Demographic Study of Texas Lottery Players

March 2005

Revised Final Report
Data compiled by the Earl Survey Research Laboratory
Texas Tech University

Executive Summary

- About 47% of adult Texas residents report playing a Texas Lottery game within the past year. This figure is down from 56% in 2002.

- The rate of participation in Texas Lottery games is consistent across income categories, with no income group more likely than any other group to play lottery games.

- The rate of participation is also consistent across groups defined by level of education, with no group more likely than any other to play the lottery.

- Hispanic residents are more likely to participate in the Texas Lottery than members of other racial/ethnic groups.

- Residents who are employed, either full or part-time, are more likely to report having played Texas Lottery games in the past year than residents who are not employed.

- White lottery players report spending less per month on lottery games than non-White lottery players. This result emerges when cases at the extreme end of monthly spending ("outliers") are removed from the analysis, but is not found when these cases are included.

- The specific games with the highest reported rate of participation are Lotto Texas (37.4% of all respondents, 80% of lottery players have played) and scratch-off games (27.2% of all respondents and 59% of lottery players have played).

- The results of this study are consistent with those of previous years in terms of consistency of rate of play across income and education categories. However, the finding of race/ethnicity based differences in average monthly spending represents a break from prior studies.

Summary of Revisions

Pursuant to a request from the Texas Lottery Commission dated 2/23/05, the "2005 Texas Lottery Demographic Study" report has been revised to eliminate some internal inconsistencies in the reporting of descriptive demographic frequencies and percentages. The revisions are noted specifically below. **It is important to note that no substantive analyses, statistical significance, or conclusions are affected.**

Revisions

1. Table 1a in the original report (January 2005) gives, in the first column of numbers, weighted values for the number and percentage of respondents in the sample. However, unweighted data were used in the second and third columns of numbers to calculate the percentage of each demographic category playing the lottery in the last year and the average amount spent per month. Therefore, the second and third columns of numbers did not require revision. In the revised report, the first column of Table 1a reports unweighted data, and the entire table is now based on unweighted data. The reason for this discrepancy is that presenting results using weighted data was the approach originally considered by the research team. Soon thereafter it was decided that all results should be based on unweighted data to maintain consistency with previous reports. The demographic data discussed here were not updated to reflect this, resulting in this revised report.

2. Table 3 also reported weighted data in the original report. The numbers have been revised and the revised table is based entirely on unweighted data.

3. Table 1b had two incorrect figures in the original report, the first of which was average spent per month among those making $100,000 or more per year. This figure has been corrected. Age group 55-64 is reported as spending $37.73 per month but should be $38.73 per month. This was a typo and has been corrected.

4. Page 6 references the presence of an outlier with less than a high school degree. This is a typo and should have referenced two outliers in this category. The statements have been revised to the following: "**However, this difference is due to the presence of two outliers in the group with less than a high school education**. Two respondents reported spending a substantially greater amount per month on lottery games, and because this is a relatively small subset of respondents, these respondents greatly inflate the average for the entire subset. **When these respondents are removed from the analysis, the average amount spent per month among those with less than a high school education drops to a level that is in line with respondents who have a high school degree and the difference is not statistically significant**."

5. Similar to #3 above, but on page 11, the text referenced a single outlier with less than a high school degree, when there were actually two. The statements have been revised to the following: "Again, it must be noted that this result is due to the presence of two outliers in the relatively small subset of respondents who have less than a high school education and report having played lottery games in the past year. *When these individuals are excluded from the*

analysis, those with less than a high school degree spend an amount comparable to those with a high school degree (see Figure 2b)."

Scratch Games

The reviewer from San Antonio College points out that the spending reported on page 9 shows that Scratch Games accounted for 41.2% of sales, while Scratch Games account for close to 70% of actual ticket sales revenue. Please refer to the tables below. Table 1 shows how our survey data match with TLC revenue data when Scratch Games are *excluded* from the equation. Clearly, the survey data are quite accurate in terms of what proportion of sales are accounted for by each game under this condition. Table 2 shows how the survey data match with TLC revenue data when Scratch Games are *included* in the equation.

Table 1: Comparison of sales as a proportion of overall sales, **EXCLUDING** SCRATCH GAMES

	Survey data*	**Sales data****	**Difference**
Pick 3	26.1	23.9	2.2
Cash 5	13.4	10.5	2.9
Lotto Texas	36.6	41.1	4.5
Texas Two-Step	2.7	4.2	1.5
MegaMillions	17.1	16.3	0.8
Megaplier	4.1	3.9	0.2

*2005 Texas Lottery Demographic Study
**Texas Lottery Commission FY 2004 Comprehensive Annual Financial Report

Table 2: Comparison of sales as a proportion of overall sales, **INCLUDING** SCRATCH GAMES

	Survey data*	**Sales data****	**Difference**
Scratch games	41.2	66.7	25.5
Pick 3	15.4	7.9	7.5
Cash 5	7.9	3.5	4.4
Lotto Texas	21.5	13.7	7.8
Texas Two-Step	1.6	1.4	0.2
MegaMillions	10.1	5.4	4.7
Megaplier	2.4	1.3	1.1

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Discrepancies of this nature are also observed in previous reports. For example, the 2001 study reports Scratch Games accounting for approximately 15% of sales. We believe that this may be due to casual lottery players who occasionally buy scratch tickets but do not perceive this as participation in the lottery responding 'no' when asked if he or she has played the lottery in the past year.

The conclusion that this could mean that sales to disadvantaged groups were underreported would be, in our opinion, speculation. We do not have data to test this hypothesis. Further, it should be recognized that the data being compared are from different sources. Our source is self-reports of average spending and participation, while the other source is objective sales data. This renders direct comparison tenuous.

Statutory Authority

Section 466.021 of the Texas Government Code: "The executive director shall, every two years, employ an independent firm experienced in demographic analysis to conduct a demographic study of lottery players. The study shall include the income, age, sex, race, education, and frequency of participation of players."

Methodology

The Texas Lottery Commission contracted with Texas Tech University's Earl Survey Research Laboratory (ESRL) to conduct the 2004 demographic study. The questionnaire was a slightly modified version of the questionnaire utilized in prior administrations of the survey. The modifications were limited to the addition of questions about lottery games that have come into existence since the last iteration of the survey and an increase in the number of response options for household income. With regard to the latter change, concern was expressed by the Commission that the upper limit on the household income measure was set at $50,000 and higher, which is considered too broad and too low for such a measure. Hence, additional categories were added to separate this category into several smaller ones, and the upper limit on household income was raised to more than $100,000 per year.

The study population consisted of all adult residents of Texas with a home telephone, including those with unlisted numbers. Although residents without a home telephone (land line) are not represented, this population is sufficiently small enough that their inclusion in the population would be inconsequential to the results. Trained, professional interviewing staff at the ESRL conducted all interviews from the lab's centralized phone bank during late November and early December 2004. A Spanish version of the survey instrument was available for respondents who preferred to complete the survey in that language. A total of 1,255 completed interviews were obtained, which represents a cooperation rate of 55.6%. Because of the short field period, additional attempts to complete interviews with prospective respondents who declined to participate could not be undertaken. Undertaking such attempts would have likely increased the final cooperation rate to near the 60% mark. A total of 25,047 calls were placed to obtain the 1,255 completed interviews.

The survey instrument was administered via ESRL's computer assisted telephone interviewing (CATI) system, which presents survey questions one at a time to the interviewer on a computer screen. Responses are entered directly by the interviewer and the CATI program controls all skipping and branching. The CATI system also handles the sample records, distributing them to interviewers based on scheduled attempt times and the previous disposition of each record.

For the following results, tests were conducted in order to detect statistically significant differences between groups on participation in the lottery and amount spent on lottery games. Results of these tests are reported when statistically significant differences were found. In essence, "statistical significance" means that the relationship between two variables observed in the sample very likely exist in the larger population from which the sample was drawn. For example, when it is reported that lottery players with less than a high school education spend more per month on lottery games than those with more education, and this difference is statistically significant, we can be confident that this finding would hold true if we were able to gather data from every adult in the state as opposed to only a sample of adults.

