

Table D4.53(3) Results of Driving Speed Measurement (in km/h) - Measuring Points 7 to 11 (22/23.04.1998 - weekday)

Time	No. 7		No. 9		No. 10 ac		No. 10 bd		No. 11	
	No. 7 a	No. 7 b	No. 9 a	No. 9 b	No. 10 a	No. 10 c	No. 10 b	No. 10 d	No. 11 a	No. 11 b
07:00 ~ 08:00	87	72	50	56	58	49	42	44	64	36
08:00 ~ 09:00	79	73	52	50	53	49	40	50	53	41
09:00 ~ 10:00	88	75	54	49	56	47	39	41	67	47
10:00 ~ 11:00	83	79	54	51	57	47	40	48	56	47
11:00 ~ 12:00	78	77	58	57	58	50	47	46	90	45
12:00 ~ 13:00	62	79	52	60	55	50	42	47	76	54
13:00 ~ 14:00	60	76	60	60	55	56	43	55	63	59
14:00 ~ 15:00	67	81	46	50	54	51	37	47	67	68
15:00 ~ 16:00	60	87	46	52	60	49	42	50	64	65
16:00 ~ 17:00	70	89	47	51	57	64	46	57	64	69
17:00 ~ 18:00	85	89	49	51	57	59	42	56	62	64
18:00 ~ 19:00	87	74	55	49	53	54	44	58	63	76
19:00 ~ 20:00	58	80	52	46	51	61	43	46	62	54
20:00 ~ 21:00	68	72	50	49	57	65	50	42	51	74
21:00 ~ 22:00	63	78	48	46	57	71	42	46	65	77
22:00 ~ 23:00	76	88	52	52	58	71	52	45	57	72
23:00 ~ 24:00	58	71	50	52	66	71	53	45	83	77
24:00 ~ 01:00	62	84	55	56	64	74	50	41	76	78
01:00 ~ 02:00	53	88	50	46	60	75	52	49	60	77
02:00 ~ 03:00	86	85	50	46	62	74	52	52	67	69
03:00 ~ 04:00	68	86	52	48	65	73	57	52	64	61
04:00 ~ 05:00	60	83	50	51	62	70	52	51	82	72
05:00 ~ 06:00	59	84	51	49	57	68	52	53	52	63
06:00 ~ 07:00	63	74	46	47	55	65	53	51	44	55
Average (daily)	70.00	80.17	51.21	51.00	57.79	60.96	46.33	48.83	64.67	62.5

Table D4.53(4) Results of Driving Speed Measurement (in km/h) - Measuring Points 7 to 11 (25/26.04.1998 - holiday)

Time	No. 7		No. 9		No. 10 ac		No. 10 bd		No. 11	
	No. 7 a	No. 7 b	No. 9 a	No. 9 b	No. 10 a	No. 10 c	No. 10 b	No. 10 d	No. 11 a	No. 11 b
07:00 ~ 08:00	100	78	54	49	58	50	37	49	67	75
08:00 ~ 09:00	77	86	51	50	52	61	37	52	69	73
09:00 ~ 10:00	101	81	48	49	55	52	38	54	66	65
10:00 ~ 11:00	121	89	51	50	56	57	38	51	73	74
11:00 ~ 12:00	88	83	48	51	57	58	44	52	58	73
12:00 ~ 13:00	68	84	48	51	53	57	38	50	61	79
13:00 ~ 14:00	70	97	50	50	54	60	37	51	63	67
14:00 ~ 15:00	74	97	50	48	56	64	40	49	60	82
15:00 ~ 16:00	88	104	48	52	56	63	37	54	74	78
16:00 ~ 17:00	89	100	50	50	58	59	38	55	64	73
17:00 ~ 18:00	90	99	49	50	60	62	41	50	62	70
18:00 ~ 19:00	79	87	50	50	53	66	40	48	63	77
19:00 ~ 20:00	74	86	50	52	50	62	52	44	61	67
20:00 ~ 21:00	82	76	51	49	56	61	55	42	67	69
21:00 ~ 22:00	80	84	50	50	58	68	52	41	61	66
22:00 ~ 23:00	86	84	54	51	59	62	51	42	60	73
23:00 ~ 24:00	102	86	51	51	64	64	57	51	67	58
24:00 ~ 01:00	89	108	52	52	66	69	57	42	66	57
01:00 ~ 02:00	98	84	52	48	62	74	56	54	69	56
02:00 ~ 03:00	99	87	50	48	61	71	57	58	53	64
03:00 ~ 04:00	102	88	50	49	64	72	68	55	63	75
04:00 ~ 05:00	87	80	51	51	61	70	67	51	70	66
05:00 ~ 06:00	85	84	52	47	58	69	65	54	60	66
06:00 ~ 07:00	78	77	50	48	55	65	50	53	54	56
Average (daily)	87.79	87.88	50.42	49.83	57.58	63.17	48.00	50.08	63.79	69.13

Table D4.53(5) Results of Driving Speed Measurement (in km/h) - Measuring Points 12-14, 16, 17 (22/23.04.1998 - weekday)

Time	No. 12		No. 13		No. 14		No. 16		No. 17	
	No. 12 a	No. 12 b	No. 13 a	No. 13 b	No. 14 a	No. 14 b	No. 16 a	No. 16 b	No. 17 a	No. 17 b
07:00 ~ 08:00	52	44	41	37	43	46	40	38	54	76
08:00 ~ 09:00	45	43	41	38	38	44	40	36	53	66
09:00 ~ 10:00	51	42	43	47	43	47	44	37	49	66
10:00 ~ 11:00	52	48	43	39	45	40	42	36	57	64
11:00 ~ 12:00	44	41	43	43	50	40	44	36	67	74
12:00 ~ 13:00	53	40	40	39	46	46	42	35	74	83
13:00 ~ 14:00	52	44	41	42	46	44	46	38	75	87
14:00 ~ 15:00	44	43	37	40	38	44	42	36	70	71
15:00 ~ 16:00	45	45	41	43	40	38	45	38	70	68
16:00 ~ 17:00	51	44	40	40	48	46	44	39	69	69
17:00 ~ 18:00	54	47	43	42	62	41	43	37	68	82
18:00 ~ 19:00	49	42	40	43	52	42	43	41	74	79
19:00 ~ 20:00	47	43	52	52	49	49	43	42	48	51
20:00 ~ 21:00	39	39	59	56	47	57	42	42	55	70
21:00 ~ 22:00	46	40	53	54	44	53	42	42	40	52
22:00 ~ 23:00	36	38	55	57	44	55	42	42	56	74
23:00 ~ 24:00	48	41	52	54	45	63	43	43	57	69
24:00 ~ 01:00	40	39	56	54	46	61	43	46	58	68
01:00 ~ 02:00	40	42	58	56	50	58	44	46	53	68
02:00 ~ 03:00	40	41	56	53	49	60	46	48	51	80
03:00 ~ 04:00	45	39	58	54	52	58	46	48	59	79
04:00 ~ 05:00	41	43	54	50	54	62	48	47	60	66
05:00 ~ 06:00	46	43	56	52	55	64	42	42	50	75
06:00 ~ 07:00	43	42	55	55	36	61	43	42	66	79
Average (daily)	45.96	42.21	48.21	47.5	46.75	50.79	43.29	40.71	59.71	71.5

Table D4.53(6) Results of Driving Speed Measurement (in km/h) - Measuring Points 12-14, 16, 17 (25/26.04.1998 - holiday)

Time	No. 12		No. 13		No. 14		No. 16		No. 17	
	No. 12 a	No. 12 b	No. 13 a	No. 13 b	No. 14 a	No. 14 b	No. 16 a	No. 16 b	No. 17 a	No. 17 b
07:00 ~ 08:00	48	50	41	38	43	46	42	38	65	69
08:00 ~ 09:00	49	52	43	45	51	42	41	38	65	66
09:00 ~ 10:00	48	50	43	41	46	46	40	37	64	70
10:00 ~ 11:00	47	48	40	43	42	58	43	39	64	66
11:00 ~ 12:00	52	47	41	40	44	47	41	35	64	68
12:00 ~ 13:00	48	49	41	40	47	42	41	38	67	67
13:00 ~ 14:00	49	43	48	44	51	44	43	36	69	68
14:00 ~ 15:00	42	44	42	46	46	38	41	33	66	60
15:00 ~ 16:00	52	46	43	39	47	41	45	39	64	60
16:00 ~ 17:00	55	52	46	46	54	39	46	37	69	65
17:00 ~ 18:00	43	44	49	55	52	39	44	38	65	71
18:00 ~ 19:00	46	41	45	49	51	38	46	40	63	65
19:00 ~ 20:00	46	47	48	43	54	48	41	44	60	63
20:00 ~ 21:00	43	53	49	49	59	46	43	42	56	63
21:00 ~ 22:00	34	49	47	54	55	43	42	42	56	64
22:00 ~ 23:00	33	52	52	51	61	45	43	42	62	70
23:00 ~ 24:00	42	50	55	47	56	46	43	44	66	66
24:00 ~ 01:00	40	48	53	50	61	45	45	47	64	60
01:00 ~ 02:00	45	42	53	48	68	47	46	47	67	70
02:00 ~ 03:00	44	40	48	50	69	48	45	46	62	73
03:00 ~ 04:00	45	42	50	53	73	50	45	45	63	63
04:00 ~ 05:00	45	44	53	51	64	44	41	47	65	80
05:00 ~ 06:00	46	48	52	48	62	52	40	42	60	70
06:00 ~ 07:00	46	47	51	50	52	41	41	42	62	65
Average (daily)	45.33	47.00	47.21	46.67	54.5	44.79	42.83	40.75	63.67	66.75

Table D4.53(7) Results of Driving Speed Measurement (in km/h) - Measuring Points 20 to 25 (22/23.04.1998 - weekday)

Time	No. 20		No. 21		No. 23 ac		No. 23 bd		No. 25	
	No. 16 a	No. 16 b	No. 17 a	No. 17 b	No. 23 a	No. 23 c	No. 19 b	No. 19 d	No. 25 a	No. 25 b
07:00 ~ 08:00	39	42	36	39	30	31	31	44	41	31
08:00 ~ 09:00	45	45	45	42	29	36	27	42	40	29
09:00 ~ 10:00	44	40	47	43	30	32	31	45	44	40
10:00 ~ 11:00	43	45	34	40	32	32	34	45	41	46
11:00 ~ 12:00	37	44	44	42	30	30	31	44	50	39
12:00 ~ 13:00	36	48	43	38	36	32	33	36	40	66
13:00 ~ 14:00	41	40	43	40	33	29	30	45	38	51
14:00 ~ 15:00	37	42	45	39	30	31	35	32	38	42
15:00 ~ 16:00	38	46	45	43	33	32	31	47	36	48
16:00 ~ 17:00	39	42	41	34	32	30	34	49	38	46
17:00 ~ 18:00	39	45	47	43	36	26	35	42	38	57
18:00 ~ 19:00	38	47	48	42	41	34	41	45	33	52
19:00 ~ 20:00	62	58	61	40	31	32	31	43	36	44
20:00 ~ 21:00	61	53	48	33	38	37	31	42	31	36
21:00 ~ 22:00	61	51	44	42	34	32	32	45	45	46
22:00 ~ 23:00	61	50	43	43	33	34	34	44	48	55
23:00 ~ 24:00	57	50	53	51	38	38	31	43	54	62
24:00 ~ 01:00	56	46	62	50	38	42	33	35	66	58
01:00 ~ 02:00	53	57	67	46	40	29	33	44	63	60
02:00 ~ 03:00	56	41	53	45	63	35	32	31	62	64
03:00 ~ 04:00	56	62	44	46	40	32	37	44	62	62
04:00 ~ 05:00	57	54	50	47	36	32	37	47	46	57
05:00 ~ 06:00	56	55	49	47	34	33	32	42	44	55
06:00 ~ 07:00	55	58	48	40	36	35	34	44	44	55
Average (daily)	48.63	48.38	47.5	42.29	35.54	32.75	32.92	42.5	44.92	50.04

Table D4.53(8) Results of Driving Speed Measurement (in km/h) - Measuring Points 20 to 25 (25/26.04.1998 - holiday)

Time	No. 20		No. 21		No. 23 ac		No. 23 bd		No. 25	
	No. 16 a	No. 16 b	No. 21 a	No. 21 b	No. 23 a	No. 23 c	No. 23 b	No. 23 d	No. 25 a	No. 25 b
07:00 ~ 08:00	42	41	42	41	38	36	40	30	40	42
08:00 ~ 09:00	40	39	41	42	35	38	37	29	42	53
09:00 ~ 10:00	40	38	44	41	41	36	41	28	41	51
10:00 ~ 11:00	39	39	38	41	34	28	31	29	39	54
11:00 ~ 12:00	37	37	40	42	40	36	34	26	39	51
12:00 ~ 13:00	34	34	38	41	44	31	38	27	43	45
13:00 ~ 14:00	40	40	41	45	45	38	41	28	44	52
14:00 ~ 15:00	34	35	41	44	38	34	41	29	43	48
15:00 ~ 16:00	37	37	46	46	37	40	44	29	41	45
16:00 ~ 17:00	31	31	45	46	39	40	37	29	46	43
17:00 ~ 18:00	36	36	46	44	38	33	39	27	42	53
18:00 ~ 19:00	31	31	43	39	38	34	36	27	42	59
19:00 ~ 20:00	38	38	41	38	33	38	40	54	38	54
20:00 ~ 21:00	38	38	42	44	38	33	39	39	39	49
21:00 ~ 22:00	45	45	43	48	36	34	37	37	39	44
22:00 ~ 23:00	37	35	48	46	40	33	36	41	36	44
23:00 ~ 24:00	42	42	43	44	34	33	38	37	44	54
24:00 ~ 01:00	53	53	41	46	35	34	36	35	48	60
01:00 ~ 02:00	48	48	53	52	37	46	38	42	49	56
02:00 ~ 03:00	45	47	60	51	38	34	39	34	66	56
03:00 ~ 04:00	46	46	54	49	39	39	34	49	62	54
04:00 ~ 05:00	41	42	55	55	37	41	38	36	51	57
05:00 ~ 06:00	44	44	48	57	35	38	33	38	56	56
06:00 ~ 07:00	46	46	50	52	30	44	36	39	53	56
Average (daily)	40.17	40.08	45.13	45.58	37.46	36.29	37.63	34.13	45.13	51.5

Table D4.53(9) Results of Driving Speed Measurement (in km/h) - Measuring Points 27 to 34 (22/23.04.1998 - weekday)

Time	No. 27		No. 29		No. 30		No. 32		No. 34	
	No. 27 a	No. 27 c	No. 29 b	No. 29 d	No. 30 a	No. 30 b	No. 32 a	No. 32 c	No. 34 a	No. 34 c
07:00 ~ 08:00	68	57	57	56	74	29	54	54	93	75
08:00 ~ 09:00	62	63	55	55	73	33	49	53	93	52
09:00 ~ 10:00	58	62	44	44	74	33	49	55	98	70
10:00 ~ 11:00	70	60	37	37	60	35	40	47	92	71
11:00 ~ 12:00	56	64	44	44	63	31	48	55	88	74
12:00 ~ 13:00	54	66	46	46	64	34	50	54	92	78
13:00 ~ 14:00	55	45	50	49	62	34	42	54	90	63
14:00 ~ 15:00	43	43	37	37	62	36	36	54	87	85
15:00 ~ 16:00	40	57	50	49	62	27	49	54	79	60
16:00 ~ 17:00	52	66	61	59	60	30	34	57	103	76
17:00 ~ 18:00	64	68	54	54	61	32	50	56	98	89
18:00 ~ 19:00	73	65	54	53	60	32	51	55	99	75
19:00 ~ 20:00	59	55	62	61	66	34	41	46	46	82
20:00 ~ 21:00	50	56	65	63	60	36	43	46	46	60
21:00 ~ 22:00	56	56	71	69	60	35	50	43	44	75
22:00 ~ 23:00	61	52	74	72	61	39	42	45	47	73
23:00 ~ 24:00	50	51	75	72	64	41	44	45	53	74
24:00 ~ 01:00	44	54	81	77	59	48	44	44	53	79
01:00 ~ 02:00	52	63	83	76	62	49	46	46	52	59
02:00 ~ 03:00	60	63	80	74	62	49	45	45	53	69
03:00 ~ 04:00	61	56	86	66	68	53	47	45	53	61
04:00 ~ 05:00	54	54	81	71	65	51	45	46	48	67
05:00 ~ 06:00	55	53	81	67	58	43	44	45	52	84
06:00 ~ 07:00	56	46	74	68	61	34	46	45	54	66
Average (daily)	56.38	57.29	62.58	59.13	63.38	37.42	45.38	49.54	71.38	71.54

Table D4.53(10) Results of Driving Speed Measurement (in km/h) - Measuring Points 27 to 34 (25/26.04.1998 - holiday)

Time	No. 27		No. 29		No. 30		No. 32		No. 34	
	No. 27 a	No. 27 c	No. 29 b	No. 29 d	No. 30 a	No. 30 b	No. 32 b	No. 32 d	No. 34 a	No. 34 c
07:00 ~ 08:00	48	34	70	67	65	46	54	54	44	68
08:00 ~ 09:00	46	36	65	62	68	47	53	53	52	66
09:00 ~ 10:00	48	32	47	46	71	46	55	55	47	72
10:00 ~ 11:00	43	29	60	58	64	46	48	48	46	74
11:00 ~ 12:00	42	32	51	50	74	45	55	55	47	74
12:00 ~ 13:00	42	35	54	53	68	45	54	54	44	80
13:00 ~ 14:00	48	33	49	49	69	46	54	54	43	67
14:00 ~ 15:00	43	36	52	52	70	45	54	54	43	73
15:00 ~ 16:00	51	34	62	59	66	47	54	54	50	58
16:00 ~ 17:00	46	37	56	55	70	45	57	56	42	64
17:00 ~ 18:00	48	34	55	54	66	46	56	56	39	69
18:00 ~ 19:00	48	43	53	52	69	47	55	55	37	64
19:00 ~ 20:00	45	53	54	53	62	34	44	47	36	45
20:00 ~ 21:00	42	52	60	58	59	36	46	50	36	53
21:00 ~ 22:00	47	50	63	60	55	39	48	52	36	54
22:00 ~ 23:00	45	51	63	61	58	39	53	55	36	58
23:00 ~ 24:00	48	51	70	68	58	40	50	53	35	64
24:00 ~ 01:00	46	52	67	68	64	46	48	51	34	52
01:00 ~ 02:00	52	61	83	74	57	48	52	55	35	57
02:00 ~ 03:00	52	57	80	71	66	53	50	53	31	63
03:00 ~ 04:00	52	59	84	75	58	54	53	51	37	65
04:00 ~ 05:00	46	65	70	66	60	47	50	49	34	58
05:00 ~ 06:00	50	91	66	63	62	44	50	46	33	56
06:00 ~ 07:00	49	56	65	64	62	44	51	47	30	56
Average (daily)	46.96	46.38	62.46	59.92	64.21	44.79	51.83	52.38	39.46	62.92

Table D4.53(11) Results of Driving Speed Measurement (in km/h) - Measuring Points 35 to 43 (22/23.04.1998 - weekday)

Time	No. 35		No. 36		No. 37		No. 40		No. 43	
	No. 35 a	No. 35 b	No. 36 a	No. 36 b	No. 37 a	No. 37 d	No. 40 b	No. 40 d	No. 43 a	No. 43 d
07:00 ~ 08:00	34	29	44	50	43	27	43	45	29	28
08:00 ~ 09:00	25	34	45	46	41	28	44	44	27	25
09:00 ~ 10:00	33	36	44	49	34	29	43	45	28	23
10:00 ~ 11:00	29	39	44	47	47	28	53	53	28	24
11:00 ~ 12:00	34	31	41	46	43	29	50	50	27	27
12:00 ~ 13:00	31	37	36	50	42	26	53	53	28	29
13:00 ~ 14:00	29	26	45	47	49	32	51	52	30	30
14:00 ~ 15:00	29	28	49	47	52	30	48	48	30	31
15:00 ~ 16:00	31	28	45	56	50	33	55	55	28	31
16:00 ~ 17:00	34	25	48	46	57	29	54	54	32	33
17:00 ~ 18:00	31	28	42	45	56	28	44	44	27	28
18:00 ~ 19:00	30	30	48	51	51	31	46	46	30	31
19:00 ~ 20:00	29	35	65	55	42	26	48	47	35	33
20:00 ~ 21:00	38	28	62	65	48	29	45	45	37	32
21:00 ~ 22:00	43	38	67	68	66	33	47	47	35	35
22:00 ~ 23:00	32	39	48	55	64	31	49	49	34	36
23:00 ~ 24:00	45	52	55	70	73	34	51	51	35	33
24:00 ~ 01:00	47	51	72	64	63	38	46	46	35	34
01:00 ~ 02:00	48	43	59	56	74	38	49	50	35	36
02:00 ~ 03:00	48	45	63	58	92	33	45	45	33	36
03:00 ~ 04:00	49	42	62	71	78	35	45	45	32	34
04:00 ~ 05:00	51	49	64	69	79	35	48	48	32	33
05:00 ~ 06:00	55	44	54	62	83	30	43	43	37	33
06:00 ~ 07:00	52	44	64	58	74	33	42	45	42	30
Average (daily)	37.79	36.71	52.75	55.46	58.38	31.04	47.58	47.92	31.92	31.04

Table D4.53(12) Results of Driving Speed Measurement (in km/h) - Measuring Points 35 to 43 (25/26.04.1998 - holiday)

Time	No. 35		No. 36		No. 37		No. 40		No. 43	
	No. 35 a	No. 35 b	No. 36 a	No. 36 b	No. 37 a	No. 37 d	No. 40 b	No. 40 d	No. 43 a	No. 43 d
07:00 ~ 08:00	46	31	47	45	54	32	49	50	32	28
08:00 ~ 09:00	40	34	44	50	59	30	47	47	30	29
09:00 ~ 10:00	38	38	42	46	54	30	46	46	33	31
10:00 ~ 11:00	44	41	40	48	52	31	50	52	32	29
11:00 ~ 12:00	36	32	46	47	62	30	50	50	32	30
12:00 ~ 13:00	48	39	47	46	57	31	46	46	32	30
13:00 ~ 14:00	48	35	43	50	53	33	45	45	31	27
14:00 ~ 15:00	50	32	44	45	54	31	50	52	31	26
15:00 ~ 16:00	46	32	45	45	52	31	54	54	30	30
16:00 ~ 17:00	44	38	42	50	56	33	56	56	32	55
17:00 ~ 18:00	44	32	46	47	62	37	81	71	32	30
18:00 ~ 19:00	45	32	42	50	58	33	46	46	29	31
19:00 ~ 20:00	37	45	63	49	62	31	44	44	32	33
20:00 ~ 21:00	32	44	59	60	61	34	45	45	32	34
21:00 ~ 22:00	35	45	69	62	56	34	45	45	37	33
22:00 ~ 23:00	36	42	63	63	65	33	48	48	36	34
23:00 ~ 24:00	32	45	66	57	64	31	49	50	40	37
24:00 ~ 01:00	35	43	63	61	61	34	50	50	51	36
01:00 ~ 02:00	31	41	71	60	83	34	50	51	33	38
02:00 ~ 03:00	39	34	65	57	79	60	48	48	33	37
03:00 ~ 04:00	36	43	68	61	83	34	54	54	32	37
04:00 ~ 05:00	38	44	73	65	83	32	46	46	37	35
05:00 ~ 06:00	38	45	63	77	71	34	50	50	31	34
06:00 ~ 07:00	34	43	63	66	69	33	42	42	32	35
Average (daily)	39.67	38.75	54.75	54.46	62.92	33.58	49.63	49.5	33.42	33.29

Table D4.53(13) Results of Driving Speed Measurement (in km/h) - Measuring Points 44ac to 49 (22/23.04.1998 - weekday)

Time	No. 44 ac		No. 44 bd		No. 46		No. 47		No. 49	
	No. 44 a	No. 44 c	No. 44 b	No. 44 d	No. 46 b	No. 46 d	No. 47 a	No. 47 b	No. 49 a	No. 49 d
07:00 ~ 08:00	68	51	34	48	38	36	40	35	54	30
08:00 ~ 09:00	58	48	36	42	34	52	41	40	50	30
09:00 ~ 10:00	53	51	53	47	39	38	42	32	41	26
10:00 ~ 11:00	67	49	64	56	39	32	44	39	45	27
11:00 ~ 12:00	66	49	66	50	40	36	41	50	47	24
12:00 ~ 13:00	58	44	58	46	39	34	46	36	43	25
13:00 ~ 14:00	49	39	54	51	41	35	47	39	46	28
14:00 ~ 15:00	54	49	55	41	36	25	48	27	45	25
15:00 ~ 16:00	53	45	56	50	40	44	46	34	45	24
16:00 ~ 17:00	56	48	56	48	37	40	51	38	44	26
17:00 ~ 18:00	66	45	66	42	39	40	50	34	45	31
18:00 ~ 19:00	64	49	64	48	39	35	54	38	45	26
19:00 ~ 20:00	61	64	64	52	39	34	42	44	46	36
20:00 ~ 21:00	64	56	63	48	39	30	43	43	49	32
21:00 ~ 22:00	77	62	77	45	38	28	45	46	46	34
22:00 ~ 23:00	67	73	75	49	36	32	45	45	49	33
23:00 ~ 24:00	65	69	60	49	38	36	41	49	51	35
24:00 ~ 01:00	65	63	68	55	38	33	43	66	49	36
01:00 ~ 02:00	67	79	71	55	34	32	46	52	52	36
02:00 ~ 03:00	75	72	66	52	37	32	45	51	55	34
03:00 ~ 04:00	73	79	62	58	38	31	46	54	48	38
04:00 ~ 05:00	58	74	60	58	41	32	41	49	48	31
05:00 ~ 06:00	57	68	68	49	44	32	43	50	47	31
06:00 ~ 07:00	50	70	62	50	37	30	45	45	41	29
Average (daily)	62.13	58.17	60.75	49.54	38.33	34.54	44.79	43.17	47.13	30.29

Table D4.53(14) Results of Driving Speed Measurement (in km/h) - Measuring Points 44ac to 49 (25/26.04.1998 - holiday)

Time	No. 44 ac		No. 44 bd		No. 46		No. 47		No. 49	
	No. 44 a	No. 44 c	No. 44 b	No. 44 d	No. 46 b	No. 46 d	No. 47 a	No. 47 b	No. 49 a	No. 49 d
07:00 ~ 08:00	53	45	62	45	39	42	48	39	61	36
08:00 ~ 09:00	56	46	60	46	37	41	47	32	62	34
09:00 ~ 10:00	59	54	57	54	40	39	45	42	63	33
10:00 ~ 11:00	58	46	59	46	39	36	40	44	65	32
11:00 ~ 12:00	57	47	62	47	40	37	41	42	64	32
12:00 ~ 13:00	60	50	59	50	38	38	44	42	69	32
13:00 ~ 14:00	61	49	60	49	41	41	44	40	63	27
14:00 ~ 15:00	60	41	65	41	38	37	44	40	62	31
15:00 ~ 16:00	55	46	60	46	38	39	47	44	55	32
16:00 ~ 17:00	56	56	63	56	40	36	48	44	57	34
17:00 ~ 18:00	60	56	56	56	40	36	49	44	60	36
18:00 ~ 19:00	60	54	63	54	41	35	47	45	54	42
19:00 ~ 20:00	62	61	68	55	35	32	44	42	60	31
20:00 ~ 21:00	65	57	69	50	37	30	43	48	57	30
21:00 ~ 22:00	65	57	67	59	37	29	43	40	57	32
22:00 ~ 23:00	54	58	61	61	38	25	42	53	56	33
23:00 ~ 24:00	60	57	64	53	38	28	48	58	58	32
24:00 ~ 01:00	65	61	61	60	39	31	46	60	58	35
01:00 ~ 02:00	74	64	57	57	43	32	46	56	59	33
02:00 ~ 03:00	77	68	63	62	38	33	46	60	61	32
03:00 ~ 04:00	77	75	59	62	40	31	47	57	60	33
04:00 ~ 05:00	76	70	59	62	42	37	46	55	63	34
05:00 ~ 06:00	68	71	61	63	40	31	46	60	64	70
06:00 ~ 07:00	74	70	61	57	38	28	46	51	68	35
Average (daily)	63.00	56.63	61.5	53.79	39.00	34.33	45.29	47.42	60.67	34.63

Table D4.53(15) Results of Driving Speed Measurement (in km/h) - Measuring Points 51 to 55ac (22/23.04.1998 - weekday)

Time	No. 51 ac		No. 51 bd		No. 52		No. 53		No. 55 ac	
	No. 51 a	No. 51 c	No. 51 b	No. 51 d	No. 52 a	No. 52 b	No. 53 a	No. 53 b	No. 55 a	No. 55 c
07:00 ~ 08:00	30	28	40	42	29	36	36	32	42	44
08:00 ~ 09:00	35	31	38	41	38	41	37	38	42	50
09:00 ~ 10:00	31	37	39	39	37	36	32	32	46	44
10:00 ~ 11:00	33	32	39	42	37	36	32	36	40	49
11:00 ~ 12:00	33	36	40	45	34	38	30	28	44	46
12:00 ~ 13:00	32	32	36	43	37	38	28	30	47	48
13:00 ~ 14:00	32	33	31	44	33	37	30	34	36	56
14:00 ~ 15:00	33	33	40	47	38	35	32	33	37	47
15:00 ~ 16:00	36	36	43	41	34	37	32	37	34	46
16:00 ~ 17:00	32	36	41	45	37	38	34	33	40	57
17:00 ~ 18:00	32	34	45	46	38	37	34	34	46	52
18:00 ~ 19:00	35	34	46	45	38	36	31	34	46	57
19:00 ~ 20:00	30	44	44	39	34	31	36	34	44	44
20:00 ~ 21:00	38	39	43	45	38	34	37	34	42	52
21:00 ~ 22:00	36	40	40	45	39	35	37	32	44	42
22:00 ~ 23:00	40	38	40	45	42	38	40	34	39	51
23:00 ~ 24:00	29	38	38	44	43	40	43	32	46	48
24:00 ~ 01:00	29	42	46	50	40	40	40	40	49	52
01:00 ~ 02:00	30	42	44	49	44	40	37	35	44	48
02:00 ~ 03:00	31	46	42	51	39	40	39	39	47	42
03:00 ~ 04:00	31	48	48	49	38	44	39	39	46	47
04:00 ~ 05:00	30	44	46	44	41	44	38	35	51	45
05:00 ~ 06:00	27	40	40	52	42	38	36	37	50	52
06:00 ~ 07:00	26	35	42	48	34	36	38	34	49	38
Average (daily)	32.13	37.42	41.29	45.04	37.67	37.71	35.33	34.42	43.79	48.21

