GAMBLING AND PROBLEM GAMBLING IN COLORADO

Report to the Colorado Department of Revenue

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We would like to thank the residents of Colorado who were interviewed for this survey. Their contribution has been vital in adding to our knowledge of changes in gambling and gambling-related problems in the United States. We would also like to thank the Colorado Department of Revenue for funding this study as well as Paul Talmey and the staff of Talmey-Drake Research & Strategy, Inc. who carried out the interviews for the survey.

EXECUTIVE SUMMARY

The purpose of this study is to establish baseline measures of the prevalence of gambling (both legal and illegal) and problem gambling among adults in Colorado. An additional purpose of this study is to identify the types of gambling causing the greatest difficulties for the citizens of Colorado. A large sample of Colorado residents aged 18 and over (N=1,810) were interviewed in April, 1997 about the types of gambling they have tried, the amounts of money they spend on gambling and about gambling-related difficulties. The results of this study will be useful in documenting the impact of legal and illegal gambling on the citizens of the State of Colorado and will contribute to the formulation of statewide policy with regard to gambling in Colorado.

Findings

- In 1997, 91% of the respondents in Colorado acknowledged participating in one or more of 13 gambling activities. This lifetime participation rate is comparable to lifetime participation rates in Northeastern states such as Massachusetts and New York as well as Western states such as California and Washington State but lower than New Jersey.

- The majority of the respondents in Colorado (81%) acknowledge participating in one or more gambling activities in the past year and 20% of the respondents acknowledge gambling one or more times in the week prior to the survey.

- Lifetime gambling participation in Colorado is highest for the lottery, non-Colorado casinos, Colorado casinos and sports pools. Past-year gambling participation is highest for the lottery, Colorado casinos and sports pools.

- Respondents in Colorado spent an average of $37 in the past month on gambling activities. This expenditure rate is similar to average monthly expenditures in Iowa and Oregon and lower than monthly expenditures identified in Washington State. The majority of Colorado respondents report spending small to moderate amounts on gambling in the past month.

- Lifetime problem gamblers are defined in this study as those who score 3 or 4 on the lifetime items on the South Oaks Gambling Screen; lifetime probable pathological gamblers are those who score 5 or more.

- In Colorado, 4.4% (±0.94%) of the respondents scored as lifetime problem gamblers (those ever having a gambling problem but not necessarily a current one) and an additional 1.8% (±0.61%) of the respondents scored as lifetime probable pathological gamblers.

- Current problem gamblers are defined in this study as those who score 3 or 4 on the current items on the South Oaks Gambling Screen; current probable pathological gamblers are those who score 5 or more.

- In Colorado, 1.8% (±0.61%) of the respondents scored as current problem gamblers and an additional 0.7% (±0.38%) of the respondents scored as current probable pathological gamblers.

- The lifetime prevalence rate in Colorado in 1997 is higher than in Western and Midwestern states surveyed in the early 1990s but lower than in Louisiana and Mississippi in the South and New York in the Northeast.

- The current prevalence rate in Colorado in 1997 is lower than in Louisiana, Mississippi , Iowa, and New York. The current prevalence rate in Colorado is closest to current prevalence rates in Georgia, Montana and North Dakota.

- We estimate that the State of Colorado could appropriately plan to provide problem gambling treatment services to approximately 250 individuals per year based on the prevalence of current pathological gambling and on information about the proportion of individuals in need who may seek services for addictive disorders.

- Problem gamblers in Colorado are significantly more likely than non-problem gamblers to be male and under the age of 30. However, it is important to remember that problem gamblers in Colorado are most likely to be White men between the ages of 30 and 54.

- Problem gamblers in Colorado are significantly more likely than non-problem gamblers to have gambled in the past week on bingo or pulltabs, Colorado casino games and lottery games.

- The greatest differences between non-problem and problem gamblers in Colorado in average past month expenditures are for Colorado casinos, bingo or pulltabs, lottery products and non-Colorado casinos. The average total expenditures on gambling in the past month are twice as high for problem gamblers as for non-problem gamblers in Colorado.

- Four of every ten individuals who have ever experienced gambling problems in Colorado are experiencing those difficulties now. One important difference between lifetime and current problem gamblers in Colorado is that current problem and probable pathological gamblers are nearly as likely to be female as male.

Future Directions

Given the possible expansion of legal gambling in Colorado, policy-makers and others concerned with this issue may wish to give consideration to the development of public education and prevention services, to the establishment of a helpline for problem gamblers and their families, to providing training for treatment professionals in the diagnosis and treatment of problem gambling and to the establishment of treatment services for problem gamblers and their families. Consideration could also be given to evaluating prevention and treatment services that are established for effectiveness and to continued monitoring of the prevalence of gambling and problem gambling in Colorado.

INTRODUCTION

Until recently, the legalization of gambling has proceeded apace with little consideration of the potentially negative impacts that gambling can have on individuals, families and communities. In the 1990s, however, prevalence surveys have become an essential component in the establishment and monitoring of gambling legalization in the United States and internationally (Volberg & Dickerson 1996). This study, initiated and funded by the Colorado Department of Revenue, examines the extent of gambling and problem gambling in Colorado in 1997 and compares these findings to similar studies conducted elsewhere in the United States.

The main purpose of this study is to establish baseline measures of the prevalence of gambling (both legal and illegal) and problem gambling among the adult population in Colorado. An additional purpose of this study is to identify the types of gambling causing the greatest difficulties for the citizens of Colorado. The results of this study will be useful in documenting the impact of legal gambling on the citizens of the State of Colorado. The results will also contribute to the formulation of statewide policy with regard to gambling in Colorado.

This report is organized into several sections for clarity of presentation. The ***Introduction*** includes a definition of the terms used in the report while the ***Methods*** section addresses the details of conducting the survey. The next four sections detail findings from the survey in the following areas:

- gambling in Colorado
- prevalence of problem gambling in Colorado
- comparing non-problem and problem gamblers
- comparing two measures of problem gambling

The report concludes with a summary and a review of the activities that other states have undertaken in response to the issue of problem gambling.

Background[1]

According to several authors, gambling in Colorado evokes images of the Western frontier, smoky saloons and fortunes risked and lost at the poker tables. Gambling has a long history in the State of Colorado; a history that is closely tied to the boomtown days of the Gold Rush and the history of the mining industry in the state.

While the modern development of legal gambling in Colorado began with horse racing in the 1940's, it was not until the mid-1980s after Colorado voters passed two referenda directing the Legislature to establish a lottery. The enabling legislation passed in 1982 and the Colorado Lottery began with a scratch game in 1983. The proceeds of the lottery were earmarked to fund parks and recreation and capital construction although this was amended in 1992 to exclude capital construction. The scratch game was followed by Lotto in 1989 and by Keno in 1991. The latest addition to the on-line products of the Colorado Lottery is Cash 5 which began in 1996. Lottery sales for FY 1996 were $331 million.

Unregulated charitable gambling existed in Colorado for many years operated, for the most part, by religious, fraternal, educational and veterans' organizations. In 1958, voters passed an amendment to the State Constitution creating a regulatory and enforcement environment for bingo, pulltabs and raffles overseen by the Secretary of State. Presently, there are approximately 60 licensed bingo halls with 1,520 organizations registered to conduct the games although only about one-third of

[1] Information in this section was obtained from several sources, including the Colorado Office of State Planning & Budgeting (1996), Connor (1996), Long, Clark and Liston (1994), Rocky Mountain News (1997) and Stowkowski (1996) as well as Nancy Lantz of the Colorado Council on Compulsive Gambling.

these organizations are active. Bingo and raffle sales in calendar year 1996 were approximately $220 million.

The Colorado Racing Commission was established in 1949 to regulate parimutuel racing in Colorado. Currently, there are four greyhound tracks and one horse track in Colorado as well as a fair circuit where races are conducted. Live racing days are allocated by the Division of Racing Events on a rotating basis and all of the tracks offer simulcasting for much of the year to allow players to wager on races at other venues. In addition, there are three off-track betting (OTB) outlets in the state which offer parimutuel wagering on races held elsewhere in the United States. Horse track revenues for FY 1996 were $9 million while greyhound track revenues were $28 million.

In November 1990, the voters of Colorado approved limited-stakes casino gambling in three mountain mining towns to support local economic development and statewide historic preservation. Casino operations in Black Hawk, Central City and Cripple Creek began in October, 1991 and casinos proliferated rapidly. The 54 casinos in these three historic mining towns (down from a high of 76 in 1992) are currently permitted to operate poker, blackjack, slot machines and video games. The maximum bet is fixed at $5 by law. Adjusted gross proceeds at these Colorado casinos in FY 1996 amounted to $401 million.

In addition to state-regulated casino gambling, there are two Native American casinos located in the sparsely populated southwestern corner of the state. These casinos, opened in 1992 and 1993, are situated in Towaoc on the Ute Mountain Ute reservation and in Ignacio on the Southern Ute reservation. There is no information about the proceeds generated by these casinos since Native American casinos are not required to report their revenues.

As in other jurisdictions, there continue to be illegal types of gambling in Colorado. These include illegal gambling on sports events, dog fights and cock fights as well as “gray machines” or illegal slot machines typically found at fraternal organizations and other sites. The amount of wagering on these activities is unknown as is the amount that Colorado residents wager out-of-state, principally in Nevada.

Altogether, parimutuel racing, charitable gambling, the lottery and the limited-stakes casinos in Colorado provided approximately $150 million in proceeds in FY 1996. As in other jurisdictions, new initiatives to expand the gaming industry in Colorado are debated frequently. In 1996, proposals included the expansion of simulcast coverage to additional off-track betting sites, an increase in the maximum bet at limited gaming establishments, the introduction of craps, roulette and baccarat at limited gambling establishments and the placement of VLTs (under the lottery’s control) at horse and dog tracks in Colorado. This last proposal was passed by the Colorado Legislature in 1997 but vetoed by the governor. Given national trends, there is little doubt that efforts to expand the availability of legal gambling in Colorado will continue.

Until recently, there was little attention paid in Colorado to the issue of problem gambling. Services for problem gamblers and their families in Colorado are limited to the self-help meetings of 11 chapters of Gamblers Anonymous (up from two meetings prior to 1991 when casinos in the mining towns became operational) and two chapters of Gam-Anon, treatment services by five trained counselors and the public education activities of the Colorado Council on Compulsive Gambling, one of 32 affiliates of the National Council on Problem Gambling. In addition, there are classes offered by Denver Cares and Arapahoe House for therapists who are interested in training to identify problem gamblers. The only crisis services for problem gamblers are provided free-of-charge by the Nebraska Council on Compulsive Gambling which operates a helpline that Colorado problem gamblers can access.

Defining Problem and Pathological Gambling

Since the 1970s, legal gambling has become a popular recreational pastime throughout North America. In 1974, the first, and only, national survey of gambling in the United States found that 68% of the adult respondents had at some time wagered on one or more types of legal or illegal gambling (Kallick-Kaufmann 1979). In the 1980s and 1990s, studies in different states have found lifetime gambling participation rates that range from a low of 64% in Mississippi to a high of 92% in New Jersey (Volberg 1994c,1997a). The majority of people who participate in legal gambling are ***social gamblers*** who gamble responsibly, for entertainment and to socialize with friends and family.

The term ***problem gambling*** has been used in different ways. The term is sometimes used to refer to individuals who fall short of the diagnostic criteria for pathological gambling but are assumed to be in a preliminary stage of this progressive disorder (Lesieur & Rosenthal 1991). The term has also been used to refer to individuals who lose excessive amounts of money through gambling, relative to their income, although without reference to specific difficulties that they may experience (Rosecrance 1988). The National Council on Problem Gambling uses this term to indicate ***any pattern of gambling behavior that compromises, disrupts or damages personal, family or vocational pursuits*** (National Council on Problem Gambling 1997).

Pathological gambling lies at one end of a spectrum of problem gambling and was first recognized as a psychiatric disorder in 1980 (American Psychiatric Association 1980). Recent changes have been made to the psychiatric criteria for pathological gambling to incorporate empirical research that links pathological gambling to other addictive disorders like alcohol and drug dependence. ***The essential features of pathological gambling are a continuous or periodic loss of control over gambling; a progression, in gambling frequency and amounts wagered, in the preoccupation with gambling and in obtaining monies with which to gamble; and a continuation of gambling involvement despite adverse consequences*** (American Psychiatric Association 1994).

In prevalence surveys, individuals are classified as ***problem gamblers*** or ***probable pathological gamblers*** on the basis of their responses to the questions included in the South Oaks Gambling Screen (see Appendix A for a discussion of the methods used to assess problem and pathological gambling in the general population). The term ***probable*** distinguishes the results of prevalence surveys, where classification is based on responses to questions in a telephone interview, from a clinical diagnosis. Respondents scoring three or four out of a possible 20 points on the South Oaks Gambling Screen items are classified as "problem gamblers" while those scoring five or more points are classified as "probable pathological gamblers." In prevalence surveys conducted since 1990, a distinction is also made between "lifetime" and "current" problem and probable pathological gamblers.

Lifetime problem and probable pathological gamblers are individuals who have, at some time in their lives, met the South Oaks Gambling Screen criteria for problem or pathological gambling. ***Current*** problem and probable pathological gamblers are individuals who have met these criteria in the past year. Not all lifetime problem and probable pathological gamblers meet sufficient criteria to be classified as current problem and probable pathological gamblers. For example, a middle-aged individual who experienced significant gambling-related difficulties in youth but no longer has such difficulties would be referred to as a lifetime problem gambler.

METHODS

There are benefits and drawbacks to any research approach. For example, ***mail surveys*** are inexpensive but tend to have very low response rates as well as long completion times. ***On-site*** surveys, as with individuals at gaming venues, are unlikely to produce a representative sample of the total population since this approach is likely to miss individuals who gamble seasonally or infrequently. ***Telephone surveys*** offer several advantages: they can be completed rapidly and offer the benefit of obtaining consistent information from a large, representative group of the population.

One disadvantage of telephone surveys is that they tend to under-represent certain groups in the population, including institutionalized groups such as prisoners and individuals with mental disorders as well as individuals with relatively low education and income. Lesieur (1994) has noted that the telephone interview process itself may be biased because of denial by problem gamblers during the interview and the possibility of family members eavesdropping. However, he notes that these issues all lead to the assumption that problem gambling prevalence rates established through telephone surveys are highly ***conservative***.

Nearly all of the surveys of gambling and problem gambling completed to date have been ***baseline*** surveys, assessing these behaviors in a jurisdiction for the first time. Baseline prevalence surveys provide estimates of the number of individuals in the general population who have experienced or are experiencing difficulties controlling their gambling as well as information about the demographic characteristics and gambling activities of these individuals. This information is useful in planning for the availability of gaming opportunities in the future as well as in targeting services for problem gamblers. ***Replication surveys*** permit more precise determinations of the impact of new gaming opportunities on the prevalence of gambling-related problems in a jurisdiction.

The baseline survey in Colorado was completed in three stages. In the first stage of the project, Gemini Research consulted with staff from the Colorado Department of Revenue as well as from Talmey-Drake Research & Strategy, Inc., the organization responsible for data collection, regarding the final design of the questionnaire and the stratification of the sample. In the second stage of the project, staff from Talmey-Drake completed telephone interviews with a sample of 1,810 residents of Colorado aged 18 years and older. All interviews were completed between April 1 and April 28, 1997 and the average length of these interviews was 14 minutes. Talmey-Drake Research & Strategy then provided Gemini Research with the data for the third stage of the project which included analysis of the data and preparation of this report.

Questionnaire

The questionnaire for the survey in Colorado was composed of four major sections (see Appendix B for a copy of the questionnaire). The first section included questions about 13 different types of gambling available to residents of the state. For each type of gambling, respondents were asked whether they had ever tried this type of gambling, whether they had tried it in the past year, and, if so, whether they had done in so in the past 30 and past seven days. Respondents were also asked to estimate their expenditures on the types of gambling that they had tried in the past 30 days and past seven days.

The second section of the questionnaire was composed of the lifetime and current South Oaks Gambling Screen items. The third section of the questionnaire consisted of an alternative screen for pathological gambling based on the DSM-IV, the most recent diagnostic criteria for pathological gambling. These two sections of the questionnaire were rotated so that half of the respondents answered the SOGS questions first and half of the respondents answered the DSM-IV questions

first. The final section of the questionnaire included questions about the demographic characteristics of each respondent.

Sample Design

Information about how survey samples are developed is important in assessing the validity and reliability of the results of the survey. While a fully random design is the most desirable approach in developing a representative sample of the population, this approach often results in under-sampling demographic groups with low rates of telephone ownership. These groups most often include young adults, minorities and individuals with low education and income. Increasingly, researchers use stratified random designs to guard against under-sampling. To determine whether a representative sample was obtained, it is helpful to calculate the response rate for the sample as a whole as well as to examine how closely the sample matches the known demographic characteristics of the population. If substantial differences are detected, post-stratification weights can be applied during analysis to ensure that the results of the survey can be generalized to the larger population.

To obtain a representative sample for the Colorado survey, random selection of households and random selection of respondents within households were used during the first part of the data collection process. During data collection, completed interviews were monitored to determine whether the sample matched the known population for males, young adults and geographic distribution. After completing approximately 900 interviews, we elected to begin screening for male respondents in eligible households in order to obtain adequate representation of men in the sample. Once we had reached the required 900 men, screening efforts were stopped.

Response Rate

Survey professionals in general have found that response rates for telephone surveys have declined in recent years. These declines are related to the proliferation of fax machines, answering machines and other telecommunications technology that make it more difficult to identify and recruit eligible individuals. These declines are also related to the amount of political polling and market research that is now done by telephone and to the higher likelihood that eligible households will refuse to participate in any surveys.

