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Lottery Play among Wisconsin Residents: A Second Look at Who Plays and How Much They Spend

Report Commissioned by and Submitted to the Wisconsin State Lottery Board

Irving Piliavin School of Social Work Institute for Research on Poverty University of Wisconsin-Madison

Bradley R. Entner Wright Department of Sociology Institute for Research on Poverty University of Wisconsin-Madison

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Table of Contents

					Pa	ıge
Executive Summary	/	• • • •	• • • • • •	••••	• • • •	1
Chapter 1: History	and Prior Research	••••	·		• • • •	4
Chapter 2: Sample	Collection, Analysis, and Description	• • • •		• • • • • •		10
Chapter 3: Lottery	Play and Attitudes in 1989 and 1991	••••			• • •	18
Chapter 4: Demogr	raphic and Attitudinal Correlates of Lottery Play	, Expe	nditures,	and		
Lottery-Rele	evant Attitudes	• • • •		• • • • • • •	• • •	27
Chapter 5: Racial I	Differences in Lottery Play, Lottery-Relevant Att	titudes,	and Lot	tery		
Knowledge		• • • •		••••	• • •	44
Chapter 6: Multivar	riate Analysis of Lottery Play	• • • •		••••	•••	54
References	•••••••	• • • • •		• • • • • • •	(65

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EXECUTIVE SUMMARY

This report follows up a 1989 study on the lottery play of Wisconsin residents. The 1989 study, which became IRP Special Report no. 50, was completed before SuperCash! and Megabucks, two lottery games that offer high payoffs but low probabilities of winning, were introduced in Wisconsin. The 1989 study also sampled too few African-Americans to permit any reliable racial comparisons. The present report, which, like the prior one, was commissioned by the Wisconsin State Lottery Board, represents an improvement on both counts. Data on who plays SuperCash! and Megabucks, how often they are played, and how much players spend on each are presented and analyzed. And with the help of Survey Sampling Incorporated, a sample of African-American residents in Wisconsin large enough to permit reliable racial comparisons has been obtained.

There are two samples used in this study. One is a sample of Wisconsin residents, randomly selected from across the state; the other, as was just mentioned, is a sample of African-American Wisconsin residents. The random sample of Wisconsin residents, called the "statewide" sample in the tables of this report, contains 542 people. It is based on a cross-sectional sample of fifteen hundred telephone numbers purchased from Nielsen Media Research. The African-American sample is drawn from an initial list of nine hundred telephone numbers of households in Wisconsin census tracts whose population is 30 percent African-American. All nine hundred numbers were called, and only those respondents who identified themselves as African-American (n=225) were interviewed.

The data are from Computer Assisted Telephone Interviews conducted by the investigators. Each interview lasted an average of fifteen minutes.

Before analyzing the data, the investigators present information on a number of important items. How frequently did Wisconsin residents play lottery games in 1990? How much did lottery players spend per month? What percentage of their income did they spend? Which of the four games--Scratch-Off, Pull-Tab, SuperCash!, or Megabucks--were the most popular? In addition, we learn about the attitudes Wisconsin residents have toward lottery games and how well they understand how the lotteries work.

The analysis consists of cross-tabulations and a logistic regression. The cross-tabulations, which make up the brunt of the report, allow one to see the interrelationship between two or more variables. For example, what percentage of whites and African-Americans play lottery games? Or, who spends more per month on lotteries, those younger than fifty or those older than fifty? The investigators use cross-tabulations to illustrate the relationship among demographic characteristics (e.g., age, education, income), attitudes toward lotteries, how frequently residents play lottery games, and how much they spend on them.

Cross-tabulations, however, cannot let us know if the interrelationship between variables is necessary or incidental. That is, to take one of the examples just mentioned, cross-tabulations cannot tell us if someone is more disposed to play the lottery because he is white or black; perhaps the white people in the sample are indeed more likely to play the lottery, but this may be because they have high incomes, not because they are white. To determine which demographic attributes and what attitudes toward lotteries actually "cause" one to play the lottery, a logistic regression analysis is needed. In chapter 6 of this report, the investigators present such an analysis. They simultaneously analyze the effects of variables such as gender, age, and attitudes toward lotteries on the selected outcome of interest—in this case, whether or not one plays the lottery.

SUMMARY OF MAJOR FINDINGS

 The number of state residents who play the lottery has changed little since 1989. As reported in 1991, about three out of five played it sometime in the prior year.

- 2. Lottery spending is becoming more concentrated among those who spend more. Currently about 10 percent of the state's populace (16 percent of lottery players) account for nearly 75 percent of all lottery revenue.
- 3. Scratch-Off and Megabucks are the most widely played lottery games. And heavy-spending players prefer SuperCash! over Megabucks, but the reverse is true for light-spending players.
- 4. Attitudes toward the lottery have changed little in the past two years, except that overall approval of the lottery may be slipping.
- 5. Few state residents (less than 5 percent) report that lottery play creates personal problems for them.
- 6. Residents least likely to play include those who are either extremely poor, aged, either without high school diplomas or with college degrees, or who do not participate in other forms of gambling.
- 7. African-American and white respondents are equally likely to play the lottery, and spend comparable amounts of their income on it.
- 8. African-American respondents, relative to whites, report more personal problems associated with lottery play.
- 9. Demographic differences exist in who plays the lottery. Men, young people, married people, high school graduates, and those with some college but no degree are the most likely to play. The bulk of these differences existed in 1989 and 1991; thus the basic profile of lottery players in Wisconsin has changed little since 1989.
- The effects of demographic characteristics upon lottery play is mediated by attitudes.
 Specifically, the effects of gender appear to be mediated by participation in other, non-lottery forms of gambling; the effects of education, by attitudes toward the lottery; and the effects of age, by both other gambling and attitudes.

CHAPTER 1

HISTORY AND PRIOR RESEARCH

HISTORICAL BACKGROUND¹

Enthusiasm for lotteries has waxed and waned throughout our nation's history. As early as the colonial era all levels of government operated lotteries, and they were supported by well-known figures such as George Washington and Ben Franklin. These government-run lotteries funded numerous, worthwhile endeavors including road building and education (Devereux 1980; Rosecrance 1988). But by the nineteenth century the inefficiency of government administration, evidenced by long delays between ticket purchases and drawings, led state governments to contract with private parties to operate lotteries. While privatization increased efficiency, it also opened the door to widespread fraud and corruption in lottery administrations (Asbury 1938). The pilfering of lottery money continued until 1895, when the federal government outlawed all games involving chance, consideration, and reward (Devereux 1980; Clotfelter and Cook 1989).

The official return of lotteries in the United States took place in New Hampshire in 1964. The return represented the culmination of a long-term series of developments involving the introduction of games of chance at movie theaters, various forms of competition promoted by private manufacturers, and perhaps most important, the introduction of bingo games by religious and charitable organizations.

With the reappearance of lotteries, considerable public debate has developed concerning their moral character and economic value. One position, argued by proponents of lotteries, holds that legalized gambling brings to government money otherwise spent on other often illegal forms of gambling (Peterson 1951). Furthermore, proponents point out that today's lotteries, being state run,

experience minimal corruption, and their revenues fund worthy endeavors such as education and property tax relief.

Countering this pro-lottery position, opponents contend that legalizing lotteries sends to the public a mixed message: why, after all, should a state legalize lotteries, but continue to outlaw other forms of gambling such as pari-mutuel betting (Clotfelter and Cook 1989; Devereux 1980)? Opponents also argue that lottery play can create enthusiasm for gambling which can in fact result in increased illegal gambling (Peterson 1951). Finally, some have claimed that should they disproportionately target the poor and uneducated, lotteries potentially constitute regressive forms of taxation (Brinner and Clotfelter 1975).

PAST LOTTERY RESEARCH

Given the recent popularity of lotteries, surprisingly few studies have rigorously examined patterns of lottery participation. The studies conducted prior to 1989 suggest that most Americans, especially those who lived in states that offered lotteries, approved of them. However, lottery approval varied among citizens, with older people, those earning under \$5,000, and those without high school educations expressing the lowest levels of approval (Commission on the Review of the National Policy toward Gambling 1976).

As for lottery play itself, prior studies have indicated that those who are young (under twentyfour years of age), those who are old (over sixty-five), and men were more likely to play the lottery. According to some studies, lottery play increased with income (Commission on the Review of the National Policy toward Gambling 1976). Lottery expenditures, however, appeared to be independent of income level, with the wealthy and the poor spending about the same on lottery play (Brinner and Clotfelter 1975). This finding can be and has been interpreted as indicating that lottery play is a form of regressive taxation. However, the validity of this conclusion depends in part on how individuals

regard these expenditures. Specifically, if they view lottery play as "entertainment," the argument is weakened. Another important finding from some prior studies indicated that lottery play was highly correlated with non-lottery forms of gambling (Koza 1984). However, the causal direction of this association was not determined, thus leading to ambiguity as to whether or not lottery play led to other gambling activities.

In 1989, at the request of the Wisconsin State Lottery Board, Irving Piliavin and Michael Polakowski of the Institute for Research on Poverty, University of Wisconsin, undertook a study of lottery play and players based on two samples, one a probability sample drawn in Wisconsin (n=527), the other a probability sample drawn nationwide (n=733). From their analysis of the Wisconsin sample, they concluded that in Wisconsin:

- 1. Most residents approve of the lottery.
- 2. Most residents have played the lottery at least once.
- 3. The mean lottery expenditure among players is \$10.57, the median is \$5.00.
- 4. Monthly lottery expenditures do not vary across age groups, income groups, race, educational levels, or marital status.
- 5. Men spend more on lottery play than do women.
- 6. Among players, those with higher family incomes, more education, and who are currently married spend proportionately less of their family incomes on lottery play.
- 7. Ninety-five percent of state residents who have played the lottery believe that playing the lottery has no adverse effect upon their household expenses.
- 8. Approximately one in three residents believe they could create a system to increase the odds of winning the lottery.
- 9. Sixty percent of residents underestimate the percentage of money spent on the lottery that is returned as winnings.

In addition, based on national sample data, Piliavin and Polakowski made the following predictions: that over time more males in Wisconsin would play the lottery; lottery spending would become more concentrated among those who spend the most, meaning that the bulk of lottery revenue would come from fewer state residents; approval of the lottery will become less associated with lottery play; and finally levels of lottery approval should remain the same or increase.

While the 1989 study produced important findings about lottery play in Wisconsin, it had two shortcomings, both recognized by its authors. First, because the study collected a cross-sectional sample of Wisconsin households, the resulting data contained very few African-American respondents--less than 6 percent of the whole sample. This substantially curtailed the statistical power needed for racial comparisons. A second problem resulted from the timing of the survey. The data were collected between June 1 and August 6 of 1989, before the Lottery Board introduced two new games, Megabucks (in August 1989) and SuperCash! (February 1991), which offer high payoffs but low probabilities of winning. Thus, the 1989 study left unresolved the impact of these games upon lottery attitudes and playing habits.

The present study overcomes these shortcomings in that it is based in part on a comparatively large sample of African-American residents in Wisconsin and specifically investigates play in all the games currently marketed by the state.

Before proceeding further, we offer a review of the four lottery games currently available--Scratch-Off, Pull-Tab, SuperCash!, and Megabucks. These games vary along several dimensions, including how they are played, their cost, and their potential payoff.²

Scratch-Off costs one dollar to play and it is offered at over 4,600 sales outlets, making it the most widely available lottery game. To play, one scratches a latex patch off of a game card to reveal any prizes won. Its potential jackpot ranges from \$1 to \$100,000, depending upon the particular Scratch-Off game. The overall odds of winning any prize are about one in four to one in five.

