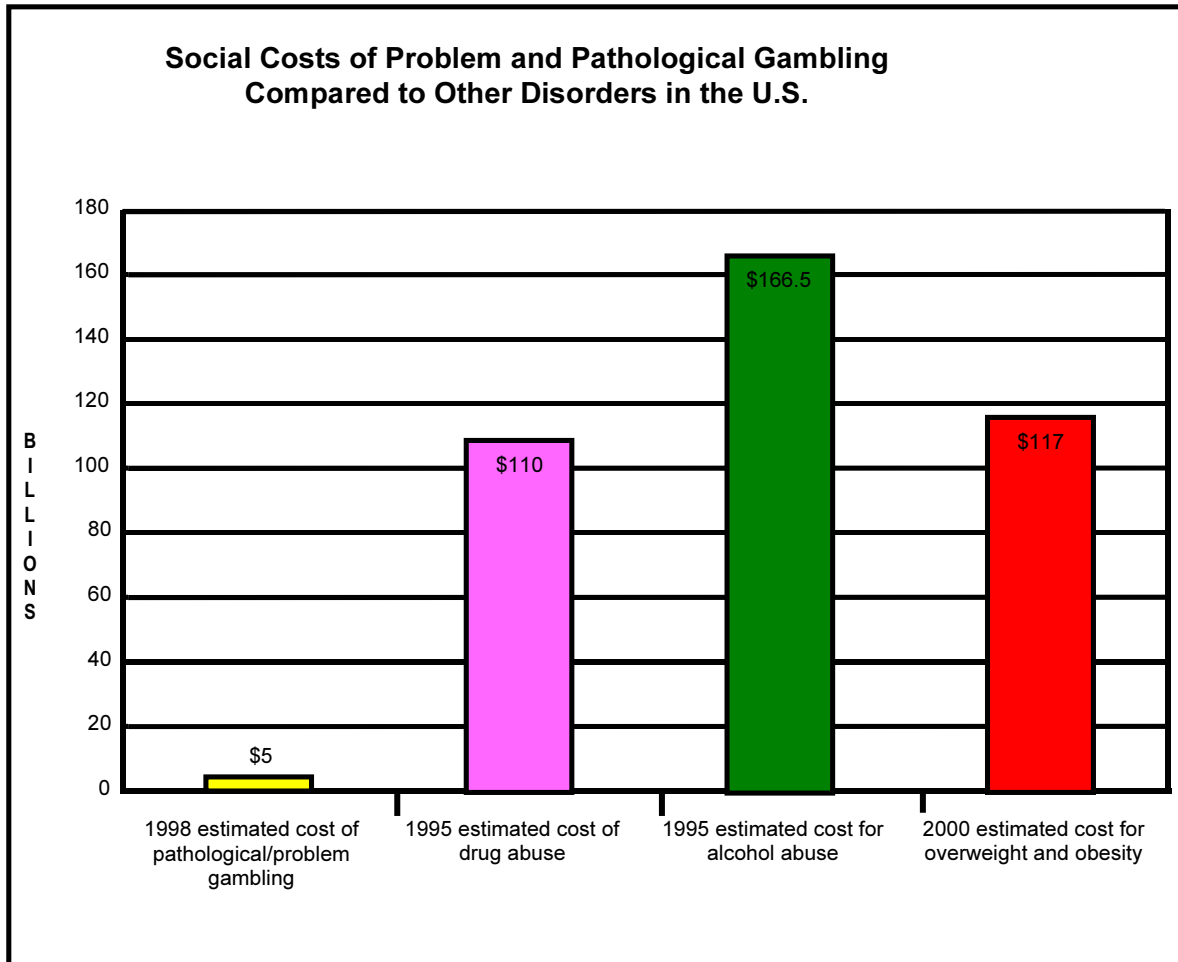
Question:

What is the overall societal cost of pathological and problem gambling in the United States?

Estimating the economic costs associated with problem and pathological gambling is a challenging task requiring a variety of assumptions, some of which are more defensible than others. In part, the accuracy of cost estimates depends on the accuracy of the estimated number of problem and pathological gamblers, as well as understanding the wide variety of types of costs that can (or are) incurred by those with gambling disorders. Moreover, **there is the issue of comorbidity and the challenge of identifying how much of various costs are due to gambling disorders compared to other comorbid disorders.**

With these caveats in mind, the most recent, well considered, and objective attempt at estimating costs is the NORC analysis commissioned by NGISC. We rely on the NORC estimates herein.

