



Lottery Jackpots, Retailer Density, and Advertising Drive Transfers to Education

at a glance

While advertising is critical to maintaining Lottery sales, additional expenditures may have a limited effect on net revenues and transfers to the Florida Educational Enhancement Trust Fund. Lottery ticket sales also are affected by factors such as jackpot amounts and retailer density, which are more highly related to net Lottery profits than advertising expenditures. Florida's compulsive gambling helpline receives few calls specifically related to the Lottery, and there does not appear to be a link between Lottery advertising spending and Lottery-related calls to the state's gambling helpline. Instead, Lottery-related calls are more strongly associated with state unemployment rates.

Scope

As directed by the Legislature, this report examines the effectiveness and return on investment of the Department of Lottery's advertising and promotion campaigns.

Background

The Florida Lottery's primary purpose is to maximize its net revenue to support public education. The Lottery regularly conducts advertising campaigns to bolster its profits, attract new players, and maintain sales. The Lottery contracts with private vendors for

advertising services targeted towards a variety of media outlets in 10 Florida market areas.

The Lottery was appropriated \$34.8 million for advertising in Fiscal Year 2009-10, which includes vendor fees, production costs, media buys, and operating a compulsive gambling helpline.¹ The department sells two product lines—on-line and scratch-off games. On-line games, such as PowerBall, LOTTO, and Fantasy Five, allow players to pick from a range of numbers on a play slip. On-line game tickets are printed by terminals that are connected to the Lottery's central computer system for a drawing at a later date. Scratch-off games are pre-printed tickets with a latex covering that the player removes to determine whether he or she has won a prize.

The department contracts with two vendors to provide advertising services for these games. In November 2007, the Lottery entered a three-year contract with Machado Garcia-Serra Advertising, Inc., for Hispanic market advertising, and in September 2009 it entered a three-year contract with St. John & Partners Advertising and Public Relations Inc., a Jacksonville based company, for English market advertising. These firms are responsible for creating, producing and placing Lottery advertising in television, radio, print, and other media.

¹ The 2009 General Appropriations Act specified that, of the total appropriation, \$3,486,945 be used for advertising agency fees and \$1,119,000 for a compulsive gambling program.

Methodology

The purpose of Lottery advertising is to maximize ticket sales and net profits, which are deposited into the Florida Educational Enhancement Trust Fund. We analyzed the outcomes of the Lottery's advertising expenditures based on their effect on education transfers. During the three-year period from July 2006 to July 2009, the Lottery transferred 31% of its ticket sales revenue to the Florida Educational Enhancement Trust Fund. This combined transfer rate reflects total transfers from on-line games (about 40% of sales) and scratch-off games (about 20% of sales).

To assess Lottery advertising effectiveness, we analyzed the relationship between advertising expenditures and sales over three years (from March 2006 to March 2009) using department data for its 10 market areas. We present a range and midpoint for estimates of the return on investment on advertising expenditures; the midpoint is the best estimate of the return on investment and there is a 95% probability that the actual return falls within the range.²

The econometric model we used to estimate the advertising return on investment is strong, explaining 87% of the variation in Lottery ticket sales. However, since the three years we examined include the worst economic downturn in recent Florida history, our return on investment estimates may understate future returns on advertising spending.³ See Appendix A for a more detailed discussion of our research methodology.

Findings

Advertising is critical to maintaining Lottery sales, but additional expenditures may not necessarily translate into increases in net

revenues and transfers to the Florida Educational Enhancement Trust Fund. Jackpot amounts and retailer density affect Lottery ticket sales and resulting profits more than advertising expenditures. Advertising spending levels do not appear to be linked to Lottery-related calls to the state's gambling helpline.

Prize payouts are the primary driver of education transfers

Our analysis and studies of other states' lotteries indicate that Lottery sales and resulting transfers to education are affected by multiple factors including jackpot amounts, lottery retailer density, and advertising. Jackpot amounts have the greatest effect on sales and transfers to education.

