

## LEGALIZED GAMBLING AND CRIME IN CANADA<sup>1</sup>

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*Summary.*—In the 10 provinces and 2 territories of Canada in 2000, but not in 1990, the total number of types of gambling activities was positively associated with rates of robbery ( $p < .05$ ). Controls for other social variables did not eliminate these associations. With so many correlations in the present study the likelihood of a Type I error was quite large. Alpha was adjusted to control that likelihood. Statistical analysis now required even stronger evidence before concluding that there were significant relationships between crime and gambling variables or among gambling variables. In the 10 provinces of Canada in 1999/2000, the total numbers of electronic gambling machines for each province was associated with rates of theft over \$5000 ( $p < .01$ ). In 1990 there were positive associations found for burglary with off-track betting and race/sportsbooks; motor vehicle theft with off-track betting, and race/sportsbooks; rate of theft with casinos; quarter horse racing with thoroughbred racing. In 2000 there were positive associations for robbery with casinos and slot machines; casinos with slot machines; scratch tickets with raffles, break-open tickets, sports tickets, and charitable bingo; raffles with break-open tickets, sports tickets, and charitable bingo; break-open tickets with sports tickets; charitable bingo with break-open tickets and sports tickets.

Lester reported on the associations of legal gambling and property crime in the 48 contiguous continental states of America in 1990. The adoption of lotteries by states encourage gambling by those least able to afford to do so, consequently increasing the rates of crime against property (Mikesell & Pirog-Good, 1990). The most prolific type of gambling in Canada is electronic gambling machines (video lottery terminals and slot machines). In 1999/2000, 66.6% of the 104,857 places to make a bet consisted of electronic gaming machines with 38,522 video lottery terminals and 31,557 slot machines available to Canadians and visitors. Thus the number of machines and the number of venues or locations are two relevant indicators of the exposure to gambling in a particular region.

The present study was designed to explore which of 18 (in 1990) and of 14 (in 2000) types of gambling activities (Even & La Fleur, 1990; Azmier, 2001, respectively) were associated with rates of violent crime, i.e., robbery, and various property crimes across the 10 provinces and territories of Canada. The rates (per 100,000) for robbery and various property crimes (total property crime=fraud, burglary, having stolen goods, motor vehicle theft,

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theft of any amount) in 1990 were calculated by the one of the authors from the Federal Government's raw data (CANSIM II, 2002; Statistics Canada, 2002, based on Canadian population) and included data from the Northwest Territories combined with those data from Nunavut. However, the 1990 sample only included 'gambling activity' data for the 10 provinces, the Yukon and Northwest Territories, without Nunavut.

The rates (per 100,000) for robbery and various property crimes (total property crime=fraud, burglary, having stolen goods, motor vehicle theft, theft over \$5000, theft of \$5000 and under) in 2000 were already readily available (Canadian Centre for Justice Statistics, 2001), but did not contain any data for Nunavut alone. Therefore, the 2000 sample included both 'robbery and property crime' and 'gambling activity' data for the 10 provinces, the Yukon and Northwest Territories/Nunavut combined. The 'robbery and property crime' data for the Northwest Territories and Nunavut were originally available separately. For the sake of comparability, one of the authors using raw data from the Federal Government (Statistics Canada, 2002) combined crime data from the Northwest Territories with those same data from Nunavut.

The present study was also designed to explore whether measures of access to gambling activities, i.e., the total numbers of gambling machines by type, the rate (100,000 adults) of these machines, and the rate (100,000 adults) of the machine locations, were associated with rates of violent crime, i.e., robbery, and various property crimes (total property crime=fraud, burglary, having stolen goods, motor vehicle theft, theft over \$5000, theft of \$5000 and under) in 10 provinces of Canada in 1999/2000. The rates (100,000 adults) of gambling machines and their locations were calculated from data provided by both Azmier (2001) and raw data from the population data of Canada provided by the Federal Government (Statistics Canada, 2002).