It is informative to consider the relative estimated costs of gambling disorders compared to the estimated costs of other disorders, such as drug and alcohol abuse and overweight and obesity. This comparison provides a reasonable context for assessing the scale or magnitude of the costs relative to more pervasive, better understood, and more commonly treated disorders. The NORC estimates of the costs of problem and pathological gambling, as well as estimates of the costs of alcohol abuse, drug abuse, and overweight and obesity are presented in the graph below.



Sources: The drug and alcohol estimates are reported in NORC and the overweight and obesity estimates are reported by the Centers for Disease Control and the United States Surgeon General.

In terms of assessing the scale of the costs, these data indicate that the costs of problem and pathological gambling are roughly 4% of the costs of drug abuse, 3% of the costs of alcohol abuse, and 4% of the costs of overweight and obesity.

Question:

What causes problem and pathological gambling?

NGISC conclusions regarding the causes of problem and pathological gambling are that:

- there are multiple "root causes" of problem and pathological gambling, including comorbidity with other behavioral problems such as personality disorders, substance abuse, and mood disorders; probable genetic predispositions; parental role model influences; and life course factors such as age of onset of problem and pathological gambling

In short, there are multiple, complex causes and correlates of gambling disorders. In turn, simple statements that assert or identify a single cause or correlate are inappropriate.

Question:

Does access to or availability of gambling facilities cause or create problem and pathological gamblers? Is the proliferation of legalized gambling in the US over the past thirty years associated or correlated with increases in the prevalence of problem and pathological gamblers?

There is some research that indicates a link between the availability of gambling and increases in the prevalence of problem and pathological gambling. However, this research does not address the issue of causality, just that of correlation (causality is a very strong term, requiring quite rigorous scientific methods). There is also some research that indicates the absence of such a link between proximity to or availability of gambling facilities. Currently, there is no scientifically reliable research that provides evidence supporting a conclusion that the availability of gambling facilities causes pathological or problem gambling or creates pathological or problem gamblers.

Another question is whether the proliferation of legalized gambling in the U.S. associated or simply correlated with upward trends in the number of problem and pathological gamblers? The conclusion is that there is no consistent, scientifically reliable research that supports the argument that the proliferation of gambling in the U.S. has led to increases in the prevalence of problem and pathological gambling.

The NRC report (1999: 65) addresses this issue succinctly.

Perhaps the most serious limitation of existing prevalence research is that the volume and scope of studies are not sufficient to ... provide estimates of changes in prevalence [of problem gambling] associated with expanded gambling opportunities and other secular trends.

While NORC and NRC report some research that is suggestive at best of a correlation between access to gambling and the prevalence of gambling disorders, important cautions must be observed in interpreting this research. The NORC evidence supporting a link between availability of gambling facilities and increases in the prevalence of problem and pathological gambling is limited to a combination of the "adult survey" and "patron survey." The link was not statistically significant in the "adult survey" alone.

The NRC review of research in six states that investigated changes over time in the prevalence of problem and pathological gamblers after the introduction of gambling opportunities reveals that evidence for a link between the two is variable. Increases in prevalence were statistically significant in some cases, not statistically significant in others, and in some cases, prevalence declined. The NRC is quite clear that due to methodological and statistical concerns, prior research on the relation between availability of gambling and prevalence of gambling disorders should be interpreted with caution. To wit (NRC, 1999: 82-83):

Because differences in the prevalence rates found in surveys done at different times might be due to differences in response rates, sampling procedures, or a host of other such factors, these findings should not be overinterpreted.

Additional research on the impact of the availability of gambling on gambling disorders in Canada has found no statistical basis for concluding that the increasing availability of gambling has led to increases in gambling disorders (e.g., Alberta Alcohol and Drug Abuse Commission, 2001, Alberta Gaming Research Institute, 2001; Govoni, Frisch, Rupcich and Getty, 1998). The Govoni et al research is one of the rare pre-test, post test designs that collected baseline gambling disorder data before the opening of Casino Windsor and then collected comparable data one year after the casino opened. The research results indicated no significant increases in gambling disorders among the resident population.