Statistical Significance

Several times throughout this report, the term "statistically significant" appears. It is important to establish a clear understanding of this term in order to ensure appropriate interpretation of results. Because these data are based on a sample of Texas residents as opposed to obtaining information from every single resident, we must have a method of determining whether an observed relationship in the survey data is likely to hold true if we were able to interview every resident of the state. To do this, we use tests of statistical significance that are standard practice in evaluating survey data. For example, if the data show that a larger proportion of males play lottery games than females, we want to know if this would be true if we interviewed every adult in the state instead of just a sample of adults. To answer this, we conduct a test of statistical significance. In this example, the test results are not statistically significant. What this means is that if we were to conduct this survey 100 times with 100 different randomly selected samples, we would probably find some samples where more females report playing the lottery than males and in others we would find more males report playing the lottery than females. Thus, *we cannot with confidence say that more males play the lottery than females based on our data*. When we report a difference in lottery participation, spending per month, etc., as **not statistically significant,** it means that while we see that there is a difference, that difference would likely **disappear or change** if we repeated this survey several more times with new randomly selected samples (or if we were able to interview every adult resident in the state). On the other hand, when we report a difference as **statistically significant**, we can with confidence say that this difference **would hold true** even if we repeat the survey, or interview every adult resident in the state. More specifically, we would expect to find the same difference in 95 out of 100 surveys.

Outliers

When relying on self-reports of behavior from people, such as when we ask how much lottery participants spend each time they play the lottery, there is always the possibility of receiving answers from some people that are well beyond the norm in one direction or another. In the case of this study, there are twelve respondents who reported a very high rate of spending on the lottery. While these individuals also reported high levels of income, it is important to note that their per-month lottery spending is so much higher (more than two standard deviations) than most that they end up distorting the results in some cases. While it is not good practice to simply throw out these cases, which would involve a subjective assessment on the part of the researchers, it is important to make note of the existence of these cases that we call "outliers." In this report, we attempt to clarify the results by noting how the results change when the outliers are excluded from the analysis. For example, when the outliers are included, respondents with less than a high school education report spending $173.17 per month on lottery games. When the outliers are excluded, the average amount spent per month for this group falls to $62.55, in line with other educational groupings. We urge consideration of both results, but also the realization of the **strong impact a very small number of outliers have** when they are included in the analysis. It is only necessary to remove the outliers when examining amount spent per month on lottery games.

Comparison With Prior Studies

While it is desirable to establish and analyze trends over time in lottery participation and spending, direct comparisons are often not available for this report. The main reasons for this are changes in data definitions and differences in analytical approach.

First, it was concluded that previous reports utilized a measure of income that was overly broad at the upper end of the income spectrum. Specifically, the upper level of income was defined as a household income of $50,000 or more. Considering that the median household income in Texas is currently around $43,000, this definition seems overly broad and capped at an unnecessarily low level. In this year's study, this upper income definition was split into several more categories, with the highest level defined as a household reporting an annual income of over $100,000.

Second, previous studies examined differences in spending and rate of play from the perspective of looking at what proportion of all lottery players came from a particular demographic category and what proportion of all players spending a certain amount per year came from a particular demographic category. Because results utilizing this approach are directly connected to the proportion of people in each demographic category in the entire population, the results can be misleading. We have taken the approach of examining proportional representation *within* each demographic group and comparing those proportions across groups. In other words, do a higher proportion of individuals from one group play the lottery compared to individuals from another group? This is different than asking whether more players are from one group than another. Further, we examine differences in the average amount spent per month on the lottery as opposed to a pre-defined threshold of amount spent per year. This approach is more likely to pick up any subtle but statistically significant differences between groups and allows for a more explicit explanation of any differences that are found.

While we can compare the proportion of the sample that report playing the lottery over time, direct comparisons of demographic groups over time are not possible because of the reasons discussed above.

Demographics and Overall Lottery Participation

Table 1a presents a demographic breakdown of the entire sample along with the proportion of each category that has participated in the lottery in the past year and the average amount spent on lottery games per month among lottery participants. *This table includes the outliers*. As the table indicates, nearly half of adult Texas residents reported playing at least one Texas Lottery game in the past year. The average amount spent per month on lottery games among participants is $73.51.[1] We have reported the overall mean for all respondents in Table 1a. *However if we separate out those respondents who spent more than two standard deviations above the average player (the outliers), the mean total spending is reduced to $44.55 (see Table 1b)*. Among those who spend more than two standard deviations above the mean spending per month on lottery games, the average is $1,515.64.

[1] The structure of the survey instrument means that the time frame for lottery spending varied by the number of times a respondent reported playing. Weekly players were asked how much they spent each week, monthly players were asked how much they spent monthly and those who played less frequently were asked total spending for year. Therefore, we need to standardize these amounts to the same time unit in order to make comparisons across demographic groups. In order to accomplish this standardization, we take average spending per play and weight by the respondent's reported times of play per month. This measure of lottery spending has been used in previous studies (see for example Clotfelter et al. 1999).

Because spending estimates are derived from self-reporting by respondents based on a twelve month time frame, the estimates might be somewhat inflated though not likely to a great extent.

The only statistically significant difference found in Table 1a relates to amount spent per month on lottery games among those with less than a high school education and those with more education. **However, this difference is due to the presence of two outliers in the group with less than a high school education**. Two respondents reported spending a substantially greater amount per month on lottery games, and because this is a relatively small subset of respondents, these respondents greatly inflate the average for the entire subset. **When these respondents are removed from the analysis, the average amount spent per month among those with less than a high school education drops to a level that is in line with respondents who have a high school degree and the difference is not statistically significant**.

Table 1b shows the average amount spent per month *when the outliers are removed from the analysis*. Removal of the outliers results in two changes to the results. First, the difference in monthly spending across educational categories disappears in terms of statistical significance. In other words, when we remove the outliers, there is no statistically significant difference in average amount spent per month across educational categories. The other change is found in spending per month across categories defined by race/ethnicity. Here, when outliers are removed we find a statistically significant relationship in that White lottery players report spending less per month on lottery games than non-White players.

Table 1a. Demographics of Sample and Expenditures of Lottery Players, Outliers Included

Demographic Variables	Respondents in Sample	Percentage of Category Playing Lottery in Last Year	Average Spent Per Month on Lottery Among Lottery Players
INCOME			
Less than $20,000	82 (7.3%)	45.7%	$76.50[a]
$20,000 to $29,000	127 (11.3)	41.3%	$106.04[a]
$30,000 to $39,000	109 (9.7)	49.5%	$79.32[a]
$40,000 to $49,000	206 (18.3)	48.1%	$112.11[a]
$50,000 to $59,000	193 (17.1)	48.7%	$39.24[a]
$60,000 to $75,000	94 (8.3)	47.9%	$34.37[a]
$76,000 to $100,000	85 (7.5)	52.9%	$28.96[a]
More than $100,000	232 (20.6)	48.3%	$71.42[a]
EDUCATION			
Less Than HS Diploma	126 (11.1%)	41.1%	$173.17[a]
HS Degree	309 (27.1)	48.5%	$82.04[b]
Some College	269 (23.6)	50.6%	$64.74[b]
College Degree	436 (38.2)	48.6%	$48.61[b]
ETHNIC GROUP			
White	766 (67.6%)	46.9%	$55.02[a]
Black	130 (11.5)	37.7%	$108.96[a]
Hispanic	179 (15.8)	54.8%	$102.20[a]
Other	58 (5.1)	43.1%	$103.09[a]
AGE			
18-24	134 (11.7%)	40.3%	$91.23[a]
25-34	194 (16.9)	45.6%	$124.24[a]
35-44	242 (21.0)	50.0%	$40.15[a]
45-54	243 (19.4)	53.7%	$93.21[a]
55-64	155 (12.4)	49.7%	$56.34[a]
65+	182 (14.5)	43.4%	$60.45[a]
GENDER			
Male	508 (40.8%)	47.7%	$77.86[a]
Female	738 (59.2)	46.7%	$70.41[a]
OVERALL	1255	46.8%	$73.51

Note: Means are compared vertically within each individual demographic heading. Means not sharing a superscript letter are significantly different at $p < .05$ by Student Newman-Keuls test.