The response (or cooperation) rate for the Colorado survey was calculated by Talmey-Drake according to the following formula:

$$\frac{\text{Completed Interviews + Failed Screener + Failed Gender Screen}}{\text{Completed Interviews + Failed Screener + Failed Gender Screen + Refusals + Terminations}}$$

This calculation does not include non-residential numbers, disconnected numbers or modem or fax tones. The response rate for the Colorado survey was 44% which is at the low end of cooperation rates for other surveys in Colorado, according to Paul Talmey of Talmey-Drake. The cooperation rate might have been higher if more time had been available for data collection since this would have allowed for more efforts at converting initial refusals into completed interviews.

All survey results are subject to margins of error. For data based on the total number of completed interviews in this survey (N=1,810), the margin of error is ±2.3% assuming a 95% confidence interval and assuming that the total proportion of the sample responding in one way or another to the question is relatively large.

Weighting the Sample

To determine whether the sample was representative of the population, the demographics of the sample were compared with demographic information from the United States Bureau of the Census. Since comparisons are with the 1990 census, some of the differences between the sample and the census, such as age and income, may be due to changes in the characteristics of the population over the past seven years. ***Table 1*** shows key demographic characteristics of the sample and compares these characteristics to information from the 1990 census.

Table 1: Comparing the Sample and the General Population

		Sample %	1990 Census %
		(N=1,810)	
Gender			
	Male	49.9	49.5
	Female	50.1	50.5
Age			
	18 - 20	2.4	6.1
	21 - 24	15.5	7.7
	25 - 54	57.9	62.3
	55 and over	24.2	23.9
Ethnicity			
	White	87.2	88.2
	Black	2.5	4.0
	Hispanic	6.8	10.2
	Other	3.5	2.6
Residence			
	Front Range	80.0	80.0
	Western Slope	15.0	15.0
	Eastern Plains	5.0	5.0

Table 1 shows that the Colorado sample is representative of the population in terms of gender, age and residence. The question of how well the sample represents the population in terms of ethnicity is more difficult to assess since these categories are not considered very robust by survey professionals and readers will notice that the census data for the ethnic categories add up to 105% since Hispanics may also be counted as White or Black. After checking the impact of weighting the sample by ethnicity on key variables, including the prevalence of problem and pathological gambling[2], and given the relatively small difference of three percentage points between sample and census data, we elected not to apply weights to the Colorado sample.

Data Analysis and Reporting

For easier comparisons of data from the survey with results of similar surveys in other states, detailed demographic data on age, ethnicity, education, income and marital status were collapsed to have fewer values. Age was collapsed into four groups ("18 to 20," "21 to 29," "30 to 54" and "55 and Over") for purposes of analysis. Ethnicity was collapsed from six groups into four groups ("White/Caucasian," "Black," "Hispanic" and "Other" which includes Native Americans and Asians). Marital status was collapsed from five groups into four groups ("Married," "Widowed," "Separated/Divorced" and "Never Married").

Education was collapsed from five groups into three groups ("Less than High School" and "High School Graduate" and "Some College"). Employment was collapsed from seven groups to three

[2] Weighting the sample had no effect on the lifetime prevalence of problem or probable pathological gambling. Weighting the sample increased current problem gambling by 0.1% and current probable pathological gambling by 0.1%.

groups (“Working,” “Unemployed” and “Other” which includes respondents who are going to school, keeping house, disabled or retired). Household income was collapsed into four groups (“Less than $25,000,” “$25,000 to $50,000,” ”$50,000 to $100,000” and “$100,00 or More”) for purposes of analysis and comparison.

Chi-square analysis and analyses of variance were used to test for statistical significance. In order to adjust for the large number of statistical tests conducted, p-values smaller than .01 are considered ***highly significant*** while p-values at the more conventional .05 level are considered ***significant***. In reading the tables in this report that contain demographic data, asterisks in the right-hand column indicate that ***one*** of the figures in that category is significantly different from other figures in the same category. It is also important to note that some demographic groups are quite small. For example, the group of 18 to 20 year old respondents includes only 44 individuals. Results based on these groups should be interpreted with caution due to the large margin for error based on small cell sizes.

GAMBLING IN COLORADO

To assess the full range of gambling activities available to Colorado residents, the questionnaire for the survey collected information about 13 different wagering activities. Respondents were asked if they had ever bet or spent money on the following activities:

- lottery, including Scratch, Lotto, Cash 5 and Keno
- at a casino in the State of Colorado
- at a casino outside the State of Colorado
- bingo or pulltabs
- card games for money not at a casino
- horse races or dog races (at the track or at an OTB)
- slot machines, poker machines or other gambling machines not at a casino
- games of skill other than card games for money, such as bowling, pool or golf
- dice games not at a casino
- sports with friends or in an office pool
- sports or other events with a bookmaker
- telephone or computer wagering including the Internet or the Worldwide Web
- any other type of illegal gambling

Gambling in the General Population

In every recent survey, the majority of respondents acknowledge participating in one or more of the gambling activities included in the questionnaire. In the United States, the proportion of respondents who have ever gambled ranges from 64% in Mississippi in 1996 to 92% in New Jersey in 1989 (Volberg 1994c, 1997a). In 1997, 91% of the respondents in Colorado acknowledged participating in one or more of 13 gambling activities. This lifetime participation rate is comparable to lifetime participation rates in Northeastern states such as Massachusetts and New York as well as Western states such as California and Washington State. This lifetime participation rate is higher than in Midwestern states and some Southern states.

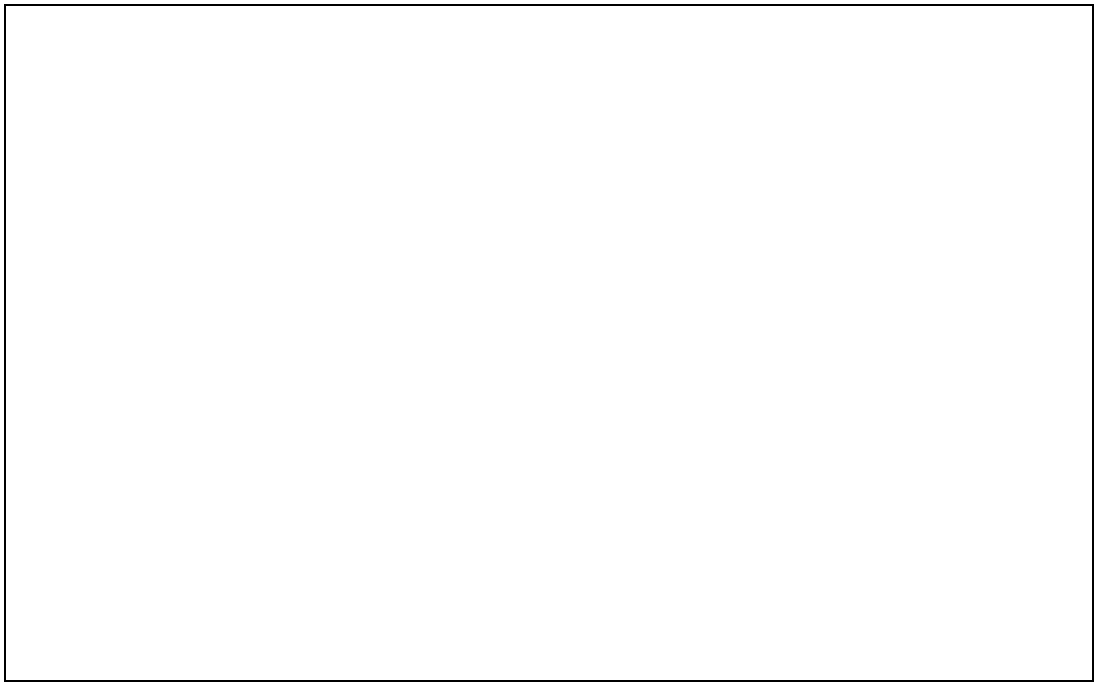
Among respondents who ever gambled, there is a small group of respondents who have only tried one type of gambling (N=127). Among these respondents, 59% had only played the lottery, 17% had been to a casino outside of Colorado, 5% had been to a Colorado casino and another 5% had wagered on sports pools. Among respondents who have tried more than one type of gambling, 23% prefer the lottery, 16% prefer gambling machines and 16% prefer to gamble at Colorado casinos. Preferences among Colorado respondents for other types of gambling are much lower.

The majority of the respondents in Colorado (81%) acknowledge participating in one or more gambling activities in the past year and 20% of the respondents acknowledge gambling one or more times in the week prior to the survey. The past year participation rate is comparable to past year participation rates in New York and Washington State. The past week participation rate is comparable to weekly participation rates in Iowa and Montana.

Figure 1 on the following page shows lifetime and past-year participation rates for the types of gambling included in the Colorado survey. Lifetime participation among Colorado respondents is highest for lottery, non-Colorado casinos, Colorado casinos and sports pools. Over half of the respondents have tried these types of gambling. About one-third to one-fifth of the respondents have wagered on horse or dog races, bingo or pulltabs, card games for money not at a casino,

games of skill and gambling machines not at a casino. Very small numbers of respondents have wagered on dice games not at a casino, sports events with a bookmaker, at Internet gambling sites or on other illegal types of gambling. In contrast to lifetime participation, past year participation in Colorado is highest for lottery, Colorado casinos and sports pools.

Figure 1: Lifetime and Past Year Gambling Participation Rates



Patterns of Gambling Participation

To understand patterns of gambling participation, it is helpful to examine the demographics of respondents who wager at increasing levels of frequency. To analyze levels of gambling participation, we divide respondents into four groups:

- ***non-gamblers*** who have never participated in any type of gambling (9% of the total sample);
- ***infrequent gamblers*** who have participated in one or more types of gambling but not in the past year (11% of the total sample);
- ***past-year gamblers*** who have participated in one or more types of gambling in the past year but not on a weekly basis (61% of the total sample); and
- ***weekly gamblers*** who participate in one or more types of gambling on a weekly basis (20% of the total sample).

Table 2 on the following page shows differences in the demographic characteristics of non-gamblers, infrequent gamblers, past-year gamblers and weekly gamblers in Colorado as well as differences in the mean number of gambling activities these groups have ever tried.

Table 2: Demographics of Gamblers in Colorado

		Non-Gamblers %	Infrequent Gamblers %	Past Year Gamblers %	Past Week Gamblers %	
		(N=159)	(N=192)	(N=1,101)	(N=358)	
Gender						**
	Male	42.8	44.3	49.4	57.8	
	Female	57.2	55.7	50.6	42.2	
Age						**
	18 - 20	3.3	0.5	2.5	2.9	
	21 - 29	12.6	9.1	16.7	16.3	
	30 - 54	49.0	55.4	58.8	60.3	
	55 and over	35.1	34.9	22.0	20.6	
Ethnicity						
	White	83.3	90.2	87.7	85.8	
	Black	4.2	0.5	2.8	1.7	
	Hispanic	8.3	6.0	6.3	8.4	
	Other	4.2	3.3	3.2	4.0	
Marital Status						*
	Married	62.3	58.8	56.6	56.4	
	Widowed	10.4	9.1	5.0	4.5	
	Divorced/Separated	13.6	18.7	18.3	20.7	
	Never Married	13.6	13.4	20.1	18.4	
Education						
	Less than HS	8.3	5.3	5.7	4.8	
	HS Graduate	26.9	24.5	27.8	32.5	
	Some College	64.7	70.2	66.6	62.7	
Employment						**
	Working	64.4	62.7	74.8	80.5	
	Unemployed	0.7	1.1	1.6	0.9	
	Other	34.9	36.2	23.6	18.6	
Income						*
	Less than $25,000	38.9	27.9	24.1	23.5	
	$25,000 to $50,000	29.6	34.3	39.0	43.7	
	$50,000 to $100,000	25.9	27.9	28.5	26.3	
	$100,000 or More	5.6	10.0	8.4	6.5	
Mean Gambling Activities		---	2.67	4.57	5.32	**

* Significant
** Highly significant

Table 2 shows that, as in other jurisdictions, infrequent gamblers and non-gamblers in Colorado are significantly more likely than more frequent gamblers to be older widowed women with relatively low education and income. These individuals are also significantly more likely than more frequent gamblers to be keeping house, retired or disabled. Past-year and weekly gamblers are significantly more likely than less frequent gamblers to be young or middle-aged men with relatively high income. Past-year and weekly gamblers are also significantly more likely to be employed than respondents who gamble less frequently or not at all. Finally, past-year and weekly gamblers are significantly more likely than less frequent gamblers to be single, divorced or separated.

In Colorado, men are significantly more likely than women to have wagered in the past year on sports pools, games of skill, card games not at a casino, horse or dog races, and on sports or other events with a bookmaker. Women are significantly more likely than men to have wagered in the past year on bingo or pulltabs. Men and women are equally likely to have purchased lottery tickets and to have been to a casino in Colorado or outside Colorado in the past year.

Respondents under the age of 30 are significantly more likely than older respondents to have wagered in the past year on nearly every type of gambling, including Colorado casinos, bingo or pulltabs, card and dice games not at a casino, horse or dog races, gaming machines, games of skill, sports pools and on the Internet. Older respondents are more likely than younger respondents to have wagered in the past year at non-Colorado casinos.

Black and Hispanic respondents in Colorado are significantly more likely than White respondents to have played bingo or pulltabs in the past year. Black respondents are the most likely to have wagered on horse or dog races in the past year while Hispanic respondents are significantly more likely than other respondents to have wagered in the past year at a Colorado casino. Respondents who have never married or are separated or divorced are significantly more likely than married or widowed respondents to have wagered in the past year on games of skill and on sports events with a bookmaker.

Expenditures on Gambling

Reported estimates of expenditures obtained in this and similar surveys are based on recollection and self-report. In addition, there are fundamental uncertainties about the tacit definitions that people have for the term "spending" when considering different types of gambling. It is also important to note that these estimates of expenditures will not include amounts spent on gambling within a jurisdiction by non-residents and tourists. For these reasons, data on reported expenditures are best suited for analyzing the relative importance of different types of gambling among a jurisdiction's residents rather than for ascertaining absolute spending levels on different types of wagering.

To determine expenditures on gambling in the general population, the ***total monthly expenditure*** for each gambling activity is calculated by summing the amount of money reported spent in the past month by each respondent on each gambling activity. The total amount spent in the past month by all respondents on all gambling activities is then calculated. The ***proportion*** of the total monthly expenditure spent on each gambling activity is calculated by dividing the amount spent on each activity in the past month by the total monthly expenditure. The total monthly expenditure on all gambling activities is divided by the total number of respondents in the survey to obtain an average amount spent in the past month per respondent.

Variations in Expenditures

Using the approach detailed above,[3] we calculate that respondents in Colorado (N=1,809) spent an average of $37 in the past month on gambling activities. This average monthly expenditure is in the same range as monthly expenditures identified in Iowa ($40) and Oregon ($43) and lower than monthly expenditures identified in Washington State ($53). Using the same approach for past week expenditures, we calculate that respondents in Colorado spent an average of $6 in the past week on gambling activities. Since weekly expenditures are so low, the remainder of our analysis is restricted to expenditures on gambling in the past 30 days.

Table 3 on the following page shows total reported past month expenditures on different types of gambling in Colorado as well as the proportion that each type of expenditure represents of the total. Only those types of gambling for which total past month expenditures exceeded 1% of the total are shown.

[3] There is one respondent in the Colorado survey whose reported expenditures in the past month for Colorado and non-Colorado casinos are extremely high. This respondent has been dropped from all analysis of gambling expenditures in order to clarify expenditure patterns in the population as a whole.

Table 3: Past Month Expenditures on Gambling

	Past Month Expenditure $	% of Total
	(N=1,809)	
Colorado Casino	16,537	24.7
Non-Colorado Casino	14,900	22.2
Lottery	13,914	20.7
Games of Skill	7,863	11.7
Bingo or Pulltabs	5,028	7.5
Sports Pools	4,014	6.0
Card Games	2,390	3.6
Horse or Dog Races	1,123	1.7
Total Expenditures	67,058	100.0

Table 3 shows that expenditures in the past month on legal forms of gambling in Colorado, including Colorado casinos, the lottery, bingo and pulltabs and horse or dog races, account for 55% of all gambling expenditures. Expenditures at non-Colorado casinos account for another 22% of all gambling expenditures while illegal or unregulated types of gambling in Colorado account for the remaining 23% of gambling expenditures.

As in other jurisdictions, the majority of respondents in Colorado report spending rather small amounts on gambling per month. The majority of respondents in Colorado (64%) report spending less than $10 on gambling in the past month. Another 28% of the respondents report spending between $10 and $99 on gambling in the past month and 8% of the respondents report spending $100 or more on gambling in the past month. However, this small group of respondents accounts for 76% of reported past month expenditures on gambling in Colorado.

Like weekly gamblers, respondents in the highest spending group in Colorado are significantly more likely to be male, under the age of 30 and divorced, separated or never married than respondents in lower spending groups. These higher spending respondents are also significantly more likely to be Black or Hispanic and to be employed than respondents who spent less on gambling in the past month. In contrast to other jurisdictions, differences between higher and lower spending respondents in Colorado in terms of education and income are not significant.

Gambling Preferences

For several types of gambling, respondents who acknowledged participation in the past year were asked about their preferences for particular games or places. These types of gambling included playing the lottery and going to casinos in Colorado and outside Colorado.

Lottery

Respondents who acknowledged playing the lottery in the past year were asked to indicate which lottery product they preferred. Among respondents who played the lottery in the past year (N=1,278), there was a clear preference for Lotto. A majority of these respondents (70%) indicated that Lotto was their preferred game while 18% of these respondents preferred Scratch. Only 5% of these respondents indicated a preference for Cash 5 and even smaller numbers of respondents indicated a preference for Keno or any other lottery game.

