

Appendix

Table A1. Transportation, Socio-Economic and Geographical Characteristics

No	City	Travel Distance	Travel Time	Mode Share (%)						Population	Area Size	Population Density
				Train	Bus	Car	Motor bike	Bicycle	Walk			
1	Akashi	14.06	30.01	15.81	0.72	51.32	2.63	11.91	17.61	297057	49.52	5998.43
2	Chiba	15.49	33.28	21.28	1.25	47.35	0.55	9.09	20.48	960051	272.25	3526.33
3	Chitose	14.45	23.77	5.19	1.39	72.56	0.39	7.26	13.2	95481	594.6	160.58
4	Dazaifu	12.97	28.95	12.61	1.6	60.96	2.98	6.78	15.07	71245	30.05	2370.56
5	Fukuoka	10.87	28.05	10.8	6.64	44.79	1.46	13.84	22.45	1474326	351.62	4192.97
6	Gifu	10.56	25.68	2.98	2.06	70.4	0.75	10.87	12.95	416625	204.31	2039.15
7	Hirosaki	10.48	21.37	1.43	1.67	73.9	0.89	11.38	10.73	180370	523.47	344.57
8	Hiroshima	14.41	29.21	7.8	3.97	56.31	3.13	10.8	17.99	1186928	915.56	1296.39
9	Hitoyoshi	12.87	21.07	1.03	0.31	76.68	2.09	8.9	10.99	34911	215.6	161.92
10	Imabari	11.74	22.47	1.13	0.5	71.25	3.91	12.51	10.7	167872	423.44	396.45
11	Ina	12.72	23.88	1.26	0.7	84.38	0.63	2.9	10.12	70258	668.1	105.16
12	Inagi	14.39	33.84	29.77	1.77	35.33	1.11	8.88	23.14	86169	17.74	4857.84
13	Isahaya	11.6	25.6	3.36	1.26	75.45	2.46	2.79	14.68	141011	327.09	431.11
14	Iwata	10.88	26.17	2.74	0.77	76.4	2.63	7.04	10.41	170960	162.52	1051.93
15	Izumisano	13.22	29.41	16.72	0.25	52.5	3.74	13.86	12.92	101685	56.92	1786.54
16	Joetsu	12.59	24.03	1.95	0.67	76.8	0.64	7.84	12.11	201794	973.25	207.34
17	Kagoshima	10.31	26.26	2.23	6.03	63.25	3.99	5.07	19.44	609250	558.86	1090.17
18	Kainan	12.02	26.77	5.69	0.31	68.91	5.14	9.77	10.17	54838	102.29	536.11
19	Kameyama	11.94	25.87	3.34	0.18	80.32	1.97	4.07	10.11	50073	191.56	261.4
20	Kanazawa	10.59	23.38	2.36	3.2	65.54	0.84	9.42	18.64	452144	469.54	962.95
21	Kasugai	10.18	27.64	10.41	1.05	65.05	1.23	8.84	13.41	309854	92.67	3343.77
22	Kawasaki	12.83	34.38	32.01	3.11	28.76	1.03	10.56	24.52	1433765	143.05	10022.62
23	Kitakyushu	13.03	28.37	6.39	5.4	63.11	1.36	5.5	18.25	981891	503.61	1949.7
24	Kobe	17.93	33.15	23.15	3.98	37.04	3.89	6.43	25.51	1553789	560.51	2772.09
25	Kochi	8.39	21.73	0.9	0.77	64.4	4.35	16.67	12.91	338909	312.01	1086.21
26	Komatsu	11.42	22.37	1.63	0.07	80.62	0.53	7.12	10.02	108980	372.91	292.25
27	Koriyama	11.17	27.26	2.04	1.53	74.73	0.62	7.92	13.17	326075	756.17	431.22
28	Kumamoto	9.82	25.82	1.79	3.57	63.31	3.65	12.88	14.8	734287	397.18	1848.73
29	Kure	11.44	26.38	6.05	4.26	58.17	3.12	8.47	19.93	238046	356.41	667.9
30	Kyoto	9.41	27.86	16.25	4.78	36.06	3.96	18.68	20.27	1420719	831.77	1708.07
31	Matsudo	14.22	35.8	25.82	0.99	42.79	1.42	9.94	19.04	485962	61.22	7938.6
32	Matsue	12.32	22.59	1.5	2.03	77.1	1.29	6.03	12.05	206404	579.04	356.46
33	Matsuyama	11.18	24.45	2.51	1.3	57.19	7.45	16.03	15.52	518050	435.91	1188.43
34	Morioka	12.16	25.83	2.51	3.76	62.18	0.85	12	18.71	295680	885.7	333.84
35	Nagato	15.28	24.69	0.89	1.36	82.22	1.36	5.28	8.89	37384	365.08	102.4
36	Nagoya	10.7	29.61	18.31	1.86	48.82	1.59	11.82	17.6	2254891	327.29	6889.55
37	Nankoku	10.49	22.96	2.09	0.32	74.95	3.75	8.16	10.73	48688	127.13	382.98
38	Nara	11.9	31.56	17.69	3.16	50.24	3.25	9.14	16.53	364969	277.95	1313.09
39	Odawara	14.11	30	15.48	1.36	50.7	1.76	12	18.71	196493	113.85	1725.91
40	Ome	11.5	28.8	14.15	1.11	57.17	0.81	9.61	17.15	137833	103.25	1334.9
41	Omihachiman	12.55	26.65	9.17	0.31	68.92	1.27	11.18	9.15	82429	180.18	457.47

