



Independent Fiscal Office

The Pennsylvania Lottery: Historical Data and Interstate Comparisons

January 2014

Special Report 2014-1

About the Independent Fiscal Office

The Independent Fiscal Office (IFO) provides revenue projections for use in the state budget process along with impartial and timely analysis of fiscal, economic and budgetary issues to assist Commonwealth residents and the General Assembly in their evaluation of policy decisions. In that capacity, the IFO will not support or oppose any policies it analyzes, and will disclose all methodologies, data sources and assumptions used in published reports and estimates.

Independent Fiscal Office
Rachel Carson State Office Building, 2nd Floor
400 Market Street
Harrisburg, PA 17105

Telephone: 717-230-8293
E-mail: contact@ifo.state.pa.us
Website: www.ifo.state.pa.us
Staff Contacts: Matthew Knittel, Director
Mark Ryan, Deputy Director



The Independent Fiscal Office was created
by the Act of Nov. 23, 2010 (P.L.1269, No.120).

- This page was intentionally left blank. -



INDEPENDENT FISCAL OFFICE

Second Floor, Rachel Carson State Office Building
400 Market Street
Harrisburg, Pennsylvania 17105

January 30, 2014

The Honorable Members of the General Assembly:

The Pennsylvania Lottery generates considerable funds that benefit elderly residents of the Commonwealth. For FY 2012-13, Pennsylvania Lottery sales yielded \$1.1 billion of profits or net revenues. Those revenues provided property tax and rent relief, subsidized transportation and prescription drug purchases and nursing home services for elderly residents. Pennsylvania is the only state that dedicates all lottery proceeds to programs that benefit senior citizens.

For recent fiscal years, Pennsylvania Lottery sales and profits have displayed impressive growth. Since FY 2009-10, sales have increased at an average rate of 6.5 percent per annum, and profits have increased by 5.2 percent per annum. Demographic projections suggest that demand for programs and services funded by lottery revenues will grow at a rate that exceeds the expansion of the Pennsylvania economy. Therefore, an important issue for policymakers is whether lottery revenues can maintain recent growth rates so they will be sufficient to meet those demands. This report provides data to assist policymakers in those deliberations.

The Independent Fiscal Office would like to thank Pennsylvania Lottery staff for their assistance regarding the clarification of various technical issues related to lottery games and operations. Questions and comments can be submitted to contact@ifp.state.pa.us.

Sincerely,

MATTHEW KNITTEL
Director

- This page was intentionally left blank. -

Introduction

Since 1964, states have utilized lotteries to generate funds for education, economic development, services for the elderly and other general needs. Currently, 44 states and the District of Columbia operate a lottery system or participate in a multistate lottery. The lottery remains the only form of commercial gaming that most adults report having played during the past year.¹

For fiscal year (FY) 2012-13, the Pennsylvania Lottery (hereafter referred to as the Lottery) generated \$1.1 billion of net revenues or profits that provided tax relief and services for elderly residents. Demographic projections suggest that the demand for programs funded by lottery profits will likely outpace general economic growth over the next decade. An important issue for policymakers is whether lottery revenues will be sufficient to support future demands. If they are not, then policymakers may need to reduce services or seek alternative sources of funding.

This report provides a brief historical analysis of lottery sales, profits and expenditures from the Lottery Fund. It compares state lotteries using common industry metrics, such as per capita sales. The interstate comparison allows policymakers to gauge the relative performance of the Lottery. The metrics are also useful to assess the rate of lottery penetration in the state and the potential for future expansion. The final section discusses short and long-term challenges the Lottery will confront as it attempts to expand in a highly competitive marketplace. The report concludes with a brief analysis of possible lottery expansion through Keno.

¹ Barnes et al. "Gambling on the Lottery: Sociodemographic Correlates Across the Lifespan." *Journal of Gambling Studies*. (2011) 27: 575-586.

The remainder of this section provides background on state lottery systems and the products sold by those systems.

A Brief History of State Lotteries

Lotteries have a long history in the U.S. All original 13 colonies and many public and private schools, colleges and universities used lotteries to fund construction projects throughout the 1700s and 1800s.² As the nation expanded and lotteries proliferated, corruption became more prevalent. By 1895, all state governments had abolished state-sanctioned and private lotteries due to recurring lottery scandals and moral concerns.

The lottery ban remained effective until 1964, when New Hampshire amended its constitution to establish the first state lottery. New York (1967) and New Jersey (1970) soon followed New Hampshire's lead. By 1971, total sales of these three lottery systems surpassed \$100 million. By 1976, Pennsylvania (March 1972) and nine other states had established lottery systems, and total sales surpassed \$1 billion. Lotteries continued to expand rapidly throughout the 1980s (18 new states) and the 1990s (6 new states). Currently, 44 states and the District of Columbia operate a lottery; only six states (Alaska, Alabama, Hawaii, Mississippi, Nevada and Utah) do not operate a lottery system.

For FY 2012-13, state lottery sales totaled \$68.8 billion and transfers to state governments (i.e., profits) totaled \$18.6 billion.³ For most states, lotteries provide a relatively small, but meaning-

² The historical timeline used in this section is from the National Association of State and Provincial Lotteries. See www.NASPL.org.

³ LaFleur's Fast Facts 2013. Includes net revenues (wagers less payouts) from non-traditional games such as video lottery terminals.

ful, source of funds, typically one to three percent of own-source (i.e., non-federal) funds at the state level. However, lottery revenues can comprise a significant source of funds for states with small populations such as Delaware (5.7 percent of own-source funds), West Virginia (7.3 percent) and Rhode Island (8.0 percent).⁴

Lottery Products

Like other retailers, state lotteries continually update and expand their product lines to meet consumer demands and attract new customers. Lottery products have evolved over time in response to a market that is highly competitive for entertainment dollars.

State lotteries sell or manage seven types of products or games. They are as follows (listed in chronological order):

Raffles - The most basic lottery product is a raffle. A raffle is game where players purchase a ticket with a pre-determined number and wait an extended period of time to see if a ticket with a matching number is drawn at random. The Lottery offered its first 50 cent raffle ticket on March 7, 1972. Drawings were weekly and the grand prize was \$1 million.⁵ Currently, 27 state lotteries sell raffle tickets. Raffles comprise a very small portion of total lottery sales.⁶

Instant Tickets - In 1974, Massachusetts became the first state to sell instant scratch-off tickets. Compared to other lottery products, instant tickets have smaller prizes but higher odds of win-

ning, and payout rates typically range from 65 to 75 percent of sales. The Lottery offered its first instant ticket game in May 1975.

Numbers Games – Numbers games allow participants to select a combination of three, four or five numbers that range from 0 to 9. Payout rates typically range from 48 to 52 percent of sales. The Lottery offered its first numbers game (the Daily Number) on March 1, 1977.

Lotto Games – Lotto games can be in-state (i.e., only one state lottery sells tickets) or multi-state. Players select (or are randomly assigned) five or six numbers that could range from 1 to 75. In many games, an extra number is added, and assigned a special name or colored ball. Lotto jackpots are normally much larger than daily numbers games, but the drawings are less frequent. In-state lotto (e.g., Cash 5, Match 6) jackpots are typically predetermined but will roll over if no player matches all numbers.⁷ Multi-state lotto jackpots (e.g., Powerball and Mega Millions) are much larger and the odds of winning much smaller. Payout rates generally range from 48 to 56 percent for lotto games. The Lottery's first lotto game (Pennsylvania Lotto) debuted on April 16, 1982. Players picked six numbers ranging from 1 to 40 and the starting jackpot was \$1 million.

