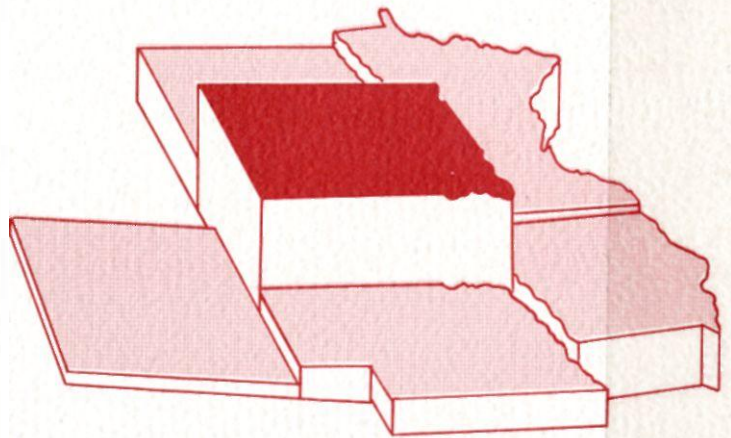


**Study of
South Dakota Gaming**

November 1991



Published by Business Research Bureau, University of South Dakota

Gaming in South Dakota

A Study of Gambling Participation and Problem Gambling

AND

**A Statistical Description
and
Analysis of Its Socioeconomic Impacts**

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December 1, 1991

**Mr. Frank Brost
Executive Assistant
Governors Office
500 East Capitol Ave.
Capitol Building
Pierre, SD 57501**

Dear Mr. Brost,

The following report is a synthesis of primary and secondary research to estimate the participation in various types of gaming, economic impacts, social impacts and the prevalence of problem and pathological gambling. It is an effort to describe the sociological and economic impacts of gambling employing scientific method. One approach relies entirely on survey data and the other uses existing secondary data sources.

The first study, "Gambling and Problem Gambling in South Dakota," is a survey based study used to assess the prevalence of problem and pathological gamblers in the state's population. The instrument used to estimate the problem is the South Oaks Gambling Screen. It has been found valid and reliable in distinguishing pathological gamblers among hospital workers, university students, high school students, prison inmates and inpatients in alcohol and substance abuse treatment programs. One thousand five hundred sixty (1,560) South Dakota adults were interviewed.

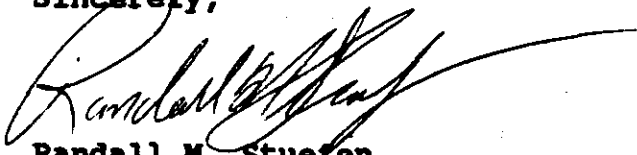
The second portion of this report is a study entitled "Gaming in South Dakota: A Statistical Description and Analysis of its Socioeconomic Impacts." This effort explores the socioeconomic impacts of gaming on the players and the revenue impacts on government using secondary sources of data. The economic measures reviewed include impacts on other consumer sectors, income and employment, business formation and market structure. The social measures studied are aid to dependent children, food stamp recipients, child abuse and neglect, child support enforcement, divorce filings, uncollected property taxes, bankruptcy, small claims and foreclosures. Fiscal impacts on state and local government are also discussed. The discussion of gaming using this approach is limited to legal activities that are required to report player activity and revenues.



An Equal Opportunity Employer

I think the two approaches provide a fuller picture of gaming in South Dakota than either could have individually. On behalf of Dr. Michael Madden, Dr. Rachel Volberg and myself, I would like to thank you for the opportunity to participate with our research in the discussion of this important issue.

Sincerely,

A handwritten signature in dark ink, appearing to read "Randall M. Stuefen", with a long, sweeping horizontal line extending to the right.

Randall M. Stuefen
Director of Research

ACKNOWLEDGEMENTS

We would like to thank each of the residents of South Dakota who were interviewed in this survey for giving their time and contributing to our knowledge of gambling and gambling-related problems in South Dakota. We would also like to thank the Governor's Office for initiating this study, the staff of the Business Research Bureau who carried out all of the interviews, and Eric Silver at Policy Research Associates who helped with the analysis of the data.

GAMBLING AND PROBLEM GAMBLING IN SOUTH DAKOTA

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November 12, 1991

EXECUTIVE SUMMARY

This report presents the findings of a state-wide survey of gambling involvement and gambling problems in South Dakota. A large sample of adult residents over the age of 18 (N=1,560) were interviewed about the types of gambling they have tried, the amounts of money they spend on gambling, and about problematic gambling-related behaviors. The results of the survey have been compared with the results of similar surveys carried out in other states.

Findings

- ▶ The lifetime prevalence rate of problem gambling in South Dakota is 1.8% and the lifetime prevalence rate of pathological gambling is 1.0% of the adult population. Based on these figures, we estimate that between 5,620 and 12,290 adult residents of South Dakota have been problem gamblers at some time in their lives. In addition, we estimate that between 2,490 and 7,460 adult residents of South Dakota have been pathological gamblers at some time in their lives.
- ▶ The current prevalence rate of problem gambling in South Dakota is 0.8% and the current prevalence rate of pathological gambling is 0.6% of the adult population. Based on these figures, we estimate that between 3,980 and 9,900 adult residents of South Dakota are currently problem or pathological gamblers.
- ▶ The lifetime prevalence rates of problem and pathological gambling in South Dakota are lower than prevalence rates in the Northeast of the United States but higher than in Iowa and Minnesota.
- ▶ The percentage of problem and pathological gamblers who are women is higher in South Dakota than in other states.
- ▶ Residents of South Dakota are most likely to have tried the types of gambling administered by the State, including Scratch & Match games, Lotto and video lottery.
- ▶ The greatest monthly expenditures on gambling are for video lottery and slot machines. The highest amounts wagered on a monthly basis are on card games, slot machines and video lottery.

Future Directions

In the future, it will be important to consider what steps can be taken by state agencies, mental health and substance abuse treatment professionals, educators and gaming industries to minimize the rates of problem and pathological gambling in South Dakota. Particular consideration should be given to developing prevention, education and treatment services.

INTRODUCTION

In the 1970s, as states experienced increasingly serious financial woes associated with cutbacks in federal funding, state legislatures around the country began to legalize many types of gambling. Between 1975 and 1988, 32 states authorized state-run lotteries (Migoya & LaFleur 1990). In 1976, New Jersey became the first state besides Nevada to legalize casinos. Six states, including South Dakota, legalized video lottery terminals in 1990. In 1991, riverboat casino gambling became legal in Iowa, Illinois and Mississippi. Saloons with card games and slot machines are now legal in South Dakota as well as in Colorado. In the wake of the Indian Gaming Regulatory Act of 1988, seven state governments established compacts with Native American tribes to conduct casino-style gambling on reservation lands. Three of these casinos are located in South Dakota. In 1989, Americans wagered \$290 billion on legal and illegal games, almost as much money as was appropriated for the Department of Defense that same year (Christiansen 1990; Frias 1991).

With the increasing legalization of gambling, the public has become sensitive to the phenomenon of pathological gambling. Media reports have detailed the gambling-related problems of such major collegiate and professional sports figures as Art Schlichter, Pete Rose and Chet Forte. While the notion that such behavior is a disorder or disease that responds to psychiatric treatment is now well accepted, until the 1970s the only form of assistance available to pathological gamblers was the self-help group, Gamblers Anonymous. Between 1960 and 1988, the number of Gamblers Anonymous chapters grew from 16 to 600 (Lesieur 1990). In 1980, pathological gambling was included in the Diagnostic and Statistical Manual for the first time (American Psychiatric Association 1980). This was the first official recognition of the problem as a medical illness and served as the foundation for the development of professional mental health services for pathological gamblers.

In the wake of the spread of gambling in South Dakota, and in response to issues raised both by opponents of legalized gambling and by other groups concerned with its regulation, the Governor of South Dakota mandated that a survey of the prevalence of problem and pathological gambling be conducted in the state. The results of that survey are reported here. The report includes a discussion of the methods used to collect the data, a review of gambling involvement by South Dakota residents, and a comparison of the results of this survey with similar studies carried out in other parts of the United States.

METHODS

The survey in South Dakota built on work carried out in other parts of the United States as well as in New Zealand. Like earlier surveys carried out in New York, New Jersey, Massachusetts, Maryland, California and Iowa (Volberg & Steadman 1988, 1989), the South Dakota survey assessed the prevalence of problem and pathological gambling with the South Oaks Gambling Screen (Lesieur & Blume 1987).

The South Oaks Gambling Screen is a 20-item scale derived from the diagnostic criteria for pathological gambling published in the Diagnostic and Statistical Manual III (American Psychiatric Association 1980). In developing the South Oaks Gambling Screen, a large pool of variables were subjected to discriminant analysis. The results of this analysis were cross-tabulated with assessments of independent counselors. The scoring system was designed to minimize the number of false-negative

and false-positive cases. The instrument has been found valid and reliable in distinguishing pathological gamblers among hospital workers, university students, high school students, prison inmates and inpatients in alcohol and substance abuse treatment programs (Lesieur & Blume 1987, 1991; Lesieur, Blume & Zoppa 1986; Lesieur & Klein 1985, 1987).

In earlier surveys in the United States, the South Oaks Gambling Screen was modified to include demographic information. Respondents were contacted and interviewed by telephone. The number of interviews completed in each state was determined by balancing available resources, confidence intervals and the size of each state's population. The database presently consists of completed interviews with 5,500 respondents from six states.

For the South Dakota survey, the first section of the questionnaire was expanded to collect more detailed information about respondents' gambling involvement. In the earlier surveys, respondents were asked only about the frequency with which they gambled in the past year and whether they had ever participated in 10 different types of wagering. Respondents in South Dakota were asked whether they had ever tried 17 different types of gambling, whether they had tried each of these types of gambling in the past 6 months, whether they participated in any of these activities on a regular, weekly basis, and how much they spent in a typical month on each of these gambling activities. As a result, the data from the South Dakota survey are much more fine-grained and detailed than the data on gambling involvement from other parts of the United States.

The sampling design was carefully constructed to ensure that inferences could be drawn between the sample and the population over the age of 18 in South Dakota. The sample was stratified to proportionally represent county populations on the basis of 1990 census figures. Random sampling of households with listed telephone numbers and random selection of respondents within households were used. Up to seven attempts were made to contact each number and up to five callbacks were made to complete an interview with each selected respondent. The response rate was 78% in South Dakota. This compares favorably with the response rates to this survey in other states. The response rate was 76% in Iowa, 69% in Massachusetts, 66% in Maryland, and 65% in New Jersey.

The expanded questionnaire was administered in Iowa following the completion of data collection in South Dakota. This was done in order to determine if the changes to the questionnaire significantly affect the prevalence estimate. The prevalence estimates for the two surveys in Iowa differ by 0.1% and we have concluded that no significant difference has resulted because of the refinements to the questionnaire.

THE GENERAL POPULATION OF SOUTH DAKOTA

In order to compare gambling involvement and prevalence rates of problem and pathological gambling in South Dakota with those in other states, it is first important to note that there are differences in the demographic characteristics of respondents in each of these states. As the following table makes clear, respondents from the Northeastern states of Massachusetts, New York, New Jersey and Maryland are more ethnically diverse, somewhat younger, less likely to be married, less likely to have a Protestant religious background, and much less likely to have an annual household income under \$25,000 per year than the respondents in South Dakota. Not surprisingly, the respondents from Iowa look much more like those from South Dakota, particularly in terms of ethnicity, religion, marital status and income.

TABLE 1
Demographic Characteristics of the General Population

Demographic Variables	East Coast (N=3500)	Iowa (N=750)	South Dakota (N=1560)
Male	45%	41%	44%
Non-White	20%	4%	3%
Under 30	25%	21%	17%
High School Graduate	88%	87%	87%
Unmarried	47%	37%	34%
Protestant	28%	58%	70%
Annual HH Income Under \$25,000	28%	44%	46%

GAMBLING IN SOUTH DAKOTA

For each different type of gambling, respondents were asked whether they had ever tried this type of gambling, whether they had tried it in the past 6 months, and whether they participated regularly (once a week or more) in this type of gambling.

Non-Gamblers in the General Population

There was a sizable proportion of the sample, 14% of the respondents, who said that they have never participated in any of the gambling activities included in the questionnaire. Women were more likely than men to have never gambled (18% vs 9%). Older individuals were more likely than younger respondents to have never gambled (16% vs 6%). Both of these differences were statistically significant.

Gamblers in the General Population

The most popular types of gambling among South Dakota's residents are the state's lottery games, including Scratch & Match, Lotto and video lottery. Other popular types of gambling among South Dakota residents are bingo, slot machines, and sports pools. Pulltabs, card games, and horse and dog races are only slightly less popular types of wagering.

A conversion rate was developed to assess how likely respondents were to become regular players if they did try a gambling activity. The conversion rate for each type of gambling was determined by dividing the number of respondents who said that they gambled once a week or more by the number of respondents who had ever tried each type of gambling. While overall conversion rates are highest for Lotto, video lottery and South Dakota Scratch & Match games, these rates are

quite variable according to the age of the respondent. The conversion rates by age group for the most popular types of gambling are shown in Figures 1 through 10. High conversion rates among older respondents are partly due to the low base number of respondents who have ever tried many types of gambling in these higher age groups.

South Dakota Scratch & Match (Figure 1)

Overall, 56% of the respondents have ever played South Dakota's Scratch & Match lottery games. Recent participation, in the past 6 months, is 31% while 7% of the respondents said that they played South Dakota's Scratch & Match games regularly. That is, 13% of those who have ever tried South Dakota's Scratch & Match games have become regular players. South Dakota Scratch & Match games are most popular among respondents aged 18 to 29 although the conversion rate to those who play regularly is highest for those over the age of 65.

Bingo (Figure 2)

Overall, 49% of the respondents have ever played bingo. Recent participation, in the past 6 months, is 9% while 2% of the respondents said that they played bingo regularly. That is, only 4% of those who ever played bingo have become regular weekly players. Bingo is most popular among respondents aged 50 to 64 although, again, the conversion rate is highest for those over the age of 65.

Sports Pools (Figure 3)

Overall, 43% of the respondents have ever wagered on sports pools. Recent participation, in the past 6 months, is 10% while 4% of the respondents said that they participated in sports pools regularly. That is, 10% of the respondents who had ever tried wagering on sports pools have become regular players. South Dakota residents under the age of 50 are most likely to have wagered on sports pools. Those under the age of 40 are most likely to be regular players.

Video Lottery (Figure 4)

Overall, 42% of the respondents have ever played video lottery. Recent participation, in the past 6 months, is 34% while 8% of the respondents said that they played video lottery regularly. Nearly one-fifth (19%) of those who have ever tried video lottery become regular weekly players. Video lottery is most popular among younger age groups. Nearly two-thirds of respondents under the age of 30 have tried video lottery games. In contrast, less than 20% of respondents over the age of 65 have tried video lottery.

Lotto (Figure 5)

Overall, 39% of the respondents have ever played Lotto. Recent participation, in the past 6 months, is 33% while 14% of the respondents said that they played Lotto regularly. That is, 35% of those who have ever tried Lotto have become regular weekly participants. While Lotto is less popular among respondents over the age of 50 than among younger respondents, those respondents most likely to become regular players are between 50 and 64.

Slot Machines in South Dakota (Figure 6)

Slot machines in South Dakota can be found in the City of Deadwood and at the three Indian reservation casinos in the state. Overall, 38% of the respondents have ever played slot machines in South Dakota. Recent participation, in the past 6 months, is 25% while 1% of the respondents said that they played slot machines in South Dakota regularly. That is, only 2% of those who have ever tried slot machines in South Dakota have become regular weekly players. In contrast to video lottery, slot machines in South Dakota are most popular among respondents aged 40 to 64. There is a sharp drop in player involvement among respondents over the age of 65.

Out-of-State Slot Machines (Figure 7)

Overall, 35% of the respondents have ever played slot machines in other states. Recent participation, in the past 6 months, is 5% while none of the respondents said that they played out-of-state slot machines regularly. As with participation in out-of-state Scratch & Match games, this low level of regular participation is easily explained by the distances that South Dakota residents must travel in order to play out-of-state slot machines regularly.

Card Games (Figure 8)

Overall, 30% of the respondents have ever wagered on card games. Recent participation, in the past 6 months, is 10% while 2% of the respondents said that they wagered on card games regularly. Five percent of those who have ever wagered on card games do so regularly. Although South Dakota residents under the age of 40 are most likely to have ever wagered on card games, those over the age of 65 are most likely to be regular players.

Pulltabs (Figure 9)

Overall, 30% of the respondents have ever played pulltabs. Recent participation, in the past 6 months, is 7% while 1% of the respondents said that they played pulltabs regularly. That is, 3% of the respondents who have ever played pulltabs are regular players. South Dakota residents between 30 and 39 are most likely to have ever played pulltabs. However, those over the age of 65 are most likely to become regular players.

Horse or Dog Races (Figure 10)

Overall, 30% of the respondents have ever wagered on horse or dog races. Recent participation, in the past 6 months, is 4% while less than one percent of the respondents said that they wagered on horse or dog races regularly. That is, almost none of the South Dakota residents who have ever wagered on horse or dog races have become regular weekly players.

Bets with Friends or Workmates

Overall, 24% of the respondents have ever bet with friends or workmates. Recent participation, in the past 6 months, is 9% while 1% of the respondents said that they wagered regularly with friends and workmates. That is, 5% of the respondents who had ever wagered with friends or workmates did so regularly.

Out-of-State Scratch & Match

Overall, 20% of the respondents have ever played out-of-state Scratch & Match games. Recent participation, in the past 6 months, is 6% while less than one percent of the respondents said that they played out-of-state Scratch & Match games regularly. Nevertheless, 3% of those who have tried out-of-state Scratch & Match games have become regular weekly players. Out-of-state Scratch & Match games are most popular among respondents under the age of 40 although, again, the conversion rate is highest for those over the age of 65.

Charitable Gaming or Casino Evening

Overall, 20% of the respondents have participated in charitable gaming events. Recent participation, in the past 6 months, is 4%. Since charitable gaming events are not on-going or regularly scheduled activities, it is not possible to determine a conversion rate for this type of gambling. South Dakota residents under the age of 50 are most likely to have ever participated in such events.

Dice Games

Overall, 12% of the respondents have ever wagered on dice games. Recent participation, in the past 6 months, is 2% while less than one percent of the respondents said that they wagered on dice games regularly. Nevertheless, 4% of those who have ever wagered on dice games participate regularly in this activity. As with card games, South Dakota residents under the age of 40 are most likely to have ever tried wagering on dice games. In contrast to wagering on card games, respondents aged 30 to 39 are most likely to be regular players.

Sports Bets with a Bookie

Very few respondents in the survey stated that they had placed bets with a bookie on sports events. Overall, 3% of the respondents stated that they have ever placed a sport bet with a bookie. Recent participation, in the past 6 months, is 1% while less than one percent of the respondents said that they placed wagers with a bookie regularly. Interestingly, among those who had ever wagered with a bookie, 11% are regular bettors. South Dakota residents between the ages of 30 and 39 are most likely to have placed a bet with a bookie.

As Table 2 shows, conversion rates are highest for Lotto, video lottery and South Dakota Scratch & Match games. Only gambling on sports pools shows a similar level of conversion among those who have ever tried this type of gambling.

TABLE 2
Gambling Involvement and Conversion Rates
for Different Types of Gambling

Type of Gambling	Ever Tried	Conversion
South Dakota Scratch & Match	56%	13%
Bingo	49%	4%
Sports Pools	43%	10%
Video Lottery	42%	19%
Lotto	39%	35%
South Dakota Slot Machines	38%	2%
Out-of-State Slot Machines	35%	---
Card Games	30%	5%
Pulltabs	30%	3%
Parimutuel Wagers (Horses or Dogs)	30%	---
Bets with Friends or Workmates	24%	5%
Out-of-State Scratch & Match	20%	3%
Charitable Gaming or Casino Evenings	20%	---
Dice Games	12%	4%

Reasons for Gambling

All respondents who indicated that they had ever taken part in any gambling activities were asked to say why they did so. The most frequently cited reason for gambling was for entertainment (71%). Other important reasons included socializing (50%), winning money (48%), for excitement or challenge (47%), as a curiosity (43%), and to support worthy causes (31%). Only 6% of the respondents indicated that they gambled for a hobby.

Reasons given by respondents for their participation in gambling activities differ by the gender, age and income of the respondent. For example, respondents with annual household incomes under \$25,000 are significantly less likely than other respondents to gamble in order to socialize, for excitement or for entertainment. Respondents over the age of 65 are significantly less likely than younger respondents to gamble in order to socialize, for excitement, to win money, or for entertainment. Respondents under the age of 65 are significantly more likely than those over 65 to gamble in order to support a worthy cause or out of curiosity. Men are significantly more likely than women to gamble for excitement, as a hobby, in order to win money, and for entertainment.

Favorite Gambling Activities

Respondents were asked to identify their favorite type of gambling. As Figure 11 illustrates, nearly a quarter of the respondents who gambled indicated that they had no favorite gambling activity. Among those who did express a preference, video lottery, slot machines and card games were the most popular types of gambling. Lotto, scratch tickets, and sports bets were also popular.

Expenditures on Different Types of Wagering

All respondents who had done any kind of gambling in the past 6 months were asked to indicate how much money they spend on that activity in a typical month. The total monthly expenditure for each gambling activity was calculated by summing the amount of money spent by each respondent on each gambling activity. The total amount spent in a typical month by all respondents on all gambling activities was then calculated. The proportion of total monthly expenditure spent on each gambling activity was calculated by dividing the amount spent on each activity by the total monthly expenditure. Figure 12 illustrates the proportion of the total monthly expenditure associated with the most popular gambling activities.

The total monthly expenditure on all gambling activities was divided by the number of respondents ($N=1,560$) to obtain an average amount spent per respondent. Using this method, we calculate that respondents spent \$23.30 on all gambling activities in a typical month. If this figure is taken as an average amount spent on gambling by all individuals over 18 in South Dakota, we estimate that the annual expenditure on gambling activities in the state as a whole is \$11,593,000 per month.

As with gambling involvement, monthly gambling expenditures vary across demographic groups. Men spend twice as much money gambling (\$32 per month) as women (\$16 per month). Respondents under the age of 30 spend more money on gambling (\$33 per month) than respondents over the age of 30 (\$21 per month). The majority of players spend modestly but there is a small group of respondents (10% of the sample) who spend over \$50 per month.

Figure 13 illustrates differences in the distribution of the amounts spent on different gambling activities. Video lottery and slot machines attract both the greatest monthly gambling expenditures and high proportions of individuals who spend over \$50 per month. Card games are also characterized by a high proportion of players who spend over \$50 per month although the total monthly expenditure on card games is much less than the amounts spent on video lottery and slot machines. Not surprisingly, Lotto and Scratch & Match games attract the largest number of small monthly expenditures.

Comparing South Dakota Gamblers with Those in Other States

Comparison of Table 3 below with Table 1 suggests that men are slightly more likely to gamble than the general population in every state. Non-Whites are slightly less likely to gamble and those with low incomes are slightly more likely to gamble than the general population.

TABLE 3
Characteristics of All Gamblers in the General Population*

Gamblers in the General Population	East Coast	Iowa	South Dakota
Male	47%	43%	46%
Non-White	16%	2%	3%
Under 30	25%	24%	19%
High School Graduate	89%	88%	91%
Unmarried	45%	36%	33%
Annual HH Income Under \$25,000	30%	48%	46%

* Includes problem and probable pathological gamblers in all states.

Types of Wagering Among Gamblers in the General Population

In examining differences among states in relation to the participation of the general population in different gambling activities, it must be emphasized that the data on gambling involvement from South Dakota are far more detailed than data collected in other states. We were only able to compare gambling involvement in South Dakota with gambling involvement in other states for 6 types of wagering. In addition, we were only able to analyze these differences for those respondents who had ever tried these different types of wagering. As Table 4 indicates, South Dakota respondents are more likely than respondents from other states to have played bingo and slot machines and to have wagered on sports events. South Dakota respondents are less likely than respondents from other states to have wagered on horse or dog races and to have played card games for money.

TABLE 4
Types of Gambling by All Gamblers in the General Population*

Types of Gambling Ever Tried	East Coast	Iowa	South Dakota
Slot Machines (In- and Out-of-State)	49%	37%	54%
Bingo	40%	31%	49%
Played Card Games for Money	38%	39%	30%
Parimutuel Wagering (Horses and Dogs)	37%	33%	30%
Sports Betting (inc. pools, bets w/bookies)	27%	24%	43%
Played Dice Games for Money	13%	10%	12%

* Includes problem and probable pathological gamblers in all states.

PREVALENCE OF PROBLEM AND PATHOLOGICAL GAMBLING

In order to assess the prevalence of problem and pathological gambling in South Dakota, respondents' scores on the South Oaks Gambling Screen items were tallied. Consistent with prior uses of the South Oaks Gambling Screen, respondents scoring 3 or 4 points on the SOGS items were classified as "problem gamblers" while respondents scoring 5 or more points were classified as "probable pathological gamblers." As the following table shows, the lifetime prevalence rate of problem and pathological gambling in South Dakota is lower than prevalence rates on the East Coast but higher than the prevalence rate in Iowa.

TABLE 5
Comparing Prevalence Rates by State

State	Problem & Pathological Gamblers	Adult Population Size	Sample Size
Massachusetts	4.4%	4 million	750
New York	4.2%	13 million	1,000
New Jersey	4.2%	6 million	1,000
California	4.1%	20 million	1,250
Maryland	3.9%	3 million	750
Iowa	1.7%	3 million	750
South Dakota	2.8%	497,542	1,560

The adult population over 18 of South Dakota is 497,542 individuals, according to the 1990 Census. Based on this figure, we estimate that there are between 2,490 and 7,460 probable pathological gamblers in South Dakota. In addition, we estimate that there are between 5,620 and 12,290 problem gamblers in South Dakota. South Dakota is the only state where current prevalence data have been collected. As a result, there is no way to compare South Dakota's current prevalence rate of 1.4% with any other states.

Demographics of Problem and Pathological Gamblers

In order to compare the demographics of problem and pathological gamblers, we combined the groups of respondents from the states of Massachusetts, New York, New Jersey, Maryland, Iowa and South Dakota who scored as problem gamblers with those who scored as probable pathological gamblers. This approach is based on our concern with determining differences between respondents without gambling problems and respondents with moderate to severe gambling problems. As Table 6 makes clear, problem and pathological gamblers in all states are more likely to be male than the general population. However, problem and pathological gamblers in the Midwestern states are more likely to be female than those in the Northeast. Problem and pathological gamblers in all states are more likely

to be non-White and under the age of 30 than the general population. In South Dakota, problem and pathological gamblers are much more likely to be unmarried than the general population. Finally, problem and pathological gamblers in the Northeast and in South Dakota are more likely than the general population to have annual household incomes under \$25,000.

TABLE 6
Comparing the Demographics of Problem and
Pathological Gamblers by State

Demographics of Problem & Pathological Gamblers	East Coast (N=146)	Iowa (N=13)	South Dakota (N=44)
Male	71%	62%	61%
Non-White	33%	0%	9%
Under 30	35%	39%	32%
High School Graduate	77%	85%	86%
Unmarried	54%	39%	64%
Annual HH Income Under \$25,000	39%	23%	59%

Comparing Gambling Involvement of Problem and Pathological Gamblers

There are few noticeable differences in the lifetime gambling involvement of problem and pathological gamblers in South Dakota compared to those in other states. Problem and pathological gamblers in South Dakota are somewhat more likely than those in other states to have played bingo and to have wagered on sports. Problem and pathological gamblers in South Dakota are just as likely as those in other states to have wagered on gambling machines, horse and dog races, card games and dice games.

Comparing Current and Lifetime Prevalence Rates

In contrast to earlier surveys of problem and pathological gambling, we collected information on current as well as lifetime prevalence rates of problem and pathological gambling in South Dakota. These data from South Dakota represent the only time that 6-month prevalence data has been collected in the United States. For each of the SOGS items, we asked South Dakota respondents whether the question applied to lifetime and to the past 6 months. The 6-month prevalence rate for problem and pathological gambling among South Dakota respondents is 1.4% in contrast to the 2.8% lifetime prevalence rate. Given the adult population, we estimate that there are between 3,980 and 9,900 current problem and probable pathological gamblers in South Dakota.

Over half (52%) of the respondents who scored as lifetime problem or pathological gamblers did not score as problem or pathological gamblers in the last 6 months. These data should be interpreted with caution since it may be that measures of lifetime and current prevalence are not

identical. Nevertheless, it is interesting to hypothesize about how respondents who score as lifetime problem or pathological gamblers are managing their gambling activities in order to avoid difficulties.

Comparing Borrowing by Problem and Pathological Gamblers

Scores on SOGS items related to borrowing among South Dakota respondents and those in other states were compared in order to assess differences in these behaviors among problem and pathological gamblers in different parts of the country. Problem and pathological gamblers in South Dakota were more likely to have borrowed from relatives, to have cashed stocks and bonds, and to have sold personal property in order to gamble or pay gambling debts than problem and pathological gamblers in other states. Problem and pathological gamblers in the Northeast were more likely than those in the Midwest to borrow from their spouse while problem and pathological gamblers in Iowa were more likely than those elsewhere to have passed a bad check in order to gamble or pay gambling debts.

TABLE 7
Comparing Borrowing Activities
of Problem and Pathological Gamblers by State

Borrowing Activities of Problem & Pathological Gamblers	East Coast (N=146)	Iowa (N=13)	South Dakota (N=44)
Relatives	22%	8%	30%
Household Money	18%	0%	21%
Spouse	13%	0%	7%
Banks or Loan Companies	12%	0%	7%
Credit Cards	11%	0%	11%
Passed Bad Checks	7%	15%	9%
Loan Sharks	5%	0%	2%
Cashed Stocks or Bonds	4%	8%	9%
Sold Personal or Family Property	3%	0%	11%

SUMMARY AND CONCLUSION

While the lifetime prevalence rates of problem and pathological gambling in South Dakota are lower than prevalence rates in the Northeast of the United States, these rates are higher than in Iowa. We estimate that at a minimum, over 8,000 adults in South Dakota have experienced moderate to severe problems related to their involvement in gambling. For nearly half of these individuals, their gambling problem or pathology is current.

While the overall lifetime and current prevalence rates of problem and pathological gambling are important, attention must also be paid to the demographics of those who score as problem and pathological gamblers. Problem and pathological gamblers throughout the United States are more likely to be male than the general population. Problem and pathological gamblers are also more likely to be non-White, to be under the age of 30, to be unmarried, and to have a low annual household income than the general population. While the demographics of problem and pathological gamblers in South Dakota are similar to those in other parts of the United States, it is interesting to note that there are more women among this group in South Dakota than in other parts of the United States.

The state of South Dakota has recently legalized a great many types of gambling. The data from our survey indicate that significant numbers of the residents of South Dakota participate in these as well as other gambling activities, that they find gambling activities entertaining and enjoyable, and that they spend moderate amounts of money on gambling activities every month. It is clear that the state of South Dakota is benefiting from the gambling involvement of its residents, through taxes and revenues from these legalized gambling activities. However, the results of this survey indicate that there are costs associated with gambling involvement among South Dakota residents, including financial, interpersonal and personal problems.

In the future, it will be important to begin to address these social and economic costs associated with the legalization of gambling in South Dakota. The first step, assessing the prevalence rate of problem and pathological gambling among South Dakota residents, has been taken. Consideration must now be given to educating South Dakota residents about the potential problems associated with gambling, to providing treatment services for those individuals who experience significant problems with their gambling, and to ensuring that adequate and enduring funds for such efforts are made available.