Larger prizes increase transfers to education. Our econometric analysis indicated that jackpot amounts are the single largest driver of Lottery sales and educational transfers. Players are more likely to buy Lottery tickets when large jackpots are available for on-line games such as LOTTO and PowerBall. As Exhibit 1 shows, over the last three years, there was a strong relationship between LOTTO sales and jackpots. For example, in November and December 2007, LOTTO jackpots rose by \$137 million due to rollovers when no player had a winning ticket; sales increased by \$37.4 million during this period. In the following month (January 2007), LOTTO jackpots fell \$116 million, and sales declined by \$31.5 million. The correlation between LOTTO sales and jackpots was lower after May 2008 due to the economic downturn and the introduction of PowerBall, a new on-line game. While PowerBall has increased overall on-line lottery sales, it has reduced LOTTO sales.

Increasing prizes for scratch-off games also typically increases sales.⁴ This occurs because some players are more likely to buy tickets for scratch-off games that they perceive as paying higher prizes. Also, players who win small

² We do not present a return on investment analysis for specific online and scratch off advertising or for media types (e.g., TV, radio, billboards) as our estimate ranges had considerable overlap, indicating no difference.

³ Our analysis considered the economic downturn and found a higher return on advertising spending prior to the downturn. However, due to the limited number of observations, we could not draw a statistical distinction between lottery sales during the periods of economic growth and contraction.

⁴ For more information on this relationship, see our prior reports *Lottery Scratch off Sales Increase; Options Available to Enhance Transfers to Education*, OPPAGA Report No. [07-09](#), and *Justification Review Sale of Lottery Products Program*, OPPAGA Report No. [02-11](#).

prizes such as \$1 or \$5 will frequently use some of their winnings to purchase more tickets for that game. Since 2003, when the Legislature authorized the Lottery to use variable prize payouts to maximize education transfers, annual Lottery sales have increased by \$867 million, (from \$3.07 billion in Fiscal Year 2003-04 to \$3.94 billion in Fiscal Year 2008-09). Most of this increase, (81%), was attributable to increased scratch-off ticket sales.

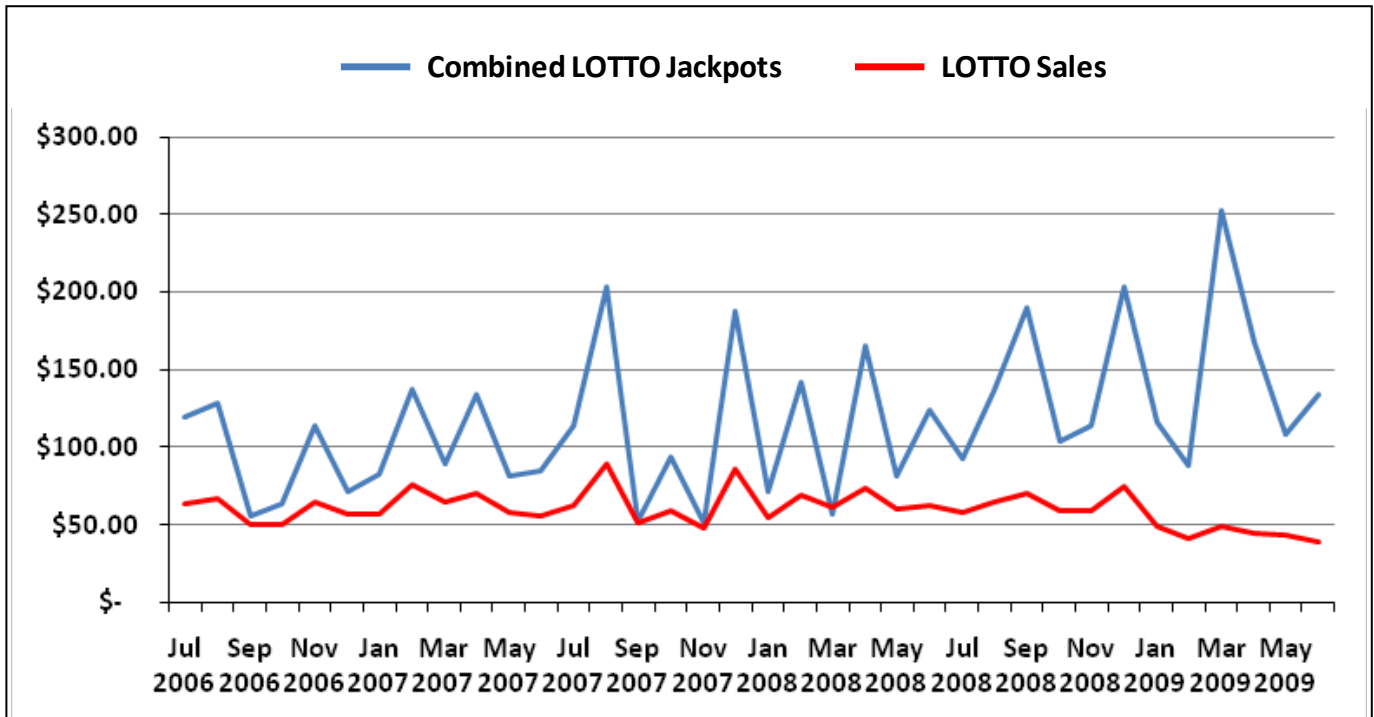
Adding more Lottery retailers would increase education transfers. A second factor that is highly correlated to Lottery sales and transfers to education is the availability of retailers who sell Lottery products. In general, customers are more likely to buy lottery tickets when these products are readily available. Our analysis indicated that market areas in Florida with greater concentrations of participating retailers tend to have higher per capita sales and