Table D4.53(16) Results of Driving Speed Measurement (in km/h) - Measuring Points 51 to 55ac (25/26.04.1998 - holiday)

Time	No. 51 ac		No. 51 bd		No. 52		No. 53		No. 55 ac	
	No. 51 a	No. 51 c	No. 51 b	No. 51 d	No. 52 a	No. 52 b	No. 53 a	No. 53 b	No. 55 a	No. 55 c
07:00 ~ 08:00	30	30	44	51	31	30	34	30	42	50
08:00 ~ 09:00	30	30	46	49	33	30	31	32	38	52
09:00 ~ 10:00	33	31	43	49	32	30	34	34	39	46
10:00 ~ 11:00	32	63	52	44	34	35	33	33	36	53
11:00 ~ 12:00	31	31	40	43	30	38	33	33	40	48
12:00 ~ 13:00	32	30	48	43	30	36	30	34	37	42
13:00 ~ 14:00	30	30	38	45	30	30	33	37	43	48
14:00 ~ 15:00	33	27	42	42	29	31	33	33	43	45
15:00 ~ 16:00	33	31	44	48	30	30	32	32	50	46
16:00 ~ 17:00	33	29	44	37	30	30	32	35	47	48
17:00 ~ 18:00	32	28	39	43	30	30	35	33	43	56
18:00 ~ 19:00	32	29	39	48	31	30	33	36	38	44
19:00 ~ 20:00	28	36	40	47	37	36	40	35	44	49
20:00 ~ 21:00	29	35	40	48	42	39	40	36	44	48
21:00 ~ 22:00	30	38	35	50	37	40	40	36	44	45
22:00 ~ 23:00	30	39	38	51	42	38	41	36	43	47
23:00 ~ 24:00	30	33	37	50	42	40	39	38	46	50
24:00 ~ 01:00	30	42	40	49	44	44	44	38	45	53
01:00 ~ 02:00	30	46	43	47	40	41	44	39	47	54
02:00 ~ 03:00	26	41	39	51	41	48	35	37	47	53
03:00 ~ 04:00	31	39	42	50	46	46	44	38	48	52
04:00 ~ 05:00	31	43	42	50	43	47	42	37	50	52
05:00 ~ 06:00	28	42	44	50	46	43	39	34	49	53
06:00 ~ 07:00	30	42	40	49	43	40	39	38	48	48
Average (daily)	30.58	36.04	41.63	47.25	36.38	36.75	36.67	35.17	43.79	49.25

Table D4.53(17) Results of Driving Speed Measurement (in km/h) - Measuring Points 55bd to 66 (22/23.04.1998 - weekday)

Time	No. 55 bd		No. 59		No. 61		No. 64		No. 66	
	No. 55 b	No. 55 d	No. 59 a	No. 59 b	No. 61 a	No. 61 b	No. 64 a	No. 64 b	No. 66 a	No. 66 b
07:00 ~ 08:00	62	46	47	46	37	37	50	52	40	34
08:00 ~ 09:00	57	51	47	50	40	40	55	52	40	36
09:00 ~ 10:00	59	56	40	41	51	51	50	54	36	37
10:00 ~ 11:00	59	48	40	47	40	40	53	47	40	35
11:00 ~ 12:00	66	48	52	56	35	35	52	51	38	40
12:00 ~ 13:00	59	49	47	56	36	36	52	49	38	38
13:00 ~ 14:00	65	49	46	70	42	42	49	48	40	34
14:00 ~ 15:00	66	49	51	55	35	35	51	48	38	34
15:00 ~ 16:00	70	56	49	69	38	38	54	48	37	35
16:00 ~ 17:00	64	53	52	62	35	36	51	50	36	37
17:00 ~ 18:00	61	50	59	68	39	40	51	53	41	38
18:00 ~ 19:00	57	47	68	74	44	45	94	50	37	36
19:00 ~ 20:00	51	31	46	53	40	40	39	43	24	22
20:00 ~ 21:00	53	40	46	58	37	38	41	44	26	26
21:00 ~ 22:00	50	35	49	57	39	39	41	47	27	29
22:00 ~ 23:00	53	35	54	62	36	36	45	45	29	33
23:00 ~ 24:00	52	40	61	64	41	41	43	44	33	35
24:00 ~ 01:00	55	42	61	65	47	48	52	50	40	38
01:00 ~ 02:00	54	40	69	65	44	44	49	122	42	45
02:00 ~ 03:00	62	40	67	62	46	45	46	57	49	52
03:00 ~ 04:00	62	44	71	56	35	36	47	50	45	51
04:00 ~ 05:00	69	37	60	58	46	46	43	80	35	42
05:00 ~ 06:00	59	34	61	54	43	43	45	46	31	36
06:00 ~ 07:00	58	35	56	48	36	37	39	110	26	32
Average (daily)	59.29	43.96	54.13	58.17	40.08	40.33	49.67	55.83	36.17	36.46

Table D4.53(18) Results of Driving Speed Measurement (in km/h) - Measuring Points 55bd to 66 (25/26.04.1998 - holiday)

Time	No. 55 bd		No. 59		No. 61		No. 64		No. 66	
	No. 55 b	No. 55 d	No. 59 a	No. 59 b	No. 61 a	No. 61 b	No. 64 a	No. 64 b	No. 66 a	No. 66 b
07:00 ~ 08:00	62	56	53	62	42	42	51	50	42	38
08:00 ~ 09:00	57	51	55	62	41	41	53	49	40	42
09:00 ~ 10:00	59	50	56	62	43	43	49	51	41	33
10:00 ~ 11:00	60	52	56	64	40	41	52	50	38	36
11:00 ~ 12:00	67	51	59	68	36	37	51	58	38	39
12:00 ~ 13:00	59	49	54	66	35	36	54	48	36	37
13:00 ~ 14:00	65	52	56	64	34	35	49	48	39	35
14:00 ~ 15:00	66	58	59	72	38	39	58	42	33	42
15:00 ~ 16:00	68	54	54	62	38	38	51	53	35	40
16:00 ~ 17:00	65	48	54	63	45	45	57	55	36	37
17:00 ~ 18:00	61	56	57	66	36	36	49	48	40	35
18:00 ~ 19:00	57	55	61	63	34	35	52	50	37	37
19:00 ~ 20:00	51	43	75	53	34	34	46	45	24	24
20:00 ~ 21:00	53	37	78	58	42	42	44	47	26	29
21:00 ~ 22:00	50	37	75	57	38	38	51	50	27	28
22:00 ~ 23:00	54	42	77	62	45	45	97	46	29	30
23:00 ~ 24:00	52	45	75	64	40	41	51	49	33	32
24:00 ~ 01:00	55	46	76	65	44	44	49	55	44	44
01:00 ~ 02:00	55	52	78	65	41	41	52	53	42	54
02:00 ~ 03:00	62	49	82	62	44	44	45	53	49	53
03:00 ~ 04:00	63	51	76	56	43	44	50	49	45	52
04:00 ~ 05:00	73	49	80	58	46	46	54	53	35	36
05:00 ~ 06:00	59	39	80	54	45	45	43	50	31	32
06:00 ~ 07:00	58	45	78	48	39	40	45	52	30	29
Average (daily)	59.63	48.63	66.83	61.5	40.13	40.50	52.21	50.17	36.25	37.25



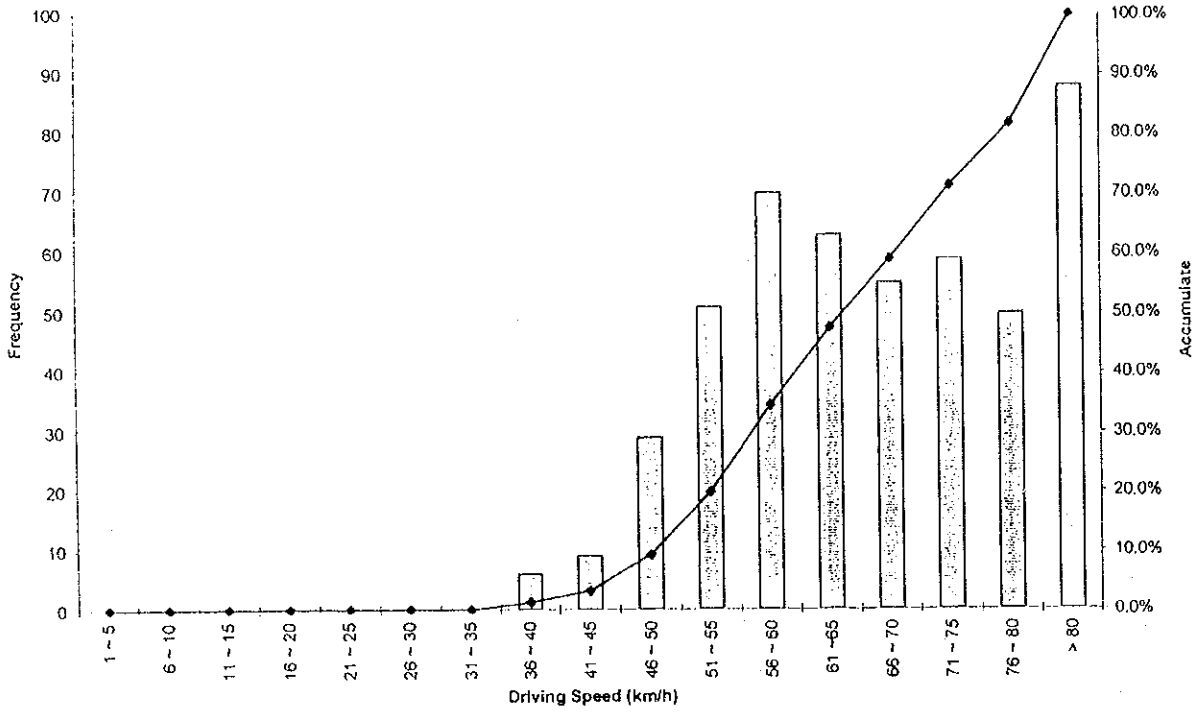
Table D4.53(19) Results of Driving Speed Measurement (in km/h) - Measuring Points 46 to 50 (22/23.04.1998 - weekday)

Time	No. 67		No. 69		No. 70		No. 71		No. 72	
	No. 67 a	No. 67 b	No. 69 a	No. 69 b	No. 70 b	No. 70 d	No. 71 a	No. 71 b	No. 72 a	No. 72 c
07:00 ~ 08:00	31	34	39	40	66	62	42	41	39	22
08:00 ~ 09:00	35	39	39	39	60	53	45	41	36	25
09:00 ~ 10:00	37	36	43	43	61	59	42	44	42	22
10:00 ~ 11:00	39	31	44	45	66	55	49	44	43	26
11:00 ~ 12:00	37	34	43	43	70	61	45	40	42	25
12:00 ~ 13:00	36	33	44	44	67	65	47	50	41	27
13:00 ~ 14:00	40	34	38	38	65	62	48	45	35	24
14:00 ~ 15:00	37	31	43	43	60	56	46	47	39	23
15:00 ~ 16:00	30	24	46	46	65	55	46	45	40	26
16:00 ~ 17:00	47	35	40	40	56	60	44	44	40	27
17:00 ~ 18:00	44	33	44	44	70	57	45	46	43	26
18:00 ~ 19:00	34	35	39	39	69	52	46	44	51	28
19:00 ~ 20:00	34	39	45	44	60	51	51	48	45	38
20:00 ~ 21:00	32	32	42	42	66	49	49	46	45	35
21:00 ~ 22:00	37	32	45	45	57	50	49	51	42	39
22:00 ~ 23:00	41	37	42	42	65	53	50	51	49	31
23:00 ~ 24:00	46	32	44	44	66	52	47	48	45	29
24:00 ~ 01:00	48	32	41	41	57	52	44	45	49	35
01:00 ~ 02:00	61	37	43	43	54	57	44	45	50	33
02:00 ~ 03:00	62	34	46	46	58	51	46	48	49	31
03:00 ~ 04:00	51	37	52	52	57	59	46	42	51	32
04:00 ~ 05:00	30	36	44	44	66	55	45	46	48	33
05:00 ~ 06:00	28	32	42	42	59	62	45	46	50	29
06:00 ~ 07:00	29	29	36	37	54	58	48	45	46	31
Average (daily)	39.42	33.67	42.67	42.75	62.25	56.08	46.21	45.5	44.17	29.04

Table D4.53(20) Results of Driving Speed Measurement (in km/h) - Measuring Points 46 to 50 (25/26.04.1998 - holiday)

Time	No. 67		No. 69		No. 70		No. 71		No. 72	
	No. 67 a	No. 67 b	No. 69 a	No. 69 b	No. 70 b	No. 70 d	No. 71 a	No. 71 b	No. 72 a	No. 72 c
07:00 ~ 08:00	41	36	49	50	63	53	48	45	31	27
08:00 ~ 09:00	43	35	44	44	66	47	51	42	33	26
09:00 ~ 10:00	38	35	46	46	78	53	52	47	34	30
10:00 ~ 11:00	38	34	41	42	81	51	44	45	33	28
11:00 ~ 12:00	38	32	40	40	85	57	46	41	32	23
12:00 ~ 13:00	34	31	41	41	81	52	43	42	34	24
13:00 ~ 14:00	37	32	47	47	71	54	47	42	44	23
14:00 ~ 15:00	36	34	40	40	76	45	48	46	46	27
15:00 ~ 16:00	36	35	37	38	74	56	44	42	53	24
16:00 ~ 17:00	37	31	41	41	73	53	46	45	47	24
17:00 ~ 18:00	36	39	45	45	73	51	48	45	51	25
18:00 ~ 19:00	33	31	39	39	78	44	45	42	51	26
19:00 ~ 20:00	32	42	39	39	49	51	43	49	31	26
20:00 ~ 21:00	28	34	40	40	66	50	45	44	35	28
21:00 ~ 22:00	28	35	41	41	60	50	50	48	37	29
22:00 ~ 23:00	33	29	39	39	60	48	47	44	39	25
23:00 ~ 24:00	32	35	44	44	62	52	44	44	38	28
24:00 ~ 01:00	34	41	44	44	55	52	46	49	42	29
01:00 ~ 02:00	33	35	41	41	64	52	52	50	43	28
02:00 ~ 03:00	33	40	43	43	54	52	52	53	45	25
03:00 ~ 04:00	31	34	41	41	56	52	52	48	42	29
04:00 ~ 05:00	29	32	42	42	63	52	47	49	44	29
05:00 ~ 06:00	37	35	43	43	56	52	47	42	42	27
06:00 ~ 07:00	27	37	38	40	63	52	45	48	38	24
Average (daily)	34.33	34.75	41.88	42.08	66.96	51.29	47.17	45.5	40.21	26.42

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

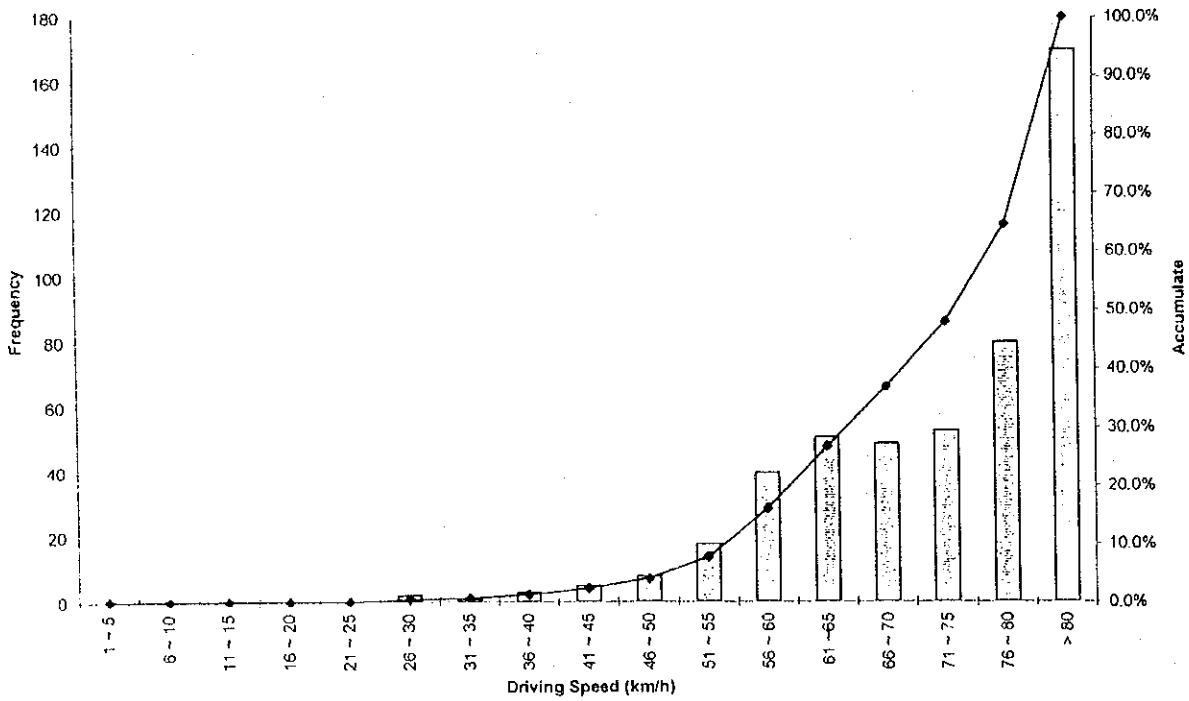


Figure 4-28(1) Distribution of Frequency of Speeds – Measuring Point No. 1

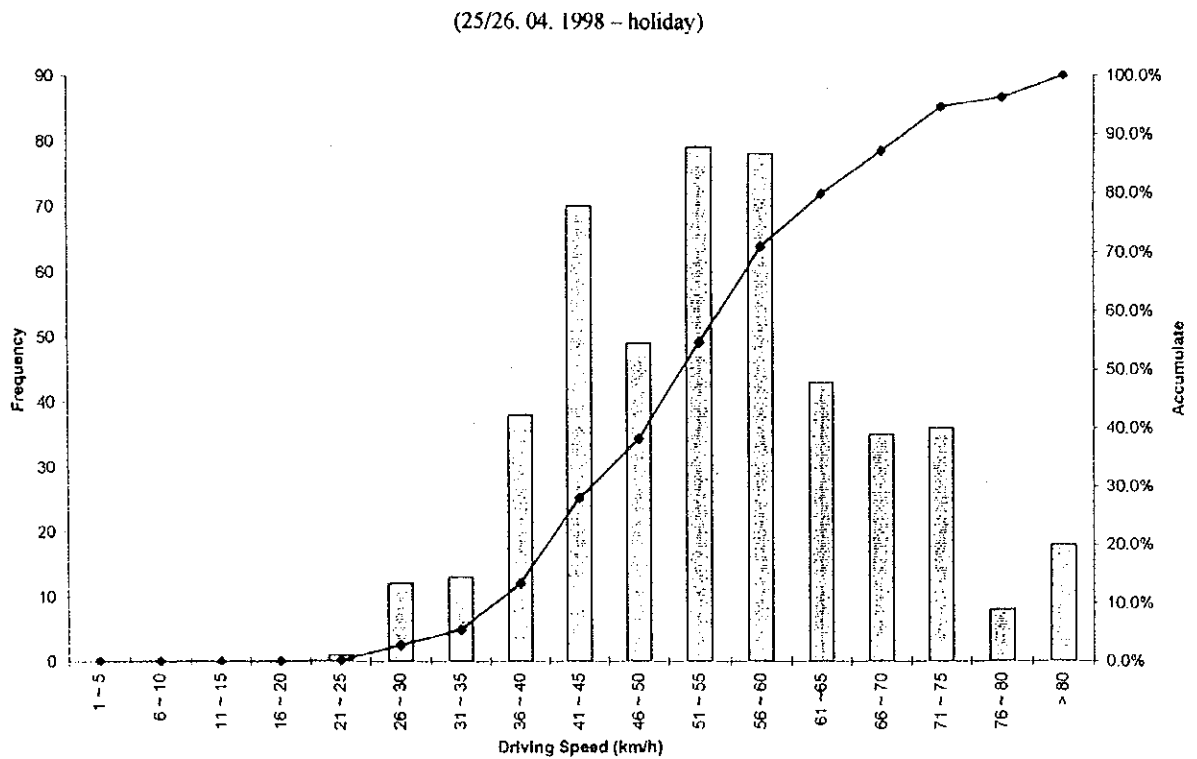
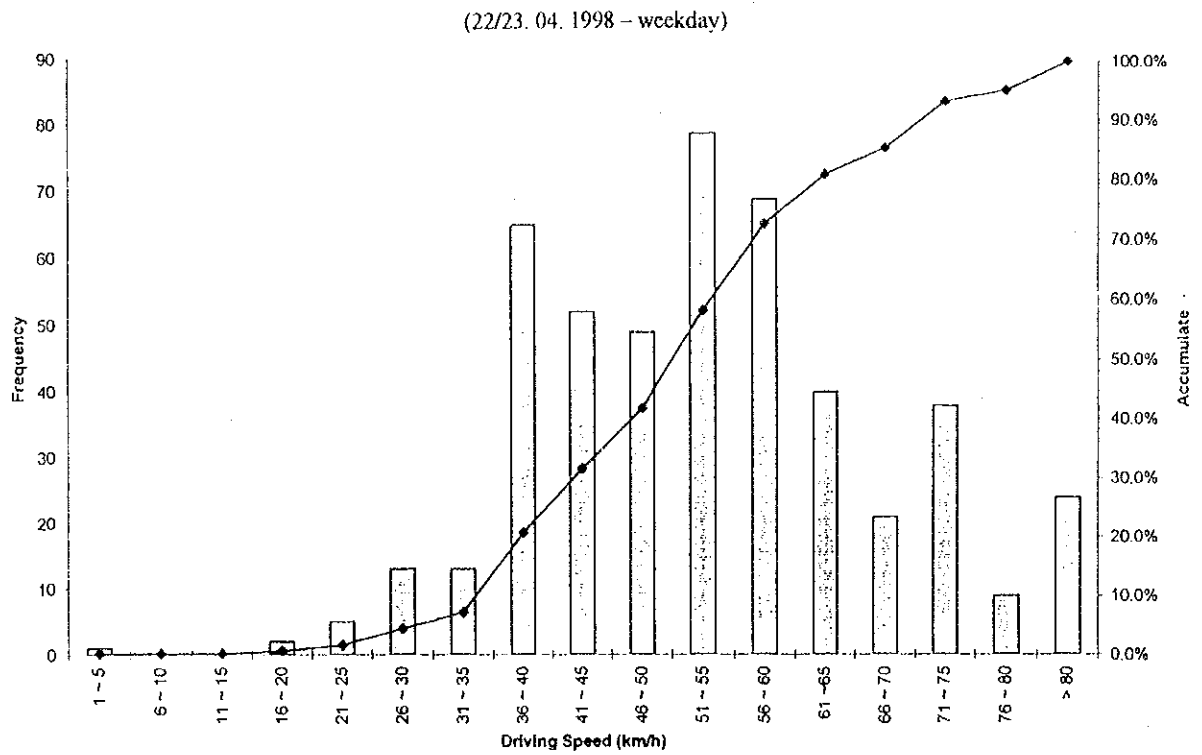
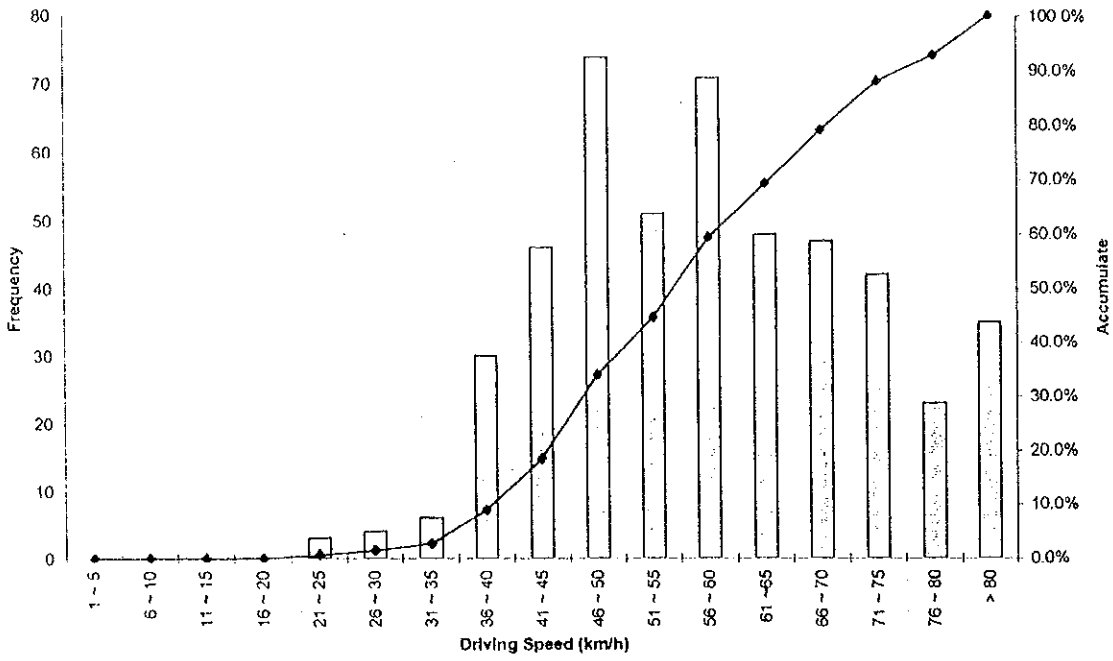


Figure 4-28(2) Distribution of Frequency of Speeds – Measuring Point No. 2

(22/23. 04. 1998 - weckday)



(25/26. 04. 1998 - holiday)

