GAMING MARKET ANALYSIS:

Analysis and Business Case of Impact of Regulating and Operating Sports Betting Through the North Carolina Education Lottery

Prepared for North Carolina Education Lottery

December 9, 2019

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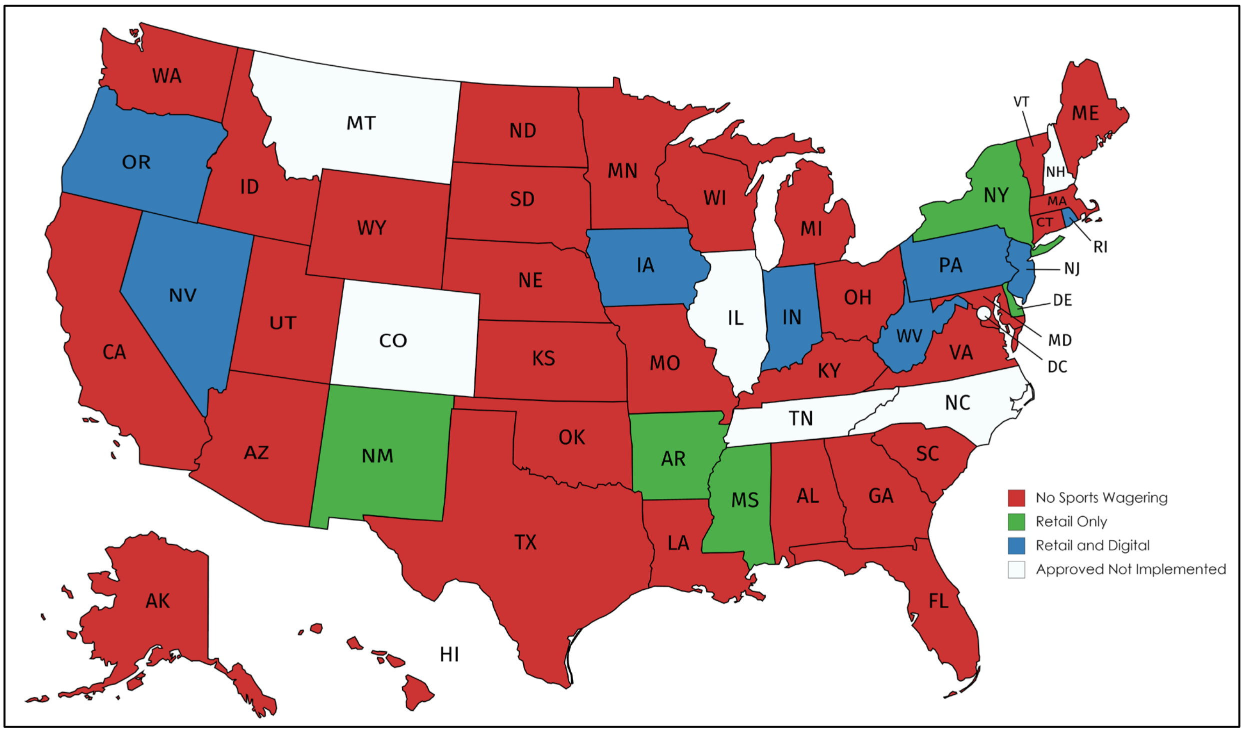
Executive Summary

The North Carolina Education Lottery ("NCEL," "the Lottery," or "Client") engaged Spectrum Gaming Group ("Spectrum," "we," or "our") to undertake an "analysis and business case of impact of regulating and operating sports betting" through NCEL. The following summarizes the key findings in this report.

Since the May 14, 2018, United States Supreme Court decision striking down the Professional and Amateur Sports Act, 12 states have joined Nevada to offer full sports betting. Six other states, including North Carolina, and the District of Columbia have legalized sports betting but have yet to implement it. Tennessee is expected to launch its digital-only platform in 2020. Another 23 states have introduced sports betting legislation.

Figure a: Map of states' status of sports betting



Source: Spectrum Gaming Group, Mapchart.net. Notes: States' status as of October 31, 2019. Tennessee has authorized sports betting only via digital channels. Sports betting in New Mexico, and soon North Carolina, is offered only at tribal casinos.

Sports betting can be offered through retail (i.e., at a physical location such as a casino) or digital (i.e., online/mobile) channels, or both. Digital is the overwhelming choice by bettors. In September, 84 percent of the handle in New Jersey was generated via digital channels, and year-to-date through September the figure was 82 percent.

Sports betting relative to other types of gambling is a low-"hold" activity; in other words, the operator typically retains only a small portion of the amount wagered. For the 12-month period ending August 2019, Nevada casinos held only 6.0 percent of the amount wagered; in New Jersey, the hold for the 12-month period ending September 2019 was 5.5 percent. By comparison, casino slot machines typically hold around 9 percent, casino table games typically hold between 12 percent and 25 percent, and NCEL's effective hold (gross sales minus prizes) on all lottery sales last year was 37 percent (before all expenses).

Spectrum made two important assumptions in developing our sports betting GGR forecasts:

1. Betting will be allowed on in-state college teams. We recognize that this can be a controversial matter in any state, and Spectrum takes no position on this issue. Betting on in-state college teams is, or will be, offered in 13 of the 20 US jurisdictions where sports betting has been authorized. We assume North Carolina will allow in-state college betting because (a) it will be offered at the Harrah's Cherokee casinos in North Carolina; (b) with 18 NCAA Division I colleges and universities, including four in the Atlantic Coast Conference, the State would be forsaking a significant revenue stream were it to prohibit bets on games involving in-state colleges; and (c) illegal sports betting would continue to thrive if in-state college betting were prohibited.
2. The legal age to bet on sports will be 21. This is, or will be, the legal sports betting age in most states and is also the legal age to place bets at the Harrah's Cherokee casinos.

Spectrum recommends, and assumes throughout this report, that NCEL will be the State's sports betting operator, as it has considerable experience in operating and regulating gambling. We note that government lotteries are the choice to operate sports betting in …

- Four US states currently (Delaware, Oregon, Rhode Island, West Virginia) and two more launching soon (Montana and New Hampshire, as well as Washington, DC);
- Every Canadian province; and
- 17 Member States of the European Union

Spectrum recommends that NCEL offer sports betting through both its current retailer base and via digital channels, and our projections herein assume this plan. The retail channels include self-service betting terminals ("SSBTs") placed at select lottery retailers, bars and restaurants that would be rolled out over a period of three years.

Based on Spectrum's assumed sports betting platform for NCEL and on our analysis of results in the US, Canada and Europe, we developed gross gaming revenue ("GGR")[1] projections for North Carolina. Spectrum projects that sports betting in the US will generate the equivalent of $50 to $70 of GGR per adult annually after a three-year ramp-up; for North Carolina, in an effort to be conservative for State budgeting purposes we used the low end of our per-adult

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[1] Gross gaming revenue is the amount retained after all winning wagers have been paid, but before any expenses or taxes have been deducted.

range and adjusted it based on county-by-county household income and the lack of easily accessible gaming for most of the state. We developed our projections in two scenarios: with a first-mover advantage – i.e., North Carolina has sports betting but Georgia, South Carolina and Virginia do not – and without a first-mover advantage, as shown in the following table:

Figure b: North Carolina sports betting gross gaming revenue forecast, by channel

Channel	Year 1	Year 2	Year 3	Three-Year Total
Cumulative No. SSBTs	500	2,000	5,000	5,000
With First-Mover Advantage				
Digital	$120,440,000	$223,670,000	$344,110,000	$688,220,000
Retail (SSBTs)	$3,600,000	$10,990,000	$37,900,000	$52,490,000
Bars & Restaurants	$15,050,000	$27,960,000	$43,010,000	$86,020,000
Total	**$139,090,000**	**$262,620,000**	**$425,020,000**	**$826,730,000**
Without First-Mover Advantage				
Digital	$97,730,000	$181,490,000	$279,220,000	$558,440,000
Retail (SSBTs)	$3,200,000	$9,990,000	$34,900,000	$48,090,000
Bars & Restaurants	$12,216,000	$22,686,000	$34,900,000	$69,802,000
Total	**$113,146,000**	**$214,166,000**	**$349,020,000**	**$676,340,000**

Source: Spectrum Gaming Group

The percentage of GGR retained by NCEL would be dependent on its contractual arrangement with its selected sports betting provider. Spectrum will not provide an estimate of the sports betting profitability to avoid tying the hands of NCEL during contract negotiations with sports betting providers. In the four states where the lottery either operates or oversees sports betting, the percentage of GGR retained by the lottery varies significantly:

- Delaware: The Lottery operates the sports betting and retains 51 percent of the GGR.
- Oregon: The Lottery, which launched digital sports betting in October 2019 and plans to add SSBTs to select lottery retailers in 2020, has not disclosed the amount it will retain.
- Rhode Island: The Lottery operates the sports betting in that state; it has subcontracted with IGT to operate the sports betting system. The Rhode Island Lottery retains 51 percent of the GGR.
- West Virginia: The Lottery does not operate sports betting but rather authorizes it through their casino licensees and sports betting subcontractors; the West Virginia Lottery retains 10 percent of GGR.

Delaware and Rhode Island retain more of the GGR but they are also responsible for paying more of the operating expenses than West Virginia.

As no US jurisdiction at this point has begun offer betting through its network of lottery retailers, there is no guiding precedent to gauge the potential impact of betting on existing NCEL sales. However, Spectrum believes the nature of sports betting could minimally impact sales of certain NCEL games, and we have erred on the side of being conservative by forecasting that overall existing NCEL sales would decline by less than 1 percent in Year 1 of sports betting before showing growth again in Year 4.

In reviewing the current universe of NCEL retailers, Spectrum found that approximately 40 percent of the current retailer base is prime to become high-performing sports betting retailers. The table below shows the total sales of all NCEL products from the total universe of 7,154 active NCEL Lottery retailers, broken down into the top four deciles; it demonstrates that the top 40 percent of retailers sell 67.9 percent of all existing lottery products. Spectrum recommends that these 2,862 top-performing retailers be encouraged to apply for, and obtain, the licenses expected to be required for those retailers wanting to offer sports-betting through NCEL.

Figure c: Total NCEL sales by retailer segment, top four deciles market share, FY 2019

Segment	Universe	Retailers	Total Revenue (M)	Share	Average (M)	Median (M)
1	All	1 to 7,154	$2,792.7	100.0%	$0.390	$0.317
2	Top 10%	1 to 715	$759.4	27.2%	$1.061	$0.937
3	Top 20%	1 to 1,431	$1,220.1	43.7%	$0.854	$0.745
4	Top 30%	1 to 2,146	$1,591.4	57.0%	$0.741	$0.639
5	Top 40%	1 to 2,862	$1,895.7	67.9%	$0.662	$0.574

Source: NCEL Lottery data, Spectrum Gaming Group

Spectrum recommends NCEL devise plans to recruit lottery retailers in areas of the state that may be under-represented to improve its retailer penetration rate and to identify potential sports betting retailers who are not current lottery retailers. This process should also be used to recruit new lottery retailers to sell traditional lottery products, which will increase traditional lottery sales.

It is evident that the bars and restaurants are under-represented as NCEL retailers, due at least in part to State restrictions on liquor licensing regarding the minimum ratio of food sales. If NCEL could grow its lottery retailer base by 500 restaurants and bars, and each new location sold $662,000 in lottery product per year (based on the average of the highest-grossing 40 percent of retailers), the increase in gross lottery sales would be $331 million annually. Further, the 500 new restaurant and bar retailers would also be prime candidates to be sports betting agents as well, and we expect sports betting revenue potential would be significant in these establishments.

A successful retail sports betting program will require buy-in from participating lottery retailers. NCEL currently pays its retailers a 7 percent commission. However, the standard retailer commission provides a unique challenge given the structure of sports betting. The 7 percent retailer commission affects the financial structure of sports betting because the commission is taken from the total amount wagered, not the GGR, which is net revenue after the payment of prizes. Spectrum recommends negotiating a commission rate lower than the 7 percent lottery retailer commission rate for sports betting retailers. The sports betting product will be driven by SSBTs, thus requiring less retailer staffing to operate and justifying a lower commission rate. Spectrum will not recommend a commission percentage in this report, as this may affect NCEL's anticipated negotiations with retailers. The ultimate commission rate for sports betting could affect retailer buy-in and thus the success of the retail program.

To accommodate sports betting, Spectrum anticipates that NCEL will add at least 16 NCEL positions over the three-year rollout of sports betting. This projection might change depending on the details of any future legislation passed and future policy decisions made by NCEL.

Regarding matters of the sports betting platform that NCEL would utilize, Spectrum makes the following recommendations:

- Spectrum recommends the Lottery adopt a *no*-risk model, in which the company contracted to provide the platform and perform all services bears all risk. This model will provide a greater predictability of revenue to the State.
- Spectrum believes SSBTs to be a viable and valuable potential channel for sports betting, and recommends them being located within both existing and new NCEL retailer outlets.
- Spectrum recommends the design and delivery of a mobile sports-betting application, capable of operation on both Android and iOS operating platforms, with a full range of betting products and markets, be available to North Carolina residents from launch.
- Spectrum recommends that NCEL assume, for business-planning purposes, a target payout range of 88 percent to 90 percent, which equates to a target gross win range of 10 percent to 12 percent. This should allow NCEL to offer sufficiently attractive odds to new sports betting customers from launch.
- Spectrum recommends that NCEL be prepared to adjust its payout percentage over time to ensure that it remains competitive at an appropriate level, and to help support a viable commercial retail model.
- Spectrum recommends that the fullest range of bet-types – both single-event and parlay bets – be available to North Carolina residents from launch.
- Spectrum recommends that a full range of sports betting products – to include pre-event betting, in-play betting and cash-out functionality – be available to North Carolina residents from launch.
- Spectrum recommends that NCEL offer the widest possible range of permitted sports from launch, and to consider potentially including esports now that other states such as Nevada and New Jersey have deemed this activity to be acceptably regulated from a sports betting perspective. This will provide the widest possible choice to its residents and help compete effectively with the offshore sports betting providers.

Meanwhile, separate from any state-operated sports betting, the Eastern Band of Cherokee Indians ("EBCI") is spending a combined $25 million to build sportsbooks at its two Harrah's casinos in North Carolina. Although a sports-betting monopoly in North Carolina would, of course, be ideal for the Cherokee casinos, Spectrum concurs with the EBCI and its casino operator, Caesars Entertainment, that the presence of attractive, entertainment-oriented sportsbooks combined with the already high patron volumes at those casinos will generate positive financial and economic-impact results at those two properties.

Illegal sports betting is now occurring throughout North Carolina. Creating a legal channel for this activity provides an opportunity to raise revenue for the state, marginalize (or possibly eliminate) an illegal business, and provide bettors with a secure, stable regulated form of entertainment.

Based on our projected performance of sports betting in North Carolina, Spectrum determined that, after accounting for reallocation of consumer spending and leakages due to imports and commuting, the introduction of sports betting through NCEL creates positive economic impacts statewide in North Carolina. These positive impacts occur with and without a first-mover advantage, though they are greater with the advantage.

Figure d: Summary economic impacts of first-mover and not first-mover scenarios, job-years

Economic Activity Summary	Employment		Output (M)		Value Added (M)		Personal Income (M)	
	Average	Cum.	Average	Cum.	Average	Cum.	Average	Cum.
First Mover	4,266	42,656	$672	$6,718	$409	$4,087	$269	$2,687
Not First Mover	4,027	40,270	$577	$5,765	$351	$3,512	$251	$2,506
Difference	*239*	*2,386*	*$95*	*$953*	*$58*	*$576*	*$18*	*$181*

Source: Spectrum Gaming Group, PI+. Job years are equivalent to one job lasting for one year. For example, over 5 years, the business will have created 50 job-years (10 jobs at the company x 5 years = 50 job-years), though it is possible that it is not the same 10 people who are working there over time. When reviewing changes in employment across multiple years, knowledge of the concept of job-years is vital to proper interpretation.

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Introduction

The North Carolina Education Lottery ("NCEL," "the Lottery," or "Client") engaged Spectrum Gaming Group ("Spectrum," "we," or "our") to undertake an "analysis and business case of impact of regulating and operating sports betting"[2] through NCEL. As stipulated in the Request for Quotation issued by NCEL, the selected consultant is to provide the following deliverables and services:

A. **Economic Impact and Business Case**

1. The successful contractor will provide independent research and analysis detailing the potential economic impact of NCEL regulating and operating sports betting in North Carolina. This should include revenue forecasts as well as any significant impacts to the state's economy overall, such as an estimate of additional jobs created.
2. The analysis should include a variety of potential scenarios based on options available to NCEL given the current gaming environment in North Carolina, NCEL's current retailer network and Online Play program, and any potential new platforms that could be implemented to maximize revenue from sports betting.
3. The analysis should also take into consideration the importance of timing (being first-mover), the potential impact of surrounding states, and the impact of current non-Lottery gaming operators in the State.
4. The successful contractor must be able to describe in detail the methodology and process for analysis.
5. The successful contractor must be available to present findings and serve as a qualified expert for in-person presentations or testimonies.

B. **Recommendation for NCEL Sports Betting Platform**

The successful contractor will need to provide recommendations for the optimal sports betting model to launch in North Carolina. This should include the following elements:

1. Staffing structure and positions based on best practices
2. Types of sports betting to be offered (e.g. fixed odds, parlay, etc.)

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[2] This report assumes sports betting will be offered via a **fixed odds sports betting** system, as is done throughout every other US state that has legalized the activity. Fixed odds sports betting, a widely used industry term, is a betting system in which bets are accepted by the operator/bookmaker at odds fixed at the precise time the bet is struck by the player, who chooses to bet at those offered odds. Thus, the individual liability of each individual bet is known by the operator/bookmaker at that precise time, and winning bets are settled, and paid out to the player, at those fixed odds once the result is known. This is in contrast with **pari-mutuel sports betting**, a betting system in which all bets of a particular, similar type are placed collectively within a pool. After deductions, for taxes and a pre-determined profit margin, the residual funds, and payouts, are made by sharing the pool among all winning bets once the result is known. Thus, final payouts are not known until the pool is closed.

3. Payout considerations and recommendation
4. Risk scenarios and recommendation
5. Optimal retailers for sports betting
6. Use of Self-Service Terminals
7. Use of Online Play Program

Subsequent to the passage of Senate Bill 574[3] on September 4, 2019, NCEL further requested that Spectrum assess the potential impact of legal sports betting on tribal gaming in the state and on traditional Lottery sales.

A. Glossary

Throughout this report we make reference to certain terms that are relevant to sports betting, including:

- **Digital** – Betting on sports via mobile device, personal computer or other personal online device.
- **Gross gaming revenue ("GGR")** or **gross win** – The amount of money players wager minus the amount players win (Handle X Hold% = GGR), before any expenses or taxes have been deducted. Also called the "win."
- **Handle** – The total amount of money wagered.
- **Hold** or **gross win percentage** – The percentage of money the bookmaker or house holds onto after all bets have been settled. It is the inverse of the payout percentage.
- **Parlay** – A single bet on multiple events or outcomes. If one part of the bet does not win, the entire bet is a loss.
- **Retail** – Betting in person at a physical location, such as at a lottery retailer (including via a self-service betting terminal), casino or other authorized location.
- **Self-service betting terminal ("SSBT")** – A standalone terminal stationed at an authorized location that allows patrons to make a sports wager without need for employee interaction. SSBTs operate via a networked-system typically consisting of a touchscreen, barcode scanner, under-counter unit housing a contactless card reader, cash acceptor, and receipt printer.

B. Methodology

Spectrum relied on the following primary methods for our research and analysis:

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[3] General Assembly of North Carolina, "An Act to Study the Status of Sports Betting and Whether or Not to Establish a Gaming Commission," 2019. https://www.ncleg.gov/Sessions/2019/Bills/Senate/PDF/S574v5.pdf

1. **Data collection:** NCEL provided Spectrum with all requested data, including detailed lottery sales data and demographic studies. We further analyzed actual sports betting data from other states that have commenced sports betting over the 17 months since the US Supreme Court struck down a federal law that prohibited it in most states. We relied heavily on results in New Jersey, which is the only newly active sports-betting state with more than a year of both retail and digital betting performance data.
2. **Interviews:** In addition to NCEL staff, Spectrum interviewed 17 people, including representatives for technology providers, retail associations, and the state's tribal casinos. The interviews were particularly important in understanding the concerns of Lottery retailers and thus the impact on a potential rollout of sports betting. (See Appendix 1 for the interview list.)
3. **Financial modeling:** Spectrum used a number of analytical tools and models to analyze gaming data, population data, and geography. We further used some of these data as inputs for an input-output economic forecasting model from Regional Economic Models Inc. (see Appendix 2), which projects the economic impacts of Lottery-operated sports betting.
4. **Experience of relevant jurisdictions:** Spectrum researched and assessed the structure, regulations and performance of sports betting in other US states and in Canada and Europe. This provided critical context for our recommendations in this report and in our GGR forecasts for North Carolina.
5. **Our experience:** Spectrum has been providing independent research and professional services related to the gaming industry since 1993, and many of our executives and associates have been gaming regulators, operators or analysts for decades. We have conducted studies or consultations in 40 US states and territories, including for numerous state, tribal and national governments. Our recent sports-betting engagements include studies for the governments of Louisiana, Puerto Rico, Rhode Island, and Washington, DC, as well as for private-sector clients. Two primary participants in this study were Spectrum Senior Associates Paul Sternberg and William Egan, who formerly were Executive Director and General Counsel, respectively, of the Massachusetts State Lottery, one of the most successful lotteries in the country. Other professionals participating in this project included experts in gaming financial analysis, sports betting, economics, finance, public policy, and journalism.

Throughout the course of this project we received a high level of cooperation from NCEL, which recognizes that this study will be an important educational tool in helping the State of North Carolina and myriad stakeholders understand the considerations and impacts of authorizing legal sports betting statewide.

C. Critical Assumptions

Spectrum made several critical assumptions in developing our forecasts and our structure for sports betting in North Carolina. They include:

- NCEL would be the State's operator of sports betting (discussed in section I.A).
- NCEL would offer sports betting through both Lottery retailers and online channels (discussed in section III.A and throughout).
- Betting on in-state college teams would be allowed (discussed in section II.B).
- The legal age to participate in sports betting would be 21 (discussed in section II.B).

D. About Spectrum Gaming Group

Spectrum Gaming Group is an independent research and professional services firm founded in 1993 that serves private- and public-sector clients worldwide. We are a non-partisan consultancy that specializes in the economics, regulation and policy of legalized gambling worldwide.

Spectrum holds no beneficial interest in any casino operating companies or gaming equipment manufacturers or suppliers. We employ only senior-level executives and associates who have earned reputations for honesty, integrity and the highest standards of professional conduct. Our work is never influenced by the interests of past or future clients.

Each Spectrum project is customized to our client's specific requirements and developed from the ground up. Our findings, conclusions and recommendations are based solely on our research, analysis and experience. Our mandate is not to tell clients what they want to hear; we tell them what they need to know. We will not accept, and have never accepted, engagements that seek a preferred result.

Our 250-plus clients have included government entities of all types and gaming companies (national and international) of all sizes, both public and private. In addition, our principals have testified or presented before the following governmental bodies:

- British Columbia Lottery Corporation
- California Assembly Governmental Organization Committee
- Connecticut Public Safety and Security Committee
- Florida House Select Committee on Gaming
- Florida Senate Gaming Committee
- Georgia House Study Committee on the Preservation of the HOPE Scholarship Program
- Georgia Joint Committee on Economic Development and Tourism
- Illinois Gaming Board
- Illinois House Executive Committee
- Indiana Gaming Study Commission
- Indiana Horse Racing Commission
- International Tribunal, The Hague
- Iowa Racing and Gaming Commission
- Louisiana House and Senate Joint Criminal Justice Committee
- Massachusetts Gaming Commission
- Massachusetts Joint Committee on Bonding, Capital Expenditures, and State Assets

- Michigan Senate Regulatory Reform Committee
- National Gambling Impact Study Commission
- New Hampshire Gaming Study Commission
- New Jersey Assembly Regulatory Oversight and Gaming Committee
- New Jersey Assembly Tourism and Gaming Committee
- New Jersey Senate Legislative Oversight Committee
- New Jersey Senate Wagering, Tourism & Historic Preservation Committee
- New York Senate Racing, Gaming and Wagering Committee
- New York State Economic Development Council
- Ohio House Economic Development Committee
- Ohio Senate Oversight Committee
- Pennsylvania Gaming Control Board
- Pennsylvania House Gaming Oversight Committee
- Puerto Rico Racing Board
- US House Congressional Gaming Caucus
- US Senate Indian Affairs Committee
- US Senate Permanent Subcommittee on Investigations
- US Senate Select Committee on Indian Gaming
- US Senate Subcommittee on Organized Crime
- Washington State Gambling Commission
- West Virginia Joint Standing Committee on Finance
- World Bank, Washington, DC

Disclaimer

Spectrum has made every reasonable effort to ensure that the data and information contained in this study reflect the most accurate and timely information possible. The data are believed to be generally reliable. This study is based on estimates, assumptions, and other information developed by Spectrum from its independent research effort, general knowledge of the gaming industry, and consultations with the North Carolina Education Lottery. Spectrum shall not be responsible for any inaccuracies in reporting by NCEL or its agents and representatives, or by any other data source used in preparing or presenting this study.

Some significant factors that are unquantifiable and unpredictable – including, but not limited to, economic, governmental, managerial and regulatory changes; and acts of nature – are qualitative by nature and cannot be readily used in any quantitative projections. No warranty or representation is made by Spectrum that any of the projected values or results contained in this study will actually be achieved. We shall not be responsible for any deviations in the project's actual performance from any predictions, estimates, or conclusions contained in this study.

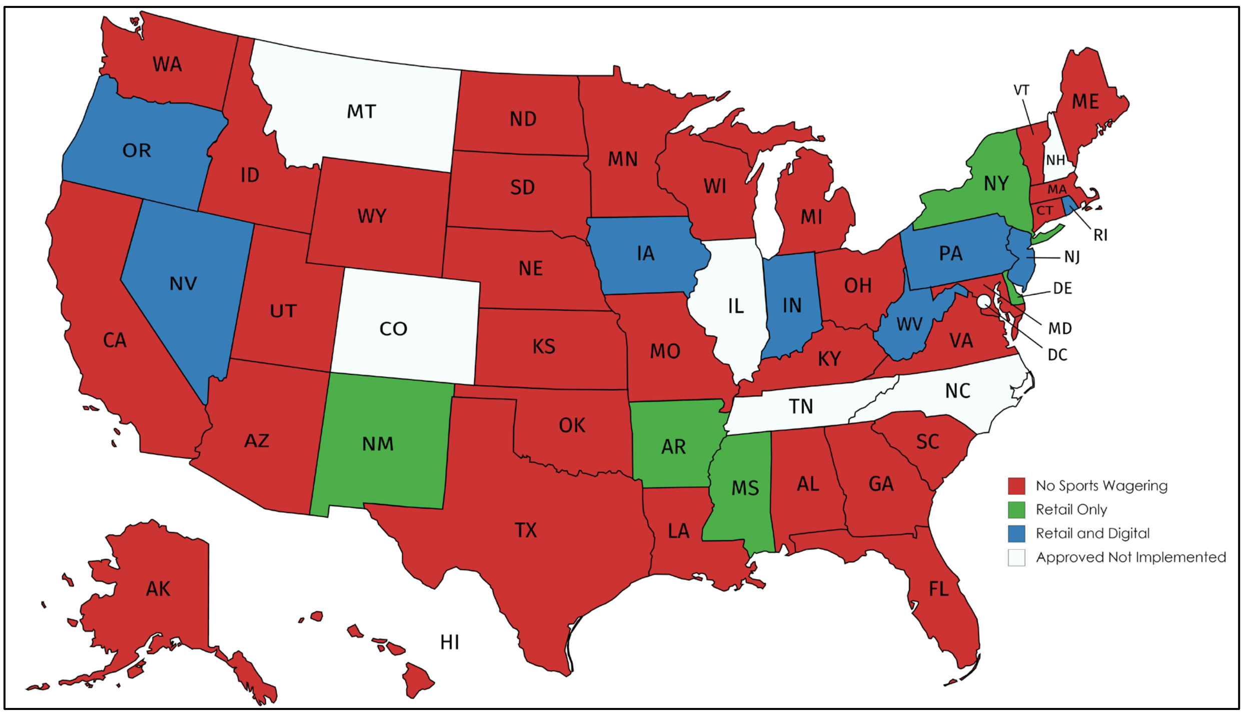
This study is qualified in its entirety by, and should be considered in light of, these limitations, conditions and considerations.

I. The Sports Betting Landscape

On May 14, 2018, the United States Supreme Court struck down the Professional and Amateur Sports Act ("PASPA"), a federal law that banned sports betting in most states. This decision enabled states to decide whether to legalize sports betting. According to the American Gaming Association ("AGA") approximately $150 billion is wagered illegally each year on sports in the US, generating approximately $7.5 billion to $9 billion of gross gaming revenue ("GGR"). Given the size of the illegal market estimates, we believe the legal, regulated market in the United States will be substantial. It is well known that sports betting has taken place illegally for many years and historically has been controlled by organized crime. States and the regulated gaming industry, led by the AGA, have cited the desire to remove the illegal elements as one reason for legalizing sports betting at the state level.

Until the Supreme Court decision, only Nevada offered full sports betting.[4] Since then, sports betting has commenced in 12 additional states in retail and/or digital channels. Six other states, including North Carolina, and the District of Columbia have legalized sports betting but have yet to implement it. The following map displays the status of legal sports betting by state.

Figure 1: Map of states' status of sports betting



Source: Spectrum Gaming Group, Mapchart.net. Notes: States' status as of October 31, 2019. Tennessee has authorized sports betting only via digital channels. Sports betting in New Mexico, and soon North Carolina, is offered only at tribal casinos.

[4] Sports betting was also offered only on a parlay basis through the Delaware Lottery.

Another 23 states have introduced sports betting legislation as momentum from the early adopters spreads throughout the country. Although the prospect of passage varies by state, Spectrum expects that within two years more than 30 states will have commenced or at least authorized sports betting. The status[5] of sports betting initiatives among North Carolina's border states:

- **Georgia:** House Resolution 380[6] would amend the state constitution to allow the General Assembly to authorize sports betting.
- **South Carolina:** Senate Bill 57[7] would amend the state constitution to allow full-scale gaming, including sports betting.
- **Tennessee:** The state implemented the Tennessee Sports Gaming Act in May 2019, authorizing sports betting via only digital channels. It could commence as early as late 2019.
- **Virginia:** The commonwealth is undertaking a study of the impacts of all forms of gaming, including sports betting, based on Senate Bill 1126.[8] Using the study results as a tool, the commonwealth is expected to consider authorizing the activity in 2020.

As shown in the map above, most states that offer sports betting allow the activity via both retail and digital channels. Data from New Jersey – which has offered betting through both retail and digital channels for more than a year – demonstrate that digital is the overwhelming choice by bettors. In September, 84 percent of the statewide handle was via digital, and year-to-date through September the figure was 82 percent.

New Jersey essentially equaled Nevada as the highest-grossing sports betting state within a year of launch due to three primary factors:

1. Its adult population is three times that of Nevada's;
2. It added digital channels within two months of commencing sports betting at retail locations; and
3. It had a first-mover advantage over neighboring New York and Pennsylvania, thus attracting bettors from the heavily populated New York City and Philadelphia markets on its borders. Pennsylvania launched digital betting in May 2019, and in New York

[5] As of November 1, 2019.