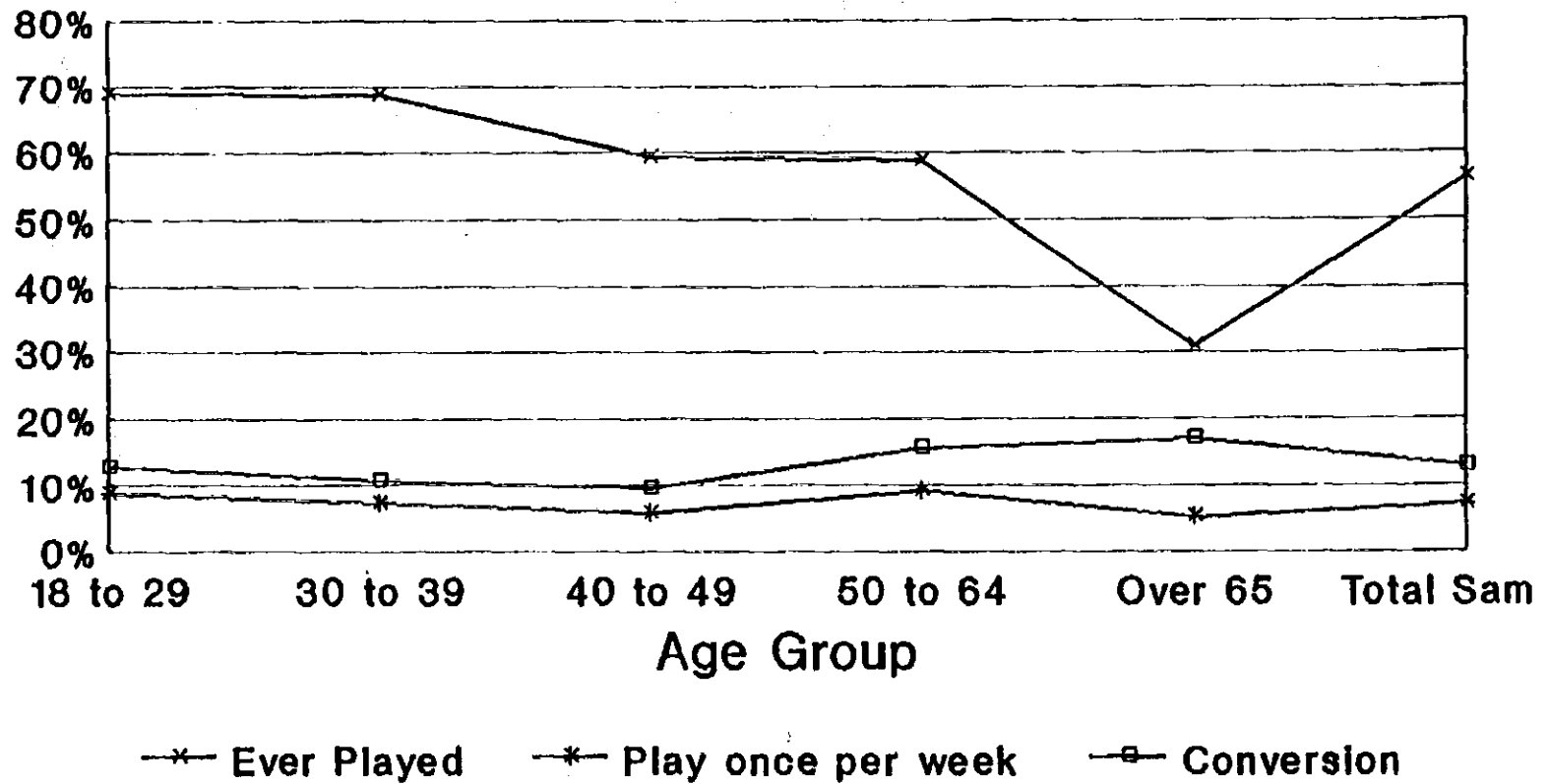
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Figure 1

"Scratch & Match"

South Dakota

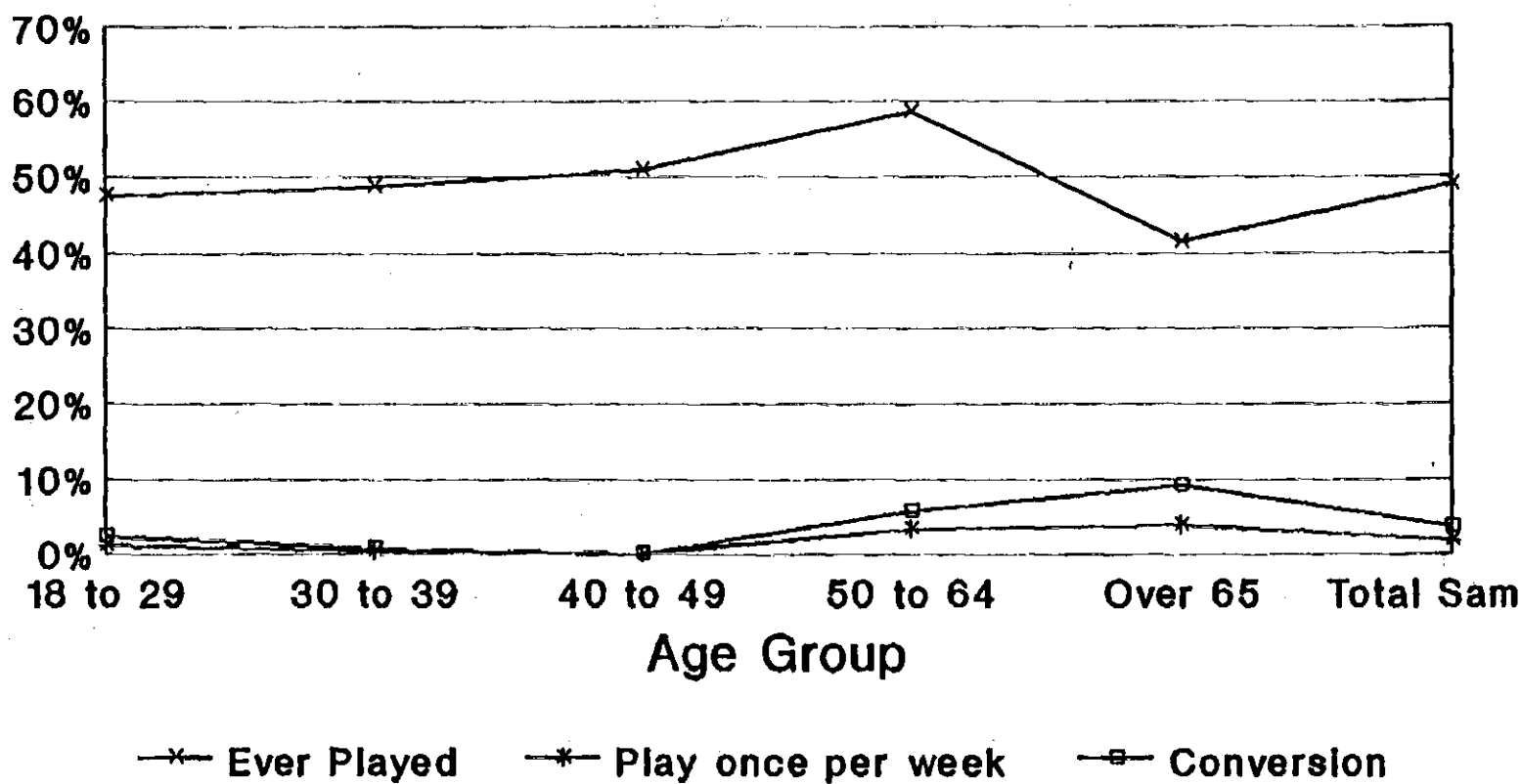


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Figure 2

Bingo

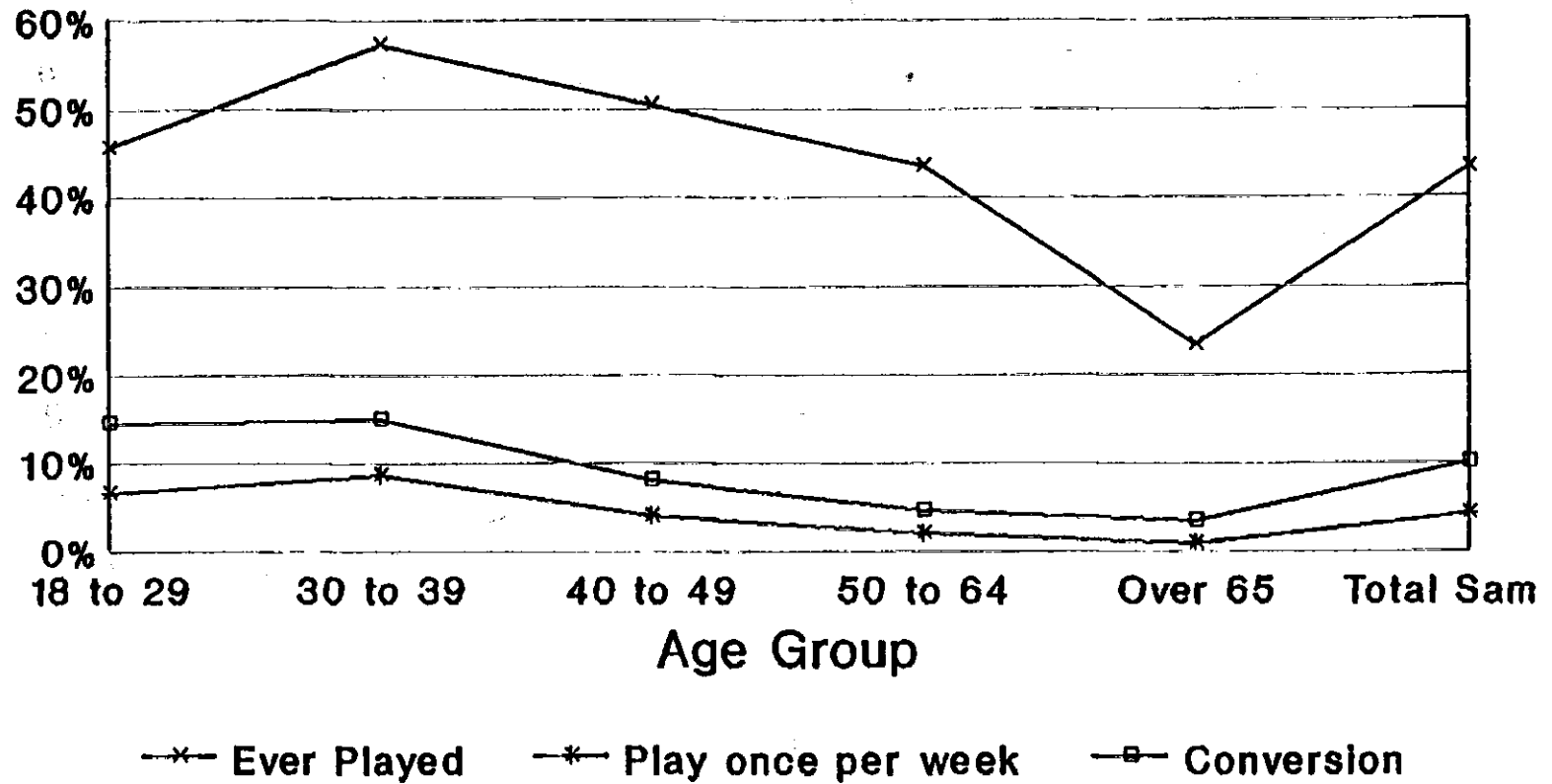
South Dakota



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Figure 3

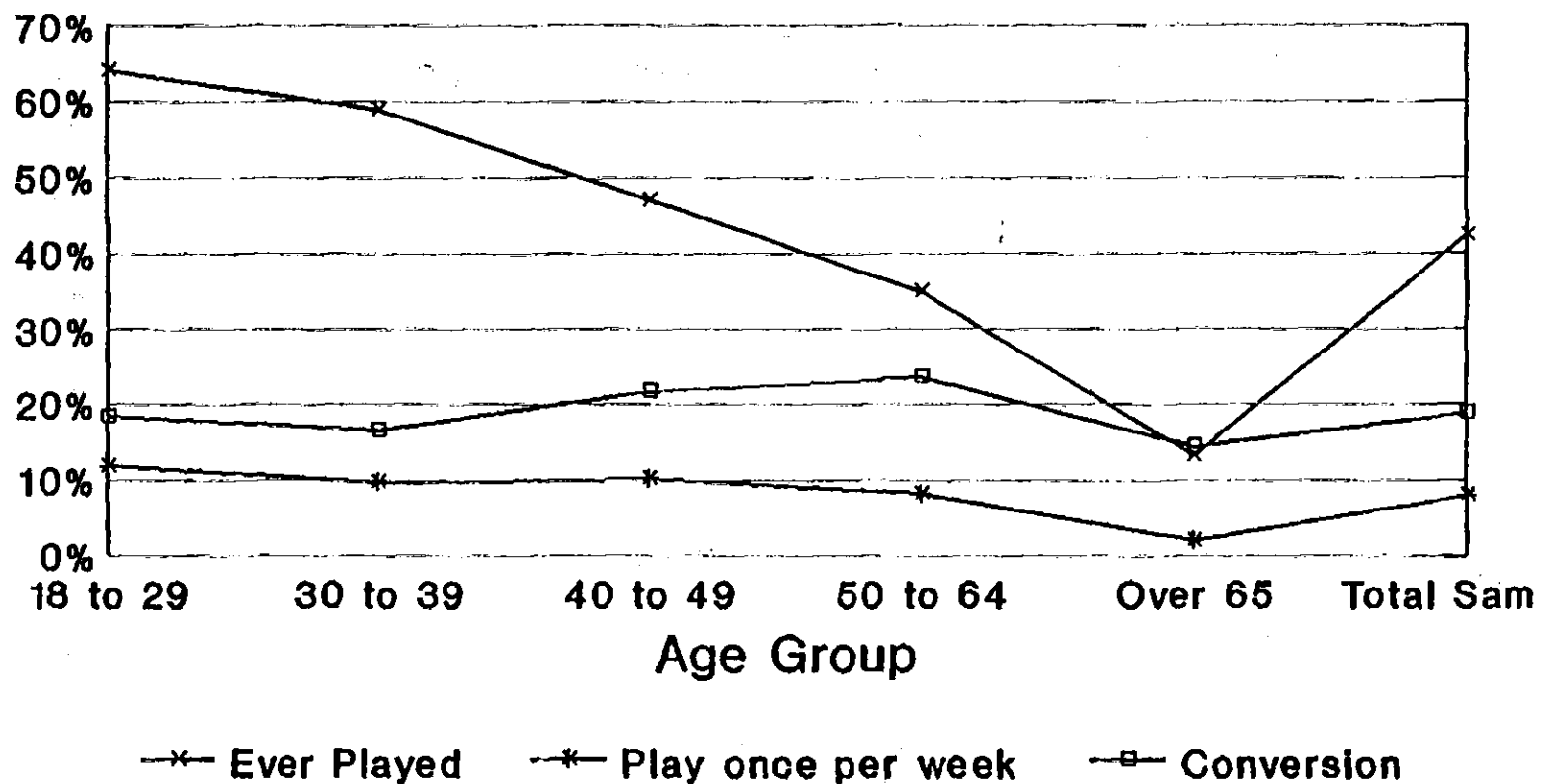
Sports Pools South Dakota



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Figure 4

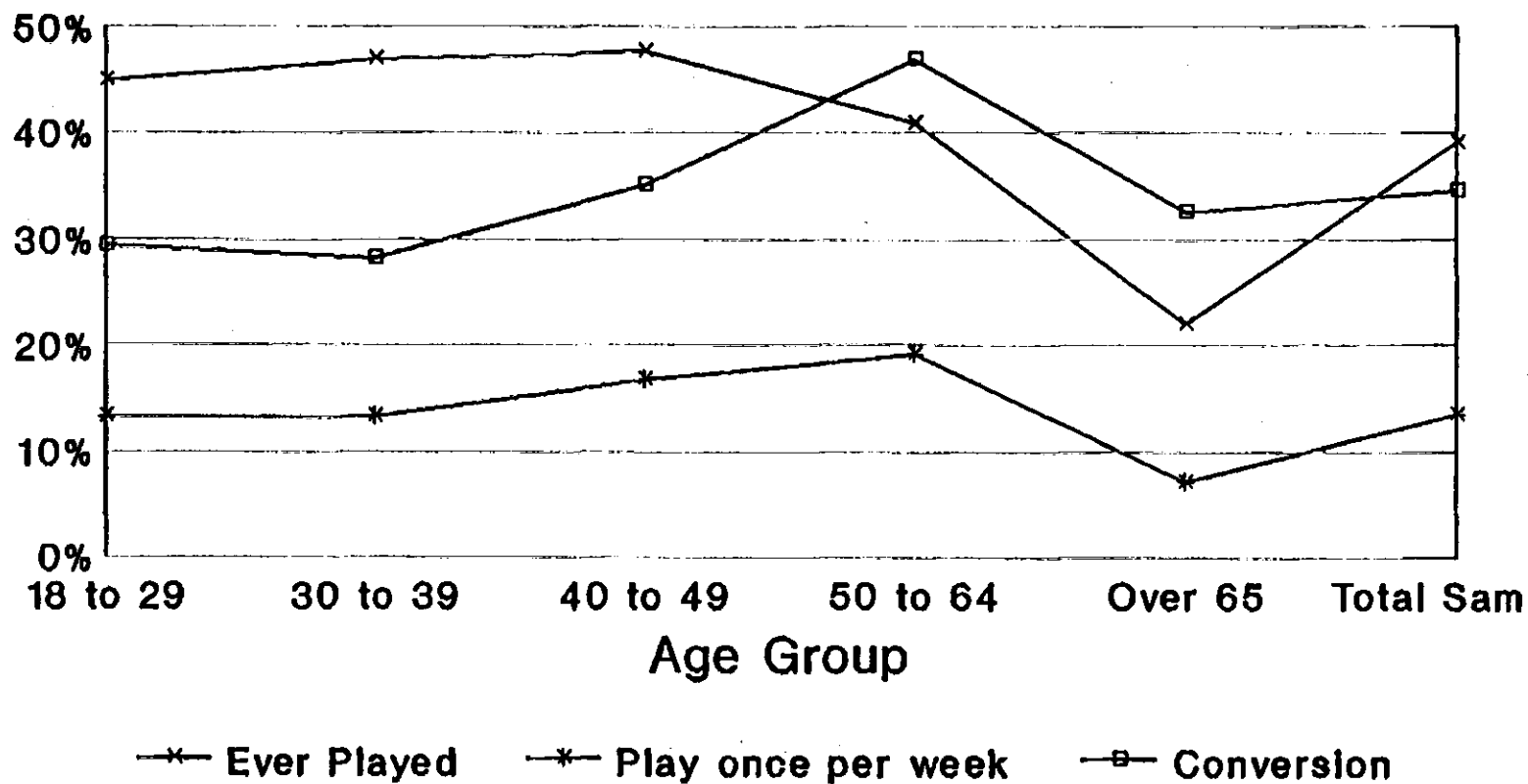
Video Lottery South Dakota



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Figure 5

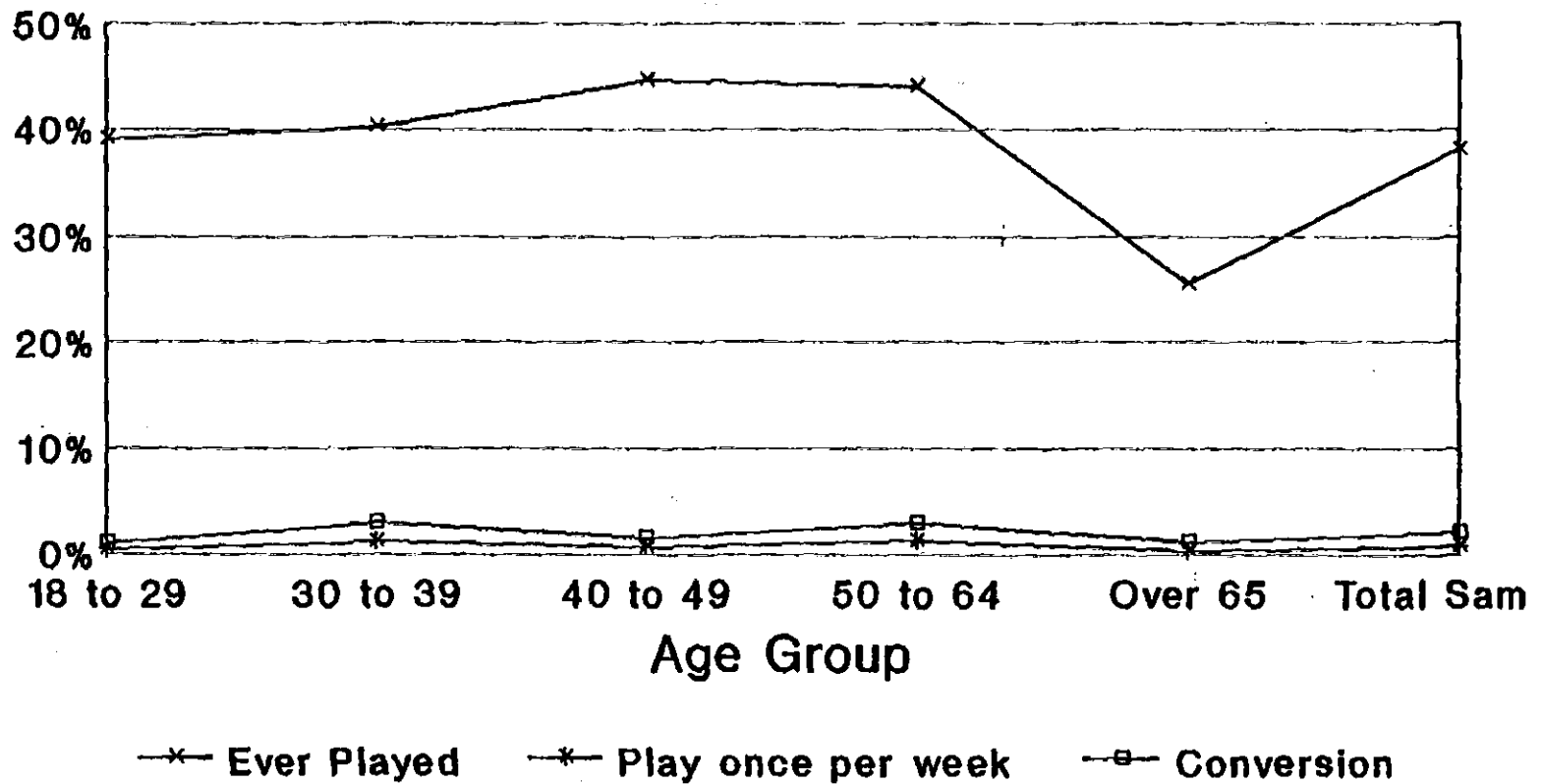
Lotto South Dakota



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Figure 6

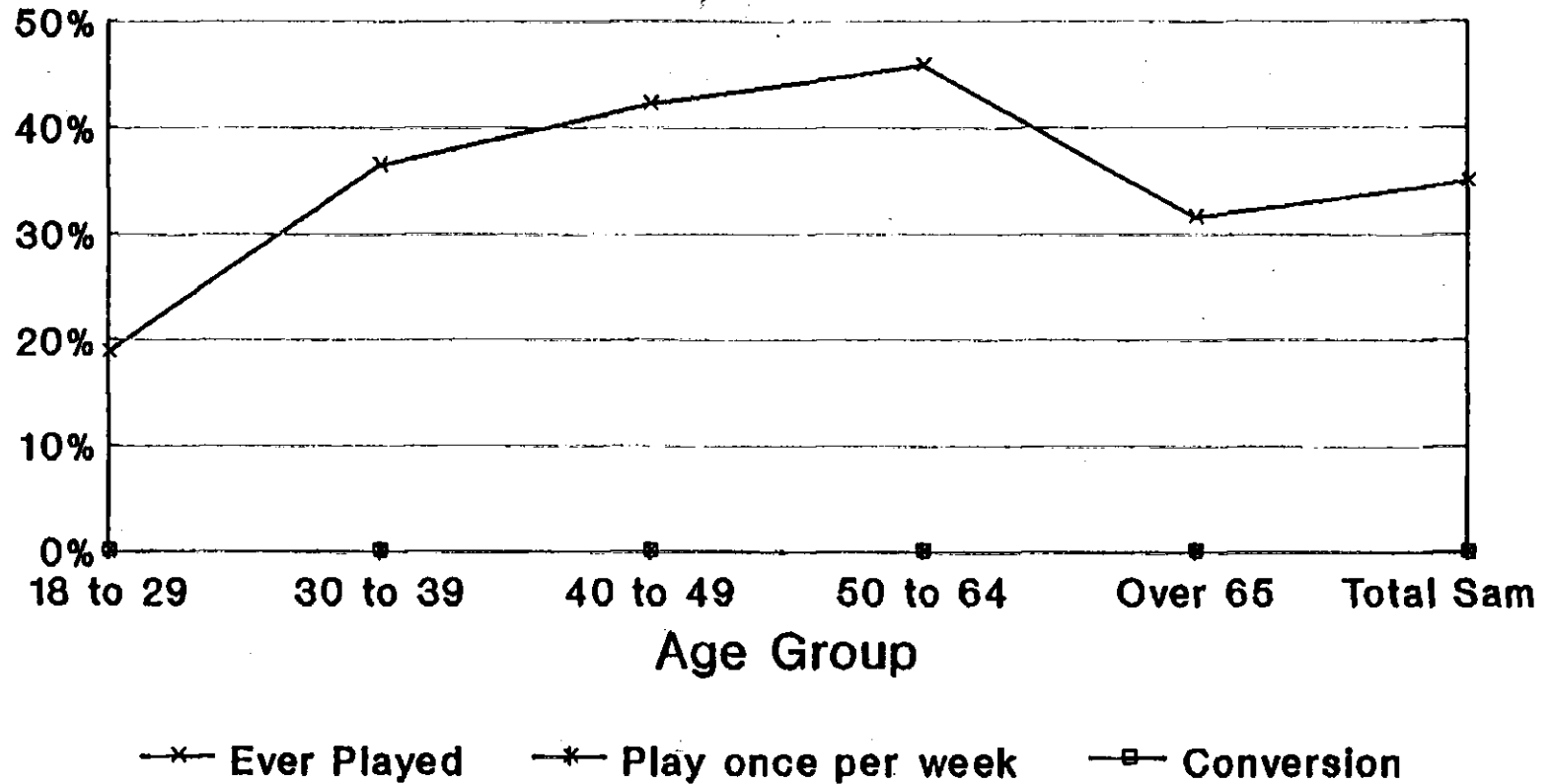
Slot Machines South Dakota



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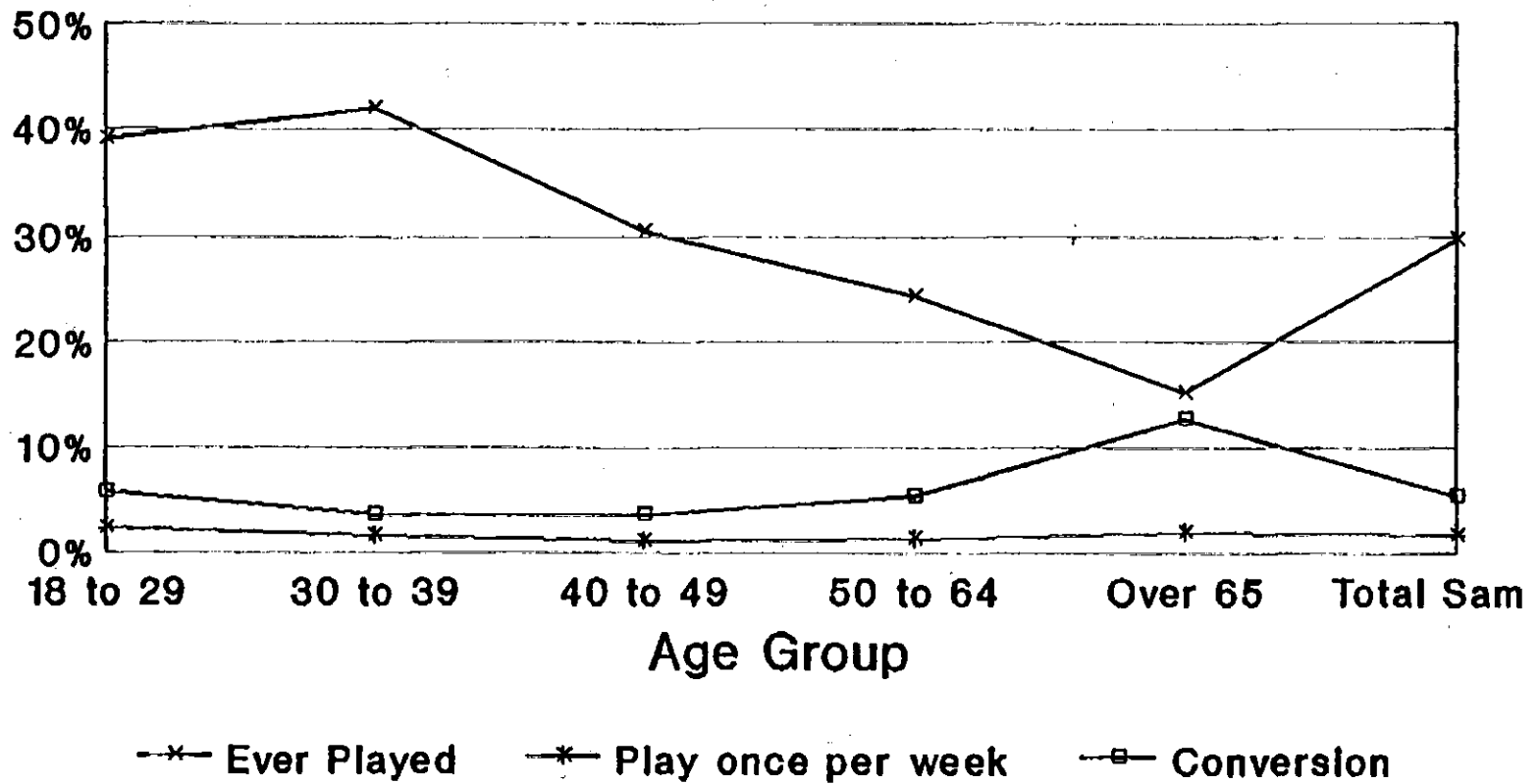
Figure 7

Out of State Slot Machines South Dakota



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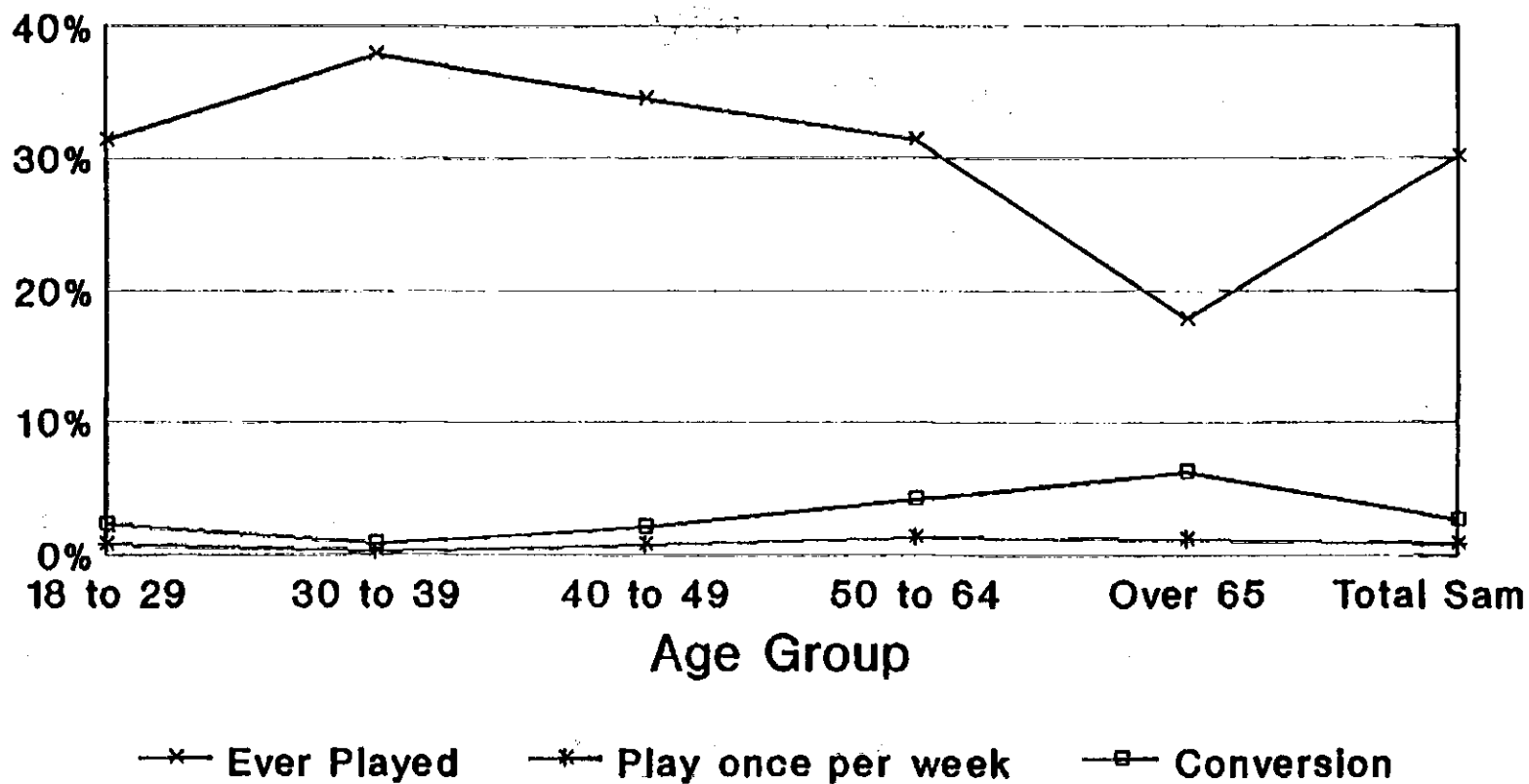
Figure 8
Card Games
South Dakota



