



APPENDIX AVAILABLE ON THE HEI WEB SITE

Research Report 170

**Impact of the 1990 Hong Kong Legislation
for Restriction on Sulfur Content in Fuel**

C-M Wong et al.

**Appendix C. Facsimile of Hong Kong Immigration Department Death Record
and Additional Data from the Current Study**

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Figure C.1. Image of a hard copy of the death records that obtained from the Immigration Department, Hong Kong

SheetNum -----> 000001

**DEATHS IN THE
香港**

(1) No. 編號	(2) When and where died 死亡日期及地點	(3) Name and surname 姓名	(4) Sex 性別	(5) Age 年齡	(6) R., profession, or occupation and nationality so far as is known 所知之職業、專業或職工及國籍	(7) Cause of death 死亡原因
256 GRO CRR 4	12 th February 1985 Queen Elizabeth Hospital		Female	87 years		a) Bronchopneumonia b) Cerebral thrombosis with right hemiparesis
257 GRO CRR 4	12 th February 1985 Caritas Medical Centre		Female	85 years		Carcinoma of colon
258 GRO CRR 4	13 FEB 1985 Kwong Wah Hospital		Female	83 years		a) Chest infection b) Chronic obstructive airways disease
259 GRO CRR 4	12 th February 1985 Princess Margaret Hospital		Female	56 years		Metastatic adenocarcinoma
260 GRO CRR 4	13 FEB 1985 Kwong Wah Hospital		Female	79 years		Ia) Fulminating hepatitis b) Chronic myeloid leukaemia c) Typhus infection

DDate -----> 12
DMonth -----> 02
DYear -----> 1985

Sex -----> Female

Age -----> 87
AgeYMDH -----> 870212

Note: "SheetNum", "ID1", "ID2", "ID3", "DDate", "DMonth", "DYear", "Sex", "Age", "AgeYMDH" are all the inputted variables.

Table C.1. Model specification on degrees of freedoms for all smoothing terms in core models by periods

Period	Month	Time	Temperature Lag, dfs	Temperature Cumulative lag, dfs	Humidity	AR
All causes, all ages						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	20	0, 3	1-10, 3	3, 3	1
Whole, 7 years	11	20	0, 9	--	0, 3	2
Pre-intervention, 2 years	11	50	0,3	1-10,3	3,3	0
Pre-intervention, 5 years	11	71	0,3	1-8,3	2,3	3
Post-intervention, 5 years	11	60	0,3	1-2,3	2,3	0
<i>Particulate species</i>						
Whole, 10 years	11	170	0,3	1-9,3	3,3	6
Whole, 7 years	11	56	0,9	--	0,4	5
Pre-intervention, 2 years	11	10	0,3	1-10,3	1,3	4
Pre-intervention, 5 years	11	40	0,3	1-8,3	2,3	5
Post-intervention, 5 years	11	40	0,3	1-2,3	2,3	5
All causes, 65+						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-10, 3	3, 3	1
Whole, 7 years	11	50	0, 9	--	0, 3	2
Pre-intervention, 2 years	11	20	0,3	1-11,3	2,3	0
Pre-intervention, 5 years	11	70	0,3	--	1,3	0
Post-intervention, 5 years	11	60	0,3	1-2,3	2,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-11,3	2,3	5
Whole, 7 years	11	84	0,9	--	0,4	5
Pre-intervention, 2 years	11	10	0,3	1-12,3	2,3	4
Pre-intervention, 5 years	11	25	0,3	1-11,3	2,3	5
Post-intervention, 5 years	11	40	0,3	1-2,3	2,3	4