No	City	Travel Distance	Travel Time	Mode Share (%)						Population	Area Size	Population Density
				Train	Bus	Car	Motor bike	Bicycle	Walk			
42	Osaka	14.71	31.37	30.73	2.17	16.53	1.69	22.42	26.45	2667830	225.48	11831.98
43	Otake	14.37	27.64	8.41	0.49	60.74	2.14	12.59	15.63	28430	77.53	366.69
44	Otaru	10.46	24.4	4.51	9.7	59.84	0.51	2.07	23.36	127224	243.34	522.82
45	Oyabe	13.22	23.86	3.35	0.43	83.39	0.64	5.42	6.77	31669	134.34	235.73
46	Saitama	12.34	32.14	24.02	1.41	37.04	0.64	15.1	21.8	1253582	217.26	5770.09
47	Sakai	12.07	29.5	18.79	0.9	45.83	2.95	16.28	15.26	849107	150.63	5636.88
48	Sapporo	10.58	26.9	12.93	4.81	51.89	0.04	9.78	20.56	1930496	1120.42	1723.02
49	Sendai	11.86	29.2	7.66	3.57	60.66	2.33	7.54	18.24	1049578	785.67	1335.91
50	Shiogama	10.63	27.79	8.78	1	67.48	1.08	4.55	17.12	56256	17.17	3276.07
51	Shizuoka	10.27	25.01	4.71	1.56	57.82	3.51	16.76	15.64	718774	1414.13	508.28
52	Soja	13.41	27.62	5.31	0.19	77.81	0.83	7.05	8.8	67765	214.23	316.32
53	Takasaki	11.58	26.3	3.96	0.5	74.1	0.42	9.88	11.14	375229	459.9	815.89
54	Tokai	10.26	25.67	9.5	0.17	69.23	0.94	5.76	14.4	112310	45.14	2488.25
55	Tokorozawa	12.68	32.38	23.19	0.85	39.31	1.11	13.28	22.26	342925	71.94	4766.56
56	Tokushima	9.04	22.24	0.56	1.37	68.66	2.59	17.12	9.7	257718	193.54	1331.59
57	Toride	13.62	30.63	16.3	0.93	60.61	0.46	7.18	14.51	109595	69.78	1570.47
58	Toyohashi	12.04	26.48	6.59	0.42	68.47	1.29	9.82	13.41	379582	261.39	1452.17
59	Toyonaka	11.17	31.11	26.73	2.34	26.98	2.01	16.36	25.58	400086	36.58	10938.42
60	Tsushima	11.25	27.51	8.76	0.45	66.13	0.97	11.94	11.75	65114	25.35	2568.12
61	Uji	11.9	28.82	19.82	0.35	47.82	6.34	9.05	16.62	191802	67.72	2832.17
62	Urasoe	6.76	22.48	0.8	2.5	71.53	5.88	2.05	17.24	114217	19.53	5846.88
63	Usuki	15.4	25.53	3.53	0.29	77.11	2.24	6.45	10.39	41486	296.3	140.01
64	Utsunomiya	12.43	26.52	3.38	1.29	75.66	1.13	9.73	8.81	518878	416.57	1245.6
65	Yamanashi	10.58	23.85	3.93	0.18	80.81	1.9	4.3	8.88	37116	290.22	127.89
66	Yasugi	11.43	22.63	1.71	0.61	79.76	1.48	7.01	9.44	41213	425.89	96.77
67	Yokkaichi	11.81	26.83	6.79	0.74	71.97	1.22	7.33	11.95	313203	207.45	1509.79
68	Yokohama	12.42	33.41	29.41	5.19	31.65	1.12	5.71	26.92	3714200	436.88	8501.69
69	Yuzawa	15.09	25.04	1.22	0.4	82.34	0.31	6.98	8.74	49851	790.1	63.09

- City: Name of city
- Travel Distance: Average Travel Distance each Trips in Kilometers
- Travel Time: Average Travel Time each Trips in Minutes
- Mode Share: Share of Transport Mode Usage (%)
 - Train: Share of Train Usage (%)
 - Bus: Share of Bus Usage (%)
 - Car: Share of Car Usage (%)
 - Motorbike: Share of Motorbike Usage (%)
 - Bicycle : Share of Bicycle Usage (%)
 - Walk: Share of Walk (%)
- Population: Number of Population (people)
- Area Size: Area Size of the City in Square Kilometers
- Population Density: Density of City Population (People per Square Kilometers)

Table A2. Pairwise Distance Calculation (1)