The total number of types of gambling activities for each province and territory was not associated with any rate of robbery or property crime in either 1990 or 2000 (Table 1; cf. also 3). However, because the likelihood of Type I error is quite large with the number of correlations in our study we sought stronger evidence of significant associations beyond what would have been expected by chance. Thus our reportable alpha was adjusted from .05 to .01 or .001 to control for that likelihood. Inspection of 1990 associations yielded significantly positive associations for burglary with off-track betting and race/sportsbooks; motor vehicle theft with off-track betting and race/sportsbooks; rate of theft with casinos; and quarter horse racing with thoroughbred racing. Although of limited value with only 12 provinces/territories, when control variables (per capita income, police per capita, and the proportion of residents aged 5 to 24 years) were placed in backward multi-

ple regressions along with the total number of types of gambling possibilities, the significant, i.e.,  $p < .01$ , prediction contribution of the total number of types of gambling possibilities remained.

Inspection of 2000 associations yielded significantly positive associations for robbery with casinos and slot machines; casinos with slot machines; scratch tickets with raffles, break-open tickets, sports tickets, and charitable bingo; raffles with break-open tickets, sports tickets, and charitable bingo; break-open tickets with sports tickets; charitable bingo with break-open tickets and sports tickets (Tables 1 and 2).

TABLE 1  
PEARSON CORRELATIONS FOR 8 CRIMES AND 14 TYPES OF GAMBLING ACTIVITIES IN 2000

Gambling	Crime							
	Robbery	Fraud	Burglary	Having Stolen Goods, Rate	Motor Vehicle Theft	Theft >\$5000, Rate	Theft \$5000 & Under, Rate	All Property Crimes, Rate
Total No. of Types of Gambling	.67	-.02	-.33	.34	.28	-.32	-.05	-.09
Lotteries (gov't and charity) <sup>a</sup>	-	-	-	-	-	-	-	-
Scratch Tickets	.39	.28	.27	.37	.44	.45	.38	.39
Raffles	.39	.28	.27	.37	.44	.45	.38	.39
Break-open Tickets	.39	.28	.27	.37	.44	.45	.38	.39
Sports Tickets	.39	.28	.27	.37	.44	.45	.38	.39
Charitable Bingo	.39	.28	.27	.37	.44	.45	.38	.39
Linked (Satellite) Bingo	.28	-.05	-.25	.08	-.003	-.09	-.01	-.09
Casinos	.74*	.24	.22	.65	.64	.10	.48	.47
Slot Machines	.74*	.24	.22	.65	.64	.10	.48	.47
Video Lottery Terminals	-.02	-.10	-.58	-.17	-.31	-.63	-.57	-.57
Electronic Gaming Machines (in Race Tracks)	.65	-.07	-.11	.18	.43	.09	-.12	-.02
Horse Racing	.25	-.34	-.86†	-.16	-.30	-.78*	-.46	-.62
First Nations Agreements	.49	.15	-.30	.45	.20	-.38	.10	-.01
Sports Games/Lottery	-.41	-.31	.13	-.43	-.26	.13	-.27	-.16

<sup>a</sup>Cannot be computed because the gambling activity variable is constant across the provinces/territories. \* $p < .01$ , two-tailed. † $p < .001$ , two-tailed.