Table 1b. Expenditures of Lottery Players, Outliers Excluded

Demographic Variables	Average Spent Per Month on Lottery Among Lottery Players
INCOME	
Less than $20,000	$48.74[a]
$20,000 to $29,000	$60.33[a]
$30,000 to $39,000	$64.33[a]
$40,000 to $49,000	$57.95[a]
$50,000 to $59,000	$39.24[a]
$60,000 to $75,000	$34.37[a]
$76,000 to $100,000	$28.96[a]
More than $100,000	$30.58[a]
EDUCATION	
Less Than HS Diploma	$62.55[a]
HS Degree	$67.19[a]
Some College	$42.28[a]
College Degree	$26.82[a]
ETHNIC GROUP	
White	$30.76[a]
Black	$88.98[b]
Hispanic	$64.83[b]
Other	$72.73[b]
AGE	
18-24	$71.22[a]
25-34	$50.91[a]
35-44	$40.15[a]
45-54	$47.73[a]
55-64	$38.73[a]
65+	$33.67[a]
GENDER	
Male	$48.65[a]
Female	$41.66[a]
OVERALL	$44.55

Note: Means are compared vertically within each individual demographic heading. Means not sharing a superscript letter are significantly different at $\underline{p} < .05$ by Student Newman-Keuls test.

Table 2a shows the rate of participation in each of the Texas Lottery games among both the full sample and the subset of lottery players. Lotto Texas has the highest rate of participation, with about 37% of all respondents reporting participation in the past year, and 80% of lottery players. The lowest rate of participation is for Megaplier, with fewer than 10% of lottery players reporting playing in the past year, and less than 4% of the sample as a whole.

In terms of spending, lottery players report spending more per month on scratch games than on any other game. Among those who report playing scratch games, the estimated amount spent per month on such games is $51.38. The game generating the lowest monthly spending among players is Texas Two-Step, with its players reporting an average monthly total of $10.98 spent on Texas Two-Step tickets.

Table 2b shows the average amount spent per month by game players **when the outliers are removed**. The average spent per month decreases for each individual game when these outliers are removed from the analysis.

Table 2a. Participation Statistics by Individual Games, Outliers Included

Game	% of Overall Sample Playing Game	% of Lottery Players Playing Game	$ Spent Per Month By Game Players	$ Spent Per Month By Lottery Players
Pick 3 Day	10.1%	21.7%	$34.47	$7.57
Pick 3 Night	5.6%	12.0%	$30.68	$3.72
Cash 5	12.4%	26.6%	$21.38	$5.77
Lotto Texas	37.4%	80.0%	$19.47	$15.80
Scratch Games	27.2%	58.8%	$51.38	$30.31
Texas Two-Step	4.9%	10.4%	$10.98	$1.16
MegaMillions	19.4%	41.2%	$17.54	$7.40
Megaplier	3.9%	8.4%	$20.91	$1.77

Table 2b. Amount Spent Per Month on Individual Games, Outliers Excluded

Game	$ Spent Per Month By Game Players
Pick 3 Day	$23.03
Pick 3 Night	$18.96
Cash 5	$10.35
Lotto Texas	$13.04
Scratch Games	$28.90
Texas Two-Step	$9.99
MegaMillions	$11.83
Megaplier	$15.85

Figure 1a compares respondents from various household income categories in terms of rate of participation in Texas Lottery games and average amount spent per month on the games among players, **with outliers included**. While the scales of these two measures differ (participation rate has a maximum of 100% while amount spent has no theoretical upper limit), it is informative to display both on the same chart. When examining the chart it is clear that there is only a moderate amount of variation in rate of participation across income categories, while the average amount spent on lottery games varies greatly. Generally speaking, it appears that as income increases, the amount spent per month on lottery tickets decreases. **This observed difference, however, is not statistically significant**. It is important to note that this is a measure of actual dollars spent and not proportion of income. Clearly, lottery players in the lower income categories are spending a higher *proportion* of their income on lottery games than those in the higher income categories.

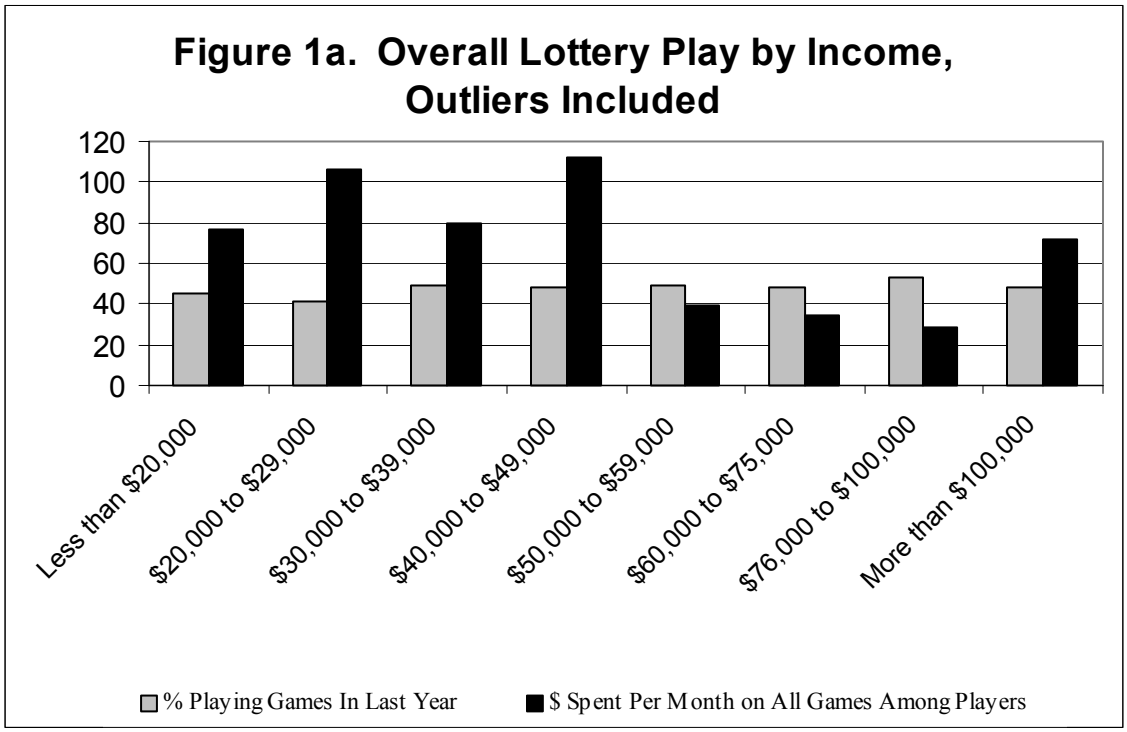
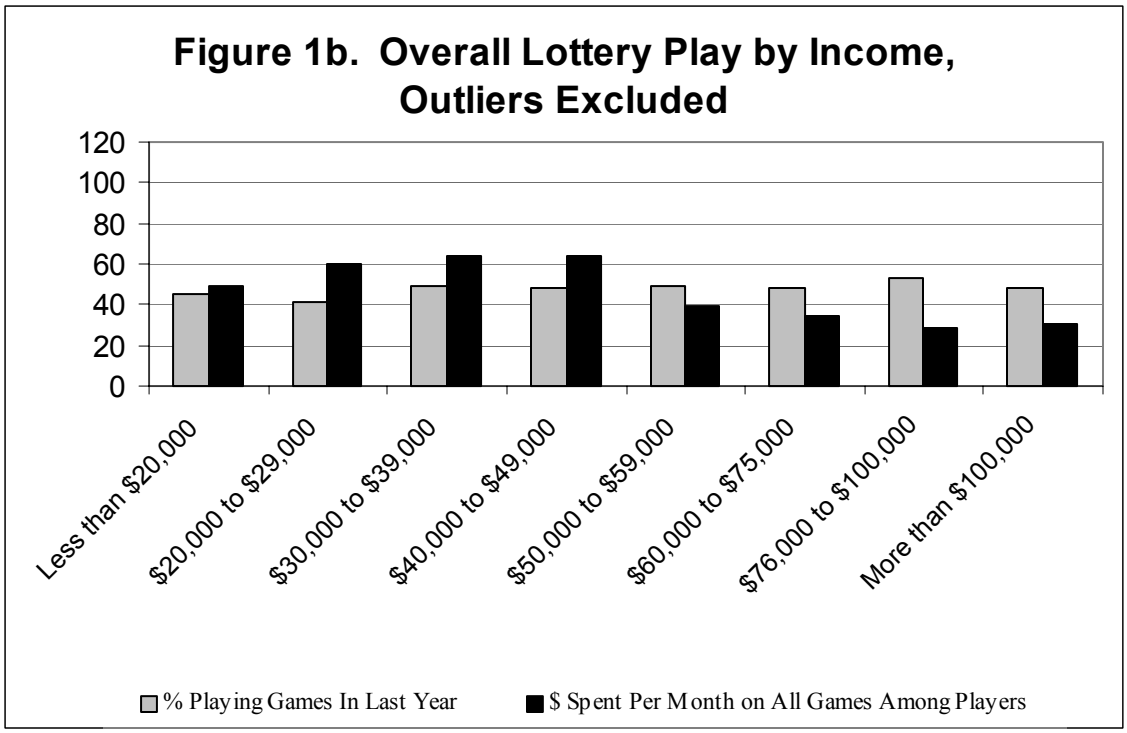


