

# **GAMBLING IMPACT AND BEHAVIOR STUDY**

**Report to the  
National Gambling Impact Study Commission**

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## **Other Contributors**

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## HIGHLIGHTS

### Basis of Findings

The National Opinion Research Center at the University of Chicago, in collaboration with Gemini Research, The Lewin Group, and Christiansen/Cummings Associates, collected or assembled and analyzed five new data sets on gambling behavior, problems, and attitudes. Three data sets were national surveys (2,417 adults at home via telephone, 530 adults intercepted in gaming facilities, and 534 adolescents (16 and 17 years of age) at home via telephone), and the other two were a 100-community statistical data base and ten community case studies on the effects of casino openings.

### Changes in Gambling Participation Over Time

- The last national survey of gambling behavior was published in 1976, conducted in 1975, and covered participants' lifetime and past-year behavior, with "past year" defined as calendar year 1974.
- Since the 1975 survey, the ratio of adults who have never gambled has dropped from roughly one out of three to one out of seven, and gambling expenditures have increased from 0.30 percent of personal income to 0.74 percent of personal income.
- Patterns of adult gambling have changed substantially since 1975:
  - Lotteries and casinos are now the most common forms of gambling. The proportion of adults who played the lottery in the past year has doubled to about one adult in two, and the proportion who gambled in a casino in the past year has more than doubled, to 29 percent of adults.
  - Past-year bingo and horserace betting have declined by two-thirds and about one-half, respectively.
  - Gambling patterns among women have grown more like gambling patterns among men.
  - Proportionately fewer people aged 18 to 44 years are gambling, and proportionately more people 45 and older are gambling, with the most dramatic increase among adults 65 and older; however, it is still the case that the proportion of seniors who gamble is smaller than the proportion of gamblers in younger age groups.

### Pathological and Problem Gambling

- Based on criteria developed by the American Psychiatric Association, we estimate that about 2½ million adults are pathological gamblers, and another 3 million adults should be considered problem gamblers.
- Extending these criteria more broadly, 15 million adults are at risk for problem gambling, and about 148 million are low-risk gamblers (about 29 million adults have never gambled).

- Although the telephone survey results alone did not detect statistically significant differences between men and women, the combined patron and telephone results indicate that men are more likely to be pathological, problem, and at-risk gamblers than women.
- Pathological, problem, and at-risk gambling are proportionately higher among African Americans than other ethnic groups, although African Americans still comprise a minority of all pathological gamblers.
- Pathological gambling is present in one out of five of the 1 percent of adults who consider themselves professional gamblers.
- Pathological gambling is found proportionately less often among people who are over 65, college graduates, and in households with incomes over \$100,000 a year; however, college graduates are more likely to be at-risk gamblers than those at other education levels.
- The availability of a casino within 50 miles (versus 50 to 250 miles) is associated with about double the prevalence of problem and pathological gamblers, according to the combined patron and telephone survey results. This finding is similar to the difference in the overall level of past-year casino gambling (40 percent of adults living close to casinos versus 23 percent of adults living 50 to 250 miles away); however, these prevalence rates were not different in the telephone survey alone.
- Pathological and problem gamblers are more likely than other gamblers or nongamblers to have been on welfare, declared bankruptcy, and to have been arrested or incarcerated.
- Pathological and problems gamblers are much more likely than low-risk gamblers to gamble for the excitement, to have been troubled by mental or emotional problems including manic symptoms and depressive episodes, and to have received mental health care in the past year.
- Pathological and problem gamblers, who comprise about 2.5 percent of adults, probably account for 15 percent of casino, lottery, and pari-mutuel receipts from the gamblers who are represented in the surveys.
- Pathological and problem gamblers in the United States cost society approximately \$5 billion per year and an additional \$40 billion in lifetime costs for productivity reductions, social services, and creditor losses. However, these calculations are inadequate to capture the intrafamilial costs of divorce and family disruption associated with problem and pathological gambling.

## **Youth Gambling**

- Youths 16 and 17 years old gamble less than adults and differently from adults, primarily betting on private and unlicensed games—especially betting on card games and sports and buying instant lottery tickets.
- Youthful gamblers tend to bet much smaller amounts of money than adults.

- Adjusting for the smaller amounts of money at stake, the rates of pathological and problem gambling among 16 and 17 year olds are similar to those for adults, and the rate of at-risk gambling is about double the adult rate.

### **Community Impact of Casinos**

- In communities proximate to newly opened casinos, per capita rates of bankruptcy, health indicators, and violent crimes are not significantly changed (changes in nonviolent and minor crime rates could not be analyzed statistically).
- Unemployment rates, welfare outlays, and unemployment insurance in such communities decline by about one-seventh.
- Construction, hospitality, transportation, recreation, and amusement earnings rise, but bar, restaurant, and general merchandise earnings fall, and race tracks are vulnerable to casino competition.
- Per capita income stays the same, indicating the communities reap more jobs, but not necessarily better jobs. There appears to be more of a shift in the types and locations of work than a net improvement in the local standard of living.
- There is wide perception among community leaders that indebtedness tends to increase as does youth crime, forgery and credit card theft, domestic violence, child neglect, problem gambling, and alcohol/drug offenses.

## INTRODUCTION

This report covers the background, methods, and findings of the research program initiated on behalf of the National Gambling Impact Study Commission by a study team from the National Opinion Research Center at the University of Chicago (NORC) and its partners at Gemini Research, The Lewin Group, and Christiansen/Cummings Associates.

The NORC team's program of research began with the execution of a contract with the Commission on April 23, 1998. In the 9 months following, five distinct data collections were designed, pilot-tested, and completed:

- We conducted a nationally representative telephone survey of 2,417 adults (aged 18 and older) regarding their gambling behavior, attitudes, and related factors.
- Using an abbreviated version of the telephone questionnaire, we performed an intercept survey of 530 adult patrons of 21 gaming facilities (casinos, racetracks, lottery ticket outlets, and small service establishments with electronic gaming devices) in eight states, as a supplement to the adult telephone survey.
- We carried out a national survey of 534 youths aged 16 and 17, using random sampling and the telephone questionnaire used in the adult telephone survey.
- We built a longitudinal data base (with data points from 1980 to 1996) of social and economic indicators and estimated gambling expenditures in a randomized national sample of 100 communities, stratified to represent places near to and distant from major gaming facilities, as well as states with and without lotteries.
- To complement the statistical analysis of community effects, we conducted case studies in 10 widely distributed communities regarding the effects of one or more large-scale casinos opening in close proximity; we based these studies on telephone interviews with seven to eight key persons in each community.

In the first section of this report, we compare the survey methods and key findings on gambling participation of the 1998 adult telephone survey with the methods and results of a 1975 national probability survey of adult gambling behavior and attitudes. The 1975 survey was conducted by researchers at the University of Michigan on behalf of the previous national commission concerned with gambling policy issues. The second section of the report describes our survey questionnaire's diagnostic screening approach, based on standardized psychiatric criteria for problem and pathological gambling, as well as our findings on the prevalence and correlates of pathological and other types of gambling among the adult population. The third section of the report estimates the economic costs engendered for the individual, family, and community by the most severely affected types of adult gamblers. The fourth section turns to the youth survey, providing our key findings concerning youth participation in types of gambling and the prevalence of gambling problems in the context of findings on these dimensions among adults. The fifth section reports the findings of a multilevel statistical analysis of the 100-community database, estimating the effects of casinos on a variety of local economic and social indicators. The sixth and final section develops the qualitative counterpart to the statistical analysis of community effects, summarizing the results of 10 community case studies and including two of these cases in detail. Separately bound from this volume are three appendices: Appendix A, which includes discussion of the development of the

questionnaires and contains the instruments used in the RDD, Patron Intercept, and Self-Administered Surveys; Appendix B, which includes discussion of the sampling and weighting methodologies for the RDD and Patron Surveys and the Community Database; Appendix C, which contains our detailed findings for all 10 of the case study communities, as well as the questionnaires used for this segment of our study, and Appendix D, which contains detailed statistical tables.

## **CHAPTER 1. COMPARISON BETWEEN THE RESULTS OF THE 1975 AND 1998 NATIONAL SURVEYS OF ADULT GAMBLING BEHAVIOR**

In 1976, when the Commission on the Review of the National Policy Toward Gambling issued its final report, only 13 states had lotteries, 2 states (Nevada and New York) had approved off-track wagering, and there were no casinos outside of Nevada. The gaming industry has grown tenfold since the “Review” Commission sponsored this first national survey on gambling behavior in the United States in 1975. Today, a person can make a legal wager of some sort in every state except Utah, Tennessee, and Hawaii; 37 states have lotteries, 21 states have casinos, 37 have lotteries, and slightly more have off-track betting. Furthermore, between 1976 and 1997, revenues from legal wagering in the United States grew by nearly 1,600 percent (Cox, Lesieur, Rosenthal, & Volberg 1997; Christiansen 1998), and gambling expenditures more than doubled as a percentage of personal income, from 0.30 percent in 1974, to 0.74 in 1997 (Kallick et al. 1976; Christiansen 1998).

Public opinion and the political landscape have changed tremendously since the Review Commission’s report was released. Not only have lawmakers dramatically eased existing restrictions around the country, but states are aggressively marketing their own games of chance, as well as marketing themselves to the casino industry. Such changes have brought not only the opportunity to gamble, but an *awareness* of the opportunity to gamble, into the everyday lives of most consumers around the country. One of the directives of the current Commission is to determine the extent to which these changes have modified gambling prevalence and behavior in the United States.

Studies on gambling prevalence among the U.S. general population have generally reported either a “lifetime prevalence rate” (the percentage of respondents who reported having ever gambled) or a “past-year prevalence rate” (which refers to the percentage of respondents who have gambled at least once in the past 12 months). The survey results collected for the Review Commission by a research group at the University of Michigan (Kallick, Suits, Dielman, & Hybels) showed that residents of the United States had a lifetime prevalence rate of 68 percent and a past-year prevalence rate of 61 percent. For the most part, studies conducted since 1976 have only been conducted in individual states that commissioned studies, usually as a result of concern about the effect of increased access to gambling opportunities. These studies have found that lifetime prevalence rates ranged from 64 to 96 percent and past-year prevalence rates ranged from 49 to 89 percent. In 1997, a meta-analysis was conducted of 120 of the 152 available studies in an effort to establish more precise overall estimates of gambling prevalence in the United States and Canada. This overview estimated that the lifetime prevalence rate across the general population was in the vicinity of 81 percent (Shaffer, Hall, & Vander Bilt 1997).

While valuable, these results do not provide the kind of detail and comparisons across time that are needed to inform national policy. In 1998 the National Gambling Impact Study Commission contracted with NORC to collect data from a nationally representative sample of households on gambling behavior and other factors, in order to extend knowledge about the prevalence and consequences of national changes beyond piecemeal state and regional levels to a national level. This section is a brief examination of methods and most notable comparisons of findings that we have been able to make between the 1975 and 1998 surveys.

## Methods

The University of Michigan's national survey of adult gambling attitudes and behavior took place in the summer of 1975 and involved a three-stage sample design. First, a set of primary sampling units (counties, large cities, and boroughs of New York) were selected at random to represent all of the household dwellings in the country. Approximately 3,250 households were then selected randomly within these primary sampling units (including an oversample of households in 12 of the largest U.S. cities). Each selected household was then approached to determine the number of adults (18 or older) of each sex residing there and to randomly pick one adult to be interviewed (the within-household selection procedures was designed to achieve a two-to-one oversample of males). This initial household contact was the "screening" stage, completed in approximately 2,680 households, or 82.5 percent of those sampled.

Every effort was then made during the field period of the study to complete an interview with each of the selected individuals. After completion, the survey was weighted so that each actual individual respondent was calculated to represent a specific number of persons of the same sex, household type, and geographic category. These weights were then further adjusted to match the overall sample to other key national characteristics such as sex, income, race, education, and occupation, using for these corrections the most contemporary population counts and estimates made by the U.S. Bureau of the Census.

The Michigan field team completed 1,749 interviews, for a 65.3-percent response rate; however, due primarily to large differences in response rates between the oversampled cities and other areas, the weighted response rate was 75.5 percent. The product of the successful screening rate among households and the successful interview rate among selected individuals produced the total cooperation rate—53.6 percent of actual (unweighted) interviews and 62.2 percent of the population after weighting the sample.

The survey of adults (18 and older) performed by NORC in 1998 was carried out by telephone, instead of in person. A random sample of 10-digit telephone numbers was purchased from Survey Sampling, Inc., a well-known vendor of telephone samples. The list from which the numbers were drawn included only actual U.S. area codes and telephone banks (that is, blocks of 1,000 consecutive numbers within these area codes) that had been determined to contain a threshold number of active residential numbers. Then each number in the sample of 9,200 numbers acquired by NORC was called (in some cases as many as 50 times) to determine whether it was a working residential number in contrast to a nonworking number, a commercial/business line, a cell phone, data or fax line, or a nonprimary household telephone. These calls also served to determine whether there was an English-speaking or Spanish-speaking adult in the household able to answer interview questions.

NORC staff classified 4,358 numbers as working residential numbers eligible for interview. NORC interviewers successfully screened 3,281 of these households to establish the number of adults of each sex residing there and to select one household adult (using systematic randomized sampling rules) for interview. Usable interviews were subsequently completed with 2,417 adults (44 in Spanish), of whom 14 were completed as self-administered versions of the questionnaire mailed to the respondents at their preference. The screening completion rate was 75.3 percent, and the post-screener completion rate was 73.7 percent, for a final cooperation rate of 55.5 percent.

The respondents to the telephone survey were weighted by age group, sex, ethnic/racial group, number of adults in the household, and state (in a few cases, contiguous smaller states were treated as a block). The weighted numbers and proportions were approximately equal to those in the general population, according to the March 1998 Current Population Survey, and the weights summed to the overall number of adult residents of the United States, approximately 200 million (more precisely, 197.35 million) persons. On average, each respondent in the 1998 survey represented about 81,650 adults.

The 1975 survey included a supplementary adult survey of 296 persons in three counties in the State of Nevada, which was then distinguished sharply from other states due to “the widespread legal availability of gambling casinos, slot machines, bingo, keno, and betting parlors.” This sample was screened to exclude “those who moved to Nevada in order to gamble,” and was meant to “predict what might happen if gambling facilities were legalized elsewhere” (quotations are from Kallick et al., 1976, p. 361). Among the comparisons made between the Nevada and national samples were differences in opinions about gambling, participation in gambling, and the prevalence of potential and probable “compulsive gamblers,” based on scaling a series of items adapted from a variety of psychometric measures of personality.

We did not need a special survey of Nevada residents in 1998 in order to “predict” the results of more widespread casino gambling, lotteries, and other forms of gambling, which had become so much more widely available in the intervening years. There was an argument to be made, however, for a supplementary survey that would yield an increased number of problem and pathological gamblers, using much more contemporary measures than the scales developed in 1975. The approach taken was a supplementary survey of patrons of gaming facilities. Data from the supplementary sample are described further and used in later analyses in this report, but not in this chapter.

The 1975 survey and NORC’s 1998 survey for the National Gambling Impact Study Commission were in many respects similar enough to permit ready comparison between their results. The questionnaire content of the two surveys was also similar in key details. Both supplemented the demographic and geographic information obtained in the screening phase with economic and family demographic indicators. Both surveys asked highly detailed questions about gambling behavior across the respondent’s lifetime and in the past year (or, in the 1975 survey, the 1974 calendar year). Both surveys queried adverse consequences related to gambling, gambling-related attitudes, and other types of behavior such as occupation, criminal record, and physical and mental health. The 1998 survey asked a series of standard questions on substance use and dependence similar to those on the National Household Survey on Drug Abuse.

Finally, the 1998 survey included a series of diagnostic questions for the subset of respondents who reported ever experiencing gambling losses greater than \$100 in one day or across a year. These questions were designed to match the criteria for diagnosing pathological gambling according to the definition in the *Diagnostic and Statistical Manual of the American Psychiatric Association, Fourth Edition*—or, the “DSM-IV criteria.” This series of questions, referred to in this report as the NORC DSM-IV Screen for Gambling Problems, or the NODS (to distinguish it from similar screening instruments such as the SOGS and MAGS), has no close counterpart in the 1975 survey. Further analysis of the items used in the 1975 survey to assess “probable compulsive

gambling” and “possible compulsive gambling” might permit us to use some of these items as stand-in for some of the diagnostic criteria in DSM–IV and thus permit closer comparisons of diagnostic categories in the two national surveys. However, this exploration must be deferred to future research.

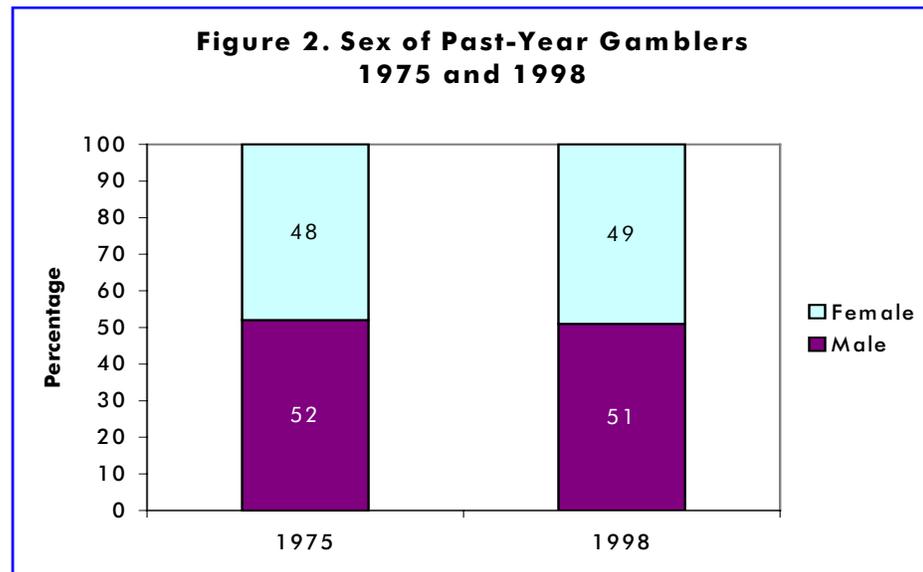
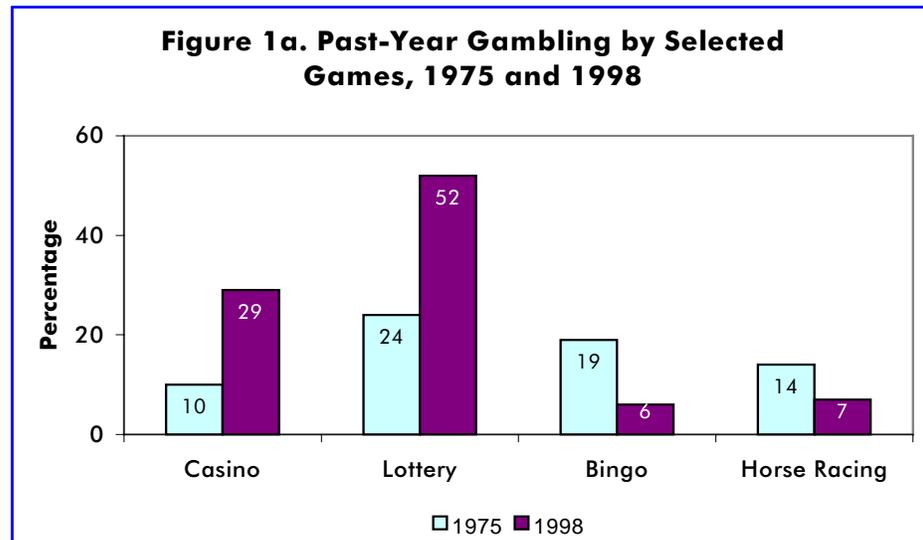
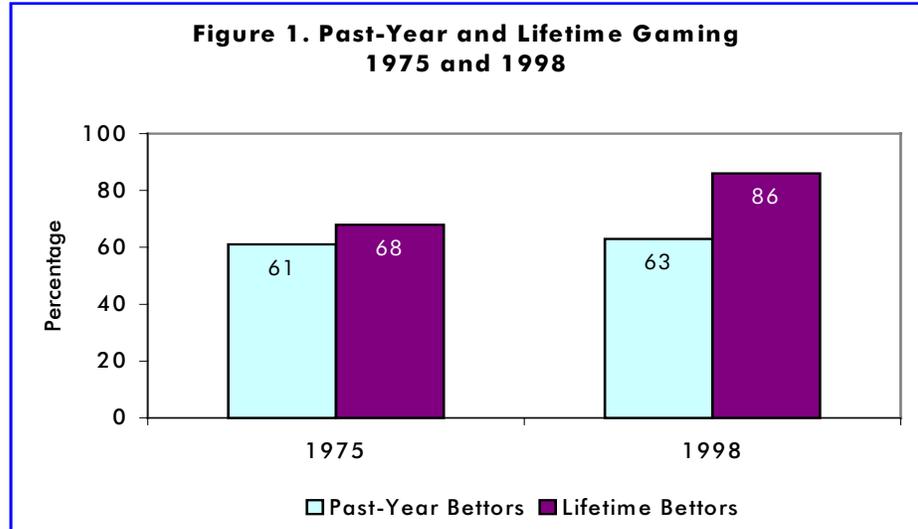
## **Overall Prevalence Rates**

The survey results published by the Commission in 1976 showed that in 1975, adult residents of the United States had a lifetime prevalence rate of 68 percent and a past-year prevalence rate of 61 percent. As can be seen in Figure 1 on the following page, the proportion of respondents indicating that they have gambled in the past year has not changed much since 1975, only reported by 63 percent—still considerably below the 78 percent of past-year gamblers in Nevada in 1975. However, the percentage of respondents who have gambled at least once in their lifetimes has increased noticeably at the national level, from 68 percent to 86 percent .

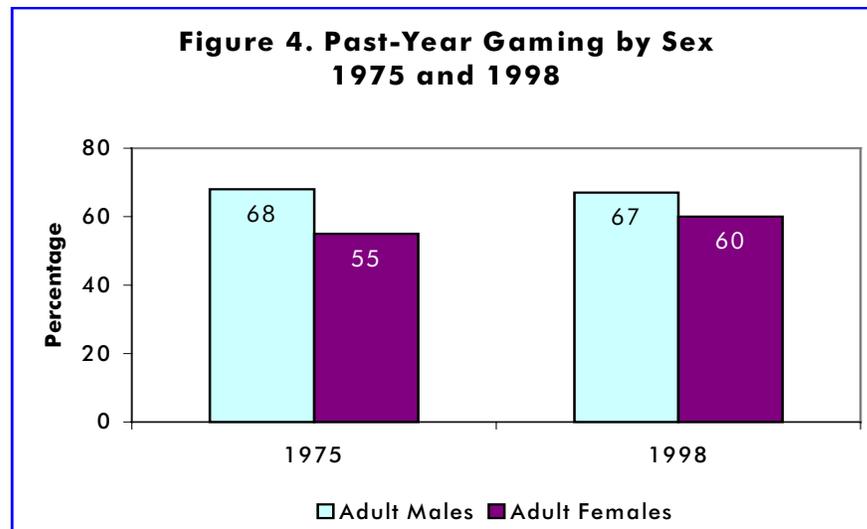
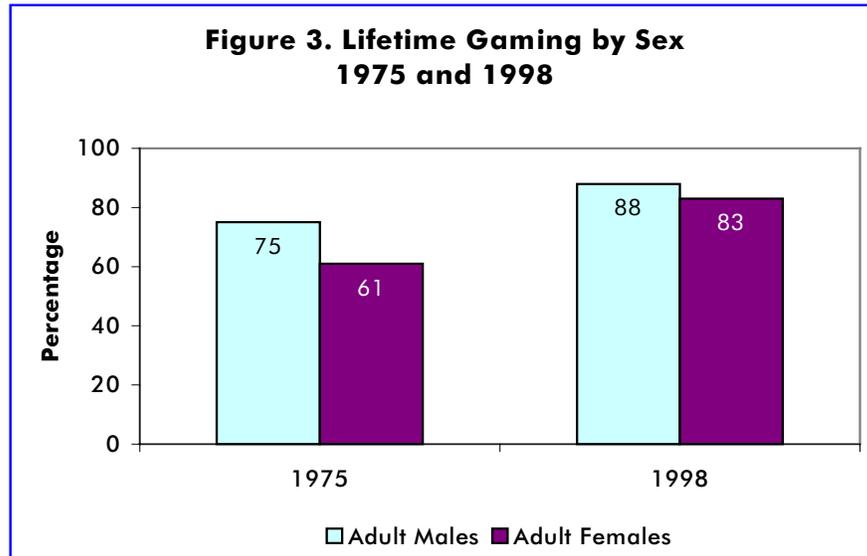
The change in rates for lifetime gambling is not surprising, since the sheer number of facilities one can visit to place a wager has exploded since the 1970s. However, it does appear surprising that the percentage of Americans who gamble each year remains unchanged. One possible explanation is that persons who play in casinos or buy lottery tickets tend to gamble more frequently now than before. The high visibility and controversy surrounding casinos and lotteries may also have played a role in this regard. Increasingly more Americans are flocking to play these types of games, while the popularity of the plethora of other games with less visibility and fewer patrons has declined dramatically. In Figure 1a on the following page, we display the change in rates of past-year play for casinos, lottery, bingo, and horse racing between 1975 and 1998. The percentage of people who reported playing the lottery in the past year has doubled, and the percentage reporting gambling in a casino in the past year has more than doubled. Past-year bingo, on the other hand, has decreased by two-thirds, and we found a similar decline in past-year pari-mutuel betting on horses.

## **Demographics of Gamblers**

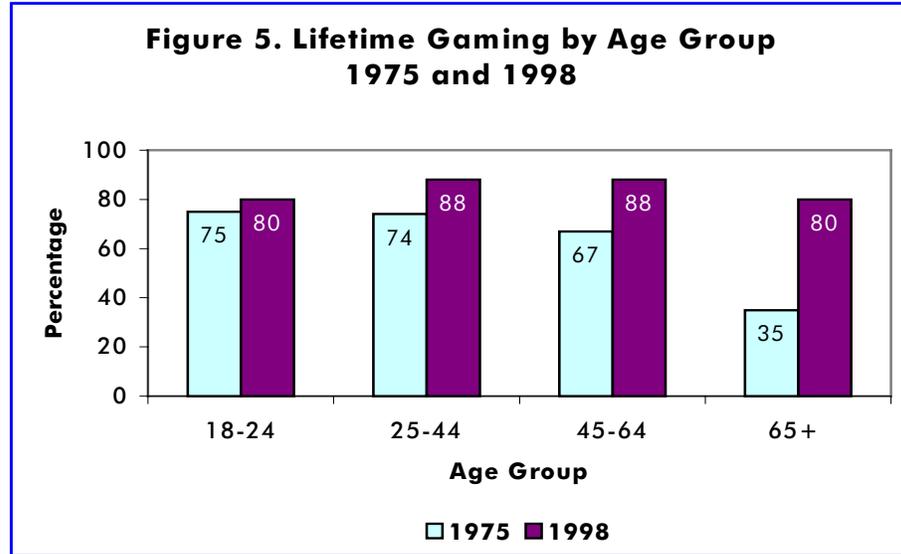
Next NORC examined the data to determine whether the characteristics of various types of gamblers have changed since the 1976 report. Data from both 1975 and 1998 show that the sex ratios of lifetime and past-year gamblers has remained constant and is in accordance with their distribution in the general population (see Figure 2). Of the games we examined for this overview, past-year casinos patrons most closely fit this overall finding, with an almost 50–50 division between males and females in both 1975 and 1998. Past-year lottery players did not differ much from casino patrons, except that males were slightly more likely to have played than females. On the other hand, past-year bingo players were more likely to be female in both 1975 and 1998, and we found this relationship to be even stronger today, with women comprising about two-thirds of adults who have played bingo in the past year.