Existing research on problem and pathological gambling focuses exclusively on prevalence (including the research reviewed in the NRC report and the original research conducted by NORC). Prevalence is defined as the average total number of cases in a specified time period. Incidence, on the other hand is the number of new cases in a specified time period. In order to reliably determine whether the availability or introduction of gambling facilities causes increases in problem and pathological gamblers, measures of incidence, not prevalence are required. Unfortunately, that has not been done to date. As the NRC report observes, "Incidence is especially pertinent to policy questions involving the effects of increased gambling opportunities, and changes in technology, industry practices and regulation." (NRC, 1999: 64).

Question:

What is the overall prevalence of problem and pathological gambling among adults in the United States?

A variety of different studies, conducted at a variety of different times, using a variety of different definitions and measures have produced statistical estimates of the prevalence of problem and pathological gamblers (see for example, Shaffer, et al, 1997; Volberg, 1996a, 1996b, Volberg et al, 1996, Wallich, 1996; National Research Council, 1999). The mix of methodologies and definitions make it extremely difficult to compare these studies. Moreover, the reliability of the results is variable.

The NGISC commissioned NORC to develop a methodology to provide updated, statistically reliable prevalence estimates of pathological and problem gamblers. In so doing, NORC developed a new DSM-IV based screening instrument for use among the general (i.e., non-clinical) population. The instrument was designed to screen for both "lifetime" and "past year" prevalence. NORC tested the reliability of the instrument and found strong internal consistency and test-retest reliability for both the "lifetime" and "past year" prevalence measures. While the "lifetime" measures also exhibited high validity, the "past year" prevalence measures did not. Thus, as NORC indicates, the "lifetime" prevalence measure is the more appropriate to use (as opposed to the "past year" measure).

It is important to point out that while relying on the superior validity of the "lifetime" measure of prevalence provides added statistical confidence in the estimate, a "lifetime" measure also is likely to over-estimate current prevalence since some unknown number or proportion of "lifetime" problem or pathological gamblers likely have sought clinical treatment or have otherwise addressed the problem and currently do not exhibit symptoms.

Even considering the caveats associated with their methodology, and cautions about potential over-estimation of lifetime rates, the NORC prevalence estimates are probably the best estimates currently available. However, it is important that the methodology and process of estimation of prevalence should continue to be improved and reliability and validity enhanced.

Keeping in mind the issue of the validity of the "last year" estimates and the likely over-estimation of current prevalence based on the "lifetime" measures, the NORC analysis, relying on the combined adult telephone and the patron intercept samples, indicates the following national prevalence estimates as a proportion of the general U.S. population:

- 1.2% of the adult population are "lifetime" pathological gamblers
- .6% of the adult population are "past year" pathological gamblers
- 1.5% of the adult population are "lifetime" problem gamblers
- .7% of the adult population are "past year" problem gamblers

In order to interpret the prevalence estimates of problem and pathological gambling in a meaningful manner, it is perhaps helpful to compare them to the prevalence of alcohol and drug abuse and dependence (alcohol and drug prevalence data are from the National Comorbidity Survey, Kessler, et al, 1994) as well as the prevalence of overweight and obesity (overweight and obesity data are from the American Obesity Association, 2004). The table below presents these comparisons. Note that the gambling, alcohol and drug disorder data are reported for both past year (presence of the problem in the past year) and lifetime (presence of the problem ever), the overweight and obesity data are not broken out in that manner.

Disorder	<i>Prevalence</i>	
	Past Year	Lifetime
Problem Gambling	.7%	1.5%
Pathological Gambling	.6%	1.2%
Problem & Pathological Gambling	1.3%	2.7%
Alcohol Dependence	7.2%	14.1%
Alcohol Abuse & Dependence	9.7%	23.5%
Drug Dependence	2.8%	7.5%
Drug Abuse & Dependence	3.6%	11.9%
Overweight	65%	
Obesity	31%	

Question:

Are some forms of gambling better than others?

A clear policy question regarding legalized gambling is whether some forms of gambling pose a higher risk than others. We are not asking whether some forms of gambling cause gambling disorders, rather, are some forms of gambling associated or correlated with a higher prevalence of gambling disorders?

This question has begun to be addressed, but with a particular focus and in a particular geographic area. The focus has been on video lottery terminals (VLTs) and most of the research has been conducted in Canada. A significant amount of research has focused on several properties of VLTs, factors that in combination potentially enhance the addictive properties of this form of gambling compared to others (see for example, Smith and Wynne, 2004).