NO	CITY	Commercial			School			Medical			Community Center		
		ED	ND	TT	ED	ND	TT	ED	ND	TT	ED	ND	TT
1	Akashi	5.32	5.57	14.38	5.93	6.27	16.07	6.28	5.96	15.28	6.06	6.51	16.87
2	Chiba	7.20	8.14	22.77	9.54	9.81	26.37	8.47	8.80	24.33	9.18	9.35	24.92
3	Chitose	4.05	4.75	7.92	8.63	8.19	12.83	4.01	3.82	6.82	7.73	8.49	13.33
4	Dazaifu	2.44	2.98	8.26	2.42	2.97	8.46	2.15	2.47	7.07	2.37	3.27	8.96
5	Fukuoka	5.67	6.65	19.67	9.73	10.41	29.41	7.26	7.95	23.25	9.30	10.12	28.58
6	Gifu	4.58	5.63	15.23	7.48	7.97	20.42	5.90	6.28	16.68	7.30	7.76	19.64
7	Hirosaki	3.94	4.45	9.69	9.38	8.95	16.71	3.41	3.94	8.81	9.09	9.87	17.75
8	Hiroshima	6.81	8.43	19.39	11.86	13.35	29.66	8.24	9.12	21.34	12.97	14.31	31.14
9	Hitooyoshi	2.03	2.59	4.98	6.37	8.50	14.20	1.69	2.12	4.24	5.08	5.73	9.96
10	Imabari	6.89	10.41	17.68	6.56	7.07	14.38	4.59	5.07	10.81	7.75	8.36	16.59
11	Ina	4.98	5.61	11.13	8.25	8.80	16.73	4.32	4.21	8.52	7.46	7.93	14.97
12	Inagi	2.26	2.97	8.46	2.36	2.93	8.08	2.67	3.02	8.47	2.29	2.67	7.75
13	Isahaya	6.23	7.44	13.90	9.63	10.94	19.53	5.60	6.70	12.76	10.49	11.77	20.31
14	Iwata	4.58	5.98	12.79	6.65	6.89	14.42	5.31	6.00	12.88	6.84	7.01	14.54
15	Izumisano	2.44	3.38	9.59	3.35	3.54	9.82	2.87	3.50	9.23	1.84	2.03	5.89
16	Joetsu	9.04	10.67	18.84	14.30	14.38	24.87	10.48	10.65	18.97	17.87	18.54	31.28
17	Kagoshima	4.98	8.04	19.70	10.27	11.62	25.43	6.96	7.62	18.71	13.11	14.44	29.72
18	Kainan	4.90	5.66	11.20	6.73	8.08	15.01	4.41	4.85	9.59	5.18	5.69	11.21
19	Kameyama	4.50	5.04	10.22	5.78	6.26	12.19	3.09	4.05	8.49	5.43	6.56	12.54
20	Kanazawa	4.14	5.00	11.66	7.06	7.47	16.47	5.50	5.58	13.05	7.05	7.33	16.07
21	Kasugai	4.96	5.36	13.31	6.14	6.37	15.46	4.88	5.55	13.66	5.15	5.92	13.99
22	Kawasaki	9.68	10.07	29.96	10.64	10.56	31.51	9.78	9.90	29.48	10.52	10.54	31.41
23	Kitakyushu	9.93	10.93	27.69	11.75	12.47	30.77	10.96	11.66	29.10	10.96	11.41	28.04
24	Kobe	10.09	11.26	23.60	12.80	13.96	28.77	11.96	12.44	26.43	11.49	11.53	23.13
25	Kochi	4.25	5.22	12.29	6.15	7.22	16.35	4.02	4.91	11.66	9.46	10.93	22.73
26	Komatsu	3.70	4.70	8.67	6.58	6.85	12.02	4.09	4.54	8.68	5.88	6.05	11.21
27	Koriyama	5.26	6.28	13.81	10.68	10.72	21.14	5.22	5.88	13.18	13.67	13.58	25.28
28	Kumamoto	5.63	7.04	18.01	8.32	9.12	22.41	7.13	7.22	18.47	8.29	8.73	21.08
29	Kure	8.10	7.45	16.24	7.92	9.53	20.04	6.53	7.30	15.89	10.13	11.71	23.33
30	Kyoto	5.17	6.95	21.70	9.46	10.34	30.57	6.99	7.80	24.52	9.75	9.69	26.77
31	Matsudo	3.95	4.79	14.73	4.66	5.18	15.74	0.50	4.71	14.52	4.36	4.23	12.64
32	Matsue	6.16	7.42	15.17	9.93	10.98	21.34	6.45	7.43	15.49	11.04	12.01	22.95
33	Matsuyama	5.26	6.35	15.76	8.07	8.72	20.04	5.83	6.56	16.24	13.58	13.54	25.11
34	Morioka	4.52	5.89	13.26	9.65	9.74	19.35	5.72	5.46	12.56	14.52	14.98	21.26
35	Nagato	7.81	9.12	13.38	9.89	10.26	14.38	7.84	8.22	11.88	8.99	10.61	14.88
36	Nagoya	6.94	8.23	22.88	9.71	9.83	27.28	8.41	8.83	24.58	8.81	10.36	27.78
37	Nankoku	3.19	4.60	9.06	4.74	5.61	10.92	3.36	3.73	7.60	4.97	5.79	11.03
38	Nara	5.80	6.83	18.86	9.19	10.54	27.52	5.33	5.71	16.82	10.89	12.67	31.67
39	Odawara	3.34	4.17	11.47	4.68	5.39	14.18	3.42	4.11	11.46	2.66	2.99	7.60
40	Ome	3.82	4.12	11.06	3.75	4.43	11.73	3.94	4.26	11.23	5.07	5.29	13.20
41	Omihachiman	3.30	3.91	8.56	4.58	4.84	10.16	3.35	3.45	7.77	5.19	5.58	11.37
42	Osaka	4.93	6.71	21.34	8.35	8.78	28.06	7.78	7.77	24.81	2.08	2.36	7.97
43	Otake	1.78	2.90	6.92	4.80	7.15	13.48	1.76	2.75	6.42	5.15	6.78	12.81
44	Otaru	4.86	4.96	8.53	8.27	8.01	13.02	4.43	4.69	8.12	7.78	8.09	12.48
45	Oyabe	3.00	3.64	6.93	3.75	4.43	11.73	2.87	3.43	6.38	5.29	5.46	9.94
46	Saitama	6.12	7.48	25.90	4.77	4.97	9.19	6.64	6.97	24.30	6.97	7.25	25.25
47	Sakai	4.92	6.42	18.09	8.20	8.57	29.55	5.52	6.50	18.40	4.90	5.38	15.16
48	Sapporo	7.79	8.20	20.08	12.96	11.63	27.42	8.00	9.22	22.56	12.06	12.16	27.92
49	Sendai	6.46	7.40	18.11	9.89	10.41	24.34	7.36	7.80	19.06	10.85	11.13	25.16
50	Shiogama	2.03	2.35	6.08	1.58	2.18	5.84	0.87	1.79	4.78	0.46	0.77	2.01
51	Shizuoka	7.40	8.50	22.23	12.12	13.85	31.74	7.88	8.35	22.04	15.81	20.40	43.60
52	Soja	3.79	4.48	8.99	6.53	7.49	13.72	3.33	3.92	8.09	5.82	6.77	12.16

