

# The Relationship Between Discrete Vector Quantization and the P-Median Problem: Supplemental Tables

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September 18, 2006

**Keywords:** Vector Quantization, P-Median problem, Optimization.

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V	N	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
		Global	85550.67 (—)	—	1809	—	1.38 (—)	—
		MAR	96964.23 (1.13)	8289.11	3.17 (0.00)	0.99	0.06 (0.04)	0.01
		DLA	96964.23 (1.13)	8289.11	3.17 (0.00)	0.99	0.02 (0.01)	0.02
100	5	HAN	87366.79 (1.02)	2417.96	7.60 (0.00)	1.63	4.93 (3.57)	1.36
		WHIT	110346.83 (1.29)	6975.27	4.77 (0.00)	2.16	1.43 (1.04)	0.75
		HAN / DLA	86854.32 (1.02)	1878.22	5.40 (0.00)	1.71	3.53 (2.56)	1.35
		WHIT / DLA	95121.26 (1.11)	5607.15	1.73 (0.00)	1.26	0.88 (0.63)	0.46
		Global	49662.46 (—)	—	1337	—	1.35 (—)	—
		MAR	62340.86 (1.26)	5363.56	3.83 (0.00)	1.12	0.07 (0.05)	0.01
		DLA	62340.86 (1.26)	5363.56	3.83 (0.00)	1.12	0.03 (0.02)	0.01
100	10	HAN	50424.52 (1.02)	891.00	13.10 (0.01)	2.04	19.22 (14.24)	3.19
		WHIT	61417.32 (1.24)	3179.29	8.97 (0.01)	3.48	5.25 (3.89)	1.96
		HAN / DLA	50471.68 (1.02)	835.24	9.63 (0.01)	2.67	14.35 (10.63)	4.01
		WHIT / DLA	57567.51 (1.16)	3029.84	2.93 (0.00)	1.48	2.57 (1.90)	0.99
		Global	32917.83 (—)	—	828	—	1.61 (—)	—
		MAR	43484.59 (1.32)	4264.08	3.80 (0.00)	0.89	0.07 (0.05)	0.01
		DLA	43484.59 (1.32)	4264.08	3.80 (0.00)	0.89	0.04 (0.02)	0.01
100	15	HAN	33232.97 (1.01)	410.56	16.60 (0.02)	2.91	35.45 (22.02)	6.01
		WHIT	43947.73 (1.34)	2664.03	12.17 (0.01)	3.16	10.09 (6.27)	2.90
		HAN / DLA	33335.81 (1.01)	451.88	11.27 (0.01)	2.56	24.31 (15.10)	5.59
		WHIT / DLA	39959.61 (1.21)	1475.95	3.67 (0.00)	1.83	4.33 (2.69)	2.02
		Global	24166.57 (—)	—	618	—	1.80 (—)	—
		MAR	33685.45 (1.39)	3614.01	3.93 (0.01)	0.91	0.07 (0.04)	0.01
		DLA	33685.45 (1.39)	3614.01	3.93 (0.01)	0.91	0.05 (0.03)	0.01
100	20	HAN	24457.71 (1.01)	287.32	19.27 (0.03)	3.14	36.68 (20.38)	10.17
		WHIT	32445.75 (1.34)	2241.30	15.60 (0.03)	4.94	10.85 (6.03)	5.35
		HAN / DLA	24424.46 (1.01)	367.30	13.37 (0.02)	1.90	25.27 (14.04)	7.54
		WHIT / DLA	29615.26 (1.23)	2040.26	6.40 (0.01)	3.24	5.75 (3.19)	3.35
		Global	14965.08 (—)	—	311	—	0.88 (—)	—
		MAR	21990.82 (1.47)	2322.26	3.77 (0.01)	0.94	0.06 (0.07)	0.00
		DLA	21990.82 (1.47)	2322.26	3.77 (0.01)	0.94	0.07 (0.07)	0.02
100	30	HAN	15145.78 (1.01)	171.43	24.43 (0.08)	2.43	52.08 (59.18)	6.37
		WHIT	19780.02 (1.32)	822.81	20.53 (0.07)	4.81	14.77 (16.78)	3.76
		HAN / DLA	15169.70 (1.01)	235.84	16.10 (0.05)	3.65	34.09 (38.74)	7.58
		WHIT / DLA	18173.31 (1.21)	779.70	8.27 (0.03)	3.52	6.74 (7.66)	2.31

