

## APPENDIX TO

# Casino Revenue and the Illinois Smoking Ban

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## Data Description and Regression Results for Individual Casinos and Markets

### I. Data Description

The sample period for the analysis runs from January 1997 through December 2008. Monthly data for adjusted gross receipts (AGR) and total admissions were obtained from information on the websites of the various state gaming commissions, as detailed below:

*Illinois:* Data for 1997 through 2008 were available in Annual Reports of the Illinois Gaming Board, : <http://www.igb.state.il.us/annualreport/>.

*Indiana:* Data for total admissions and AGR were obtained from monthly reports of the Indiana Gaming Commission, <http://www.in.gov/igc/2363.htm>. AGR has been reported directly since July 2003. For July 2002 through June 2003, total revenue is measured as the sum of revenues reported for table games and slot machines. Prior to July 2002 revenues were calculated by multiplying the total wagering tax by 5.0. (Until July 2002, Indiana imposed a fixed 20% tax on adjusted gross revenues).

*Iowa:* Revenue and admissions data were obtained from monthly reports of the Iowa Racing and Gaming Commission, <http://www.state.ia.us/irgc/>.

*Missouri:* Revenue and admissions data were obtained from monthly reports of the Missouri Gaming Commission, [http://www.mgc.dps.mo.gov/rb\\_fin\\_nav/mo\\_fin\\_report\\_nav.htm](http://www.mgc.dps.mo.gov/rb_fin_nav/mo_fin_report_nav.htm).

Other Variables:

- Indexes of coincident economic activity for Illinois, Indiana, Iowa and Missouri were obtained from the Federal Reserve Bank of Philadelphia.
- Monthly snowfall totals, along with measures of “normal” snowfall were collected from various webpages associated with the National Oceanic and Atmospheric Administration (NOAA).
- Dummy variables representing one-time intercept shifts as well as “pulse” dummies for transitory events are defined in Table A1.

## II. Results for Individual Casinos in Illinois

Tables A2a and A2b present regressions for AGR at each of the nine individual casinos in Illinois. In Table A2a, results for the four casinos in the Chicago area are presented. In addition to the policy variables for July 1999 and July 2003, a numbers of casino-specific events are also modeled.<sup>1</sup> The two casinos in Joliet had major renovations or new facilities in October 2001 (Harrah's) and May 2003 (Empress). The Hollywood casino in Aurora opened new facilities in two stages, in February and June of 2002. Each of these events is associated with significant increases in revenue.

Table A2b presents AGR regressions for casinos outside the Chicago area. Renovations and new facilities are also relevant for two of these casinos, including the Par-A-Dice in Peoria (Sept. 2005 and March 2007), and the Casino Queen in East St. Louis (August 2007). For the casino in Metropolis Illinois, river conditions created transitory disturbances to business.<sup>2</sup>

Tables A3a and A3b report regressions with the same specifications as those in A2a and A2b, but with total admissions as the dependent variable.

## III. Regional Market Analyses

### *Chicago Market*

In addition to the four casinos examined in Tables A2a and A3a, there are four casino locations in northwest Indiana that are part of the greater Chicago metropolitan area.<sup>3</sup> Tables A4 and A5 report regressions for AGR and total attendance for these four locations. The July 1999

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<sup>1</sup>All regressions in Tables A2 and A3 include the Coincident Economic Activity Index for Illinois. Snowfall variables are as follows: For Chicago are casinos, snowfall for Chicago (Midway) is used; regressions for the casinos in East Peoria and Metropolis, use snowfall totals for Urbana. For the Rock Island casino, the snowfall variable is for Moline, Illinois, and for the Argosy in Alton and Casino Queen, the snowfall variable is for St. Louis, MO.

<sup>2</sup> In January 2005 low water forced the closing of the Metropolis casino, then in August 2005 it was closed for several days due to flooding.

<sup>3</sup> The Majestic Star casinos in Gary Indiana are two separate gaming floors that share a common admission gate. For the purposes of this analysis, the revenues of these two casinos are combined.

and July 2003 dates are included in these regressions in order to evaluate the prevalence of cross-border spillovers from policy changes in Illinois.<sup>4</sup> There is little evidence of such spillover effects from these events, suggesting that it would not be surprising for the smoking ban to show no significant, measurable effects on the nearby Indiana casinos.

The regressions in Tables A4 and A5 also include Indiana-specific events: In August 2002 the Indiana Gaming Commission allowed continuous boarding.<sup>5</sup> In two cases, major renovations were also associated with increased admissions and revenue: in August 2008 for the Horseshoe casino in Hammond and in February 2006 for the Blue Chip casino in Michigan City.

The regressions in Tables A4 and A5 also include a dummy variable for August 2007, the opening date for a new tribal casino in Michigan, only 10 miles north of the Blue Chip casino in Michigan City, Indiana. The impact of this event on the revenue and admissions are large and significant for the Blue Chip casino itself, but are generally not evident for other casinos in the market.

The differences between Indiana casinos and Illinois casinos in the Chicago area market are summarized in the last two columns of Tables A4 and A5. These regressions use sums of the AGR and admissions figures for the four casinos in Illinois and the four locations in Northwest Indiana as their dependent variable.

### *Southern Illinois Market*

The regression results for Harrah's Metropolis casino are reproduced in the first columns of Tables A6 and A7 for comparisons with similar models for the Evansville and Caruthersville casinos. Table A6 reports the results for AGR, while Table A7 reports the results for total

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<sup>4</sup> The regressions in Tables 4A and 5A all use the CEAI for Illinois and snowfall totals for Chicago (Midway).

<sup>5</sup> As with the similar move by Illinois in July 1999, this replaced an earlier system in which boarding was limited to the start of specific "cruise" periods. As was the case in Illinois, this change in policy was associated with increased revenues for the Indiana casinos. It also resulted in a sharp decline in official admittances, since the prior regime double-counted patrons who stayed for more than one "cruise."

admissions. In both tables, the final column reports results for combined totals for Evansville and Caruthersville.