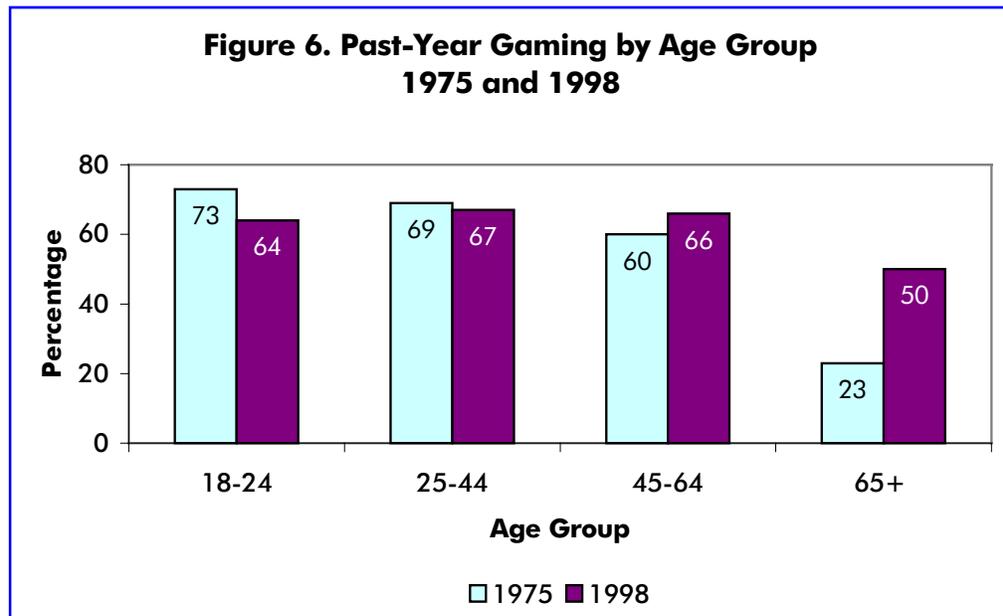
Despite the equal proportions of males and females who have gambled in their lifetimes, the actual percentage of all women who have ever gambled has risen by 22 percent, while for males, the percentage has increased by 13 percent (see Figure 3, below). Similarly, the percentage of women who have gambled in the past year has risen slightly, but the percentage of males who have placed a bet in the past year has stayed the same (see Figure 4).

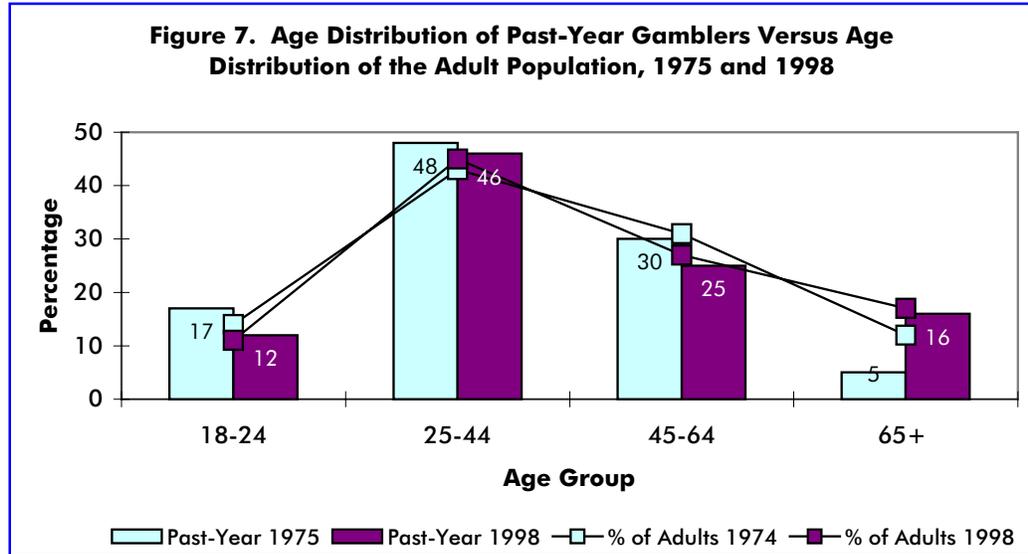


We also looked at differences between 1975 and 1998 by age group, which revealed some noteworthy changes. While the percentage of people who have ever gambled has increased in each age group (see Figure 5 on the following page), most notably among the population 65 years and older, today we see a more comparable distribution of lifetime gamblers across age groups. Another finding worth noting here is that the proportion of lifetime gamblers among young adults has increased only about 5 percentage points, while this proportion has increased within other age groups between 14 and 45 percentage points.



Looking at past-year gambling by age (see Figure 6 below) also reveals some interesting differences. The proportion of young adults placing a bet in the past year has decreased by about 10 percent, while it has increased slightly in the 45 to 64 age group and dramatically among persons over 65—about doubling. While it may be tempting to sound an alarm at what may appear to be a gambling epidemic among seniors, such changes are simply due to the fact that persons age 65 and older had much lower rates of participation relative to their proportion in the population in 1974. As we show in Figure 7 (on the following page), seniors are still underrepresented among the total population of past-year gamblers.



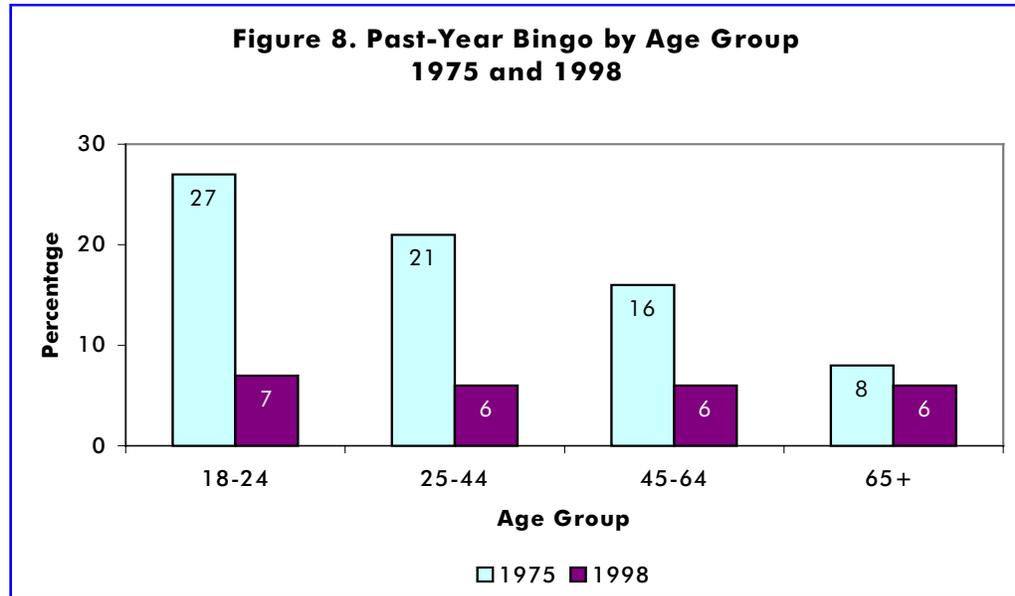


Finally, we examined demographics of players of specific games in 1975 and 1998. Probably the most striking difference between then and now is the distribution of individuals who play bingo. When the Commission published its report in 1976, bingo was far more popular, and one of the reasons ascribed to this was the social acceptability of the game, due to the established stereotype of the bingo player:

Bingo is commonly described as a “little old ladies” game. While this does not imply that only little old ladies play bingo, it clearly indicates that most people view bingo players as a conservative group, predominantly female, and somewhat elderly. In addition, they are often perceived as belonging to a low-income group with a relatively low educational achievement.

However, the data collected in 1975 contradicted this picture. The difference between the percentages of men and women who played bingo were not “overwhelming” (16 versus 21, respectively), and the group had a significant over-representation of persons under 25 as well as a significant under-representation of persons 65 and older. They found also that bingo players come from all educational backgrounds, but with disproportionately fewer from both extremes (persons without a high school diploma and college graduates) (Kallick et al. 1976).

Today the stereotype persists, and while it seems to be fulfilling itself, it would appear that it remains off-mark. The percentage of women who have played bingo in the past year is double that for men, and the percentage of players without a high school diploma is triple that of the number of college graduates who play. In addition, the percentage of players from every age group has fallen off considerably more than it has for players 65 and older (see Figure 8 below). Nevertheless, in 1998, the age distribution of bingo players is virtually identical to their proportions within the general population.



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## **CHAPTER 2. THE PREVALENCE AND CORRELATES OF GAMBLING PROBLEMS AMONG ADULTS**

Legal gambling is now an accepted part of the social landscape in many countries. When gambling is legalized, the operation and oversight of these activities become part of the routine processes of government. Gambling commissions are established; revenues are distributed; and constituencies of customers, workers and organizations develop. Governments become dependent on revenues from legal gambling to fund essential services. Many nongambling occupations and businesses also become dependent on revenues from legal gambling to continue to operate profitably, including convenience stores, retail operators, restaurants, hotels, social clubs, and charitable organizations. Ancillary services—including legal, accounting, architectural, public relations and advertising, security, and financial organizations—expand their activities to provide for the needs of gambling operations (Volberg 1998a).

A further element in the growing legitimacy of gambling has been the “medicalization” of gambling problems and the professionalization of gambling treatment (Abt & McGurrin 1991; Rosecrance 1985), in other words, the acceptance of gambling problems as suitable subjects for disciplines such as psychiatry, clinical psychology, and epidemiology. A constituency of well-educated treatment professionals has emerged whose livelihoods involve providing services to governments and gaming operators. Organizations that provide services to these helping professions—hospitals, clinics, government health agencies, universities and colleges, the insurance industry—have growing interests in the development of legal gambling. These organizations are investing increasing, though still relatively modest, resources in training and certifying treatment professionals, in educating students, and in covering treatment for pathological gambling.

### **The Social Construction of Psychiatric Tools**

The tools used to generate numbers are always a reflection of the work that researchers and others are doing to identify and describe the phenomena in which they are interested (Gerson 1983). Historically, standardized measures and indices have often emerged in situations where there is, simultaneously, intense controversy and a perceived need for public action (Porter 1995). Examples include the emergence of measures of “public utility” in France in the mid-1800s and the development of cost-benefit analysis in the United States in the mid-1900s.

There have been three “generations” of psychiatric research since the turn of the century. The third, and latest, generation of studies began around 1980 and coincided, as did the first two generations, with dramatic changes in psychiatric nomenclature (Dohrenwend 1998). The publication of the third edition of the *Diagnostic and Statistical Manual (DSM-III)* (American Psychiatric Association 1980), with its systematic approach to psychiatric diagnoses, led directly to the development of semi-structured interviews and rating examinations for use by clinicians. These tools were quickly adopted for epidemiological research despite the lag in research to establish the validity of these case identification procedures among general population samples (Dohrenwend 1995).

The assumption underlying all of the existing gambling research is that gambling-related difficulties are a robust phenomenon and that gambling problems exist in the community and can be measured. Despite agreement among researchers and treatment professionals at this fundamental level, there is disagreement about the concepts and measurement of gambling-related difficulties. The ascription of “conceptual and methodological chaos” to the field (Shaffer, Hall & Vander Bilt 1997:8) may be an overstatement of the situation among its experienced researchers, but the presence of competing concepts and methods is not uncommon among emerging and even mature scientific fields. Nevertheless, disputation among experts has led to some degree of public confusion and uncertainty about the impacts of legal gambling on society.

### **Measuring Gambling Problems**

Following the inclusion of the diagnosis of pathological gambling in the *DSM-III* for the first time in 1980, a few researchers from a variety of scientific disciplines, including psychiatry, psychology, and sociology, began to investigate gambling-related difficulties using various methods from psychiatric epidemiology. At this time, few tools existed to measure gambling-related difficulties. The only tool that had been rigorously developed and tested for its performance was the South Oaks Gambling Screen (SOGS). The SOGS, closely based on the new diagnostic criteria, was originally developed to screen for gambling problems in clinical populations (Lesieur & Blume 1987).

The SOGS is a 20-item scale that includes weighted items to determine if the client is hiding evidence of gambling, spending more time or money gambling than intended, arguing with family members over gambling and borrowing money from a variety of sources to gamble or to pay gambling debts. In developing the SOGS, specific items as well as the entire screen were tested for reliability and validity with a variety of groups, including hospital workers, university students, prison inmates, and inpatients in alcohol and substance abuse treatment programs (Lesieur & Blume 1987).

### **Adopting the South Oaks Gambling Screen in population research**

Like other tools in clinical research, the SOGS was quickly adopted in clinical settings as well as in epidemiological research. The SOGS was first used in a prevalence survey in New York State (Volberg & Steadman 1988). By 1998, the SOGS had been used in population-based research in more than 45 jurisdictions in the United States, Canada, Asia and Europe (Shaffer, Hall & Vander Bilt 1997; Volberg & Dickerson 1996; Volberg & Moore 1999). This widespread use of the SOGS came at least partly from the great advantage of comparability within and across jurisdictions that came with use of a standard tool (Walker & Dickerson 1996). Although there were increasingly well-focused grounds for concern about the performance of the SOGS in non-clinical environments, this tool remained the *de facto* standard in the field until the mid-1990s, when the new DSM-IV criteria were published (American Psychiatric Association 1994; Volberg & Banks 1990).

Like all tools to detect physical and psychological maladies, screening questions to detect gambling problems can be expected to generate some errors in classification. However, misclassification has very different consequences in different settings. Misclassification can occur when an individual without the malady in question is misdiagnosed as having the malady. This type of classification error is called a “false positive.” Misclassification

can also occur when an individual with the malady is misdiagnosed as not having the malady. This type of classification error is called a “false negative.” While most screens to detect psychiatric disorders work well in clinical settings where the prevalence of the disorder under investigation is predictably high, the accuracy of many psychiatric screens declines when they are used among populations where prevalence is much lower, such as the general population (Dohrenwend 1995).

### **Validating the South Oaks Gambling Screen**

A national study in New Zealand in the early 1990s furnished an opportunity to examine the performance of the SOGS in the general population (Abbott & Volberg 1992, 1996). This opportunity arose from the two-phase research design employed in the New Zealand study, which allowed the researchers to identify *true pathological gamblers* using face-to-face interviews with respondents selected from subgroups of respondents in a much larger telephone survey. These sub-groups included non-problem gamblers, lifetime problem gamblers, and lifetime probable pathological gamblers, as classified by the SOGS. Prevalence rates for the national sample were corrected using the “efficiency approach,” which involved calculating the rate of true pathological gamblers in each group and dividing this number by the total number of respondents in the sample. The efficiency approach resulted in a revised current prevalence estimate in New Zealand that was 0.1 percent higher than the uncorrected current prevalence rate.

The revised prevalence estimate in New Zealand rested on the conservative assumption that there were no false negatives among individuals who do not gamble regularly. While error rates in the sub-groups have an impact on the overall prevalence rate, the size of the error rate for each group has a different impact because of the different sizes of these groups in the population. Even if the number of false negatives among respondents who do not gamble regularly were extremely small, the relatively large size of these groups contributes to a noticeably higher overall prevalence rate. For example, if the nongambling group in New Zealand is assumed to include a very small number of pathological gamblers (1 percent), the prevalence estimate increases by 0.7 percent.

The New Zealand researchers concluded that the *lifetime* SOGS was very good at detecting pathological gambling among those who would *currently* meet diagnosis for this disorder. However, as expected, the SOGS identified pathological gamblers at the expense of generating a substantial number of false positives. The *current* SOGS produced fewer false positives than the lifetime measure but more false negatives. It thus provided a weaker screen for identifying pathological gamblers in the clinical sense. However, the greater efficiency of the current South Oaks Gambling Screen made it a more useful tool for detecting rates of change in the prevalence of problem gambling over time (Abbott & Volberg 1996).

### **The eclipse of the South Oaks Gambling Screen**

With the rapid expansion of legalized gambling in the early 1990s, state governments began to establish services for individuals with gambling problems. In establishing these services in more than 20 states, policy makers and program planners sought answers to questions about the number of “pathological gamblers” in the general population who might seek help for their difficulties. These questions required epidemiological research to identify the number (or “cases”) of pathological gamblers, to ascertain the demographic

characteristics of these individuals, and to determine the likelihood that they would utilize treatment services if these became available.

Around this same time, a variety of methodological questions were raised about SOGS-based research in the general population (Culleton 1989; Dickerson 1993; Lesieur 1994; Volberg 1994; Walker 1992). Some of these issues, such as respondent denial and rising refusal rates, were common to all survey research. Other questions were related to the issue of how best to study gambling-related difficulties. These included reservations about the reliability and validity of the SOGS, as well as challenges to assumptions about the nature of gambling problems that were built into the original version of this instrument.

What led to the growing dissatisfaction with the South Oaks Gambling Screen? One important change was the rapid expansion of legal gambling itself. This expansion led many people who had never before gambled to try these activities. As legal gambling expanded into new markets and as new types of gambling were marketed to new groups, the individuals seeking help for gambling difficulties became increasingly heterogeneous. In their efforts to discount what they saw as unreasonably high prevalence rate estimates, representatives of the gaming industries also played a role in the eclipse of the South Oaks Gambling Screen.

Prevalence surveys in the early 1990s suggested that growing numbers of women and middle-class individuals were developing gambling problems (Volberg 1992; Volberg & Silver 1993). Several of the specific items included in the SOGS made little sense to these new groups or to the treatment professionals working with them. Questions about borrowing from loansharks, for example, or cashing in stocks and bonds to get money to gamble or pay gambling debts were more relevant to the middle-aged, middle-class men most likely to seek help for gambling problems in the 1970s and early 1980s than to the young adults and middle-aged women who began to experience gambling problems in the 1990s. Questions about others criticizing one's gambling and feeling guilty about one's gambling were more likely to receive a positive response from low-income and minority respondents than others in the population (Volberg & Steadman 1992). Questions about borrowing from the "household" to get money to gamble would be interpreted differently by individuals from ethnic groups where "household" may be defined as the entire extended family.

The need was also growing for tools appropriate to different settings and purposes, including program evaluation. In 1985, only three states funded services for problem gamblers, but by 1996, 21 states funded such services (Cox, Lesieur, Rosenthal & Volberg 1997). Along with these resources came new demands for accountability and performance. These demands drew further attention to the deficiencies of the SOGS and increased dissatisfaction with its performance in general population studies.

### ***Emergence of a new standard: The DSM-IV***

A standard exists when a multiplicity of workers concerned with a phenomenon accept, at least tacitly, that there is a best available measure to identify that phenomenon, and then adopt that measure in their daily work (Becker 1960; Dean 1979; Gerson 1983; Volberg 1983). However, the way we look at problem gambling has changed over the past couple decades, and likewise, the DSM-IV criteria are very different from the diagnostic criteria adopted in the DSM-III in 1980 (American Psychiatric Association 1994).

The changes made to the psychiatric criteria for pathological gambling incorporated empirical research that linked pathological gambling to other addictive disorders like alcohol and drug dependence (American Psychiatric Association 1994). In developing the DSM–IV criteria, 222 self-identified pathological gamblers and 104 substance abusers who gambled socially tested the individual items (Lesieur & Rosenthal 1991). Discriminant analysis was used to identify the items that best differentiated between pathological and non-pathological gamblers. While the results from this sample indicated that a cutoff of 4 points was appropriate (Lesieur & Rosenthal 1998), the American Psychiatric Association established a diagnostic cutoff of 5 points. Pathological gambling is now defined as persistent and recurrent maladaptive gambling behavior as indicated by five or more criteria (listed in the table below), with the reservation that the behavior is not better accounted for by manic episodes—a reservation added somewhat as an afterthought, as it was not part of the underlying research on which the DSM–IV criteria were based.

**Table 1. DSM–IV Criteria for Pathological Gambling**

Preoccupation	Is preoccupied with gambling (e.g., preoccupied with reliving past gambling experiences, handicapping or planning the next venture, or thinking of ways to get money with which to gamble)
Tolerance	Needs to gamble with increasing amounts of money in order to achieve the desired excitement
Withdrawal	Is restless or irritable when attempting to cut down or stop gambling
Escape	Gambles as a way of escaping from problems or relieving dysphoric mood (e.g., feelings of helplessness, guilt, anxiety, or depression)
Chasing	After losing money gambling, often returns another day in order to get even (“chasing one’s losses”)
Lying	Lies to family members, therapists, or others to conceal the extent of involvement with gambling
Loss of control	Has made repeated unsuccessful efforts to control, cut back, or stop gambling
Illegal acts	Has committed illegal acts (e.g., forgery, fraud, theft, or embezzlement) in order to finance gambling
Risked significant relationship	Has jeopardized or lost a significant relationship, job, or educational or career opportunity because of gambling
Bailout	Has relied on others to provide money to relieve a desperate financial situation caused by gambling

Most researchers and treatment professionals working with gambling problems have expressed satisfaction with the new DSM–IV criteria. At two recent international meetings of gambling researchers and treatment professionals,<sup>1</sup> the consensus was that the field needed to move fully into the new “DSM–IV era.” Internationally, researchers and treatment professionals have adopted the DSM–IV criteria as the new standard. For

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<sup>1</sup> The first meeting took place in conjunction with the Twelfth National Conference on Problem Gambling in June 1998 in Las Vegas, hosted by Trimeridian, Inc. Invited participants included researchers and treatment professionals from Australia, Canada, Great Britain, Spain, and the United States. The second meeting took place in September 1998 in Malta at the 42<sup>nd</sup> ICAA International Institute on the Prevention and Treatment of Dependencies; this meeting included members of the newly-organized ICAA Gambling Section from the countries of Canada, Denmark, Great Britain, Italy, the Netherlands, Spain, Sweden, and the United States.

all we have yet to learn about pathological gambling, the DSM–IV criteria are now the measure against which the performance of other instruments must be demonstrated.

At the end of the 1990s, one finds a rapidly growing community of researchers and treatment professionals active in the gambling field and a growing number of tools to measure gambling problems for different purposes. Until 1990, only three screens existed to identify individuals with gambling problems, including the ISR screen used in the last national study; the CCSM; and the SOGS (Culleton 1989; Kallick et al. 1975; Lesieur & Blume 1987). Since 1990, in contrast, nine screens for adults and three screens for adolescents have been developed, including two based on the SOGS and at least four based on the DSM–IV criteria.

Despite this proliferation, the psychometric properties of these new tools remain unexamined. Even more significantly, few of these new screens have been tested for their differential performance in clinical settings, population research, and program evaluation. Another concern is how to calibrate the performance of these new screens with the results of more than a decade of SOGS-based research.

### **Development of the NORC DSM–IV Screen for Gambling Problems (“the NODS”)**

The guidelines put forth by the National Gambling Impact Study Commission specified that the DSM–IV criteria be used to identify problem and pathological gamblers in the general population. This meant that the SOGS could not be used, since this instrument is based on the outdated DSM–III criteria. In developing the questionnaire for the research to be conducted for the Commission, the NORC team identified three screens based on the DSM–IV criteria that had been used in population research. These included the Fisher DSM–IV Screen (Fisher 1996), the Diagnostic Interview Schedule (DIS; Cunningham-Williams et al. 1998), and the Diagnostic Interview for Gambling Severity (DIGS; Winters, Specker & Stinchfield 1997).<sup>2</sup>

Careful consideration was given to all three of these possible tools for identifying individuals with gambling-related difficulties. Our initial decision was to use the DIGS rather than the Fisher DSM–IV Screen or the DIS. This decision was based on the fact that only the DIGS had been tested for its performance with non-clinical groups (Stinchfield 1997). This decision was further based on the high internal consistency of this screen (Winters, Specker & Stinchfield 1997). However, examination of the individual items that make up the DIGS raised several doubts, especially about the varying timeframes associated with different items and about the forced splitting of some of the DSM–IV criteria into two items.

Accordingly, the research team elected to develop a new instrument based on the DSM–IV criteria. We have called the new instrument the NODS (NORC DSM Screen for Gambling Problems). The specific items that make up the NODS and the DSM–IV criteria to which they relate are shown in Table 2 below.

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<sup>2</sup> A fourth screen based on the DSM-IV criteria, the Massachusetts Gambling Screen (MAGS; Shaffer, LaBrie, Scanlan & Cummings 1994) has never been used in adult population research.

**Table 2. DSM–IV Criteria and Matched NODS Lifetime Questions**

Preoccupation	1	Have there ever been periods lasting 2 weeks or longer when you spent a lot of time thinking about your gambling experiences or planning out future gambling ventures or bets? OR
	2	Have there ever been periods lasting 2 weeks or longer when you spent a lot of time thinking about ways of getting money to gamble with?
Tolerance	3	Have there ever been periods when you needed to gamble with increasing amounts of money or with larger bets than before in order to get the same feeling of excitement?
Withdrawal	4	Have you ever tried to stop, cut down, or control your gambling?
	5	On one or more of the times when you tried to stop, cut down, or control your gambling, were you restless or irritable?
Loss of control	6	Have you ever tried but not succeeded in stopping, cutting down, or controlling your gambling?
	7	If so, has this happened three or more times?
Escape	8	Have you ever gambled as a way to escape from personal problems? OR
	9	Have you ever gambled to relieve uncomfortable feelings such as guilt, anxiety, helplessness, or depression?
Chasing	10	Has there ever been a period when, if you lost money gambling one day, you would return another day to get even?
Lying	11	Have you ever lied to family members, friends, or others about how much you gamble or how much money you lost on gambling?
	12	If so, has this happened three or more times?
Illegal acts	13	Have you ever written a bad check or taken money that didn't belong to you from family members or anyone else in order to pay for your gambling?
Risky significant relationship	14	Has your gambling ever caused serious or repeated problems in your relationships with any of your family members or friends? OR
	15	ASK ONLY IF R IS IN SCHOOL Has your gambling caused you any problems in school, such as missing classes or days of school or your grades dropping? OR
	16	Has your gambling ever caused you to lose a job, have trouble with your job, or miss out on an important job or career opportunity?
Bailout	17	Have you ever needed to ask family members or anyone else to loan you money or otherwise bail you out of a desperate money situation that was largely caused by your gambling?

The NODS is composed of 17 lifetime items and 17 corresponding past-year items, compared to the 20 lifetime items and 20 past-year items that make up the SOGS, and the 20 items (19 items in the field test) that make up the DIGS. Like the revised South Oaks Gambling Screen (SOGS–R) used in most of the epidemiological research on gambling since 1991, the past-year item is asked for each lifetime NODS item that receives a positive response. The maximum score on the NODS is 10, compared to 20 for the SOGS. Although there are fewer items in the NODS, and the maximum score is lower, the NODS is designed to be more demanding and restrictive in assessing problematic behaviors than the SOGS or other screens based on the DSM–IV criteria.

Several complications needed to be overcome in developing the NODS. For example, a number of the DSM–IV criteria are difficult to establish with a single question. In assessing these criteria (preoccupation, escape, and risking a significant relationship), we used two or three questions, and respondents received a single point if they gave a positive response to any of the questions assessing that criterion. Another complication in constructing the NODS is that two of the DSM–IV criteria (withdrawal and loss of control) assume that the questioner already knows that the individual has tried to “stop, cut down, or control” her or his gambling. Therefore, we obtained this information first before asking whether the respondent had felt restless or irritable during these times (i.e., withdrawal); we then assessed whether the respondent had succeeded in doing so (or, experienced loss of control).

Our final decision in developing the NODS was to place definite limits on several of the criteria, in keeping with the approach taken in alcohol and drug abuse research. For example, in assessing “preoccupation,” the NODS asks if the periods when respondents spent a lot of time thinking about gambling or about getting money to gamble have lasted 2 weeks or longer. Similarly, the NODS asks whether respondents have tried to control their gambling three or more times without success (loss of control). We also ask respondents if they have lied to others about their gambling three or more times (lying). Only a positive response to the latter questions contributes to the respondent’s score on the NODS.

The greater specificity of the NODS was adopted by the research team in response to concerns about misclassification. As noted above, research on the performance of the SOGS has shown that the *lifetime* screen is very good at detecting pathological gambling among those who *currently* experience the disorder. However, the lifetime SOGS accurately identifies at-risk individuals at the expense of generating higher numbers of false positives. Although more research is needed, it is likely that the lifetime NODS will prove more effective than the lifetime SOGS at detecting pathological gambling in a variety of populations.

In the national survey, NORC chose to administer the NODS only to those respondents who acknowledged ever losing \$100 or more in a single day of gambling, as well as to those respondents who denied this, but acknowledged that they had been behind at least \$100 across an entire year of gambling at some point in their lives. We chose to use these “filter” questions in the national survey after our pretesting indicated that nongamblers and very infrequent gamblers grew impatient with repeated questions about gambling-related problems. Moreover, our review of previous surveys indicated that persons who had never experienced significant losses were not those who reported problems related to gambling (Volberg 1997a, 1997b). We believe that this approach captured virtually all of the respondents within the survey’s respondent population who would report three or more problems.<sup>3</sup> Further analyses will be needed to estimate the capture percentage for gamblers who would have reported one or two problems.

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<sup>3</sup> A bias may exist toward under-registration of problem gambling among lottery and bingo players. Such players tend to lose smaller amounts on any given day of gambling, which may accumulate to substantial sums; however, such players may not consider themselves “behind” in the sense that most gamblers would. Filtering based on expenditures or frequency of play rather than losses is an alternative approach that may yield some differences in survey-based estimation.

