

附錄一 模擬數據結果

本研究針對雙供給平均需求點散布之路網條件，去除了因路網對稱性而相對相同的配置情形，進行了136種完全不同的雙供給配置組合(S1、S2之組合)情境，並根據研究所發展之指標：平均旅行成本(Average Travel Cost, ATC)、最大旅行成本(Maximum Travel Cost, MTC)、繞路成本(Longest Detour, LD)、平均互援成本(Average Mutual Assistance Cost, AMAC)、路網成本(Network Cost, NC)，以觀察各種情境下之路網特性，並用以描繪主研究「防災存活路網設計模型」中圖7.3~圖7.7之趨勢，所有指標並已與初始路網總長度相除，轉換為百分率數值概念(%)。

S1	S2	To Center	Between	ATC	MTC	LD	AMAC	NC
40	8	9.52	9.52	4.23	7.14	15.48	46.43	71.43
40	15	8.33	8.33	4.10	7.14	13.10	44.05	71.43
40	16	7.14	7.14	4.23	7.14	13.10	40.48	71.43
40	29	8.33	5.95	4.36	7.14	26.19	40.48	70.24
40	36	9.52	4.76	4.76	8.33	23.81	40.48	70.24
40	30	7.14	4.76	4.50	7.14	26.19	38.10	72.62
40	37	8.33	3.57	4.76	8.33	30.95	36.31	69.05
40	32	7.14	2.38	5.29	9.52	28.57	32.14	79.76
40	39	8.33	1.19	5.55	10.71	33.33	30.36	82.14
33	9	7.14	7.14	4.36	8.33	14.29	39.88	75.00
33	11	7.14	4.76	4.63	8.33	25.00	36.90	71.43
33	15	7.14	7.14	4.10	5.95	16.67	38.69	73.81
33	16	5.95	5.95	4.23	7.14	10.71	37.50	75.00
33	18	5.95	3.57	4.90	8.33	25.00	33.33	76.19
33	19	7.14	2.38	5.42	10.71	26.19	33.33	80.95
33	29	7.14	4.76	4.36	7.14	20.24	36.31	71.43
33	30	5.95	3.57	4.36	7.14	26.19	33.33	70.24
33	32	5.95	1.19	5.16	9.52	28.57	28.57	78.57
33	37	7.14	4.76	4.63	8.33	21.43	36.31	76.19
33	39	7.14	2.38	5.42	10.71	33.33	30.36	79.76
32	16	4.76	4.76	4.50	7.14	17.86	34.52	76.19
32	18	4.76	2.38	4.76	7.14	17.86	28.57	76.19
7	1	11.90	2.38	6.22	13.10	28.57	38.69	88.10
7	2	10.71	3.57	5.42	11.90	35.71	34.52	75.00
7	4	10.71	4.76	4.63	9.52	20.24	38.10	75.00
7	5	11.90	7.14	4.63	9.52	16.67	44.05	79.76
7	8	10.71	1.19	6.22	11.90	38.10	30.95	79.76
7	9	9.52	2.38	5.42	10.71	26.19	34.52	77.38
7	10	8.33	3.57	4.36	9.52	15.48	35.71	76.19
7	11	9.52	4.76	4.36	8.33	13.10	37.50	72.62
7	12	10.71	5.95	4.36	8.33	13.10	39.29	73.81
7	13	11.90	7.14	4.36	9.52	15.48	41.07	73.81
7	14	10.71	1.19	5.95	11.90	38.10	32.14	82.14