TABLE 2  
MATRIX OF CORRELATIONS AMONG 13 TYPES OF GAMBLING ACTIVITIES IN 2000

Gambling Activity	<i>r</i>											
	2	3	4	5	6	7	8	9	10	11	12	13
1. Scratch Tickets	1.0*	1.0*	1.0*	1.0*	-.30	.43	.43	-.21	.26	-.14	.36	-.67
2. Raffles		1.0*	1.0*	1.0*	-.30	.43	.43	-.21	.26	-.14	.36	-.67
3. Break-open Tickets			1.0*	1.0*	-.30	.43	.43	-.21	.26	-.14	.36	-.67
4. Sports Tickets				1.0*	-.30	.43	.43	-.21	.26	-.14	.36	-.67
5. Charitable Bingo					-.30	.43	.43	-.21	.26	-.14	.36	-.67
6. Linked (Satellite) Bingo						.35	.35	.00	.51	.45	.17	.00
7. Casinos							1.0*	-.13	.60	.16	.48	-.63
8. Slot Machines								-.13	.60	.16	.48	-.63
9. Video Lottery Terminals									.24	.63	.12	-.16
10. Electronic Gaming Machines (in Race Tracks)										.38	.37	-.38
11. Horse Racing											.53	-.40
12. First Nations Agreements												-.53
13. Sports, Games, Lotteries												

Note.—Lotteries (government and charity) was omitted from the table because this gambling activity variable is constant across the provinces/territories. \* $p < .01$ , two-tailed.

The total numbers of electronic gambling machines for each province were positively associated with rates of theft over \$5000 for 1999/2000 (Table 3; Pearson  $r = .80$ ,  $p < .01$ ). The other measures of access to gambling activities, i.e., total number of video lottery terminals, rate of electronic gambling machines per 100,000 adults, rate of video lottery terminals per 100,000 adults, rate of video lottery terminal locations per 100,000 adults were not associated with rates of robbery or rates of crime against property.

TABLE 3  
PEARSON CORRELATION COEFFICIENTS AMONG 7 CRIMES  
AND 18 TYPES GAMBLING ACTIVITIES IN 1990

Gambling	Crime						
	Robbery	Fraud	Burglary	Having Stolen Goods, Rate	Motor Vehicle Theft	Theft, Rate	All Property Crimes, Rate
Total No. of Types of Gambling	.35	.07	-.13	.08	-.12	.51	.21
Bingo							
Casinos							
Charitable Gaming							
	-.29	-.22	-.03	.01	-.29	.16	.03

(continued on next page)

† Cannot be computed because these gambling activity variables are constant across the provinces/territories. \* $p < .01$ , two-tailed.

TABLE 3 (CONT'D)  
 PEARSON CORRELATION COEFFICIENTS AMONG 7 CRIMES  
 AND 18 TYPES OF GAMBLING ACTIVITIES IN 1990

Gambling	Crime						
	Robbery	Fraud	Burglary	Having Stolen Goods, Rate	Motor Vehicle Theft	Theft, Rate	All Property Crimes, Rate
Slot Machines	.45	.04	.11	-.01	.14	.51	.33
Sports Betting	.34	-.05	.13	.17	.27	.53	.37
Instant†	-	-	-	-	-	-	-
Lotto†	-	-	-	-	-	-	-
Numbers/Cards	.23	-.13	.20	.18	.27	.09	.16
Keno	-.14	-.71*	-.50	-.72*	-.42	-.55	-.60
Passives	-	-	-	-	-	-	-
Harness	.05	-.54	-.79*	-.65	-.79*	-.36	-.65
Quarter Horse	.37	.28	-.03	.33	-.02	.58	.32
Thoroughbred	.37	.28	-.03	.33	-.02	.58	.32
Interprovincial Intetrack	.10	.25	.01	-.04	-.16	.20	.10
Intraprovincial Intertrack	.05	.05	-.17	.29	-.12	.31	.10
Off-track Betting, race/sportsbooks	-.05	.54	.79*	.65	.79*	.36	.65
Telephone Betting	.46	.15	.08	.15	.16	.64	.40
Teletheaters	.27	.10	.02	-.19	-.08	.15	.08

†Cannot be computed because these gambling activity variables are constant across the provinces/territories. \* $p < .01$ , two-tailed.

Unlike Lester's findings (1998) across the states in America in 1990 (using an alpha of .05), the total number of types of gambling activities for each Canadian province and territory was not associated with the rates of robbery in 1990. However in 2000, the opposite was found, i.e., the total number of types of gambling activities for each Canadian province and territory was associated with the rates of robbery ( $p < .05$ ). This latter finding supports that reported by Lester (1998).