### **Validity and reliability of the NODS**

In developing our instrument for identifying individuals with gambling-related difficulties, we received substantial assistance from the gambling treatment community. Most significantly, we were able to field-test the NODS and examine its performance in a clinical sample prior to adopting it in the national survey.

A sample of 40 individuals in outpatient problem gambling treatment programs throughout the United States responded by telephone to an abbreviated version of the questionnaire used in the national survey. Thirty-eight of these individuals (95 percent) scored five or more points on the lifetime NODS. A diagnosis of pathological gambling requires an individual to meet five or more of the DSM–IV criteria. The other two cases scored four points on the lifetime NODS. Lesieur and Rosenthal (1991, 1998) have argued persuasively that meeting 4 of the 10 DSM–IV criteria constitutes an appropriate threshold for a diagnosis of pathological gambling.

Scores for the past-year NODS were somewhat lower than lifetime scores in the clinical sample. Thirty of the forty individuals (75 percent) scored five or more points on the past-year NODS; five of these individuals (12 percent) scored three or four points; and the remaining five (12 percent) scored zero to two points. The significance of lower scores on the past-year than the lifetime scale may differ depending on the status of the client. As discussed below, the DSM–IV criteria are meant to accumulate or apply across as many years as the individual has gambled—five criteria are not required to appear within the confines of a single year in order to establish the diagnosis, firmly identifying the individual as a pathological gambler. Lower past-year scores may also result when an individual has been in treatment for an extended period (more than 1 year) or entered treatment in order to prevent an impending relapse.

The test-retest reliability of the NODS across a period of 2 to 4 weeks was tested in 44 cases, including some of the clinical cases discussed above. Both the lifetime and past-year scores on the NODS were highly reliable. The lifetime test statistic ( $r=0.99$ ) and the past-year test statistic ( $r=0.98$ ) were well above the 0.80 considered desirable for overall test–retest agreement. Our conclusion based on the field test was that the NODS has strong internal consistency and retest reliability. The lifetime NODS appears to have strong validity as well in identifying clinically confirmed pathological gamblers. In this respect, the past-year NODS does not perform quite as well. We report the past-year data here to permit comparison with results of other surveys which use the 12-month time frame, but we consider the lifetime NODS scores to be the superior instrument for the purpose of estimating prevalence rates and investigating correlates. We report the past-year data here to permit comparison with results of other surveys which use the 12-month time frame, but we consider the lifetime NODS scores to be the superior instrument for the purpose of estimating prevalence rates and investigating correlates.

### **The NODS typology**

Numerous terms have been adopted or proposed in the field of gambling research to identify individuals who experience difficulties related to their gambling. The terms “compulsive” and “addicted” are popular with the public and the media; however, the psychiatric term “pathological gambler” is more widely used in the gambling treatment and research communities. The terms “problem,” “at risk,” “potential pathological,” “sub-clinical,” and “in transition” have all been proposed by gambling researchers or

treatment professionals to identify individuals who do not meet the psychiatric criteria for a gambling disorder but who nevertheless appear to experience substantial difficulties related to their gambling. One recent term, “disordered” gambling, was proposed as a way to describe the continuum of problems from less to more severe levels, noting the similarities and differences among troubled gamblers as observed in a multiplicity of studies (Shaffer, Hall & Vander Bilt 1997).

In discussing the results of the national survey, we have adopted the following terminology to correspond to the problem levels determined by the survey questions:

**Table 3. Criteria for Classifying Respondents**

<b>Nongambler</b>	<b>Never gambled</b>
Low-risk gambler	Gambled, but never lost more than \$100 in a single day or year OR Lost more than \$100 in a single day or year but reported no DSM-IV criteria
<i>Lost more than \$100 in a single day or year AND reported:</i>	
At-risk gambler	One or two DSM-IV criteria
Problem gambler	Three or four DSM-IV criteria
Pathological gambler	Five or more DSM-IV criteria

### **The role of timeframe**

The DSM-IV describes pathological gambling in the following terms:

Pathological gambling is persistent and recurrent maladaptive gambling behavior...that disrupts personal, family, or vocational pursuits.... Although a few individuals are “hooked” with their very first bet, for most the course is more insidious. There may be years of social gambling followed by an abrupt onset.... The gambling pattern must be regular or episodic, and the course of the disorder is typically chronic. (APA 1994, pp. 615–17)

In the study of clinical disorders, pathological gambling is considered a chronic rather than an acute disorder. Acute disorders, like influenza, wounds, or broken bones, may be healed and leave no further mark or susceptibility. Chronic disorders, like pathological gambling, alcoholism, and manic depression, are quite different. Once fully developed, chronic disorders strongly tend to recur, constituting a lifelong vulnerability; even in periods of remission or relative quiescence, the disorder may yield a continuing stream of disabilities. This vulnerability to relapse may be effectively treated and kept in check. However, a period in which the individual is relatively free of symptoms does not indicate that the person is free of the disorder.

From the perspective of measuring prevalence, the strongest emphasis belongs on determining whether pathological gambling has developed, rather than on whether symptoms are recent or current. The DSM-IV criteria clearly reflect this, in their focus on the accumulation of discrete symptoms across a lifetime. These criteria do not require that specific symptoms be clustered tightly together in time (e.g., during the past year).

The field test conducted prior to the national survey demonstrated that the sensitivity of the lifetime NODS in a clinical population was higher than the past year NODS. One would expect this if pathological gambling were appropriately conceptualized as a

chronic disorder. It remains to be seen how well the past-year NODS criteria map onto clinical assessments of pathological gambling. Based on how the NODS is constructed, as well as our findings in the general population, we believe that the specificity of the NODS items is very good, reducing the rate of lifetime false positives; in this respect, we believe the performance of the NODS exceeds that of the SOGS.

## **Patron Survey**

It was expected (and the results below confirm) that the adult RDD survey would yield a relatively small number of cases of pathological and problem gamblers. In anticipation of this limitation, NORC was charged with conducting a second survey to generate additional problem and pathological gamblers. An intercept survey of patrons of gaming facilities was selected as the most promising approach—in other words, to go where gamblers are, and especially where more frequent gamblers would be found in concentrated numbers. The research design called for 500 patron interviews to be collected from 5 major facility types in approximate proportion to their estimated share in overall gaming revenues. This distribution was targeted as follows: 170 interviews in lottery ticket outlets (not including locations with video lottery terminals only), 125 in Nevada and New Jersey casinos, 65 in riverboat casinos, 65 in Indian reservation casinos, 40 in pari-mutuel locations, and 40 in locations with video lottery terminals.

NORC first carried out a pilot study, which comprised 86 interviews with randomly selected patrons at three destination-style casinos in Wisconsin and Nevada. This type of facility was viewed as the most difficult in which to successfully conduct such a survey. (These casinos agreed to participate in the pilot study through the offices of the National Indian Gaming Association and the American Gaming Association.)

The pilot survey provided experience with the process of recruiting sites to participate in the survey, as well as with some of the specific methodological features of randomly intercepting and recruiting patrons in these settings (generally in the stream of foot traffic exiting through access doors or corridors), including the feasibility of completing an interview of this length. We shortened the RDD survey instrument by about one-third, to 191 items, to take on average 18 minutes to administer. In addition, the order of questions was revised somewhat for ease of administration in a paper-and-pencil in-person format. The field-test interviews were administered by NORC field interviewers.

Finally, in addition to testing the methods of the patron intercept survey, the pilot study provided confirmation of the expectation that proportionately greater numbers of pathological and problem gamblers might be obtained through this type of survey. Although the pilot survey was too small to confirm this point with counts of these two categories alone, the proportion of at-risk, problem, and pathological gamblers combined was nearly 36 percent in the pilot survey—a much richer concentration of such gamblers than was obtained in the pilot RDD survey.

The design for the patron intercept survey originally called for rotating the periods of data collection throughout business hours, picking 32 data collection sites with 16 interviews per site. The tight schedule for completion of the patron intercept survey, once Commission authorization was obtained, as well as the need to deploy interview resources efficiently, necessitated a revised design. Therefore, we selected fewer sites, took a greater number of cases per site, and standardized the time frames to the busiest

hours of mid-afternoon and mid-evening. At the conclusion of the patron intercept survey, we had completed 530 interviews in 21 facilities (see Table 4).

**Table 4. Patron Interviews**

Type of Facility	Targeted	Attempted	Completed	Response Rate
Casinos in NV & NJ	125	313	150	48%
Riverboat casinos	65	119	64	54%
Tribal casinos	65	98	67	68%
Lottery (traditional & VLT)	210	313	193	62%
Pari-mutuel	40	225	56	26%
<b>TOTAL</b>	<b>505</b>	<b>1,068</b>	<b>530</b>	<b>50%</b>

The sample facilities were in 7 states from all regions of the country: 4 in the Northeast, with 106 completed interviews; 7 in the North Central region, with 160 interviews; 4 in the South/Southwest, with 110 interviews; and 6 on the West Coast, with 145 interviews.

The patron intercept data were intended as a supplement to the adult telephone survey. Due to the constraints of sample selection and size, the intention was not to view these cases in isolation but to analyze them, to the extent possible, together with the telephone cases, improving the overall precision of our information about frequent players and problem and pathological gamblers. After carefully studying the composition of the patron intercept sample, we arrived at a procedure to combine the samples and re-weight the resulting larger file to accurately reflect the “dual-frame” origin of the respondents (that is, we viewed all adults as having two opportunities to be represented in the sample—to be contacted at home via telephone, and to be intercepted while visiting a gaming facility). We combined the samples by creating a file that included all of the more frequent past-year lottery or casino players from both surveys (intercept patrons not interviewed in casino or lottery sites were included here if they met either the lottery or casino participation criteria in their questionnaire responses). This “players” sample contained about 1,226 individuals (450 from the patron intercept survey and the remainder from the telephone survey) representing about 64 million players.

We then sorted the players from both surveys into 23 groups or “adjustment cells” (described in more detail in Appendix B); each cell included respondents who reported similar frequencies of casino and lottery play and were similar in age. We then took the population estimated to have the characteristics of each of these cells according to the telephone data alone and divided that population number by the number of patron AND telephone cases in the cell. We then assigned this average weight to each of the patron cases, and finally readjusted all the weights to add up once again to the cell’s population. In other words, we had the intercepted patrons *share* the sample weights assigned initially to the telephone cases whom they most resembled in terms of age and past-year gambling behavior. Finally, we recombined these re-weighted cases with all of the telephone cases who were not in the “players” file; none of these other caseweights (adding up to 133 million persons) were changed.

The following table indicates key characteristics of the weighted RDD file, the original unweighted patron file, and the combined, reweighted patron+RDD file.

**Table 5. Key Characteristics in RDD, Patron, and Merged Adult Surveys**

<b>Demographic Characteristic</b>	<b>RDD (N=2,417)</b>	<b>Patron (N=530)</b>	<b>Patron+RDD (N=2,867)</b>
<b>Sex</b>			
Female	51.9%	43.2%	51.5%
Male	48.1	56.8	48.5
<b>Race/Ethnicity</b>			
White	71.5	71.1	71.4
Black	11.1	20.0	12.2
Hispanic	10.2	4.2	9.3
Other	7.3	4.8	7.1
<b>Age</b>			
18–29	22.5	11.6	22.3
30–39	24.0	16.5	24.0
40–49	20.2	19.8	20.3
50–64	17.1	31.6	17.3
65+	16.2	20.5	16.1
<b>Education</b>			
Less than high school	11.8	15.6	12.3
High school graduate	27.5	34.6	27.9
Some college	31.2	28.5	30.7
College graduate	29.5	21.3	29.1
<b>Income</b>			
Less than \$24,000	34.4	28.5	32.8
\$24,000–49,999	31.2	31.9	31.0
\$50,000–99,999	27.1	28.7	26.7
100,000+	9.4	10.8	9.5
<b>Marital/Parental Status</b>			
Married	58.0	54.8	57.8
Divorced/Separated	10.0	17.3	10.6
Never married	24.7	21.7	25.0
Other marital status	7.4	6.3	6.6
Lives with (minor) children	38.3	27.8	38.3
<b>Employment</b>			
Current Full-time Employment	59.1	51.1	58.0
Part-Time Employment	11.4	10.6	11.9
Not Employed	29.5	39.2	30.1
<b>Distance to major casino</b>			
0–50 miles	21.2	60.8	24.4
51–250 miles	64.1	37.5	61.7
251+ miles	14.7	1.7	13.9
<b>Lottery state</b>	83.7	100.0	84.0
<b>“Professional gambler”</b>	1.0	4.0	1.4
<b>Frequency of Play</b>			
At least weekly lottery	12.3	41.4	12.5
At least monthly other gambling	12.6	49.8	12.0

The patron group was on the whole somewhat more likely than the RDD sample to be male, African American, older than 50, less than college educated, divorced, not employed, not an active parent, and living close to a major casino and in a lottery state. Some of these characteristics are also likely to be associated to some extent with under-representation in a telephone sample. More to the point of carrying out the patron survey,

the patrons were three to four times more likely to play the lottery at least once a week, gamble in other venues at least once a month, and (albeit only a small fraction) consider themselves to be “professional” gamblers.

### Prevalence Rates

Prevalence rates are based on the proportion of respondents who score on increasing numbers of items that make up the lifetime scale used in the survey. Table 6 presents information about the proportion of respondents who scored at particular levels on the lifetime NODS screen in the RDD survey, the patron survey, and the combined sample (which pools past-year casino and lottery players from the patron survey). The classifications, as discussed above, are nongamblers, low-risk gamblers (limited gambling losses or zero DSM–IV problem criteria), at-risk gamblers (affirmed one or two criteria), problem gamblers (affirmed three or four criteria), or pathological gamblers (affirmed five or more criteria).

As we display in Table 6, about one in seven (or 29 million) adults have never gambled, and about 148 million adults are low-risk gamblers. At the other end of the spectrum are pathological gamblers, who comprise about 0.8 percent of the adult population based on the RDD sample alone. Problem gamblers comprise another 1.3 percent of the adult population, based on the RDD sample, and 1.5 percent based on the combined sample. Our best estimate based on the combined sample is that there are about 2½ million pathological gamblers, 3 million problem gamblers, and 15 million at-risk gamblers in the United States.

**Table 6. Percentage Gambling Types Based on Lifetime and Past-Year NODS Scores**

	RDD Survey				Patron Survey				Combined (Patron+RDD)			
	%		N		%		N		%		N	
	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year
TOTAL	100.0	100.0	2,417	2,417	100.0	100.0	530	530	100.0	100.0	2,867	2,867
Nongambler	14.4	36.7	342	898	0.6	2.8	3	15	14.4	36.7	342	898
Low-Risk	75.6	60.4	1,841	1,452	68.3	72.6	362	385	75.1	59.1	2,145	1,784
At-Risk	7.9	2.3	183	55	17.9	14.3	95	76	7.7	2.9	267	125
Problem	1.3	0.4	30	9	5.3	4.9	28	26	1.5	0.7	56	33
Pathological	0.8	0.1	21	3	7.9	5.3	42	28	1.2	0.6	57	27

The higher rates of at-risk, problem, and pathological gambling in the patron survey confirm the expectations of the patron pilot survey, although that survey was carried out only in casinos.<sup>4</sup>

<sup>4</sup> The division of gambling types among patrons at particular types of gambling facilities was a particular interest of the Commission. As the table below indicates, the sample sizes, as well as the small number of sites for each detailed facility type within the patron database, render hazardous any attempt to generalize from the patron data alone. On a self-weighted basis, 13.2 percent of the patrons interviewed were problem or pathological gamblers, and 17.9 percent were at-risk gamblers. The pari-mutuel patrons at the three race-

As in other surveys, prevalence rates in the national survey are different among the various subgroups of the population. Table 7 shows lifetime prevalence of gambling type by demographic characteristics in both the RDD and combined surveys.

**Table 7. Lifetime and Past-Year Prevalence of Gambling Problems Among Demographic Groups, in Percentages**

Demographic Characteristic	RDD Survey (%)			RDD+Patron Survey (%)		
	At-Risk (n=183)	Problem (n=30)	Path. (n=21)	At-Risk (n=267)	Problem (n=56)	Path. (n=67)
	Life/Year	Life/Year	Life/Year	Life/Year	Life/Year	Life/Year
<b>Gender</b>						
Male	9.6 / 3.2	1.6 / 0.4	0.9 / 0.1	9.6 / 3.9	2.0 / 0.9	1.7 / 0.8
Female	6.3 / 1.6	1.0 / 0.4	0.7 / 0.2	6.0 / 2.0	1.1 / 0.6	0.8 / 0.3
<b>Race</b>						
White	6.8 / 2.2	1.2 / 0.2	0.6 / 0.1	6.8 / 2.7	1.4 / 0.6	1.0 / 0.5
Black	8.1 / 2.9	2.3 / 1.2	1.9 / 0.0	9.2 / 4.2	2.7 / 1.7	3.2 / 1.5
Hispanic	13.7 / 3.6	0.8 / 0.8	0.9 / 0.0	12.7 / 3.7	0.9 / 0.7	0.5 / 0.1
Other	9.6 / 1.4	1.1 / 0.5	0.6 / 0.3	8.8 / 1.8	1.2 / 0.5	0.9 / 0.4
<b>Age</b>						
18–29	10.3 / 4.3	1.9 / 0.8	1.2 / 0.1	10.1 / 3.9	2.1 / 1.0	1.3 / 0.3
30–39	6.9 / 1.4	1.0 / 0.4	0.5 / 0.2	6.9 / 2.1	1.5 / 0.8	1.0 / 0.6

tracks visited by interviewers differed significantly from the other five types in their distribution of gambling types; there were no statistically significant differences among the first five facility types. The past-year NODS distributions were very similar to the lifetime but at lower levels: 10.2 percent of all patrons were problem or pathological gamblers, and 14.3 percent were at-risk gamblers; across the six facility types from Nevada/Atlantic City casinos to pari-mutuel, pathological and problem gamblers were 6.7, 14.1, 10.5, 6.1, 6.7, and 28.5 percent of patrons, respectively.

On a more generalizable basis, patterns of lifetime prevalence were calculated using the combined RDD+Patron data file for past-year patrons (more than one visit) of Nevada and Atlantic City casinos, riverboats, tribal casinos, traditional lottery outlets, stores/bars restaurants with VLTs or other electronic devices, and pari-mutuel racetracks. The percentages of pathological and problem gamblers at these sites were, respectively, 8.5, 9.6, 7.7, 3.8, 5.3, and 15.1 percent. These results indicate that, among the most common gambling venues, multi-visit lottery patrons in general have the lowest prevalence of pathological and problem gambling; casino patrons have higher prevalence rates, with small differences by type of casino; and pari-mutuel patrons have the highest prevalence rates.

**Table a. Percentage of Gambling Types Based on NODS Lifetime Score, by Gambling Venue—Patron Data Only**

Type of Gambler	NV/AC Casino (5)		Riverboats (3)		Tribal Casino (2)	
	%	N	%	N	%	N
TOTAL	100.0%	149	100.0%	64	100.0%	67
Nongambler	0.7	1	0	0	0	0
Low-Risk	68.4	102	67.2	43	73.1	49
At-Risk	22.1	33	15.6	10	16.4	11
Problem	3.4	5	6.3	4	6.0	4
Pathological	5.4	8	10.9	4	4.5	3
Type of Gambler	Lottery Outlets (6)		VLT Locations (2)		Pari-Mutuel (3)	
	%	N	%	N	%	N
TOTAL	100.0%	164	100.0%	30	100.0%	56
Nongambler	0	0	0	0	3.4	2
Low-Risk	78.1	128	70.0	21	33.9	19
At-Risk	12.8	21	23.3	7	23.2	13
Problem	3.7	6	3.3	1	14.3	8
Pathological	5.5	9	3.3	1	25.0	14

**Table 7. Lifetime and Past-Year Prevalence of Gambling Problems Among Demographic Groups, in Percentages**

Demographic Characteristic	RDD Survey (%)			RDD+Patron Survey (%)		
	At-Risk (n=183)	Problem (n=30)	Path. (n=21)	At-Risk (n=267)	Problem (n=56)	Path. (n=67)
	Life/Year	Life/Year	Life/Year	Life/Year	Life/Year	Life/Year
40–49	9.2 / 2.3	1.5 / 0.5	0.9 / 0.3	8.9 / 3.3	1.9 / 0.7	1.4 / 0.8
50–64	5.3 / 2.3	1.7 / 0.0	1.1 / 0.0	6.1 / 3.6	1.2 / 0.3	2.2 / 0.9
65+	6.9 / 1.3	0.2 / 0.2	0.1 / 0.0	6.1 / 1.7	0.7 / 0.6	0.4 / 0.2
<b>Education</b>						
Less than HS	10.7 / 1.6	1.4 / 0.9	1.2 / 0.0	10.0 / 2.4	1.7 / 1.2	2.1 / 1.0
HS graduate	8.6 / 3.2	1.7 / 0.3	0.9 / 0.3	8.0 / 3.5	2.2 / 1.1	1.9 / 1.1
Some college	7.8 / 2.9	1.4 / 0.7	0.9 / 0.1	7.9 / 3.5	1.5 / 0.8	1.1 / 0.3
College graduate	6.1 / 1.4	0.7 / 0.0	0.3 / 0.0	6.4 / 2.0	0.8 / 0.2	0.5 / 0.1
<b>Income</b>						
Less than \$24,000	8.0 / 2.7	1.0 / 0.3	1.0 / 0.2	7.3 / 2.6	1.6 / 0.7	1.7 / 0.9
\$24,000–49,999	7.2 / 2.7	2.1 / 0.6	0.8 / 0.1	6.9 / 3.2	1.8 / 0.9	1.4 / 0.6
\$50,000–99,999	7.6 / 1.7	1.0 / 0.4	0.7 / 0.1	8.0 / 2.5	1.3 / 0.7	0.9 / 0.2
\$100,000+	12.3 / 2.2	0.9 / 0.2	0.6 / 0.0	13.4 / 4.9	1.4 / 0.4	0.7 / 0.2
<b>Marital status</b>						
Married	6.0 / 1.6	0.9 / 0.5	0.8 / 0.2	5.9 / 1.9	1.0 / 0.8	1.0 / 0.3
Divorced/separate	8.9 / 2.0	1.2 / 0.0	1.0 / 0.0	9.9 / 4.7	1.7 / 0.9	3.0 / 1.7
Never married	11.6 / 3.9	2.1 / 0.4	0.8 / 0.1	11.4 / 4.3	2.6 / 0.8	1.2 / 0.7
Cohabiting	8.1 / 4.4	1.8 / 0.6	1.3 / 0.0	6.8 / 3.2	1.2 / 0.2	0.8 / 0.0
Widowed	8.9 / 1.9	1.5 / 0.0	0.0 / 0.0	7.3 / 1.7	0.5 / 0.0	0.0 / 0.0
<b>Minor children</b>						
None	7.9 / 2.4	1.3 / 0.3	0.4 / 0.0	7.7 / 3.1	1.6 / 0.7	1.0 / 0.5
One or more	7.7 / 2.3	1.2 / 0.6	1.4 / 0.2	7.8 / 2.7	1.3 / 0.9	1.6 / 0.6
<b>Employment</b>						
Full-time	8.5 / 2.5	1.4 / 0.5	0.9 / 0.1	8.5 / 3.0	1.5 / 0.7	1.5 / 0.6
Part-time	4.6 / 0.7	0.0 / 0.0	0.6 / 0.5	5.3 / 2.1	0.3 / 0.0	0.8 / 0.6
Not employed	7.9 / 2.7	1.5 / 0.3	0.6 / 0.1	7.3 / 3.2	2.1 / 1.0	1.0 / 0.4
<b>Region</b>						
Northeast	10.1 / 3.4	1.4 / 0.0	0.5 / 0.0	8.8 / 2.9	0.8 / 0.0	0.4 / 0.0
South	5.8 / 2.1	0.9 / 0.6	1.2 / 0.2	5.9 / 2.2	1.1 / 0.6	1.2 / 0.4
Midwest	5.3 / 1.6	1.2 / 0.1	0.6 / 0.2	6.0 / 2.7	1.6 / 0.7	1.5 / 1.0
West	12.9 / 2.9	2.0 / 0.7	0.5 / 0.0	12.1 / 4.3	2.3 / 1.4	1.4 / 0.6
<b>Lottery state</b>						
No	4.5 / 2.8	1.4 / 0.8	1.4 / 0.1	4.6 / 2.9	1.4 / 0.7	1.5 / 0.2
Yes	8.5 / 2.3	1.3 / 0.3	0.7 / 0.1	8.3 / 2.9	1.5 / 0.7	1.2 / 0.6
<b>Distance to casino</b>						
0–50 miles	6.7 / 2.1	1.6 / 0.2	0.5 / 0.0	7.4 / 4.1	2.3 / 1.1	2.1 / 1.3
51–250 miles	8.7 / 2.3	1.3 / 0.5	0.7 / 0.1	8.5 / 2.6	1.2 / 0.6	0.9 / 0.3
250+	6.0 / 2.9	1.0 / 0.3	1.2 / 0.4	5.5 / 2.6	1.2 / 0.3	1.3 / 0.4
<b>Professional gambler</b>						
No	7.8 / 2.3	1.3 / 0.3	0.7 / 0.1	7.6 / 2.9	1.5 / 0.7	1.1 / 0.5
Yes	14.7 / 5.9	5.9 / 11.8	11.8 / 0.0	19.2 / 11.4	2.9 / 7.2	19.8 / 10.4

Several interesting observations can be made based on this table and associated tests of statistical significance (every specific difference in our findings that is noted in the

following discussion has a 5 percent or less likelihood of arising by chance). First, with regard to sex, we found that prevalence rates of problem and pathological gambling tended to be higher among men than women in the RDD survey, but not to statistical significance. However, significantly more at-risk male gamblers were present in this sample than at-risk female gamblers. When we increased the sample size by merging the RDD and patron survey data, analysis revealed that rates of at-risk, problem, and pathological gambling were all higher among men.

When we examined differences by age, we found that persons 65 years and older were substantially less likely to be at-risk, problem, or pathological gamblers than those in younger age groups. The prevalence rates of at-risk, problem, and pathological gambling are also higher among African Americans than whites in the combined survey (the difference in the RDD survey reaches significance only for pathological gamblers). In the combined survey data, the prevalence of at-risk and problem gambling is higher among the never married than those who are married, and divorced people have higher prevalence rates of pathological, problem, and at-risk gambling than married people. Prevalence is higher among respondents living with minor children in the household than among those without minor children in the household, but this may be due to the different age and sex profile of people living with minors (more of whom are women and under 65) versus those who are not.

Finally, about 1 percent of respondents in the telephone survey identified themselves as “professional gamblers.” Problem and pathological gambling are both present at elevated rates in this group. The DSM–IV states that professional gamblers, who limit their risk-taking and gamble in a “disciplined” way may relate somewhat differently to the screening items than other gamblers. However, the DSM–IV does not suggest that professionals are immune to gambling problems, any more than professional bartenders are immune to alcohol problems; nor does the DSM–IV recommend (or have a basis to recommend) that the screening criteria be modified for this subgroup. The evidence of our survey suggests that persons who consider themselves professional gamblers do not necessarily earn their entire living or even a significant part of it by gambling.

## **Regional Differences and Availability**

In summarizing the results of a large number of prevalence studies conducted throughout the United States, Cox, Lesieur, Rosenthal, and Volberg (1997) noted that prevalence rates tend to be lowest in the Midwest and higher in the Northeast. This cross-jurisdictional analysis also showed that prevalence rates are highest in southern states like Louisiana and Mississippi, where the availability of legal gambling has increased rapidly, where the population is ethnically diverse, and where socioeconomic levels are relatively low. In the national survey, prevalence rates of pathological and problem gambling are lowest in the Northeast and highest in the West.

The availability of a state-owned lottery has a statistically significant association with the prevalence of at-risk gambling (which increases about 80 percent, in parallel with the generally greater past-year lottery play in these states, 55 percent versus 33 percent). However, the difference in prevalence of problem and pathological gamblers hovers at the edge of statistical significance, and is in the opposite direction. The availability of a casino within 50 miles (versus 50–250 miles) is associated with a higher prevalence (about double) of problem and pathological gambling in the combined survey results,

parallel with the general difference in levels of past-year casino gambling (40 percent among adults within 50 miles, vs. 23 percent of adults 50–150 miles). However, we found little difference in the prevalence of at-risk gambling in the combined survey, and differences in prevalence were not statistically significant in the RDD survey.

### Attitudes Toward Gambling

It is interesting to examine general attitudes toward gambling among problem and pathological gamblers. One might assume that despite their gambling-related difficulties, problem and pathological gamblers enjoy gambling and believe that it is generally a good thing for society. However, Table 8 shows that nearly half of all pathological gamblers, as identified by lifetime NODS scores, believe that the overall effect of legalized gambling on society is either bad or very bad; these attitudes are more negative than for any other group of gamblers. When the smaller groups with positive past-year NODS scores are examined, gamblers at every problem level are less negative about the impact of gambling (conversely, the group that did not gamble in the past year is much larger than just the lifetime nongamblers, and generally more negative about gambling).