Table 1: Data on problem instances with  $|V| = 100$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

V	N	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
		Global	246928.61 (—)	—	15968	—	42.42 (—)	—
		MAR	276367.05 (1.12)	13634.66	3.80 (0.00)	1.35	0.62 (0.01)	0.08
		DLA	276367.05 (1.12)	13634.66	3.80 (0.00)	1.35	0.03 (0.00)	0.01
250	5	HAN	254048.97 (1.03)	4874.21	9.53 (0.00)	2.18	22.53 (0.53)	4.93
		WHIT	335922.84 (1.36)	21145.84	4.13 (0.00)	2.11	4.71 (0.11)	1.84
		HAN / DLA	252794.56 (1.02)	4776.74	7.40 (0.00)	2.18	17.23 (0.41)	5.28
		WHIT / DLA	275340.70 (1.12)	11604.24	1.07 (0.00)	0.25	2.75 (0.06)	0.36
		Global	142291.92 (—)	—	9638	—	196.09 (—)	—
		MAR	160751.79 (1.13)	8891.15	4.50 (0.00)	1.28	0.69 (0.00)	0.08
		DLA	160751.79 (1.13)	8891.15	4.50 (0.00)	1.28	0.07 (0.00)	0.02
250	10	HAN	144686.83 (1.02)	1397.11	14.37 (0.00)	3.38	77.14 (0.39)	19.24
		WHIT	182212.58 (1.28)	9965.46	9.03 (0.00)	3.05	19.78 (0.10)	6.83
		HAN / DLA	144651.24 (1.02)	1215.29	9.90 (0.00)	2.75	53.98 (0.28)	18.02
		WHIT / DLA	158340.57 (1.11)	6439.99	1.73 (0.00)	0.87	6.79 (0.03)	1.72
		Global	101244.58 (—)	—	5531	—	21.86 (—)	—
		MAR	121983.31 (1.20)	5246.39	4.23 (0.00)	0.82	0.57 (0.03)	0.14
		DLA	121983.31 (1.20)	5246.39	4.23 (0.00)	0.82	0.08 (0.00)	0.02
250	15	HAN	103210.87 (1.02)	1447.30	19.83 (0.00)	3.31	139.87 (6.40)	39.67
		WHIT	133070.78 (1.31)	5586.15	10.47 (0.00)	3.05	29.87 (1.37)	11.67
		HAN / DLA	103506.48 (1.02)	1465.76	15.23 (0.00)	3.99	105.68 (4.83)	34.58
		WHIT / DLA	118622.97 (1.17)	4879.07	2.97 (0.00)	2.09	10.89 (0.50)	5.07
		Global	78006.26 (—)	—	3972	—	16.34 (—)	—
		MAR	99033.96 (1.27)	5357.31	4.47 (0.00)	1.28	0.45 (0.03)	0.15
		DLA	99033.96 (1.27)	5357.31	4.47 (0.00)	1.28	0.08 (0.01)	0.04
250	20	HAN	78985.13 (1.01)	1018.41	26.77 (0.01)	3.47	188.76 (11.55)	79.03
		WHIT	103036.08 (1.32)	2048.69	15.80 (0.00)	2.94	39.41 (2.41)	20.63
		HAN / DLA	79644.19 (1.02)	1326.23	18.87 (0.00)	3.83	128.35 (7.85)	54.34
		WHIT / DLA	93502.78 (1.20)	3722.01	4.93 (0.00)	2.02	14.90 (0.91)	8.68
		Global	53605.98 (—)	—	2760	—	15.48 (—)	—
		MAR	69682.82 (1.30)	4088.00	4.67 (0.00)	0.96	0.40 (0.03)	0.15
		DLA	69682.82 (1.30)	4088.00	4.67 (0.00)	0.96	0.11 (0.01)	0.06
250	30	HAN	54525.75 (1.02)	532.34	34.43 (0.01)	3.93	300.68 (19.42)	139.59
		WHIT	69653.05 (1.30)	2260.00	23.90 (0.01)	4.82	72.82 (4.70)	45.91
		HAN / DLA	54616.96 (1.02)	574.40	23.23 (0.01)	4.78	213.96 (13.82)	109.91
		WHIT / DLA	64156.57 (1.20)	2606.54	6.83 (0.00)	3.04	21.54 (1.39)	14.50