In addition to the variables used in the previous regression for Metropolis, the model for Evansville includes a dummy variable for March 2007. Two factors emerged from a perusal of local media to explain a significant slowdown associated with this date:<sup>6</sup> First, a new casino in French Lick Indiana opened in October 2006 (with revenue peaking in March 2007). The second potential factor was a public relations incident in which the Mayor of Evansville was very outspoken about layoffs at the casino after new ownership took over at the beginning of the year (with the flap taking place in March).<sup>7</sup> The equations for Evansville and Caruthersville also include the 2005 closures associated with river conditions in Metropolis.<sup>8</sup>

#### *Quad Cities Market*

Tables A8 and A9 compare the experience of Rock Island with its four nearest competitors in the Quad Cities area. The regressions for this market includes dummy variables for several incidents of flooding that closed one or more of the casinos: April-May 2001, April 2008 and June 2008. In addition, Catfish Bend opened a new land-based casino in June 2007, the same month that a new hotel opened at the Isle of Capri in Bettendorf. Later that year, in November 2007, Catfish Bend closed its riverboat facility.<sup>9</sup> In July 2008, the Wild Rose casino

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<sup>6</sup> See, for example, Wilson (2007). Wilson, Mark, "Aztar appoints general manager," *Evansville Courier & Press*, December 9, 2007.

<http://www.courierpress.com/news/2007/dec/09/aztar-appoints-general-manager/>

<sup>7</sup> In the absence of a shift-intercept dummy for March 2007, regression residuals clearly indicated the presence of a missing variable.

<sup>8</sup> The dummy variables for January 2005 and Aug 2005 are evidently associated with significant responses in Evansville and Caruthersville. However, Fomby and Murfin (2005) caution that the Newey-West adjustment for significance can lead to inference errors in the case of "pulse" dummy variables. Without the HAC adjustment, only the January 2005 variable in the Caruthersville regression is significant.

<sup>9</sup> All regressions in Tables A8 and A9 use the CEAI for Iowa and snowfall totals for Moline, IL.

in Clinton opened a new land-based casino. Each of these events is included in the regressions in Tables A8 and A9, entering with the expected signs and registering as statistically significant.

The Rock Island casino had its own new-facility grand opening in December 2008. Revenue in that month more than doubled, and attendance tripled. In order to control for this special event, each of the regressions in Tables A8 and A9 are estimated using data through November 2008.

The final column in each of Tables A8 and A9 report regressions using the totals for the four Iowa casinos.

#### *St. Louis Market*

The final market to consider is the St. Louis area market. This market includes two casinos on the Illinois side of the Mississippi river, the Alton Belle in Alton and the Casino Queen in East St. Louis. The regressions in Tables A2 and A3 showed that these two venues experienced losses of over 25 percent in revenue and between 15 and 20 percent declines in attendance. However, the situation in the St. Louis market is complicated by the opening of a new casino and hotel in St. Louis city, the Lumiere Place Casino, which opened in mid-December 2007. The timing of its opening – coinciding so closely to the implementation of the Illinois smoking ban – makes it nearly impossible to disentangle the effects with certainty. Nevertheless, careful analysis can yield some findings that are at least suggestive.

Tables A10 and 11 present regression results for the three other casinos on the Missouri side of the border, without taking any explicit account of the Lumiere Place opening.<sup>10</sup> The final

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<sup>10</sup> The regressions in Tables A10 and A11 each use the CEAI for Missouri for the economic-activity scale variable. Snowfall for St. Louis is used in each of the regressions.

two columns in Tables A10 and A11 compare results using the sum of the three pre-existing Missouri casinos to those using the sum of the two Illinois casinos.

Regressions reported in table A12 indicate the impact that Lumiere Place had on total revenue and admissions for the St. Louis market as a whole. The regressions in Table A12 include most of the market specific events included in the previous two tables. Not including Lumiere's revenue, AGR in the St. Louis market was down by 14 percent, according to the smoking ban dummy variable. When Lumiere's revenue are included, the coefficient on the smoking ban dummy is slightly positive but not significant. For admissions, a negative coefficient for the total without including Lumiere is significant, but when Lumiere's attendance is added to the total, the coefficient is positive and significant. We can conclude that overall, revenue in the St. Louis market were consistent with no unusual aggregate changes in revenue in 2008, but with an increase in overall casino attendance that is likely associated with the novelty of a new casino.

## APPENDIX TABLES:

**Table A1: Definitions for Dummy Variables**

### *Intercept-Shift Dummies*

**SMOKEFREE:** Illinois smoking ban. Value=1 for 2008:01 through 2008:12, zero otherwise.

**July 99:** Beginning of open boarding for Illinois casinos.

**Aug 02:** Beginning of open boarding for Indiana casinos.

**July 03:** Tax increase for Illinois casinos, reportedly associated with policy changes (supply shift).

**July 03:** Indiana casinos get approval to stay open 24 hours per day.

**Sep-Nov 99:** Beginning of open boarding for Missouri casinos. St. Louis area casinos began open boarding in September, with the rest of the state following in November. Dummy variable coded as having a value of 0.5 for 1999:09 and 1999:10, 1.0 for 1999:11 and all subsequent periods (zero otherwise).