NO	CITY	Commercial			School			Medical			Community Center		
		ED	ND	TT	ED	ND	TT	ED	ND	TT	ED	ND	TT
53	Takasaki	6.08	7.05	16.58	9.97	10.10	21.89	6.90	7.28	16.92	8.19	8.20	18.56
54	Tokai	2.83	3.95	9.70	3.49	3.73	9.13	3.84	3.75	9.19	2.60	2.93	7.51
55	Tokorozawa	4.16	4.44	13.02	4.62	5.16	14.69	3.37	3.82	11.76	4.47	4.45	12.79
56	Tokushima	4.12	5.23	12.26	6.17	7.01	15.98	3.79	4.89	11.53	6.74	7.83	17.63
57	Toride	4.69	4.95	10.49	4.88	5.33	11.20	4.40	4.62	9.88	4.91	5.21	10.81
58	Toyohashi	4.47	5.26	13.06	7.03	7.37	17.54	5.17	5.30	13.19	7.44	7.78	18.45
59	Toyonaka	3.74	4.03	12.72	3.87	4.27	13.54	3.61	3.88	12.28	4.86	4.72	14.57
60	Tsushima	2.89	3.14	7.29	3.24	3.44	8.07	2.18	2.92	6.89	2.79	3.08	7.10
61	Uji	2.49	3.52	9.97	3.81	4.52	11.81	3.20	3.95	10.71	2.96	3.21	9.04
62	Urasoe	2.12	2.90	7.19	1.83	2.46	6.11	1.51	2.47	6.22	1.25	1.83	4.35
63	Usuki	5.14	6.46	11.08	8.40	9.31	15.73	5.06	5.55	9.51	9.70	10.47	17.59
64	Utsunomiya	5.44	6.71	15.00	8.14	9.17	19.35	6.61	6.72	15.21	11.35	11.04	21.96
65	Yamanashi	3.29	4.41	9.82	6.51	7.44	15.40	3.85	4.11	9.63	5.99	6.64	13.04
66	Yasugi	6.59	8.31	13.89	8.70	10.10	16.52	5.97	6.49	11.59	11.89	13.17	21.77
67	Yokkaichi	4.86	5.96	16.06	6.62	7.82	19.20	5.85	6.27	16.54	8.13	8.50	20.29
68	Yokohama	9.34	12.11	32.80	11.68	13.71	37.99	12.28	12.84	35.29	10.78	14.24	38.49
69	Yuzawa	6.81	8.48	13.69	10.55	11.08	17.83	7.88	7.80	12.56	9.53	11.69	18.48

- ED: Euclidean-based Distance (in Kilometers)
- ND: Network-based Distance (in Kilometers)
- TT: Travel Time (in Minutes)

Table A3. Pairwise Distance Calculation (2)

NO	CITY	Park			School & Medical			School & Community Centers			School, Community Center & Park		
		ED	ND	TT	ED	ND	TT	ED	ND	TT	ED	ND	TT
1	Akashi	5.48	6.14	15.76	6.35	6.01	15.41	6.49	6.36	16.36	6.50	6.28	16.15
2	Chiba	8.91	9.45	25.46	5.37	9.00	24.82	8.98	9.73	35.13	7.89	9.59	25.81
3	Chitose	4.00	4.66	8.55	2.56	4.82	8.20	8.94	8.00	12.57	5.62	5.26	9.30
4	Dazaifu	2.18	3.35	9.74	5.72	2.67	7.65	2.58	2.93	8.31	3.05	3.30	9.55
5	Fukuoka	10.47	11.32	32.18	8.46	8.27	24.17	9.10	10.32	33.19	10.84	10.84	30.91
6	Gifu	7.37	8.03	20.10	6.68	6.52	17.23	7.97	7.95	20.26	7.99	8.01	20.20
7	Hirosaki	3.26	4.17	10.12	5.72	5.19	10.84	9.15	9.16	13.02	6.52	6.07	12.83
8	Hiroshima	10.47	12.22	28.23	9.52	9.56	22.17	11.65	13.60	34.08	11.75	12.57	28.57
9	Hitoyoshi	1.33	1.75	3.78	2.98	3.22	5.98	6.73	7.95	6.44	5.32	6.18	10.63
10	Imabari	4.23	4.90	11.41	5.49	5.48	11.57	5.49	14.16	13.60	6.70	6.66	14.06
11	Ina	5.67	5.92	11.75	5.48	5.28	10.46	8.59	8.62	16.37	8.38	8.42	16.02
12	Inagi	1.96	3.03	8.69	2.77	3.03	8.48	2.70	3.10	10.68	2.69	3.04	8.65
13	Isahaya	4.01	4.44	9.17	7.33	7.63	14.26	9.45	11.25	19.94	8.63	9.20	16.83
14	Iwata	3.90	4.66	10.36	6.45	6.18	13.19	7.25	6.98	14.57	6.04	5.88	12.61
15	Izumisano	3.46	3.54	9.97	3.08	3.54	9.39	3.47	3.48	9.71	3.53	3.54	9.94
16	Joetsu	5.97	5.82	10.89	12.44	11.84	20.91	16.06	16.93	28.92	12.86	14.54	25.12
17	Kagoshima	7.99	9.32	22.23	7.91	8.28	19.97	10.06	11.96	25.93	8.91	9.93	23.10
18	Kainan	5.08	5.93	11.23	5.46	5.68	11.03	6.98	7.64	14.38	7.10	7.63	14.33
19	Kameyama	3.66	3.88	7.59	4.35	4.61	9.50	5.95	6.06	11.82	4.47	4.64	9.09
20	Kanazawa	6.88	7.07	16.18	6.21	5.92	13.68	7.65	7.51	16.55	7.52	7.27	16.42
21	Kasugai	5.88	5.66	14.16	6.03	5.72	14.05	6.57	6.38	17.46	6.19	5.94	14.72
22	Kawasaki	10.84	10.58	31.30	10.55	9.88	29.43	10.23	10.70	38.88	11.15	10.66	31.58
23	Kitakyushu	12.11	13.32	32.01	11.78	11.70	29.29	11.13	12.30	36.40	12.85	13.27	31.95
24	Kobe	14.46	15.59	30.84	12.74	12.69	26.90	12.48	14.09	36.94	14.62	15.30	30.66
25	Kochi	6.45	7.08	16.46	5.11	5.29	12.45	8.01	8.74	19.15	6.88	7.45	17.06