Pull-Tab, similar to Scratch-Off, offers instant prizes, with the player pulling a tab off of a game card to reveal any prizes won. Unlike Scratch-Off cards, Pull-Tab cards are sold mostly at bars and organizational fund-raisers, and cost only 50 cents each. The game offers smaller jackpots--from 50 cents to \$100--but the odds of winning any prize approximate those of Scratch-Off--about one in four to one in five.

The remaining games, SuperCash! and Megabucks, entail a player attempting to correctly pick randomly drawn numbers. For one dollar, the SuperCash! player picks six numbers from 1 to 36, hoping to match those randomly drawn at the end of each day by the State Lottery Board. Correctly picking all six wins the player \$250,000. Those matching only four or five numbers win smaller prizes. The odds of winning any prize with SuperCash! are estimated to be about 1 in 150.

Megabucks resembles SuperCash! in its basic structure and cost, but with one major difference: Megabucks players pick from a much wider range of six numbers from 1 to 54. Each Saturday and Wednesday night, the Multi-State Lottery Association, an organization which operates Megabucks for fifteen states and Washington, D.C., randomly selects six winning numbers and pays a jackpot to any individual who successfully picks all six. Should multiple players win, the jackpot is split. If no one matches all six numbers, the jackpot rolls over to the next drawing. Megabucks pays jackpots up to many millions of dollars. As with SuperCash!, players matching four or five numbers win smaller prizes. The odds of winning any prize are about 1 in 750.

The remainder of this report is organized in the following manner. In chapter 2 we describe the sampling and interview procedures we employed in this survey as well as provide descriptive information on our respondents. In chapter 3 we examine changes since 1989 in the playing habits and attitudes of Wisconsin residents toward the lottery. In chapter 4, we use bivariate analysis to explore which factors are associated with lottery participation, lottery expenditures, and lottery-related attitudes among Wisconsin residents. In chapter 5, we compare the African-American and white

respondents in terms of their lottery play, knowledge, and attitudes. Finally, in chapter 6, we use multivariate analysis to investigate which demographic characteristics and attitudes best predict the likelihood of playing the lottery.

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CHAPTER 2

SAMPLE COLLECTION, ANALYSIS, AND DESCRIPTION

The data on which our analysis is based were collected during the fall of 1991 by the Letters and Science Survey Research Center of the University of Wisconsin. The Survey Research Center, a unit of the College of Letters and Science and supported by the College and the Graduate School, surveyed a total of 767 Wisconsin residents. In this chapter, we review the sampling techniques used to select and interview these respondents,³ and we describe the resulting sample.

SELECTING RESPONDENTS

The samples we employ in this survey are based on two lists of Wisconsin telephone numbers, one representing a random, statewide sample, and the other, households in minority-dense areas of the state.

The statewide, cross-sectional sample of fifteen hundred phone numbers was obtained from Nielsen Media Research. This sample comes from a list of potentially working residential telephone numbers in Wisconsin, including both listed and unlisted numbers. Nielsen updates this master list three times a year. Though experts estimate that approximately 93 to 95 percent of U.S. households have telephones, we do not know the proportion of such households in Wisconsin.

A second sample, comprised of African-Americans, was drawn from an initial list of nine hundred telephone numbers in Wisconsin purchased from Survey Sampling Incorporated (SSI). Using 1980 U.S. Census data, SSI has identified census tracts where the density of African-American households is found to be 30 percent or higher, and it uses these tracts as a sampling frame for its Targeted African-American Sample. The nine hundred numbers purchased come from this Targeted African-American Sample, and only the African-American households from the list were interviewed. Because SSI bases its Targeted African-American Sample on census tracts, those African-Americans living in rural, untracted areas of Wisconsin will not be represented in the sample. Furthermore, since the sampling methodology identifies those areas in Wisconsin where African-American households tend to be clustered, African-Americans living in predominately non-African-American neighborhoods will also be excluded.

In addition, certain African-American households (those with lower incomes and less education, in particular) have been determined to be less likely to have listed telephone numbers than the population as a whole. Because only households with listed telephones were included in the sampling frame, we have an underrepresentation, probably small, of African-American households with lower incomes and less education.

For the statewide sample, the Survey Research Center called each of the fifteen hundred numbers provided by the Nielsen Organization. Interviews were initiated in all instances in which a call resulted in contact with a household where at least one adult was present. If more than one adult was present at the time of the call, each was identified and the individual interviewed was selected by random sampling procedures. If a call did not result in a contact after eight attempts, the number was dropped from the sample pool. Efforts to make contact took place at various times: afternoons, evenings, and weekends. The random sampling procedures netted a sample whose composition resembles that of Wisconsin as a whole; thus, most members of the statewide sample are white and only a few are African-American.

The selection procedures for the African-American sample were the same as those for the statewide sample, with the exception that households were screened to determine the race of the selected respondent. The interview continued only if the respondent identified him or herself as African-American.

THE INTERVIEWING PROCEDURE

The interview was conducted using a Computer Assisted Telephone Interview (CATI) system, in which the text of all questions appear on the screen for the interviewer to read. The computer routes the interview, based on previously programmed logical skip patterns. This system has several advantages, including allowance for both precoded and open-ended questions, automated screening of only valid responses, maintenance in memory of all sample telephone numbers, automatic routing of no-answers to the proper directory for next attempts, and maintenance of an elaborate set of management records. Interview length averaged fifteen minutes.

RESPONSE RATES

Response rates are provided below for the entire sample; the random, statewide sample; and the African-American sample.

The Entire Sample

Twenty-four hundred total telephone numbers were used in the project, with the following results:

Type of contact	<u>Number</u>
Completed interviews	767
Refusals	393
Other	8
Not in sample (nonworking numbers, nonresidential numbers, etc.)	895
Answered, but not interviewed (respondent not available for interview, etc.)	255
Number never answered	82

To compute the response rate, we employed the following equation:

completed interviews

Response rate =

completed + refused + other + respondent not available + never answered

If we assumed that the ratio of working residential numbers to other numbers for neveranswered numbers was the same as it was for those which were answered, we computed the following adjustment:

completed + refused + other + respondent not available

= .614 completed + refused + other + respondent not available + not in sample which allowed us to calculate the overall response rate, which was 52.1 percent:

767

Response rate = _____ = .521

767 + 393 + 8 + 255 + (.641) (82)

The Statewide, Random Sample

Fifteen hundred telephone numbers were used in the statewide sample with these results:

Type of Contact	<u>Number</u>
Completed interviews	542
Refusals	217
Other	3
Not in sample (nonworking numbers, nonresidential numbers, etc.)	540
Answered, but not interviewed (respondent selected but not	
available for interview, etc.)	136
Number never answered	62

Making the same assumptions and adjustments as above, we calculated that the response rate for the statewide sample was 57.8 percent:

542

Response rate = _____ = .578

542 + 217 + 3 + 136 + (.624) (62)

The African-American Sample

Nine hundred telephone numbers were used in this part of the study. This resulted in: Type of Contact Number Completed interviews 225 Refusals 176 5 Other Not in sample (nonworking numbers, nonresidential numbers, etc.) 3554 Answered, but not interviewed (respondent selected but not available for interview, etc. 119 20 Number never answered

Again, making the same assumptions and adjustments as above, we calculated the response rate for the African-American sample to be 41.9 percent, as follows:

225

Response rate = _____

225 + 176 + 5 + 119 + (.597) (20)

DESCRIPTION OF THE SAMPLE

In Table 1, we describe the respondents interviewed in this survey. For the reader's convenience, we also reprint a description of the 1989 study respondents. As shown, the 1991 statewide, random sample closely resembles that collected in 1989, for the average respondent is white, middle-aged, female, married, and a high school, but not college, graduate. Respondents in the 1991 survey reported significantly more family income than did the 1989 respondents (\$35,128 vs. \$28,676),⁵ an 18 percent increase that can only in part be accounted for by inflation. A contributing factor to this increase might be the higher percentage of college graduates in the 1991 sample relative to the 1989 sample (23.6 percent vs. 19.5 percent).

Overall, the 1991 statewide sample resembles the state population. According to the 1990 census, the Wisconsin population was 49 percent male and 92 percent white, and the average age of adults was 44.7 years (Department of Commerce 1991). These census figures correspond to those of the 1991 statewide sample. Thus we believe our statewide sample represents adequately the population of adults in Wisconsin.

Members of the African-American sample differ significantly⁶ from members of the statewide sample on several characteristics. The former respondents on average are older (48 years vs. 45) and are less likely to be married (40.4 percent vs. 56.5 percent respectively), but are more likely to be widowed (14.2 percent vs. 7.6 percent). Additionally, the African-American respondents average lower levels of education and have smaller average annual incomes.

Though the demographic differences between African-American and statewide, random sample members were not unexpected, they did pose a potential problem in making racial comparisons. That is, in making simple racial comparisons, we compared individuals who differed not only by race, but who also possibly differed by education, income, and marital status. African-American and white respondents differed in yet another regard, namely that most of the

	1989 State- Wide Sample (N=527)	1991 State- Wide Sample (N=542)	1991 African- American Sample (N=225)
Median age	43.8 yrs.	45.0 yrs. +	48.0 yrs. +
Percentage white	94.3	95.0 ++	0.0 ++
Percentage male	45.2	48.3	43.6
Percentage married	58.4	56.5 ++	40.4 ++
Percentage single	18.8	21.6	25.8
Percentage widowed	10.4	7.6 +	14.2 +
Percentage divorced/separated	12.3	14.2	19.6
Percentage high school graduates	88.0	89.1 + +	68.8 ++
Percentage college graduates	19.5	23.6 + +	6.2 ++
Mean household income	\$28,676**	\$35,128**	\$23,810++
Median household income	\$26,170	\$33,800++	\$18,780

Demographic Characteristics of Wisconsin Residents Participating in Lottery Study

Source: Telephone interviews conducted by authors.

Note: The 1989 statewide sample, which is a probability sample, and the 1991 statewide sample, which is a random sample, contain a small number of African-Americans.

** Difference between 1989 and 1991 statewide samples is significant at p < .01.

- + Statewide and African-American samples significantly differ at p=.05.
- ++ Statewide and African-American samples significantly differ at p=.01.

African-American sample members were from urban areas only whereas the white members of the statewide sample were from urban <u>and</u> rural areas. These considerations must be kept in mind throughout our presentation, and in chapter 6 we provide an analysis that specifically deals with these concerns.

ANALYSIS OF THE DATA

To analyze the data contained in both the statewide and African-American samples, we utilized two statistical techniques: cross-tabulation and logistic regression. Cross-tabulation compares sample-member attitudes on one variable by the attributes of a second variable. For example, one might calculate the average dollars spent on lottery play (the first variable) by gender (the second variable). The difference in spending between men and women can be then tested for significance. All cross-tabulations were performed using the SPSSX computer program (SPSS Inc. 1988).

Simple cross-tabulation has several advantages, including straightforward analysis and easily interpretable results. Unfortunately this approach does not analyze more than two variables at a time, which allows for the possibility of spurious correlation, that is, correlation that does not reflect a causal connection. We will discuss this problem in more depth in chapter 6, and at that point we review logistic regression, a technique for analyzing the effects of numerous variables that reduces the possibility of spurious correlation.

CHAPTER 3

LOTTERY PLAY AND ATTITUDES IN 1989 AND 1991

In this chapter, we investigate the lottery-playing habits and attitudes of Wisconsin residents, and we compare our results with those found by the Piliavin and Polakowski (1990) study.⁷

FREQUENCY OF LOTTERY PLAY

Table 2 contains lottery-play data as provided by members of the 1991 statewide sample. A majority of the sample (61 percent) reported playing the lottery at least once in the prior year, but a large percentage of those who played (47.2 percent, or 29.0 percent of the sample) claimed that they played less than once a month. Only a very small proportion of the players, 7.9 percent (4.3 percent of the sample) played the lottery once a week or more.