**May03:** Empress-Joliet, new barge completed.

**Oct 01:** Harrah's- Joliet, riverboats replaced with floating barges.

**Feb 02:** Hollywood – Aurora opens new dockside casino.

**Jun 02:** Hollywood – Aurora opens phase two of dockside casino.

**Sep 05:** Par-A-Dice – Peoria renovation completed August 23.

**Sep 01:** Harrah's - Metropolis opens new riverboat.

**Aug 07:** Casino Queen – E. St. Louis opens new land-based casino.

**Aug 07:** New casino in SW Michigan opens, competition for casinos in the Chicago market (esp. those in Indiana).

**Aug 08:** Horseshoe – Hammond opens new riverboat.

**Feb 06:** Blue Chip – Michigan City opens new riverboat.

**Mar 07:** In Evansville Indiana, new casino owners announce layoffs, leading to a public dispute with the mayor.

**Jun 07:** Catfish Bend opens new land based casino. Isle of Capri in Bettendorf, Iowa opens new hotel tower.

**Nov 07:** Catfish Bend closes old riverboat casino.

**Jul 08:** Wild Rose – Clinton, Iowa opens new land-based casino.

**Table A1: Definitions for Dummy Variables (Cont.)**

*“Pulse” Dummies*

**Apr-May 2001:** Flooding on the Mississippi River closes some of the Iowa casinos.

**Jan 2005:** Low water forces Metropolis casino to close for several days.

**Aug 2005:** Flooding forces Metropolis casino to close for several days.

**Apr 2008:** Flooding closes Iowa casinos along the Mississippi.

**Jun 2008:** Flooding closes Rhythm City Casino in Davenport, Iowa.

**Apr 1998:** Barges collide with the President casino, forcing its closing.

**May 2002:** Flooding forces the closing of the President casino for several days.

**Apr 2008:** Flooding forces the closing of the President casino for several days.

**Jun 2008:** Flooding forces the closing of the President casino for several days.

**Jul 2008:** Flooding forces the closing of the President casino for several days.

**Sep 2008:** Flooding forces the closing of the President casino for several days

**Table A2a: Illinois Adjusted Gross Receipts (AGR) – Chicago Area Market**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>			
	<b>Empress – Joliet</b>	<b>Harrah’s – Joliet</b>	<b>Hollywood – Aurora</b>	<b>Grand Victoria – Elgin</b>
SMOKEFREE	-0.2360 *** (0.0336)	-0.2471 *** (0.0254)	-0.2305 *** (0.0525)	-0.2395 *** (0.0270)
Constant	6.9945 *** (1.6470)	-1.0727 (2.1650)	12.6514 *** (2.4347)	11.3678 *** (1.4035)
Trend	0.7356 *** (0.1562)	-0.0527 (0.2188)	0.5348 *** (0.1787)	0.3865 *** (0.1306)
Trend Squared	-0.4519 *** (0.1067)	0.0682 (0.1249)	-0.1121 (0.0937)	-0.1849 ** (0.0804)
CEAI	1.8843 *** (0.3344)	3.5754 *** (0.4405)	0.7446 (0.4993)	1.1097 *** (0.2860)
Snow	-0.0035 *** (0.0006)	-0.0024 *** (0.0006)	-0.0024 *** (0.0005)	-0.0029 *** (0.0004)
July 99	0.1787 *** (0.0393)	0.2350 *** (0.0530)	0.1312 *** (0.0304)	0.2627 *** (0.0316)
July03	-0.2022 *** (0.0239)	-0.1568 *** (0.0217)	-0.2757 *** (0.0238)	-0.0172 (0.0285)
May03	0.1536 *** (0.0264)			
Oct01		0.2539 *** (0.0286)		
Feb02			0.0977 *** (0.0344)	
Jun02			0.0614 *** (0.0229)	
AR(1)	0.3762 *** (0.1063)	0.6200 *** (0.0783)	0.4256 *** (0.0878)	0.4366 *** (0.1097)
Adj R-Squared	0.9274	0.9756	0.9552	0.9641

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A2b: Illinois Adjusted Gross Receipts (AGR) – Downstate Markets**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>				
	<b>Par-A-Dice – Peoria</b>	<b>Jumer’s – Rock Island</b>	<b>Harrah’s – Metropolis</b>	<b>Argosy – Alton</b>	<b>Casino Queen – E. St. Louis</b>
SMOKEFREE	-0.0990 *** (0.0143)	-0.1115 *** (0.0312)	-0.3344 *** (0.0267)	-0.2969 *** (0.0309)	-0.3104 *** (0.0191)
Constant	18.7133 *** (0.7978)	28.0706 *** (8.0951)	11.5381 *** (1.9293)	8.4285 *** (1.4535)	15.7543 *** (0.1781)
Trend	0.8106 *** (0.0850)	2.0797 *** (0.3486)	0.0717 (0.2073)	0.7973 *** (0.2181)	0.1420* (0.0853)
Trend Squared	-0.4702 *** (0.0600)	-0.7929 *** (0.2403)	0.1105 (0.0843)	-0.3385 *** (0.1293)	-0.0408 (0.0647)
CEAI	-0.6105 *** (0.1637)	-2.9757* (1.6642)	0.8289** (0.3983)	1.4161 *** (0.2951)	0.0022* (0.0013)
Snow	-0.0065 *** (0.0014)	-0.0026* (0.0016)	-0.0053** (0.0026)	-0.0053 *** (0.0018)	-0.0040 *** (0.0013)
July 99	0.1880 *** (0.0244)	0.3957 *** (0.0796)	0.2127 *** (0.0408)	0.2227 *** (0.0715)	0.2154 *** (0.0263)
July03	-0.1041 *** (0.0186)	-0.0788** (0.0303)	-0.0098 (0.0298)	-0.1472 *** (0.0306)	0.0308** (0.0147)
Sep05	0.0509 *** (0.0167)				
Mar07	0.0937 *** (0.0117)				
Apr-May 2001		0.0460 (0.0546)			
Apr 2008		-0.1059 *** (0.0274)			
Jun 2008		0.0480** (0.0190)			
Sep01			0.2054 *** (0.0488)		
Jan 2005			-0.1191 *** (0.0312)		
Aug 2005			-0.1345 *** (0.0171)		
Aug 07					0.2341 (0.0229) ***
AR(1)	0.0030 (0.0908)	0.7872 *** (0.0665)	-0.0195 (0.0942)	0.4057 *** (0.1038)	0.1535* (0.0865)
Adj R-Squared	0.9316	0.9728	0.9423	0.9657	0.9380