Research conducted by Wynne, Smith and Volberg (1994), Wynne Resources (1998), and Smith and Wynne (2002, 2004) in the province of Alberta indicate that individuals with gambling disorders are over-represented among those who play VLTs. A 1998 study commissioned by the Alberta Alcohol and Drug Abuse Commission (AADAC) (Wynne Resources, 1998) utilized a random survey of over 1,800 adult Albertans. The key research results indicate that pathological and problem gamblers were substantially more likely than non-problem gamblers to report that VLTs are their favorite form of gambling. VLTs were ranked as the favorite gambling activity by pathological gamblers and ranked as the ninth favorite gambling activity by non-problem gamblers. A 2002 follow-up study funded by the Alberta Gaming Research Institute (Smith and Wynne, 2002) found a similar relationship between VLT participation and problem gambling. Specifically, 12% of non-problem gamblers played VLTs, 31% of low risk gamblers played VLTs, 45% of moderate risk gamblers played VLTs, and 61% of problem gamblers played VLTs.

Corroborating, though more anecdotal information is provided by the Alberta Alcohol and Drug Abuse Commission (Problem Gambling Information and Services Summary, 2001), which reports that of 3,100 problem gamblers receiving treatment services in the prior year, 67% indicated that VLTs were their game of preference, compared to casinos (13%) and bingo (12%). Similar patterns emerge from analysis of calls to the AADAC Gambling Help Line. Individuals that played VLTs constituted the majority of individuals seeking help from the Gambling Help Line over the period 1996 to 2000. In 2000, 50% of the calls were specifically associated with VLT participation, compared to 12% that were generally casino related.

Some experts (e.g., Smith and Wynne, 2002, 2004) suggest that VLTs may facilitate gambling addiction. As Smith and Wynne (2004, 1) state:

First, instead of coin winnings dropping into a hopper, as is the case with slot machines, they are displayed as credits on the computer screen and can only be redeemed by presenting a receipt to a cashier elsewhere on the premises. Second, VLTs are faster paced than other forms of gambling, thus allowing for more wagers in a gambling session. Third, VLTs are located in bars and lounges, making them

more accessible than most legal gambling formats. Fourth, the design of VLTs (bright colors, flashing lights and pleasant sounds) facilitates some players reaching a dissociative state; that is, becoming psychologically detached from reality and engrossed in a fantasy world. Lastly, VLT play is easy to learn, requires no special talent, and, because VLTs are governed by a randomly programmed microchip, there is no optimal playing strategy. These commingling factors are thought to produce an addictive potency greater than that of other gambling formats and as a result, pose formidable policy challenges for the jurisdictions that sanction them.

The NGISC also offered an opinion about the potential disadvantages of other forms of gambling. The NGISC Report (1999: 7-4) states:

And in the past few years, internet gambling sites enabled slot machine and video poker style gambling to come right into our homes. In many ways, these forms of gambling are far more troublesome than any other, as the benefits are negligible, the level of regulation minimal and the likelihood of abuse much greater. Of greater concern to parents, convenience and internet gambling are far more accessible to children and unlike casino and pari-mutual gambling, far more difficult to avoid. Further, the types of games typically offered in convenience gambling facilities or over the internet tend to be the fastest-paced and, therefore, the most addictive forms of gambling.

Recommendations

An obvious recommendation is that more research is needed. Any gambling legislation should require and fund more comprehensive research, including establishing valid and reliable baseline data of prevalence in Texas as well as providing for ongoing monitoring and tracking of the incidence (i.e., new cases) of gambling disorders.

There are a number of questions about gambling, gambling disorders, and individual and community level impacts that the scientific community has been unable to conclusively address. Many of these have been identified in this report. One of the most pressing is to better understand the comorbidity of gambling disorders with other disorders. This research will not only inform the dynamics of gambling disorders, but will also facilitate screening, assessment and treatment of gambling disorders.

While the question of what causes pathological and problem gambling is quite complex, gambling disorders nevertheless are a reality and therefore need to be addressed. There are effective treatment modalities available and effective ways of providing access to screening, assessment and treatment. Any legislation legalizing gambling should mandate state and gambling industry funding for aggressive gambling disorder screening, assessment, and treatment, as well as ongoing evaluation of the effectiveness of treatment programs.

Finally, any serious consideration of VLTs should weigh the potential hazards that are indicated by scientific research against any perceived benefits. Casino gambling, compared to other gambling formats, can provide the necessary mechanisms for appropriate regulation and control while providing significant entertainment and revenue generating opportunities.

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