Table 2: Data on problem instances with  $|V| = 250$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

$ \mathbb{V} $	$N$	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
		Global	501407.97 (—)	—	114294	—	4282.88 (—)	—
		MAR	549777.60 (1.10)	26591.23	4.13 (0.00)	1.25	2.15 (0.00)	0.12
		DLA	549777.60 (1.10)	26591.23	4.13 (0.00)	1.25	0.03 (0.00)	0.01
500	5	HAN	511191.39 (1.02)	7201.95	9.87 (0.00)	2.11	31.22 (0.01)	6.24
		WHIT	648306.88 (1.29)	50385.48	4.27 (0.00)	2.42	7.61 (0.00)	2.62
		HAN / DLA	511004.83 (1.02)	8521.28	8.00 (0.00)	2.84	26.56 (0.01)	10.64
		WHIT / DLA	545965.52 (1.09)	19918.92	1.33 (0.00)	0.61	5.34 (0.00)	1.29
		Global	274236.58 (—)	—	30483	—	299.22 (—)	—
		MAR	311046.20 (1.13)	16103.83	5.20 (0.00)	1.94	3.09 (0.01)	0.74
		DLA	311046.20 (1.13)	16103.83	5.20 (0.00)	1.94	0.12 (0.00)	0.07
500	10	HAN	278217.88 (1.01)	3492.21	17.87 (0.00)	3.51	216.63 (0.72)	90.27
		WHIT	392236.36 (1.43)	19055.32	7.47 (0.00)	3.41	34.08 (0.11)	20.24
		HAN / DLA	277250.25 (1.01)	3842.16	13.10 (0.00)	4.17	161.88 (0.54)	79.07
		WHIT / DLA	309458.05 (1.13)	14132.92	1.17 (0.00)	0.38	14.61 (0.05)	6.13
		Global	209176.79 (—)	—	142286	—	7465.60 (—)	—
		MAR	241080.60 (1.15)	11371.49	4.57 (0.00)	1.19	2.68 (0.00)	1.01
		DLA	241080.60 (1.15)	11371.49	4.57 (0.00)	1.19	0.11 (0.00)	0.07
500	15	HAN	213132.48 (1.02)	1963.72	23.47 (0.00)	4.06	329.44 (0.04)	171.43
		WHIT	276778.90 (1.32)	13252.56	12.40 (0.00)	3.91	55.78 (0.01)	40.46
		HAN / DLA	213871.82 (1.02)	2478.79	15.73 (0.00)	4.60	234.54 (0.03)	157.51
		WHIT / DLA	238216.37 (1.14)	9649.00	1.63 (0.00)	0.85	19.59 (0.00)	14.52
		Global	167475.09 (—)	—	31609	—	3427.54 (—)	—
		MAR	198087.25 (1.18)	6001.96	4.77 (0.00)	1.25	3.61 (0.00)	0.81
		DLA	198087.25 (1.18)	6001.96	4.77 (0.00)	1.25	0.26 (0.00)	0.11
500	20	HAN	171428.21 (1.02)	1849.10	28.63 (0.00)	4.96	939.15 (0.27)	172.05
		WHIT	219462.79 (1.31)	8785.06	16.80 (0.00)	5.37	184.54 (0.05)	61.14
		HAN / DLA	171983.64 (1.03)	2228.37	20.37 (0.00)	5.01	706.38 (0.21)	186.52
		WHIT / DLA	193251.61 (1.15)	4651.41	2.87 (0.00)	1.38	47.11 (0.01)	19.43
		Global	121038.81 (—)	—	14912	—	795.63 (—)	—
		MAR	151675.27 (1.25)	5472.31	5.17 (0.00)	1.23	3.32 (0.00)	0.46
		DLA	151675.27 (1.25)	5472.31	5.17 (0.00)	1.23	0.37 (0.00)	0.11
500	30	HAN	123840.27 (1.02)	954.77	37.93 (0.00)	3.52	1942.48 (2.44)	249.03
		WHIT	157963.85 (1.31)	4979.40	23.60 (0.00)	6.03	331.29 (0.42)	108.69
		HAN / DLA	124195.91 (1.03)	1284.02	27.70 (0.00)	5.03	1414.40 (1.78)	307.38
		WHIT / DLA	144139.45 (1.19)	3200.81	5.53 (0.00)	2.40	96.13 (0.12)	32.92