Note: dfs refers to degrees of freedoms

Period	Month	Time	Temperature Lag, dfs	Temperature Cumulative lag, dfs	Humidity	AR
Cardiovascular, all ages						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	2, 3	0
Whole, 7 years	11	20	0, 4	--	0, 4	1
Pre-intervention, 2 years	11	50	0,3	1-12,3	2,3	0
Pre-intervention, 5 years	11	40	0,3	--	1,3	1
Post-intervention, 5 years	11	50	0,3	1-2,3	3,3	0
<i>Particulate species</i>						
Whole, 10 years	11	100	0,3	1-8,3	2,3	6
Whole, 7 years	11	56	0,9	--	0,4	5
Pre-intervention, 2 years	11	8	0,3	1-8,3	1,3	4
Pre-intervention, 5 years	11	70	0,3	1-12,3	1,3	4
Post-intervention, 5 years	11	40	0,3	1-8,3	2,3	5
Cardiovascular, 65+						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	2, 3	0
Whole, 7 years	11	20	0,4	--	0,3	1
Pre-intervention, 2 years	11	50	0,3	1-12,3	2,3	0
Pre-intervention, 5 years	11	40	0,3	--	1,3	0
Post-intervention, 5 years	11	50	0,3	1-8,3	0,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-12,3	2,3	6
Whole, 7 years	11	35	0,9	--	0,4	5
Pre-intervention, 2 years	11	6	0,3	1-12,3	0,3	4
Pre-intervention, 5 years	11	40	0,3	1-12,3	1,3	4
Post-intervention, 5 years	11	25	0,3	1-9,3	2,3	5

Note: dfs refers to degrees of freedoms

Period	Month	Time	Temperature Lag, dfs	Temperature Cumulative lag, dfs	Humidity	AR
Respiratory, all ages						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	3, 3	0
Whole, 7 years	11	50	0,3	--	0,3	1
Pre-intervention, 2 years	11	50	0, 3	1-12, 3	3, 3	0
Pre-intervention, 5 years	11	40	0,3	--	2,3	0
Post-intervention, 5 years	11	60	0,3	1-12,3	3,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-12,3	2,3	5
Whole, 7 years	11	56	0,11	--	0,3	
Pre-intervention, 2 years	11	4	0,3	1-3,3	4,3	4
Pre-intervention, 5 years	11	25	0,3	1-12,3	2,3	4
Post-intervention, 5 years	11	40	0,3	1-12,3	3,3	5
Respiratory, 65+						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	3, 3	0
Whole, 7 years	11	50	0,3	--	0,3	1
Pre-intervention, 2 years	11	50	0, 3	1-12, 3	3, 3	0
Pre-intervention, 5 years	11	40	0,3	1-14,3	2,3	0
Post-intervention, 5 years	11	60	0,3	1-5,3	3,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-12,3	2,3	5
Whole, 7 years	11	35	0,11	--	0,3	5
Pre-intervention, 2 years	11	4	0,3	1-3,3	4,3	4
Pre-intervention, 5 years	11	25	0,3	1-11,3	2,3	4
Post-intervention, 5 years	11	40	0,3	1-12,3	3,3	5

Note: dfs refers to degrees of freedoms

Period	Month	Time	Temp	Temp	Humid	AR
Respiratory, all ages						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	3, 3	0
Whole, 7 years	11	50	0,3	--	0,3	1
Pre-intervention, 2 years	11	50	0, 3	1-12, 3	3, 3	0
Pre-intervention, 5 years	11	40	0,3	--	2,3	0
Post-intervention, 5 years	11	60	0,3	1-12,3	3,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-12,3	2,3	5
Whole, 7 years	11	56	0,11	--	0,3	
Pre-intervention, 2 years	11	4	0,3	1-3,3	4,3	4
Pre-intervention, 5 years	11	25	0,3	1-12,3	2,3	4
Post-intervention, 5 years	11	40	0,3	1-12,3	3,3	5
Respiratory, 65+						
<i>Gaseous pollutants</i>						
Whole, 10 years	11	50	0, 3	1-12, 3	3, 3	0
Whole, 7 years	11	50	0,3	--	0,3	1
Pre-intervention, 2 years	11	50	0, 3	1-12, 3	3, 3	0
Pre-intervention, 5 years	11	40	0,3	1-14,3	2,3	0
Post-intervention, 5 years	11	60	0,3	1-5,3	3,3	0
<i>Particulate species</i>						
Whole, 10 years	11	50	0,3	1-12,3	2,3	5
Whole, 7 years	11	35	0,11	--	0,3	5
Pre-intervention, 2 years	11	4	0,3	1-3,3	4,3	4
Pre-intervention, 5 years	11	25	0,3	1-11,3	2,3	4
Post-intervention, 5 years	11	40	0,3	1-12,3	3,3	5