Keno – Keno games can take many forms. Typically, players select 10 numbers from 1 to 80. Twenty numbers are then drawn at random. Payouts are based on the share of selected numbers that match those drawn randomly. Drawings can occur frequently (every four to five minutes) and payout rates typically range from 62 to 68 percent of gross wagers. Keno is offered in bars, taverns, restaurants and certain convenience stores. Some states (e.g., West Virginia and Maryland) also offer Keno-type games that allow players to select horses that participate in a simulated race.

⁴ U.S. Census Bureau, State Government Finances. Own-source revenues include all licenses and fees. Figures based on latest available data for FY 2010-11. For Pennsylvania, lottery net revenues comprised 1.9 percent of total own-source funds.

⁵ See the Pennsylvania Lottery website for a product timeline: <http://www.palottery.state.pa.us/About-PA-Lottery/History-of-PA-Lottery.aspx>.

⁶ LaFleur's 2012-13 Unaudited Lottery Fiscal Sales Report. For FY 2012-13, raffle sales totaled \$20.4 million and comprised 0.6 percent of Pennsylvania Lottery sales. For all state lotteries, the raffle share was 0.2 percent of total sales.

⁷ The starting jackpot is \$125,000 for Cash 5 (50 percent payout) and \$500,000 for Match 6 (58 percent payout).

Video Lottery Games - A more recent gaming option offered by state lotteries is electronic gaming or video lottery terminals (VLTs). These electronic games are managed by a lottery authority or gaming control board, depending on the state. The games include slot-type games, video poker and other games of chance. The games usually reside within a casino, although certain states allow them to be housed in restaurants and taverns (e.g., West Virginia). For FY 2012-13, eight state lotteries generated \$5.8 billion in net machine income (gross wagers less payouts).⁸

Sports Betting – Delaware is currently the only state that offers sports betting through the state lottery. Players must be of legal age and physically located within the state. Wagers can only be placed on National Football League games. For FY 2012-13, sports betting generated \$25.4 million of gross revenues (4.0 percent of Delaware lottery sales) and \$3.7 million of profits.

⁸ LaFleur's Fast Facts 2013. Four state lotteries (West Virginia, Maryland, Delaware and New York) also provide oversight for table games.

- This page was intentionally left blank. -

Pennsylvania Lottery Sales and Profits

This section presents historical data for lottery sales, profits and expenditures from the Lottery Fund. All data are from the Executive Budget or financial statements posted on the Lottery's website. Relevant explanatory footnotes can be found at the bottom of the tables.

Lottery Sales

Table 1 displays lottery sales from FY 2004-05 through FY 2012-13. Historically, instant ticket sales have comprised more than half of total sales. The Lottery sells instant tickets at \$1, \$2, \$3, \$5, \$10 and \$20 price points. Instant ticket sales increased dramatically from FY 2004-05 (\$1.3 billion) through FY 2012-13 (\$2.3 billion), an average increase of 7.4 percent per annum. Since the latest recession, sales growth has been even more impressive, increasing at an average rate of 9.6 percent per annum (not shown in table). The robust growth of instant ticket sales is due to successful marketing campaigns, an expanding retailer network and the installation of numerous instant ticket vending machines (ITVMs) and PlayCentral Terminals (PCTs) in various retail, eating and drinking establishments.⁹

The next largest product in terms of dollar sales is numbers games. Numbers games use a combination of numbers that range from 0 to 9. The Daily Number game uses a three number combination, Big 4 uses four numbers and Quinto uses five numbers. Over time, numbers games have become less popular. Since FY 2004-05, the Daily Number (-2.6 percent growth per annum) and Big 4 (-1.4 percent) games have registered sales reductions, and that trend has accelerated since the 2008-09 recession. Although a portion of the trend reduction is due to the introduction

of Quinto (2009), the inclusion of Quinto does not reverse the long-term decline in sales of numbers games.

In-state lotto games use a combination of numbers that range from 1 to 49: Cash 5 uses five numbers from 1 to 43, Treasure Hunt uses five numbers from 1 to 30 and Match 6 uses six numbers from 1 to 49. From FY 2004-05 to FY 2012-13, Cash 5 (-2.3 percent per annum) and Match 6 (-6.7 percent) sales have declined.¹⁰ Treasure Hunt debuted in 2007 and likely captured some sales from other lotto games. However, the inclusion of Treasure Hunt does not reverse the long-term decline in sales of in-state lotto games.

Multi-state lotto games have the same structure as in-state lotto games, but have larger jackpots due to higher sales volume and lower odds of winning. Powerball uses a five number combination from 1 to 59 and an extra Powerball number from 1 to 35. The Power Play option allows players to increase payouts for an additional dollar wager.

Powerball sales have held steady over the past decade. Sales for FY 2012-13 were unusually strong due to a high number of very large jackpots, which induces greater purchases. Sales for the first half of FY 2013-14 were weaker, but considerably higher than the first half of FY 2011-12. Mega Millions uses a five number combination from 1 to 75 and one mega ball number from 1 to 15. Mega Millions debuted in Pennsylvania during FY 2009-10, and it is likely that a portion of its sales were shifted away from Powerball and in-state lotto and numbers games.

⁹ For FY 2012-13, the Lottery had deployed 4,425 ITVMs and 1,772 PCTs throughout the state.

¹⁰ For the first six months of FY 2013-14, in-state lotto game sales increased by 7.8 percent over the prior year.

Table 1
Pennsylvania Lottery Sales
(\$ millions)

	Fiscal Year Ending									AAGR ¹ 2005-13
	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Instant Tickets	\$1,302	\$1,588	\$1,704	\$1,707	\$1,758	\$1,749	\$1,922	\$2,135	\$2,305	7.4%
Numbers Games										
Daily Number	425	415	413	416	399	388	380	360	345	-2.6
Big 4	272	269	272	270	260	260	255	246	243	-1.4
Quinto	0	0	0	0	33	34	40	41	43	n.a.
In-State Lotto										
Cash 5	201	203	195	186	187	180	172	160	168	-2.3
Match 6 ²	113	98	102	78	80	45	56	66	65	-6.7
Treasure Hunt	0	0	4	24	20	20	23	24	26	n.a.
Mix & Match	0	0	25	27	20	17	0	0	0	n.a.
Multi-State Lotto										
Powerball	253	385	274	303	261	265	178	244	368	4.8
Power Play	41	63	53	54	50	48	36	33	33	-2.8
Mega Millions	0	0	0	0	0	35	108	132	71	n.a.
Megaplier	0	0	0	0	0	6	18	20	13	n.a.
Raffle	0	23	21	25	19	18	20	21	20	n.a.
All Other³	<u>38</u>	<u>27</u>	<u>14</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>n.a.</u>
Total Sales	2,645	3,070	3,076	3,089	3,088	3,066	3,208	3,481	3,700	4.3
Regional CPI-U ⁴	3.6%	3.3%	2.2%	4.2%	0.7%	1.8%	3.3%	2.2%	1.2%	2.4%
GSP ⁴	482	506	531	545	540	559	581	601	613	3.0
Personal Income ⁴	447	477	502	520	515	530	558	575	587	3.5
Sales Composition										
Instant Tickets	49.2%	51.7%	55.4%	55.2%	56.9%	57.0%	59.9%	61.3%	62.3%	
Numbers Games	26.4	22.3	22.2	22.2	22.4	22.3	20.9	18.6	17.1	
In-State Lotto	11.9	9.8	10.5	10.2	10.0	8.5	7.9	7.2	7.0	
Multi-State Lotto	11.1	14.6	10.6	11.6	10.1	11.6	10.6	12.3	13.1	
Raffle and All Other ³	<u>1.4</u>	<u>1.6</u>	<u>1.1</u>	<u>0.8</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	<u>0.6</u>	
Total Sales	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

¹ Average annual growth rate. Computed only for games available in all years.