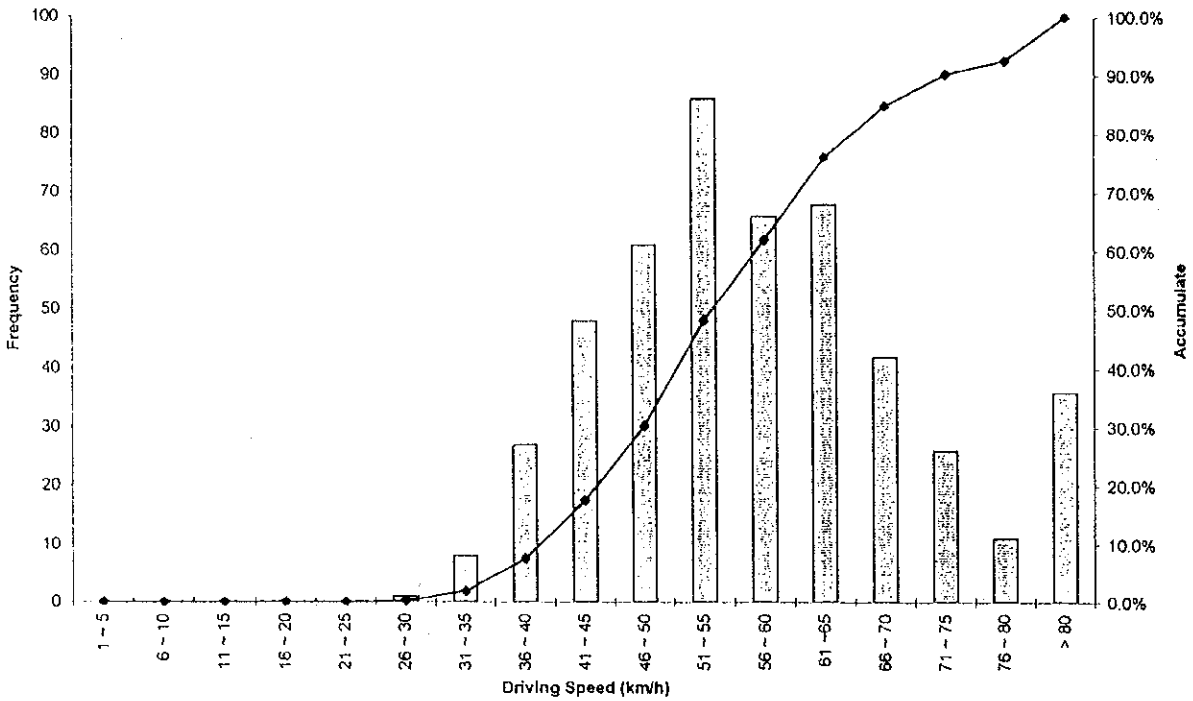


Figure 4-28(3) Distribution of Frequency of Speeds - Measuring Point No. 4

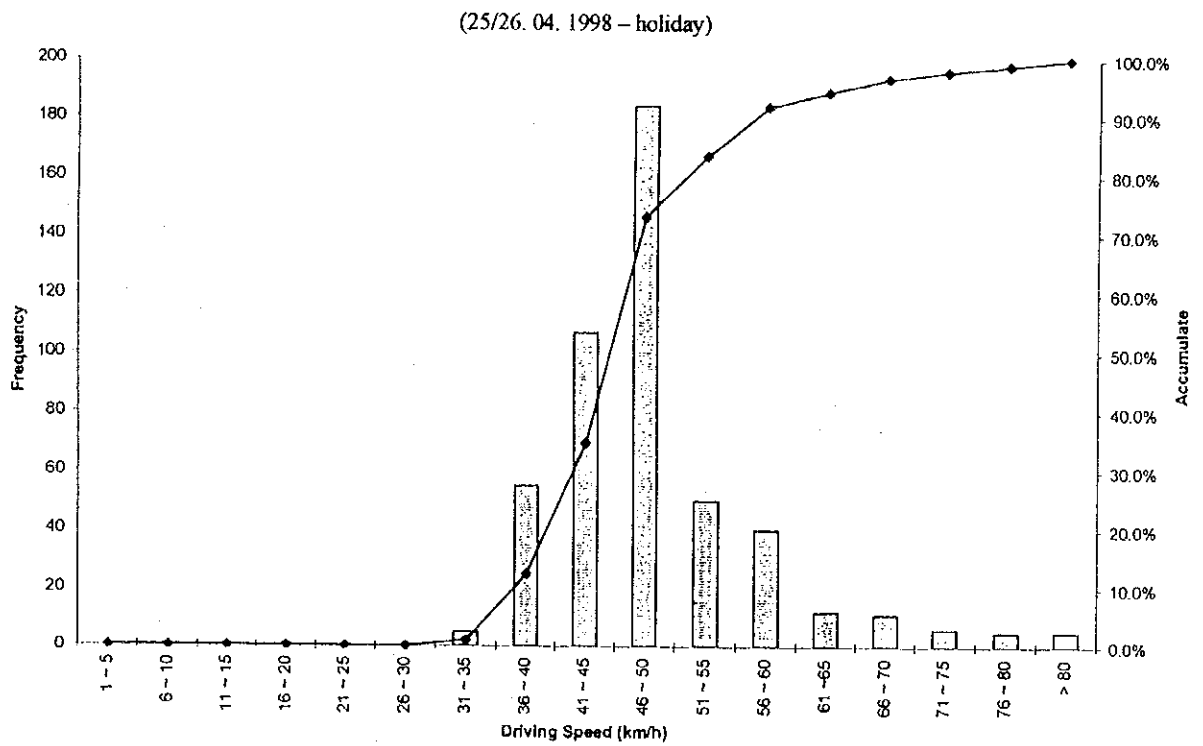
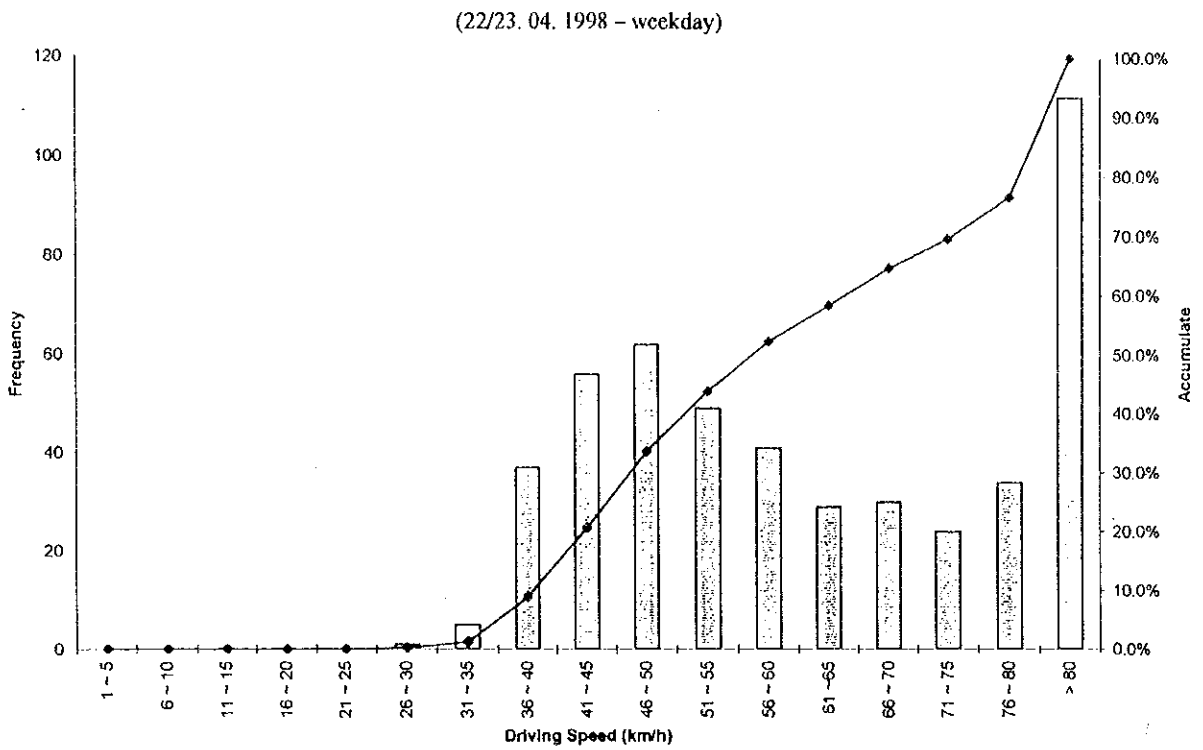
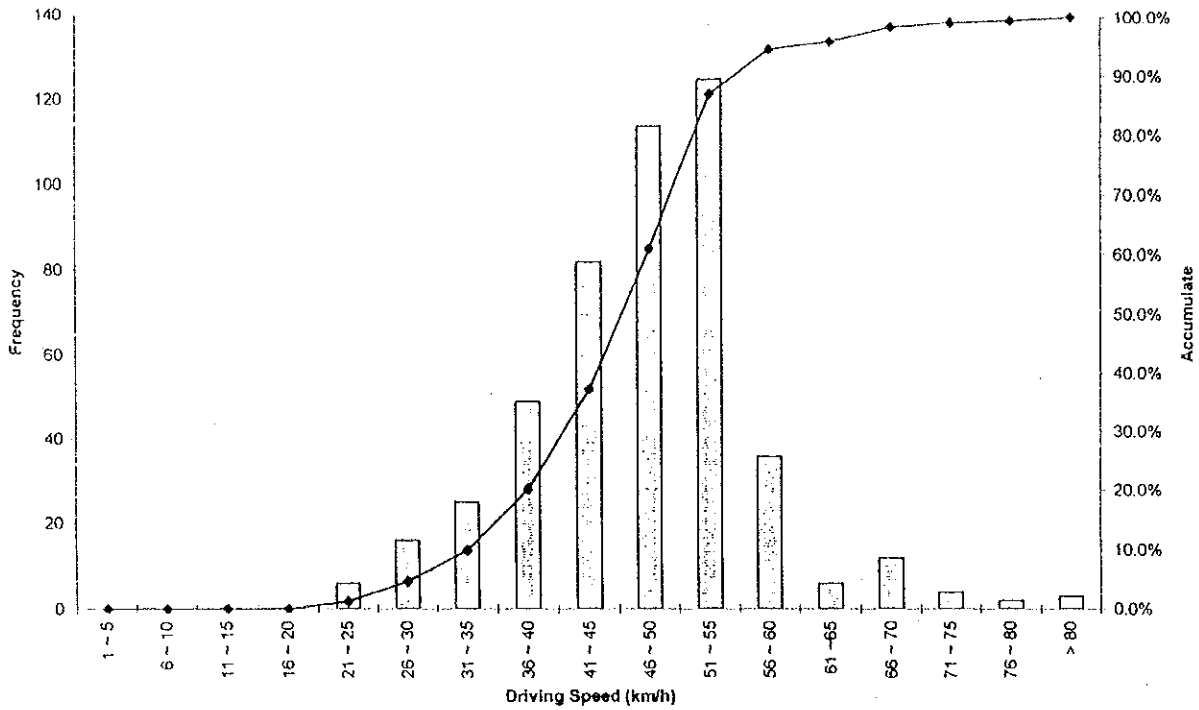


Figure 4-28(4) Distribution of Frequency of Speeds – Measuring Point No. 5

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

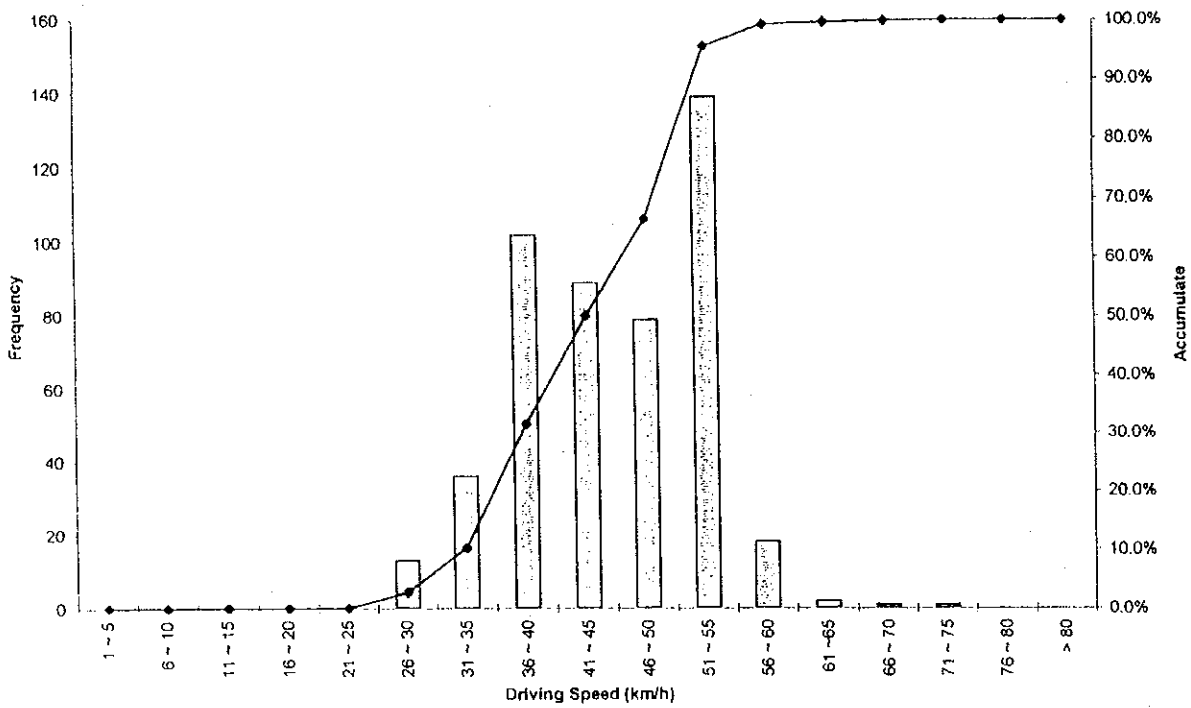
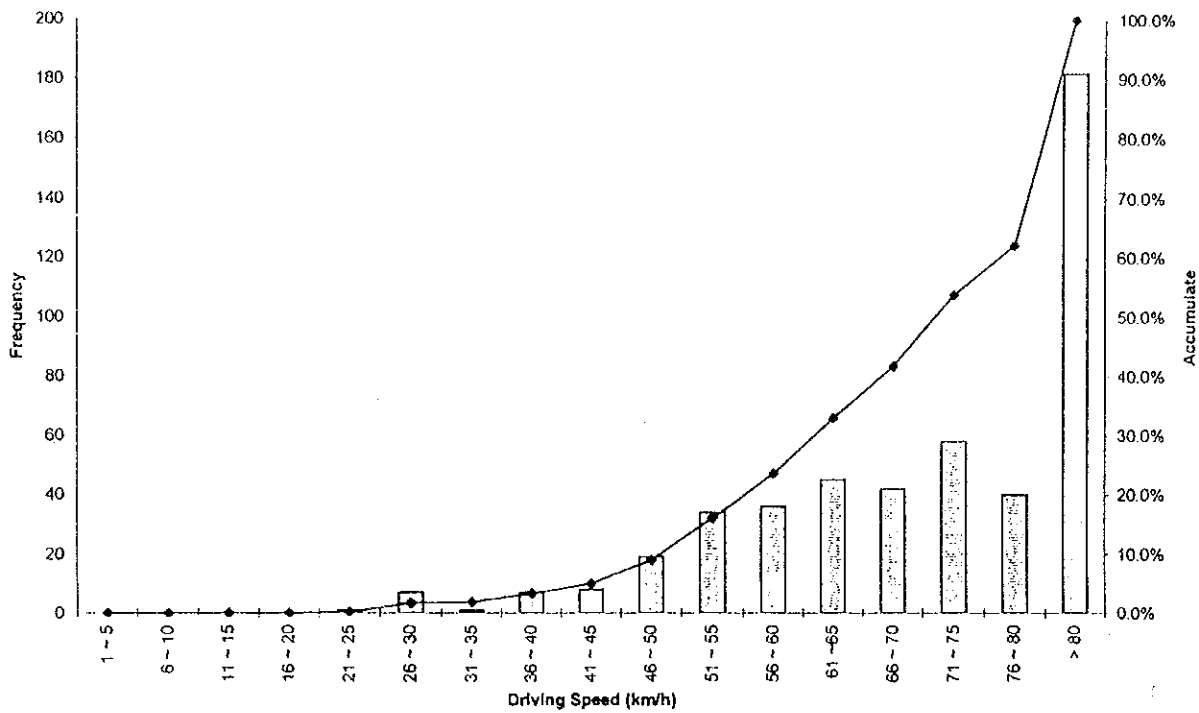


Figure 4-28(5) Distribution of Frequency of Speeds – Measuring Point No. 6

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

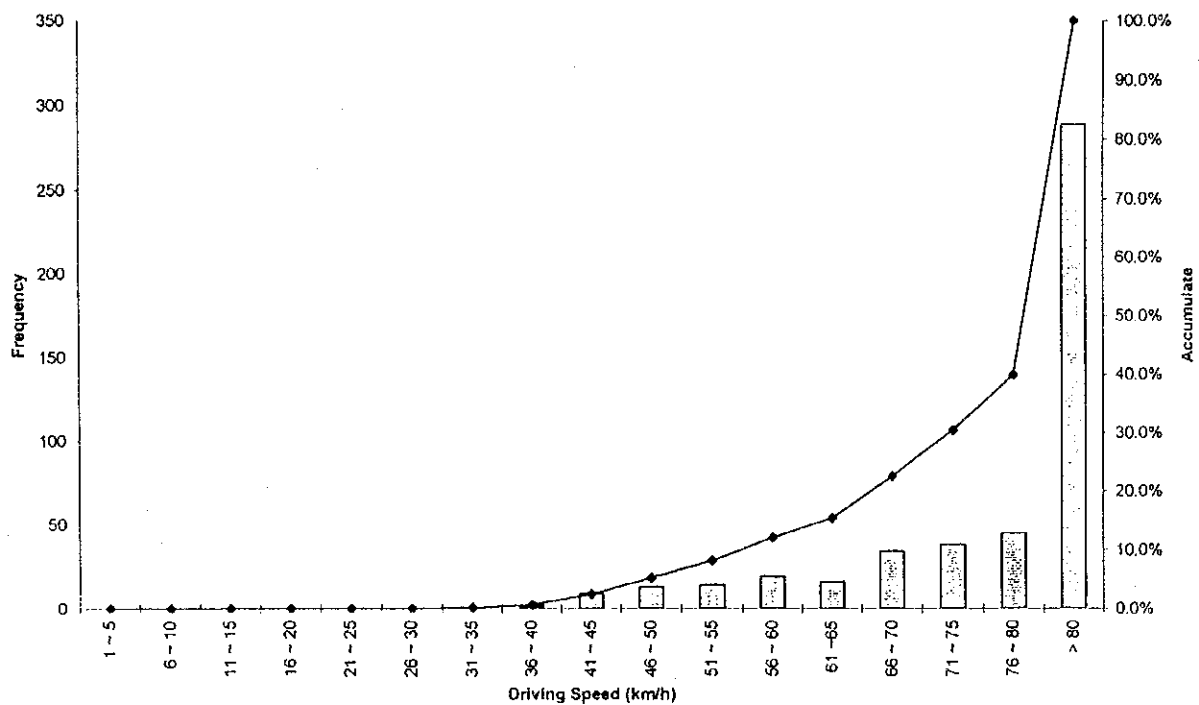
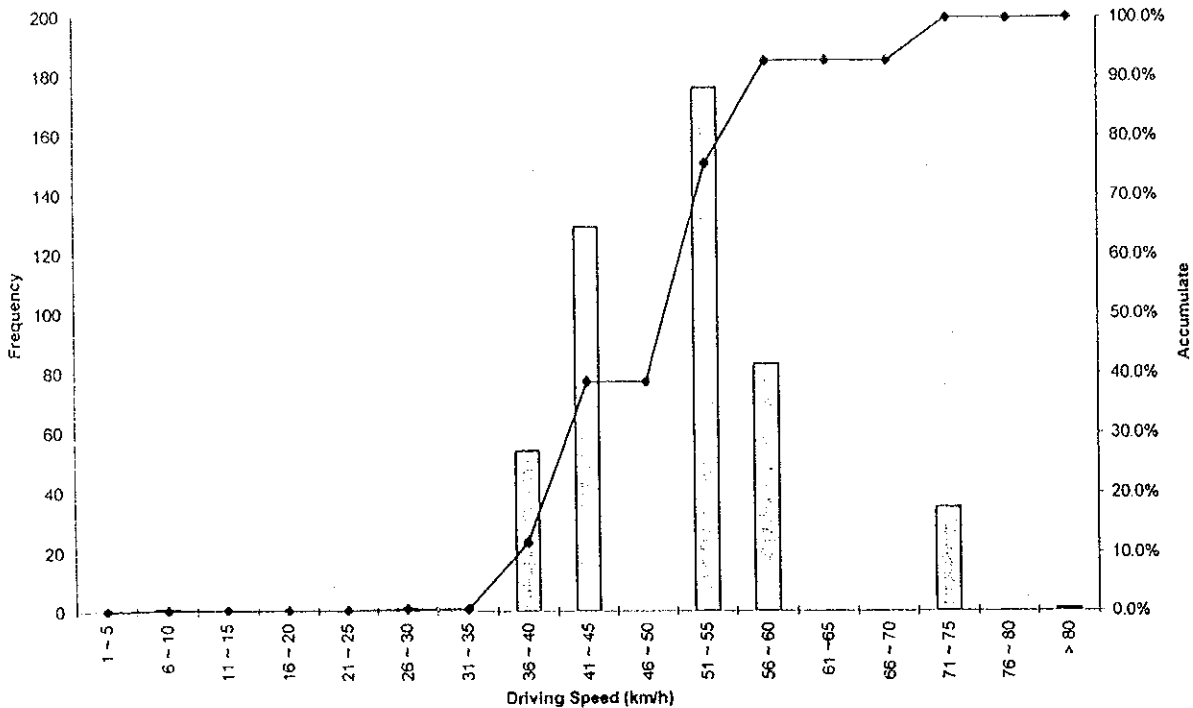


Figure 4-28(6) Distribution of Frequency of Speeds - Measuring Point No. 7

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

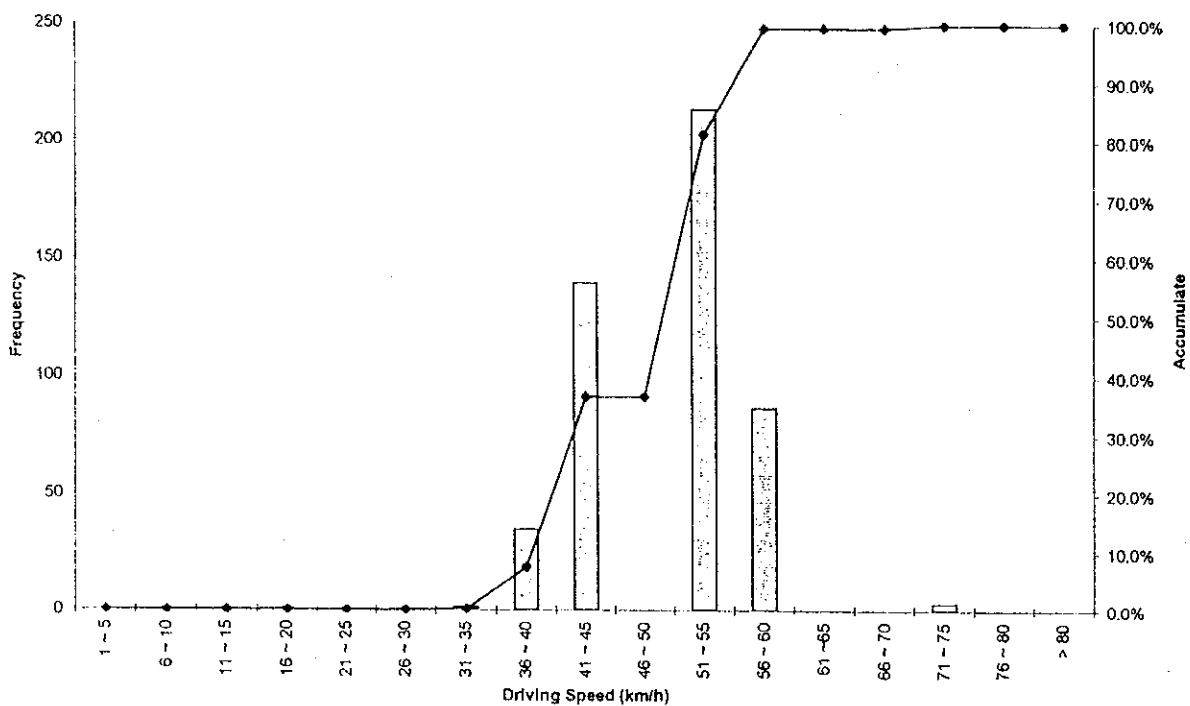
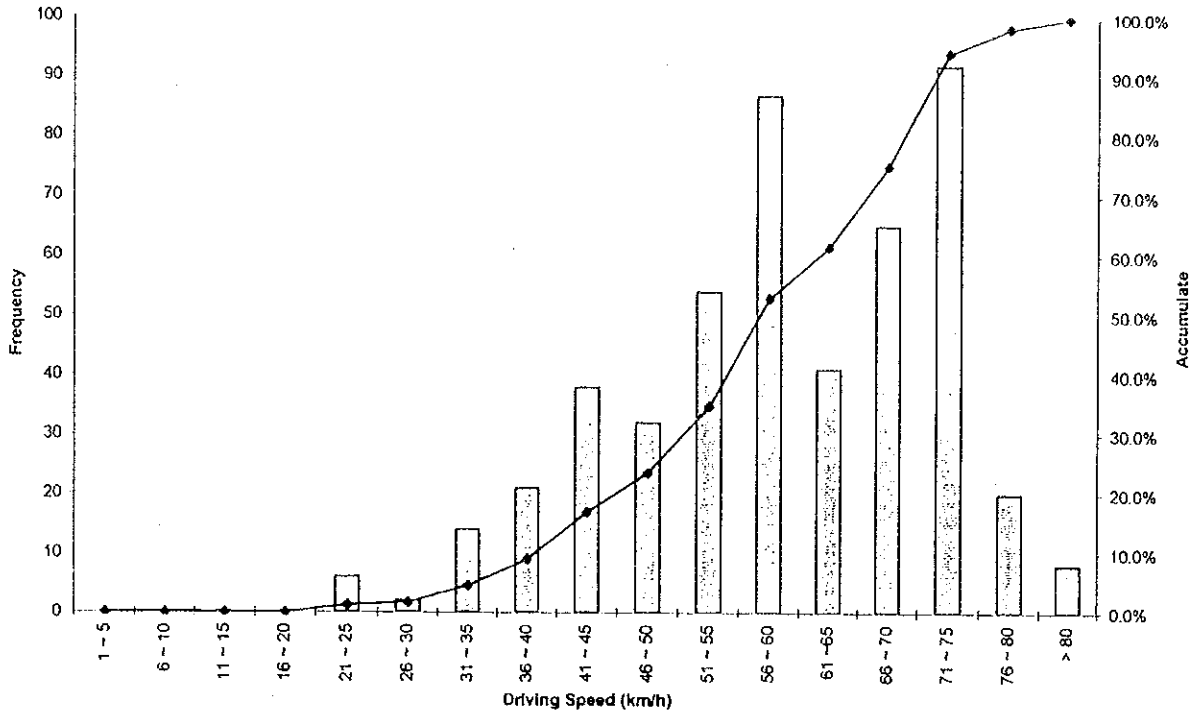


Figure 4-28(7) Distribution of Frequency of Speeds - Measuring Point No. 9



(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

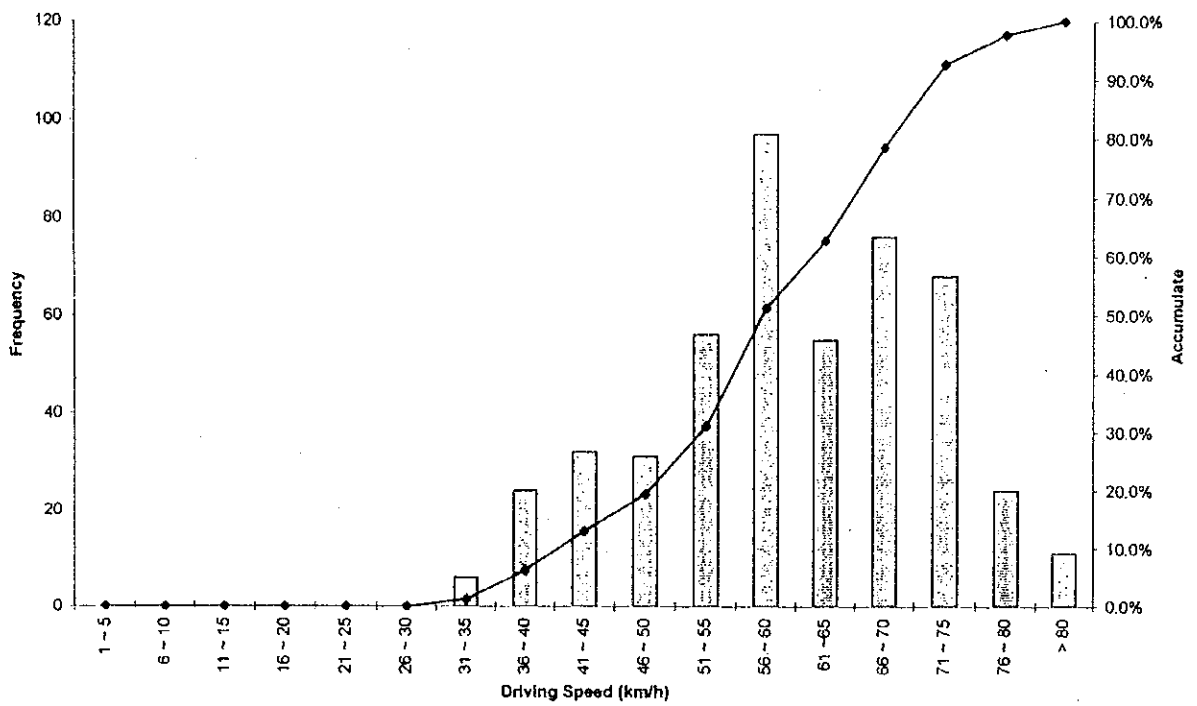
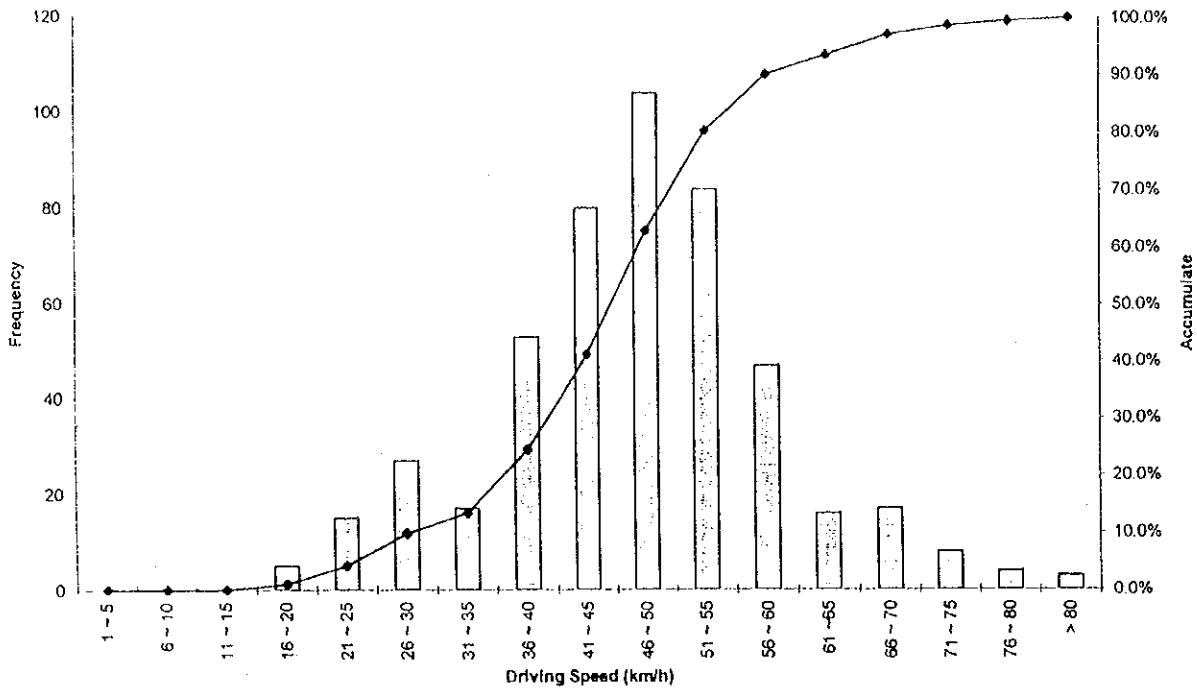