Figure 1b shows the same data but with the outliers removed. Both charts are presented on the same scale to show how the amount spent per month is reduced notably when outliers are removed. **Again, there is no statistically significant difference in amount spent per month across income categories.**



Figures 2a and 2b are similar to Figures 1a and 1b but compare groups based on educational attainment rather than household income. Again we see little variation across education categories in rate of participation but a good deal of variation in amount spent per month among players. Those with less than a high school diploma report spending notably more per month than those with more education. Again, it must be noted that this result is due to the presence of two outliers in the relatively small subset of respondents who have less than a high school education and report having played lottery games in the past year. *When these individuals are excluded from the analysis, those with less than a high school degree spend an amount comparable to those with a high school degree (see Figure 2b)*.

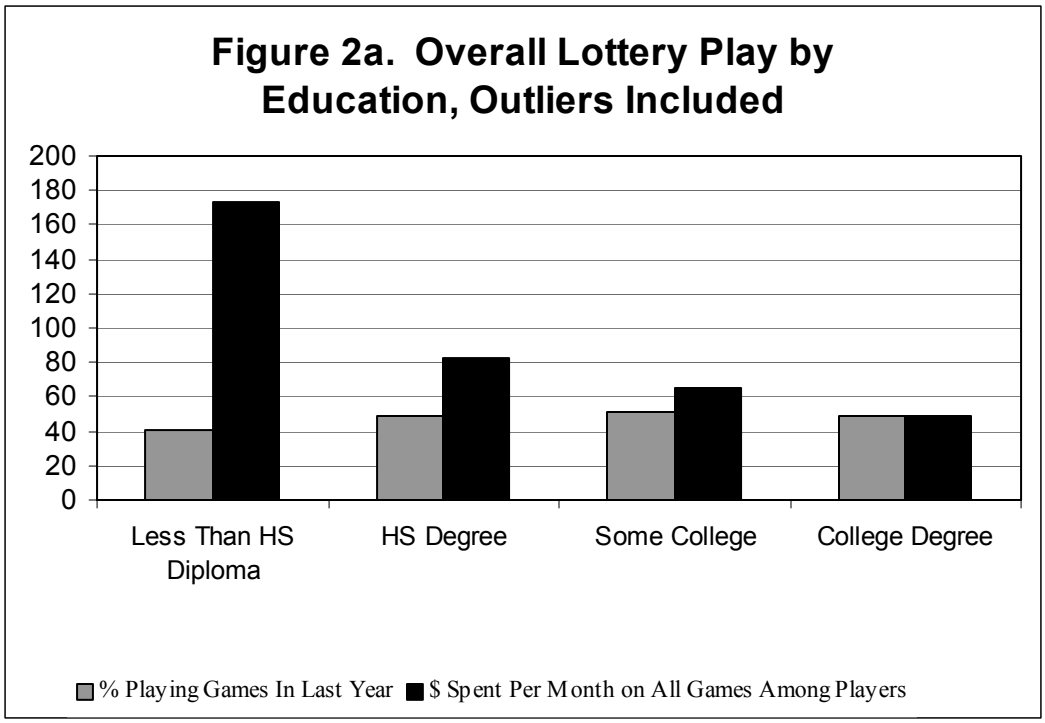
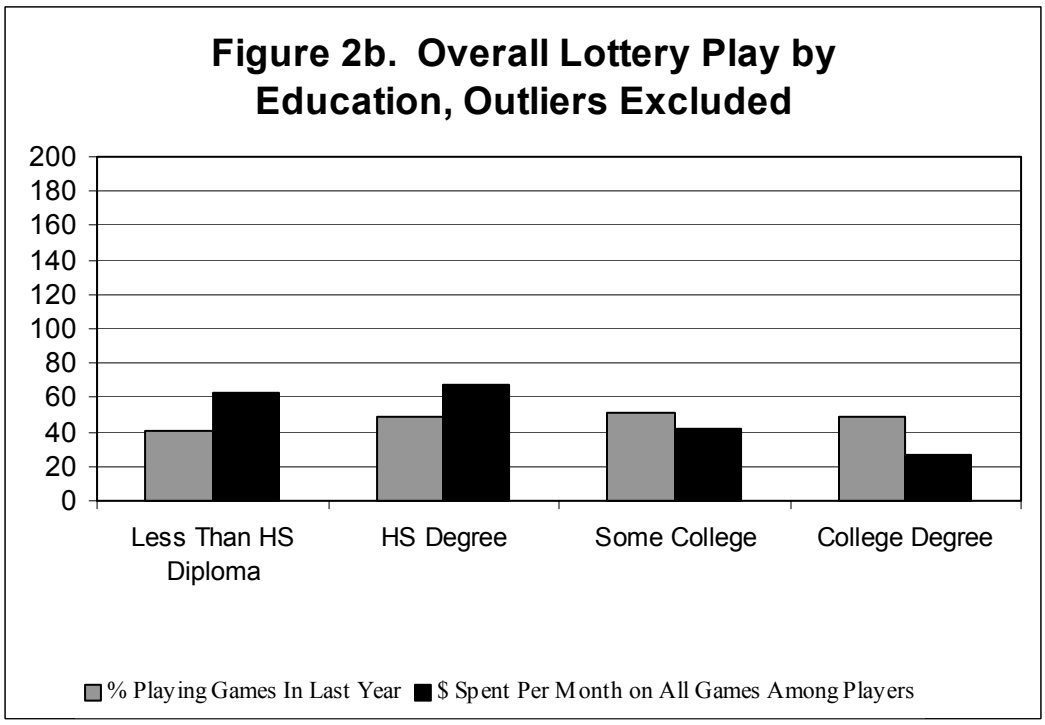
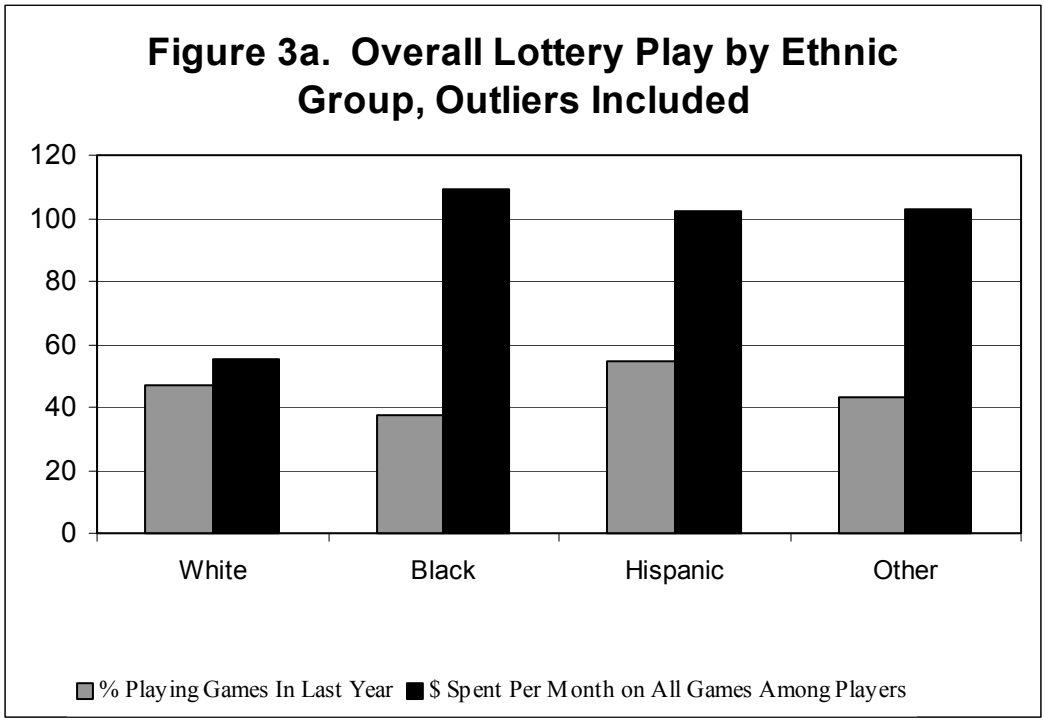


Figure 2b is the version of the chart with the outliers removed. Obviously, a small number of outliers have a strong impact on the appearance of the results. This is most obvious among the group with less than a high school education, where the average amount spent per month falls into line with the other groups when outliers are removed.