In comparing the prevalence of lottery players in the current sample with that of 1989, we find little change. In 1989, 58 percent of survey respondents reported lottery play, a percentage not significantly different than the 61 percent of the 1991 sample. However, the reported frequency of play has decreased substantially over time. In the 1989 study, 18 percent of the respondents (31 percent of the players) reported playing the lottery at least once a week, more than four times the percentage of once-a-week players in 1991. On the other hand, only 22.4 percent of the 1989 sample (39 percent of the players) reported they played less than once a month.

DOLLARS SPENT ON THE LOTTERY

Despite the apparent decrease since 1989 in the frequency of lottery play among Wisconsin residents, there is some evidence of an increase in money expended on lottery play. In the 1991 statewide sample, lottery players wagered, on average, \$14.27 a month on the lottery--about 50 cents

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Overall Lottery Play and Expenditures of Wisconsin Residents in 1989 and 1991

	1080 State	1001 State
	Wide Sample	Wide Sample
Frequency of Lottery Play Last Year		
Lottery play once a week or more	18.0% (95) **	4.3% (23) **
Lottery play once a month or more	17.6% (93)	28.1% (150)
Lottery play less than once a month	22.4% (118)	29.0% (155)
Did not play	41.9% (221)	38.6% (206)
Player's Monthly Expenditure on Lottery		
Mean	\$10.50 (306)	\$14.27 (311)
Median	\$5.00 (306)	\$2.50 (311)
\$0 to \$4 per month	37.9% (116)	58.2% (181)
\$4 to \$30 per month	59.2% (181)	28.6% (89)
\$31 to \$99 per month	1.3% (4)	11.3% (35)
\$100 or more per month	1.6% (5)	1.9% (6)
Player's Percentage of Total Family Income Spo	ent on Lottery	
Mean	.65% (288)	.67% (284)
Median	.24% (288)	.12% (284)
0.0% to .10%	28.5% (82)	47.22% (134)
.11% to 1.00%	56.3% (162)	38.4% (109)
1.01% to 4.99%	13.2% (38)	12.0% (34)
5.00% or more	2.1% (6)	2.5% (7)

Source: Telephone interviews conducted by authors.

Note: Number of sample members answering question/giving an answer is in parentheses; not all sample members responded to all questions.

** Difference between 1989 and 1991 is significant at p < .01.

a day. This compares to the average expenditure among players in the 1989 sample of \$10.50 per month. Assuming that in fact the mean level of lottery spending has increased, it is a surprise that the median spending level has actually decreased, from the 1989 level of \$5.00 to the 1991 median of \$2.50.⁸

That mean expenditures increased as the median expenditure decreased suggests that the distribution of lottery spending changed from 1989 to 1991. That is, while many state lottery players may have reduced their spending level, which would lower the median amount spent, a minority of players may have increased their lottery spending enough to raise the overall mean spending level. In Table 2, we offer data that indicate that this change may have actually occurred. In the 1989 sample, about one-third of the players (37.9 percent) wagered less than one dollar a week, but in 1991 nearly two-thirds of the players (58.2 percent) spent this little. This shift accounts for the observed decrease in median spending level. In 1989, few players (2.9 percent) wagered a dollar a day or more, but in 1991, a full 13.2 percent of the lottery players spent this much. This increase in the percentage of players who spent heavily was sufficient to increase the overall mean amount spent.

In effect, then, a small proportion of state residents accounts for the bulk of state lottery revenue. Ten percent of the 1989 sample members (17 percent of the players) accounted for 61 percent of the total amount spent on the lottery by the sample in 1989.⁹ Lottery spending has since concentrated even more. Ten percent of the 1991 sample (16 percent of the players) accounted for 75 percent of the amount the sample spent on lottery play.¹⁰ To express this concentration in terms of the Wisconsin populace, approximately 360,000 Wisconsin adults (10 percent of the estimated 3.6 million adults in Wisconsin [Department of Commerce 1991]) spent about 294 million (75 percent) of the total 392 million dollars collected last year in lottery revenue.

PERCENTAGE OF INCOME SPENT ON LOTTERY PLAY

We now examine lottery expenditures as a percentage of total family income. As summarized in Table 2, the lottery players in the 1989 and 1991 samples spent small percentages of their incomes on lottery play, on average less than 1 percent.

The changes since 1989 in the percentage of income wagered somewhat mirror the changes observed above with dollars spent. Though the mean percentage of income wagered has remained stable, .65 to .67 percent, the median percentage has decreased substantially, from .24 to .12 percent of family income. Accordingly, it appears that while many of the lottery players in 1991 spent less of their income on the lottery than did players in 1989, some spent considerably more, allowing the mean percentage to remain stable while the median percentage dropped.

VARIATION BETWEEN LOTTERY GAMES

In the preceding sections we analyzed patterns of lottery play without differentiating between specific lottery games. However, four distinct lottery games are currently available in Wisconsin--Scratch-Off, Pull-Tab, Megabucks, and SuperCash!. The possibility exists that lottery participation and expenditures vary by game type. We explored this possibility, and our findings are presented in Table 3.

When the 1989 sample was collected only Scratch-Off and Pull-Tab were available. At that time, 58.1 percent of the respondents played one of these two games. In 1991, 54 percent of the respondents played either Scratch-Off or Pull-Tab. The difference is not statistically significant. In 1989, players of these games wagered an average of \$10.50 per month. In 1991 the players' average wager dipped to \$7.22 a month. From 1989 to 1991, the median amount spent on these two games substantially dropped, from \$5.00 to \$1.08.

Lottery Play of Wisconsin Residents, by Game

	1989 State-	1991 State-
	Wide Sample	Wide Sample
Scratch-Off or Pull-Tab		
Played last year	58.1% (527)	54.0% (541)
Mean dollars spent by players	\$10.50 (306)	\$7.22 (276)
Median dollars spent by players	\$5.00 (306)	\$1.08 (276)
Scratch-Off Game ^a		
Played last year		52.9% (541)
Mean dollars spent by SO players		\$7.09 (270)
Median dollars spent by SO players		\$1.00 (270)
Pull-Tab Game ^a		
Played last year		16.9% (540)
Mean dollars spent by PT players		\$0.90 (87)
Median dollars spent by PT players		\$0.33 (87)
Megabucks Game		
Played last year		51.4% (541)
Mean dollars spent by MB players		\$5.19 (262)
Median dollars spent by MB players		\$1.00 (262)
SuperCash! Game		
Played last year		22.0% (541)
Mean dollars spent by SC players		\$10.68 (111)
Median dollars spent by SC players		\$2.50 (111)

Source: Telephone interviews conducted by authors.

Note: The differences between 1989 and 1991 sample members are not significant. Number of sample members answering question/giving an answer is in parentheses; not all sample members responded to all questions.

^aBreakdown of play between Scratch-Off and Pull-Tab games unavailable for 1989 dataset.

As seen in Table 3, in 1991 Scratch-Off and Megabucks were the two most widely played games, with 52.9 percent and 51.4 percent of the statewide sample playing each game, respectively. Pull-Tab and SuperCash! attracted fewer players, with only 16.9 percent of the sample playing the former and 22.0 percent playing the latter. In terms of lottery expenditures, however, a different ranking emerges. SuperCash! players spent the most money, averaging \$10.68 on this game a month. Scratch-Off players spent a somewhat smaller amount on their game, averaging \$7.09. Megabucks players spent even less, averaging \$5.19, and finally Pull-Tab players spent the least on their game, averaging just 90 cents a month.

GAME SELECTION AS A FUNCTION OF MONEY SPENT

The above investigation of the separate lottery games suggests that game selection may vary by spending habits. To test this possibility, we divided the lottery-playing respondents into three groups, those spending large amounts (more than \$30 a month), moderate amounts (\$4 to \$30), and small amounts (less than \$4 a month). Then, for each group, we calculated what portion of their total lottery expenditure was spent on each of the four lottery games.

As indicated in Table 4, the three spending groups did not significantly differ in the proportion of their money allocated to Scratch-Off and Pull-Tab games. However, they did differ significantly in their expenditures on Megabucks and SuperCash!. Small-expenditure players wagered very little of their money on SuperCash! (4 percent). In contrast, large-expenditure players preferred SuperCash!, spending more of their money on it (35 percent) than on any other game. Small-expenditure players appear to prefer playing Megabucks, spending almost half of their lottery funds (47 percent) on it. In contrast, large-expenditure players bet less than a third of their lottery funds (30 percent) on Megabucks.

Spending Level	% Spent on Scratch-Off	% Spent on Pull-Tab	% Spent on SuperCash!	% Spent on Megabucks
\$0.00 to \$4.00/month (n=181)	45	4	4**	47**
\$4.01 to \$30.00/month (n=89)	44	2	16**	38**
\$30.01 and up/month (n=41)	34	1	35**	30**
Mean for all players	43	3	11	42

Game Preferences of Wisconsin Residents, by Spending Levels (1991 Statewide Sample)

Source: Telephone interviews conducted by authors. ** Difference in percentage spent between games is significant at p < .01.

ATTITUDES TOWARD THE LOTTERY

We now examine Wisconsin residents' knowledge about and attitudes toward lotteries. As seen from the data in Table 5, overall approval of lotteries appears to have marginally slipped somewhat between 1989 and 1991. While close to three-quarters of the 1989 sample either somewhat or strongly approved of lotteries, this was true of but two-thirds of the 1991 sample. Additionally, the 1991 sample members appear to have a better understanding than 1989 sample members of lottery "systems." While 34 percent of the 1989 sample members believed systems could be developed to beat lotteries, only 23 percent expressed this belief in 1991. Knowledge concerning lottery payoffs also changed between 1989 and 1991, but only modestly. Though 60 percent of the 1989 sample members believed that returns to players of monies wagered on lotteries was less than 25 percent (the actual rate is a little over 50 percent), this was the case for 55 percent of the 1991 sample.

Aside from the preceding changes, Wisconsin residents were remarkably stable between 1989 and 1991 in their opinions about lottery play. Almost 59 percent of the 1989 respondents and 62.5 percent of the 1991 agreed that lottery play is harmless recreation. Over 13 percent of the 1989 and 14.1 percent of the 1991 respondents agreed that the lottery is an easy way to make money. And 22.1 percent of the 1989 and 26.7 percent of the 1991 respondents agreed that they played less due to not having extra money.

Finally, few respondents in 1989 or 1991 expressed the belief that lottery play or gambling in general causes personal problems. To illustrate, 98 percent of 1991 respondents thought gambling was not a problem for them, 96 percent believed that lottery play had no effect on their household expenses, 97 percent believed lottery play caused no disagreements with partners, and 96 percent thought they could afford lottery play. In comparing these attitudes with those expressed in 1989, we find no significant change. Seemingly, continued exposure to the state lottery has not engendered more self-reported gambling problems for Wisconsin residents.