² Includes Super 7 for FY 2008-09 (\$22.5 million) and FY 2009-10 (\$42.3 million).

³ Includes Lucky for Life Lottery and Lucky for Life Instant.

⁴ Regional CPI-U (growth rate); Pennsylvania Gross State Product (GSP, \$ billions) and Personal Income (\$ billions).

Sources: Executive Budget, various years. Regional CPI-U from U.S. Bureau of Labor Statistics. GSP and Personal Income from U.S. Bureau of Economic Analysis.

The Megaplier option increases the ticket cost by one dollar and multiplies any payout.

Overall, total lottery sales have increased at an average rate of 4.3 percent per annum from FY 2004-05 though FY 2012-13. That average growth rate easily exceeds economic measures such as inflation (2.4 percent per annum), gross

state product (GSP, 3.0 percent) and statewide personal income (3.5 percent). (See middle of Table 1.) Since FY 2009-10, total lottery sales have grown rapidly (6.5 percent per annum) due to the gains in instant ticket sales.

The bottom of Table 1 illustrates the dramatic shift to instant ticket sales relative to numbers

and lotto games. Instant tickets have higher payout rates and lower profit margins, so a higher level of sales must occur to generate the same amount of profits.

Lottery Profits

Table 2 displays the Lottery's income statement for FY 2004-05 through FY 2012-13. Lottery net revenues or profits are equal to total sales less vendor and retailer commissions (i.e., the cost to produce and sell lottery products), prize payouts, operating expenses plus miscellaneous revenues such as investment income. The bottom of Table 2 displays some common performance metrics for state lotteries. An analysis of the income statement reveals:

- The moderately strong total sales growth (4.3 percent per annum) is attributable to instant ticket sales, which more than offsets the decline in numbers games.
- Vendor commissions have declined relative to sales. Commissions pay for market research, the printing of tickets and daily drawings.
- Retailer commissions comprise a relatively constant share of total lottery sales (5.3 percent).
- Prize payouts comprise an increasing share of total sales. That trend is due to the strong growth of instant tickets, which have higher payouts than draw games.
- Total operating expenses (2.3 percent per annum) have grown at a rate roughly equal to inflation and have declined as a share of total sales.
- Net revenues or profits (2.9 percent per annum) have expanded at a rate roughly equal to the Pennsylvania economy (GSP, 3.0 percent per annum). Since FY 2009-10, profits have grown by 5.2 percent per annum.

Certain state lotteries must ensure that net revenues or profits exceed a specified share of total sales. Prior to 2009, the Pennsylvania Lottery was required to return 30 percent of sales as net

revenues. Act 53 of 2008 reduced the minimum required return to 27 percent through FY 2010-11. Act 23 of 2011 extends the reduced minimum through FY 2014-15. The lower minimum return allows the Lottery to pursue instant ticket sales to facilitate sales and profit growth.¹¹

Lottery Fund Expenditures

Table 3 displays expenditures made from the Lottery Fund. The Lottery Fund receives revenues from lottery sales (gross sales less field paid prizes and commissions) plus transfers from other gaming activities (slots).^{12,13} By statute, all lottery net revenues must be used to benefit elderly residents. Programs funded and expenses paid by the Lottery Fund include:

PennCARE - Provides funds that enable elderly residents to receive healthcare services outside of a nursing home. Funds are distributed to 52 regional Area Agencies on Aging that provide coverage to all counties. The agencies must use 55 percent of funds for in-home services; residual funds may be used in a discretionary manner. Services include adult day care, home delivered meals, legal assistance, personal care and senior centers.

Pharmaceutical Assistance - Includes the PACE (Pharmaceutical Assistance Contract for the Elderly) and PACENET (Pharmaceutical Assistance Contract for the Elderly Needs Enhancement Tier) programs. These programs subsidize the purchase of generic and brand name prescription drugs by eligible participants.

¹¹ For FY 2012-13, five other states mandated a minimum return from lottery operations: Delaware (30 percent), Louisiana (35 percent), Oklahoma (35 percent), Tennessee (35 percent) and New Jersey (30 percent). 2012 NASPL Resource Index.

¹² Prizes of \$2,500 or less can be paid by lottery retailers (referred to as field paid prizes).

¹³ For FY 2012-13, the transfer from the Gaming Fund (slots revenue) through the Property Tax Relief Fund to the Lottery Fund was \$166.8 million.

Table 2
Pennsylvania Lottery Income Statement
(\$ millions)

	Fiscal Year Ending									AAGR ¹ 2005-13
	2005	2006	2007	2008	2009	2010	2011	2012	2013	
Instant Tickets	\$1,302	\$1,588	\$1,704	\$1,707	\$1,758	\$1,749	\$1,922	\$2,135	\$2,305	7.4%
Numbers Games	697	685	685	686	693	683	674	646	631	-1.2
All Other	<u>646</u>	<u>798</u>	<u>688</u>	<u>696</u>	<u>638</u>	<u>635</u>	<u>612</u>	<u>700</u>	<u>763</u>	<u>2.1</u>
Total Gross Sales	2,645	3,070	3,076	3,089	3,088	3,066	3,208	3,481	3,700	4.3
Vendor and Retailer Commissions										
Vendor Online	51	54	51	52	40	29	31	34	38	-3.6
Vendor Instant	29	33	35	26	18	18	22	22	24	-2.3
Retailer	<u>138</u>	<u>171</u>	<u>166</u>	<u>170</u>	<u>165</u>	<u>160</u>	<u>169</u>	<u>184</u>	<u>196</u>	<u>4.5</u>
Subtotal	218	258	253	248	224	207	221	240	258	2.1
Total Payouts	<u>1,529</u>	<u>1,805</u>	<u>1,833</u>	<u>1,845</u>	<u>1,853</u>	<u>1,867</u>	<u>1,958</u>	<u>2,121</u>	<u>2,299</u>	<u>5.2</u>
Gross Revenues	898	1,007	991	996	1,012	992	1,029	1,120	1,142	3.1
Operating Expenses										
Advertising	30	25	30	32	32	41	37	37	37	-3.7
Expanded Sales ²	15	19	23	28	18	17	0	0	0	n.a.
Personnel	11	12	12	12	12	13	18	19	19	14.7
Operating	8	7	10	11	12	9	14	14	17	21.7
Fixed Assets	0	0	0	0	6	0	5	4	4	n.a.
Augmentations	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>-4</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>n.a.</u>
Subtotal	64	64	75	82	79	76	74	73	77	2.3
Other Revenues	<u>18</u>	<u>32</u>	<u>33</u>	<u>14</u>	<u>-28</u>	<u>0</u>	<u>6</u>	<u>14</u>	<u>2</u>	<u>n.a.</u>
Net Revenues	852	975	949	928	905	916	961	1,061	1,067	2.9

Expenses and Net Revenues Relative to Sales

Vendor Commissions	2.3%	2.1%	2.1%	1.5%	1.0%	1.0%	1.1%	1.0%	1.1%
Retailer Commissions	5.2	5.6	5.4	5.5	5.3	5.2	5.3	5.3	5.3
Prize Payouts	57.8	58.8	59.6	59.7	60.0	60.9	61.0	60.9	62.1
Operating Expenses	2.4	2.1	2.4	2.6	2.6	2.5	2.3	2.1	2.1
Net Revenues	32.2	31.8	30.9	30.0	29.3	29.9	29.9	30.5	28.8
Minimum Return ³	30.0	30.0	30.0	30.0	27.0	27.0	27.0	27.0	27.0

¹ Average annual growth rate.

