

GUN AVAILABILITY AND USE OF GUNS FOR SUICIDE, HOMICIDE, AND MURDER IN CANADA¹

F. STEPHEN BRIDGES AND JULIE C. KUNSELMAN

The University of West Florida

Summary.—A reliability check of Lester's (2000b) 1970–1995 time series that examined associations between the availability of firearms and their use for homicide and suicide in Canada. For the period 1974 to 1999, the relative availability of firearms as measured by the rate of accidental death from firearms *and* the average of the percentages of suicides + homicides using firearms was positively associated with the rate of homicide by firearms but *not* negatively associated with the rate of homicide by all other methods, and positively associated with the rate of suicide by firearms and negatively associated with the rate of suicide by all other methods. Correlations for the homicide versus murder rates, homicide rate using guns versus murder rate using guns, and homicide rate by all other methods versus murder rate by all other methods were very similar. There was a decrease over time of total suicide and homicide rates and firearm suicide and homicide rates, and with a slight indication of substitution of other methods for suicide.

Two proxy measures of the availability of firearms in a society might be, first, the rate of accidental death from firearms and, second, the average of the percentages of homicides + suicides using firearms (Cook, 1982; Lester, 2000b; Ludwig & Cook, 2003). Since the percentages of homicides using firearms can be derived from two sources, i.e., the mortality statistics at the Mortality Database (Statistics Canada, 2002) and crime statistics at the Homicide Survey (Dauvergne, 2002), a third proxy measure of the availability of firearms could easily be calculated for the average of the percentages of murders + suicides using firearms. Lester (2000a) reported that in a sample of 36 countries circa 1993, a measure of firearm availability based on the average of the percentages of homicides + suicides using firearms gave better evidence for an association between firearm availability and their use for homicide and suicide than did the rate of accidental death from firearms. Lester (2000b) hypothesized that the more available firearms were, the more likely that accidental deaths from firearms would occur and the more likely that firearms would be used for suicide and homicide. He reported that “the relative availability of firearms as measured by the accidental firearm death rate *and* the average of the percentages of suicides/homicides using firearms was positively associated with the firearm homicide rate and negatively associated

¹Please send enquiries to Dr. F. Stephen Bridges, Division of Health, Leisure, and Exercise Science, The University of West Florida, 11000 University Parkway, Pensacola, FL 32514-5750 or e-mail (fbridges@uwf.edu).

with the homicide rate by all other methods. The same pattern was found for the firearm suicide rate and suicide rate by all other methods" (p. 186).

Lester (2000b) examined the associations between the availability of firearms and their use for homicide and suicide in Canada for the period 1970 to 1995. In 1995 Canadians passed firearm control Bill C-68. Dauvergne (2002) reported that firearm control Bill C-68 "created strict new penalties for the trafficking and smuggling of firearms and tougher mandatory minimum sentences for 10 serious offences involving firearms. All firearm owners and users are now required to obtain a firearm licence, and all firearms will have to be registered by January 2003 (including nonrestricted rifles and shotguns)" (p. 10). Lester (2000b) suggested that researchers might investigate the effect of this gun control legislation as the data on the use of firearms for accidental, suicidal, and homicidal deaths become available. When the data became available, the present study sought to check the reliability of this earlier study by Lester.

Scrutiny of a study by Gabor, Hung, Mihorean, and St-Onge (2002) allowed the present authors to identify the sources of data used by Lester (2000b). They were obtained from the Canadian Mortality Database (Statistics Canada, 2002), i.e., cause of death statistics such as suicide (e.g., total, by gun, by all other methods), and the rate of accidental death from firearms, and the average of the percentages of suicides+homicides by firearm (see Table 1). Other data used by Lester (2000b) were likely obtained from a Homicide Survey (Dauvergne, 2002), i.e., crime statistics such as homicide (e.g., total, by gun, by all other methods). The present study refers to homicide as murder in Table 2 only when the source, i.e., rates or the data used for calculating rates, is the Homicide Survey (Dauvergne, 2002). This is done to make a distinction concerning the sources of data used. This is important because coroners and doctors are reported to be more hesitant to classify a death as a homicide than are the police (Hung, 1999, 2002). In Canada, numbers in statistical tables derived from a Mortality Database (Statistics Canada, 2002) are, in most cases, reported to be lower than numbers obtained from a Homicide Survey (Dauvergne, 2002). Therefore, the present study uses three measures of the availability of firearms described earlier, i.e., the rate of accidental death from firearms, the average of the percentages of suicides+homicides by firearm, and the average of the percentages of suicides+murders by firearm. In the present study, the data reported in Table 1 for the average of the percentages of suicides+murders by firearm were obtained from two sources, i.e., a Canadian Mortality Database (Statistics Canada, 2002) and Homicide Survey (Dauvergne, 2002), while the data reported for the average of the percentages of suicides+homicides by firearm were obtained only from the Mortality Database (Statistics Canada, 2002). The remaining four years of data for the rates of homicide and suicide by all