	1989 State- Wide Sample	1991 State- Wide Sample
Overall attitude toward lottery ^a	2.35 (518)	2.49 (536)
% somewhat/strongly in favor	72.8%	66.7%
Gambling has been a problem ^b	3.46 (521)	3.51 (540)
% agree/strongly agree	2.9%	1.9%
Played less because don't have extra money ^b	3.04 (515)	2.98 (524)
% agree/strongly agree	22.1%	26.7%
Lottery is harmless recreation ^b	2.41 (508)	2.40 (522)
% agree/strongly agree	58.9%	62.5%
Lottery reduces money for household expenses°	3.33 (304)	3.36 (332)
% agree/strongly agree	3.9%	3.6%
Spend more on lottery than can afford [°]	3.34 (307)	3.37 (333)
% agree/strongly agree	5.9%	3.9%
Lottery play causes disagreement w/partner [°]	3.43 (237)	3.39 (208)
% agree/strongly agree	4.6%	2.4%
Lottery is easy way to make money ^b	3.14 (517)	3.21 (526)
% agree/strongly agree	13.5%	14.1%
Can create a winning system	34.3% (515) **	22.8% (505) **
Percentage of money wagered on lottery that is returned as winnings?		
0-25%	60.1% (233) *	54.2% (208) *
26-50%	31.7% (123)	34.1% (131)
51% and above	8.2% (32)	11.7% (45)
Participate in other forms of gambling	49.7% (527)	50.3% (533)
Set money aside for lottery [°]	7.2% (306)	10.8% (332)

Attitudes of Wisconsin Residents toward Lottery in 1989 and 1991

Source: Telephone interviews conducted by authors.

Note: Number of sample members answering question/giving an answer is in parentheses; not all sample members responded to all questions.

^aResponses scored as 1=strongly in favor, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed.

^bResponses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

^cQuestion asked of lottery players only. Responses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

* Differences between groups are statistically significant at p = <.05.

** Differences between groups are statistically significant at p = <.01.

CHAPTER 4

DEMOGRAPHIC AND ATTITUDINAL CORRELATES OF LOTTERY PLAY, EXPENDITURES, AND LOTTERY-RELEVANT ATTITUDES

In their analysis of lottery play among Wisconsin residents, Piliavin and Polakowski (1990) tested correlations between a variety of personal attributes, attitudes, and playing habits. Their investigation yielded a number of significant correlates of both lottery play and attitudes. To measure the extent to which these correlations have changed in the past two years, we replicated their bivariate analysis using 1991 data. We present our findings in Tables 6 through 15, with the first column of each table summarizing the 1989 findings, and the second column presenting the 1991 findings.

DEMOGRAPHIC CORRELATES OF LOTTERY PLAY

As we noted earlier, we investigated the association between personal attributes and having played the lottery, utilizing bivariate analysis. The first association we tested regarded income. The 1989 study found that the likelihood of having played the lottery significantly varied by income level, with the bottom two income groups having the lowest participation rates (see Table 6, panel a). The participation pattern in the 1991 survey was similar except that only its bottom income group reported relatively low participation rates.

Turning to marital status, as presented in Table 6, panel b, significantly fewer of the widowed respondents in 1989 played the lottery (30.9 percent) than did those who were divorced (55.4 percent), married (60.1 percent), or single (68.7 percent). In the 1991 sample, however, we did not find this pattern: lottery play did not significantly vary by marital status.

Panels c through e in Table 6 present the associations of lottery play with age, education, and other gambling. As with income, the association between these factors and playing the lottery

		1989 Statewide S	1989 Statewide Sample		1991 Statewide Sample	
		Percentage Who		Percentage Who	0	
De	mographic Characteristic	Played Lottery	Ν	Played Lottery	N	
<u>а</u>	Annual family income (pretax)					
	\$0-\$9.999	45.3*	75	42.5*	56	
	\$10,000-\$19,999	47.7*	111	69.1*	84	
	\$20,000-\$29,999	71 3*	94	68.2*	66	
	\$30,000-\$39,999	61.8*	89	69.3*	75	
	\$40,000-\$49,999	62.2*	45	75.9*	58	
	\$50,000 or more	69.9*	82	62.0*	129	
h	Marital status	07.7	02	02.0	12/	
υ.	Single	68 7*	99	54 7	117	
	Married	60.1*	308	63.1	306	
	Divorced/senerated	55 4*	55	68.8	500 77	
	Widowed	20.0*	55 65	56 1	// /1	
~	A go	50.9	05	JU.1	71	
υ.	19 25	70.8*	65	61 /*	70	
	10-2J 26 20	70.0° 80.2*	03 71	77 6*	58	
	20-50	60.3° 66 7*	71 81	67.1*	50	
	31-33 26 40	50.4*	61	02.1 ° 70.7*	50	
	30-40 41 45	J7.4* 47.5*	22	70.7* 60.2*	20 50	
	41-4J 46 50	02.J* 57.5*	<i>32</i> 40	00.5°	20	
	40-30 51 60	J7.J* 54.7*	40	/3./* 50.2*	30 70	
	51-00	J4./**	55	J0.J* 60.5*	12	
	01-70	44.1** 31.0*	59	02.3*	50	
	/1+	21.0*	62	37.3*	39	
d.	Education	00.4%	69	54 0 4	50	
	Less than high school	38.1*	63	54.2*	59	
	High school graduate	61.2*	134	65.7*	131	
	Some post-high school					
	education	56.8*	132	64.1*	142	
	College associate arts degree	77.9*	95	71.8*	78	
	College graduate	49.5*	103	53.1*	128	
e.	Does other gambling?					
	Yes	. 72.5*	261	72.4*	268	
	No	43.8*	264	50.2*	265	
f.	Gender					
	Male	58.4	238	65.3	262	
	Female	57.8	289	58.2	280	
g.	Race					
	White	59.0	496	62.5	514	
	Nonwhite	43.3	29	44.4	27	

Percentage of Wisconsin Residents Who Played the Lottery in Prior Year, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

appears unchanged from 1989 to 1991. In both samples, respondents over fifty years old played less than those under fifty; high school dropouts and college graduates were less likely to play than those with medium levels of education; and the respondents reporting other gambling were more likely to play than non-gamblers.

As regards gender and race, our findings agree with those of 1989. Neither race nor gender was significantly associated with having played the lottery (see panels f and g).

DEMOGRAPHIC CORRELATES OF DOLLARS SPENT PLAYING THE LOTTERY

In examining the associations between demographic attributes and dollars spent on the lottery, we found that little had changed since 1989. Piliavin and Polakowski (1990) found that neither age, family income, race, education, nor marital status was significantly associated with how much players' spent on the lottery. They did, however, find that male lottery players wagered more than female players, \$13.37 vs. \$8.18 a month (Table 7, panel c). Data for the 1991 sample largely reveal similar patterns in that age, family income, race, education, and marital status were again not significantly associated with lottery expenditures (Table 7, panels a, b, d, and e). In contrast to 1989, however, we found that gender was no longer significantly correlated with spending levels. As seen in Table 7, panel c, female lottery players in 1991 wagered nearly as much (\$12.99) as did male players (\$15.43).

DEMOGRAPHIC CORRELATES OF THE PERCENTAGE OF INCOME SPENT ON THE LOTTERY

As with dollars spent, the relationship between demographic characteristics and the percentage of income spent changed little between 1989 and 1991. In both years neither age nor race was significantly correlated with the percentage of income spent (Table 8, panels a and d). On the other

		<u>1989 Statewide :</u> Monthly	<u>1989 Statewide Sample</u> Monthly		<u>1991 Statewide Sample</u> Monthly	
D	emographic Characteristic	Expenditures	N	Expenditures	N	
а.	Age					
	18-25	\$11.87	48	\$4.28	39	
	26-30	7.79	57	10.26	42	
	31-35	14.90	57	17.19	41	
	36-40	10.50	39	23.97	38	
	41-45	7.84	21	12.92	33	
	46-50	10.13	24	14.41	26	
	51-60	8.07	29	14.43	38	
	61-70	10.65	26	20.80	34	
	71+	10.07	15	8.71	19	
b.	Annual family income (pretax)					
	\$0-\$9,999	8.32	36	11.60	23	
	\$10,000-\$19,999	12.73	55	12.35	55	
	\$20,000-\$29,999	9.14	68	20.27	42	
	\$30,000-\$39,999	10.55	58	19.95	48	
	\$40,000-\$49,999	6.55	29	13.00	42	
	\$50,000-\$59,999	18.50	24	19.11	22	
	\$60,000 or more	10.89	28	10.11	56	
c.	Gender					
	Male	13.37*	146	15.43	163	
	Female	8.18*	170	12.99	148	
d.	Race					
	White	10.48	302	14.57	299	
	Nonwhite	12.56	14	7.32	11	
e.	Education					
	Less than high school	15.25	25	15.54	27	
	High school graduate	8.46	83	23.31	79	
	Some post-high school education	14.08	79	12.64	85	
	College associate arts degree	10.58	75	10.51	53	
	College graduate	6.55	54	8.22	66	
f.	Marital status					
	Single	10.59	72	5.46	60	
	Married	9.80	189	17.10	178	
	Divorced/separated	10.28	18	18.27	52	
	Widowed	14.64	37	5.60	21	

TABLE 7Average Monthly Lottery Expenditures of Wisconsin
Players, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

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Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

	<u>1989 Statewi</u> Percentage o	<u>de Sample</u> f	<u>1991 Statew</u> Percentage	<u>vide Sample</u> of
Demographic Characteristic	Income	Ν	Income	N
2 Å ØP				
18-25	75	48	28	33
26-30	.19	57	41	41
31-35	.69	57	.66	37
36-40	.40	39	1.00	36
41-45	.34	21	.40	31
46-50	.34	24	.51	26
51-60	.42	29	1.15	33
61-70	.71	26	1.51	30
71+	.91	15	.66	16
b. Annual family income (pretax)				•
\$0-\$9,999	1.00*	36	1.90*	19
\$10,000-\$19,999	1.02*	55	1.13*	55
\$20,000-\$29,999	.44*	68	.99*	42
\$30,000-\$39,999	.36*	58	.70*	48
\$40,000-\$49,999	.17*	29	.36*	42
\$50,000-\$59,999	.40*	24	.41*	22
\$60,000 or more	.20*	28	.14*	56
c. Gender				
Male	.68*	146	.74	[°] 1 54
Female	.43*	170	.71	130
d. Race				
White	.53	302	.70	272
Nonwhite	.87	14	1.38	11
e. Education				
Less than high school	1.08*	· 25	1.18*	23
High school graduate	.48*	83	1.47*	72
Some post-high school education	.61*	79	.50*	80
College associate arts degree	.61*	75	.43*	49
College graduate	.23*	54	.20*	59
f. Marital status				
Single	.62*	72	.21	53
Married	.39*	189	.72	162
Divorced/separated	.98*	18	1.16	51
Widowed	.97*	37	1.07	18

 TABLE 8

 Percentage of Wisconsin Players' Income Spent on Lottery, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

hand, as in 1989, the percentage of income spent on the lottery in 1991 significantly varied by family income and education. In 1989, lottery players reporting higher family incomes wagered comparatively less of their income than those with lower incomes (Table 8, panel b), and respondents with more education spent comparatively less of their income than those with less education (panel e). These patterns were found again in 1991.

Two correlates of the percentage of income spent on lottery play have changed since 1989. Piliavin and Polakowski (1990) found that women devoted less of their family income to lottery play then did men (Table 8, panel c), and that married respondents wagered less of their income than did single, divorced, or widowed respondents (Table 8, panel f). In 1991, however, neither gender nor marital status were significantly associated with the percentage of income spent.

To summarize this chapter so far, demographic characteristics give insight into who plays the lottery and how much is spent. For the 1989 and 1991 samples, we find that family income, age, education, and other gambling experience are all significantly related to the likelihood of playing the lottery. For the 1991 sample, we find no demographic correlates of dollars spent, but levels of income and education influence the percentage of income spent. Overall, the relationship over time between demographic characteristics and lottery play appears remarkably stable.