Respondents in the national survey were also asked about their reasons for gambling. Table 8 shows that the majority of at-risk, problem, and pathological gamblers gamble for excitement or challenge, and in this respect are quite different from low-risk gamblers. A great majority of at-risk, problem, and pathological gamblers also gamble in order to win money, and in this respect they also differ from low-risk gamblers. Finally, we found no statistically significant differences among these groups in the extent to which they gamble with friends or family, except that pathological gamblers exceed others. All of these results are the same whether the past-year or lifetime NODS is used.

**Table 8. Attitudes Toward Gambling in RDD+Patron Survey, by Lifetime and Past-Year Gambler Type**

Attitude Toward Gambling	Low Risk	At Risk	Problem Gamblers	Path. Gamblers
	Life/Year	Life/Year	Life/Year	Life/Year
Overall impact is bad/very bad	32 / 24%	21 / 11%	27 / 18%	49 / 19%
Excitement is important/very imp	35 / 36	63 / 81	83 / 93	85 / 87
Winning money important/very imp	62 / 63	79 / 88	89 / 84	95 / 94
Usually gamble with friends, family	64 / 65	70 / 64	62 / 71	81 / 81

### Correlation with Other Disorders

Finally, it is useful to compare problem and pathological gamblers to others in the national survey in terms of physical and psychological disorders and other kinds of troubles in life. Table 9 shows the percentages of gamblers and nongamblers who have experienced some of these problems. Lifetime pathological gamblers are twice as likely as other gamblers (31 percent versus about 15 percent, with nongamblers, an older group, falling in between) to describe their general health over the past 12 months as fair or poor. Lifetime pathological and problem gamblers are twice as likely as all other groups (13 percent versus 6 to 7 percent) to have sought professional help for emotional or mental health problems in the past year. Lifetime pathological and problem gamblers are more likely than at-risk gamblers (42 percent, versus 27 percent) to acknowledge being

somewhat or very troubled by their emotions, nerves or mental health; lifetime at-risk gamblers are in turn more likely than lifetime low-risk gamblers (16 percent), who are more likely than persons who have never gambled (11 percent) to affirm this.

**Table 9. Percentage of Lifetime and Past-Year Gambler Types by Health, Mental Health, Substance Abuse, and Other Problems**

Problem	Non-gamblers		Low-Risk Gamblers		At-Risk Gamblers		Problem Gamblers		Path. Gamblers	
	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year	Life-time	Past Year
Health poor/fair, past year	22.8	21.0	14.0	12.3	15.7	13.2	16.3	22.6	31.1	29.6
Mentally troubled (currently) (RDD only)	10.7	14.6	15.9	17.1	26.5	28.5	42.3	24.2	41.9	66.5
Mental health tx, past year	5.1	6.9	6.8	6.3	6.4	10.1	12.8	5.4	13.3	12.9
Emotionally harmful family argument about gambling	NA	0.5	0.1	0.3	0.8	6.8	15.8	10.5	53.1	65.6
Manic symptoms, ever	NA	0.7	NA	1.6	11.3	17.6	16.8	13.4	32.5	40.1
Depressive episode, ever (RDD only)	NA	0.1	NA	1.0	8.6	17.4	16.9	5.2	29.1	20.0
Alcohol/drug dependent, ever (RDD only)	1.1	0.9	1.3	1.8	5.6	13.3	12.4	13.9	9.9	20.0
Drug use 5+ days, past year	2.0	2.4	4.2	5.1	9.2	13.5	16.8	16.1	8.1	13.9
Any job loss, past year	2.6	4.8	3.9	3.6	5.5	2.1	10.8	0.0	13.8	25.0
Bankruptcy, ever	3.9	3.3	5.5	6.4	4.6	10.9	10.3	13.8	19.2	10.7
Arrested, ever	4.0	7.0	10.0	11.9	21.1	25.7	36.3	25.0	32.3	26.4
Incarcerated, ever (RDD only)	0.4	—	3.7	—	7.8	—	10.4	—	21.4	—

The survey questionnaire includes screens for manic or depressive episodes, that is, questions asking whether a respondent ever displayed certain symptoms that are strongly indicative of manic or depressive episodes. The depression items led, if answered positively, to a full series of DSM–IV diagnostic questions, but this series was only used with respondents scoring one or more points on the NODS; other national surveys estimate general prevalence with the same questions. The manic screening items were asked only of respondents who scored one or more points on the NODS. This helps shed further light on the “manic episode” exclusion for the psychiatric disorder of pathological gambling, but we do not attempt to implement this exclusion. It has not been implemented in previous studies using the DSM–IV criteria, nor is there an underlying research base to indicate how it would be implemented, and therefore no research to validate an exclusion procedure (Lesieur and Rosenthal, 1998).

Table 9 shows that lifetime and past year pathological gamblers are significantly more likely than other risk respondents to have symptoms associated with manic disorder. The lifetime prevalence of major depressive episode among problem and pathological gamblers is significantly higher than that observed in the general population in other surveys, and a definite downward trend is noted from those with the most to least severe gambling problems in our sample. Table 9 also shows that both lifetime and past-year respondents reporting at-risk, problem, and pathological gambling are more likely than low-risk or nongamblers to have ever been alcohol or drug-dependent and to have used illicit drugs in the past 12 months. Lifetime , as well as to have ever been arrested or

incarcerated. Finally, pathological and problem gamblers are more likely than any other group to have lost a job in the past year and to have ever declared bankruptcy.

## **Gambling Expenditures**

One expectation of our survey work was that it would enable us to estimate the proportion of gaming revenues associated with problem and pathological gamblers. There are two principal obstacles to this enterprise. First, a certain fraction of gaming revenues, particularly in destination-style casinos but also in certain high-stakes lotteries, have historically been derived from a relatively small number of high-end players, many of whom are not U.S. residents. Therefore, estimates based on a survey that does not sample from this special stratum must restrict its scope of generalization to exclude reference to these very wealthy players. Because these players are so few in number, determination of the population prevalence and correlates of problem and pathological gambling are not affected by their absence from the survey. However, due to the amount of money that these individuals put into play at casinos (and to an evidently much lesser extent in other games), any denomination of gambling in monetary units will be missing this component.

The second problem is the weakness in individuals' reports of gambling winnings and losses. Virtually none of the survey data on the reported amounts "ahead" or "behind" (won or lost) appears to be accurate at face value, when compared with official statistical data on regulated games. An exception is lottery play, for which we were able to reconcile the survey data quite well with officially counted sales receipts. This exception is probably due to the more routinized purchase patterns of most lottery play, compared with the way that betting and payoffs take place in other games with faster, more complicated, and more interactive formats. But here as well, the net win/loss data vary appreciably from what ticket buyers are known to spend and not recover through winning tickets. Instead of a careful, computer-like accounting for gaming dollars, individuals tend to understate their net losses and exaggerate their net wins, particularly when accounting for expenditures in private settings.

Table 10, which is based on the RDD questionnaire data (which covered gambling wins and losses much more extensively than the patron questionnaire; but see footnote 4 below), displays gambling win, loss, and expenditure totals for five types of gambling, in total and by type of gambler. The table provides numerous instances of non-credible overall results—for example, the results of adding up reports of lottery ticket purchases, on the one hand (expenditure data), and on the other, how much the survey respondents thought they were ahead (won) or behind (lost) over the course of a year. The annual information is calculated separately from two kinds of questions—items about the last day the respondent gambled, which are summed up taking account of the reported number of days gambling each year, and a direct question about past-year gambling wins or losses.

**Table 10. Estimated Annual Amount Ahead, Behind, or Spent (in Millions of Dollars) in the Past Year, 1998 (from RDD Data)**

	Casino				Track				
	Last-Day Sums		Past Year		Last-Day Sums		Past Year		
	Ahead	Behind	Ahead	Behind	Ahead	Behind	Ahead	Behind	
<b>Total</b>	\$35,555 (100.0)	\$30,460 (100.1)	\$9,461 (100.0)	\$6,134 (100.0)	\$9,580 (100.0)	\$3,855 (100.0)	\$2,903 (100.0)	\$1,003 (100.0)	
<b>Gambler type reporting amount</b>									
Low-Risk	28,050 (78.9)	12,751 (41.9)	6,996 (73.6)	3,265 (53.2)	8,431 (88.0)	3,033 (78.7)	2,398 (82.6)	672 (67.0)	
At-Risk	2,715 (14.7)	13,351 (43.8)	900 (9.5)	1,514 (24.7)	873 (9.1)	873 (19.8)	411 (14.2)	176 (21.3)	
Problem	1,995 (5.6)	3,351 (11.3)	1,562 (16.5)	601 (9.8)	166 (1.7)	61 (1.6)	94 (3.2)	121 (12.1)	
Pathological	279 (0.8)	1,007 (3.3)	33 (0.3)	754 (12.3)	111 (1.2)	—	1 (0.1)	35 (3.4)	
	Private				Lottery		Unlicensed		
	Last-Day Sums		Past Year		Past Year		Past Year		
	Ahead	Behind	Ahead	Behind	Ahead	Behind	Total \$	Ahead	Behind
<b>Total</b>	\$23,860 (100.0)	\$3,412 (100.0)	\$4,090 (100.0)	\$336 (100.0)	\$1,420 (100.0)	\$6,099 (100.0)	\$25,270 (100.0)	\$2,419 (100.0)	\$444 (100.0)
<b>Gambler type reporting amount</b>									
Low-Risk	18,990 (79.6)	1,564 (45.8)	2,165 (52.9)	241 (71.7)	1,324 (93.2)	3,958 (64.9)	18,670 (73.9)	1,855 (76.7)	221 (49.7)
At-Risk	4,528 (19.0)	117 (6.5)	265 (6.5)	85 (25.3)	81 (5.7)	1,647 (27.0)	4,560 (18.0)	276 (11.4)	173 (39.0)
Problem	342 (1.4)	1,732 (40.5)	1,657 (40.5)	1 (0.3)	15 (1.1)	411 (6.7)	1,742 (6.9)	288 (11.9)	38 (8.6)
Pathological	—	—	3 (0.1)	8 (2.4)	—	84 (1.4)	297 (1.2)	—	12 (2.7)

The total spending estimate for lottery tickets using the RDD data only is 25.5 billion. This figure is approximately 20 percent below the national lottery sales figures for 1998 sales cited by Clotfelter, Cook, Edell, and Moore (1999) in their analysis of lottery gambling for the Commission.<sup>5</sup> However, to be consistent, the same players in the survey, when asked to estimate their *net* receipts, should have reported losses of

<sup>5</sup> The combined RDD+patron data on lottery expenditures, in contrast to other data in Table 10, are more complete than the RDD alone. Using the combined data set, we calculated the total lottery expenditures in the past year to be \$31.5 billion, which is very similar to the figures cited by Clotfelter and colleagues for 1998 national lottery sales. However, Clotfelter and colleagues arrived at their own survey-based estimate for total national expenditures on lottery tickets (based on the same combined data set) by using a more complex summing algorithm to quantify the frequency-of-play response categories in the NORC questionnaire, as well as a series of post hoc adjustment factors designed to match the survey estimates for each major lottery type with the FY1998 sales figures published by LaFleur ([www.lafleurs.com](http://www.lafleurs.com)). When we used the same program code (Malme, private communication) to calculate the distribution of expenditures by type of gambler, we calculated the percentage of the \$31.9 billion total expenditure by low-risk, at-risk, problem, and pathological gamblers at 67.5 percent, 18.0 percent, 7.9 percent, and 6.6 percent, respectively—statistics which are very close to our estimates based on the combined data (67.0, 18.8, 7.6, and 6.6), which are similar to those in Table 10 except that the RDD data ascribe a much lower percentage of lottery expenditures to pathological gamblers.. Further analytic explorations of these data, as well as further methodological research on how to elicit the most accurate expenditure information, will undoubtedly prove useful to students of lottery play.

approximately \$14 billion, reflecting the percentage of lottery expenditures not returned to ticket-holders. Instead, the data equate to a net loss of \$4.7 billion, reflecting \$1.4 billion in winnings (claimed by about 8 percent of all the past-year players) and \$6.1 billion in losses (contributed by about 85 percent of players); the remaining 7 percent “broke even.” This loss is about one-third what it should have been based on the survey-expenditures captured in the RDD data, and about one-fourth the actual amount lost according to the official sales data.

Undercounting of losses and/or overcounting of winnings are also evident for other forms of gambling, both for wins and losses across the past year as well as on the last day respondents gambled. The balance of past-year casino wins and losses for last-day and past-year items shows patrons ending up with a \$5 billion or \$3 billion windfall, instead of leaving more than \$20 billion at tables and machines—the revenues reported by the casino industry. The same reversals hold for tracks and for unlicensed betting, comprised largely of sports books.

Most revealing of the rosiness of the collective view of gambling results is private gaming, largely at cards, in which there is no “house” or commercial intermediary to remove money from players’ wins and losses. In private bets, all of the wins and losses should balance. However, the last-day-based and past-year aggregates from the survey show the amounts won exceeding the amounts lost by factors of seven and twelve, respectively. Unlike lottery play, in which 85 percent of buyers consider themselves net losers and 8 percent net winners (a 1:10 ratio), in private games, on the last day of play there were 3 self-reported winners for each loser (3:1), and over a year’s time, five overall winners for every three losers (5:3). While these ratios are not inherently impossible, since they might imply that each losers’ money was spread out across a larger number of (smaller) winners, the individual amounts reported as won and lost by each group actually greatly exaggerate, rather than reduce, this disparity in numbers of winners and losers.

Despite the lack of realism in the overall estimates of monetary wins and losses, there is some degree of information in the extent to which problem and pathological gamblers account for the amounts in both the win and loss columns (and in the case of lotteries, the expenditure column). Discounting the impossible sums of conjured winnings in private games, most of the money actually and reportedly changing hands is in lotteries, casinos, and pari-mutuel betting, and these are the estimates for which the number of respondents reporting win/loss data are the largest.

In lottery play, problem and pathological gamblers account for 8 percent of total expenditures (but 14.2 percent in the combined survey data for this measure), 8.1 percent of past-year losses, and 1.1 percent of past-year winnings. In casino play, problem and pathological gamblers account for 22.1 percent of past-year losses, 14.3 percent of last-day-based losses, 16.8 percent of past-year winnings, and 6.4 percent of last-day-based gains. In pari-mutuel betting, problem and pathological gamblers account for 15.5 percent of past-year losses, 3.3 percent of past-year winnings, none of the last-day-based losses, and 1.2 percent of last-day-based winnings..

Overall, when we sum up these data, similar information on the less frequently played games, and parallel monetary items such as the amount of money taken to gamble with or how much the person was willing to lose, these sums converge on the estimate that about

15 percent of the dollars lost gambling are lost by problem and pathological gamblers. These figures well exceed the percentage of problem and pathological gamblers in the general population, but not by so much as to dominate the economics of gambling. Perhaps a more general finding from these data is that gamblers, whether or not they are classifiable as problem or pathological, seem accustomed to a fairly high level of wishful thinking about the economics of the games they play.

### **Assessing Problem and Pathological Gambling in the Future**

The issues surrounding legal gambling have become far more complex than they were when the last Commission published its report in 1976. Policy makers, government agencies, gambling regulators, and gaming operators are concerned about the likely impacts of changing mixes of legal gambling on the gambling behavior of broad segments of the population, as well as on the prevalence of gambling-related difficulties. Public health researchers and social scientists are concerned with minimizing the risks of legal gambling to particular subgroups in the population. Economists, financial institutions, and law enforcement professionals are concerned about the relationship between legal gambling and bankruptcies, gambling and crime, and the reliance of the gaming industries on problem gamblers for revenues. Treatment professionals, government agencies, and not-for-profit organizations are concerned about how to allocate scarce resources for the prevention and treatment of gambling problems (Volberg 1998b). Finally, groups opposed to the expansion of legal gambling are now working to prevent the further expansion of legal gambling and to repeal existing activities.

Like much of science, measurement is a developmental process. Instrumentation is always a reflection of the work that researchers are doing to identify and describe the phenomena in which they are interested. As research on problem gambling continues, our systems change for classifying problem gamblers. The SOGS represents a culturally and historically situated consensus about the nature of gambling problems. As research continues and as the definitions of problem gambling change, new instruments and new methods for estimating prevalence in the general population and for testing models of gambling behavior will continue to emerge. These emerging methods must be tested against each other and against the SOGS in order to advance the field of problem gambling research in an orderly manner, ensuring the relevance of past work as well as work in the future.

There are several areas for which we would recommend future research investments. Much more work needs to be done with the patron intercept methodology as a way to capture frequent players. This type of survey work requires cooperation between researchers and the gaming industry, which will undoubtedly increase as the importance and value of onsite research findings becomes more widely understood. Research is also needed on the efficacy of treatment for gambling problems, both through voluntary support groups and professional channels. Finally, longitudinal studies are needed that can extrapolate across 20-year spans or longer on the “careers” or “natural history” of gambling and related disorders.

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### **CHAPTER 3. ECONOMIC ANALYSIS OF THE CONSEQUENCES OF GAMBLING PROBLEMS AMONG ADULTS**

Problem and pathological gamblers, as defined in previous sections of this report, experience excessive rates of adverse consequences that have tangible economic costs. Further consequences experienced by these gamblers that are quite real (e.g., broken relationships and families), although not readily amenable to having price tags attached, are often termed “intangible” costs. Another dimension of gambling consequences is that their impact is usually spread across an entire community. While costs begin with the gambler, they spill over to the household, other family members, friends, employers, creditors, and the community as a whole.

The focus of this analysis is on the tangible economic value of gamblers’ problems or consequences that have been identified and analyzed in the literature on problem and pathological gambling (see, e.g., Lesieur 1998; Volberg et al. 1998). The earliest studies examined these phenomena through indepth interviews and surveys of persons who sought help to control their gambling. This approach has been effective in identifying the breadth and types of consequences that pathological gamblers experience and in exploring alternative ways that economic values can be attached to some of these problems. The analysis in this study in large measure builds upon the prior studies, but refines the earlier methods in order to generate estimates of the impacts of problem gambling among problem and pathological gamblers who can be identified from surveys of the general population.

The estimates in this study diverge from reported impacts and costs among the very small proportion of problem and pathological gamblers who have sought help (believed to be only about 3 percent; Volberg 1998). Since it is often the severity and accumulation of problems well beyond the threshold of clinical concern that may drive gamblers to seek treatment (Lesieur 1998), we expect that the average costs and impacts from the general population will be significantly lower than the estimates from treatment populations.

A challenge is posed for this study based on the fact that “denial” is considered a clinical characteristic of addictive disorders, including gambling. This has led to some concern among researchers (see, e.g., Chapter 6, by W. Thompson. in WEFA Group 1998) that surveys of the general population will not elicit acknowledgement or valid responses from pathological and problem gamblers that are selected into the samples. While this study has asked for specific attribution of adverse consequences/outcomes by respondents to gambling problems, the primary emphasis has been upon consequences that are experienced by the entire population, which are also susceptible to being affected by gambling problems. It is believed that asking about general problems without requiring adverse outcomes to be attributed to gambling (although allowing it) should elicit plausible responses. While validation surveys would be useful in the future, the findings in the rest of this section demonstrate that pathological and problem gamblers are indeed willing to acknowledge adverse outcomes, and at rates in excess of low-risk gamblers and nongamblers; indeed, our study found that the very low proportions that experience adverse consequences tend to attribute them to problem and pathological gambling. Examples of such consequences include job and financial problems, divorce, poor health, and criminal justice involvement.

In this analysis, our basic strategy is to compare rates (and costs) of specific adverse consequences associated with problem and pathological gambling for each of our designated gambling types. For example, problem and pathological gamblers (and perhaps those considered at risk as well) are believed to experience higher rates of personal bankruptcy (primarily attributed to their problems with gambling) than persons who are otherwise similar but do not gamble or at lower risk gamblers. Obviously, there are reasons unrelated to gambling for individuals to experience bankruptcy.

The analysis thus attempts to ascertain whether the bankruptcy rates (and other negative consequences) of problem and pathological gamblers are greater than bankruptcy rates of other gambling types who are otherwise similar, and to determine whether the difference is larger than might be expected due to chance. The bankruptcy cost attributed to problem and pathological gambling adjusts for “expected” rates of bankruptcy. Thus, the estimates are of “excessive” costs (be it for bankruptcy, job loss, health problems, etc.) experienced by problem and pathological gamblers.

In attempting to assess the postulated impacts, the survey incorporated questions that explicitly examined behaviors and problems that prior research on problem and pathological gambling has suggested are disproportionately experienced by this population. A large number of questions ask whether respondents attributed specific aspects of such problems directly to gambling.

Costs that could be measured on an annualized, present-value basis (poor physical and mental health, job losses/unemployment) sum to about \$1,200 and \$700 for each pathological and problem gambler, respectively. Other costs are infrequent (e.g., divorce, bankruptcy, arrest, incarceration), and in the absence of a very large study sample, they are more readily observed and measured on a lifetime basis (e.g., “Have you ever been divorced?” vs. “Have you gotten divorced in the past year?”). We estimate these “lifetime” costs (which are additive with the “annual” costs when the latter have been translated to a lifetime basis) at about \$10,500 and \$5,100 per pathological and problem gambler, respectively. About 25 percent of these estimates are costs generally termed “transfers.” Under standard economic theory, transfers are not treated as costs because they represent a *loss* to the “donors” (generally taxpayers) and a *gain* to the recipients (in this case, problem and pathological gamblers). Thus, the total cost (including transfers) might be thought of as the cost to those who are not problem or pathological gamblers.

In this analysis we estimate costs per person by gambler type, with a particular focus on problem and pathological. We combined the cases from the supplemental survey of patrons with cases from the adult telephone survey. As explained in Chapter 2, we re-weighted these groups in order to make the weighted samples generally equivalent to the age and gender distribution of the general population of 197 million adults age 18 and older in 1998. This strategy is designed to maximize information about the problem and pathological gamblers who were relatively rare in the telephone survey and much more numerous in the patron survey. It is possible to convert these to aggregate or total national costs—that is, to sum our economic quantities to represent the entire population by combining the estimates of the number of problem and pathological gamblers with our estimates of the costs per problem and pathological gambler (per year and across lifetime).

Other dimensions of the analysis concern the time period over which gamblers have experienced symptoms of pathological and problem gambling and the component of the data from which estimates have been derived. This concerns whether the individual is classified as a pathological or problem gambler for the past year (number of problems reported in the past 12 months), or on a lifetime basis. The second issue concerns estimates for the random digit dial (RDD), patron survey, or combined data set.

We believe that the best estimates for the purpose of understanding the economic impacts of pathological and problem gambling come from use of the combined survey and lifetime measures. The estimates in this section of the report are based largely on these calculations. However, we have also examined the potential impact of using the different survey components and the past year versus lifetime in a series of tabulations that appear in the appendices.

When the data are reassessed by the noncombined survey components and the past-year classification, the general patterns reported in this chapter are supported. However, relatively few observations are available for many of the values calculated, and small numbers generate unstable estimates. For example, the impact of past year pathological gambling sometimes is and sometimes is not estimated to be greater than the impact of lifetime-but-not-past-year gambling. We observe this for problem gambling as well. These instabilities do not invalidate the estimates but simply reflect random variation around the main effect in relatively small samples. Furthermore, the study has not attempted to identify when patterns of problems were initiated or stopped, or their duration. Pathological and problem gambling are often long-term, with the adverse impact(s) building up over time. The adverse consequences may take some time to abate, and may never completely do so. A person with a problematic work history (or criminal justice record) carries such a record forward the rest of their life.

Tabulations appearing in the appendix also compare the rates from the RDD and patron survey. The patron survey has a higher concentration of pathological and problem gamblers (as a share of all persons interviewed); this is the principal reason this supplemental survey was undertaken. In both components of the survey we find that pathological gamblers generally have comparable, if not higher or more severe problems than problem gamblers. These two groups certainly have more severe impacts than other types of gamblers (and non-gamblers). Pathological gamblers in the two respective components of the study (RDD and patron) are generally more like each other in terms of problems and impacts than they are like “problem,” “at-risk” or “no problem” gamblers. The same statement is true for the “problem” gamblers in each study component—they are generally more like each other than like other types of gamblers.

We believe that the combined sample provides the best technical results for the purpose of the analyses done in this chapter, and we have used them for the main analysis and for the preparatory analyses with a few exceptions. In compressing the length of the RDD interview so as to better suit the patron-intercept mode of data collection, some questions in the RDD survey pertinent to the analysis in this chapter were omitted from the patron questionnaire. In these instances we have used the RDD instead of the combined data in order to develop estimates of problem prevalence from which costs were calculated. All such instances are identified in the applicable table. Appendix C includes disaggregated estimates of all of the fundamental descriptive values used in developing the cost estimates.

## **Prior Studies on the Costs of Gambling**

There have been several prior efforts at describing the economic impacts of problem and pathological gambling (e.g., Lesieur and Anderson 1995, Thompson, Gazel, and Rickman 1996; WEFA Group 1997; Westphal, Rush, and Stevens 1998; also see reviews by Lesieur 1998; Volberg et al. 1998). The critical contribution of these studies has been the identification of consequences and impacts of problem and pathological gambling that have economic implications, and the efforts made to develop estimates of these costs. Among the obvious financial consequences these studies have examined are gambling-attributed bankruptcy, dissipation of assets, debt, and theft. Other impacts studied are missed work or lateness to work, lost employment, stress and impaired physical and mental health, suicidal ideation, and alcohol- and drug-related disorders. Families and personal relationships usually are adversely affected, with associated conflict and strife, with divorce frequently the result.

For the most part, the existing body of research examines persons in treatment for a gambling disorder. This approach has had obvious advantages in developing and understanding the phenomenon. Persons in treatment have generally initiated treatment because they experienced severe consequences from their gambling. Patients enrolled in treatment based on the self-help tradition are generally encouraged to be forthright about the problems they have caused or encountered related to their disorder, whether it is for gambling, alcohol, drugs, or some other problem. It is possible to compile a picture of the problems of pathological gamblers that go for treatment by reviewing these studies.

Still, the objective of this study is to attempt to portray the consequences and economic costs of typical or average problem and pathological gamblers. Data on gamblers in treatment probably describe the most severely impacted individuals—the tail of the distribution in terms of severity and number of impacts. We expect that the general population survey will identify individuals who have not reached this extreme level of severity.

Our survey instrument asked about most of the impacts that the existing literature indicates are likely to be experienced (or imposed) by problem and pathological gamblers. The following sections will attempt to give some indication as to how comparable the measured impacts are to prior estimates derived from individuals in treatment or Gamblers Anonymous (GA).

## **Costly Consequences of Gambling**

The NODS survey undertook to examine a number of different types of impacts of problem and pathological gambling. These included family impacts, job impacts, financial problems, and criminal/legal problems. While there are many facets and dimensions to such problems, there are certain issues that are more conducive to both measurement and valuation. Therefore, this analysis focuses on a small number of tangible consequences. The consequences of concern were selected both because a body of literature already exists that strongly suggests that problem and pathological gambling may cause such outcomes (e.g., Lesieur and Anderson 1995, Thompson, Gazel and Rickman 1996, Volberg 1998), and because it is possible to measure certain economic values that are associated with them. Such consequences include the following:

- Divorce;
- Poor health and mental health problems;
- Job loss and lost wages from unemployment;
- Bankruptcy; and
- Arrest and incarceration.

Based on the existing research literature, it is expected that gamblers with higher counts of gambling symptoms will have higher rates of problems. Since the problems often attributed to problem and pathological gambling are also experienced by many people whether or not they gamble, we adjust for whether a problem or pathological gambler has other characteristics or behaviors that might contribute to the consequence in question. For example, if those who gamble also have alcohol and drug problems, ignoring these other problems might result in attributing an inaccurately high consequence rate to problem and pathological gambling.

Our analysis used logistical regression to control for the following sociodemographic factors: age, gender, ethnicity, educational attainment, residence with one's children, and use/abuse of alcohol and illicit drugs. In general, these factors were generally strongly predictive of whether individuals had experienced the costly consequences identified above. Ignoring these control factors would result in attributing a larger proportion of the consequences to gambling than if the controls were applied. The specifications of the variables used and the primary results are presented in the annexes to this chapter.

As we state above, it is important to note that many of the costs often associated with problem and pathological gambling are not unique to persons who gamble or who might need help for gambling problems. Thus, our analysis examines the following questions:

- To what extent did the problem and pathological gamblers surveyed experience a certain consequence?
- To what extent did they attribute the consequence to their gambling?
- What plausible economic costs can be associated with higher than expected rates of this consequence?