transfers to education. For example, the Panama City market area has the most Lottery retailers per capita as well as the highest average monthly per capita sales; \$19.22. The Fort Myers-Naples market area has the fewest retailers per capita along with the lowest average monthly per capita sales; \$13.94.

In Fiscal Year 2007-08, the top nine state lotteries ranked by per capita sales had an average of 1,200 residents per retailer. In contrast, the Florida Lottery averaged about 1,400 residents per retailer, and it ranked 10th among U.S. lotteries in per capita sales. To match the top-performing states' average market penetration, the Lottery would need to expand its retail network to 15,000 retailers.⁵ We estimate that adding 1,500 new retailers would generate about \$32 million annually in additional transfers to the Educational Enhancement Trust Fund.

⁵ To do so, the Lottery would need spending authority to operate additional sales terminals, as it is currently authorized up to 13,500 terminals and has 13,200 terminals in operation.

Exhibit 1
Education Transfers Tend to Increase as LOTTO Jackpots Rise¹



¹ Values in this exhibit are in millions of dollars.

Source: OPPAGA analysis of Florida Department of Lottery data.

While advertising is critical to maintain Lottery sales, additional expenditures may have a limited effect on net revenues

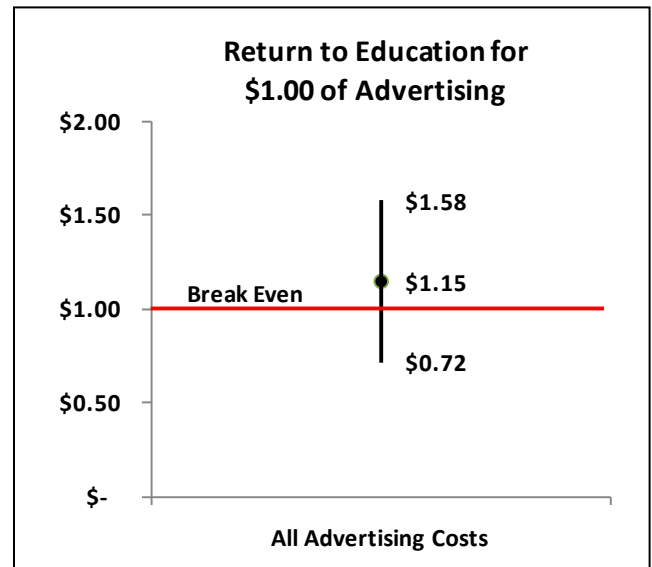
Both our analysis and studies of other state’s lotteries show that advertising has a positive effect on lottery ticket sales. However, increasing the Lottery’s current level of advertising expenditures may not necessarily translate into an increase in net revenues and education transfers. Reducing advertising production costs, which would allow a larger proportion of advertising funding to be spent on media buys (airtime), would help increase education transfers.