NO	CITY	Park			School & Medical			School & Community Centers			School, Community Center & Park		
		ED	ND	TT	ED	ND	TT	ED	ND	TT	ED	ND	TT
26	Komatsu	6.26	6.59	10.91	5.47	5.24	9.74	6.88	6.66	11.88	6.88	6.75	11.60
27	Koriyama	5.84	5.82	13.52	7.36	6.96	14.99	10.56	12.04	23.09	10.34	9.88	19.85
28	Kumamoto	8.13	8.79	22.18	7.51	7.47	19.00	8.90	9.17	24.48	7.47	8.88	22.33
29	Kure	8.75	10.37	21.80	7.12	7.68	16.62	9.34	11.95	23.74	8.85	10.21	21.44
30	Kyoto	9.34	9.65	29.91	8.18	8.23	25.52	9.06	10.42	33.70	9.98	10.04	30.50
31	Matsudo	4.42	4.93	15.14	4.85	4.77	14.67	9.82	11.36	24.94	4.99	5.03	15.40
32	Matsue	8.51	9.14	17.67	7.99	8.17	16.72	5.09	5.22	18.84	9.00	10.71	20.68
33	Matsuyama	8.65	9.69	22.66	6.97	6.86	16.81	9.66	11.49	24.69	9.46	9.61	22.24
34	Morioka	7.10	7.68	17.58	6.70	6.24	13.85	9.70	10.27	20.13	8.72	8.34	18.28
35	Nagato	8.15	10.84	14.68	9.04	8.92	12.73	11.20	12.37	17.67	11.96	11.86	16.74
36	Nagoya	10.89	10.85	29.89	9.38	8.95	24.95	9.28	9.88	34.42	11.14	10.65	29.33
37	Nankoku	1.64	3.37	6.95	4.20	4.45	8.89	5.31	5.75	11.07	5.46	5.99	11.56
38	Nara	5.07	6.28	18.70	9.07	9.83	26.01	9.07	11.38	34.26	7.64	8.22	22.92
39	Odawara	5.29	5.75	14.28	4.25	4.31	11.90	5.06	5.56	14.28	5.39	5.77	14.47
40	Ome	3.11	3.38	9.85	4.05	4.30	11.33	4.36	4.71	12.24	3.86	3.98	10.99
41	Omihachiman	1.86	2.37	5.65	3.84	3.79	8.42	5.20	5.11	10.58	4.42	4.34	9.38
42	Osaka	8.40	9.05	28.64	7.96	7.87	25.15	8.85	8.78	34.07	7.97	8.94	28.42
43	Otake	2.92	3.87	8.90	3.38	3.98	8.51	5.28	7.05	9.42	3.79	5.10	10.66
44	Otaru	8.07	9.96	15.64	6.26	5.51	9.35	7.03	8.21	13.28	10.48	9.48	15.04
45	Oyabe	0.51	0.55	1.60	4.23	4.00	7.40	5.61	5.29	9.65	5.42	5.09	9.34
46	Saitama	7.44	8.12	28.19	7.57	7.26	25.28	8.52	8.43	40.07	8.44	8.22	28.51
47	Sakai	5.94	6.70	18.86	6.50	6.51	18.41	6.90	7.05	22.85	6.71	6.76	19.04
48	Sapporo	14.18	12.52	29.63	10.90	9.21	22.44	12.45	11.62	32.39	14.20	12.22	28.93
49	Sendai	10.57	10.63	25.57	8.14	7.92	19.19	9.57	10.55	24.52	10.80	10.76	25.52
50	Shiogama	2.42	2.68	7.00	1.74	1.87	4.97	1.61	1.88	4.94	2.36	2.58	6.76
51	Shizuoka	9.77	10.23	26.04	9.26	9.26	23.76	12.37	15.03	33.99	11.46	12.12	29.24
52	Soja	2.62	3.68	7.97	4.70	4.84	9.58	6.89	7.40	13.46	5.06	5.39	10.55
53	Takasaki	6.86	7.16	17.17	8.24	7.75	17.79	9.04	9.64	21.11	8.63	8.37	19.13
54	Tokai	3.18	3.62	9.05	3.87	3.76	9.22	3.62	3.64	9.00	3.69	3.67	9.13
55	Tokorozawa	4.26	4.72	14.33	4.04	4.01	12.19	5.05	5.17	16.66	4.82	4.88	14.51
56	Tokushima	6.25	7.57	17.09	4.99	5.21	12.22	6.86	7.34	16.60	6.94	7.50	16.95
57	Toride	3.42	4.47	9.69	4.91	4.80	10.22	5.44	5.40	13.25	4.81	4.88	10.39
58	Toyohashi	6.01	6.44	15.64	5.84	5.65	13.94	7.71	7.54	17.92	6.95	6.83	16.45
59	Toyonaka	3.90	4.36	13.74	3.96	3.92	12.44	4.32	4.40	14.89	4.23	4.36	13.76
60	Tsushima	1.22	1.54	3.96	3.03	3.01	7.09	3.49	3.48	9.12	3.27	3.25	7.68
61	Uji	2.88	3.80	11.31	3.86	4.04	10.94	4.06	4.45	11.76	3.66	3.99	11.48
62	Urasoe	2.33	2.83	7.11	2.16	2.48	6.23	2.01	2.57	6.40	2.27	2.76	6.94
63	Usuki	0.54	0.64	1.68	6.57	6.90	11.77	9.31	9.68	16.29	9.03	9.36	15.81
64	Utsunomiya	8.13	8.29	18.69	7.58	7.11	15.90	8.96	9.45	19.77	7.99	8.55	19.00
65	Yamanashi	1.84	2.13	5.82	5.28	5.25	11.64	6.78	7.10	14.43	6.30	6.59	13.70
66	Yasugi	10.32	11.97	20.57	8.25	8.17	14.00	10.48	11.97	19.64	11.49	11.98	19.63
67	Yokkaichi	6.99	7.64	19.36	6.73	6.57	17.09	8.08	8.06	19.66	7.71	7.77	19.47
68	Yokohama	12.45	13.56	37.47	12.76	12.73	34.96	12.62	13.79	49.80	13.58	13.74	37.88
69	Yuzawa	4.19	4.53	7.79	9.57	9.18	14.78	9.51	11.41	18.22	10.28	9.70	15.67