Figure 4-28(8) Distribution of Frequency of Speeds – Measuring Point No. 10ac

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

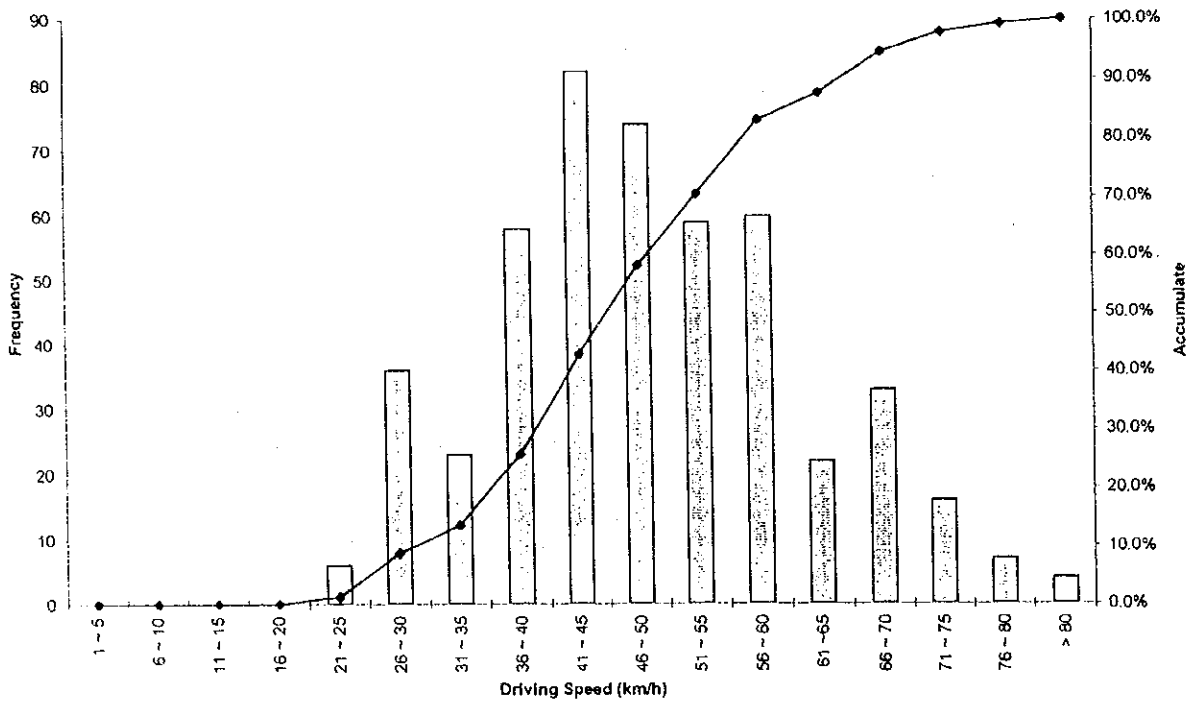
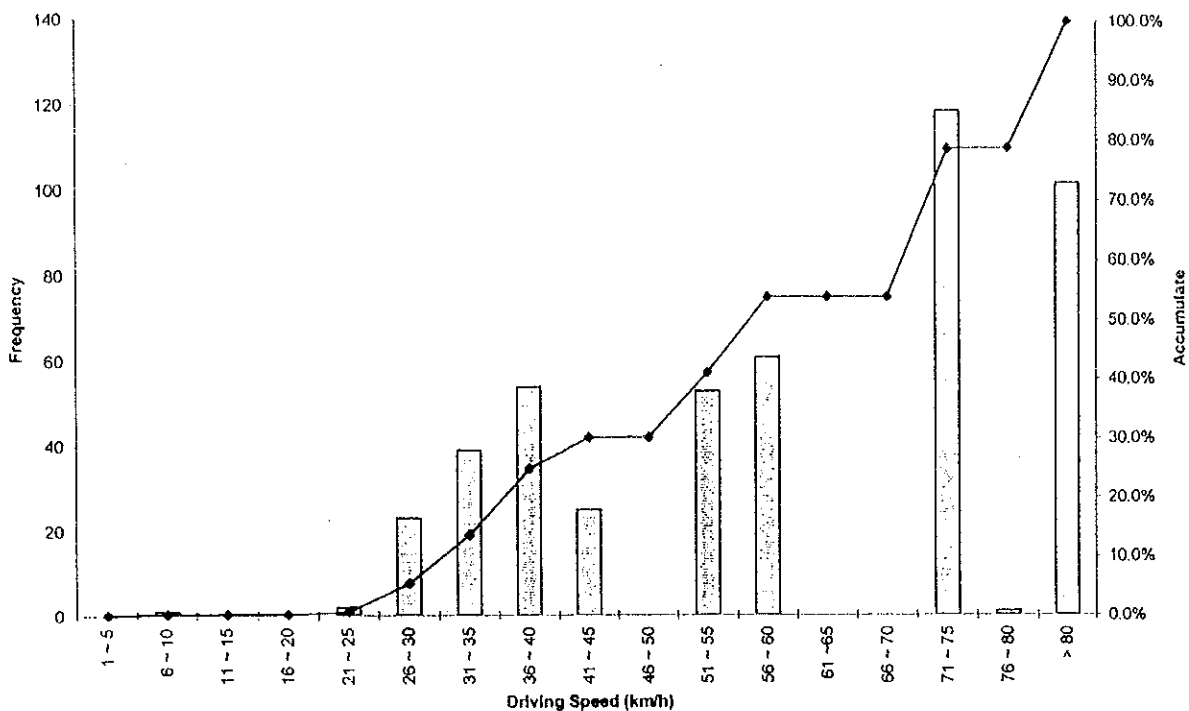


Figure 4-28(9) Distribution of Frequency of Speeds – Measuring Point No. 10bd

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

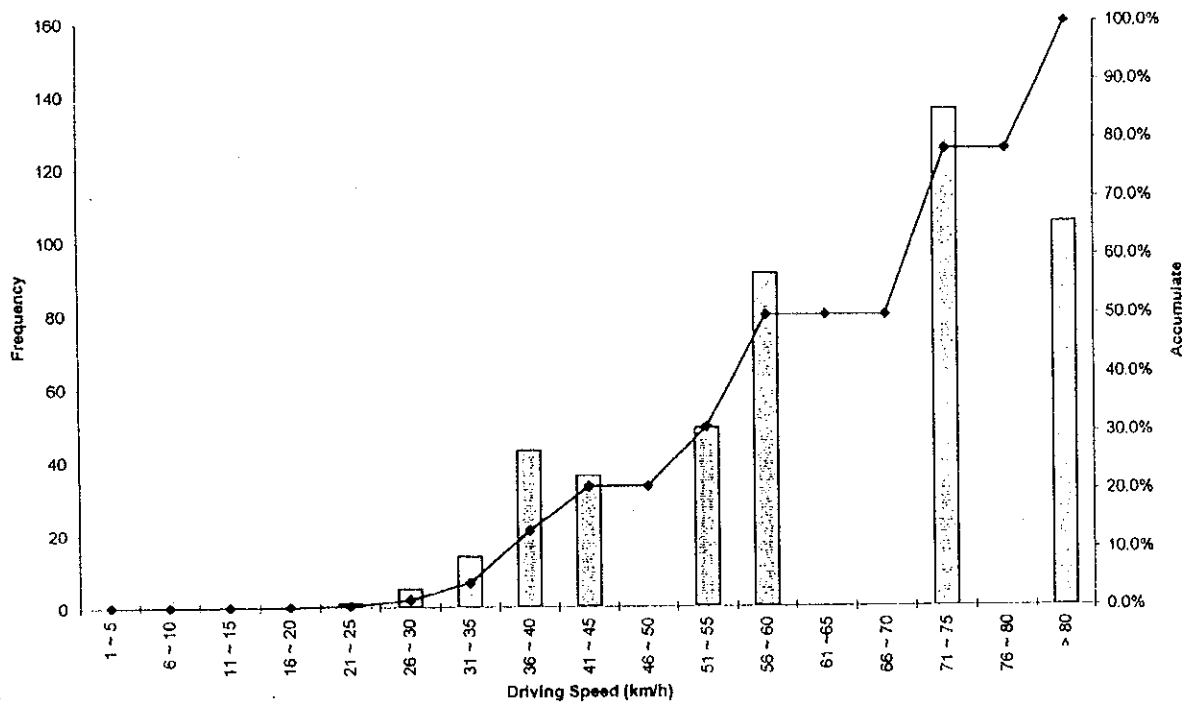
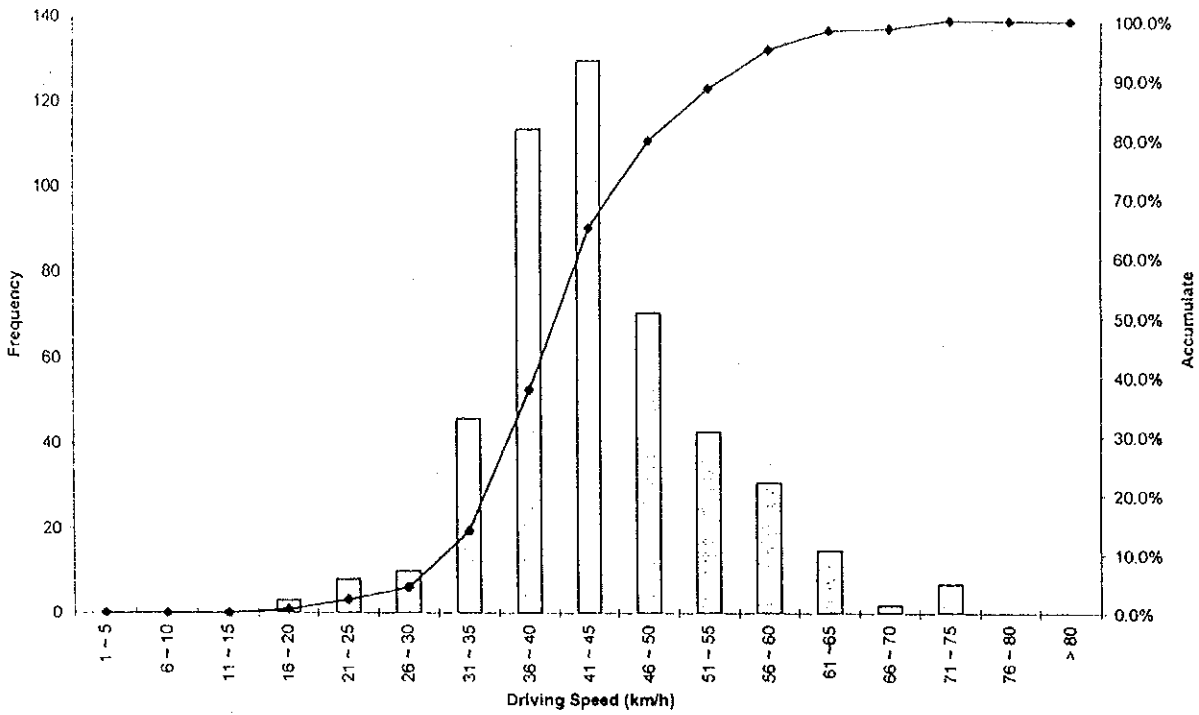


Figure 4-28(10) Distribution of Frequency of Speeds – Measuring Point No. 11

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

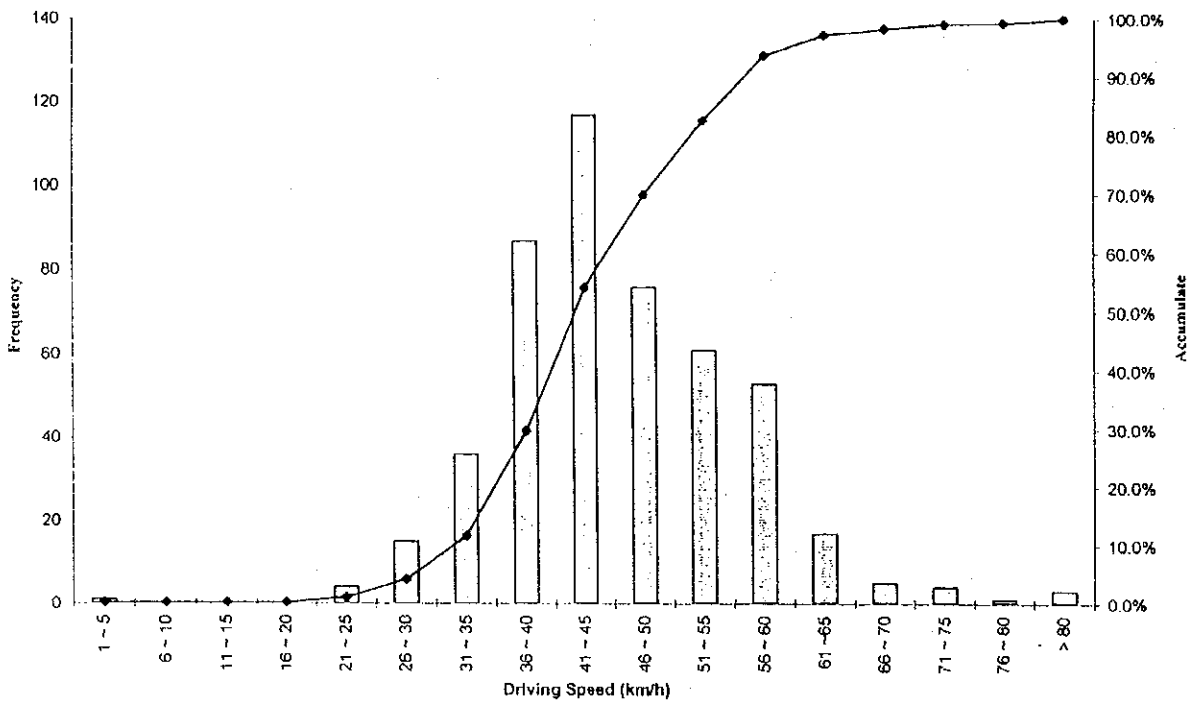


Figure 4-28(11) Distribution of Frequency of Speeds - Measuring Point No. 12

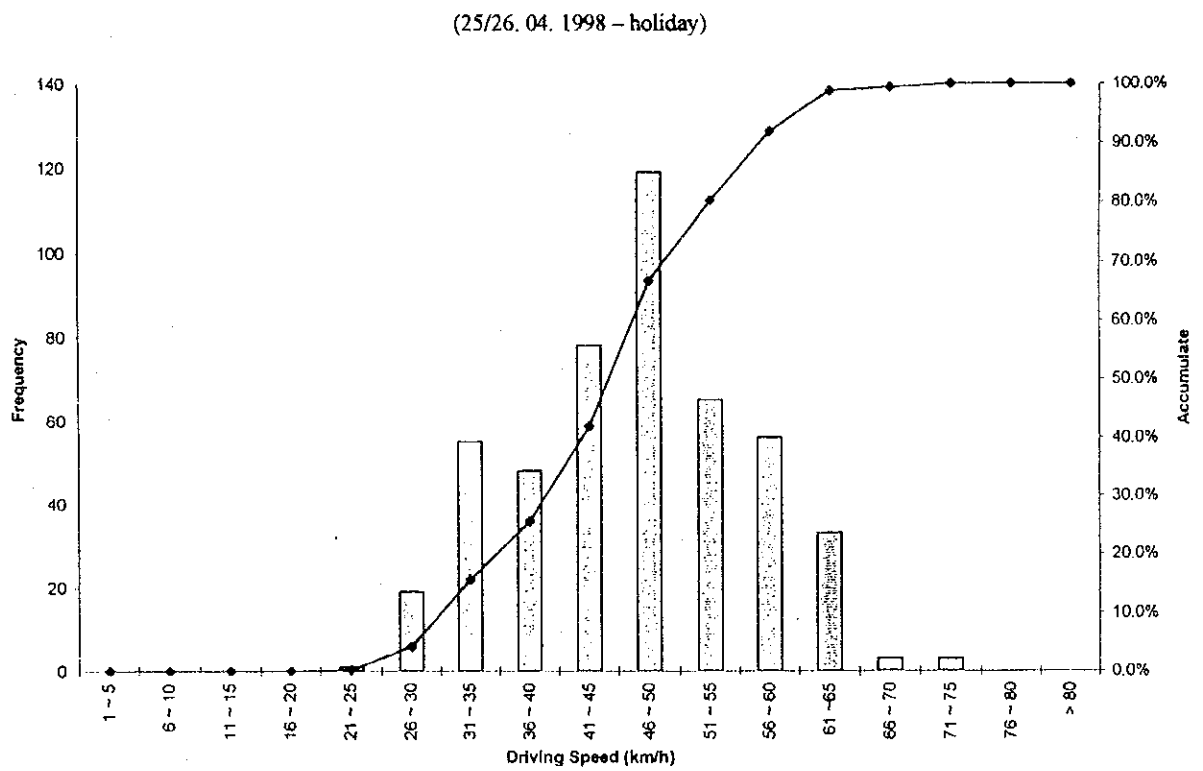
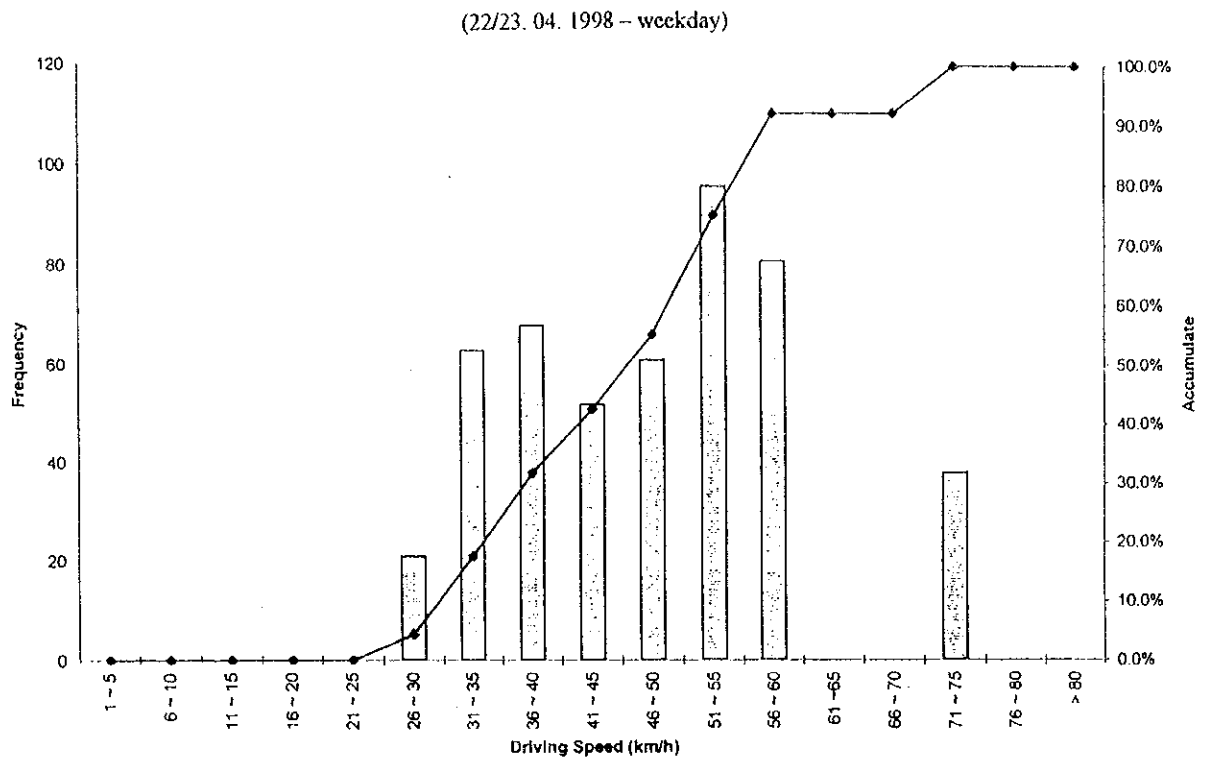
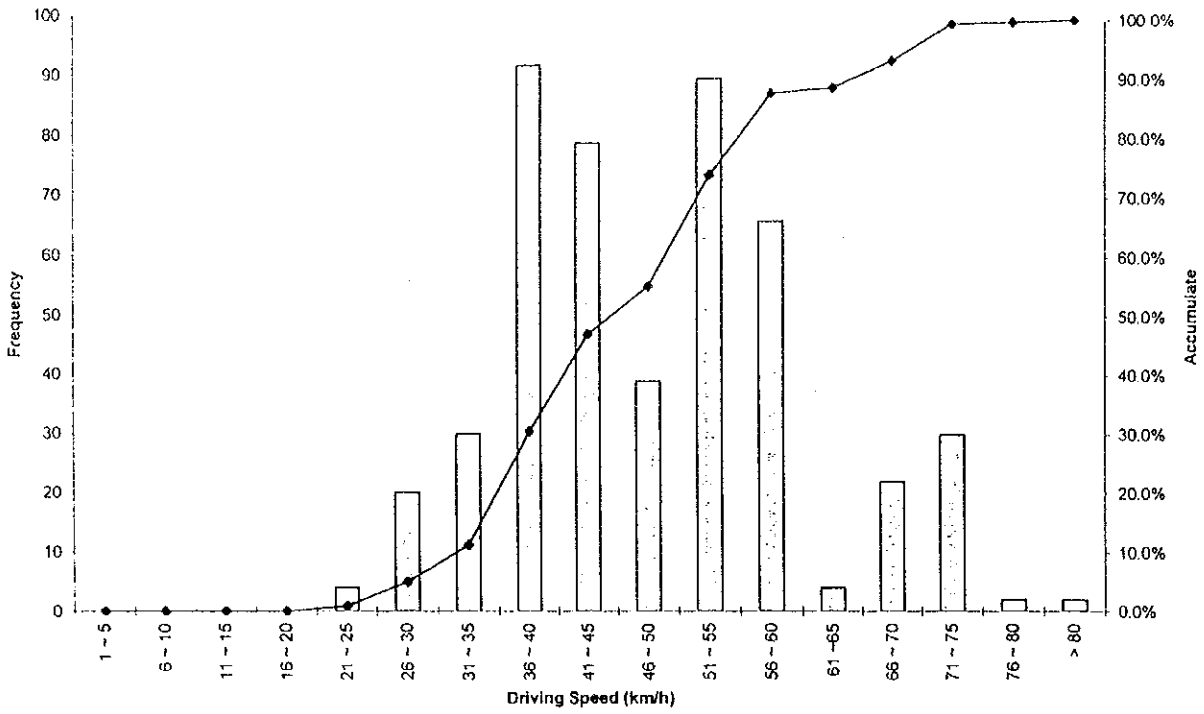


Figure 4-28(12) Distribution of Frequency of Speeds – Measuring Point No. 13

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

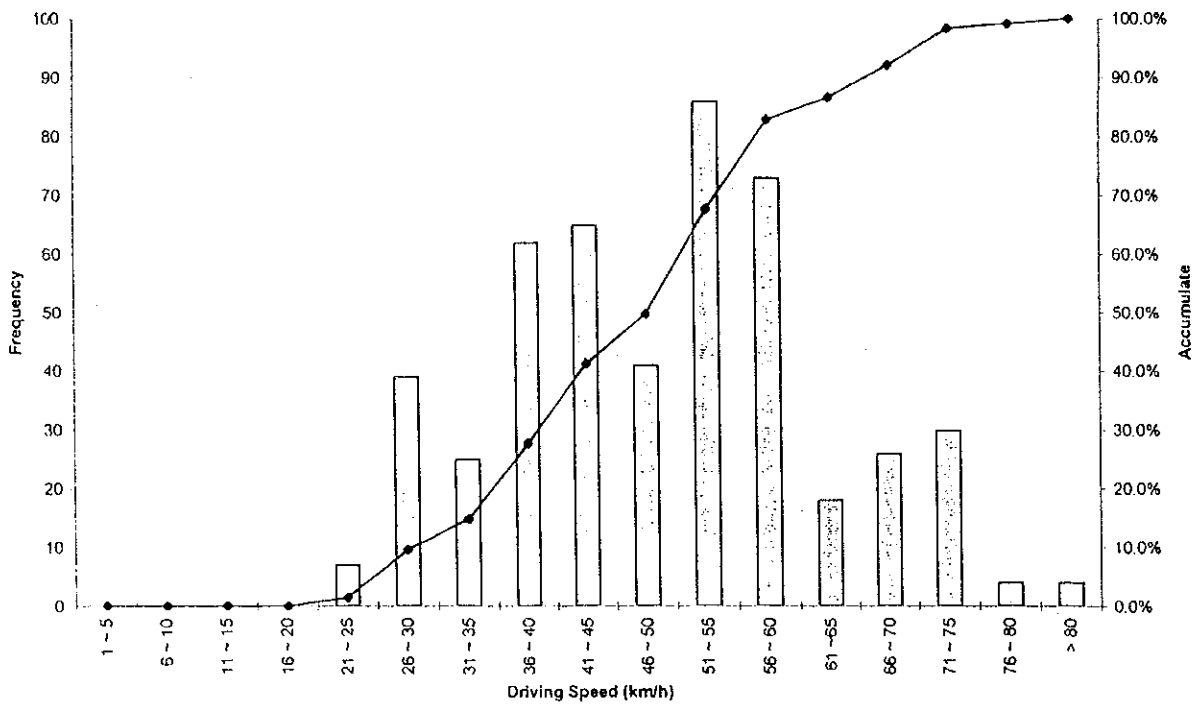


Figure 4-28(13) Distribution of Frequency of Speeds – Measuring Point No. 14

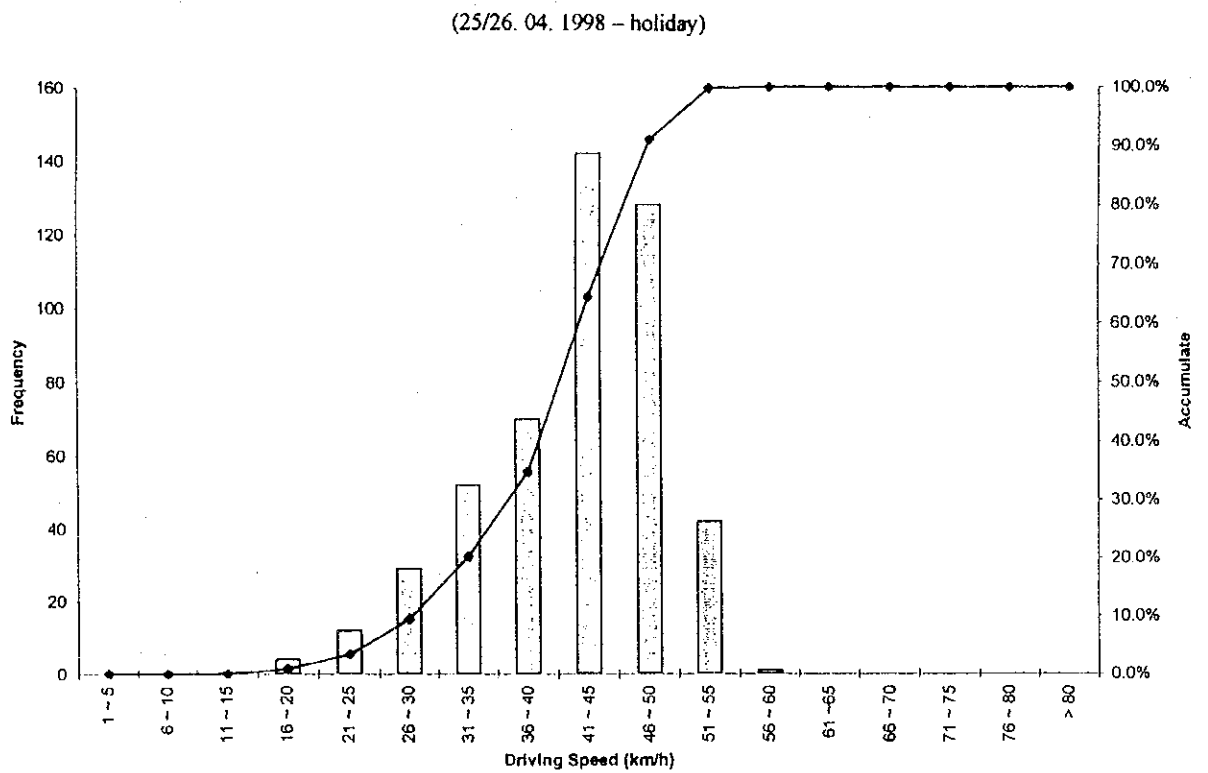
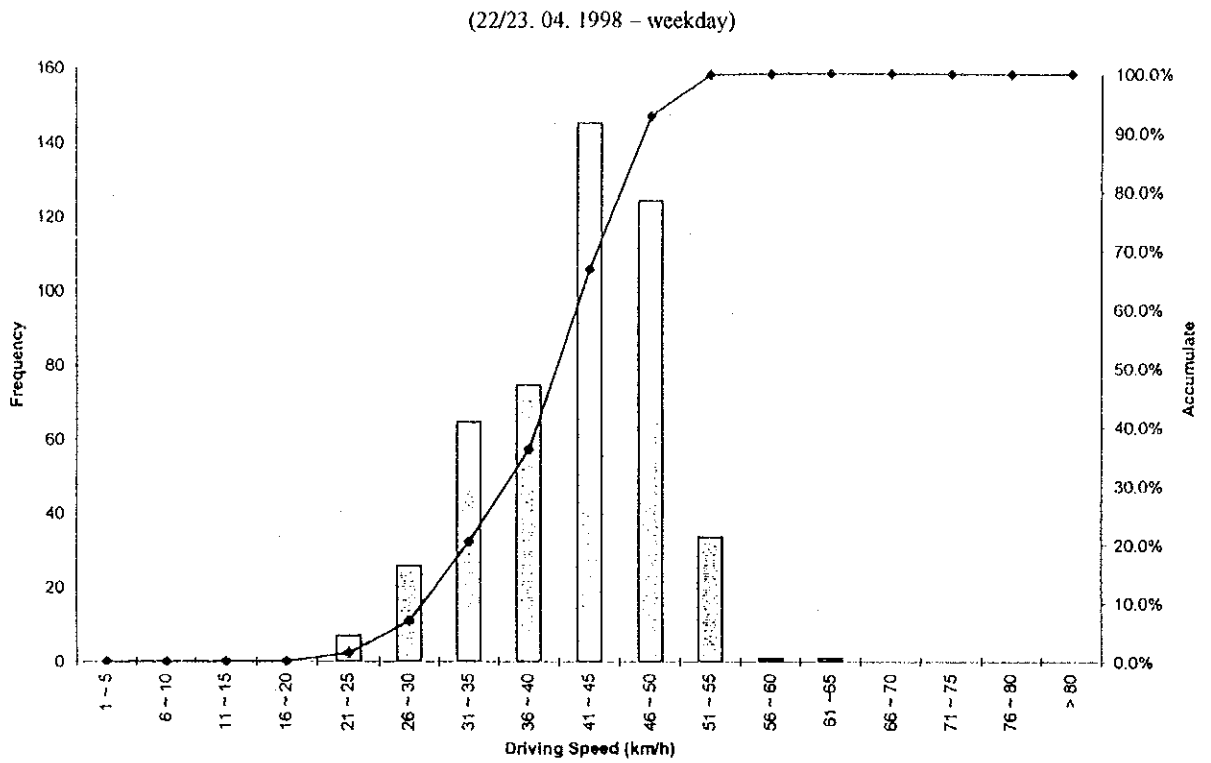
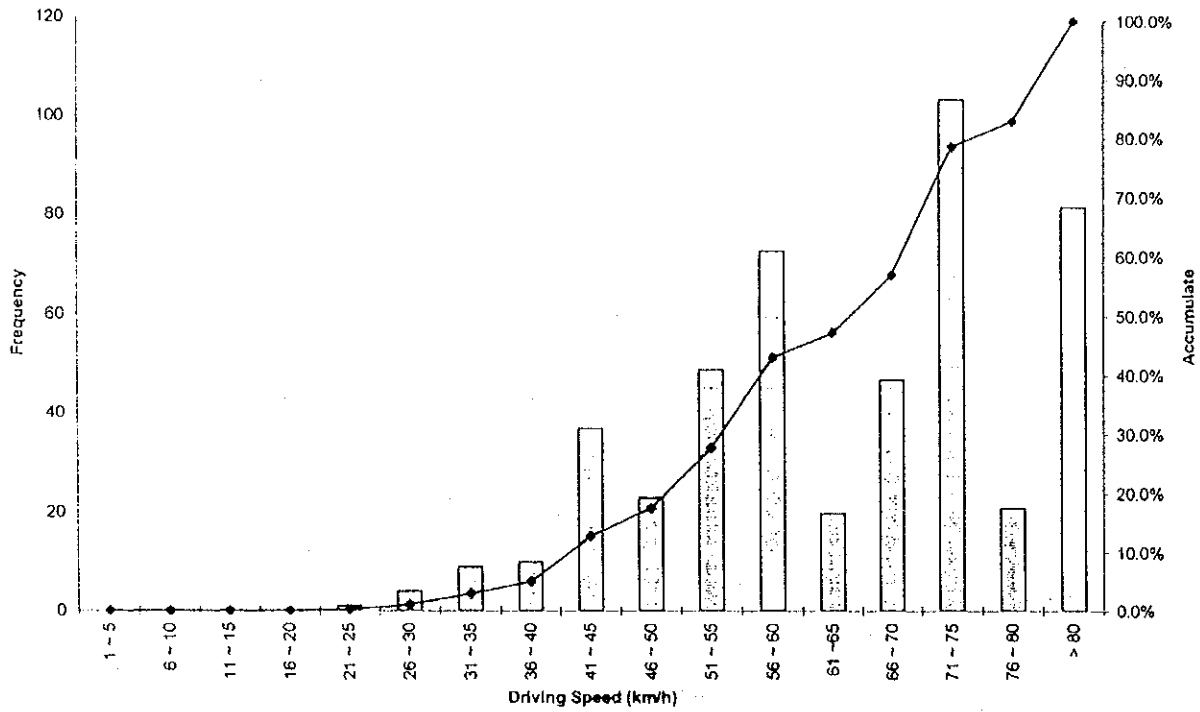