² An expanded sales appropriation was established in FY 2003-04 to pay for costs required to increase lottery sales to \$2.6 billion. A key part of the plan was the expansion of the retail network. For FY 2003-04, 45 new lottery positions were created; for FY 2004-05, 12 new positions were created. Expanded sales include the cost to fund those new positions and to service new retailers. Beginning with FY 2008-09, those costs were shifted to general operations.

³ Act 53 of 2008 reduced the required minimum return from 30% to 27% through FY 2010-11. Act 23 of 2011 extends the 27% minimum return through FY 2014-15.

Source: Pennsylvania Lottery Income Statement, see www.palottery.state.pa.us.

Table 3
Lottery Fund Expenditures
(\$ millions)

	Fiscal Year Ending								
	2005	2006	2007	2008	2009	2010	2011	2012	2013
PENNCARE	\$212	\$220	\$228	\$236	\$240	\$241	\$243	\$249	\$248
Pharmaceutical Assistance Fund	300	400	204	278	255	200	200	200	190
Medical Asst. – Long Term Care	0	0	249	249	301	178	178	178	309
Property Tax and Rent Assistance	127	124	120	245	276	278	283	285	286
Public Transportation Trust Fund	52	52	50	80	82	87	88	90	91
Older Pennsylvanians – Shared Rides	71	72	72	77	78	80	73	79	81
Fixed Route Transportation	0	17	21	0	0	0	0	0	0
All Other ¹	378	553	500	520	517	498	479	522	592
Total	1,139	1,438	1,443	1,685	1,749	1,562	1,545	1,602	1,797

¹ Includes appropriations for the Departments of Revenue, Treasury and Aging that are not itemized above.

Source: Executive Budget, various years.

Long-Term Care - Provides funds for certain nursing home services. Also provides funds that allow Medical Assistance recipients to obtain services that enable them to live outside of a nursing home.

Property Tax and Rent Rebate - Provides for the refund of property tax or rental payments for persons (or spouses) who are at least 65 years old, widows and widowers age 50 or older and the permanently disabled age 18 or older based on certain income thresholds. The maximum rebate is \$650.¹⁴

Public Transportation Trust Fund - Transfer from the Lottery Fund to the Public Transportation Trust Fund.

Shared-Ride - Seniors age 65 or older qualify to use Shared-Ride, a door-to-door transportation service, at a discounted rate equal to 15 percent of the existing fare; lottery proceeds pay the remaining 85 percent.

All Other - For FY 2012-13, expenditures include pre-admission assessment (\$10.7 million), caregiver support (\$12.1 million), Alzheimer’s outreach (\$0.3 million), general government operations (\$53.7 million), vendor commissions (\$56.3 million), payment of certain prize monies (\$414.7 million, not paid in the field) and lottery advertising (\$37.0 million).¹⁵

¹⁴ However, certain residents may qualify for enhanced rebates based on the city of residence and the share of income paid in property tax.

¹⁵ General government operations include expenditures for the administration of the Property Tax Rent Rebate program.

- This page was intentionally left blank. -

Interstate Comparisons

This section compares lottery sales and profits across states. The interstate comparison uses states that have established lottery systems located in the Mid-Atlantic (PA, NJ, NY, DE, MD, VA), Midwest (IA, OH, IL, IN, MI, WE, MN, MO), populous New England states (MA, CT) and certain southern states that have significant lottery operations (NC, TN, KY, GA, FL).¹⁶ These general comparisons do not control factors that may drive lottery sales in a particular state such as demographic composition, intensity of advertising and retailer participation.¹⁷

The analysis makes separate interstate comparisons for instant tickets and numbers and lotto games.¹⁸ The interstate comparison uses two common industry metrics: (1) per capita sales and (2) sales relative to state personal income. Analysts use these metrics to measure lottery performance, the penetration rate of lottery sales, and to assess the potential for higher sales via increased lottery penetration rates. Most data are from LaFleur’s for the most recent fiscal year (FY 2012-13).¹⁹ However, certain data available only for FY 2011-12 are from the National Association of State and Provincial Lotteries (NASPL).²⁰ Sources are noted at the bottom of the tables.

Table 4 lists the states used for the interstate comparison. States are ranked from highest to lowest based on the number of residents age 18

**Table 4
Comparison States**

	Year ¹	Population ²	Income ³
Florida	1988	15.5	\$804.2
New York	1967	15.4	1,053.1
Pennsylvania	1972	10.0	581.1
Illinois	1974	9.8	596.6
Ohio	1974	8.9	468.2
Michigan	1972	7.6	383.5
North Carolina	2006	7.5	374.4
Georgia	1993	7.5	377.1
New Jersey	1970	6.9	493.4
Virginia	1988	6.4	400.3
Massachusetts	1972	5.3	376.3
Tennessee	2004	5.0	253.0
Indiana	1989	5.0	253.0
Missouri	1986	4.6	238.4
Maryland	1973	4.6	319.5
Wisconsin	1988	4.4	244.5
Minnesota	1990	4.1	256.1
Kentucky	1989	3.4	157.6
Connecticut	1972	2.8	216.5
Iowa	1985	2.4	137.5
West Virginia	1986	1.5	65.6
Delaware	1975	0.7	41.2

¹ Year lottery implemented.
² Number in millions. Residents age 18 or older as of June 1, 2013. Source: U.S. Census Bureau.
³ Billions of dollars, FY 2012-13. Source: U.S. Commerce Department, Bureau of Economic Analysis.

or older that may legally purchase lottery products.²¹ Nearly all comparison states have lottery systems that have been operational for at least a decade; the exception is North Carolina (2006). Table 4 also lists state personal income, which is equal to all income that was earned by or accrued to residents of the state during FY 2012-13.

¹⁶ The analysis excludes states that have a legal gaming population under one million. An exception is made for Delaware due to its geographic proximity.

¹⁷ The comparisons also do not control for the presence of possible substitutes such as slots and table games. Most comparison states offer those games.

¹⁸ The analysis excludes video lottery terminal sales.

¹⁹ LaFleur’s Fast Facts 2013 and LaFleur’s 2012-13 Unaudited Lottery Fiscal Sales Report.

²⁰ 2012 NASPL Resource Index.

²¹ Population data are from the U.S. Census Bureau. For 2013, total population estimates are available but age breakdowns by state are not. To determine the population age 18 or older, the analysis assumes that the 2012 population age 18 or older grows at the same rate as the overall state population.