There is a significant difference in average expenditures among lottery players based on their preferred game. Respondents who indicated that Scratch or Cash 5 was their preferred lottery game spent significantly more in the past 30 days on lottery products than respondents whose preference is for other lottery games. Cash 5 players acknowledge spending an average of $27 on lottery products and Scratch players acknowledge spending an average of $16 in the last 30 days compared to the average of $9 by respondents whose preference is for other lottery games.

Non-Colorado Casinos

Respondents who had gambled at a casino outside Colorado in the past year (N=405) were asked how many times they had spent money at a casino outside of Colorado in the past year. While half of these respondents (56%) had been to a casino outside Colorado only once in the past year, 21% had been twice, 14% had been three to five times and 7% had been more than five times. In response to a question about where they usually went, 64% of these respondents indicated that they traveled to Las Vegas and 10% indicated that they went to other Nevada casinos. The remainder of these respondents (26%) indicated that they went somewhere else to gamble at a casino outside Colorado, including Atlantic City, Deadwood, riverboat casinos, Indian casinos outside Colorado and elsewhere.

In terms of game preferences, 52% of respondents who had gambled at a casino outside Colorado in the past year preferred to play slot machines and 27% preferred to play card games. Only 6% preferred video games and 5% preferred dice games while 9% of these respondents indicated that they had some other game preference or none at all.

There are significant differences in average expenditures among non-Colorado casino players based on where they prefer to go. Respondents who prefer Las Vegas or other Nevada casinos spent an average of $435 in the past year at non-Colorado casinos compared to an average of $122 for respondents who prefer Indian or riverboat casinos and an average of $108 for respondents who prefer other casinos.

Colorado Casinos

Respondents who had gambled at a casino in Colorado in the past year (N=572) were asked about the type of gambling they preferred to do at these casinos. The majority of these respondents (59%) indicated that they preferred to play slot machines. One-quarter of these respondents (24%) preferred blackjack and 10% preferred video games such as video poker or video blackjack. Only 5% of these respondents indicated a preference for poker and 1% indicated some other preference.

Respondents who had gambled at a casino in Colorado were asked where they usually went only if they had been to a casino in the past 30 days. Among these respondents (N=155), there was a clear preference for the Black Hawk / Central City casinos due to the distribution of the population in Colorado. This is probably due the concentration of the Colorado population in the Denver Metro and North Front Range areas which offer easiest access to Black Hawk and Central City. Nearly three-quarters of these respondents (74%) indicated that they had been to a casino in the Black Hawk/Central City area. Another 24% of these respondents had been to a casino in Cripple Creek and only 3% of these respondents had been to one of the two Southwest Colorado Indian casinos.

As with respondents who gambled at non-Colorado casinos, there are significant differences in average expenditures among Colorado casino players based on their preferred game. Respondents who indicated that video games were their preferred game spent significantly more than respondents who preferred card games, slot machines or other games. Respondents who preferred video games spent an average of $58 at Colorado casinos in the past 30 days compared to an average of $26 by respondents who prefer card games or slot machines.

Summary

In this section, we examined patterns of gambling participation in the Colorado sample as a whole. In 1997, 91% of the respondents in Colorado acknowledge participating in one or more gambling activities at some time, 81% acknowledge participating in one or more gambling activities in the past year and 20% acknowledge participating in one or more gambling activities in the past week. Lifetime participation is highest for the lottery, non-Colorado casinos and Colorado casinos while past year participation is highest for the lottery and Colorado casinos. Young and middle-aged employed men with relatively high income are the respondents most likely to have ever gambled in Colorado.

Expenditures in the past month at Colorado and non-Colorado casinos as well as on lottery products account for the majority of reported expenditures on gambling reported in Colorado. As in other jurisdictions, young, unmarried men with relatively high education and income are most likely to report spending the largest amounts of money on gambling. These patterns of gambling participation identified in Colorado are similar to patterns identified in many other jurisdictions.

Relationships between respondents' preferences for lottery and casino games and their estimated expenditures on these types of gambling are most interesting. While only 18% of respondents who played the lottery in the past year prefer Scratch and only 5% prefer Cash 5, these respondents spent significantly more on lottery games in the past month than respondents who prefer Lotto or other lottery games. While only 10% of respondents who have been to a Colorado casino in the past year prefer video poker or video blackjack, these respondents spent significantly more on casino games in the past month than respondents who prefer other casino games. In the next section, we turn our attention to the prevalence of problem and probable pathological gambling in the Colorado sample.

PROBLEM AND PATHOLOGICAL GAMBLING IN COLORADO

As noted in the section *Defining Problem and Pathological Gambling* on Page 3, individuals are classified as ***problem gamblers*** or ***probable pathological gamblers*** in prevalence surveys on the basis of their responses to the South Oaks Gambling Screen (SOGS) items. There is a further distinction made in prevalence surveys between lifetime and current problem and probable pathological gamblers. Not all lifetime problem and pathological gamblers meet sufficient criteria to be classified as current problem and pathological gamblers.

Research on the performance of the South Oaks Gambling Screen has shown that the lifetime screen is very good at detecting pathological gambling among those who currently experience the disorder (see Appendix A for a full discussion of the accuracy of the SOGS). However, as expected, the screen identifies at-risk individuals at the expense of generating a substantial number of false positives. The current SOGS produces fewer false positives than the lifetime measure but more false negatives and thus provides a weaker screen for identifying pathological gamblers in the clinical sense. However, the greater efficiency of the current South Oaks Gambling Screen makes it a more useful tool for detecting rates of change in the prevalence of problem and pathological gambling over time.

Following established criteria for discriminating between respondents without gambling-related difficulties and those with moderate to severe problems (Abbott & Volberg 1996; Lesieur & Blume 1987), Colorado respondents' scores on the lifetime and current (past-year) South Oaks Gambling Screen items were tallied. In accordance with these criteria, prevalence rates were calculated as follows:

- ***lifetime problem gamblers*** are those respondents who score 3 or 4 points on the lifetime SOGS items. In Colorado, 4.4% (±0.94%) of the respondents scored as lifetime problem gamblers.

- ***lifetime probable pathological gamblers*** are those respondents who score 5 or more points on the lifetime SOGS items. In Colorado, 1.8% (±0.61%) of the respondents scored as lifetime probable pathological gamblers.

- ***current problem gamblers*** are those respondents who score 3 or 4 points on the past year SOGS items. In Colorado, 1.8% (±0.61%) of the respondents scored as current problem gamblers.

- ***current probable pathological gamblers*** are those respondents who score 5 or more points on the past year SOGS items. In Colorado, 0.7% (±0.38%) of the respondents scored as current probable pathological gamblers.

In the tables that follow in this and the next section, lifetime and current problem and probable pathological gamblers are grouped together. This approach is based on discriminant analysis that has established a strong and significant separation between non-problem gamblers and those who score as problem and probable pathological gamblers (Abbott & Volberg 1996; Volberg & Abbott 1994).

Lifetime Prevalence

According to the 1990 census, the population aged 18 and over in Colorado is 2,433,128 individuals. Based on these figures, we estimate that between 84,200 (3.46%) and 129,900 (5.34%) of Colorado residents aged 18 and over can be classified as lifetime problem gamblers. In

addition, we estimate that between 28,900 (1.19%) and 58,600 (2.41%) of Colorado residents aged 18 and over can be classified as lifetime probable pathological gamblers.
Table 4 shows that lifetime problem and probable pathological gamblers in Colorado are significantly more likely than other respondents in the sample to be male, under the age of 30 and never married. Differences between lifetime problem and probable pathological gamblers and other respondents in education, income and employment status are relatively small and do not attain statistical significance. In terms of their gambling involvement, lifetime problem and probable pathological gamblers are significantly more likely than other respondents to have gambled in the past week on one or more activities and to have spent $100 or more on gambling in the past month.

Table 4: Comparing Lifetime Problem Gamblers with Non-Problem Respondents

		Non-Problem Respondents %	Problem & Pathological Respondents %	
		(N=1,699)	(N=111)	
Gender				**
	Male	49.3	60.4	
	Female	50.7	39.6	
Age				**
	18 - 20	2.2	5.6	
	21 - 29	14.8	26.9	
	30 - 54	57.7	61.1	
	55 and over	25.3	6.5	
Ethnicity				
	White	87.5	82.9	
	Black	2.4	3.8	
	Hispanic	6.7	8.6	
	Other	3.4	4.8	
Marital Status				*
	Married	57.9	48.2	
	Widowed	5.9	3.6	
	Divorced/Separated	18.2	20.9	
	Never Married	17.9	27.3	
Education				
	Less than HS	5.6	7.3	
	HS Graduate	27.8	35.5	
	Some College	66.6	57.3	
Employment				
	Working	73.3	80.6	
	Unemployed	1.3	1.9	
	Other	25.4	17.6	
Income				
	Less than $25,000	25.7	21.8	
	$25,000 to $50,000	38.5	43.6	
	$50,000 to $100,000	27.9	25.7	
	$100,000 or More	7.9	8.9	
Gambled Past Week (1 or more activities)		18.7	36.9	**
Spent $100 or More Past Month		6.7	28.8	**

* Significant
** Highly significant

Current Prevalence

Based on current prevalence and 1990 census information, we estimate that between 28,900 (1.19%) and 58,600 (2.41%) of Colorado residents aged 18 and over can be classified as current problem gamblers. In addition, we estimate that between 7,800 (0.32%) and 26,300 (1.08%) of Colorado residents aged 18 and over can be classified as current probable pathological gamblers.

Comparison of ***Table 4*** and ***Table 5*** shows that most of the differences between respondents who score as lifetime problem or probable pathological gamblers and the remainder of the sample in Colorado hold true for current problem and probable pathological gamblers. One important difference is that current problem and probable pathological gamblers in Colorado are not significantly different from other respondents in terms of gender. Another important difference is that current problem and probable pathological gamblers in Colorado are significantly less likely to have graduated from high school or attended college than other respondents.

Table 5: Comparing Current Problem Gamblers with Non-Problem Respondents

		Non-Problem Respondents %	Problem & Pathological Respondents %	
		(N=1,764)	(N=46)	
Gender				
	Male	49.8	56.5	
	Female	50.2	43.5	
Age				**
	18 - 20	2.2	10.9	
	21 - 29	15.0	32.6	
	30 - 54	58.1	50.0	
	55 and over	24.7	6.5	
Ethnicity				
	White	87.4	81.4	
	Black	2.5	2.3	
	Hispanic	6.6	14.0	
	Other	3.3	2.3	
Marital Status				
	Married	57.7	43.5	
	Widowed	5.8	4.3	
	Divorced/Separated	18.3	21.7	
	Never Married	18.2	30.4	
Education				*
	Less than HS	5.5	13.0	
	HS Graduate	27.9	43.5	
	Some College	66.6	43.5	
Employment				
	Working	73.7	77.8	
	Unemployed	1.3	2.2	
	Other	25.0	20.0	
Income				
	Less than $25,000	25.5	24.4	
	$25,000 to $50,000	38.6	46.3	
	$50,000 to $100,000	28.0	22.0	
	$100,000 or More	8.0	7.3	
Gambled Past Week (1 or more activities)		19.2	43.5	**

Spent $100 or More Past Month	7.1	41.3	**

* Significant
** Highly significant

As with lifetime problem gamblers, current problem and probable pathological gamblers are significantly more likely than other respondents to have gambled in the past week on one or more activities and to have spent $100 or more on gambling in the past month.

Natural Recovery

Gambling surveys conducted since 1990 have collected information on current as well as lifetime prevalence rates of problem and probable pathological gambling. The difference between lifetime and current prevalence rates represents individuals who have experienced a gambling problem at some time in their lives but do not score as having a gambling problem currently. Since there are few available treatment services for problem and pathological gamblers in most states, these individuals can be regarded as problem and pathological gamblers in ***natural recovery***.

The proportion of problem and pathological gamblers in natural recovery in the general population ranges from 29% in New Brunswick to 57% in British Columbia (Angus Reid Group & Gemini Research 1994; Baseline Market Research 1992). As in other jurisdictions, a proportion of the Colorado respondents who score as lifetime problem or probable pathological gamblers do not score as having a current problem or pathology. In Colorado, 60% of lifetime problem and probable pathological gamblers do not score as having a current problem or pathology. Another explanation of this number is that six out of every ten individuals who have ever experienced gambling problems in Colorado are no longer experiencing such difficulties.

Comparing Problem Gambling Prevalence Across States

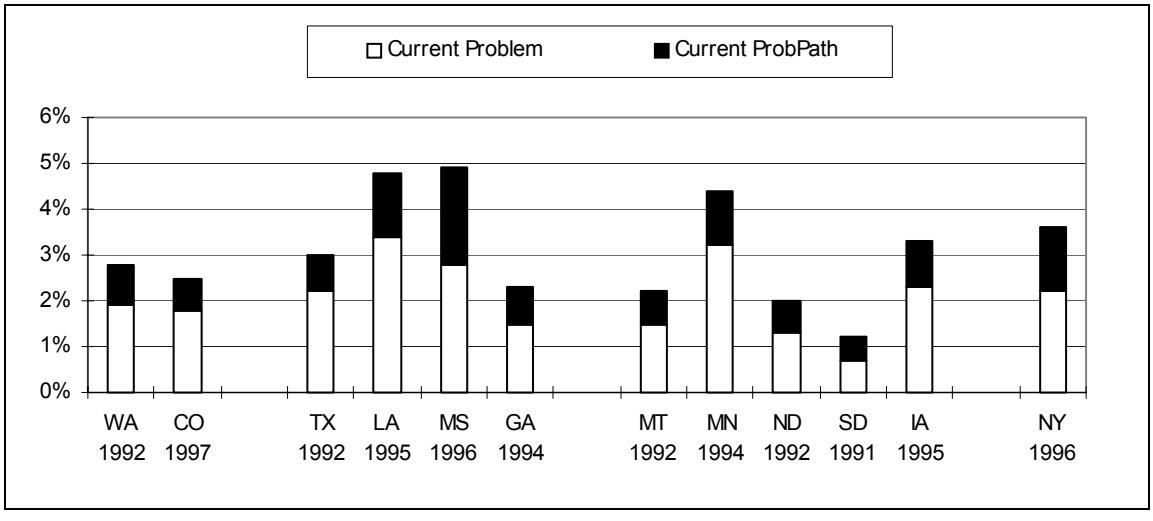
The jurisdictions where problem gambling surveys have been done in the United States differ substantially in the types of gambling available, in levels of gambling participation and in the demographic characteristics of the general population. ***Figure 2*** shows prevalence rates of lifetime problem and probable pathological gambling in all of the United States jurisdictions where surveys based on the South Oaks Gambling Screen have been completed. The data in ***Figure 2*** are arrayed geographically from West to Northeast. In states where replication surveys have been completed (Iowa, New York, South Dakota and Texas), the most recent prevalence rates are shown.

Figure 2: Lifetime Prevalence Rates in the United States

Figure 2 shows that, in general, lifetime prevalence rates are lower in Central and Midwestern states than in the Northeast, South and West. In contrast to the Midwest, states in the Northeast and West tend to be ethnically more diverse and to have had access to legal gambling for longer periods of time. Like the Northeast and West, states in the South tend to be ethnically diverse. However, legal gambling is a recent introduction in all of the Southern states where surveys of gambling and problem gambling have been completed. The lifetime prevalence rate in Colorado in 1997 is higher than in Western and Midwestern states surveyed in the early 1990s but lower than in Louisiana and Mississippi in the South and New York in the Northeast.

Figure 3 shows prevalence rates of current problem and probable pathological gambling in all of the United States jurisdictions where surveys based on the South Oaks Gambling Screen have been completed. As in ***Figure 2***, the data in ***Figure 3*** are arrayed geographically from West to Northeast. The current prevalence rate in Colorado in 1997 is lower than in Louisiana and Mississippi in the South, Iowa in the Midwest and New York in the Northeast. The current prevalence rate in Colorado is closest to current prevalence rates in Georgia in the South and Montana and North Dakota in the Midwest.

Figure 3: Current Prevalence Rates in the United States



Current prevalence rates tend to be higher in jurisdictions where casino gambling has recently been introduced. In the Midwest, Iowa and Minnesota have the highest current prevalence rates of problem and pathological gambling. Iowa legalized riverboat casinos in 1992 and Minnesota has nearly 20 Native American casinos which have become operational since the passage of the Indian Gaming Regulatory Act in 1988. In the South, current prevalence rates in Louisiana and Mississippi, where casinos have become operational since 1992, are also high. While both Colorado and Washington State have casino gambling, the lower current prevalence rates in these states may be due to the limited stakes at casinos in Colorado and the remote location of Indian casinos in Washington.

Summary

In Colorado, 4.4% of the respondents scored as lifetime problem gamblers and an additional 1.8% scored as lifetime probable pathological gamblers. In Colorado, 1.8% of the respondents scored as current problem gamblers and another 0.7% scored as current probable pathological gamblers. While the lifetime prevalence of problem and pathological gambling in Colorado is higher than in most other states where similar surveys have been completed, the current prevalence of problem and pathological gambling in Colorado is lower than in many other jurisdictions with casino gambling.

In Colorado, lifetime problem and probable pathological gamblers are significantly more likely than other respondents to be male, under the age of 30 and never married. Current problem and probable pathological gamblers are significantly more likely than other respondents in Colorado to be under the age of 30. These individuals are significantly less likely than other respondents in Colorado to have graduated from high school. Only four out of every ten individuals who have ever experienced gambling problems in Colorado are experiencing those difficulties now.