Advertising is necessary to maintain sales. Experiences in other states show that major reductions in Lottery advertising reduce sales. A study of three states that significantly curtailed lottery advertising (two states eliminated television advertising and the third reduced its advertising budget by 97%) estimated that each 10% reduction in advertising expenditures resulted in a sales reduction of 7% to 16%. If the Florida Lottery reduced its advertising expenditures by 10% and experienced a 7% decrease in sales, education transfers would be reduced by a net of \$83 million based on Fiscal Year 2008-09 sales data.⁶

Increased Lottery advertising may have a limited effect on increasing transfers to education. While Lottery advertising does not appear to have reached a saturation point in which a dollar spent on advertising (media buys, production costs, and vendor fees) returns less than a dollar to education, there is uncertainty as to whether additional advertising expenditures would produce a net return in educational transfers. As shown in Exhibit 2, the estimated range of return to education for an additional

dollar of Lottery advertising spending is between \$0.72 and \$1.58; the midpoint (most likely) estimate is that the return on investment is \$1.15.⁷ However, as the bottom range of this estimate is below \$1, there is a potential that additional advertising expenditures could result in a net decrease in transfers to education if the advertising was funded with funds that would otherwise have been directly deposited into the Educational Enhancement Trust Fund. As most of the estimated return on investment is above \$1, reducing the current level of advertising would likely reduce transfers to education.

**Exhibit 2
Increased Lottery Advertising May Have a Limited Effect on Increasing Education Trust Fund Revenues**



Source: OPPAGA analysis of Florida Department of Lottery data.

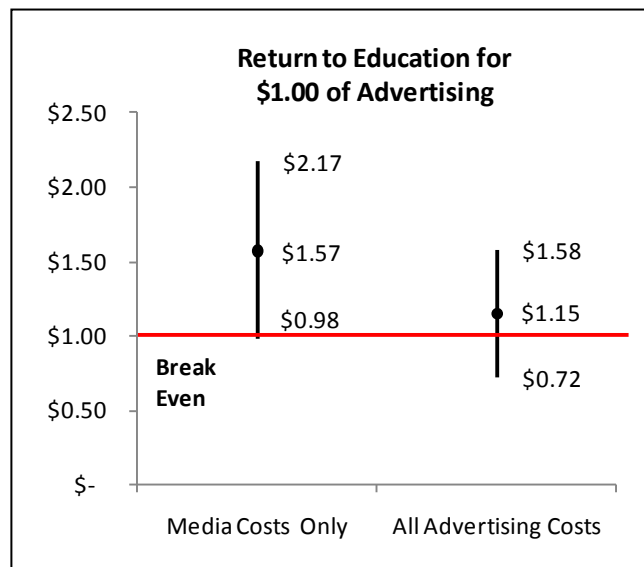
Reducing advertising production costs would increase education transfers. While media buys (TV and radio airtime, billboard space, print advertisement) affect Lottery sales, this return on investment is diminished by advertising production and vendor costs. We estimate that each advertising dollar spent on direct media buys returns \$1.57 to education, with an estimated range of \$0.98 to \$2.17. (See Exhibit 3.) However, this return on investment is reduced when advertising production and

⁶ This estimate assumes that 10% of the Lottery’s \$38.4 million advertising budget would be transferred to the Educational Enhancement Trust Fund. Sales would decline by an estimated \$276 million, which would result in a decline of \$86 million in educational transfers, for a net reduction of \$83 million.

⁷ This estimate controls for factors including jackpot amounts and market areas with different retailer concentration rates.

vendor costs are included in the analysis. During Fiscal Year 2008-09, the Lottery spent \$28.8 million in media costs and \$5.4 million on production and vendor fee costs.

**Exhibit 3
The Return on Lottery Advertising Is Reduced by
Production Costs and Vendor Fees**



Source: OPPAGA analysis of Florida Department of Lottery data.

Accordingly, it is important for the Lottery to try to reduce its advertising production costs so that funds can be shifted to media buys. In this way, the department can attain the highest return on its overall advertising investment. For example, the Lottery should explore options such as extending the life of some advertising campaigns rather than producing new campaigns, which would reduce production costs and allow a greater proportion of advertising funds to be spent on airtime purchases. However, it is also important to recognize that advertising campaigns must be refreshed periodically to avoid loss of effectiveness.

Lottery gambling problems are more strongly related to unemployment than advertising

One issue of concern is whether Lottery advertising tends to produce negative social consequences by increasing compulsive gambling. Our analysis of calls to Florida’s compulsive gambling helpline showed that it receives relatively few calls related to the Lottery, and there is no correlation between Lottery advertising levels and the number of callers who reported Lottery related problems. However, changes in the state’s unemployment rate are somewhat more strongly correlated with Lottery-related helpline calls than to calls related to other forms of gambling.