TABLE 4  
MATRIX OF CORRELATIONS AMONG 14 TYPES OF GAMBLING ACTIVITIES IN 1990

Gambling	<i>r</i>													
	2	3	4	5	6	7	8	9	10	11	12	13	14	
1. Casinos	.10	.53	.36	.26	-.51	-.08	.66	.66	.53	.31	.08	.68	.36	
2. Charitable Gaming		.26	.17	-.17	-.19	.26	.49	.49	.26	.10	-.26	.33	.16	
3. Slot Machines			.67	.14	.00	.20	.53	.53	.40	.08	-.20	.78	.67	
4. Sports Betting				.09	.30	.14	.36	.36	-.14	.36	-.14	.52	-.09	
5. Numbers/Cards					-.30	-.14	.26	.26	.14	.26	.14	.17	.09	
6. Keno						.45	-.51	-.51	-.45	-.17	-.45	-.19	-.30	
7. Harness							.38	.38	.20	.38	-1.0*	.26	.14	
8. Quarter Horse								1.0*	.53	.66	-.38	.68	.36	
9. Thoroughbred									.53	.66	-.38	.68	.36	
10. Interprovincial Intertrack										.08	-.20	.26	.67	
11. Intraprovincial Intertrack											-.38	.29	-.26	
12. Off-track Betting, race/ sportsbooks												-.26	-.14	
13. Telephone Betting													.52	
14. Teletheaters														

Note.—Bingo, Instant, Lott, and Passives were omitted because each of these gambling activities is constant across the provinces/territories. \* $p < .01$ , two-tailed.

Stronger evidence was found in 1990 and in 2000 (Tables 4 and 5), as casinos were positively associated with both rate of theft and robbery, respectively ( $ps < .01$ , two-tailed). In 1990 but not 2000, off-track betting and race/sportsbooks were positively associated with burglary and motor vehicle theft. Thus it appears for 1990 and 2000 that most types of gambling activities were not positively associated with an increase in robbery or property crime rates. However, as Lester (1998) pointed out for states in America, the present associations may reflect their shared association with other social characteristics of the Canadian provinces and territories.

TABLE 5  
PEARSON CORRELATION COEFFICIENTS FOR 8 CRIMES AND  
14 TYPES GAMBLING ACTIVITIES IN 1999/2000

Gambling	Crime							
	Robbery	Fraud	Burglary	Having Stolen Goods, Rate	Motor Vehicle Theft	Theft >\$5000, Rate	Theft \$5000 & Under, Rate	All Property Crimes, Rate
Total No. Electronic Gambling Machines, VLTs/Slots	.35	-.19	.09	-.10	.21	.80†	-.23	-.07
Total No. Slot Machines, includes slots at race tracks/casinos	.19	-.16	-.10	.04	.08	.63	-.08	-.05
Total No. Video Lottery Terminals	.31	-.11	.24	-.20	.23	.49	-.26	-.05

(continued on next page)

† $p < .01$ , two-tailed.

TABLE 5 (CONT'D)  
 PEARSON CORRELATION COEFFICIENTS FOR 8 CRIMES AND  
 14 TYPES GAMBLING ACTIVITIES IN 1999/2000

Gambling	Crime							
	Robbery	Fraud	Burglary	Having Stolen Goods, Rate	Motor Vehicle Theft	Theft > \$5000, Rate	Theft \$5000 & Under, Rate	All Property Crimes, Rate
Rate of Electronic Gambling Machines, per 100,000 adults	-.08	.18	.10	.14	.05	-.44	-.34	-.16
Rate of Video Lottery Terminals, per 100,000 adults	-.31	.04	-.10	-.13	-.18	-.61	-.15	-.34
Rate of Video Lottery Terminal Locations, per 100,000 adults	-.59	.12	-.32	-.30	-.48	-.50	-.61	-.55

† $p < .01$ , two-tailed.

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