In this section, we have examined the prevalence of problem and probable pathological gambling among respondents in the Colorado survey. Here, and in the first section of the report on *Gambling in Colorado*, our focus has been on the entire sample of 1,810 respondents. In the next section, we turn our attention to differences between non-problem and problem gamblers in the Colorado survey. Only those respondents who have ever tried one or more types of gambling (N=1,651) are included in analyses of the differences between non-problem and problem gamblers in the following section.

COMPARING NON-PROBLEM AND PROBLEM GAMBLERS IN COLORADO

In considering the development of policies and programs for problem gamblers, it is important to direct these efforts in an effective and efficient way. The most effective efforts at prevention, outreach and treatment are targeted at individuals who are at greatest risk of experiencing gambling-related difficulties. Since the purpose of this section is to examine individuals at risk, our focus will be on differences between individuals who gamble, with and without problems, rather than on the entire sample.

In addition to looking only at respondents who gamble, our analysis in this section is limited to differences between non-problem gamblers and ***lifetime*** problem and probable pathological gamblers. Both the lifetime and current South Oaks Gambling Screen measures are important tools but they have rather different uses (see Appendix A for a full explanation of the methodological issues related to the South Oaks Gambling Screen). For reasons related to different rates of classification errors by the lifetime and current SOGS, the lifetime measure is better than the current measure at detecting pathological gambling among those who currently experience the disorder.

Since the lifetime South Oaks Gambling Screen is the more accurate method for identifying at-risk individuals in the general population, we use information about the characteristics of respondents who score as ***lifetime*** problem and pathological gamblers when considering the characteristics of individuals most in need of help with their gambling-related difficulties. Further, respondents who score as lifetime problem gamblers and those who score as lifetime probable pathological gamblers are treated as a single group and are referred to as ***problem gamblers*** in this section. As in the previous section, this approach is based on discriminant analysis that has established a strong and significant separation between non-problem gamblers and those who score as problem and probable pathological gamblers (Volberg & Abbott 1994).

Demographics

Table 6 on the following page shows that, as in other jurisdictions, problem gamblers in Colorado are demographically distinct from non-problem gamblers in the sample. Problem gamblers in Colorado are significantly more likely than non-problem gamblers to be male and under the age of 30. While none of the other demographic differences between non-problem and problem gamblers attain statistical significance, it is interesting to note that problem gamblers are less likely to be married than non-problem gamblers in Colorado. However, this is probably related to the significantly younger age of problem gamblers in Colorado compared to non-problem gamblers.

Table 6: Demographics of Non-Problem and Problem Gamblers in Colorado

		Non-Problem Gamblers %	Problem Gamblers %	
		(N=1,540)	(N=111)	
Gender				*
	Male	49.9	60.4	
	Female	50.1	39.6	
Age				**
	18 - 20	2.1	5.6	
	21 - 29	15.0	26.9	
	30 - 54	58.5	61.1	
	55 and over	24.4	6.5	
Ethnicity				
	White	87.9	82.9	
	Black	2.2	3.8	
	Hispanic	6.6	8.6	
	Other	3.3	4.8	
Marital Status				
	Married	57.4	48.2	
	Widowed	5.5	3.6	
	Divorced/Separated	18.7	20.9	
	Never Married	18.4	27.3	
Education				
	Less than HS	5.3	7.3	
	HS Graduate	27.9	35.5	
	Some College	66.8	57.3	
Employment				
	Working	74.2	80.6	
	Unemployed	1.3	1.9	
	Other	24.5	17.6	
Income				
	Less than $25,000	24.6	21.8	
	$25,000 to $50,000	39.2	43.6	
	$50,000 to $100,000	28.1	25.7	
	$100,000 or More	8.1	8.9	

* Significant
** Highly significant

While information about the demographic characteristics of problem gamblers is helpful in designing prevention and treatment services, it is also important to understand more about the gambling behavior of non-problem and problem gamblers. Information about the behavioral correlates of problem gambling can help treatment professionals effectively identify at-risk individuals and provide appropriate treatment measures. This information is also useful to policy-makers and gaming regulators in developing measures to mitigate the negative impacts of currently legal forms of gambling as well as those types that may become legal in the future.

Weekly Gambling

Behavioral correlates of problem gambling include regular gambling and involvement with ***continuous*** forms of gambling (Dickerson 1993; Ladouceur, Gaboury, Dumont & Rochette 1988; Walker 1992). Regular gambling is defined as weekly or more frequent involvement in one or more types of gambling. ***Continuous*** forms of gambling are characterized by rapid cycles of play as well as the opportunity for players to immediately reinvest their winnings. Legal forms of continuous gambling in Colorado include some lottery games such as Scratch, most casino games, parimutuel wagering on horse and dog races, bingo and pulltabs and sports pools. Illegal

forms of continuous gambling in Colorado include betting on games of skill, card and dice games not at casinos and betting on sports events with a bookmaker.

Problem gamblers in Colorado are significantly more likely than non-problem gamblers to have ever tried all of the different types of gambling included in the survey. Problem gamblers are also significantly more likely than non-problem gamblers to have participated in every type of gambling included in the survey in the past year with the exception of wagering on sports or other events with a bookmaker. Finally, problem gamblers in Colorado are significantly more likely than non-problem gamblers to have participated in every type of gambling included in the survey in the past month.

There are fewer differences in the weekly participation of problem and non-problem gamblers in Colorado. ***Table 7*** shows differences in the past week involvement in different types of wagering by non-problem and problem gamblers in Colorado. Although past week participation for many types of gambling is significantly higher for problem gamblers than for non-problem gamblers in Colorado, the number of respondents involved can be extremely small. Only those types of gambling for which weekly participation among problem gamblers is 5% (N=5) or higher are shown.

Table 7: Past Week Gambling of Non-Problem and Problem Gamblers

Games Played Weekly	Non-Problem Gamblers %	Problem Gamblers %	Ratio	
	(N=1,540)	(N=111)		
Lottery	29.4	55.9	1.9	**
Colorado Casino	2.1	9.9	4.7	**
Bingo or Pulltabs	1.2	6.3	5.2	**
Weekly Gambling (1+ activities)	20.6	36.9	1.8	**

* Significant
** Highly significant

Table 7 shows that problem gamblers in Colorado are significantly more likely to have gambled in the past week on lottery games, Colorado casino games and bingo or pulltabs. ***Table 7*** also shows that nearly twice as many problem gamblers as non-problem gamblers in Colorado have wagered one or more times in the past week. Finally, ***Table 7*** shows that the ratio of problem to non-problem participation is highest for bingo or pulltabs and lowest for the lottery.

In addition to gambling involvement, respondents were asked about their preferred type of gambling. Nearly one-quarter (24%) of non-problem gamblers in Colorado identified the lottery as their favorite type of gambling. In spite of their high rate of participation, only 9% of the problem gamblers identified the lottery as their favorite type of gambling. The same proportion of non-problem and problem gamblers (16% respectively) identified Colorado casinos as their preferred gambling activity and the same proportion of both groups (16% respectively) identified gaming machines not at a casino as their preferred gambling activity. Problem gamblers in Colorado were somewhat more likely than non-problem gamblers to identify non-Colorado casinos and card games not at a casino as their preferred gambling activity.

Expenditures[4]

In addition to gambling regularly on continuous types of wagering, an important behavioral correlate of problem gambling is heavy gambling losses (Dickerson 1993). In this regard, it is interesting to examine the proportion of annual household income accounted for by the gambling expenditures of non-problem and problem gamblers. ***Table 8*** provides an estimate of the proportion of annual household income that non-problem and problem gamblers spend on gambling. These figures are derived by multiplying the total past month expenditures for non-problem and problem gamblers by 12 (to estimate total annual expenditures) and then dividing by the mid-point of each income category ($12,500 for the lowest income category, $37,500 for the middle income category and $75,000 for the highest income category).

Table 8: Gambling Expenditures as Proportion of Household Income

Income Category	Non-Problem Gamblers %	Problem Gamblers %
	(N=1,539)	(N=111)
Less than $25,000	2.8	11.7
$25,000 to $50,000	1.0	3.2
$50,000 or More	0.9	2.1

Table 8 shows that reported gambling expenditures of non-problem gamblers account for between 1% and 3% of median annual household income while reported gambling expenditures of problem gamblers account for 2% to 12% of median annual household income. Some treatment professionals believe that any expenditures on gambling over 5% of income constitute "over-gambling" (Robson 1995). This analysis suggests that the "5% rule" may be quite good. Our analysis also suggests that the gambling expenditures of lower-income problem gamblers in Colorado have a greater impact on household income than the gambling expenditures of higher-income problem gamblers or non-problem gamblers in Colorado.

Although gambling losses must be considered relative to income, comparisons of reported gambling expenditures of non-problem and problem gamblers provide further insight into the greater financial impact of gambling involvement on problem gamblers and their families. ***Table 9*** on the following page shows differences in the reported past month expenditures on different types of gambling for non-problem and problem gamblers in Colorado. Although expenditures on seven types of gambling are significantly higher for problem gamblers than for non-problem gamblers in Colorado, only those types of gambling for which average expenditures by problem gamblers exceed $5 in the past month are shown.

[4] As in our analysis of expenditures in the sample as a whole, we have excluded one individual from our analysis of expenditures by non-problem and problem gamblers. This individual is a divorced, 41-year old White man with an annual household income of $125,000 who claims to have spent $15,000 at casinos in Black Hawk as well as $10,000 at casinos in Las Vegas in the month prior to the survey. His preferred game is video poker and his past month expenditures are equivalent to 20% of his annual income. While this individual does not score as a problem or pathological gambler, his expenditures and demographic characteristics suggest that he may be a problem or pathological gambler in denial.

Table 9: Average Past Month Expenditures of Non-Problem and Problem Gamblers

Type of Gambling	Non-Problem Gamblers $	Problem Gamblers $	Ratio	
	(N=1,539)	(N=111)		
Lottery	7.79	17.29	2.2	**
Colorado Casino	7.34	47.21	6.5	**
Non-Colorado Casino	8.58	15.32	1.8	
Bingo or Pulltabs	2.30	13.43	5.8	**
Games of Skill	4.46	8.96	2.0	**
Sports Pools	2.21	5.51	2.5	**
Total Expenditures	51.30	117.95	2.3	**

* Significant
** Highly significant

Table 9 shows that the greatest differences between non-problem and problem gamblers in Colorado in average past month expenditures are for Colorado casinos and bingo or pulltabs and that the ratio of problem to non-problem expenditures is highest for Colorado casinos and lowest for non-Colorado casinos. ***Table 9*** also shows that average total expenditures on gambling in the past month are twice as high for problem gamblers as for non-problem gamblers in Colorado.

In our discussion of gambling expenditures in the total sample, we identified a small proportion of respondents (8%) who reported spending $100 or more on gambling in the past month (see Page 11 and the discussion of *Variations in Expenditures*). This small group of respondents accounted for 76% of reported past month expenditures on gambling in Colorado. In considering risk factors associated with problem gambling in Colorado, it is worth noting that 29% of the problem gamblers in Colorado fall into this heavy-spending group compared to 7% of the non-problem gamblers.

Prevalence by Type of Gambling

The question most often asked about the relationship between gambling and problem gambling is: What type of gambling is most likely to add to the number of problem and pathological gamblers in the general population? We have examined the relationship between weekly involvement (see ***Table 7***), gambling expenditures (see ***Table 9***) and problem gambling among respondents in this survey to help answer this question for Colorado. Our analysis shows that for lifetime problem and pathological gamblers, legal types of gambling including Colorado casinos and bingo and pulltabs present the greatest risk.

Another approach is to examine the prevalence of gambling problems among individuals who have participated in specific types of gambling. ***Figure 4*** on the following page illustrates the prevalence of lifetime problem and pathological gambling for the total sample, for respondents who have ever gambled and for respondents who have ever participated in different types of gambling. It is important to note that respondents who have tried several types of gambling will be included in several groups in ***Figure 4*** since these groups are not mutually exclusive.

Figure 4: Prevalence by Type of Gambling

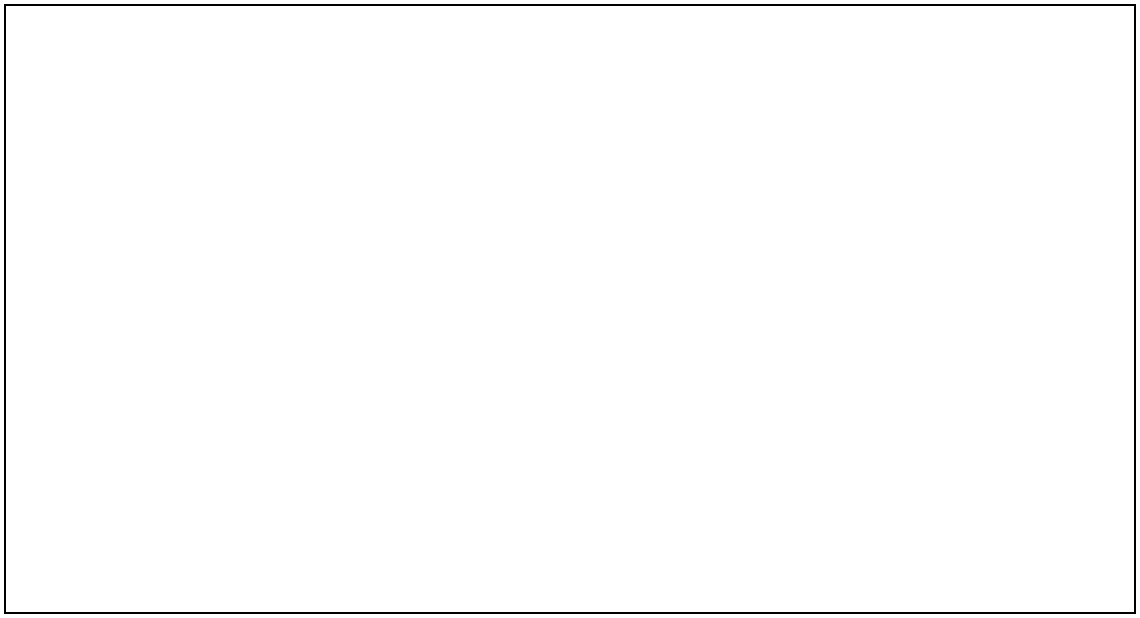


Figure 4 shows that lifetime prevalence rates can be substantially higher among individuals who have participated in specific types of wagering than among the sample as a whole or among gamblers in general. In Colorado, prevalence rates are highest among individuals who have ever participated in illegal types of gambling, including "gray machines," card games not at a casino and games of skill. Among legal types of gambling, prevalence rates are highest among respondents who have ever played bingo or pulltabs, wagered on sports with friends or in office pools or bet on horse or dog races.

Other Significant Differences

In addition to their demographic characteristics and gambling involvement, there are other significant differences between non-problem and problem gamblers in Colorado. These include differences in respondents' perceptions of their gambling involvement, the amount of time they usually gamble and the largest amount they report losing in a single day. One important difference between non-problem and problem gamblers is the age at which they start gambling. While the mean age at which non-problem gamblers in Colorado started gambling is 24 years old, the mean age at which problem and pathological gamblers in Colorado started gambling is significantly younger at 18 years old.

Table 10 on the following page shows that problem gamblers are significantly more likely than non-problem gamblers in Colorado to have felt nervous about their gambling and to have felt that one or both parents had a gambling problem. ***Table 10*** also shows that there are significant differences between non-problem and problem gamblers in Colorado in terms of the time and resources that they devote to gambling. Problem gamblers are significantly more likely than non-problem gamblers to spend six or more hours gambling per session and to have lost $1,000 or more in a single day.

Table 10: Other Significant Differences Between Non-Problem and Problem Gamblers

	Non-Problem Gamblers %	Problem Gamblers %	
	(N=1,540)	(N=111)	
Ever Felt Nervous About Your Gambling	11.9	44.1	**
Parent Ever Have Gambling Problem	4.4	13.6	**
Usually Gamble With			
Alone	20.3	17.8	
Spouse/Partner	29.6	24.3	
Other Family	10.9	9.3	
Friends	31.2	37.4	
Other	7.9	11.2	
Usual Time Spent Gambling			**
< 1 to 2 hours	68.2	45.0	
3 to 5 hours	27.5	40.4	
6 or more hours	4.3	14.7	
Largest Amount Lost in One Day			**
< $1 to $9	16.8	3.7	
$10 to $99	55.5	25.2	
$100 to $999	25.7	53.3	
$1,000 or more	1.9	17.8	

* Significant
** Highly significant

Very few problem gamblers in Colorado acknowledge desiring or seeking help for a gambling problem. Only 11 respondents in Colorado (four problem gamblers and seven non-problem gamblers) have desired help for a gambling problem and only one individual has sought help from an unidentified source.

Summary

As predicted by the research literature, regular gambling involvement and heavy gambling losses are the factors associated with gambling-related difficulties in Colorado. Problem gamblers in Colorado are most likely to have gambled in the past week on legal forms of gambling in the state, including the lottery, Colorado casinos and bingo or pulltabs. Problem gamblers are significantly more likely to have spent substantial amounts in the past month on legal types of gambling, including Colorado casinos, bingo or pulltabs, the lottery and non-Colorado casinos. Problem gamblers are also significantly more likely than non-problem gamblers in Colorado to have felt nervous about their gambling, to believe that one or both parents has had a gambling problem, to spend six or more hours gambling at a time and to have lost $1,000 or more in a single day.

In this section, we have identified several major risk factors associated with gambling-related problems among respondents in Colorado. Our focus has been on respondents who have ever gambled, whether or not they experience difficulties related to this involvement. In the next section, we will examine similarities and differences between the two screens used in the Colorado survey to identify individuals as problem or pathological gamblers.