ATTITUDINAL CORRELATES OF LOTTERY PLAY

In their investigation of the relationship between attitudes and lottery play, Piliavin and Polakowski (1990) found six significant correlations. These are found in Table 9. To summarize, lottery play was found to be positively associated with approval of lotteries, players' belief that they could not play more due to a lack of funds, their belief that the lottery was a harmless form of recreation, their view that lottery play was an easy way to make money, and the beliefs that lotteries

Percentage of Wisconsin Residents Who Played the Lottery, by Attitudes and Opinions toward Lotteries

		<u>1989 Statewide S</u> Percentage Who	ample	<u>1991 Statewide S</u> Percentage Who	1991 Statewide Sample		
Attitude/	Opinion toward Lotteries	Played Lottery	Ν	Played Lottery	Ν		
a. Attitu	ide toward lotteries						
Stro	ongly in favor	87.5*	144	91.7*	108		
Son	newhat in favor	64.6*	240	71.2*	250		
Nor	e of these	25.0*	8	33.3*	42		
Som	newhat opposed	30.2*	63	38.8*	80		
Stro	ngly opposed	6.3*	63	16.1*	56		
b. Can't	play lottery more because lac	k extra money					
Stro	ngly agree	90.0*	20	71.4*	21		
Agr	ee	70.2*	94	77.3*	119		
Disa	agree	61.9*	247	62.8*	234		
Stro	ngly disagree	43.5*	154	50.7*	150		
c. Lotter	ry is harmless recreation						
Stro	ngly agree	83.7*	49	85.0*	40		
Agr	ee	70.4*	250	71.3*	286		
Disa	Igree	47.2*	159	51.1*	143		
Stro	ngly disagree	18.0*	50	28.3*	53		
d. Playin	ng lottery is an easy way to ma	ake money					
Stro	ngly agree	83.0*	6	20.0	5		
Agre	ee	60.9*	64	66.7	69		
Disa	igree	62.3*	300	64.4	264		
Stro	ngly disagree	50.3*	147	58.5	188		
e. Percer	ntage of dollars wagered return	ned as winnings					
25%	or less	57.9*	223	56.4*	227		
26%	-50%	69.9*	123	71.1*	187		
51%	or more	75.0*	32	67.7*	62		
f. Possib	le to improve one's chances to	o win the lotteries					
Agre	e	69.4*	160	65.2	115		
Disa	gree	56.7*	307	63.6	390		

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

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*Differences across groups within sample are statistically significant at alpha=.05.

not only offered players comparatively high odds of winning, but that the odds could be improved by some form of wagering system.

Our 1991 study replicated four of these significant correlations. Three of the four follow intuition: those more likely to play the lottery include those who favor it, those who consider it a harmless form of recreation, and those who believe it returns a high percentage of wagers back as winnings. The fourth correlation appears perverse. As in 1989, a higher percentage of players was found among people who agreed that they could not play the lottery more because of a lack of funds. As did Piliavin and Polakowski, we conclude that those likely to play the lottery would play even more if they had extra money.

ATTITUDINAL CORRELATES OF DOLLARS SPENT ON LOTTERY PLAY

Piliavin and Polakowski (1990) found only two significant correlations of dollars spent on lottery play with lottery-relevant attitudes and knowledge: those who favored the lottery spent more than those who did not, and those who expected higher rates of returned winnings spent more than those who expected lower returns. In the right-hand columns of Table 10 we present the 1991 results. These indicate again that respondents who favored the lottery spent far more per month than those opposed. However, we did not find the second relation: respondents expecting large returns and those expecting small returns were statistically indistinguishable in their spending levels. Furthermore 1991 lottery players who agreed that a lack of extra money curtailed their lottery play spent much less on lotteries than those who disagreed. This is in contrast to findings in 1989 when no relationship was found between lottery play and the perception of financial constraint on lottery play.

	1989 Statewide	<u>1991 Statewide</u> Monthly	1991 Statewide Sample		
Attitude/Opinion toward Lotteries	Expenditure	N	Expenditure	N	
a. Attitude toward lotteries					
Strongly in favor	\$14.73*	129	\$22.73*	93	
Somewhat in favor	8.13*	159	12.86*	164	
None of these	3.00*	2	4.48*	13	
Somewhat opposed	4.98*	21	4.78*	31	
Strongly opposed	7.60*	5	0.92*	8	
b. Percentage of dollars wagered retu	rned as winnings				
25% or less	9.54*	137	11.11	115	
26%-50%	9.61*	92	16.41	130	
51% or more	24.74*	25	20.28	40	
c. Can't play lottery more because lac	k extra money				
Strongly agree	14.01	18	11.18*	69	
Agree	10.66	67	11.26*	139	
Disagree	11.73	157	16.27*	85	
Strongly disagree	7.47	73	50.89*	14	

Average Monthly Lottery Expenditures of Wisconsin Players, by Attitudes and Opinions toward Lotteries

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

ATTITUDINAL CORRELATES OF THE PERCENTAGE OF INCOME SPENT ON THE LOTTERY

We found substantial differences between 1989 and 1991 sample members regarding the relationship between lottery-relevant attitudes and the percentage of income spent on lotteries. In the earlier study, respondents who favored the lottery, expected higher returns, considered it an easy way to make money, and who believed they had more financial constraints on lottery play spent a greater proportion of their income on lottery play than did respondents with contrary views. As indicated in Table 11, we found that in 1991 the first three of these attitudes were no longer significantly correlated with the percentage of income spent on lottery play. However, as in 1989, those who agreed that they played less due to a lack of extra money wagered a higher proportion of their income than those who disagreed.

DEMOGRAPHIC CORRELATES OF ATTITUDES TOWARD THE LOTTERY

A last set of correlations we examine pertains to those between demographic characteristics and attitudes toward the lottery.

Lottery Approval

As presented in Table 12, panels a through c, the 1989 study found that respondents who were widowed, had lower incomes, and were older expressed the most disapproval of lotteries. Additionally, 1989 respondents who were high school dropouts and college graduates expressed disapproval of lotteries (Table 12, panel d). Findings from the 1991 survey essentially replicate only the findings on age and education. Older respondents, high school dropouts, and college graduates registered the most disapproval. Unlike the 1989 study, however, the 1991 study found no significant links between either marital status or income and lottery approval.

Percentage of Wisconsin Players' Income Spent on the Lottery, by Attitudes and Opinions toward Lotteries

	1989 Statewid	e Sample	1991 Statewide Sample		
	Percentage of	NT	Percentage o	f	
Attitude/Opinion toward Lotteries		N	Income	<u>N</u>	
a. Attitude toward lotteries					
Strongly in favor	.73*	123	1.00	85	
Somewhat in favor	.42*	148	.74	149	
None of these	.13*	2	.11	12	
Somewhat opposed	.36*	20	.28	29	
Strongly opposed	.82*	5	.05	7	
b. Percentage of dollars wagered r	eturned as winnings				
25% or less	.49*	137	.50	103	
26%-50%	.46*	92	.97	121	
51% or more	1.03*	25	.68	38	
c. Playing lottery is an easy way to	o make money				
Strongly agree	.09*	4	3.33	1	
Agree	.92*	40	.92	39	
Disagree	.52*	180	.84	150	
Strongly disagree	.44*	73	.40	89	
d. Can't play lottery more because	lack extra money				
Strongly agree	.86*	17	2.28*	9	
Agree	.73*	64	1.20*	82	
Disagree	.55*	147	.51*	127	
Strongly disagree	.32*	69	.34*	63	

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

1989 Statewide Sample 1991 Statewide Sample Attitude Attitude Demographic Characteristic Score Ν Score Ν a. Marital status Single 2.11* 97 2.41 117 Married 2.36* 304 2.53 303 Divorced/separated 2.09* 58 2.28 76 Widowed 3.02* 41 2.82 39 b. Annual family income (pretax) \$0-\$9.999 2.79* 73 2.89 53 \$10,000-\$19,999 2.51* 109 2.24 83 \$20,000-\$29,999 2.17* 2.30 93 66 \$30,000-\$39,999 2.15* 88 2.53 74 \$40,000-\$49,999 1.91* 45 2.41 58 \$50,000-\$59,999 2.00* 31 2.30 37 \$60,000 or more 2.43* 42 2.51 92 c. Age 18-25 2.06* 65 2.09* 70 26-30 1.94* 68 2.10* 58 31-35 2.16* 81 2.23* 66 36-40 2.10* 63 2.46* 56 2.36* 41-45 2.19* 32 58 46-50 2.17* 40 2.53* 38 51-60 53 2.38* 2.72* 72 61-70 57 56 3.02* 2.79* 71+ 3.17* 59 3.15* 55 d. Education Less than high school 2.69* 59 2.50* 58 High school graduate 2.38* 133 2.35* 128 Some post-high school education 2.30* 131 2.29* 141 College associate arts degree 1.89* 93 2.39* 78 College graduate 2.57* 103 2.88* 127

General Attitude of Wisconsin Residents toward Lottery, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: Attitudes were scored as follows: 1=strongly in favor of lotteries, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed. N=number of sample members answering question/giving an answer; not all sample members responded to all questions. *Differences across groups within sample are statistically significant at alpha=.05.

Devising Systems to Improve One's Chances of Winning

Piliavin and Polakowski (1990) found that race and marital status were related to the belief that systems for beating the lottery could be devised. Specifically they found that sample members most likely to believe in such systems were nonwhite, single, and divorced. As noted in Table 13, these findings were replicated in the 1991 survey.

Lottery as Harmless Recreation

Piliavin and Polakowski (1990) found that marital status and age were related to the belief that lotteries are a means of harmless recreation. Widowed respondents and older respondents were the least likely to view lotteries as harmless. The findings for 1991, which are presented in Table 14, parallel those of 1989, with widowed and older respondents still least likely to agree that lotteries are harmless.

Percentage of Lottery Revenues Returned as Winnings

We found considerable changes since 1989 in the attitudinal correlates of the estimated percentage of lottery revenues returned as winnings. Piliavin and Polakowski (1990) found this attitude to significantly vary by education, age, and marital status. High school dropouts, older respondents, and widowed respondents all estimated relatively low rates of return. In 1991, as presented in the right-hand columns of Table 15, panels a through c, we discovered that none of these correlations held. Estimated rates of return were no longer significantly associated with either education, age, or marital status. We did, however, find that this attitude now varied by gender (panel d). Male respondents in 1991 estimated significantly higher return rates (33 percent) than did female respondents (24.0 percent).

	<u>1989 Statewi</u> Belief	<u>de Sample</u>	<u>1991 Statewide Sample</u> Balief		
Demographic Characteristic	Score	Ν	Score	N	
a. Race					
White	1.67*	441	1.78*	478	
Nonwhite	1.46*	26	1.62*	26	
b. Marital status					
Single	1.56*	90	1.72*	112	
Married	1.71*	278	1.80*	289	
Divorced/separated	1.50*	58	1.66*	70	
Widowed	1.76*	41	1.94*	33	

Belief among Wisconsin Residents that a System Can Be Devised to Improve One's Chances to Win, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: Replies scored as follows: 1=yes, 2=no. N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

1989 Statewide Sample 1991 Statewide Sample Belief Belief Demographic Characteristic Score Ν Score Ν a. Marital status 2.27* 96 Single 2.22* 112 Married 2.43* 300 2.46* 295 Divorced/separated 2.34* 62 2.34* 76 Widowed 2.70* 50 2.60* 38 b. Age 2.34* 2.19* 69 18-25 65 26-30 2.09* 69 2.09* 58 31-35 2.31* 81 2.25* 65 36-40 2.38* 63 2.33* 57 41-45 31 2.55* 2.39* 54 46-50 39 36 2.18* 2.44* 51-60 2.43* 51 2.68* 69 61-70 2.76* 2.56* 55 55 71+ 2.83* 54 2.74* 54

Belief among Wisconsin Residents that Lottery Is Harmless Recreation, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: Replies scored as follows: 1=strongly agree lottery play is harmless, 2=agree lottery is harmless, 3=disagree lottery is harmless, 4=strongly disagree that lottery is harmless. N=number of sample members answering question/giving an answer; not all sample members responded to all questions. *Differences across groups within sample are statistically significant at alpha=.05.