Figure 4-28(14) Distribution of Frequency of Speeds – Measuring Point No. 16

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

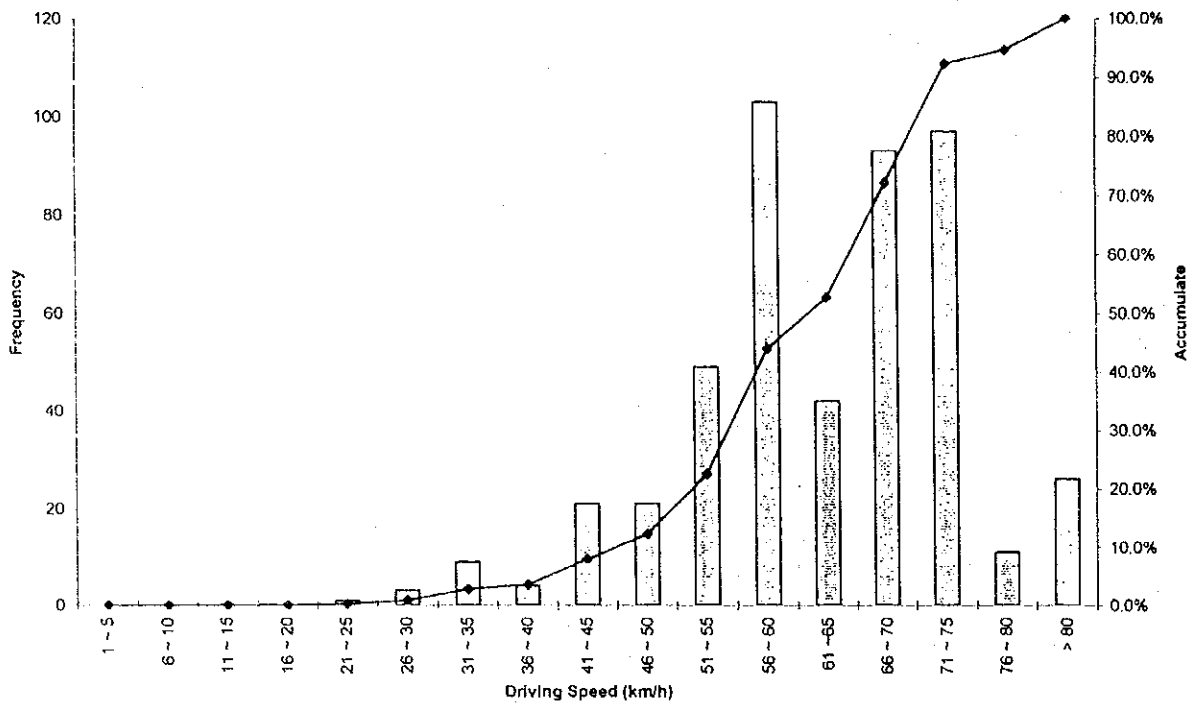
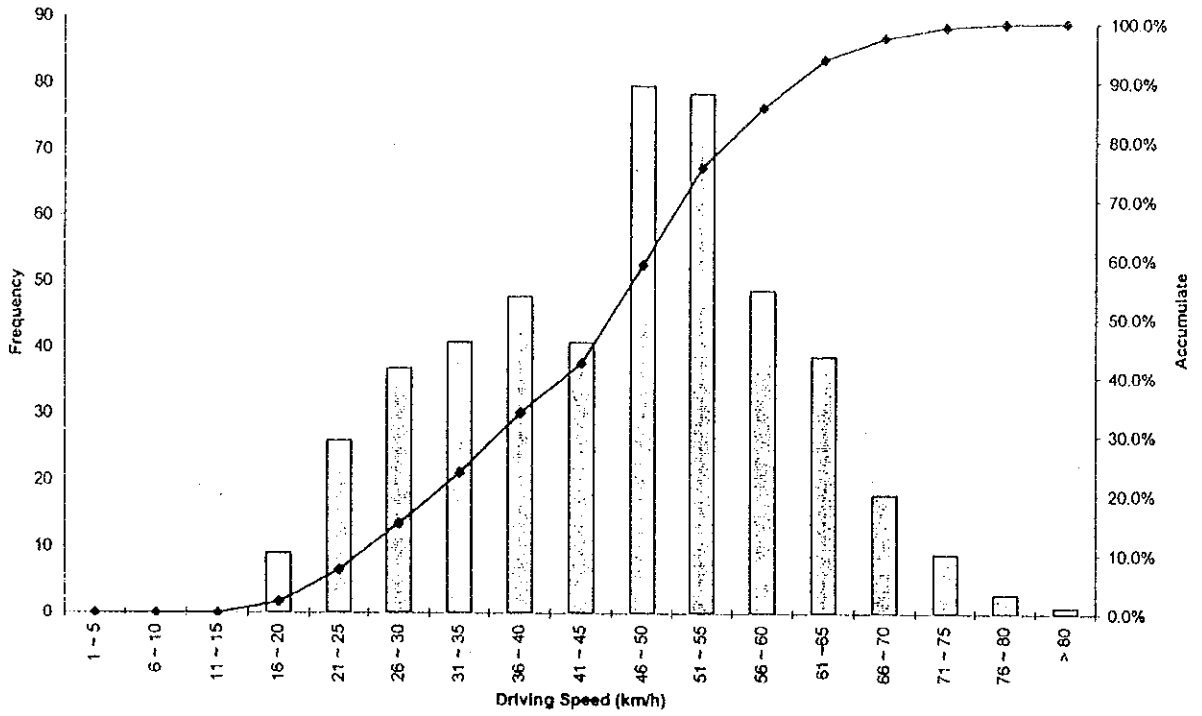


Figure 4-28(15) Distribution of Frequency of Speeds – Measuring Point No. 17



(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

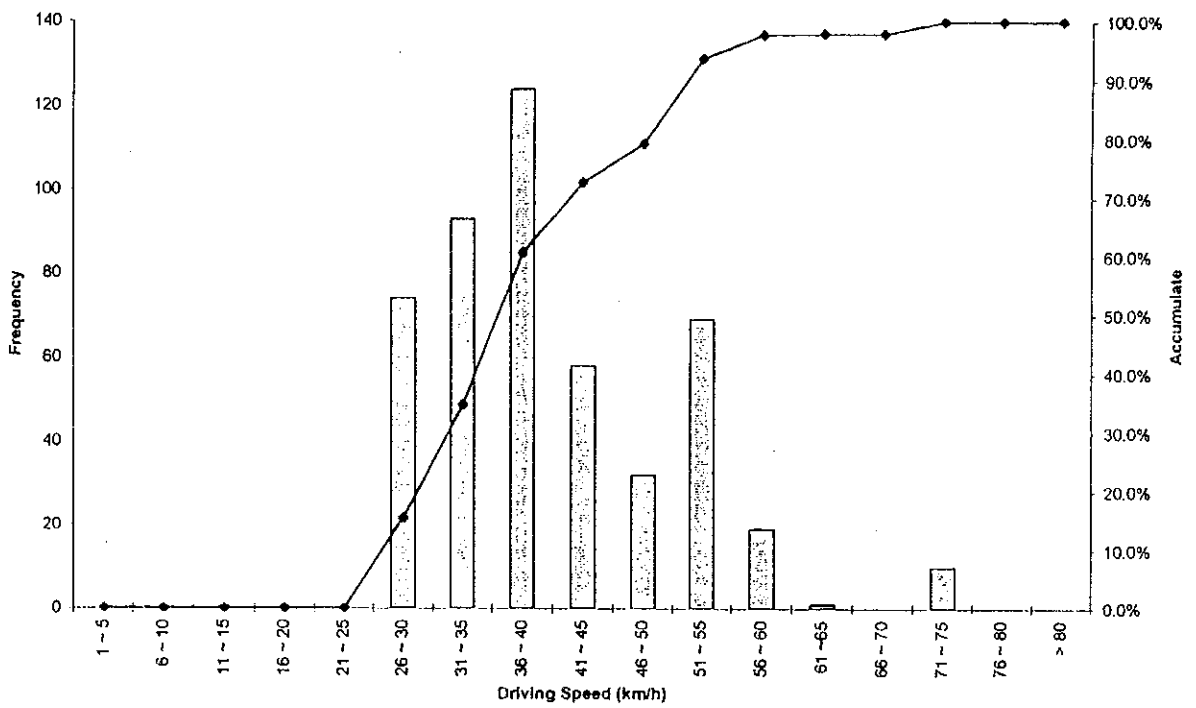
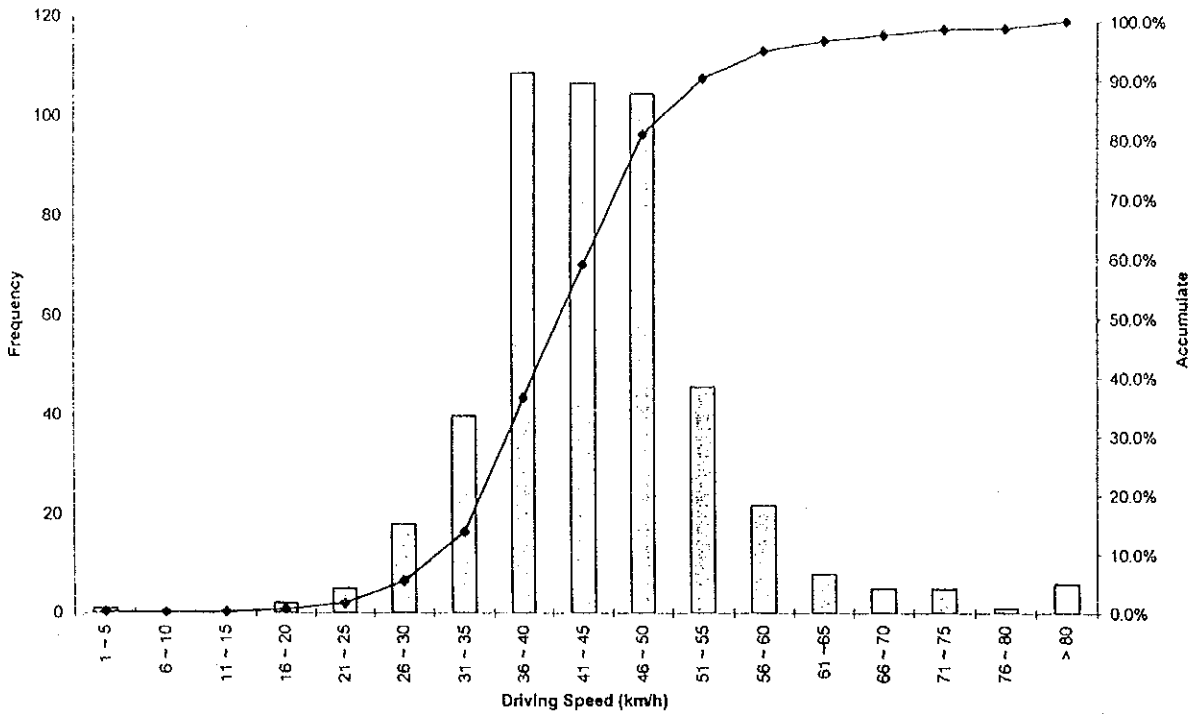


Figure 4-28(16) Distribution of Frequency of Speeds – Measuring Point No. 20

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

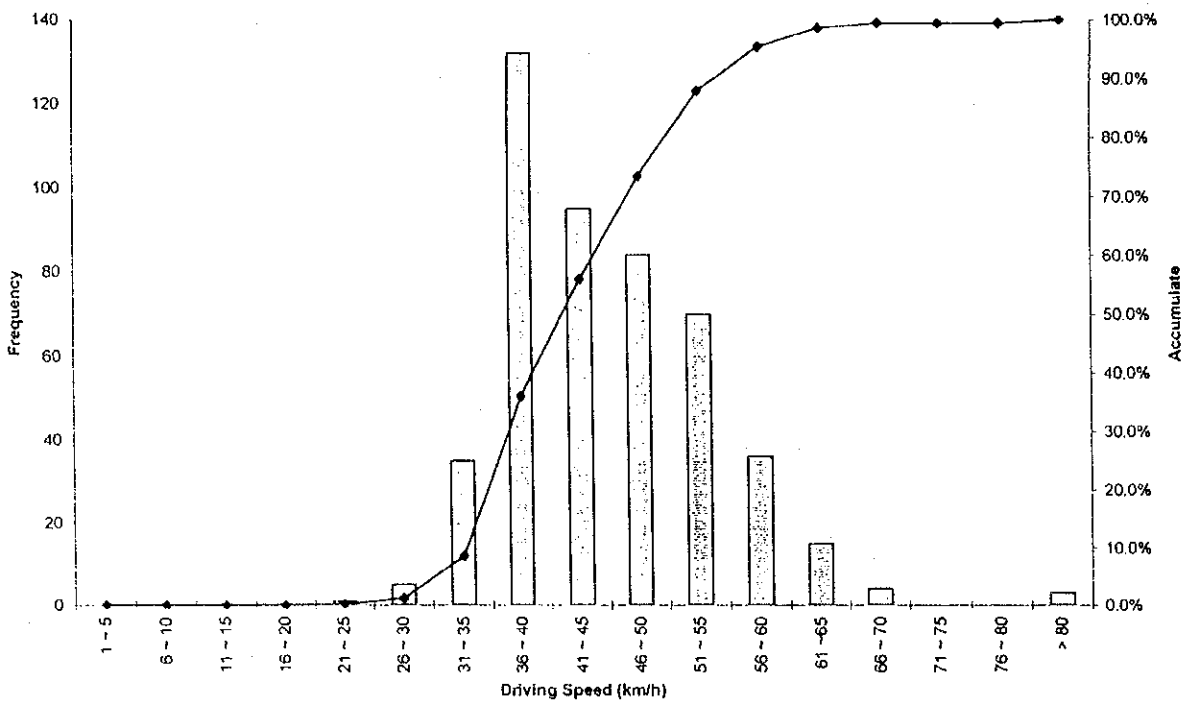
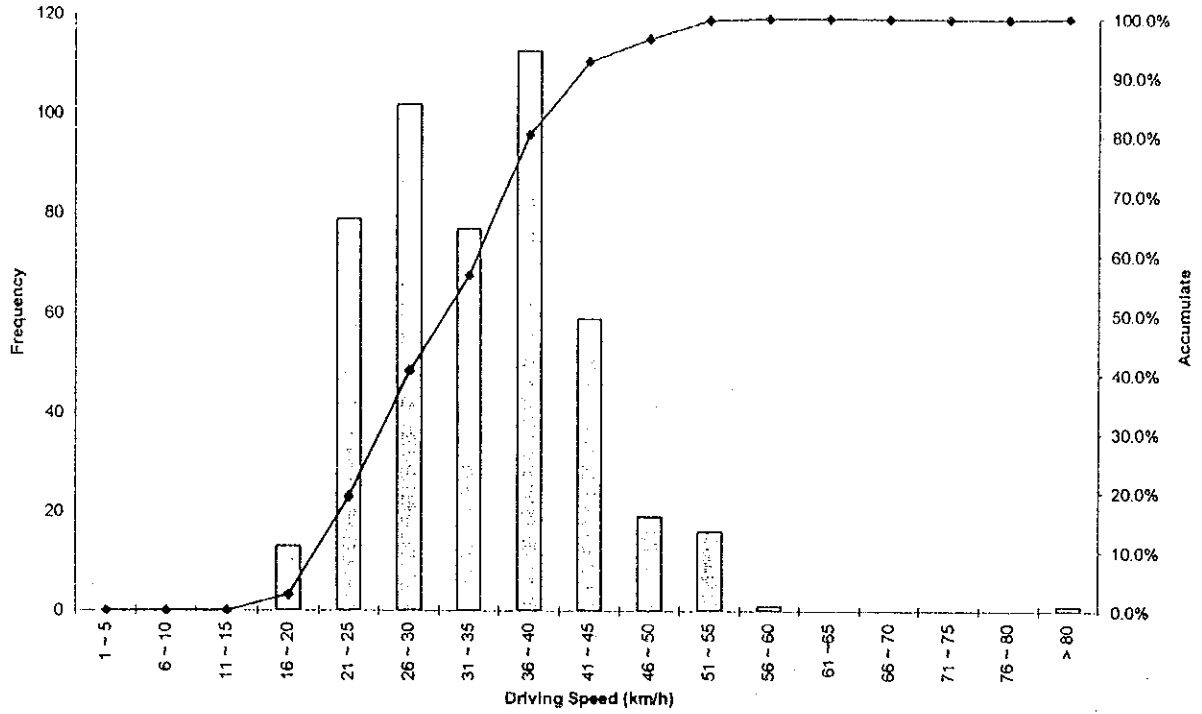


Figure 4-28(17) Distribution of Frequency of Speeds - Measuring Point No. 21

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

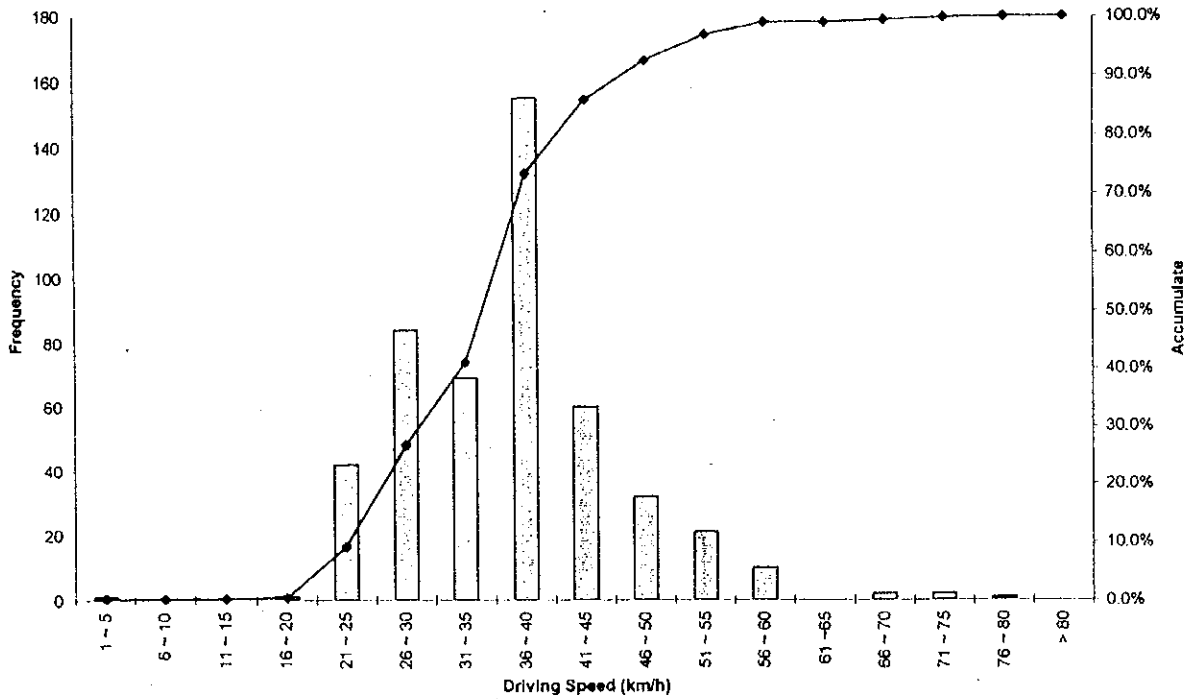
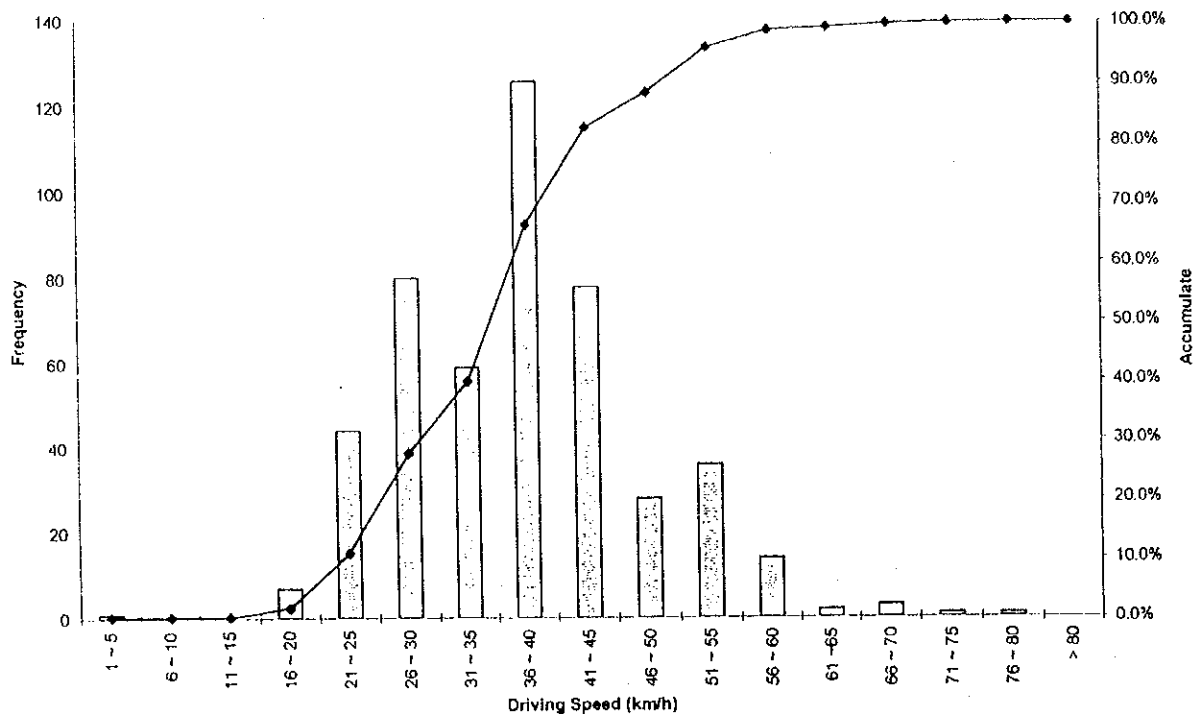


Figure 4-28(18) Distribution of Frequency of Speeds - Measuring Point No. 23ac

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

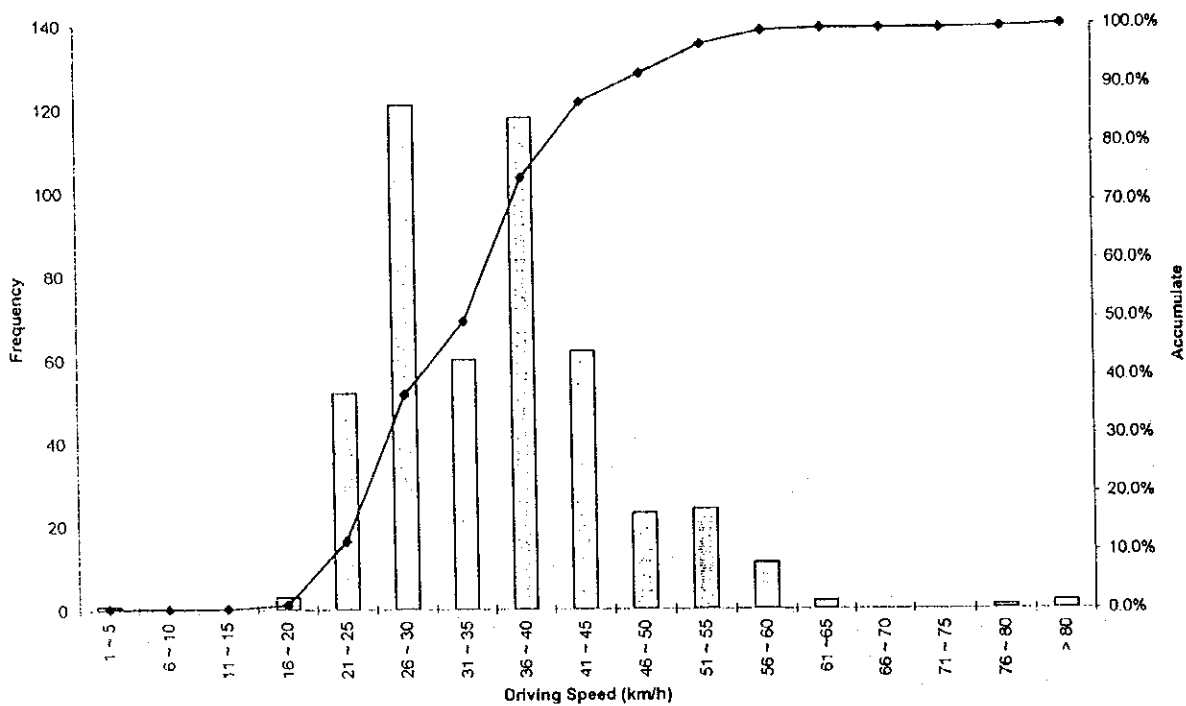


Figure 4-28(19) Distribution of Frequency of Speeds -- Measuring Point No. 23bd

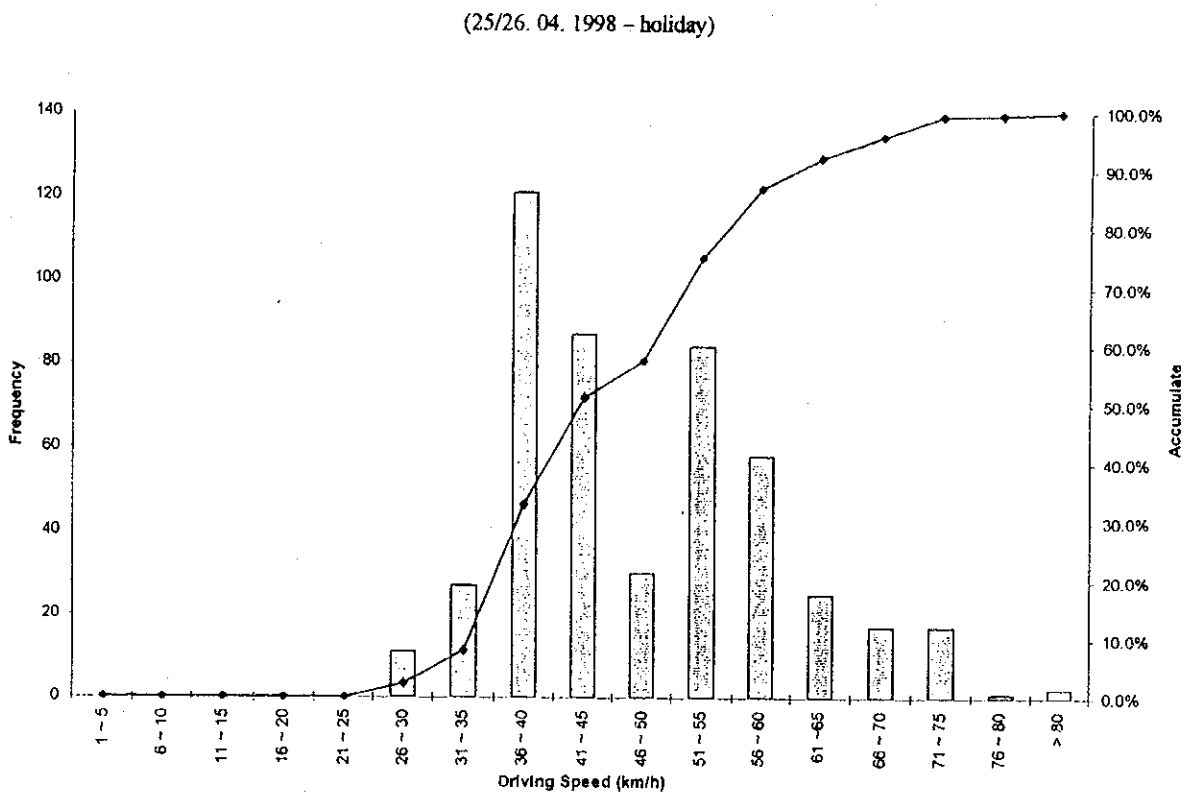
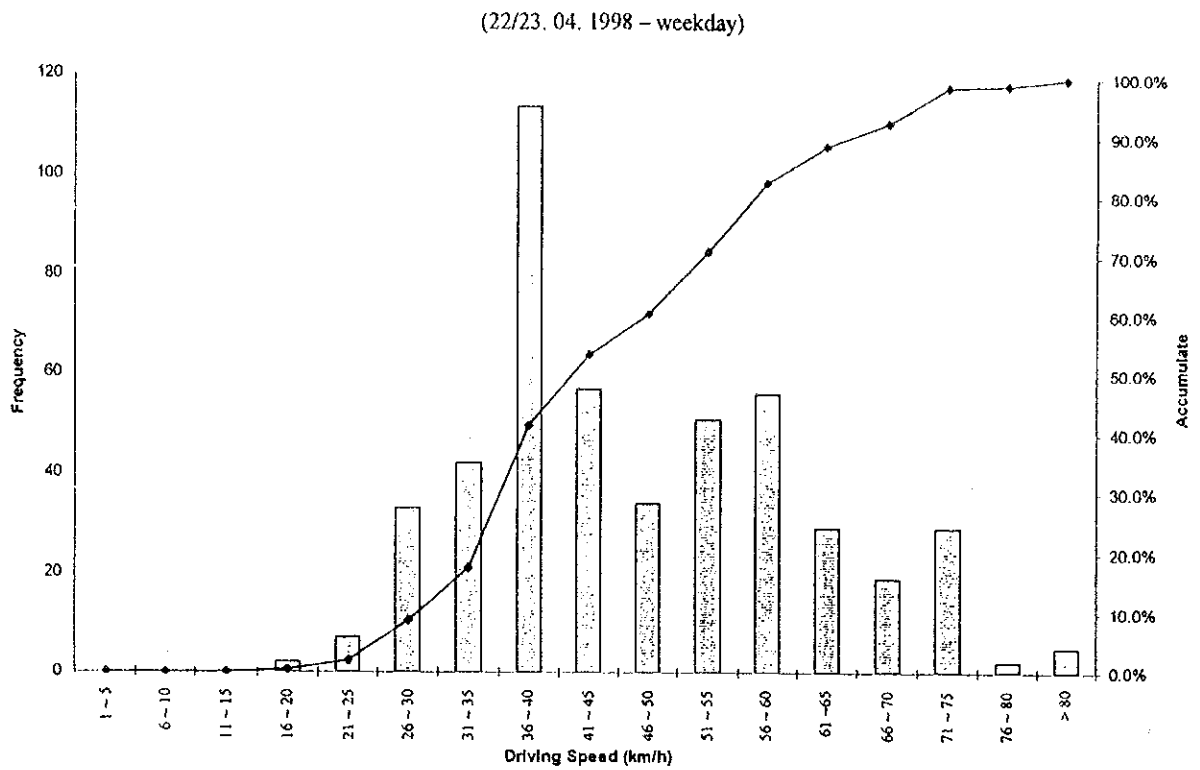
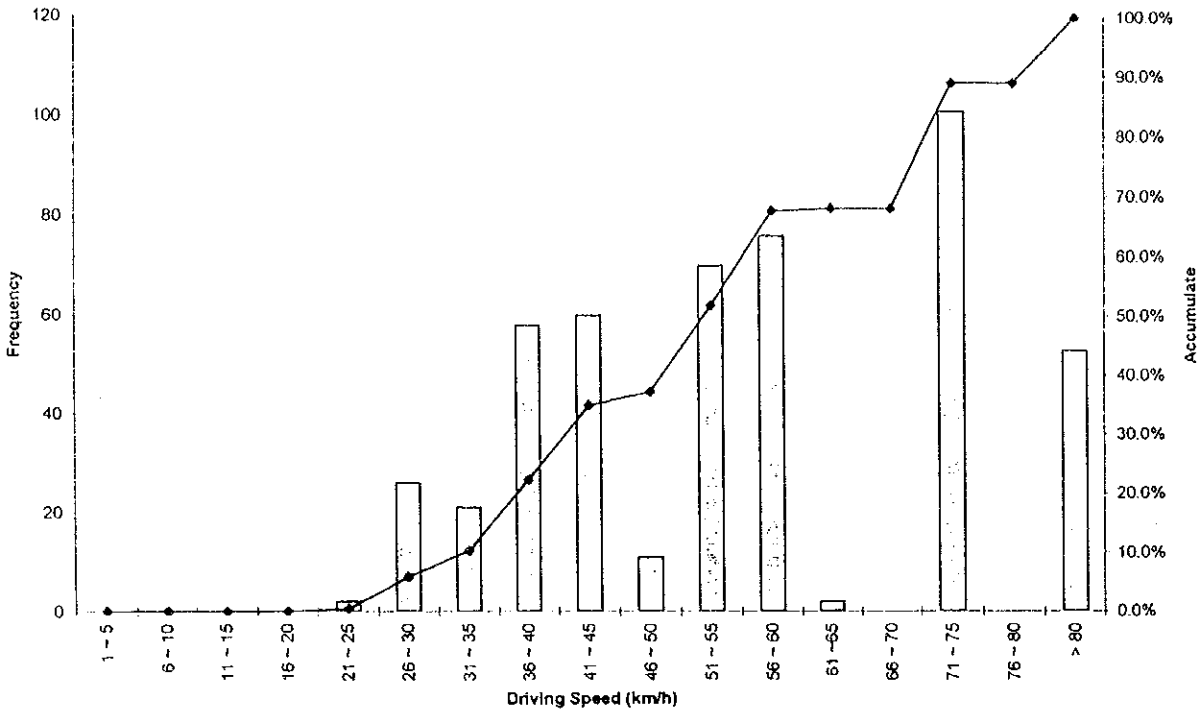