About two out of every five callers to the state gambling helpline mentioned the Lottery. In Fiscal Year 2008-09, the state’s compulsive gambling helpline received 2,253 calls in which the caller identified a specific gambling issue. Of these, 868 calls (39%) were specifically related to Lottery gambling.⁸

Lottery-related helpline calls are not driven by Lottery advertising or awareness levels but are related to changes in the state unemployment rate. We found no correlation between Lottery advertising spending and the number of Lottery-related helpline calls, or between awareness of the Lottery advertising and helpline calls. In those months where the department spent the most on advertising, there was no increase in Lottery-related calls to the state’s gambling helpline. For example, in August 2008, the Lottery spent approximately \$2.9 million on advertising and the helpline received 42 Lottery-related calls. In contrast, the Lottery spent \$306,000 on advertising in March 2009 and the hotline received 74 Lottery-related calls. There was a similar lack of correlation between public awareness of the Lottery, as measured by the Lottery’s monthly public surveys and Lottery-related helpline calls.

⁸ Of these callers, 272 reported Lottery play as their primary gambling issue and 596 reported it as a secondary issue.

In contrast, there is a relatively strong positive (0.62) correlation between Lottery-related helpline calls and the state's unemployment rate, while there is no correlation between the state unemployment rate and non-Lottery helpline calls.⁹ For example, when Florida's unemployment rate was 5% in January 2008, there were 56 Lottery-related calls made to the gambling helpline; however, calls increased to 88 when the state unemployment rate rose to over 7% in October 2008. Overall, for the last two fiscal years, each percentage point increase in

⁹ A perfectly correlated relationship has a value of 1, while a value of 0 means no relationship; the closer to 1 the correlation, the stronger the relationship.

the state's unemployment rate was associated with an increase of five Lottery-related calls to the state's gambling helpline.

We did not find a similar relationship between the unemployment rate and non-Lottery related helpline calls. For example, in January 2008, when the state's unemployment rate was 5%, the number of non-Lottery related helpline calls was 163. When the unemployment rate rose to over 7% in October 2008, the number of non-Lottery related gambling helpline calls was lower at 102.

Appendix A

Method Used to Estimate the Return to Education from Advertising Lottery Products

To estimate transfers to the Educational Enhancement Trust Fund generated by Lottery advertising, we used ordinary least squares time series regression. This statistical method uses the correlation between the timing of lottery sales and media expenditures to estimate the return in sales for a dollar spent in media expenditures, which can be converted to estimate the impact of a dollar in advertising expenditures on transfers to the Florida Educational Enhancement Trust Fund.

Data. The Department of Lottery provided sales data for the 36 month period between July 2006 and June 2009, and advertising expenditure data for the period March 2006 through March 2009. We used these slightly different time periods because sales tend to slightly lag advertising expenditures; prior research on lottery advertising concluded that advertising spending affects sales in the month that the expenditure was made as well as subsequent months. Also, the department was unable to provide expenditure data through June 2009, when we made our data request because compiling advertising expenditure data was a manual process. The department also provided data on lottery retailers, advertised jackpots, and the types of lottery games offered during the period (e.g., available payouts by type of scratch-off and online game). The Legislature's Office of Economic and Demographic Research provided county-level data on population and taxable sales, and we obtained county-level unemployment information from the U.S. Bureau of Labor Statistics.

Methods of analysis. We used ordinary least squares time series regression to estimate monthly lottery sales per capita generated by a dollar in monthly media expenditures per capita (excluding advertising production costs and vendor fees). We aggregated these data by month and market area, producing 33 months of observations for Florida's 10 market areas (n=330). Our model included media expenditures per capita for the current and prior month, as well as combined monthly jackpot amounts for on-line games, population per lottery retailer, an indicator of the months affected by the economic downturn; the calendar month (allowing us to adjust sales for seasonal patterns); and the market area. The market area variables adjusted for local differences that influence sales, such as population characteristics that are not otherwise included in the model. We adjusted for serial correlation in the time series data using a correction based on the Durbin-Watson statistic (Gujarati, 1988). The final model explained 87% of the variation in lottery sales.