[6] See https://trackbill.com/bill/georgia-house-resolution-380-general-assembly-provide-by-law-for-sports-betting-authorize-ca/1709255/

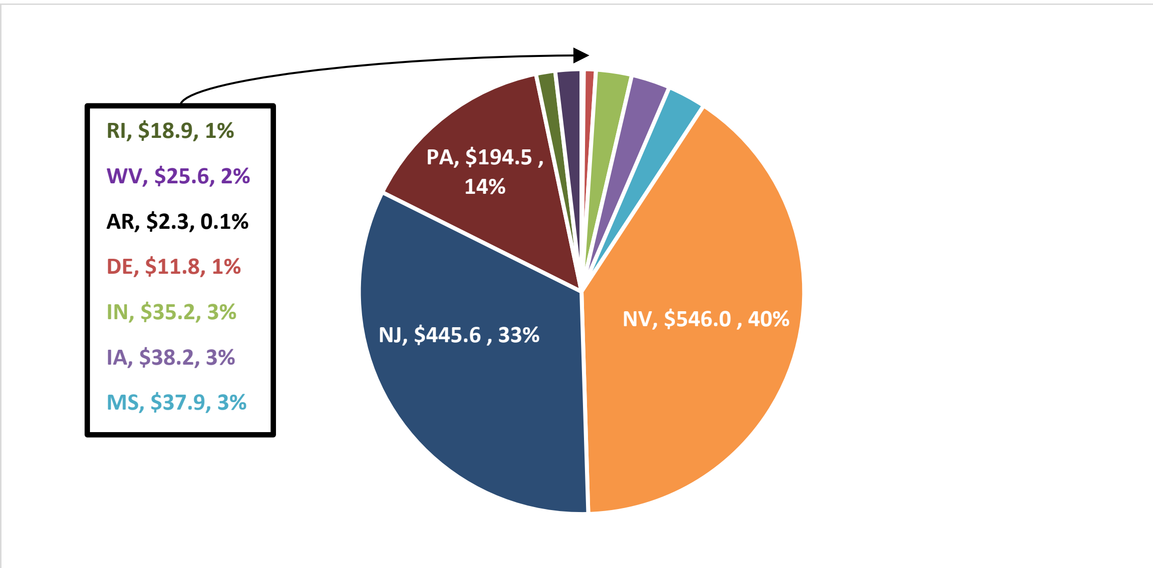
[7] See https://www.scstatehouse.gov/query.php?search=DOC&searchtext=sports&category=LEGISLATION&session=123&conid=15537938&result_pos=0&keyval=1230057&numrows=10

[8] See https://trackbill.com/bill/virginia-senate-bill-1126-lottery-board-regulation-of-casino-gaming-penalties-report/1614190/

sports betting remains restricted to full-service casinos, the closest to New York City being 95 miles away.

The chart below shows the total sports betting handle by state among the reporting states for September 2019 and the percentage of the US total among reporting states. We note that all states except Nevada are still in ramp-up mode. We use handle instead of GGR to illustrate the interest and activity of sports betting, as GGR can fluctuate disproportionately to handle due to event outcomes. Note that Nevada accounted for only 40 percent of betting volume that month, a number that will continue to shrink as the new adopters ramp up their volumes and more states legalize sports betting.

Figure 2: Sports betting handle (M) and US market share* by state, September 2019



Source: Spectrumetrix, state gaming commissions. *Data are among reporting states as of September.

It is important to note that sports betting relative to other types of gambling is a low-"hold" activity; in other words, the operator typically retains only a small portion of the amount wagered. For the 12-month period ending September 2019, Nevada casinos held 6.0 percent of the amount wagered and in New Jersey combined retail and digital hold was 5.5 percent. By comparison, casino slot machines typically hold around 9 percent, casino table games typically hold between 12 percent and 25 percent, and NCEL's effective hold (gross sales minus prizes) on all lottery sales last year was 37 percent (before all expenses).

A. Lotteries as Sports Betting Operators

States contemplating the introduction of sports betting must decide which state entity will offer and regulate this activity. The primary choices are as follows:

- The existing casino/gaming commission

- A newly created gaming or betting commission
- The existing lottery
- The existing pari-mutuel commission

So far, the newly active states have opted to utilize their existing gaming commissions or lotteries to regulate sports betting. This makes sense, because these entities have the gambling-related experience and structure in place to oversee the implementation of sports betting quickly and do so with the necessary integrity. In states with both state-regulated casinos (as opposed to Native American casinos) and lotteries, the states have opted to use the existing casino/gaming commission instead of the lottery.

Four states offer sports betting via their lotteries. Delaware, Rhode Island and West Virginia offer sports betting through their respective lottery-regulated casinos; Rhode Island and West Virginia also offer digital betting. In October 2019, the Oregon Lottery launched digital betting and plans to add SSBTs to select lottery retailers beginning in 2020.

Four additional US jurisdictions that have authorized sports betting but have yet to launch the activity will be doing so through their state lotteries: Montana, New Hampshire, Tennessee, and Washington, DC. It appears that if Virginia authorizes sports betting it will also be under the auspices of its state lottery.

In Canada, lotteries are the exclusive provider of sports betting in every province. This includes:

- Atlantic Lottery Corp., which includes New Brunswick, Newfoundland, Nova Scotia, and Prince Edward Island
- British Columbia Lottery Corp.
- Loto-Quebec
- Ontario Lottery and Gaming Corp.
- Western Canada Lottery Corp., which includes Alberta, Manitoba and Saskatchewan, as well as Northwest Territories, Nunavut, and Yukon Territory as associate members

In Europe, 17 EU Member States offer sports betting through their respective Lottery providers. They are as follows:

Figure 3: EU Member States with lotteries offering sports betting

Country	Lottery Name(s)	No. Providers
Belgium	Loterie Nationale	1
Bulgaria	EuroFootball Ltd	1
Croatia	Hvratska Lutrija d.o.o.	1
Czech Republic	Sazka a.s.	1
Finland	Veikkas OY	1
France	La Francaise des Jeux	1
Germany	Multiple States/Landes, Solus Providers	13
Greece	OPAP	1
Hungary	Szerencsejatek Zrt.	1
Italy	Lottomatica, Sisal SpA	2
Luxembourg	Loterie Nationale	1
Malta	Maltco Lotters Ltd.	1
Netherlands	Nederlandse Loterij	1
Poland	Totolek SA	1
Portugal	Santa Casa de Misericordia de Lisboa	1
Slovakia	Tipos National Lottery Company AS	1
Sweden	AB Svenska Spel	1

Source: European Lottery Association, Spectrum Gaming Group

Based on both the experience of other North American jurisdictions, as well as major European jurisdictions, and the fact that North Carolina already has a successful, proven gaming operator in the form of its state lottery, Spectrum recommends (and assumes throughout this report) that NCEL be the State's sports betting operator.

In addition to the example of other lotteries, NCEL, as it is presently constituted, is in the most advantageous position to create a sustainable sports betting model that not only will maximize revenue for North Carolina, but also allow for responsible growth of a sports betting product. NCEL is in the most advantageous position for three reasons:

- First, it is the current operator of a successful lottery operation and has extensive marketing and operation experience in the state.
- Second, NCEL has experience in developing an extensive retail chain and a great deal of experience in managing gaming technology providers in both the retail and digital spaces.
- Third, NCEL has experience in operating gambling in North Carolina responsibly by supporting efforts to minimize problem gambling.

A new, purely regulatory body would not have any of these advantages.

Moreover, if NCEL were authorized to offer sports betting through its retail chain, it would provide a tremendous opportunity to grow traditional lottery revenue through an expanded retail base, as is discussed elsewhere in this report. Further, if North Carolina follows Spectrum's recommendation that sports betting be offered on a digital platform as well as through a retail chain, then NCEL is the most viable option to operate and regulate sports betting because of its existing relationship with the most viable retail partners and its existing management of the Lottery's online presence.

Additionally, NCEL has experienced staff who can grow into the additional duties required to operate sports betting with the addition of a small number of positions, as is discussed in this report (chapter III.C). In looking at lottery operations in the US , the most efficient operations are the entities that have a strong level of employee experience where employees take ownership of key functions and are not vendor-dependent. Based on our review, NCEL has such an operation. This fact – combined with its retail relationships and management of an existing gaming digital space – makes NCEL the best qualified to start this operation and manage it efficiently, limiting costs where possible, to maximize revenue for the State of North Carolina.

II. North Carolina Sports Betting Forecast

In this chapter we project the gross gaming revenue potential for North Carolina if it were to implement statewide sports betting through NCEL via retail and digital channels. We further assume, as discussed later in this chapter, that betting on in-state college teams will be allowed, and that North Carolina will have a first-mover advantage over Virginia, South Carolina and Georgia. We also provide projections if North Carolina were not to enjoy such a first-mover advantage.

A. Analysis of Performance in Other Jurisdictions

Because legal sports betting outside of Nevada is new in the United States, there are few good comparative jurisdictions that can be used to project North Carolina sports betting GGR. Las Vegas provides limited value because it is a tourist market. Among the 12 newly active states, only New Jersey has a full year of high-volume results via both retail and digital channels, and as such that state provides valuable insight in our analysis. Canada offers a limited comparison, as only parlay bets are allowed in each province; single-game bets are prohibited. The experience in Europe is helpful, although it remains to be seen whether the results there correlate to results in the United States.

Europe and Canada

Sports betting in many large European countries has been a regulated activity for more than a decade. We analyzed the largest mature markets for insight into the potential size of the US market and, in turn, state-by-state potential. Additionally, many of these markets established digital betting when internet usage became more widespread during the 2000s. The impact and size of the US business is likely to grow significantly faster because markets are developing in a more advanced digital environment. The sports betting landscape in Europe has similar characteristics to the existing and ongoing rollout across US states. The top 10 European markets have tax rates ranging from 8.5 percent in France to as high as 35 percent in Greece.

A review of the land-based gaming industry in the United States compared to European markets suggests US gamblers have a higher propensity to gamble as measured by land-based GGR to gross domestic product ("GDP") percentage. The median GGR/GDP percentage for Europe is 0.17 percent and the US ratio is 0.40 percent, more than double that of Europe. Land-based GGR for the US was about $75.4 billion (both commercial gaming and Native American)[9] in 2018, or $299 per US adult. The higher propensity to gamble in the United States can be attributed to the widespread availability of land-based gaming at more than 1,000 casinos of all

[9] State gaming commissions, National Indian Gaming Commission.

types in 43 states. By comparison, the largest land-based casino market in Europe is in the United Kingdom, with about 150 land-based casinos serving 54 million adults.[10] We note that the United Kingdom had approximately 8,400 betting shops as of September 2018, but compared to the land-based casinos throughout the United States these are much smaller and less attractive entertainment venues. When analyzing land-based casino spending in the United States one key conclusion is that if gambling – and in turn sports betting – is made widely available, the spend/adult is likely to outpace European markets.

As adjusted for GDP per adult, the top 10 sports betting markets in Europe generate a wide range of sports betting GGR per adult – between $26 and $82. That would translate to a very wide range of $6.6 billion to $20.9 billion of sports betting GGR for all of the United States (approximately 252 million adults). Given the higher propensity to gamble in the United States, we believe sports betting GGR per adult nationwide will be at the higher end of the range, at $50 to $70 per US adult per year.

In Canada, Ontario is the most populated province and has the only Major League Baseball and National Basketball Association teams outside the US, as well as two National Hockey League teams, a Major League Soccer team, and three Canadian Football League teams. Despite being limited to parlay bets, Ontario still generates about $27 in GGR per adult, as shown in the following table.

Figure 4: Ontario sports betting performance, FY 2016 – FY 2019

Fiscal Year	2015-16	2016-17	2017-18	2018-19
GGR	$293,600,000	$297,900,000	$298,200,000	$302,600,000
Est. adult population	10,795,960	10,976,583	11,195,852	11,424,854
Per capita GGR	$27	$27	$27	$26

Source: Ontario Lottery and Gaming Corp, Statistics Canada, Spectrum Gaming Group

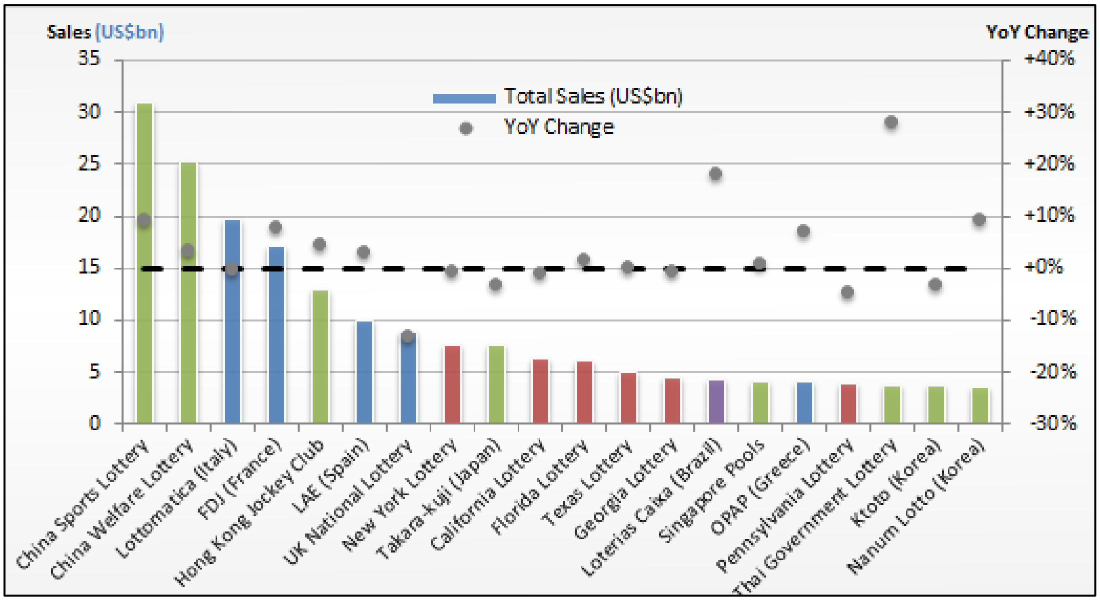
In August 2018, the Atlantic Lottery in eastern Canada began offering an online parlay sports betting platform called ProLine Sports. For the six months ended March 2019, GGR totaled $14.2 million.[11] With an estimated adult population of 1.7 million adults across the four member provinces, the estimated annualized GGR per adult was $16 in the first six months of operation. By way of comparison, annualized GGR per adult in New Jersey for the first six months was $15. By the end of the first full year of sports betting in New Jersey, the 12-month GGR per adult was $32. This shows the ramp-up effect as patrons become more comfortable with sports betting.

[10] H2 Gambling Capital.

[11] Atlantic Lottery Corporation, *Consolidated Financial Statements Year End March 31, 2019*. https://www.alc.ca/content/dam/alc/docs-en/Corp/AboutAL/WhoisAL/AnnRepts/2018-19%20FINAL%20Financial%20Statements.pdf

In Europe, sports betting helped the national lotteries in Italy, France and Greece rank 3rd, 4th and 16th, respectively, in the World Lottery Association's annual sales rankings, as shown in the following chart.

Figure 5: World Lottery Association top 20 members by sales, FY 2017



Source: World Lottery Association. Data exclude sales from VLTs, electronic lotteries and horse racing

By way of further background, the European Lotteries ("EL") compiles information and performance statistics from their 70 individual members, which covers 42 European countries, including the 28 EU Member States. The EL discussed in its annual report[12] the growing importance of sports betting among its members, showing a total GGR of €1.90 billion ($2.22 billion) in 2017. The EL noted the following:

> The two Sports Games gaming categories, including also the Horse Racing, both collected and analysed separately for Pari-Mutuel and Fixed Odds wagering, totalled a GGR of €2.3bn by 36 EL Members from the EU and €2.8bn by all 46 EL Members reporting the 7 category for 2017.
>
> Although Sports Games are rather the minor product categories, generating for EL Members from the EU only 7.0% of their total GGR and for all EL Members 7.5% of their total GGR, they are both fast growing categories, increasing in terms of joint GGR by 9.0% and by 11.1% for EL Members from the EU and for all EL Members respectively (compared to 2016).
>
> Out of the two product categories Sports Games Fixed Odds is more important, representing over 81% of the GGR generated for the two product categories. The category GGR was reported by 28 EL Members in 17 EU states, showed a total GGR of €1.9bn in 2017 and grew by 11.1% compared to 2016 and 9.6% on average for four consecutive years.

[12] European Lotteries & Toto Association, "Annual Report 2018," issued July 22, 2019. https://www.european-lotteries.org/system/files/announcement/4761/files/20190716-europeanlotteries-annualreport2018final.pdf

All 37 EL Members reporting this category enjoyed a total GGR of €2.3bn, which also meant a year on year increase by 9.4% compared to 2016 with an average growth of 9.6% for four consecutive years.

The following table examines in more detail the relative performance of the largest three European lottery providers of sports betting, namely Italy, France and Greece. From our analysis, Spectrum estimates that these three markets have more than a 50 percent share of the total €1.90 billion ($2.22 billion) in GGR produced through the 17 EU Member States that currently offer sports betting through their providers.

Figure 6: Sports betting comparison by lottery provider – France, Greece and Italy

EU State	Total 2017 Sales (B)	Top 20 WLA Rank	Introduction date of sports betting	Lottery Provider	Sports Betting Brand(s)	Sports Betting share of total GGR	Mobile	Retail?	Bars and Rest.?
France	$17.4	4th	2009	FDJ	Parionssport	15%	Y	Y	Y
Greece	$4.9	16th	2000	OPAP	Pame Stihima, Monitor	20%	Y	Y	Y
Italy	$19.0	3rd	2008	Lottomatica	Better	6%	Y	Y	Y

Source: World Lottery Association, European Lottery Association, Company Presentations, Spectrum Gaming Group

Newly Active US States

Since the May 2018 Supreme Court decision, 12 states have added sports betting as an added amenity to their existing casino industry. Each state operates with differing business models and under varying tax rates, as shown in the table below. Due to the nature of tribal gaming, there is no tax rate on these revenues, but there may be a fee or other revenue-sharing arrangement made by the tribe to the state.

In the four lottery-operated sports betting states, the percentage of GGR retained by the lottery varies from 10 percent to 51 percent. While Delaware and Rhode Island retain more of the GGR, they are also responsible for paying more of the operating expenses than West Virginia.

- Delaware: The Lottery operates the sports betting and retains 51 percent of the GGR.
- Oregon: The Lottery, which launched digital sports betting in October 2019 and plans to add SSBTs to select lottery retailers in 2020, has not disclosed the amount it will retain.[13]
- Rhode Island: The Lottery operates the sports betting in that state; it has contracted with IGT operate the sports betting system. The Rhode Island Lottery retains 51 percent of the GGR.
- West Virginia: The Lottery does not operate sports betting but rather authorizes it through its casino licensees and sports betting subcontractors; the West Virginia Lottery retains 10 percent of GGR.

[13] Spectrum has filed a Freedom of Information Act request with the Oregon Lottery to obtain this information.

Figure 7: Summary of regulations and tax rates – newly active states

State	Modality	Start Date		Tax Rate	
		Retail	Digital	Retail	Digital
Arkansas	Retail Only	7/19	N/A	12.50%	
Delaware*	Retail Only	5/18	N/A	*	*
Indiana	Retail & Digital	9/19	10/19	9.50%	9.50%
Iowa	Retail & Digital	8/19	8/19	6.75%	6.75%
Mississippi	Retail Only	8/18	N/A	12.00%	
New Jersey	Retail & Digital	6/18	8/18	8.50%	13.00%
New Mexico**	Retail Only	10/18	N/A	N/A	N/A
New York	Retail Only	7/19	N/A	8.50%	
Oregon** *	Retail & Digital	9/19	10/19	**	*
Pennsylvania	Retail & Digital	11/18	5/19	36.00%	36.00%
Rhode Island*	Retail & Digital	11/18	9/18	*	*
West Virginia*	Retail & Digital	8/18	8/19	*	*

Source: State gaming commissions. Sports betting via lottery shown in blue-shaded rows. *The lottery is the operator of sports betting in these states, so there is no tax, per se, on sports betting revenue; there are revenue splits among the lottery, the sports betting service provider, and the retail outlet (such as a casino). **At tribal casinos only.

It is important to note that the jurisdictional tax rate on sports betting GGR can have significant influence on sports betting volumes, although this is difficult to quantify – especially at such an early stage in the expansion of US sports betting:

- Sports betting operators in high-tax-rate jurisdictions are less likely to offer players higher odds/higher winning percentages and are less likely to offer players attractive promotions; conversely,
- Low-tax-rate environments do allow for more attractive odds/higher winning percentages and more aggressive promotional activity, which attracts players.

We view adult population size, median household income ("HHI"), and number of professional sports teams in the relevant state market(s) as key influencing characteristics to estimate the potential size of the sports betting industry in each state.

The most insight on the impact of sports betting can be derived from New Jersey because the state legalized both retail and digital betting the earliest among newly active states. Additionally, New Jersey's adult population is relatively high, at 7 million adults, and that number is augmented by the large New York metropolitan population that can place bets when its residents physically cross the border into New Jersey. Also, median household income is $76,000 in New Jersey, much higher than the overall US number of $57,600. Therefore, despite the newness of the sports betting industry, New Jersey provides the most robust data at this early stage.

New Jersey legalized sports betting at the state's casinos and pari-mutuel racetracks, thereby enabling accessibility of retail sports betting throughout the state. New Jersey's casinos are all located in Atlantic City, which is easily accessible for residents of the southern part of the state, but a two-hour drive from the densely populated New York City/Northern New Jersey area. By allowing sports betting at racetracks including the Meadowlands, which is in northern New Jersey, and Monmouth Park, which is more centrally located, more of the population could access retail sports betting. During the peak summer season, the number of visitors to Atlantic City increases significantly. New Jersey launched digital sports betting just two months after retail gaming began at the casinos and racetracks.

The volume of retail sports betting GGR in Atlantic City increased to $7.9 million in the summer (June through August) of 2019 from $6.9 million in the winter months (January through March) 2019, driven by the increased visitation to the southern shore in the summer. A portion of this increase was driven by the increased familiarity players have with sports betting. During the peak season for sports betting – fall and winter – the retail locations at tracks in the middle and northern part of the state performed well. This suggests that accessibility and convenience of sports betting has a direct impact on GGR results, just as it does in casino gaming.

Digital sports betting continues to account for an increasing share of sports betting GGR. From the inception of digital sports betting through May 2019, digital sports betting accounted for 74.5 percent of sports betting GGR in New Jersey. In August 2019, after one full year of digital sports betting, digital accounted for 85 percent of total handle. Retail betting is not going away, as many bettors enjoy the live sportsbook entertainment experience (as described below in Section E of this chapter). Digital betting is simply growing more quickly.

Figure 8: New Jersey sports betting handle and revenue, last 12 months September 2019

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Total	Per Adult
Retail handle ($M)	86.3	92.1	78.1	80.3	61.5	74.2	59.7	55.4	46.5	38.3	44.4	71.3	**788.2**	121.3
Digital Handle ($M)	174.4	238.6	241.0	305.0	258.9	298.3	254.0	263.6	226.7	213.0	249.3	374.2	**3,096.9**	476.4
Total Handle ($M)	260.7	330.7	319.2	385.3	320.4	372.5	313.7	318.9	273.2	251.4	293.7	445.5	**3,885.2**	597.7
GGR ($M)	**8.27**	**19.96**	**17.83**	**15.81**	**16.43**	**23.15**	**19.71**	**18.72**	**15.60**	**14.55**	**17.0**	**27.3**	**214.4**	**33.0**
Hold%	3.2%	6.0%	5.6%	4.1%	5.1%	6.2%	6.3%	5.9%	5.7%	5.8%	5.8%	6.2%	**5.5%**	
Annualized GGR/Adult	$15	$37	$33	$29	$30	$43	$36	$35	$29	$27	$31	$50	**$33**	

Source: New Jersey Division of Gaming Enforcement

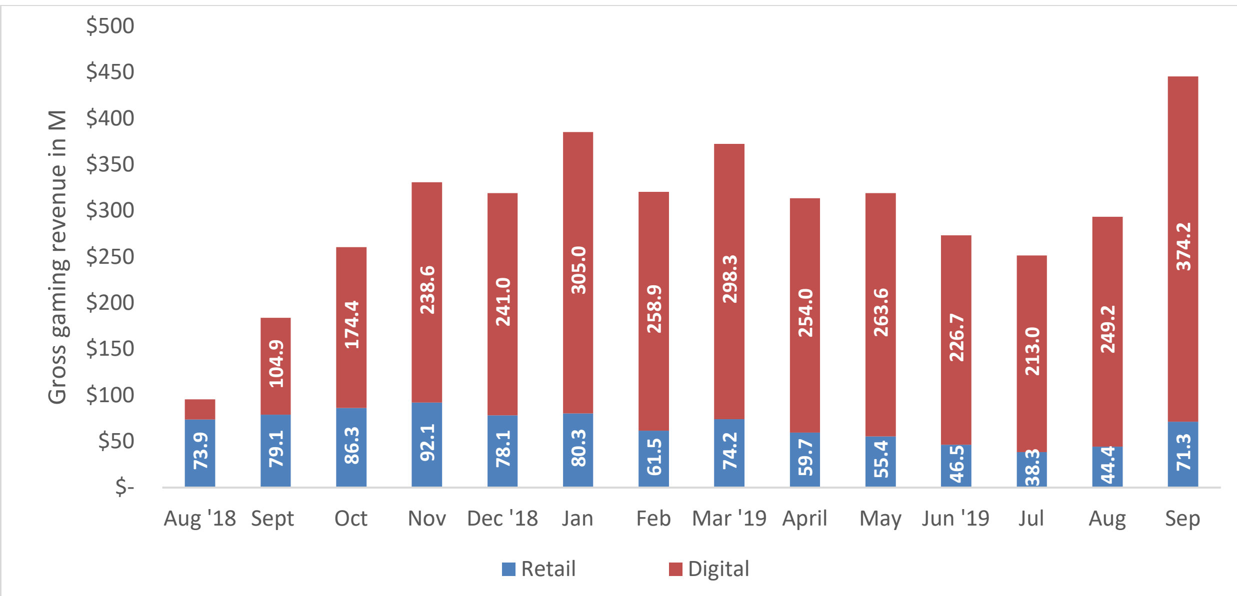
As extrapolated from the results in the table above, New Jersey is already generating nearly $33 of sports betting GGR per adult in the first year of operations, or more than 66 percent of the low range of our estimates for the United States as a whole. With the start of the NFL season, the annualized per capita GGR in New Jersey reached $50 for September 2019. A review of handle, which is a measure of overall betting volume, shows that once football season started, handle increased significantly. Gaming activities typically ramp up over three years as patrons become accustomed to betting.

After reviewing and analyzing the results in the United States, Europe and Canada, we believe US states will ramp up to a GGR range equating to $50 to $70 per adult annually. For

North Carolina, in an effort to be conservative for State budgeting purposes we have used the low end of our estimated US range as the basis for our forecast.

We believe across the US states that legalize digital betting, the outcome will be similar to what we are seeing in New Jersey (and Europe). Total New Jersey sports betting handle for retail and digital results are graphically illustrated in Figure 9 below. The figure also illustrates the seasonality of sports betting. During the NFL and college football seasons and around the NCAA basketball tournament in March, sports betting volume typically increases, although this may be difficult to see in the newly active states because their industries are still in ramp-up mode. The dramatic increase in sports betting in September 2019 speaks to the popularity of football betting.

Figure 9: Analysis of New Jersey monthly sports betting handle, retail vs. digital



Source: New Jersey Division of Gaming Enforcement

Rhode Island, which launched retail sports betting in November 2018, provides more evidence of the popularity of football betting – as well as the potential perils of football betting. The New England Patriots, although playing in Massachusetts, are in fact a regional team with a fan base that stretches from Connecticut to Maine. Rhode Island is the only New England state with legal sports betting. The variance in handle during football season is noticeable, although the Red Sox, Bruins and Celtics (all Boston teams) generated significant handle.

In February, the Patriots won the Super Bowl. Many Patriots fans traveled to the Rhode Island casinos to bet on their team. The bets paid off, and in February the sports betting GGR for the Rhode Island Lottery was negative, as shown below. It is important and interesting to note that the annualized GGR per adult reached $39 in September – coincident with the start of the

NFL season – and that despite the losing month of February, annualized GGR per capita is $14 from launch through September 2019. Excluding that month brings the GGR per capita to $18.

Rhode Island subsequently added digital betting, but it requires the bettor to register in person at the physical location of the sportsbook rather than permitting online registration. This hurdle has hampered the uptake of digital betting in the state, and thus limited the penetration and GGR per capita. As of late October 2019, more than 12,000 people had downloaded the Rhode Island Lottery betting app, but only 45 percent of had activated it.[14]

Figure 10: Rhode Island sports betting performance, November 2018 – September 2019

	Nov	Dec '18	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Total
Handle	$0.68	$13.09	$19.05	$20.69	$23.58	$16.86	$18.90	$14.74	$8.32	$10.06	$222.20	**$354.39**
GGR	$0.07	$0.96	$0.16	($0.89)	$1.55	$1.97	$0.90	$2.15	$0.83	$0.85	$2.52	**$10.03**
Annualized GGR/ Adult	$1	$15	$2	($14)	$24	$31	$14	$33	$13	$13	$39	**$14**

Source: Rhode Island Lottery, Spectrum Gaming Group

The Illegal Market

There is no way to know how much sports betting occurs in the illegal market, although the American Gaming Association ("AGA") estimates there is $150 billion in illegal sports handle bet across the country each year.[15] North Carolina has about 3.2 percent of the US population, which if proportionate to the amount of estimated illegal handle nationally would equate to $4.7 billion. Applying a 5 percent hold rate to the handle arrives at an illegal GGR estimate of $237 million for North Carolina, which equates to just over $31 per adult. Other estimates are sourced from various firms issued in 2016 and 2017 and shown in the following table.

Figure 11: Estimates of illegal gaming in US

Illegal Sports Betting Estimates					
Projection Author	**Eilers**	**EY**	**AGA**	**H2GC**	**Avg.**
Illegal Sports Betting Handle ($M)	$55,000	$107,000	$150,000	$196,000	$127,000
Assumed Hold Percentage	5.0%	6.0%	5.5%	5.3%	5.5%
Illegal Sports Betting GGR ($M)	$2,750	$6,420	$8,250	$10,388	$6,985
Illegal Sports Betting GGR per Adult (252M)	$11	$25	$33	$41	$28

Source: American Gaming Association, Eilers & Krejcik, EY, H2 Gambling Capital

The estimates of illegal sports betting GGR range from $11 per adult to $41 per adult, with an average of $28 per adult. Spectrum utilized this national average and adjusted it for the household income in each North Carolina county. We believe the illegal sports betting market in

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[14] Matthew Waters, "Mobile RI Sports Betting Restrained By In-Person Registration Requirement," *Legal Sports Report*, October 24, 2019. https://www.legalsportsreport.com/35775/ri-sports-betting-mobile-registration/

[15] Figure regularly cited by American Gaming Association based on its research, including in a letter to US Senate Democratic Leader Charles Schumer, September 13, 2018. https://www.americangaming.org/sites/default/files/AGA%20Letter%20to%20The%20Honorable%20Charles%20Schumer%209-11-18%20FINAL.pdf

North Carolina could be $193 million in GGR, while again acknowledging there is no way to know the actual number.