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1989 Statewide Sample 1991 Statewide Sample Estimated Estimated Percentage Percentage Returned Demographic Characteristic Ν Returned Ν a. Education Less than high school 14.1* 29 30.6 25 High school graduate 28.5* 97 27.7 93 Some post-high school education 100 29.1* 101 28.5 College associate arts degree 26.9* 76 30.8 59 College graduate 24.7* 85 27.9 104 b. Age 18-25 29.1* 60 57 31.5 26-30 29.4* 61 32.9 47 31-35 30.5* 70 31.2 52 36-40 28.1* 51 25.6 41 41-45 32.6* 27 25.9 39 27 46-50 23.0* 28 34.0 51-60 20.5* 37 26.2 45 61-70 23.4* 33 29.6 36 71+ 7.8* 24 35 23.5 c. Marital status Single 29.5* 82 31.5 92 Married 26.9* 234 27.4 216 Divorced/separated 28.7* 46 34.3 54 Widowed 8.9* 26 21.7 21 d. Gender Male 28.1 190 33.0* 213 Female 198 24.0* 24.8 171

Wisconsin Residents' Estimates of Percentage of Lottery Revenues Returned as Winnings, by Demographic Characteristics

Source: Telephone interviews conducted by authors.

Note: N=number of sample members answering question/giving an answer; not all sample members responded to all questions.

*Differences across groups within sample are statistically significant at alpha=.05.

CONCLUSION

The bivariate correlations examined in this chapter tell a twofold story. First, we find more correlates of who plays the lottery than of how much is spent. We have identified many demographic characteristics and attitudes that are significantly correlated with having played the lottery, and these bivariate relationships give insight into which Wisconsin residents play the lottery. In contrast, we find few characteristics or attitudes that are correlated with either dollars spent or the percentage of income spent on lottery play. Second, we find several demographic traits that are correlated with attitudes held toward the lottery. Residents most likely to disapprove of the lottery include the aged and college graduates. Also, widowed and aged respondents are the least likely to consider the lottery to be harmless recreation. We further find that many of the relationships Piliavin and Polakowski observed in 1989 still held true in 1991.

CHAPTER 5

RACIAL DIFFERENCES IN LOTTERY PLAY, LOTTERY-RELEVANT ATTITUDES, AND LOTTERY KNOWLEDGE

In this chapter we compare the 1991 lottery play, lottery-relevant attitudes, and lottery knowledge of African-Americans and whites in Wisconsin. The data we use for this comparison come from caucasian members of the statewide sample (n=514) and members of the African-American sample (n=225), augmented by African-American members of the statewide sample (n=18).

LOTTERY PLAY

We first examine racial differences in lottery play. In 1991, as presented in Table 16, 62.4 percent of the white respondents reported that they played the lottery in the prior year, as compared to 56.0 percent of the African-American respondents. The difference is not statistically significant. We next examine the likelihood of playing specific lottery games, and here we find significant racial differences. Again in Table 16, a significantly higher percentage of whites than African-Americans played Pull-Tab (20.0 percent vs. 9.5 percent) and Megabucks (53.9 percent vs. 44.0 percent). Conversely, a significantly higher percentage of African-Americans than whites played SuperCash! (31.7 percent to 22.0 percent), and roughly equal proportions of each played Scratch-Off (53.6 percent of the whites, 50.6 percent of the African-Americans).

Additional racial differences exist in the frequency of lottery play. While African-American respondents who play the lottery do so on average 13.9 times a year, white lottery players play on average 18.7 times a year. The difference is statistically significant.

Lottery Play of Wisconsin Residents, by Race (1991 Sample)

	Whites	African-Americans
Games Played Last Year		
Played any game	62.4% (514)	56.0% (243)
Played Scratch-Off	53.6% (513)	50.6% (243)
Played Pull-Tab	20.0% (514)	9.5% (243)**
Played SuperCash!	22.0% (513)	31.7% (243)**
Played Megabucks	53.9% (514)	44.0% (243)*
Player's Frequency of Lottery Play Last Year		
Mean	18.7 (315)	13.9 (132)*
Median	12.0 (315)	10.0 (132)
Played once a week or more	7.3% (23)	3.0% (4)
Played once a month or more	45.4% (143)	40.2% (53)
Played less than once a month	47.3% (149)	56.8% (75)
Player's Monthly Expenditure on Lottery		
Mean	\$14.57 (299)	\$10.72 (129)
Median	\$2.42 (299)	\$2.50 (129)
\$0 to \$4 per month	58.2% (174)	58.1% (75)
\$4 to \$30 per month	28.1% (84)	33.3% (43)
\$31 to \$99 per month	11.7% (35)	7.0% (9)
\$100 or more per month	2.0% (6)	1.6% (2)
Player's Percentage of Total Family Income Spent	on Lottery	
Mean	.70% (273)	.80% (108)
Median	.12% (273)	.20% (108)
0.0% to .10%	47.3% (129)	38.9% (42)
.11% to 1.00%	37.4% (102)	46.3% (50)
1.01% or more	15.4% (42)	14.8% (16)

Source: Telephone interviews conducted by authors.

Note: Number of sample members answering question/giving an answer is in parentheses; not all sample members responded to all questions. Whites are from the 1991 statewide sample; African-Americans are from the 1991 African-American sample, augmented by the African-Americans in the statewide sample. * Difference between whites and African-Americans is statistically significant at p < .05.

** Difference between whites and African-Americans is statistically significant at p < .01.

LOTTERY EXPENDITURES

In the bottom two panels of Table 16, we present the lottery expenditures of white and African-American lottery players. White respondents who play the lottery wager, on average, \$14.57 a month. African-American lottery players average \$10.72 a month. The difference is not statistically significant. The median amount spent by the two groups is quite similar, that for whites being \$2.42 and that for African-Americans \$2.50.

Results dealing with the percentage of family income spent on lottery play follow those of dollars spent. White lottery players wager, on average, .70 percent of their total family income. Their median percentage is .12 percent of family income. African-American lottery players wager, on average, .80 percent of their total family income on lottery play, and their median percentage is .20 percent. As with dollars spent, the difference between groups in percentage of family income wagered is not statistically significant. The data thus suggest that African-Americans and white Wisconsin residents have similar lottery expenditures in terms of both dollars spent and percentage of family income wagered.

KNOWLEDGE ABOUT AND ATTITUDES TOWARD LOTTERIES

The knowledge and attitudinal queries on which we compare African-American and white sample members are those discussed in chapters 3 and 4. Our results are presented in Table 17. The two groups report apparent agreement on only one item, that concerning overall attitude toward the lottery. Two-thirds of white sample members and almost 60 percent of African-Americans state they are in favor of lotteries. The difference is not statistically significant.

Despite their common, generally favorable views of lotteries, whites and African-Americans express significantly different perceptions concerning the payoffs and the character of lottery play as

	Whites	African-Americans
Overall attitude toward lottery ^a	2.50 (508)	2.64 (237)
% somewhat/strongly in favor	66.7%	59.1%
Gambling has been a problem ^b	3.52 (512)	3.34 (239)**
% agree/strongly agree	1.8%	4.2%
Played less because didn't have extra money ^b	3.00 (497)	2.70 (225)**
% agree/strongly agree	25.8%	40.0%
Lottery is harmless recreation ^b	2.41 (494)	2.58 (223)*
% agree/strongly agree	61.5%	49.3%
Lottery reduces money for household expenses°	3.36 (319)	3.16 (133)**
% agree/strongly agree	3.8%	7.5%
Spend more on lottery than can afford [°]	3.38 (320)	3.12 (134)**
% agree/strongly agree	3.8%	9.0%
Lottery play causes disagreement w/partner [°]	3.39 (206)	3.10 (62)**
% agree/strongly agree	2.4%	4.8%
Lottery is easy way to make money ^b	3.23 (498)	3.01 (228)**
% agree/strongly agree	13.5%	22.4%
Someday will be rich via lottery ^b	3.40 (507)	3.23 (238)**
% agree/strongly agree	6.5%	13.4%
Can create a winning system	22.0% (478)	31.6% (209)*
Out of \$100 in lottery revenue, how much is returned as winnings?	\$28.96 (363)	\$24.18 (141)*
Participate in other forms of gambling	50.7% (505)	31.1% (241)**
Set money aside for lottery ^c	11.3% (319)	5.2% (135)*

Attitudes of Wisconsin Residents toward Lottery, by Race (1991 Sample)

Source: Telephone interviews conducted by authors.

Note: Number of sample members answering question/giving an answer is in parentheses; not all sample members responded to all questions. Whites are from the 1991 statewide sample; African-Americans are from the 1991 African-American sample, augmented by the African-Americans in the statewide sample. *Responses scored as 1=strongly in favor, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed.

^bResponses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

[°]Question asked of lottery players only. Responses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

* Difference between whites and African-Americans is statistically significant at p < .05.

** Difference between whites and African-Americans is statistically significant at p < .01.

well as the consequences of lottery play on family life. As compared to whites, African-Americans believe that the state of Wisconsin returns less of its lottery revenue to winners (\$24 vs \$29), but conversely they are more likely to believe that systems of play can be developed to increase one's chances of winning lotteries (32 percent vs 22 percent). African-Americans are also more likely to perceive lottery play as an easy way to make money and to believe that someday lotteries will make them rich (13.4 percent vs 6.5 percent).

Both whites and African-Americans are predominantly of the view that lottery play causes them no problems. Thus, the majorities of both groups believe that lottery play places no financial burden on their household expenses, that their lottery play is within bounds of affordability, and that it causes no disagreements between them and their spouses (if present in the household). These general views notwithstanding, African-Americans are still more likely than whites to report that lottery play does in fact lead to financial problems and family conflict. While the percentages of respondents who report these problems are small, African-Americans are significantly more likely to report that lottery play reduces money for household expenses (7.5 percent vs. 3.8 percent), that they wager more than they can afford (9.0 percent vs. 3.8 percent), that they play less due to financial constraints (40.0 percent vs. 25.8 percent), and that playing lotteries causes disagreements with partners (4.8 percent vs. 2.4 percent). Finally, African-Americans are more likely to report that gambling in general is a problem for them (4.2 percent vs. 1.8 percent).

POSSIBLE MEDIATING INFLUENCES OF OBSERVED RACIAL DIFFERENCES

In reporting racial differences in lottery play and lottery-relevant attitudes between African-American and white sample members, we cannot neglect the possibility that these differences are caused by related demographic differences. As discussed in chapter 2, African-Americans surveyed, on average, earn less family income, are less likely to be currently married, and have

completed fewer years of education than the white respondents. Therefore it might be these differences, rather than strictly racial differences, that generate the previously observed differences in lottery play and attitudes.

To address this concern, we again compare African-American versus white respondents but this time control for possible mediating factors. The comparisons in Table 18 employ, as a control, respondents' family income. As indicated in the column under significant race effects, relative to whites, African-American respondents are still less likely to play Pull-Tab and Megabucks. They are more likely to play SuperCash!. Controlling for income, however, does reduce to statistical insignificance the previously observed racial differences in the total frequency of play for all games. Finally, the dollar expenditures of African-Americans and whites remain statistically indistinguishable, as was illustrated in Table 16.