Figures 3a and 3b make the same comparisons but across racial/ethnic categories rather than income and educational attainment. There is some variation in rate of participation, with Black respondents reporting the lowest rate and Hispanic respondents the highest. However, Black respondents that do play Texas Lottery games report spending the most per month of any group. White respondents are in the middle in terms of participation, but the lowest in amount spent per month on lottery games. When the outliers are included, no statistically significant difference in amount spent per month is found across race/ethnic categories. However, this result changes in Figure 3b, when the outliers are removed.



When outliers are excluded from the analysis (Figure 3b), a statistically significant relationship between race/ethnicity and average spending per month emerges. Specifically, White respondents report spending significantly less per month than all other respondents. Among non-White respondents, there are no significant differences.

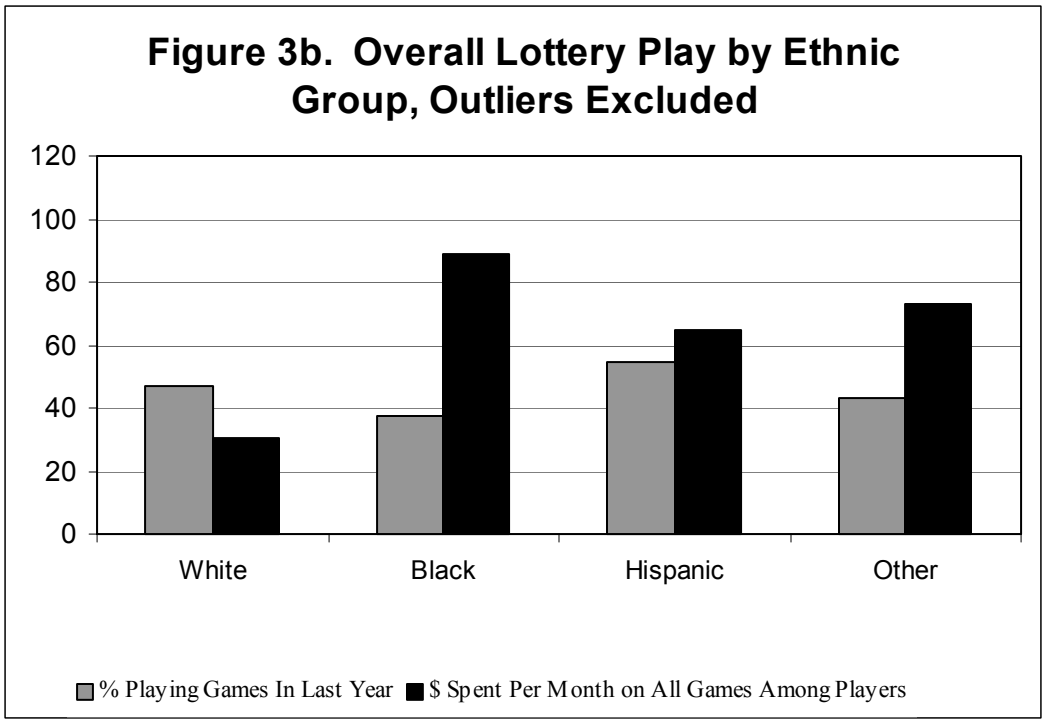
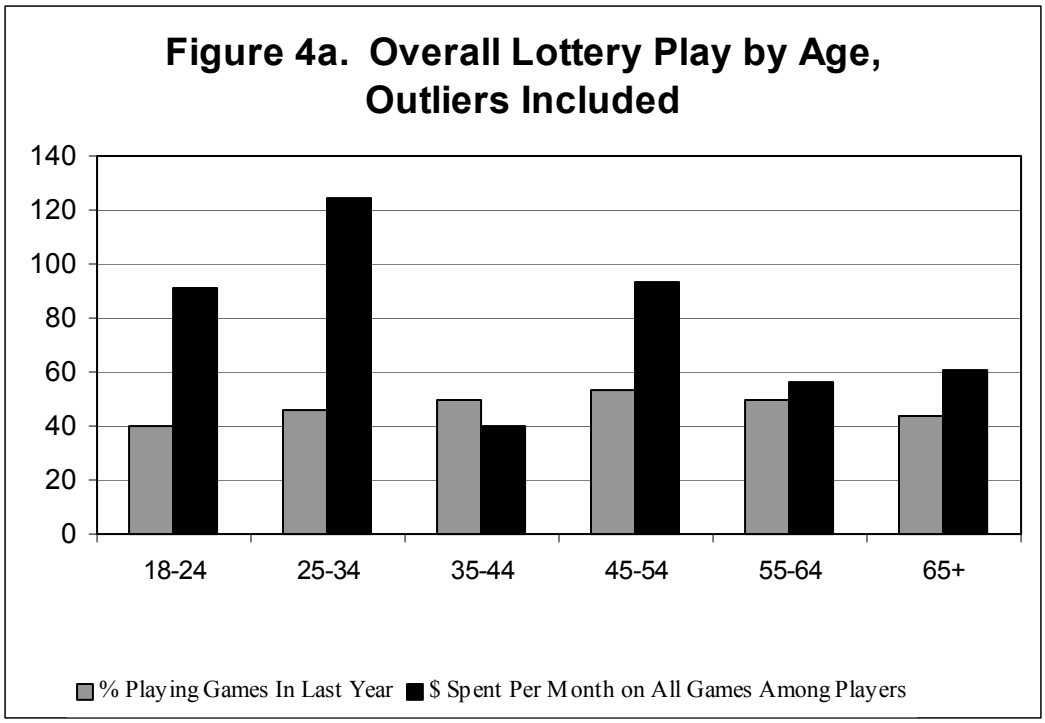


Figure 4a compares rates of participation and average monthly spending among age categories. There is little variation in rate of participation among the age groups, with between about 39% and 54% of respondents reporting having played a Texas Lottery game in the last year, depending on age group. However, the chart shows that younger players (those 35 and under) report spending more per month than respondents in the other age categories. Spending appears to increase among the 45-54 age group, but decreases again from age 55 on. This is likely a reflection of changing circumstances (marriage, family formation, retirement, etc.) throughout the life cycle, with the associated changes in discretionary income available. No statistically significant differences, however, are found among the age categories in terms of average monthly spending.



When the outliers are excluded, the appearance of the results changes somewhat as shown in Figure 4b. While the same general trend in spending throughout various age groups generally holds, it is less pronounced than when the outliers are included. Again, there are no statistically significant differences across age groups in amount spent per month.

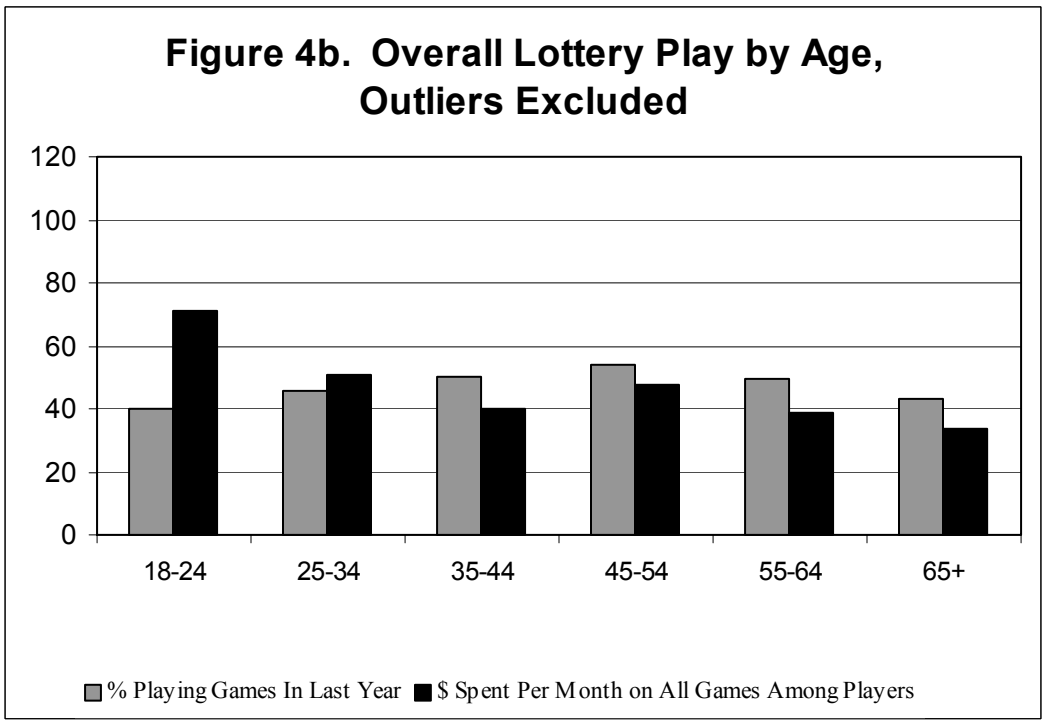


Figure 5a compares participation and spending between male and female respondents when the outliers are included in the analysis. A slightly higher percentage of male respondents report playing Texas Lottery games in the past year, and those male respondents who do play report spending somewhat more per month on lottery games than do females.