Table C.2. By sex: percentages of matched cases and numbers in C&SD database

(A) 1985-1989

Sex	1985		1986		1987		1988		1989	
	Matched (n=23725)	C&SD (n=25248)	Matched (n=25237)	C&SD (n=25902)	Matched (n=26125)	C&SD (n=26916)	Matched (n=27141)	C&SD (n=27659)	Matched (n=28045)	C&SD (n=28745)
Male	55.57	55.56	55.57	55.63	55.60	55.72	55.38	55.50	56.45	56.58
Female	44.40	44.40	44.40	44.33	44.39	44.27	44.60	44.48	43.54	43.40
Unknown	0.04	0.04	0.04	0.04	0.01	0.01	0.02	0.02	0.01	0.02

(B) 1990-1994

Sex	1990		1991		1992		1993		1994	
	Matched (n=28581)	C&SD (n=29136)	Matched (n=28020)	C&SD (n=28429)	Matched (n=29854)	C&SD (n=30550)	Matched (n=29494)	C&SD (n=30571)	Matched (n=29032)	C&SD (n=29905)
Male	55.80	55.99	55.96	55.97	56.07	56.33	55.98	56.17	56.81	57.05
Female	44.19	44.00	44.02	44.00	43.93	43.67	44.01	43.82	43.19	42.95
Unknown	0.01	0.01	0.02	0.02	0.00	0.01	0.01	0.01	0.00	0.00

Table C.3. By area of living: percentages of matched cases and numbers in C&SD database

(A) 1985-1989

Areas of living	1985		1986		1987		1988		1989	
	Matched (n=23725)	C&SD (n=25248)	Matched (n=25237)	C&SD (n=25902)	Matched (n=26125)	C&SD (n=26916)	Matched (n=27141)	C&SD (n=27659)	Matched (n=28045)	C&SD (n=28745)
Hong Kong Island	22.96	23.00	23.77	23.55	22.74	22.72	22.45	22.49	23.04	23.04
Kowloon Side	56.97	56.91	55.24	55.11	54.48	54.51	54.17	54.09	52.72	52.51
New Territories and Islands	18.52	18.53	19.46	19.79	21.26	21.18	22.10	22.05	22.62	22.68
Unknown	1.55	1.56	1.52	1.56	1.52	1.59	1.28	1.37	1.62	1.77

(B) 1990-1994

Areas of living	1990		1991		1992		1993		1994	
	Matched (n=28581)	C&SD (n=29136)	Matched (n=28020)	C&SD (n=28429)	Matched (n=29854)	C&SD (n=30550)	Matched (n=29494)	C&SD (n=30571)	Matched (n=29032)	C&SD (n=29905)
Hong Kong Island	22.11	22.11	22.15	22.21	21.80	21.68	21.17	21.53	21.36	21.23
Kowloon Side	52.49	52.36	51.29	51.13	50.46	50.32	50.47	50.14	50.49	50.39
New Territories and Islands	23.96	23.95	25.34	25.39	26.55	26.72	27.17	27.03	27.18	27.31
Unknown	1.44	1.58	1.22	1.27	1.20	1.29	1.19	1.30	0.97	1.07

Table C.4. By marital status: percentages of matched cases and numbers in C&SD database

(A) 1985-1989

Marital status	1985		1986		1987		1988		1989	
	Matched (n=23725)	C&SD (n=25248)	Matched (n=25237)	C&SD (n=25902)	Matched (n=26125)	C&SD (n=26916)	Matched (n=27141)	C&SD (n=27659)	Matched (n=28045)	C&SD (n=28745)
Never married	12.18	12.12	12.21	12.33	11.55	11.72	11.33	11.50	10.78	11.09
Married	56.11	56.02	54.81	55.07	55.84	56.00	60.26	60.16	60.17	60.02
Widowed	27.22	27.39	27.66	27.19	27.71	27.26	23.29	23.10	23.55	23.27
Divorced/legally separated	0.61	0.61	0.59	0.58	0.70	0.72	0.79	0.80	0.73	0.72
Unknown	3.88	3.85	4.73	4.82	4.19	4.30	4.33	4.43	4.78	4.90