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A3a: Illinois Total Admissions – Chicago Area Market**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>			
	<b>Empress – Joliet</b>	<b>Harrah’s – Joliet</b>	<b>Hollywood – Aurora</b>	<b>Grand Victoria – Elgin</b>
SMOKEFREE	-0.2598 *** (0.0574)	-0.1830 *** (0.0583)	-0.1069 ** (0.0431)	-0.0282 (0.0230)
Constant	1.1412 (2.0595)	-2.6133 (2.4980)	-1.9332 (2.9019)	4.1762 *** (0.8443)
Trend	-0.6961 *** (0.1626)	-0.9843 *** (0.2278)	-1.6762 *** (0.2175)	-0.2950 *** (0.0852)
Trend Squared	0.3105 *** (0.1180)	0.6323 *** (0.1266)	0.7136 *** (0.1092)	-0.2085 *** (0.0452)
CEAI	2.3499 *** (0.4204)	3.1048 *** (0.5121)	3.0077 *** (0.5969)	1.7445 *** (0.1734)
Snow	-0.0045 *** (0.0006)	-0.0042 *** (0.0005)	-0.0030 *** (0.0006)	-0.0035 *** (0.0004)
July 99	-0.3739 *** (0.0408)	-0.3298 *** (0.0294)	-0.1473 *** (0.0264)	-0.0986 *** (0.0154)
July 03	(0.3509) *** (0.0432)	(0.4423) *** (0.0363)	(0.4585) *** (0.0245)	0.0805 ** (0.0314)
May 03	0.2312 *** (0.0419)			
Oct 01		0.4036 *** (0.0469)		
Feb 02			0.2896 *** (0.0280)	
Jun 02			0.0409 (0.0274)	
AR(1)	0.4820 *** (0.1014)	0.5416 *** (0.0833)	0.7110 *** (0.0685)	0.4010 *** (0.1144)
Adj R-Squared	0.9339	0.9315	0.9802	0.9739

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A3b: Illinois Total Admissions – Downstate Markets**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>				
	<b>Par-A-Dice – Peoria</b>	<b>Jumers – Rock Island</b>	<b>Harrah’s – Metropolis</b>	<b>Argosy – Alton</b>	<b>Casino Queen – E. St. Louis</b>
SMOKEFREE	0.0570 *** (0.0166)	-0.0551 (0.0400)	-0.2082 *** (0.0454)	-0.1590 *** (0.0389)	-0.1936 *** (0.0454)
Constant	15.9187 *** (0.6860)	24.5787 *** (3.9728)	5.2952 * (2.7902)	7.6893 *** (0.9861)	12.8254 *** (0.1571)
Trend	0.6009 *** (0.0804)	0.5512 ** (0.2379)	-0.7147 *** (0.2457)	0.0041 (0.0904)	-0.2674 ** (0.1208)
Trend Squared	-0.5551 *** (0.0669)	-0.1836 (0.1293)	0.2430 * (0.1253)	-0.0788 (0.0629)	0.0623 (0.0870)
CEAI	-0.7654 *** (0.1404)	-2.8777 *** (0.8224)	1.3797 ** (0.5747)	0.8786 *** (0.2015)	-0.0021 * (0.0012)
Snow	-0.0074 *** (0.0010)	-0.0034 * (0.0017)	-0.0043 ** (0.0020)	-0.0080 *** (0.0011)	-0.0064 *** (0.0012)
July 99	-0.3764 *** (0.0198)	0.2094 *** (0.0703)	-0.3424 *** (0.0362)	-0.2717 *** (0.0283)	-0.4110 *** (0.0353)
July 03	(0.1047) *** (0.0151)	-0.0376 (0.0371)	(0.0718) (0.0451)	(0.1105) *** (0.0237)	0.0920 *** (0.0265)
Sep 05	(0.0093) (0.0145)				
Mar 07	0.1443 *** (0.0209)				
Apr-May 2001		0.0012 (0.0275)			
Apr 2008		-0.0235 (0.0267)			
Jun 2008		0.0335 (0.0223)			
Sep 01			0.2135 *** (0.0556)		
Jan 2005			(0.2033) *** (0.0434)		
Aug 2005			(0.1964) *** (0.0373)		
Aug 07					0.3553 *** (0.0632)
AR(1)	0.0709 (0.0726)	0.5716 *** (0.1113)	0.4266 *** (0.1156)	0.4138 *** (0.0787)	0.1963 *** (0.0735)
Adj R-Squared	0.9767	0.8582	0.9048	0.9635	0.9616

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A4: AGR for Indiana Casinos in the Chicago Area**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>					
	Horseshoe - Hammond	Ameristar - East Chicago	Majestic Star - Gary	Blue Chip - Michigan City	Indiana Total	Illinois Total
SMOKEFREE	-0.0156 (0.0401)	0.0288 (0.0384)	-0.0236 (0.0254)	-0.0919 ** (0.0358)	0.0044 (0.0193)	-0.2257 *** (0.0170)
Constant	20.0472 *** (0.9506)	13.2254 *** (2.2235)	16.1905 *** (2.4219)	10.3864 *** (1.9338)	14.2350 *** (1.3763)	15.6433 *** (1.1734)
Trend	0.8425 *** (0.0809)	0.9773 *** (0.2269)	0.5506 ** (0.2369)	1.2597 *** (0.1872)	0.9364 *** (0.1178)	0.6816 *** (0.1093)
Trend Squared	-0.0731 * (0.0417)	-0.5201 *** (0.1497)	-0.4395 *** (0.1411)	-0.7130 *** (0.1155)	-0.4215 *** (0.0720)	-0.1155 (0.0699)
CEAI	-0.7197 *** (0.1970)	0.6309 (0.4524)	0.0990 (0.4934)	1.1370 *** (0.3949)	0.7228 ** (0.2806)	0.4380 * (0.2379)
Snow	-0.0038 *** (0.0010)	-0.0040 *** (0.0009)	-0.0032 *** (0.0009)	-0.0044 *** (0.0006)	-0.0041 *** (0.0005)	-0.0028 *** (0.0004)
July 99	-0.0630 *** (0.0133)	0.1325 ** (0.0629)	-0.0513 (0.0630)	-0.0284 (0.0383)	-0.0490 * (0.0274)	0.2290 *** (0.0292)
July 03	-0.0131 (0.0280)	0.0189 (0.0345)	0.0650 (0.0423)	0.0086 (0.0212)	0.0192 (0.0158)	-0.1616 *** (0.0124)
Aug 02	0.0948 *** (0.0285)	0.0797 ** (0.0335)	0.0937 *** (0.0253)	0.1349 *** (0.0299)	0.1035 *** (0.0219)	-0.0744 *** (0.0219)
Aug 07	-0.0709 * (0.0402)	0.0195 (0.0361)	0.0330 (0.0328)	-0.2695 *** (0.0317)	-0.0656 *** (0.0202)	-0.0428 *** (0.0119)
Aug 08	0.1515 *** (0.0382)				0.0481 ** (0.0192)	-0.1093 *** (0.0387)
Feb 06				0.20948 *** (0.0341)		
AR(1)	-0.0447 (0.0763)	0.2219 (0.1401)	0.6100 *** (0.0730)	0.1789 *** (0.0488)	0.1351 (0.1058)	0.2492 ** (0.1049)
Adj R-Squared	0.9593	0.9220	0.7451	0.9630	0.9656	0.9788