One argument of sports-betting proponents during the State of New Jersey's lengthy and ultimately successful fight to legalize sports betting was that it would eliminate the illegal market – which consists of unlawful bookmakers or offshore sites skirting US regulations. Geoff Freeman, then president of the AGA, said immediately after the Supreme Court ruling, "I'm confident that we can put the illegal market out of business."[16]

A critical component to eliminating the illegal market is for legal operators to offer a competitive product. As one journalist who specializes in betting issues noted, "Say what you want about offshore sportsbooks, but I can tell you this: They are very good at public relations. They have been sending out press releases for years, and now they are doing it at a break-neck pace in the wake of the fall of PASPA. They also actively get their lines in front of people who have the ears of bettors and sports fans … ."[17] The AGA acknowledges that simply legalizing sports betting is not enough to combat the illegal activity:

> "Policymakers play an integral role in facilitating consumer transitions from the widespread illegal sports betting market to a safe, legal alternative. The key to enabling a move to above-board sports wagering is creating business environments in which licensed, regulated, responsible operators can offer a competitive product," [AGA Vice President Casey] Clark said.
>
> "This includes the implementation of sensible tax rates and licensing fees and enabling consumer choice for how they engage in this activity — intrastate mobile wagering. For example, getting this wrong could affect the odds that legal bookmakers can offer and limit the customer experience in a way that might deter American sports bettors from moving away from unprotected, illegal options and continue to perpetuate illicit activity."[18]

In Canada, single-outcome sports betting is prohibited by law, meaning the lotteries can offer only parlay, or combination, bets, which significantly limits their GGR potential. The Canadian Gaming Association ("CGA") said this restriction causes Canadians to wager $10 billion annually through illegal sportsbooks and more than $4 billion through offshore sportsbooks, as

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[16] Richard Wolf, "Supreme Court strikes down ban on sports betting in victory for New Jersey," USA Today, May 14, 2018. https://www.usatoday.com/story/news/politics/2018/05/14/supreme-court-strikes-down-ban-sports-betting-new-jersey/1053022001/

[17] Dustin Gouker, "Legal March Madness Betting Is Here, So Why Is Everyone Promoting Offshore Sportsbooks?" *Legal Sports Report*, March 19, 2019. https://www.legalsportsreport.com/30338/march-madness-betting-legal-vs-illegal/

[18] Martin Derbyshire, "Legal Sportsbooks Have to Dominate Illegal Ones and Lawmakers are Key," Play USA, June 18, 2019. https://www.playusa.com/lawmakers-sports-betting-market/

compared to $500 million wagered legally through the provincial lotteries. The CGA said it has been advocating single-event betting for a decade.[19]

Illegal sports betting is now occurring throughout North Carolina. Creating a legal channel for sports betting provides an opportunity to raise revenue for the State, marginalize (or possibly eliminate) an illegal business, and provide bettors with a secure, stable regulated form of entertainment. As with the sale of lottery games, regulated sports betting would further provide a measure of age verification as part of NCEL's commitment to responsible gaming.

B. Key Assumptions

The Issue of In-State College Betting

Spectrum makes an important assumption in forecasting sports betting GGR for North Carolina: that betting will be allowed on in-state college teams. We recognize that this can be a controversial matter in any state that is considering the legalization of sports betting, and Spectrum takes no position on this issue. As shown in the following table, betting on in-state college teams is offered in 13 of the 20 jurisdictions where sports betting has been authorized.

Figure 12: States' policies on in-state college sports betting

Offer Betting on In-State College Teams?	
Yes	**No**
Arkansas	Delaware
Colorado	Illinois
Indiana	New Hampshire
Iowa	New Jersey
Mississippi	New York
Montana	Rhode Island
Nevada	Washington, DC
New Mexico*	
North Carolina*	
Oregon**	Oregon**
Pennsylvania	
Tennessee	
West Virginia	

Source: Sportshandle.com,[20] Spectrum research. *Betting available at tribal casinos only. **At least some Oregon tribal casinos offer betting on in-state college sports; digital betting via Oregon Lottery does not offer betting on any college sports at this time.

[19] "Canadian Gaming Association calls on all party support for single-event sports betting," Canadian Gaming Association press release, October 10, 2019. https://www.newswire.ca/news-releases/canadian-gaming-association-calls-on-all-party-support-for-single-event-sports-betting-892707769.html

[20] Hasan Nabulsi, "The Legality of College Football Betting Across the US," LegalSportsBetting.com, September 14, 2019. https://www.legalsportsbetting.com/news/the-legality-of-college-football-betting-across-the-us/

Spectrum assumes North Carolina will allow in-state college betting for the following reasons:

1. The State bill that authorizes sports betting at the Cherokee casinos, Senate Bill 154,[21] permits in-state college wagering, and casino management advised Spectrum it intends to accept such bets. Spectrum believes the State would, and should, be consistent in its treatment of betting options were it to legalize the activity statewide.
2. North Carolina is home to 18 NCAA Division I colleges and universities (the fourth-highest number of Division I schools among states[22]). Given the particular popularity of Atlantic Coast Conference ("ACC") basketball and football in the region – a conference in which North Carolina has four member schools – the State would be forsaking a significant revenue stream were it to prohibit bets on games involving in-state colleges.
3. One purpose in legalizing sports betting is to eliminate the illegal market, which as noted earlier is estimated at $150 billion in handle nationally. If the State of North Carolina were to prohibit betting on in-state college teams, illegal betting would continue to thrive for the reasons noted in No. 2 above. Bettors would have little incentive to use the legal, NCEL betting channels for professional games and then an illegal channel for games involving in-state colleges and universities. Two prominent sportsbook operators in the United States told Spectrum in confidence that their data show that betting on in-state college teams can account for up to 10 percent of handle in a given state – and that if betting on in-state college teams were not allowed, those bettors would take all of their bets to an illegal bookmaker, which could negatively impact a state's overall handle by as much as 25 percent.

We note that Mississippi, home to two universities in another "Power Five" conference, the Southeastern Conference, authorized betting on in-state college teams. Bets on college sports in the first three months of the year made up 64 percent of all wagers in Mississippi, although we note that Mississippi has no major-league sports teams. During that time, Ole Miss, Mississippi State, LSU and Auburn all competed in the NCAA men's basketball tournament, with LSU advancing to the Sweet 16 and Auburn getting to the Final Four.[23] The popularity of college sports in Mississippi and in neighboring Louisiana and Alabama drives much of this betting. As the only southern jurisdiction for legal sports betting at the time, Mississippi benefitted greatly.

Although Mississippi does not report data on college versus professional sports betting, an official at the Mississippi Gaming Commission told Spectrum that operators have said football

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[21] Senate Bill 154 / SL 2019-163. https://www.ncleg.gov/BillLookUp/2019/S154

[22] 1KeyData.com, "List of NCAA Division I Schools." https://state.1keydata.com/ncaa-division-1-schools-by-state.php (accessed September 25, 2019)

[23] Jill R. Dorson, "Betting On College Sports - Or Not - Often A Game Of Political Football: Prohibiting betting on college sports leaves money on the table, allows black market to continue to thrive," SportsHandle.com, July 11, 2019. https://sportshandle.com/sports-betting-on-college-sports/

betting is has the highest handle of any sport, and that college football betting accounts for well over half of that figure.

The presence of major-league sports teams in a host state can also factor into states' policy discussions regarding betting on in-state college teams. As noted above, Mississippi has no Major League Baseball, National Basketball Association, National Football League or National Hockey League teams, nor do Iowa, Rhode Island or West Virginia, which also were early adopters. Each of those states has major-college sports teams and some have rooting interests in professional sports teams in neighboring states.

If betting on in-state college teams were allowed, North Carolina would have an abundance of potential betting options that includes three major league teams – the NFL Panthers, NBA Hornets, and NHL Hurricanes – four ACC schools and several other Division I college teams, as well as NASCAR, golf and other sports.

The Legal Gaming Age

The age to legally gamble in US casinos is typically 21, and the age to play traditional state lottery games is typically 18. In the four states where sports betting is currently offered by their respective lotteries, the legal sports betting age in Delaware, Oregon and West Virginia is 21, and in Rhode Island it is 18. In all four states, sports betting is tied to the casinos that operate under auspices of their respective lotteries.

Spectrum takes no position on what the legal sports betting age should be in North Carolina, but for the sake of forecasting GGR in this study we had to choose either 18 or 21. We chose 21, for the following reasons:

- The legal sports betting age in most states is, or will be, 21.
- The legal sports betting age at the two Harrah's Cherokee casinos is 21.
- As a conservative state with limited gaming (i.e., non-lottery) options currently, we believe North Carolina would opt for the higher minimum age for this new form of gaming.
- We seek to provide the State with the less-aggressive assumption in our revenue and economic forecasts. If the State were to choose age 18 instead, Spectrum's forecasted revenues could increase by approximately 2 percent.

C. Projections for North Carolina

To estimate states' sports betting GGR at stabilization, we applied the $50-per-adult estimate (as discussed above) across the United States and adjusted it for North Carolina for several reasons:

1. North Carolina's median household income ("HHI") is lower than the US average

2. There is no legal gaming (other than the Lottery) in North Carolina, so sports betting would be a wholly new legal gaming activity for most of its residents
3. For NCEL and State budgeting purposes, we chose to be on the conservative side of our forecast

Median US household income was approximately $61,900 in 2018. In North Carolina the median household income is about $53,850, but that varies greatly by county.[24] To develop a more precise assessment of the potential for sports betting GGR, we estimated the potential for each county. Using the US median HHI as a baseline, we indexed the HHI for each county and adjusted the expected GGR spend relative to the HHI.

Figure 13: Median household income, North Carolina vs. US, 2018

	Median HHI
North Carolina	$53,855
United States	$61,900
Ratio	87.0%

Source: US Census Bureau

Using a statewide median has the effect of blurring the market and makes the mistake of assuming that a resident of a county with a $42,000 HHI will spend the same as a resident of a county with a $60,000 HHI. An average also obscures the population factor. The table below illustrates that while Robeson County is more populous than Moore County, the HHI in Moore County exceeds Robeson County. A simple calculation of "proxy income," calculated as *HHI x Adults*, shows that despite being less populous, the available income in Moore County exceeds that in Robeson County. The table further shows that using the state median would reverse this indicator, which could lead to a misallocation of sports betting resources; i.e., with too many SSBTs allocated to Robeson County and too few to Moore County.

Figure 14: Illustrative example of proxy income using county HHI vs. state median HHI

"Proxy Income" using County Median Household Income			
County	Estimated Adults	Est. County HHI 2021	Proxy Income
Robeson	93,800	$36,963	$3,467,200,000
Moore	76,300	$61,749	$4,711,400,000
"Proxy Income" using State Median Household Income			
County	**Estimated Adults**	**Est. State Avg. HHI 2021**	**Proxy Income**
Robeson	93,800	$56,816	$5,329,300,000
Moore	76,300	$56,816	$4,335,000,000

Source: US Census Bureau

[24] US. Census Bureau, "Household Income: 2018," September, 2019. https://www.census.gov/content/dam/Census/library/publications/2019/acs/acsbr18-01.pdf

As discussed above, by indexing each county by population and income we derived sports betting GGR estimates from each county. We have indexed the estimated annual gaming spend to account for the relative wealth of each county. Using the inputs of population and income, we can derive estimated sports betting GGR by county.

In September 2019, the US Census Bureau released estimated HHI for the US as a whole and for every state. In addition, updated HHI estimates were released for 44 of the counties in North Carolina. Where available, the Census Bureau numbers were used in calculating Spectrum's forecasted sports betting GGR. Where not available, we used the reported 2017 numbers and increased them by 2 percent, the amount of increase for North Carolina overall.

As this is a forward-looking estimate, we used county population estimates for 2021 from the North Carolina State Demographer in the Office of State Budget Management. To arrive at an estimated HHI by county for 2021, we grew the 2018 number by 1.8 percent annually.

The following table further illustrates the impact of using the state median HHI to develop the estimate versus the more detailed county-by-county approach. Using the overall state number understates the impact of high-density, high-income areas. The total estimated GGR from sports betting is $14 million greater by using a county-by-county method.

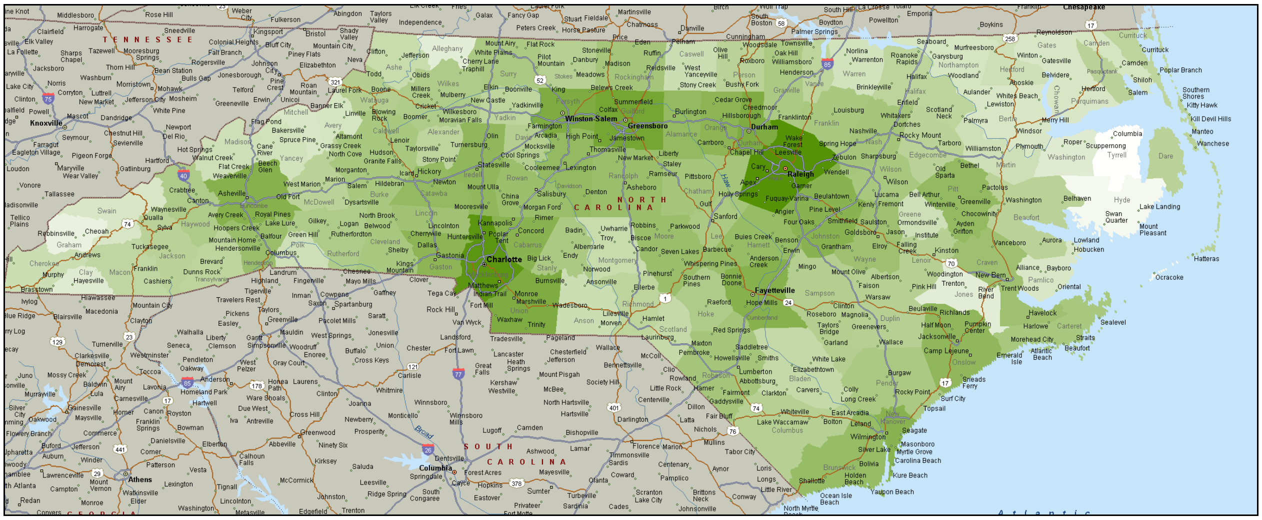
Figure 15: North Carolina county household income, population, and estimated sports betting GGR

County	Estimated Median HHI 2021	Projected County Adult Pop. 2021	Estimated Sports Betting GGR	County	Estimated Median HHI 2021	Projected County Adult Pop. 2021	Estimated Sports Betting GGR
North Carolina	**$56,816**	**7,861,100**	**$335,050,000**	Jackson*	$49,623	33,700	$1,250,000
Sum of Counties		**7,861,100**	**$349,020,000**	Johnston	$63,438		$7,380,000
Alamance	$52,727	126,600	$4,900,000	Jones*	$44,684	7,400	$250,000
Alexander*	$52,275	28,300	$1,110,000	Lee*	$57,354	44,600	$1,920,000
Alleghany*	$41,962	8,500	$270,000	Lenoir*	$42,411	41,500	$1,320,000
Anson*	$44,407	18,600	$620,000	Lincoln	$67,289	64,800	$2,980,000
Ashe*	$43,702	20,400	$670,000	Macon*	$45,688	27,500	$940,000
Avery*	$43,779	13,100	$430,000	Madison*	$45,080	17,000	$570,000
Beaufort*	$46,808	34,500	$1,210,000	Martin*	$40,059	16,800	$500,000
Bertie*	$35,536	14,300	$380,000	McDowell*	$46,115	34,300	$1,190,000
Bladen*	$40,956	24,600	$760,000	Mecklenburg	$67,484		$44,980,000
Brunswick	$63,822	106,900	$4,850,000	Mitchell*	$43,679	11,100	$360,000
Buncombe	$56,948	198,400	$8,050,000	Montgomery*	$47,021	20,600	$730,000
Burke	$46,063	67,900	$2,310,000	Moore	$61,749	76,300	$3,870,000
Cabarrus	$73,510	161,600	$8,110,000	Nash	$54,438	70,000	$2,690,000
Caldwell	$44,580	61,800	$2,230,000	New Hanover	$55,111		$7,780,000
Camden*	$68,964	7,700	$400,000	Northampton*	$38,945	14,900	$440,000
Carteret	$57,848	52,600	$2,260,000	Onslow	$53,423		$6,020,000
Caswell*	$48,423	17,000	$620,000	Orange	$76,552		$6,100,000
Catawba	$56,393	116,600	$5,020,000	Pamlico*	$52,095	9,700	$380,000
Chatham	$79,080	58,300	$2,980,000	Pasquotank*	$50,264	29,100	$1,100,000
Cherokee*	$41,197	22,100	$680,000	Pender*	$56,159	48,200	$2,030,000
Chowan*	$46,469	10,100	$350,000	Perquimans*	$48,437	10,200	$370,000
Clay*	$47,009	8,900	$310,000	Person*	$54,095	29,500	$1,200,000
Cleveland	$42,927	72,500	$2,340,000	Pitt	$44,817		$5,010,000
Columbus*	$40,504	41,200	$1,250,000	Polk*	$49,057	16,000	$590,000
Craven	$53,286	75,600	$3,140,000	Randolph	$50,273		$3,760,000
Cumberland	$49,284	240,300	$8,550,000	Richmond*	$39,172	32,700	$960,000
Currituck*	$67,147	21,400	$1,080,000	Robeson	$36,963	93,800	$2,550,000
Dare*	$61,679	28,100	$1,300,000	Rockingham	$42,925	66,400	$2,480,000
Davidson	$47,812	124,700	$4,790,000	Rowan	$48,566		$4,070,000
Davie*	$62,573	32,600	$1,530,000	Rutherford	$45,481	51,200	$1,680,000
Duplin*	$42,474	43,100	$1,370,000	Sampson*	$45,144	47,000	$1,590,000
Durham	$61,266	237,700	$11,520,000	Scotland*	$40,835	26,200	$800,000
Edgecombe*	$37,804	38,400	$1,090,000	Stanly*	$53,667	47,300	$1,900,000
Forsyth	$51,869	284,000	$11,650,000	Stokes*	$52,459	34,000	$1,340,000
Franklin	$63,930	51,800	$2,220,000	Surry	$51,059	53,400	$1,850,000
Gaston	$55,641	164,900	$6,660,000	Swain*	$44,559	11,100	$370,000
Gates*	$53,982	8,900	$360,000	Transylvania*	$51,209	26,400	$1,010,000
Graham*	$40,621	6,400	$200,000	Tyrrell*	$37,904	3,100	$90,000
Granville*	$57,187	47,000	$2,020,000	Union	$84,754		$11,370,000
Greene*	$43,186	15,500	$500,000	Vance*	$42,880	33,000	$1,060,000
Guilford	$54,651	402,000	$16,970,000	Wake	$84,367		$52,260,000
Halifax*	$36,617	37,000	$1,020,000	Warren*	$39,635	14,600	$430,000
Harnett	$53,827	102,500	$4,250,000	Washington*	$38,924	8,800	$260,000
Haywood*	$51,516	47,000	$1,820,000	Watauga*	$52,102	44,800	$1,750,000
Henderson	$56,659	89,100	$3,690,000	Wayne*	$43,034	93,300	$3,360,000
Hertford*	$41,738	17,600	$550,000	Wilkes	$45,856	51,700	$1,770,000
Hoke*	$54,642	44,400	$1,820,000	Wilson	$45,120	60,800	$2,200,000
Hyde*	$44,351	3,900	$130,000	Yadkin*	$50,454	28,600	$1,080,000
Iredell	$62,603	137,700	$6,290,000	Yancey*	$44,178	13,500	$450,000

Source: US Census Bureau, Spectrum Gaming Group, NC OSMB. *County without 2018 HHI estimate from the Census Bureau

The map below depicts the median HHI in each North Carolina county: The darker the shade of green, the higher the HHI, and the lighter the shade, the lower the HHI. This distribution enables us to see where sports betting is most likely to generate the most revenues. Examining the GGR potential in this manner assists us in developing the rollout plan for sports betting locations.

Figure 16: Map of North Carolina household income, scaled by county



Source: Microsoft MapPoint, Spectrum Gaming Group. Darker shades = higher HHI, lighter shades = lower HHI.

Based on the factors of population, household income and our conservative estimate of sports betting at maturity of $50 per adult per year, North Carolina is estimated to have the potential to generate $349 million of GGR in Year 3 from sports betting – before considering the first-mover advantage (see below). As legal sports betting is new (outside of Nevada) to the United States, we believe the GGR in some states could ultimately approach $70 per adult. We adjusted the low-end GGR per-adult estimate across the United States of $50 for North Carolina's household income by county and adult population to arrive at this range of estimates. For the purposes of this report we have used the index-adjusted revenue number as our estimate of sports betting GGR.

We have assumed that the digital component on the NCEL sports betting program will be rolled out in tandem with the retail betting outlets. We also have assumed an implementation schedule for self-service betting terminals ("SSBTs") across the state. Our estimates indicate a demand for 5,000 machines across North Carolina. While later in the report we explain the features, benefits and operational requirements of SSBTs, our projected demand for 5,000 units is underpinned by proven demand for SSBTs within retail sports betting markets in Europe and, increasingly, within other US sports betting states. Our estimate assumes implementation over a three-year time frame, because it is virtually impossible to install 5,000 SSBTs in one year. We believe a three-year implementation program is aggressive, but achievable. In the first year we estimate that there would be 500 SSBTs installed across North Carolina. In our modeling we chose to allocate these terminals proportionally to the 20 counties with the highest estimated potential sports betting GGR. In the second year of implementation, another 1,500 SSBTs would be installed, across additional counties using the same distribution method. Finally, in the third year another 3,000 SSBTs will be installed across the state for a total installed base of 5,000 SSBTs.

The table below examines the SSBT density ratios across this three-year period, as a proportion of the 2,862 highest-performing NCEL retailers, as reviewed within the Pareto Analysis (section III.A). We believe these density ratios to be reasonable, achievable, and in line with Spectrum's overall opinion about the future demand for SSBTs within the US sports betting market.

Figure 17: Estimated NCEL SSBT density ratio over three years

Installation Period	Total Installed SSBTs	Density Ratio (Total Installed SSBTs /2,862 Retailer Base)
Year 1	500	0.17
Year 2	2,000	0.69
Year 3	5,000	1.74

Source : NCEL, Spectrum Gaming Group

Rolling out the machines in this manner accomplishes two primary goals:

1. The highest potential GGR is generated by starting with the counties with the highest GGR potential.
2. A phased approach allows for growing pains and pinch points of service to be identified and managed prior to moving forward with additional machines.

Spectrum recommends that NCEL and/or its selected sports betting provider perform a cost-benefit analysis of each SSBT after the first 12 and 24 months of operation, including retailer-type analysis, to ensure they are optimally located.

The following table (next page) shows Spectrum's assumed SSBT rollout by county.

Figure 18: Proposed rollout of SSBTs in North Carolina

County	Est. Sports Betting GGR	SSBTs Year 1	SSBTs Year 2	SSBTs Year 3	TOTAL SSBTs	County	Est. Sports Betting GGR	SSBTs Year 1	SSBTs Year 2	SSBTs Year 3	TOTAL SSBTs
Wake	$52,260,000	114	254	449	818	Duplin	$1,370,000			12	12
Mecklenburg	$44,980,000	98	219	387	704	Stokes	$1,340,000			12	12
Guilford	$16,970,000	37	83	146	265	Lenoir	$1,320,000			11	11
Forsyth	$11,650,000	25	57	100	182	Dare	$1,300,000			11	11
Durham	$11,520,000	25	56	99	180	Columbus	$1,250,000			11	11
Union	$11,370,000	25	55	98	178	Jackson	$1,250,000			11	11
Cumberland	$8,550,000	19	42	73	134	Beaufort	$1,210,000			10	10
Cabarrus	$8,110,000	18	39	70	127	Person	$1,200,000			10	10
Buncombe	$8,050,000	18	39	69	126	McDowell	$1,190,000			10	10
New Hanover	$7,780,000	17	38	67	122	Alexander	$1,110,000			10	10
Johnston	$7,380,000	16	36	63	115	Pasquotank	$1,100,000			9	9
Gaston	$6,660,000	15	32	57	104	Edgecombe	$1,090,000			9	9
Iredell	$6,290,000	14	31	54	98	Currituck	$1,080,000			9	9
Orange	$6,100,000	13	30	52	95	Yadkin	$1,080,000			9	9
Onslow	$6,020,000	13	29	52	94	Vance	$1,060,000			9	9
Catawba	$5,020,000	11	24	43	79	Halifax	$1,020,000			9	9
Pitt	$5,010,000	11	24	43	78	Transylvania	$1,010,000			9	9
Alamance	$4,900,000	11	24	42	77	Richmond	$960,000			8	8
Brunswick	$4,850,000		24	42	65	Macon	$940,000			8	8
Davidson	$4,790,000		23	41	64	Scotland	$800,000			7	7
Harnett	$4,250,000		21	37	57	Bladen	$760,000			7	7
Rowan	$4,070,000		20	35	55	Montgomery	$730,000			6	6
Moore	$3,870,000		19	33	52	Cherokee	$680,000			6	6
Randolph	$3,760,000		18	32	51	Ashe	$670,000			6	6
Henderson	$3,690,000		18	32	50	Anson	$620,000			5	5
Wayne	$3,360,000		16	29	45	Caswell	$620,000			5	5
Craven	$3,140,000		15	27	42	Polk	$590,000			5	5
Chatham	$2,980,000		14	26	40	Madison	$570,000			5	5
Lincoln	$2,980,000		14	26	40	Hertford	$550,000			5	5
Nash	$2,690,000		13	23	36	Greene	$500,000			4	4
Robeson	$2,550,000		12	22	34	Martin	$500,000			4	4
Rockingham	$2,480,000		12	21	33	Yancey	$450,000			4	4
Cleveland	$2,340,000		11	20	31	Northampton	$440,000			4	4
Burke	$2,310,000		11	20	31	Avery	$430,000			4	4
Carteret	$2,260,000		11	19	30	Warren	$430,000			4	4
Caldwell	$2,230,000		11	19	30	Camden	$400,000			3	3
Franklin	$2,220,000		11	19	30	Bertie	$380,000			3	3
Wilson	$2,200,000		11	19	30	Pamlico	$380,000			3	3
Pender	$2,030,000		10	17	27	Perquimans	$370,000			3	3
Granville	$2,020,000		10	17	27	Swain	$370,000			3	3
Lee	$1,920,000		9	17	26	Gates	$360,000			3	3
Stanly	$1,900,000		9	16	26	Mitchell	$360,000			3	3
Surry	$1,850,000		9	16	25	Chowan	$350,000			3	3
Haywood	$1,820,000		9	16	24	Clay	$310,000			3	3
Hoke	$1,820,000		9	16	24	Alleghany	$270,000			2	2
Wilkes	$1,770,000		9	15	24	Washington	$260,000			2	2
Watauga	$1,750,000		9	15	24	Jones	$250,000			2	2
Rutherford	$1,680,000			14	14	Graham	$200,000			2	2
Sampson	$1,590,000			14	14	Hyde	$130,000			1	1
Davie	$1,530,000			13	13	Tyrrell	$90,000			1	1

Source: Spectrum Gaming Group

Tennessee has authorized digital sports betting. Virginia is considering adding sports betting to the portfolio of gaming options in the state. As such, we have developed an in-state-only estimate for North Carolina sports betting that does not include material spill-over from neighboring states.

Forecast with First-Mover Advantage

"First-mover advantage" is a term referring to the advantage gained by the first entrant into a market. In some situations, particularly in retail environments, the first-mover advantage can stick. This means that some customers who have tried the services of the industry pioneer will remain loyal even when other providers enter the market. The newer providers may erode the leader's advantage, but they do not eliminate it.

An example from the Chicago-area casino market highlights this advantage. In the 12 months ended June 2011, the Horseshoe Hammond casino in Indiana (30 minutes from downtown Chicago) generated $539 million in casino GGR. The next-highest casino in the market was the Grand Victoria casino in Elgin, IL, which earned $286 million. In July 2011 a new casino, Rivers Des Plaines in Illinois, opened in the Chicago market. The new casino was more convenient for many Chicagoans than Horseshoe. Market leadership swung to Rivers, but Horseshoe remained a strong second in the market. Many players liked the experience at the first-mover, had a sense of loyalty to the property, and continued to play at Horseshoe. In the 12 months ended June 2019, Horseshoe generated $386 million in GGR, to Rivers Casino's $440 million.[25]

In other cases, such as with technology, first-mover advantage is fleeting as other, more convenient options erode the market share of the initial entrant. In the technology world, Blackberry and Palm had first-mover advantage in what were called at the time PDAs, or personal digital assistants. The advent of the Apple iPhone, and then Android devices, with more features and more convenience wiped the two initial leaders off the map.

The most insight on the impact of the first-mover advantage in sports betting can be derived from New Jersey because the state legalized both retail and digital betting the earliest (other than Nevada). New Jersey's adult population of 7 million adults is augmented by the large New York metropolitan population that can place bets when they physically cross the border into New Jersey, as noted in an Associated Press story earlier this year:

> In the time it takes for a red light to turn green, Leonard Sciascia can get his sports bets made, turn around and head home.

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[25] Indiana Gaming Commission Annul Report, FY 2019 https://www.in.gov/igc/files/FY2019-Annual.pdf; Illinois Gaming Commission Monthly Casino Revenue Reports.
https://www.igb.illinois.gov/FilesRiverboatRevenueReports/201906CasinoReport.pdf

The 39-year-old man from New York City's Staten Island runs his own business selling advice on which teams to bet on. But when he wants to take his own advice, he needs to leave home and cross the border into New Jersey – the only place near him where sports betting is legal.

He drives across the Bayonne Bridge, stops at the first traffic light, logs in to his mobile betting account with playsugarhouse.com, make his bets, turns around and drives back home. The whole process takes 25 minutes, door to door. He considers the $6.50 toll part of the price of doing business.

"I'm looking at (betting) lines all day," Sciascia said. "If I see something I like, I jump in my car and go." …

FanDuel says 9 percent of its sportsbook customers live in New York and 4 percent live in Pennsylvania. DraftKings has a similar breakdown, and says about 20 percent of its active customers visit New Jersey from other states to place bets.

Maurice Shalam travels each Sunday morning from Brooklyn into Manhattan, where he catches a train into New Jersey.

"I'll get off the train and stand right in the station, a few steps from where I got off, take out my phone, do my bets right there, and go back home," he said. The 30-minute round trip across the river and back, along with the $5.50 fare, is just part of the price of playing, he said.[26]

An important potential portion of the forecasted GGR for North Carolina sports betting comes from people who live across the state line but commute to North Carolina for work – or who could be tempted to cross state lines for the primary purpose of making a bet. Three Metropolitan Statistical Areas ("MSAs") – those centered around Charlotte, Myrtle Beach, and Virginia Beach – straddle the North Carolina border. In two of these MSAs, the majority of residents do not live in North Carolina.

Figure 19: Cross-state MSA adult populations shared with North Carolina

Total Charlotte MSA Adult Population	In North Carolina	In South Carolina	% in South Carolina
1,833,013	1,551,078	281,935	15.4%
Total Myrtle Beach MSA Adult Population	**In North Carolina**	**In South Carolina**	**% in South Carolina**
353,001	101,914	251,087	71.1%
Total Virginia Beach MSA Adult Population	**In North Carolina**	**In Virginia**	**% in Virginia**
1,257,866	28,571	1,229,295	97.7%
Three-MSA Adult Population	**In North Carolina**	**Out of State**	**% Out of State**
3,443,880	1,681,563	1,762,317	51.2%

Source: US Census Bureau, 2013-2017 American Community Survey 5-Year Estimates

[26] The Associated Press, "Gamblers crossing the Delaware (and Hudson) for sports bets," Associated Press, January 29, 2019. https://www.nj.com/news/2018/11/wagerers_crossing_the_delaware_and_hudson_for_spor.html

Were North Carolina to move first and establish sports betting before neighboring states, many in these bi-state communities would travel to North Carolina to place a sports bet, as evidenced by the number of New Yorkers who flock to New Jersey to place bets. Spectrum estimates that $81 million in annual sports betting GGR could flow from these non-resident bettors, or nearly 20 percent of total estimated potential GGR with the first-mover advantage. While the potential first-mover advantage is $81 million, it is unlikely that the NCEL will capture all of that potential due to the relative inconvenience for an out-of-state resident to travel to an SSBT site to place a bet.