(B) 1990-1994

Marital status	1990		1991		1992		1993		1994	
	Matched (n=28581)	C&SD (n=29136)	Matched (n=28020)	C&SD (n=28429)	Matched (n=29854)	C&SD (n=30550)	Matched (n=29494)	C&SD (n=30571)	Matched (n=29032)	C&SD (n=29905)
Never married	10.87	11.14	10.99	11.18	10.16	10.56	10.08	10.50	10.21	10.63
Married	58.83	58.66	59.36	59.22	58.66	58.45	59.05	58.77	60.90	60.74
Widowed	24.71	24.46	24.30	24.18	25.50	25.14	24.72	24.44	23.29	22.87
Divorced/legally separated	0.84	0.83	0.79	0.79	0.89	0.91	0.92	0.91	0.86	0.86
Unknown	4.77	4.92	4.56	4.64	4.79	4.95	5.23	5.37	4.74	4.91

Table C.5. By occupation: percentages of matched cases and numbers in C&SD database

(A) 1985-1989

Occupation	1985		1986		1987		1988		1989	
	Matched (n=23725)	C&SD (n=25248)	Matched (n=25237)	C&SD (n=25902)	Matched (n=26125)	C&SD (n=26916)	Matched (n=27141)	C&SD (n=27659)	Matched (n=28045)	C&SD (n=28745)
Professional, technical and related workers	0.89	0.88	0.73	0.73	1.35	1.35	1.20	1.22	1.15	1.16
Administrative and managerial workers	0.29	0.29	0.34	0.35	0.54	0.54	0.51	0.50	0.46	0.46
Clerical and related workers	1.37	1.35	1.19	1.20	2.29	2.27	2.07	2.08	1.89	1.89
Sales workers	3.02	3.10	2.89	2.88	5.10	5.03	4.75	4.73	4.23	4.20
Service workers	3.64	3.68	2.95	2.97	5.36	5.31	5.19	5.20	4.83	4.83
Agriculture, animal husbandry and forestry workers and fishermen	0.81	0.83	0.71	0.71	1.27	1.25	1.18	1.16	1.08	1.07
Production and related workers, transport equipment operators and laborers	9.01	9.04	8.20	8.21	13.42	13.28	12.61	12.64	11.71	11.74
Not applicable (occupation unclassifiable and armed forces)	80.97	80.83	83.00	82.95	70.66	70.98	72.49	72.47	74.65	74.64

(B) 1990-1994

Occupation	1990		1991		1992		1993		1994	
	Matched (n=28581)	C&SD (n=29136)	Matched (n=28020)	C&SD (n=28429)	Matched (n=29854)	C&SD (n=30550)	Matched (n=29494)	C&SD (n=30571)	Matched (n=29032)	C&SD (n=29905)
Professional, technical and related workers	1.15	1.15	1.01	1.01	0.98	0.99	1.18	1.19	1.05	1.09
Administrative and managerial workers	0.42	0.43	0.45	0.46	0.39	0.40	0.35	0.37	0.34	0.35
Clerical and related workers	1.86	1.86	1.68	1.67	1.60	1.60	1.82	1.85	1.82	1.89
Sales workers	4.31	4.31	3.23	3.22	3.39	3.38	4.10	4.07	3.32	3.35
Service workers	5.13	5.15	4.12	4.14	3.87	3.91	4.71	4.67	3.87	3.88
Agriculture, animal husbandry and forestry workers and fishermen	0.93	0.91	0.60	0.60	0.65	0.64	0.84	0.83	0.70	0.69
Production and related workers, transport equipment operators and laborers	11.34	11.39	8.17	8.18	8.69	8.75	10.13	10.17	8.44	8.52
Not applicable (occupation unclassifiable and armed forces)	74.85	74.80	80.74	80.71	80.43	80.32	76.87	76.85	80.46	80.23

Table C.6. Mean (u) and standard deviation (sd) of daily counts of mortality and cumulative number of mortality