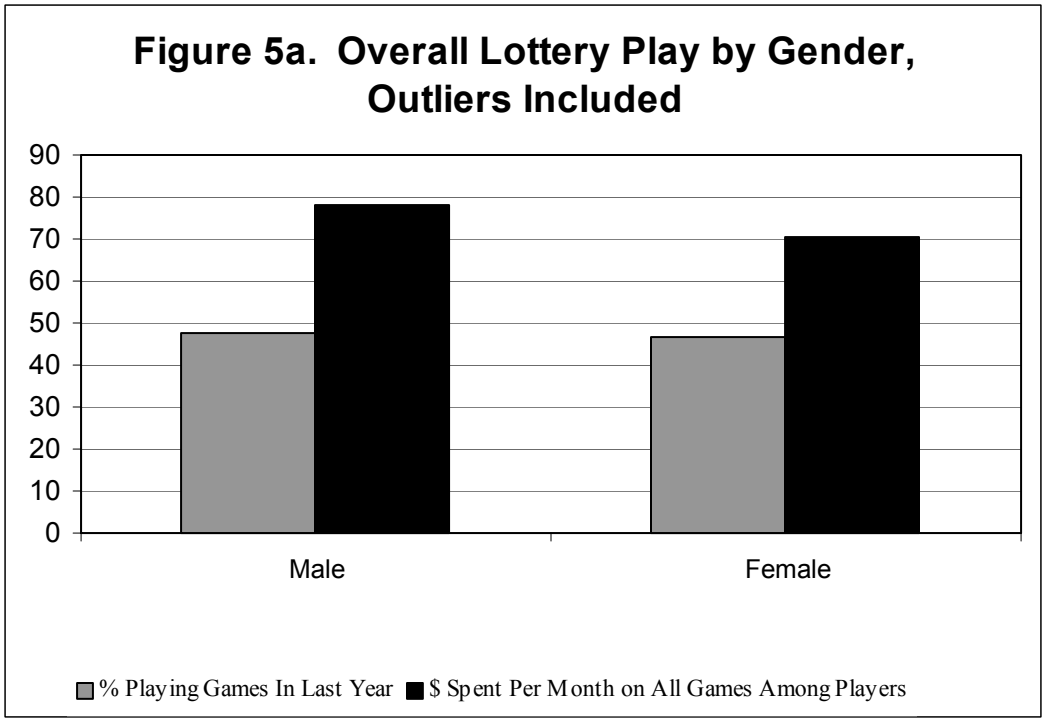
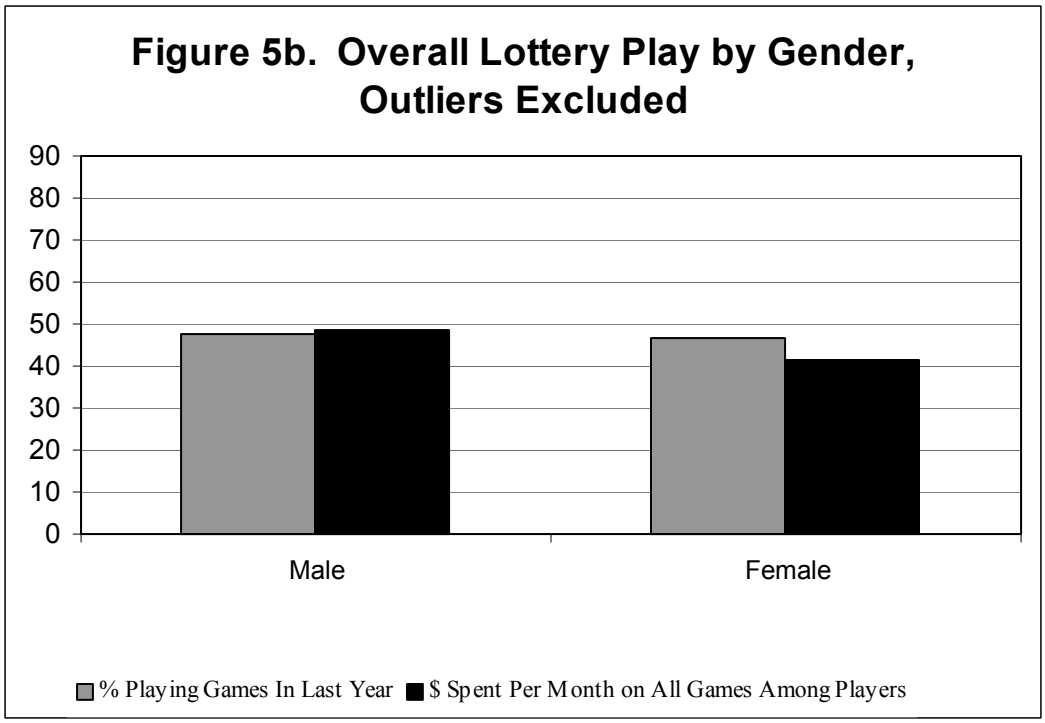


Figure 5b shows the same data with the outliers removed. Again, the scale is preserved for ease of comparison with the previous table. The average spending per month decreases among both groups and the small difference, not statistically significant, in spending remains.



Individual Game Play

While previous reports have presented data on participation in individual games across various demographic subgroups, this report does not report such data. In generating such tables it quickly became apparent that some of the groupings contained so few respondents that the resulting charts would be misleading at best. For example, if we were to compare rates of participation in the Pick 3 Day game across groups based on income category, the lowest income group contains only 5 respondents. Obviously, drawing any conclusions or making comparisons based on 5 respondents is unwise. Figure 6a, however, does compare overall rates of participation for each Texas Lottery game. The chart shows the data from Table 2a in graphical format, and as was noted previously, the game with the highest overall rate of participation is Lotto Texas, while scratch games are associated with the highest amount spent per month by lottery participants. This figure includes the outliers, while Figure 6b presents the same data without the outliers for comparison.