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A5: Total Admissions for Indiana Casinos in the Chicago Area**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>					
	Horseshoe - Hammond	Ameristar - East Chicago	Majestic Star - Gary	Blue Chip - Michigan City	Indiana Five	Illinois Four
SMOKEFREE	-0.0711 (0.0470)	-0.0049 (0.0481)	-0.0335 (0.0254)	-0.1123 *** (0.0312)	-0.0306 * (0.0184)	-0.1408 *** (0.0326)
Constant	8.1434 *** (1.7639)	14.0625 *** (2.4142)	11.6914 *** (2.6446)	10.2654 *** (1.6025)	11.7372 *** (1.3679)	9.1722 *** (1.5090)
Trend	-0.1883 (0.1817)	0.4449 ** (0.2116)	0.1298 (0.2348)	0.5736 *** (0.1717)	0.2827 ** (0.1190)	-0.3735 *** (0.1094)
Trend Squared	0.0243 (0.0940)	-0.3428 ** (0.1339)	-0.2764 ** (0.1377)	-0.3503 *** (0.1265)	-0.2093 *** (0.0731)	0.2922 *** (0.0616)
CEAI	0.9571 *** (0.3636)	-0.2595 (0.4953)	0.2963 (0.5397)	0.4252 (0.3292)	0.5112 * (0.2789)	0.9813 *** (0.3095)
Snow	-0.0038 *** (0.0005)	-0.0045 *** (0.0008)	-0.0032 *** (0.0008)	-0.0051 *** (0.0011)	-0.0041 *** (0.0006)	-0.0039 *** (0.0004)
July 99	-0.0508 (0.0454)	0.0966 * (0.0500)	-0.0424 (0.0603)	-0.0391 (0.0281)	-0.0462 (0.0284)	-0.2383 *** (0.0216)
July 03	0.1150 *** (0.0390)	0.0533 (0.0499)	0.0788 (0.0533)	0.0643 * (0.0337)	0.0775 *** (0.0219)	-0.2891 *** (0.0177)
Aug 02	-0.3233 *** (0.0358)	-0.4484 *** (0.0619)	-0.5523 *** (0.0447)	-0.4326 *** (0.0316)	-0.4700 *** (0.0321)	-0.0145 (0.0292)
Aug 07	-0.0286 (0.0267)	0.0639 (0.0402)	0.0638 *** (0.0239)	-0.2558 *** (0.0433)	-0.0337 * (0.0176)	-0.0369 ** (0.0176)
Aug 08	0.4751 *** (0.0703)				0.0952 *** (0.0183)	-0.0852 (0.0520)
Feb 06				0.21599 *** (0.0408)		
AR(1)	0.4799 *** (0.0841)	0.2009 (0.1769)	0.5922 *** (0.0858)	0.1021 (0.0642)	0.1868 ** (0.0798)	0.4658 *** (0.0946)
Adj R-Squared	0.9319	0.9087	0.9771	0.9405	0.9765	0.9733

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A6: AGR for Southern Market Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>			
	<b>Metropolis (Illinois)</b>	<b>Evansville (Indiana)</b>	<b>Caruthersville (Missouri)</b>	<b>Non-Illinois Total</b>
SMOKEFREE	-0.3344 *** (0.0267)	-0.0514 (0.0400)	-0.1205 *** (0.0381)	-0.0666 * (0.0343)
Constant	11.5381 *** (1.9293)	14.3917 *** (2.3072)	5.9362 ** (2.3547)	13.8510 *** (1.8832)
Trend	0.0717 (0.2073)	-0.5211 ** (0.2032)	-0.7095 *** (0.1897)	-0.5465 *** (0.1736)
Trend Squared	0.1105 (0.0843)	0.3486 *** (0.1151)	0.5962 *** (0.0953)	0.4118 *** (0.1011)
CEAI	0.8289 ** (0.3983)	0.3318 (0.4785)	1.7441 *** (0.4882)	0.4818 (0.3899)
Snow	-0.0053 ** (0.0026)	-0.0047 *** (0.0011)	-0.0029 (0.0020)	-0.0043 *** (0.0012)
July 99	0.2127 *** (0.0408)	-0.0533 (0.0587)	0.0694 * (0.0377)	-0.0293 (0.0516)
July 03	-0.00983 (0.0298)	0.02618 (0.0271)	-0.00493 (0.0372)	0.01416 (0.0226)
Sep 01	0.20535 *** (0.0488)	0.06682 ** (0.0276)	0.03436 (0.0493)	0.05495 ** (0.0247)
Aug 02		0.16833 *** (0.0206)		0.12407 *** (0.0206)
Mar 07		-0.15177 *** (0.0416)		-0.13366 *** (0.0364)
Jan 2005	-0.11914 *** (0.0312)	0.08518 *** (0.0246)	0.18469 *** (0.0235)	0.10071 *** (0.0218)
Aug 2005	-0.13449 *** (0.0171)	-0.05267 *** (0.0194)	-0.08173 *** (0.0275)	-0.05865 *** (0.0180)
AR(1)	-0.01951 (0.0942)	0.22612 ** (0.1023)	0.27710 *** (0.1013)	0.21320 ** (0.1045)
Adj R-Squared	0.9423	0.7741	0.8604	0.7996