Table 5
Instant Ticket Sales and Profits
FY 2012-13

	Total Sales ¹	Payout Rate ²	Per Capita				Share of Personal Income			
			Sales	Rank	Profit ³	Rank	Sales	Rank	Profit ³	Rank
Florida	\$3,029	69.0%	\$195.4	8	\$60.5	8	0.38%	5	0.12%	5
New York	3,724	69.0	242.4	3	75.1	3	0.35	6	0.11	7
Pennsylvania	2,305	69.7	229.8	5	69.6	7	0.40	4	0.12	4
Illinois	1,768	72.8	180.0	9	49.0	11	0.30	12	0.08	13
Ohio	1,430	68.4	160.7	11	50.8	10	0.31	10	0.10	9
Michigan	819	68.1	107.4	16	34.3	16	0.21	16	0.07	16
North Carolina	1,012	67.5	134.2	14	43.6	14	0.27	13	0.09	12
Georgia	2,631	73.0	351.4	2	94.8	2	0.70	2	0.19	2
New Jersey	1,474	66.7	214.8	7	71.6	6	0.30	11	0.10	8
Virginia	887	68.2	138.9	13	44.2	13	0.22	15	0.07	15
Massachusetts	3,343	76.2	632.9	1	150.6	1	0.89	1	0.21	1
Tennessee	1,089	66.9	218.0	6	72.2	5	0.43	3	0.14	3
Indiana	615	68.5	123.7	15	39.0	15	0.24	14	0.08	14
Missouri	759	70.7	163.8	10	48.0	12	0.32	8	0.09	11
Maryland	486	68.1	106.2	17	33.8	17	0.15	18	0.05	19
Wisconsin	324	64.9	73.2	20	25.7	20	0.13	21	0.05	20
Minnesota	364	67.7	88.0	18	28.4	19	0.14	20	0.05	21
Kentucky	522	66.4	154.8	12	52.0	9	0.33	7	0.11	6
Connecticut	667	69.3	238.3	4	73.2	4	0.31	9	0.09	10
Iowa	202	62.2	85.6	19	32.3	18	0.15	19	0.06	17
West Virginia	109	67.2	73.1	21	24.0	21	0.17	17	0.05	18
Delaware	48	65.0	67.8	22	23.7	22	0.12	22	0.04	22
All States ⁴	27,607	70.1	198.2	n.a.	59.3	n.a.	0.34	n.a.	0.10	n.a.

¹ Millions of dollars. Source: LaFleur’s 2012-13 Unaudited Lottery Fiscal Sales Report.

² Average share of instant ticket sales paid out as prizes. Source: LaFleur’s 2012-13 Unaudited Lottery Fiscal Sales Report.

³ Profit is equal to the residual amount after payout. Excludes miscellaneous costs and commissions.

⁴ Comparison states only.

Instant Tickets

Table 5 displays instant ticket sales, the average payout rate for instant tickets, per capita sales and profits and sales and profits relative to state personal income. Profit measures are used in addition to sales because average payout rates range from 62.2 percent (Iowa) to 76.2 percent (Massachusetts) and higher payout rates will increase sales, but reduce profit margins. For most states, lottery authorities determine average payout rates, subject to any mandated minimum return. Average payout rates will also vary based on the mix of tickets sold (i.e., price points, which range from \$1 to \$20 per ticket); tickets

with higher price points generally have higher payout rates.²²

For the purpose of this comparison, the term “profit” represents the residual amount after payout, and does not reflect amounts needed to cover remaining fixed and variable costs or retailer commissions. The metric that measures sales relative to state personal income represents the share of average income that was spent on instant tickets during FY 2012-13.

²² For the Pennsylvania Lottery, the \$1 instant ticket payout rate is 58.5 percent, the \$5 payout rate is 69.3 percent and the \$20 payout rate is 73.6 percent. LaFleur’s Fast Facts 2013.

An interstate comparison for instant ticket sales reveals:

- In terms of per capita sales and profits, Pennsylvania ranked 5th and 7th highest respectively. The rank using personal income was slightly higher (4th).
- Massachusetts and Georgia have very high penetration rates using either metric. The high penetration rate for Massachusetts may be due to the large influx of non-residents who work and visit the state. Both states have high payout rates.
- Compared to the weighted average for all comparison states (bottom of Table 5), Pennsylvania has a somewhat higher penetration rate using either the per capita or personal income metric.

Numbers and Lotto Games

For Pennsylvania, numbers and lotto games comprise slightly more than one-third of total lottery sales. This category includes the Daily Number, Big 4, Cash 5, Quinto, Match 6, Treasure Hunt, Powerball, Power Play, Mega Millions and Megaplier.

Table 2 from the previous section illustrates the long-term trend decline of both numbers and in-state lotto games. This trend generally holds for most states. Lottery consumers have shifted towards instant tickets due to the quick gratification, multi-tiered prize structure and high payout rates. In addition, new players are more inclined to make impulse buys of instant tickets or play multi-state lotto games that offer very large jackpots.

The sales shift to instant tickets has a disproportionate impact on lottery profit margins because the payout rates are considerably higher compared to numbers and lotto games. For comparison states, the weighted average payout rate was 70.1 percent for instant tickets. For numbers and

lotto games, it was 51.6 percent. (See bottom of Tables 5 and 6.)

An interstate comparison of numbers and lotto games reveals (see Table 6):

- Pennsylvania ranked 7th in per capita sales (\$137.0) and 6th in profits (\$68.9). Similar results were obtained using the personal income metric.
- Three states adjacent to Pennsylvania rank highest in per capita sales: New York (\$180.6), New Jersey (\$196.3) and Maryland (\$167.3).
- For some states, the personal income metric can change relative rankings. For example, Connecticut ranks 4th using the per capita metric, but 11th or 12th using the personal income metric. The choice of metric does not affect Pennsylvania.
- Compared to the weighted average for all comparison states, Pennsylvania has somewhat higher penetration rates using the per capita and personal income metrics.

All Lottery Games

Table 7 combines the data from Tables 5 and 6 to derive total lottery sales by state. The table also includes Keno and other miscellaneous lottery games that are unique to certain states.²³ For ease of exposition, the analysis only uses the per capita sales and profit metrics. For the purpose of this comparison, profits are the net revenues or government transfers reported by state lotteries in their income statement and aggregated by LaFleur's. The profit margin is equal to total profits divided by total sales. The profit margin is a function of the types of games offered by state lotteries, payout rates, mandated minimum returns and efficiency of operations.

²³ Video lottery terminals and table games are excluded from all sales and profit tabulations.

Table 6
Numbers and Lotto Games Sales and Profits
FY 2012-13

	Total Sales ¹	Payout Rate ²	Per Capita				Share of Personal Income			
			Sales	Rank	Profit ³	Rank	Sales	Rank	Profit ³	Rank
Florida	\$1,985	49.6%	\$128.0	9	\$64.5	9	0.25%	5	0.12%	5
New York	2,775	51.0	180.6	2	88.5	2	0.26	4	0.13	4
Pennsylvania	1,374	49.7	137.0	7	68.9	6	0.24	7	0.12	6
Illinois	1,073	48.0	109.2	13	56.8	11	0.18	14	0.09	12
Ohio	972	53.8	109.2	12	50.5	12	0.21	9	0.10	10
Michigan	1,099	53.8	144.1	5	66.6	8	0.29	1	0.13	3
North Carolina	678	50.0	89.9	15	44.9	14	0.18	13	0.09	13
Georgia	1,076	51.7	143.7	6	69.4	5	0.29	2	0.14	1
New Jersey	1,347	50.1	196.3	1	98.0	1	0.27	3	0.14	2
Virginia	786	50.1	123.0	11	61.4	10	0.20	11	0.10	9
Massachusetts	662	60.0	125.3	10	50.1	13	0.18	15	0.07	15
Tennessee	272	50.4	54.4	20	27.0	18	0.11	19	0.05	18
Indiana	275	52.2	55.4	18	26.5	19	0.11	18	0.05	19
Missouri	313	56.6	67.5	16	29.3	16	0.13	16	0.06	16
Maryland	766	56.0	167.3	3	73.6	3	0.24	6	0.11	8
Wisconsin	216	50.4	48.7	21	24.2	21	0.09	21	0.04	21
Minnesota	186	48.9	45.0	22	23.0	22	0.07	22	0.04	22
Kentucky	313	55.6	92.8	14	41.2	15	0.20	10	0.09	14
Connecticut	425	51.6	151.8	4	73.5	4	0.20	12	0.10	11
Iowa	137	53.0	58.0	17	27.2	17	0.10	20	0.05	20
West Virginia	81	55.0	54.7	19	24.6	20	0.12	17	0.06	17
Delaware	96	50.0	134.4	8	67.2	7	0.23	8	0.12	7
All States ⁴	16,904	51.6	121.4	n.a.	58.8	n.a.	0.21	n.a.	0.10	n.a.