Our estimated GGR number for the out-of-state portion in the third year of legalized sports betting is derived using the same methodology as the in-state estimate.

Figure 20: North Carolina out-of-state sports betting GGR potential

Out-of-State MSA Population	Indexed per Capita GGR	Total out of state GGR
1,762,317	$46.03	$81,120,000

Source: Spectrum Gaming Group

Figure 21: Forecasted North Carolina sports betting GGR with first-mover advantage, by channel

Sports Betting Channel	Year 1	Year 2	Year 3	Three-Year Total
Digital	$ 120,440,000	$ 223,670,000	$ 344,110,000	$ 688,220,000
Retail (SSBTs)	$ 3,600,000	$ 10,990,000	$ 37,900,000	$ 52,490,000
Bars & Restaurants	$ 15,050,000	$ 27,960,000	$ 43,010,000	$ 86,020,000
Total	**$ 139,090,000**	**$ 262,620,000**	**$ 425,020,000**	**$ 826,730,000**

Source: Spectrum Gaming Group

NCEL may choose to introduce sports betting through the network of retailers and through bars and restaurants and forgo the digital option. Or the Lottery may choose to introduce a digital option after the retail sportsbooks operations have an opportunity to develop.

As shown in Figure 22 below, Spectrum estimates that in an environment with only retail outlets (including restaurants and bars), North Carolina would see only 30 percent of the total first-mover GGR potential, or $104.7 million in GGR, with a proportionate reduction in revenue earned for the Lottery. Additionally, a program without a digital component leaves open the possibility for neighboring Virginia, or South Carolina to follow Tennessee and quickly legalize digital sports betting.

If North Carolina opted for a digital-only rollout, based on the results in New Jersey thus far, we believe the state would generate slightly more than 80 percent of the total GGR potential, or $279 million in Year 3. A program with both retail and digital – the strategy being offered or pursued by most states considering sports betting – would generate the most GGR and the most income for the Lottery.

Figure 22: North Carolina sports betting GGR if by limited channels

Sports Betting Channel	Year 1	Year 2	Year 3
Digital Only – No Retail or Bars	$ 97,730,000	$ 181,490,000	$ 279,220,000
Retail – No Digital	$ 4,800,000	$ 14,985,000	$ 52,350,000
Bars & Restaurants – No Digital	$ 18,324,000	$ 34,029,000	$ 52,350,000

Source: Spectrum Gaming Group

Just as important as the first-mover pull that North Carolina would have on neighboring states is the potential loss to neighboring states should the neighboring jurisdictions implement sports betting before North Carolina. In this scenario we analyze the potential outflow of sports betting activity to neighboring states.

Figure 23: Potential transfer of sports betting GGR to other states if they launch first

Metro Area	NC Adult Population	Indexed GGR per Capita	Est. Sports Betting GGR Transfer
Charlotte	1,551,078	$58	$90,690,000
Myrtle Beach	101,914	$45	$4,630,000
Virginia Beach	28,571	$50	$1,440,000
Total	**1,681,563**	**$58**	**$96,760,000**

Source: Spectrum Gaming Group

Interestingly, the population in the bi-state MSAs is nearly evenly split, with Charlotte being heavily weighted to North Carolina and Virginia Beach heavily weighted to Virginia. However, the higher income in the Charlotte area drives the potential lost GGR higher. Were South Carolina to authorize sports betting prior to legalization in North Carolina, the potential loss of sports betting GGR is nearly $97 million at maturity, assuming a digital channel is available in South Carolina.

If North Carolina were to approve sports wagering across retail and digital outlets after South Carolina, we believe much of the handle would repatriate to North Carolina. It would simply be easier for people in North Carolina to bet in Charlotte without having to drive across the border. Some handle would stay in the other state due to the inertia factor.

Forecast without First-Mover Advantage

Without the first-mover advantage, North Carolina will see less sports betting activity, particularly from the three MSAs mentioned above that straddle state lines. Sports betting GGR from the adjacent state where sports betting is legal would remain in the origin state. As noted, this could amount to $81 million. A great portion of that total is from the Norfolk/Virginia Beach/Newport News area, as the population in the area is heavily weighted to Virginia.

Tennessee has approved a digital-only sports betting platform expected to launch in 2020. Given the relative inaccessibility of Tennessee to population centers in North Carolina, we expect that the potential loss from North Carolina residents would be modest. The forecast below accounts for the North Carolina-only portions of sports betting, without any out-of-state flows.

The potential revenue decreases by $81 million due to the loss of commuters and other out-of-state players betting in North Carolina.

Figure 24: Forecasted North Carolina sports betting revenue without first-mover advantage, by channel

Sports Betting Channel	Year 1	Year 2	Year 3	Three-Year Total
Digital	$97,730,000	$181,490,000	$279,220,000	$558,440,000
Retail (SSBTs)	$3,200,000	$9,990,000	$34,900,000	$48,090,000
Bars & Restaurants	$12,216,000	$22,686,000	$34,900,000	$69,802,000
Total	**$113,146,000**	**$214,166,000**	**$349,020,000**	**$676,332,000**

Source: Spectrum Gaming Group

D. Impacts on Traditional Lottery Sales

In 2018, the US Lottery industry grossed more than $77.7 billion in annual sales.[27] In 2018, the National Association of State and Provincial Lotteries ("NASPL"), the North American lottery trade group, advocated that given its relationship with bars, restaurants, taverns and pubs as current lottery retailers, state lotteries should have a primary role in the sports betting market in the US; the NASPL views these types of establishments as a key component to sports betting growth in the US.[28]

Given the infancy of sports betting in most of the United States (17 months), there is limited relevant data on the possible effect of sports betting on lottery sales. The one state that may offer insight is New Jersey, which launched sports betting in June 2018, meaning its first full month – July 2018 – coincided with the start of its fiscal year. During that 12-month period, New Jersey's lottery had total ticket sales of $3.3 billion, an increase of 3.5 percent from $3.17 billion in FY 2017.[29] In New Jersey, however, sports betting is not offered via lottery channels, so there is no choice of lottery-gaming expenditure to be made among sports bettors at the time of the bet, as there would be at participating North Carolina retailers.

Three state lotteries currently operate live sports betting – Delaware, Oregon and Rhode Island.[30] Three other lotteries are expected to go live with sports betting the next few months – Montana, New Hampshire and Washington, DC – and they will do so through their retailer networks, as is Spectrum's recommendation for NCEL. Having a lottery as a state's sports betting

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[27] La Fleur's, "Fiscal 2018 Report." https://lafleurs.com/magazine-feature/magazine-secondary-feature/2018/09/19/fiscal-2018-report/

[28] Brian Pempus, "80 Billion US Lottery Industry Wants Involvement In Regulated Sports Betting," *CardPlayer*, May 22, 2018. https://www.cardplayer.com/poker-news/22814-80-billion-u-s-lottery-industry-wants-involvement-in-sport-betting.

[29] State of New Jersey, Division of State Lottery, "Financial Statements and Supplementary Information," June 20, 2018, p. 4. https://njs-cdn.lotteryservices.com/content/dam/portal/pdfs/giving_back/FY2018_Annual_Audit_Report.pdf.

[30] In West Virginia, the Lottery regulates sports betting via the video lottery terminal casinos it oversees but itself is not a sports betting operator.

provider means it will be marketed, advertised, taxed and regulated differently than in those states where it is offered via casinos and casino-related digital channels. Factoring a lottery's retailer network into a state's sports-betting scheme will add substantial marketing/advertising muscle to the program, complicating estimates of how sports betting would impact traditional lottery sales in North Carolina.

The launch of the lottery-retailer-based sports betting programs in Montana, New Hampshire and Washington, DC, will eventually provide insight into what may be expected in North Carolina. The District of Columbia and Montana will allow lottery retailers to take all types of sports wagers. Conversely, New Hampshire will allow existing lottery retailers to accept parlay sports wagers only and no single-game wagers.[31] Additionally, New Hampshire will be offering digital sports wagering and the operation of 10 independent retail-based sportsbooks that will be regulated by the New Hampshire Lottery.

Similarly, in 2018 the District of Columbia passed legislation that authorized the DC Lottery to be both an operator and regulator of sports betting. The DC Lottery will operate its own sportsbook through a digital platform and through its lottery retailer network. The DC Lottery will also be a regulator when it licenses privately owned sportsbooks located at DC professional sports venues as designated in the legislation. The DC Lottery was scheduled to start sports betting in the fall of 2019, but this has been delayed.[32]

Earlier this year, Montana passed a sports betting legislation, similar to DC, in which sports betting would be potentially available through its roughly 1,400 retailers, including the bar and restaurant sector. The Montana Lottery also has the ability to offer sports betting on a digital platform. Sports betting could begin there by the end of 2019.[33]

Based on data from new games and dependent on what gaming options are introduced, Spectrum believes that the worst-case scenario is NCEL would experience a small but temporary decrease in lottery sales. It remains a distinct possibility that, if this worst-case scenario is not realized, then NCEL does not suffer any decrease in the sale of traditional lottery products.

There is some basis to conclude that sports betting could potentially affect two types of Lottery games more than others. A 2018 study conducted by Ipsos for NCEL[34] found the following

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[31] Interview with Charlie McIntyre, Executive Director, New Hampshire Lottery, November 12, 2019.

[32] Fennit Nirappil, "Sports Betting Won't Launch In Time for NFL Season; Bars Start Applying," *Washington Post*, August 8, 2019. https://www.washingtonpost.com/local/dc-politics/sports-betting-wont-launch-in-dc-in-time-for-nfl-season-bars-start-applying/2019/08/08/ffc3ea2c-b854-11e9-bad6-609f75bfd97f_story.html

[33] Montana Lottery, "What Do You Think?" https://www.montanalottery.com/en/view/sports-wagering (accessed October 10, 2019)

[34] Ipsos, NCEL Player Demographic Study, June 2018.

results that we believe are informative for estimating the impact of sports betting on lottery sales:

- 46 percent of all North Carolina residents purchase lottery products at varying frequency.
- Scratch-off games are the most popular lottery games and account for the majority of lottery sales.
- Lucky for Life, Cash 5, Pick 4, Pick 3 and keno have a smaller but loyal fan base.
- 52 percent of all lottery players buy lottery products to win the big prize.

These market data show scratch-off tickets account for the majority of lottery sales in North Carolina.

When viewed through this prism, the characteristics of sports betting are more akin to a daily game with smaller prizes that are dictated by the amount of the wager and the odds. Similar to Cash 5, Pick 4, Pick 3 and keno, sports bettors are playing against the house and not each other for prizes. Given this similarity, if NCEL is to experience any reduction sales in the initial offering of sports betting, it would be in its sales in these products. Given that that these products are a smaller percentage of overall sales as compared to the Powerball, Mega Millions and scratch-off games, the potential for a temporary reduction in overall sales of the Lottery's traditional products is minimal.

Based on the profile of NCEL sales – and in an effort to be conservative for forecasting purposes – Spectrum believes the initial decrease in NCEL sales could be as high as 3.5 percent of sales in the Cash 5, Pick 4, Pick 3 and Keno games, but that such declines would be short-term as sports betting ramps up to its full potential. Based on the FY 2018 audited financials, these games represent only 21 percent of total NCEL game sales. So, an initial 3.5 percent decline in the selected games would represent a minimal impact on overall sales. This is a trend we have seen in other states with the introduction of new games by a lottery or new forms of gaming.

For example, during years of overall growth of the Massachusetts Lottery, it appears the introduction of the Lucky for Life Game directly affected sales in The Numbers game. In reviewing the Financial Statements for the Fiscal Years ending in 2012, 2013, 2014, and 2015, it shows that Lucky for Life had steady growth over its first two years followed by steady declines.[35] Conversely, in 2012 The Numbers game decreased by 3.1 percent, then in 2013 decreased by 2.8 percent, followed by a decrease of 0.6 percent in 2014 and an increase of 0.1 percent in 2015. In the worst case, Spectrum believes that in North Carolina the Cash 5, Pick 4 and Pick 3-style games generally would follow a similar pattern, making up the sales in three years, and keno in four to five years.

[35] Massachusetts State Lottery, annual Financial Statements. https://www.masslottery.com/about/commission.html

Factoring in the entire NCEL portfolio including sports betting, NCEL's total sales will increase. But with respect to the existing lottery portfolio, Spectrum is estimating the following annual changes; we again emphasize that we are being conservative for forecasting purposes:

Figure 25: Estimated impact of sports betting on existing NCEL product sales

Impact Category	Year 1	Year 2	Year 3	Year 4	Year 5
Cash 5, Pick 4, Pick 3 and Keno	-3.50%	-2.00%	-1.00%	+2.00%	+4.00%
Total Sales	-0.74%	-0.42%	-0.21%	+0.42%	+0.84%

Source: Spectrum Gaming Group estimates

A point of comparison can be seen in Massachusetts, which has expanded gaming by opening three casinos over the past four years. We believe this example may be more comparable to North Carolina than other states. Prior to the introduction of casinos in Massachusetts, the lottery was the only form of legalized gambling in the state. As part of the expanded gaming act, each casino is required to be a Massachusetts Lottery retailer and demonstrate a plan that includes lottery products but also mitigate any effects on lottery sales. Plainridge Park Casino (in Plainville, MA) also sells lottery products. A 2018 University of Massachusetts study[36] found the following with respect to lottery sales and the opening of Plainridge Park:[37]

- No large, significant decline in lottery revenue can be attributed to Plainridge Park Casino.
- No obvious pattern between lottery sales growth and proximity to the casino was detected. Sales have not uniformly increased at greater distances from the casino.
- In the first year after the opening of Plainridge Park Casino, lottery revenue in Plainville increased approximately 25 percent. It has remained at that level in the second year of operation.
- Sales for other agents in Plainville have not notably declined since the opening of Plainridge Park casino.
- Compared to the year prior to the casino opening, gains in lottery revenue in Plainville have been sufficient to offset declines in the surrounding communities, leaving sales essentially unchanged, but not matching gains in rest of the state.

[36] The UMass Donahue Institute is also a contributor to this report.

[37] SEIGMA: Social and Economic Impacts of Gambling in Massachusetts; University of Massachusetts School of Public Health and Health Science; report by Mark W. Nichols, University of Nevada, Reno with University of Massachusetts Donahue Institute, Economic and Public Policy Research Group, "Lottery Revenue and Plainridge Park Casino: Analysis After Two Years of Casino Operation," April 26, 2018. https://massgaming.com/wp-content/uploads/Lottery-Revenue-and-Plainridge-Park-Casino-Analysis-after-Two-Years-of-Casino-Operation-5-10-18.pdf

- Relative to the rest of the state, lottery sales for agents within a 16- to 30-minute drive of Plainridge Park Casino grew more rapidly compared to the year prior to the casino opening.
- Massachusetts has one of the largest lotteries in the country, both in per capita terms and in absolute terms. As late as fiscal year 2012 and 2013, lottery revenue in Massachusetts exceeded lottery revenue in Florida and California, respectively.
- Growth in lottery revenue in Massachusetts has been slower than growth in lottery revenue nationwide and in other New England states.
- Lottery sales in Massachusetts in fiscal year 2017 decreased 2.6 percent from fiscal year 2016 (a record sales year), when sales increased 4.3 percent over fiscal year 2015.
- Between fiscal year 2003 and fiscal year 2017, lottery revenue has grown at an annualized rate of 1.38 percent. Inflation over the same period has grown at an annualized rate of 2.04 percent.
- With the exception of the Berkshires region, sales growth in Metro Boston and the Southeast Region (the source of 85 percent of recaptured gambling dollars) lagged behind other regions in the state in the two years following the casino opening.

The UMass study offers an interesting comparison to the potential offering of sports betting in North Carolina. The similarities between the two examples are significant. First, in both states the state lottery was the primary form of legal gaming in the state prior to the introduction of the new form of gaming. In North Carolina, tribal casinos do exist but are located in one part of the state, making this comparison stronger for the majority of North Carolina. Second, traditional lottery products will be offered in the same venue and/or platform as the expanded game offering Massachusetts. In North Carolina, NCEL will potentially offer sports betting in its retail locations and on a digital platform in the same space it offers traditional lottery products. In Massachusetts, each casino is required to be a licensed lottery retailer and provide a plan demonstrating that it offers traditional lottery products to its customers. This type of offering puts the expanded gaming product and the transitional lottery product on the same stage and mitigates any negative effects on the traditional product.

In reviewing relevant findings of the University of Massachusetts study and the previous discussion, it is almost certain that the introduction of sports betting in North Carolina will have both positive and negative results on traditional lottery products. Spectrum expects a reduction in the Cash 5, Pick 4, Pick 3 and potentially keno sales. Keno is in its infancy in North Carolina and its growth in bar and restaurant retailers along with the introduction of sports betting to these same retailers could result in an increase of keno sales as well as a broadening of the lottery's player demographic to younger players.

In sum, the impact of sports betting on traditional lottery products likely will be mixed at first but ultimately Spectrum believes it will result in an increase in revenue to North Carolina that will be seen both in sports betting revenue and in the long-term increase of lottery traditional product sales.

E. Impacts on Cherokee Casinos

North Carolina Senate Bill 154,[38] signed into law on July 26, 2019, allows the only two casinos in the state – Harrah's Cherokee Casino Resort in Cherokee and Harrah's Cherokee Valley River Casino in Murphy – to offer sports betting alongside their traditional casino games, which include slot machines, live table games, and live poker. The two casinos are spending a combined $25 million to develop sportsbooks that are likely to open in early 2020. Both casinos are owned by the Eastern Band of Cherokee Indians ("EBCI") and operated by Caesars Entertainment, one of the world's largest gaming companies.

In interviews with Spectrum, officials from Caesars and the EBCI said the casino in Cherokee is developing a "large, Caesars Palace-style" sportsbook that will integrate with its poker operation, whereas the sportsbook in Murphy will be smaller. They said the sportsbooks will add 40 jobs at Cherokee and 10 to 12 at Murphy – on top of the 2,600 and 1,200 already employed at those properties, respectively.

The introduction of statewide sports betting in North Carolina could impact the sports-betting potential at the Cherokee casinos because the ability to place wagers at lottery retailers and/or online would be much more convenient for most North Carolina bettors than driving to either of the two casinos, which are located in remote areas. That said, Caesars and EBCI officials told Spectrum that the introduction of sports betting at the casinos will boost their revenues, both directly and indirectly, as well as their economic impacts. They said the vast majority of the Cherokee casino business comes from out of state, primarily from Tennessee, Georgia and South Carolina, none of which has casino gaming or sports betting. Tennessee, however, has authorized digital-only sports betting, which is expected to launch in 2020.

Spectrum believes that despite the convenience of placing wagers via mobile device or at a lottery retailer, those betting experiences are not likely to replicate the casino sportsbook experience – a convivial atmosphere with numerous large-screen televisions, odds boards, and food and beverage service – that will be available at the Harrah's Cherokee properties, most notably at the flagship resort in Cherokee.

The phenomenon of bettors flocking to casinos for major sports events was evident in Atlantic City last spring during the NCAA men's basketball tournament. (Sports betting had commenced in New Jersey nine months earlier.) Telsey Advisory Group said in a March 26, 2019,

[38] North Carolina Senate Bill 154 / SL 2019-163. https://www.ncleg.gov/BillLookUp/2019/S154

note to investors that the sportsbooks in Atlantic City casino properties drove significantly higher hotel room rates and non-gaming revenues due to the start of the tournament:

> We spent the first and second rounds of the NCAA tournament in Atlantic City last weekend (Thursday to Sunday). This was the first year with legal sports betting outside of Nevada. In our opinion, Atlantic City was completely overwhelmed with the increased visitation for the supply of hotel rooms, restaurants, bars, table games, and sportsbook seats. Once again, it isn't necessarily the handle that will come from the NCAA games. It is the fact that hotels were priced higher than summer weekends, every seat in restaurants was essentially full the entire weekend, and at night it was difficult to find an open table game. When Ocean Resort runs out of beer on Friday evening, we are guessing it had something to do with the crowd there for March Madness. We spoke to numerous groups of people who visited Las Vegas in the past and now are planning to make the easier trip to [Atlantic City]. … We also heard of strong results in other sports betting markets such as Mississippi, West Virginia, and Pennsylvania.[39]

The Press of Atlantic City also reported that sports betting on the NCAA men's basketball tournament was further driving additional spending on other casino games, food, and beverage at the host casinos in Atlantic City:

> "There is a lot of ancillary business that occurs. People are eating, drinking, they're doing some gambling. We've seen a nice uptick at our tables," [Mark Giannantonio, president and CEO of Resorts Atlantic City] said. "So, we're pleased."
>
> In the Marina District, Borgata Hotel Casino & Spa put together a large viewing area upstairs complete with a full bar and tellers to accommodate the huge number of sports gamblers.[40]

Caesars officials told Spectrum that since retail-only sports betting commenced in Mississippi in August 2018, bettors at its casinos in that state have spent an additional 15 percent to 20 percent beyond their sports betting amounts on other casino games, in addition to spending on food, beverage and other non-gaming amenities. They said their player-loyalty databases show that among sports bettors at Caesars' Mississippi casinos, 25 percent of the bettors are new, 25 percent are re-activated (meaning that had not played there in a long time), and 50 percent were existing customers. Thus, sports betting has brought incremental visitation and revenues to the company's casino properties.

In the big picture, it is important to note that sports betting revenues typically account for only a small portion of a casino's total gaming revenue. In Nevada last year, sportsbook win represented just 2.4 percent of total gaming revenue.[41] Gaming operators have told Spectrum that the direct profits from sportsbooks are minimal – sometimes break-even – but that the

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[39] "Sports Betting Update: Sports Betting Still Doesn't Matter? Au Contraire Mon Frere!," Telsey Advisory Group investor note, March 26, 2019.

[40] David Danzis, "Atlantic City sportsbooks 'buzzing' during first March Madness," *The Press of Atlantic City*, March 22, 2019. https://www.pressofatlanticcity.com/news/press/casinos_tourism/atlantic-city-sportsbooks-buzzing-during-first-march-madness/article_444c2cf5-7b47-59e8-8826-77801c385b67.html

[41] At 98 locations statewide reporting at least $1 million in total gaming revenue. At the major Las Vegas Strip casinos (21 locations), sportsbook win accounted for 1.5 percent of total gaming revenue.

casino property as a whole benefits from the spending on other gaming and non-gaming activities and services.

Spectrum concurs with the EBCI and Caesars that although a sports-betting monopoly in North Carolina would of course be ideal for the Cherokee casinos, the presence of attractive, entertainment-oriented sportsbooks combined with the already high patron volumes at those casinos will generate positive financial and economic-impact results at those two properties.

III. Sports Betting Options Available to NCEL

Based on Spectrum's research of NCEL sales and operations, we have developed areas that NCEL needs to consider when developing its model to introduce sports betting. We have endeavored to provide options or scenarios that would optimize the success and sustainability of the sports betting product given the current gaming environment in North Carolina.

A. Retail vs. Digital

If North Carolina decides to introduce sports betting, the first decision that needs to be made is whether to offer sports betting via its existing retailer base or on its existing digital platform, or both. A different aspect of this decision is discussed in the next chapter of this report. This decision is critical to the number of potential players that NCEL will reach and the type of player demographic it will attract.

Among the 13 states that offer sports betting, four do so via their respective state lottery – Delaware, Oregon, Rhode Island and West Virginia – but no state offers full sports betting through its lottery retailer network. (Delaware Lottery retailers do offer pro and college football parlay bets only.) It is important to note that offering sports betting through a lottery retailer network affects the financial structure of sports betting as well as the odds offered to players. As the current sports-betting lotteries ramp up and, potentially, other state lotteries offer sports betting, the role and performance of the lottery retailer network will come into focus. Two other lotteries – the District of Columbia and Montana – are planning to launch retailer-based sports-betting programs, which will eventually provide insight into what may be expected in North Carolina.

As noted in the previous chapter, in 2018, the District of Columbia passed legislation that authorized the DC Lottery to be both an operator and regulator of sports betting.[42] The DC Lottery will operate its own sportsbook through a digital platform and through its lottery retailer network. The lottery will also be regulator when it licenses privately owned sportsbooks located at DC professional sports venues, as designated in the legislation. The DC Lottery was scheduled to start sports betting in the fall of 2019, but this has been delayed.[43]

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[42] For insight, see: Spectrum Gaming Group, "Sports Betting in the District Of Columbia: Analysis and Business Case of the Economic Impact of Regulating and Operating Sports Betting through the DC Lottery," report for the Office of the Chief Financial Officer, District of Columbia, December 27, 2018. https://dclottery.com/resources/docs/spectrum-report-dc-lottery-final.pdf

[43] "Sports betting won't launch in D.C. in time for NFL season; bars start applying," Fennit Nirappil, *Washington Post*, August 8, 2019. https://www.washingtonpost.com/local/dc-politics/sports-betting-wont-launch-in-dc-in-time-for-nfl-season-bars-start-applying/2019/08/08/ffc3ea2c-b854-11e9-bad6-609f75bfd97f_story.html

Earlier in 2019, Montana passed a sports betting legislation, similar to the District of Columbia, whereby sports betting would be potentially available through its roughly 1,400 retailers.[44] The Montana Lottery also has the ability to offer sports betting on a digital platform. Montana appears to be focusing on implementing sports betting through its 1,400 retailers, particularly the bar and restaurant sector. Sports betting could begin later in 2019.

It is Spectrum's recommendation that NCEL offer sports betting through both its current retailer base and its existing digital platform – i.e., via online and mobile channels. It is critical to note that our projections in this report assume that NCEL will introduce sports betting both through its existing retailer base and via digital channels. Our interviews with representatives of the current and potential retailer base and NCEL's current and future technology providers make it clear all stakeholders want and believe a role in the implementation of sports betting in North Carolina will be beneficial to all involved.[45]

As is noted throughout this report, the digital channel is critical to optimizing sports betting success in North Carolina. In addition to the New Jersey results discussed earlier, we note that Pennsylvania offered sports betting starting in late May 2019[46] and in the next month – the first full month after launch – the digital channels accounted for 41.8 percent of the statewide handle.[47] By August 2019, that share had risen to 76.3 percent, boosted by the preseason betting on the new NFL season, which commenced the following month. The success of sports betting on a digital platform is clear from the early successes of other states.

Although Spectrum expects the sports betting performance in North Carolina to follow the patterns in other states where both digital and retail betting are offered, North Carolina will benefit by having an existing, large Lottery retailer network in which to market its sports betting product to the traditional lottery player, some of whom have established relationships with their favorite retailers. In addition to direct sales at retailers, promotional material present at the retailers will help to create awareness of the digital option. A well-designed cross-marketing program can both benefit retailers by maintaining lottery player foot traffic in its stores and increase the number of sports bettors in this state.

With this being said, it is clear that sports betting is a product that is totally different than traditional lottery products. It requires a greater level of scrutiny in licensing and compliance (see

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[44] Adam Candee, "Montana Sports Betting Improbably First To The Finish Line in 2019," *Legal Sports Report,* May 3, 2019. https://www.legalsportsreport.com/32061/montana-sports-betting-bill-signed/

[45] Interviews with North Carolina Petroleum and Convenience Marketers, North Carolina Restaurant and Lodging Association, North Carolina Merchant Retailers Association, Scientific Games International, IGT, and NeoPollard, various dates.

[46] Pennsylvania Gaming Control Board, "Monthly Sports betting Report." https://gamingcontrolboard.pa.gov/files/revenue/Gaming_Revenue_Monthly_Sports_Wagering_FY20182019.xlsx.

[47] Gary Rotstein, "Pennsylvania's Sports Betting Surges with FanDuel's Addition," Penn Bets, September 16, 2019. https://www.pennbets.com/pennsylvania-online-mobile-sports-betting-fanduel/

Chapter IV.C of this Report). The suitability of a lottery retailer will be predicated on its current level of lottery sales plus its ability to demonstrate a sufficiently well-developed business to maintain the security and integrity of the product.

In reviewing the current demographic of the NCEL retailers, approximately 40 percent of the current retailer base is prime to become high-performing sports betting retailers. This analysis is based on the current sales level of lottery products at the location. The success of this group will be largely dependent on the structure of sports betting; policy decisions by NCEL; training and marketing; and cross-promotion between Lottery retailers and the digital platform. If a coordinated plan incorporates both the retail and digital platform, the probability of success of the sports betting product is dramatically increased. The increase in potential foot traffic into retail establishments will increase not only the sports betting performance, but also the sale of lottery and non-lottery products. In sum, the introduction of sports betting on both a retail and digital platform coupled with a coordinated marketing effort can dramatically increase the economic benefit seen in North Carolina. The direct result of the success of the sports betting and traditional lottery products is more funding for North Carolina education, per NCEL's mission.

With respect to the retail sector, Spectrum found that bars and restaurants are grossly underrepresented as NCEL retailers. North Carolina does have restrictive licensing for on-premises consumption of alcohol, which limits NCEL's reach into this space. Regardless, the addition of sports betting in North Carolina bars and restaurants as well as the offering of traditional lottery products – e.g., Carolina Keno – will increase the success of sports betting and also increase traditional lottery sales while potentially reaching a younger demographic as regular lottery players.

Lastly, the success of sports betting in North Carolina – specifically with the retailers – is largely dependent on the policy decisions that NCEL makes with respect to the implementation and coordination of sports betting.

Pareto Analysis

The following table shows the total sales of all NCEL products from the total universe of 7,154 NCEL active retailers, broken down into the top four deciles; it demonstrates that the top 40 percent of retailers sell 67.9 percent of all existing lottery products. Spectrum recommends that these top-performing 2,862 retailers be encouraged to apply for, and obtain, the licenses expected to be required for those retailers wanting to offer sports-betting through NCEL.

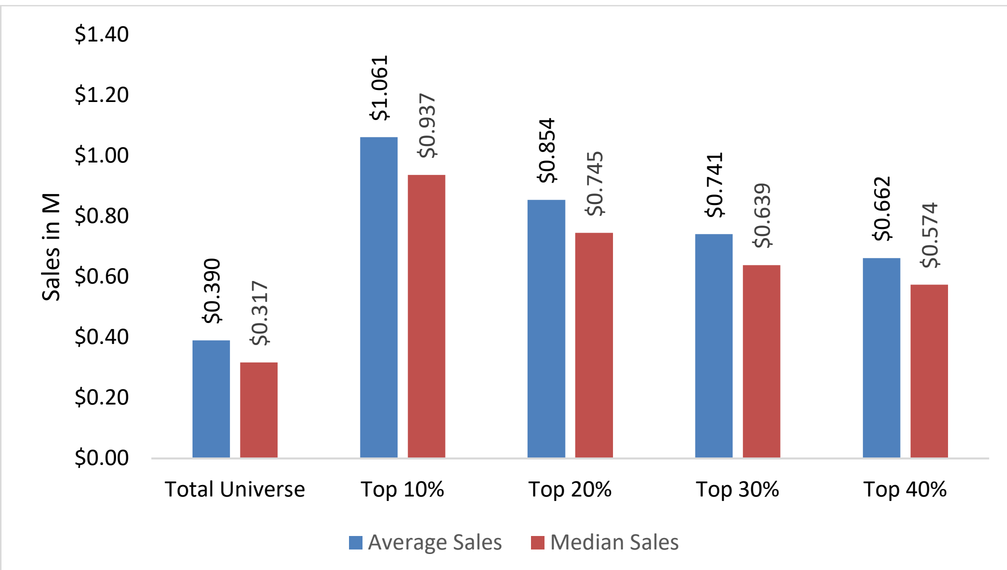
Figure 26: Total NCEL sales by retailer segment, top four deciles market share, FY 2019

Segment	Universe	Retailers	Total Revenue (M)	Share	Average (M)	Median (M)
1	All	1 to 7,154	$2,792.7	100.0%	$0.390	$0.317
2	Top 10%	1 to 715	$759.4	27.2%	$1.061	$0.937
3	Top 20%	1 to 1,431	$1,220.1	43.7%	$0.854	$0.745
4	Top 30%	1 to 2,146	$1,591.4	57.0%	$0.741	$0.639
5	Top 40%	1 to 2,862	$1,895.7	67.9%	$0.662	$0.574

Source: NCEL Lottery data, Spectrum Gaming Group

The chart below shows the same top four deciles by average and median Lottery sales and shows these top 2,862 retailers reported an average $662,000 in sales on an annual basis, far more than the average ($390,000) of the entire universe of 7,154 active retailers, thereby underpinning their likely potential to best maximize sports-betting revenue sales.