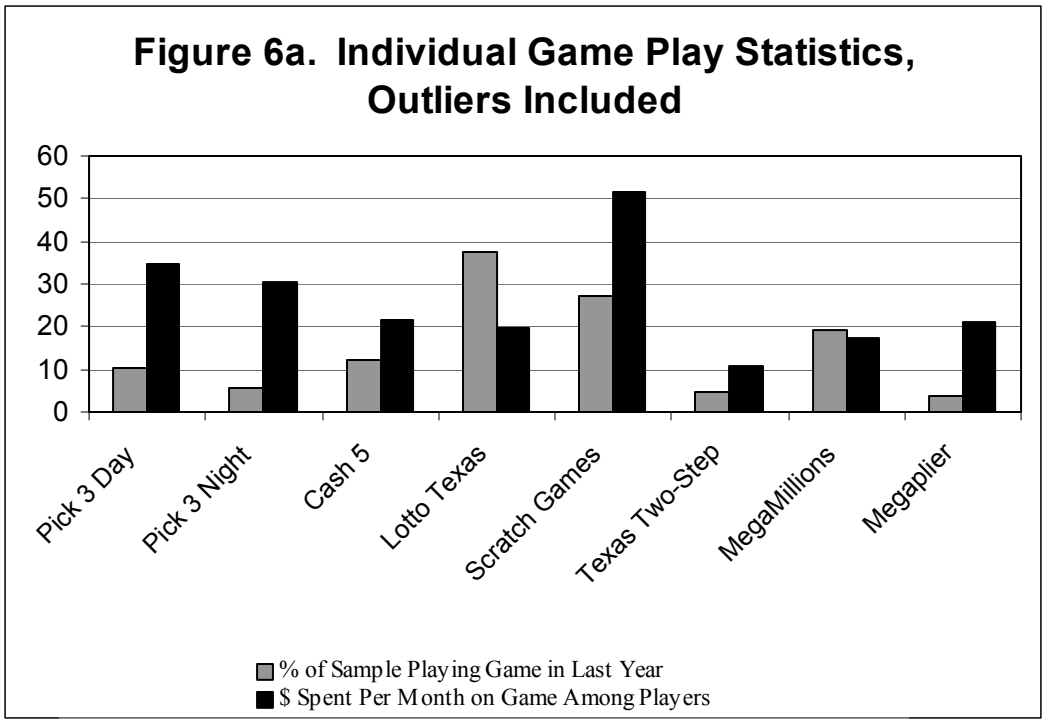


Figure 6a. Individual Game Play Statistics, Outliers Included
60
50
40
30
20
10
0
Pick 3 Day
Pick 3 Night
Cash 5
Lotto Texas
Scratch Games
Texas Two-Step
MegaMillions
Megaplier
% of Sample Playing Game in Last Year
$ Spent Per Month on Game Among Players

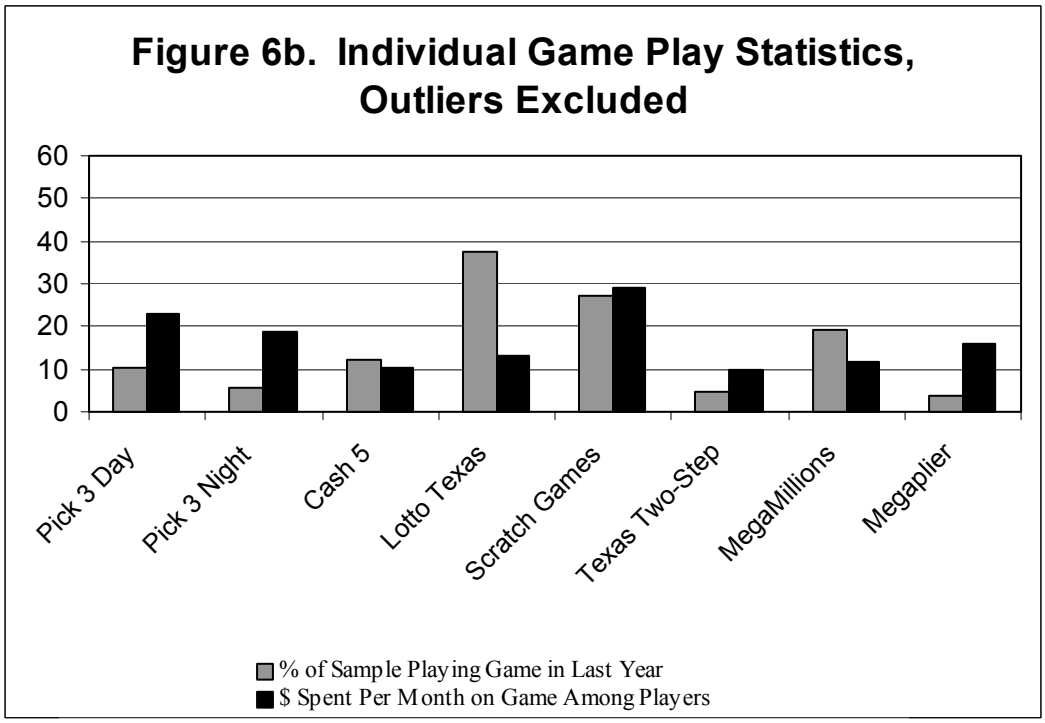


Figure 6b. Individual Game Play Statistics, Outliers Excluded
60
50
40
30
20
10
0
Pick 3 Day
Pick 3 Night
Cash 5
Lotto Texas
Scratch Games
Texas Two-Step
MegaMillions
Megaplier
% of Sample Playing Game in Last Year
$ Spent Per Month on Game Among Players

Comparison of Lottery Players and Non-Players

Table 3. Demographics of Lottery Players and Non-Players[†]

Variables	Players	Non-Players	Difference Between Lottery Players and Non-Players
INCOME			
Less than $20,000	37 (6.9%)	44 (7.5%)	-.6
$20,000 to $29,000	52 (9.7)	74 (12.6)	-2.9
$30,000 to $39,000	54 (10.0)	55 (9.4)	.6
$40,000 to $49,000	99 (18.4)	107 (18.2)	.2
$50,000 to $59,000	94 (17.5)	99 (16.8)	.7
$60,000 to $75,000	45 (8.4)	49 (8.3)	.1
$76,000 to $100,000	45 (8.4)	40 (6.8)	1.6
More than $100,000	112 (20.8)	120 (20.4)	.4
EDUCATION			
Less Than HS Diploma	51 (9.3%)	73 (12.4%)	-3.1
HS Degree	150 (27.3)	159 (27.0)	.3
Some College	136 (24.8)	133 (22.6)	2.2
College Degree	212 (36.2)	224 (33.5)	2.7
ETHNIC GROUP			
White	359 (67.7%)	407 (67.7%)	0.0
Black	49 (9.2)	81 (13.5)	-4.3*
Hispanic	97 (18.3)	80 (13.3)	5.0*
Other	25 (4.7)	33 (5.5)	-.8
AGE			
18-24	52 (9.5%)	82 (13.6%)	-4.1
25-34	88 (16.1)	105 (17.5)	-1.4
35-44	121 (22.1)	121 (20.1)	2.0
45-54	130 (23.8)	112 (18.6)	5.2
55-64	77 (14.1)	78 (13.0)	1.1
65+	79 (14.4)	103 (17.1)	-2.7
GENDER			
Male	242 (41.3%)	265 (40.3%)	1.0
Female	344 (58.7)	393 (59.7)	-1.0
EMPLOYMENT			
Employed	392 (67.4%)	366 (56.4%)	11.0**
Not employed	190 (32.6)	283 (43.6)	-11.0**

*$p < .05$, chi-square = 9.2, df = 3
**$p < .01$, chi-square = 15.58, df = 1
[†]Because two respondents did not indicate whether they had played lottery games in the past year, the frequencies in this table do not match exactly with those in Table 1a. In other words, demographic data are available but not data on whether they participated in the lottery in the past year.

Table 3 compares respondents who report having played Texas Lottery games in the past year with those who have not played on several demographic characteristics. Two statistically significant differences are found. First, lottery players are more likely to be Hispanic and less likely to be Black than non-players. Second, lottery players are more likely to be employed, either full or part-time than non-players.

District-Level Analysis

This section presents participation data at the district level. Because of the small sample problem discussed above, analysis at the district level will be limited to overall participation comparisons between districts and will not include demographic breakdowns within districts. Table 4a shows the distribution of respondents from the 10 Lottery Commission districts. Caution is urged when examining the proportion of respondents from each district who report playing lottery games and the amount per month spent because of the relatively small sample sizes for many of the districts. This table includes the outliers in the analysis.

Table 4a: Comparison of Districts, Outliers Included

District	Number	Percent of sample	Percent playing lottery	Avg. spent per month on lottery among lottery players
Abilene	79	6.3	38.0	$40.55
Austin	138	11.0	46.4	$41.86
El Paso	21	1.7	33.3	$13.59
Houston	314	25.0	48.1	$43.31
Irving	351	28.0	46.4	$117.90
Lubbock	61	4.9	45.9	$51.30
McAllen	42	3.3	64.3	$134.80
San Antonio	117	9.3	50.4	$62.56
Tyler	88	7.0	43.2	$78.10
Victoria	44	3.5	45.5	$79.64

Table 4b shows the average amount spent per month among lottery players by district but excludes the outliers. Most districts show a decrease in amount spent per month when outliers are excluded. Abilene and El Paso remain the same because none of the outliers were from these districts.