S1	S2	To Center	Between	ATC	MTC	LD	AMAC	NC
7	15	9.52	2.38	5.69	10.71	44.05	36.31	75.00
7	16	8.33	3.57	5.03	9.52	28.57	36.31	80.95
7	17	7.14	4.76	4.10	8.33	13.10	35.12	77.38
7	18	8.33	5.95	4.10	7.14	13.10	36.90	75.00
7	19	9.52	7.14	4.10	7.14	13.10	42.26	73.81
7	20	10.71	8.33	3.97	8.33	15.48	44.64	72.62
7	22	8.33	3.57	5.55	9.52	30.95	32.74	72.62
7	23	7.14	4.76	4.63	8.33	26.19	35.12	73.81
7	25	7.14	7.14	3.84	5.95	13.10	41.07	73.81
7	26	8.33	8.33	3.70	5.95	13.10	42.26	73.81
7	28	10.71	3.57	5.16	9.52	17.86	35.71	73.81
7	29	9.52	4.76	4.90	8.33	16.67	35.12	76.19
7	30	8.33	5.95	4.50	8.33	13.10	39.88	73.81
7	31	7.14	7.14	4.10	8.33	16.67	39.88	75.00
7	32	8.33	8.33	4.10	7.14	17.86	45.24	80.95
7	33	9.52	9.52	3.84	5.95	16.67	44.64	72.62
7	34	10.71	10.71	3.70	5.95	15.48	47.02	72.62
7	35	11.90	4.76	5.16	9.52	16.67	38.69	79.76
7	36	10.71	5.95	5.03	8.33	16.67	38.69	73.81
7	37	9.52	7.14	4.36	8.33	16.67	42.26	72.62
7	38	8.33	8.33	4.10	9.52	22.62	45.24	75.00
7	39	9.52	9.52	4.10	8.33	16.67	44.64	71.43
7	40	10.71	10.71	3.97	7.14	20.24	48.21	71.43
7	41	11.90	11.90	4.10	8.33	19.05	55.36	69.05
7	43	11.90	7.14	4.63	9.52	17.86	42.26	76.19
7	44	10.71	8.33	4.23	8.33	13.10	44.64	70.24
7	46	10.71	10.71	3.97	8.33	16.67	47.02	72.62
7	47	11.90	11.90	4.10	5.95	15.48	50.60	72.62
10	1	8.33	3.57	4.90	9.52	15.48	33.33	78.57
10	2	7.14	2.38	5.29	9.52	15.48	32.14	80.95
10	8	7.14	2.38	5.29	11.90	20.24	33.93	83.33
10	9	5.95	1.19	5.29	9.52	22.62	30.36	80.95
10	14	7.14	4.76	4.23	9.52	15.48	34.52	77.38
10	15	5.95	3.57	4.90	9.52	15.48	30.95	75.00
10	16	4.76	2.38	5.55	10.71	20.24	28.57	76.19
10	22	4.76	4.76	4.50	9.52	15.48	33.33	77.38
10	23	3.57	3.57	4.23	8.33	26.19	29.17	77.38
10	28	7.14	7.14	4.23	9.52	15.48	39.29	79.76
10	29	5.95	5.95	4.23	8.33	15.48	36.31	79.76
10	30	4.76	4.76	4.50	7.14	15.48	32.14	85.71
10	31	3.57	3.57	3.97	5.95	15.48	30.36	73.81
10	35	8.33	8.33	3.97	8.33	15.48	43.45	73.81