COMPARING THE SOGS AND THE DSM-IV

A variety of methodological questions have been raised in recent years about research on gambling and problem gambling in the general population (Dickerson 1993; Lesieur 1994; Walker 1992). One serious concern has to do with changes in the criteria for identifying pathological gamblers that have been adopted by the American Psychiatric Association. The South Oaks Gambling Screen was based on the original DSM-III criteria published in 1980 and was tested in clinical trials against the DSM-III-R criteria published in 1987. In the DSM-III, a diagnosis of pathological gambling required an individual to meet four of seven criteria with an exclusion of Anti-Social Personality Disorder. In the DSM-III-R, the same diagnosis required an individual to meet four of nine criteria and the exclusion of Anti-Social Personality Disorder was dropped. In the DSM-IV, a diagnosis of pathological gambling requires an individual to meet five of ten criteria with an exclusion of Manic Personality Disorder.

Since so many surveys have been carried out using the South Oaks Gambling Screen,[5] use of this instrument allows comparisons of gambling problems across jurisdictions as well as over time (Walker & Dickerson 1996). With the recent changes in the psychiatric criteria for pathological gambling, however, researchers have become concerned about whether the South Oaks Gambling Screen is the best tool for measuring the prevalence of pathological gambling in the community. Recent work in Minnesota suggests that while the South Oaks Gambling Screen is well-suited for identifying individuals at risk for developing a gambling pathology, the DSM-IV may be more useful if the goal of a study is to estimate the prevalence of pathological gambling in the general population (Stinchfield 1997).

In moving forward, it is essential that the performance of any new instrument, such as the DSM-IV, be compared to the South Oaks Gambling Screen as well as to clinical assessments so that findings based on these new measurements can be matched to findings based on the South Oaks Gambling Screen. In this way, the field of gambling research can move forward in an evolutionary, rather than revolutionary, manner.

The Colorado Survey

In the Colorado survey, the DSM-IV Screen was used in addition to the South Oaks Gambling Screen. The South Oaks Gambling Screen was used in order to obtain prevalence data comparable to data from many other North American jurisdictions. The DSM-IV Screen was used in order to assess pathological gambling using the most current criteria and to contribute to the development of problem gambling research. While this and similar studies do not answer questions about the validity and reliability of the DSM-IV Screen in relation to clinical assessments, use of the DSM-IV Screen does provide an important opportunity to understand how the two most widely-used methods to identify problem and pathological gamblers operate in relation to one another.

In administering the questionnaire for the Colorado survey, the two problem gambling screens were rotated so that half of the respondents answered the items from the South Oaks Gambling Screen first and the other half of the sample answered the items from the DSM-IV Screen first. Since there were no statistically significant differences between the two halves of the sample in terms of demographics, gambling involvement or scores on either of the problem gambling screens, we elected to analyze the results as a single sample. Further, since both screens were

[5] Baseline studies based on the South Oaks Gambling Screen have been carried out in 29 United States and Canadian jurisdictions, including Colorado, as well as in Australia, New Zealand and Spain. Replication surveys based on the South Oaks Gambling Screen have been carried out in 9 jurisdictions.

administered only to respondents who had ever gambled, all of the information reported in this section is based on the sample of gamblers (N=1,651) rather than on the total Colorado sample.

The DSM-IV Screen

In contrast to the 20-item South Oaks Gambling Screen, the DSM-IV Screen is a 10-item scale based on the most recent diagnostic criteria for pathological gambling (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, the American Psychiatric Association (1994) subsequently established a diagnostic cutoff of 5 points. The individual DSM-IV criteria include the following behaviors:

PREOCCUPATION	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	Restlessness or irritability when attempting to cut down or stop gambling
ESCAPE	Gambling 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 return 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	Made repeated unsuccessful efforts to control, cut back or stop gambling
ILLEGAL ACTS	Committed illegal acts, such as forgery, fraud, theft or embezzlement, in order to finance gambling
RISKED SIGNIFICANT RELATIONSHIP	Jeopardized or lost a significant relationship, job, educational or career opportunity because of gambling
BAILOUT	Reliance on others to provide money to relieve a desperate financial situation caused by gambling

The DSM-IV criteria were adapted slightly for use in a survey of British casino patrons (Fisher 1996) and it is this DSM-IV Screen that was used in the surveys in Colorado, New York and Oregon (Volberg 1996, 1997B). In developing the DSM-IV Screen, Fisher made some minor adjustments to the wording of the DSM-IV criteria and increased the number of response categories from "Yes/No" to "Never," "Once or Twice," "Sometimes" and "Often." In the surveys in Colorado, New York and Oregon, respondents received a score of one for any of the DSM-IV Screen items to which they gave a positive response ("Once or Twice," "Sometimes" or "Often"). Total scores were obtained by adding the positive items for each respondent.[6]

In her analysis of problem gambling among British casino patrons, Fisher (1996) identified respondents who scored 3 or 4 points on the DSM-IV Screen as "problem gamblers" and respondents who scored 5 or more points as "severe problem gamblers." In our analysis of the

[6] This scoring method is somewhat different from the scoring method adopted by Fisher (1996). In Fisher's approach, the first seven items were scored only if the response was "Often" while the last three items were scored for any positive response. The different scoring method adopted in the Colorado, New York and Oregon surveys was used because of the low response rate to the DSM-IV Screen items in these surveys compared to the sample of casino patrons used by Fisher.

DSM-IV Screen in Colorado, we have followed Fisher's lead and used the terms "problem gambler" to identify respondents who score 3 or 4 points on the DSM-IV Screen and "severe problem gambler" to identify respondents who score 5 or more on the DSM-IV Screen.

Statistical Characteristics of the DSM-IV Screen

In this section, we examine the psychometric properties of the DSM-IV Screen among the Colorado respondents who ever gambled. These properties are important in assessing the accuracy of the two different methods used to identify problem and pathological gamblers in the general population. There are different kinds of error inherent in any set of data. While random error is addressed by using statistical techniques to reject the "null hypothesis" and to calculate the probability that a particular result is not due to random error, measurement error is more difficult to assess.

The accuracy of any instrument is measured by looking at the reliability and validity of the instrument (Litwin 1995). The ***reliability*** of an instrument refers to the ability to reproduce the results of the application of the test. The ***validity*** of an instrument refers to the ability of the instrument to measure what it is intended to measure. In examining the psychometric properties of the DSM-IV Screen, we assess its reliability by examining the internal consistency of the screen and then analyze the individual items to determine the ability of the screen to discriminate effectively between non-problem and problem gamblers. We then examine several forms of validity for the DSM-IV Screen.

Reliability

The most widely accepted test of reliability is a measure of the internal consistency of an instrument. The reliability of the DSM-IV Screen in the Colorado sample of gamblers is marginal with Cronbach's alpha at .65, just under the .70 that is generally accepted as representing good reliability.

In addition to testing the internal consistency of the DSM-IV Screen, we carried out a factor analysis of the screen to assess how the individual items cluster together. Factor analysis shows that 32% of the variance for the DSM-IV Screen was accounted for by one factor in Colorado, Preoccupation. Other factors with eigenvalues over 1.0 were Tolerance which accounted for an additional 14% of the variance and Withdrawal which accounted for an additional 10% of the variance. These findings suggest that the scale is homogeneous and measures the desired behavior although its reliability among the Colorado respondents is not as high as in the Oregon survey.

Item Analysis

Endorsement of DSM-IV Screen items among Colorado gamblers ranged from a high of 19.0% (Preoccupation) to a low of 0.2% (Risked a Significant Relationship). It is instructive to compare positive responses to specific items by problem gamblers and non-problem gamblers to see how well the different items discriminate between these groups. For this analysis, we have used the SOGS classification of non-problem and problem gamblers in order to prevent confusion between the method of classifying respondents and the items by which they were classified. Since all of the DSM-IV Screen items are framed in the past year, the ***current*** problem and probable pathological gamblers in Colorado were used in this analysis.

Table 11: Comparing Non-Problem and Problem Gamblers on the DSM-IV Items

DSM-IV Items	Non-Problem Gamblers %	Problem Gamblers %	
	(N=1,605)	(N=46)	
Preoccupation	17.7	64.4	**
Tolerance	2.1	23.9	**
Withdrawal	1.2	21.7	**
Escape	2.7	30.4	**
Chasing	6.0	47.8	**
Lying	.5	19.6	**
Loss of Control	1.1	17.4	**
Illegal Acts	0.4	8.7	**
Risked Significant Relationship	0.1	4.3	**
Bailout	0.3	6.5	**
Mean DSM-IV Score	0.3	2.4	**

* Significant
** Highly significant

Table 11 shows that all of the DSM-IV Screen items discriminate effectively between SOGS-defined problem and non-problem gamblers in Colorado. The most effective discriminator among the DSM-IV Screen items was Preoccupation with 64% of the current problem and probable pathological gamblers scoring a positive response in contrast to only 18% of the non-problem gamblers. The next best discriminator was Chasing, with 48% of the problem and probable pathological gamblers scoring a positive response compared to 6% of the non-problem gamblers. ***Table 11*** also shows that there is a significant difference in the mean DSM-IV scores for non-problem and problem gamblers, supporting the notion that the DSM-IV Screen measures something similar to the SOGS.

Validity

There are several different types of validity that can be used to assess the performance of an instrument. These include content, criterion, congruent and construct validity. Content validity is a subjective measure of how appropriate the items seem to a set of reviewers who have some knowledge of the subject matter. The DSM-IV Screen has already been found to have good content validity by a variety of appropriate audiences including self-identified pathological gamblers as well as treatment professionals and survey researchers (Fisher 1996; Lesieur & Rosenthal 1991).

Criterion Validity: Criterion validity requires that the instrument be judged against some other method that is acknowledged as a "gold standard" for assessing the same variable. In the case of the DSM-IV Screen, we must use the SOGS as the "gold standard" since this is the primary method that has been used to identify problem and pathological gamblers since the late 1980s (Volberg & Banks 1990). As a first step, we calculated the correlation coefficient between the DSM-IV Screen and the current South Oaks Gambling Screen among Colorado respondents. The result of this analysis was statistically significantly at 56% (correlation coefficient = .560, p=.000).

To better understand how the SOGS and the DSM-IV Screen operate in relation to one another, it is useful to examine how respondents scored on each of these instruments in more detail. Overall, the prevalence of the less severe DSM-IV category (3 or 4 points) is 1.9% while the prevalence of the more severe DSM-IV category (5 or more points) is 0.5% among respondents

in Colorado who gambled. These figures compare to 2.0% and 0.8% for the current SOGS scores among respondents who gambled. ***Table 12*** shows the number of respondents who scored at different levels on the SOGS and the DSM-IV.

Table 12: Comparing Scores on the SOGS and the DSM-IV

	DSM-IV			
SOGS	0 - 2	3 - 4	5+	
0 - 2	1,580	24	1	1,605
3 - 4	27	4	2	33
5+	4	3	6	13
	1,611	31	9	1,651

Table 12 shows that the DSM-IV Screen operates quite well in relation to the SOGS. On the one hand, respondents who score low on the DSM-IV Screen also tend to score low on the SOGS. On the other hand, 89% of respondents who score high on the DSM-IV Screen (5 or more) score 3 or more points on the SOGS. However, as in New York and in contrast to Oregon, the SOGS does not appear to perform as well in relation to the DSM-IV Screen. While the majority of respondents who score as current probable pathological gamblers on the SOGS (69%) score 3 or more points on the DSM-IV Screen, only 46% of these respondents score at the highest level on the DSM-IV Screen. While this analysis demonstrates that the DSM-IV Screen and the SOGS have a strong relationship to one another, it is still unclear whether the strictest DSM-IV criteria represent the best cutoff for identifying pathological gamblers in the general population.

Congruent Validity: Since several of the items on the SOGS and DSM-IV Screen are similar, it is possible to check whether respondents answered similar questions differently in different places in the interview. ***Table 13*** shows how respondents who gambled answered several similar questions from the current SOGS and the DSM-IV Screen.

Table 13: Comparing Scores on Similar SOGS and DSM-IV Items

	SOGS or DSM-IV Item	% Positive
		(N=1,651)
CHASING	Go back another day to win money you lost (chasing) (SOGS)	1.3
	Often return another day to get even (chasing) (DSM)	7.1
LYING	Claimed to win when in fact lost (SOGS)	2.1
	Hidden evidence of gambling (SOGS)	1.2
	Lies to others to conceal extent of gambling (DSM)	1.0
TOLERANCE	Spend more time or money gambling than intended (SOGS)	13.3
	Need to gamble with increasing amounts to achieve desired excitement (DSM)	2.7
LOSS OF	Would like to stop gambling but couldn't (SOGS)	0.6
CONTROL	Made repeated unsuccessful efforts to control or stop gambling (DSM)	1.6

Table 13 shows that respondents in Colorado are less likely to give a positive answer to the DSM-IV questions than to the current SOGS items assessing Tolerance and more likely to give a positive answer to the DSM-IV questions than to the current SOGS items assessing Chasing and Loss of Control. Responses to items assessing Lying are similar for both screens. In the New

York survey, we speculated that some of these differences might be the result of an ordering effect (Volberg 1996). However, the same differences were noted in Oregon where the screens were rotated as in the Colorado survey (Volberg 1997b). A more likely explanation for these differences may be that they are the result of the specific wording of the items.

Construct Validity: In assessing the performance of a new instrument, it is helpful to examine differences between classified groups with respect to behaviors that are associated with problem gambling but are not included in the measurement scale. In gambling surveys, we can examine differences between DSM-IV-defined non-problem and pathological gamblers in their mean DSM-IV Screen scores as well as other measures related to gambling difficulties, including weekly gambling, time spent gambling per session, largest amount lost in a single day, total expenditures on gambling, parental gambling problems and age when gambling started.

There are significant differences in the mean scores of problem and non-problem gamblers, as defined by the DSM-IV Screen. The mean score of non-problem gamblers on the DSM-IV Screen is 0.3 compared to 3.4 for problem gamblers and 6.4 for severe problem gamblers in Colorado.

There are other behaviors that provide support for the construct validity of the DSM-IV Screen. For example, problem and severe problem gamblers in Colorado, as defined by the DSM-IV Screen, are significantly more likely than non-problem gamblers to have gambled on one or more activities in the past week, to have lost $100 or more in a single day, to have felt nervous about their gambling and to have desired help for a gambling problem. Further, problem and severe problem gamblers in Colorado, as defined by the DSM-IV Screen, acknowledge starting to gamble at a significantly younger age than non-problem gamblers.

Comparing the SOGS and DSM-IV Problem Gamblers

The prevalence of problem and severe problem gambling in Colorado, measured by the DSM-IV Screen, is nearly identical to the prevalence rates identified with the South Oaks Gambling Screen. While 1.7% of the total sample (N=1,810) scored 3 or 4 points on the DSM-IV Screen, 1.8% of the total sample scored 3 or 4 points on the current South Oaks Gambling Screen. While 0.5% of the total sample scored 5 or more points on the DSM-IV Screen, 0.7% of the total sample scored 5 or more points on the current South Oaks Gambling Screen. Adjustments to estimates of the number of individuals in Colorado with moderate to severe gambling difficulties, based on use of the DSM-IV Screen rather than the South Oaks Gambling Screen, would be quite small.

Table14 on the following page compares the demographic characteristics of problem and severe problem gamblers as defined by the DSM-IV Screen with problem and pathological gamblers as defined by the SOGS. Since both the SOGS and the DSM-IV groups are small, and since the majority of the DSM-IV group is part of the SOGS problem group as well, we made no effort to test the differences for statistical significance. ***Table 14*** does show that problem gamblers, as defined by the DSM-IV, are more likely than problem gamblers as defined by the SOGS, to be male, under the age of 30 and divorced, separated or never married. Problem gamblers defined by the DSM-IV are less likely than problem gamblers defined by the SOGS to have graduated high school and more likely to be unemployed.

Table 14: Comparing Demographics of SOGS and DSM Problem Gamblers

		SOGS Problem Gamblers %	DSM-IV Problem Gamblers %
		(N=46)	(N=40)
Gender			
	Male	56.5	67.5
	Female	43.5	32.5
Age			
	18 - 20	10.9	17.5
	21 - 29	32.6	35.0
	30 - 54	50.0	40.0
	55 and over	6.5	7.5
Ethnicity			
	White	81.4	83.8
	Black	2.3	---
	Hispanic	14.0	16.2
	Other	2.3	---
Marital Status			
	Married	43.5	32.5
	Widowed	4.3	5.0
	Divorced/Separated	21.7	25.0
	Never Married	30.4	37.5
Education			
	Less than HS	13.0	17.9
	HS Graduate	43.5	43.6
	Some College	43.5	38.5
Employment			
	Working	77.8	73.7
	Unemployed	2.2	5.3
	Other	20.0	21.1
Income			
	Less than $25,000	24.4	29.4
	$25,000 to $50,000	46.3	47.1
	$50,000 to $100,000	22.0	11.8
	$100,000 or More	7.3	11.8

Summary

Comparison of the South Oaks Gambling Screen and the DSM-IV Screen in the Colorado survey shows that the two screens are highly consistent and appear to be measuring the same phenomenon. The DSM-IV Screen is slightly more strict than the South Oaks Gambling Screen in classifying individuals as problem or pathological gamblers. As in New York and Oregon, psychometric analysis of the results of the Colorado survey suggests that the cutoff point for the DSM-IV Screen (5+ = pathological) may be too severe. Separate identification of the group of individuals who score three or four points on the DSM-IV Screen, as recommended by Lesieur and Rosenthal (1991), would allow the screen to capture individuals whose pathology is well-developed but perhaps not yet extreme.