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Figure 9

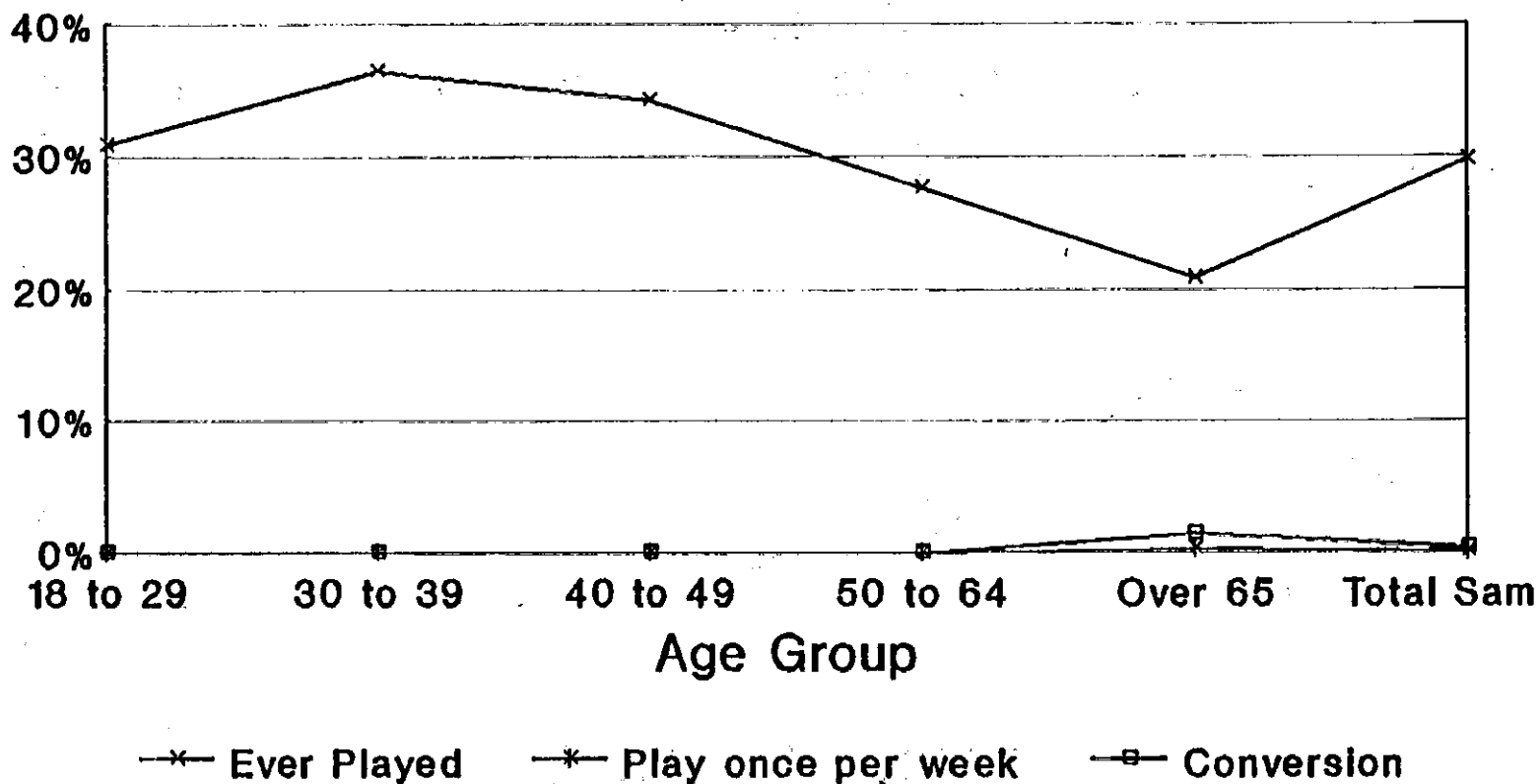
Pulltabs South Dakota



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Figure 10

Horse or Dog Races South Dakota



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Figure 11

Favorite Gambling Activities

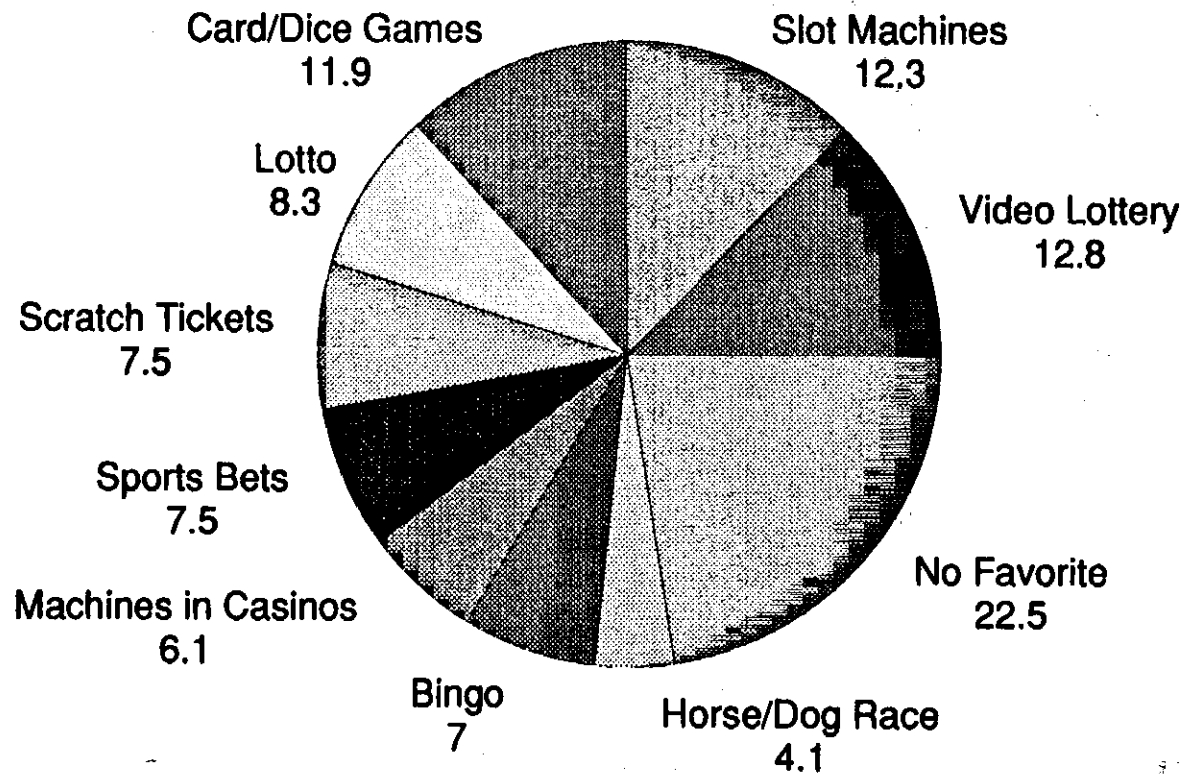
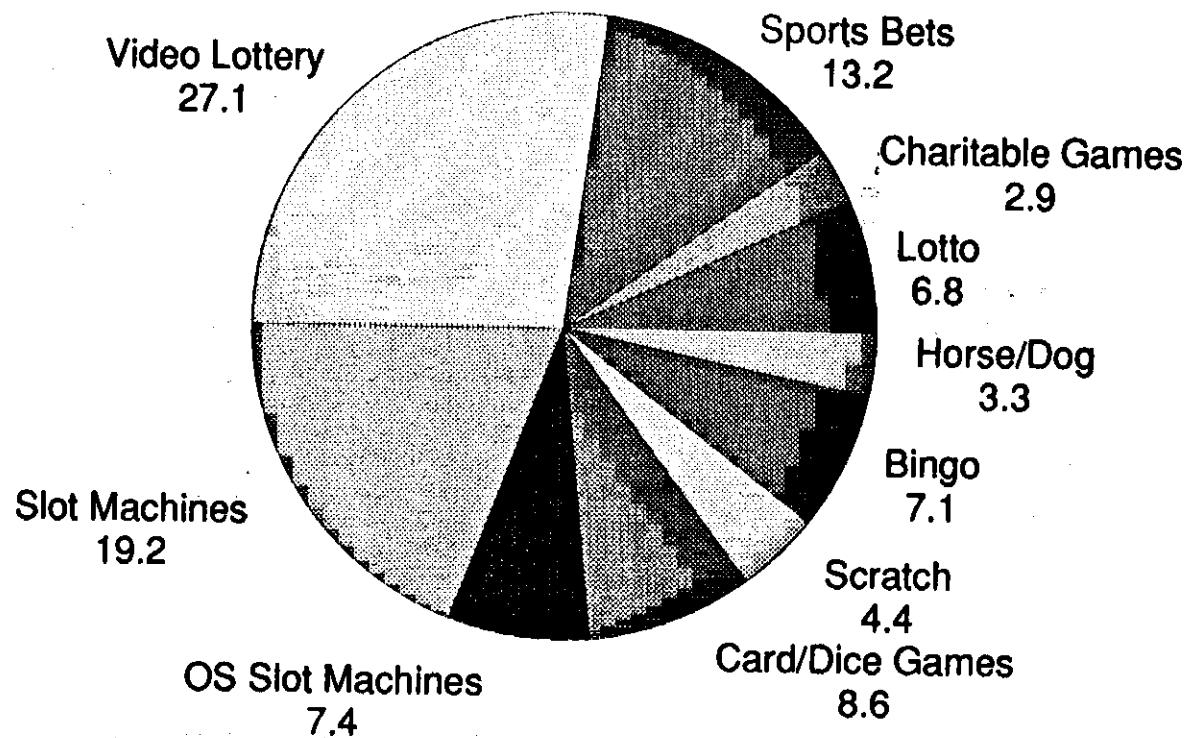


Figure 12

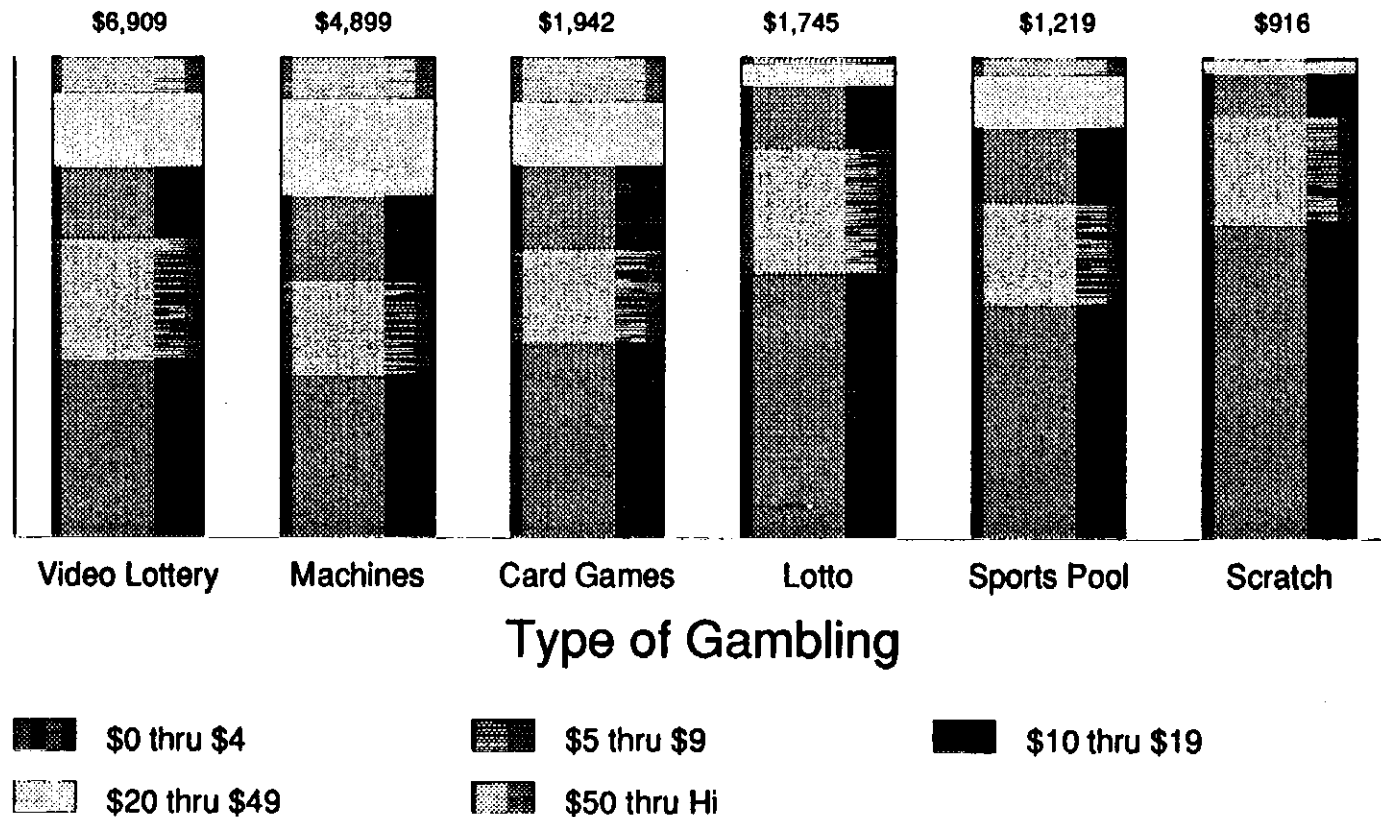
Monthly Expenditures on Gambling



Total Monthly Expenditure = \$25,520

Figure 13

Distribution of Monthly Expenditures by Gambling Activity



GAMING IN SOUTH DAKOTA:
A STATISTICAL DESCRIPTION
AND ANALYSIS OF ITS
SOCIOECONOMIC IMPACTS

By: Dr. Michael K. Madden
University of South Dakota

November 1991

ACKNOWLEDGEMENTS

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The private sector was equally helpful in providing statistics. The high survey response rate from vendor-operators and reservation sponsored operations provided needed information as well as evidence of the desire on their part to see that the study was complete.

I also wish to thank Ms. Karin Nevit, my research assistant, for her excellent data preparation, graphics and editorial expertise.

Any errors and omissions are, of course, my responsibility.

Michael K. Madden

TABLE OF CONTENTS

	PAGE
SECTION I - INTRODUCTION	1
Purpose Of Study	1
Research Methodology	2
Study Content And Organization	2
History Of Gaming Development	3
Operational Infrastructure	4
Instant Scratch Lottery	6
Video Lottery	7
Deadwood Gaming	8
Lotto America	8
Reservation Gaming	9
Summary	10
SECTION II - SPENDING VOLUME ANALYSIS	13
Deadwood Games	13
South Dakota Instant Lottery	13
Lotto America	14
South Dakota Video Lottery	14
Growth In Video Lottery Popularity	15
Net Revenue Per Terminal	17
Geographical Considerations	18
Summary	22
SECTION III - SELECTED ECONOMIC IMPACTS	23
Types Of Expenditure Impacts	23
Methodology	24
Taxable Sales Graphs	26-31
Sector Definitions	32
Impacts By Sector	33
Total Retail And Service Taxable Sales	36
Income And Employment	38
Business Formation	43
Income, Eating And Drinking Establishment Employees	46
Employment And Income, Vendor Operators	46
Total Private Sector Gaming Employment And Earnings	48
Lottery Commission Employment And Income	49
Non Wage Income	50
Market Structure	50
Aggregate Income	52
Deadwood Gaming	53
Section Summary	53

SECTION IV - FISCAL AND SOCIAL IMPACTS	55
State Revenue	55
Deadwood And Lawrence County	56
Reservation Sponsored Gaming	58
Other Local Governments In South Dakota	58
Social Impacts	59
Aid To Dependent Children	60
Food Stamp Recipients	63
Child Abuse And Neglect	65
Child Support Enforcement	68
Divorce Filings	70
Uncollected Property Taxes	72
Chapter 7 Bankruptcy Filings	73
Small Claims Filings	74
Foreclosures, Real Property	76
Section Summary	77
 SECTION V - STUDY SUMMARY	 78
 LIST OF REFERENCES	 81
 APPENDIX	 82

GRAPHS

GRAPH		PAGE
1	Instant Game Sales Quarterly Figures	6
2	Video Lottery Sales Quarterly Figures	7
3	Lotto America Sales From Dec 90 To Aug 91	9
4	Annual Gross Cash Sales Before Prizes, FY1991	11
5	Adjusted Gross Sales After Prizes Have Been Deducted	11
6	Proportionate Contribution Of Games State Fiscal Impact	12
7	Per Capita Expenditures By Game, Fiscal Year 1991	15
8	Number Of Licensed Video Terminals Entire State, Oct 88 To June 1991	16
9	Number Of Licensed Video Terminals Ten Largest Counties, Oct 88 To Jun 91	16
10	Number Of Licensed Video Terminals Smaller Counties, Oct 88 To Jun 91	17
11	Net Revenue Per Terminal October 1989 To June 1991	18
12	Net Video Revenue Per Location Per Capita	19
13	Net Video Revenue Per Terminal	20
14	Taxable Sales Total Retail Sales (1991 \$)	37

15	Taxable Sales Total Services (1991 \$)	37
16	Eating Establishments Average Employment 1985 - 90	39
17	Eating Establishments Monthly Employment 1988 - 91	40
18	Drinking Establishments Average Employment 1985 - 90	41
19	Drinking Establishments Monthly Employment 1988 - 91	42
20	Active On Sale Liquor And Beer Licenses By Fiscal Year	44
21	On Sale Licenses Compared To Sales Of Spirits	45
22	Beer Licenses Compared To Sales Of Beer	45
23	SD Video Lottery Total Terminals By Decile	51
24	SD Video Lottery Percent Of Terminals By Decile	51
25	Means Of Financing General Fund Budget Fiscal Year 1991	56
26	Average Number Of Families Receiving ADC Maintenance	61
27	Number Of Households Receiving Food Stamps	63
28	Child Abuse And Neglect Investigations, By Fiscal Year	65
29	Child Support Enforcement Caseload, ADC & Non ADC Cases	68

30	Child Support Enforcement Caseload, AFCD Cases In Arrears	69
31	South Dakota Divorce Filings By Fiscal Year	70
32	Chapter Seven Bankruptcy Filings, 1986 To 1991 * Projected	73
33	Small Claims Filings South Dakota, FY 1985 To 1991	74

TABLES

TABLE		PAGE
1	South Dakota Games And Dates Of Inception	4
2	Employment Statistics, By Vendor Size	47
3	Lottery Commission Employment By Location	49
4	Economic Impacts Associated With Gaming By Type Fiscal Year 1991	54
5	Relative Changes And Number Of Households Receiving Aid To Dependent Children Assistance	62
6	Relative Changes And Number of Households Receiving Food Stamp Assistance	64
7	Total Number Of Substantiated Abuse And Neglect Cases By Office By Fiscal Year	66
8	Substantiated Physical Neglect Cases By Office By Fiscal Year	67
9	Relative Changes And Number Of Divorce Filings By County	71
10	Percentage Of Assessed Property Taxes Assessed But Not Collected By Fiscal Year	72
11	Relative Changes And Number Of Small Claims Filings By County	75
12	Foreclosures By County 1983 - 1991* Projected	76

SECTION I - INTRODUCTION

This document constitutes an inquiry into the economic and social impacts which can be traced to gaming activities in South Dakota. The impacts examined in this study are limited to those which are quantifiable and are statistically recorded both before and after various gaming activities were first initiated. The methodology used herein is not micro in nature. For example, case by case analyses are not pursued.

Economic and social factors, however, are treated on a county basis in all instances where such data is readily available. Any variations concerning the mix and intensity of gaming activity by county are analyzed. Sixteen of the largest counties in the state are identified and compared to each other as well as to the balance of the state.

PURPOSE OF STUDY

The gaming infrastructure in South Dakota has experienced substantial changes in a relatively short period of time. Prior to 1987, gambling opportunities were basically limited to dog and horse racing and bingo. Since that year, gaming options have expanded on a statewide basis. Several gaming infrastructures have also evolved for certain local communities as well.

It is generally agreed that most games established since 1987 have, as a whole, proven more popular than was expected prior to their inception. Taken as an aggregate, citizen outlays on games of chance in South Dakota have grown to a level such that it represents a significant component of total spending within the state. Thus, an interest exists to ascertain the extent to which the gaming industry has produced impacts on other economic sectors.

Along with the growth in the popularity of gaming, fiscal impacts have evolved in regard to state revenue. Local governments and tribal governments also have experienced some revenue enhancements. At the state level, it can be reasoned that increased dependence on gaming revenue and therefore gaming itself has occurred. One purpose of this research is to identify the degree of reliance that governments have on gaming revenue.

Increased interest in knowledge about economic and social impacts connected to gaming has also been demonstrated by residents and public officials throughout the state. The perception of the rising significance of this industry to the state has produced a desire on the part of the public to acquire factual information of the type which is to be found in this document.

RESEARCH METHODOLOGY

The findings reported in this study are statistically descriptive. Substantial amounts of time series data which are maintained by various agencies throughout the state is analyzed. For purposes of presentation, this data is transformed in order to determine statistical descriptions of changes, if any, which have occurred subsequent to the growth of gaming activity. Graphics and tabular presentations of associative findings will be used extensively.

It is important to understand that in this study, the economic and social factors which may relate to gaming activity are associative in nature. That is, the limited time frame and aggregative form of the data limits a researcher's ability to establish unambiguous causal connections. In this regard, movements in time series' which are observed subsequent to the establishment of gaming activity are identified as being associated with gaming rather than caused by gaming. Firm causal connections can only be safely determined with additional years' experience with the industry.

STUDY CONTENT AND ORGANIZATION

The following section will describe the extent of gaming activity by game type. The level of spending will be analyzed at the county level in some cases. Sixteen of the largest volume counties are included. When evidence exists in regard to resident as opposed to nonresident spending, that information will be outlined in this section.

In addition, trends in gaming activity will be analyzed. This information will help form inferences concerning projections of activity into the future.

Section III contains a development of economic impacts. Statewide expenditures by various sectors will be examined through time. A major purpose of this segment of the study is to determine which spending sectors have proven complementary to gaming and which are substitutes to gaming.

Employment and income also constitute economic impacts resulting from gaming activity. In some cases such impacts are reallocative in nature and in others net increases in income and employment are observable.

Social impacts are analyzed in Section IV. A broad group of social statistics are formed into time series and analyzed with regard to post gaming changes.

Also included in Section IV is a review of fiscal impacts which have occurred as a result of gaming development during the last few years. The bulk of this discussion deals with state impacts, but some local and tribal governments are included also.

Finally, a summary of the findings will be presented in Section V.

HISTORY OF GAMING DEVELOPMENT

It is essential to understand the chronological development of the various games which are now present in South Dakota before one is able to gain an understanding of the economic, social and fiscal impacts which be may associated with the industry. For many years prior to 1987 games of chance were limited to racing and bingo. Dog racing was conducted at two tracks in the state and horse racing took place during short annual periods at three or four state locations.

The primary focus of this study concerns the post-1987 changes in the state gaming infrastructure. The following table summarizes the various gaming options established in South Dakota since 1987.

TABLE 1

SOUTH DAKOTA GAMES AND DATES OF INCEPTION	
Instant (scratch) Lottery	October 1987
Video Lottery	October 1989
Deadwood Gaming	November 1989
Lotto America	November 1990
Reservation Sponsored (3)	Oct. 1990 to June 1991

The Instant ticket, Lotto America and video lottery games are administered by the South Dakota Lottery Commission. Deadwood gaming is administered by the South Dakota Commission on Gaming and reservation gaming programs are administered tribally, but managed by way of contract with private operators.

OPERATIONAL INFRASTRUCTURE

This subsection outlines the geographical distribution, industry structure and participation trends in the various forms of gaming in South Dakota.

Dog and Horse Racing

Until 1991, management of greyhound and horse racing was undertaken by the South Dakota Racing Commission. In 1991, the South Dakota Commission on Gaming assumed administrative responsibility in addition to the Deadwood gaming industry.

Greyhound racing has historically taken place in two locations in South Dakota. The Black Hills track near Rapid City and Sodrac in the southeast corner of the state are the only greyhound tracks in South Dakota. The traditional operating season for these operations spanned the late spring to early fall each year. Business volume at the Sodrac track is heavily dependent on population centers in South Dakota, Iowa and Nebraska. Black Hills vacation travelers accounted for much of the volume for the western South Dakota track.

The Black Hills track was not in operation in 1991 after experiencing declining public interest for many years. Total betting dropped from a high of about \$8 million in 1983 to only \$2.5 million in 1990. Although still operating in 1991, the Sodrac track has experienced a drop in betting to \$2.7 million in 1991 from about \$26.4 million in 1983.¹ Although the decline in greyhound racing interest can be partially attributed to competition from other forms of gaming, the downward trend in this industry began many years before 1987.

Historically, horse racing took place at Park Jefferson in Union County, Fort Pierre, Aberdeen and Rapid City. Both Park Jefferson and Rapid City discontinued operations in the nineteen eighties leaving only Fort Pierre and Aberdeen as centers of horse racing activity. Today fifteen week-end race days are divided between these two tracks in April and May.¹

Horse racing betting volume has steadily decreased in South Dakota during the last decade. Betting on live horse racing now only totals about \$500,000 for the two remaining tracks in the State. In 1981, the total horse racing handle was about \$3.7 million. In fiscal year 1991, Simulcast, remote video racing from out of state tracks generated total spending of \$4.2 million.

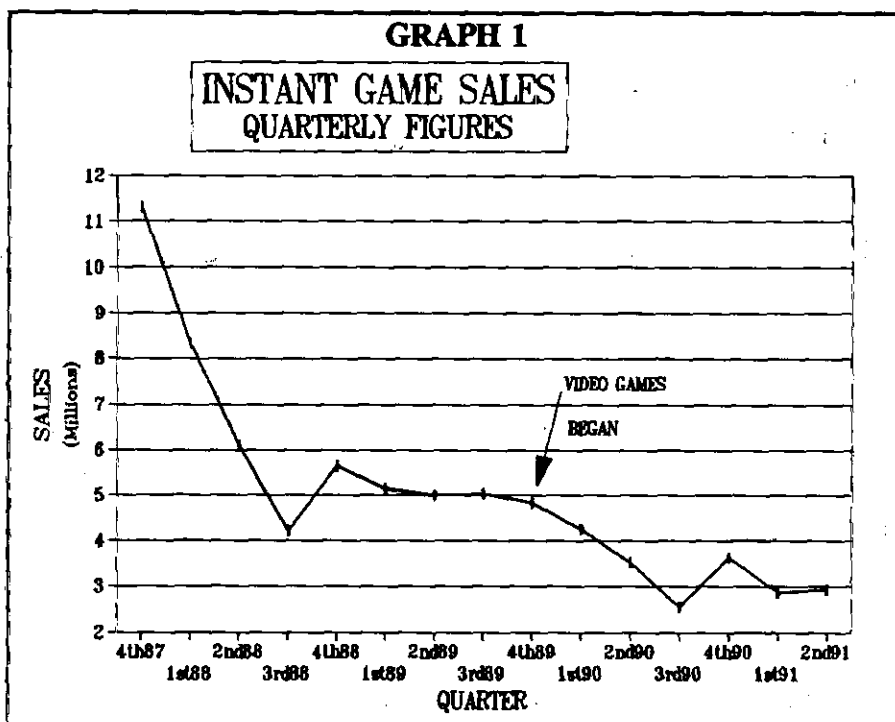
Because of the present marginal financial status of the remaining dog and horse racing operations, virtually no revenue accrues to state government. Gross wagering is divided between winnings to bettors and added purse allowances to race participants.¹

Existing trends in dog and horse racing suggest that these activities do not face a bright future; quite possibly being ultimately phased out in their entirety. Due to the relative insignificance of these two forms of gaming from the standpoint of state government as well as individual communities, the present study devotes only limited attention to them.

INSTANT SCRATCH LOTTERY

Instant lottery games first began in October of 1987. This was, of course, the first lottery sponsored by the state and enjoyed exceptional popularity prior to the inception of other lottery games. Instant games continue to receive moderate popularity. A large number of retail locations throughout the state make lottery tickets available. A five percent selling commission is received by these outlets along with additional incentives for meeting sales goals.

The accompanying graph traces the quarterly movements in instant game gross sales since it was established.² The novelty of this new gaming opportunity produced a high volume of sales initially. Prior to the beginning of the video lottery, sales appear to have been quite stable at about \$5 million per quarter. As



denoted in the graph, instant ticket sales experienced a steady decline once the video lottery began operation in the fourth quarter of 1989. This substitution effect reduced instant ticket

sales to about \$3 million each quarter. It is quite plausible that a certain market segment is being reached by the instant game lottery; those not willing to substitute other forms of gaming. If this is true, it is likely that its popularity will be sustained at approximately its current level.

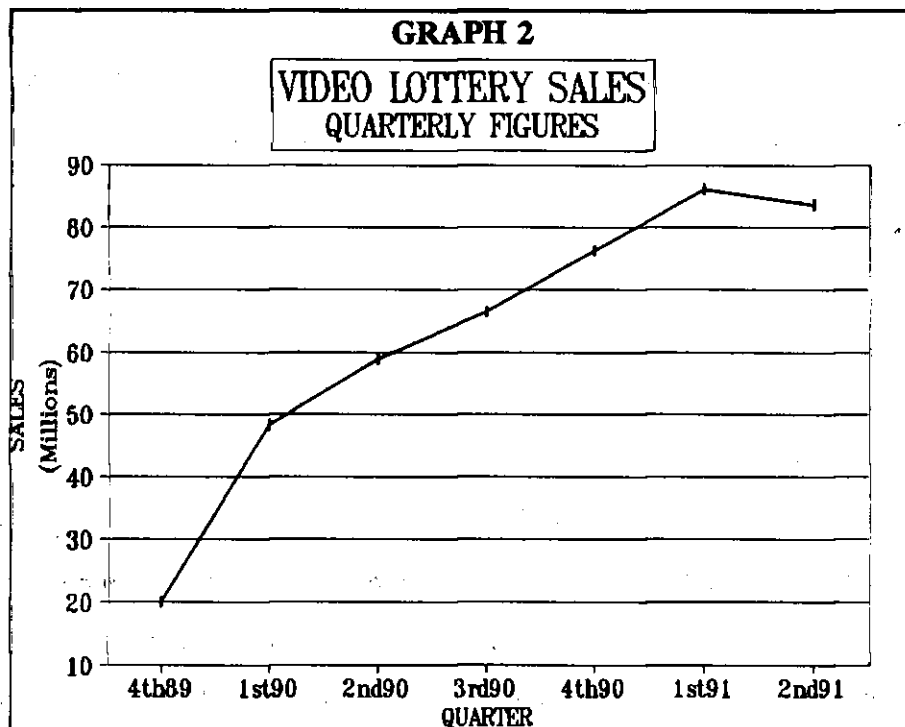
VIDEO LOTTERY

The South Dakota video lottery began operation in October of 1989. This game is also administered by the South Dakota Lottery Commission.

Video terminals throughout the state are electronically linked to a central computer system in Pierre. One of the requirements is that an on-sale liquor, beer or wine license must be held by businesses. Individual businesses are limited to a maximum of ten video terminals.

The growth in popularity of this game has been substantial. This is evidenced by the fact that the number of terminals in operation grew from 1,452 in November of 1989 to 6,144 in June of 1991.² Monthly gross play before deducting player winnings grew from about \$7.1 million to \$25.8 million during this same period.

Graph 2 illustrates the quarterly growth that has taken place since the video lottery began in October 1989. The pattern of growth suggests that perhaps the level of play has reached a leveling off point. It will be shown that this game has



proven the dominate game in terms of player interest and fiscal returns to state government. For this reason a considerable amount of attention in the following analysis will be given to the video lottery game.

DEADWOOD GAMING

Gaming in Deadwood was established in November of 1989, one month after the inception of the statewide video lottery. The Deadwood gaming industry began after a successful initiated change in the state constitution one year earlier. The efforts to establish gaming in this community was tied to historical preservation needs as well as an economic development tool.

Slot machines, blackjack and poker card games are included in the limited gaming structure. As of August 1991, nearly 2,000 gaming devices are licensed in approximately 80 gaming establishments. The first 22 months of gaming in Deadwood has produced total gaming action of more than \$565 million of which \$56 million has been generated in gross revenue after prizes have been paid.³

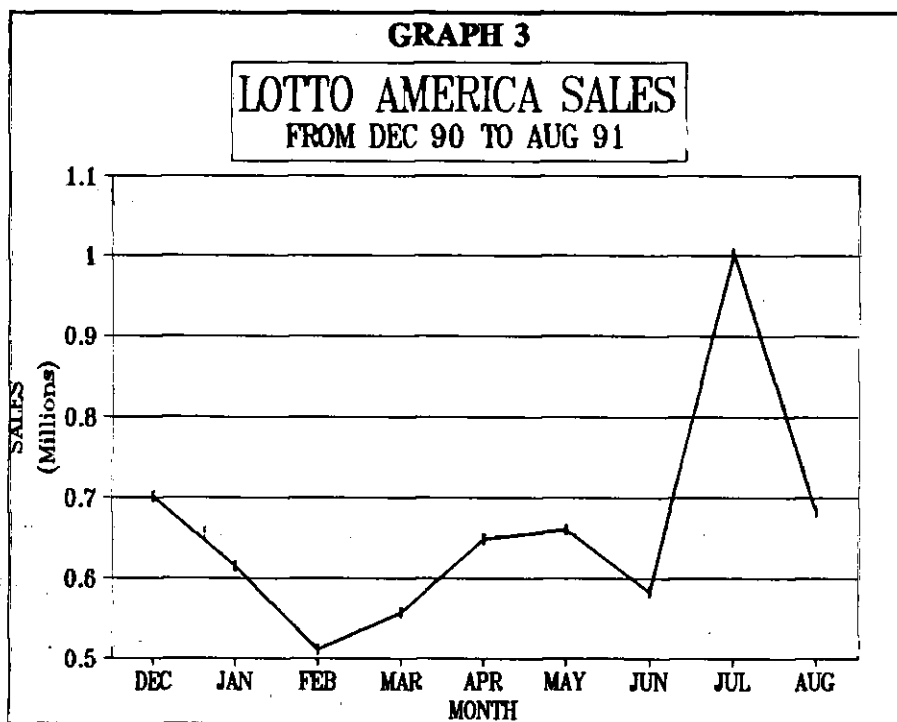
State government, the City of Deadwood and Lawrence County all participate in tax and license fee proceeds. The details of this revenue arrangement will be discussed later in this document.