TABLE 1
 USE OF FIREARMS FOR SUICIDE AND HOMICIDE/MURDER IN CANADA, 1974-1999

Year	Rate*	Percent		Murder Rates			Homicide Rates			Suicide Rates		
		1	2	Total	Guns	Other Methods	Total	Guns	Other Methods	Total	Guns	Other Methods
1974	.55	42.35	41.20	2.62	1.24	1.38	2.38	1.18	1.20	12.98	4.57	8.41
1975	.49	40.50	39.60	3.02	1.26	1.76	2.61	1.14	1.47	12.37	4.64	7.73
1976	.39	38.45	37.95	2.84	1.10	1.74	2.37	.94	1.43	12.76	4.76	8.00
1977	.43	38.35	37.45	2.99	1.09	1.90	2.52	.97	1.55	14.26	5.46	8.80
1978	.38	38.60	37.40	2.75	1.04	1.71	2.38	.96	1.42	14.80	5.48	9.32
1979	.30	32.05	32.75	2.60	.85	1.75	2.41	.76	1.65	14.18	4.65	9.53
1980	.31	35.25	33.10	2.41	.75	1.66	2.02	.75	1.27	14.03	4.68	9.35
1981	.26	33.25	32.55	2.60	.80	1.80	2.26	.73	1.53	13.98	4.81	9.17
1982	.23	35.00	35.55	2.65	.98	1.67	2.36	.85	1.51	14.30	4.88	9.42
1983	.17	33.10	32.85	2.68	.88	1.80	2.33	.78	1.56	15.09	4.97	10.12
1984	.24	33.70	32.35	2.60	.89	1.71	2.26	.84	1.43	13.69	4.19	9.50
1985	.25	32.60	31.70	2.71	.86	1.85	2.08	.69	1.39	12.85	4.10	8.75
1986	.20	32.70	31.55	2.17	.67	1.50	1.97	.65	1.31	14.50	4.69	9.81
1987	.23	32.20	31.25	2.42	.75	1.67	2.14	.71	1.43	14.03	4.39	9.63
1988	.22	30.70	29.90	2.14	.63	1.51	1.82	.56	1.25	13.05	3.97	9.08
1989	.28	33.05	32.00	2.40	.80	1.60	2.02	.71	1.31	12.75	3.93	8.82
1990	.24	32.05	30.45	2.37	.71	1.66	2.00	.66	1.34	12.16	3.79	8.37
1991	.24	34.75	33.35	2.69	.96	1.73	2.22	.86	1.36	12.78	3.94	8.83
1992	.22	32.05	31.00	2.56	.87	1.69	2.10	.75	1.35	12.99	3.67	9.32
1993	.15	30.30	29.35	2.17	.67	1.50	1.83	.60	1.23	13.14	3.64	9.50
1994	.13	30.05	29.45	2.04	.67	1.37	1.72	.59	1.13	12.82	3.33	9.49
1995	.17	26.30	26.40	1.99	.59	1.40	1.67	.49	1.17	13.41	3.08	10.33
1996	.15	28.50	27.85	2.13	.71	1.41	1.72	.60	1.13	13.28	2.96	10.31
1997	.15	29.15	27.50	1.95	.64	1.31	1.44	.52	.92	12.27	2.71	9.55
1998	.10	24.85	24.65	1.83	.50	1.33	1.54	.43	1.12	12.22	2.69	9.53
1999	.12	32.70	25.25	1.76	.54	1.22	1.51	.50	1.02	13.36	2.64	10.71

Note.—Rates are per 100,000 population. Percent 1 is suicides/homicides by gun; Percent 2 is suicides/murder by gun. *Accidental firearm mortality rate.

other methods and the average of the percentages of homicides and suicides involving firearms were either obtained or calculated by the present authors from Federal Government data (Hung, 1999, 2002; Statistics Canada, 2002). Lester (2000b) had reported in Table 1 that his data were calculated from Federal government's data.