Figure 27: Average and median NCEL lottery sales, by retailer performance segment, FY 2019



Source: NCEL Lottery data, Spectrum Gaming Group

B. Opportunities for Growth

A key metric for lotteries is the retailer penetration rate, or the number of retailers per capita. A lower number generally means there are more lottery outlets per resident, enabling a deeper penetration.

Figure 28: Selected state lottery retailer penetration rates

State Lottery	No. Residents per Retailer	2018 Total Sales
Florida	1,518	$6.7B
Georgia	1,197	$4.6B
Massachusetts	825	$5.3B
North Carolina	1,483	$2.6B
Ohio	1,186	$4.1B

Source: La Fleur's World Lottery Almanac, state lotteries, Spectrum Gaming Group

Although the NCEL retailer penetration rate is in the top half of all state lotteries,[48] Spectrum believes NCEL could improve its penetration rate by recruiting lottery retailers in under-represented areas; this would allow it to also identify potential sports betting retailers who are not current lottery retailers.

In Spectrum's discussions with both NCEL executive staff and stakeholders, it is clear that the bars and restaurants are under-represented as lottery retailers (as indicated in the tables below). This is a significant difference as compared to other state lotteries, where this sector is a significant sales generator. One of the differences in the representation in this sector is whether the state lottery offers keno. When utilized correctly, keno is a social game that can provide bars and restaurants with ancillary sales. NCEL is in the beginning stages of offering keno to more bars and restaurants, more than doubling its presence in the bar and restaurant sector over the last several years. Spectrum recommends that NCEL continue this expansion and incorporate sports betting should it be authorized in North Carolina. The following table provides NCEL's current retailer segmentation.

Figure 29: NCEL active retailers by type of business

Trade Style	No. Retailers
Apparel and Accessory Stores	2
Bar	99
Club or Association	35
Convenience Store	831
Convenience Store with Gas Pump	3,106
Convenience Store with Gas Pump & Fast Food	1,418
Drug Store	23
Gas Service Station	10
General Merchandise	34
General Services	36
Grocery Store (5 or less check stands)	139
Home and Auto Supplies	4
Other	30
Restaurant with Liquor &/or Beer License	165
Restaurant without Liquor License	9
Special Events and Locations	2
Supermarket (more than 5 check stands)	958
Superstore	102
Tobacco Store	134
Unknown	17
Grand Total	**7,154**

Source: North Carolina Education Lottery, as of November 18, 2019

[48] La Fleur's 2019 World Lottery Almanac.

Based on this information, NCEL products are offered in 273 bar and restaurant locations across North Carolina. As noted above, this number has grown recently with the offering of Carolina Keno to bars and restaurants, to the point where bars and restaurants now account for 3.8 percent of active NCEL retailer locations. As seen in the table below, this sector is under-represented in North Carolina (and in Florida and South Carolina) as compared to other states. The ability to offer keno is a critical aspect to recruiting bars and restaurants to become lottery retailers, as it is a sociable game that encourages patrons to extend their stay and order food and beverage. Of note in the table below, Florida and South Carolina do not offer keno and thus have low retailer representation in that sector. Spectrum found that Montana presents an interesting case because it a smaller lottery that has focused its retailer base in the bar and restaurant sector.[49] Moreover, as is discussed elsewhere in this report, Montana is in the final stages of preparing to offer sports betting, and its retail base will exclusively be bars and restaurants.

Figure 31: Percent of active retailer locations that are bars and restaurants, selected state lotteries

State Lottery	Pct. Total Retailers that are Bars and Restaurants
California	5.8%
Florida	1.0%
Georgia	4.6%
Maryland	16.1%
Massachusetts	15.5%
Michigan	24.2%
Montana	34.9%
New York	10.6%
North Carolina	3.8%
Ohio	18.2%
Oregon	44.3%
South Carolina	0.2%

Source: La Fleur's World Lottery Almanac, NCEL active locations

If NCEL could grow its lottery retailer base by 500 restaurants and bars, the increased lottery revenue alone would make it a worthwhile endeavor. If each of the 500 locations equaled the average performance of the top 40 percent of retailers ($662,000), the increase in gross lottery sales would be $331 million annually. Based on these projections, even if an additional 500 retailers in the bars and restaurants segment performed slightly below average, the gain for NCEL would be significant. Moreover, the 500 new restaurant and bar retailers would also be prime retailers to be sports betting agents as well, and we expect sports betting revenue potential would be significant in these establishments.

[49] Montanalottery.com.

North Carolina has restrictions on liquor licensing,[50] such that bars and restaurants that sell beer or liquor are required to maintain a ratio of 30 percent food sales as compared to total sales in order to maintain a liquor license that allows patrons to consume alcohol on the premises. If a bar or restaurant cannot maintain this 30 percent ratio, the establishment is required to operate as a private club open only to members. It is unclear at this point how much of an obstacle this restriction may be to sports betting and traditional lottery product expansion in this sector. However, Spectrum suggests that such establishments are – or could be – well positioned to incentivize patrons to stay on site for longer periods if they offered a sportsbook-type atmosphere, thus increasing their potential overall sales of both food and beverage (see Chapter II.E for insight). The North American Association of State and Provincial Lotteries has long advocated that the lottery industry's strong relationship with bars, pubs, taverns and restaurants make it best positioned to implement sports betting.[51] Similarly, NCEL is best positioned to utilize the bar and restaurant sector to implement sports betting and grow its traditional products to benefit education in North Carolina.

Spectrum recommends that NCEL continue to focus on recruiting bars and restaurants to be not only sports betting agents but also sell traditional lottery products. This strategy will require NCEL to develop materials to educate potential retailers, particularly bars and restaurants, about the potential overall business growth related to the increased foot traffic. Also, establishments can increase the length of stay of customers by offering social games like keno and sports betting. Moreover, these products can be offered in restaurants and bars with minimal staffing impact with the utilization of self-service betting terminals ("SSBTs") for both sports betting and traditional lottery products. NCEL has a strong case to make that participation as a sports betting agent and a lottery retailer will not only benefit the establishment's sales, but also contribute to education funding.

C. Staffing Structure and Positions Based on Best Practices

If NCEL is authorized to offer sports betting, it will have an immediate impact on staffing, with the addition of positions and potential alteration of duties of current NCEL employees. The departments that will be impacted are product development, sales, marketing, licensing, compliance, IT and, potentially, finance. There are a number of variables that will determine how significant the impact on staffing will be in the short term. Our staffing recommendations rely on the following assumptions:

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[50] Jonathan Ammons, "Members only: A lingering law requires Asheville's bars to function as private clubs," Mountain Xpress, August 27, 2015. https://mountainx.com/food/members-only-a-lingering-law-requires-ashevilles-bars-to-function-as-private-clubs/

[51] Renee, "US Lotteries Want In on Sports Betting After SC Rules to Overturn PASPA", May 23, 2018. https://www.tightpoker.com/news/us-lotteries-want-in-on-sports-betting-after-sc-rules-to-overturn-paspa-12632/

- The timing of the rollout of sports betting: It is recommended that NCEL plan a three-year rollout for the full implementation of sports betting.
- Sports betting channels: The three-year rollout presumes that NCEL will adopt Spectrum's recommendation that NCEL offer sports betting both via its current digital platform and through its current (and potentially expanded) retailer base.
- Future contract with technology provider/operator: Contracts with technology providers in the US lottery industry vary as to what functions the provider will assume versus what functions the Lottery will assume. For the purposes of this report, we will assume that the current functions performed by NCEL and its current gaming system provider will be the same with any future sports betting technology provider.
- Sales and marketing: Based on our recent conversations with NCEL, staff stated that it anticipates it will maintain all sales and marketing functions in-house and not contract out these functions to any future sports betting technology provider.

Any staffing recommendation does not factor in NCEL's ability to potentially reduce the number of new positions by modifying the duties of existing positions and possibly reorganizing current staff.

When offering a new category of gaming, the effect on staffing is contingent on the preparedness and flexibility of the current staff to effectuate the change. Based on discussions with NCEL, there is a level of knowledge of the recent implementation of sports betting in other jurisdictions. Preparedness for sports betting among the existing NCEL could minimize the need for additional positions in certain areas. Conversely, and based on our interviews with representatives of both NCEL technology providers and retail organizations, there is a mixed level of knowledge and a fairly low level of preparedness for outside stakeholders that NCEL will need to participate in the implementation and operation of sports betting.[52] However, across these groups of stakeholders, who represent key points of sale and contact for the general public, there is a high level of interest to participate in the implementation of sports betting. This interest is the most acute in the large base of existing lottery retailers who are petroleum providers and convenience stores.

Still, it is clear that product development coupled with training of retailers and NCEL sales staff will be a significant indicator of success for sports betting. As stated above, Spectrum assumes that the current division of services between NCEL employees and outside vendors will remain the same. For example, if NCEL contracts with a sports technology provider and elects to take on more of the IT functions by having NCEL employees perform these duties, then vendor costs would decrease but staffing costs – i.e., positions added – would increase. Accordingly, the

[52] Interviews with North Carolina Restaurant and Lodging Association (September 20, 2019), North Carolina Association of Petroleum and Convenience Marketers (September 20, 2019), and North Carolina Merchant Retailers Association (September 13, 2019).

staffing recommendations assume the current division of labor in NCEL's current technology contracts will be the same when it procures a sports technology provider.

Similar to Spectrum's recommendation to the DC Lottery,[53] we recommend the creation of a new Sports Betting Department ("Department") within NCEL dedicated to the development, implementation and oversight of sports betting in North Carolina. The Department head will be a director-level position reporting directing to the Executive Director. The Department head will preferably have experience in sports betting operations but at a minimum have experience in gaming or a strong sales and oversight background. For ease of discussion in this section, we will refer to this position as the Director of Sports Betting.

There will significant duties related to sport betting, as well as overlap with other NCEL functions and departments – e.g. sales and finance – but the Department and position will coordinate all sports betting activities for NCEL. Spectrum recommends that product development, compliance and marketing exist within this department as direct-line reports, with dotted-line reporting to the traditional lottery functions in product development, security and marketing, as discussed below.

In Washington, DC, sports betting will be offered and regulated by the DC Lottery.[54] In DC, there will be multiple sportsbooks:

- DC Lottery will operate its own sports book through a digital channel and through its existing retailer base. Retailers who are part of the existing retailer base will need to obtain a separate sports betting license to offer the product.
- The DC Lottery will regulate the independent sportsbooks operated by the professional sports teams located in DC, earning a guaranteed, fixed-revenue percentage of GGR of each sportsbook; i.e., a tax. There is potential for up to three additional separate sportsbooks. The DC Lottery added a different department to oversee the regulatory functions of private operators (the professional sports teams), requiring the addition of 10 new positions. The new positions include the Director of Regulation and Oversight, Investigations and Enforcement Officer, Investigations and Enforcement Agent, Licensing Coordinator, Audit and Compliance Officer, and Responsible Gaming Officer.

The DC Lottery further added one product development position in the lottery-operated sportsbook operation. Its current vendor is assuming all sales and marketing functions for sportsbook operations. Moreover, the separate license for sport betting retailers for the lottery-operated product will be processed and regulated by the new licensing functions set up in the

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[53] See "Sports Betting In District Of Columbia: Analysis and Business Case of the Economic Impact of Regulating and Operating Sports Betting through the DC Lottery," Spectrum Gaming Group, December 27, 2018. https://dclottery.com/resources/docs/spectrum-report-dc-lottery-final.pdf

[54] Interviews with Beth Bresnahan, Executive Director, DC Lottery, October 15, 2019, and November 11, 2019.

regulatory department mentioned above. The licensing function will cover both the statutorily required multiple licenses for each independent operator and the more simplistic license requirements for retailers to take wagers for the lottery-operated sportsbook.

Generally, in reviewing operational models of different state lotteries with respect to the tasks performed by the lottery as opposed to vendor employees, it varies significantly. Massachusetts stands at one end of the spectrum as the only operation completely operated by lottery employees, including gaming system operation and instant-ticket warehousing. Other states such as Vermont have a small number of lottery employees and rely to a great extent on vendor staff to run almost the entire operation. NCEL is closer to the Massachusetts model in that it retains many functions to be controlled and operated by its own employees.

It is Spectrum's experience that the NCEL form of lottery management provides a more efficient management model that minimizes costs and improves response to market factors and ultimately maximizes revenue. Reliance on vendors for day-to-day services can prove costly, as the lottery does not control that portion of the operation and the vendor has the advantage. Additionally, when a lottery relies on a vendor to provide services almost exclusively, its employees do not have the necessary experience in, for example, gaming-system operation, thus making a change to a self-operated model difficult given the lack of experienced employees.

Given the assumptions stated above, Spectrum anticipates an addition of at least 16 NCEL positions over the three-year rollout of sports betting. This projection will change depending on the details of any future legislation passed and future policy decisions made by NCEL.

Because the current traditional lottery products are offered in all or nearly all lottery retail locations, with the exception of keno, Spectrum believes it makes sense that the product development and marketing functions for sports betting report directly to the Director of Sports Betting. However, sports betting is a different type of game with respect to game structure, financial model, and retailer participation. The product development and marketing functions will have significant overlap in beginning of sports betting and will have a significant role in the training and education of retailers and the public in sports betting. If these functions for sports betting are located in the same department, it will be easier to coordinate efforts. Training and education are discussed later in this section.

Over a three-year rollout of sports betting, we anticipate the initial creation of up to three positions providing product leadership, management, and support for a sports betting product. Spectrum believes that the staffing structure would consist of a manager of sports betting product development who reports to the director of Director of Sports Betting. This position would oversee the development of both the retail and digital offering. In Year 1, NCEL should add two to three support staff performing different functions including channel management, promotions planning and business intelligence/analysis. This group should be considered the sports betting specialists and work with the marketing and sales staff to train retailers, NCEL staff and educate the public on the details of the sports betting product. The marketing and product development staff in the sports betting department would coordinate with other NCEL departments to train and inform them about sports betting.

Currently, NCEL has 10 staff members in its marketing department. These positions are responsible for oversight and development of conventional marketing, digital marketing, web development and graphic design. Spectrum recommends that a sports betting marketing manager be a direct report to the Director of Sports Betting with a dotted-line reporting relationship to NCEL's Marketing Director. The anticipated limited offering in retail locations combined with an online presence will provide a different marketing perspective for the sports betting product. Lastly, the marketing manager will have significant input in the rollout of sports betting and the alteration to plans as market needs dictate.

One of the critical factors in the success of any new product, but particularly a new product line like sports betting, is training and educating the staff and the retailers and educating and incentivizing the potential consumer through effective marketing. This multipronged task is accomplished through a coordinated plan designed by the Sports Betting Department and the NCEL sales staff. Specifically, the sports betting product development staff and sports betting marketing manager will assist in the development plan with input from the existing sales and marketing staff. The sales staff's buy-in is critical as they will be responsible as the primary trainer and contact with the retailer base. The product development and marketing plans for online sports betting will require coordination with the marketing efforts of the online sports betting technology provider and the NCEL digital marketing manager and website development staff. This level of coordination supports sports betting as its own department, where it can act as the communication for the internal stakeholders.

Currently, NCEL has three dedicated compliance staff who perform in office and field compliance checks on lottery retailers. This staff is focused on retailer ADA compliance. Other compliance functions are performed by the security department on Lottery retailers in conjunction with the department's security investigations. Accordingly, the current compliance standards are designed to address ADA compliance and compliance with NCEL rules regarding the sale of traditional lottery products. The Lottery will be required to develop operation standards and rules and regulations that are specific to sports betting that apply to its retailers, suppliers, and service providers. Additional staff will be required to develop these standards. Staff will be required to regularly and frequently monitor and check for compliance with all standards, such as, but not limited to, know your customer, anti-money-laundering, operations, and advertising/promotions.

Accordingly, in Year 1, we recommend three staff members focus on the development of standards, developing a process to conduct compliance checks of retailers and to conduct the compliance checks. Additional staff may be needed in Year 2 depending on how workload develops. Staffing needs will be dependent on how many of each retail sports betting licenses are awarded.

Initially, we recommend a compliance manager and two staff members be added to focus on the development of standards, developing a process to conduct compliance checks of retailers and to conduct initial compliance checks. As the number of licensees increase, an additional compliance staff person would be needed to conduct compliance checks with other members of compliance department. Additional staff may be needed in subsequent years depending on how workload develops.

Spectrum recommends that the NCEL licensing department add three positions in Year 1. The growth in the licensing department will depend on several factors. First, the addition of staff will depend on how many retailers decide to participate in sports betting. In reviewing sales by retailer location, we believe that 2,862 existing lottery retailers have sufficient sales to make them a viable sports betting retailer. Of this number, we anticipate at least 1,431 retailers would participate in Year 1, 860 more retailers would participate in Year 2, and 571 more retailers would participate in Year 3.

Spectrum recommends that a sports betting license be a separate license from the typical lottery retailer license. Currently, retailers are subject to background checks for tax and criminal background checks.[55] The NCEL Policies and Procedures Manual provides that NCEL can deny a license application or revoke or suspend a license if the retailer or any of its owners have been convicted of any felony or gambling offense in a state or federal court within 10 years of the retailer's application or entering into the retailer contract.[56]

It is Spectrum's recommendation that these sports betting license standards have heightened standards compared to what states require of a typical lottery retailer. For example, the current lottery policy applies to all owners of the company who are defined in subsection C and is expanded to all proprietors, partners, corporate officers and shareholders. In many retail establishments, the owners of the business may not run the day-to-day operation. In such instances, it is recommended for sports betting retailers in which the owners or corporate officer does not run the day-to-day operation that the owner designate a manager in charge of the sports betting operation who will be subject to the same criminal background check. Additionally, the NCEL Policies and Procedures limit the felony and gambling offense to 10 years prior to the application or entering into the contract. The 10-year limit should be removed for sports betting applicants, making a retailer's license subject to revocation if at any time NCEL learns of a past

[55] North Carolina Education Lottery Policy and Procedures, chapter 8, section 8.01(C).

[56] Id, at section 8.01(F)(3).

felony or gambling offense no matter when it occurred. We acknowledge that in many instances background checks can be limited to 10 years. It is our recommendation the 10-year period be lifted and require not only self-reporting but also include instances where NCEL learns of an offense independently.

One of the first tasks for NCEL's licensing and compliance departments will be to develop standards and procedures. Because this is a separate license and subject to separate requirements, this additional license will increase the workload in the NCEL Licensing Department, requiring at least a rework of current duties and possibly the addition of staff.

In some jurisdictions, we note that sports betting licensing can require more than one licensee per location depending on the role of the employee; e.g., a retailer license and a sports betting manager license for each location. So, for 1,431 locations, there could be 1,250 retailers licensed but another 1,000 to 2,000 individuals requiring licenses to work with the sports betting product. For the purpose of NCEL staffing changes, it is our recommendation that each sports betting retailer require one license per location, which will allow all of its employees to work with a sports betting product at the specified location.

Currently, NCEL has a staff of five that handles retailer licensing. Over the last three years, NCEL processed 950 lottery applications annually. Sports betting projections would increase this volume by 1,431 applications in Year 1, by 860 applications in Year 2, and by 571 applications in Year 3. The NCEL licensing cycle currently has a three-year period before re-application. Our recommendation for sports betting is that each licensee be subject to an annual update for each location to ensure no changes have occurred. The annual update will ensure the sports betting agents are complying with the stringent standards set by the Lottery and by statute. Applying the current three-year reply cycle to sports betting potentially leaves too much time during which a retailer may not be compliant with standards. This annual requirement would more than double the workload of the licensing department going forward. Sports betting retailers should, like lottery retailers, reapply for their license every three years.

Spectrum recommends adding three support staff to this department in Year 1 to help create the licensing process, standards, and applications and to manage the process. One new staff member must have the ability to assess reports relative to financial ability of license applicants to handle the unique nature of sports betting. Additional staff may be needed as sports betting develops in North Carolina. It is anticipated an additional staff person will be needed in years 2 and 3.

It is expected that many of these sports betting retailers will be existing lottery retailers. However, as part of the recommendations in this report, NCEL will experience growth in the bar and restaurant sector by as much as 500 retailers in the first three years of sport betting. These 500 retailers would more than likely become new lottery retailers as well. In discussions with

NCEL staff, for every new 100 retailers, NCEL is required to hire one additional sales representative to service these retailers. We believe that NCEL could see 300 new lottery retailers in the first year of sports betting. Moreover, the training and education duties for the sales staff will increase in the first year, making the addition of new sales staff even more critical. Based on these facts, we recommend NCEL plan to add a total of five new sales representatives over the first three years of sports betting, with three in the first year and one each in years 2 and 3.

D. Retailer Commission

The current retailer commission for traditional lottery sales is 7 percent on the total amount wagered.[57] The current retailer base expects a similar commission structure with the sports betting product. By way of comparison among other lotteries that will be launching sports betting via their retailer networks:

- The New Hampshire Lottery provides lottery retailers with a 5 percent commission plus a 1 percent cashing bonus for all prizes cashed up to $599.[58] The New Hampshire Lottery plans to offer retailers that same commission rates where it plans to offer sports betting as an additional game under its existing agreement and not require a separate license.[59] New Hampshire decided to follow this approach because its lottery retailers will be permitted to accept only parlay wagers and not the more-popular single-event sports betting.
- The Montana Lottery will allow its retailers in the restaurant and bar sector to offer sports betting. Currently, the Montana Lottery offers it lottery retailers a 5 percent commission plus a similar cashing bonus.[60] In its proposed regulation changes for sports betting, the Montana Lottery proposes to offer its sports betting agents a 6 percent commission with no cashing or incentive increases offered to lottery retailers.[61]
- The District of Columbia Lottery will offer its sports betting retailers the same commission rate of 5 percent that it offers its lottery retailers.[62] Details regarding cashing bonuses are still in the planning process.[63]

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[57] Interview with North Carolina Petroleum and Convenience Marketers and NCEL.

[58] New Hampshire retailer agreement, January 2018. https://nhlottery.com/Files/PDFs/Retailer_Agreement

[59] Interview with Charles McIntyre, Executive Director, New Hampshire Lottery, November 12, 2019.

[60] State of Montana, "Before the State Lottery and Sports Wagering Commission, Department of Administration of the State of Montana: Notice of Public Hearing On Proposed Adoption, Amendment, and Repeal," September 24, 2019. https://doa.mt.gov/Portals/65/2-63-580pro-arm.pdf?ver=2019-09-27-140226-060

[61] Ibid.

[62] "Retailer Resources: How to Become a DC Lottery Retailer," DC Lottery. https://dclottery.com/retailer-resources/default.aspx (accessed November 11, 2019)

[63] Interview with Beth Bresnahan, Executive Director, DC Lottery, November 11, 2019.

The standard retailer commission provides a unique challenge given the structure of sports betting. In the typical sports betting financial model, gross gaming revenue is calculated based on a 95 percent payout percentage or, in other words, a 5 percent gross win percentage. The 7 percent retailer commission affects the financial structure of sports betting because the commission is taken from the total amount wagered, not the GGR, which is net revenue after the payment of prizes. (See Chapter V.B). Both the gross win percentage and anticipated prize payout affect the odds offered to the player. These percentages are an average that a skilled sportsbook operator uses statistical probability to reach, so over the course of time it will allow the sportsbook operator (NCEL) to realize the projected GGR to cover costs and meet retained revenue expectations.

NCEL needs to decide the amount of retailer commission for the participating retailer. Spectrum recommends negotiating a commission rate lower than the 7 percent lottery retailer commission rate for sports betting retailers. Spectrum will not recommend a commission percentage in this report, as this may affect the NCEL's anticipated negotiation with retailers. The sports betting product will be driven by self-service betting terminals and require less retailer staffing to operate, justifying a lower commission rate. This decision could affect retailer buy-in to the program, which could affect the rollout of sports betting in North Carolina. This decision will affect the financial model of sports betting and the odds offered to players. The financial model and risk aspects are discussed in more detail in the next chapter of this report.

The next retailer decision for NCEL is whether and how to involve non-sports betting retailers in sports betting. If NCEL decided to include non-sports betting lottery retailers in sports betting, it would be by allowing these retailers to sell gift cards, with the retailer receiving a modest commission to allow a player to fund his or her online account. Currently, NCEL allows online players to use all payment methods except credit cards. Deciding the payment method for player mobile accounts could also have an effect on the retailer commission structure. If NCEL allows the non-sports betting retailers to sell gift or debit cards to fund a player mobile account, it should consider a much lower commission rate for these transactions. Given the low margins in sports betting, a lower commission rate for non-sports betting agents would allow for a much more sustainable business model. Based on Spectrum's estimates of betting by channel, 20 percent of the total sports bets would be subject to the retailer commission.

E. Selection of Technology Providers

Some of the most controversial decisions for lotteries center on the selection of technology providers.[64] Spectrum certainly sees the value of seeking competitive bids to procure

[64] Jill Dorson, "Montana Rolls Out Proposed Sports Betting Rules," SportsHandle, October 7, 2019. https://sportshandle.com/montana-proposed-sports-betting-rules/

services in the public setting.[65] Conversely, Spectrum has recommended working within current contracts when the procurement process would cause undue delay and ultimately cost the lottery business opportunities that it would not recover.[66]

The NCEL enabling act provides NCEL will a great deal of autonomy with respect to procurement by exempting NCEL from state procurement requirements.[67] Based on conversations with NCEL staff, the Lottery utilizes this discretion efficiently to achieve the best value for NCEL, but in a fashion that allows for the quick completion of competitive procurements from initiation to award. Through Spectrum's lottery work in several jurisdictions, we have formed the fundamental belief that a competitive procurement process when operated in an efficient and well thought out manner achieves the greatest value. Accordingly, Spectrum recommends NCEL explore developing and issuing a new procurement to operate a sportsbook both through the retailer base and through its digital space. Should a contract be awarded to a company other than current providers IGT and NeoPollard, coordination between the existing gaming system and online platform may be necessary.

Of note, the State of Rhode Island in 2018 issued a procurement for a sports betting technology provider.[68] In the current gaming system contract, Rhode Island's gaming-system provider, IGT, had a right of first refusal to perform any work at an equal or better price related to the gaming system. We believe this dissuaded other companies from submitting bids. IGT was awarded the sports betting contract in August 2018 after being the sole bidder to an April 2018 RFP, and sports betting launched in December 2018. It is unclear if this right is included in IGT's current contract, but it is unlikely that the NCEL contract has a similar provision. If any such provisions exist, NCEL needs to develop a strategy to maximize competition for any future RFP.

In sum, given the efficiency of the NCEL process and the benefits provided by open procurement, Spectrum recommends that NCEL draft an RFP or a series of RFPs to procure the necessary technology and services necessary to operate and implement sports betting in North Carolina. Moreover, we cannot find a reason to explore working within the confines of NCEL's existing contractual relationships when the benefits of an open procurement can be achieved easily in the case of NCEL.

Spectrum recommends that a single RFP be drafted for the provision of both retail and digital technology services needed to operate sports betting. In the current gaming technology

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[65] Spectrum Gaming Group, "Business Assessment: Ohio Lottery: Identifying Opportunities, Generating Growth," September 26, 2015. http://spectrumgaming.com/wp-content/uploads/2018/04/spectrumreportforohiodas.pdf

[66] Spectrum Gaming Group, "Sports Betting in the District of Columbia."

[67] N.C. General Statutes C.18C, Article 6, section 18C-150.

[68] Rhode Island Lottery, Request for Proposals, "Sports Betting Service Provider for Rhode Island Lottery," April 3, 2018. [Prepared by Spectrum Gaming Group.] https://www.spectrumgaming.com/wp-content/uploads/2018/04/18-04a.pdf

marketplace, there are a number of companies that can provide both services to NCEL. There are also companies that specialize in one platform or another. Additionally, we recommend that the RFP be written so NCEL can award one or multiple contracts based on its determination on what option (or options) provides the best value for NCEL from an economic and efficiency standpoint. To operate its lottery sportsbook, the DC Lottery chose a single vendor to offer both retail and digital technology services. The DC Lottery will offer sports betting from an extensive retailer base, where potentially many existing and new retailers will be full-service sports betting agents. The DC Lottery also will offer sports betting on a digital platform. Conversely, New Hampshire is planning to offer a limited retailer-based sports betting program, with its plan to focus on a lottery-operated digital platform. The New Hampshire Lottery selected a new vendor to operate its digital-based sportsbook and selected its existing gaming system vendor to operate the limited retail-based sportsbook. Spectrum recommends that NCEL launch an extensive retail and digital sports betting offering similar to the plan in DC. Based on this similarity, it appears the single-vendor approach may offer more efficiency both in terms in operating and regulating but also potential costs savings given the anticipated size of the retail offering. That being said, it is our recommendation to issue an RFP with the option to award a single or multiple contracts for the provision of the technology to operate sports betting both on a retail and a digital platform. The ultimate operating efficiencies and cost will be determined by the details of the sports betting operation NCEL decides to offer.

F. Marketing and Education

One of the most important factors in supporting a successful sports betting platform is educating players. And because regulated sports betting in the United States has existed outside of Nevada for only a little over one year, a great deal of curiosity will be piqued from traditional and non-traditional bettors alike. While most potential bettors comprehend the basic concept of sports betting, a much smaller subset actually understand how to bet on the point spread, over-under, moneyline, etc. NCEL will need a detailed tutorial on its website – as well as point-of-sale materials for retailers – explaining how to place a sports bet, the different types of sports bets available and types of wagering that can be placed, as well as key terms and other helpful information. If NCEL plans to offer parlay wagering in addition to single-game betting, there will need to be much explanation as to how it works. NCEL may also want to consider an online help/chat platform for players to ask questions and receive responses in real time, as well as a hotline. Players understanding and feeling comfortable with sports betting is imperative to the success of NCEL's program.

As discussed in the Staffing section above, marketing and education will be a key initial function of the Sports Betting Department. This effort will be part of the strategic plan and rollout developed by the Director of Sports Betting and the new product development and marketing functions of the department. Sports betting product development and marketing will leverage and work with the experienced sales staff and marketing department to develop the most effective plans and jointly – on a lottery-wide basis – execute the marketing, education and rollout of sport betting. This coordination will be a key cog in developing a successful sports betting product. NCEL will need education on sports betting to effectively communicate to the public. Retailers will need education and support to attract their buy in and participation in sports betting. Lastly, NCEL and its retailers will need to educate members of the public so they have the awareness and knowledge needed to participate in sports betting.