LOTTO AMERICA

In December of 1990 South Dakota joined a consortium of other states in offering the Lotto America game. The essential feature of this game is the opportunity for players to buy chances for winning a lotto prize of \$2 million or more. Lesser consolation prizes are also available. A network of businesses throughout the state are involved in the sale of Lotto America tickets. The types of businesses which offer Lotto America sales include grocery stores, convenience stores, drug stores among others. Each outlet is electronically connected to Lotto America operational facilities. Businesses receive a five percent sales commission for tickets sold.

Because of the relative newness of this game, it is not possible to establish a long term trend in Lotto America volume. The following graph shows that monthly sales have ranged between \$500,000 and \$700,000.

Examination of the graphic illustrates that sales are erratic through time. Undoubtedly substantial movements in sales are triggered by the size of the lotto prize. Although this game has not been available for a full year, it appears that annual sales are on an \$8 million pace.



RESERVATION GAMING

Upon the establishment of gaming in Deadwood, interest in this industry rapidly developed among South Dakota Indian tribes. Since October 1990, three reservation gaming operations have commenced. The first operation, Royal River Casino, is located near Flandreau. The Dakota Sioux Casino began operation in its present form in May of 1991. This facility is located near Watertown. The Fort Randall Casino near Pickstown opened in June of 1991.⁴ Although these gaming establishments have been open only a short time, early indications suggest that they are likely to be very successful.

Among all of the forms of gaming discussed above, reservation gaming is the one which is likely to grow significantly in scope in South Dakota. Decisions regarding expansion rests largely with Indian tribes themselves, although some state and local control serves as a limiting constraint. If profits appear to be attainable for new operations it is reasonable to expect new operations to develop at various locations throughout the state.

In comparison to the Deadwood gaming structure, reservation operations do not limit wagers to \$5.00 and the number of devices in these establishments is much larger, ranging from 180 to 250. Net proceeds from these operations are divided between operations management and tribal governments.⁴

SUMMARY

The games which have been established in South Dakota differ in enough different ways to generate a somewhat complex organization. The instant lottery, video lottery and Lotto America are state sponsored games each generating revenue to state government. They are state wide in scope. The Deadwood gaming industry produces substantial revenue for economic redevelopment and historical renovation. However, regulation of Deadwood gaming rests with a state agency and significant revenue accrues to state government. Reservation gaming is essentially independent of state regulation, and economic returns do not accrue to state government.

A perspective can be gained by comparing annual gross sales among the post-1987 gaming infrastructure existing in South Dakota. Reservation gaming is omitted because they have only been recently established and because they have no fiscal impact on state government.

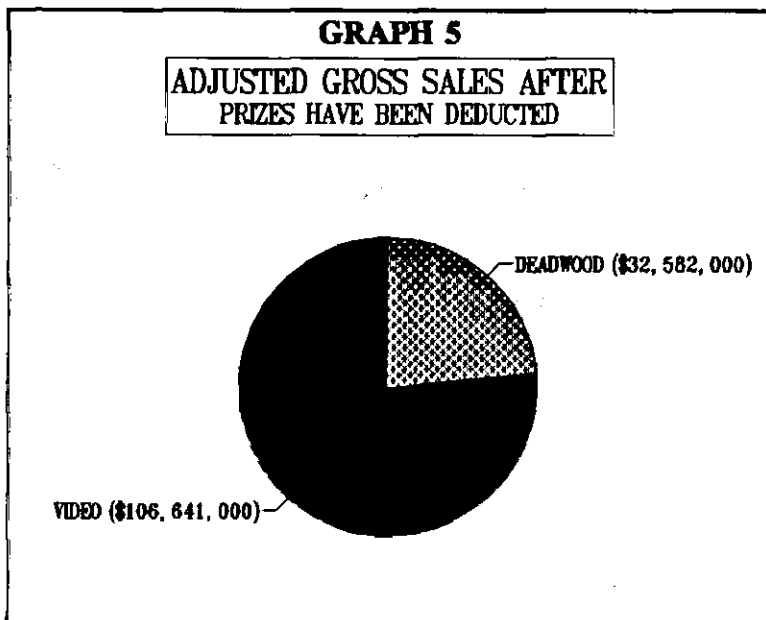
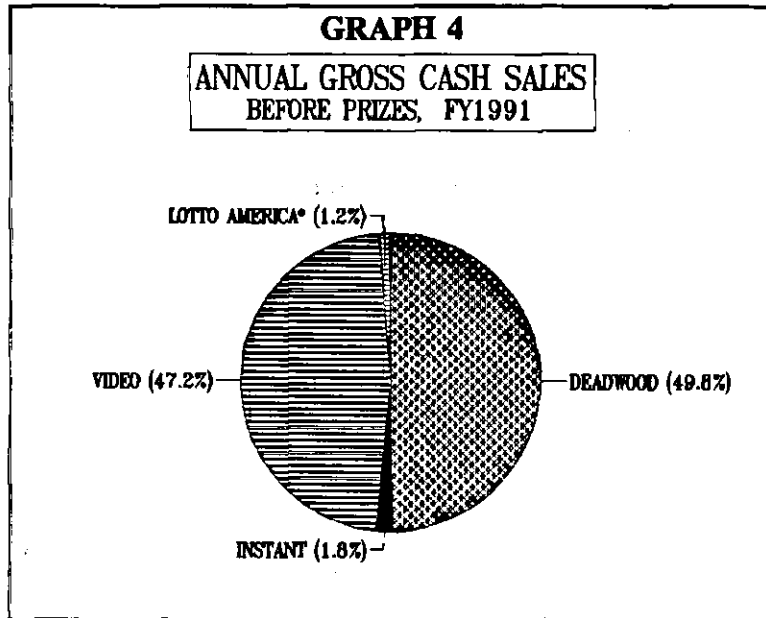
Graph 4 below compares the total amount of sales among games administered by the South Dakota Lottery Commission and the South Dakota Commission on Gaming.⁵ Gross spending refers to the total amount of sales or gaming action before deducting prizes.

In terms of total gaming action, Deadwood gaming and the South Dakota video lottery are close to being equal. The graph further demonstrates that in terms of volume of sales, player interest is dominated by the video lottery compared to the other two state sponsored games. Total gaming action simply indicates the volume of player activity, but can be misleading because this measure

does not take into account the amount of money expended by players. A comparison of Deadwood gaming to the state video lottery from the standpoint of adjusted gross sales is illustrated in the following graph.

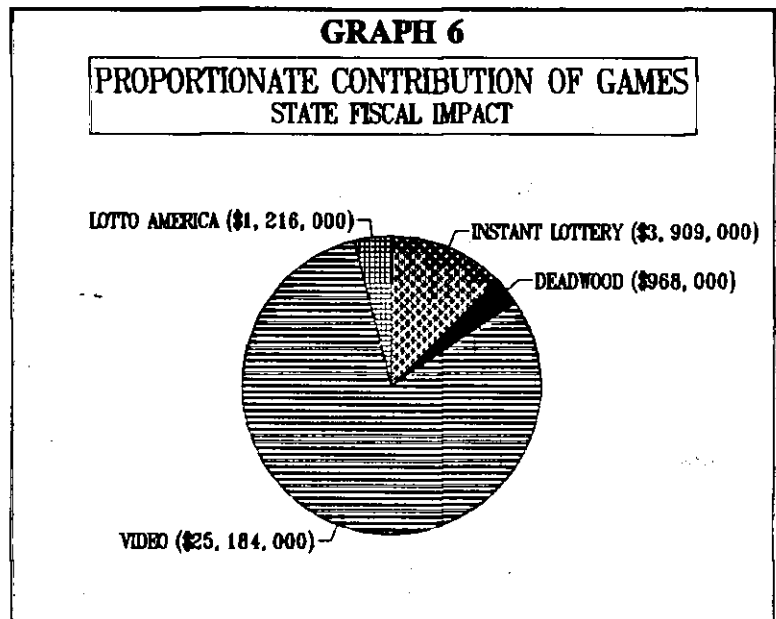
Because the percentage of total play retained as income is significantly higher for the video lottery, it can be said that adjusted gross receipts and therefore player expenditure toward that game is far higher than it is for Deadwood gaming operations.⁵

The \$106,641,000 net spending by video patrons is well over three times higher than net spending by Deadwood players.



The fiscal effects as distributed among the four forms of gaming for which state government participates is illustrated in the following graph. Dollar totals represent remittances into the state treasury after all relevant administrative and management expenses have been deducted.⁶ Most of this state income is received into the General Fund, but \$715,500 entered a special corrections construction fund.

The video lottery, with its relatively high earnings percentage coupled with a comparatively high tax rate produces the bulk of gaming revenue for the state of South Dakota. In fiscal year 1991, more than 80% of the \$31.3 million in state gaming revenue was derived from the video lottery game.



Accordingly, much of the detailed analysis found in this study concentrates on this gaming option.

The following section deals with spending and other economic issues associated with gaming in South Dakota.

SECTION II - SPENDING VOLUME ANALYSIS

It has been established in Section I that any major statewide social or economic impact caused by gaming is likely to be traced to the video lottery. This is due to the fact that net spending undertaken by resident players is dominated by the utilization of that game. This issue can be further clarified by comparing resident net spending per year by the three state sponsored games as well as Deadwood games.

DEADWOOD GAMES

Deadwood gaming is associated with high net spending levels, but research indicates that only a minority of spending in that town is traceable to South Dakota residents.⁷ A survey of Deadwood visitors shows that only 14.6% of all Deadwood visitors are from South Dakota.⁷ Although this percentage appears small, it is the only professional sampling research available at this writing. If one assumes that spending by residency is proportionate to visitation rates, only \$4.76 million of the \$32,582,000 spent by Deadwood gamblers in fiscal year 1991 is derived from South Dakota Residents. It is to be expected that within the South Dakota resident segment of the market, a concentration of Deadwood players is from communities in the Black Hills. The referenced research document reports that sixty percent of the South Dakota residents sampled in June of 1991 were from the Black Hills area.⁷

Assuming this residency breakdown is valid and using the 1990 population statistics for those aged 21 and over, the following per capita Deadwood gaming statistics can be derived. The census reports that there are 466,528 people over 21 years of age in South Dakota.⁸ Dividing \$4.76 million by that population total results in an estimated **\$10.20** per capita expenditure annually in connection with Deadwood gaming.

SOUTH DAKOTA INSTANT LOTTERY

The instant lottery game in fiscal year 1991 generated total sales of about \$13.4 million. However, approximately \$8.0 million was returned to players in the form of prizes.² The

balance of \$5.1 million represents net participant spending. Dividing this total by the population aged 21 and above results in a per capita spending level of **\$10.93**.

It will be recalled that significantly larger per capita spending levels occurred in the beginning years of the instant game, but reductions took place after the video lottery began operation.

It is a safe assumption that the vast majority of revenue generated through this game originates from South Dakota residents. Although it is likely that some spending arises from nonresidents, no research was done to determine the extent.

LOTTO AMERICA

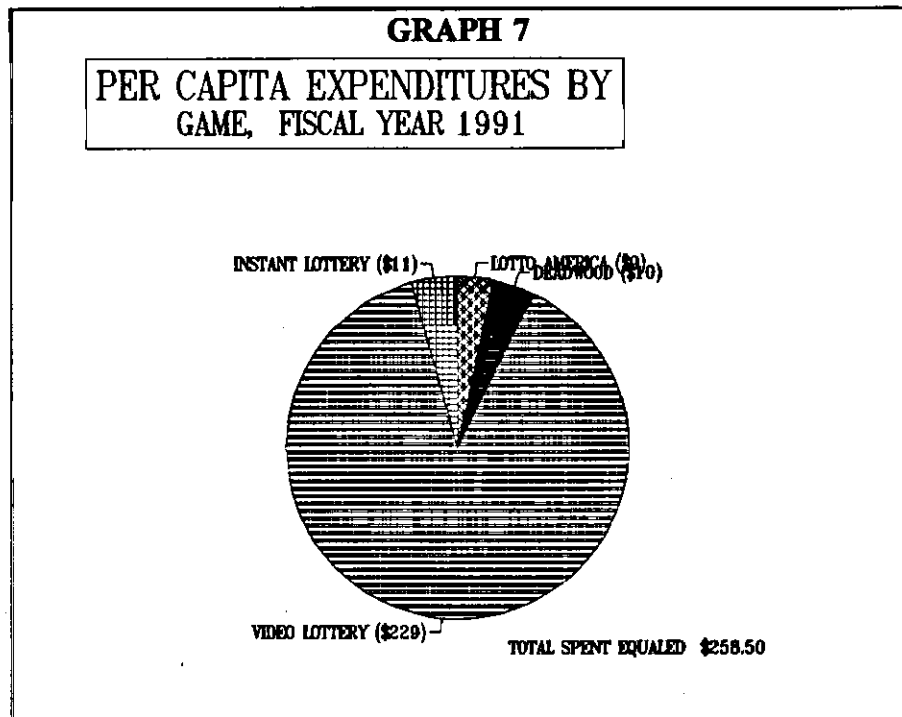
Actual data concerning this game is not available for an entire year. In Section I it was estimated that given the game popularity during the first eight months, a projected \$8 million will be spent over an entire year. During the first seven months of operation approximately \$2.3 million or 49% of total sales was diverted to prize expenses.² In this game, much of the prize expense is contributed to the central Lotto America pool. In the long run it is assumed that a like proportionate share will be returned to residents as prizes. Accordingly, about \$4.1 million or **\$8.78** per capita in net spending is assumed to occur in connection with this game. Thus, this number will be used in conjunction with the fiscal year data for the other games.

SOUTH DAKOTA VIDEO LOTTERY

During fiscal year 1991, adjusted gross sales which is the same as net spending by players equaled about \$106,641,000 for this game. Dividing this fiscal year total by population results in an estimated per capita spending rate of **\$228.58**. It will be shown later that evidence suggests that a small portion of video lottery receipts are derived by nonresidents. However, based on this estimate and those developed above, the following graph illustrates the estimated

breakdown of resident player action by type of game. It is recalled that the Lotto America spending estimate is an annualized projection.

The video lottery dominates the other three games combined, accounting for 88.4% of the total per capita spending on the games identified. The total per capita spending on these four games equaled \$258.50. It is clearly the case that these estimates are simply arithmetic means.



Obviously, much of the population spends virtually nothing on these games and others spend significantly more than these averages.

Because of the dominance of the video lottery in the state gaming industry a detailed analysis of spending characteristics within the state will be undertaken. An examination of intra state levels for Lotto America and instant lottery sales shows only minor geographic differences.

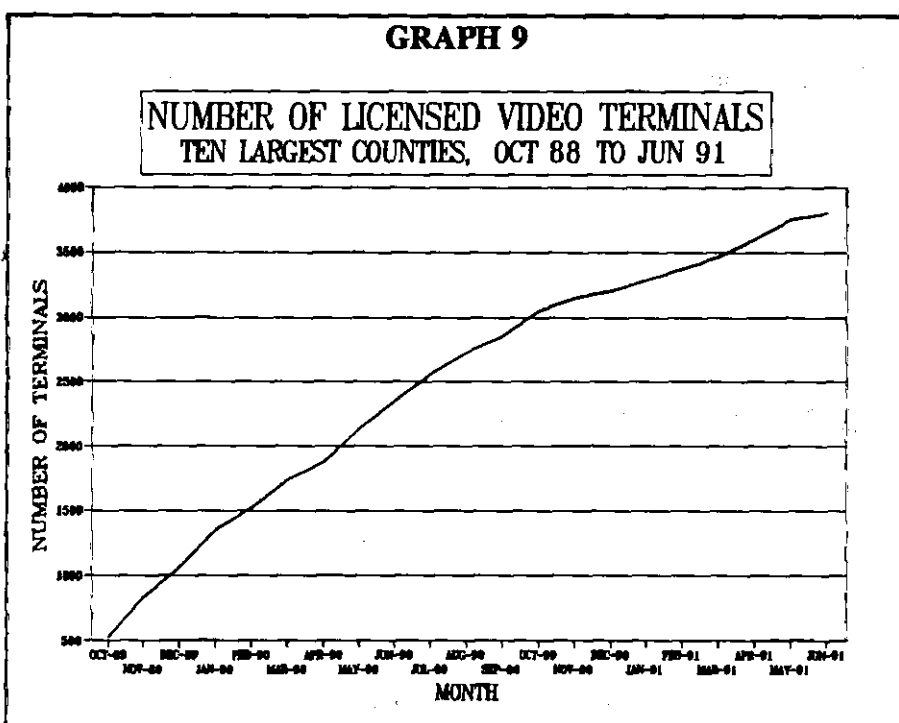
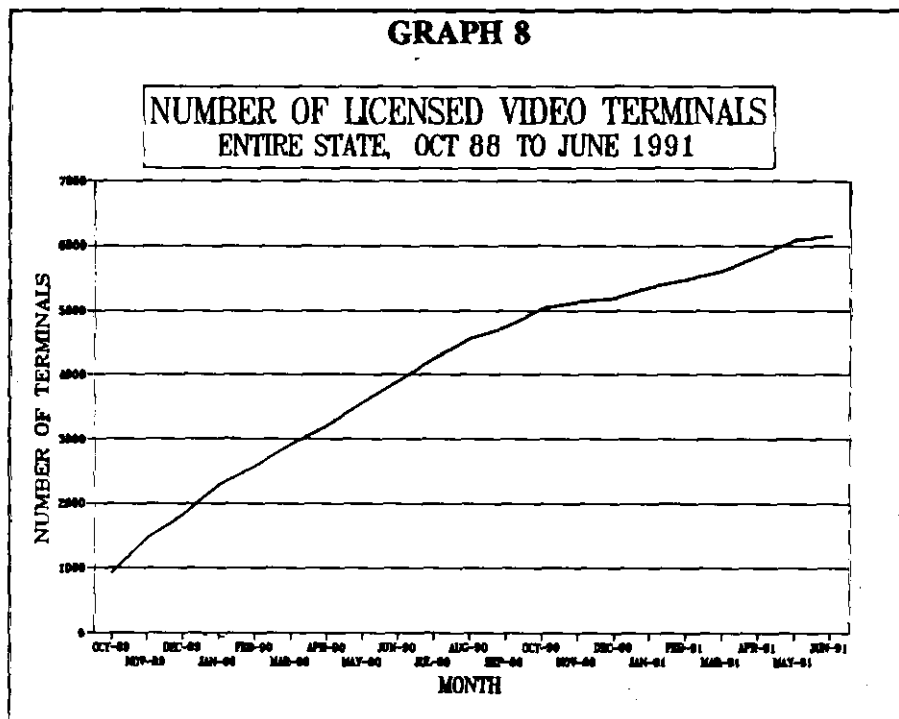
GROWTH IN VIDEO LOTTERY POPULARITY

It has been alluded to earlier that popularity of the video lottery has experienced substantial growth in the two years since operations began. It can be illustrated that the growth pattern has been similar in both large urbanized counties and small counties. The growth pattern for the entire state is illustrated in Graph 8 below.²

Growth exhibited a relatively smooth systematic pattern until October 1990, one year after their inception. Thereafter, growth appeared to have leveled off to a reduced rate before rising again in the spring of 1991. The data indicates a maturing of the industry is taking place. As further evidence, data from late

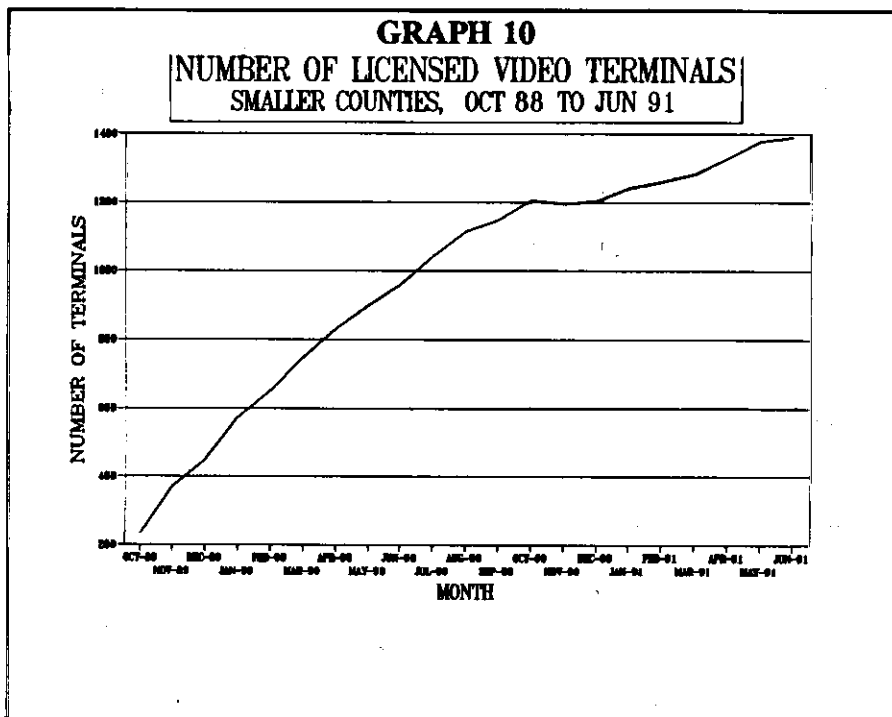
summer of 1991 actually shows a moderate decrease in the number of terminals in operation.⁹

The growth pattern exhibited by the ten counties having the most terminals is very similar to that of the entire state. The dominance of these counties in terms of number of terminals can also be observed. In June of 1991, nearly 3,800 of the 6,144 terminals operating in



the state were in these counties.

The remaining 2,350 were distributed among the remaining fifty or so counties in the state. The growth pattern in the smaller counties is similar except for a more distinct leveling off in the months after October 1990. By the spring of 1991, growth accelerated before reaching maturity during the summer of 1991.

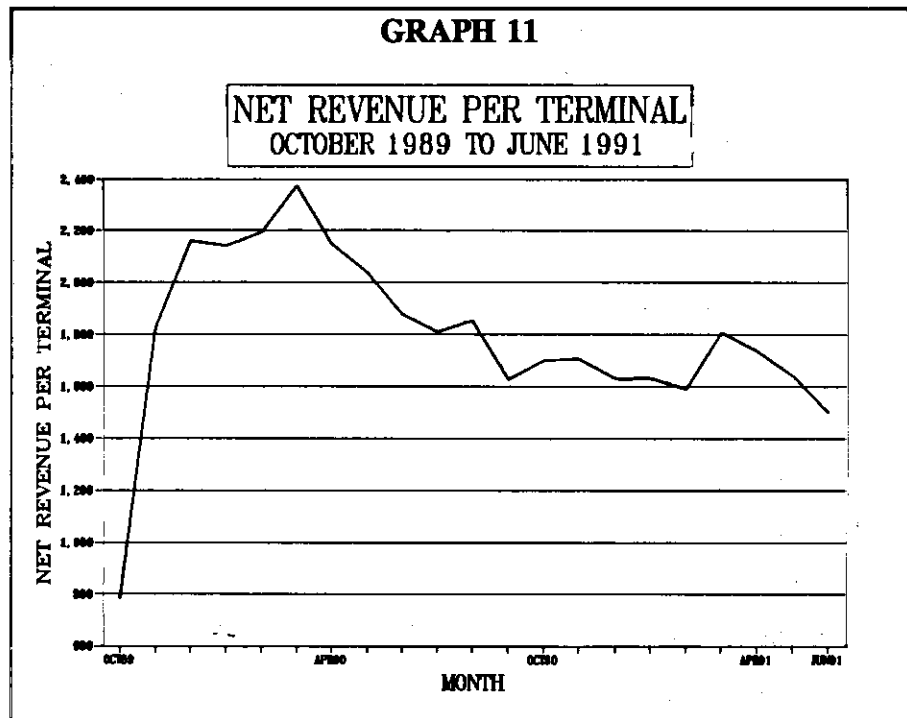


NET REVENUE PER TERMINAL

An analysis of the net revenue per machine is useful in gaining an understanding of the reasons for growth in the number of video terminals. Net revenue is here defined as the amount earned before payment of the state video lottery tax.

The free market system dictates that when revenues per terminal rise, pressure is brought forth to increase the number of machines. Conversely, when revenues fall sufficiently the number of machines will presumably decrease. Thus, there is the notion of an equilibrium number of machines which is determined by these revenues. This equilibrium number of machines and associated average revenue are market determined phenomena.

Graph 11 illustrates very clearly the reason for the initial growth in private investment in terminals. From the game's inception until March of 1990, dramatic growth in monthly net revenue per machine occurred. This precipitated the growth patterns observed in the three previous graphs. As this growth continued, play became



more dispersed among the larger number of terminals producing a rather steady decline in revenue per machine. Accordingly in June of 1991, per terminal monthly revenue approximated \$1,500 per month. This compares to a high of nearly \$2,400 in March of 1990.

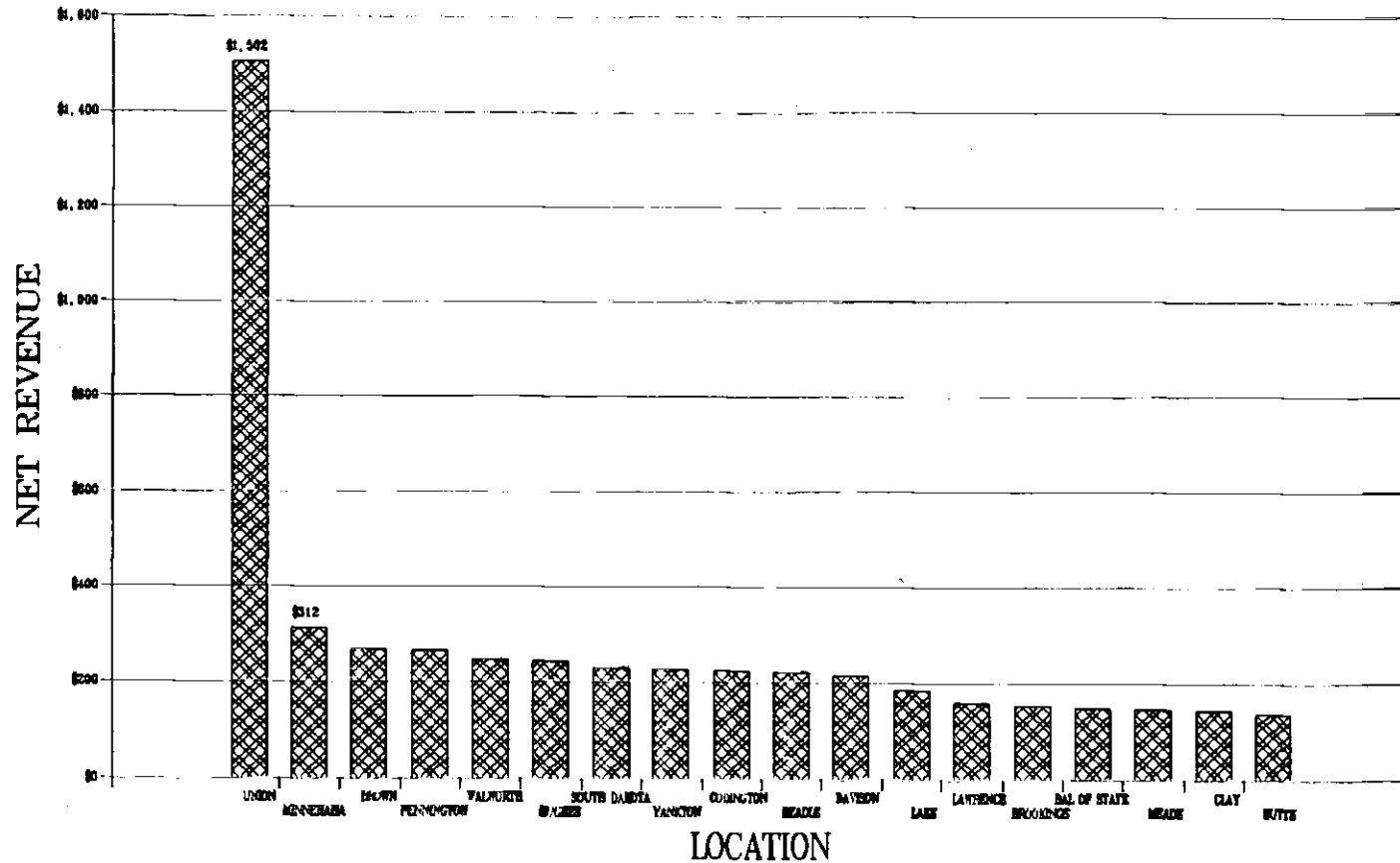
This analysis points to the possibility that a maturing of the industry is approaching.

GEOGRAPHICAL CONSIDERATIONS

Fiscal year 1991 provides a base for comparing differences in popularity of the video lottery. Sixteen counties are compared with each other as well as the balance of the state in the following graphics. These sixteen counties were selected based on player volume and number of terminals in operation. Graph 12 illustrates the marked differences in per capita spending by location.¹⁰ Union County in extreme southeast South Dakota is a special case in regard to per capita spending. Located just north of the city of Sioux City, Iowa, it benefits very substantially in

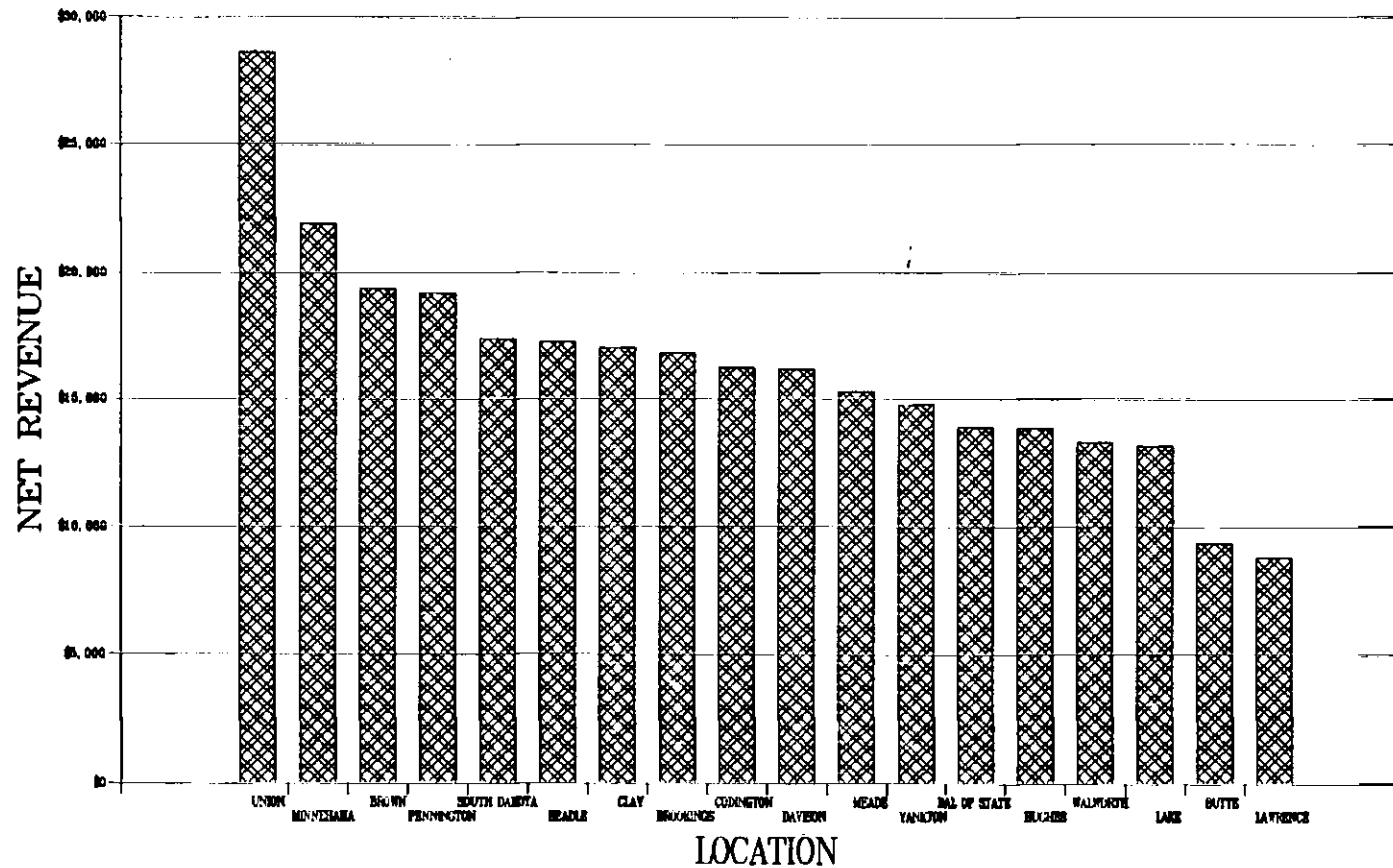
GRAPH 12

NET VIDEO REVENUE PER LOCATION PER CAPITA



GRAPH 13

NET VIDEO REVENUE
PER TERMINAL



terms of video lottery volume. At \$1,500 per capita expenditure volume, its geographical proximity to Sioux City and other communities in Iowa and Nebraska makes it unique among South Dakota counties. Union County is the only obvious location where nonresident popularity dominates video player volume. The significance of this is learned if one assumes that residents of Union County, in actuality, play at a rate equal to that of the entire state. If one deducts \$229 from \$1,502 and multiplies that residual by the Union County population 21 years and over, it is estimated that about \$8.75 million is generated from nonresidents in that county. The remaining \$1.6 million is that which is spent by Union County residents.