Table 4b: Comparison of Districts, Outliers Excluded

District	Avg. spent per month on lottery among lottery players
Abilene	$40.55
Austin	$20.60
El Paso	$13.59
Houston	$36.39
Irving	$59.53
Lubbock	$27.72
McAllen	$59.23
San Antonio	$53.29
Tyler	$53.75
Victoria	$39.41

Trends in Lottery Participation Over Time

This section provides a brief overview of trends in lottery participation over time based on data from previous surveys. Figure 7 shows the overall trend in participation among all respondents based on the survey data. Participation peaked in 1994, with 71% of respondents reporting having played a Texas Lottery game in the past year. A gradual decline began the following year, leading to the 2004 figure of 47% of Texans playing a lottery game in the past year. This represents the lowest level of participation since the introduction of the Texas Lottery.

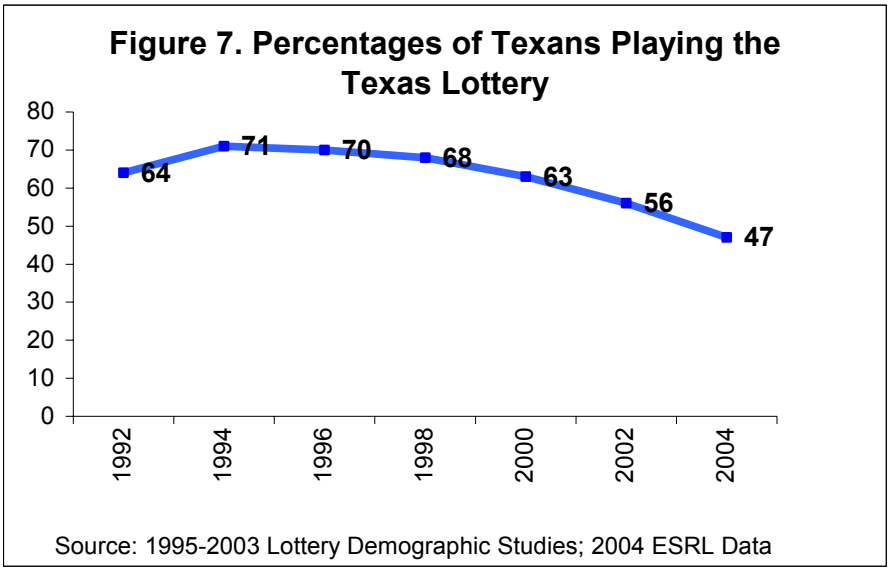


Figure 8 compares participation rates between the two extreme ends of the income spectrum. The data are limited in two ways. First, because of the way income and participation were presented in the 2000 and 2002 reports, it is impossible to include comparable data for those two years. Specifically, the 2000 and 2002 reports reported the proportion of lottery players from each income group. However, in other years, the proportion of respondents in each income category who have played the lottery was reported. The latter measure is the more appropriate of the two, as it standardizes the proportions and is not dependent on the relative size of each group. The second limitation is in the definition of the highest income category. As discussed previously, the upper limit of $50,000 or more is overly broad and too low. However, in the interest of comparability, the 2004 data are presented in this way for this particular chart.

The chart shows a good deal of consistency across years in terms of the relationship between household income and participation. Respondents in the lowest income category report somewhat lower levels of participation than those in the highest category.

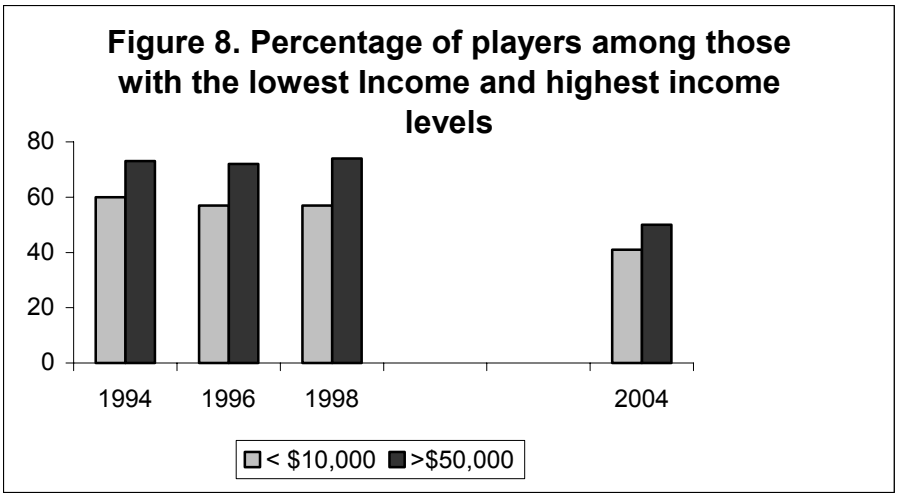
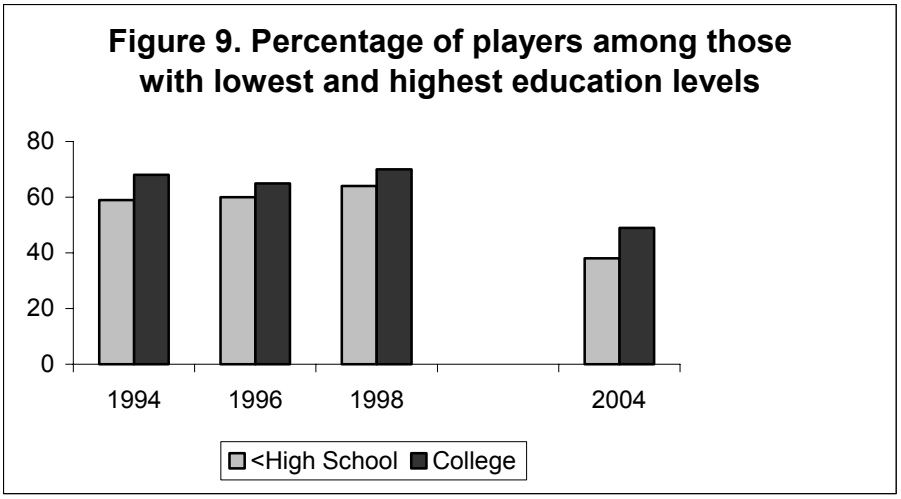


Figure 9 is similar to Figure 8 but compares the lowest and highest levels of educational attainment rather than income. Not surprisingly, the results are quite similar, with a slightly larger proportion of respondents in the highest education category reporting participation compared to those in the lowest education category. Because educational attainment and income are so highly correlated this result is expected.



Extrapolated vs. Actual Revenue

As a check on the validity of the results in terms of reported spending, it is instructive to project annual revenue based on the self-reported data to the entire population and compare this to known sales figures available from the Texas Lottery Commission. According to the Commission's Comprehensive Annual Financial Report for the period ending August 31, 2004, lottery ticket sales for fiscal year 2004 totaled $3.488 billion. If we take the survey data and extrapolate based on the self-reported average spending of lottery players, our projection for sales would be $3.744 billion. It should be noted that this calculation is made without the outliers because such a projection would be very sensitive to these extreme cases and greatly inflate estimated sales. Also, the survey took place in November and December of 2004 with a time reference of the last calendar year, which is slightly different than the fiscal year of September through August. While there does appear to be some amount of inflation of reported average spending on lottery tickets, it is a relatively small amount. It is assumed that exaggeration of self-reported spending on lottery tickets is randomly distributed throughout the sample and not systematically linked to a particular demographic category. If we calculate a confidence interval based on the standard error of our survey data, the range of projected total sales is $3.16 billion to $4.33 billion. In statistics, what this means is that we can be 95% confident that the true sales figure lies between $3.16 billion and $4.33 billion based on our survey data. Much of the time in survey research we do not know the true population figure, but in this case we of course do. Our projected range does encompass the true figure of $3.49 billion.

Conclusions

Based on these data, there appear to be few differences across demographic categories in propensity to participate in the Texas Lottery and in the average amount spent on lottery games per month. This becomes more apparent when the small set of outliers in the data is excluded from analyses. Overall, about 47% of adult Texas residents report having played a Lottery Texas game in the past year, and among those that have played, an average of about $76 per month is spent. However, when outliers are removed, the average amount spent per month drops to about $45 per month. Per month spending is consistent across income categories, meaning that while the amount spent per month in dollars remains relatively constant, residents in lower income categories spend a larger *proportion* of their income on lottery games.

When outliers are excluded from the analysis, White lottery players spend less per month on lottery games than non-White players. Regardless of whether outliers are excluded or included, Hispanic residents are more likely than other racial/ethnic groups to participate in the lottery.