- ED: Euclidean-based Distance (in Kilometers)
- ND: Network-based Distance (in Kilometers)
- TT: Travel Time (in Minutes)

Table A4. Agglomeration Index (1)

NO	CITY	AI (Euclidean Distance)							AI (Network Distance)						
		S	M	CC	P	SM	SC	SCP	S	M	CC	P	SM	SC	SCP
1	Akashi	1.11	1.18	1.14	1.03	1.19	1.22	1.22	1.13	1.07	1.17	1.10	1.08	1.14	1.13
2	Chiba	1.32	1.18	1.27	1.24	0.75	1.25	1.10	1.20	1.08	1.15	1.16	1.11	1.19	1.18
3	Chitose	2.13	0.99	1.91	0.99	0.63	2.21	1.39	1.72	0.80	1.79	0.98	1.01	1.69	1.11
4	Dazaifu	0.99	0.88	0.97	0.89	2.34	1.06	1.25	1.00	0.83	1.10	1.13	0.90	0.99	1.11
5	Fukuoka	1.71	1.28	1.64	1.85	1.49	1.60	1.91	1.57	1.20	1.52	1.70	1.24	1.55	1.63
6	Gifu	1.63	1.29	1.59	1.61	1.46	1.74	1.75	1.42	1.12	1.38	1.43	1.16	1.41	1.42
7	Hirosaki	2.38	0.87	2.31	0.83	1.45	2.33	1.66	2.01	0.89	2.22	0.94	1.17	2.06	1.36
8	Hiroshima	1.74	1.21	1.90	1.54	1.40	1.71	1.73	1.58	1.08	1.70	1.45	1.13	1.61	1.49
9	Hitoyoshi	3.13	0.83	2.50	0.65	1.47	3.31	2.62	3.29	0.82	2.22	0.68	1.24	3.07	2.39
10	Imabari	0.95	0.67	1.13	0.61	0.80	0.80	0.97	0.68	0.49	0.80	0.47	0.53	1.36	0.64
11	Ina	1.66	0.87	1.50	1.14	1.10	1.72	1.68	1.57	0.75	1.41	1.05	0.94	1.54	1.50
12	Inagi	1.04	1.18	1.01	0.87	1.23	1.20	1.19	0.99	1.02	0.90	1.02	1.02	1.04	1.02
13	Isahaya	1.55	0.90	1.68	0.64	1.18	1.52	1.39	1.47	0.90	1.58	0.60	1.02	1.51	1.24
14	Iwata	1.45	1.16	1.49	0.85	1.41	1.58	1.32	1.15	1.00	1.17	0.78	1.03	1.17	0.98
15	Izumisano	1.37	1.17	0.75	1.41	1.26	1.42	1.45	1.05	1.04	0.60	1.05	1.05	1.03	1.05
16	Joetsu	1.58	1.16	1.98	0.66	1.38	1.78	1.42	1.35	1.00	1.74	0.54	1.11	1.59	1.36
17	Kagoshima	2.06	1.40	2.63	1.60	1.59	2.02	1.79	1.44	0.95	1.80	1.16	1.03	1.49	1.23
18	Kainan	1.37	0.90	1.06	1.04	1.11	1.42	1.45	1.43	0.86	1.01	1.05	1.00	1.35	1.35
19	Kameyama	1.28	0.69	1.20	0.81	0.97	1.32	0.99	1.24	0.80	1.30	0.77	0.92	1.20	0.92
20	Kanazawa	1.70	1.33	1.70	1.66	1.50	1.85	1.82	1.50	1.12	1.47	1.41	1.18	1.50	1.45
21	Kasugai	1.24	0.98	1.04	1.19	1.22	1.33	1.25	1.19	1.03	1.10	1.06	1.07	1.19	1.11
22	Kawasaki	1.10	1.01	1.09	1.12	1.09	1.06	1.15	1.05	0.98	1.05	1.05	0.98	1.06	1.06
23	Kitakyushu	1.18	1.10	1.10	1.22	1.19	1.12	1.29	1.14	1.07	1.04	1.22	1.07	1.13	1.21
24	Kobe	1.27	1.19	1.14	1.43	1.26	1.24	1.45	1.24	1.11	1.02	1.39	1.13	1.25	1.36
25	Kochi	1.45	0.95	2.22	1.52	1.20	1.88	1.62	1.38	0.94	2.09	1.36	1.01	1.67	1.43
26	Komatsu	1.78	1.10	1.59	1.69	1.48	1.86	1.86	1.46	0.97	1.29	1.40	1.11	1.42	1.43
27	Koriyama	2.03	0.99	2.60	1.11	1.40	2.01	1.97	1.71	0.94	2.16	0.93	1.11	1.92	1.57
28	Kumamoto	1.48	1.27	1.47	1.44	1.33	1.58	1.33	1.29	1.02	1.24	1.25	1.06	1.30	1.26
29	Kure	0.98	0.81	1.25	1.08	0.88	1.15	1.09	1.28	0.98	1.57	1.39	1.03	1.61	1.37
30	Kyoto	1.83	1.35	1.89	1.81	1.58	1.75	1.93	1.49	1.12	1.39	1.39	1.18	1.50	1.44
31	Matsudo	1.18	0.13	1.10	1.12	1.23	2.49	1.26	1.08	0.98	0.88	1.03	1.00	2.37	1.05
32	Matsue	1.61	1.05	1.79	1.38	1.30	0.83	1.46	1.48	1.00	1.62	1.23	1.10	0.70	1.44
33	Matsuyama	1.54	1.11	2.58	1.65	1.33	1.84	1.80	1.37	1.03	2.13	1.52	1.08	1.81	1.51
34	Morioka	2.14	1.27	3.22	1.57	1.48	2.15	1.93	1.65	0.93	2.54	1.30	1.06	1.74	1.42
35	Nagato	1.27	1.00	1.15	1.04	1.16	1.43	1.53	1.13	0.90	1.16	1.19	0.98	1.36	1.30
36	Nagoya	1.40	1.21	1.27	1.57	1.35	1.34	1.60	1.19	1.07	1.26	1.32	1.09	1.20	1.29
37	Nankoku	1.48	1.05	1.56	0.51	1.31	1.66	1.71	1.22	0.81	1.26	0.73	0.97	1.25	1.30
38	Nara	1.58	0.92	1.88	0.87	1.56	1.56	1.32	1.54	0.84	1.86	0.92	1.44	1.67	1.20
39	Odawara	1.40	1.02	0.80	1.58	1.28	1.52	1.62	1.29	0.99	0.72	1.38	1.04	1.33	1.38
40	Ome	0.98	1.03	1.33	0.82	1.06	1.14	1.01	1.08	1.03	1.28	0.82	1.04	1.14	0.96
41	Omihachiman	1.39	1.02	1.57	0.56	1.16	1.58	1.34	1.24	0.88	1.43	0.61	0.97	1.31	1.11
42	Osaka	1.69	1.58	0.42	1.70	1.62	1.80	1.62	1.31	1.16	0.35	1.35	1.17	1.31	1.33
43	Otake	2.70	0.99	2.90	1.64	1.90	2.97	2.13	2.46	0.95	2.34	1.33	1.37	2.43	1.75
44	Otaru	1.70	0.91	1.60	1.66	1.29	1.45	2.16	1.62	0.95	1.63	2.01	1.11	1.66	1.91
45	Oyabe	1.25	0.96	1.76	0.17	1.41	1.87	1.80	1.22	0.94	1.50	0.15	1.10	1.46	1.40
46	Saitama	0.78	1.08	1.14	1.21	1.24	1.39	1.38	0.66	0.93	0.97	1.09	0.97	1.13	1.10
47	Sakai	1.66	1.12	1.00	1.21	1.32	1.40	1.36	1.34	1.01	0.84	1.04	1.01	1.10	1.05
48	Sapporo	1.66	1.03	1.55	1.82	1.40	1.60	1.82	1.42	1.12	1.48	1.53	1.12	1.42	1.49
49	Sendai	1.53	1.14	1.68	1.64	1.26	1.48	1.67	1.41	1.06	1.50	1.44	1.07	1.43	1.45
50	Shiogama	0.78	0.43	0.23	1.19	0.86	0.79	1.17	0.93	0.76	0.33	1.14	0.80	0.80	1.10