S1	S2	To Center	Between	ATC	MTC	LD	AMAC	NC
10	36	7.14	7.14	3.97	7.14	15.48	40.48	73.81
10	37	5.95	5.95	3.97	5.95	15.48	37.50	73.81
10	38	4.76	4.76	3.97	5.95	15.48	34.52	73.81
10	43	8.33	8.33	3.70	5.95	15.48	43.45	75.00
10	44	7.14	7.14	3.70	5.95	15.48	39.29	76.19
14	1	10.71	3.57	5.42	11.90	38.10	34.52	82.14
14	2	9.52	4.76	5.29	11.90	48.81	38.10	75.00
14	4	9.52	7.14	4.50	9.52	20.24	44.05	75.00
14	5	10.71	8.33	4.23	8.33	13.10	44.64	71.43
14	8	9.52	2.38	5.82	11.90	25.00	36.31	86.90
14	9	8.33	3.57	5.16	10.71	17.86	38.69	80.95
14	11	8.33	5.95	4.23	8.33	13.10	36.31	76.19
14	12	9.52	7.14	4.23	8.33	13.10	38.10	76.19
14	13	10.71	8.33	3.97	8.33	13.10	44.64	73.81
14	15	8.33	1.19	5.82	10.71	33.33	29.17	79.76
14	16	7.14	2.38	5.29	11.90	20.24	33.93	80.95
14	18	7.14	4.76	3.97	7.14	10.71	35.71	70.24
14	19	8.33	5.95	3.97	7.14	15.48	38.69	72.62
14	20	9.52	7.14	3.97	8.33	10.71	47.02	75.00
14	22	7.14	2.38	5.55	9.52	35.71	29.76	82.14
14	23	5.95	3.57	4.63	8.33	26.19	33.93	76.19
14	25	5.95	5.95	3.70	5.95	13.10	36.31	73.81
14	26	7.14	7.14	3.70	5.95	10.71	39.29	73.81
14	28	9.52	2.38	5.55	9.52	20.24	32.14	82.14
14	29	8.33	3.57	5.16	9.52	15.48	33.33	80.95
14	30	7.14	4.76	5.03	9.52	22.62	34.52	77.38
14	31	5.95	5.95	3.97	8.33	26.19	33.93	80.95
14	32	7.14	7.14	3.97	7.14	17.86	39.29	77.38
14	33	8.33	8.33	3.84	5.95	16.67	41.67	73.81
14	34	9.52	9.52	3.70	5.95	10.71	46.43	75.00
14	35	10.71	3.57	5.42	10.71	20.24	35.71	78.57
14	36	9.52	4.76	5.03	9.52	20.24	34.52	76.19
14	37	8.33	5.95	4.76	9.52	20.24	41.07	70.24
14	38	7.14	7.14	4.23	9.52	20.24	39.88	79.76
14	39	8.33	8.33	4.63	9.52	26.19	40.48	70.24
14	40	9.52	9.52	3.97	7.14	13.10	46.43	71.43
14	41	10.71	10.71	3.70	5.95	13.10	49.40	71.43
14	43	10.71	5.95	4.63	9.52	20.24	38.10	75.00
14	44	9.52	7.14	4.50	9.52	20.24	39.29	75.00
14	46	9.52	9.52	4.23	9.52	20.24	47.62	75.00
14	47	10.71	10.71	3.97	8.33	15.48	48.21	71.43
17	1	7.14	4.76	4.63	8.33	13.10	37.50	76.19

S1	S2	To Center	Between	ATC	MTC	LD	AMAC	NC
17	2	5.95	3.57	4.50	8.33	13.10	31.55	79.76
17	8	5.95	3.57	4.50	8.33	13.10	31.55	77.38
17	9	4.76	2.38	4.90	8.33	14.29	27.98	79.76
17	10	3.57	1.19	4.76	8.33	15.48	26.79	78.57
17	14	5.95	3.57	4.76	11.90	20.24	33.33	84.52
17	15	4.76	2.38	4.90	8.33	19.05	30.36	79.76
17	16	3.57	1.19	5.03	8.33	17.86	25.60	79.76
17	22	3.57	3.57	4.50	8.33	13.10	29.17	76.19
17	23	2.38	1.19	4.63	8.33	19.05	25.60	79.76
17	28	5.95	5.95	4.10	8.33	13.10	36.90	76.19
17	29	4.76	4.76	4.36	8.33	19.05	33.93	76.19
17	30	3.57	3.57	4.36	7.14	19.05	29.76	80.95
17	31	2.38	2.38	4.46	8.33	19.05	22.62	67.86
17	35	7.14	7.14	4.10	8.33	19.05	39.88	78.57
17	36	5.95	5.95	4.63	8.33	23.81	35.12	71.43
17	37	4.76	4.76	4.10	5.95	19.05	31.55	75.00
17	38	3.57	3.57	3.97	5.95	19.05	30.36	72.62
17	43	7.14	7.14	3.84	5.95	19.05	37.50	75.00
17	44	5.95	5.95	3.70	5.95	13.10	35.12	73.81

