## **Data supplement**



## Fig DS1 Suicides by gas poisoning in Hong Kong, Taiwan, and Japan (1997–2005).<sup>a</sup>

a. Suicides by gas poisoning (excluding the suicides by domestic gas) is defined by the ICD-9<sup>11</sup> code E952 in Hong Kong and Taiwan, or the ICD-10<sup>12</sup> code X67 in Japan. Data accessed 27 January 2010 from World Health Organization Mortality Database (http://www.who.int/whosis/mort/download/en/index.html) and HKJC Centre for Suicide Research and Prevention (http://csrp.hku.hk/WEB/eng/customized.asp).

## **Additional references**

11 World Health Organization. International Statistical Classification of Diseases and Related Health Problems, Ninth Revision (ICD-9). WHO, 1978. 12 World Health Organization. The ICD-10 Classification of Mental and Behavioral Disorders: Clinical Descriptions and Diagnostic Guidelines. WHO, 1992.

	District			
Category	Tuen Mun	Yuen Long	Whole territory	
Population				
n	502,000	534,000	6,864,000	
Proportion of 65+ years, %	8.8	8.3	12.4	
Labour force participation rate, %	61.1	60.7	60.3	
Proportion that had attained university degree, %	10.3	10.6	15.4	
Median income from main employment, HK\$	9500	9500	10,000	
Proportion of working population who were professionals, administrators, or executives, %	10.0	11.6	16.9	
Household				
n	162,500	169,800	2,226,500	
Median household income, HK\$	15,000	14,810	17,250	
Proportion living in public rental housing, %	34.9	35.1	31.1	
Suicide rates per 100,000				
Charcoal	4.0	5.2	2.4	
Overall	16.5	14.2	13.6	

## **Poisson regression analyses**

The number and rates for suicide by charcoal burning and other methods in the intervention region (Tuen Mun) were monitored and compared with those in the local control region (Yuen Long) and in the whole of Hong Kong for the pre-intervention (July 2005-June 2006) and the intervention period (July 2006-June 2007). Statistical tests were performed to ascertain any significant change of charcoal burning deaths before and after the implementation. To assess the main effect, and its statistical significance, of restricting access to barbecue charcoal we used a Poisson regression model implemented in SAS GENMOD software for Windows Version 9.1.3. The numbers of suicidal events for Tuen Mun (R = 1) and Yuen Long (R = 0) over the study period were fitted with a dummy binary variable (D), which takes the value of 0 and 1 to indicate the pattern of suicide epidemiology in the pre-intervention period and the intervention period respectively. Geographical region (R) was considered as a random effect and D (before and after intervention) was the main effect. The suicide rates of the two regions were treated as repeated observations over the two time periods. A significant interaction between region and time  $(D \times R)$  would indicate that the rates had changed differently over time between the two regions. In

addition, to adjust for the age and gender difference of suicide rate and population structure between the two regions, we included the gender and age of the suicide victim, and the offset term of population size of corresponding districts in the regression equation as the confounding variables. Mathematically, the regression equation is written as follows:

 $log(suicide cases) = \alpha + \beta(D \times R) + \gamma_1(D) + \gamma_2(R) + \delta_1(gender)$  $+ \delta_2(age) + log(population size)$ 

To quantify the effect of restriction of access to the means for charcoal-burning suicide prevention, we estimated the regional difference in the percentage change (RDPC) of the number of suicides in the pre-intervention and intervention periods as follows:

$$RDPC = [exp(\beta) - 1] \times 100\%$$

To assess the method-substitution effect, we separately fitted charcoal-burning suicides and non-charcoal-burning suicides to the described model. If the effect of method substitution exists, the number of non-charcoal-burning suicides in the intervention region during the intervention period should be significantly higher ( $\beta$ >0) than during the pre-intervention period.<sup>9</sup>

Table DS2 Number and rate of suicides according to gender and suicide method							
		Intervention Tuen Mun		Control Yuen Long		All districts	
	Period <sup>a</sup>	Cases, n	Rate <sup>b</sup>	Cases, n	Rate <sup>b</sup>	Cases, n	Rate <sup>b</sup>
Men							
Charcoal burning	Pre-intervention	16	6.6	10	3.9	118	3.6
-	Intervention	7	2.9	16	6.2	104	3.2
Other methods	Pre-intervention	35	14.5	28	10.8	457	14.0
	Intervention	26	10.8	23	8.9	477	14.5
All methods	Pre-intervention	51	21.2*	38	14.7	575	17.6
	Intervention	33	13.7	39	15.1	581	17.7
Women							
Charcoal burning	Pre-intervention	5	2.0	6	2.2	58	1.6
0	Intervention	3	1.2	7	2.6	55	1.5
Other methods	Pre-intervention	32	12.8	23	8.5	333	9.3
	Intervention	24	9.6	20	7.4	281	7.8
All methods	Pre-intervention	37	14.8	29	10.7	391	11.0
	Intervention	27	10.8	27	10.0	336	9.3
Men and women							
Charcoal burning	Pre-intervention	21	4.3*	16	3.0	176	2.6
0	Intervention	10	2.0	23	4.3	159	2.3
Other methods	Pre-intervention	67	13.6	51	9.6	790	11.6
	Intervention	50	10.2	43	8.1	758	11.0
All methods	Pre-intervention	88	17.9*	67	12.7	966	14.1
	Intervention	60	12.2	66	12.5	917	13.3
a. Pre-intervention period Ju b. Rate per 100 000. *P<0.05 for comparison ber	ly 2005 to June 2006, intervention Ju tween pre-intervention and intervent	ly 2006 to June 2007. ion periods.					

Table DS3	Adjusted regional difference on percentage change in the number of suicides in the intervention region (Tuen Mun)
compared w	ith the control region (Yuen Long) by method of suicide

Suicide method	β	Regional difference, %	χ <sup>2</sup>	Р
Adjusted by age and gender				
Charcoal burning	-1.1048	-66.9*	4.81	0.0282
Other methods	-0.122	-11.5	0.19	0.6617
All methods	-0.368	-30.8	2.33	0.1269
Adjusted by age only				
Male				
Charcoal burning	-1.2967	-72.7*	4.57	0.0325
Other methods	-0.1005	-9.6	0.07	0.7926
All methods	-0.4613	-37.0	2.09	0.1484
Female				
Charcoal burning	-0.665	-48.6	0.52	0.4689
Other methods	-0.1479	-13.7	0.13	0.7169
All methods	-0.2436	-21.6	0.44	0.5082
*Statistically significant at the 5% level.				