Based on these questions, we concluded that the major findings are as follows:

- Problem and pathological gamblers have significantly higher rates of costly consequences than otherwise similar persons do.
- Problem and pathological gamblers experience or impose thousands of dollars of economic costs per year on society.
- Problem and pathological gamblers rarely directly attributed these costly problems to their gambling behaviors or difficulties.

The next section presents our findings about the extent to which consequences with tangible economic costs are associated with different types of gamblers. These patterns are analyzed in order to determine whether problem and pathological gamblers have other

characteristics or behaviors that may be the cause of their higher rates of consequences, such as gender or age. The section thereafter presents our findings on selected economic impacts experienced or imposed by problem and pathological gamblers, adjusting for the effects of other factors.

### ***Employment-related impacts***

Adverse financial consequences are the crux of the issue for problem and pathological gambling. While there are obviously other manifestations and consequences that can and often do arise, the financial problems are generally thought to underlie these in some way. One potential mechanism through which gambling might bring adverse consequences is for the gambler to lose too much money relative to her or his earning capacity and/or wealth. Problem and pathological gamblers in this study display a pattern of higher rates of certain types of financial problems relative to other gamblers (with no or few problems) and to nongamblers. While this finding is almost tautological (attributing financial problems to gambling contributes to a determination of gambling type), this is exactly the pattern of problems that contributes to other sorts of consequences (e.g., family, legal, and health problems).

Another mechanism for adverse consequences is for one to engage in gambling at times and places that are inappropriate given one's responsibilities; adverse outcomes could include a decline in job performance and additional costs to employers, job loss, lost wages, and reliance on Unemployment Insurance and/or other social welfare programs.

Studies of pathological gamblers in treatment have looked at a variety of the potential impacts on the workplace, but they have been limited by not having comparison populations. Such studies have examined narrow aspects such as lateness or missing work in order to gamble as well as gambling while on the job, while broader impacts have included job loss and unemployment. While it is possible to develop cost estimates from such data, they may present an inaccurate picture, since workers in general are sometimes late and miss work, or use work time for personal purposes.

Lesieur (1998) found in his review of the cost literature that between 69 and 76 percent of pathological gamblers have missed work at some point in order to gamble. Various studies in his review found that from 21 to 36 percent of gamblers in treatment have attributed a lost job to their gambling problems. A survey in Wisconsin of 98 GA respondents found that 66 percent had missed work due to gambling, and 21 percent had lost or quit their jobs due to gambling (Thompson et al. 1996). A general population telephone survey found that problem gamblers miss slightly more work (2.7 days and 1.7 days for "level 2 and 3" gamblers, respectively) than low-risk and nongamblers (0.9 days) (Westphal et al. 1998).

Our model attempts to reflect these issues by building on the standard model of labor markets. This model decomposes the employment experience into labor market participation/employment, amount of employment, and wage rate. In the standard model of the labor market, the wage rate represents the perceived/actual value of the employees' productivity to their employers. Divergence of an employee's perceived/actual productivity from their expected rate will result in an increase or decrease in their wage or salary and/or termination (in the case of under-performance). In an economic model of the labor market, we hypothesize that to the extent problem and pathological gamblers' behaviors in the workplace impact their overall or average performance, employers will

generally recognize and reward the worker with continued employment and increased wages, or penalize the worker with lower wages and/or termination of employment.

The data reveal somewhat complex patterns regarding employment. For example, pathological gamblers had relatively high employment (76.3 percent) at the time of the survey. However, among those that had worked in the past year, we found a slightly higher (but not statistically significant) rate of working less than a full year (about 26.6 percent, versus 18.6 percent for low-risk gamblers). Still, pathological gamblers who had worked in the prior 12 months were significantly more likely to have lost/been fired from a job (13.8 percent versus 4 percent for low-risk gamblers). However, they were not significantly more likely to have been earning a wage below \$10 per hour than others. The mean household income for pathological gamblers was about 15 percent lower than for low-risk gamblers, but this difference was not statistically significant.

**Table 11. Employment Experiences, by Type of Gambler (Lifetime Only)**

Type of Characteristic	Gambling Type				
	Non-gambler	Low Risk	At Risk	Problem Gambler	Path. Gambler
Employed currently	55.3***	73.3	71.5	58.9***	76.3
Any employment past year	64.4	78.8	80.3	77.2	82.3
<i>Among Those Working Past Year...</i>					
Any unemployment	21.5	12.7	17.7	23.8	15.9
Months unemployed	1.6	0.9	1.3	1.8	1.3
Lost a job/fired past year	2.6	4.0	5.6	10.8 $\phi$	13.8*
Hourly wage (RDD only)	\$14.60	\$18.20	\$18.10	\$18.00	\$17.90

Statistical significance of differences between groups tested using multivariate logistical regression, with control variables for age, gender, ethnicity, education, child in household, and alcohol and drug use/abuse. Gamblers with no problems were used as the base group.

Significance tests: Problem and pathological types tested *separately*; statistically significant at the: \*\*\* = 0.01 level; \*\* = 0.05 level. \* = 0.10 level. Problem and pathological types were *combined* for significance testing; statistically significant at the:  $\phi\phi\phi$  = 0.01 level;  $\phi\phi$  = 0.05 level.  $\phi$  = 0.10 level.

Problem gamblers, in contrast, were significantly more likely to have been unemployed or at least not working at the time of their interview (58.9 percent, versus 73.3 percent for low-risk gamblers). However, those who did work were employed for as much of the year as low-risk gamblers. Their rate of having lost or been fired from a job was also higher (10.8 percent compared to 2.6 percent for nongamblers). Wage rates did not appear to be impaired in this group.

### *Employers' losses*

The most unambiguous measure of employer dissatisfaction with employee performance (productivity) is to fire an employee. As noted above, both problem and pathological gamblers have higher rates of job loss than low-risk or nongamblers—10.8 and 13.8 percent, respectively (compared to the expected rates of 5.8 and 5.5 percent). Employers incur search and training costs assumed equal to 10 percent of the annual salary for each employee replaced. Frazis et al. (1998) estimated that 4 percent of an employee's hours go into training; we are assuming employer costs equivalent to an additional 6 percent of an employee's time is invested in recruiting and initially training a replacement hire.

Since pathological gamblers in our sample earned about \$18 per hour, or \$40,000 per year, firing an employee costs an employer an average of \$4,000. Since pathological gamblers had a job loss rate of 13.8 percent, versus the expected rate of 5.8 percent, their “excess” rate of job loss was 8 percent. Therefore, the average pathological gambler cost his or her employer 8 percent of \$4,000, or about \$320. The cost of excess job loss for each problem gambler was \$200.

**Table 12. Annual Financial and Job Losses by Problem and Pathological Gamblers**

	<b>Who Pays the Cost</b>	<b>Problem Gamblers</b>	<b>Path. Gamblers</b>
Job loss	Employer	\$200	\$320
Unemployment/wage	Gambler	n.s.	n.s.
Lower wage/salary	Gambler	n.s.	n.s.

***Employees’ loss of earnings***

Even though problem and pathological gamblers have elevated rates of job loss, there is no systematic indication that they earned less than otherwise similar individuals due to either excess unemployment or lower wages. While problem gamblers had a lower employment rate than expected at the time of the interview, we elected not to incorporate this in our cost estimates, because the estimate does not appear to be supported by other related measures. For example, problem gamblers were virtually identical to low-risk and nongamblers in the proportion that had less than a full year of employment. Also, their average hourly wage rate was virtually the same. This is not necessarily inconsistent with an elevated rate of job loss. If problem and pathological gamblers are less likely to voluntarily quit or leave jobs, their aggregate rate of unemployment could be the same even though they are more likely to be fired or laid off.

***Bankruptcy, debt, unemployment insurance and welfare***

Previous studies of GA and treatment populations have given a good deal of attention to other financial impacts. Such studies have found, for example, that pathological gamblers have high levels of debt and declare bankruptcy at higher rates than other types of gamblers (and nongamblers). Research on gambling treatment populations found that gambling-attributed current debt (as opposed to lifetime borrowing) was \$39,000 in Wisconsin and \$114,000 in Illinois (Thompson, Gazel and Rickman 1996; Lesieur and Anderson 1995). These studies found that in the GA/treatment populations, between 18 and 28 percent of males and 8 percent of females had declared bankruptcy.

However, debt per se is not unexpected or an indication of unusual problems, as many individuals buy residences, automobiles, and other large purchases on credit. What is unusual is when an individual declares bankruptcy, based on an inability to repay debt when compared to the income of the individual or the household. When bankruptcy occurs, some fraction of the debt may be never repaid, and it is this fraction of debt and borrowing that constitutes a loss to creditors (rather than the magnitude of borrowing or indebtedness). However, this loss is theoretically considered a transfer, and generally is not be included in “cost” estimates.

Pathological gamblers have clearly elevated rates of indebtedness, both in an absolute sense and relative to their income. Indebtedness per person is 25-percent greater than

that of low-risk gamblers and about 120-percent greater than that of nongamblers. However, the disparity is even greater when debt is compared to income: pathological gamblers owe \$1.20 for every dollar of annual income, while low-risk and nongamblers only owe \$0.80 and \$0.60, respectively. In accord with their higher debt, pathological gamblers have significantly elevated rates of having ever declared bankruptcy: 19.2 percent, versus 5.5 percent and 4.2 percent for low-risk and nongamblers.

Again, for problem gamblers the story is not as clear. Their average level of indebtedness is actually the lowest of any type of gambler; however, they still have an elevated rate of bankruptcy (10.3 percent), but this is only marginally statistically significant when compared to the rate among nongamblers.

**Table 13. Financial Characteristics and Impacts, by Type of Gambler**

Characteristic	Lifetime Gambling Behavior				
	Non-gambler	Low-Risk	At-Risk	Problem Gambler	Path. Gambler
Any unemployment benefits, 12 mos.	4.6	4.0	10.9	10.9*	15.0**
Received welfare benefits, 12 mos.	1.9	1.3	2.7	7.3*	4.6
Household income, 12 mos. (RDD)	\$36,000	\$47,000	\$48,000	\$45,000	\$40,000
Household debt, current (RDD)	\$22,000	\$38,000	\$37,000	\$14,000	\$48,000
Filed bankruptcy, ever	4.2	5.5	4.7	10.3 $\phi$	19.2*

Statistical significance of differences between groups tested using multivariate logistical regression, with control variables for age, gender, ethnicity, education, child in household, and alcohol and drug use/abuse. Gamblers with no problems were used as the base group.

Significance tests: pathological and problem types tested *separately*; statistically significant at the: \*\*\* = 0.01 level; \*\* = 0.05 level. \* = 0.10 level. Pathological and problem types *combined* for significance testing; statistically significant at the:  $\phi\phi\phi$  = 0.01 level;  $\phi\phi$  = 0.05 level.  $\phi$  = 0.10 level.

On average, excess lifetime losses involved with bankruptcy are about \$3,300 for pathological gamblers and \$1,600 for problem gamblers. Almost 19 percent of pathological gamblers have ever declared bankruptcy, versus an expected 10.8 percent, given their personal characteristics. For problem gamblers, their 10-percent rate compares to an expected rate of 6.3 percent. Personal bankruptcies result in an average of \$39,000 in losses to creditors (WEFA Group, 1998; Gropp et al., 1997), although one should keep in mind that there are major differences between Chapter 7 and 13 filings.

**Table 14. Financial Losses, by Type of Gambler**

Type of Cost	Who Pays Cost	Time Period of Estimate	Problem Gambler	Path. Gambler
Unemployment benefits	Government	Past Year	\$65	\$85
Welfare benefits	Government	Past Year	\$90	\$60
Filed bankruptcy	Creditors	Lifetime	\$1,600	\$3,300

### ***Criminal justice costs***

Pathological and problem gamblers in treatment populations often reveal that they have stolen money or other valuables in order to gamble or pay for gambling debts (Lesieur 1998). Nearly half (46 percent) of GA participants in Wisconsin reported they had ever stolen something to gamble, and 39 percent had been arrested (Thompson et al. 1996). The GA survey in Illinois found that 56 percent had stolen to gamble (Lesieur and Anderson 1995).

Although we asked study participants if they had ever stolen money in order to gamble or pay a gambling debt, the reported frequency was too low to measure, or at least report in this study. However, it was possible to obtain information about the frequency with which respondents reported ever being arrested and/or serving time in jail or prison (unfortunately, past-year rates were too low for analysis). However, these are only indirect measures of the underlying issue that we would like to measure. Still, to the extent that problem and pathological gamblers have rates of arrest and imprisonment that are greater than low-risk gamblers and nongamblers, it is possible to infer that the difference may be related to gambling behaviors and problems (although the direction of causality may be open to debate).

Table 15 below shows that those with more gambling symptoms have much higher rates of lifetime arrests and imprisonment. About one-third of problem and pathological gamblers reported having been arrested, compared to 10 percent of low-risk gamblers and only 4 percent of nongamblers. About 23 percent of pathological gamblers and 13 percent of problem gamblers have ever been imprisoned. Again, these rates are much higher than rates for low-risk gamblers and nongamblers (4 and 0.3 percent, respectively).

For this analysis, we performed tests to establish the probability that these differences were not primarily associated with other characteristics of the respective gambler types (e.g., age, gender, alcohol and drug problems) and were not observed due to chance. The arrest and imprisonment rates of problem and pathological gamblers were highly significant.

### ***Arrests***

Pathological and problem gamblers account for about \$1,000 each (\$1,250 and \$960, respectively) in excess lifetime police costs. Almost one-third of each group has been arrested or detained by the police at some time in their life (their expected rates are about 19 and 15 percent, respectively). Based on the survey, pathological and problem gamblers had been arrested about 3.3 and 1.6 times, if they had ever been arrested. In 1992 (the most recent national data available), police spent \$41.3 billion to make 14 million arrests (about \$2,900 per arrest; U.S. Dept. of Commerce 1998). Thus, the 32 percent of pathological gamblers with arrest histories had about \$10,000 in lifetime arrest costs. However, the \$10,000 must be prorated across all pathological gamblers, and further adjusted for the 19-percent expected rate of arrest in this population. Thus, the average cost per pathological gambler is  $\$10,000 \times (32\% - 19\%)$ , which equals \$1,250.

**Table 15. Weighted Occurrence of Criminal Justice Consequences, by Type of Gambler**

Type of Consequence	Lifetime Gambling Behavior				
	Non-gambler	Low Risk	At Risk	Problem Gambler	Path. Gambler
Arrested	4.5	11.1	20.7	36.3***	32.3*
Times arrested	1.7	2.1	2.9	1.6	3.3
Incarcerated (RDD only)	0.4	3.7	7.8	10.4	21.4

Statistical significance of differences between groups tested using multivariate logistical regression, with control variables for age, gender, ethnicity, education, child in household, and alcohol and drug use/abuse. Gamblers with no problems were used as the base group.

Significance tests: problem and pathological tested against low-risk gamblers; statistically significant at the: \*\*\* =0.01 level; \*\* = 0.05 level. \* = 0.10 level. Pathological and problem gamblers tested against nongamblers for significance test; statistically significant at the:  $\phi\phi\phi$  = 0.01 level;  $\phi\phi$  = 0.05 level.  $\phi$  = 0.10 level.

### ***Incarceration***

More than one-fifth of pathological gamblers have ever been incarcerated in a prison or jail in their lifetimes (the survey did not ask about number of incarcerations). The simulation indicates an expected rate of about 6 percent. The cost of incarcerations has been estimated based on the ratio of national police and corrections spending. The most recent survey of criminal justice spending found that total corrections costs were about one-quarter smaller than total police spending (USDOJ 1996). This ratio has been applied to estimate the lifetime incarceration costs for problem and pathological gamblers. However, a further adjustment has been made to account for the fact that pathological gamblers are much more likely to have been incarcerated, if ever arrested (this is consistent with the findings that pathological gamblers have 3.3 arrests, if ever arrested, compared to 2.1 for low-risk gamblers). Thus, pathological gamblers are estimated to have \$1,700 in lifetime corrections costs, with problem gamblers having \$670 in costs (see Table 16).

**Table 16. Criminal Justice Losses , by Type of Gambler**

Type of Cost	Who Pays Cost	Time Period of Estimate	Problem Gambler	Pathological Gambler
Arrests	Government	Lifetime	\$960	\$1,250
Corrections	Government	Lifetime	\$670	\$1,700

### ***Divorce***

Family problems are one of the primary concerns associated with problem and pathological gambling. Lesieur (1998) reports that between 26 and 30 percent of GA members attribute divorces or separations to their gambling difficulties. While this type of consequence is difficult to measure and to assign value to, the number of resulting divorces can be measured, and legal fees can be estimated. One measure of gambling as a factor in divorce is that respondents representing about 400,000 adults pointed to their own gambling as a cause or factor in a past divorce, and respondents representing 2 million adults identified a spouse’s gambling as a significant factor in a prior divorce.

The analysis estimates that the average pathological gambler has accumulated \$4,300 more than expected for legal fees involved with excess divorces (measured rate of 53.5

percent, versus an expected rate of 33.4 percent). Low-risk gamblers and nongamblers have lifetime divorce rates of 30 and 18 percent, respectively. Problem gamblers have losses of \$1,950 in lifetime excess divorce legal fees. Their reported divorce rate was 39.5 percent, compared to a rate of 31 percent expected for persons otherwise similar without gambling problems. Legal fees per divorce average \$20,000 (Wilson). The costs per problem and pathological gambler were developed by multiplying the average number of divorces per gambler times \$20,000 to get legal costs per gambler ever divorced. This total was averaged over all pathological gamblers and adjusted down to account for the difference between reported and predicted divorce rates.

**Table 17. Marital and Health Status, by Type of Gambler**

Status	Lifetime Gambling Behavior				
	Non-gambler	Low Risk	At- Risk	Problem Gambler	Path. Gambler
Divorced	18.2	29.8	36.3	39.5 $\phi\phi$	53.5**
Poor/ fair health	21.8	13.9	16.0	16.4	31.1**
Mental health tx.	6.9	6.5	5.8	12.8**	13.3**

Statistical significance of differences between groups tested using multivariate logistical regression, with control variables for age, gender, ethnicity, education, child in household, and alcohol and drug use/abuse. Gamblers with no problems were used as the base group.

Significance tests: Problem gamblers against pathological; statistically significant at the: \*\*\* = 0.01 level; \*\* = 0.05 level. \* = 0.10 level. Problem and pathological tested against nongamblers A for significance test; statistically significant at the:  $\phi\phi\phi$  = 0.01 level;  $\phi\phi$  = 0.05 level.  $\phi$  = 0.10 level.

The economic consequences of divorce are actually much greater than the direct value of the associated legal costs. The major economic conclusion from the divorce literature (Everett 1991) is that the economic well-being of children and the mother usually significantly falls, while that of males increases materially. Thus, there is a tragic winner–loser scenario, where the values are somewhat offsetting.

These costs are clearly to be differentiated from the emotional cost that is borne by all of those involved. The ability to calculate these economic costs in the present study is limited, however, because the costs are quite complicated. They involve interpersonal losses and gains by the adults and the children involved, and entail detailed information about the timing and duration of marriage, divorce, and any remarriage. The current study was not designed to perform such analyses, as it would be necessary to collect equivalent and extensive data for the two parties to the divorce. However, it is possible to describe the kinds and relative magnitudes of the economic impacts that prior research on divorce has identified.

One study estimated that women with minor children suffered a 73-percent reduction in their standard of living in the first year after divorce (Weitzman 1985). National statistics show that married couples had a median household income of \$47,000 in 1995, compared to \$21,000 for a female-headed household with absent husband (U.S. Department of Commerce 1998). This results from a combination of factors, such as the infrequency of awards of alimony (less than 20 percent of divorced women) and a scarce majority of women receiving child support (U.S. Department of Commerce 1986). This factor is further exacerbated by the fact that a significant fraction of child support and alimony payments are never made, and when women make recourse to courts, the legal costs can easily consume a significant share of the payments in arrears.

Another prominent aspect of the economic impact is that many mothers with small children do not work or work only part time. Leaving the workforce (generally because marriage makes this economically feasible), whether entirely or partially, impairs future earning ability through a loss of valuable work experience (Mincer and Polachek 1978). Also, part-time jobs generally entail lower skilled occupations with limited opportunities for career and earnings growth.

Paradoxically, when a previously unemployed mother returns to the workplace due to economic hardship associated with divorce, she experienced an increase in earnings; this increase is considered to offset the loss in income contributed by the absent spouse. However, this movement of a mother into the workplace in order to earn more constitutes a net loss (in an economic sense) of her contribution to the household, since she can spend less time engaged in child care and other household activities. One study estimated the difference in the value of these services at about \$12,000 per year (adjusted for inflation; Paringer and Berk 1977). This is the value of services the mother can no longer contribute to the operation of the household, because time is spent outside of the home engaged in paid employment.

Probably the longest term and potentially the greatest economic cost is associated with impacts on children. Several studies have found that children from divorced households have lower academic and/or occupational achievement (Krein 1986; Cassetty and Douthitt 1985). These costs would last for most of the lifetimes of the affected children, and when discounted to their present value, could be in the tens of thousands of dollars per child. Again, the economic costs of divorce are quite substantial, however they are measured. This study has only represented a small—although very tangible—component of such costs, because the study was not designed to undertake the level of sophisticated analysis needed to make such estimates.

### **Health care**

Several studies have suggested that pathological and problem gambling is correlated with a decline in health and elevated rates of illness—either physical or mental (Lesieur 1998). We did not identify research that examined personal health care utilization and expenditures, or health status (generally the strongest predictor of health expenditures within age and gender groups). It is unclear how gambling problems would cause adverse impacts on health, although such impacts are believed to be a function of stress and strain. In our survey, 33.8 percent of pathological gamblers reported that they were in poor or only fair health, while only about 14 percent of low-risk gamblers reported poor or fair health. We estimated that annual health care expenditures were elevated by about \$750 for pathological gamblers, with an estimated annual expenditure of about \$3,800 per capita. Based on their other characteristics, absent the effect of gambling, we expected significantly fewer pathological gamblers to be in poor or fair health—about 17 percent, with personal health expenditures of about \$3,000 per capita.<sup>6</sup>

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<sup>6</sup> This calculation used analyses from the National Medical Expenditure Survey and The Lewin Group's Health Benefits Simulation Model to produce estimates of expected annual expenditures for population groups defined on self-reported health status, gender and age (all available from NODS).

**Table 18. Divorce and Health Costs, by Type of Gambler**

Type of Cost	Who Pays Cost	Time Period of Estimate	Problem Gambler	Path. Gambler
Divorce	Gambler/spouse	Lifetime	\$1,950	\$4,300
Health	Insurance	Past year	n.s.	\$700
Mental Health	Insurance	Past year	\$360	\$330

### ***Mental health care***

Pathological and problem gamblers had annual mental health expenditures about \$330 and \$360 greater than expected, respectively. About 13 percent of these two groups reported past-year use of mental health services, while our analyses projected use by only about 6 percent. Utilization of mental health services was just under 7 percent for low-risk and nongamblers. In 1996, about \$50 billion was spent on mental health care (excluding psychiatric hospitals and residential treatment centers for children) to treat about 10 million adults (about \$5,000 per person receiving care; Mark et al. 1998). Therefore, an excess of 7 percent of problem and pathological gamblers had mental health problems, at an average cost of \$5,000 per year, which yields the estimated cost per problem and pathological gambler of about \$350 per year.

### ***Treatment for pathological gambling***

There have been no national studies on the issue of pathological gambling treatment. Volberg (1998) estimates that only about 3 percent of current pathological gamblers obtain professional treatment in a given year (not including participation in self-help groups like GA). This rate of treatment access is much lower than rates for persons with current drug addiction (about one-third), alcoholism (about 15 to 20 percent), and other mental disorders (ranging from about 40 to 80 percent). In Oregon, Volberg found that public clinics had about 600 documented patients and/or affected family members per year, compared to a current estimated prevalence of about 20,000 pathological gamblers.

Similarly, no substantial data exist regarding costs for treating pathological gambling. Inpatient treatment facilities generally keep patients for several weeks, at a cost of up to \$10,000; outpatient providers treat patients for several months or more, often taking on patients after they leave 24-hour care. Volberg (1998) reports that in Oregon, patients generally receive care for up to 6 months in outpatient addiction treatment centers (similar to the course of treatment for alcohol and drug addiction), although due to client dropout, the average duration of treatment per patient is about 3 months. Costs in these centers runs about \$70 per week (Mark et al. 1998), suggesting average costs per patient of between \$900 and \$1000.

In sum, about 3 percent of pathological gamblers seek care in a given year, with an average cost per person of \$1,000. If one uses these data to estimate the cost of treatment in a year, then the annual treatment cost per pathological gambler is about \$30. It is assumed that most problem gamblers do not seek treatment unless or until they advance to pathological. While in a given year a pathological gambler may have a 3 percent probability of entering treatment, over a period of pathological gambling there may be a greater probability that they will seek care.

### Total costs of pathological gambling

The total costs estimated above are summarized in Table 19. Costs are shown for both past year and lifetime, since certain costs could only be calculated in these respective units. Annual costs of lifetime pathological gamblers are estimated at \$1,195, compared to \$715 for lifetime problem gamblers. However, substantial additional costs are present that can only be estimated on a lifetime basis, as they did not occur frequently enough in the past year to be estimated with the current sample size. Lifetime impacts were \$10,550 and \$5,130 for pathological and problem gamblers.

**Table 19. Selected Economic Costs of Pathological and Problem Gambling: Costs per Pathological and Problem Gambler**

Type of Cost	Who Pays (Primary)	Problem Gambler Costs		Pathological Gambler Costs	
		Lifetime	Past Year	Lifetime	Past Year
Job loss	Employer	n.e.	\$200	n.e.	\$320
Unemployment benefits	Government	n.e.	\$65	n.e.	\$85
Welfare benefits	Government	n.e.	\$90	n.e.	\$60
Filed bankruptcy	Creditors	\$1,550	n.e.	\$3,300	n.e.
Arrests	Government	\$960	n.e.	\$1,250	n.e.
Corrections	Government	\$670	n.e.	\$1,700	n.e.
Divorce	Gambler/spouse	\$1,950	n.e.	\$4,300	n.e.
Poor health	Health insurance	n.e.	\$0	n.e.	\$700
Poor mental health	Health insurance	n.e.	\$360 <sup>@</sup>	n.e.	(\$330 <sup>@@</sup> )
Gamb. treatment	Government	0	0	n.e.	\$30
Total costs/impacts		\$5,130	\$715	\$10,550	\$1,195
Costs minus transfers		\$3,580	\$560	\$7,250	\$1,050
Transfers to gamblers		\$1,550	\$155	\$3,300	\$145

<sup>@</sup> This is a net increase in cost. <sup>@@</sup>This is a part of total health. n.e.: not able to be estimated in this survey.

We believe that the annual costs should be increased to incorporate some contribution from the lifetime costs. However, the basis for making such an allocation is weak at the present time. This study has found that past-year prevalence rates are about one-half of that for lifetime prevalence, indicating that pathological and problem gambling is a chronic problem for many, with the disorder going into remission and later recurring. Future studies should consider collecting data about the course of gambling problems, including the age of onset and the ebb and flow of gambling problems, in order to ascertain the period of time over which costs are incurred.

The sums indicated in the table include several types of costs that are termed “transfers” in the formal economic sense; they should be treated differently depending on the calculation one is making. Transfers are those costs that mainly represent a shifting of resources from one individual to another, with one person gaining what the other loses. The transfers of concern in this model are the costs of bankruptcy and the value of unemployment insurance and welfare benefits. These amounts accrue to the benefit of the problem and pathological gamblers and to the detriment of either their creditors or the government.

The costs of problem and pathological gambling minus transfers are \$1,050 and \$560 per year, and \$10,550 and \$5,130 per lifetime, respectively. When these sums are multiplied by the estimated prevalence of pathological and problem gamblers from the combined RDD+patron data file (which was used for the cost calculations), they translate into annual costs of about \$4 billion per year, and \$28 billion on a lifetime basis. If transfers to the gambler from creditors and other taxpayers are included, the costs rise to about \$5 billion per year and \$40 billion per lifetime.

Annualizing the lifetime estimates is difficult without a firm estimate of the average duration of problem and pathological gambling in the general population, which would provide a denominator for the lifetime costs. If the average age of onset were in adolescence or young adulthood and gambling persisted continuously or sporadically throughout the adult life, the average duration could be as long as 50 years. In this case, the lifetime costs would annualize to a present value in the neighborhood of \$1 billion. A lower estimate of the lifetime duration would increase the annual estimate.