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A7: Total Admissions for Southern Market Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>			
	<b>Metropolis (Illinois)</b>	<b>Evansville (Indiana)</b>	<b>Caruthersville (Missouri)</b>	<b>Non-Illinois Total</b>
SMOKEFREE	-0.2082 *** (0.0454)	-0.0776 ** (0.0362)	-0.1779 *** (0.0426)	-0.1104 *** (0.0342)
Constant	5.2952 * (2.7902)	12.8858 *** (2.5699)	6.3581 *** (2.3736)	11.1256 *** (2.2164)
Trend	-0.7147 *** (0.2457)	-0.0777 (0.2105)	-0.7124 *** (0.2324)	-0.3533 ** (0.1763)
Trend Squared	0.2430 * (0.1253)	0.0764 (0.1032)	0.5943 *** (0.1183)	0.3151 *** (0.0933)
CEAI	1.3797 ** (0.5747)	-0.1829 (0.5350)	0.9402 * (0.4919)	0.2428 (0.4582)
Snow	-0.0043 ** (0.0020)	-0.0059 *** (0.0014)	-0.0040 ** (0.0016)	-0.0051 *** (0.0014)
July 99	-0.3424 *** (0.0362)	0.0073 (0.0486)	0.2367 *** (0.0496)	0.0749 * (0.0440)
July 03	-0.07179 (0.0451)	0.03254 (0.0242)	-0.00723 (0.0375)	0.01118 (0.0232)
Sep 01	0.21347 *** (0.0556)	0.08361 ** (0.0381)	0.00015 (0.0469)	0.06585 * (0.0357)
Aug 02		-0.42093 *** (0.0242)		-0.30493 *** (0.0270)
Mar 07		-0.13592 *** (0.0372)		-0.11474 *** (0.0344)
Jan 2005	-0.20333 *** (0.0434)	0.11169 *** (0.0260)	0.13514 *** (0.0242)	0.12067 *** (0.0256)
Aug 2005	-0.19643 *** (0.0373)	-0.04687 *** (0.0164)	-0.03820 (0.0277)	-0.04270 ** (0.0190)
AR(1)	0.42665 *** (0.1156)	0.29896 *** (0.0889)	0.44184 *** (0.0775)	0.27897 *** (0.0858)
Adj R-Squared	0.9048	0.9327	0.8678	0.8472

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A8: AGR for Quad Cities Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>					
	<b>Jumers – Rock Island (IL)</b>	<b>Catfish Bend - Burlington</b>	<b>Rhythm City - Davenport</b>	<b>Isle of Capri - Bettendorf</b>	<b>Wild Rose - Clinton</b>	<b>Iowa Four</b>
SMOKEFREE	-0.1115 *** (0.0312)	0.2040 *** (0.0388)	0.0188 (0.0533)	0.1131 *** (0.0193)	-0.0028 (0.0213)	0.1359 *** (0.0311)
Constant	28.0706 *** (8.0951)	6.2737 *** (1.5528)	13.8006 *** (2.6936)	15.2113 *** (1.5462)	18.3599 *** (1.5094)	15.8267 *** (1.1368)
Trend	2.0797 *** (0.3486)	0.1857 (0.1162)	0.4526 ** (0.2226)	1.1813 *** (0.1065)	0.1371 (0.1105)	0.6154 *** (0.0934)
Trend Squared	-0.7929 *** (0.2403)	-0.4052 *** (0.0934)	-0.4845 *** (0.1178)	-0.8035 *** (0.0769)	0.0541 (0.0752)	-0.4630 *** (0.0538)
CEAI	-2.9757 * (1.6642)	1.7145 *** (0.3186)	0.3401 (0.5569)	0.0520 (0.3177)	-0.7846 ** (0.3101)	0.1392 (0.2353)
Snow	-0.0026 * (0.0016)	-0.0067 *** (0.0009)	-0.0084 *** (0.0030)	-0.0037 ** (0.0015)	-0.0053 *** (0.0009)	-0.0057 *** (0.0007)
July 99	0.3957 *** (0.0796)	0.0317 (0.0315)	-0.1312 ** (0.0580)	-0.0351 (0.0290)	-0.0189 (0.0261)	-0.0472 * (0.0252)
July 03	-0.0788 ** (0.0303)	0.1432 *** (0.0235)	0.2499 *** (0.0531)	0.0728 *** (0.0176)	-0.0793 *** (0.0281)	0.1051 *** (0.0214)
Apr-May 2001	0.0460 (0.0546)	-0.1268 *** (0.0168)	-0.7672 *** (0.0719)	0.0702 ** (0.0315)	-0.0155 (0.0338)	-0.1438 *** (0.0141)
Apr 2008	-0.1059 *** (0.0274)	-0.1108 *** (0.0347)	-0.0603 (0.0492)	-0.0116 (0.0265)	-0.0538 *** (0.0193)	-0.0616 *** (0.0205)
Jun 2008	0.0480 ** (0.0190)	0.0274 (0.0310)	-0.4911 *** (0.0316)	0.0876 *** (0.0152)	0.0135 (0.0195)	-0.0975 *** (0.0215)
Jun 07		0.4344 *** (0.0287)		0.1075 *** (0.0176)		0.0736 *** (0.0184)
Nov 07		-0.2040 *** (0.0255)				-0.0415 *** (0.0121)
July 08					0.4516 *** (0.0401)	
AR(1)	0.7872 *** (0.0665)	0.1426 (0.0961)	0.2197 (0.1513)	0.2322 *** (0.0873)	0.2049 ** (0.0913)	0.1876 * (0.1023)
Adj R-Squared	0.9728	0.8361	0.7875	0.8676	0.8306	0.8287