The return on investment for media expenditures (e.g., purchased radio and television airtime or billboard space) is the estimated regression coefficient from the model described above. We made two adjustments to this coefficient to produce an estimate of the transfers to education per dollar of total advertising expenditures. First, we estimated the return in sales from total advertising expenditures, including media, production, and ad agency costs ($\text{SALES/TOT\$} = (\text{SALES/MEDIA\$}) / (1 / (\text{MEDIA\$} / (\text{PROD\$} + \text{AGENCY\$})) + 1)$). In this equation, the return in lottery sales (SALES) per every dollar of total advertising expenditures (TOT\$) is computed using the ratio of sales (SALES) to media expenditures (MEDIA\$) and the ratio of

media expenditures (MEDIA\$) to the sum of production expenditures (PROD\$) and vendor fees (AGENCY\$).

Second, we multiplied the estimate calculated above by 0.31 to reflect the results in terms of transfers to education. About 31% of lottery sales are transferred to the Educational Enhancement Trust Fund to be used for education.

Statistical results. As shown in Table A-1, the model produced confidence intervals, which are shown as the range of predicted estimates of return on investment. The midpoint is the most likely result. Overall, we estimate that a dollar of advertising expenditures generated \$1.15 (range of return from \$0.72 to \$1.58) in transfers to education.

**Table A-1
One Dollar of Advertising Expenditures Generates \$1.15 in Transfers to Education**

Expenditures	Estimate	Range
Lottery sales per \$1 in media expenditures	\$5.03	\$3.14 to \$6.91
Lottery sales per \$1 in total advertising expenditures	\$3.67	\$2.29 to \$5.04
Transfers to the Educational Enhancement Trust Fund	\$1.15	\$0.72 to \$1.58

Source: OPPAGA analysis.

Table A-2 shows the model estimates and the 95% confidence intervals for the effect media expenditures, combined online jackpots, and people per retailer have on monthly per capita lottery sales.

Our model found that monthly lottery sales were affected by media expenditures in the month of the sale and the previous month. One dollar in media expenditures for a month generated a total of \$5.03 in lottery sales; \$3.33 in the month of the media expenditure and \$1.70 in the following month.

The effect of online jackpot amounts was non-linear, with lottery sales increasing with larger jackpots but at a lower rate as jackpots rise. For example, an increase in a combined online jackpot total of \$10 million to \$20 million is estimated to increase monthly sales by \$12.5 million, while an increase in monthly online jackpots from \$20 million to \$30 million is estimated to increase monthly sales by \$9.2 million.

Our model also predicted that lottery sales will decrease as the number of people per retailer increases (i.e., sales fall when there are fewer retailers per person). Thus, increases in the number of lottery retailers will tend to increase lottery sales. Our model estimate that reducing the ratio of persons in an area to retailers by 100 (for example, from 1400 individuals per retailer to 1300) increases per capita monthly sales by \$1.20, generating \$22.8 million in statewide Lottery sales.

Table A-2
Advertising Media Expenditures, Jackpots, and Retailers Per Capita Affect Lottery Sales¹

	Estimate	95 Percent Confidence Range
Lottery sales per media expenditures		
Current month	\$3.33	\$2.38 to \$4.28
Prior month	\$1.70	\$0.76 to \$2.63
Lottery sales per \$10 million in combined online jackpots		
Combined online jackpots in current month	\$0.93	\$0.76 to \$1.09
Square of combined online jackpots in current month	-\$0.09	-\$0.10 to -\$0.07
Lottery sales per retailer density (people per retailer)	-\$0.012	-\$0.014 to -\$0.010

¹ Estimates are adjusted for the economic downturn, seasonality, and market area characteristics. Level of statistical significance is p<0.05.

Source: OPPAGA analysis.

Appendix B

CHARLIE CRIST
Governor



LEO DIBENIGNO
Secretary

FLORIDA LOTTERY

January 28, 2010

Gary R. VanLandingham, Ph.D.
Director
Office of Program Policy Analysis and
Government Accountability
111 West Madison Street
Tallahassee, Florida 32399-1475

Dear Dr. VanLandingham:

Thank you for the opportunity to respond to your office’s report entitled “Lottery Jackpots, Retailer Density, and Advertising Drive Transfers to Education.”