Use of the DSM-IV Screen in the Colorado survey provided a valuable opportunity to improve our understanding of the DSM-IV Screen in relation to the South Oaks Gambling Screen. In addition, use of this screen provides a basis for comparison in future surveys of gambling and problem

gambling in Colorado if the DSM-IV Screen, or any other instrument based on the DSM-IV criteria, becomes the instrument of choice for identifying problem and pathological gamblers in the general population.

In the future, it will be important to compare the SOGS and the DSM-IV in problem gambling treatment programs where clinical assessments can be used to triangulate the results of these measurement tools and to determine the best cutoff points for classifying individuals as problem and pathological gamblers.

SUMMARY AND CONCLUSION

The main purpose of this study was to establish a baseline measure of the prevalence of gambling (both legal and illegal) and gambling-related problems among the adult population in Colorado. An additional purpose of this study was to identify the types of gambling causing the greatest difficulties for the citizens of Colorado. The results of this study will be useful in documenting the impact of legal and illegal gambling on the citizens of the State of Colorado. The results will also be valuable in formulating statewide policy with regard to gambling in Colorado.

The results of this study show that significant numbers of Colorado residents participate in legal gambling, that these activities are widely accepted, and that most residents spend small to moderate amounts on gambling. However, the study also shows that there is a small number of Colorado residents who are currently experiencing severe difficulties related to their gambling involvement. With annual revenues from legal gambling in excess of $100 million, the State of Colorado may wish to consider implementing some efforts to minimize the negative impacts caused by legal and illegal gambling.

Summary

In 1997, nine out of ten respondents in Colorado acknowledge participating in one or more types of gambling at some time in their lives. Lifetime gambling participation in Colorado is highest for the lottery, non-Colorado casinos, Colorado casinos and sports pools. As in other jurisdictions, young men with relatively high income are the respondents most likely to have ever gambled.

In Colorado, 4.4% of the respondents scored as lifetime problem gamblers and an additional 1.8% of the respondents scored as lifetime probable pathological gamblers. In contrast, 1.8% of the respondents scored as current problem gamblers while 0.7% of the respondents scored as current probable pathological gamblers. Overall, the lifetime prevalence of problem and pathological gambling in Colorado is 6.2% while the current prevalence rate in Colorado is 2.5%. The lifetime prevalence rate in Colorado is higher than in other Western states while the current prevalence rate is lower than in many other states.

Lifetime problem gamblers in Colorado are significantly more likely than other respondents to be male, under the age of 30 and unmarried. In contrast to lifetime problem gamblers, current problem gamblers are just as likely to be women as men. Problem gamblers in Colorado are most likely to gamble weekly on the lottery, at Colorado casinos and on bingo or pulltabs. Problem gamblers are more likely than non-problem gamblers to spend six or more hours gambling in a typical session and to have lost $100 or more in a single day.

Use of the DSM-IV Screen in the Colorado survey provided a valuable opportunity to improve our understanding of the DSM-IV Screen in relation to the South Oaks Gambling Screen. Comparison of these two screens shows that they are highly consistent. Our analysis suggests that the cutoff point for the DSM-IV Screen may be too severe and that using a separate classification for individuals who score three or four points on the DSM-IV Screen would allow the screen to capture individuals whose pathology is well-developed but perhaps not yet extreme.

Directions for the Future

The costs of gambling problems can be high, not only for individuals but for families and communities. Pathological gamblers experience physical and psychological stress and exhibit substantial rates of depression, alcohol and drug dependence and suicidal ideation. The families of pathological gamblers experience physical and psychological abuse as well as harassment and

threats from bill collectors and creditors. Other significant impacts include costs to employers, creditors, insurance companies, social service agencies and the civil and criminal justice systems.

The first step usually taken by governments in response to an emerging social problem is to determine the number of individuals who may be in need of assistance as a result of a specific government policy or activity. The next step is to develop a range of services for affected individuals and their families. In the wake of widespread gambling legalization in the 1980s and 1990s, governments have moved forward in implementing measures to educate the public as well as treatment professionals and gaming operators about problem gambling.

What Have Other States Done?

As of 1996, twenty-one states had initiated and/or funded programs for problem gambling and the level of funding authorized by these state governments for problem gambling programs had reached $13 million. Programs funded by state governments are primarily for prevention and awareness activities, helplines, public education, training and research. Only a few states provide direct funding for assessment, referrals and treatment.

Generally, treatment is limited to outpatient services for problem gamblers and not family members, although mental health professionals emphasize the importance of including family members in treatment. When treatment is authorized, for either problem gamblers or family members, the funding system has traditionally been reimbursement contracts for outpatient treatment. Funding for both prevention and treatment programs generally comes from a dedicated portion of lottery, parimutuel or casino revenue. Some states fund programs as a line item in their general appropriation act or divert funding by executive order or statute from existing gaming-related agencies.

Problem gambling service delivery systems vary from state to state. The most common approach is for a state agency, most often an office of substance abuse within a department of mental health, to make grants to or manage contracts with one or more private agencies with experience in delivering services to alcohol and drug abusers. Another approach is for the state agency to provide services directly through its existing service delivery network.

Nearly all of the problem gambling programs established in the United States are relatively new. While the state of Maryland established the first publicly-funded inpatient treatment program almost twenty years ago (it later discontinued this funding), most programs have only developed in the last ten years. As yet, there is limited research on the effectiveness of state-funded problem gambling programs. This is because most of these programs have not been in operation long enough for performance reviews and outcome studies to measure program effectiveness and because the measures used to assess these programs are not well-developed. However, some states, such as Minnesota and Oregon, have started the evaluation process.

How Many To Plan For?

The State of Colorado has taken the first step in addressing the issue of problem gambling by funding the prevalence study reported here. One important purpose of a prevalence survey is to identify the number of individuals in a jurisdiction who may need treatment services for gambling-related difficulties. Experience in many jurisdictions suggests that not all of the individuals in need of treatment for a physical or psychological problem will seek out such treatment. From a policy perspective, the question is: How many individuals should we plan to provide for?

Recently, researchers in Australia have successfully used an approach adopted from the alcoholism treatment field to predict the proportion of individuals in need of problem gambling treatment services who would access such services. Research suggesting that approximately 3% of individuals with severe alcohol-related difficulties actually seek treatment was replicated in

predicting the number of problem gamblers who would seek treatment in two Australian states (Dickerson 1997).

In calculating the number of problem and pathological gamblers who might seek treatment in Colorado, we focus on the group of individuals who score as current probable pathological gamblers (e.g. the 7,800 individuals represented by the lower end of the confidence interval for current probable pathological gambling in Colorado). Based on this approach, we estimate that the State of Colorado should plan to provide problem gambling treatment services to approximately 250 individuals per year.

In making decisions about implementing services for problem gamblers and their families in Colorado, policy-makers may wish to give consideration to developing the following services and activities:

- ***development*** of public education and prevention services targeted toward at-risk groups in the population, including young men, women problem gamblers and toward specific types of gambling in the state, in particular casinos and bingo halls;

- ***helpline*** to provide Colorado residents with information about problem gambling as well as referrals to appropriate agencies for gambling-related difficulties;

- ***training opportunities*** to educate mental health and substance abuse treatment professionals in how to screen for gambling problems and pathology as well as when and where to refer such individuals for appropriate treatment;

- ***treatment services*** for problem gamblers offered through existing mental health and substance abuse outpatient programs throughout the state;

- ***evaluation*** of program services that are established, based on uniform data collected from existing providers and the helpline; and

- ***monitoring*** of gambling and problem gambling prevalence to assess the impacts of the introduction of new types of legal gambling on the residents of Colorado and to assess the effectiveness of prevention and treatment services.

This report represents the first opportunity to assess rates of gambling and problem gambling in Colorado. The data from this survey provide insights that will be valuable in on-going policy and planning efforts in the state. In the future, it will be important for everyone involved with legal gambling in Colorado to work together to develop ways to help the citizens of Colorado who experience difficulties related to their gambling and to prevent any future increases in the prevalence of problem gambling in the state.

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APPENDIX A

Methods to Assess Problem Gambling in the General Population

Introduction

Surveys of gambling and problem gambling in the general population have become an essential component in the establishment and monitoring of gaming initiatives in Australia, Canada, Europe and the United States (Volberg & Dickerson 1996). Information from such surveys helps identify and minimize the potentially harmful impacts that legal gambling may produce. This proactive approach thus helps ensure that appropriate measures are taken to educate the public about problem gambling and that appropriate levels and types of services for individuals with gambling-related difficulties are funded, developed and maintained.

A variety of methodological questions have been raised in recent years about research on gambling and problem gambling in the general population (Dickerson 1993; Lesieur 1994; Walker 1992). Questions about surveys of gambling and problem gambling in the general population raised by Lesieur (1994) and Walker (1992) are issues common to all social science and survey research. Every researcher who uses survey methods must be concerned with respondent denial and with rising refusal rates in telephone surveys. As Lesieur points out, however, "the flaws in the telephone interviewing process would lead us to believe that the rates found in these epidemiological surveys seriously ***underestimate*** the extent of the problem" (1994: 392; emphasis in original).

The concerns raised about survey research in the general population are best addressed through careful attention to good survey design, including the use of appropriate sampling frames and well-designed questionnaires, as well as an emphasis on adequate interviewer training. Alternative or supplementary research methods can also be valuable as our experience conducting field interviews in Alberta and New Zealand as well as frequent player surveys such as a recent study of heavy bingo players in British Columbia demonstrate (Abbott & Volberg 1996; Wynne, Smith & Volberg 1994; Volberg 1995a)

Issues related to the substantive topic of gambling and problem gambling include questions about the validity and reliability of the widely-used South Oaks Gambling Screen as well as challenges to assumptions about the nature of gambling and problem gambling built into the original version of this instrument (Culleton 1989; Dickerson 1993; Volberg 1994a). A particular concern of these researchers is the rate of false positive classification errors generated by the South Oaks Gambling Screen. In response to questions about these assumptions, work to improve the South Oaks Gambling Screen and to extend our understanding of how well the South Oaks Gambling Screen operates in general population surveys was carried out in New Zealand in the early 1990s and in Minnesota in the mid-1990s.

Development of the South Oaks Gambling Screen

Only one survey of gambling and gambling-related difficulties in the general population was conducted in the United States prior to 1980 (Kallick, Suits, Dielman & Hybels 1979). Between 1980 and 1991, state-wide surveys of gambling and problem gambling were carried out in California, Connecticut, Iowa, Maryland, Massachusetts, Minnesota, New Jersey, New York and Ohio (Christiansen/Cummings Associates 1992; Culleton 1985; Laundergan, Schaefer, Eckhoff & Pirie 1990; Volberg 1994c; Volberg & Steadman 1988) as well as in the Canadian province of Quebec (Ladouceur 1993).

Since 1991, baseline prevalence surveys of gambling and problem gambling have been completed in Colorado, Georgia, Louisiana, Michigan, Mississippi, Montana, New Mexico, North Dakota, Oregon, Puerto Rico, South Dakota, Texas, Washington State and Wisconsin (Gullickson & Hartmann 1997; New Mexico Department of Health 1996; Thompson, Gazel & Rickman 1996; Volberg 1992, 1993, 1995a, 1995c, 1997a, 1997b; Volberg & Silver 1993; Volberg & Stuefen 1991; Volberg & Vales 1997; Wallisch 1993) as well as in the Canadian provinces of Alberta, British

Columbia, Manitoba, New Brunswick, Nova Scotia, Ontario and Saskatchewan (Angus Reid Group & Gemini Research 1994; Baseline Market Research 1992; Criterion Research 1993; Insight Canada Research 1993; Omnifacts Research 1993; Volberg 1994b; Wynne, Smith & Volberg 1994;). A national prevalence survey of gambling and problem gambling was carried out in New Zealand (Abbott & Volberg 1991, 1992, 1996) and surveys have also been conducted in Australia (Dickerson, Baron, Hong & Cottrell 1996) and in several Spanish provinces (Becoña 1996).

A growing number of replication surveys of gambling and problem gambling have been conducted since 1993. There have now been nine replication studies completed in North America, including surveys in Iowa, Minnesota, New York, South Dakota and Texas in the United States (Emerson & Laundergan 1996; Volberg 1995b, 1996; Volberg & Stuefen 1994; Wallisch 1996) as well as in British Columbia, Manitoba, New Brunswick and Quebec in Canada (Angus Reid Group 1996; Baseline Market Research 1996a; Criterion Research 1995; Jacques, Ladouceur, Ferland & Giroux 1997). A survey completed in Nova Scotia in 1996 is not truly a replication survey since the method used to identify problem gamblers in the baseline survey in 1993 was not repeated (Baseline Market Research 1996b). There is presently a replication survey underway in Alberta although the results are not yet available.

While the majority of prevalence surveys carried out in North America have been based on the South Oaks Gambling Screen (Lesieur & Blume 1987), there are several exceptions. Surveys in New Mexico, Ohio and Wisconsin used entirely new and untested screens for problem gambling that have never been experimentally validated (Culleton 1989; New Mexico Department of Health 1996; Thompson, Gazel & Rickman 1996). In Minnesota, Nova Scotia and Ontario, researchers made untested modifications to the original South Oaks Gambling Screen. In Minnesota, the researchers altered all of the items to assess behaviors only in the past year (Laundergan, Schaefer, Eckhoff & Pirie 1990). In Nova Scotia and Ontario, the researchers made changes to individual items as well as to the scoring method (Insight Canada Research 1993; Omnifacts Research 1993). These changes to the SOGS have made it difficult to directly compare the results of these surveys with other SOGS-based surveys (Laundergan 1992).

The South Oaks Gambling Screen is a 20-item scale based on the diagnostic criteria for pathological gambling (American Psychiatric Association 1980). Weighted items on the South Oaks Gambling Screen include hiding evidence of gambling, spending more time or money gambling than intended, arguing with family members over gambling and borrowing money to gamble or to pay gambling debts. In developing the South Oaks Gambling Screen, 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; Lesieur, Blume & Zoppa 1986; Lesieur & Klein 1985).

Surveys of gambling and problem gambling directed by Volberg and her associates since 1991 have used a revised version of the South Oaks Gambling Screen developed in New Zealand (Abbott & Volberg 1991). In revising the South Oaks Gambling Screen, the preliminary unweighted section of the questionnaire was expanded to collect more detailed information about gambling frequency and expenditures in the general population. In addition, the weighted items of the screen were expanded to assess both lifetime and current prevalence of problem and pathological gambling. To determine if these changes to the South Oaks Gambling Screen had any impact on reported prevalence rates, the revised South Oaks Gambling Screen was tested in Iowa in 1991. The difference in the prevalence rates for these two questionnaires was 0.1% (Volberg & Stuefen 1991).

The Accuracy of SOGS-Based Prevalence Rates

The South Oaks Gambling Screen was originally developed for use as a clinical screen and was adapted slightly in 1986 for use in general population surveys (Volberg & Steadman 1988). Like all screens to detect physical and psychological maladies, the South Oaks Gambling Screen is expected to make errors in classification although misclassification has very different consequences in clinical settings than in research in the general population.

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*** (see table below).

Classification	**Condition**	
	Pathological	**Non-Pathological**
Pathological	True Positive	False Positive
Non-Pathological	False Negative	True Negative

Determining the size of each type of classification error and correcting for these errors is the key to establishing more accurate prevalence estimates. The importance of both classification errors must be emphasized since each has an independent impact on the overall accuracy of any instrument. The rate of false negatives is of particular concern in population-based research because of the much larger size of the group of non-pathologicals (both true and false). Even a relatively low rate of false negatives can have a large impact on the overall efficiency of an instrument, that is, the total proportion of individuals who are correctly identified as pathological or non-pathological.

Let us take as an example a group of 1,000 individuals of whom 5% are classified as pathological and 95% are classified as non-pathological. Let us assume that the rate of false positives is 10% so that 5 of the 50 pathological gamblers are misclassified.[7] If the rate of false negatives were also 10%, then 95 of the 950 non-pathological gamblers would be misclassified. Even if the rate of false negatives were much lower, say at 1%, 10 of the 950 non-pathological gamblers would be misclassified. Thus, even a very low rate of false negatives will generate a group that is twice as large as the group of false positives (see table below).

[7] In fact, the known sensitivity of the lifetime South Oaks Gambling Screen in clinical settings (that is, the rate at which the instrument accurately identifies pathological gamblers or true positives) is extremely high at .967 (Lesieur & Blume 1987).

	Pathological	Non-Pathological	Total
Pathological	45	5	50
Non-Pathological	10	940	950
Total	55	945	1,000

Validating the SOGS in New Zealand

Research in New Zealand used both the positive predictive value and efficiency approaches in efforts to correct lifetime and current prevalence rates of pathological gambling (Abbott & Volberg 1992, 1996). The positive predictive value approach is based on existing information about the sensitivity and specificity of an instrument.[8] While the lifetime South Oaks Gambling Screen is known to have high sensitivity, the specificity of the screen has differed across different groups in the population (Lesieur & Blume 1987). Sensitivity and specificity have never been determined for the current South Oaks Gambling Screen.

While the New Zealand researchers were able to correct the lifetime prevalence rate for false positives, it proved difficult to make the correction for false negatives. The researchers concluded that until more is known about the rate at which the lifetime South Oaks Gambling Screen misclassifies pathological gamblers as non-pathological, the usefulness of the positive predictive value approach in revising lifetime prevalence estimates was limited.