Prior findings reported in Table 17 concerning relevant knowledge and attitudes of African-Americans and whites are little changed when the income of respondents is controlled (see Table 18). Two exceptions are found. Controlling for income, African-Americans no longer significantly differ from whites in their estimations of the percentage of lottery revenue returned as winnings nor are they less likely to set money aside for lottery play.

Other possible mediating factors include marital status and education. The comparisons in Table 19 control for marital status. Only one of the racial differences presented in Tables 16 and 17 changes with this control. Net of marital status, African-American and white lottery-playing respondents do not significantly differ in their reported frequency of lottery play. In Table 20 we replicate the above comparisons while controlling for education. Net of education, all of the significant racial differences presented in Tables 16 and 17 remain significant.

To place our findings into a larger context, critics of lotteries have suggested that such games disproportionately burden a particular segment of society, such as minorities or the poor (Brinner and

Racial Differences in Lottery Play and Attitudes of Wisconsin Residents, Controlling for Family Income (1991 Sample)

	Earning Less <u>Than \$20,000</u>		Earning More Than \$20,000		Significant Effects		icant ects
	Whites	African- Americans	Whites	African- Americans	Race	Income	Interaction
Lottery Participation				· · · · · · · · · · · · · · · · · · ·			
Played any game	61.2%	57.6%	67.4%	57.7%			
Played Scratch-Off	52.9%	51.7%	57.6%	55.2%			
Played Pull-Tab	25.3%	6.7%	18.1%	14.1%	**		
Played SuperCash!	21.0%	29.7%	24.0%	36.5%	**		
Played Megabucks	50.0%	43.2%	58.6%	47.0%	*		
Mean frequency of play	18.6	13.0	18.5	17.1			
Lottery Expenditures							
Mean dollars spent	\$12.49	\$6.80	\$16.42	\$16.93			
Mean percentage of income spent	1.17%	1.07%	.51%	.48%		*	
Attitudes toward Lottery							
Overall lottery attitude ^a	2.50	2.62	2.43	2.56			
Gambling has been a problem ^b	3.33	3.19	3.55	3.25	**	**	
Play less because no extra money ^b	2.54	2.35	3.02	2.69	**	**	
Lottery a harmless recreation ^b	2.42	2.52	2.38	2.57	*		
Reduces money for household expenses°	3.20	3.04	3.43	3.22	**	**	
Spend more than can afford [°]	3.20	3.03	3.47	3.22	**	**	
Lottery play causes disagreement							
w/partner ^c	3.29	3.05	3.44	3.10	**		
Lottery is easy way to make money ^b	3.03	2.88	3.31	3.11	**	**	
Someday will be rich through lottery ^b	3.32	3.16	3.41	3.26	**		
Can create a winning system	21.1%	34.0%	22.1%	26.2%	*		
Out of \$100, how much is returned							
as winnings?	\$27.46	\$26.41	\$30.11	\$23.20			
Participate in other forms of gambling	38.7%	24.8%	58.4%	43.5%	**	**	
Set aside money for lottery	8.2%	1.5%	12.7%	10.2%			

Source: Telephone interviews conducted by authors.

Note: Whites are from the 1991 statewide sample; African-Americans are from the 1991 African-American sample, augmented by the African-Americans in the statewide sample.

^aResponses scored as 1=strongly in favor, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed.

^bResponses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

^oQuestion asked of lottery players only. Responses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

* Differences between African-Americans and whites are statistically significant at p = .05.

** Differences between African-Americans and whites are statistically significant at p=.01.

 TABLE 19

 Racial Differences in Lottery Play and Attitudes of Wisconsin Residents, Controlling for Marital Status (1991 Sample)

	Currently Married		Currently Not Married		Significant Effects		
		African-	African-			Marital	
	Whites	Americans	Whites	Americans	Race	Status	Interaction
Lottery Participation							
Played any game	63.8%	56.4%	60.5%	55.7%			
Played Scratch-Off	53.5%	50.0%	53.7%	51.0%			
Played Pull-Tab	19.1%	8.5%	21.4%	10.1%	**		
Played SuperCash!	24.1%	39.4%	19.2%	26.9%	**	*	
Played Megabucks	52.8%	47.9%	55.3%	41.6%	*		
Mean frequency of play	20.6	16.7	16.1	12.2		*	
Lottery Expenditures							
Mean dollars spent	\$17.28	\$11.59	\$10.70	\$10.19			
Mean percentage of income spent	.72%	.73%	.67%	.85%			
Attitudes toward Lottery							
Overall lottery attitude ^a	2.53	2.83	2.44	2.51			
Gambling has been a problem ^b	3.46	3.19	3.52	3.31	**		
Play less because no extra money ^b	2.90	2.63	2.83	2.44	**		
Lottery a harmless recreation ^b	2.47	2.65	2.34	2.53	**	*	
Reduces money for household expenses°	3.35	3.10	3.38	3.20	**		
Spend more than can afford [°]	3.40	3.08	3.36	3.15	**		
Lottery play causes disagreement							
w/partner [°]	3.39	3.06	3.40	3.33	**		
Lottery is easy way to make money ^b	3.26	3.04	3.17	2.99	**		
Someday will be rich through lottery ^b	3.38	3.34	3.43	3.16	**		+
Can create a winning system	19.9%	23.5%	25.0%	36.7%	*	*	
Out of \$100, how much is returned							
as winnings?	\$27.85	\$23.43	\$30.45	\$24.61	*		
Participate in other forms of gambling	48.5%	24.7%	53.8%	35.1%	**		
Set aside money for lottery	11.6%	3.9%	10.8%	6.0%	*		

Source: Telephone interviews conducted by authors.

Note: Whites are from the 1991 statewide sample; African-Americans are from the 1991 African-American sample, augmented by the African-Americans in the statewide sample.

^aResponses scored as 1=strongly in favor, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed.

^bResponses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

^oQuestion asked of lottery players only. Responses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

* Differences between African-Americans and whites are statistically significant at p=.05.

** Differences between African-Americans and whites are statistically significant at p=.01.

+ Race and marital status significantly interact at p=.05, meaning the effect of race in predicting Someday Will Be Rich is strongest for non-married respondents.

Racial Differences in Lottery Play and Attitudes of Wisconsin Residents, Controlling for Education (1991 Sample)

	Some College Education		No College Education		Significant Effects		
	Whites	African- Americans	Whites	African- Americans	Race	Education	Interaction
	vv mees		*********	1 monound	1(400	Duuvution	
Lottery Participation							
Played any game	61.9%	56.3%	63.3%	55.7%			
Played Scratch-Off	51.8%	50.9%	56.7%	50.4%			
Played Pull-Tab	20.7%	11.6%	18.9%	7.6%	*		
Played SuperCash!	20.2%	30.4%	25.6%	32.8%	*		
Played Megabucks	53.8%	44.6%	53.9%	43.5%	*		
Mean frequency of play	15.3	14.1	24.9	13.8	**	**	+a
Lottery Expenditures							
Mean dollars spent	\$10.80	\$6.94	\$21.91	\$14.11		**	
Mean percentage of income spent	.39%	.32%	1.32%	1.29%		**	
Attitudes toward Lottery							
Overall lottery attitude ^a	2.56	2.68	2.38	2.60			
Gambling has been a problem ^b	3.57	3.31	3.35	3.21	**	**	
Play less because no extra money ^b	2.98	2.61	2.70	2.44	**	**	
Lottery a harmless recreation ^b	2.43	2.71	2.38	2.45	**	*	
Reduces money for household expenses°	3.44	3.17	3.22	3.14	**	**	
Spend more than can afford [°]	3.47	3.29	3.22	2.97	**	**	
Lottery play causes disagreement							
w/partner [°]	3.43	3.07	3.30	3.12	**		
Lottery is easy way to make money ^b	3.34	3.14	3.01	2.90	**	**	
Someday will be rich through lottery ^b	3.47	3.33	3.29	3.14	**	**	
Can create a winning system	21.8%	35.3%	21.7%	28.0%	**		
Out of \$100, how much is returned							
as winnings?	\$29.29	\$20.49	\$28.00	\$28.89	*		+b
Participate in other forms of gambling	52.3%	39.1%	48.0%	24.4%	**	*	
Set aside money for lottery	11.8%	3.1%	10.5%	6.9%	*		

Source: Telephone interviews conducted by authors.

Note: Whites are from the 1991 statewide sample; African-Americans are from the 1991 African-American sample, augmented by the African-Americans in the statewide sample.

*Responses scored as 1=strongly in favor, 2=somewhat in favor, 3=neither in favor nor opposed, 4=somewhat opposed, 5=strongly opposed.

^bResponses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

[°]Question asked of lottery players only. Responses scored as 1=strongly agree, 2=agree, 3=disagree, 4=strongly disagree.

* Differences between African-Americans and whites are statistically significant at p=.05.

** Differences between African-Americans and whites are statistically significant at p = .01.

+ aThe effects of race upon the frequency of play are most pronounced for those with no college education.

+bThe effects of race upon estimated returns from lotteries are strongest for those with college educations.

Clotfelter 1975). We find mixed support for this concern. On one hand, our analysis suggests that minority residents do not play more often or spend larger amounts on the lottery than whites. And in general African-Americans report significantly less gambling than whites.

On the other hand, African-Americans are substantially more likely to characterize the lottery as creating personal problems for them, that it reduces household expenses, creates family disagreements, and causes other problems.

CHAPTER 6

MULTIVARIATE ANALYSIS OF LOTTERY PLAY

MULTIVARIATE ANALYSIS

In chapter 4, we analyzed the relationship between attributes of sample members and various dimensions of lottery play. These bivariate analyses uncovered a number of significant correlates of lottery play. However, as we noted, bivariate correlations do not necessarily imply causal connections. Specifically, two unrelated variables may correlate because each correlates with a common third variable. To illustrate this concept, suppose that older people have more reticent attitudes toward lotteries and that these attitudes are negatively associated with lottery play. In this situation, the relationship between attitude and play may be spurious since both are determined by the critically causal agent, namely, age.

So-called multivariate statistical analyses can be employed to reduce this potential pitfall by simultaneously analyzing the effects of many explanatory variables (independent variables) upon an outcome of interest (dependent variable). This approach tests the impact of each independent variable upon a dependent variable while controlling for the remaining independent variables.

Correct use of multivariate analysis necessitates consideration of the form of the dependent variable. The Piliavin and Polakowski (1990) study used multivariate analysis to determine which demographic characteristics and attitudes significantly predicted lottery play. In replicating their analysis, we also used as a dependent variable the answer to the question, "Did you (i.e., the respondent) play the lottery last year?" This variable is dichotomous: the answer can only be "yes" or "no." We assigned the variable a value of 0 if the response was "no," and 1 if it was "yes." Given this dichotomous form, a suitable multivariate statistical technique is logistic regression, for it accounts for dichotomously distributed dependent variables. As such, logistic regression will provide

non-biased estimates of the influence of personal characteristics and attitudes upon the likelihood of playing the lottery.

In replicating Piliavin and Polakowski (1990), we analyzed the effects on lottery play of three categories of independent variables: demographic characteristics, other forms of gambling, and attitudes. We analyzed these independent variables in the same causal order as did Piliavin and Polakowski. First, we tested if demographic variables predict lottery play. Then we tested the effects of participation in other forms of gambling while controlling for demographic variables. Last, we added several attitudinal measures to the above variables and tested the relative impact of all three categories of independent variables.

RESULTS

Table 21 contains the results of our multivariate analyses. In the first three columns we present the findings of Piliavin and Polakowski (1990). In the last three columns we report our findings. Columns one and four contain the estimates of lottery participation regressed upon demographic characteristics. Columns two and five add a measure of having participated in non-lottery gambling. And columns three and six add attitudinal measures.