OPPAGA is to be commended for the extensive data compilation and rigorous analysis reflected in this study. While the study presents no recommendations, the Lottery interprets its results as affirming the direction of previous analyses conducted by the Revenue Estimating Conference and the Lottery itself in regard to the positive effects of advertising spending, retailer density and jackpot levels on Lottery contributions to the Educational Enhancement Trust Fund (EETF). That the returns on the investments in advertising are somewhat lower than previously found we would attribute primarily to the different time frames examined in the different studies and, in particular, to the dampening effects of the current recession on the returns—a fact also noted by OPPAGA in its analysis.

The Lottery is also pleased with OPPAGA’s finding that investments in media expenditures have a better return to EETF than expenditures for production costs. This is the basis for their suggestion that we attempt to reduce production costs and shift the money to media buys. This has been a strategy the Lottery has been following for the past year as is exemplified by our consolidation of several commercial “shoots” into one session and the adoption of a continuing ad campaign that can feature a variety of Lottery games.

There is but one reservation the Lottery has about the study write-up. We see no basis in the analysis for the statement: “Increased Lottery advertising may have a limited effect on increasing transfers to education.” (page 4) OPPAGA itself states that “. . . Lottery



250 MARRIOTT DRIVE • TALLAHASSEE, FLORIDA • 32301 • (850) 487-7777
www.flalottery.com

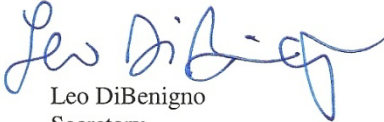
Gary R VanLandingham, Ph.D.
OPPAGA Response to Preliminary and Tentative Findings
January 28, 2010
Page 2 of 2

advertising does not appear to have reached the saturation point . . ." (also page 4). Nor are any data provided supporting a diminishing returns relationship for advertising spending. The return on investment range of \$0.72 to \$1.58 characterizes the set of advertising experiences examined by OPPAGA. Based on this study, one could expect a return in this range (with a "most likely" estimate of \$1.15) whether or not the Lottery's advertising expenditures were above or below the current appropriation level.

To illustrate the point above, consider that typical consumer product companies (that are direct competitors to lottery tickets) invest many times the percentage of revenue on advertising than does the Lottery. As a percentage of revenue, Lottery advertising is less than 1%, while companies like Pepsi, Anheuser Busch and Wrigley's Gum spend from 5% to 28% of their revenue on advertising. Again, while the Lottery agrees with OPPAGA's conclusion that we have yet to hit an advertising "saturation point", it is important to emphasize our position that advertising expenditures as a percentage of revenue could be doubled or even tripled before any fear of achieving saturation.

Again, thank you for the analysis and for allowing us the opportunity to comment on the draft report.

Sincerely,



Leo DiBenigno
Secretary

cc: Dennis Harmon, Deputy Secretary
Andy Mompeller, Inspector General
Marcy Jackson, Chief Financial Officer
Pat Koop, Chief Marketing Officer
Ken Hart, General Counsel

The Florida Legislature

Office of Program Policy Analysis and Government Accountability



OPPAGA provides performance and accountability information about Florida government in several ways.

- Reports deliver program evaluation, policy analysis, and Sunset reviews of state programs to assist the Legislature in overseeing government operations, developing policy choices, and making Florida government better, faster, and cheaper.
- PolicyCasts, short narrated slide presentations, provide bottom-line briefings of findings and recommendations for select reports.
- Government Program Summaries (GPS), an online encyclopedia, www.oppaga.state.fl.us/government, provides descriptive, evaluative, and performance information on more than 200 Florida state government programs.
- The [Florida Monitor Weekly](#), an electronic newsletter, delivers brief announcements of research reports, conferences, and other resources of interest for Florida's policy research and program evaluation community.
- Visit OPPAGA's website at www.oppaga.state.fl.us

OPPAGA supports the Florida Legislature by providing evaluative research and objective analyses to promote government accountability and the efficient and effective use of public resources. This project was conducted in accordance with applicable evaluation standards. Copies of this report in print or alternate accessible format may be obtained by telephone (850/488-0021), by FAX (850/487-3804), in person, or by mail (OPPAGA Report Production, Claude Pepper Building, Room 312, 111 W. Madison St., Tallahassee, FL 32399-1475). Cover photo by Mark Foley.

OPPAGA website: www.oppaga.state.fl.us

Project supervised by Jane Fletcher (850/487-9255)

Project conducted by Sabrina Hartley (850/487-9232); Steve Harkreader; Mark West

Gary R. VanLandingham, Ph.D., OPPAGA Director