NO	CITY	AI (Euclidean Distance)							AI (Network Distance)						
		S	M	CC	P	SM	SC	SCP	S	M	CC	P	SM	SC	SCP
51	Shizuoka	1.64	1.07	2.14	1.32	1.25	1.67	1.55	1.63	0.98	2.40	1.20	1.09	1.77	1.43
52	Soja	1.72	0.88	1.54	0.69	1.24	1.82	1.33	1.67	0.87	1.51	0.82	1.08	1.65	1.20
53	Takasaki	1.64	1.13	1.35	1.13	1.36	1.49	1.42	1.43	1.03	1.16	1.02	1.10	1.37	1.19
54	Tokai	1.23	1.36	0.92	1.12	1.37	1.28	1.31	0.94	0.95	0.74	0.92	0.95	0.92	0.93
55	Tokorozawa	1.11	0.81	1.07	1.02	0.97	1.21	1.16	1.16	0.86	1.00	1.06	0.90	1.16	1.10
56	Tokushima	1.50	0.92	1.64	1.52	1.21	1.66	1.68	1.34	0.93	1.50	1.45	0.99	1.40	1.43
57	Toride	1.04	0.94	1.05	0.73	1.05	1.16	1.03	1.08	0.93	1.05	0.90	0.97	1.09	0.99
58	Toyohashi	1.58	1.16	1.67	1.35	1.31	1.73	1.56	1.40	1.01	1.48	1.22	1.07	1.43	1.30
59	Toyonaka	1.04	0.96	1.30	1.04	1.06	1.16	1.13	1.06	0.96	1.17	1.08	0.97	1.09	1.08
60	Tsushima	1.12	0.75	0.97	0.42	1.05	1.21	1.13	1.10	0.93	0.98	0.49	0.96	1.11	1.04
61	Uji	1.53	1.29	1.19	1.16	1.55	1.63	1.47	1.28	1.12	0.91	1.08	1.15	1.26	1.13
62	Urasoe	0.86	0.71	0.59	1.10	1.02	0.95	1.07	0.85	0.85	0.63	0.98	0.85	0.89	0.95
63	Usuki	1.63	0.98	1.89	0.10	1.28	1.81	1.76	1.44	0.86	1.62	0.10	1.07	1.50	1.45
64	Utsunomiya	1.50	1.22	2.09	1.49	1.39	1.65	1.47	1.37	1.00	1.64	1.23	1.06	1.41	1.27
65	Yamanashi	1.98	1.17	1.82	0.56	1.60	2.06	1.91	1.69	0.93	1.51	0.48	1.19	1.61	1.50
66	Yasugi	1.32	0.91	1.80	1.57	1.25	1.59	1.74	1.21	0.78	1.58	1.44	0.98	1.44	1.44
67	Yokkaichi	1.36	1.20	1.67	1.44	1.39	1.66	1.59	1.31	1.05	1.43	1.28	1.10	1.35	1.30
68	Yokohama	1.25	1.31	1.15	1.33	1.37	1.35	1.45	1.13	1.06	1.18	1.12	1.05	1.14	1.13
69	Yuzawa	1.55	1.16	1.40	0.62	1.41	1.40	1.51	1.31	0.92	1.38	0.53	1.08	1.35	1.14

- S: School
- M: Medical
- CC: Community Center
- P: Park
- SM: School & Medical
- SCC: School & Community Center
- SCP: School, Community Center, and Park

Table A5. Agglomeration Index (2)