Other counties such as Minnehaha, Brown, Pennington and others undoubtedly experience video lottery receipts from nonresidents. It is not statistically possible to isolate the visitor component, however, because of the limited length of time series' and because experience thus far has been statistically dominated by a growth trend. In following years, once the video game has stabilized in volume, nonresident spending volumes can be identified.

Relatively low per capita video spending occurs in Lawrence, Meade and Butte Counties. Undoubtedly, this can be explained by competition from gaming opportunities in nearby Deadwood. Per capita spending in these counties ranged from \$135 to \$155 in fiscal year 1991. Likewise, the relatively low player volume in Lake county may be traced to the Royal River gaming operation near Flandreau.

Brookings and Clay Counties are also characterized by relatively low player volume. Socioeconomic and educational differences found in communities dominated by a University may serve in explaining this observation.

The balance of the counties not individually included in the graph, as a group, are very moderate users of the video lottery. These counties are generally of low population, experience low visitor volume and probably include a smaller percentage of residents who are wage earners. Thus, per capita player volume in fiscal year 1991 averaged about \$147.

Aside from Union County discussed above, the more populous counties exhibit the largest player interest. Minnehaha County registered per capita spending of \$312 in fiscal year 1991. Brown and Pennington recorded average spending of about \$265. Other counties ranking among the top include Walworth and Hughes with \$247 and \$244 respectively.

Graph 13 provides a ranking of average net revenue (before taxes) per video terminal. Again the high volume of play identified in Union County produces substantial amounts of revenue per machine. In fiscal year 1991, net revenue after prizes were paid averaged \$28,557 per video terminal in that county. This is more than \$11,000 higher than the state average of \$17,357.

Rankings correlate somewhat with per capita spending (Graph 12) but there are some important exceptions. Revenue per capita is relatively high in Walworth and Hughes Counties, but revenue per machine is relatively low. Conversely, revenue per capita is quite low in Brookings and Clay Counties, but revenue per machine is relatively high. The lowest rankings among the sixteen counties analyzed were Butte and Lawrence, undoubtedly due to their geographical proximity to the Deadwood gaming industry.

SUMMARY

The purpose of this section is to give the reader a perspective among the various gaming opportunities which are sponsored or regulated by State Government agencies. Clearly the dominant form of gaming in terms of participation rates is the video lottery. Evidence provided in this section demonstrates that this game grew dramatically during its short existence. Indications seem to point to the likelihood that most of the growth period is now past, and that a leveling off in player volume and number of video terminals in the state will take place.

SECTION III - SELECTED ECONOMIC IMPACTS

In the previous section, a detailed examination of spending patterns of gaming patrons was developed. Such spending is equivalent to net amounts of revenue generated after prizes have been paid. When player spending in connection with Deadwood gaming, the video lottery, the instant lottery and Lotto America are added together, it was found that per capita spending in fiscal year 1991 amounted to \$258.50. Multiplying this amount by the state's population aged 21 and over, one arrives at an estimated \$120.6 million aggregate spending in 1991.

This estimate may be somewhat high because of the fact that some nonresident spending on the video lottery is included in this figure. For example it is recalled that \$8.75 million is likely to have been expended by nonresidents in Union County alone. Other larger communities also experience nonresident video lottery patronage, but the amount is difficult to statistically isolate because of the short time the game has existed. Judging from the analysis at the county level in Section II, one suspects that only a minor proportion of video lottery outside Union County can be attributed to non-residents.

Offsetting the nonresident influence are the reservation sponsored gaming enterprises. Although this data must be suppressed to prevent the disclosure of proprietary information, data available to this writer suggests that there is a complete offset to nonresident spending which may be involved among other forms of gaming.

TYPES OF EXPENDITURE IMPACTS

Based on the above discussion, it appears that at least \$115 million and perhaps as much as \$125 million was allocated to gaming in fiscal year 1991 by South Dakotans. This implies that a significant amount of expenditure is diverted from other spending sectors into gaming activities. A study of various spending sectors in terms of this substitution effect is provided in this section.

Other sectors, it will be shown, have experienced growth simultaneous to the rise in gaming activity. That is, some sectors are positively impacted because the goods and services they provide are purchased in association with gaming activity. In economic terms, these are referred to as complementary sectors.

Still other sectors show no significant impact in connection with gaming. Such sectors are referred to as independent.

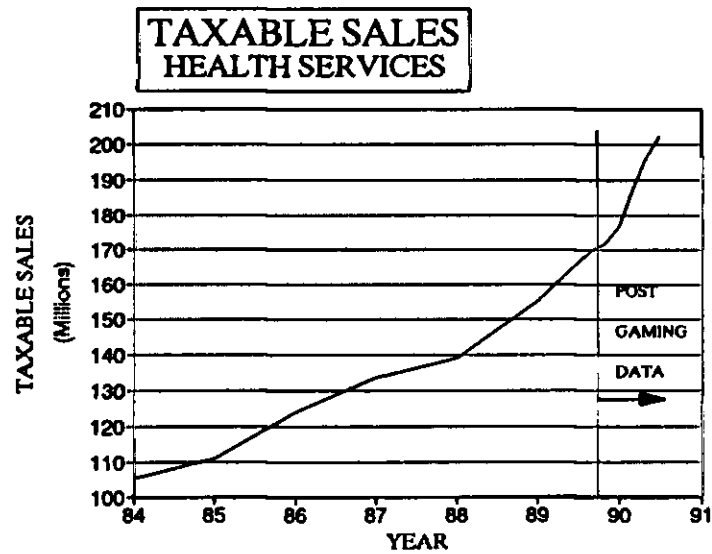
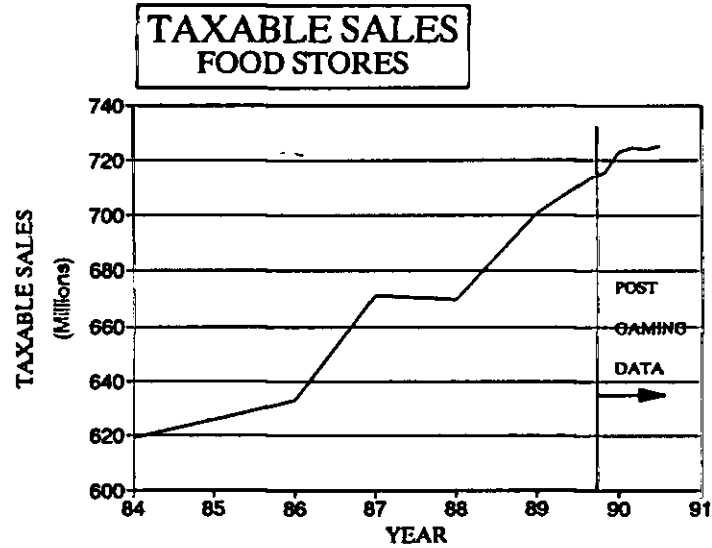
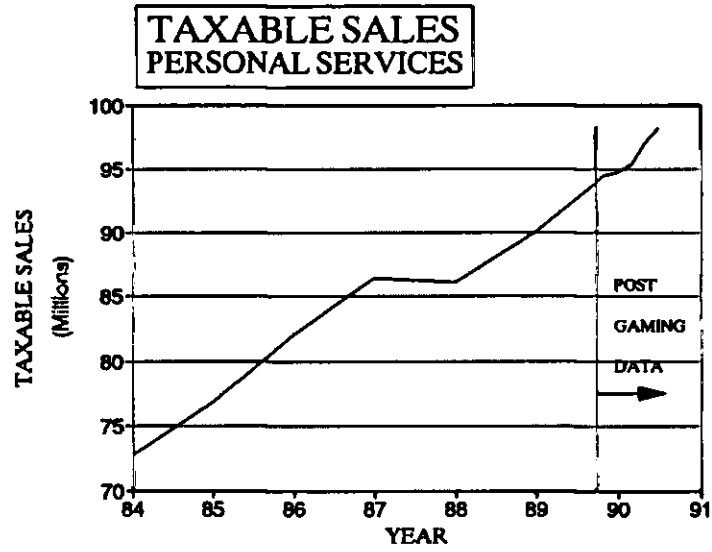
METHODOLOGY

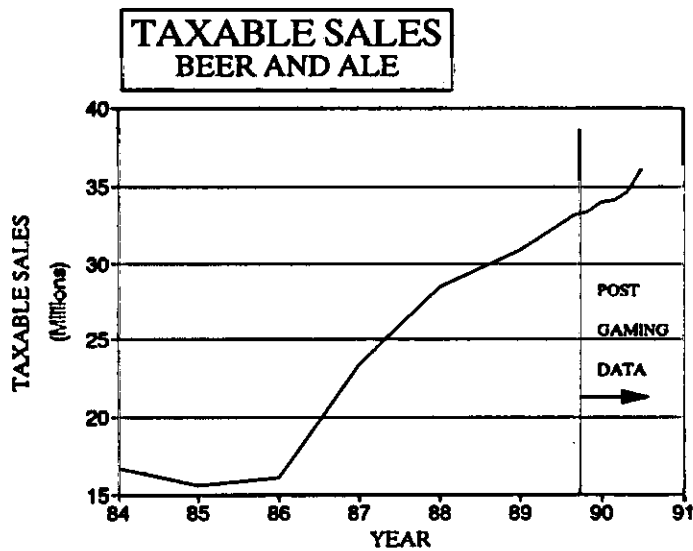
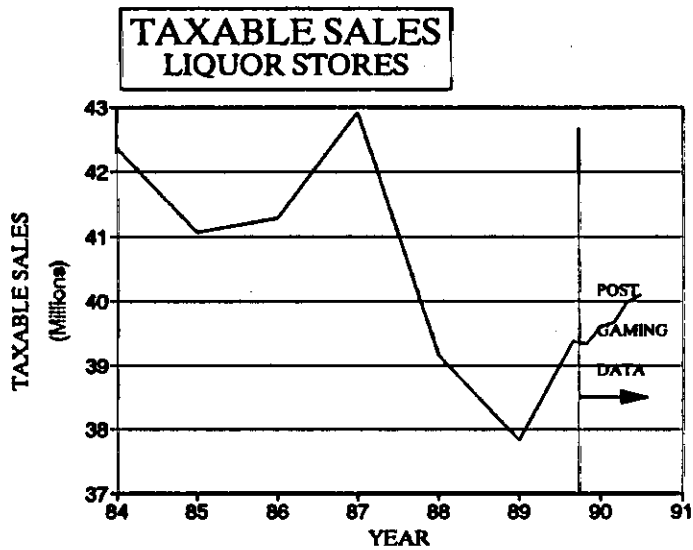
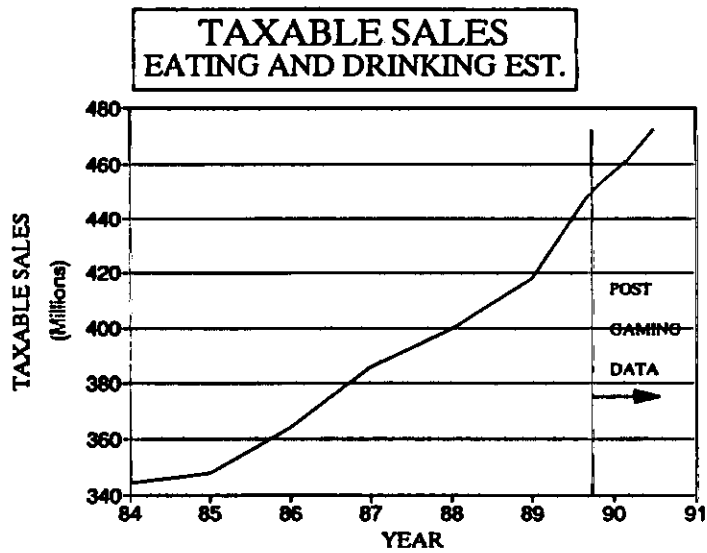
Taxable sales data in current year dollars from 1984 to 1991 provides the basis of the following analysis.¹³ A visual distinction is made in each graph separating the pre video gaming period from the post video period. This is true likewise in the case of Deadwood gaming. Each sector's time series is comprised of annual taxable sales for the pre video time segment. For the time span after the inception of the video lottery, annualized moving averages were calculated by successively adding a bimonthly data point. For example, the first annualized moving average was calculated using taxable sales data from November 1989 to October 1990 inclusive. The second encompassed January 1990 to December 1990, the third encompassed March 1990 to February 1991, etc. The last annualized data point consists of the twelve months ending in June of 1991.

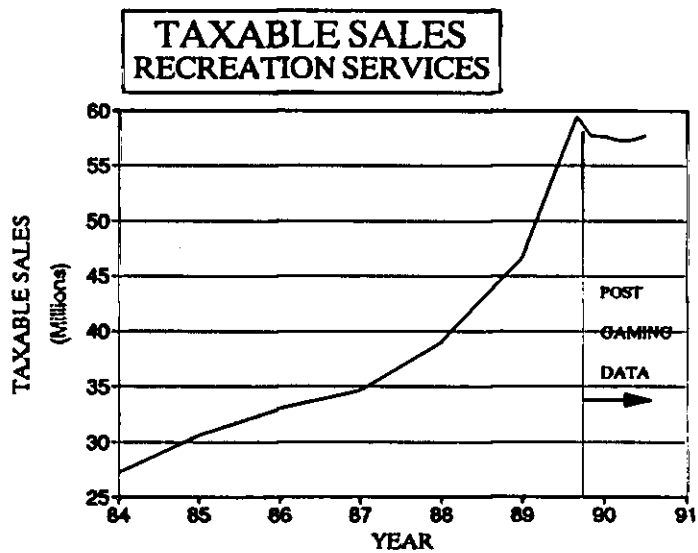
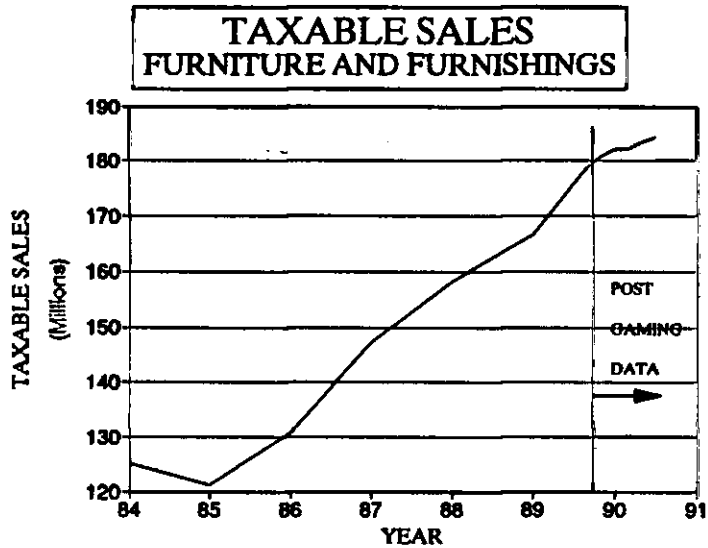
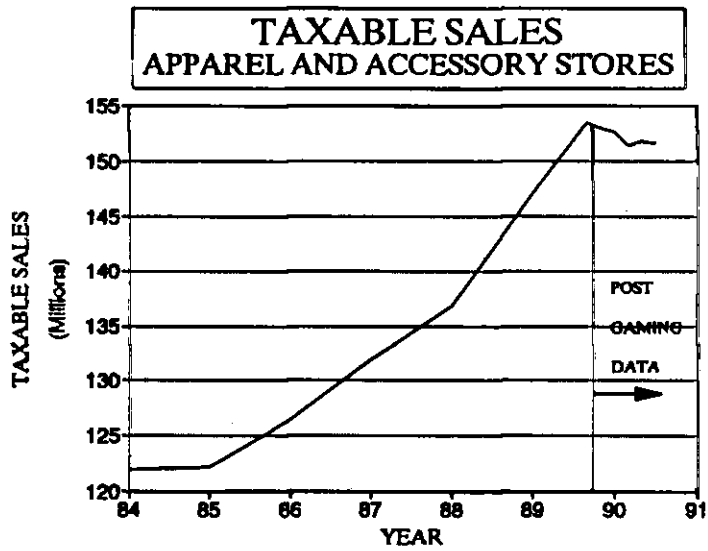
One benefit of this methodology is that the post video data points mirror on an annualized basis the phasing in of the video lottery. A second benefit is that the most recent bimonthly data can be utilized.

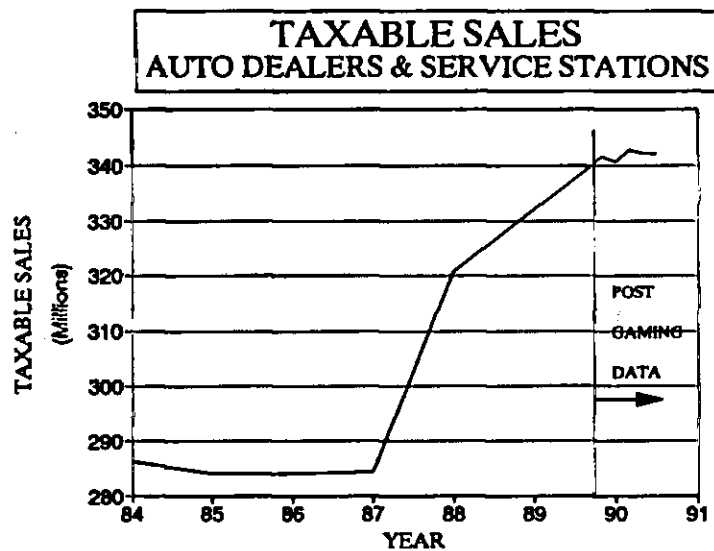
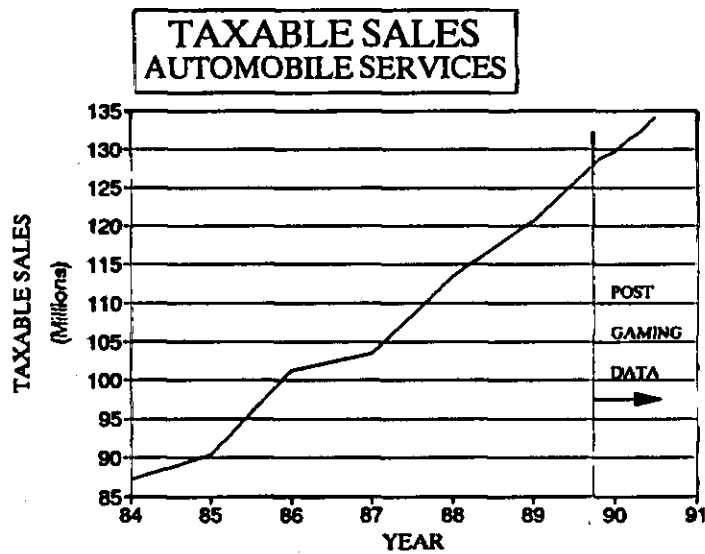
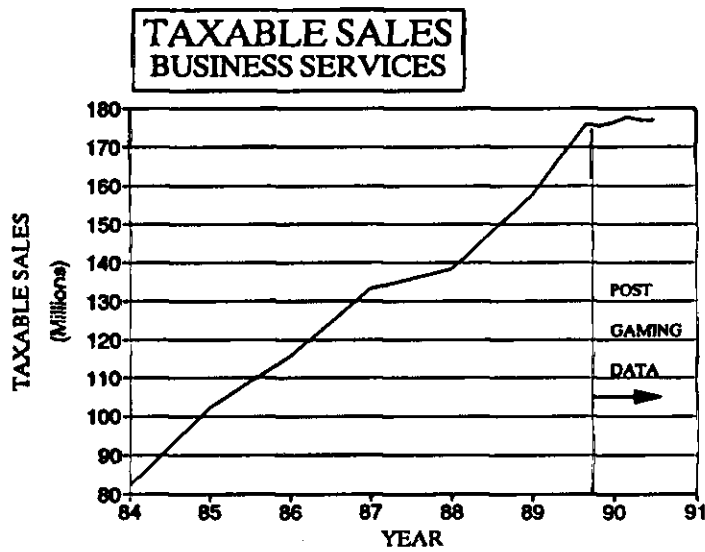
Graphic presentations of this analytical process are included on the following pages for a selected set of spending sectors. Sectors which were judged to be quite independent of gaming are excluded. Examples of these sectors are mining, agriculture, construction, manufacturing as well as others.

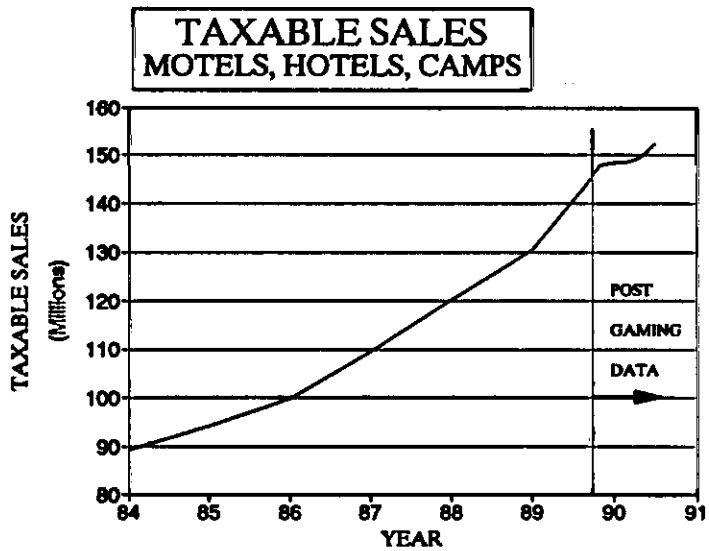
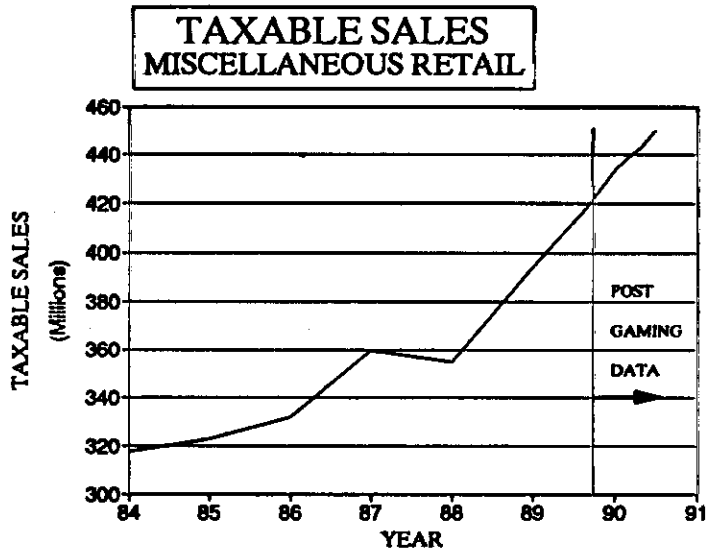
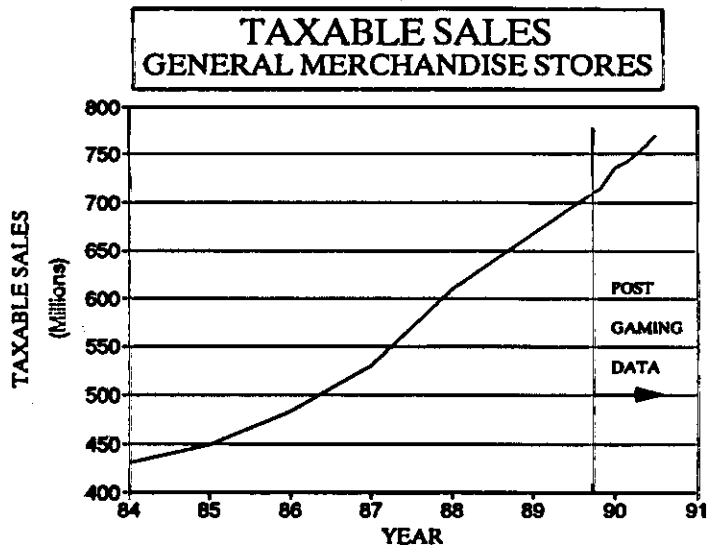
Each graph is demarked in a manner which separates the pre video (and pre Deadwood) data from the post video data. They appear in consecutive pages for the convenience of the reader.

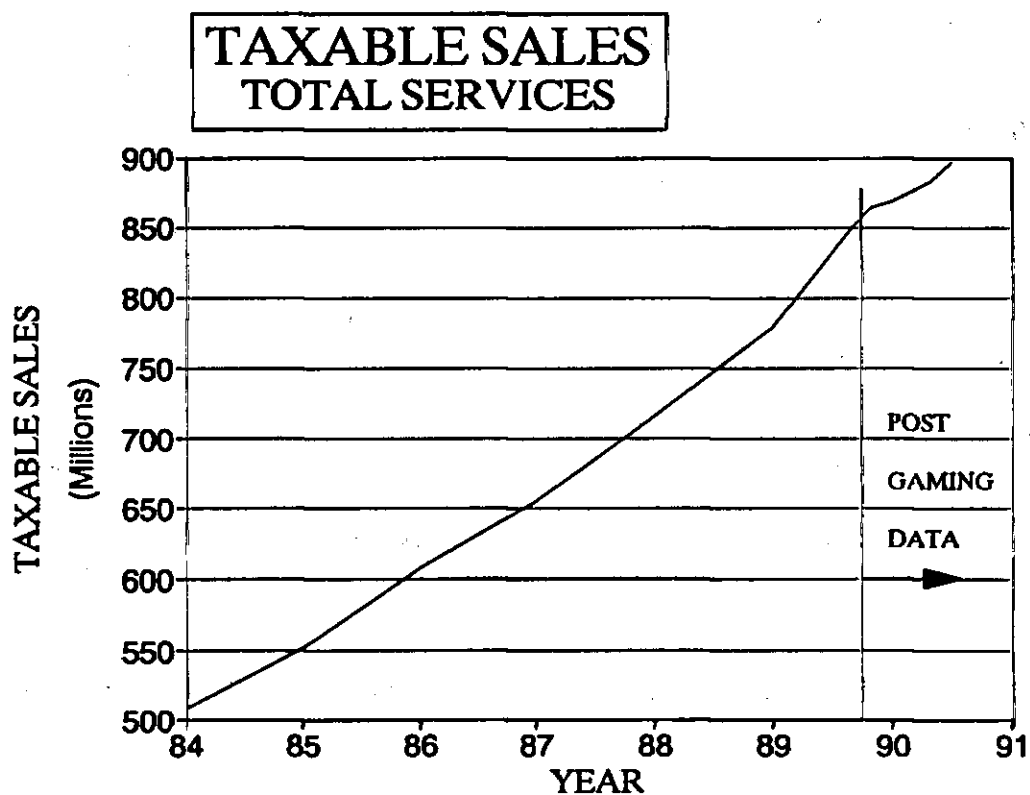
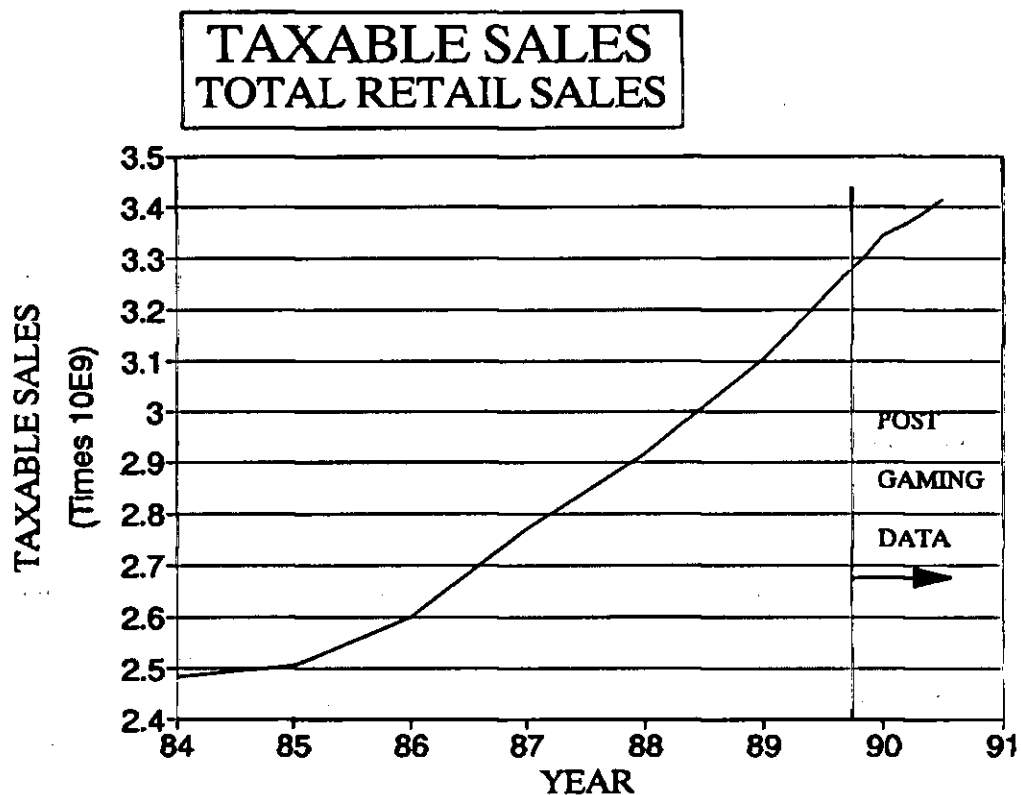












SECTOR DEFINITIONS

A brief description of each of the series included in this study is presented in the following paragraphs. In many cases the title of the series is somewhat self explanatory, but in others the types of businesses actually included are not obvious.

Personal Services - Beauty and barber shops, laundromats, dry cleaning businesses and photography shops make up the majority of taxable sales generated within this classification.

Food Stores - Grocery stores represent the vast majority of taxable sales generated within this classification. Bakeries, meat markets and other specialty food outlets are also included.

Health Services - The taxable component of business activity undertaken by physicians, dentists and medical laboratories constitute the bulk of activity within this classification. It should be understood that the vast majority of volume within these organizations are not subject to the South Dakota state sales tax.

Eating and Drinking Establishments - Restaurants, cafes, cocktail lounges, and all similar establishments selling prepared food and distilled spirits are included in this category.

Liquor Stores - This sector includes establishments whose principal business is the sale of off sale liquor and beer.

Beer and Ale - Represents businesses selling brewed beverages, but not distilled spirits.

Apparel and Accessory Stores - This classification includes men, women and children clothing stores as well as shoe stores.

Furniture and Furnishings - In addition to furniture stores, floor covering, drapery, radio and TV, household appliance, music and computer stores fall into this classification.

Recreation Services - Golf courses, bowling alleys, professional sporting events, fitness centers as well as other membership sporting organizations are included in this classification.

Business Services - A wide variety of establishments oriented toward business customers are included within this category. Employment agencies, computer services, detective and guard services, equipment rental businesses, advertising and photo finishing businesses are examples of enterprises making up this classification.

Automobile Services - Passenger car rentals, body shops, tire shops and specialty repair businesses relating to automobiles consist of this category.

Automotive - Sales subject to the state sales tax generated in motor vehicle dealerships, auto supply stores, gasoline stations, boat, motorcycle and recreational vehicle businesses are included in this series. The reader is reminded that auto sales subject to the state motor vehicle excise tax and gasoline sales subject to the state motor fuel tax are not included within this total.

General Merchandise Stores - Department stores make up the bulk of this classification. Also included are variety stores and miscellaneous businesses that do not fit logically into any other category.

Miscellaneous Retail - A wide variety of businesses are included in this category. Gift and Souvenir shops, drug stores, liquor stores, jewelry and photography stores, book stores and hobby and game stores are a few of the types of businesses contained in this classification.

Motels, Hotels and Camps - Campgrounds and recreation camps are included along with all forms of motels and hotels within this category. In general more than 95% of the taxable sales within this classification consists of motel and hotel business activity.

IMPACTS BY SECTOR

The primary focus in regard to the graphics on the preceding pages is the pattern which developed after the commencement of the video lottery. This time segment is identified by points to the right of the vertical line in each graph. When studying each graph it is important to realize that movement in the series cannot automatically be attributed to video lottery activity. During the pre video lottery years almost all of the series have occasionally experienced significant year to year aberrations. Thus, there exists many potential factors in addition to the video lottery that may produce movements in these time series'. It is important to understand that any observed movements in the data are associated with the inception of the lottery, but not necessarily caused by it.

The years which are included in the preceding graphs are all characterized by moderate inflation rates. The data is expressed in current year dollars, but because of moderate and quite stable

inflation rates the year to year pattern of the series' are not unduly impacted by varying inflation rates.

Personal Services does not appear to have experienced any significant move off its general trend. The change in taxable sales from 1987 to 1988, like most other sectors analyzed, is negligible.