Table 3: Data on problem instances with  $|\mathbb{V}| = 500$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

$ \mathbb{V} $	$N$	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
		Global	984086.18 (—)	—	5916840	—	675021.47 (—)	—
		MAR	1035941.50 (1.05)	28175.18	4.63 (0.00)	1.63	16.62 (0.00)	0.46
		DLA	1035941.50 (1.05)	28175.18	4.63 (0.00)	1.63	0.05 (0.00)	0.02
1000	5	HAN	992759.74 (1.01)	12359.17	11.07 (0.00)	2.48	130.80 (0.00)	25.49
		WHIT	1248013.17 (1.27)	78594.21	4.30 (0.00)	2.05	34.52 (0.00)	7.80
		HAN / DLA	994052.01 (1.01)	10950.64	7.83 (0.00)	2.96	99.38 (0.00)	31.48
		WHIT / DLA	1035941.50 (1.05)	28175.18	1.00 (0.00)	0.00	25.64 (0.00)	0.90
		Global	561880.17 (—)	—	381953	—	35836.61 (—)	—
		MAR	622804.73 (1.11)	27320.90	5.50 (0.00)	1.31	19.20 (0.00)	5.27
		DLA	622804.73 (1.11)	27320.90	5.50 (0.00)	1.31	0.16 (0.00)	0.09
1000	10	HAN	569926.42 (1.01)	4350.30	17.87 (0.00)	3.17	591.14 (0.02)	292.88
		WHIT	722545.10 (1.29)	36545.88	9.97 (0.00)	4.01	120.76 (0.00)	83.98
		HAN / DLA	571526.60 (1.02)	5577.67	13.60 (0.00)	3.08	460.23 (0.01)	297.97
		WHIT / DLA	621896.74 (1.11)	26224.37	1.07 (0.00)	0.25	43.84 (0.00)	17.92
		MAR	484141.37	13008.80	5.60	1.61	19.41	2.86
		DLA	484141.37	13008.80	5.60	1.61	0.32	0.13
1000	15	HAN	438013.54	3698.46	24.60	4.62	1799.17	535.47
		WHIT	548669.09	18905.32	13.27	4.21	330.82	184.98
		HAN / DLA	438260.47	3142.73	17.63	4.15	1284.11	476.36
		WHIT / DLA	480651.07	11493.93	1.93	1.20	91.87	31.08
		MAR	397533.35	10180.53	5.47	1.20	22.44	3.80
		DLA	397533.35	10180.53	5.47	1.20	0.49	0.16
1000	20	HAN	350785.76	3914.38	30.47	3.78	3378.49	847.30
		WHIT	438809.55	13065.10	18.03	5.05	625.39	255.30
		HAN / DLA	350395.62	4402.96	23.07	5.52	2659.48	886.77
		WHIT / DLA	391928.92	7715.32	2.33	1.56	167.36	106.36
		MAR	299768.69	10665.32	5.50	1.78	18.41	3.40
		DLA	299768.69	10665.32	5.50	1.78	0.54	0.36
1000	30	HAN	254771.90	2621.24	43.90	5.90	5771.88	1896.89
		WHIT	323742.20	9037.45	23.50	6.58	822.20	460.47
		HAN / DLA	254509.68	1784.30	32.10	5.58	4688.76	1570.34
		WHIT / DLA	292226.35	6293.68	4.00	2.29	204.30	142.69

Table 4: Data on problem instances with  $|\mathbb{V}| = 1000$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