¹ Millions of dollars. Includes 3, 4, and 5 digit numbers games, raffles and all in-state and multi-state lottery games. Source: LaFleurs’s 2012-13 Unaudited Lottery Fiscal Sales Report.

² Based on FY 2011-12 payout rates. Source: 2012 NASPL Resource Index.

³ Profit is equal to the residual amount after payout. Excludes miscellaneous expenses and commissions.

⁴ Comparison states only.

An interstate comparison of total sales and profits reveals:

- The inclusion of other lottery games and products such as Keno does not alter Pennsylvania’s relative ranking.
- Pennsylvania recorded the 7th highest profit margin.
- Massachusetts and Georgia rank highest in per capita sales due to the large volume of instant ticket sales. These two states also have the highest instant ticket payout rate.
- Pennsylvania per capita sales (\$368.8) and profits (\$106.4) are somewhat higher than

the weighted averages for all comparison states.

Although Table 7 ranks states based on profit margin, a high rank need not signal efficient operations or an optimal game portfolio. Most state lotteries have discretion over payout rates, especially for instant tickets. In theory, lottery authorities could adjust payout rates to maximize net revenues. Data are not available to determine whether states have adjusted payout rates to achieve that outcome. In many cases, a lower profit margin will yield a higher level of dollar profits.

Table 7
All Lottery Games¹
FY 2012-13

	Instant Tickets	Numbers & Lotto	Keno	All Other ²	Total Sales	Total Profits ³	Profit Margin	Rank	Per Capita			
									Sales	Rank	Profits	Rank
Florida	\$3,029	\$1,984	\$0	\$0	\$5,013	\$1,417	28.3%	11	\$323.4	9	\$91.4	9
New York	3,724	2,775	580	30	7,109	2,165	30.5	5	462.6	3	140.9	2
Pennsylvania	2,305	1,374	0	20	3,700	1,067	28.9	7	368.8	7	106.4	7
Illinois	1,768	1,073	0	0	2,841	804	28.3	10	289.3	11	81.9	11
Ohio	1,430	972	250	43	2,695	748	27.7	13	303.0	10	84.1	10
Michigan	819	1,099	553	0	2,471	749	30.3	6	324.0	8	98.1	8
North Carolina	1,012	678	0	0	1,690	480	28.4	9	224.1	16	63.6	16
Georgia	2,631	1,076	190	16	3,912	928	23.7	21	522.5	2	123.9	4
New Jersey	1,474	1,347	0	0	2,821	925	32.8	3	411.1	4	134.8	3
Virginia	887	786	0	17	1,689	487	28.8	8	264.5	13	76.2	12
Massachusetts	3,343	662	825	1	4,832	952	19.7	22	914.7	1	180.2	1
Tennessee	1,089	272	0	0	1,361	340	25.0	18	272.4	12	68.0	14
Indiana	615	275	0	44	934	225	24.0	20	187.9	18	45.2	19
Missouri	759	313	65	4	1,141	289	25.3	16	246.3	15	62.3	17
Maryland	486	766	345	160	1,756	550	31.3	4	383.9	5	120.2	5
Wisconsin	324	216	0	26	566	145	25.6	15	127.9	22	32.8	21
Minnesota	364	186	0	10	560	135	24.1	19	135.6	20	32.7	22
Kentucky	522	313	0	11	847	224	26.4	14	250.9	14	66.3	15
Connecticut	667	425	0	30	1,123	312	27.8	12	400.9	6	111.5	6
Iowa	202	137	0	0	339	85	25.0	17	143.6	19	35.9	20
West Virginia	109	81	6	0	196	68	34.6	1	131.7	21	45.5	18
Delaware ⁴	48	96	2	0	146	50	34.3	2	205.7	17	70.6	13
All States ⁴	27,607	16,904	2,817	414	47,742	13,142	27.5	n.a.	342.8	n.a.	94.4	n.a.

¹ Numbers are millions of dollars, except per capita measures.

² Includes raffles, certain regional games and miscellaneous games.

³ Excludes profits from video lottery terminals and table games. Profits are net of all expenses and commissions.

⁴ Comparison states only.

Source: LaFleur's FY 2012-13 Unaudited Lottery Fiscal Sales Report.

**Table 8
Retailer Data
FY 2011-12**

	Number Retailers	Residents Per Retailer	Rank	Total Sales ¹	Average Sales	Rank	Commission	
							Sales ²	Cashing
Florida	13,939	1,099	13	\$4,450	319,214	8	5.0%	1.0%
New York	17,100	895	4	7,013	410,099	5	6.0	n.a.
Pennsylvania	9,087	1,103	15	3,481	383,063	6	5.0	n.a.
Illinois	9,153	1,072	12	2,671	291,773	10	5.0	1.0
Ohio	9,400	945	7	2,738	291,273	11	5.5	1.0
Michigan	10,879	700	1	2,413	221,846	17	6.0	n.a.
North Carolina	6,789	1,100	14	1,597	235,186	15	7.0	n.a.
Georgia	8,518	872	3	3,835	450,188	2	6.0	n.a.
New Jersey	6,700	1,021	10	2,759	411,776	4	5.0	1.3
Virginia	5,125	1,235	19	1,616	315,317	9	5.0	1.0
Massachusetts	7,400	709	2	4,725	638,509	1	5.0	1.0
Tennessee	4,983	996	8	1,311	263,135	14	6.5	n.a.
Indiana	3,935	1,257	20	856	217,427	18	6.0	1.0
Missouri	4,938	935	6	1,098	222,256	16	5.0	2.0
Maryland	4,260	1,066	11	1,795	421,336	3	5.0	3.0
Wisconsin	3,674	1,200	18	544	148,127	21	6.0	n.a.
Minnesota	3,123	1,314	21	520	166,516	19	5.5	1.0
Kentucky	2,835	1,186	17	824	290,494	12	6.2	1.0
Connecticut	3,041	920	5	1,082	355,719	7	5.0	n.a.
Iowa	2,350	1,001	9	311	132,272	22	6.4	n.a.
West Virginia	1,287	1,143	16	206	160,202	20	7.0	1.0
Delaware	500	1,424	22	133	265,296	13	5.0	1.0
All States ³	139,016	997	n.a.	45,975	330,718	n.a.	5.7	n.a.

¹ Millions of dollars. Includes instant ticket, numbers, lotto and miscellaneous games and Keno. Excludes video lottery terminal sales.

² Base sales commission only. Effective commission for Pennsylvania is 5.28% if all retailer incentives included.

³ Comparison states only.

Source: 2012 NASPL Resource Index and LaFleur’s Fast Facts 2013.

Lottery Retailers

All state lotteries partner with retailers to display and sell lottery products. Retail outlets may include gas stations, convenience stores, grocery and liquor stores, restaurants, bars and department stores. Retailers receive a commission based on total dollar sales. In general, more extensive retail operations will increase lottery penetration rates or per capita sales. Other important factors include the mix of retail outlets, the placement and visual appeal of lottery displays and the utilization of automated technology such as ITVMs and PCTs.