To maximize these marketing and outreach efforts, NCEL will need to leverage its player-loyalty club database to generate marketing lists for email blasts and promotional messages aimed at added value promotions on wagers. For example, $100 in wagers placed could earn a player a 5 percent to 10 percent credit toward their next wagers. These players (in existing databases) are most likely core players who like and trust the Lottery and the brand, and this brand loyalty would hopefully lead to these players wagering with NCEL if they choose to bet on sports. Marketing to these audiences should emphasize the trusted brand and integrity of NCEL and that the Lottery's profits fund education programs throughout the state.

NCEL will want to place television and radio ads in and around sporting events broadcast on North Carolina radio stations as well as programming that is viewed by the audiences that are most likely to place sports bets. Football and basketball are the most popular sports bet on in the United States and are the most likely events to draw attention of people who would place sports bets.

Lastly, NCEL will want to develop retailer-based events around the start of sports betting to attract attention to the new product and to encourage the public to give it a try. Examples of such events include:

- Grand opening event for sports betting with giveaways and raffles, hosted by a local celebrity.
- Remote televised drawing for one of the in-state draw games with designed effort to promote and educate the public on sports betting.
- Retailer incentives where retailers and their employees are encouraged to provide information on sports betting to their customer. NCEL sends a mystery shopper – i.e., one of its employees – to retailers across North Carolina over fixed periods and when the mystery shopper witnesses a retailer or clerk provide sports betting information to customer, the retailer or the clerk wins a prize; e.g., $50.
- Cross-promotion with existing lottery games. When a customer enters a set number of second-chance prizes then the customer is eligible for a free $1 sports bet.

These type of events will assist retailers while also educating the public on sports betting.

IV. Recommendations for NCEL Sports Betting Platform

In this chapter, Spectrum reviews and recommends (where possible) the elements of NCEL's sports betting platform. Much of this section will depend on policy decisions and future legislative authority granted to NCEL for the implementation of sports betting.

A. Distribution Channels

As discussed in the previous chapter, the first and most important decision for NCEL is what distribution channels it will employ to offer sports betting. Spectrum recommends – and assumes in all our modeling and projections herein – that NCEL will offer sports betting through both retail and digital channels.

Retail

Over-the-Counter System

A modern, integrated over-the-counter ("OTC") system will enable fast and accurate bet transactions to be taken directly from customers, both via customer call-over and written betting slips, or "mark-sense" cards. Frequently featuring secure electronic point-of-sale ("EPOS") tills, an OTC system will possess an ability to handle multiple customers simultaneously and be able to take/payout cash from/to the player, plus offer other card-based payment options. Directly linked to a supporting customer-management system, an OTC system would typically offer the same range of bets as available through other distribution channels and have an ability to identify individual customers via any loyalty programs in place.

While a potentially viable option for the operator, and convenient to a range of sports betting customers, successful OTC systems require extensive staffing, physical retail space and secure locations. They also require significant investment in real estate, TV screens and retail-environment infrastructure, plus they frequently need extended operating hours to maximize turnover and revenue. In terms of return on investment, OTC systems should thus be closely examined in conjunction with alternative distribution channels, both retail and digital, before policy and/or investment decisions are made.

Self-Service Betting Terminals

Self-service betting terminals ("SSBTs") are defined as terminals that enable the consumer to self-select and strike sports bets through a networked system typically consisting of a touchscreen, barcode scanner, under-counter unit housing a contactless card reader, cash acceptor and receipt printer.

With the ability of SSBTs to offer and support a wide variety of bet types and markets – and to do so in multiple languages and with a variety of payment mechanisms – operators typically find gross win margins (or "hold percentage") from bets struck on SSBTs to be well above average due to the nature of player betting patterns and above-average selection of higher-margin multiple/parlay bets by the player. Since the introduction of SSBT units in New Jersey during the fourth quarter of 2018, one SSBT provider has seen its operator-clients recording a 15 percent gross win margin, contrasting the more normal 7 percent experienced through alternative betting channels, based on our conversations with sports betting providers. In particular, SSBTs have good scope to be customized to deliver a user-friendly, easy-to-understand interface with extensive menu functions for markets and bet-types. For novice bettors, especially, SSBTs help remove the uneasiness of acknowledging to a human clerk that one is unfamiliar with how to place a bet.

Accordingly, Spectrum believes SSBTs to be a viable and valuable potential channel for sports betting, located within both existing and new NCEL retailer outlets.

On a global basis, the main SSBT provider has been Austrian-based BGT, founded in 2005. BGT was acquired in 2016 by Playtech, a London-listed global gaming software provider, and now operates as Playtech BGT Sports.

Spectrum estimates that there are roughly 100,000 SSBTs currently in operation in Europe, with the United Kingdom, Eastern Europe and Greece being the most densely populated markets. Existing US-facing suppliers, with alternative offerings, are currently operating in Nevada, New Jersey and Rhode Island, including Golden Entertainment/William Hill, SBTech/Resorts Atlantic City Casino Hotel and IGT/Twin River, respectively.

Operationally, SSBTs typically require the following to function within a retail environment:

- Power supply
- Reliable internet connectivity, with adequate bandwidth
- 6 square feet to 7 square feet of floor space, where approximately 60 percent is needed for the SSBT and 40 percent the standing-room needed for the consumer
- Alternatively, wall-mounted multiple-screen type set-ups require similar floor space, but offer more flexible footprints to suit a variety of retail environments or layouts
- Ability to securely fix the unit(s), whether wall- or floor-mounted, within the retail environment

Other operational features typically include:

- Cash/coins/debit card payment-in options
- Loyalty card (tap-to-ID) function
- Ticket-out, cash-in at retailer cashier/payout function

The following is a summary of typical contractual arrangements, prevalent in Europe, relating to the supply and operation of SSBTs:

- Units supplied on a rental basis, with a typical rental period of three years
- Revenue-share model, in which 15 percent to 20 percent of net gaming revenue generated by SSBT is paid to supplier, covering notional rental cost and profit contribution
- Usually subject to minimum revenue levels
- Volume-related discounts commonly available

Although existing penetration of SSBTs is currently low within the US – Spectrum estimates there were fewer than 1,000 units as of September 2019 – our ongoing program of channel checks at major global gaming conferences over the last 18 months, plus recent additional conference calls with suppliers and operators in summer 2019, indicate that SSBT suppliers are adopting similar contractual arrangements within the United States, which all suppliers see as a valuable market-expansion opportunity.

Digital, Including Mobile

Sports betting offered on a mobile platform is commonly regarded as the ideal channel to create and retain customers. This is due to its convenience, consumer preference and prevalence-of-device-ownership by sports bettors. In developed sports betting markets elsewhere, mobile devices can account for more than 70 percent of all digital bet volumes and revenues; in other markets, for some consumer segments, it is their selected default channel, and they choose not to use any other, whether retail or digital. Of note, there are now 17 mobile apps available to sports bettors in New Jersey, and less than a year after launch the digital channel accounted for 81 percent of monthly volume. In Pennsylvania the figure had risen to 76 percent within three months of launch. Other states with legal sports betting have noted this adoption rate, and the significance of such revenues, and have amended legislation in response. In March 2019, Rhode Island, which had launched sports betting in November 2018, but without the ability to bet via digital channels, chose to amend legislation to allow this method of betting, and soft-launched this channel in early September 2019.

More recently, and particularly pertinent for NCEL, the Oregon Lottery launched sports betting in October 2019, becoming the eighth state to allow digital betting. The ScoreBoard app went live on October 16, 2019, and is available on both Android and iOS via the OSL website; plus players have the option of a desktop version. Spectrum notes that NCEL's current online lottery offering is already available on both iOS and Android, and we recommend that the anticipated sports betting also be offered via both app formats. In the first two weeks of launch, the Oregon

Lottery reported more than 25,000 people having registered to use the ScoreBoard app, and total money wagered had reached more than $4.5 million.[69]

Telsey Advisory Group commented in a May 16, 2019, note to investors about the importance of mobile betting, and its associated betting patterns, the latter of which is explored elsewhere in this Report. (Spectrum clarifications are in [*italic*] below.)

> The hold [*gross win*] continues to move higher as more mobile accounts are opened. This is due to in-game betting and also the fact that more parlays are being placed in New Jersey. Parlays have much higher hold at 15% to 20% versus single game betting that is 5%.
>
> In New Jersey, with 80% of the betting taking place on mobile accounts, it is driving parlay wagering to 15% of total bets. This is materially higher than what has gone on in Nevada, as [*that market*] does not have a robust mobile market. The parlay wagering in New Jersey has lifted the *[overall]* hold to 6.8% now, since sports betting launched last June. That is 36% higher than the 5% hold rate. It is just easier to put in a multi entry parlay on a mobile device than it is in person at a [*retail outlet*] teller.[70]

In a further industry update to investors on July 30, 2019, Telsey Advisory Group gave additional operational insights to mobile betting, in both Pennsylvania and New Jersey. Spectrum clarifications are shown in [*italic*].

> Mobile and desktop gaming continues to grow in Pennsylvania. The first app available for iOS and Android was the partnership between FanDuel and Boyd Gaming.
>
> The app is the same as New Jersey and is much easier and cleaner to use than the desktop versions by Sugarhouse in Pennsylvania. The only issue that FanDuel/Boyd may have is the fact they are *[limiting]* the amount bet, especially on multi-game parlays and futures.

According to Statista.com, as of August 2019, 50.9 percent of US smartphone subscribers were using a Google Android device, with Apple/iOS the second-most popular mobile OS with a market share of 48.3 percent, its highest-ever US market share.[71]

Nonetheless, additional research shows that younger, educated, urban and higher-income groups – all deemed to be attractive demographic attributes for NCEL – have the highest ownership and usage patterns of smartphones,[72] devices ideally suited to the preferred usage patterns of sports-betting players in other developed sports-betting markets.[73]

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[69] "More than $4.5M wagered since Oregon Lottery launched sports betting app," KPTV – Fox 12, November 5, 2019. https://www.kptv.com/news/more-than-m-wagered-since-oregon-lottery-launched-sports-betting/article_e7c0dd36-002a-11ea-84c0-7f3c2c89842d.html

[70] "Sports Betting Industry Update," Telsey Advisory Group investor note, May 16, 2019.

[71] "Subscriber share held by smartphone operating systems in the United States from 2012 to 2019. https://www.statista.com/statistics/266572/market-share-held-by-smartphone-platforms-in-the-united-states/

[72] "Mobile Fact Sheet," Pew Research Center, February 5, 2018. https://www.pewinternet.org/fact-sheet/mobile/

[73] *Online Gambling Quarterly*, Fall 2019 Edition. https://www.online-gambling-quarterly.com/edition/2019-3/

As Spectrum has not been able to identify any reliable source of adult smartphone ownership data specific to residents of North Carolina, we have instead created a proxy model by examining nationwide data, including the latest US Census Bureau population estimates from mid-2018, and applying that to North Carolina.

Pew Research estimates a nationwide adult ownership of 77 percent for smartphones, and Internet Innovation estimates 71.4 percent.[74] Applying each of those two assessed ownership ratios to the assumed 21+ adult North Carolina population of 7.6 million, Spectrum estimates there are likely to be between 5.4 million and 5.8 million North Carolina adults who own a smartphone (producing a mid-point estimate of 5.6 million). As shown in the following, our estimate would rank North Carolina well within the top 10 states by the number of 21+ adult smartphone-owning residents.

Figure 30: Top 10 states by estimated adult (21+) smartphone ownership

Rank	State	Population (M)	Adults (M)	Smartphone Owners (M)
1	CA	39.6	28.9	21.4
2	TX	28.7	20.9	15.5
3	FL	21.3	15.5	11.5
4	NY	19.5	14.3	10.5
5	PA	12.8	9.3	6.9
6	IL	12.7	9.3	6.9
7	OH	11.7	8.5	6.3
8	**NC**	**10.4**	**7.6**	**5.6**
9	MI	10.0	7.3	5.4
10	NJ	8.9	6.5	4.8

Source: USBC, July 2018, Pew Research/Internet Innovation, Spectrum Gaming Group

Spectrum recommends the design and delivery of a mobile sports-betting application, capable of operation on both Android and iOS operating platforms, with a full range of betting products and markets, be available to North Carolina residents from launch.

B. Payout Considerations and Recommendation

In sports betting, GGR – or "gross win" – is defined as total stakes bet by players, minus player winnings. If, for example, a total of $100 was staked by players, and a total of $94 was

[74] Emily A. Vogels, "Millennials stand out for their technology use, but older generations also embrace digital life," Pew Research Center, September 9, 2019. https://www.pewresearch.org/fact-tank/2019/09/09/us-generations-technology-use/ and "Research Peek of the Week: Smartphone Users in the US Expected to Reach Over 270 Million by 2022," Internet Innovation Alliance, July 3, 2018. https://internetinnovation.org/general/research-peek-of-the-week-smartphone-users-in-the-us-expected-to-reach-over-270-million-by-2020/

returned to players from the settlement of all winning and losing bets, the gross win would be reported as 6 percent. Another way of expressing this is by referring to the payout ratio of the same set of player stakes, winnings and losses, which in this case would be 94 percent. Both of these terms are used in this report, and they are simply two alternative ways of describing the same sports betting metric.

Each state operates with differing business models and under varying tax rates, as shown in the following table, which is repeated here for convenience. In addition to the state tax, sports betting operators must pay a federal excise tax of 0.25 percent of handle. This equates to a tax on sports betting revenue of approximately 5 percent. However, the treatment of the federal excise tax for a state-run operator such as NCEL may depend on its how its relationship with its sports betting provider is structured.

Figure 31: Summary of regulations and tax rates – newly active states

State	Modality	Start Date		Tax Rate	
		Retail	Digital	Retail	Digital
Arkansas	Retail Only	7/19	N/A	12.50%	
Delaware*	Retail Only	5/18	N/A	*	*
Indiana	Retail & Digital	9/19	10/19	9.50%	9.50%
Iowa	Retail & Digital	8/19	8/19	6.75%	6.75%
Mississippi	Retail Only	8/18	N/A	12.00%	
New Jersey	Retail & Digital	6/18	8/18	8.50%	13.00%
New Mexico**	Retail Only	10/18	N/A	N/A	N/A
New York	Retail Only	7/19	N/A	8.50%	
Oregon** *	Retail & Digital	9/19	10/19	**	*
Pennsylvania	Retail & Digital	11/18	5/19	36.00%	36.00%
Rhode Island*	Retail & Digital	11/18	9/18	*	*
West Virginia*	Retail & Digital	8/18	8/19	*	*

Source: State gaming commissions. *The lottery is the operator of sports betting in these states, so there is no tax, per se, on sports betting revenue; there are revenue splits among the lottery, the sports betting service provider, and the retail outlet (such as a casino). **At tribal casinos only.

As detailed in Chapter II of this report, Spectrum considers adult population size, household income and number of local professional sports teams as key influencing characteristics to estimate the potential size of the sports betting industry in each state. Spectrum has undertaken analysis of the sports betting gross win performance of the first six newly active states – Delaware, Mississippi, New Jersey, Pennsylvania, Rhode Island and West Virginia. We have restricted our analysis solely to these six because they have each launched, and produced appropriate metrics, for a minimum of 11 calendar months prior to the production of this report. The following table provides the adult population and median household income for each of these states:

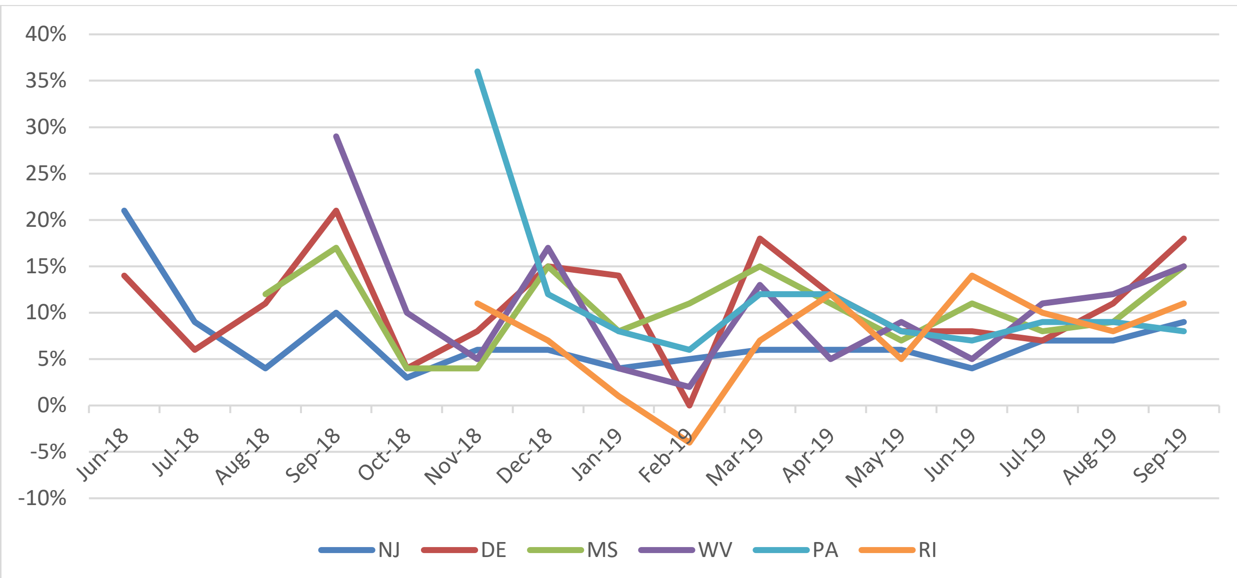
Figure 32: Demographic data for first six newly active states

State	21+ Adult Pop. (M)	Household Income
New Jersey	6.5	$81,740
Delaware	0.7	$64,805
Mississippi	2.1	$44,717
West Virginia	1.2	$44,097
Rhode Island	0.8	$64,340
Pennsylvania	9.3	$60,905

Source: State Gaming Commissions, US Census Bureau

Through September 2019, a total of 81 individual months of sports betting gross-win metrics have been reported by these six states, and this information is summarized below.

Figure 33: Gross win rate trends, first six newly active states, June 2018 – September 2019



Source: State Gaming Commissions, Spectrum Gaming Group

From analysis of other, mature sports betting markets, there is evidence that as sports-betting develops and the amount staked by players increases, we frequently, and consistently, see a consequent degree of convergence toward a lower gross win rate over time. While the data set in the chart above cannot yet be considered conclusive, Spectrum believes there is sufficient initial evidence that such a trend appears to be evident in the US as of the third quarter 2019.

Directly related to that evidence, we have also seen, among the first six newly active states and over the past 12-plus months, a predictable range of highs and lows of monthly gross win performances, as noted in the following table.

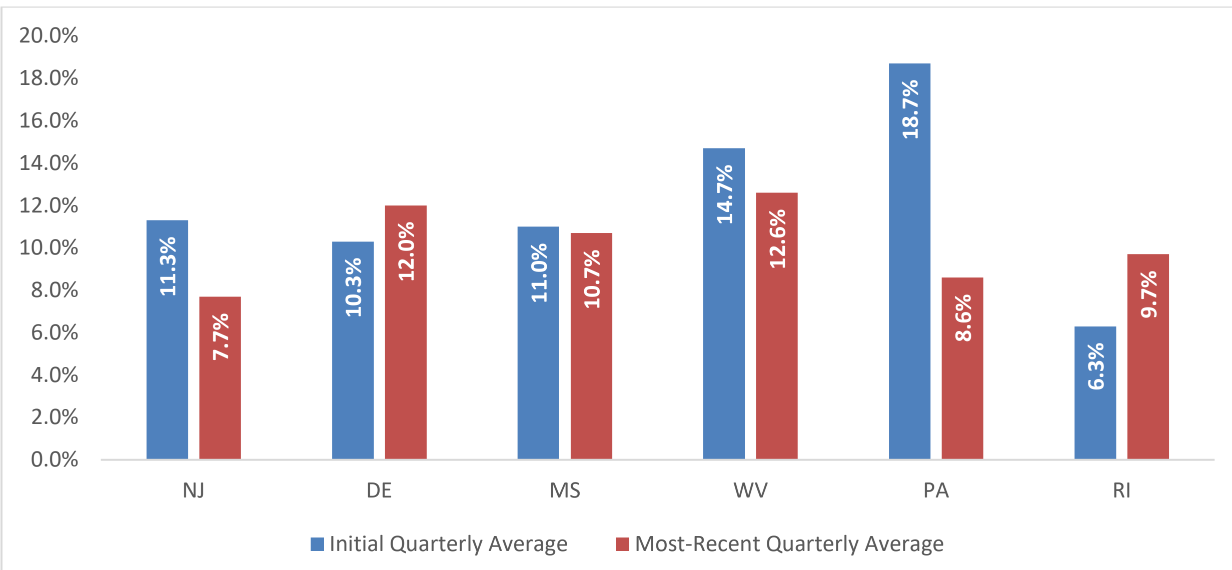
Figure 34: High-low gross win rate first six newly active states, June 2018 – September 2019

State	Highest Gross Win Rate	Lowest Gross Win Rate	Average Gross Win Rate
NJ	21%	3%	7%
DE	21%	0%	11%
MS	17%	4%	11%
WV	29%	2%	11%
PA	36%	6%	12%
RI	14%	-4%	7%

Source: State gaming commissions, Spectrum Gaming Group. Gross win rates are rounded.

Spectrum has also undertaken additional analysis of sports betting GGR performance by comparing each state's initial launch quarterly period (i.e., the first three calendar months of metrics commencing with the month in which sports betting went live) with its most recent quarterly period (i.e., the three calendar months of July/August/September 2019) to provide an additional insight to gross win performance metrics, as highlighted the following chart.

Figure 35: Average gross win rate, quarterly comparative performance, first six newly active states



Source: State gaming commissions, Spectrum Gaming Group

The findings shown in the chart above provides further initial evidence that, as sports betting markets develop after launch, turnover levels generally rise, betting patterns settle down, and GGR levels tend to decline toward a lower long-term trend. Through the most recent three-month periods analyzed, among these six states, only Rhode Island and Delaware deviated from that trend.

Findings and Recommendation

In the sports betting industry, the operator weighs the statistical probability of sporting contest outcomes, along with other factors, to set odds – an expression of probability – that theoretically allow the operator to make money over the long term and encourage as many players as possible to place a wager. However, sports betting is not like food or gasoline in that it is hardly a necessity, thus the demand would be relatively inelastic, meaning that any increase in price would result in a decrease in demand.

To a certain degree, any elasticity of demand (in which price increases do not automatically translate into lower demand) may be true in a monopoly situation, but not entirely. Illegal sports betting already occurs in North Carolina and surrounding states, and players who bet on illegal sites will not necessarily transfer to a legal provider, especially if they get better odds and have a history of being paid through their existing provider.

Also, given the relatively low margins in sports betting, any anticipated sports-betting retailer commissions will likely constitute a challenge for NCEL in developing a commercial retail model that is both competitive and sustainable.

Spectrum recommends that NCEL be prepared to adjust its payout percentage over time to ensure that it remains competitive at an appropriate level, and to help support a viable commercial retail model.

The payout percentage directly correlates with the odds offered to players, and Spectrum has noted – both from non-published studies in other sports-betting markets and from empirical evidence gained from channel-checks with operators in other developed markets – that many players will respond to what they perceive as better-value odds (thus, higher payout percentages) over time in a variety of ways.

These include the recycling of winnings, increased frequency of betting, and increased betting levels. All these factors can directly lead to an increase in sports betting revenues.

The result of any lower payout percentage (or higher gross win) would be less GGR. To mitigate this reduction in GGR, and given the likely impact of the anticipated sports betting retailer commission, Spectrum recommends that NCEL assume, for business-planning purposes, a target payout range of 88 percent to 90 percent, which equates to a target gross win range of 10 percent to 12 percent. This should allow NCEL to offer sufficiently attractive odds to new sports betting customers from launch, as well as through the period immediately following, during which it would have at least a short period of time without significant competition from other, adjacent legal markets.

The following table shows that Spectrum's recommended payout percentages would be in line with the other newly active states that have at least 10 months of performance data available.

Figure 36: Handle, payout and payout percentage, first five newly active states

Handle and Payout in $M	Oct	Nov	Dec '18	Jan	Feb	Mar '19	April	May	Jun '19	Jul	Aug	Sep '19	12-mo. Total
New Jersey													
Total Handle	260.7	330.7	319.2	385.3	320.4	372.5	313.7	318.9	273.2	251.4	293.7	445.5	3,885.2
Payout	252.4	310.8	301.3	369.5	303.9	349.3	294.0	300.2	257.6	236.8	276.7	405.2	3,657.8
Payout %	96.8%	94.0%	94.4%	95.9%	94.9%	93.8%	93.7%	94.1%	94.3%	94.2%	94.2%	91.0%	**94.1%**
Delaware													
Total Handle	14.7	16.4	16.1	11.9	8.5	10.5	6.1	5.9	6.3	3.9	4.4	11.8	121.6
Payout	14.2	15.1	13.6	10.3	8.5	8.6	5.4	5.5	5.8	3.3	3.9	9.4	107.4
Payout %	96.5%	92.2%	84.7%	86.2%	99.7%	82.1%	88.4%	92.2%	91.6%	85.2%	88.6%	79.2%	**88.3%**
Mississippi													
Total Handle	32.8	44.5	41.8	21.2	25.1	32.4	19.2	17.4	15.2	13.4	19.9	37.9	320.9
Payout	31.7	42.8	35.6	19.5	22.4	27.5	17.1	16.2	13.6	12.3	17.0	32.2	287.9
Payout %	96.4%	96.2%	85.2%	91.6%	89.0%	84.9%	89.3%	93.2%	89.3%	92.1%	85.5%	85.1%	**89.7%**
Pennsylvania													
Total Handle		1.4	16.2	32.0	31.5	44.5	36.8	35.9	46.3	59.3	109.0	194.5	607.5
Payout		0.9	14.2	29.4	29.6	39.0	32.5	33.1	42.8	53.6	96.6	165.9	537.6
Payout %		64.0%	87.6%	91.9%	93.8%	87.6%	88.5%	92.0%	92.5%	90.3%	88.6%	85.3%	**88.5%**
Rhode Island													
Total Handle			13.1	19.1	20.7	23.6	16.9	18.9	14.7	8.3	10.1	22.2	145.3
Payout			12.1	18.9	21.6	22.0	14.9	18.0	12.6	7.5	9.2	19.7	136.8
Payout %			92.7%	99.2%	104.3%	93.4%	88.3%	95.2%	85.4%	90.1%	91.5%	88.7%	**94.2%**

Source: State gaming commission/lotteries, Spectrum Gaming Group

After the payout percentage, for states offering retail sports betting through their lotteries, the retailer commission can impact the profitability sports betting. The following table shows how the NCEL retailer commission at different rates could impact the profitability of the overall retail sports betting operation.

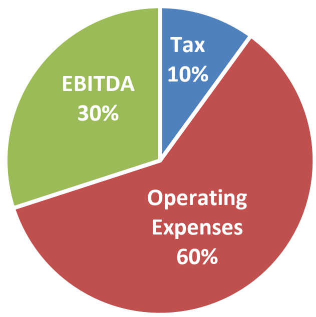
Figure 37: Illustrative example of impact of retailer commission on NCEL retained revenue

Retailer Commission Rate	7%	6%	5%	4%	3%
Wager	$1,000	$1,000	$1,000	$1,000	$1,000
Prize Payout	88%	88%	88%	88%	88%
Gross Win	12%	12%	12%	12%	12%
GGR	$120	$120	$120	$120	$120
Operating Expense (60%)	$(72)	$(72)	$(72)	$(72)	$(72)
Retailer Commission	$(70)	$(60)	$(50)	$(40)	$(30)
Net Return to NCEL	**$(22)**	**$(12)**	**$(2)**	**$8**	**$18**

Source: Spectrum Gaming Group

Operating expenses generally account for 60 percent of GGR for a sportsbook that offers digital and retail channels. These operating expenses include all overhead costs such as staffing, marketing costs, credit/debit card swipe fees, and vendor/technology fees. The following chart illustrates, for a state adopting a 10 percent tax rate and a competitive operating model with private-enterprise operators, how a typical dollar of sports betting GGR may be allocated.

Figure 38: Illustrative example of allocation of sports betting gross gaming revenue



Source: Spectrum Gaming Group. *EBITDA = earnings before interest, taxes, depreciation and amortization, a widely used industry measure of profitability

Each state is required to address unique factors that affect the gross win/payout percentage and the GGR in that state. The key variable is the tax rate. Consider, for example, the situation in New Jersey and Pennsylvania, which are neighboring states. Assuming a 5 percent gross win percentage in both states, in New Jersey, which imposes a 13 percent tax on sports betting GGR, operators would realize a 27 percent margin on earnings before interest, taxes, depreciation and amortization ("EBITDA," a widely used measure of profitability), whereas in Pennsylvania, which imposes a 36 percent tax, operators would realize a 4 percent EBITDA margin.

It is important to note that there are many variables that could alter profitability. Specifically, any costs absorbed by the technology provider would potentially decrease operating expenses. Moreover, profitability in sports betting is predicated on decreasing costs.

For a Lottery-operated sportsbook, the State of North Carolina could realize revenue in two categories listed in Figure 38. The first has been discussed above, with the state tax rate or guaranteed retained revenue. The second category is from EBITDA. A key factor in determining how much of the EBITDA goes to the technology provider and what portion may go to the State is which party bears the risk of any losses. If the technology provider bears all the risk of loss, then the profit generally flows to the technology provider. (See the risk models described in this section). Any revenue sharing from the EBITDA is subject to negotiation, and given that NCEL's retained revenue will be subject to negotiation, Spectrum is hesitant to estimate or provide examples of retained revenue so as not to limit NCEL in any future negotiations.

Moreover, NCEL needs to be cognizant of the fact that EBITDA margin initially will be lower due to the fact that when sports betting is implemented, operating costs tend to be higher in the early stages – particularly marketing costs in the launch and early post-launch phases – then decrease over time. Additionally, EBITDA on the portion of wagers subject to a retailer commission will potentially be dramatically decreased contingent on NCEL's decision and subsequent negotiation on both the quantum and the structure of a sustainable sports betting retailer commission.

C. Risk Scenarios and Recommendations

One of the fundamental differences between operating casino or lottery games and sports betting is the element of risk that exists in the latter. In the sports betting industry, the risk management skill of the operator is pitted against the forecasting skill of the player. The ultimate result of the sports event is out of the control of both operator and player. As stated above, the operator must weigh the statistical probability of sporting contest outcomes, along with other factors, to set odds – an expression of probability – that theoretically allow the operator to make money over the long term and encourage as many players as possible to place a wager. In that context, there will be both individual events, and patterns of events, that may result in the operator losing money.

While the sports betting industry differs from casinos or lotteries – where the Law of Large Numbers applies in generating a long-term return – the higher the volume of sports wagers taken over time, the higher the probability a skilled sports-betting operator will successfully manage its risk and generate positive gross gaming revenue.

Here, the policy decision is how much, if any risk, does NCEL want to bear. If it wants to bear some risk, then it will directly share in the earnings, and sometime losses, of a sports betting operation. NCEL expressed to Spectrum in interviews that it must operate "within a zero-risk model." This stated policy decision narrows the operating and risk choices open to NCEL, all of which, for completeness, are explored further in this section.

The implementation of legal sports betting in any jurisdiction requires an understanding of the key policy and regulatory factors that serve to determine, among other aspects, how and where the activity takes place, how it will be regulated, and how it will be provided to players.

In this section, Spectrum provides critical insights on key aspects that a jurisdiction must take into consideration when developing, and finalizing, its sports-betting risk policy.