Figure 4-28(20) Distribution of Frequency of Speeds - Measuring Point No. 25

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

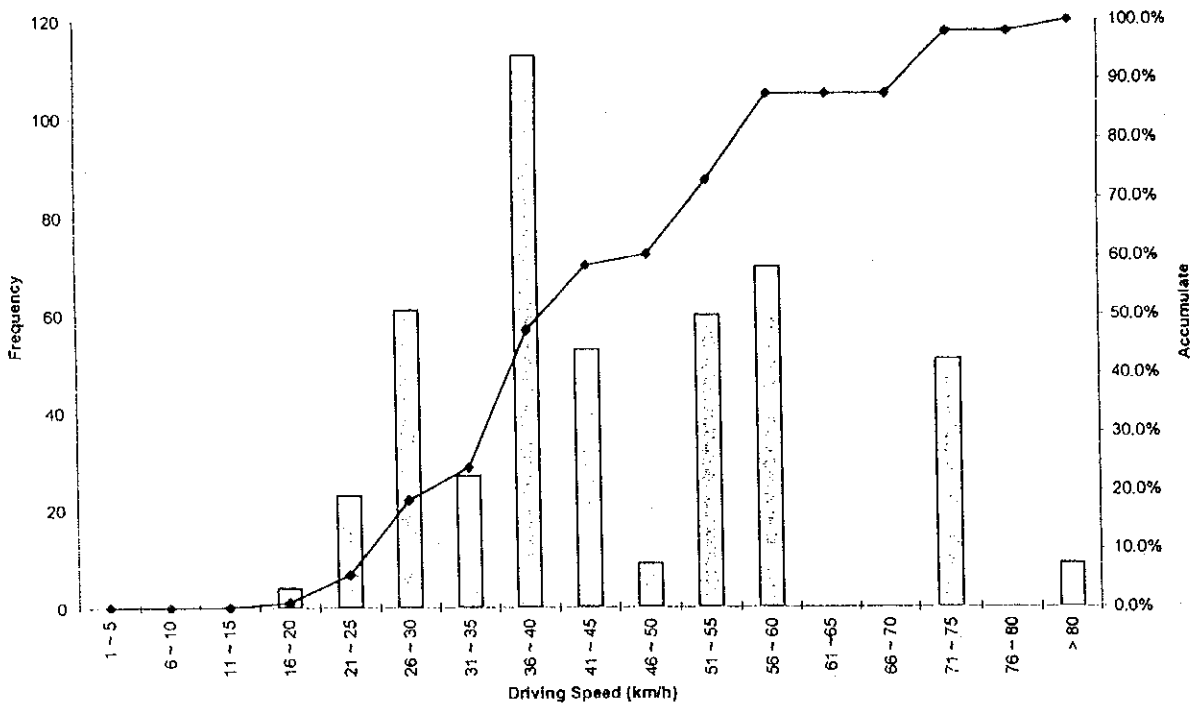


Figure 4-28(21) Distribution of Frequency of Speeds – Measuring Point No. 27

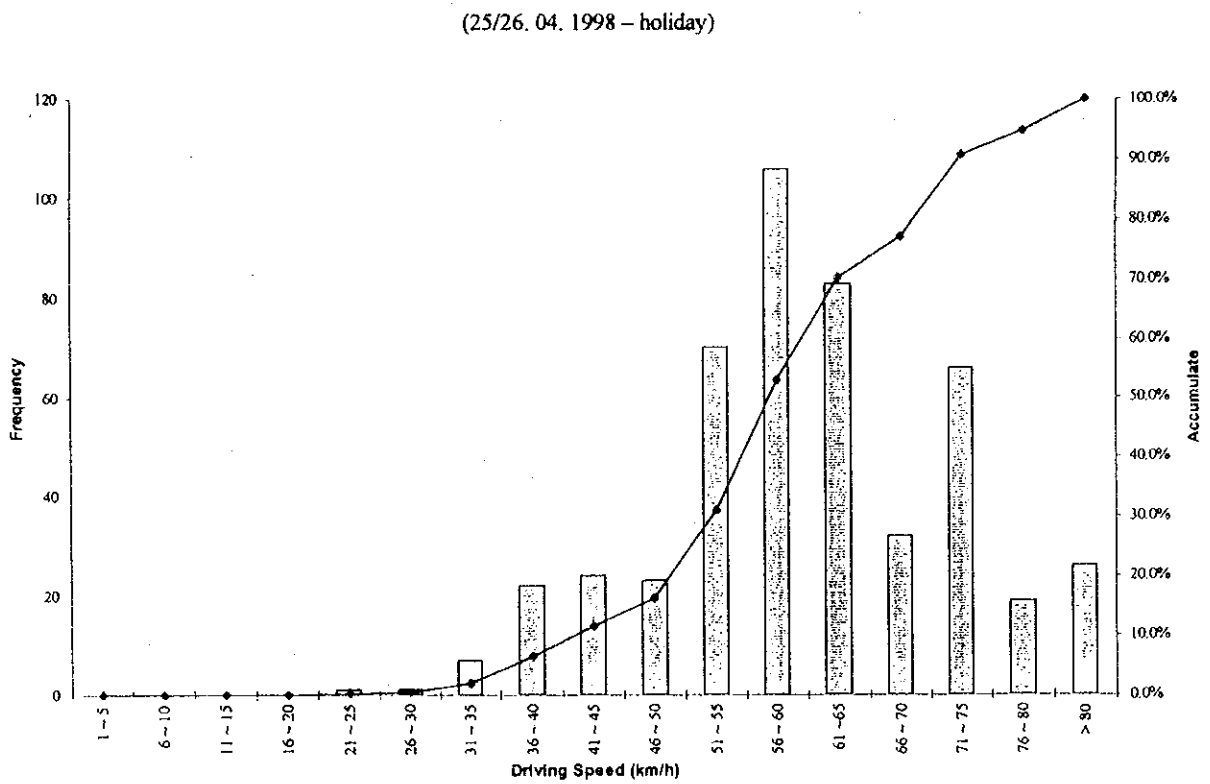
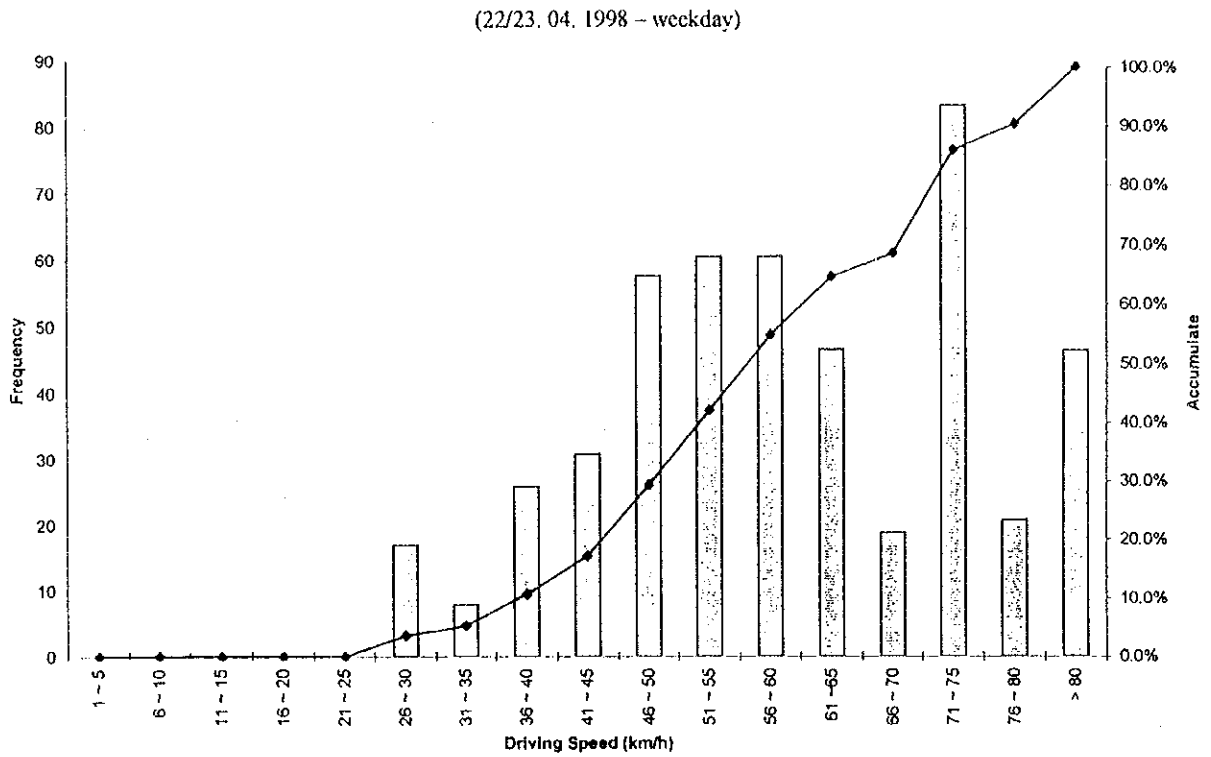


Figure 4-28(22) Distribution of Frequency of Speeds – Measuring Point No. 29

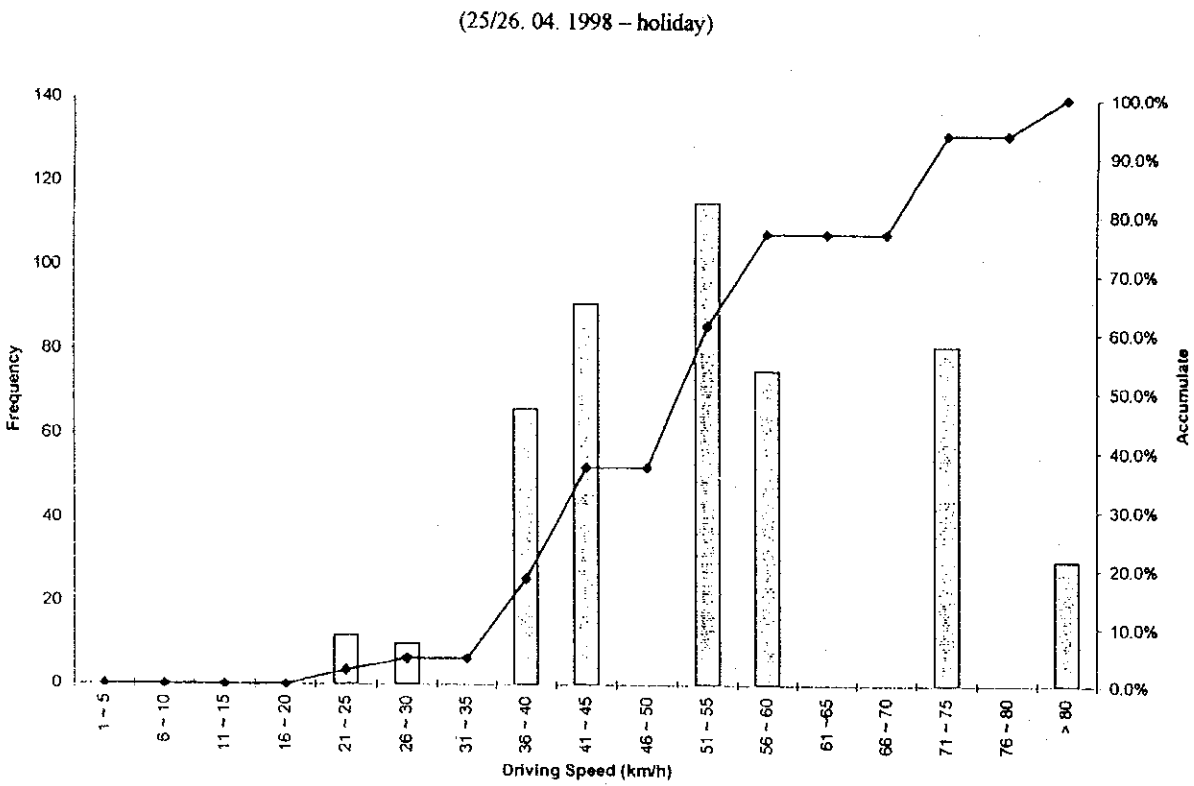
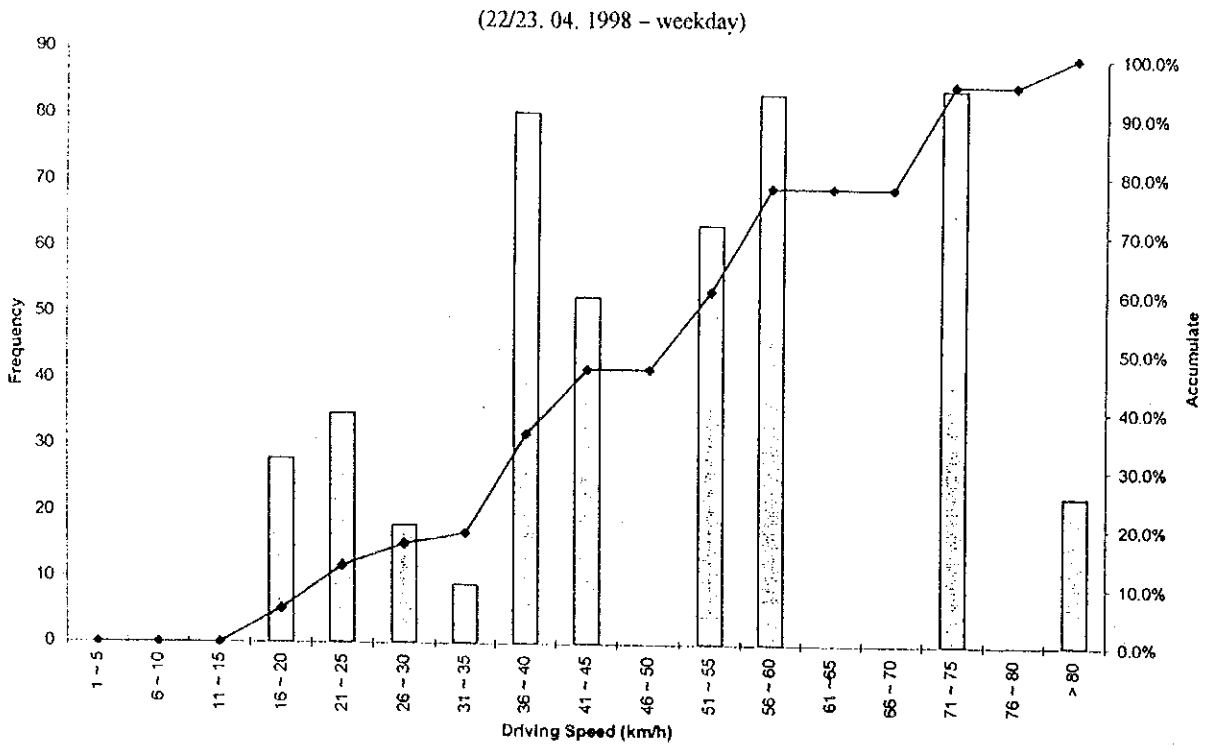


Figure 4-28(23) Distribution of Frequency of Speeds - Measuring Point No. 30



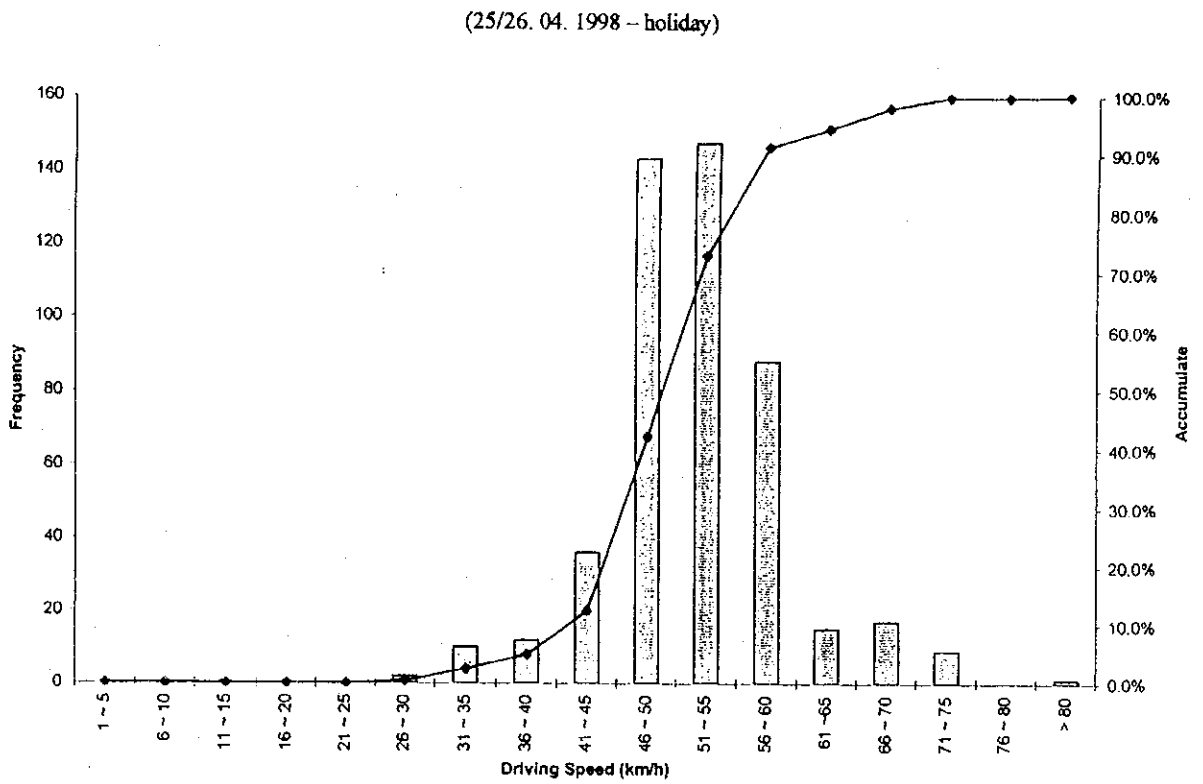
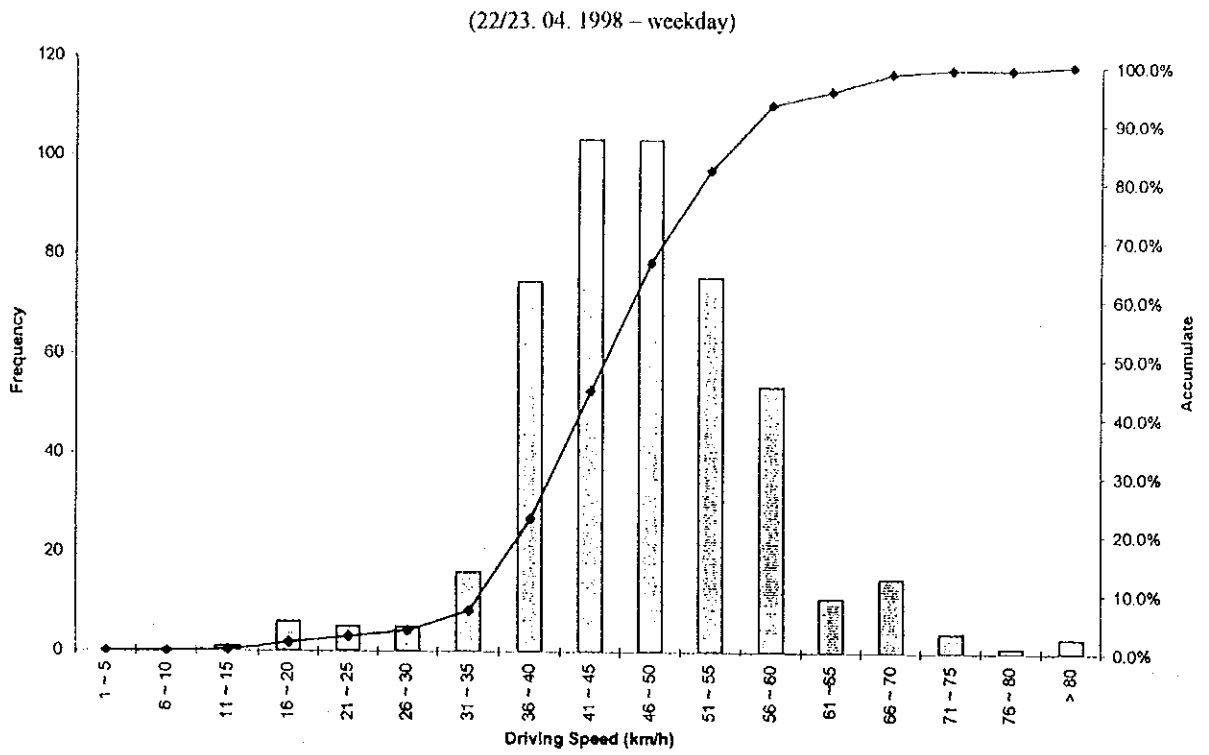
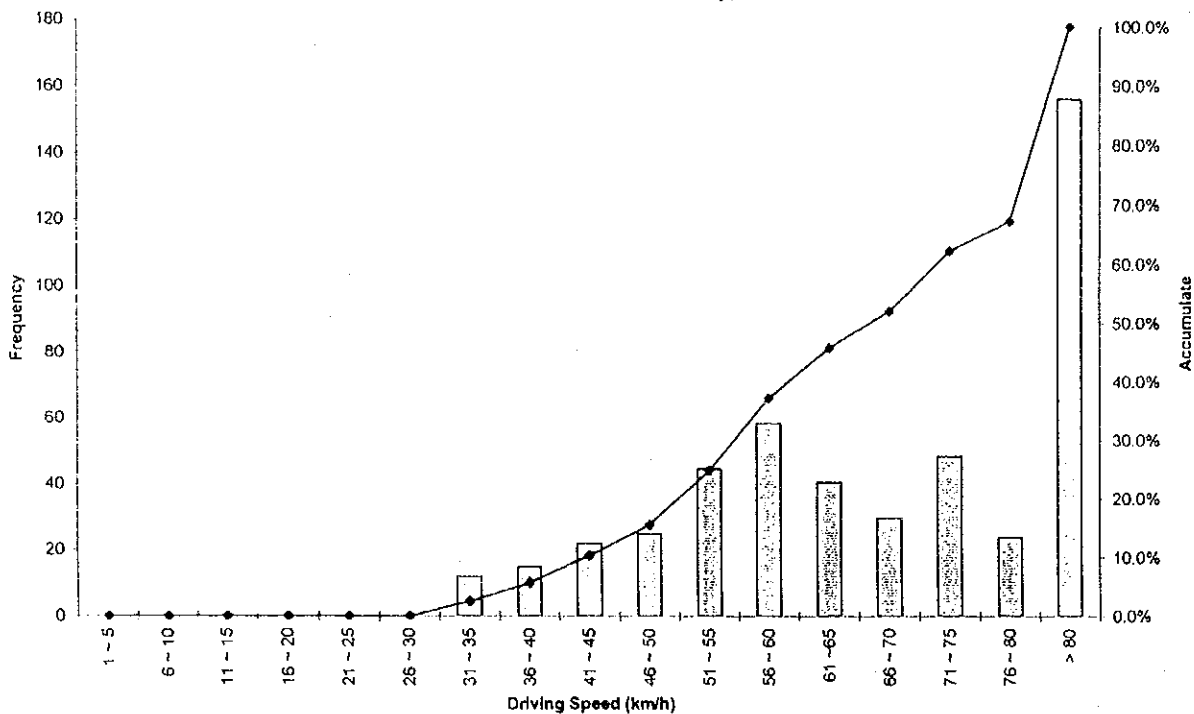