V	N	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
1200	5	MAR	1249412.90	35464.89	4.73	1.36	28.76	4.93
		DLA	1249412.90	35464.89	4.73	1.36	0.10	0.06
		HAN	1207857.50	24696.77	10.57	2.85	245.43	132.00
		WHIT	1553473.63	90552.95	4.13	1.74	62.18	22.54
		HAN / DLA	1205400.25	22777.59	6.83	2.46	150.22	65.41
		WHIT / DLA	1249412.90	35464.89	1.00	0.00	43.68	10.48
1200	10	MAR	736012.64	29969.14	6.10	1.77	31.29	6.09
		DLA	736012.64	29969.14	6.10	1.77	0.22	0.11
		HAN	683129.19	6893.83	18.07	3.54	907.38	439.40
		WHIT	901634.31	56638.71	9.30	3.33	180.76	107.99
		HAN / DLA	683498.22	6795.44	13.37	4.00	693.00	361.33
		WHIT / DLA	734120.81	27355.68	1.17	0.38	72.60	28.68
1200	15	MAR	572403.52	19480.09	5.77	1.85	40.90	8.56
		DLA	572403.52	19480.09	5.77	1.85	0.46	0.22
		HAN	514241.08	5038.09	27.43	4.61	3340.03	1078.72
		WHIT	655112.87	23639.95	12.70	4.54	509.45	243.37
		HAN / DLA	516585.32	6968.28	19.83	5.07	2392.81	861.19
		WHIT / DLA	569050.56	18324.46	1.70	0.92	158.24	62.10
1200	20	MAR	468286.07	10547.44	5.50	1.38	31.18	5.91
		DLA	468286.07	10547.44	5.50	1.38	0.43	0.25
		HAN	418904.90	3939.02	34.83	5.00	4274.68	1721.76
		WHIT	531484.83	16695.86	15.93	4.49	593.49	322.54
		HAN / DLA	417541.64	3000.16	24.67	4.74	2980.82	1058.87
		WHIT / DLA	464389.04	10310.56	1.97	1.07	147.45	92.55
1200	30	MAR	359706.27	10112.52	5.97	1.22	32.67	5.76
		DLA	359706.27	10112.52	5.97	1.22	0.76	0.37
		HAN	309488.91	2949.65	44.37	6.05	9333.20	2610.58
		WHIT	388331.32	8913.82	23.83	6.24	1223.01	663.82
		HAN / DLA	310675.27	2447.53	32.80	6.29	6871.89	2360.52
		WHIT / DLA	352012.45	7508.70	3.27	1.23	328.67	181.81

Table 5: Data on problem instances with  $|V| = 1200$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

$ \mathbb{V} $	$N$	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
1500	5	MAR	1551652.53	43929.61	4.80	1.37	69.96	7.40
		DLA	1551652.53	43929.61	4.80	1.37	0.20	0.05
		HAN	1503390.56	14083.52	12.53	3.04	767.93	177.43
		WHIT	1904536.01	113347.05	4.80	2.02	190.91	69.68
		HAN / DLA	1506054.19	10744.71	7.37	3.97	489.43	246.27
		WHIT / DLA	1551652.53	43929.61	1.00	0.00	118.84	13.63
1500	10	MAR	917783.52	40467.16	6.10	1.45	54.93	6.63
		DLA	917783.52	40467.16	6.10	1.45	0.25	0.12
		HAN	840867.27	8020.68	19.03	3.76	1257.71	531.24
		WHIT	1142665.04	53670.50	8.47	3.19	223.21	138.18
		HAN / DLA	842070.23	6816.51	13.53	2.64	923.61	434.55
		WHIT / DLA	916476.71	38917.60	1.10	0.40	105.12	28.03
1500	15	MAR	703636.68	19014.99	6.30	1.97	59.35	10.73
		DLA	703636.68	19014.99	6.30	1.97	0.44	0.22
		HAN	642533.78	11138.11	26.27	6.45	3284.41	1269.00
		WHIT	827843.31	32673.27	11.23	2.88	412.59	255.87
		HAN / DLA	641331.20	10086.16	20.47	5.22	2388.12	1086.98
		WHIT / DLA	700880.54	16071.53	1.30	0.60	160.67	68.07
1500	20	MAR	583472.42	16483.64	6.10	1.69	57.84	9.64
		DLA	583472.42	16483.64	6.10	1.69	0.52	0.24
		HAN	524795.27	5630.94	33.00	4.91	5729.75	1807.96
		WHIT	673580.19	23617.92	14.43	4.00	687.90	378.58
		HAN / DLA	523801.76	3943.07	24.67	4.46	4345.28	1556.88
		WHIT / DLA	580356.51	13859.16	1.50	0.82	195.56	91.99
1500	30	MAR	449847.33	14210.82	5.83	1.34	61.26	11.27
		DLA	449847.33	14210.82	5.83	1.34	0.85	0.45
		HAN	387265.31	3072.85	50.03	7.43	15693.83	3755.70
		WHIT	493636.16	12540.64	23.10	5.03	1724.91	786.75
		HAN / DLA	387445.31	3149.22	34.57	6.55	10721.61	2931.60
		WHIT / DLA	441210.53	9891.62	3.43	2.42	453.67	281.90