		Pre-intervention										Post-intervention											
		Jul85-		Jul-86		Jul-87		Jul-88		Jul-89		Jul-90		Jul-91		Jul-92		Jul93-		Jul94-			
		u	sd	u	sd	u	sd	u	sd	u	sd	u	sd	u	sd	u	sd	u	sd	u	sd		
Daily																							
All causes	All ages	64	(12)	65	(11)	70	(13)	71	(13)	73	(13)	72	(11)	78	(15)	77	(15)	76	(12)	78	(14)		
	65+	41	(10)	42	(9)	47	(11)	48	(10)	50	(11)	50	(9)	56	(13)	55	(12)	55	(11)	58	(12)		
Cardiovascular	All ages	20	(6)	20	(5)	22	(6)	21	(6)	22	(6)	22	(6)	24	(7)	23	(7)	23	(6)	24	(7)		
	65+	15	(5)	15	(4)	17	(6)	16	(5)	17	(5)	17	(5)	19	(6)	18	(6)	18	(6)	19	(6)		
Respiratory	All ages	11	(4)	11	(4)	13	(5)	13	(5)	13	(5)	13	(4)	15	(5)	15	(6)	14	(5)	15	(5)		
	65+	8	(3)	9	(3)	10	(4)	11	(4)	11	(4)	10	(4)	13	(5)	13	(5)	12	(4)	13	(5)		
Accidental	All ages	4	(2)	4	(2)	4	(2)	4	(2)	4	(2)	4	(2)	4	(2)	4	(3)	3	(2)	3	(2)		
Cumulative																							
All causes	All ages	129	(21)	129	(18)	140	(22)	143	(22)	147	(22)	144	(18)	157	(26)	154	(27)	151	(21)	157	(25)		
	65+	82	(18)	84	(16)	94	(19)	96	(18)	101	(19)	100	(15)	112	(22)	110	(22)	110	(19)	115	(21)		
Cardiovascular	All ages	40	(10)	39	(8)	44	(11)	43	(10)	44	(10)	44	(9)	48	(12)	45	(12)	45	(10)	48	(12)		
	65+	29	(8)	29	(7)	34	(9)	33	(9)	34	(9)	34	(8)	38	(10)	36	(11)	36	(9)	39	(11)		
Respiratory	All ages	21	(6)	22	(6)	25	(8)	27	(8)	27	(8)	25	(6)	30	(9)	30	(10)	29	(8)	29	(9)		
	65+	17	(6)	17	(5)	20	(7)	22	(7)	22	(7)	20	(5)	26	(8)	26	(9)	24	(7)	25	(8)		
Accidental	All ages	8	(3)	7	(3)	8	(3)	8	(3)	9	(3)	8	(3)	8	(3)	8	(4)	7	(4)	7	(4)		

Table C.7. Summary statistics of pollutants (in $\mu\text{g}/\text{m}^3$) by types of areas in different time periods

Pollutants	Whole					Pre-intervention					Post-intervention				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
NO₂	3627	9.33	381.60	62.79	31.75	1804	9.33	381.60	70.65	39.15	1823	12.78	130.80	55.01	19.18
Industrial	2497	4.91	136.50	51.05	18.68	695	4.91	136.50	49.57	17.55	1802	7.75	133.00	51.62	19.07
Mixed	3626	3.27	381.60	64.73	32.17	1804	3.27	381.60	72.21	39.42	1822	14.46	139.80	57.32	20.26
SO₂	3644	0.44	259.80	30.31	25.63	1821	2.84	259.80	36.33	31.55	1823	0.44	150.90	24.29	15.70
Industrial	2505	0.52	259.30	41.88	33.82	695	1.44	259.30	73.18	39.26	1810	0.52	182.80	29.86	21.71
Mixed	3643	0.39	259.80	24.66	25.39	1821	1.76	259.80	28.79	31.97	1822	0.39	184.60	20.53	15.30
PM₁₀	947	9.00	244.30	59.35	27.19	577	9.00	244.30	58.87	27.57	370	16.99	219.50	60.11	26.60
Industrial	586	13.05	193.80	57.03	27.10	220	15.00	188.00	59.29	28.89	366	13.05	193.80	55.67	25.91
Mixed	945	9.00	245.30	60.44	28.08	577	9.00	244.30	58.95	28.13	368	14.66	245.30	62.77	27.88
O₃	3384	0.00	222.00	33.32	22.81	1569	0.00	216.70	30.46	18.87	1815	0.00	222.00	35.79	25.48
Industrial	2392	0.00	321.00	33.46	25.33	644	2.00	321.00	26.69	19.47	1748	0.00	246.00	35.95	26.75
Mixed	3081	0.00	220.00	34.53	24.94	1552	0.00	146.00	30.72	20.10	1529	0.00	220.00	38.39	28.53