The efficiency approach was possible in New Zealand because a two-phase research design was used to identify ***true pathological gamblers*** among particular groups of respondents (Abbott & Volberg 1992). In the New Zealand study, true pathological gamblers were identified in each of four groups included in the survey: (1) probable pathological gamblers, (2) problem gamblers, (3) continuous gamblers and (4) non-continuous gamblers. No error rate was determined for respondents in the New Zealand study who did not acknowledge gambling on a regular basis. The efficiency approach 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% higher than the uncorrected current prevalence rate.

This revised estimate rested on the conservative assumption that there are no false negatives among individuals who do not gamble regularly. While the error rates in each of the four 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 in the non-pathological group or 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 non-gambling group is assumed to include a very small number of pathological gamblers (1%), the prevalence estimate increases by 0.7%.

[8] Sensitivity is a measure of the capacity of an instrument to accurately detect the presence of a particular condition (true and false positives). Specificity is a measure of the rate at which an instrument detects true and false negatives.

The New Zealand researchers concluded that the lifetime South Oaks Gambling Screen is very good at detecting pathological gambling among those who currently experience the disorder. However, as expected, the screen identifies at-risk individuals at the expense of generating a substantial number of false positives. The current South Oaks Gambling Screen produces fewer false positives than the lifetime measure but more false negatives and thus provides a weaker screen for identifying pathological gamblers in the clinical sense. However, the greater efficiency of the current South Oaks Gambling Screen makes it a more useful tool for detecting rates of change in the prevalence of problem and pathological gambling over time (Abbott & Volberg 1996).

Although there are questions about the validity of applying results from research in New Zealand to studies in the United States, the New Zealand research does suggest that estimates of the lifetime prevalence of problem and probable pathological gambling over-state the actual prevalence of pathological gambling. However, since the lifetime South Oaks Gambling Screen does a good job of identifying pathological gamblers in the general population, information about the characteristics of these respondents is valuable in planning the implementation and development of services for pathological gamblers in the community.

The New Zealand research further suggests that estimates of the current prevalence of problem and probable pathological gambling are quite accurate. In conducting replications of surveys of gambling and problem gambling in the future, it will be essential to collect information on current prevalence so that the magnitude of changes in the prevalence of gambling-related difficulties can be accurately assessed.

Validating the SOGS in Minnesota

A recent study in Minnesota supports the New Zealand work on the performance of the SOGS (Stinchfield 1997). In the Minnesota research, the SOGS and the DSM-IV diagnostic items (rather than the DSM-IV Screen) were administered to three samples, including a general population sample, a sample of callers to a gambling hotline and a sample of individuals entering treatment for a gambling problem.

As in New Zealand, Stinchfield found that the accuracy of the SOGS was high among individuals who called a gambling hotline or were entering treatment but that the instrument did not perform as well in the general population. While Stinchfield concludes that the SOGS has satisfactory reliability and validity in all three samples, he argues that the DSM-IV diagnostic criteria are most useful if the goal of a study is to estimate the prevalence of pathological gambling in the general population while the SOGS is well-suited for identifying individuals at risk for developing a gambling pathology.

Stinchfield's work supports our view that the South Oaks Gambling Screen is a useful tool for measuring problem and pathological gambling in clinical and population research. His work further supports our belief that, as new tools emerge for identifying problem and pathological gamblers, work is needed to understand the their performance in relation to the existing "gold standard" represented by the South Oaks Gambling Screen (Volberg & Banks 1990).

Assessing Problem Gambling in the Future

To enable the field of gambling research to move forward in an evolutionary way, it is essential that the performance of any new screen be assessed in relation to existing measures. With the large body of research that already exists on problem gambling in the general population, it makes little sense to switch in midstream to another tool whose results cannot be used to adjust the results of earlier work.

The greatest advantage to using the South Oaks Gambling Screen in population-based research of problem gambling prevalence is the comparability across jurisdictions that comes with this tool. There are several limitations to the use of the South Oaks Gambling Screen in problem gambling research. These include the lack of validation research on the South Oaks Gambling Screen in the United States as well as the fact that this tool is not particularly useful in theoretically-driven research on the psychology of problem and pathological gambling.

There are alternative approaches now emerging to investigate problem gambling. Some of these approaches spring from the perspective of testing theories about the psychology of gambling. Other approaches issue from the more descriptive work represented by prevalence research. The Scale of Gambling Choices, now under development in Australia, represents a more theoretically driven approach to understanding how individuals come to experience difficulties related to their gambling involvement from a socio-cognitive perspective (Baron, Dickerson & Blaszczynski 1995). On the descriptive side, it is likely that secondary analyses of data from existing surveys will yield new information to assess the risks of developing gambling difficulties based on relationships between frequent gambling, high gambling expenditures and gambling-related difficulties as measured by the SOGS. Finally, the DSM-IV Screen, used in tandem with the SOGS, will probably yield new information about the importance of assessing "cases" of pathological gambling *versus* assessing risk factors associated with the development of gambling difficulties in the population.

Like much of science, measurement is a negotiable 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 for classifying problem gamblers must change. The South Oaks Gambling Screen represents a culturally and historically situated consensus about the nature of problem gambling. 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 all 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 our past work as well as our work in the future.

APPENDIX B

Questionnaire for the Colorado Survey

Talmey-Drake Research & Strategy
Project 97061 badgamb.QNR

Colorado Gambling and Problem Gambling Questionnaire

Hello, my name is _____, and I'm with Talmey-Drake Research. We're a public opinion and market research firm calling from Boulder, Colorado. First, I want to assure you that we're not selling anything; we're conducting a survey of people in your community for the State of Colorado concerning the gambling practices of Colorado Citizens.

Your household is one of 1,800 being surveyed throughout the state. Your number was randomly selected by a computer and I do not know your name. All of your answers will be kept strictly confidential and will only be used when combined with those from all the other people in the survey for reporting purposes. If I come to a question that you would prefer not to answer, please just say so, and I will move on to the next question.

SCREENER

A. In order to interview the right person, I need to speak with the member of your household who is aged 18 or over and has had the most recent birthday. Would that be you?

Yes	1 ⇒ *Go to B*
No	2 ⇒ *Arrange callback if possible*

C. Because your phone number was randomly selected by a computer, would you please tell us what county you live in?

Adams 01	Dolores 17	Lake 33	Pitkin 49
Alamosa 02	Douglas 18	La Plata 34	Prowers 50
Arapahoe 03	Eagle 19	Larimer 35	Pueblo 51
Archuleta 04	Elbert 20	Las Animas 36	Rio Blanco 52
Baca 05	El Paso 21	Lincoln 37	Rio Grande 53
Bent 06	Fremont 22	Logan 38	Routt 54
Boulder 07	Garfield 23	Mesa 39	Saguache 55
Chaffee 08	Gilpin 24	Mineral 40	San Juan 56
Cheyenne 09	Grand 25	Moffat 41	San Miguel 57
Clear Creek 10	Gunnison 26	Montezuma 42	Sedgwick 58
Conejos 11	Hinsdale 27	Montrose 43	Summit 59
Costilla 12	Huerfano 28	Morgan 44	Teller 60
Crowley 13	Jackson 29	Otero 45	Washington 61
Custer 14	Jefferson 30	Ouray 46	Weld 62
Delta 15	Kiowa 31	Park 47	Yuma 63
Denver 16	Kit Carson 32	Phillips 48	DK/NS 64

C. Sex? *[Do not ask]*

Male	1
Female	2

SECTION 1: GAMBLING INVOLVEMENT

SKIP RULES: ASK ALL RESPONDENTS Q#1 (Lifetime Participation). IF RESPONDENT DOES NOT ACKNOWLEDGE ANY GAMBLING, SKIP TO SECTION 4, (Demographics).

IF RESPONDENT ACKNOWLEDGES ANY LIFETIME ACTIVITIES, ASK PAST YEAR, PAST 30 DAYS, PAST 30 DAYS EXPENDITURES, PAST 7 DAYS, PAST 7 DAY EXPENDITURES FOR EACH TYPE OF GAMBLING ACKNOWLEDGED.

IF RESPONDENT ACKNOWLEDGES ANY LIFETIME ACTIVITIES, ASK SECTION 2 (South Oaks Gambling Screen) AND SECTION 3 (DSM-IV Items).

1. People bet on many different things such as raffles, football games and card games. I am going to ask you about some activities such as these that you may participate in. *[IF PERSON NEVER GAMBLES, DOESN'T BELIEVE IN IT, ETC. SAY: We understand that not everyone gambles, but your opinions are still very important to us.]*

Have you ever bet or spent money:

		Yes	No	DK/NS	Refused
a.	on the lottery	1	2	3	4
b.	at a casino in the State of Colorado	1	2	3	4
c.	at a casino outside the State of Colorado	1	2	3	4
d.	on bingo or pulltabs	1	2	3	4
e.	on card games for money not at a casino	1	2	3	4
f.	on horse races or dog races (at the track or at an OTB)	1	2	3	4
g.	on slot machines, poker machines or other gambling machines not at a casino	1	2	3	4
h.	on games of skill other than card games for money, such as bowling, pool or golf	1	2	3	4
i.	on dice games not at a casino	1	2	3	4
j.	on sports with friends or in an office pool	1	2	3	4
k.	on sports or other events with a bookmaker	1	2	3	4
l.	on telephone or computer wagering, including the Internet or the Worldwide Web	1	2	3	4
m.	on any other type of illegal gaming such as cockfights, dogfights or the numbers	1	2	3	4

2. *[Ask if Q1a is "yes"]* Have you bet or spent money on lottery games in the past year?

Yes	1 ⇒ *Ask Q3*
No	2 ⇒ *Go to Q8*
DK/NS	3 ⇒ *Go to Q8*

Refused..... 4 ⇒ *Go to Q8*

3. *[If Q2 is "yes"]* When you play the lottery, which game do you prefer? *[READ LIST]*

Scratch tickets	1
Lotto	2
Keno	3
Cash Five	4
Other [*Specify*]_____	5
None	6
Refused	7

4. *[If yes]* How many times have you spent money on lottery games in the last 30 days?

   Times: _____

5. *[Ask if played in last 30 days]* Can you give me an idea of the amount that you spent on lottery games in the last 30 days? [*IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

   Dollars: _____

6. How many times have you spent money on lottery games in the last 7 days?

   Times: _____

7. *[Ask if played in last 7 days]* Can you give me an idea of the amount that you spent on lottery games in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

   Dollars: _____

8. *[Ask if Q1b= 1]* Have you bet or spent money **at a casino in the State of Colorado** in the past year?

Yes	1 ⇒ *Ask Q9*
No	2 ⇒ *Go to Q15*
DK/NS	3 ⇒ *Go to Q15*
Refused	4 ⇒ *Go to Q15*

9. *[If Q8 = 'yes']* How many times have you bet or spent money at a casino in Colorado in the last 30 days?

   Times: _____

10. *[If played last 30 days]* If you have been to a casino in Colorado in the last 30 days, where did you go? *[Multiple response okay]*

Cripple Creek	1
Black Hawk/Central City	2
Southwest Colorado Indian casinos	3

11. *[If Q8 = 'yes']* When you bet at a casino in Colorado, what is the game that you prefer?

Poker	1
Blackjack	2
Video games, such as video poker or video blackjack	3
Slot machines	4
DK/NS	5
Refused	6

12. *[If played last 30 days]* Can you give me an idea of the amount that you spent on casino gambling in Colorado in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

13. *[If played last 30 days]* How many times have you spent money at a casino in Colorado in the last 7 days?

Times: _____

14. *[If played last 7 days]* Can you give me an idea of the amount that you spent on casino gambling in Colorado in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

15. *[Ask if Q1c= 1]* Have you bet or spent money at a casino outside the State of Colorado in the past year?

Yes	1	⇒ *Ask Q16*
No	2	⇒ *Go to Q22*
DK/NS	3	⇒ *Go to Q22*
Refused	4	⇒ *Go to Q22*

16. *[If Q15 is 'yes']* How many times have you bet or spent money at a casino outside of Colorado in the past year?

Times: _____

17. *[If Q15 is 'yes']* If you have been to a casino outside Colorado in the past year, where did you go? *[Multiple response okay]*

Las Vegas	1
Other Nevada casinos	2
Deadwood, SD	3
Indian casinos	4
Riverboat casinos	5
Other	6
Refused	7

18. *[If yes]* When you bet at a casino outside Colorado, what is the game that you prefer?

Card games	1
Dice games	2
Video games	3
Slot machines	4
Other	5
DK/NS	6
Refused	7

19. Can you give me an idea of the amount that you spent on casino gambling outside Colorado in the past year? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

20. How many times have you spent money at a casino outside Colorado in the last 30 days?

Times: _____

21. *[Ask only if spent money in last 30 days]* Can you give me an idea of the amount that you spent on casino gambling outside Colorado in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

22. *[Ask if Q1d=1]* Have you bet or spent money on **bingo or pulltabs** in the past year?

Yes	1 ⇒ *Ask Q23*
No	2 ⇒ *Go to Q27*
DK/NS	3 ⇒ *Go to Q27*
Refused	4 ⇒ *Go to Q27*

23. *[If yes]* How many times have you bet or spent money on bingo or pulltabs in the last 30 days?

Times: _____

24. *[If played last 30 days]* Can you give me an idea of the amount that you spent on bingo or pulltabs in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

25. How many times have you bet or spent money on bingo or pulltabs in the last 7 days?

Times: _____

26. *[If played last 7 days]* Can you give me an idea of the amount that you spent on bingo or pulltabs in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

27. Have you played **card games for money not at a casino** in the past year?

Yes	1 ⇒ *Ask Q28*
No	2 ⇒ *Go to Q32*
DK/NS	3 ⇒ *Go to Q32*
Refused	4 ⇒ *Go to Q32*

28. *[If yes]* How many times did you bet or spend money on card games for money not at a casino in the last 30 days?

    Times: _____

29. *[If played last 30 days]* Can you give me an idea of the amount that you spent playing card games for money not at a casino in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

30. How many times did you play card games for money not at a casino in the last 7 days?

    Times: _____

31. *[If played last 7 days]* Can you give me an idea of the amount that you spent playing card games for money not at a casino in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

32. *[Ask if Q1f=1]* Have you bet or spent money on **horse races or dog races (at the track or at an OTB)** in the past year?

Yes	1 ⇒ *Ask Q33*
No	2 ⇒ *Go to Q37*
DK/NS	3 ⇒ *Go to Q37*
Refused	4 ⇒ *Go to Q37*

33. *[If yes]* How many times did you bet or spend money on horse races or dog races in the last 30 days?

    Times: _____

34. *[If played last 30 days]* Can you give me an idea of the amount that you spent on horse races or dog races in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

35. How many times did you spend money on horse races or dog races in the last 7 days?

Times: _____

36. *[If played last 7 days]* Can you give me an idea of the amount that you spent on horse races or dog races in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

37. Have you bet or spent money on **slot machines, poker machines or other gambling machines not at a casino** in the past year?

Yes	1 ⇒ *Ask Q38*
No	2 ⇒ *Go to Q42*
DK/NS	3 ⇒ *Go to Q42*
Refused	4 ⇒ *Go to Q42*

38. *[If yes]* How many times have you bet or spent money on slot machines, poker machines or other gambling machines not at a casino in the last 30 days?

Times: _____

39. *[If played last 30 days]* Can you give me an idea of the amount that you spent on slot machines, poker machines or other gambling machines not at a casino in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

40. How many times did you bet or spend money on slot machines, poker machines or other gambling machines not at a casino in the last 7 days?

Times: _____

41. *[If played last 7 days]* Can you give me an idea of the amount that you spent on slot machines, poker machines or other gambling machines not at a casino in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

42. *[Ask if Q1h=1]* Have you **bet or spent money on games of skill other than card games for money, such as bowling, pool, or golf** in the past year?

Yes	1 ⇒ *Ask Q43*
No	2 ⇒ *Go to Q47*
DK/NS	3 ⇒ *Go to Q47*
Refused	4 ⇒ *Go to Q47*

43. *[If yes]* How many times did you bet or spend money on games of skill other than card games for money in the last 30 days?

Times: _____

44. *[If played last 30 days]* Can you give me an idea of the amount that you spent on games of skill other than card games for money in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

45. How many times did you bet or spend money on games of skill other than card games for money in the last 7 days?

    Times: _____

46. *[If played last 7 days]* Can you give me an idea of the amount that you spent on games of skill other than card games for money in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

47. *[Ask if Q1i=1]* Have you bet or spent money playing **dice games not at a casino** in the past year?

Yes	1 ⇒ *Ask Q48*
No	2 ⇒ *Go to Q52*
DK/NS	3 ⇒ *Go to Q52*
Refused	4 ⇒ *Go to Q52*

48. *[If yes]* How many times did you bet or spend money on dice games not at a casino in the last 30 days?

    Times: ____

49. *[If played last 30 days]* Can you give me an idea of the amount that you spent playing dice games not at a casino in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

50. How many times did you bet or spend money playing dice games not at a casino in the last 7 days?

    Times: _____

51. *[If played last 7 days]* Can you give me an idea of the amount that you spent playing dice games not at a casino in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

    Dollars: _____

52. *[Ask if Q1j=1]* Have you spent money betting on **sports with friends or in an office pool** in the past year?

Yes	1 ⇒ *Ask Q53*
No	2 ⇒ *Go to Q57*
DK/NS	3 ⇒ *Go to Q57*
Refused	4 ⇒ *Go to Q57*

53. *[If yes]* How many times did you bet or spend money on sports with friends or in an office pool in the last 30 days?

Times: _____

54. *[If played last 30 days]* Can you give me an idea of the amount that you spent betting on sports with friends or in an office pool in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

55. How many times did you bet or spend money on sports with friends or in an office pool in the last 7 days?

Times: _____

56. *[If played last 7 days]* Can you give me an idea of the amount that you spent betting on sports with friends or in an office pool in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

57. Have you spent money betting on **sports or other events with a bookmaker** in the past year?

Yes	1 ⇒ *Ask Q58*
No	2 ⇒ *Go to Q62*
DK/NS	3 ⇒ *Go to Q62*
Refused	4 ⇒ *Go to Q62*

58. *[If yes]* How many times did you spend money betting on sports or other events with a bookmaker in the last 30 days?