Figure 4-28(24) Distribution of Frequency of Speeds – Measuring Point No. 32

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

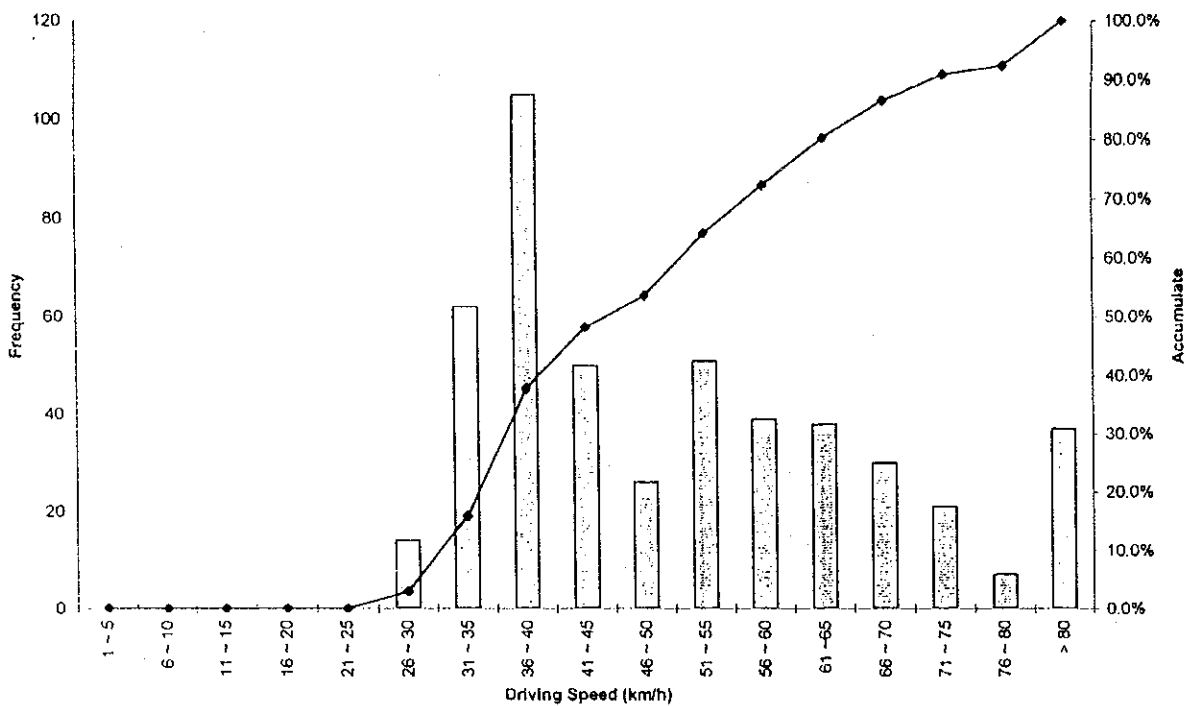


Figure 4-28(25) Distribution of Frequency of Speeds – Measuring Point No. 34

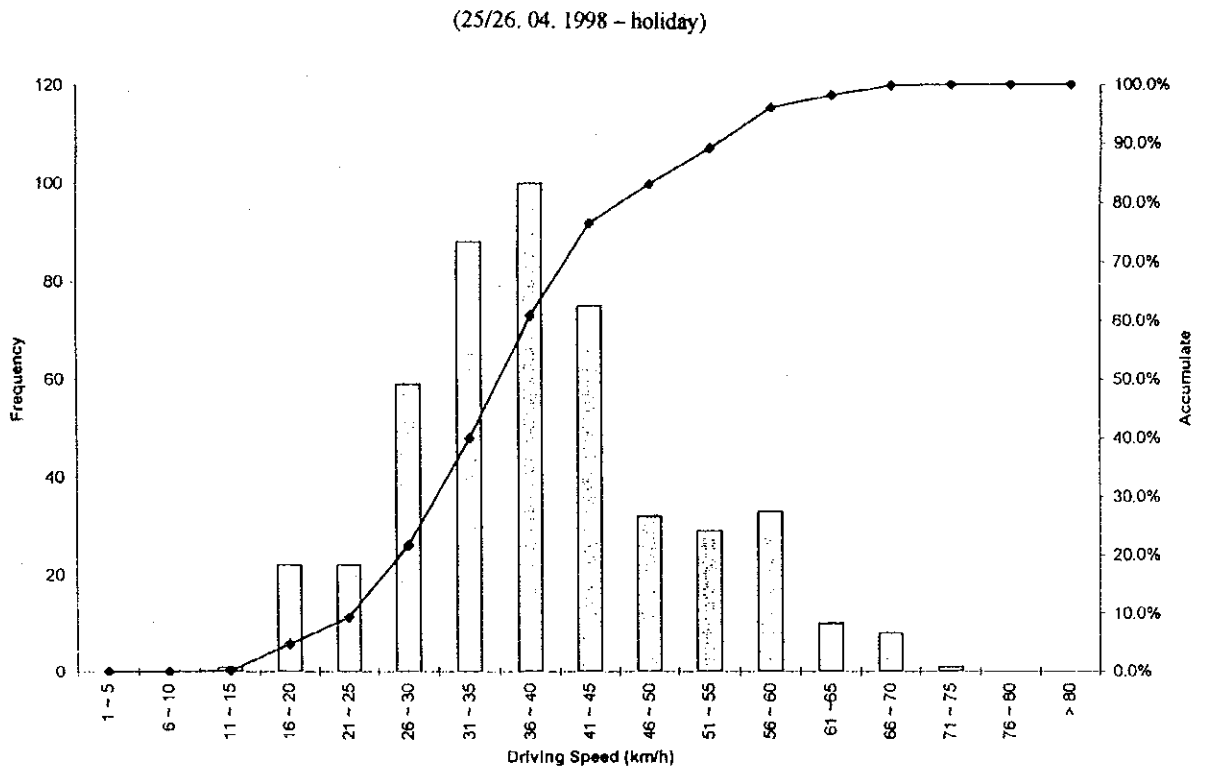
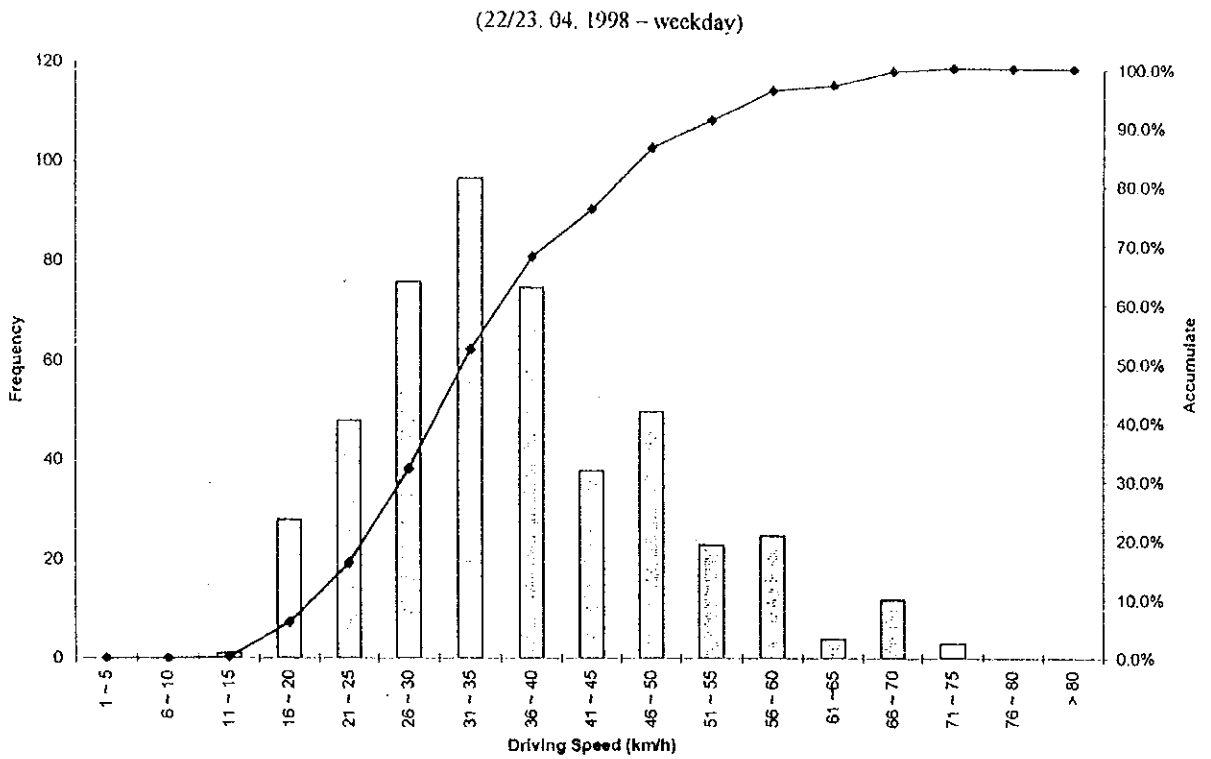


Figure 4-28(26) Distribution of Frequency of Speeds – Measuring Point No. 35

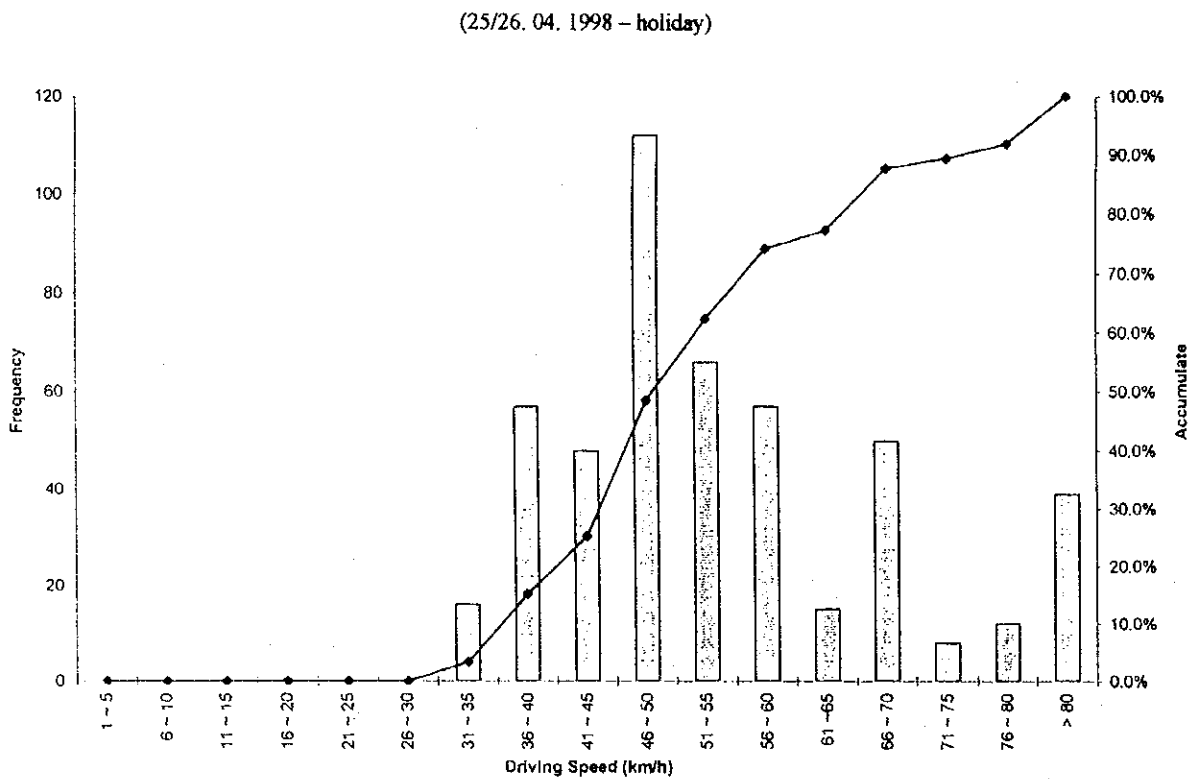
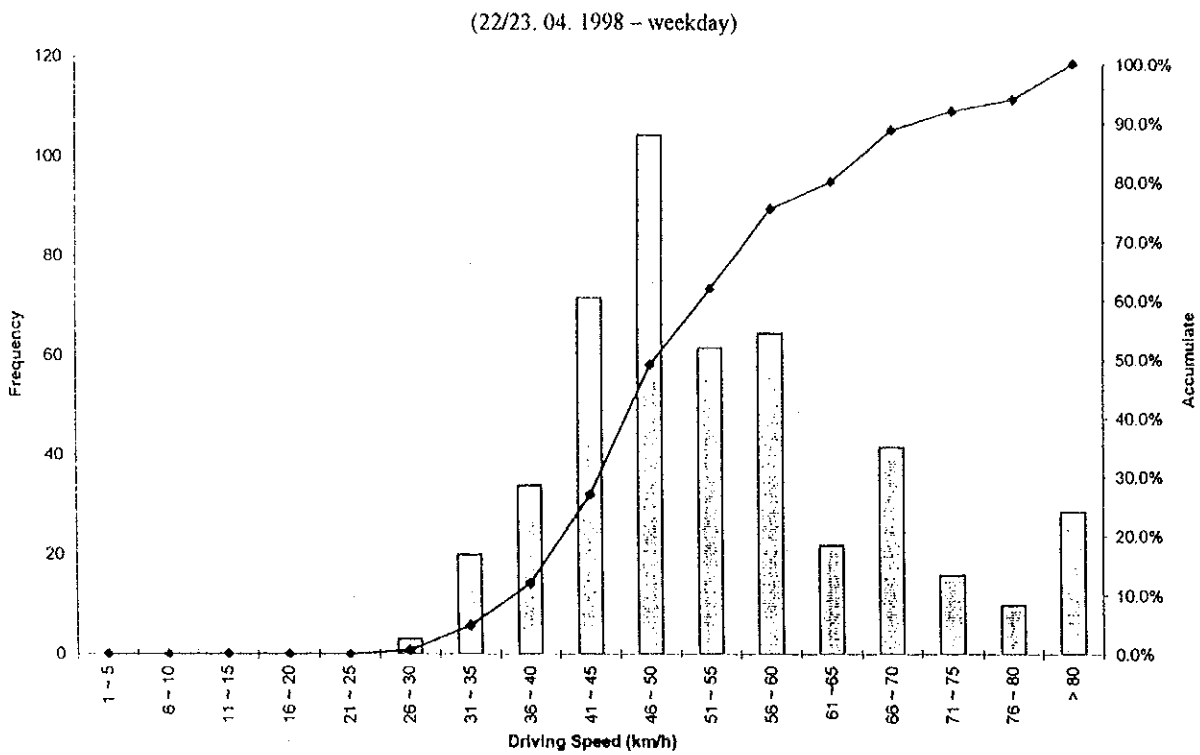
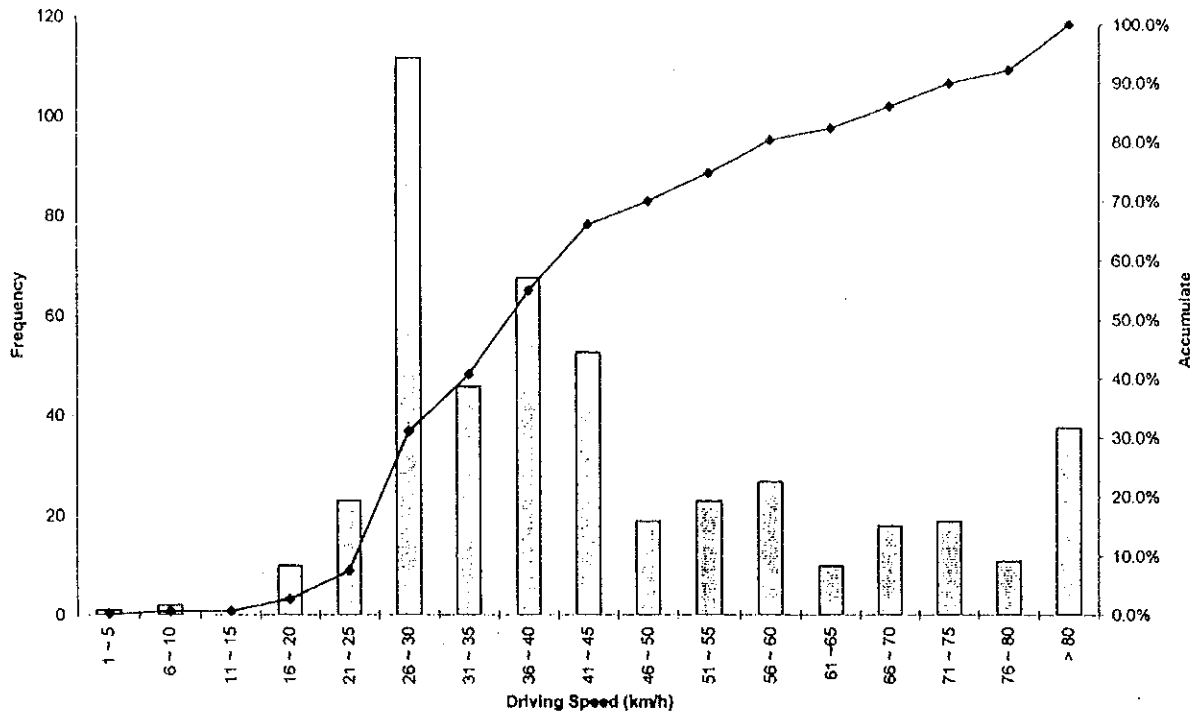


Figure 4-28(27) Distribution of Frequency of Speeds – Measuring Point No. 36

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

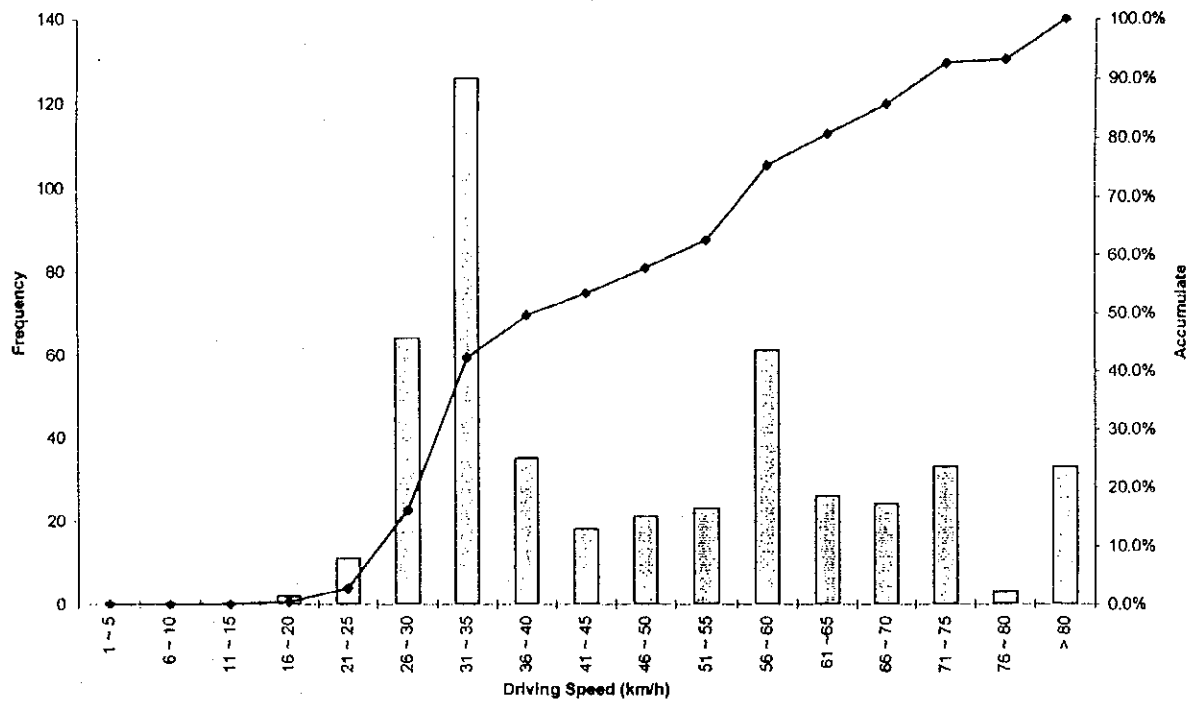


Figure 4-28(28) Distribution of Frequency of Speeds – Measuring Point No. 37

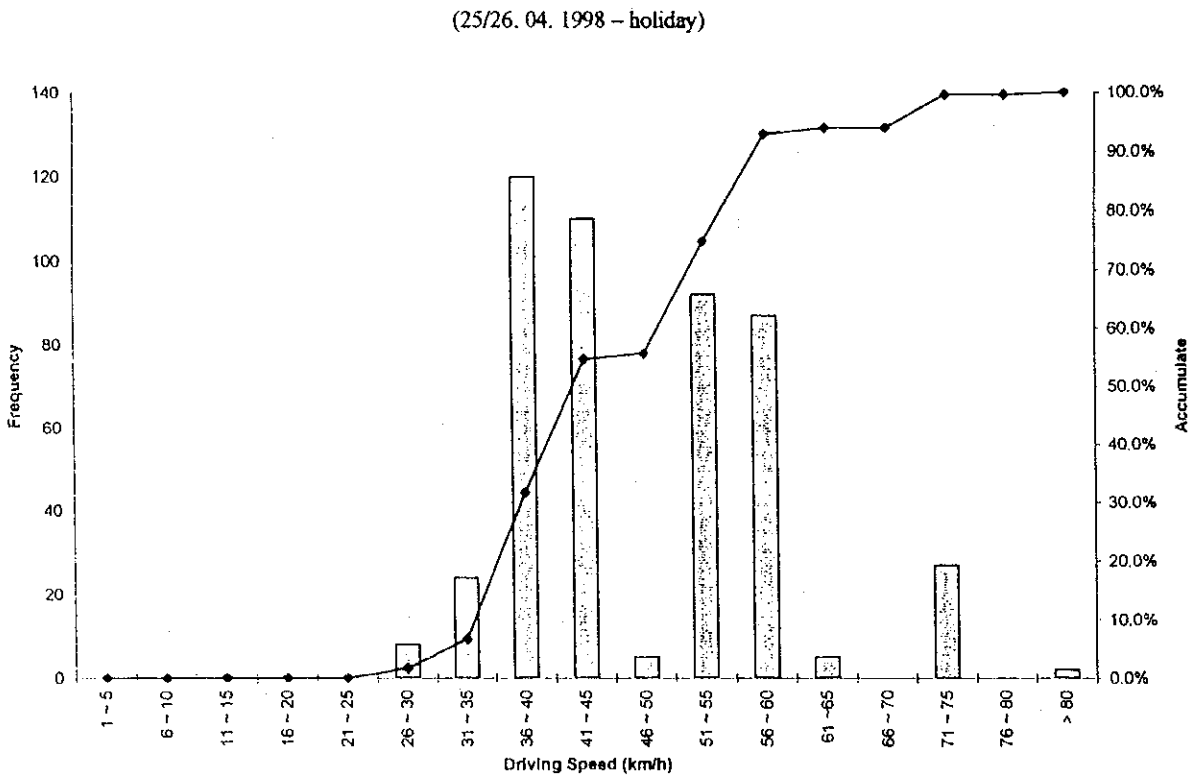
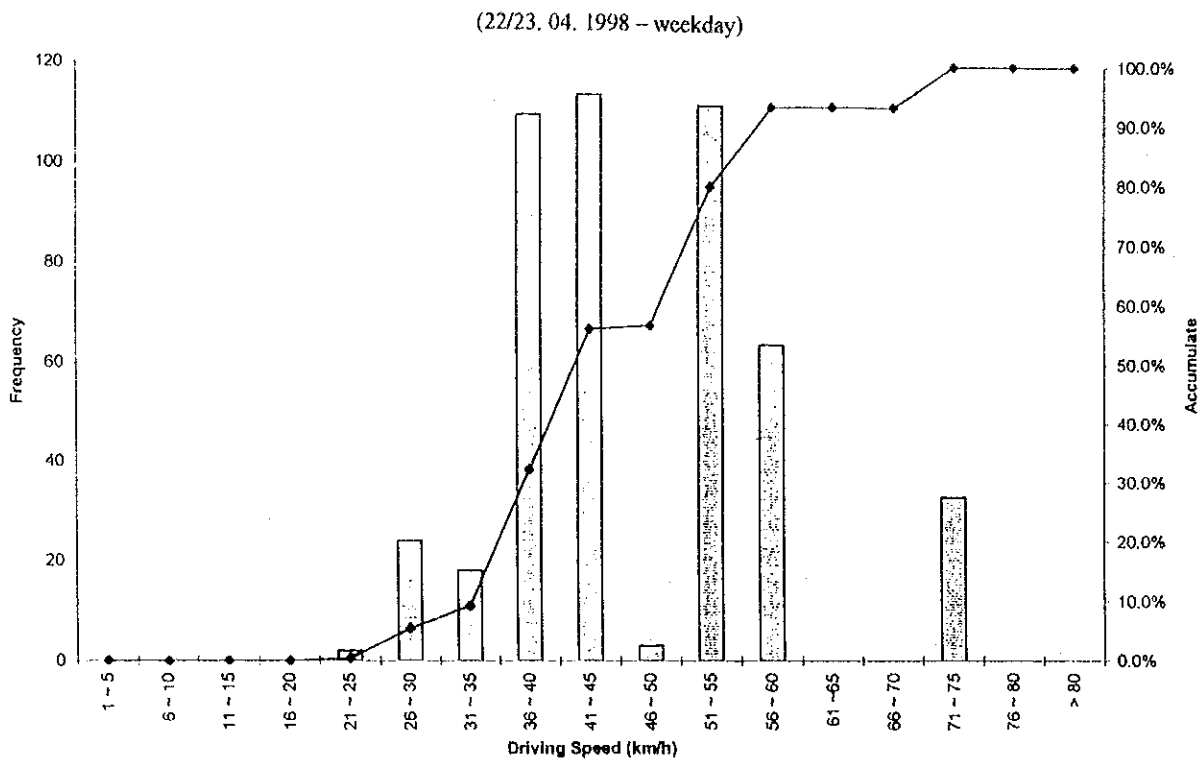


Figure 4-28(29) Distribution of Frequency of Speeds - Measuring Point No. 40

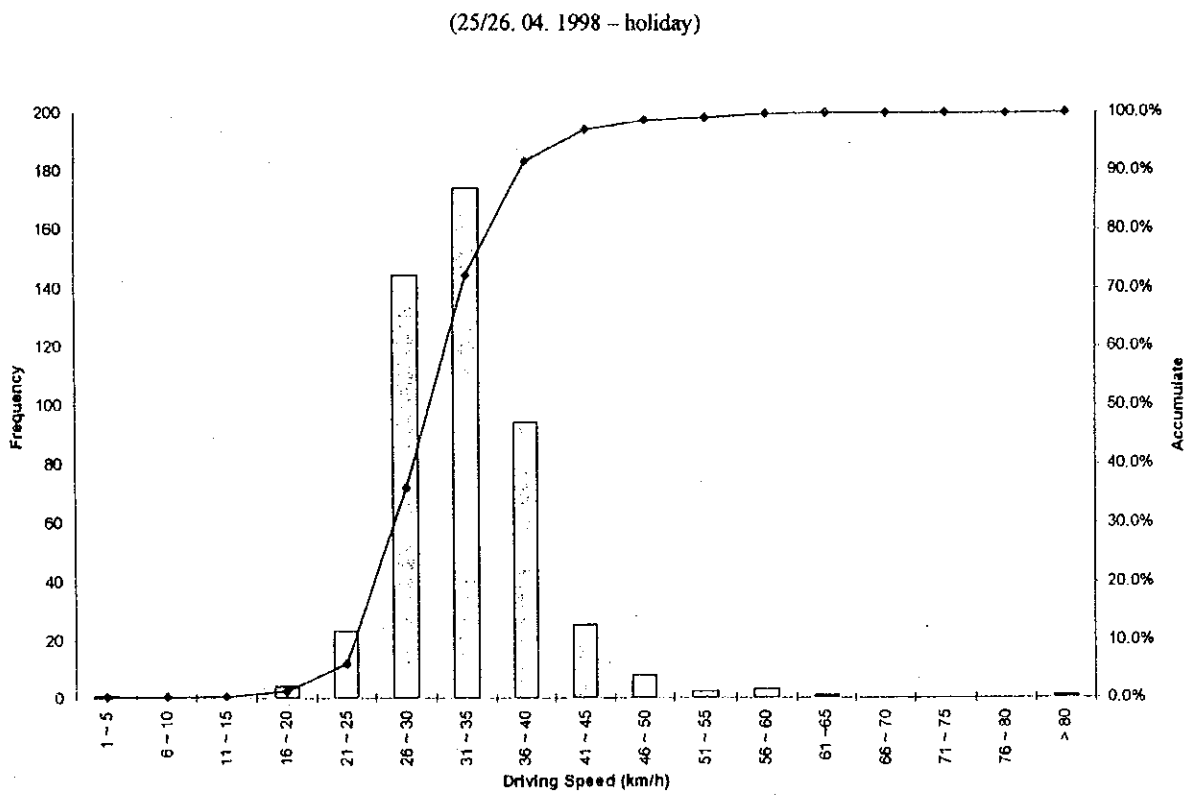
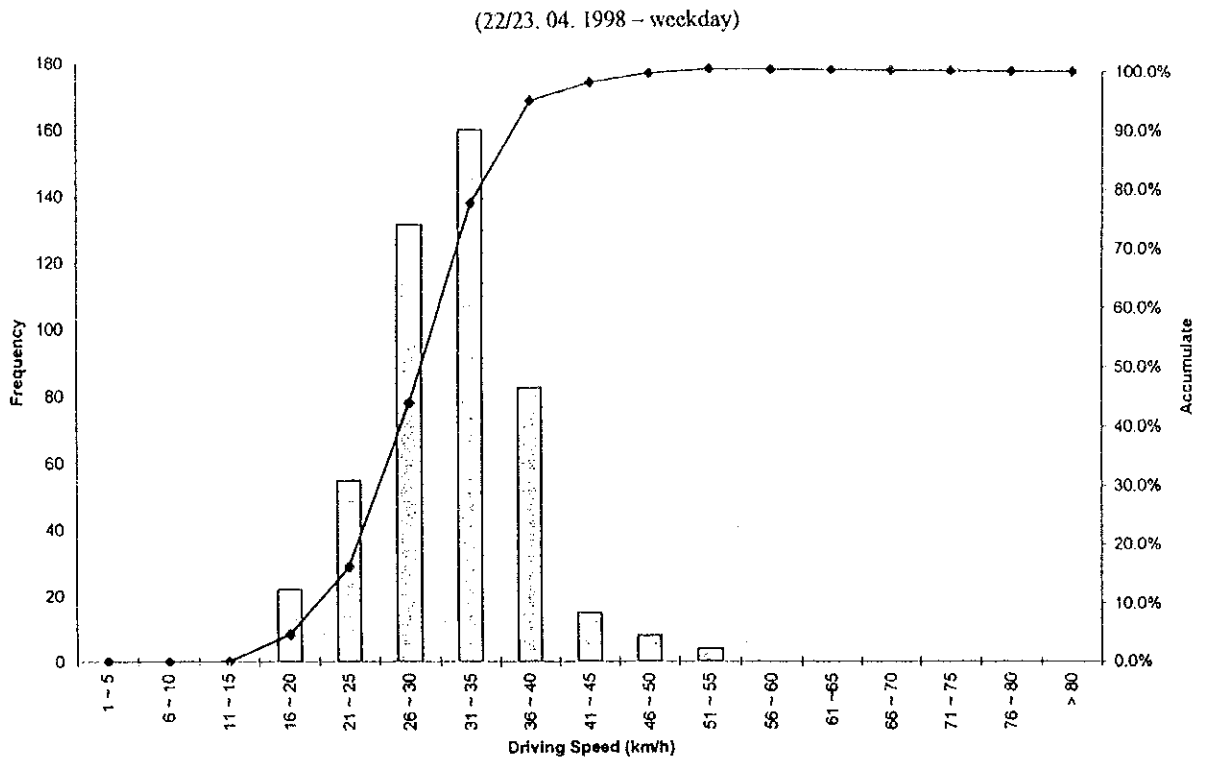
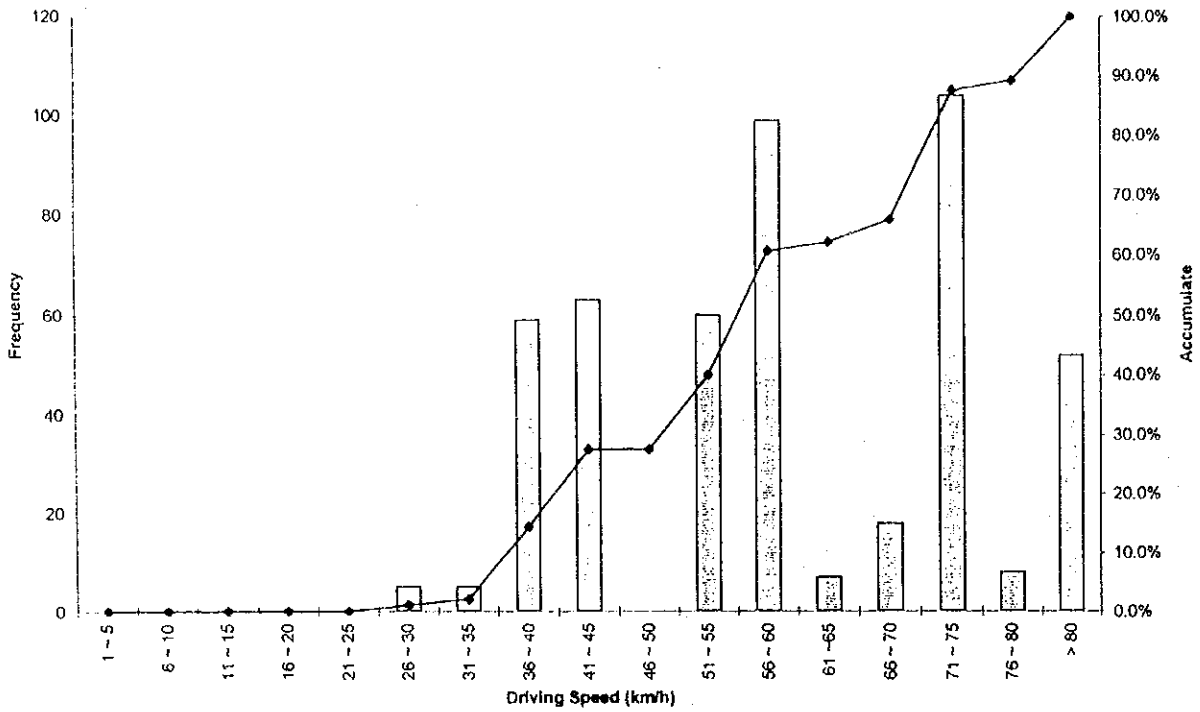