Operating Models

There are three broad sports-betting operating model options available to an operator or jurisdiction seeking to offer sports betting to consumers, with differing risk profiles. They include:

- **White Label:** Operating model in which the client provides the marketing and, typically, an existing database of consumers, but the entire sportsbook function and supporting services is provided by and managed by a licensed third-party. Risk is usually borne entirely by the third party.

- **Managed Services:** Operating model in which the client provides marketing and manages the resultant data base of consumers, but a wide range of operational sportsbook functions – such as trading, risk-management, customer support and management reporting – is provided by a licensed third party. Risk is typically shared between the parties but may be borne entirely by the third party.
- **In-House:** Operating model in which the client provides the marketing, manages the database of consumers, and operates the entire sportsbook function itself, using licensed third parties for selected support activities. Risk is entirely borne by the client.

The table below examines these competing models, providing additional insight to an operating-model decision-making process through reference to the following factors:

- **Volatility:** Defined as the direct impact, whether positive or negative, of sporting results and betting patterns upon business-plan expectations of gross win/profits
- **Profit/ROI:** Defined as the overall retained share of gross win profit after any revenue-share arrangements with third parties
- **Flexibility**: Defined as the ability to adapt the consumer offer, introduce new products, bets, markets or sports, or integrate third-party content
- **Management:** Defined as the overall burden of required management, headcount, supporting staff, internal structure and function

Figure 39: Sports betting operating model summary comparison

Operating Model	Volatility	Profit/ROI	Flexibility	Management
White Label	Lower	Lower	Lower	Low/Medium
Managed Services	Medium	Medium	Medium	Low/Medium
In-House	Higher	Higher	Higher	Higher

Source: Spectrum Gaming Group

Deciding which of these operating models is optimal for NCEL will depend on a variety of individual circumstances but, essentially, it will depend upon the outcome of a critical assessment of two key criteria: control and risk versus reward.

- **Control** includes:
  - The degree of influence required over distribution channels, products, events, markets and bets offered to consumers;
  - The degree of influence required, and decision-making control, over trading policy and trading decisions; and
  - The degree of influence required over the ability to adapt the consumer offer.
- **Risk vs. Reward** includes:
  - The internal attitude to risk and reward; overall degree of comfort with volatility

- The degree of acceptance with the concept of higher risk/higher potential reward; and
- The degree of acceptance with the concept of higher risk/higher potential losses.

Note that the following three risk models were considered by the Rhode Island Lottery when developing a request for proposal ("RFP") ahead of adopting its sports-betting regime, which launched in November 2018:

- **Option 1:** Fully-Managed-Services Model, in which the service provider provides all services and functions as scoped within the RFP and manages entire sports-betting risk on behalf of the Lottery. Commercial offer to reflect economic model where resultant gross-win performance/risk is retained/borne entirely (100%) by the service provider.
- **Option 2:** Fully-Managed-Services, Shared-Risk Model, in which the service provider provides all services and functions as scoped within the RFP and manages sports betting on a shared-risk basis on behalf of the Lottery. Commercial offer to reflect economic model where resultant gross-win performance/risk is shared/borne equally (50%/50%) between the Service Provider and Lottery.
- **Option 3:** Fully-Managed-Services, Shared-Risk Model, in which the service provider provides all services and functions as scoped within the RFP, and manages sports betting on a shared-risk basis on behalf of the Lottery. Commercial offer to reflect economic model where resultant gross-win performance/risk is shared (75%/25%) between the Service Provider, at 75 percent, and the Lottery at 25 percent.

Potential suppliers were required to submit cost proposals for each risk model. Rhode Island chose the Fully-Managed-Services model (Option 1), with the service provider bearing all risk.

However, it is important to point out that when a provider is bearing all the risk, a sustainable commercial model requires a reasonable tax rate, or retained-revenue-share rate, to be in place, and for the provider to be incentivized to perform through a reasonable commercial return.

Recommendation

The policy decision for the operational model is how much risk, if any, does NCEL want to bear. If it wants to bear *some* risk, then it will share in the earnings and sometime losses in addition to collecting the fixed percentage of GGR. NCEL has clearly stated that it wants to take on no risk with respect to the operation of sports betting. In any event, with respect to lotteries, Spectrum recommends the Lottery adopt a *no*-risk model, in which the company contracted to provide the platform and perform all services bears all risk. This model will provide a greater predictability of revenue to the State.

D. Types of Sports Betting to be Offered

Spectrum believe there are three essential features required to establish and maintain a successful sports-betting market, namely:

1. A sustainable-tax, or retained-revenue-share, model
2. A sustainable-tax, or retained-revenue-share, rate
3. A full range of available sports, events, markets and bet types

We discuss the first two points elsewhere in this Report and examine the third point in this section.

For the purposes of this section of the Report, we are defining sports-betting as the offering of fixed-odds betting on the outcome of events based on real-life sporting contests. Further, we are adopting the following definitions when describing sports-betting operations throughout this section, and elsewhere within this Report.

- **Sport:** A distinct, real-life sporting activity (example, football/NFL)
- **Event:** A specific sporting contest (example, Super Bowl LIII, February 3, 2019)
- **Market:** A unique betting proposition on that contest (example, who will win this event?)
- **Odds:** An offer to bet on the relative probability of an offered market, at a specific point in time (example, New England Patriots, 1.70 to win the event)

Range of Bet Types

There are two core bet types:

- Single bets, where one individual bet-selection must be successful for the player to win
- Parlay (or multiple) bets, where each individual bet-selection, of two or more, must be successful for the player to win.

Within the above two core bet types, there are a variety of supplementary bet types, such as, but not limited to, single-game bets, teaser bets, over-under bets, moneyline bets, proposition bets and straight bets. The essential point to remember is that all of these bet types would each fall under one of the two core bet types as described above.

Before examining how the relative mix of these two-core bet-types affect an operator's overall gross win performance, it is important to understand the key principle of operating a sportsbook, and how an operator aims to make money. Essentially, a sportsbook operator achieves a long-term profit by offering "adjusted" odds to players. After establishing a theoretical probability of an outcome occurring, or not, the operator will then offer odds to reflect both that probability, plus an additional, theoretical margin.

To better explain, consider the toss of a coin, where there are just two outcomes: heads or tails. The chance of either a head or a tail resulting from a single toss of a coin is equal, and are thus expressed, in probability terms, as 50 percent (on a scale where 0 percent is impossible and 100 percent is certain). To illustrate, using decimal odds for the sake of simplicity, these probabilities can be expressed as odds of 2.00 for heads, and 2.00 for tails. These are the actual, fair probabilities of the two possible outcomes of a single coin toss.

However, if a sportsbook operator offered those odds, of 2.00 for either outcome, it would not be able to make a profit in the long-run. In order to do that, the operator needs to offer "adjusted odds," such as 1.95 for heads and 1.95 for tails. Over the long run, accepting many individual coin-toss bets and offering these odds, the operator would expect to make a theoretical return of 2.56 percent.

This method, of offering adjusted odds, has a variety of descriptions (including "over-round," "juice" and "vigorish"). It is regarded as the essential component of effective sportsbook practice, and it provides the basis upon which the operator depends to generate an overall, long-term gross-win return.

A single bet, in which one individual bet-selection must be successful for the player to win, is the most popular among players due to its simplicity, availability and perceived value. It is also traded, by the operator, at the lowest gross win margin, often as low as 2.0 percent and rarely at more than 5.5 percent or so.

Parlays, however, are traded at higher gross win margins, due to the multiplication effect when accepting such bets. For example, if a player selects two bets in a parlay, both at a theoretical return of 4.5 percent, the margin on that parlay becomes 9.2 percent [(1.045 x 1.045) – 1 x 100/1], more than double the theoretical return of a single bet. This relative margin advantage increases with the number of selections chosen by the player within a parlay bet.

The relative mix of these two-core bet-types directly, and significantly, affects an operator's overall gross win performance, as illustrated below. In the table below, we examine two different operators, with different ratios of single- to parlay-bets, and their overall blended average gross win/margin performance.

Figure 40: Comparison of overall gross win performance, by bet type volume share

	Operator A	Operator B
Assumed Average Margin, by Bet Type	Bet Volume Share, by Type	Bet Volume Share, by Type
Singles, at 4.50% margin	95.0%	75.0%
Parlays, at 12.50% margin	5.0%	25.0%
Blended Average margin	**4.9%**	**6.5%**
Margin Index (rounded)	100	133

Source: Spectrum Gaming Group

In this example, Operator B, with a 25 percent share of total bet types being parlays, could expect to achieve, in the long run, a 30 percent-plus improvement in overall gross win performance versus Operator A.

Spectrum recommends that the fullest range of bet-types – both single-event and parlay bets – be available in North Carolina from launch.

Range of Betting Products

There is also a range of betting products open to a player when betting, summarized as follows:

- **Pre-Event Betting ("PEB")**: Any bet struck on an event at any time before the commencement of that sporting event
- **In-Play Betting ("IPB"):** Any bet struck on an event at any time after the commencement of that sporting event until the result, or outcome, is known
- **Cash-Out ("CO"):** The ability for the player to 'close-out' an existing bet, (either placed as a PEB or IPB), before the result or outcome is known, which enables the player to either "lock-in a profit" or "limit a loss."

Pre-Event Betting

Globally, this form of betting was initially 100 percent of all sports bets, as there were no alternative methods until relatively recently. PEB remains highly popular with players, particularly those who bet "recreationally." It is important to operators, as it typically provides the best overall gross-win performance, primarily due to the inclusion of higher-margin parlay bets, which must be placed before the commencement of the first parlay bet/event selection.

In-Play Betting

This form of betting has come to be one of the most important developments in sports betting. Introduced in Europe around 2000, it is now an extremely popular choice of betting product by a wide variety of player types, both recreational and sharper player profiles.

The range of markets offered in-play during a sports event has risen greatly, with this form of betting having a symbiotic relationship with the growth and availability of mobile betting, together with an increase in the availability of live- and streamed-TV coverage of sporting events.

IPB operates at lower margin than PEB, as it primarily involves single-outcome bets, but it frequently significantly boosts volume of betting turnover, which is important to operators.

Max Bischel, former US director of Kambi, a Swedish-listed technology provider and sportsbook-platform supplier to Pennsylvania operators including Rush Street Gaming and Parx, provided early insights in July 2019, soon after mobile betting apps had gone live there in late May/early June 2019:[75]

> "You take the fifth largest state (PA) and allow them to bet online and it becomes a game-changer in some respects." Bischel said. "It's a significant multiple of what we see at retail. It's very exciting. The size of the market is dramatically larger *(than)* what some have expected.
>
> "It's significantly different than betting on just a few types of markets in sports. It's betting on the next pitch and next pass in football and it's much more of a minute-by-minute, second-by-second business, and that adoption by consumers has arguably been greater than we initially expected."

In Europe, IPB is now the dominant betting type for many players. It grew from 8 percent of total handle in 2005 to 65 percent by 2015.[76] Spectrum predicts the same popularity, for both player and operator, within the US market where this activity is allowed. The following table provides estimates of IPB in Europe and New Jersey.

Figure 41: In-play betting estimates, Europe and New Jersey

Sport	Europe In-Play	New Jersey In-Play to Dec 18	New Jersey In-Play to March 19
NBA	50%	33%	50%
Ice Hockey	40%	25%	40%
Soccer	60%	40%	55%
Tennis	85%	80%	80%

Source: Betting on Sports America 2019, via Lineups[77]

A recent *New York Times* article examining the outlook for betting on the NFL noted the following:

> Though it is still rare in the United States, in-play is the dominant form of sports betting overseas. Bet365, one of the largest British bookmakers, said in 2015 that 80 percent of its revenue came from in-play betting, and most industry experts believe it will eventually make up at least half of U.S. sports betting.[78]

Cash-Out

This product innovation was originally derived from the arrival, in the UK, of peer-to-peer betting exchanges from the late 1990s, where the manual trading technique of "locking in a

[75] Buck Wargo, "Prediction: Pennsylvania will lead nation in sports betting within a year through online and mobile wagering," CDC Gaming Reports, July 26, 2019. https://www.cdcgamingreports.com/prediction-pennsylvania-will-lead-nation-in-sports-betting-within-a-year-through-online-and-mobile-wagering/

[76] Gaming Economics.

[77] Calvin McAlee, "Will US Sports Betting Market Follow European In-Play Betting Behavior?" Lineups, June 6, 2019. https://www.lineups.com/betting/will-us-sports-betting-market-follow-european-in-play-betting-behavior/

[78] Kevin Draper, "Sports Betting Has Arrived to Transform the N.F.L. Or Not," *New York Times*, September 4, 2019. https://www.nytimes.com/2019/09/04/sports/football/sports-betting-nfl.html

profit," or "limiting a loss," had become widespread among some of the more sophisticated/sharper sports betting exchange users.

UK sportsbook operators Betfair and William Hill separately developed, but simultaneously launched, a simpler, automated tool to enact a cash-out functionality from late 2012, which has since been adopted by virtually all sportsbook operators in Europe, and elsewhere due to its convenience and simplicity, leading to widespread popularity among many different player profiles.[79]

CO can be considered a highly efficient product development, as it clearly delivers tangible options, choices and benefits to players, which has led to its wide adoption, particularly when used by players in conjunction with IPB. It also delivers a range of significant advantages to operators.

For the operator, CO delivers improved margin opportunities through its becoming a second opportunity to offer adjusted odds to players, in addition to the acceptance of the original bet. In addition, sportsbook operators report that CO users typically demonstrate improved performance metrics, including:

- Increased staking frequency
- Higher average stake size
- Reduction in player churn
- Recycling of winnings, leading to incremental revenues

To date, the adoption rate of CO has been slow within the developing US market, although many of the sportsbook platform providers who have achieved US market-share since the Supreme Court struck down PASPA in May 2018 – such as Kambi, SB Tech, SG Digital, et al – have available proven CO functions, from their experience in the UK and European markets, where CO is well-established.

Spectrum recommends that a full range of sports betting products – to include pre-event betting, in-play betting and cash-out functionality – be available to North Carolina bettors from launch.[80]

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[79] "William Hill launches cashout feature for mobile," Gaming Intelligence, January 21, 2019. https://www.gamingintelligence.com/marketing/23957-william-hill-launches-cashout-feature-for-mobile-devices

[80] Elizabeth A. Killick and Mark D. Griffiths, "In-Play Sports Betting: a Scoping Study," International Journal of Mental Health and Addiction, April 28, 2018. https://link.springer.com/article/10.1007%2Fs11469-018-9896-6

Range of Sports

Traditional Sports

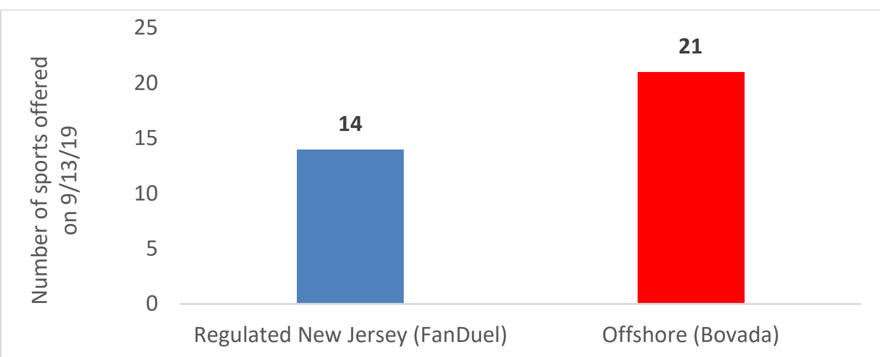
Analysis of sports betting markets elsewhere provides some valuable insight as to policy decisions concerning those sports that should be permitted upon which to accept bets. While such decisions are always best driven by allowing maximum customer choice, it is nonetheless worth highlighting that as most sports betting markets develop, they consistently show that the top five sports typically generate about 95 percent of total bet volume within that market.

A review of Nevada, which is the longest-running active US sports betting state, shows that football and basketball (professional and college) drive the most betting volume and overall activity. Football accounts for 37 percent of the total bet volume and basketball for 32 percent, followed by baseball (18 percent). Hockey and other sports account for the remaining 13 percent.[81]

This dominance of betting on football (both NFL and college contests) is material for the developing US market. The NCAA is pushing for federal betting legislation. In an ESPN article, published September 10, 2019, Naima Stevenson Starks, NCAA vice president of hearing operations, commented: "We are absolutely supportive of federal legislation. It's fairly daunting to think that every state would have a different set of regulations. Having some minimum standards, we are very supportive of and have been an active proponent of."[82]

Spectrum on September 13, 2019, compared the range of sports currently on offer by a popular, regulated New Jersey sportsbook site (FanDuel) and a popular US-facing but offshore sportsbook site (Bovada) of uncertain regulatory status; the result is shown in the following chart.

Figure 42: Comparison of number of sports offered at NJ sportsbook and offshore sportsbook



[81] Nevada Gaming Control Board-Revenue Reports, July 2019. https://gaming.nv.gov/modules/showdocument.aspx?documentid=15049

[82] David Purdum, "NCAA pushing for federal sport betting legislation," ESPN.com, September 10, 2019. https://www.espn.co.uk/chalk/story/_/id/27586235/ncaa-pushing-federal-sport-betting-legislation

Source: Spectrum Gaming Group

In operational terms, a higher number of individual sports made available to players helps mitigate seasonality issues – when popular sports are unavailable during their respective close seasons – plus it helps ensure a competitive offer when compared with offshore sportsbooks available to, and accessible by, North Carolina adults. A policy trend analysis and review document by Gambling Compliance provided further insight to this topic:

> As lawful wagering expands, operators are facing a complex matrix of state-specific restrictions on permitted betting events and markets.
>
> Various states are following New Jersey in applying blanket bans on all bets involving in-state college teams, while Colorado, Iowa and Tennessee are allowing wagers on the outcome of local collegiate games, but restricting prop bets.
>
> States are also trending toward limiting their markets only to specific sports and wager types that are expressly approved by regulators, deviating from the more liberal approaches of Nevada and most European jurisdictions. Indiana, meanwhile, has adopted a statutory prohibition on e-sports betting.
>
> We will also be looking at how operators will respond to the compliance challenge posed by the differing state restriction. We note that in H1 2019, sportsbook operators in New Jersey were fined over $25,000 for inadvertently violating the state's ban on wagers involving NJ college teams.[83]

New Sports

Esports, or competitive video gaming, has been widely recognized as a new form of entertainment, especially popular with Millennials (i.e., those born, at the widest range, between 1976 and 2004). Several esports leagues have been formed for specific, popular games including League of Legends, Overwatch, and Fortnite, similar to the how the NBA formed for basketball, MLB for baseball and NFL for football.

Nevada and New Jersey regulators had expressed concerns about the integrity of betting on esports, namely the need for a robust sanctioning body that has dispute-resolution procedures firmly in place, as the outcome of wagers could depend on decisions made by the sanctioning body.

Betting on esports has been scant in Nevada, and New Jersey began accepting bets on esports in November 2019. Spectrum believes that other states will monitor the experience in Nevada and New Jersey with regard to betting volumes before making their own decision on whether to include esports in their menu of betting options.

Spectrum recommends that NCEL offer the widest possible range of permitted sports from launch, and to consider potentially including esports now that other states including Nevada

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[83] "A Tight Rein on Bet Types," *US Sports Betting: What we Learned in H1 2019*, Gambling Compliance, July 29, 2019.

or New Jersey have deemed this activity to be acceptably regulated from a sports betting perspective. This will provide the widest possible choice to its residents and help compete effectively with the offshore sports betting providers.

We note that the Oregon Lottery, which as discussed earlier launched digital sports betting in October 2019, already offers a wide range of US sports, plus other sports such rugby, darts and cricket. In-play betting is available across a variety of sports.

G. Summary of Recommendations

The following are key recommendations regarding the anticipated NCEL sports betting platform:

- Spectrum recommends the Lottery adopt a *no*-risk model, in which the company contracted to provide the platform and perform all services bears all risk. This model will provide a greater predictability of revenue to the State.
- Spectrum believes SSBTs to be a viable and valuable potential channel for sports betting, and recommends them being located within both existing and new NCEL retailer outlets.
- Spectrum recommends the design and delivery of a mobile sports-betting application, capable of operation on both Android and iOS operating platforms, with a full range of betting products and markets, be available to North Carolina residents from launch.
- Spectrum recommends that NCEL assume, for business-planning purposes, a target payout range of 88 percent to 90 percent, which equates to a target gross win range of 10 percent to 12 percent. This should allow NCEL to offer sufficiently attractive odds to new sports betting customers from launch.
- Spectrum recommends that the NCEL be prepared to adjust its payout percentage over time to ensure that it remains competitive at an appropriate level, and to help support a viable commercial retail model.
- Spectrum recommends that the fullest range of bet-types – both single-event and parlay bets – be available to North Carolina residents from launch.
- Spectrum recommends that a full range of sports betting products – to include pre-event betting, in-play betting and cash-out functionality – be available to North Carolina residents from launch.
- Spectrum recommends that NCEL offer the widest possible range of permitted sports from launch, and to consider potentially including esports now that other states such as Nevada and New Jersey have deemed this activity to be acceptably regulated from a sports betting perspective. This will provide the widest possible choice to its residents and help compete effectively with the offshore sports betting providers.

V. Economic Impacts of Sports Betting in North Carolina

Relying primarily on the market analysis presented above, Spectrum estimated the economic impacts of introducing sports betting to North Carolina. The following sections describe our methodology and present the results of this analysis.

A. Methodology

The economic impact analysis relied on data developed by the team and the PI$^+$ economic impact model developed by Regional Economic Models, Inc. ("REMI"). The PI$^+$ model used for this study is a single-region model of North Carolina. For the purposes of modeling, we assumed Year 1 to be 2020. Changing the starting year would make small but likely immaterial changes to these findings. We also conducted the analysis for two scenarios: North Carolina has or does not have a first-mover advantage in sports betting (see Chapter II.C above).

The key factor driving the economic impact analysis is projected sports betting revenues and their distribution across different channels, namely digital, retail, and bars and restaurants. We chose the industries of information, retail, and accommodations and food services to represent these channels in the model. Our revenue forecasts assumed a ramp-up in sports betting for the first three years after its introduction. From Year 4 onward, we assumed that GGR would grow at the same rate as personal income in North Carolina as forecasted in the REMI model. Along with forecasted revenues, we forecasted the new employment that will be required to support sports betting, including staff at NCEL and retailers. From Year 3 for NCEL and Year 5 for the other sectors, we held direct employment constant as revenue growth is assumed to be primarily driven by the growing value of bets rather than increased visitation. The retail employment was further divided into retail and food and beverage establishments by using the share of GGR accruing from each channel.

In most gaming studies, the issue of taxes on GGR is critical to the public policy question. In this case, because the State (via NCEL) is the gaming operator, there will not be taxes as such. However, the "profits" from sports betting will be remitted to the State Treasurer and from that point on they will function economically just like tax revenues. From our evaluation of other markets, we assumed that 28.3 percent is a good estimate of the share of sports betting GGR that NCEL will transfer to the State Treasurer. The retained revenue rates/state tax rate varies considerably by state, ranging from a low of 6.75 percent (Iowa) to a high of 51 percent (Rhode Island). This percentage represents the guaranteed revenue from sports betting GGR. The total revenue retained by the State of North Carolina could be more, depending on negotiations with the technology provider and the risk model used so that the State may share in the bottom-line profit discussed in various parts of this report. Given the range of state tax rates, we believe 28.3 percent is a reasonable estimate, particularly given that it is the same percentage of retained revenue the North Carolina realizes from lottery sales. This estimate is assuming NCEL's ability to introduce sports betting is not outside its current cost structure. These revenues were assumed to be spent by the State in the same year they were raised.

GGR, employment, and government spending could not be entered into the model without other adjustments. First, the State's revenues from sports betting were subtracted from GGR prior to adding this data to our model. This was done to avoid double counting the same dollar as stimulating both private economic activity and public economic activity. We also made an adjustment for the difference in productivity (output per workers) implied between the sports betting revenues per employee and normal revenues per employee in the information, retail, and accommodations and food services sectors.

Next, we nullified intermediate demand induced by sales and employment. Intermediate demand is the goods and services purchased by one sector from the other sectors in the economy in order to produce the output of the first sector. For example, vegetables and meat are intermediate inputs to food services just as steel and wiring are intermediate inputs to auto manufacturing. These demands were removed from the model because the increased sales entered into the model for the impacted sectors is not for their normal products. In other words, the increase in revenues at bars and restaurants supported by selling sports betting products will not require an increase in the amount of vegetables and meat the restaurant needs.

We also nullified the investment induced by sales. though not by employment. We nullified investment induced by sales because we manually estimated the amount of investment needed for sports betting terminals and geolocation services for this analysis. However, our market analysis showed that none of the likely vendors for these products and services is based in North Carolina and therefore these expenditures would have no economic benefit for the State. Investment induced by employment was retained because the businesses will still need some amount of new plant and equipment to support their employment growth.

The methodology outlined above describes the main analysis of the introduction of sports betting; i.e., the employment, private revenues, and public revenues generated. However, to complete the analysis another set of inputs is required. This next section describes changes that primarily serve to offset the main analysis. These changes are reallocation of existing spending, impacts on existing Lottery sales, lost sales taxes, and new food and beverage sales.

In essentially every case, a new economic activity will compete with existing activities. For example, a new restaurant in town will draw at least some diners away from existing restaurants in the same town, such that total restaurant revenues will increase by less than that of the new restaurant. Reallocation is not limited to competition between businesses in the same sector. Similar reallocation exists between businesses in different sectors; e.g., a sports stadium likely competes for dollars with sports bars, or Netflix competes for dollars with movie theaters and so on. In this study, we must assume that some of the spending now going to sports betting was previously going to other existing economic activity in North Carolina. Similar to the tax discussion above, reallocation must be included in the analysis to avoid double counting the same dollar of activity as both stimulating the sports betting sector and other sectors.

To find the pool of money that is subject to reallocation, we used the estimates of patronage from the market analysis to find the share of gross gaming revenue coming from North Carolina residents; out-of-state betting is considered to be new money to North Carolina. Next, the GGR sourced from instate is reduced by the estimated amount of illegal sports betting, which we estimate at $23.44 per capita per year or roughly $186.8 million statewide. Illegal betting is removed because, by definition, illegal activities are not included in formal economic accounts so to our model this spending is new.

Lastly, not all of the spending going to sports betting would be reallocated away from existing North Carolina-based activity. Here we assumed 50 percent would be shifted from other instate activity. This assumption is consistent with findings in gaming studies in other jurisdictions. Furthermore, it is prudent in and of itself as the true value of reallocation is more likely to be nearer to 50 percent than either zero or 100 percent. In summary, the reallocation of consumer spending is sports betting GGR from North Carolina residents less existing spending on illegal betting divided by two.

Another offsetting component to the analysis is the effect that sports betting will have on existing Lottery sales. We estimated these effects elsewhere in this report for the first five years of sports betting. For the 10-year economic analysis, we held the change in Year 5 constant for Years 6 through 10. The public share of Lottery revenues (i.e., the share kept by NCEL and that remitted to the Treasurer) was included in the estimates of taxes and reallocation described above. Where sales of traditional Lottery products were down, new revenues to the State and consumer spending reallocation were likewise decreased; when Lottery sales were up, the opposite occurred. In general, these changes were small in comparison to sports betting and in no year, when combined with sports betting, resulted in net negative new sales by the Lottery.

To further account for the effects of reallocated consumer spending, we estimated the sales taxes lost from the shift in consumption patterns. Using 2018 data from the Federation of Tax Administrators,[84] we obtained total state tax revenues and the share of total revenues comprised of sales taxes. Using the baseline estimate of consumption expenditures from the REMI model, we calculated the effective sales tax rate on all consumption in North Carolina. This rate was then applied to the reallocated spending to estimate a reduction in sales tax revenues

[84] Federation of Tax Administrators, "Revenues/Burdens." https://www.taxadmin.org/revenues-burdens (accessed September 19, 2019)

for each year of the analysis. Similar to the tax gains, the tax loss was assumed to impact government spending in the year incurred.

The final adjustment in the model was an estimate of increased sales at food and beverage establishments caused by an increase in patronage due to offering sports betting. Here again reallocation is important. A patron who would have gone out to eat at one restaurant but who chooses another because of the availability of sports betting is not supporting net new restaurant sales in North Carolina. Neither is shifting a Saturday meal to Sunday or vice versa. Therefore, our estimate focuses only on out-of-state patrons. Again, relying on our forecasts from Chapter II above, we used the share of GGR from out-of-state bettors as a starting point. We applied this share to the GGR from bars and restaurants to find the share of GGR at this channel that would be supported by nonresidents. Finally, we assumed that 10 percent of this amount would be net new food and beverage purchases by out-of-state residents.

B. Economic Concepts Glossary

To fully appreciate the economic impacts, it is helpful to understand the terms that describe the results discussed in this report.

Employment: Employment is a count of jobs, not people, by place of work. It counts all jobs with the same weight regardless of whether the position is full-time or part-time or the labor of a self-employed proprietor.

Additionally, jobs are counted as **job-years**, which are equivalent to one job lasting for one year. This is a similar concept to "person-hours." Jobs often carry over from year to year and therefore the jobs in one year include many of the same jobs as in the previous year. For example, if a new business opens with 10 employees, then the host community of that business will have 10 more jobs than it would have had in every future year that the company maintains its workforce. For example, over 5 years, the business will have created 50 job-years (10 jobs at the company x 5 years = 50 job-years), though it is possible that it is not the same 10 people who are working there over time. When reviewing changes in employment across multiple years, knowledge of the concept of job-years is vital to proper interpretation.

Output: Output is the total economic value of production, sales, or business revenues, whether final (i.e., purchased by the end user) or intermediate (used by another business to produce its own output). It includes the value of inputs to production, wages paid to employees, capital expenses, taxes, and profit. It is useful as an indicator of business activity, but it should not be construed as net new economic activity.

Personal Income: Personal income is income and benefits from all sources earned by all persons living in an area. It excludes the income earned by non-resident workers who commute into an area, but it includes the income of residents who commute out.

Value Added: Value added is the value of all final goods and services created in an economy. It represents new economic activity and is also known as gross product or net economic impact. It differs from output by the value of inputs to production. Value added provides a useful summary of the economy, which is why all nations and US states report their economic growth in this way, calling it either gross domestic product or gross state product as appropriate. Its usefulness derives from the elimination of the double-counting inherent in output, which stems from the inclusion of inputs. An example of the double-counting of inputs can be found and simplified in the process of making and selling a loaf of bread. A farmer sells wheat to a mill, which then sells flour to a baker, who then sells bread to the final customer. The sale price of the bread includes the cost of all necessary inputs including growing the wheat, milling the flour, and baking the bread. Value added counts only the sale price of the bread to the final consumer, which is the net new value created in the economy. On the other hand, output counts the revenues earned by every business in the supply chain, which means that the value of the wheat and flour are counted more than once.

C. Economic Impact Results

Economic impact analysis is used to find out how a change introduced in an economy creates additional changes beyond itself. These ripple effects are primarily caused by business-to-business transactions and consumer purchases. In this study, we assumed sports betting is introduced to North Carolina. This is the direct effect. To facilitate betting, sports betting providers make purchases from a series of vendors that then make purchases from their own vendors and so on down the supply chain. These are called indirect effects. New employees hired to support sports betting and the new employees at each impacted vendor have more money to spend, which creates new activity at consumer-oriented businesses. These are called induced effects. Together, direct, indirect, and induced effects create the total economic impacts of a new business.