Table C.8. Spearman correlation of particulates species by stations in different assessment periods

		Whole study (10 years)					Pre-intervention (5 years)					Post-intervention				
		CW	KC	KT	SSP	TW	CW	KC	KT	SSP	TW	CW	KC	KT	SSP	TW
Al	CW	1.00	0.89	0.82	0.80	0.85	1.00	0.87	0.80	0.78	0.80	1.00	0.90	0.86	0.82	0.88
	KC	0.89	1.00	0.84	0.81	0.90	0.87	1.00	0.77	0.82	0.90	0.90	1.00	0.87	0.82	0.90
	KT	0.82	0.84	1.00	0.75	0.87	0.80	0.77	1.00	0.72	0.82	0.86	0.87	1.00	0.82	0.88
	SSP	0.80	0.81	0.75	1.00	0.84	0.78	0.82	0.72	1.00	0.76	0.82	0.82	0.82	1.00	0.87
	TW	0.85	0.90	0.87	0.84	1.00	0.80	0.90	0.82	0.76	1.00	0.88	0.90	0.88	0.87	1.00
Fe	CW	1.00	0.82	0.66	0.74	0.81	1.00	0.80	0.62	0.72	0.73	1.00	0.83	0.70	0.79	0.83
	KC	0.82	1.00	0.72	0.75	0.86	0.80	1.00	0.76	0.82	0.86	0.83	1.00	0.72	0.76	0.86
	KT	0.66	0.72	1.00	0.64	0.70	0.62	0.76	1.00	0.67	0.72	0.70	0.72	1.00	0.65	0.70
	SSP	0.74	0.75	0.64	1.00	0.79	0.72	0.82	0.67	1.00	0.79	0.79	0.76	0.65	1.00	0.80
	TW	0.81	0.86	0.70	0.79	1.00	0.73	0.86	0.72	0.79	1.00	0.83	0.86	0.70	0.80	1.00
Mn	CW	1.00	0.83	0.72	0.71	0.82	1.00	0.80	0.55	0.64	0.79	1.00	0.83	0.83	0.79	0.82
	KC	0.83	1.00	0.81	0.68	0.83	0.80	1.00	0.76	0.69	0.90	0.83	1.00	0.81	0.68	0.81
	KT	0.72	0.81	1.00	0.67	0.82	0.55	0.76	1.00	0.66	0.76	0.83	0.81	1.00	0.73	0.84
	SSP	0.71	0.68	0.67	1.00	0.74	0.64	0.69	0.66	1.00	0.77	0.79	0.68	0.73	1.00	0.73
	TW	0.82	0.83	0.82	0.74	1.00	0.79	0.90	0.76	0.77	1.00	0.82	0.81	0.84	0.73	1.00
Ni	CW	1.00	0.53	0.41	0.48	0.54	1.00	0.40	0.17	0.27	0.27	1.00	0.47	0.56	0.57	0.57
	KC	0.53	1.00	0.44	0.51	0.76	0.40	1.00	-0.03	0.55	0.40	0.47	1.00	0.65	0.57	0.67
	KT	0.41	0.44	1.00	0.40	0.51	0.17	-0.03	1.00	0.18	0.21	0.56	0.65	1.00	0.52	0.62
	SSP	0.48	0.51	0.40	1.00	0.54	0.27	0.55	0.18	1.00	0.57	0.57	0.57	0.52	1.00	0.53
	TW	0.54	0.76	0.51	0.54	1.00	0.27	0.40	0.21	0.57	1.00	0.57	0.67	0.62	0.53	1.00
V	CW	1.00	0.49	0.40	0.62	0.51	1.00	0.35	0.02	0.38	0.24	1.00	0.56	0.84	0.85	0.64
	KC	0.49	1.00	0.28	0.43	0.81	0.35	1.00	-0.14	0.46	0.33	0.56	1.00	0.61	0.70	0.78
	KT	0.40	0.28	1.00	0.58	0.42	0.02	-0.14	1.00	0.23	0.21	0.84	0.61	1.00	0.81	0.67
	SSP	0.62	0.43	0.58	1.00	0.52	0.38	0.46	0.23	1.00	0.58	0.85	0.70	0.81	1.00	0.73
	TW	0.51	0.81	0.42	0.52	1.00	0.24	0.33	0.21	0.58	1.00	0.64	0.78	0.67	0.73	1.00