The Pearson correlations over the time period are given in Table 2. The correlations for the homicide versus murder rates, homicide rate using guns versus murder rate using guns, and homicide rate by all other methods versus murder rate by all other methods were strongly associated ($r = .96$, $p < .001$; $r = .98$, $p < .001$; $r = .90$, $p < .001$, respectively). It can be seen that the relative availability of firearms as measured by the rate of accidental death from firearms and the average of the percentages of suicides and homicides using firearms was positively associated with the rate of murder by firearms

but not negatively associated with the rate of murder by all other methods as Lester (2000b) had reported for the time interval he used, i.e., $-.41$ ($p < .05$) and $-.08$ (ns), respectively. Although not reported by Lester (2000b), the relative availability of firearms as measured by the average of the percentages of suicides and *murders* using firearms was positively associated with the rate of homicide by firearms and positively associated with the rate of homicide by all other methods. The rate of accidental death from firearms *and* the average of the percentages of suicides and homicides using firearms were positively associated with the rate of suicide by firearms and negatively associated with the rate of suicide by all other methods. The correlation coefficient for the rate of accidental death from firearms and the rate of suicide by firearms was unlike Lester's finding (i.e., $r = .27$, ns) in that it was significant and positive ($r = .69$, $p \leq .001$).

TABLE 2
CORRELATIONS BETWEEN MEASURES OF AVAILABILITY OF FIREARMS
AND FIREARM SUICIDE, HOMICIDE, AND MURDER RATES

	Accidental Firearm Death Rate	Average of % of Suicides + Homicid- es by Firearm	Average of % of Suicides + Murders by Firearm	Year
Homicide Rate (mortality statistics)				
Total	.78*	.80*	.90*	-.90*
Firearm	.91*	.94*	.97*	-.87*
Other Methods	.46	.47	.61*	-.73*
Murder Rate (crime statistics)				
Total	.76*/.09†	.78*/.47†	.88*	-.85*/-.26†
Firearm	.88*/.61†	.90*/.87*†	.96*	-.84*/-.65*†
Other Methods	.46*/-.41†	.48*/-.08†	.59*	-.68*/.19†
Suicide Rate (mortality statistics)				
Total	.07*/-.50†	.21*/-.23†	.24	-.41/.20†
Firearm	.69*/.27†	.74*/.58†	.83*	-.91*/-.57†
Other Methods	-.73*/-.82*†	-.63*/-.73*†	-.70*	.60*/.68*†
Year				

Note.—Murder for homicide occurs only when the data source is the Homicide Survey.

* $p \leq .001$, one-tailed. †Present findings/Lester's findings (2000b).

Table 1 also depicts strong trends over time. Like Lester's (2000b) findings from 1970 to 1995, when looking at the correlations by year (in the column labeled "year" in Table 2), from 1974 to 1999 availability of firearms decreased. Lester (2000b) reported that this was probably the result of Bill C-51 being passed in Canada in 1977. Perhaps the present findings are the result of Bill C-68 being passed in Canada in 1995. Both Lester's (2000b) and the present findings for the correlation coefficients for year and rate of total homicide were negative, i.e., $rs = -.85$ and $-.26$, respectively; however, in the present study the negative association was also significant ($p \leq .001$),

unlike Lester's (2000b) nonsignificant finding. These findings indicate the availability of firearms decreased after 1995 when Bill C-68 was passed. The correlation between the rate of accidental death from firearms and year was $-.87$ and between the average of the percentage of suicide and homicides by firearms and year was $-.85$. Lester (2000b) reported very similar significant correlations, i.e., $rs = -.89$ and $-.86$. Although not reported by Lester (2000b), the correlation between the average of the percentages of suicide and murders by firearms and year was $-.93$.

As in Lester's (2000b) report for the years 1970–1995, availability of firearms decreased in Canada from 1974 to 1999, perhaps consequent to passage of stiffer gun control laws in 1977, 1991, and 1995. The use of firearms for suicide and homicide became less common, while the use of other methods became more common. While Lester reported that perhaps people may have changed their methods for suicide and homicide, the present study indicates this is true only for suicide.

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