NO	CITY	AI (Travel Time by Car)						
		S	M	CC	P	SM	SC	SCP
1	Akashi	1.12	1.06	1.17	1.10	1.07	1.14	1.12
2	Chiba	1.16	1.07	1.09	1.12	1.09	1.54	1.13
3	Chitose	1.62	0.86	1.68	1.08	1.04	1.59	1.17
4	Dazaifu	1.02	0.86	1.08	1.18	0.93	1.01	1.16
5	Fukuoka	1.49	1.18	1.45	1.64	1.23	1.69	1.57
6	Gifu	1.34	1.10	1.29	1.32	1.13	1.33	1.33
7	Hirosaki	1.73	0.91	1.83	1.05	1.12	1.34	1.32
8	Hiroshima	1.53	1.10	1.61	1.46	1.14	1.76	1.47
9	Hitoyoshi	2.85	0.85	2.00	0.76	1.20	1.29	2.14
10	Imabari	0.81	0.61	0.94	0.65	0.65	0.77	0.80
11	Ina	1.50	0.77	1.35	1.06	0.94	1.47	1.44
12	Inagi	0.96	1.00	0.92	1.03	1.00	1.26	1.02
13	Isahaya	1.40	0.92	1.46	0.66	1.03	1.43	1.21
14	Iwata	1.13	1.01	1.14	0.81	1.03	1.14	0.99
15	Izumisano	1.02	0.96	0.61	1.04	0.98	1.01	1.04
16	Joetsu	1.32	1.01	1.66	0.58	1.11	1.54	1.33
17	Kagoshima	1.29	0.95	1.51	1.13	1.01	1.32	1.17
18	Kainan	1.34	0.86	1.00	1.00	0.98	1.28	1.28

NO	CITY	AI (Travel Time by Car)						
		S	M	CC	P	SM	SC	SCP
19	Kameyama	1.19	0.83	1.23	0.74	0.93	1.16	0.89
20	Kanazawa	1.41	1.12	1.38	1.39	1.17	1.42	1.41
21	Kasugai	1.16	1.03	1.05	1.06	1.06	1.31	1.11
22	Kawasaki	1.05	0.98	1.05	1.04	0.98	1.30	1.05
23	Kitakyushu	1.11	1.05	1.01	1.16	1.06	1.31	1.15
24	Kobe	1.22	1.12	0.98	1.31	1.14	1.56	1.30
25	Kochi	1.33	0.95	1.85	1.34	1.01	1.56	1.39
26	Komatsu	1.39	1.00	1.29	1.26	1.12	1.37	1.34
27	Koriyama	1.53	0.95	1.83	0.98	1.09	1.67	1.44
28	Kumamoto	1.24	1.03	1.17	1.23	1.05	1.36	1.24
29	Kure	1.23	0.98	1.44	1.34	1.02	1.46	1.32
30	Kyoto	1.41	1.13	1.23	1.38	1.18	1.55	1.41
31	Matsudo	1.07	0.99	0.86	1.03	1.00	1.69	1.05
32	Matsue	1.41	1.02	1.51	1.16	1.10	1.24	1.36
33	Matsuyama	1.27	1.03	1.59	1.44	1.07	1.57	1.41
34	Morioka	1.46	0.95	1.60	1.33	1.04	1.52	1.38
35	Nagato	1.07	0.89	1.11	1.10	0.95	1.32	1.25
36	Nagoya	1.19	1.07	1.21	1.31	1.09	1.50	1.28
37	Nankoku	1.21	0.84	1.22	0.77	0.98	1.22	1.28
38	Nara	1.46	0.89	1.68	0.99	1.38	1.82	1.22
39	Odawara	1.24	1.00	0.66	1.25	1.04	1.24	1.26
40	Ome	1.06	1.01	1.19	0.89	1.02	1.11	0.99
41	Omihachiman	1.19	0.91	1.33	0.66	0.98	1.24	1.10
42	Osaka	1.32	1.16	0.37	1.34	1.18	1.60	1.33
43	Otake	1.95	0.93	1.85	1.29	1.23	1.36	1.54
44	Otaru	1.53	0.95	1.46	1.83	1.10	1.56	1.76
45	Oyabe	1.69	0.92	1.43	0.23	1.07	1.39	1.35
46	Saitama	0.35	0.94	0.98	1.09	0.98	1.55	1.10
47	Sakai	1.63	1.02	0.84	1.04	1.02	1.26	1.05
48	Sapporo	1.37	1.12	1.39	1.48	1.12	1.61	1.44
49	Sendai	1.34	1.05	1.39	1.41	1.06	1.35	1.41
50	Shiogama	0.96	0.79	0.33	1.15	0.82	0.81	1.11
51	Shizuoka	1.43	0.99	1.96	1.17	1.07	1.53	1.32
52	Soja	1.53	0.90	1.35	0.89	1.07	1.50	1.17
53	Takasaki	1.32	1.02	1.12	1.04	1.07	1.27	1.15
54	Tokai	0.94	0.95	0.77	0.93	0.95	0.93	0.94
55	Tokorozawa	1.13	0.90	0.98	1.10	0.94	1.28	1.11
56	Tokushima	1.30	0.94	1.44	1.39	1.00	1.35	1.38
57	Toride	1.07	0.94	1.03	0.92	0.97	1.26	0.99
58	Toyohashi	1.34	1.01	1.41	1.20	1.07	1.37	1.26
59	Toyonaka	1.06	0.97	1.15	1.08	0.98	1.17	1.08
60	Tsushima	1.11	0.95	0.97	0.54	0.97	1.25	1.05
61	Uji	1.18	1.07	0.91	1.13	1.10	1.18	1.15
62	Urasoe	0.85	0.87	0.61	0.99	0.87	0.89	0.97
63	Usuki	1.42	0.86	1.59	0.15	1.06	1.47	1.43
64	Utsunomiya	1.29	1.01	1.46	1.25	1.06	1.32	1.27
65	Yamanashi	1.57	0.98	1.33	0.59	1.19	1.47	1.40
66	Yasugi	1.19	0.83	1.57	1.48	1.01	1.41	1.41
67	Yokkaichi	1.20	1.03	1.26	1.21	1.06	1.22	1.21
68	Yokohama	1.16	1.08	1.17	1.14	1.07	1.52	1.15
69	Yuzawa	1.30	0.92	1.35	0.57	1.08	1.33	1.14

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- M: Medical

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