### Summary

This section demonstrates that problem and pathological gamblers experience a variety of tangible consequences at rates that are significantly higher than would otherwise be expected based upon their sociodemographic (and substance abuse) characteristics. Such consequences include burdens to personal health, family, workplace, and the criminal justice system. In other words, such gamblers impose costs on themselves, their families, and on those around them, including employers, creditors, and taxpayers. It is possible to estimate economic impacts experienced by, or at the level of, the individual problem or pathological gambler. These estimates use standard and commonsense methods to attach valuations on the consequences that could be measured. Average annual costs per pathological gambler are about \$1,200 per year, and \$715 per year per problem gambler. “Lifetime” costs are estimated at \$10,550 and \$5,130. (Annual and lifetime costs should not be added together, since they are measured over different time periods.)

It is instructive to compare economic cost estimates from this study with measurable costs of other sources of morbidity, mortality, and productivity loss (see Table 20). The annual cost estimate for pathological and problem gambling in 1998 of \$5 billion (somewhat more if we annualize the lifetime costs) compares with 1995 estimates for drug abuse of \$110 billion and alcohol abuse of \$166.5 billion (Harwood et al. 1998). Motor vehicle crashes in 1992 cost \$71 billion (Blincoe and Faigin 1992). The most recent estimates for other major health problems such as diabetes, stroke, and heart disease have been compiled and compared by the National Institutes of Health (1997). The current economic impact of problem and pathological gambling, in terms of population or cost per prevalent case, appears smaller than the impacts of such lethal competitors as alcohol abuse and heart disease. However, the costs measurable by health-based estimation methods do not capture all of the consequences important to the person, family, or society. The burden of family breakdown, for example, is outside of these measures. And the value of further attention at the policy level may depend more on the quality of efforts to respond as on the extent of costs we can presently measure.

**Table 20. Economic Impacts of Major Health Problems**

Type of Problem	Annual Cost (billions)	Prevalence (millions)	Annual Cost per Prevalent Case
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			<b>(\$ per person)</b>
Path./prob. gambling	\$5	5.4	\$900
Drug abuse	\$110	6.7	\$10,000
Alcohol abuse	\$166	13.8	\$7,000
Mental illness	\$105	44	\$2,300
Stroke	\$30	3	\$10,000
Heart disease	\$125	21	\$6,000
Diabetes	\$92	15.5	\$5,800
Motor vehicle crashes	\$71	19	\$3,600
Smoking	\$72	46	\$1,500

A major component of cost for most of these problems is the cost of treatment, which is much more universally available, and administered much more often, to sufferers of trauma, organic illnesses, and other mental and behavioral disorders than to pathological or problem gamblers. Health care accounts for about one-half of the economic impact of mental illness, stroke, heart disease, and diabetes. The measured economic impacts therefore include the cost of society’s determination to respond directly to such problems.

The findings of this part of the report directly raise the question of the extent to which problem gambling behavior is the cause of the higher rates of consequences. This analysis cannot rule out the possibility that the gambling problems are actually reflective of certain underlying inclinations or values of these persons, such as a reduced willingness to abide by social norms or an inclination to take extra risks (not simply in gambling). To the extent that this is true, the gambling problems are as much symptomatic of the other characteristics or issues as causes of difficulties in the life of gamblers and their families. This is not to say that the gambling behavior is not in itself damaging as documented in this study, but that the additional issues will probably need to be addressed in order to ameliorate the tangible negative consequences of problem and pathological gambling.

While the conclusions of this analysis are relatively robust, they must be tempered by several factors. The small sample size was a limiting factor in the analysis. There were too few problem and pathological gamblers in the survey, even after the random digit dial and the patron surveys were combined and weighted to generate cost estimates for consequences that were directly attributed by interviewees to “gambling problems.” All of the costs that have been estimated are associated with excess rates of consequences that can be caused by factors in addition to problem and pathological gambling. Analyses have been done to adjust for selected other factors such as alcohol and drug use, age and educational attainment. Adjustment for these factors does result in smaller estimates of costs than would otherwise result simply by comparing problem and pathological gamblers to nongamblers and those with no problems.

Finally, the costs that we measured are tangible and relatively amenable to economic analysis. However, many of the human burdens of pathological and problem gambling are not so readily quantifiable into dollars, for conceptual and practical reasons. For example, we calculated the cost of divorce in terms of the legal fees generated to complete divorce actions through the court system. The cost in legal fees hardly begins to capture all of the social and psychological meaning of divorce for the partners and families directly involved, and for society as a whole. The economic costs that we calculated are a lower bound. Without a substantially greater research base on the

characteristics and consequences of pathological and problem gambling, it is impossible to say with precision where the upper bound or midpoint of economic impact would lie.

### **Annex 1: Description of Outcome Variables**

The economic and econometric analysis of the consequences of gambling problems examined the following respondent-specific outcome variables:

- *Not working*, dummy variable set equal to one if the respondent is unemployed or not in the labor force;
- *Employed less than 12 months in past year*, dummy variable set equal to one if the respondent, if employed at all, was employed for less than 12 months in the past year;
- *Lost job in past year*, dummy variable set equal to one if the respondent lost or was fired from his or her job in the past year;
- *Employed in low-wage job*, dummy variable set equal to one if the respondent's hourly wage is \$10 per hour or less;
- *Received unemployment insurance in past year*, dummy variable equal to one if the respondent reported having received unemployment insurance/disability benefits in the past year and reported being in fair, good, or excellent health;
- *Received welfare benefits in past year*, dummy variable equal to one if the respondent reported having received any welfare benefits, including AFDC/TANF, general assistance, and foster care payments, in the past year;
- *Low-income household*, dummy variable set equal to one if the respondent's annual household income is less than \$24,000;
- *Bankruptcy*, dummy variable set equal to one if the respondent ever filed for bankruptcy;
- *In poor or fair health*, dummy variable equal to one if the respondent reported being in poor or fair health;
- *Mental health treatment in past year*, dummy variable equal to one if the respondent reported having gone to a clinic, doctor, or counselor, or outpatient treatment for problems with his or her emotions, nerves, or mental health in the past year;
- *Ever divorced*, dummy variable equal to one if the respondent reported ever having been divorced. This model only includes those respondents who have ever been or are currently married;
- *Ever arrested*, dummy variable equal to one if the respondent reported ever having been arrested; and

- *Ever incarcerated* variable equal to one if the respondent reported ever having been incarcerated. The patron survey does not ask about incarceration; therefore, this model only includes respondents from the RDD survey.

## **Annex 2: Description of Explanatory/Independent Variables**

All of the logistic regression models include the following respondent-specific explanatory variables:

- *Dummy variables for lifetime gambling behavior*, including never gambled in lifetime, gambled with one or two problems in lifetime, gambled with three or four problems in lifetime, and gambled with five or more problems in lifetime, with gambled with no problems in lifetime serving as the excluded base category;
- *Age*, included as a continuous variable in both linear and quadratic forms;
- *Dummy variable for sex*, set equal to one for men and equal to zero for women;
- *Dummy variables for race*, including black, Hispanic, and non-white other, with white serving as the excluded base category;
- *Dummy variables for current marital status*, including married, separated, divorced, and widowed, with never married serving as the excluded base category;
- *Dummy variable for household with children*, set equal to one if the respondent lives in a household that includes at least one child under the age of 18;
- *Dummy variables for educational attainment*, including did not attend 12<sup>th</sup> grade, attended 12<sup>th</sup> grade, attended technical school, attended one to three years of college, and attended four years of college, with attendance at graduate/professional school level serving as the excluded base category;
- *Dummy variables for alcohol and drug use and abuse*: Questions on alcohol and drug abuse were not included in the patron survey; therefore, this set of variables includes four variables specific to respondents to the RDD survey and two variables specific to respondents to the patron survey. The RDD variables are: use of alcohol at least 12 times in the past year; use of at least one drug on five or more days in the past year; abuse of/dependence on alcohol; and abuse of/dependence on drugs. RDD respondents coded as alcohol abusers/dependent and/or drug abusers/dependent are not coded as being alcohol and/or drug users, respectively. The patron variables are use of alcohol at least 12 times in the past year and use of at least one drug on five or more days in the past year;
- *Dummy variable for survey type*, set equal to one if the respondent participated in the patron survey and zero if the respondent participated in the RDD survey; and
- *Dummy variables for region of residence*, including dummy variables for the Midwest, South, West and Missing, with the Northeast serving as the excluded base category.

### **Annex 3: Methodological Notes for Costs**

The following table presents certain values and calculations used to estimate the cost per problem and pathological gambler. Specifically, the estimates of this study compare the rate of costly consequences for these gamblers relative to “predicted” or expected rates for individuals with similar characteristics, but who are low-risk gamblers (they have gambled, but never experienced any symptoms of problem gambling).

Specifically, the analysis adjusts for a standard set of characteristics that are believed to be predictive of the behaviors and outcomes of interest in this report. These factors were identified and the variables were defined in the body of the report. They include age, gender, ethnic identity, educational attainment, use/problems with alcohol and drugs, respectively, and region of the country in addition to variables representing the gambling Type of the individual. The purpose of these calculations is to adjust for basic and systematic differences between different types of gamblers that might be related to the outcomes of interest, rather than simply take the difference in outcomes for pathological and problem gamblers and compare them to those with no history of problems.

The analysis has compared problem and pathological gamblers to low-risk gamblers (never had any problems) rather than nongamblers for several reasons. First, nongamblers have lower rates of problems than low-risk, thus we get more conservative (smaller) cost estimates when we use low-risk gamblers for comparisons. Second, other researchers have found persons that have never gambled to be relatively distinct in their characteristics, e.g., less likely to work outside of the home, more likely to be female, and otherwise more conservative in certain behaviors.

The costs are based on the “excess” or difference between the actual rate and the predicted rate, where the predicted rate is calculated from the “odds ratio.” This yields a smaller or more conservative estimate than simple comparison of problem and pathological gamblers to the unadjusted rates for low-risk and nongamblers.

For all of the costs examined that rate of problems is materially greater for problem and pathological gamblers than for low-risk gamblers (and nongamblers). Costs have only been estimated where the rate for pathological and/or problem gamblers is statistically significantly different (worse) than low-risk gamblers (or alternatively nongamblers). For comparison purposes the rate of consequences/problems for low-risk gamblers is also presented. Note that for all types of consequences except one the “predicted” rate of problems for problem and pathological is greater than the unadjusted rate for low-risk gamblers. This indicates that problem and pathological gamblers on average are more likely to have characteristics that are associated with the consequences of concern, even if they were not problem gamblers. For example, other tabulations have shown that problem and pathological gamblers are more likely to have alcohol and drug problems and lower educational attainment. If these factors are not adjusted for the cost estimates will be somewhat inflated, as having these characteristics (alcohol and drug problems) is generally significantly and negatively related to measures such as divorce, health, and criminal justice involvement (as is the case in the analyses done for this study).

For example, the problem of “job loss” was reported by 13.8 percent of pathological gamblers who had been employed during the prior year, compared to a rate of 4.0 for low-risk gamblers. In the logistical regression the “odds ratio” is 2.62, which means that the odds of pathological gamblers experiencing job loss is 2.62 times greater than for low-risk after adjusting for other characteristics. These data imply that pathological gamblers without their gambling problems would have a predicted rate of 5.8 percent.

This is greater than the value for low-risk gamblers of 4.0 percent, due to the other characteristics which indicate that pathological gamblers are at higher risk of job loss even without the gambling issues.

Predicted rates are estimated from the rates for pathological and problem gamblers, respectively, and their “odds ratios” from multivariate logistical regressions comparing each respective type of gamblers to low-risk gamblers. Odds ratios (and accordingly costs) are only used where problem and pathological gamblers are significantly worse than low-risk gamblers or those that have never gambled at the  $p < 0.10$  significance level (one-tailed test) or better.

**Table 21. Summary of Comparisons Between Pathological, Problem, and Low-Risk Gamblers**

Type of Costly Consequence/Problem	Rate of Consequence per Problem	Odds Ratio Relative to Low Risk	Predicted Rate without Gambling	Rate for Low-Risk Gamblers
<b>Pathological Gamblers</b>				
Job loss	13.8%	2.62	5.8%	4.0%
Unemployment Insurance	15.0%	2.81	5.9%	4.0%
Welfare benefits	4.6%	1.94	2.4%	1.3%
Bankruptcy	19.2%	1.97	10.8%	5.5%
Divorced ever	53.5%	2.29	33.5%	29.8%
Health poor or fair	31.1%	2.43	15.7%	13.9%
Mental health utilization	13.3%	2.12	6.7%	6.5%
Arrested ever	32.3%	2.00	19.3%	11.1%
Incarceration ever	21.4%	4.38	6.3%	4.0%
<b>Problem Gamblers</b>				
Job loss	10.8%	2.07	5.5%	4.0%
Unemployment Insurance	10.9%	2.21	5.3%	4.0%
Welfare benefits	7.3%	3.35	2.3%	1.3%
Bankruptcy	10.3%	1.71	6.3%	5.5%
Divorced ever	39.5%	1.38	32.1%	29.8%
Health poor or fair	16.4%	n.s.	n.s.	13.9%
Mental health utilization	12.8%	2.47	5.6%	6.5%
Arrested ever	36.3%	3.15	15.3%	11.1%
Incarceration ever	10.5%	2.34	6.2%	4.0%

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## CHAPTER 4. GAMBLING AMONG 16- AND 17-YEAR-OLD YOUTHS

As part of its data collection protocols for the Commission, the NORC team interviewed 534 youths via a randomized telephone survey of U.S. households during the last 2 months of 1998. Surveys of small age groups, and particularly of minors, are more complicated than general adult surveys, even when the same interview is being used. (albeit some skip patterns were widened and others narrowed; see below). The differences are attributable both to the screening requirements, under which the great majority of households have no eligible respondent, as well as to the need to obtain two contacts and consents for the interview—one from the parent and then one from the youth.

No more than 7 percent of households have a 16- or 17-year-old in residence. Because youths of this narrow age band are so rare, relatively speaking, they are time-consuming to reach for interviewing. The cost of screening to obtain a sufficient number for typical national estimation purposes is much higher than for an adult survey. Consequently, researchers may take one of the following approaches: (1) the survey is conducted by group administration in schools, (2) the survey protocol accepts a much wider age group (such as 9- to 17-year-olds), or (3) residences are screened for a more extensive protocol, so the relative cost of the screening is less significant. The cost of selecting youth for a highly specialized one-interview sample survey is such that we recommend further national-level research on adolescents instead be performed in the context of ongoing longitudinal or cross-sectional research, in which gambling questions can be appended to one or more rounds of questionnaires, rather than as a stand-alone survey.

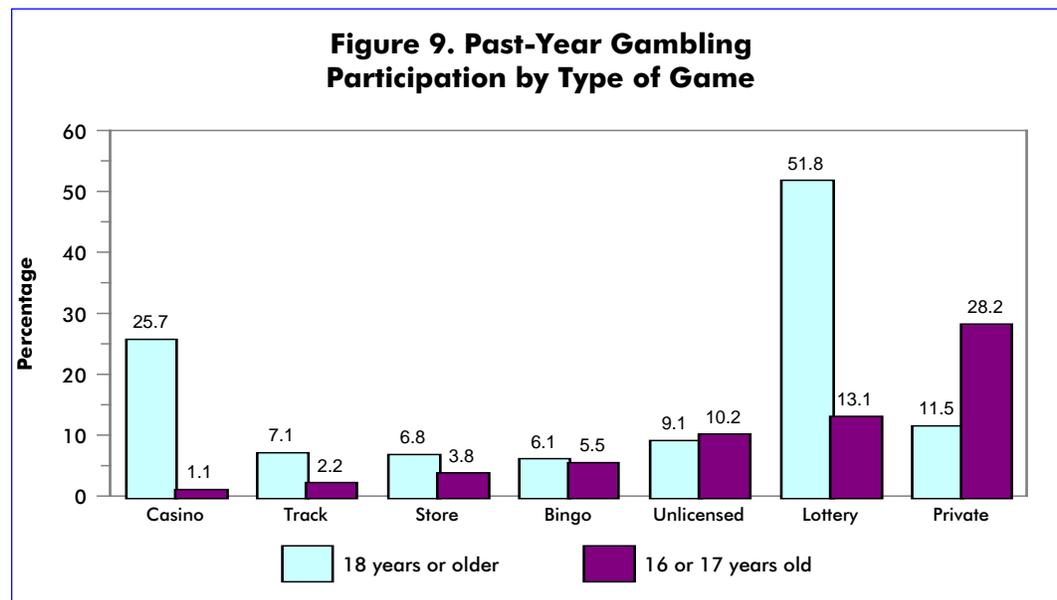
In the present survey of youth gambling behavior, we began by obtaining two kinds of randomized phone lists: a random-digit-dial sample like those used for the adult sample, and a random selection of household telephone numbers from lists that were known to be “enriched” with adolescents. The latter lists contain phone numbers that, due to their neighborhood location or other known household characteristics (e.g., school enrollment or consumer expenditure patterns), have a much higher than random likelihood of providing access to adolescents. Numbers from this second type of list were in fact much more accurate, in that about 19 of every 20 were found to be working residential numbers, in contrast to about one-half of the phone numbers on the RDD lists. The enriched lists also had a much higher percentage of 16- and 17-year-olds among the successfully screened cases; at present, we have not yet finalized our calculations for these separate sample sources.

The screening procedure for the youth sample was somewhat different from the adult procedure. As with the adults, we first asked for the number of residents age 18 or older, and then 17 or younger, in the household. If minors resided there, we then asked whether one or more was of the requisite age; if there were more than one, we randomly selected the youth with the most recent birth date. We then asked to speak with the child’s parent or guardian, from whom we would request consent to interview the child. Only in cases where we obtained parental consent did we pursue further contact with the youth, at which point we would request her or his personal consent to take part in the survey.

A small number ( $n=49$ ) of the youth cases were obtained from the fully randomized lists; all others were reached through the enriched lists. In examining the composition of the

total sample this procedure gave us, we found that the North Central region of the United States was over-represented, and that black and Hispanic youth were under-represented. We therefore weighted the sample by poststratification (described previously for the adult surveys) on region, race, and ethnicity to yield proportionate weights equal to those obtained in *Current Population Estimates*. The final sample represented 8.3 million 16- and 17-year-olds, with a slight preponderance (less than 1 percent) of males; the sample was 74-percent white, 13-percent black, 9-percent Hispanic, and 3-percent assorted other backgrounds. Nearly 36 percent lived in the South, 19 percent in the Northeast, and 23 percent in the Midwest (North Central) and in the West. Further calculations revealed that 82 percent lived in lottery states.

Our overall finding was that adolescents gamble appreciably less often than adults. About one-third of the 16- and 17-year-olds have never gambled, versus less than one-seventh of adults. However, the most striking finding in the youth sample was not the lower overall participation rates, but the difference in their reported *pattern* of gambling when compared with that of adults. The past-year data most clearly demonstrate this difference. As indicated in Figure 9 below, adolescent gambling was predominantly composed of private betting on games of skill, particularly card games (named by more than 40 percent of those who mentioned a favorite game). Nearly 3 out of 10 youths, versus just more than one-tenth of adults, bet on such games in the past year.



The other most prominent youth games, albeit much less popular than private games of skill, were betting in sports pools and buying lottery tickets. Youths particularly favored instant lotteries; about three-quarters of the young lottery players bought instant (scratch-off type) lottery tickets in their most recent purchase period, and no more than 15 percent bought either multi-state, daily, or big-jackpot tickets.<sup>7</sup> For adults, the lottery was the

<sup>7</sup> There is a reasonable prospect that a small payoff, such as that delivered by most winning instant-lottery tickets, could be collected by an underage gambler. The likelihood that a youth could collect on a winning Powerball ticket, or for that matter a MegaBucks slot machine, is very small (Cummings, personal communication, 1999).

most frequent mode of gambling. More than one-half of adults bought lottery tickets in the past year, versus about one-eighth of 16- to 17-year-olds. In addition, adults strongly favored lotteries with big payoffs; during their most recent purchase period, more than one-third bought Powerball-type (multistate) tickets, more than one-half bought big-jackpot (state) tickets, and fewer than one-quarter bought instant lottery tickets.

Casino gambling (especially slot machines) was the second most common form of adult gambling, with one-quarter of all adults participating in the past year. The adolescents were notably absent from casino play, with barely 1 percent reporting any casino wagers. This presumably reflects well on the enforcement efforts (particularly against fake IDs) of casino operators, among other factors.

The data also show that 16- and 17-year-olds have wagered (and won or lost) substantially smaller amounts of money when compared with adults. For example, approximately 22 percent of adults ever lost more than \$100 in a single day of gambling, compared with only about 2 percent of the 16- and 17-year-olds. When asked about their wagering in the past year, about one-quarter of all adult lottery players reported losing more than \$100, while less than 2 percent of youth who played the lottery reported losing this much. Even in their preferred form of gambling—private games—only about 2 percent of all 16- and 17-year-olds lost more than \$100 in the past year, compared with 6 percent of adults.<sup>8</sup> Finally, youths who gambled did so less frequently than adults who gambled. For example, when looking at those who did play private betting games in the past year, only one-fourth of the 16- and 17-year-olds, compared with one-third of adults, made private bets at least once a month in the past year.

If we use adult guidelines standards to gauge the sheer financial riskiness of youthful wagers, we would have to conclude that adolescent gambling is not nearly as serious a problem as adult gambling. But this would be a premature conclusion. For example, many 12- and 17-year-olds hold part-time jobs and earn incomes. These incomes are generally much lower than those of adults, and few adolescents are in a position to “bet the rent.” However, the amounts they wager may in fact comprise an appreciable percentage of the income they do control. Unfortunately, the pattern of income questions in the survey was poorly suited to adolescent economic circumstances, which require a different approach. The relationship between the discretionary income of adolescents and their pattern of gambling is an important subject for further research.

The NODS screen was a second area in which there was a slight difference between the adult and adolescent survey, but in this case a more revealing one, in that all adolescents who ever gambled were asked the NODS questions, without regard to reported their reported levels of gambling losses. By using the answers to the daily and annual greatest loss questions, it is still possible to apply to youth the same parameters when considering their “problem gambling type” as we applied to adults—namely, that gamblers who have never lost more than \$100 in a single day, or as a net yearly loss, are automatically considered to be low-risk gamblers. When we apply these parameters to our youth sample, about 2 percent (roughly 150,000 youths) would then be classified as at-risk gamblers, which is about one-fourth the proportion seen among adults. About 1.5 percent

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<sup>8</sup> We should note that, of the population of youth who have lost more than \$100 in a single day, or netted a \$100 loss in any given year, about two-thirds are male.

(roughly 100,000 youths) would be classified as problem or pathological gamblers,<sup>9</sup> which is less than the figure for adults.

Most prior research on adolescents has not applied the same yardstick to youthful gambling behavior as to adult gambling, but instead designated behavior as problematic with a lower required number of behavioral criteria, or by admitting less severe levels as diagnostically important than the same researchers would accept for adults. If, for example, the adult financial criterion that we used is not considered, so that all 16- and 17-year-olds are screened with the NODS regardless of the largest amount lost in a day or year, the percentage of problem and pathological and problem gambling youth doubles to about 3 percent, which is similar to the percentage for adults. Furthermore, the percentage of at-risk youth increases even more dramatically, to about 15 percent—which is more than double the incidence among adults.

There is no single “right” decision on what kind of yardstick to use at this stage of developing research on youthful gambling. It is plausible to argue that the limited discretionary funds available to adolescents are largely spent to purchase entertainment, and that private games of skill and luck, around which most youthful gambling occurs, provide a relatively protected environment in which to learn how to discipline one’s gaming expenditures. That is, one can say that it is potentially a good thing for youths interested in gambling to be able to discover, with relatively limited financial exposure, that excessive wagers can be costly and disruptive, both in dollars and in the absorption of time that might be devoted to other pursuits.

But one can also argue that these “protected” environments, in which there is no continuing “house cut” from the money being wagered, present a misleading and seductive picture of gambling as it exists for most adults. Even the notion of protection may be mistaken, insofar as adolescents may be prepared to enforce the collection of debts (or to attempt to evade collection) with less discipline and more ill temper than in the more businesslike world of regulated adult credit and loan arrangements. Moreover, one might argue that many forms of learning compete for the limited attention of youths in the chrysalis of adolescence, and the real cost of time spent learning how to gamble—that is, how to manage and live with the operations of chance—is the lost time from learning about other foundations of life, including responsibility, love, trust, charity, and work. Finally, an early introduction to gambling, even if it proved salutary for many adolescents, may also encourage earlier onset and a longer and more difficult course for those who are vulnerable to development of gambling problems.

At any rate, depending on which measurement approach one prefers, adolescents can be seen as less at risk of gambling problems than adults, about equally at risk, or at greater risk. A deeper understanding of the economic, social, and psychological dimensions of adolescent gambling is very much needed.

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<sup>9</sup> The sample sizes of problem and pathological gamblers are too small to permit comparisons between them.

## **CHAPTER 5. IMPACTS OF CASINO PROXIMITY ON SOCIAL AND ECONOMIC OUTCOMES, 1980–1997: A MULTILEVEL TIME-SERIES ANALYSIS**

Casinos have opened in and near many U.S. population centers during the past two decades, especially in the 1990s. To determine the effects of these establishments, we analyzed social and economic changes between 1980 and 1997 in 100 non-tribal sample communities. The outcome (or response) variables are the published social and economic indicators for the counties of the sample communities by year, from 1980 to 1997. These variables include annual county-level measures of criminal activity, employment, income and earnings, bankruptcy filings, and demographic behavior.

The key explanatory variable is “casino proximity,” in other words, whether one or more casinos were in operation within a 50-mile radius of a given community between 1980 and 1997.<sup>10</sup> In the sample of 100 communities, casino proximity was an irreversible community attribute during these years; in other words, all communities that were near at least one casino had this attribute steadily from their first year of casino proximity up until 1997. Only 5 of the 100 sample communities were near casinos in 1980, while 45 were near casinos in 1997. Thus, any effects of casino proximity in this sample are largely attributable to casino openings in 40 communities between 1980 and 1997.

A statistical model is needed to analytically separate the effects of casino openings from the effects of other factors operating during this timespan. From a statistical perspective, the 100-community sample is close to being ideal for this purpose. Both the sample of communities, as well as the total populations residing in the counties of the sample communities, are roughly balanced between communities that were near casinos and communities that were not. Based on county-level data, the 45 communities near at least one casino in 1997 accounted for about 46 percent of the approximately 42 million individuals who resided in the 100 sample communities. Moreover, in the subsample of 45 communities that were near at least one casino in 1997, the majority of years from 1980 to 1997 antedated the opening of any nearby casino. The average year of first casino opening equals approximately 1990.6, and about 90 percent of the 45 communities had their first casino opening in 1989 or later. The statistical model seeks to isolate the effects of casino proximity by (1) comparing communities with and without a nearby casino between 1980 and 1997 and (2) comparing years before and after first casino openings in communities that were near a casino sometime during 1980–1997.<sup>11</sup>

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<sup>10</sup> Alternately, we use the phrasing “near [one or more casinos]” in this section to mean “casino proximity.”

<sup>11</sup> In contrast to the favorable balance of the 100-community sample, the worst sample composition for statistical purposes would occur if casinos opened near all sample communities in the same year. No model could hope to isolate casino effects given such a data set, because casino effects could not be distinguished from effects of other factors, such as changes in the U.S. economy, that tend to affect all communities in the same way at the same time.

## Data

A set of social and economic indicators was selected for analysis based on hypotheses about the effects of casino proximity presented in Reuter (1997). For example, casinos may create conditions conducive to crime, including larcenies and burglaries that target gamblers carrying large amounts of cash; the risks associated with gambling may result in non-business bankruptcies; casinos may provide employment; visitors who come to an area to gamble at casinos may boost earnings in other sectors, especially hotels and construction; and visitors who come to the casinos may drain business away from other sites. These are all empirical questions.

Social and economic indicators for counties of the 100 sample communities were taken from a number of published sources, including crime data from the Federal Bureau of Investigation (FBI); employment, earnings, and income data from the Bureau of Labor Statistics (BLS); health indicators from the National Center for Health Statistics (NCHS); and numbers of business and non-business bankruptcies from the Administrative Office of the U.S. Courts. Estimates of per capita casino spending were provided by Christensen/Cummings Associates. An important caveat is that the estimates of per capita casino spending are not completely independent of the key explanatory variable—casino proximity—because the Christensen/Cummings estimation algorithm used proximity along with other variables, including reported revenues of local gambling facilities, to approximate casino spending (Christensen/Cummings Associates 1999). Prior to analysis, all dollar measures—including casino spending, income measures, and earnings measures—were adjusted to 1980 price levels using the consumer price index (CPI-U) for all items (Bureau of the Census 1997, p. 487).