Table 8 displays the number of residents age 18 or older per retailer, average retailer sales and retailer commissions. An interstate comparison reveals:

- For FY 2011-12 (latest data available), Pennsylvania ranked 15th in retailer penetration, with one retailer per 1,103 residents age 18 or older. States with strong instant tickets sales (e.g., Massachusetts and Georgia) ranked high.
- In terms of average dollar sales volume, Pennsylvania retailers rank 6th highest. The average retailer reported \$383,000 in total sales.

- The base retailer commission is 5.0 percent for Pennsylvania, which is on the lower end of the commission range. Many states also offer a 1.0 percent (or higher) cashing commission; Pennsylvania does not. Higher commissions encourage retailer participation, but reduce net profits on sales.²⁴

²⁴ A cashing commission is a payment to compensate retailers for redeeming prizes under certain dollar thresholds.

- This page was intentionally left blank. -

Lottery Outlook

Lottery profits support many programs for elderly residents of Pennsylvania such as property tax and rent rebates, pharmaceutical subsidies and free transportation. Demographic data suggest that the demand for these programs will grow quickly over the next decade. The Pennsylvania State Data Center projects that the number of residents age 65 or older will increase by 20.7 percent from 2013 to 2020 (2.7 percent per annum).²⁵ If the cost to provide services increases by 2.0 percent per annum and residents who need services grow at the same rate as demographic projections, then expenditures must increase by roughly 4.7 percent per annum to maintain current levels of service.

Hence, an important issue for policymakers is whether lottery profits will be sufficient to support future needs. Since FY 2004-05, the data from Table 1 show that net revenues have increased at an average rate of 2.9 percent per annum. Since FY 2009-10, the average growth rate has been higher (5.2 percent per annum). To maintain current levels of service, the Lottery must raise penetration rates and reproduce the strong growth achieved the past three years.

Whether that type of growth is achievable remains unclear. Certain challenges will need to be overcome. The subsection that follows outlines these challenges. The second subsection concludes with a brief analysis of potential lottery expansion through Keno.

Challenges to Sales and Profit Growth

Six challenges exist that may restrain future lottery sales and profit growth. They are as follows:

²⁵ For demographic projections, see *Pennsylvania's Economic and Budget Outlook: FY 2013-14 to FY 2018-19*, Independent Fiscal Office, November 2013.

Lottery prices do not increase automatically over time.

Unlike other goods and services, most prices of lottery products generally do not change over time; they do not increase automatically due to inflation. Therefore, any sales gain from higher prices must arise from customers who migrate to higher price points (e.g., the purchase of a \$5 instant ticket instead of a \$2 ticket), but do not simultaneously compensate by reducing their volume of purchases.

Due to the lack of automatic inflationary price gains, lottery sales growth must rely more on higher volume compared to other products. It may prove difficult to continually increase sales volume because long-term factors that motivate volume growth are beyond the Lottery's control. For example, if per capita sales or penetration rates do not change, then dollar sales should increase by the growth of the resident population age 18 or older, roughly 0.6 percent per annum. Higher levels of disposable income due to an expanding economy may increase sales another 1.0 percent per annum (discussed below), for total growth of 1.6 percent per annum. That baseline growth rate is motivated by broad economic and demographic trends beyond the control of the Lottery.

In order to generate sales growth above that level, the Lottery must increase the intensity of play by new and current customers (i.e., they spend a larger share of their disposable income on lottery products) or a higher proportion of residents must play the lottery. The interstate comparison from the previous section suggests that the Lottery can achieve higher penetration rates, but it is also likely that higher rates will be incrementally harder to achieve.

The long-term decline of higher profit numbers and in-state lotto games.

Similar to other states, sales of numbers and in-state lotto games have declined during the past decade, while instant ticket sales have increased dramatically. The Lottery reports that the average payout for instant tickets is roughly 70 percent, while the average payout for numbers and lotto games is closer to 50 percent. As shown by Table 1, instant tickets comprise an increasing share of total sales, and the share has increased by approximately one percent per annum for recent years. If lottery sales continue to shift in this manner, then sales must increase at a faster rate to achieve the same growth in net revenues.

Small Games of Chance (House Bill 1098 of 2013).

It is unclear whether the recent expansion of small games of chance to bars, restaurants and taverns will have an impact on lottery sales. The products may be sufficiently different so that any impact will be relatively minor. However, many bars, restaurants and taverns also sell lottery products, and some sales shift seems plausible. For FY 2014-15, the Department of Revenue estimates that small games of chance will generate \$156 million of revenues for the Commonwealth due to the 60 percent tax levied on gross wagers (\$260 million). If the impact includes a ten percent sales shift from lottery products, then that implies a \$26 million reduction in lottery sales. Currently, it is unclear how small games of chance will affect lottery sales.

Demographic trends.

Research finds that the share of adults who purchase lottery products generally peaks for adults age 35 to 54. Participation rates decline modestly for the 55 to 64 year age cohort, but then decline rapidly for individuals age 65 or older.²⁶

²⁶ Barnes et al. "Gambling on the Lottery: Sociodemographic Correlates Across the Lifespan," Journal of

Hence, the aging of the baby boom generation may place additional pressure on lottery sales. On the opposite side of the age spectrum, some lottery officials have noted that it has become increasingly difficult to entice young adults to participate in the lottery.

Lower incremental gains from retail expansion.

Over the past decade, the deployment of ITVMs and PCTs throughout the state has been a major factor in the strong growth of instant ticket sales. Pennsylvania is at the forefront of states that use automated technology to sell lottery products. However, as penetration rates increase over time, it becomes more likely that new placements of machines will generate lower incremental sales gains compared to existing machines. Although productive placements remain, prior placements are likely to yield higher average returns. If new machines yield lower incremental gains, then it becomes more difficult to replicate recent growth rates.

Modest growth of disposable income.

Like other goods and services, lottery purchases generally increase with disposable (i.e., after tax) income. Research finds that lottery purchases at the national level are an "inelastic" good: if disposable income increases by one percent, then lottery purchases will increase by less than one percent.²⁷

To confirm this finding for Pennsylvania, the Independent Fiscal Office used a regression analysis to estimate how per capita lottery sales have responded to changes in per capita or average disposable income. The regression analysis controls for the number of retailers and the general increase in residents over time, but it cannot

Gambling Studies, (2011) 27; 575-586 and "Demographic Survey of Texas Lottery Players 2011," University of Houston, Hobby Center for Public Policy.

²⁷ Grote, Kent and Victor Matheson. "The Economics of Lotteries: A Survey of the Literature," College of the Holy Cross, Department of Economics Faculty Research Series, Paper No. 11-09. August 2011.

control for factors such as the popularity of games or advertising campaigns.²⁸ The analysis suggests that a 1.0 percent increase in per capita disposable income increases per capita lottery sales by roughly 0.2 to 0.4 percent. These findings are generally consistent with studies of lottery sales for the U.S.

Currently, the forecast projects that average or per capita disposable income will increase at a rate of 4.0 percent per annum through 2020. If the results from the regression analysis hold, then lottery sales would increase by roughly one quarter of that rate, or 1.0 percent per annum, solely due to higher disposable income. Normal population growth (i.e., the gain from a larger pool of potential players due to new players reaching legal purchase age and migration into the state) would further increase total sales growth to roughly 1.6 percent per annum. As noted, sales growth above that level must originate from higher intensity of sales to new and current players (i.e., they spend a larger share of their disposable income on lottery products) or a higher proportion of residents must play the lottery.

Potential Expansion through Keno

During the past decade, the Lottery has employed various methods to increase sales. Successful methods include the expansion of the retailer network, the deployment of ITVMs and

PCTs, the upgrade of vendor displays, advertising campaigns and new game offerings. Another possible method to augment sales is the expansion of the lottery product line to Keno.