Food Stores represents a spending sector which appears not to have experienced any significant drop in sales volume in the latest observed time periods.

Health Services is a series which has experienced an upward trajectory since the video lottery began. There is no obvious connection which can be established given the fact that the bulk of medical services are not subject to the state sales tax.

Eating and Drinking Establishments, as expected, have generated increased business volume. It is apparent that sales of the goods and services provided by these businesses are stimulated by video lottery customers.

Liquor Stores and Beer and Ale businesses have both generated increased sales volume since 1989. Of particular interest is the sales volume of liquor stores. After experiencing drops in sales volume since 1987, a reversal has apparently taken place since 1989.

Apparel and Accessory Stores depend to a large degree on what economists refer to as discretionary income. In comparison with other consumer purchases, products sold within this sector are regarded as luxuries rather than necessities.

Furniture and Furnishings Stores also depend upon discretionary income. Although the post video movement is not as dramatic as in the case of apparel stores, taxable sales in this sector are very moderately off trend.

Recreation Services covers a broad range of business enterprises and appears to have experienced a negative impact since the video lottery began. This is a relatively low volume sector, however. It is also likely that businesses within this classification have experienced offsetting increases in business sales volume due to video lottery play.

Business Services sales volume has also dampened. Given the type of businesses included within this classification, it is not obvious how any gaming impact could reach this sector.

Automobile Services is dominated by repair and accessory type businesses. Virtually no change from earlier trends have occurred since 1989.

Auto Dealers and Service Stations have experienced some reduction in the rate of growth of taxable sales. The reader is reminded that two of the major goods sold within this sector, gasoline and motor vehicles are not subject to the state sales tax.

General Merchandise Stores and Miscellaneous Retail Stores have not experienced any noticeable impact since the video lottery began in 1989.

Motels, Hotels and Camps seem to have undergone a moderate move off trend in taxable sales, but may be recovering.

Briefly summarizing the spending impacts in these sectors, it can be concluded that some sectors have served as substitutes, some have served as complements and others appear to be quite independent of gaming activity. Those demonstrating a substitution effect include apparel and accessory stores, recreation services, automobile dealers and service stations, and to lesser degrees furniture stores, and business services. As expected many of the sectors in which spending has been substituted for gaming tend to be dependent on discretionary income.

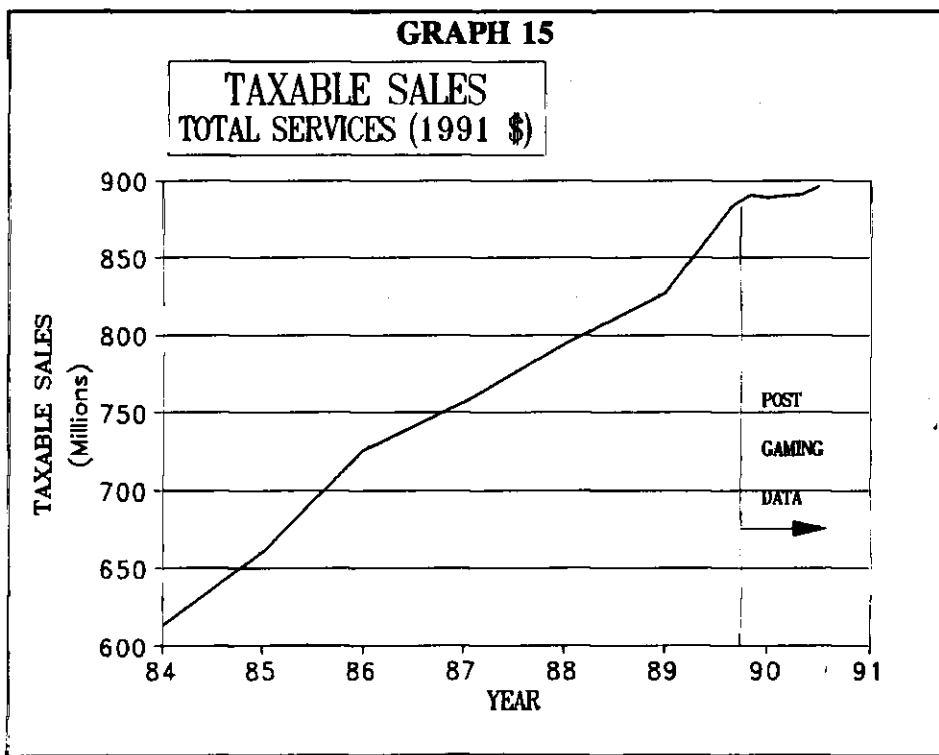
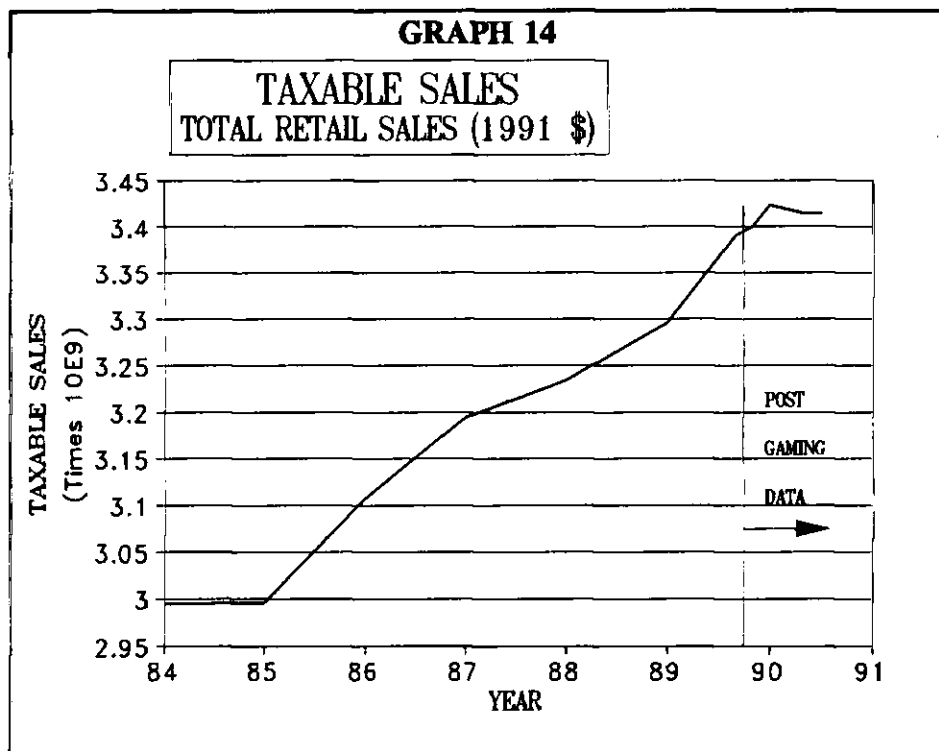
Eating and drinking establishments have experienced increases in sales reflecting their obvious complementarity to the video lottery in particular. Liquor and beer sales have also been positively impacted because of their complementarity to gaming. The other sectors included here do not exhibit any significant impacts since the establishment of the video lottery.

TOTAL RETAIL AND SERVICE TAXABLE SALES

The tables appearing on Page 31 represent an aggregation of all retail and service classifications. All of the spending classifications analyzed in this section plus others make up the retail and service aggregate. Both total retail sales and total services do not appear to be significantly impacted in the post video period.

However, closer examination shows that the slightly higher inflation which occurred in 1990 and 1991 conceals the impact that has occurred in real spending. The effect of price changes can be removed from a time series by adjusting data in current dollars into a new series in constant dollars. In this case taxable retail and service sales are converted into constant 1991 dollars so that the series exhibits real flows of goods and services.¹³ Real taxable retail and service sales in 1991 dollars for the years 1984 to the twelve month period ending in June 1991 are presented in the following two graphs.

During the last half of 1990 and the first half of 1991 total retail and service taxable sales added to about \$4.3 billion.¹³ In terms of real taxable sales it appears that retail sales in 1991 are about \$40 to \$45 million off trend and service taxable sales are somewhat less than \$20 million off trend. In total, therefore, it appears that approximately \$60 million in taxable sales have been substituted in favor of video lottery, Deadwood and perhaps other forms of gaming. This substitution represents only 1.4% of all statewide retail and service taxable sales. In comparison prices rose from 1990 to 1991 at nearly 5%, more than three times higher than the 1.4% derived above.



FISCAL IMPACTS AND CONSUMER SUBSTITUTION

If one assumes that \$60 million in net spending has been substituted in favor of lottery spending, one can likewise estimate the positive incremental impact this has placed upon state fiscal resources. At a 4% state sales tax this amount of sales volume represents \$2.4 million in sales taxes. Assuming the \$60 million of spending was diverted into the video lottery state fiscal receipts would amount to \$15 million which represents a \$12.6 million net increase in state revenue.

INCOME AND EMPLOYMENT

This subsection deals with income and employment that is generated within the gaming industry. Income accrues in the form of wages and salaries and also in the form of business income. Types of businesses generating direct gaming income include eating and drinking establishments, machine vendors and perhaps various other ancillary enterprises.

In some cases, portions of employment can be attributed to a specific gaming type. In other instances, this is not possible for a variety of reasons. Some jobs are related to two or more different gaming activities. For example, machine vendors may have employees who deal with devices for both the video lottery and gaming in Deadwood. Also, State Lottery Commission employees have responsibilities which cover more than one of the state lottery games.

The approach used in this document is quite aggregative in nature. Several categories of employment are identified on a statewide level. First a distinct employment impact is observed in the classification of establishments which participate in gaming. The video lottery, Deadwood and Reservation sponsored gaming have each produced an increase in employment within eating and drinking establishment classifications. The South Dakota Labor Information Center maintains data by standard industrial class codes.¹⁴

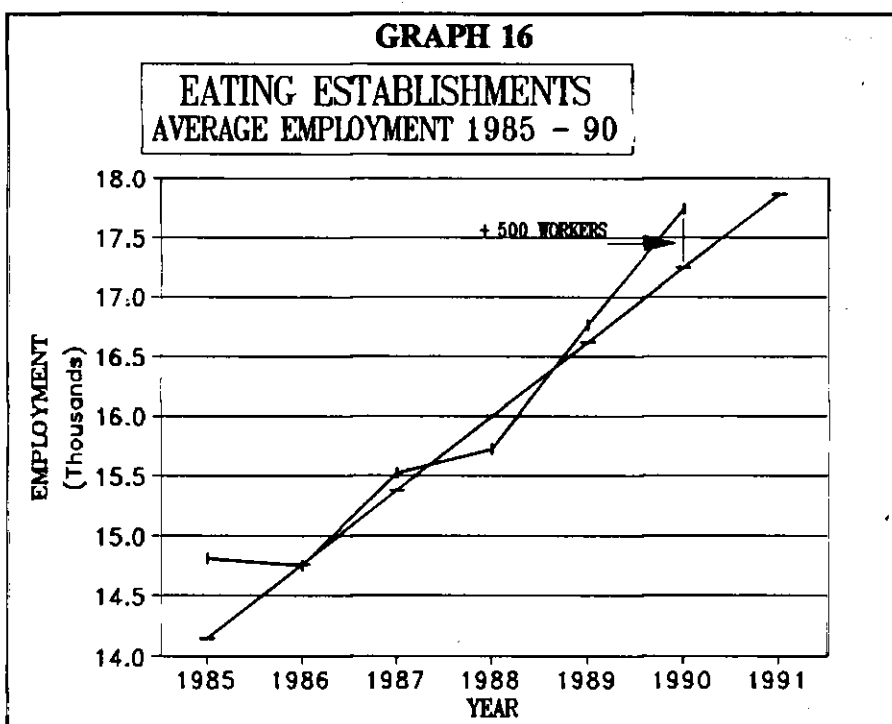
Employment has also occurred within machine vending companies and other operators who supply and maintain video and other gaming devices. A survey of these business interests was

performed in connection with this research project which has produced information concerning employment impacts within this phase of the gaming industry.

Finally, the South Dakota State Lottery Commission and the State Gaming Commission employ people in Pierre and throughout the state in the management and administration of the state sponsored lottery games.

Data provided by the Labor Market Information Center shows that substantial increases in employment have occurred in businesses classified as drinking as well as eating establishments.¹⁴ Monthly employment data for both types of establishments is available through the first quarter of 1991. Average annual employment data is available through calendar year 1990.

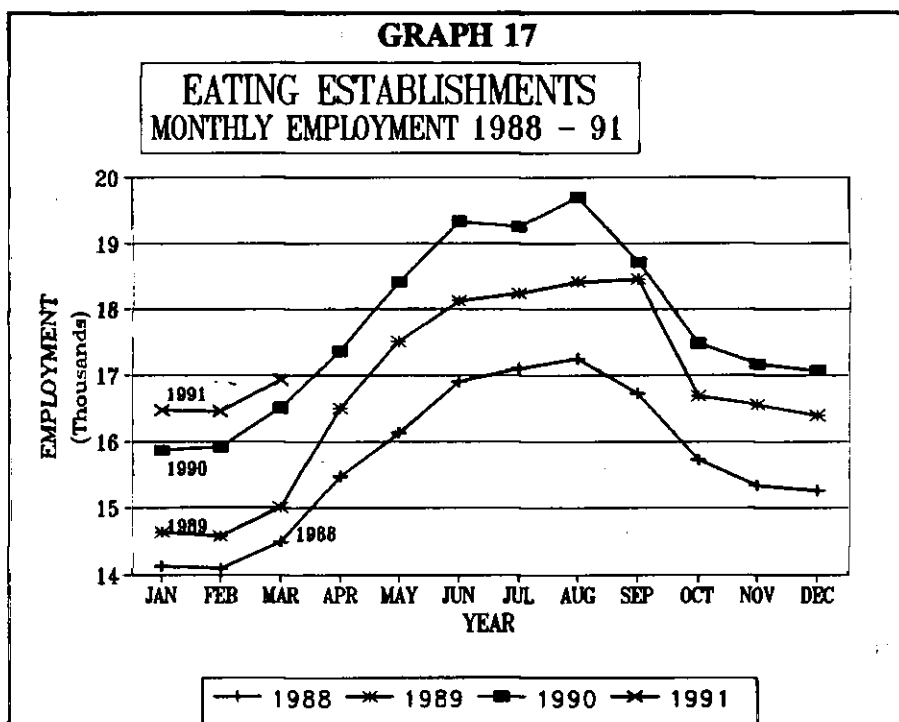
The accompanying graph shows average annual employment on the line with vertical markers. The straight line represents a least squares trend extrapolation based on the years 1986 through 1989. The growth of the travel industry as well as other factors have produced annual growth even before



gaming activities began. In recent years employment growth has averaged slightly more than 500 workers annually. This analysis suggests that 500 more workers were employed in eating establishments in 1990 than the long term trend would project. The monthly data for eating

establishments indicates that a further increase in employment will undoubtedly be found when all of the 1991 data is available. This can be verified by studying Graph 17 below. Monthly data for each year illustrates the seasonal nature to employment within these type of businesses.

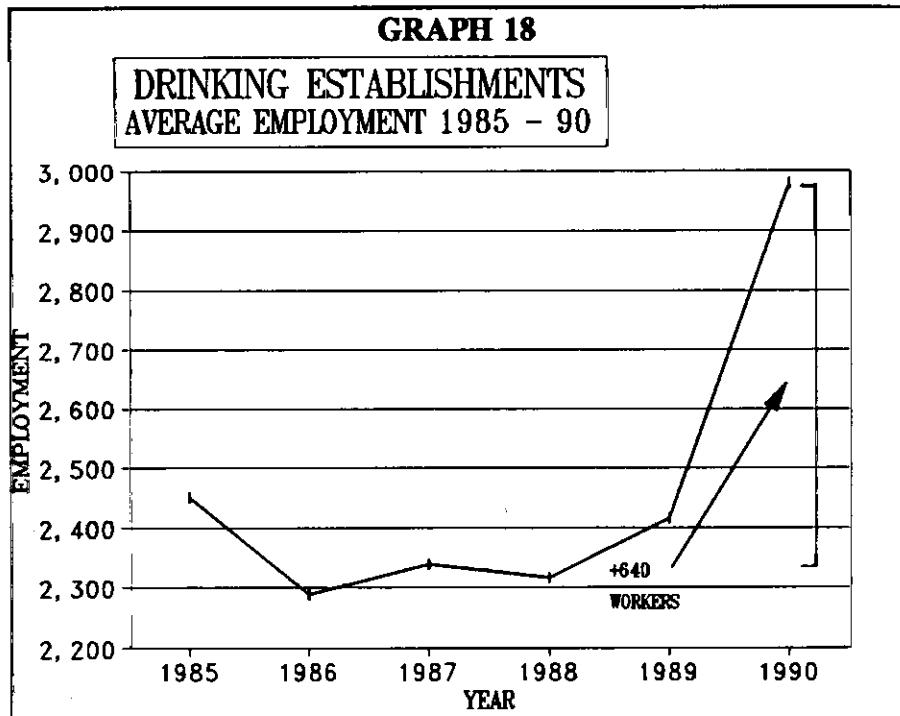
Nineteen eighty eight represents a pre gaming baseline with which gaming years can be compared. It is also the case that 1989 is absent of most gaming impacts because the last two or three months were associated with only the beginning phases of gaming. As shown in the previous graph, the difference in average



employment between 1989 and 1990 was about 500 workers. It must also be remembered that some gaming influence perhaps occurred in the last three months of 1989. Because only three months data is currently available for 1991, it is difficult to measure the incremental increase in average employment which may have occurred between 1990 and 1991. Data from the first three months of 1991 does suggest that an additional three to four hundred workers have found employment in these businesses from 1990 to 1991. A study of these two graphs suggests that additional eating establishment employment produced by gaming is in the range 800 to 900.

Some businesses which provide gaming opportunities to their patrons are classified as eating establishments, while others are categorized as drinking establishments. The following two graphs illustrate employment impacts in businesses classified as drinking establishments.

As shown in the graph, employment in this sector was relatively stable from 1986 to 1988. Employment was somewhat higher in 1985 and earlier years, however. Increases in job availability began in 1989 and increased dramatically in 1990. It is presumed that these increases came about because of existing



businesses hiring additional workers and also because of the increased number of business starts which have accompanied the inception of the video lottery as well as Deadwood gaming. The issue of new business formation will be addressed later in this section.

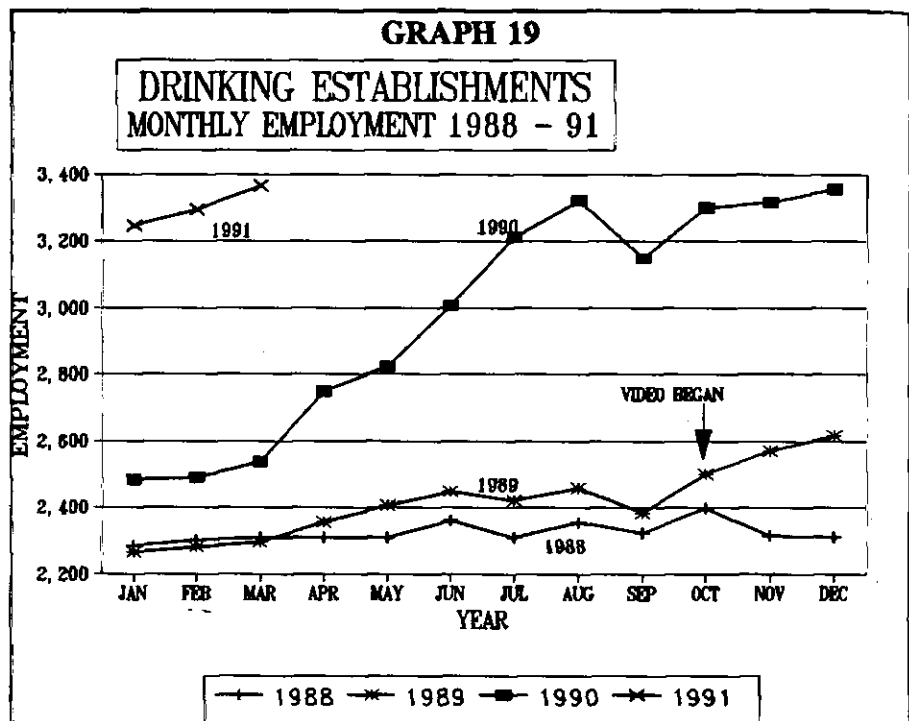
The substantial increase in 1990 employment in this sector is highlighted in the above graph. From a 1986 to 1988 average of slightly more than 2,300 workers, 1990 saw average employment jump to nearly 3,000. In view of the employment trend from earlier years it is reasonable to assume that this employment increase is nearly all gaming related.

Graph 19 below plots monthly employment movements for the years 1988 through the first quarter of 1991. This graphic clearly illustrates the dramatic growth in drinking establishment employment beginning in October 1989 the first month of the video lottery. From a period of several years of virtually no employment growth, late 1989 started a long upward swing in the number of jobs in this sector. The year 1990 saw the bulk of this growth period beginning with somewhat less than 2,500 total employment and ending at nearly 3,400.

An inspection of the three data points in 1990 in conjunction with earlier data shows that employment in this sector has grown by approximately 1,000 workers.

Unlike eating establishments, there was virtually no growth in this sector prior to gaming, so all of the

post gaming employment expansion can probably be attributed to the gaming industry.



Combining the employment impacts which have evolved in both eating and drinking establishments, the total job impact occurring in the businesses which operate the gaming devices is equal to 1,800 to 1,900 jobs. In a study which detailed the employment impacts specific to Deadwood gaming, it was determined that 800 to 900 employees are associated with gaming establishments in that community.¹⁵ The Royal River Casino near Flandreau accounts for an additional 180 employees.⁴ The nature of both Deadwood and Reservation sponsored gaming is such that the labor input requirements are far higher than for the video lottery. The video lottery probably accounts for 800 to 850 of the total state employment impact in these business classifications. Employment in the other two reservation sponsored operations are not part of the above estimates because they were opened in the second quarter of 1991.

It is likely that a certain number of businesses offering video gaming are not included within either eating or drinking establishments. Bowling alleys, truck stops and several other type

businesses in the state are licensed to operate the video lottery, but are not classified as eating or drinking establishments.

BUSINESS FORMATION

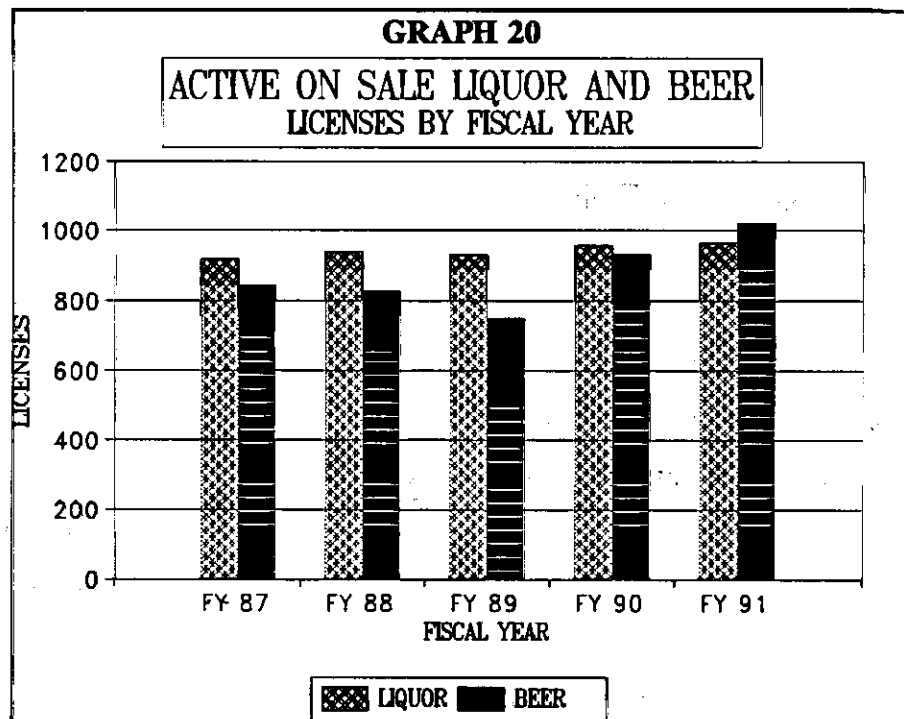
This subsection provides a brief description of the expansion which has occurred in the number of establishments extending gaming opportunities to the public. Both the video lottery and Deadwood gaming regulations require either an on-sale liquor, beer or wine license as a prerequisite to a gaming license. Accordingly a substantial change has occurred in the state in terms of the number of active on-sale licenses in the state. This change has, in turn, had a direct impact on employment and income creation within the industry.

State statutes limit the maximum number of liquor establishments according to population parameters but do not limit the number of beer and wine establishments. Most, but not all, communities have traditionally contained all of the liquor licenses allowed by state law. However, beer and wine license issuance rests with units of local government. The number of active beer and wine licenses have understandably grown with the advent of gaming opportunities.

The graphics in this section illustrate the changes which have occurred in the number of active licenses and also the associated change in the volume of beer and liquor sales.¹⁵

Graph 20 tracks the changes in the number of active on-sale liquor and beer licenses in the state since fiscal year 1987. From 1987 to 1989 the number of active liquor licenses was rather stable at about 930 licenses. In fiscal years 1990 and 1991 a moderate increase to about 960 licenses was experienced. It is likely that the current number of active licenses is now at the maximum allowed by state statute. A drop in the number of beer licenses occurred in fiscal years 1987 to 1988, in part due to the previously adopted change in the minimum drinking age. Upon the inception of video lottery, a reversal in the trend began. By fiscal year 1991, more than 1,020

active beer licenses were in existence from a low of 747 in fiscal year 1989. Although data for fiscal year 1992 is not yet available, it is safe to assume that the number has continued to rise. In total, the number of on sale liquor and beer licenses has risen from 1,678 in FY 1989 to 1,985 in FY 1991. This represents



an 18.3% increase. Some of the 307 additional on sale liquor and beer licenses are classified as eating establishments while others are drinking establishments. Consequently, portions of the employment increases documented above are traced to each of these classifications. From the standpoint of both classifications, the video lottery and Deadwood gaming are in all likelihood the precipitating force in new business formation. Some additional boosts in job numbers, however, relate to employment levels in businesses which have been in existence before gaming activity commenced.

The relation between this business formation and gaming is further identified in comparing sales of beer and spirits. In the following graph the left axis measures the total number of on-sale liquor licenses in South Dakota.¹⁵ The right axis represents sales in gallons of alcoholic beverages defined as spirits. This measure of spirits measures both on and off-sale volumes.

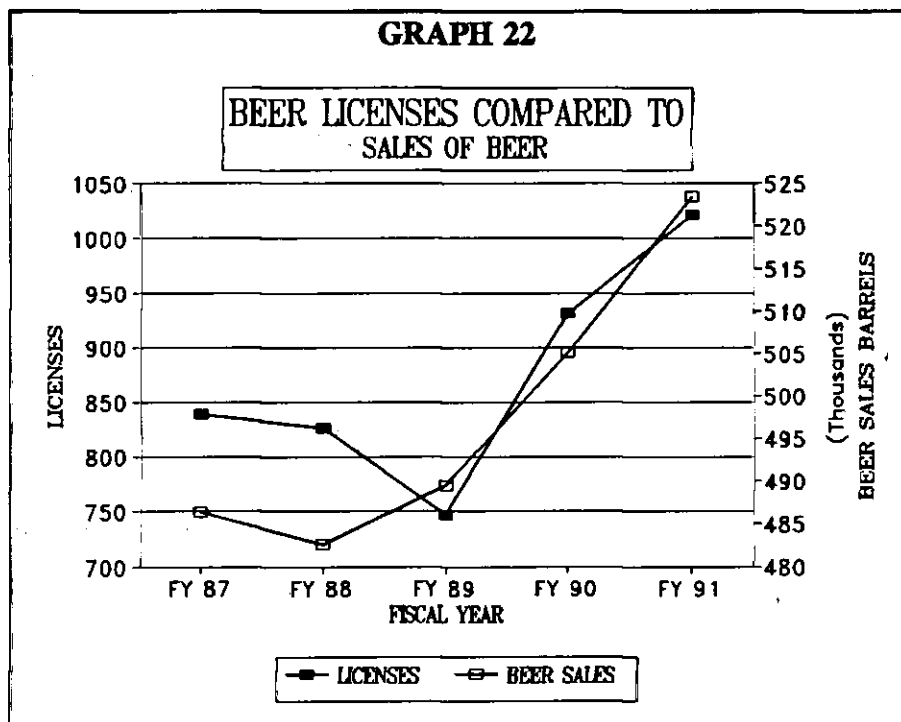
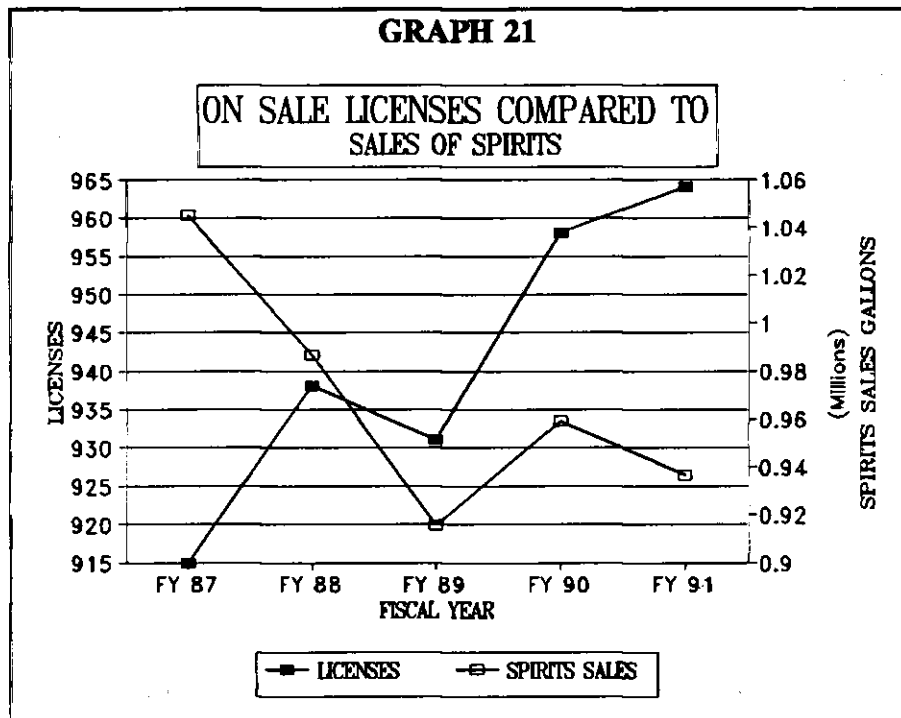
From fiscal year 1989 the number of on-sale licenses increased significantly. Sales of spirits rose from 1989 to 1990, but again fell in 1991. In 1989, slightly less than 920,000 gallons were

sold compared to a little more than 930,000 gallons in fiscal year 1991. Because of the manner in which such data is collected by the South Dakota Department of Revenue, it is not possible to identify the gallonage which is sold in package establishments compared to on-sale businesses.

However, the

movements in the data in graph 21 suggest that liquor sales have not been the motivating factor in the formation of new businesses.

Graph 22 describes similar movements for volumes of beer compared to the number of on-sale beer licenses. The reader is reminded that the volume data includes beer sold as package goods as well as all that is sold on-sale establishments. Unlike



the pattern between liquor establishments and liquor sales, it can be observed that increases in beer sales have mirrored the growth in the number of establishments holding on-sale beer licenses. Since fiscal year 1988, beer sales have risen from about 482,000 barrels to 524,000 in fiscal year 1991. While other factors may explain this growth in sales volume, some of the rise is clearly traceable to the increase in on-sale beer establishments. As illustrated in this graphic, the number of establishments grew by more than 270 since gaming began in South Dakota.

INCOME, EATING AND DRINKING ESTABLISHMENT EMPLOYEES

It is now possible to arrive at an estimate of the additional employee income earned by workers employed in eating and drinking establishments. Earlier in this section it was determined that 1,800 to 1,900 new employees are associated with the advent of video and Deadwood gaming within these business classifications. Average weekly earnings for these workers according to data maintained by the South Dakota Labor Market Information Center is equal to \$125.¹⁵ Multiplying 52 weeks times \$125 times 1,850 workers results in an aggregate earnings estimate of \$12,025,000. Employees often receive tip income in connection with these occupations. The actual amount of gratuities varies substantially among these businesses and acquiring valid data is difficult. In a study of gaming in Deadwood, an overall estimate of gratuities averaged about 8% of wage earnings.¹⁶ Adding an estimated 8% tip income to the actual wages yields about \$13 million in new income earned by employees whose jobs are associated with gaming activity.

EMPLOYMENT AND INCOME, VENDOR OPERATORS

A survey of vendors and other operators was undertaken to determine the employment impact which has occurred in that industry. Focus was placed on operators who, as a major part of their business, engaged in a lease or some other participating arrangement of video lottery machines to eating and drinking establishments. An excellent response rate of 58.9% was achieved in connection with these businesses. The survey instrument is found in the Appendix

to this document. Because of the proprietary nature of much of the information, a question involving the relevant range of video terminals was asked. The number of employees and labor expense associated with these terminals were also identified in the survey. A summary of the survey results appear in the following table.