Times: _____

59. *[If played last 30 days]* Can you give me an idea of the amount that you spent betting on sports or other events with a bookmaker in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

60. How many times did you spend money betting on sports or other events with a bookmaker in the last 7 days?

Times: _____

61. *[If played last 7 days]* Can you give me an idea of the amount that you spent betting on sports or other events with a bookmaker in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

62. Have you bet or spent money on telephone or computer wagering, including the Internet or the Worldwide Web in the past year?

Yes	1 ⇒ *Ask Q63*
No	2 ⇒ *Go to Q67*
DK/NS	3 ⇒ *Go to Q67*
Refused	4 ⇒ *Go to Q67*

63. *[If yes]* How many times did you bet or spend money on telephone or computer wagering in the last 30 days?

Times: _____

64. *[If played last 30 days]* Can you give me an idea of the amount that you spent betting on telephone or computer wagering in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

65. How many times did you spend money betting on telephone or computer wagering in the last 7 days?

Times: _____

66. *[If played last 7 days]* Can you give me an idea of the amount that you spent betting on telephone or computer wagering in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

67. Have you bet or spent money on **any other type of illegal gambling such as cockfights, dogfights or the numbers** in the past year?

Yes	1 ⇒ *Ask Q68*
No	2 ⇒ *Go to Q72*
DK/NS	3 ⇒ *Go to Q72*
Refused	4 ⇒ *Go to Q72*

68. *[If yes]* How many times did you bet or spend money on these types of gambling in the last 30 days?

Times: _____

69. *[If played last 30 days]* Can you give me an idea of the amount that you spent on these types of gambling in the last 30 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

70. How many times did you bet or spend money on these types of gambling in the last 7 days?

Times: _____

71. *[If played last 7 days]* Can you give me an idea of the amount that you spent on these types of gambling in the last 7 days? *[IF NEEDED, SAY: I am only looking for an approximate amount, rounded to the nearest 5 dollars or so.]*

Dollars: _____

72. *[If r has done more than one type of gambling, ask:]* Thinking about the sorts of activities we just discussed, which involve an element of luck or chance, can you tell me which is your favorite gambling activity?

The lottery	1
At a casino in the State of Colorado	2
At a casino outside the State of Colorado	3
Bingo or pulltabs	4
Card games for money not at a casino	5
Horse races or dog races (at the track or at an OTB)	6
Slot machines, poker machines or other gambling machines not at a casino	7
Games of skill other than card games for money, such as bowling, pool or golf	8
Dice games not at a casino	9
Sports with friends or in an office pool	10
Sports or other events with a bookmaker	11
Telephone or computer wagering, including the Internet or the Worldwide Web	12
Any other type of illegal gaming such as cockfights, dogfights or the numbers	13
Other	14

73. When participating in your favorite type of gambling, do you usually do so: *[Read list; one answer only]*

Alone	1
With your spouse or partner	2
With other family members	3
With friends	4
With co-workers	5
With some other individual or group	6
Refused	7

74. When participating in your favorite type of gambling, do you usually do so for: *[Read list]*

Less than 1 hour	1
1 - 2 hours	2
3 - 5 hours	3
6 - 12 hours	4
More than 12 hours	5
Refused	6

75. For any type of the types of gambling you have tried, what is the largest amount of money you have ever lost in one day gambling or wagering? *[If DK/NS or refused, read categories]*

Less than $1	1
$1 - $9	2
$10 - $99	3
$100 - $999	4
$1,000 - $9,999	5
$10,000 or more	6
Refused	7

SECTION 2: SOUTH OAKS GAMBLING SCREEN *[Ask Section 2 before Section 3 for 1/2 sample]*

The next set of questions is part of a standard measurement scale which has been used throughout the United States. There are no right or wrong answers to the questions that follow. We want to know what your experiences have been. Please try to be as accurate as possible in your answers and remember that this information is confidential.

SKIP RULES: FOR Q#76 TO Q#96, IF RESPONDENT ANSWERS "NEVER" OR "NO" TO A, SKIP TO NEXT QUESTION. OTHERWISE, ASK B.

IF INTERVIEWER ENCOUNTERS DIFFICULTIES WITH RESPONDENTS IN COMPLETING THIS SECTION, SAY: *We realize that these questions may not apply to everyone, but we do need answers to all of the questions. It will only take a few more minutes.*

76a. When you participate in the gambling activities we have discussed, how often do you go back another day to win back money you lost? Is it: *[Read list]*

Never	1	⇒ *Go to Q77*
Some of the time	2	
Most of the time	3	
Every time	4	
DK/NS	5	⇒ *Go to Q77*
Refused	6	⇒ *Go to Q77*

76b. How often have you done this in the past year? *[Read list]*

Never	1

Some of the time	2
Most of the time	3
Every time	4
DK/NS	5
Refused	6

77a. Have you ever claimed to be winning money from these activities when in fact you lost? *[Read list]*

Never	1	⇒ *Go to Q78*
Some of the time	2	
Most of the time	3	
Every time	4	
DK/NS	5	⇒ *Go to Q78*
Refused	6	⇒ *Go to Q78*

77b. How often have you done this in the past year? *[Read list]*

Never	1
Some of the time	2
Most of the time	3
Every time	4
DK/NS	5
Refused	6

78a. Do you ever spend more time or money gambling than you intended?

Yes	1	
No	2	⇒ *Go to Q79*
DK/NS	3	⇒ *Go to Q79*
Refused	4	⇒ *Go to Q79*

78b. Have you done this in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

79a. Have people ever criticized your gambling?

Yes	1	
No	2	⇒ *Go to Q80*
DK/NS	3	⇒ *Go to Q80*
Refused	4	⇒ *Go to Q80*

79b. Have people criticized your gambling in the past year?

Yes	1

No	2
DK/NS	3
Refused	4

80a. Have you ever felt guilty about the way you gamble or about what happens when you gamble?

Yes	1	
No	2	⇒ *Go to Q81*
DK/NS	3	⇒ *Go to Q81*
Refused	4	⇒ *Go to Q81*

80b. Have you felt this way in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

81a. Have you ever felt that you would like to stop gambling, but didn't think that you could?

Yes	1	
No	2	⇒ *Go to Q82*
DK/NS	3	⇒ *Go to Q82*
Refused	4	⇒ *Go to Q82*

81b. Have you felt this way in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

82a. Have you ever hidden betting slips, lottery tickets, gambling money or other signs of gambling from your spouse or partner, children, or other important people in your life?

Yes	1	
No	2	⇒ *Go to Q83*
DK/NS	3	⇒ *Go to Q83*
Refused	4	⇒ *Go to Q83*

82b. Have you done so in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

83. Have you ever argued with people you live with over how you handle money?

Yes	1	⇒ *Ask 84a*
No	2	⇒ *Go to 85a*
DK/NS	3	⇒ *Go to 85a*
Refused	4	⇒ *Go to 85a*

84a. Have these arguments ever centered on your gambling?

Yes	1	
No	2	⇒ *Go to Q85a*
DK/NS	3	⇒ *Go to Q85a*
Refused	4	⇒ *Go to Q85a*

84b. Have you had any of these arguments in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

85a. Have you ever missed time from work or school due to gambling?

Yes	1	
No	2	⇒ *Go to Q86*
DK/NS	3	⇒ *Go to Q86*
Refused	4	⇒ *Go to Q86*

85b. Have you missed time from work or school in the past year due to gambling?

Yes	1
No	2
DK/NS	3
Refused	4

86a. Have you ever borrowed money from someone and not paid them back as a result of your gambling?

Yes	1	
No	2	⇒ *Go to Q87*
DK/NS	3	⇒ *Go to Q87*
Refused	4	⇒ *Go to Q87*

86b. Have you done so in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

Next, I am going to read a list of ways in which some people get money for gambling. Can you tell me which of these, if any, you have ever used to get money for gambling or to pay gambling debts?

87a. Have you ever borrowed from household money to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q88*
DK/NS	3	⇒ *Go to Q88*
Refused	4	⇒ *Go to Q88*

87b. Have you borrowed from household money in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

88a. Have you ever borrowed money from your spouse or partner to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q89*
DK/NS	3	⇒ *Go to Q89*
Refused	4	⇒ *Go to Q89*

88b. Have you borrowed money from your spouse or partner in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

89a. Have you ever borrowed from other relatives or in-laws to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q90*
DK/NS	3	⇒ *Go to Q90*
Refused	4	⇒ *Go to Q90*

89b. Have you borrowed from other relatives or in-laws in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

90a. Have you ever gotten loans from banks, loan companies or credit unions to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q91*
DK/NS	3	⇒ *Go to Q91*
Refused	4	⇒ *Go to Q91*

90b. Have you gotten loans from banks, loan companies or credit unions in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

91a. Have you ever made cash withdrawals on credit cards to get money to gamble or pay gambling debts? *[Does not include instant cash cards from bank accounts]*

Yes	1	
No	2	⇒ *Go to Q92*
DK/NS	3	⇒ *Go to Q92*
Refused	4	⇒ *Go to Q92*

91b. Have you made cash withdrawals on credit cards in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

92a. Have you ever gotten loans from loan sharks to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q93*
DK/NS	3	⇒ *Go to Q93*
Refused	4	⇒ *Go to Q93*

92b. Have you gotten loans from loan sharks in the past year?

Yes	1
No	2
Don't know	3
Refused	4

93a. Have you ever cashed in stocks, bonds or other securities to finance gambling?

Yes	1	
No	2	⇒ *Go to Q94*
DK/NS	3	⇒ *Go to Q94*
Refused	4	⇒ *Go to Q94*

93b. Have you cashed in stocks, bonds or other securities in the past year?

Yes	1
No	2
Don't know	3
Refused	4

94a. Have you ever sold personal or family property to gamble or pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q95*
DK/NS	3	⇒ *Go to Q95*
Refused	4	⇒ *Go to Q95*

94b. Have you sold personal or family property to gamble or pay gambling debts in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

95a. Have you ever borrowed from your checking account by writing checks that bounced to get money for gambling or to pay gambling debts?

Yes	1	
No	2	⇒ *Go to Q96*
DK/NS	3	⇒ *Go to Q96*
Refused	4	⇒ *Go to Q96*

95b. Have you borrowed from your checking account by writing checks that bounced in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

96a. Do you feel that you have ever had a problem with betting money or gambling?

Yes	1	
No	2	⇒ *Go to Q97*
DK/NS	3	⇒ *Go to Q97*
Refused	4	⇒ *Go to Q97*

96b. Do you feel that you have had a problem with betting money or gambling in the past year?

Yes	1
No	2
DK/NS	3
Refused	4

97. Do you feel that either of your parents ever had a problem with betting money or gambling?

Yes	1	
No	2	⇒ *Go to Q98*
DK/NS	3	⇒ *Go to Q98*
Refused	4	⇒ *Go to Q98*

98. [*If yes*] ASK: Which parent was that? *[take multiple responses]*

Father	1
Mother	2
Stepfather	3
Stepmother	4
Refused	5

99. How old were you when you first gambled? *[If respondent refuses to answer, record 00 and skip to Q101]*

Age: ____

100. What type of gambling was that?

The lottery	1
At a casino in the State of Colorado	2
At a casino outside the State of Colorado	3
Bingo or pulltabs	4
Card games for money not at a casino	5
Horse races or dog races (at the track or at an OTB)	6
Slot machines, poker machines or other gambling machines not at a casino	7
Games of skill other than card games for money, such as bowling, pool or golf	8
Dice games not at a casino	9
Sports with friends or in an office pool	10
Sports or other events with a bookmaker	11
Telephone or computer wagering, including the Internet or the Worldwide Web	12
Any other type of illegal gaming such as cockfights, dogfights or the numbers	13

101. Was there any time when the amount you were gambling made you nervous?

Yes	1	
No	2	⇒ *Go to Q104*
DK/NS	3	⇒ *Go to Q104*
Refused	4	⇒ *Go to Q104*

102. How old were you when that happened?

Age: _____

103. What type of gambling were you doing when that happened?

The lottery	1
At a casino in the State of Colorado	2
At a casino outside the State of Colorado	3
Bingo or pulltabs	4
Card games for money not at a casino	5
Horse races or dog races (at the track or at an OTB)	6
Slot machines, poker machines or other gambling machines not at a casino	7

Games of skill other than card games for money, such as bowling, pool or golf	8
Dice games not at a casino	9
Sports with friends or in an office pool	10
Sports or other events with a bookmaker	11
Telephone or computer wagering, including the Internet or the Worldwide Web	12
Any other type of illegal gaming such as cockfights, dogfights or the numbers	13

104. Have you ever desired help to stop gambling?

Yes	1	
No	2	⇒ *Go to Q107*
DK/NS	3	⇒ *Go to Q107*
Refused	4	⇒ *Go to Q107*

105. Have you ever sought help to stop gambling?

Yes	1	
No	2	⇒ *Go to Q107*
DK/NS	3	⇒ *Go to Q107*
Refused	4	⇒ *Go to Q107*

106. *[If yes]* ASK: What type of help was that? *[Do not read]*

Family member	1
Friend	2
Family doctor	3
Gamblers Anonymous	4
Problem gambling treatment program in STATE	5
Problem gambling treatment program outside STATE	6
Veterans Administration	7
Employee assistance program (EAP)	8
Psychologist or psychiatrist	9
Other counselor	10
Minister/priest/rabbi	11
Alcohol or drug abuse treatment program	12
Other	13
Refused	14

SECTION 3: DSM-IV QUESTIONS *[Ask Section 3 before Section 2 for 1/2 sample]*

Next, I would like to ask you some questions about how you feel about your gambling. As before, this set of questions is part of a standard measurement scale. There are no right or wrong answers to the questions that follow. We want to know what your experiences have been. Please try to be as accurate as possible in your answers and remember that all this information is confidential.

107. In the past year, have you often found yourself thinking about gambling (e.g. reliving past gambling experiences, planning the next time you will play or thinking of ways to get money to gamble)? *[Read list]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

108. In the past year, have you needed to gamble with more and more money to get the amount of excitement you are looking for? *[Read list]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

109. In the past year, have you become restless or irritable when trying to cut down or stop gambling? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

110. In the past year, have you gambled to escape from problems or when you were feeling depressed, anxious or bad about yourself? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

111. In the past year, after losing money gambling, have you returned another day in order to get even? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3

Often	4
DK/NS/Refused	5

112. In the past year, have you lied to your family or others to hide the extent of your gambling? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

113. In the past year, have you made repeated unsuccessful attempts to control, cut back or stop gambling? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

114. In the past year, have you been forced to go beyond what is strictly legal in order to finance gambling or to pay gambling debts? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

115. In the past year, have you risked or lost a significant relationship, job, educational or career opportunity because of gambling? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

116. In the past year, have you sought help from others to provide money to relieve a desperate financial situation caused by gambling? *[Read list if necessary]*

Never	1
Once or twice	2
Sometimes	3
Often	4
DK/NS/Refused	5

Our last questions are about you and your family. The answers to these questions will help us statistically classify the results we obtain and will only be used when combined with the hundreds of other interviews conducted for this survey. If I come to a question that you prefer not to answer, please just say so, and I will move on to the next question.

D1. Approximately how long have you lived in Colorado?

Years: _____

D2. And are there children under the age of 18 living in this household?

Yes	1
No	2
Refused	3

D3. Including yourself, how many people aged 18 and over live in your household?

Number: _____

D4. And are you currently married, widowed, divorced, separated, or have you never been married?

Married, common-law, co-habitation	1
Widowed	2
Divorced	3
Separated	4
Never married	5
Refused	6

D5. What is the last grade of school you completed?

Elementary or some high school	1
High school graduate or G.E.D.	2
Some college or Associates degree (vocational, technical or trade school)	3
Bachelors degree	4
Graduate study or degree	5
Refused	6

D6. Last week, were you working full-time, part-time, going to school, keeping house, or something else?

Working full-time	1	
Working part-time	2	
Going to school	3	
Keeping house	4	⇒ *Go to D8*
Disabled	5	⇒ *Go to D8*
Retired	6	⇒ *Go to D8*
Unemployed	7	
Refused	8	

D7. What kind of work do you normally do?

Farming/agriculture	1
Mining	2
Sales	3
Retail services	4
Other services	5
Clerical	6
Professional/technical	7
Manager/proprietor	8
Skilled, craftsman	9
Semi-skilled, operative	10
Laborer	11
Student	12
Other	13
Refused	14

D8. May I ask how old you are?

Age: _____

D9. 124. Can you tell me approximately what your total household income was last year? *[Record income; if refused or DK/NS, ask D9a]*

Income: _____

D9a. And would you mind telling me which of these broad income categories your total household income from last year falls into? *[Read list except refused and DK/NS]*

Up to $15,000	1
$15,001 to $25,000	2
$25,001 to $35,000	3
$35,001 to $50,000	4
$50,000 to $75,000	5
$75,000 to $100,000	6
$100,000 to $125,000	7
Over $125,000	8
Refused	9
DK/NS	10

D10. Finally -- so that we can make sure all groups are statistically represented -- would you please tell me what racial or ethnic group you consider yourself to be a member of??

White/Caucasian	1
Black	2
Hispanic	3
Native American	4
Asian	5
Other	6
Refused	7

THANK YOU FOR TAKING OUR SURVEY. YOUR ANSWERS HAVE BEEN EXTREMELY HELPFUL.