Table 6: Data on problem instances with  $|\mathbb{V}| = 1500$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.

V	N	Method	Objective		Iterations		Time	
			$\mu$	$\sigma$	$\mu$	$\sigma$	$\mu$	$\sigma$
		MAR	2075004.18	50857.55	5.57	2.28	163.26	9.73
		DLA	2075004.18	50857.55	5.57	2.28	0.35	0.15
2000	5	HAN	2012217.18	23691.20	11.20	2.55	1319.57	286.16
		WHIT	2597829.55	170896.89	4.53	2.26	337.42	60.52
		HAN / DLA	2014231.69	29140.00	7.30	3.06	915.82	317.02
		WHIT / DLA	2075004.18	50857.55	1.00	0.00	253.69	14.17
		MAR	1181678.48	35824.09	7.47	2.93	140.52	26.02
		DLA	1181678.48	35824.09	7.47	2.93	0.55	0.43
2000	10	HAN	1115155.67	8170.00	20.23	4.28	3098.14	1369.03
		WHIT	1526636.97	67653.43	8.50	3.18	530.78	260.06
		HAN / DLA	1118836.18	13509.42	13.70	3.73	2269.26	1179.16
		WHIT / DLA	1181678.48	35824.09	1.00	0.00	255.89	83.98
		MAR	938668.69	20000.04	5.77	1.41	139.45	24.32
		DLA	938668.69	20000.04	5.77	1.41	0.58	0.38
2000	15	HAN	864152.92	9061.51	28.03	5.62	6831.03	2023.19
		WHIT	1133849.70	48289.12	12.33	3.86	911.15	527.96
		HAN / DLA	862767.01	7864.97	19.90	3.42	4404.01	1858.81
		WHIT / DLA	936515.06	18933.84	1.30	0.65	347.00	161.33
		MAR	771266.70	26732.24	6.00	1.82	130.63	19.75
		DLA	771266.70	26732.24	6.00	1.82	0.70	0.47
2000	20	HAN	700183.77	6135.55	35.80	6.32	11117.92	3296.40
		WHIT	909981.54	34425.87	15.87	3.65	1366.29	703.32
		HAN / DLA	700357.49	7344.56	25.23	7.18	7429.20	3181.22
		WHIT / DLA	768348.43	24686.80	1.47	0.82	344.27	122.73
		MAR	593233.16	18387.39	6.10	1.94	148.86	41.00
		DLA	593233.16	18387.39	6.10	1.94	1.51	0.93
2000	30	HAN	518363.75	3816.94	49.37	6.37	26457.18	5881.93
		WHIT	665332.02	18562.90	23.37	6.88	3048.34	1640.56
		HAN / DLA	518912.75	4046.48	37.10	6.43	19748.13	4970.07
		WHIT / DLA	585938.18	14371.09	2.70	1.64	766.12	412.93

Table 7: Data on problem instances with  $|\mathbb{V}| = 2000$  and varying values of  $N$  and solution methods with  $k = 3$ . The number of runs of each heuristic technique was 30.