Summary Impacts

The PI^+ economic model used by us for the study takes the direct effects and uses its understanding of North Carolina's economy to calculate indirect and induced effects. The direct effects are the cumulative changes described in the methodology of the economic impact section and include employment, private revenues, public revenues, and offsets (e.g., reallocation, impact on existing Lottery products, and so on). The structure of PI^+ includes a description of supply-chain relationships between all the sectors of the economy and the import and export relationship between North Carolina and the rest of the nation and world. Combined, these elements of the model estimate the indirect changes. Additionally, PI^+ includes the employment and wage characteristics of each sector and the average consumption patterns of North Carolina residents. These elements yield the induced changes. Therefore, the modeling process begins with the modeler entering the direct changes into the economic impact model, continues through the model's calculation of the indirect and induced effects, and ends with the analysis of the results by the modeler. The results of this process are described in this section of the report.

Our modeling results show that the introduction of sports betting in North Carolina creates positive total economic impacts. These positive impacts occur both with and without a first-mover advantage, though they are greater with the advantage. The total direct, indirect, and induced effects of sports betting are expected to create or support an average of nearly 4,300 jobs, whose cumulative earnings will approach $2.7 billion over 10 years. Without the higher sports betting revenues coming from a first-mover advantage, these amounts drop by 239 jobs and $181 million of income.

These jobs and incomes are paired with business and government revenues. Over 10 years, sports betting cumulatively adds $6.7 billion to revenues (i.e., output) at an average of $672 million of new production per year. This amount falls to $5.8 billion and $577 million without the benefits of a first-mover advantage. When accounting for only net new economic activity (i.e., gross state product), sports betting cumulatively adds $4.1 billion with first-mover advantage and $3.5 billion without it. Therefore, the contribution of the first-mover advantage to North Carolina's gross state product is $58 million per year and $576 million cumulatively over 10 years.

Figure 43: Summary economic impacts of first-mover and not first-mover scenarios, job-years

Economic Activity Summary	Employment		Output (M)		Value Added (M)		Personal Income (M)	
	Average	Cum.	Average	Cum.	Average	Cum.	Average	Cum.
First Mover	4,266	42,656	$672	$6,718	$409	$4,087	$269	$2,687
Not First Mover	4,027	40,270	$577	$5,765	$351	$3,512	$251	$2,506
Difference	*239*	*2,386*	*$95*	*$953*	*$58*	*$576*	*$18*	*$181*

Source: Spectrum Gaming Group, PI+

Detailed Impacts

The summary impacts above provide a snapshot of the results of our analysis of the economic impacts of the introduction of sports betting. The following results expand on those above to highlight changes over the analysis period and to explain in detail the relationship between the results.

The key factor driving the impacts of sports betting is the estimates of gross gaming revenue. The opportunity to capture these revenues is the motivation behind business decisions to hire and invest. GGR is the source of new revenues to the State, which it uses to hire workers, fund programs, and increase public investment. Finally, some of the GGR comes at the expense of monies that were previously supporting other businesses, existing Lottery products, and sales taxes. When calculated as described in the methodology, with North Carolina taking a first-mover advantage, we estimate that sports betting GGR will average roughly $435 million per year over the 10-year analysis period. After contributions to the state are excluded from GGR, sports betting revenue averages $312 million per year. Without first-mover advantage, average GGR drops to $357 million and $256 million after contributions to the state.

The multiplier effect shows how much of a total change one unit of an input creates.[85] For an output multiplier, the multiplier shows how many dollars of new output are created for each dollar of direct output. Later, we show the employment multiplier, which relates total jobs to each direct job. For this study, direct output is sports betting GGR, while total output is shown in Figure 44. With first-mover advantage, every $1 of GGR is estimated to yield $1.15 of additional economic activity in the state. Without this advantage, the multiplier increases to $1.25 of additional economic activity per dollar. The multiplier can be inverted (1/multiplier) to find the share of the total impact comprised by the direct change. GGR comprises 46 percent of the cumulative output impact with the first-mover advantage and 44 percent without, which, like the multiplier, also shows that direct changes with the first-mover advantage create smaller additional impacts. Despite the smaller additional impacts, the scenario with first-mover advantage creates larger positive impacts for North Carolina. The higher multiplier from the smaller scenario is primarily the result of less cannibalization of existing economic activity and, as a result, less lost sales taxes. In other words, the scenario without the first-mover advantage has both smaller positive and negative elements that combine to create a smaller total impact but a larger multiplier effect. Over 10 years, losing the first-mover advantage yields $953 million less economic activity in North Carolina.

Three-quarters of sports betting GGR is expected to come from North Carolina residents. These revenues and market patterns result in an average of roughly $78 million (first-mover) and $64 million (not first-mover) of revenue shifting away from other businesses in North Carolina toward sports betting. Additionally, sales of existing Lottery products will rise on average over the analysis period, yielding $5.4 million of additional reallocation toward Lottery from other economic activity.

Figure 44: Output impacts of sports betting with and without first-mover advantage and by year

Output (M)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Avg.	Cum.
First Mover	$186	$381	$621	$683	$732	$766	$794	$821	$851	$883	$672	$6,718
Not First Mover	$154	$321	$527	$585	$631	$661	$685	$708	$733	$760	$577	$5,765
Difference	$32	$60	$94	$98	$102	$105	$109	$113	$118	$123	$95	$953

Source: Spectrum Gaming Group, PI+

[85] The multiplier is simply total impact divided by direct impact. This calculation shows the total impact per one unit of input. Subtracting 1 from the multiplier yields the *additional* impact per one unit of input, which is what is shown here.

GGR and reallocation are the two driving forces behind the estimate of new revenues to the State. Though not taxes per se, the "profit" the Lottery earns on sports betting and increased sales of existing products will be remitted to state coffers, enabling increased spending. Simultaneously, the reallocation of spending away from other consumption will yield less sales tax revenues. The net effect of new revenues from sports betting and existing Lottery products and less revenues from reallocation is shown in Figure 45. With first-mover advantage, new revenues average $119 million per year for a cumulative total of $1.2 billion. Without this advantage, the annual average decreases by $20 million and the 10-year total falls by $205 million. Over the 10-year analysis period, lost sales taxes from reallocation average $9 million per year with first-mover advantage and $7.3 million without, which shows that the larger capture of sports betting dollars is somewhat offset by greater losses in sales taxes. Nevertheless, in either scenario, on net the State gains revenues from the introduction of sports betting.

Figure 45: State revenue contributions from sports betting with and without first-mover advantage, net of changes in the sales of existing Lottery products and sales taxes

State Revenues (M)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Avg.	Cum.
First Mover	$30	$65	$109	$120	$130	$136	$141	$147	$154	$161	$119	$1,194
Not First Mover	$23	$52	$90	$100	$108	$113	$118	$123	$128	$134	$99	$989
Difference	$7	$13	$20	$21	$22	$23	$24	$24	$26	$27	$20	$205

Source: Spectrum Gaming Group, PI+

Net economic activity or value added (also called gross state product) is a subcomponent of output. Value added excludes the value of the goods and services used up in production and thus shows only the new value created in an economy. Given that it is a subset of output, value added follows the same yearly pattern as output. Cumulative net new economic activity is 61 percent of output, which is the value that remains after accounting for inputs to production, taxes, and economic leakages due to out-of-state trade and commuting. Cumulative value added is $4.1 billion with the first-mover advantage and $3.5 billion without. Therefore, North Carolina loses a total of $576 million of gross state product, or $58 million annually, by foregoing the first-mover advantage in the adoption of sports betting.

Figure 46: Value added impacts of sports betting with and without first-mover advantage

Value-Added (M)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Avg.	Cum.
First Mover	$110	$228	$374	$413	$445	$466	$485	$502	$522	$542	$409	$4,087
Not First Mover	$91	$192	$317	$354	$383	$403	$419	$434	$450	$468	$351	$3,512
Difference	$19	$36	$56	$59	$61	$64	$66	$69	$72	$75	$58	$576

Source: Spectrum Gaming Group, PI+

By definition and necessity, creating output, or business revenues, requires labor, so increasing output also creates hiring. We estimate the direct labor needs of NCEL to be rather small, topping out at 16 new employees by Year 3 and remaining constant thereafter. Conversely, we estimate that the retail and food and beverage sectors will together need 2,645 new workers by Year 5 to support the demand from sports betting (also held constant for the remainder of the analysis).

Here the multiplier impacts are the inverse of those seen with output. The scenario with first-mover advantage requires 1.27 sports betting jobs to yield one job elsewhere while without the advantage it requires 1.45 sports betting jobs. When inverted, this multiplier implies 56 percent of the total employment impact is direct sports betting jobs with the first-mover advantage and 59 percent without. As with output, the difference is again driven by reallocation. Reducing consumption elsewhere creates a larger impact on output than jobs, implying that the productivity (output per worker) of the losing sectors is greater than that of the gaining sectors, which yields the pattern seen here. These results suggest that if North Carolina prioritizes the size of the total impacts and/or the most jobs created for each sports betting job then the scenario with the first-mover advantage is more desirable.

Figure 47: Employment impacts of sports betting with and without first-mover advantage

Total Employment	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Avg.	Cum.
First Mover	1,891	3,082	4,170	4,504	4,812	4,829	4,831	4,829	4,843	4,865	4,266	42,656
Not First Mover	1,791	2,907	3,908	4,245	4,552	4,569	4,569	4,565	4,574	4,591	4,027	40,270
Difference	100	175	263	259	260	261	262	264	269	274	239	2,386

Source: Spectrum Gaming Group, PI+

The opposing multipliers in employment and output between the two scenarios can be further illustrated by examining the top sectors by employment for each scenario alongside their respective output. In both scenarios, the large amount of new money going to state revenues creates substantial public sector employment (because government spending is primarily service-based and thus labor intensive). Similarly, sports betting also supports many jobs in the accommodations and food services and retail sectors. However, these sectors are also on the leading edge of negative impacts due to reallocation because they are the destination of much of discretionary spending.

With higher tax revenues and reallocation, the scenario with first-mover advantage creates larger opposing forces within the economy than the scenario without the advantage. As a result, gaining the first-mover advantage creates a different mix of top sectors than does the scenario without the advantage. Specifically, the ranking of State and Local Government and Retail Trade differs between the two scenarios. With large employment and output impacts, the relative ranking of the government sector is especially impactful on the multipliers for both employment and output. When higher up the rankings, it causes the employment multiplier to be proportionately larger relative to the output multiplier, which is a driver of the opposing multipliers seen in this analysis.

Figure 48: Top impacted sectors by cumulative employment and respective output, with first-mover

Sector	Job-Years	Output (M)
Accommodation and food services	13,890	$437
State and Local Government	13,102	$1,837
Retail trade	11,294	$428
Construction	2,678	$430
Health care and social assistance	820	$199

Source: Spectrum Gaming Group, PI+

Figure 49: Top impacted sectors by cumulative employment and respective output, without first-mover

Sector	Job-Years	Output (M)
Accommodation and food services	13,128	$369
Retail trade	12,018	$405
State and Local Government	11,032	$1,548
Construction	2,554	$409
Health care and social assistance	814	$193

Source: Spectrum Gaming Group, PI+

Finally, our projections recognize that employment supports income. Not surprisingly, the pattern of income follows that of employment. The scenario with first-mover advantage supports more jobs and also creates more additional income. Income gains from having a first-mover advantage compared to not having the advantage average $18 million per year and $181 million cumulatively over the 10-year analysis period. Combining the income and employment data suggests that the income per job generated in the first-mover scenario is approximately $63,000 per year, while for the scenario without it is roughly $62,200. The relatively high income levels are attributable to the large amount of state and local government workers in the results.[86]

Figure 50: Personal income impacts of sports betting with and without first-mover advantage

Personal Income (M)	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Avg.	Cum.
First Mover	$73	$138	$213	$250	$285	$307	$327	$345	$365	$385	$269	$2,687
Not First Mover	$67	$128	$197	$232	$266	$287	$305	$323	$341	$360	$251	$2,506
Difference	$6	$11	$17	$18	$19	$20	$21	$22	$23	$25	$18	$181

Source: Spectrum Gaming Group, PI+

As stated in the methodology, we chose to reallocate 50 percent of eligible spending away from other North Carolina-based activities to sports betting. For the reasons stated in the methodology, we believe this is a sound assumption. However, to give readers more context, we also ran the analysis with zero and 100 percent reallocation. The scenario with no reallocation can be considered the best case because it assumes that all of the new revenues going to sports

[86] Personal income includes the value of benefits, property income, and government transfers and is thus greater than simple wage or salary.

betting come without any cost to existing economic activity in North Carolina. Conversely, the scenario with 100 percent reallocation is the worst-case scenario because it assumes that every dollar of sports betting GGR that comes from a North Carolina resident is being taken away from an existing purchase within the state. The summary results of all three scenarios are presented below.

In general, all scenarios provide net positive economic impacts. The reallocation scenarios imply that North Carolina can roughly expect an annual average of at least 3,600 jobs and at most 4,800 jobs with the first-mover advantage. Without the advantage, jobs could range from 3,500 to 4,500 annually. Similarly, net economic impact or gross state product could range from an annual average of $343 million to $474 million with the advantage or $298 million to $405 million without. With the first-mover advantage, each 10 percent increase in reallocation causes the loss of an average of 116 jobs and $13 million of gross state product. Without the advantage, the state losses an average of 95 jobs and $11 million of gross state product for every 10 percent increase in reallocation.

Figure 51: Comparison of results with different rates of reallocation

Scenario	Economic Activity Summary	Employment		Output (M)		Value Added (M)		Personal Income (M)	
		Average	Cum.	Average	Cum.	Average	Cum.	Average	Cum.
0% Reallocation	First Mover	4,844	48,444	$778	$7,783	$474	$4,741	$310	$3,101
	Not First Mover	4,502	45,019	$664	$6,639	$405	$4,048	$285	$2,846
50% Reallocation	First Mover	4,266	42,656	$672	$6,718	$409	$4,087	$269	$2,687
	Not First Mover	4,027	40,270	$577	$5,765	$351	$3,512	$251	$2,506
100% Reallocation	First Mover	3,687	36,867	$565	$5,654	$343	$3,434	$227	$2,274
	Not First Mover	3,552	35,521	$489	$4,892	$298	$2,976	$217	$2,167
Chg. With Each 10% Increase in Reallocation	First Mover	-116	-1,158	($21)	($213)	($13)	($131)	($8)	($83)
	Not First Mover	-95	-950	($17)	($175)	($11)	($107)	($7)	($68)

Source: Spectrum Gaming Group, PI+

Appendix 1: Individuals Interviewed

In addition to North Carolina Education Lottery staff, Spectrum interviewed the following individuals for this study, some of whom were interviewed more than once and by multiple project team members.

Last	First	Affiliation	Title
Barber	R. Scott	Caesars Entertainment	Regional President
Bresnahan	Beth	DC Lottery	Executive Director
Cohen	Charles	IGT	VP Sports Betting
Ellen	Andy	NC Retail Merchants Association	President and General Counsel
Freeman	Ian	IGT	VP Global Business Development
Germain	Alan	NeoPollard	VP-Customer Service
Gorman	John	Scientific Games	Director of Marketing
Harris	Gary	NC Petroleum & Convenience Marketers	Executive Director
Malul	Moti	NeoPollard	Co-CEO
Martinez	Scott	North Louisiana Economic Partnership	President
McIntyre	Charlie	New Hampshire Lottery	Executive Director
Myers	Paxton	Eastern Band of Cherokee Indians	Chief of Staff to the Principal Chief
Pezzullo	David	IGT	Account Development Manager
Robinson	Brooks	Caesars Entertainment	General Manager, Harrah's Cherokee casinos
Satz	David	Caesars Entertainment	SVP, Government Relations & Development
Shaban	Chris	IGT	VP Regional Operations
Villa-Garcia	Isabel	NC Restaurant & Lodging Association	Director of Governmental Affairs

Appendix 2: The Regional Economic Models Inc. PI+ Model

The PI+ by Regional Economic Models, Inc. ("REMI") used to forecast the economic impacts of sports betting in North Carolina, as described in this report, is a structural economic forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to compensation, price, and other economic factors.

The model consists of thousands of simultaneous equations with a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, demand, and other detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output and Demand, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Compensation, Prices, and Costs, and (5) Market Shares. The blocks and their key interactions are shown in Figure 52 and Figure 53.

Figure 52: REMI model linkages

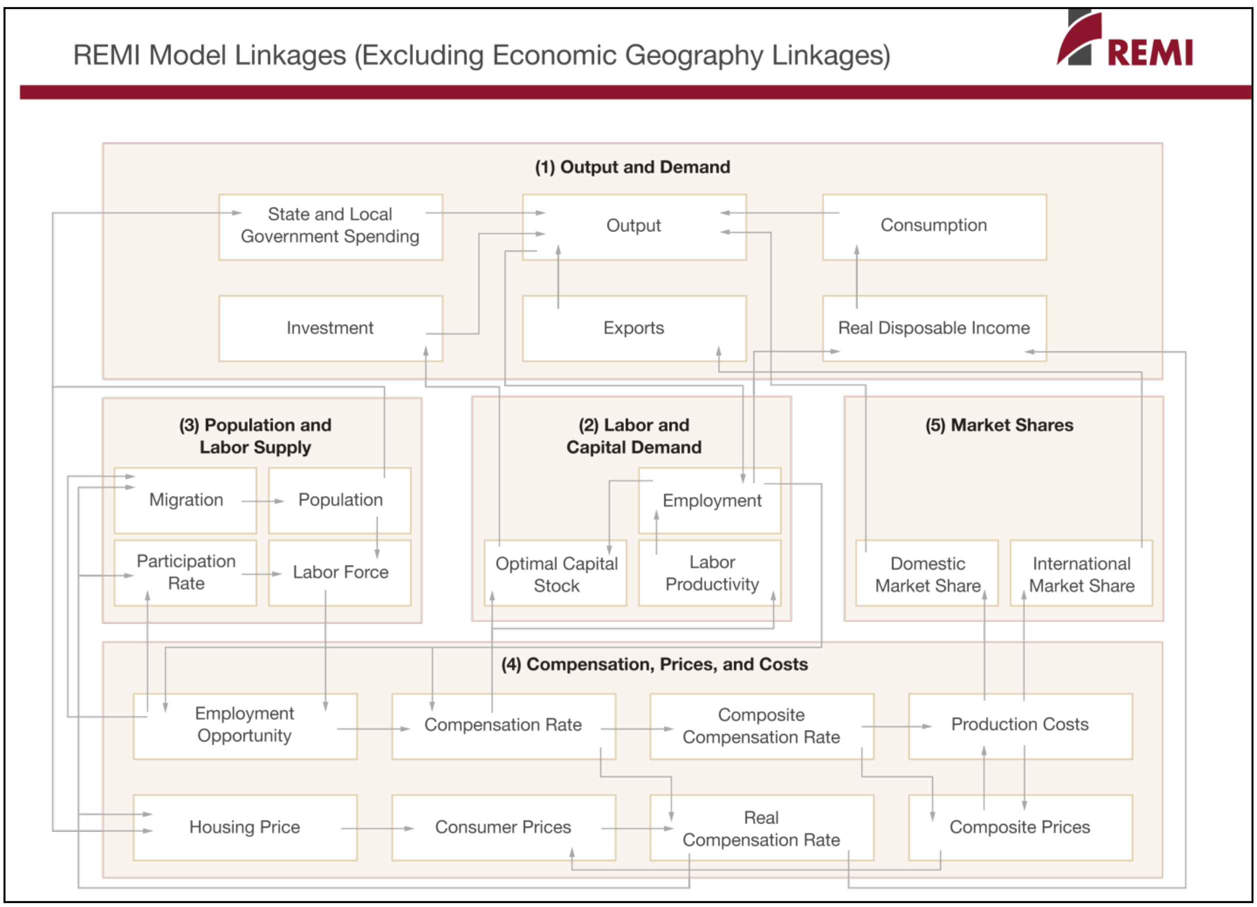
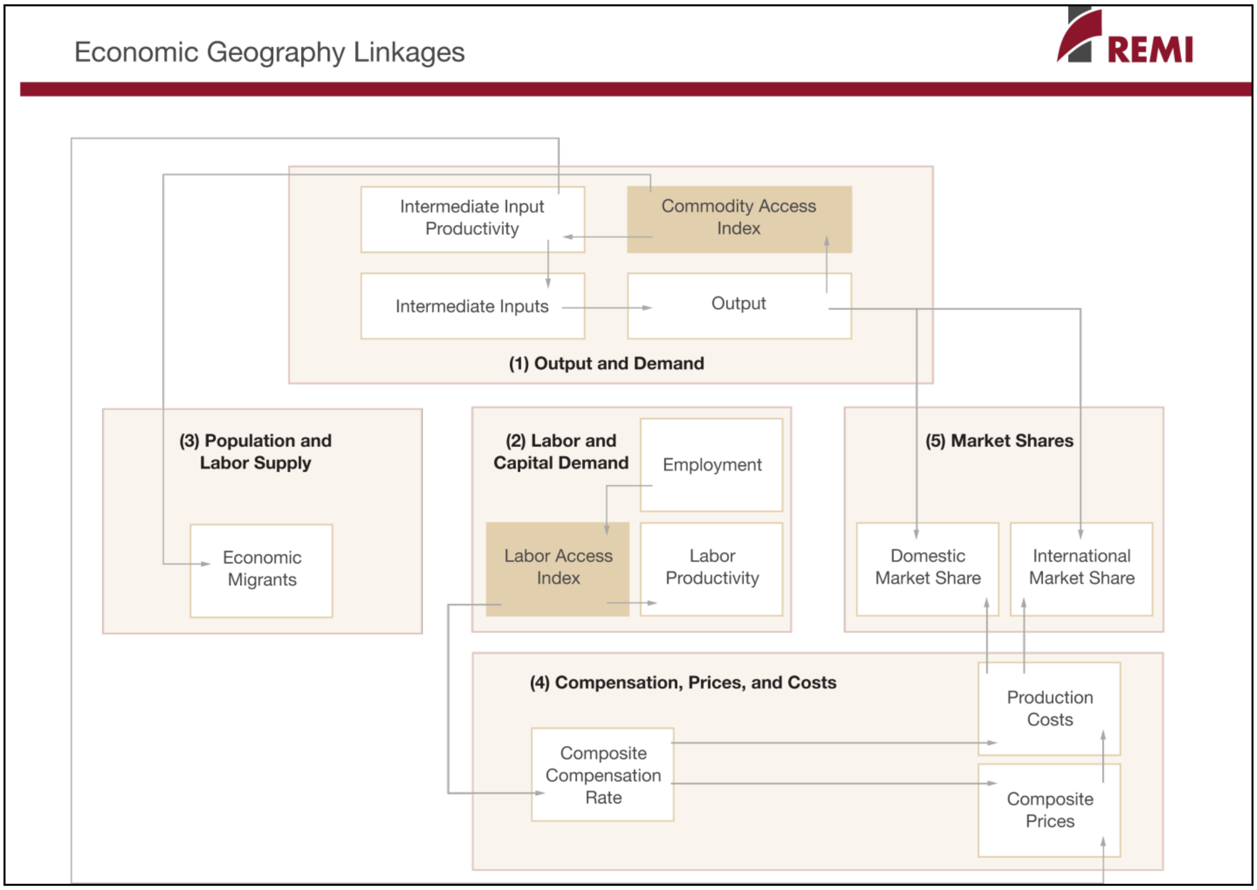


Figure 53: PI+ model – economic geography linkages



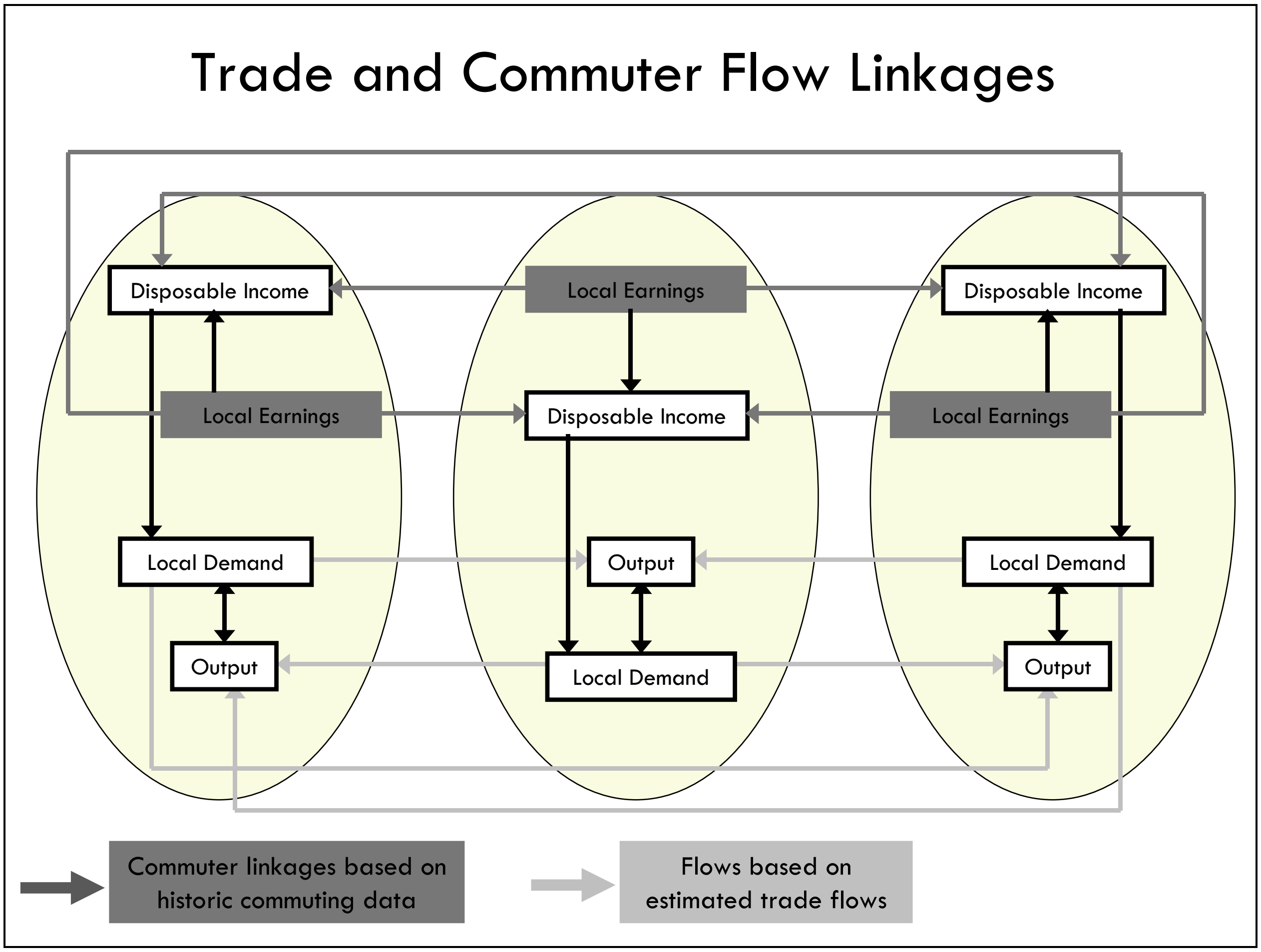
The Output and Demand block consists of output, demand, consumption, investment, government spending, exports, and imports, as well as feedback from output change due to the change in the productivity of intermediate inputs. The Labor and Capital Demand block includes labor intensity and productivity as well as demand for labor and capital. Labor force participation rate and migration equations are in the Population and Labor Supply block. The Compensation, Prices, and Costs block includes composite prices, determinants of production costs, the consumption price deflator, housing prices, and the compensation equations. The proportion of local, inter-regional, and export markets captured by each region is included in the Market Shares block.

Models can be built as single region, multi-region, or multi-region national models. A region is defined broadly as a sub-national area, and could consist of a state, province, county, or city, or any combination of sub-national areas.

Single-region models consist of an individual region, called the home region. The rest of the nation is also represented in the model. However, since the home region is only a small part of the total nation, changes in the home region do not have an endogenous effect on the variables in the rest of the nation.

Multi-regional models have interactions among regions, such as trade and commuting flows. These interactions include trade flows from each region to each of the other regions. These flows are illustrated for a three-region model in Figure 54.

Figure 54: Trade and commuter flow linkages



Multiregional national models also include a central bank monetary response that constrains labor markets. Models that only encompass a relatively small portion of a nation are not endogenously constrained by changes in exchange rates or monetary responses.

Block 1. Output and Demand

This block includes output, demand, consumption, investment, government spending, import, commodity access, and export concepts. Output for each industry in the home region is determined by industry demand in all regions in the nation, the home region's share of each market, and international exports from the region.

For each industry, demand is determined by the amount of output, consumption, investment, and capital demand on that industry. Consumption depends on real disposable income per capita, relative prices, differential income elasticities, and population. Input productivity depends on access to inputs because a larger choice set of inputs means it is more likely that the input with the specific characteristics required for the job will be found. In the capital stock adjustment process, investment occurs to fill the difference between optimal and actual capital stock for residential, non-residential, and equipment investment. Government spending changes are determined by changes in the population.

Block 2. Labor and Capital Demand

The Labor and Capital Demand block includes the determination of labor productivity, labor intensity, and the optimal capital stocks. Industry-specific labor productivity depends on the availability of workers with differentiated skills for the occupations used in each industry. The occupational labor supply and commuting costs determine firms' access to a specialized labor force.

Labor intensity is determined by the cost of labor relative to the other factor inputs, capital and fuel. Demand for capital is driven by the optimal capital stock equation for both non-residential capital and equipment. Optimal capital stock for each industry depends on the relative cost of labor and capital, and the employment weighted by capital use for each industry. Employment in private industries is determined by the value added and employment per unit of value added in each industry.

Block 3. Population and Labor Supply

The Population and Labor Supply block includes detailed demographic information about the region. Population data is given for age, gender, and race, with birth and survival rates for each group. The size and labor force participation rate of each group determines the labor supply. These participation rates respond to changes in employment relative to the potential labor force and to changes in the real after-tax compensation rate. Migration includes retirement, military, international, and economic migration. Economic migration is determined by the relative real after-tax compensation rate, relative employment opportunity, and consumer access to variety.

Block 4. Compensation, Prices and Costs

This block includes delivered prices, production costs, equipment cost, the consumption deflator, consumer prices, the price of housing, and the compensation equation. Economic geography concepts account for the productivity and price effects of access to specialized labor, goods, and services.

These prices measure the price of the industry output, taking into account the access to production locations. This access is important due to the specialization of production that takes place within each industry, and because transportation and transaction costs of distance are significant. Composite prices for each industry are then calculated based on the production costs of supplying regions, the effective distance to these regions, and the index of access to the variety of outputs in the industry relative to the access by other uses of the product.

The cost of production for each industry is determined by the cost of labor, capital, fuel, and intermediate inputs. Labor costs reflect a productivity adjustment to account for access to specialized labor, as well as underlying compensation rates. Capital costs include costs of non-residential structures and equipment, while fuel costs incorporate electricity, natural gas, and residual fuels.

The consumption deflator converts industry prices to prices for consumption commodities. For potential migrants, the consumer price is additionally calculated to include housing prices. Housing prices change from their initial level depending on changes in income and population density.

Compensation changes are due to changes in labor demand and supply conditions and changes in the national compensation rate. Changes in employment opportunities relative to the labor force and occupational demand change determine compensation rates by industry.

Block 5. Market Shares

The market shares equations measure the proportion of local and export markets that are captured by each industry. These depend on relative production costs, the estimated price elasticity of demand, and the effective distance between the home region and each of the other regions. The change in share of a specific area in any region depends on changes in its delivered price and the quantity it produces compared with the same factors for competitors in that market. The share of local and external markets then drives the exports from and imports to the home economy.