To standardize outcomes across communities, we calculated per capita rates and means by dividing the estimates of the numbers of crimes, bankruptcies, and dollars of earnings or income of counties in specific years by corresponding estimates of the population sizes of the same counties in the same years.<sup>12</sup> For example, the larceny rate is calculated per 100,000 people (i.e.,  $100,000 \times (\text{number of larcenies})/(\text{county population size})$ ). Per capita income is calculated as  $(\text{number of dollars of income})/(\text{county population size})$ . Details are provided in Table 22, at the end of this section.

Years of availability and communities for which data are available also vary depending on the data source. For example, crime rates are available for 92 counties and years 1980 to 1995, while most earnings and income measures are available for all 100 communities from 1980 to 1996 (see Table 22 for details). Sporadic missing values are also present in the time series of specific communities. We chose a method of analysis designed to yield robust results in the presence of missing values.

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<sup>12</sup>The appropriate county population bases for rates in particular years vary slightly depending upon the data source. The population bases of the rates and means analyzed in this section, and the population bases used in constructing analytical weights (next section), are from the agencies that published the numerators of the corresponding rates and means. Thus, the bases of crime rates are county population estimates of the FBI, and the bases of average income and earnings estimates are county population estimates of BLS and the Bureau of the Census. The base of the unemployment rate is the population size of the civilian labor force (BLS), and the base of the infant mortality rate is number of live births (NCHS).

## Methods

A statistical model used to analyze survey data is a precisely stated concept about how different measured (and unmeasured) features of the subject under study relate to one another, such as how casino proximity relates to community characteristics over time. By computing how well the data fit the model, we are able to infer the accuracy of its conceptual structure and the strength of postulated relationships.

Multilevel models are models that represent the multilevel (hierarchical) structure of a dataset and allow the random error component of a model to depend on units at different levels. In the time series of social and economic indicators, there are two “levels”—years (repeated measures of a specific indicator for a particular community) are “nested” with communities (counties). That is, for each community, we have as many as 18 annual measurements for years between 1980 and 1997. Years within communities are “level-1 units,” and communities are “level-2 units.”

Multilevel models are especially appropriate for estimating casino proximity effects, given this data structure, for two reasons. First, community-level effects are probably important in these data, because there are many factors—including factors that are unmeasured or poorly understood—that vary across communities and affect the levels of outcomes differently in different communities. Multilevel models allow incorporation of a community-specific intercept that varies across communities and serves as a proxy for diverse unmeasured factors that differentiate the communities in the sample. The results corroborate the importance of community-level effects: For most outcome measures, more than one-half of the total variance in the outcome measure is attributable to the community-specific intercept, meaning that most of the variance in the outcome measure is among, rather than within, communities (see Table 22). Second, unlike traditional multivariate models for multiple time series, multilevel models can accommodate missing values because the models do not require a balanced data structure (Goldstein 1995). The outcome measure can be available for different communities in different years.

Another important modeling decision is the choice of scale for the outcome variable. Prior to the multilevel analysis, we transformed each outcome measure by taking the natural logarithm, for two reasons. First, most of the outcome variables are highly positively skewed, and without exception, the mean level of the outcome measure across communities exceeds the median. Based on histograms and residual plots, it appears that the log transformation worked well in normalizing the distributions of the outcome variables. Second, plots of the community-level means by community-level standard deviations showed that the standard deviations tended to increase linearly with the means. This is the case of “constant coefficient of variation,” common in social datasets. The log transformation operates to make the variance of the outcome measure constant across communities, thereby simplifying the models that can be used to analyze the data (e.g., McCullagh and Nelder 1989, Chap. 4).<sup>13</sup>

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<sup>13</sup>The log transformation applied in our analyses was a slight modification of the usual transformation, namely  $\log(Y + 1)$ , where  $Y$  denotes the outcome measure—a rate, percentage, or mean. The addition of unity obviates the problem of occasional zero rates and means.

Given the log transformation applied to rates, means, and percentages, statistical efficiency is enhanced by weighting the observations in proportion to the population bases of these statistics (McCullagh and Nelder op.cit.). We used the weighting technique available in the multilevel program MLwiN (Goldstein et al. 1998) to weight communities in each analysis in proportion to their mean populations across years during 1980–1997 when the outcome measure was available. This procedure may tend to understate the “good” effects of casinos, if any, with respect to employment, increased tourism, and so forth, because in larger communities these effects would tend to be less salient than in smaller ones (e.g., 100,000 “tourists” coming to gamble to Minneapolis/St. Paul will have a lower relative impact than the same number coming to Tunica, Mississippi). Adverse impacts (in terms of greater gambling-related pathology among local residents) would appear to be more independent of the size of the community.

The results presented in this section are based on four “nested” multilevel models, called Models 0, 1, 2, and 3. Each of the four models incorporates one or more of three classes of explanatory variables:

- *Community*, represented by a community-specific intercept;
- *Year*, represented by a set of 0–1 variables indexing years when data were available; and
- *Casino*, represented by a single 0–1 variable measuring whether a casino was within 50 miles of a specific community in a specific year.

Each model assumes that the logarithm of the outcome variable equals a linear function of (1) one or more of the three classes of variables and (2) a “level-1” random error term, i.e., a random error that varies across years within communities. Each model assumes that both the community-specific intercept and the level-1 error are normally distributed in the population and mutually independent. Each model was estimated using likelihood-based methods discussed in Goldstein (1995) and implemented in the program MLwiN (Goldstein et al. 1998).<sup>14</sup>

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<sup>14</sup> The most general model is Model 3, which can be written in the following manner:

$$Y_{ij} = \alpha + \alpha_j + \sum_{t=81}^{97} \gamma_t I_{ijt} + \beta CASINO_{ij} + e_{ij} ,$$

where  $Y_{ij}$  denotes the outcome measure for community  $j$  in year  $i$ ;  $I_{ijt}$  denotes a 0-1 dummy variables that takes on the value 1 if  $i = t$  and takes on the value 0 otherwise; and  $CASINO_{ij}$  is a 0-1 dummy variable that takes on the value 1 if community  $j$  has a proximate casino in year  $i$  and takes on the value 0 otherwise.

The parameters  $\alpha$ ,  $\beta$ , and the  $\gamma_t$ 's are fixed constants.  $\alpha_j$  and  $e_{ij}$  are random variables assumed to be normally and independently distributed with zero mean and constant variance. The variance of  $\alpha_j$  is the level-2 (community-level) variance, and the variance of  $e_{ij}$  is the level-1 variance. The community-specific intercept of the  $j$ -th community equals  $(\alpha + \alpha_j)$ .

Models 0, 1, and 2 result from setting specific parameters equal to zero in Model 3. Model 0 assumes that  $\beta$  and the  $\gamma_t$ 's equal zero. Model 1 assumes that the  $\gamma_t$ 's equal zero. Model 2 assumes that  $\beta$  equals zero.

Directions for improving Model 3 include allowing for serial correlation of successive values of  $e_{ij}$ . Estimation of such models is currently possible but nontrivial in the multilevel framework (Goldstein 1995;

The models differ in which of the three classes of explanatory variables are included, as follows:

- Model 0: community only
- Model 1: community + casino
- Model 2: community + year
- Model 3: community + year + casino

The presentation of results in the next section focuses on the comparison of Models 2 and 3. For each outcome measure and model, community effects were highly statistically significant. For each outcome measure and each of Models 2 and 3, year effects were highly statistically significant. For each outcome measure, the casino effect is significant in Model 1, but it is significant for only selected outcome measures in Model 3 (see the next section). Estimates of year effects are highly consistent between Model 2 and 3, but estimates of casino effects vary dramatically depending upon the choice of Model 1 or Model 3.<sup>15</sup>

The presentation of results focuses on the comparison of Models 2 and 3 because year effects represent an important competing hypothesis for the apparent effects of casinos. The opening of casinos in recent years has been correlated with important changes in outcome measures in many communities (Reuter 1997). The inference that casinos are causing such changes in outcomes can be discounted to the extent that the changes are fully accounted for by changes that occurred in specific years both in communities with proximate casinos and in those without proximate casinos. The question is whether the addition of the casino effect in Model 3 results in a statistically significant increment to the goodness of fit of Model 2. In effect, the sequence of the model development serves to control for changes that occur in communities independently of whether casinos are becoming more accessible to them.

The comparisons between Model 2 and Model 3 in the next section use a likelihood-ratio chi-square statistic, gauging the difference in goodness of fit between the two models. We infer a casino effect if and only if the chi-square (one degree of freedom) is statistically significant at the standard  $\alpha = 0.05$  level. It is also possible to use the Wald criterion, comparing the casino parameter estimate to its estimated standard error, but the likelihood-ratio chi-square criterion is generally more accurate in small samples (Goldstein 1995).<sup>16</sup>

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Goldstein et al. 1998). NORC has obtained preliminary estimates, extending Model 3 to allow serial correlation, for several of the outcome variables presented in the previous section. This is an important area for future research.

<sup>15</sup>For example, the effect of casino proximity is to increase total per capita bankruptcy filings by 51 percent according to Model 1, but, as discussed in the next section, the same effect of casino proximity is small (+3 percent) and statistically insignificant in Model 3.

<sup>16</sup>A current limitation of multilevel modeling techniques is the absence of an overall measure of the goodness-of-fit of a model, analogous to the  $R^2$  measure used in linear regression analysis. We evaluated Model 3 by examining plots of residuals, which did appear to corroborate the assumptions of the model.

The log transformation of the outcome variable implies that the casino proximity effects in Model 3 are multiplicative on the original scale of the outcome measure. This means that casino effects can be expressed as the percentage change in the outcome measure that is associated with the opening of a nearby casino. For example, based on Model 3, the opening of a casino is associated with an increase of 237 percent in annual per capita casino spending (this is discussed further in the next section). Thus, if annual per capita casino spending equals \$10.00 in a particular community before the opening of any proximate casino, we would expect annual per capita casino spending to equal \$33.70 in the same community after the opening of a proximate casino.

## Results

Table 22 presents comparisons of Models 2 and 3 and casino proximity parameter estimates based on Model 3. Table 23 presents detailed Model 3 parameter estimates for four of the outcome measures with significant results: per capita casino spending, percentage unemployed, per capita income maintenance, and per capita earnings from hotels and lodging. To facilitate combining estimates, the estimates in Table 23 are presented on the log scale rather than on the untransformed scale. For example, from the first column, the estimated mean per capita casino spending (that is, gambling expenditures) in communities without proximate casinos during 1990 equals  $\exp(2.72 + 1.24) = \$52$ . The same estimate in communities with proximate casinos during 1990 equals  $\exp(2.72 + 1.24 + 1.22) = \$178$ .

We draw the following conclusions. First, the casino effect is not statistically significant for any of the bankruptcy or crime outcome measures or for the infant mortality measure (which is as close to a common measure of child welfare as can be obtained). 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. Also, the index crimes measured here are generally those which reflect the public safety and security of persons and real property—that is, “Part 1” crimes reported to the Uniform Crime Report system of the Federal Bureau of Investigation. The “Part 2” offenses, which include “white collar” crimes such as embezzlement and fraud, are not yet available for analysis.

Second, there is a statistically significant casino effect for (1) per capita casino spending (that is, local gambling expenditures in casinos), (2) 4 of 5 employment measures, and (3) 7 of 16 income and earnings measures. The largest significant effect is for per capita casino spending, which rises 237 percent. There is also a marked decrease in the percentage of the labor force that is unemployed, or -12 percent from an average unemployment rate of 6.5 percent; in other words, about one percentage point is taken off the unemployment rate. A marked decrease is also seen in the receipt, on a per capita basis, of income-maintenance (welfare) dollars (-13 percent), unemployment insurance (-17 percent), and other transfer payments (-3 percent), which may be associated with the drop in local government employment. There is a slight increase in the employment rate in construction trades, matched by a larger increase (+18 percent) in actual per capita construction earnings, an important component of the local labor market. Even more substantial percentage increases are seen in earnings in hotel and lodgings (+43 percent) and recreation and amusement industries (+22 percent); however, these start from quite small bases in the communities under study. No change is seen in overall per capita

income, as the increases noted above are offset by the reductions in welfare and transfer payments as well as a drop-off in income from restaurants and bars, which may be losing business to the food and beverage services in casinos and hotels. The net picture in the economic and crime data is on the positive side, but not in an overwhelming way. There appears to be more of a shift in the types and locations of work, and perhaps the overall number of workers, than a rise in per capita earnings.

**Table 22. Casino Proximity Effects in Model 3.**  $\beta$ =casino proximity effect as % change.  $\rho$ =% variance between communities. Baseline level=avg. in yrs. w/o proximate casinos.

Outcome measure	Baseline level	Significance of $\beta$ : Model 3 v. Model 2		Model 3 Estimates	
		$\chi^2$ (1 df)	$\rho$	$\beta$	$\rho$
<b>Casino spending<sup>1</sup></b>					
Per capita casino spending	\$29	1321.9	0.00*	+237%*	75%
<b>Bankruptcy filings per 100,000 pop.<sup>2</sup></b>					
Total filings	1,138	0.5	0.48	+3%	98%
Business filings	85	2.1	0.15	+9%	92%
Non-business filings	1,054	0.5	0.48	+1%	98%
<b>Crime<sup>3</sup></b>					
FBI crime index	4,400	0.1	0.75	-0%	96%
FBI modified crime index	4,430	0.1	0.75	-0%	96%
Larcenies per 100,000 pop	3,863	0.3	0.58	+2%	69%
Burglaries per 100,000 pop	1,326	2.5	0.11	-7%	74%
Motor vehicle thefts per 100,000	367	0.1	0.75	+0%	81%
Assaults per 100,000 pop	322	0.2	0.65	-4%	74%
Robberies per 100,000 pop	131	0.2	0.65	+3%	87%
<b>Employment—civilian labor force composition<sup>4</sup></b>					
% unemployed	6.5%	27.2	0.00*	-12%*	53%
% employed—local govt.	8.9%	5.4	0.02*	-2%*	45%
% employed—construction	6.1%	15.6	0.00*	+1%*	58%
% employed—services	26.7%	0.1	0.75	+0%	87%
% employed—retail trade	18.8%	7.9	0.01*	-3%*	82%
<b>Demographic behavior<sup>5</sup></b>					
Infant deaths per 1,000 live births	9.2	2.0	0.16	+7%	29%
<b>Income and earnings per capita<sup>6</sup></b>					
Total income	\$16,153	0.1	0.75	+0%	94%
-income maintenance	\$157	66.3	0.00*	-13%*	95%
-retirement	\$1,866	0.6	0.44	-1%	93%
-transfer payments	\$2,094	14.5	0.00*	-3%*	94%
-unemployment insurance	\$70	20.5	0.00*	-17%*	58%
-net earnings	\$10,976	1.2	0.27	+1%	99%
Private earnings: construction	\$679	5.6	0.02*	+18%*	51%
-restaurants, bars	\$241	11.9	0.00*	-19%*	25%
-gen. merchandise	\$124	3.0	0.08	-15%	29%
-local govt, govt enterprise	\$824	2.2	0.14	-1%	95%
-hotels & lodging	\$64	7.1	0.01*	+43%*	55%
-recreation & amusement	\$64	4.3	0.04*	+22%*	51%
-retail trade	\$1,104	0.1	0.75	-0%	88%
-services	\$2,354	0.2	0.65	+1%	83%
-social services	\$69	0.1	0.75	-2%	42%
-transportation	\$769	3.9	0.06	+11%	71%

\*Significantly different from 0 at level  $\alpha = 0.05$ . 1. Data for 100 counties, 1980–97; source: Christensen/Cummings. 2. Data for 100 counties, 1987–97; source: Administrative Office of U.S. Courts. 3. Data for 92 counties, 1980–95; source: FBI Uniform Crime Reports. 4. Data for 100 counties, 1980–94 except 1987; source: BLS. 5. Data for 100 counties, 1982–93 except 1983; source: NCHS. 6. Data for 100 counties, 1980–96 for per capita income, 1980–95 otherwise; source: BLS.

**Table 23. Model 3 Parameter Estimates: Selected Outcome Measures**

Parameter	Estimate on log scale (standard error)			
	Casino spending	Unemployment	Income maintenance	Earnings, hotels
Avg. base level, 1980	2.72 (0.05)	1.94 (0.03)	4.71 (0.06)	3.44 (0.16)
Year 1981	0.22 (0.04)	0.05 (0.02)	0.19 (0.02)	0.15 (0.15)
Year 1982	0.34 (0.04)	0.27 (0.02)	0.24 (0.02)	0.18 (0.15)
Year 1983	0.43 (0.04)	0.27 (0.02)	0.34 (0.02)	0.21 (0.15)
Year 1984	0.55 (0.04)	0.05 (0.02)	0.38 (0.02)	0.46 (0.15)
Year 1985	0.64 (0.04)	0.03 (0.02)	0.43 (0.02)	0.61 (0.15)
Year 1986	0.70 (0.04)	0.02 (0.02)	0.49 (0.02)	0.59 (0.15)
Year 1987	0.84 (0.04)		0.53 (0.02)	0.59 (0.15)
Year 1988	0.95 (0.04)	-0.18 (0.02)	0.65 (0.02)	0.75 (0.15)
Year 1989	1.06 (0.04)	-0.21 (0.02)	0.79 (0.02)	0.87 (0.15)
Year 1990	1.24 (0.04)	-0.19 (0.02)	0.97 (0.02)	1.09 (0.15)
Year 1991	1.28 (0.04)	-0.03 (0.02)	1.16 (0.02)	1.30 (0.15)
Year 1992	1.37 (0.04)	-0.04 (0.03)	1.36 (0.02)	1.29 (0.15)
Year 1993	1.61 (0.04)	-0.03 (0.03)	1.46 (0.02)	1.45 (0.16)
Year 1994	1.85 (0.04)	-0.10 (0.03)	1.54 (0.02)	1.40 (0.16)
Year 1995	2.08 (0.04)		1.19 (0.02)	1.16 (0.16)
Year 1996	2.19 (0.04)			
Year 1997	2.31 (0.04)			
Casino proximity	1.22 (0.03)	-0.13 (0.02)	-0.14 (0.02)	0.36 (0.13)
Level-2 variance (communities)	0.20 (0.03)	0.03 (0.01)	0.35 (0.05)	1.43 (0.21)
Level-2 variance (years within communities)	0.07 (0.02)	0.02 (0.001)	0.02 (0.001)	1.15 (0.04)

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## **CHAPTER 6. CASE STUDIES OF THE EFFECT ON COMMUNITIES OF INCREASING ACCESS TO MAJOR GAMBLING FACILITIES**

As a part of the NORC team's work for the Commission, we conducted a 10-community case study on the impact of increased access to legalized casino gambling. We randomly selected our sites from eligible towns and cities across the United States; the one requirement was that the community have a population of at least 10,000 and lie within a 50-mile radius of at least one major casino, as defined by the criterion of at least 500 gaming devices, and measuring the distance with commercial place-mapping software with longitude/latitude coordinates. We stratified the selection of cases so that all four census regions of the United States are represented by at least two communities.

Once the communities were selected, we began the process of deciding who the appropriate contacts would be for a telephone interview process. The set of possibilities included local planners, addiction specialists, social service personnel including employment specialists, law enforcement officers, chamber of commerce members, and other persons representing a spectrum of community experience and viewpoints. We developed a series of open-ended questionnaires that consisted of a core set of questions plus items that were tailored to each particular type of community member. We then compiled lists of potential contacts from recommendations of NORC field staff residing in or near these communities, as well as phone directories of government numbers and the local yellow pages. Finally, in the closing section of each interview, we included an item asking the respondent whether there was anyone else in the area they would recommend we speak with; this method yielded a number of additional interviews.

Once this process was complete, three experienced interviewers were selected to contact and interview respondents, speaking with seven or eight people in every community. These respondents were often in prominent positions, such as heads of local planning boards and chambers of commerce, chiefs of police, executive directors of mental health agencies and addiction centers, community development directors, newspaper editors, consumer credit counselors, attorneys, and program directors in local and county social service agencies.

We selected our respondents based not only on their positions, but also on the length of time they have lived in the area and how long they have been in their respective lines of work. Many of our respondents have lived in their communities all their lives, and of those who have not, many have lived in the area for most of their careers. One interview had to be excluded from use due to respondent noncompliance. Our interviews averaged approximately one-half hour each.

In the sections below, we begin with a brief introduction of the various types of gaming available in the case study communities at the current time. We then provide an aggregate overview of the case study sites, discussing common threads we have noted among the diversity of cities and towns we examined. Finally, we present two of the case studies in detail. Each case study is an independent, indepth look at how a community has responded to legalized casino gaming; taken together, they are a study in contrasts of the very different ways that people's lives can be affected (or not) by the introduction of casinos.

## The Communities

It is important to keep in mind when reading these case studies that people are reporting, more often than not, their own subjective impressions of *numbers* of people with problems, of crimes and bankruptcies, and so forth. In many cases, the population of an area has increased at least modestly (and in some cases dramatically) due to the introduction of one or more casinos, and in at least two of our case studies, the population has increased due to factors that were unrelated to the casinos. What cannot be concluded based on these vignettes alone is whether the *proportion* of cases concerning a particular outcome, negative or positive, has changed.

Where possible, we attempted to verify the descriptions of the types of gambling available in and near the case study communities. With this exception, we should emphasize that the information we report here, including the direct and indirect quotes from respondents, is based on our interviews alone and have not been validated or investigated through external means.

### **Types of gaming**

The sites we chose to examine for our case studies all had a variety of gambling facilities<sup>17</sup> within the city limits and nearby; we asked respondents to tell us which facilities were available within the town proper, as well as any facilities within a 50-mile radius that drew residents. All of these communities were within driving distance of a casino per our selection criteria. Since these casinos are recent additions to the local landscape, all being introduced within the last 9 years, the issues surrounding their introduction were fresh in our respondents' memories.

### **Casinos**

Until quite recently, casinos were confined to Nevada and Atlantic City. However, in the last decade, casino gambling has spread to towns and cities across the country, partly in response to the need for additional revenues for local and state governments, and partly as a result of the Indian Gaming Regulatory Act of 1988. The earliest efforts to legalize casinos outside of Nevada and Atlantic City came in South Dakota and Colorado, where small-stakes casino gambling for the purpose of historic preservation was approved by referendum in several old mining towns. Published research has reported that the impact on these towns has been enormous, with skyrocketing property values, conversion of many businesses to casinos, increased traffic, and increased crime (Long, Clark & Liston 1994, in Cox et al. 1997).

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<sup>17</sup> According to the Commission's directives, we define the term "gambling" as "an activity that involves staking or risking something of value upon the outcome of a contest, sporting event, or game of chance, with the understanding that one may receive something of value in the event of a certain outcome" (RFP, p. 7). Hence, we interpret a "gambling facility" to be any structure where such activity takes place. For the purposes of this study, we do not include bona fide business transactions governed by the securities laws for the purchase or sale of stocks, bonds, or securities.

Riverboat casinos in particular have also spread rapidly in the 1990s, and at least one of our communities is in proximity to one or more riverboats.<sup>18</sup> The first riverboats, legalized in Iowa in 1991, placed strict limits on both wagers and losses. As riverboat casinos were legalized in other states, including Illinois, Indiana, Louisiana, Mississippi, and Missouri, these limits were lifted. While these casinos must be located on facilities that look like boats, few of the riverboats actually leave shore. In Mississippi, as well as in Iowa where the earlier restrictions have been eliminated, the term “dockside gambling” is a more accurate description than “riverboat gambling” (Cox et al. 1997), since the minimum requirement is that the gambling occur above a body of water, which may pre-exist or be dredged for the purpose.

The Indian Gaming Regulatory Act created a regulatory structure for gambling on Native American lands throughout the United States. By establishing a framework for negotiation between the sovereign tribes and state governments, Congress opened the door for Native American tribes to establish casino-style gambling in any state where charitable or social gambling is permitted (Eadington 1991). In 1996, more than 700 privately owned or Native American casinos were operating in 28 states (*International Gaming & Wagering Business* 1997). At least 3 of our 10 case study sites are based near one or more tribally owned casinos.

### ***Lotteries***

States across the nation have been implementing lotteries since the mid-1960s to fund government services. Today, 37 states have legalized lotteries, and we found state and/or multi-state lottery games to be present in each of our communities with the exception of one. With cutbacks in federal spending, pressures on state lotteries to provide revenues for government programs have increased. State lotteries now offer a multitude of games that blur the boundaries between their traditional products and other types of gambling, including instant or scratch tickets, daily numbers games, and electronic gaming devices offering keno, poker, and line games similar to slot machines at casinos (Cox et al. 1997). In only one of our case study communities did the lottery seem to be a problem for a significant proportion of residents.

### ***Pari-mutuel gaming***

In contrast to lotteries and casinos, the pari-mutuel industry has undergone a dramatic struggle to stay competitive in the last 10 years. We found a strong representation of pari-mutuel gaming in our case study sites, with two communities reporting jai alai frontons in the area, and seven reporting one or more dog and/or horsetracks. However, a full six of the sites reported that one or more tracks have moved or gone bankrupt due to the increased competition from the casinos. In response, racetracks have sought relief from taxation from state legislatures and have also sought to expand their activities. Initially racetracks worked to increase access to their traditional product by establishing off-track betting systems and broadcasting races from other tracks at their own facilities. More recently, racetracks have sought to compete by offering other types of gambling. In

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<sup>18</sup> To ensure the confidentiality of our informants, we have tried wherever possible to eliminate information that could readily identify an individual community. We found in the course of analyzing results from these sites that the type of casino, particularly whether it was water- or land-based, did not appear to have any differential impact on the communities. Therefore, we do not identify riverboats as such in our profiles.

California, several racetracks now have cardrooms where patrons may wager on poker and other games. In Delaware, Iowa, Rhode Island, and West Virginia, racetracks have been permitted to add electronic gaming machines to their traditional products, often with excellent results for their bottom line (Cox, Lesieur, Rosenthal, & Volberg 1997). Respondents in two of our case study communities reported local referenda on this issue.

### ***Video gaming devices***

The innovation widely thought to have the greatest impact in recent years has been the electronic gaming device, specifically video lottery terminals (VLTs) and video poker. Widely publicized incendiary remarks by one clinician who called video gaming the “crack cocaine” of gambling (Bulkeley 1992), and observations by helpline counselors who report increased calls from video poker players, indicate the potential value of undertaking systematic studies of this form of gambling. There are now at least 21 states where electronic gaming devices such as slot machines or video lottery terminals are available (McQueen 1996). Of our 10 case study communities, respondents in 5 reported video gaming devices operating (legally and illegally) in local small businesses. No respondent mentioned this type of game to be particularly addictive or harmful; however, respondents in five communities specifically opined that casinos—in which video gaming devices are the predominant form of gaming—generate more problems for gamblers than other types such as the lottery or racetracks.

### ***Other types of games***

In addition to these games, all but one community reported bingo. All of these sites had charitable bingo, and some also had commercial bingo. In addition, three communities were reported to have bookmaking, and one community each was said to have a sports bar, a bar with a pull-tab dispenser, and keno.

One of the interesting if unexpected outcomes of our interviews was that when we asked respondents about the effects legalized gaming has had on their communities, respondents seemed to forget all the other kinds of gaming in town and just speak to the casinos. This is understandable if a community has no other gaming except charitable, which many people do not perceive as really “gambling” but, rather, giving money to a good cause. However, communities reported to have, on average, five major game types. One possible explanation for this focus on casinos may be simple timing. In other words, since, according to our respondents, bingo parlors, lotteries, and tracks have typically been operating in their communities for at least 15 years, it seems reasonable that these types of games have become more a part of day-to-day reality, and that fewer people visit these types of facilities today, as in the case of racetracks and bingo.