TABLE 2

EMPLOYMENT STATISTICS, BY VENDOR SIZE			
Number of Machines	Average No. of Employees	Number of Machines per employee	Average Wage Per Employee
1 to 50	1.9	10.4	\$21,700
51 to 100	2.6	27.3	26,500
101 to 200	5.2	30.2	19,600
Above 200	12.7	25.6	23,400
Overall		25.3	\$22,800

The survey was conducted in late September of 1991 and therefore reflects employment numbers relevant at that time. The number of terminals per employee varies, as expected, according to the number of machines managed by the enterprise. Smaller operators are perhaps unable to take advantage of economies of scale and accordingly have on average one employee for every 10.4 machines. Those businesses with 51 to 200 machines have the highest labor efficiency in terms of machines per employee. It is suspected that the largest operators tend to have their machines spread over a wider geographical area than smaller operators which may account for the slightly higher labor requirements.

The average employee in this phase of the industry experiences annual earnings of \$22,800. This figure as well as the state wide estimate of machines per employee, is arrived at through the use of weighted averages. This means that the size categories which account for more machines are weighted proportionately higher in the calculation of the averages.

Based upon the number of video terminals operating in June of 1991 the total number of employees and associated earnings can be derived. By dividing a total of 6,144 terminals by 25.3 results in an estimated 243 workers whose jobs are connected to the management and maintenance of video terminals. Given the average annual wage of \$22,800, total employee earnings generated within this segment of the industry amounts to \$5,540,000 yearly.

TOTAL PRIVATE SECTOR GAMING EMPLOYMENT AND EARNINGS

The level of employment and annual earnings rate in the private sector is assumed to consist of eating and drinking establishment workers as well as vender-operator employees. Eating and drinking businesses include workers associated with Deadwood gaming, the video lottery and the Royal River Casino. Because recent employment data is not available employment connected to the other two reservation sponsored casinos are not included in the above analysis. This component alone would add three to four hundred additional workers.

The vendor-operator component includes only workers associated with the video lottery. It is safe to assume that additional workers could be identified in connection with slot machine maintenance in Deadwood and the three reservation casinos, but are not included here.

Total private employment from the two sources described above is estimated to be about 2,100. This should be regarded as a conservative estimate because of the omissions outlined above.

Earlier in this section earnings estimates for both components of private employment were derived. Currently, these workers are generating a total of about \$18.5 million in earnings, of which one million is estimated to be derived from gratuities.

LOTTERY COMMISSION EMPLOYMENT AND INCOME

The management and administration of the South Dakota lottery games requires personnel resources in Pierre and several other cities in the state. Currently regional offices are located in Sioux Falls, Aberdeen and Rapid City. The following table summarizes employment levels by location as of late summer 1991.

TABLE 3

LOTTERY COMMISSION EMPLOYMENT BY LOCATION	
Location	Employment (FTE)
Pierre	24.5
Sioux Falls	9.0
Rapid City	6.0
Aberdeen	3.0
Statewide	42.5

Examples of functional areas for which these employees are allocated include administration, sales, computer information systems, and operations.

Earnings associated with these workers totaled about \$1,133,000 in fiscal year 1991. About 28% of this earnings total is connected to the video lottery.

In addition to State Lottery Commission employment, the State Gaming Commission employs 16 workers who are distributed in Pierre and Deadwood. Wages and salaries of these employees are paid from a gaming commission fund which is financed through the 8% gaming tax.

NON WAGE INCOME

Earnings received by the employees discussed above are paid from adjusted gross revenues less state taxes. In cases where a vendor furnishes video terminals to eating and drinking establishments, adjusted gross revenues less taxes due are shared by the business establishment and the vendor. For the video lottery, it is common that adjusted gross income less taxes is evenly split between the business establishment and the vendor. It is not known for certain how many machines are owned by individual establishments, but it is safe to assume that a large majority of machines are operated on a shared income basis. In a broad sense, it can be assumed that in the case of the video lottery, wages paid for the maintenance and general management of the terminals come from the vendor share and workers in eating and drinking establishments are paid in large part from the retailer share of video income.

The Deadwood gaming structure differs somewhat from the video lottery. About one-third of the slot machines licensed in that community are owned by the retail establishment leaving two-thirds provided by vendors.¹⁷ The division of adjusted gross revenues varies substantially among operators.

MARKET STRUCTURE

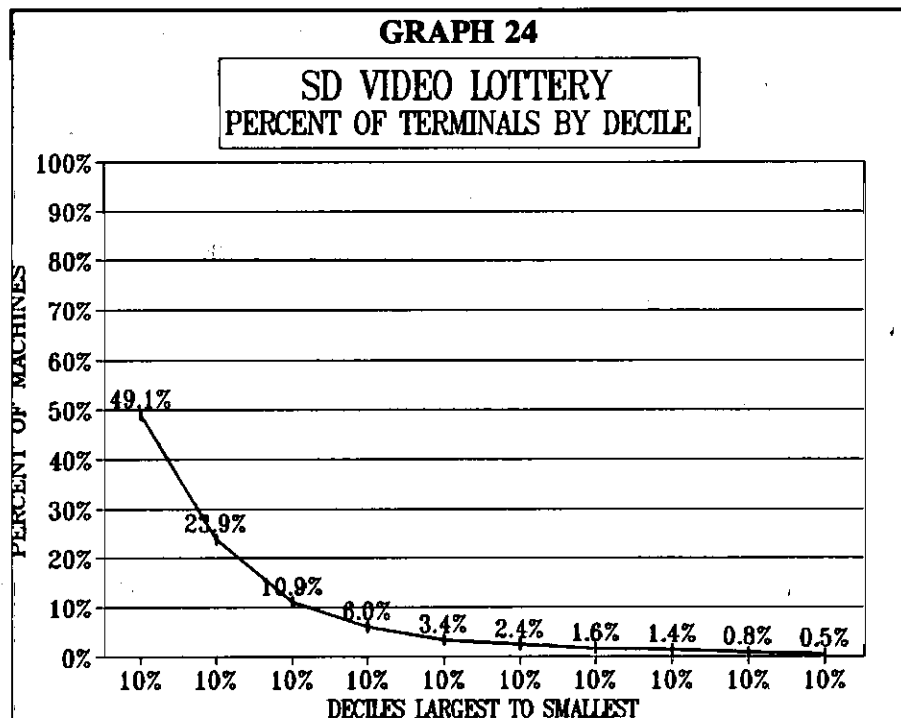
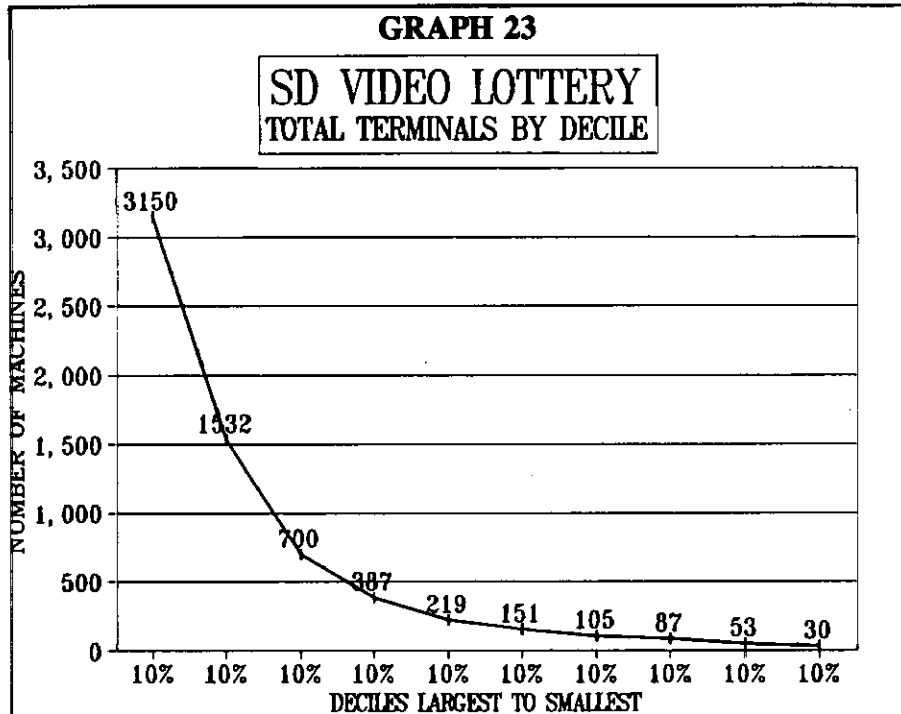
The market structure of the video lottery industry lends support to the fact that most of the video terminals are operated via a lease or some other participating arrangement with retail establishments.

One important element of market structure relates to market concentration. The accompanying graphics illustrate that the video lottery industry is highly concentrated. Graph 23 is a Lorenze type curve relating the amount of machines to successive deciles of vendor operators. From left to right the deciles of market participants are arranged from largest to smallest. Thus, the graphic illustrates that the largest 10% of the vendors own 3,150 of the 6,418 licensed video

terminals in the state. The second largest 10% of vendors own 1,532, etc. This data is based on terminal ownership data as of August 1991. It happens that, as of this date, there were approximately 100 licensed owners of video terminals so 10% of the market participants represents 10 owners. The lower deciles

toward the right of the graph are undoubtedly made up of the relatively few retail operators choosing to purchase their own terminals.

Graph 24 presents the same information in percentage terms. The decile breakdowns are interpreted in the same manner as in the previous graph. Thus, the ten largest operators own 49.1% of all video terminals. The largest twenty operators manage 73% of the terminals.



Because of statutory requirements, the retailer side of the market is quite atomistic. Each business establishment is limited to a maximum of 10 terminals. Accordingly, there are currently between 1,350 and 1,400 businesses who offer video gaming in the state.

AGGREGATE INCOME

The above market structure information is useful in understanding the dispersion of non wage income derived from video earnings. Video lottery net revenue before deducting the state share totaled about \$152.86 million from its inception until July 1, 1991. The state share was equal to 22.5% until January of 1991 whereupon the share increased to 25%. Taking into account these two different rates, the state has received about \$35.8 million during this same period.⁶

Meaningful comparisons can be made with the earlier analyses by converting this form of income to annualized amounts. In fiscal year 1991 net revenue after the payment of prizes totaled about \$106,641,000. Deducting the state share of \$25,418,000 from this yields an after tax net revenue of approximately \$81,223,000. As stated earlier, the majority of machines are placed in retail establishments on a share basis. If one assumes that revenues net of the state tax are evenly allocated between vendor-operators and retail establishments, it would imply that in fiscal year 1991, revenue accruing to each would approximate \$40.6 million. From the standpoint of machine owners, this amount of revenue is equal to about \$6,600 per terminal. From the standpoint of retail businesses, average income before expenses is equal to about \$30,000 per establishment.

It must be emphasized that these are arithmetic averages and wide variations are certain to exist among individual terminals and businesses.

This revenue is available to provide financial contributions to expenses and profits. One component of expenses discussed in this section involve wages and salaries to employees. It is estimated that vendor-operators incur annual wage and salary expenses of \$5.54 million.

Similarly, the proportionate share of wage and salary expense incurred by eating and drinking establishments in connection with the video lottery is about \$5,363,000. Obviously, other expenses occur in regard to the private operation of the video lottery. Initial investments in video terminals, rolling stock, insurance, security systems and other costs are part of the industry. Because detailed information concerning costs is regarded as proprietary information, no specific cost analysis is performed here.

DEADWOOD GAMING

A detailed analysis of Deadwood gaming was performed in early 1991 concerning expenditure, employment and income. For completeness, some of the parallel economic impacts associated with Deadwood gaming appear in this subsection. Since Deadwood gaming began in November of 1989, revenue after the payment of prizes totaled about \$46,535,000.¹⁸ In fiscal year 1991, revenue was \$32,582,000. An 8% gaming tax is assessed on this amount which results in an after tax net revenue of \$29,976,000. Approximately 80 licensed establishments are involved in receiving this revenue.

Deadwood businesses also incur various costs in connection with gaming activity. Each year a device license fee of \$2,000 per unit is assessed. Thus, the total device licensing costs each year amounts to nearly \$4 million. Wage and salary expense is approximately \$5,525,000 of which a portion should be allocated to food and beverage sales.

SECTION SUMMARY

This section provides an analysis of the economic significance of various forms of gaming in the State of South Dakota. As of fiscal year 1991, the video lottery and Deadwood gaming have demonstrated the most economic impact. In future years, reservation sponsored gaming is likely to increase its importance in terms of expenditures, employment and income. As of this writing, only one such business has been open for at least one year. Two others have been open a few

months and several others are contemplated. Future studies of this type will need to address this growing segment of the South Dakota Gaming Industry.

Fiscal year 1991 impacts of selected forms of gaming with respect to expenditures, income and employment are summarized in the following table.

TABLE 4

ECONOMIC IMPACTS ASSOCIATED WITH GAMING BY TYPE FISCAL YEAR 1991				
Gaming Type	Per Capita Spending *	Total Spending *	Employment	Wage and Salary Income
Video Lottery	\$228.58	\$106,641,000	1,068	\$10,903,000
Deadwood Gaming	\$10.20	\$4,760,000	850	\$5,525,000
Reservation Gaming	NA	NA	498 **	\$3,237,000
Lotto America	\$8.78	\$4,100,000	NA	NA
Instant Lottery	\$10.93	\$5,100,000	NA	NA

* Estimates apply only to South Dakota Residents

** Reservation employment applies to all three operating casinos, of which two did not operate in FY 1990.

Employment impacts also exist in the public sector in regard to Deadwood and state sponsored gaming. A total of 58.5 such employees are involved with these gaming opportunities at the government level.

Non wage income is received by the private sector in regard to Deadwood gaming, the video and instant lotteries, as well as Lotto America. Retail businesses and vendor operators shared about \$81.2 million after deducting the state government share. Also, in fiscal year 1991, Deadwood gaming establishments received nearly \$30 million. From these totals, contributions toward expenses for labor costs, capital investments and other business expenses were made.

Revenue generation estimates are not available for reservation casinos because it would disclose confidential financial information.

SECTION IV - FISCAL AND SOCIAL IMPACTS

The subject of fiscal impacts includes changes which may occur with respect to both government revenues and expenses. In this section an examination and review of revenues will be undertaken on the state level as well as those local governments which experience direct revenue impacts.

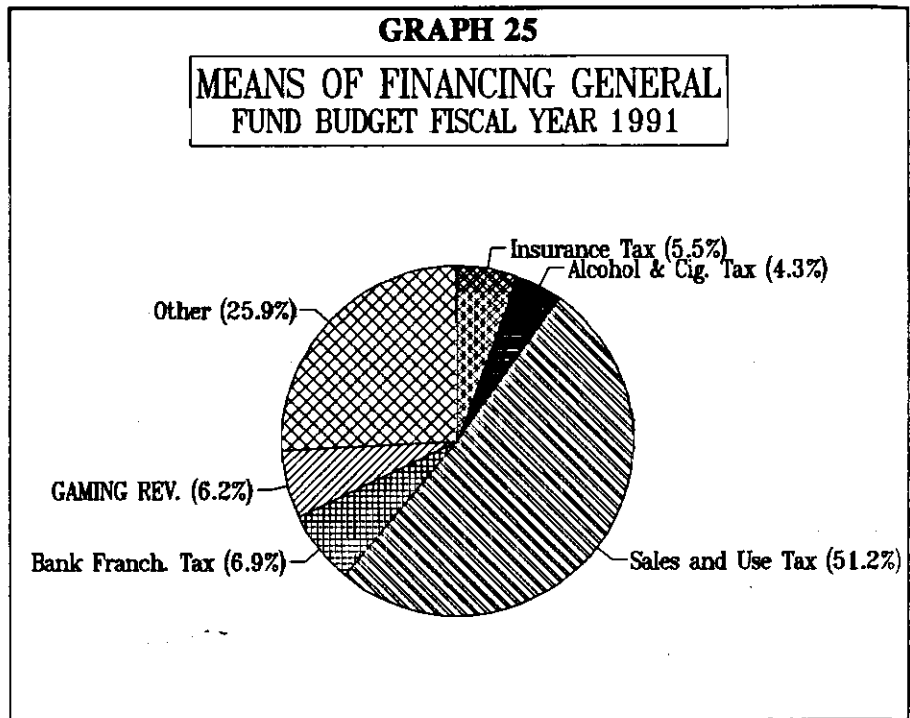
Expenses to units of government, other than management costs, are difficult to document given the limited time that gaming has existed in its present form. Evidence accumulated to date suggests that, except for the unique cases of the City of Deadwood and Lawrence County, no significant amounts of local expenditure has occurred in connection with gaming. Although some communities can perhaps make the case that additional law enforcement work activity has occurred it is difficult to document actual budgetary increases within units of local government. This does not imply that additional services and therefore costs will not actually take place in the longer term. Should gaming activity influence social phenomena in the future, an ultimate cost may be incurred by local units of government.

STATE REVENUE

From the standpoint of revenue, fiscal impacts have been discussed earlier in this document. Graph 6 in Section I summarized the fiscal impacts to state government from gaming activity after administrative and management expenses are deducted. More than \$25 million was derived for state government funding purposes from the video lottery and more than \$6 million was generated by other forms of gaming in fiscal year 1991. All but \$715,500 of this revenue was received into the State General Fund, the latter amount going into a special corrections construction fund.⁶

In the current fiscal year (1992), state video revenues appear to be accumulating at a \$30 million pace with at least five million additional dollars generated from other games.

The accompanying graph provides one with a perspective of the relative significance of gaming revenues in financing the general fund. The largest means of general fund financing involves the state sales and use tax. Generally this tax rate is 4% of purchases of goods and services covered by the tax. The



bank franchise and insurance tax together accounts for over \$60.5 million. Gaming taxes represent 6.2% of the financing of the general fund. In absolute dollars, gaming receipts to state government is the equivalent of a .5% additional sales and use tax on all goods and services now covered by that tax.

The early part of fiscal year 1991 was associated with the early growth of video lottery popularity. Thus far in fiscal year 1992, all months have shown significant revenue volume which means that state revenue will be higher than for the previous year. Accordingly, this form of gaming revenue is expected to finance a higher percentage of the general fund in 1992 and into the future.

DEADWOOD AND LAWRENCE COUNTY

The unique nature of gaming in Deadwood has produced equally unique revenue impacts upon area local governments. From the commencement of gaming until August of 1991, Lawrence

County government has received \$447,000 as its portion of the 8% gaming tax. During the twelve months ending in August 1991, this tax reversion has produced nearly \$280,000.¹⁸ Originally for the purpose of defraying law enforcement related expenditures, state statute specified that 10% of the Deadwood gaming tax be allotted to Lawrence County. The other major fiscal impact relates to the direct increase in the tax base which has taken place in regard to Deadwood commercial property. Full and true taxable values have increased by a factor of between two and three times their pre gaming levels. At existing property tax rates, Lawrence County government can raise about \$200,000 in revenue from this source.¹⁶

Expenses have also risen for Lawrence County Government. In a study completed in early 1991 it was determined that non inflationary costs increased about \$157,000 in the twelve months after gaming in Deadwood began.¹⁶ Law enforcement and the judicial system accounted for much of this amount. County government expenses in calendar year 1991 have not been analyzed, but are expected to be studied in early 1992.

The City of Deadwood has experienced dramatic revenue enhancements since gaming began in that community. The largest source of this revenue is license fee income. A fee of \$2,000 per gaming device is assessed each year and is received by the city primarily for historic preservation capital expenditures. A portion of the state gaming tax above that needed by the State Gaming Commission is reverted back to the city. Since gaming began the City of Deadwood has received \$11.6 million in gaming fees and taxes.⁶ In fiscal year 1991, slightly more than \$5 million was reverted to Deadwood.

Increased visitor volume has produced substantial revenue impacts upon the general government of Deadwood. In a 1991 study involving gaming in Deadwood, it was determined that city revenue increased by an additional \$550,000 through increased sales tax collections and interest returns.¹⁶

Expenses have increased very moderately for Deadwood. Other than capital improvement projects related to renovation and preservation, public safety is about the only expenditure category which has required increased outlays.

RESERVATION SPONSORED GAMING

Because of the short experience with this phase of the gaming industry it is not possible to identify fiscal impacts on an annual basis. Additionally, the limited number of operating casinos prevent detail in the reporting of financial information. Based upon the limited experience to date and very general financial information currently available, it appears that several million dollars in revenue will accrue to the sponsors of the three existing casinos. This segment of the gaming industry is destined to increase in magnitude in the future. Accordingly, there will be an increased need to develop a means of measuring these impacts in successive years.

Because of the manner in which this type of gaming is structured, it is believed that very little additional reservation expenses have taken place by sponsoring tribes.

OTHER LOCAL GOVERNMENTS IN SOUTH DAKOTA

Except for Deadwood and Lawrence County, units of local government do not participate in gaming revenues. Any revenue enhancements relate to the incidence of current tax and fee structures. Although not documented here, the expansion in business formation as well as real improvements of existing businesses may have produced increases in real estate taxable values.

The incidence of municipal sales taxes frequently relate heavily toward eating and drinking establishments, lodging and entertainment. To the extent that this is so, there is probably a net increase in local sales taxes in some communities, offsetting taxable sales which have been diverted into video lottery spending.

Except for Deadwood and Lawrence County there is little tangible evidence that local government spending has increased. Some added law enforcement activity has taken place in police and sheriff's departments in terms of calls for service, but in relation to total law enforcement activity, such increases have been minor.¹⁹

SOCIAL IMPACTS

Because of the short time since the inception of gaming in South Dakota it is somewhat premature to measure movements in various social and legal phenomena. Questions have been raised by citizens and public officials, however, concerning possible impacts that gaming may exert on members of society. The major concern expressed centers on whether gaming participation has produced financial pressures on players causing fundamental changes in the allocation of disposable income. A secondary concern involves the question of whether other social patterns have been impacted because of gaming activity. Virtually all concerns raised by the public are traced to the amount of gaming expenditure and the time citizens devote to it. Thus, it is safe to assume that most concern relates to the video lottery.

The methodology employed herein does not involve individual case studies of gaming participants. Rather time series' are examined in an aggregative sense. When possible these series will be analyzed on a county level. The findings presented below merely record changes which have occurred in regard to the series since gaming began. It is not possible to statistically identify a causal relationship between any of them and gaming activity. Additional years of experience will be necessary before cause-effect relationships can be established. Hopefully, the series examined below will provide a set of baseline data to be further analyzed in the future.

The following series were selected for a variety of reasons. Some have been mentioned by the public and government officials as being relevant to the issue of gaming. Others, have an *a-priori* relationship to gaming. The following series are examined as possible social indicators.

1. Aid To Dependent Children - Average number of families receiving assistance.
2. Food Stamps - Number of families receiving food stamps.
3. Child Abuse and Neglect - Number of Cases
4. Child Support - Number of Cases in Office of Child Support Enforcement.
5. Divorces - Number of filings.
6. Property Taxes Not Collected - The percent of taxes assessed but not collected.
7. Bankruptcy - Number of Chapter 7 filings.
8. Small Claims - Number of Filings.
9. Foreclosures - Number of real estate foreclosures by county.

The list of social indicators examined here is by no means exhaustive. They do, however, cover the areas of social assistance, child protection services, civil and financial legal proceedings. The element of commonality with respect to all of them is that necessary data have been collected over a long number of years, both before and after the development of the gaming industry. Other series, particularly civil court actions, would be extremely valuable in this analysis, but are not systematically categorized by the court system.

AID TO DEPENDENT CHILDREN

Aid to Dependent Children is a form of public assistance primarily to single parent families. Eligibility guidelines involving income are central to this assistance program. A possible hypothesis is that diverting spending into gaming produces a larger need for such aid. Another possible hypothesis is that job availability in connection with gaming may decrease the need for such aid.

The following graph traces the movements in the number of households in South Dakota receiving aid to dependent children maintenance. As shown in the graph, there have been between six and seven thousand families receiving this aid in the last six fiscal years. The biggest increase in this number occurred between 1986 and 1987. Other years have witnessed more moderate relative increases. Fiscal years 1990 and 1991 include the time interval after gaming began in Deadwood and after the inception of the video lottery.

There is no major change in this series after the inception of gaming in South Dakota. Although ADC maintenance has risen through time, the magnitude of that change since gaming is relatively smaller than for the 1986 - 1989 period.

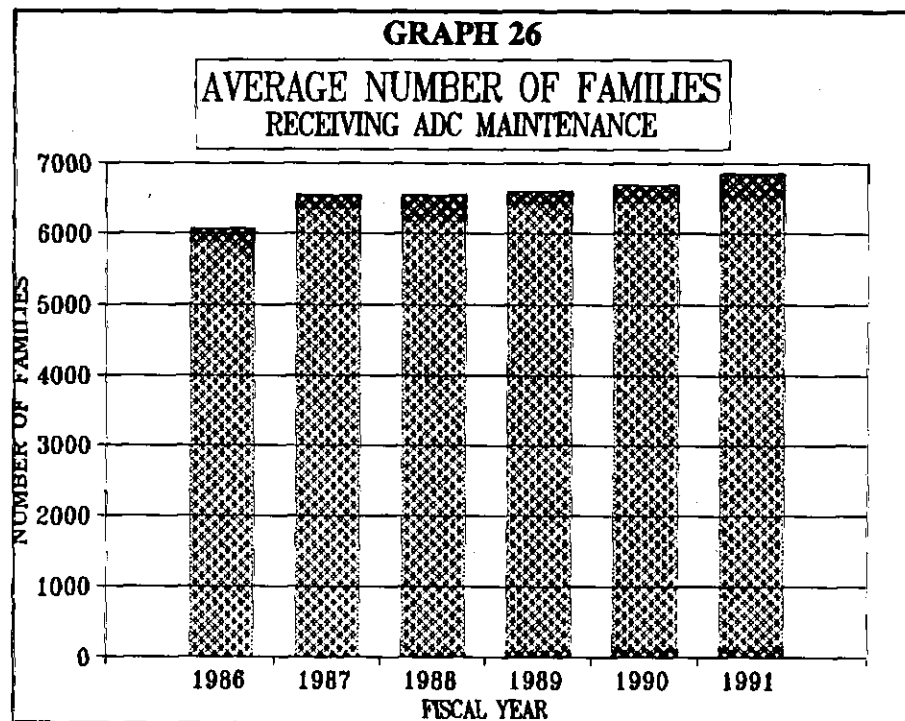


Table 5 provides one with a clearer understanding of changes in ADC assistance levels in the last six years. Of the sixteen counties specifically identified in this study, eight have experienced reductions in the number of families receiving ADC while seven experienced increases. Pennington County, where the state's largest caseload exists did not experience any change.

Interestingly, the counties that have shown indications of highest gaming influence, are those which have experienced decreases in ADC requirements. Butte, Meade and Lawrence are Counties in which the Deadwood gaming industry has had the greatest influence. Walworth, As shown in Graph 12 in Section I, Brown and Union Counties are among those having the highest average video lottery spending levels.

Conversely, Brookings, Clay and Lake Counties have experienced low per capita video expenditure, but are among the highest in growth of ADC caseloads.

TABLE 5

RELATIVE CHANGES AND NUMBER OF HOUSEHOLDS RECEIVING AID TO DEPENDENT CHILDREN ASSISTANCE			
County	Number of Households 1991	Average Percent Change 1986-1989	Average Percent Change 1989-1991
Butte	53	7.1%	-16.9%
Walworth	73	15.6%	-11.2%
Davison	130	0.5%	-4.5%
Meade	86	2.7%	-4.3%
Lawrence	140	-6.4%	-2.4%
Union	79	16.4%	-1.8%
Beadle	98	4.1%	-1.5%
Brown	238	-0.8%	-0.4%
Pennington	1,029	4.2%	0.0%
Yankton	112	-1.2%	0.9%
Codington	142	1.0%	1.8%
ENTIRE STATE	6,852	2.9%	1.9%
Minnehaha	828	3.1%	2.3%
Lake	55	-4.0%	2.9%
Bal of State	3,420	3.9%	3.7%
Brookings	107	-6.7%	4.0%
Hughes	122	-5.6%	11.0%
Clay	140	6.0%	13.1%

The entire state saw an average percent change in ADC households of 2.9% in the four years preceding gaming, but this rate has dropped to 1.9% during the last two fiscal years.

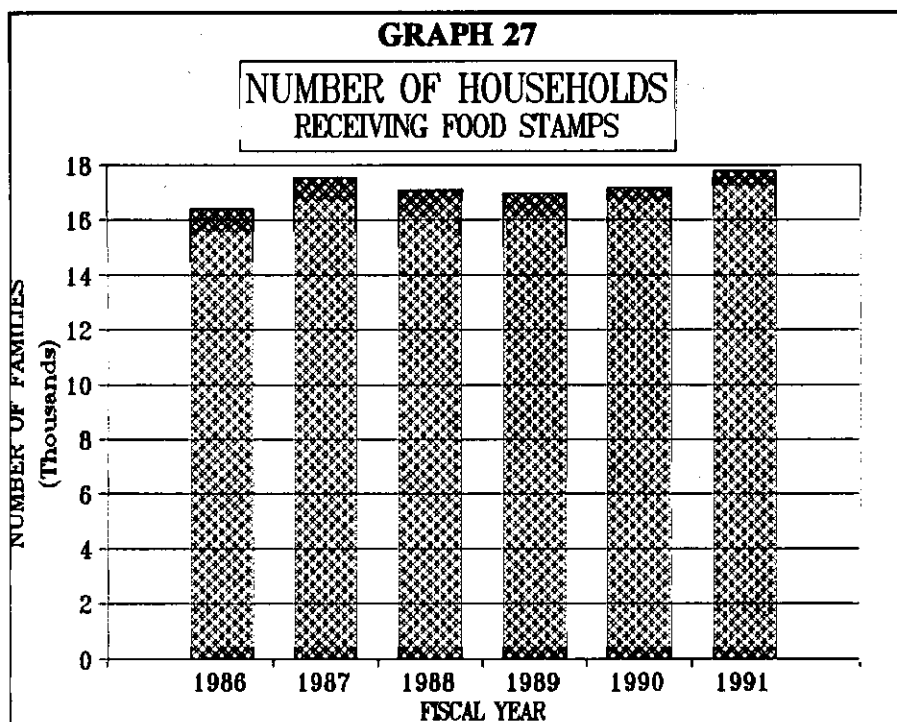
Aid to families with dependent children has been favorably impacted since Deadwood and Video gaming began in South Dakota. Drops in ADC caseloads have occurred in counties most directly influenced by gaming. Furthermore the rate of increase has been reduced statewide. A possible explanation is that members of households formerly receiving ADC have experienced

some growth in available job opportunities. The passing of time will be needed in learning more about this relationship.

FOOD STAMP RECIPIENTS

Since fiscal year 1986, the number of households receiving food stamps has ranged between 16,000 and 18,000.

A comparison of the historical movements of food stamp with ADC recipients (Graph 25) shows a definite correlative relationship. The largest absolute increase in food stamp recipients occurred from 1986 to 1987. Moderate negative and positive changes have occurred in successive years. The



graphic shows that increases from the previous year took place in both fiscal years 1989 and 1990.

A more detailed examination of the movement of this data is possible by studying the following table. Five counties have experienced negative post-gaming changes in the volume of households receiving food stamps. Ten counties have seen increases. Davison County has shown virtually no change. It is important to note that the five counties experiencing drops in food stamp requirements are those which are most heavily involved with gaming. Lawrence,

Butte and Meade, the counties most proximate to Deadwood gaming, have experienced the largest drops respectively, Walworth and Union County are noted for the local popularity of the video lottery.

TABLE 6

RELATIVE CHANGES AND NUMBER OF HOUSEHOLDS RECEIVING FOOD STAMP ASSISTANCE			
County	Number of Households 1991	Average Percent Change 1986-1989	Average Percent Change 1989-1991
Lawrence	370	-2.8%	-6.7%
Butte	208	1.6%	-6.7%
Meade	328	6.0%	-3.8%
Walworth	196	1.0%	-3.8%
Union	249	-3.1%	-3.0%
Davison	536	-1.5%	0.5%
Lake	272	0.5%	1.1%
Bal of State	7386	0.7%	2.0%
Brookings	437	1.3%	2.0%
ENTIRE STATE	17,781	1.2%	2.4%
Codington	565	1.8%	2.8%
Pennington	2,465	5.9%	3.2%
Minnehaha	2,441	0.9%	3.5%
Yankton	369	-4.9%	4.4%
Brown	833	3.5%	5.5%
Hughes	359	-0.6%	8.3%
Clay	373	3.1%	10.2%
Beadle	394	-3.6%	12.9%

Brown, Hughes, Clay and Beadle Counties have experienced the largest increase in food stamp demand. Beadle and Clay Counties have demonstrated lower than average per capita play of the video lottery while Hughes and Brown have experienced above average play.