We report two numbers for each independent variable in each column. The first is a logistic regression coefficient, which measures the change in log odds of playing the lottery associated with a one-unit increase in the independent variable.¹¹ When the coefficient is positive, the probability of playing the lottery increases as the independent variable increases. Conversely, when the coefficient is negative, the probability of lottery play decreases as the independent variable increases. Below the regression coefficient, in parentheses, we report the standard error of the regression coefficient. If the regression coefficient is twice the size or more of its standard error, the regression coefficient is statistically significant at the 95 percent confidence level.

	1989 Statewide Sample			1991	ample	
	(1)	(2)	(3)	(4)	(5)	(6)
Demographic Characteristics						
Male	0334	2310	3699	.3242*	.2523	.1759
	(.2565)	(.2653)	(.3196)	(.1605)	(.1642)	(.1877)
Aged 31-60	5264	4418	5935	4001*	3570	.0425
•	(.2927)	(.3015)	(.3613)	(.2040)	(.2078)	(.2336)
Aged 61+	-1.501***	-1.521***	4495	8204**	6726**	0941
	(.4430)	(.4580)	(.5582)	(.2513)	(.2577)	(.3072)
White	1.035	.9121	.9963	.2640	.1218	.0657
	(.5409)	(.5625)	(.6536)	(.1737)	(.1788)	(.2077)
Single	.6490	.5449	.4300	4632*	5570*	5138*
	(.3799)	(.3892)	(.4526)	(.2239)	(.2293)	(.2590)
Widowed	- 3133	- 3568	-1.062	- 1398	- 2466	- 3221
11 140 11 04	(6643)	(6976)	(8280)	(3075)	(3140)	(3650)
Divorced	- 0951	- 1120	- 8659	0504	- 0393	- 1318
Bivoroda	(3847)	(3992)	(4610)	(2348)	(2400)	(2834)
Some college	- 3624	- 0399	- 1334	- 0911	- 1239	- 2019
Some conege	(3030)	(3008)	(3674)	(1021)	(1064)	(2236)
College graduate	- 8150*	(.3098) - 7784*	- 6828	- 5661*	- 5343*	(.2230) - 4146
Concee graduate	(2528)	(3627)	(.4413)	(2241)	(2280)	(2670)
Family income	(.5556)	(.5027)	1275	(.22+1)	(.2209)	- 0033
Fainity income	.0901	.0441	(1050)	(0020)	(0020)	0035
Family income missing	(.0039)	(.0804)	(.1039)	(.0029)	(.0030)	(.0033)
Failing income missing				7098	(2500)	(2014)
Other combline		1 0/0***	5207	(.2439)	(.2309)	(.2914)
Other gambling		1.049****	.5507		.9102	.4915*
		(.2008)	(.3150)		(.1704)	(.1941)
Attitudinal Measures			0001***			7050 444
Attitude toward lottery			.8001***			./338***
ww. a			(.1581)			(.0906)
Harmless recreation [®]			.2914			.1288
_ \			(.2267)			(.1487)
Easy money [®]			.1187			5504***
			(.2554)			(.1578)
Can't play more because lack funds ^b			.6504*			.2758*
			(.2217)			(.1326)
Percentage returned as winnings			.2314			.2256
			(.2535)			(.1407)
Can create winning systems			.5349			1370
			(.3391)			(.2286)

TABLE 21Maximum Likelihood Coefficients for Logistic Regression of Having
Played the Lottery, for Wisconsin Residents

(table continues)

 TABLE 21 (continued)

	1989 Statewide Sample			1991	mple	
	(1)	(2)	(3)	(4)	(5)	(6)
Create winning systems missing						8376*
- • -						(.3509)
Gambling is a problem ^b			.4896			2720
			(.3253)			(.1789)
- log likelihood	-194.89	-193.03	-170.69	-468.41	-453.66	-375.76
-2 log likelihood	389.78	386.06	341.38	936.82	907.32	751.52
df		1	7		1	7
L-Squared		3.72	44.68***		29.50***	77.90***

Source: Authors' computations based on telephone interviews conducted by authors.
Note: Standard errors in parentheses. Dependent variable is answer to "Did you (i.e., respondent) play the lottery last year?" (1=yes, 0=no).
* Statistically significant at .05 level.
** Statistically significant at .01 level.
***Statistically significant at .001 level.
*Attitude scored 1=strongly opposed to 5=strongly in favor.
*Belief scored 1=strongly disagree to 5=strongly agree.

As shown in column four, several demographic characteristics of the 1991 respondents significantly predict lottery play. These include gender, age, marital status, and education. First, men are more likely to play the lottery than women, with an estimated regression coefficient of .3242 (top of column four). Being positive, this coefficient indicates that male respondents (coded as 1) have higher probabilities of lottery play than female respondents (coded as 0). To put this change of log odds into terms of probabilities,¹² men have a .64 probability (p=.64) of playing the lottery, whereas women have only a .57 probability. Second, middle-aged respondents are significantly less likely to play than younger respondents (p=.45 vs. p=.65). Third, single respondents, relative to married respondents, have significantly lower probabilities of lottery play (p=.52 vs. p=.63). Last, respondents with a college degree are significantly less likely to play relative to those with only high school educations (p=.49 vs. p=.63).

Column five presents the effect of demographic characteristics upon the likelihood of lottery play, net of participation in other forms of gambling. Net of other gambling, the effects of being male and middle-aged are insignificant. However, older respondents are still less likely to play than younger respondents (p=.48 vs. p=.64); single respondents, less likely than married respondents (p=.50 vs. p=.63); and college graduates, less likely than those with only high school degrees (p=.50 vs. p=.63). Non-lottery gambling is significantly associated with lottery play. Respondents who gamble on non-lottery games have higher probabilities of lottery play than those who do not (p=.71 vs. p=.50).

Column six tests the effects of demographic characteristics and other gambling on the probability of playing the lottery, net of lottery-relevant attitudes. Controlling for attitudes reduces to insignificance the effect of being older or having a college degree. Single respondents, however, are

still less likely to play than married respondents (p=.51 vs. p=.63), and gamblers are still more likely to play the lottery than non-gamblers (p=.67 vs. p=.54).

Several of the attitudes are significantly associated with lottery play. First and foremost, positive evaluation of the lottery closely corresponds with playing the lottery. Respondents who strongly favor the lottery have much higher probabilities of playing than those strongly opposed (p=.20 vs. p=.82). Viewing the lottery as easy money is also associated with lottery play. Respondents agreeing that the lottery is an easy way to make money have lower probabilities of playing than those who disagree (p=.44 vs. p=.57). Last, a perceived lack of funds is associated with lottery play. Respondents who strongly agree that a lack of extra money limits their lottery play have higher probabilities of playing than those who strongly disagree (p=.72 vs. p=.54).

DISCUSSION

In generalizing from these findings, we draw several conclusions. First, in neither the 1989 nor 1991 analysis did race or family income significantly predict lottery play. Therefore, we find no evidence that minority or poor state residents are more likely to play the lottery than white or wealthy residents. This findings supports our supposition in chapter 5 that the lottery-playing levels of minorities approximate those of whites. With the poor, however, even if they play at comparable levels as the wealthy, they may still be spending a greater percentage of their income on the lottery.

Second, the basic profile of lottery players has changed little from 1989 to 1991. Although the full equations (columns three and six) indicate that in 1991 several more phenomena predicted lottery play than in 1989, all those phenomena relevant to lottery play in 1989 were also relevant in 1991. Specifically, in equations one and four, both old age and college degree predict less lottery play. In equations two and five, both old age and college degree remain significant and other

gambling significantly increases the likelihood of playing. And in equations three and six, overall approval and perceived lack of funds both increase the probability of lottery play.

Third, as in 1989, the effects of demographic characteristics on lottery play appear to be mediated by attitudes and other gambling. Specifically our analysis suggests first that males and married people are more likely to gamble generally and that this leads them, as compared to women and younger respondents, to be more likely to play lottery games. The analyses suggest further that college graduates and older people are less likely to play lottery games because they tend to have more negative views of these games.

SUMMARY

To highlight the findings of our report, we find the following:

- 1. The number of state residents who play the lottery has changed little since 1989. As reported, in 1991 about three out of five played it sometime in the prior year.
- Lottery spending is becoming more concentrated over time among those who spend more.
 Currently about 10 percent of the state's populace (16 percent of the players) account for nearly 75 percent of all lottery revenue.
- 3. Scratch-Off and Megabucks are the most widely played lottery games. And heavy-spending players prefer SuperCash! over Megabucks, but the reverse is true for light-spending players.
- 4. Attitudes toward the lottery have changed little in the past two years, except that overall approval of the lottery may be slipping.
- 5. Few state residents (less than 5 percent) report that lottery play creates personal problems for them.

- Residents least likely to play include those who are either extremely poor, aged, female, single, either without high school diplomas or with college degrees, or who do not participate in other forms of gambling.
- 7. African-American and white respondents are equally likely to play the lottery, and spend comparable amounts of their income on it.
- 8. African-American respondents, relative to whites, report more personal problems associated with lottery play.
- 9. Demographic differences exist in who plays the lottery. Men, young people, married people, high school graduates, and those with some college but no degree are the most likely to play. The bulk of these differences existed in both 1989 and 1991; thus the basic profile of lottery players in Wisconsin has changed little since 1989.
- The effects of demographic characteristics upon lottery play is mediated by attitudes.
 Specifically, the effects of gender appear to be mediated by participation in other, non-lottery forms of gambling; the effects of education, by attitudes toward the lottery; and the effects of age, by both other gambling and attitudes.

Endnotes

¹Much of this chapter is condensed from Piliavin and Polakowski (1990), to which we refer the reader for further detail.

²We thank Diane Harmelink of the State Lottery Board for the information used in this review.

³We thank Bob Lee, director of the Letters and Science Survey Center, for providing this overview.

⁴Note: 117 of these 355 were excluded from the sample because the respondents identified themselves as something other than African-American.

⁵The 1989 and 1991 surveys used different measures of family income. To facilitate comparison, we recomputed the 1989 income measure to equal the form used in 1991; hence we report a different 1989 mean income than did the 1989 report.

⁶Statistical significance refers to the likelihood that our findings result from chance rather than actual differences in the population. At p=.05, we are 95 percent sure that our findings are not due to chance. At p=.01, we are 99 percent sure.

⁷Piliavin and Polakowski's study was conducted in 1989; the results appeared in 1990 in Institute for Research on Poverty Special Report no. 50.

⁸A median spending level of \$2.50 means that one-half of the players spent more than this, and one-half spent less.

⁹The 1989 sample averaged spending \$6.18 per month on the lottery, for a total monthly expenditure of \$3,258 (527 respondents * \$6.18). The top 53 highest-spending respondents (10 percent of the sample) averaged wagering \$37.23 a month, for a total monthly average expenditure of \$1,973 (53 * \$37.27). Thus, the top 10 percent spent 61 percent of all lottery expenditures (\$1,973/\$3,258). ¹⁰The 1991 sample averaged spending \$8.57 per month on the lottery, for a total monthly expenditure of \$4,440 (518 * \$8.57). The top 52 highest-spending respondents (10 percent of the sample) averaged wagering \$63.93 a month, for a total expenditure of \$3,324 (52 * \$63.93). Thus, the top 10 percent spent 75 percent of all lottery expenditures (\$3,324/\$4,440).

¹¹Since many of our readers are perhaps unfamiliar with log odds, we will translate the logistic coefficients into probabilities when a variable is significant.

¹²The equation used is $p = \exp(BX) / 1 + \exp(BX)$, where BX is the matrix of logit coefficients and x variables.

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