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A9: Total Admissions for Quad Cities Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>					
	<b>Jumers – Rock Island (IL)</b>	<b>Catfish Bend - Burlington</b>	<b>Rhythm City - Davenport</b>	<b>Isle of Capri - Bettendorf</b>	<b>Wild Rose - Clinton</b>	<b>Iowa Four</b>
SMOKEFREE	-0.0551 (0.0400)	-0.0710 ** (0.0345)	-0.0446 (0.0497)	0.0611 *** (0.0196)	-0.0286 (0.0218)	0.0240 (0.0307)
Constant	24.5787 *** (3.9728)	-3.2693 * (1.9396)	13.6833 *** (3.4938)	6.2125 ** (2.5138)	15.9386 *** (1.2763)	11.2219 *** (2.5029)
Trend	0.5512 ** (0.2379)	0.0170 (0.1477)	0.1356 (0.2287)	0.3962 (0.1508)	-0.0340 (0.0838)	0.1332 (0.1226)
Trend Squared	-0.1836 (0.1293)	-0.4728 *** (0.0964)	-0.3380 *** (0.1233)	-0.6270 *** (0.1109)	-0.0730 (0.0600)	-0.3539 *** (0.0814)
CEAI	-2.8777 *** (0.8224)	2.9096 *** (0.4008)	-0.4016 (0.7217)	1.1475 ** (0.5158)	-1.0719 *** (0.2635)	0.3224 (0.3917)
Snow	-0.0034 * (0.0017)	-0.0069 *** (0.0011)	-0.0087 *** (0.0031)	-0.0041 *** (0.0013)	-0.0056 *** (0.0012)	-0.0060 *** (0.0007)
July 99	0.2094 *** (0.0703)	-0.0632 * (0.0340)	-0.0671 (0.0484)	-0.0079 (0.0393)	-0.0020 (0.0223)	-0.0241 (0.0268)
July 03	-0.0376 (0.0371)	0.0807 ** (0.0356)	0.0849 (0.0593)	0.0805 *** (0.0302)	-0.0503 ** (0.0237)	0.0442 (0.0325)
Apr-May 2001	0.0012 (0.0275)	-0.1983 *** (0.0327)	-0.7873 *** (0.0966)	0.0110 (0.0446)	-0.0301 ** (0.0124)	-0.2082 *** (0.0157)
Apr 2008	-0.0235 (0.0267)	-0.3643 *** (0.0209)	-0.0457 (0.0639)	-0.0184 (0.0237)	-0.0589 *** (0.0153)	-0.1068 *** (0.0183)
Jun 2008	0.0335 (0.0223)	0.0599 ** (0.0233)	-0.4897 *** (0.0295)	0.0585 *** (0.0156)	0.0888 *** (0.0189)	-0.1213 *** (0.0203)
Jun 07		1.0222 *** (0.0861)		0.1158 *** (0.0269)		0.2531 *** (0.0413)
Nov 07		-0.3414 *** (0.0754)				-0.0777 *** (0.0191)
July 08					0.7693 *** -0.0318	
AR(1)	0.5716 *** (0.1113)	0.3304 *** (0.0966)	0.4165 ** (0.2080)	0.4961 *** (0.0843)	0.2776 *** (0.0914)	0.5337 *** (0.0637)
Adj R-Squared	0.8615	0.9234	0.8751	0.8588	0.9459	0.9010

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A10: AGR for St. Louis Market Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>				
	<b>Harrah's – Maryland Hts.</b>	<b>Ameristar – St. Charles</b>	<b>President</b>	<b>Missouri Three</b>	<b>Illinois Two</b>
SMOKEFREE	0.0073 (0.0580)	-0.1272 *** (0.0413)	-0.2131 *** (0.0348)	-0.1082 *** (0.0303)	-0.3040 *** (0.0210)
Constant	-1.8585 (2.9253)	29.6002 *** (2.0633)	3.3782 (10.0372)	19.6579 *** (1.1708)	12.7165 *** (1.1770)
Trend	1.4718 *** (0.3419)	1.0018 *** (0.1688)	2.4032 ** (1.1201)	1.4648 *** (0.0973)	0.3960 *** (0.1278)
Trend Squared	-0.7831 *** (0.1861)	-0.1821 * (0.1010)	-1.8037 *** (0.6649)	-0.5381 *** (0.0588)	-0.1404* (0.0805)
CEAI	3.5881 *** (0.5991)	-2.8250 *** (0.4234)	2.3318 (2.0199)	-0.6181 ** (0.2419)	0.7658 *** (0.2405)
Snow	-0.0035 * (0.0018)	-0.0062 *** (0.0018)	-0.0053 *** (0.0018)	-0.0046 *** (0.0014)	-0.0045 *** (0.0011)
July 99	-0.0106 (0.0333)	-0.0389 (0.0287)	-0.0737 *** (0.0263)	-0.0366 ** (0.0179)	0.2273 *** (0.0385)
July03	0.0054 (0.0487)	0.0525 * (0.0278)	0.1363 *** (0.0242)	0.0452 * (0.0231)	-0.0566 *** (0.0135)
Sep99	-0.0059 (0.0379)	0.0648 ** (0.0291)	0.0176 (0.0275)	0.0090 (0.0262)	
Apr00	0.5240 *** (0.0413)			0.2355 *** (0.0274)	
Aug02		0.3893 *** (0.0361)			
Aug07					0.1446 *** (0.0171)
Apr 1998			-1.8439 *** (0.0210)	-0.2121 *** (0.0096)	
May 2002			-0.3269 *** (0.0231)	-0.0485 *** (0.0112)	
Apr 2008			-0.1675 *** (0.0192)	-0.0539 *** (0.0189)	
Jun 2008			-1.1618 *** (0.0258)	-0.0193 (0.0214)	
Jul 2008			-0.7027 *** (0.0238)	-0.0189 (0.0207)	
Sep 2008			-0.4192 *** (0.0353)	-0.0830 *** (0.0248)	
AR(1)	0.5950 *** (0.0876)	0.4647 *** (0.0953)	0.9183 *** (0.0422)	0.2274 ** (0.1015)	0.2896 *** (0.0939)
Adj R-Squared	0.9882	0.9867	0.9665	0.9894	0.9676