		Whole study (10 years)					Pre-intervention (5 years)					Post-intervention				
		CW	KC	KT	SSP	TW	CW	KC	KT	SSP	TW	CW	KC	KT	SSP	TW
Ni	CW	1.00	0.53	0.41	0.48	0.54	1.00	0.40	0.17	0.27	0.27	1.00	0.47	0.56	0.57	0.57
	KC	0.53	1.00	0.44	0.51	0.76	0.40	1.00	-0.03	0.55	0.40	0.47	1.00	0.65	0.57	0.67
	KT	0.41	0.44	1.00	0.40	0.51	0.17	-0.03	1.00	0.18	0.21	0.56	0.65	1.00	0.52	0.62
	SSP	0.48	0.51	0.40	1.00	0.54	0.27	0.55	0.18	1.00	0.57	0.57	0.57	0.52	1.00	0.53
	TW	0.54	0.76	0.51	0.54	1.00	0.27	0.40	0.21	0.57	1.00	0.57	0.67	0.62	0.53	1.00
V	CW	1.00	0.49	0.40	0.62	0.51	1.00	0.35	0.02	0.38	0.24	1.00	0.56	0.84	0.85	0.64
	KC	0.49	1.00	0.28	0.43	0.81	0.35	1.00	-0.14	0.46	0.33	0.56	1.00	0.61	0.70	0.78
	KT	0.40	0.28	1.00	0.58	0.42	0.02	-0.14	1.00	0.23	0.21	0.84	0.61	1.00	0.81	0.67
	SSP	0.62	0.43	0.58	1.00	0.52	0.38	0.46	0.23	1.00	0.58	0.85	0.70	0.81	1.00	0.73
	TW	0.51	0.81	0.42	0.52	1.00	0.24	0.33	0.21	0.58	1.00	0.64	0.78	0.67	0.73	1.00
Pb	CW	1.00	0.89	0.70	0.79	0.86	1.00	0.73	0.51	0.64	0.71	1.00	0.93	0.82	0.88	0.91
	KC	0.89	1.00	0.76	0.85	0.88	0.73	1.00	0.55	0.72	0.80	0.93	1.00	0.81	0.88	0.91
	KT	0.70	0.76	1.00	0.77	0.75	0.51	0.55	1.00	0.63	0.56	0.82	0.81	1.00	0.86	0.80
	SSP	0.79	0.85	0.77	1.00	0.83	0.64	0.72	0.63	1.00	0.74	0.88	0.88	0.86	1.00	0.86
	TW	0.86	0.88	0.75	0.83	1.00	0.71	0.80	0.56	0.74	1.00	0.91	0.91	0.80	0.86	1.00
Zn	CW	1.00	0.61	0.47	0.53	0.63	1.00	0.53	0.30	0.41	0.37	1.00	0.66	0.62	0.65	0.73
	KC	0.61	1.00	0.49	0.34	0.52	0.53	1.00	0.29	0.38	0.32	0.66	1.00	0.54	0.37	0.61
	KT	0.47	0.49	1.00	0.57	0.65	0.30	0.29	1.00	0.60	0.53	0.62	0.54	1.00	0.65	0.69
	SSP	0.53	0.34	0.57	1.00	0.63	0.41	0.38	0.60	1.00	0.61	0.65	0.37	0.65	1.00	0.64
	TW	0.63	0.52	0.65	0.63	1.00	0.37	0.32	0.53	0.61	1.00	0.73	0.61	0.69	0.64	1.00