### ***Economic outcomes***

A variety of economic themes came through in our case studies; some reflected positively on casinos and gaming as a whole, while others did not. The silver linings and dark clouds seemed inextricable from each other. For example, a recurrent positive theme was the new employment opportunities that casinos create for local people. In five communities this was cited as a very positive advantage (all but one of these communities was located within 10 miles of a major casino). Respondents in the other four communities indicated that unemployment remained a problem, despite former hopes to the contrary. In two of these sites, as well as in four that cited more jobs, residents

complained that the casinos for the most part provide low-paying and/or part-time positions with no benefits (four of these communities were located within 10 miles of a major casino, and two, between 20 and 40 miles of a major casino). One respondent indicated that because of the part-time nature of most of the jobs available in his town, the welfare rolls had not decreased, even though some families had found work in the casinos. He stated that the reason for this is that people are afraid to take jobs without benefits; while on welfare, they have some assurance that if something happens to themselves or one of their family members, their medical bills would still be paid. Similarly, in another community, a respondent reported that the welfare rolls have decreased, but not due to the casinos, because they only brought part-time jobs. On the other hand, one respondent did indicate very clearly that welfare rolls have decreased due in part to the opening of casinos.<sup>19</sup>

In addition to casino operations as such, there was growth in the hotel and motel industry (three communities), as well as more funds flowing either directly or indirectly from the casinos into local government (six communities) and into charitable organizations (three communities). Respondents in five communities indicated an increase in construction, and four of these mentioned housing construction in particular. Two communities were reported to have had property values increase. In communities where casinos were built within the city limits, one of the most common concerns was the burden on public infrastructure. One town was able to use increased revenues from casinos to upgrade its water and sewage systems; four reported that either road improvements were needed or that such improvements had taken place but more work needed to be done. In six communities, at least one resident complained about the increased traffic brought by the casinos. Three communities reported a growth in the number of retail establishments, but two reported a decline since the casinos were built, with a variety of places going out of business.

All but one of the communities reported an increase in debt problems and/or bankruptcies. One possible explanation that is likely at least in part for this, as told to us in most of these communities, is that people are gambling on their credit cards and taking out cash advances at ATMs in or near the casinos. However, it is also true according to a few of our respondents that because new casinos promise jobs and financial stability for disadvantaged persons or families, many people move to these towns with their existing debt problems to try for a better life. If the only work they find available is part-time service positions, this may lead to further financial distress and eventually, in severe cases, bankruptcy. Respondents in five communities, all but one of which had casinos within the town limits, noted that one of the primary problems in the community was the large number of working poor. Three communities also mentioned problems with homelessness, and about four mentioned problems with low-income housing or housing stock.

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<sup>19</sup> The vast majority of U.S. communities located within 50 miles of a major casino are not located near a casino with unionized workers, as most unionized casino employees work in the relatively larger, destination-style/resort casinos located in Nevada and Atlantic City. However, due to the concentration and size of these casinos, their workers comprise a fair percentage of the total number of casino workers. The sample of case studies would have to be larger and selected to reflect union presence (for example, 10 communities with and 10 without unionized casinos) to permit comparison of the differential effects (if any) that unionization would have on the type of jobs available and related economic effects.

### **Other social benefits and costs**

Two communities reported an overall reduction in crime in their communities, and three reported an overall increase. Interestingly, the youth in particular appear to be having problems; five communities reported increases in youth crime, one specific to illegal gambling, and one including illegal gambling. Two of these communities were among the three reporting an overall increase in crime, and one was a community reporting an overall decrease in crime. Illegal gambling did not seem to be much of an issue in the communities we looked at; two reported a decrease and one reported an increase, with the remainder either not knowledgeable or not aware of any change having taken place. So-called white collar crimes such as forgery and credit card theft were reported to be on the rise in seven of nine communities, including the two towns that reported an overall decrease in crime; some respondents attributed this change to increased gambling in the casinos, citing the timing of the increase or the circumstances given in particular news reports they had seen.

Domestic violence also appeared to be a theme, with respondents in six communities telling us they have seen increases in this behavior. Respondents reported, on the whole, no increase in child abuse in their communities. However, six communities had one or more respondents who said they had seen increases in child neglect, and attributed this increase at least in part to parents leaving their children alone at home or in casino lobbies and parking lots while they went to gamble.

A number of social service staff across several communities mentioned they have seen an overall increase in “family stress” due to gambling. In one community, a mental health specialist attributed a recent increase in divorces to casino gambling. Seven communities reported either an increase in suicide since the casinos opened, or having seen cases where people ended their lives due to problems stemming from their gambling. In addition to the need for more gambling treatment, residents of four communities told of an increased need for general mental health services for gamblers and their families.

Respondents in four communities noted concern over the increased numbers of older and retired persons gambling in the casinos, and respondents in two communities noted an increase in youth gambling. (As noted in Section 1, data from the national survey do not indicate that particularly large numbers of young adults or elderly are gambling; in fact, past-year gambling statistics for persons between the ages of 18 and 24 and 65 and older show that these two groups gamble disproportionately less than one would expect, given their proportion of the adult population. See Section 4 for a discussion of gambling among 16- and 17-year-olds.)

### **Problem gambling**

In seven of the nine communities we investigated, respondents told us they have seen an increase in the number of people who are problem and pathological gamblers. Aside from the fact that simply more people are gambling, one interviewee pointed out that once a community builds a casino, the area may become more attractive to persons who have the potential to develop into problem gamblers. Furthermore, as the casinos are still a relative novelty in the communities we investigated, it may be that in time, the numbers of people who find themselves having difficulty controlling their gambling behavior will learn ways to keep their behavior in check, or will simply lose interest when another novel and exciting activity comes along.

While the national prevalence data from the 1998 survey versus its 1975 counterpart indicate an increase in lifetime gambling in the United States, the data do not indicate an increase in the proportion of people who have gambled in the past year. Therefore, most of the increase in gambling appears to be from increased activity among those in the population who gamble regularly. From the perspective of our interviewees in at least four communities, casino gambling is more habitual than previously available gaming opportunities, so those who gamble do so more frequently and intensively. In fact, it is clear that casinos are “more popular” than other forms of legal gambling in that people, as a group, spend much more money at them than on other games, other things being equal. People who live within 10 miles of a casino typically spend \$400–600 per adult per year on casino gambling, versus \$50–100 per adult per year on state lotteries (in states that have them) and \$10–30 per year on horse and/or greyhound racing (if they live within 10 miles of a track).

Finally, a major theme that came through in every single case study is that substance abuse is a major problem in these communities. Respondents complained about the high proportion of drug-related crime, arrests for public intoxication and DWI, youth drug use, and addiction in general. Many interviewees also drew a connection between substance abuse and gambling, noting that a high proportion of people with one problem will also have the other. It is plausible that casinos are affecting substance-using behavior and/or the reverse. It should also be kept in mind that some of the changes reported in the communities may potentially be due to substance abuse.

### **Public opinion regarding gambling**

One community was strongly in favor of legalized gambling, six indicated a slight bias in favor or a general acceptance of the casinos, two communities were very mixed, and one was clearly negative. Despite a sample size of only 10 communities, these results are reasonably consistent with how the general population characterizes gambling.

### **Case Study One: Florissant<sup>20</sup>**

The case study interviews were organized in sections, and for the most part, we found it sensible to retain this organization when writing up our findings. We structure each case study in the following way: First, we discuss the backgrounds of the interviewees who participated in our survey. Second, we present a summary of the types of gaming that are available to residents both within the community itself, as well as nearby, meaning within a 50-mile radius of the city or town. Third, we present our findings on the types of changes that have occurred in the community in the past 10 years. Although we stressed to respondents that this question referred to general changes and not just those due to gaming, most often respondents told us about the latter; we make this difference explicit where needed in the text. Next interviewees were asked what they currently saw as the most important socioeconomic issue in their community. Finally, we asked respondents what their views were on how the community generally feels about having legalized gaming readily available.

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<sup>20</sup> This name and all other proper names in these case studies are fictitious.

Below we present two of our case studies, chosen in part for the very different impacts gambling has had on these two communities. In Appendix C, we repeat this section, and include full discussion of the remaining eight case studies.

### ***Our respondents***

For our case study of the Florissant community, we interviewed a detective in the Florissant police department, the director of a nonprofit organization specializing in child abuse prevention, an addiction counselor, a city planner, the manager of a consumer credit counseling agency, a tourism office commissioner, and the editor of a local newspaper. Our respondents have been in their line of work for an average of 15 years (ranging from about 7 years to more than 25). All have lived in the Florissant area or nearby for at least 10 years.

### ***Gaming in Florissant***

When people talk about gaming in Florissant, they are usually talking about casinos. Bingo games are run by nonprofits such as the War Veterans Association, so it appears that people view bingo more as making a charitable contribution than as actual gambling. We asked four respondents if they had noticed any trends that appeared to be influenced by the opening or closing of gaming facilities, or by the availability of certain kinds of games, and three of them told us that comparisons could not be made, since “We really only have one type.”

Around 1990, state residents voted to allow casino gambling, and within Florissant, the first casino opened its doors within a year of the vote. Residents also travel more to a nearby state to play in the casinos there. Residents reported some turnover of casinos in the area, with some of the initial, smaller operations leaving or being bought out by larger firms. In recent years, several casinos near but not within Florissant have closed or gone bankrupt and changed owners. The two original casinos within the city limits are the only casinos still operating there and no others have opened and closed in town in the meantime; however, a new casino/hotel complex is expected to open soon.

### ***Community changes***

This city is one of the largest in the state; the opening of the casinos has turned what was once a “ghost town” into a popular tourist destination. “[Gambling] is part of the community. Gambling is an active part, it has been involved with community activities. The casinos in [town] are corporate citizens.” In this vein, another stated, “The reason we brought [gaming] in was to use it as a leverage point to bring in other business. Gaming is certainly different than most expect it, but the casinos are run by Fortune 500 companies, not by gangster types.” In the midst of these changes, the city has been striving to maintain a “clean” image. One interviewee reported that “[a] strip joint opened up in downtown [Florissant], but the city took them to court and they left town.”

We asked individuals what community changes they have seen over the last 10 years and whether they thought any of these changes was related to gaming. Everyone mentioned the population boom or some change that was related to the increased number of people moving to the area, such as the lack of housing or the traffic and demand for new roads. The thriving economy appears to be the main reason for this influx. People without jobs or many resources come to the Florissant area to start a new life.

Due to the casinos, according to one interviewee, “Investment into schools and public services has been greater. Also, there has been more investment in highways and sanitation services.... More people are working; there are more two-income families than ever before. The MSA now has more businesses than any other region . . .”

Gaming, according to the newspaper editor we interviewed, comprises one-quarter to one-half of the local economy, and all respondents except one indicated that they were pleased with the overall direction of the local economy (the exception abstained). The thread that connects most of these comments is the dramatic improvement in employment opportunities. Since so many people mentioned this, we break out their comments below.

- According to one respondent who is involved in transportation planning, “We’ve had to build roads faster, increase housing stock, service businesses.... About 60 percent of these changes are due to gaming.”
- A credit counselor stated, “We see mostly people who have been out of work in other areas moving here, then paying off creditors....”
- A staff member on the tourist commission stated, “We’ve had significant increases in employment. We have more two-income households, with more spending power. There’s been a [substantial] rise in per capita income since 1990. It’s generated a positive image about the area, and has attracted other sectors. The timing [of the casinos being built] was very good.... It has impacted a large portion of the economy, ... but not all of it. [New kinds of businesses] have appeared, [and] the manufacturing sector ... has strengthened due to independent world conditions. [The casinos have] increased exposure for tourism-related business, which we’ve seen in data from [two local associations].
- According to another, “We’ve had a huge increase in employment and tax revenues. It’s a tight labor market, so salaries are increasing. People are moving to Florissant from all over the country.”
- A newspaper editor stated that the lower end jobs in the area now have benefits, where before they did not.
- Another respondent stated, “The region’s population has grown [by more than half] in the past 10 years. We have more service-oriented jobs now.”

Respondents also mentioned what could be considered less desirable changes attributable to the casinos, including the rise in problem gambling. According to a respondent in law enforcement, “there are now Gamblers’ Anonymous meetings in [Florissant] every single night of the week, when there used to be none.” An addiction counselor stated that problem gamblers were not known before the casinos. The detective stated, “We already had alcohol and drug addiction services. The casinos opened up . . . and we saw our first problem gamblers [within 18 months]. These people were often both alcoholics and problem gamblers. They have free booze” in the casinos. Two respondents mentioned an increase in bankruptcies. But help is advertised—“They have help-lines now, and more people are aware that help is available.” Another told us, “Casinos are proactive in combating gambling problems and are bringing money into the community.”

An interviewee in social services mentioned seeing an increase in neglect, though not abuse, over the past several years; “We’ve seen children left unattended, people losing

their money who can't afford to pay for their food and rent..." Another reported that "[h]ousing prices have gone up. We have traffic congestion and crowded schools. There's been a strain on infrastructure, construction is up. Not a huge rise in crime. Some traditional neighborhoods have been stressed by growth—high-rise condos, shopping centers, hotels appearing. All of [this change was due to gambling], though some of it was indirect." One person indicated that chain restaurants were moving in and "chasing away the local restaurants." A respondent summed up the two sides this way:

It's been both good and bad. Construction is booming, but there are complaints of illegal immigrants. The schools have more money, but there's also the increase in Gamblers' Anonymous groups and bankruptcies. Property values have gone up, but renters have been hurt, especially seniors. Average rent has gone from \$200 a month to \$700a month.

We asked our informants whether they thought the nature or number of crimes in Florissant had changed. Everyone mentioned an increase in robberies. According to an officer in law enforcement, crime in general has increased. He added that burglaries account for the greatest proportion of crime in the city. Furthermore,

Robberies are up, and there has been a rash of bank robberies ... that appear to have been gambling related. Attempted suicides have also gone up. We have had some illegal gambling activity in the area. There has also been a rise in prostitution.... The casinos give away alcohol for free, and we have seen a big rise in alcohol-related crimes. The casinos try to self-regulate, but they are ineffective. In Vegas, people catch cabs, but in [Florissant], drunk driving is an issue.

On the other hand, according to a newspaper reporter, prostitution is now less visible than it was before the casinos, and it should be noted that we were unable to find any escort agencies in the Florissant Yellow Pages. The reporter also stated that "there have been some isolated, weird crimes, from people freaking out after losing their money. One woman faked her own kidnapping, then disappeared for a month."

### **Current community issues**

We asked respondents what they thought was the primary social or economic problem their community was facing right now, and whether they thought gambling had helped the community to control this problem. One respondent was not sure, and did not elaborate. Another interviewee, in social services, had only good things to say: "Economically, we're doing much better, unemployment is extremely low. Socially, I don't know what the primary problem would be." A respondent on the tourist board complained about the transportation congestion and workforce availability, but added, "Gaming is the cause but also employs [thousands] directly. Tax rates have actually gone down as we have ... extra capital there now." Similarly, the planner stated, "The cost of housing is increasingly too rapidly, but gaming has increased salaries, too."

The law enforcement interviewee was less positive and pointed to an array of problems he felt had all been created by the opening of casinos:

Pawnshops are now all over the place operating 24 hours a day, and they don't worry about dealing in stolen merchandise. There are even places that will let you sign over the title to your car. We've seen some organized crime. We had a

... [situation] where the FBI came in and arrested people.... Casinos are very-image conscious. If there are rapes in the parking lot, the casinos ask us not to report them. Casinos don't go after problem gamblers unless they exhibit signs of substance abuse. Also, the increases in bankruptcy.

According to the addiction counselor, the primary problem in Florissant is “[d]rug abuse. Crack has been around 10 or 15 years, and hit a high in the last 4 years.” He added that gambling does not appear to be related to the drug problem in Florissant. Finally, the newspaper editor stated that the primary problem Florissant faces is “uncontrolled growth. And gambling’s causing it!”

### **Public views on gaming**

Next we tried to get a feel for the climate in the community regarding gaming. People did not seem to differ much on their perception that the community felt positively toward the casinos, although some emphasized the fact that a minority exist who do not approve. Since the community voted to allow casino gaming, it is not surprising that most interviewees told us that the majority supports it. However, a few either expounded on this or disagreed; we include their responses below.

- “There’s no middle of the road. The community is divided. The town voted gambling down before it passed. [Florissant] is a casino town now.”
- “For the most part, it’s understood to be an industry, albeit a recreation/leisure industry. It’s seen to be positive for our economy.”
- “We had a vote, and it passed. It would depend on whom you talk to. It offends the religious beliefs of some, but the economic benefits have been significant.”

We also asked people what their expectations had been for when the casinos opened—whether they thought that the community would change in any way. Only one person mentioned having no expectations beforehand. Three people mentioned they believed that the casinos would bring more tourism to the general area, and two stated that the result far exceeded their expectations. The flip side to this was expressed by another respondent, who stated, “My expectations were that gaming would cannibalize the area. And it’s happened.” Another stated he had thought that the casinos “would contribute more to treatment programs for compulsive gambling and drug addiction on the local and state level, though [one casino] did contribute to an awareness program.” Finally, a respondent stated, “I expected a lot more crime and a lot more traffic. Traffic has increased, crime has not really increased as much as I expected.”

When it came to their own views on the impact the casinos have had, respondents either reiterated their feelings that they have been positive for a majority of the community or were even more glowing with their praise. In the words of one, “It’s been very good. Very positive. It’s like having Disney World move to your community.”

## **Case Study Two: Hansen**

### **Our respondents**

For this case study, we interviewed the local chief of police, a mental health program administrator in the local department of social services, a psychotherapist, a director of a council on problem gambling, the local director of community development, a program director at a consumer credit counseling service, an administrator in the local chamber of commerce, and a reporter for a local newspaper. On the whole, respondents have lived in the general area for a significant amount of time; with the exception of one respondent (the administrator in the chamber of commerce, who has lived there for just over 5 years); interviewees have lived in the vicinity for a minimum of 20 years.

### **Gaming in Hansen**

We asked respondents about the kinds of gambling available in their area. We found it significant that we received such an inconsistent set of responses, and we repeat them below:

- “We have lottery games at the gas stations. None, otherwise.”
- “There are three popular bingo halls.”
- “Every kind you can imagine, from legal to illegal.... Charity gaming, illegal sports books, illegal video poker machines in bars.”
- “Zero.”
- “The state lottery.”
- “Absolutely none. [Hansen] was started to be a religious community. It is still dry, and originally no doctors were even allowed.”
- “None that I am aware of, outside of the lottery.”

Respondents also told us about locations outside the immediate community, but within a 50-mile radius, that attract local residents. These include a handful of casinos all close by, which opened around 1990; “numerous bingo halls,” including a tribally owned parlor; and a dog track. According to one respondent, the dog track has been operating for more than a generation. One interviewee stated that the municipal government sponsors casino junkets for local senior citizens to a casino about an hour or so from town, but he did not know how popular these excursions were.

When asked if any facilities have closed, the majority of the respondents mentioned a horse track that was a short drive from town; one interviewee added that after the track closed, a more local OTB parlor closed. Another respondent stated, “None [have closed], because there haven’t been any.”

The respondents in this case study were unique in that they interpreted our use of the phrase “legalized gambling” with the understanding that this category includes a variety of types of games. In every other community in which we conducted interviews, respondents appeared to equate “legalized gambling” with casino gaming. In this particular town, one interviewee told us that people tend to spend more money at bingo

halls than at the casinos, but added that the share taken by casinos is growing. Another respondent commented that she has seen people in town spending “a disproportionate amount of their meager incomes” on lottery tickets, partly because it is “just so convenient to play.” A credit counselor told us that about one-half of the people she works with play the lottery regularly, and guessed that they spend about ten dollars per week on tickets. Another resident commented on the popularity of the lottery as well, adding “We occasionally see thefts of lottery tickets from convenience stores, or a domestic dispute over a winning lottery ticket.”

### **Community changes**

Hansen is small town that has recently experienced some economic troubles. Several respondents told us that a particularly large plant recently closed in the area, which affected the tax base significantly. According to an administrator in the local chamber of commerce, this shutdown “had a major impact on our community. [Hundreds of] jobs were lost.” However, the newspaper reporter indicated that most of the plant’s employees were from out of town. The real impact seems to have been in revenue loss; three respondents told us that this shutdown has impacted as much as half of the tax base. The chief of police added that the schools have been particularly hard hit.

The director of community development defined the town as a “low-to-moderate income community, primarily residential in nature. Like many older, inner-suburban communities, we are struggling to provide services, meet demands.” Another issue the town is trying to handle is that people are moving out to newer suburbs. “We face a lack of local jobs, and our taxes are based on residential property.” Another respondent told us that the town has a high percentage of rental housing per capita, and that they are trying to take advantage of a local housing boom in the county to improve the housing situation.

We asked respondents if they personally were pleased with the overall direction of their economy at this point. Two respondents indicated they were, while four respondents indicated dissatisfaction, including

- One interviewee who cited the recent closing of a large plant;
- A program administrator in mental health, who told us that “medical services are outrageous in our community. If they’re going to legalize gambling, they should put money into treatment, across all areas”;
- The director of community development, who stated the community needs “a broader economic base, more industrial and business development in the community”; and
- A newspaper reporter, who commented that “[Hansen] really needs to wean itself off of the tax money [from the power plant].”

One respondent declined to answer.

The director of community development told us, “We are part of [a] metro region, and are influenced by [the city].... We constantly face movement to the green fields, new suburbs. Urban sprawl contributes to our problems and is part of our planning process. We face a lack of local jobs, and our taxes are based on residential property.” Aside from the plant closing, however, “The community has not changed much since 1990.... We

have an ongoing economic development program, though. We have no specific sectors targeted, but would like to attract light manufacturing jobs. We're too far from the interstate to attract warehouse and distribution business."

According to another interviewee, a couple of new restaurants and banks have opened over the past several years, but overall "There's not a huge commercial base.... Basically, service industries are all that's moving in.... It tends to be a strictly residential community." The credit counselor commented on the job situation, saying, "We have low unemployment, but they're all low-paying, service-industry jobs."

None of our informants indicated that the local gaming establishments have had any affect on the local economy, not even on tourist-related businesses. People from out of town visit the community to go to the park or to walk along the marina, and the town has an excellent medical center. In the past 2 years, the chamber of commerce representative said, only one person has asked her about gambling in the area.

On the other hand, some controversy exists surrounding whether the opening of casinos nearby has had an affect on individuals in the town. The program director for a consumer credit counselor service said that the town has "seen higher and higher credit card debt.... The number of individuals filing for both Chapter 7 and Chapter 13 bankruptcies [i.e., personal bankruptcy] has increased." She told us she did not see any connection between these trends and gambling, saying, "gambling losses play a minor role in the debt problems that we are now seeing." But she added, "Casino gambling has increased in the area. A few families have come in with gambling problems." According to a mental health administrator, the town's relatively high poverty rate has made residents more vulnerable to potentially addictive behaviors. "People think that they can get rich [if they gamble], and the people that we treat tend to be on the lower end of the income scale in [the] county.... The economic impact creates stress, which creates substance abuse and other negative impacts."

With regard to changes in social services in the community, the mental health program administrator told us she has seen "extreme changes" in her agency, and the demand for addiction services far exceeds their resources. Not-for-profit companies in particular have been suffering. "It's been a steady increase, maybe there was a surge since the early 1990s. The courts have adopted an interventionist approach as opposed to a punitive one. More people are getting court-ordered treatment instead of jail time. [However,] we're limited in the number of sessions we can provide and the number of people that we can treat because of financial concerns."

Since the agency is not set up to deal with gambling addiction, and none of the counselors are certified gambling counselors, staff only deal with gambling indirectly. The administrator added that no services exist in the immediate area specifically to help people with gambling problems, but she said that gambling treatment centers have been opening in the state. She told us that her agency now refers more people to gambling treatment than they used to. "I'm sure there's an indirect effect with drinking and other kinds of drug abuse. I think it's a cumulative effect. Gambling, drinking and drugs increase domestic violence and poverty. Can I track that as a statistic? No. That's more my opinion than anything I could prove."

The director of the council on problem gambling also spoke to this issue for the state as a whole:

There's a tremendous need for treatment of gambling problems. There is better awareness now, people show up stating that they and their families have gambling problems. Taxpayers also spend much more for prosecution and incarceration of compulsive gamblers. This is often not factored into the equation.... We have seen a doubling, at least, in the number of Gamblers Anonymous groups in the state ... over the past 5 to 6 years. The need for services has expanded dramatically.... We've trained [hundreds of] professionals in diagnosis, assessment, and treatment over the last 3 to 4 years statewide.

We also asked respondents about ways in which crime and law enforcement may have changed in their communities over the last decade or so. According to the chief of police, all types of crime are prevalent in this community, and most of it is related to drugs and gangs. In particular, sales of illegal drugs "are way up." The newspaper reporter told us, "Substance abuse is still a big problem.... Crack-cocaine [for instance], but it's declining. Drug raids have tapered off, but are very severe when they occur. The improved economy also helps, though it's really not better in [Hansen]." The local police department has responded to this problem by becoming more involved in community policing: "The districts haven't changed, but officers are permanently assigned to areas now, and we used to rotate them."

The chief of police faxed us a brief table displaying major offenses (e.g., homicide, burglary, arson) in the town from 1994 to 1997. These data show a downward trend in violent offenses, and particularly in robberies and property offenses, although it we have not calculated whether these changes are statistically significant. The chief of police told us that although specific types of crime have increased, these trends are not connected to gambling. In addition, he reported that illegal gambling has not increased since the casinos have opened, and a program administrator in mental health told us she is not aware of any trends in underage gambling.

When we asked the director of the council on problem gambling whether he thought that crime has increased, he did not speak to the Hansen community in particular, but did speak to the state as a whole:

Certainly. We have noticed a statewide increase in paper crime—forgery, fraud, theft and embezzlement—none of which are classified by law enforcement officials as gambling-related crime. Criminal activities of compulsive gamblers are often not recorded. The crime question is being asked incorrectly, and the results could be completely misleading.

The newspaper reporter told us that, overall; crime in the area has gone down. However, he added that "transient residents" are susceptible to gang activity, and that the town mostly has drug-related crime like robberies and vandalism. "I don't think the police force would want gambling in the area. Crime is already somewhat high for a community our size."

Adolescent suicide rates may also be on an upward trend. The mental health administrator told us, "I think teenage suicide is up slightly in this community, though I don't know what the statistics are county-wide. I'm not aware of any connection between suicide trends and gambling, but I'm not saying that they don't exist."

### **Current community issues**

We asked respondents to tell us what they thought was the primary social or economic problem their community faces at this time, and whether they believe legalized gambling has had any affect on the community's efforts to control this problem. One interviewee told us he did not know. Two respondents mentioned drugs, one also mentioning gangs, and the other explicitly including alcohol. The latter respondent stated, "Crack cocaine is far too accessible, far too cheap. Our treatment of crack-cocaine users is at an all-time high. [Legalized gambling] certainly has a negative impact." Two respondents mentioned the tax base, one calling it "unstable," and the other saying "We have a serious crisis." Neither could say that gambling has helped or worsened this problem. One interviewee mentioned the lack of high-paying jobs, adding that she was not aware of any change in this area due to the opening or closing of gambling facilities. Finally, one respondent told us he saw the primary problem as "pathological gambling.... Legalized gambling has brought the problem more to the surface, but at the same time, has not made it easier to deal with. In [this state], there's absolutely no state funding to address compulsive gambling problems. The casinos also kick in no money for treatment programs."

### **Public views on gaming**

Next we asked respondents how they thought the community generally feels about having legalized gaming readily available. We found the nature of our responses to depart rather radically from the kinds of responses we were given in other case study communities. Basically, the respondents in this town were split into two camps: Interviewees who felt that overall, the community was pleased with having gambling available due to their being uninformed about the negative impacts, and interviewees who felt that the majority of the community was opposed to gambling for religious reasons. A sampling of responses follow:

- "I think they're ecstatic. They think that more money's going into education, that they won't have to pay higher taxes. They don't grasp the negative impact. They are used to segregating off crime and substance abuse in a societal kind of way."
- "I think most of the community likes it, and it's based on ignorance. It's not even the gambling that the community likes, it's the fantasy of winning."
- "[Hansen] was originally formed as a religious community. Most residents are not interested in having gambling."
- "I'm sure it would fail miserably in this town. They tried to get alcohol on the ballot in the November election, and it failed to pass."

Next we asked interviewees what their personal expectations were for the effects of a nearby gaming establishment on the community before the casinos opened, and whether their expectations have been borne out. Most said they did not have expectations, and so had no surprises when the casinos opened. The two respondents who did have expectations expressed them in the following way:

- "My expectations were that it would be a net loss to the community, and they have been borne out. I see things that others don't see. For every winner, there's a loser. It's easy to spot fire plugs painted, streets paved, buildings built... [Also, I have been

surprised] that the public would continue to be as blind as they are to the loss side of the equation.”

- “I would expect it to be detrimental. In [other communities in the state that have opened casinos], jobs were created, but the economic runoff that they expected has not been realized.”

Finally, we asked the respondents what their overall feelings were about the effects legalized gambling has had on their communities. We repeat their comments below (two respondents were not asked this question):

- “It has social and economic negative impacts, and contributes to addiction. I don’t support it, personally.”
- “Negative.”
- “I can’t say that there’s any [effects] that I know of.”
- “I’m not aware of any community effects, but gambling can be devastating for an individual family.”
- “I’ve never even bought a lottery ticket, but don’t see a big problem with gambling personally.... I’m sure there’s an impact, probably slight.”

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