CHILD ABUSE AND NEGLECT

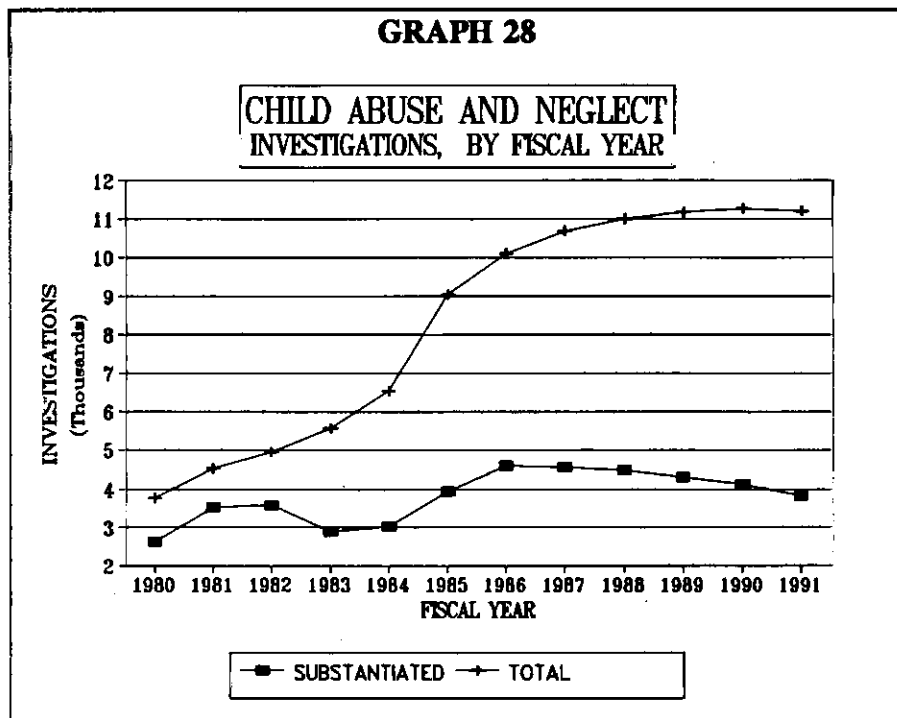
The Child Protection Office of the Department of Social Services maintains a statistical database in regard to its activity.²¹ Graph 28 portrays the movement of total child abuse and neglect investigations. The movement of substantiated investigations also appears in the graph.

Over the long run, these series are influenced by changes in policies, changes in investigative criteria as well as changes in discovery methods in local communities. As shown in the graphic the number of total investigations has shown substantial increases; tapering off in recent

years. The number of substantiated investigations recorded a historical maximum in 1986 and has since gone down.

Professionals classify cases of abuse and neglect into four types; physical abuse, sexual abuse, physical neglect and emotional maltreatment. Among these, physical neglect makes up over one-half of all substantiated cases.

The following table contains information by selected social service office in South Dakota. The total number of substantiated cases for the fiscal years 1989 to 1991 are listed for each office as well as for the balance of the state and for the entire state. The 1991 data is preliminary and



may contain missing cases. However, the number of missing cases is not believed to exceed 120 cases.²¹

TABLE 7

TOTAL NUMBER OF SUBSTANTIATED ABUSE AND NEGLECT CASES BY OFFICE BY FISCAL YEAR			
Office	1989	1990	1991
Aberdeen	231	265	250
Belle Fourche	216	101	87
Brookings	128	138	129
Deadwood	216	262	298
Huron	76	101	66
Mitchell	105	107	111
Mobridge	119	119	78
Pierre	181	167	158
Rapid City	917	796	752
Sioux Falls	658	696	435
Vermillion	140	145	90
Watertown	95	64	112
Yankton	96	143	167
Balance of State	2,038	1,891	1,640
ENTIRE STATE	5,035	4,995	4,375

The evidence, from the standpoint of individual offices, appears mixed. The largest relative increases occurred in the Deadwood and Yankton offices. From the standpoint of western South Dakota, the Belle Fourche and Rapid City offices experienced a substantial decrease from 1989 to 1991. However, Deadwood experienced increases during this same span of time. An examination of this data doesn't suggest a positive associative relationship to gaming activity.

Table 8 below presents three years of data involving physical abuse, a subset of the cases appearing in Table 7.

TABLE 8

SUBSTANTIATED PHYSICAL NEGLECT CASES BY OFFICE BY FISCAL YEAR			
Office	1989	1990	1991
Aberdeen	109	113	117
Belle Fourche	76	46	34
Brookings	51	49	47
Deadwood	84	95	113
Huron	38	60	36
Mitchell	38	40	30
Mobridge	46	66	44
Pierre	102	92	102
Rapid City	524	452	346
Sioux Falls	269	299	179
Vermillion	45	62	33
Watertown	45	25	38
Yankton	42	69	60
Balance of State	1,291	1,210	1,110
ENTIRE STATE	2,658	2,602	2,289

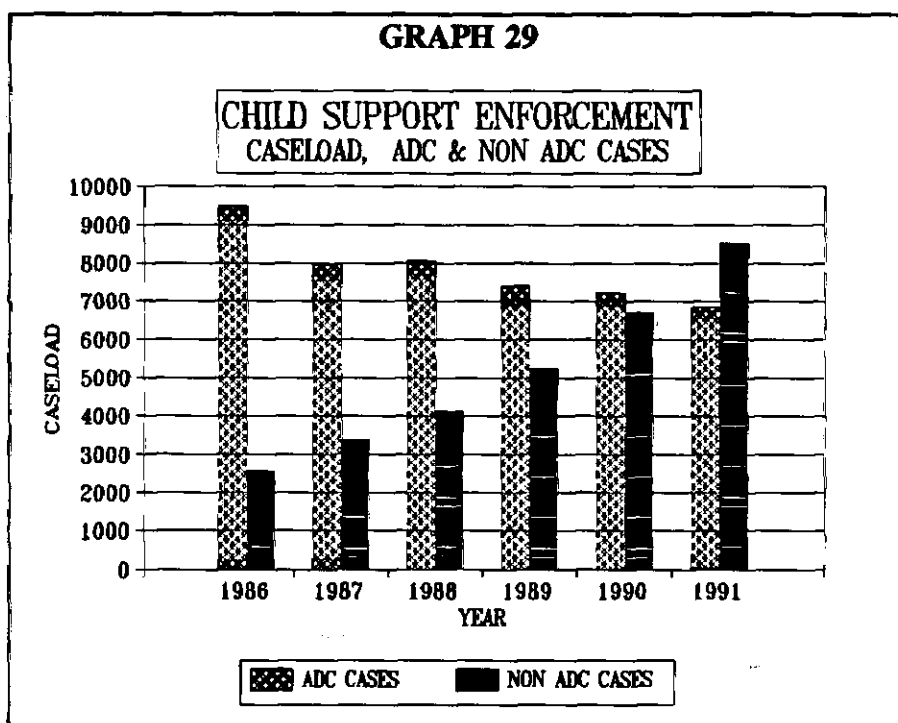
In general, it can be concluded at this point that there have been no significant increases in child protection service cases. The number of cases for most counties has fallen during the fiscal years in which gaming emerged. The Deadwood office has experienced increases in the gaming years, but it is possible that the amount of increase is traceable to the increased population of the Lead-Deadwood area as well as Spearfish.

CHILD SUPPORT ENFORCEMENT

The South Dakota Department of Social Services maintains an office of Child Support Enforcement. The purpose of this office is to assist in the collection of child support payments on behalf of those whom are so entitled. Federal and state regulations and policies change from time to time which themselves can cause changes in the apparent caseload.

The accompanying graph records this office's caseload broken into ADC and non ADC cases. Data is based on caseloads for July of each calendar year.²²

As can be seen, the number of ADC cases has fallen and the number of non ADC cases has risen both before and after



Deadwood and video gaming began. Part of the increase in non ADC cases can be attributed to an increased focus on that segment on the part of the Office of Child Support Enforcement. In 1984, federal mandate required that child support enforcement services be provided for non ADC cases equal to other cases. Much of the increase in non ADC cases is accordingly attributed to added awareness which has built since that time. In addition, federal regulations required that when clients no longer required ADC support, the cases be transferred into the non ADC category. This factor accounts in large part for the opposite direction of movements in these two series.

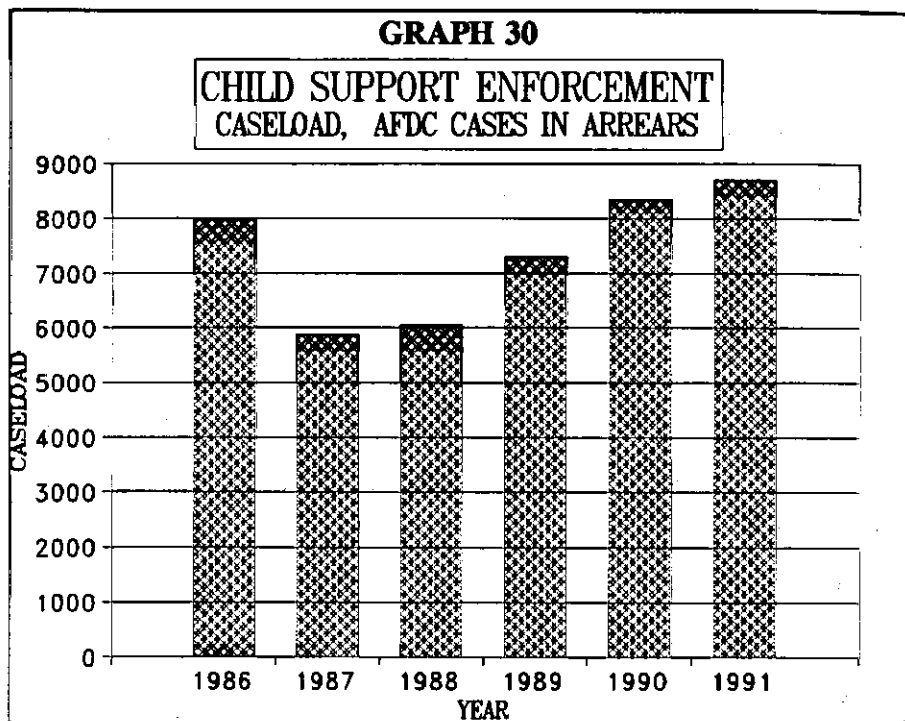
Graph 30 illustrates the movement through time in ADC cases which are regarded in arrears. This data is distinct and separate from the ADC data in the previous graph.

This class of cases represent ADC recipients who are due child support payments, but for a variety of

reasons amounts owed are not current. Changes in federal regulations during the nineteen eighties have extended the length of time cases remain active. Currently a minimum of three years is required in locating or otherwise producing payment for due child support.

Increased numbers of out of wedlock births as well as increased emphasis on collecting child support payments is also a main contributor in rising caseloads in the Office of Child Support Enforcement.

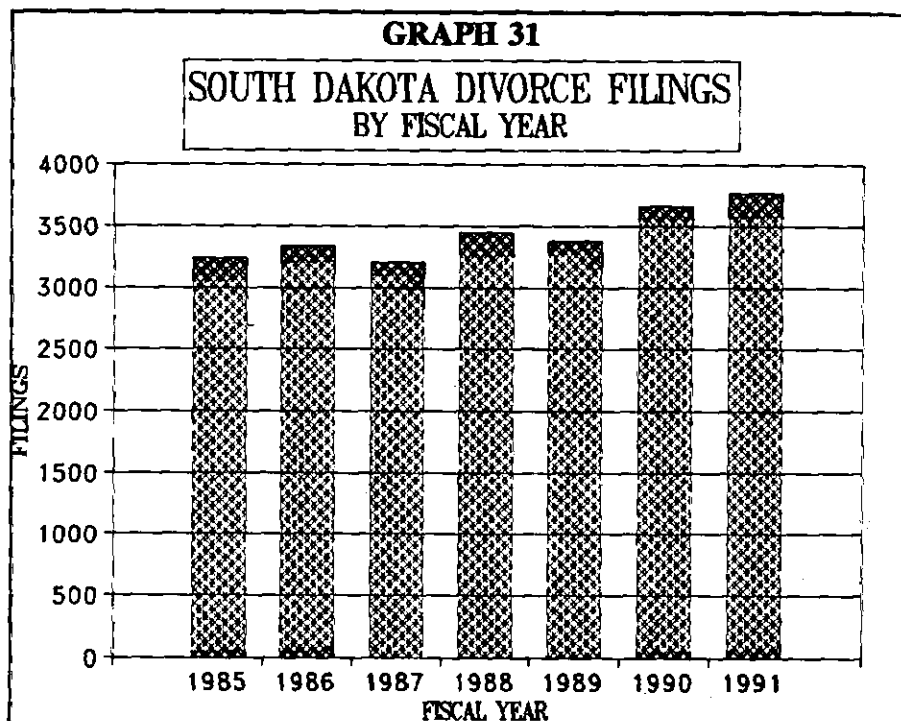
Because of the significant changes in scope of service provided by this office, state and federal regulations and number of social factors associated with clients, it is difficult to attribute any association of gaming activity with increased child support enforcement caseloads.



DIVORCE FILINGS

Divorce filings are recorded by the South Dakota Unified Judicial System by county and for the entire state.²³ A possible hypothesis in regard to divorce and gaming is that filings would rise in connection with financial and other pressures related to gaming.

The accompanying graph records the statewide number of divorce filings by fiscal year beginning in 1985. Generally, it is apparent that a long run upward trend in divorces has taken place in South Dakota. Only in 1987 and 1989 have divorces dropped in relation to their previous year.



Both 1990 and 1991 represent years which coincide with Deadwood and video gaming. Both of these years experienced successive increases in the number of divorce filings.

The following table provides data on a county level as well as for the entire state. Six counties, Union, Davison, Walworth, Butte Lake and Clay, have experienced significant drops in divorce filings in the 1990 - 1991 post gaming period. Five counties, Brown, Meade, Yankton, Hughes and Codington, have witnessed significant increases in filings. The five remaining counties have no seen any significant change in divorce filings. The state as a whole experienced an average annual increase in filings of 1% in the pre gaming period and 5.9% in the post gaming period.

TABLE 9

RELATIVE CHANGES AND NUMBER OF DIVORCE FILINGS BY COUNTY			
County	Number of Cases 1991	Average Percent Change 1986-1989	Average Percent Change 1989-1991
Union	42	4.0%	-13.8%
Davison	87	14.4%	-12.2%
Walworth	24	16.2%	-7.1%
Butte	43	2.2%	-7.0%
Lake	39	7.8%	-3.6%
Clay	61	8.0%	2.6%
Lawrence	125	-3.4%	4.3%
Pennington	675	-1.8%	4.3%
Brookings	113	2.8%	6.5%
Beadle	104	7.5%	7.1%
Minnehaha	992	5.6%	7.9%
Codington	126	-5.0%	11.2%
Hughes	94	1.0%	11.8%
Yankton	115	6.6%	13.2%
Meade	137	0.8%	16.5%
Brown	265	-6.3%	42.7%
STATE TOTAL	3,770	1.0%	5.9%

It is difficult to reach clear conclusions in regard to divorce filings and gaming. Certainly additional years' experience will help in determining whether gaming is actually a causal influence. While divorce filings have increased substantially in the post gaming era, they also increased significantly from 1987 to 1988. Individual counties have either experienced significant increases or significant decreases in the post gaming period, but county variations in gaming accessibility do not appear to explain the large variations in divorce filings.

UNCOLLECTED PROPERTY TAXES

Ideally, a series recording the number of properties associated with delinquent taxes would be used in the analysis. The only collective county data relating to this issue is the percentage of total assessed property taxes which remain unpaid. Accordingly, the reduction in the number of large commercial parcels having delinquent taxes can offset any increase in the number of delinquent residential properties. Thus, one is unable to produce sufficient resolution in the data to determine if the number of delinquencies has changed since the inception of gaming in the state.

TABLE 10

PERCENTAGE OF ASSESSED PROPERTY TAXES ASSESSED BUT NOT COLLECTED BY FISCAL YEAR				
COUNTY	1987	1988	1989	1990
Beadle	2.7%	1.9%	1.4%	1.3%
Butte	7.3%	6.7%	3.6%	3.9%
Codington	1.4%	0.9%	0.7%	0.9%
Lake	3.8%	2.4%	1.5%	1.6%
Lawrence	4.0%	3.5%	4.1%	4.4%
Meade	8.3%	6.2%	5.7%	4.0%
Minnehaha	3.2%	2.9%	2.5%	2.6%
Pennington	3.7%	3.9%	4.0%	3.3%
Union	6.2%	5.8%	5.1%	4.7%
Yankton	3.4%	3.1%	2.5%	2.0%
TOTAL	3.9%	3.3%	3.0%	2.9%

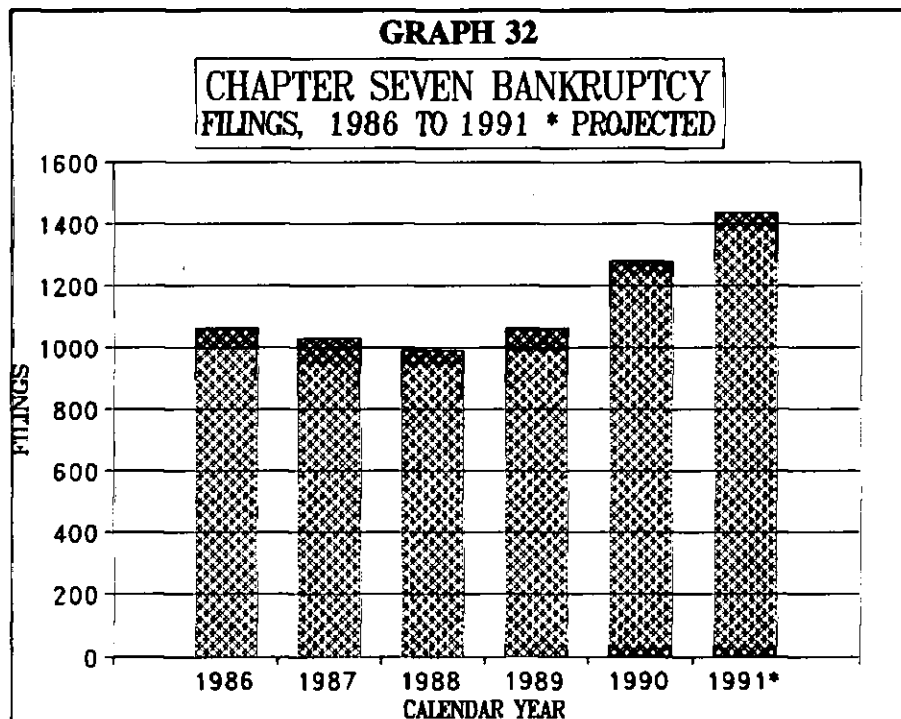
For the counties listed, there has been a steady reduction in the amount of unpaid property taxes. In addition to the issues discussed above, gaming may not be expected to impact property tax payments because in many cases, property taxes are escrowed as part of the house payment. Also, many citizens live in rental housing. Additional data needs to be maintained by county treasurers before this impact can be accurately analyzed.

CHAPTER 7 BANKRUPTCY FILINGS

Individuals or households filing for bankruptcy normally do so under Chapter 7 of the United States Bankruptcy Code. Certain debts are written off under this chapter provided the necessary requirements are met. Individuals who file with an intent to repay debts do so under Chapter 13. In South Dakota, the number filing under Chapter 7 is more than ten times higher each year than those filing under Chapter 13. One hypothesis is that increased gaming expenditures may produce financial pressures leading to bankruptcy.

The accompanying graph traces the calendar year changes in the number of Chapter 7 filings.²⁴ The data point for 1991 is a projection based on the number of actual filings through September 13, 1991.

In the two calendar years since gaming began in South Dakota, the number of Chapter 7



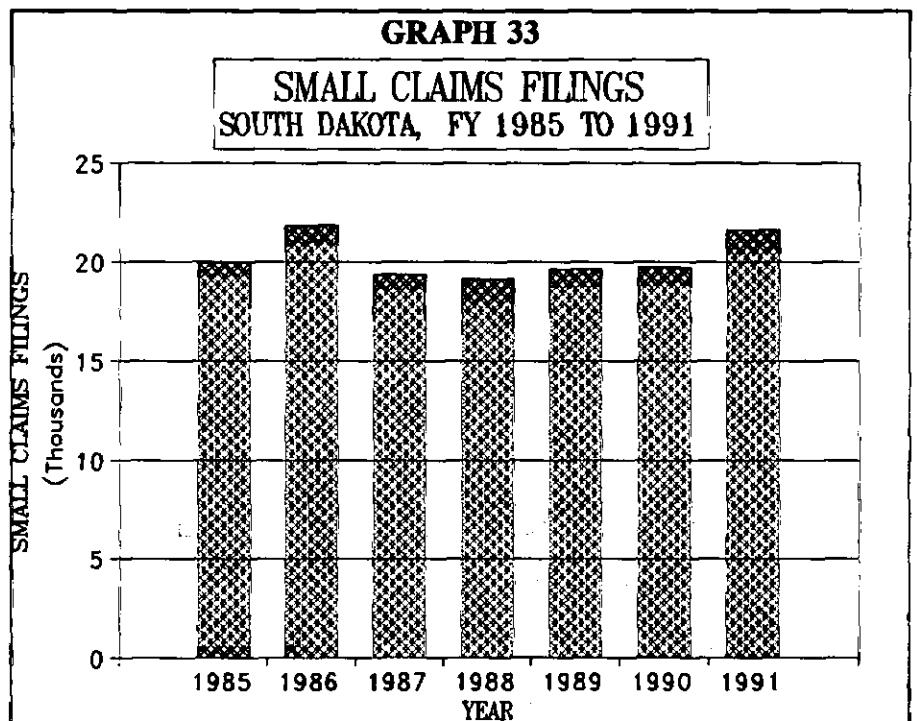
filings has increased substantially. Because of limitations on disclosure surrounding each filing it is not possible to pinpoint specific reasons concerning the events that lead to bankruptcy. Recent media reports suggest that credit card debt and medical expenses have been two of the leading causes of the rapid increase in bankruptcy during the last two years.²⁵ However, it is possible that the combination of these two causes can in turn be traceable to gaming activity.

Individual discussions with those working with the bankruptcy court have suggested that some increase in bankruptcy may be gaming related.²⁶ In the process of listing uses for disposable income, some individuals are not able to account for a portion monthly income. The frequency of this phenomena during the last two years suggests the possibility of a gaming relationship. Although two years' experience is insufficient to establish a firm causal connection to gaming expenditure, it appears that a more detailed study of individual bankruptcy cases is warranted.

SMALL CLAIMS FILINGS

Civil disputes involving the collection of debts are often settled in small claims actions. Merchants, professionals and private citizens frequently utilize small claims courts in South Dakota. A hypotheses in regard to small claims actions is that their frequency may increase because of the popularity of gaming.

The graphic shows that since 1985, the number of small claims filings increased by rather large numbers in fiscal years 1986 and 1991.²³ In 1990, the first fiscal year in which gaming existed, filings were nearly the same as in 1989. The increase in filings in 1991 took place during the second fiscal year in which gaming was legal in South Dakota.



It is possible, but not a certainty, that some of this increase may be connected to gaming expenditure. More experience is necessary before one can be relatively certain of this relationship.

The following table examines the number of filings according to county. Six counties, Meade, Walworth, Codington, Beadle, Davison and Hughes have each experienced decreases in small claims filings since the commencement of gaming. Five other counties, Yankton, Clay, Union,

TABLE 11

RELATIVE CHANGES AND NUMBER OF SMALL CLAIMS FILINGS BY COUNTY			
County	Number of Filings 1991	Average Percent Change 1986-1989	Average Percent Change 1989-1991
Meade	336	31.5%	-29.3%
Walworth	125	0.0%	-24.2%
Codington	709	8.5%	-19.1%
Beadle	558	2.9%	-10.3%
Davison	792	0.3%	-9.1%
Hughes	404	-14.4%	-2.7%
Brookings	999	-1.3%	0.5%
Minnehaha	3,437	11.0%	3.2%
Lake	389	7.6%	4.0%
Balance of State	5,171	-7.3%	5.7%
Brown	1,305	6.1%	6.3%
Butte	212	6.1%	8.7%
Lawrence	866	12.4%	17.0%
Pennington	4,448	0.5%	25.4%
Union	228	-10.6%	45.2%
Clay	479	-0.2%	53.5%
Yankton	1,115	3.3%	58.8%
STATEWIDE	21,573	-4%	9.5%

Pennington, and Lawrence have experienced double digit annual increases during this same period. Other counties experienced increases, but were more moderate in magnitude. Lawrence County has seen large increases in small claims filings both before and after gaming. Rapid growth in that county's population may explain much of the impact, but of course gaming may have also contributed. It is also interesting to note that the five counties which have experienced the largest post gaming drops in small claims filings did not have similar drops prior to 1989.

FORECLOSURES, REAL PROPERTY

Official records concerning foreclosures by county is not maintained by the state. Rarely do individual counties record this data either. As a means of gathering all of the data available a survey was distributed to Sheriffs of sixteen counties. Many of these officials chose not to respond and others responded by reporting that the information is not available. The following table records the responses which were returned.

TABLE 12

FORECLOSURES BY COUNTY 1983 - 1991* PROJECTED									
County	1983	1984	1985	1986	1987	1988	1989	1990	1991
BEADLE	NA	NA	18	13	10	12	7	5	5
BROWN	NA	33	30	44	66	23	12	10	7
BUTTE	5	6	4	12	10	12	4	2	3
LAWRENCE	12	21	14	19	21	21	13	11	6
YANKTON	10	6	8	15	20	11	3	2	3
WALWORTH	2	2	1	5	3	2	6	5	6
PENNINGTON	52	38	36	74	85	124	110	88	57

This small sample of counties show that the number of foreclosures was far higher in the mid to late nineteen eighties than in recent years. Accordingly, there does not appear at this time that foreclosure actions have increased in response to gaming. More general economic conditions are likely to be much more related to foreclosure rates than specific factors.

SECTION SUMMARY

The gaming industry in South Dakota has produced substantial fiscal benefits to the State of South Dakota. In fiscal year 1991, 6.2% of general fund revenue was directly traceable to gaming receipts. Growth in gaming is likely to add somewhat to this percentage in later years.

Other units of local government which have greatly benefitted include the City of Deadwood and Lawrence County as well as several tribal governments currently sponsoring gaming.

Although it is too early to be definitive in regard to social impacts, indications at this point appear mixed. Social assistance programs, such as Aid To Dependent Children and Food Stamp assistance do not appear to have experienced increased caseloads in connection with gaming. Likewise the number of child abuse and neglect cases have not experienced gaming related increases. Although divorce filings have risen, county level statistics do not give an indication that the increase is gaming related. Child support caseloads recorded by the Office of Child Support Enforcement have risen, but structural changes in that program prevents the ability to attach any associative relationship to gaming.

Chapter seven bankruptcy filings and small claims filings have experienced significant increases in the two fiscal years since gaming began in South Dakota. Chapter seven filings, in particular, have shown substantial rises during the last two years and is therefore a phenomenon that should be studied in more detail.

Real estate foreclosures and property tax collections do not appear to have suffered adverse impacts.

SECTION V - STUDY SUMMARY

Prior to 1987, games of chance in South Dakota mainly consisted of bingo and track racing. State involvement into these activities was very limited in terms of regulation and sharing in revenues generated. The state entered the gaming industry first in 1987 with instant scratch tickets. This game met with success, reaching levels of popularity which were not widely anticipated. However, the largest steps into the gaming industry were taken by the state in 1989 with the advent of limited gaming in Deadwood and the inception of the statewide video lottery. Shortly after this time, reservation gaming was developed in several South Dakota Locations. Because of the economic magnitude of these latter forms of gaming, the primary focus of this study concerns the post 1989 window of time.

The two years' experience with the latter two games have provided sufficient data to afford an examination of the associated economic impacts. Measurable fiscal impacts have occurred in regard to local and state governments over this time period as well.

By their nature, any emergence of social impacts are expected to require longer periods of time before they evolve. A number of social variables are studied for their potential associative relationship to gaming activity.

A series of summary statements concerning the main findings developed here are presented in this section. The reader is highly encouraged to read the entire document to gain a more complete understanding of these issues.

- The instant or scratch lottery games began in the fourth quarter of 1987. Initial sales were as much as \$11.4 million per quarter until they stabilized at about \$5 million per quarter during 1989. After the beginning of the video lottery, a substitution in favor of that game took place reducing sales to about \$3 million in 1991.
- Beginning in October of 1990, video lottery sales before deducting prizes began at a \$20 million quarterly pace. The game quickly developed a steady growth path reaching quarterly sales of \$80 million.

- Gaming in Deadwood has produced total gaming action of \$565 million through August of 1991. Of that amount \$56 million has been retained as adjusted gross income after prizes have been paid.
- In late 1990 South Dakota joined a consortium of other states in Lotto America and began offering players a chance for large jackpot prizes. Total sales in regard to this game totals more than \$1.8 million per quarter. Wide monthly aberrations in sales occur when the lotto prize reaches large amounts.
- Net spending levels after the receipt of prizes by South Dakotans vary substantially between games. When non resident spending is deducted from Deadwood volume, per capita spending by South Dakota residents is estimated to be \$10.20. Per capita spending estimates are based on the component of population over 21 years of age. Per capita spending on the instant game is \$10.93 and Lotto America experiences per capita spending of \$8.78. The video lottery totally dominates per capita spending and equals about \$228.60 annually. However, an undertermined amount of this video spending arises from non residents. These four games together account for total per capita spending of nearly \$260 or about \$5 per week.
- By far, Union County in extreme Southeast South Dakota experiences the largest amount of per capita player volume. In that county, net revenue per video terminal was \$28,000 in fiscal year 1991. Per capita spending is equal to \$1,500. The unique sales volume in that county is traceable to communities in Iowa and Nebraska. Other counties demonstrating high per capita video revenue tend to be those containing large urban communities. Counties containing large universities as well as those located close to Deadwood experience lower per capita spending levels.
- Retail and service spending sectors have witnessed mixed impacts in regard to the inception of gaming. Sectors such as recreation and apparel businesses which are dependent on discretionary personal income tend to have been negatively impacted as spending units substitute in favor of gaming activity. Other sectors such as eating and drinking establishments have developed increased spending because of their complementarity to gaming.
- The dramatic growth of the gaming industry has produced substantial increases in employment in associated businesses. Nearly 2,500 more workers are employed in eating and drinking establishments, vender-operator businesses and the government. This accounts for at least \$22 million in industry earnings.

- In fiscal year 1991 gross income before expenses but after the video tax amounted to \$81.2 million to owners of video terminals and businesses hosting them. If one allocates one-half of this revenue each to vendors and retail establishments, average revenue per terminal to their owners was \$6,600 in fiscal year 1991. The average revenue per retail business was \$30,000 after video taxes were paid.
- In fiscal year 1991, gross revenue after payment of prizes amounted to \$32,582,000. Deducting the 8% gaming tax resulted in \$29,976,000 in revenue divided among the approximately 80 licensed gaming establishments in that community.
- State revenues in fiscal year 1991 from gaming taxes comprised more than \$30 million or 6.2% of the total general fund financing. This is equivalent to a .5% general sales and use tax on items currently covered under that tax.
- Social assistance programs analyzed in this document do not appear to have been adversely impacted in connection with gaming. Aid to Dependent Children assistance requirements may even have been favorably impacted. Counties which are among those most heavily involved with gaming tended to show decreases in households using this assistance. Much the same can be said in the case of food stamp assistance.
- Child abuse and neglect caseloads do not at this point appear to be associated with gaming activity.
- Divorce filings have risen in both fiscal years 1990 and 1991. However, similar annual increases have occurred in some pre gaming years. Additional experience will be necessary in further documenting this relationship.
- Small claims filings increased significantly in fiscal year 1991; however, the amount of the increase has also occurred in at least one pre gaming year. Chapter 7 bankruptcy filings have increased substantially in calendar years 1990 and 1991. Several other explanatory factors have been mentioned in this document including medical costs and credit card debt. The need exists to examine more carefully the relationship that gaming might have to bankruptcy.
- No adverse impact has taken place with respect to real estate foreclosure rates. This is likewise true in regard to unpaid property tax assessments.

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26. Interview with U.S. Bankruptcy Court Trustee, October 1991.

APPENDIX

October 3, 1991

2~
1~
3~
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Dear 2~:

You may be aware of a socioeconomic study being conducted on behalf of state government concerning gaming. One of the significant segments of the study involves the positive economic impacts associated with this new South Dakota industry. Employment connected with the maintenance and general management of video terminals is one of the economic impacts that I need to document in this report. The information which is most valuable to me involves operators who are involved with lease or some other type of participating arrangements with retail outlets.

I realize that some information is likely to be regarded as proprietary so I am not seeking financial data. I am asking you to complete the following questions concerning employment so that I can aggregate it with that of all other operators in the state. If you have a problem in answering one of the questions I would still appreciate knowing your responses to other questions.

If it's convenient, you can simply complete the blanks in this letter and return it to me.

1. Do you have video lottery machines that are leased to retail operators. YES NO
2. How many full-time-equivalent employees do you have involved with the maintenance and management of video terminals? _____
3. What is the aggregate approximate annual worker earnings associated with these employees? \$ _____
4. How many video terminals are managed within your organization?
10 to 50 51 to 100 101 to 200 more than 200

Your answers to these four questions will be extremely helpful in determining the economic significance of the video lottery in South Dakota. The statistical reliability of the aggregate results is heavily dependent on a high response rate to this survey so I hope you will take a few minutes today and return the completed survey to me. I personally assure you that the information you supply will not be reported individually, but rather will be aggregated with all of the other responses.

The scheduled completion date of this study is about twenty days from now so your prompt response will be greatly appreciated. Thank you very much for your assistance.

Sincerely,

MICHAEL K. MADDEN

UNIVERSITY OF LETHBRIDGE



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