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A11: Total Admissions for St. Louis Market Casinos**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>				
	<b>Harrah's – Maryland Hts.</b>	<b>Ameristar – St. Charles</b>	<b>President</b>	<b>Missouri Three</b>	<b>Illinois Two</b>
SMOKEFREE	-0.0003 (0.0576)	-0.0609 * (0.0347)	-0.2111 *** (0.0670)	-0.0799 *** (0.0252)	-0.1791 *** (0.0341)
Constant	-7.5057 *** (2.7757)	23.8182 *** (2.3107)	8.5685 (6.1525)	14.5105 *** (1.5014)	11.8141 *** (0.6802)
Trend	0.1565 (0.2625)	0.2164 (0.1786)	1.3525 *** (0.4122)	0.6743 *** (0.1505)	-0.1552 ** (0.0768)
Trend Squared	-0.4069 *** (0.1527)	-0.0929 (0.1025)	-1.2083 *** (0.3003)	-0.4345 *** (0.0683)	0.0174 (0.0567)
CEAI	4.1742 *** (0.5695)	-2.2479 *** (0.4744)	0.7416 (1.2544)	-0.1585 (0.3115)	0.2431 * (0.1388)
Snow	-0.0053 *** (0.0017)	-0.0072 *** (0.0018)	-0.0077 *** (0.0021)	-0.0061 *** (0.0014)	-0.0071 *** (0.0011)
July 99	0.0578 ** (0.0278)	0.0678 *** (0.0233)	-0.0027 (0.0309)	0.0608 *** (0.0203)	-0.3586 *** (0.0189)
July03	0.0471 (0.0483)	0.0176 (0.0397)	0.0282 (0.0366)	0.0729 ** (0.0334)	-0.0045 (0.0170)
Sep99	0.0929 *** (0.0268)	0.1284 *** (0.0250)	0.0689 * (0.0359)	0.1119 *** (0.0222)	
Apr00	0.5536 *** (0.0467)			0.2107 *** (0.0450)	
Aug02		0.5181 *** (0.0469)			
Aug07					0.2087 *** (0.0398)
Apr 1998			-1.8701 *** (0.0154)	-0.2100 *** (0.0134)	
May 2002			-0.3417 *** (0.0129)	-0.0696 *** (0.0128)	
Apr 2008			-0.1420 *** (0.0152)	-0.0552 ** (0.0211)	
Jun 2008			-1.0630 *** (0.0212)	-0.0298 * (0.0164)	
Jul 2008			-0.6292 *** (0.0285)	0.0159 (0.0212)	
Sep 2008			-0.3611 *** (0.0331)	-0.0424 * (0.0233)	
AR(1)	0.6081 *** (0.0851)	0.5509 *** (0.0774)	0.8298 *** (0.0537)	0.4017 *** (0.0912)	0.1460 * (0.0819)
Adj R-Squared	0.9759	0.9741	0.9737	0.9690	0.9700

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.

**Table A12: Regressions for St. Louis Area Market Totals**

	<i>Coefficient Estimates (Standard Errors in Parentheses)</i>			
	AGR		Total Admissions	
	Without Lumiere	Including Lumiere	Without Lumiere	Including Lumiere
SMOKEFREE	-0.1479 *** (0.0211)	0.0054 (0.0180)	-0.0805 *** (0.0187)	0.1241 *** (0.0406)
Constant	17.5506 *** (0.9348)	17.8219 *** (0.8740)	15.0083 *** (1.3138)	15.5285 *** (1.3116)
Trend	1.0008 *** (0.0858)	0.9832 *** (0.0828)	0.4777 *** (0.1260)	0.4342 *** (0.1266)
Trend Squared	-0.3391 *** (0.0531)	-0.3221 *** (0.0499)	-0.3092 *** (0.0627)	-0.2719 *** (0.0624)
CEAI	-0.0626 (0.1922)	-0.1163 (0.1802)	-0.1816 (0.2721)	-0.2844 (0.2718)
Snow	-0.0041 *** (0.0013)	-0.0040 *** (0.0014)	-0.0059 *** (0.0013)	-0.0052 *** (0.0018)
July 99	0.0712 *** (0.0170)	0.0779 *** (0.0161)	-0.0308 ** (0.0146)	-0.0229 (0.0161)
July03	0.0109 (0.0161)	0.0077 (0.0155)	0.0582 * (0.0305)	0.0554 * (0.0282)
Sep99	0.0036 (0.0152)	0.0012 (0.0143)	0.0807 *** (0.0160)	0.0864 *** (0.0165)
Apr00	0.1533 *** (0.0147)	0.1532 *** (0.0145)	0.1738 *** (0.0361)	0.1694 *** (0.0357)
Aug07	-0.0017 (0.0144)	0.0089 (0.0122)	-0.0069 (0.0201)	0.0278 (0.0344)
Apr 1998	-0.0880 *** (0.0108)	-0.0877 *** (0.0112)	-0.1165 *** (0.0124)	-0.1134 *** (0.0130)
May 2002	-0.0334 *** (0.0089)	-0.0363 *** (0.0099)	-0.0488 ** (0.0201)	-0.0465 * (0.0254)
Apr 2008	-0.0285 (0.0188)	-0.0263 (0.0177)	-0.0237 (0.0164)	0.0038 (0.0191)
Jun 2008	-0.0003 (0.0210)	0.0113 (0.0195)	0.0131 (0.0193)	0.0220 (0.0207)
Jul 2008	0.0027 (0.0199)	0.0074 (0.0183)	-0.0400 * (0.0213)	-0.0256 (0.0219)
Sep 2008	-0.0492 ** (0.0214)	-0.0501 ** (0.0186)	-0.0618 *** (0.0119)	-0.0677 *** (0.0136)
AR(1)	0.0964 (0.0969)	0.0964 (0.0938)	0.3766 *** (0.0881)	0.2996 *** (0.0982)
Adj R-Squared	0.9888	0.9897	0.9434	0.9382

NOTE: \*, \*\*, and \*\*\* denote significance at 0.10, 0.05, and 0.01, respectively.