Currently, 15 states and the District of Columbia offer some form of Keno. In order to gauge the potential for Keno sales in the Commonwealth, Table 9 compares sales of lottery products for Pennsylvania and select comparison states that offer Keno. Dollar amounts represent gross sales before prize payouts. Notable results include:

- For FYs 2007-13 (pre-recession start) and FYs 2010-13 (post-recession start), the average growth rate of Pennsylvania lottery sales compares favorably to the five comparison states that offer Keno.
- For comparison states, Keno comprises roughly 10 to 30 percent of total sales.²⁹
- Keno is sufficiently different than other lottery products so that it has unique growth rates. Unlike some instant ticket and draw games, Keno recorded positive sales growth across all states despite the severe recession.
- For FY 2012-13, Maryland lottery officials noted that casino openings harmed lottery sales (including Keno). Instant ticket and draw games also recently declined in Ohio due to casino openings, but Keno growth remained robust.

²⁸ The equation uses per capita sales as the dependent variable and number of residents per retailer and per capita disposable income as explanatory variables. The time frame is 2003 Q3 to 2013 Q4.

²⁹ Maryland data include Racetrax and Racetrax Bonus. Racetrax is a computer animated monitor game where players select one of 12 horses to win. The game is played in a social environment with drawings held every four to five minutes. The game is included with Keno due to the game environment and the frequency of drawings.

Table 9
Total Lottery Sales¹
(\$ millions)

	Fiscal Year Ending							AAGR ²	
	2007	2008	2009	2010	2011	2012	2013	2007-13	2010-13
Massachusetts									
Instant Tickets	\$3,066	\$3,341	\$3,069	\$3,016	\$3,008	\$3,252	\$3,343	1.4%	3.5%
Draw Games	617	612	612	635	631	676	683	1.7	2.5
Keno	<u>777</u>	<u>755</u>	<u>762</u>	<u>773</u>	<u>789</u>	<u>814</u>	<u>825</u>	<u>1.0</u>	<u>2.2</u>
Total	4,461	4,709	4,443	4,424	4,428	4,742	4,851	1.4	3.1
Maryland									
Instant Tickets	425	514	507	491	494	507	486	2.3	-0.3
Draw Games	690	700	708	724	724	766	777	2.0	2.4
Keno	<u>462</u>	<u>460</u>	<u>483</u>	<u>492</u>	<u>497</u>	<u>522</u>	<u>494</u>	<u>1.1</u>	<u>0.1</u>
Total	1,577	1,673	1,698	1,707	1,715	1,795	1,756	1.8	1.0
Michigan									
Instant Tickets	718	734	749	751	739	772	827	2.4	3.3
Draw Games	1,134	1,069	1,108	1,118	1,100	1,116	1,115	-0.3	-0.1
Keno	<u>491</u>	<u>527</u>	<u>520</u>	<u>491</u>	<u>501</u>	<u>526</u>	<u>534</u>	<u>1.4</u>	<u>2.9</u>
Total	2,343	2,330	2,378	2,359	2,340	2,413	2,476	0.9	1.6
New York									
Instant Tickets	3,602	3,594	3,666	3,611	3,546	3,579	3,724	0.6	1.0
Draw Games	2,605	2,635	2,605	2,758	2,788	2,931	2,805	1.2	0.6
Keno	<u>445</u>	<u>444</u>	<u>424</u>	<u>412</u>	<u>424</u>	<u>502</u>	<u>580</u>	<u>4.5</u>	<u>12.1</u>
Total	6,652	6,673	6,695	6,781	6,758	7,012	7,109	1.1	1.6
Ohio									
Instant Tickets	1,354	1,365	1,349	1,379	1,463	1,508	1,428	0.9	1.2
Draw Games	906	960	969	991	980	1,022	1,018	2.0	0.9
Keno	<u>0</u>	<u>0</u>	<u>100</u>	<u>121</u>	<u>158</u>	<u>210</u>	<u>252</u>	<u>n.a.</u>	<u>27.8</u>
Total	2,259	2,325	2,418	2,490	2,601	2,739	2,698	3.0	2.7
Pennsylvania									
Instant Tickets	1,704	1,707	1,758	1,749	1,922	2,135	2,305	5.2	9.6
Draw Games	1,373	1,383	1,331	1,317	1,286	1,346	1,395	0.3	1.9
Keno	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>0</u>	<u>n.a.</u>	<u>n.a.</u>
Total	3,076	3,089	3,088	3,066	3,208	3,481	3,700	3.1	6.5

¹ Excludes video lottery terminals and table games. Draw games include all games except instant tickets and Keno.

² Average annual growth rate.

Source: State lottery income statements, various years.

Table 10
Per Capita Sales Comparison for Keno States
FY 2012-13

	Instant Tickets		Draw Games ¹		Keno ²		Total ³	
	Per Capita Sales	Payout Rate ⁴	Per Capita Sales	Payout Rate ⁴	Per Capita Sales	Payout Rate ⁴	Per Capita Sales	Keno Share
Massachusetts	632.7	76.2%	\$129.3	60.0%	\$156.2	69.0%	\$918.3	17.0%
Maryland	106.2	68.1	169.8	56.0	107.9	62.1	383.9	28.1
Michigan	108.4	68.1	146.2	53.8	70.0	64.5	324.7	21.6
New York	242.4	69.0	182.5	51.0	37.7	64.5	462.7	8.2
Ohio	160.7	68.4	114.5	53.8	28.3	64.8	303.3	9.3
Pennsylvania	229.8	69.7	139.0	49.7	n.a.	n.a.	368.8	n.a.

¹ Includes all numbers, raffles, in-state and multi-state lotto games and other miscellaneous games.

² Maryland includes Racetrax and Racetrax Bonus. Michigan includes Club Keno, Club Keno Kicker, and Keno. Massachusetts includes Keno and Race Game.

³ Excludes video lottery terminals and table games.

⁴ Instant ticket payout rate is for FY 2012-13 from LaFleur’s. Draw game payout rate is for FY 2011-12 from NASPL. Keno payout rate computed by IFO based on lottery financial statements. Figures may differ slightly from Tables 5, 6 and 7 due to different data source.

Source: State lottery income statements.

Table 10 displays per capita sales for instant tickets, numbers and lotto games and Keno for the six states from Table 9. As shown by Table 10, per capita Keno sales vary widely across states both in absolute terms and relative to other lottery products.

- For the five comparison states, per capita Keno sales ranged from \$28 to \$156.
- Per capita Keno sales are generally lower than instant ticket and draw games except for Massachusetts (draw games) and Maryland (instant tickets).

Per capita Keno sales will depend upon the business model used by the state lottery and the number of participating retailers. If per capita Keno sales are on the lower end of the range (\$50) for comparison states, then total sales

would equal \$505 million.³⁰ A 65 percent payout rate and five percent commission would imply net revenues of approximately \$150 million. Per capita sales towards the middle and upper end of the range (\$100) would double the figure.

In order to derive the net fiscal impact, these figures must be adjusted for any relevant fixed or variable costs as well as the cannibalization of sales from other lottery and non-lottery (e.g., slots and small games of chance) games. Keno may offer direct competition to current lottery products because the play is “local” and not based on a destination (such as a casino). Moreover, Keno price points and multi-tiered payouts are similar to instant tickets. Data are not available to reliably estimate the potential sales shift from lottery and non-lottery games to Keno.

³⁰ Equal to 10.1 million residents age 18 or older times \$50.