Figure 4-28(30) Distribution of Frequency of Speeds – Measuring Point No. 43

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

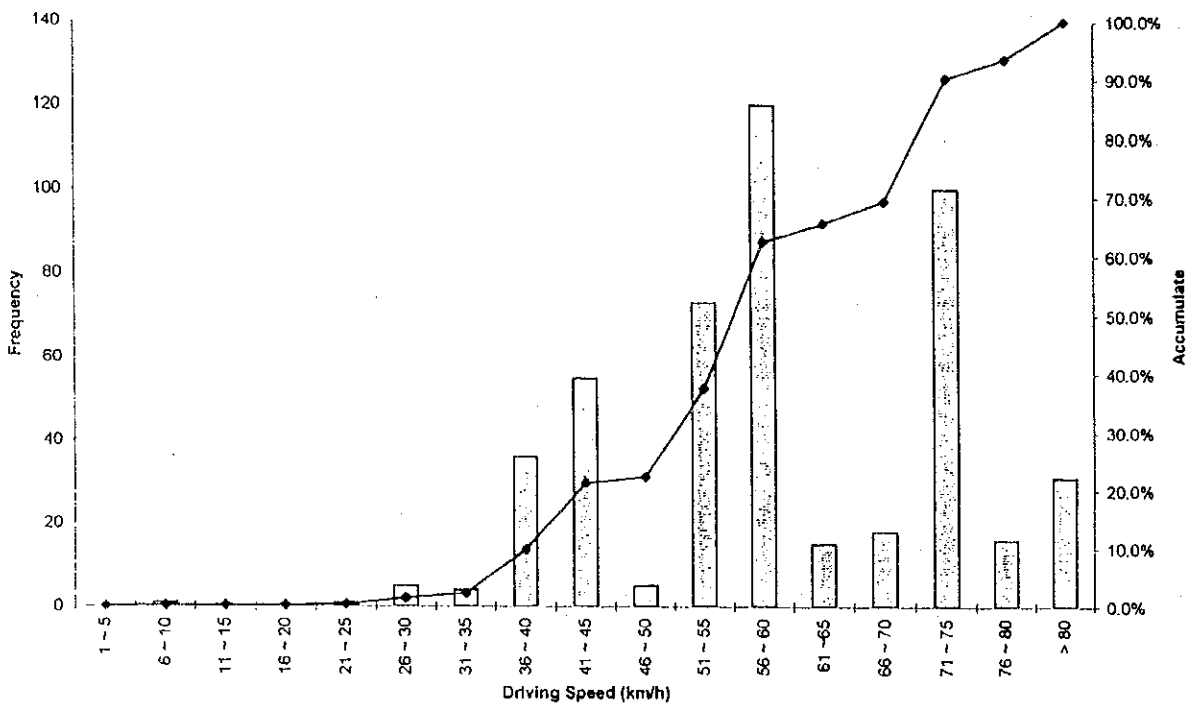


Figure 4-28(31) Distribution of Frequency of Speeds – Measuring Point No. 44ac



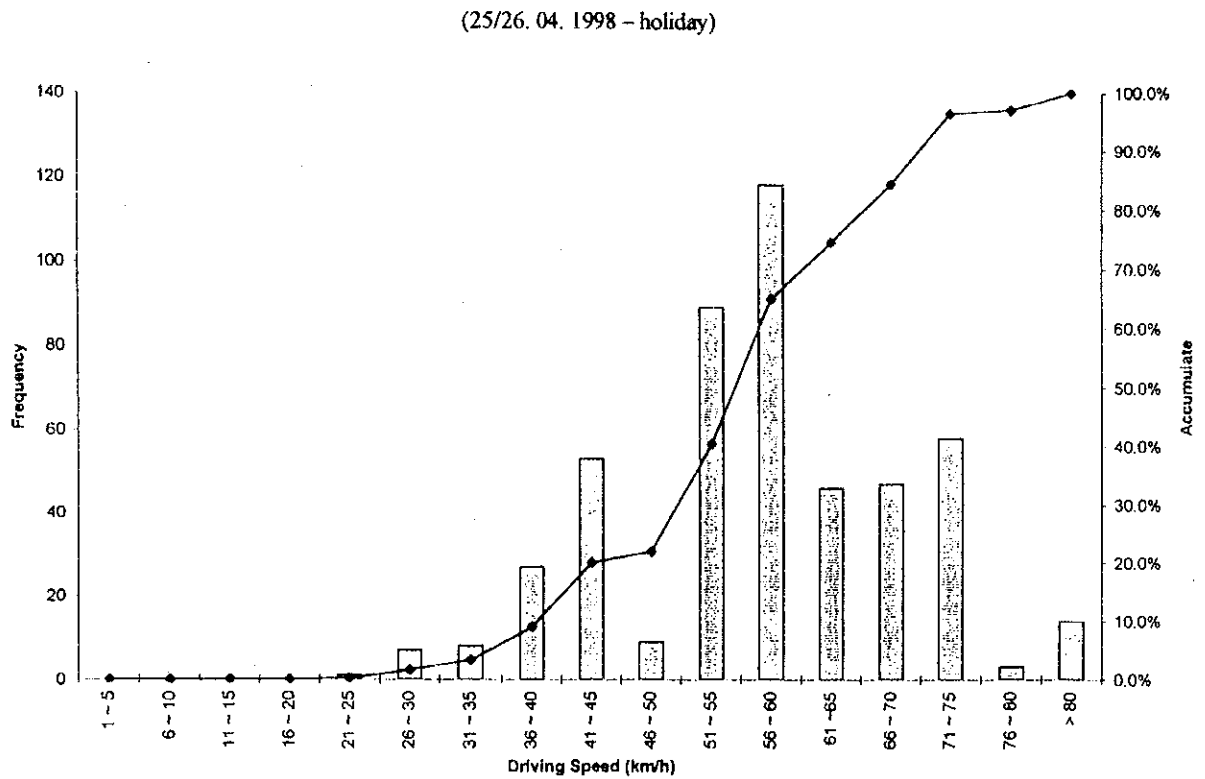
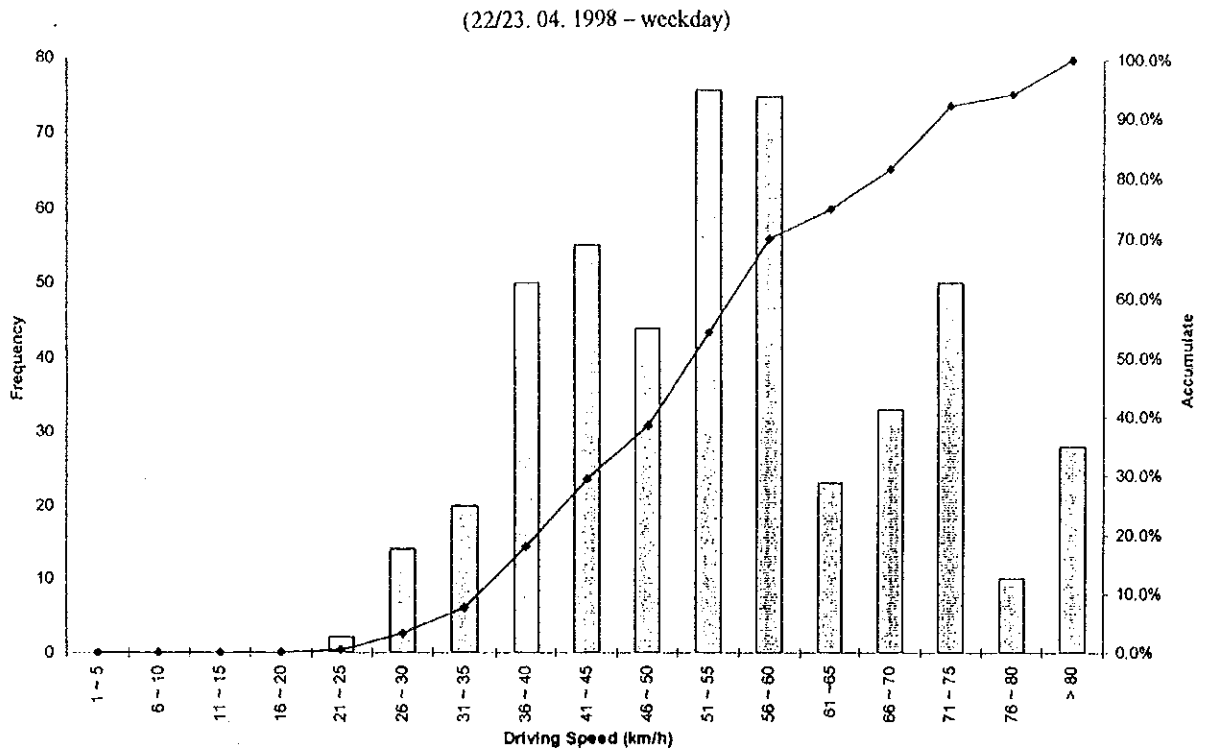
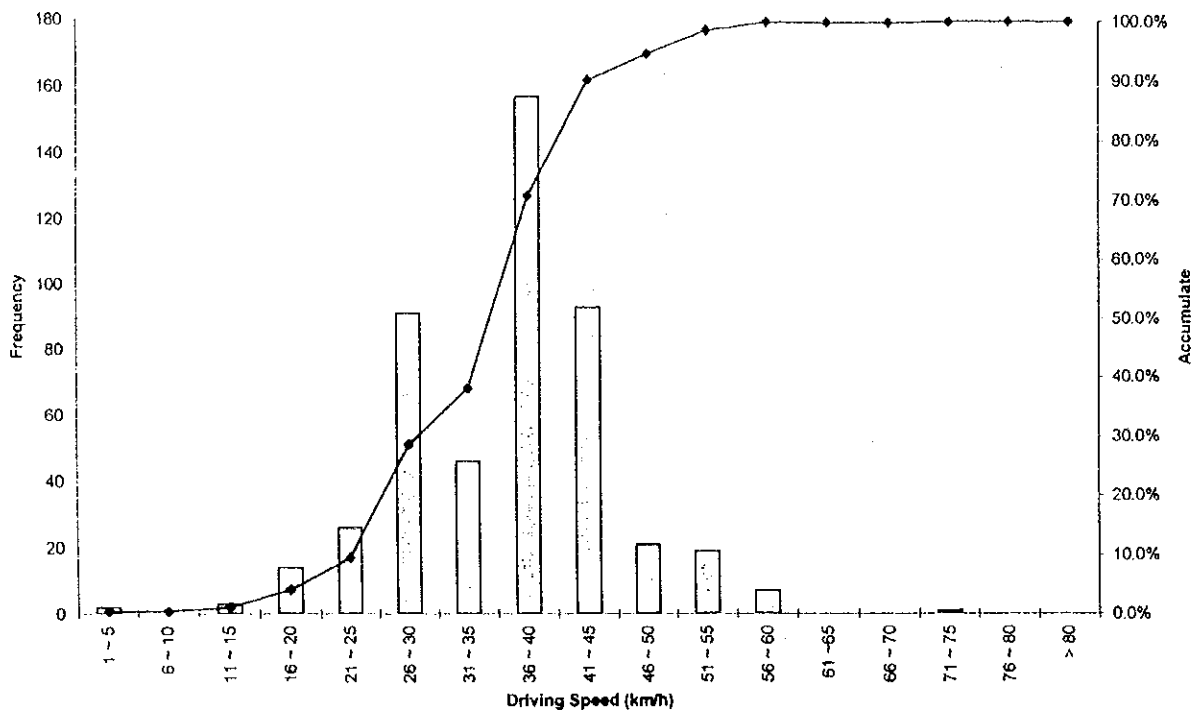


Figure 4-28(32) Distribution of Frequency of Speeds – Measuring Point No. 44bd

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

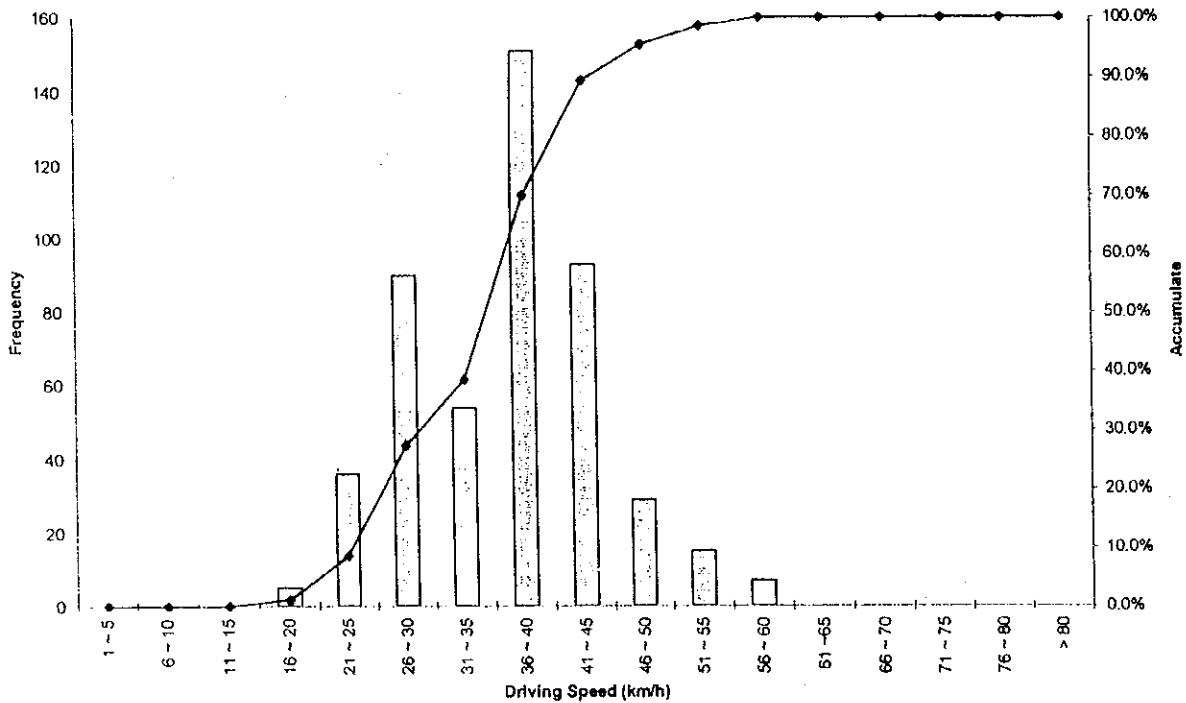


Figure 4-28(33) Distribution of Frequency of Speeds – Measuring Point No. 46

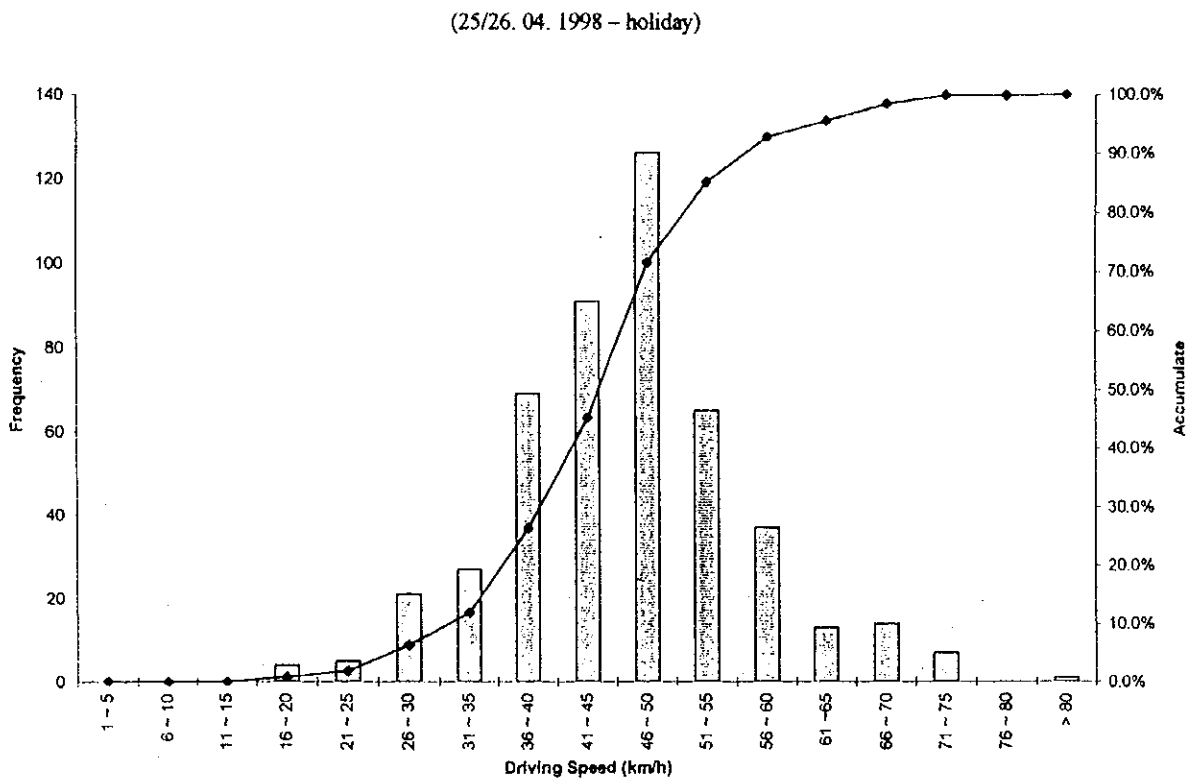
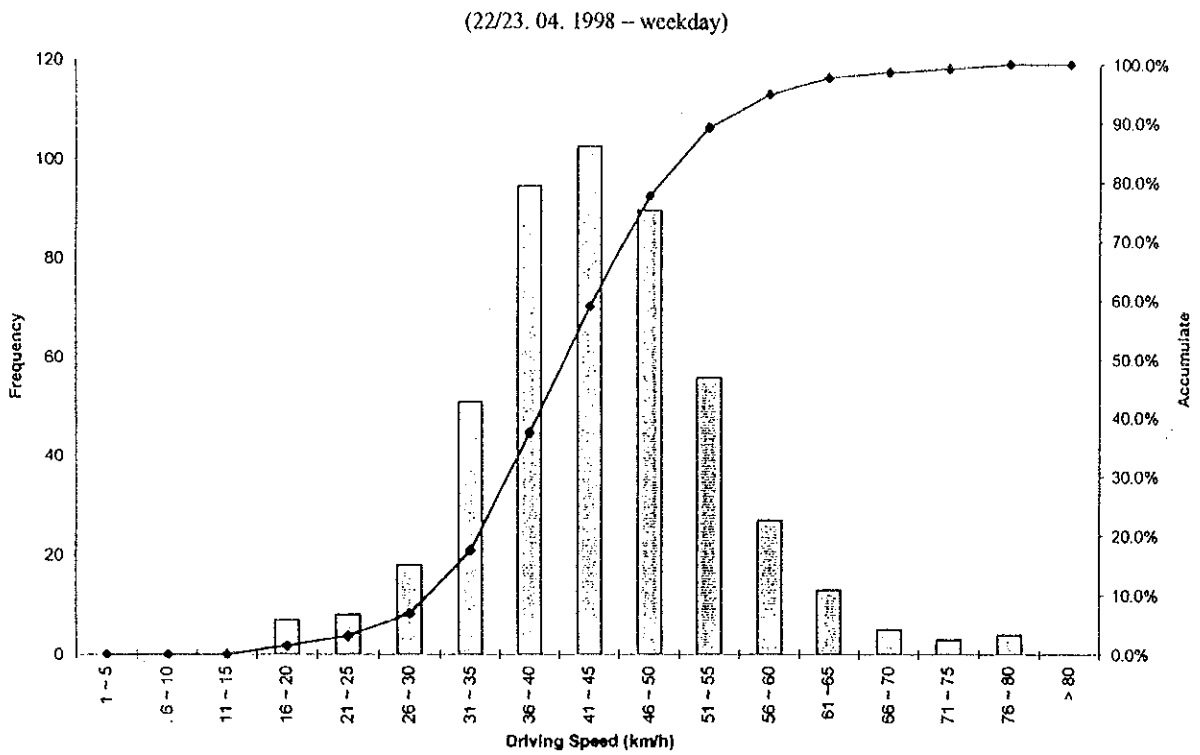
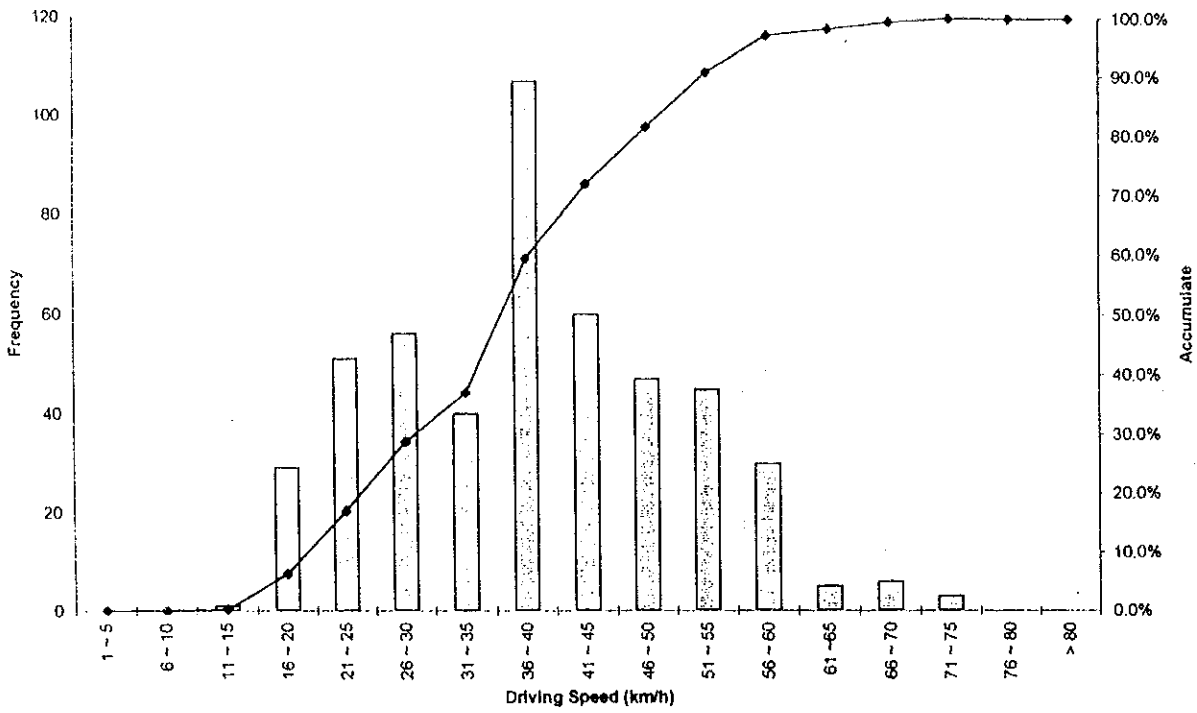


Figure 4-28(34) Distribution of Frequency of Speeds – Measuring Point No. 47

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

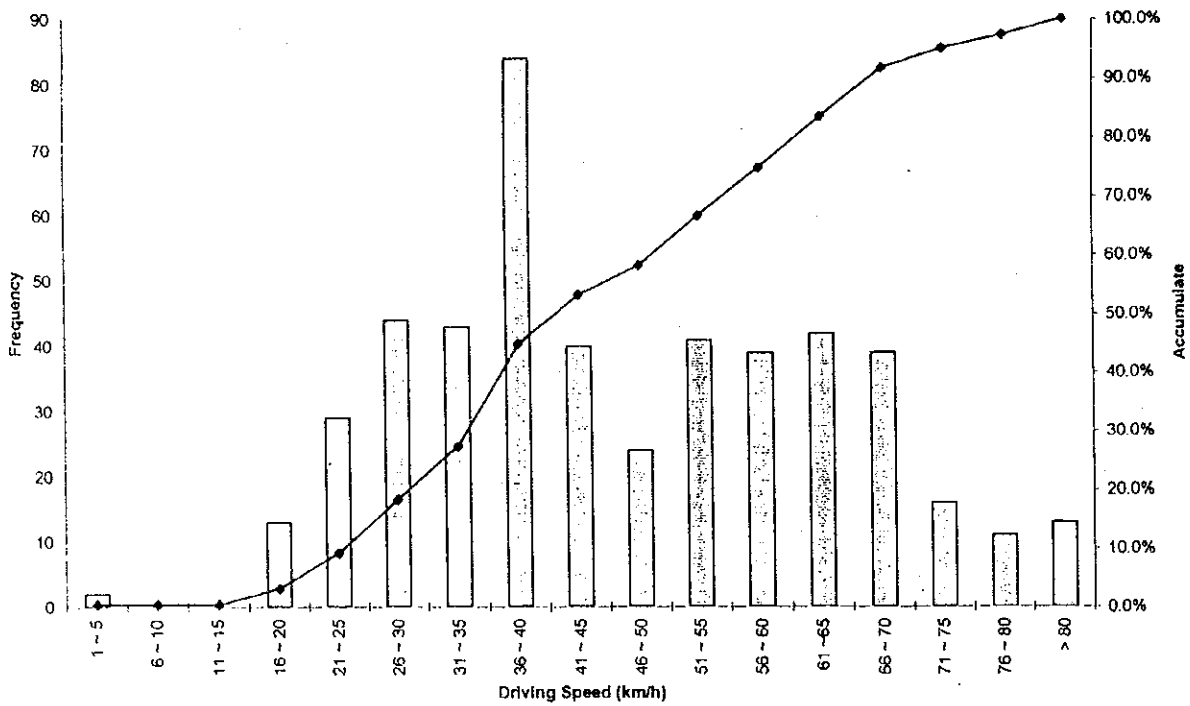


Figure 4-28(35) Distribution of Frequency of Speeds – Measuring Point No. 49

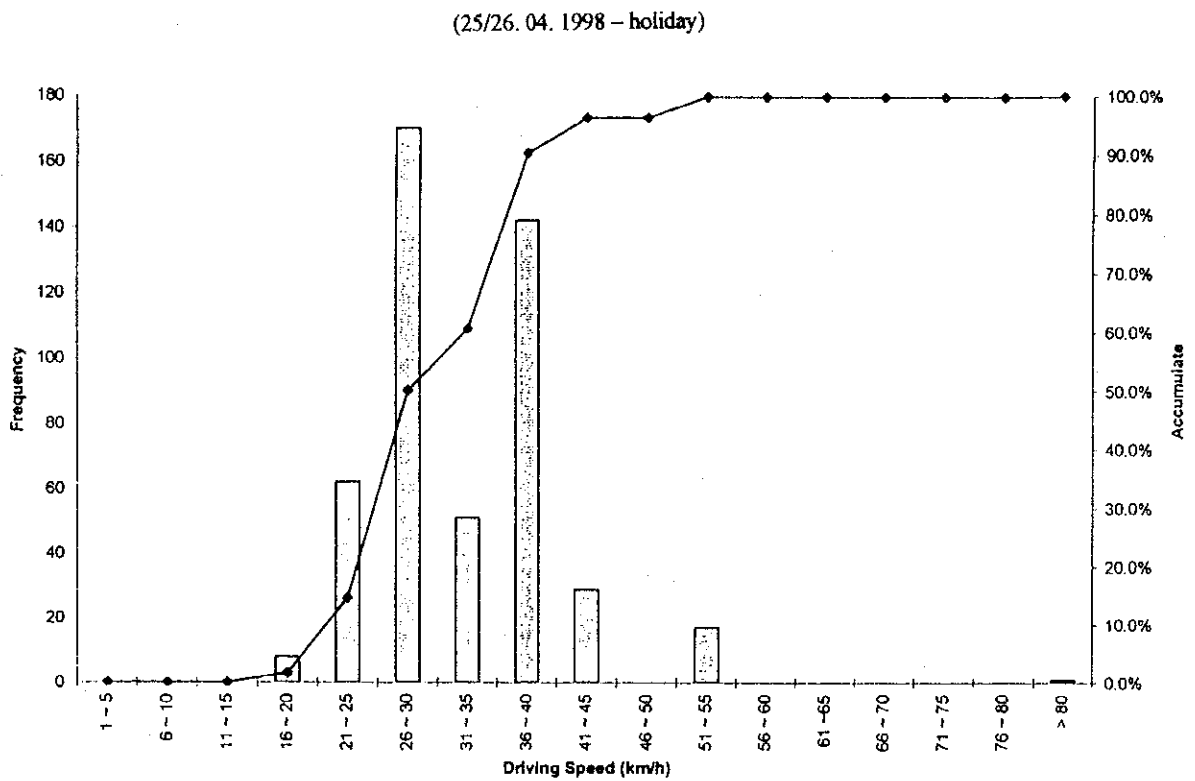
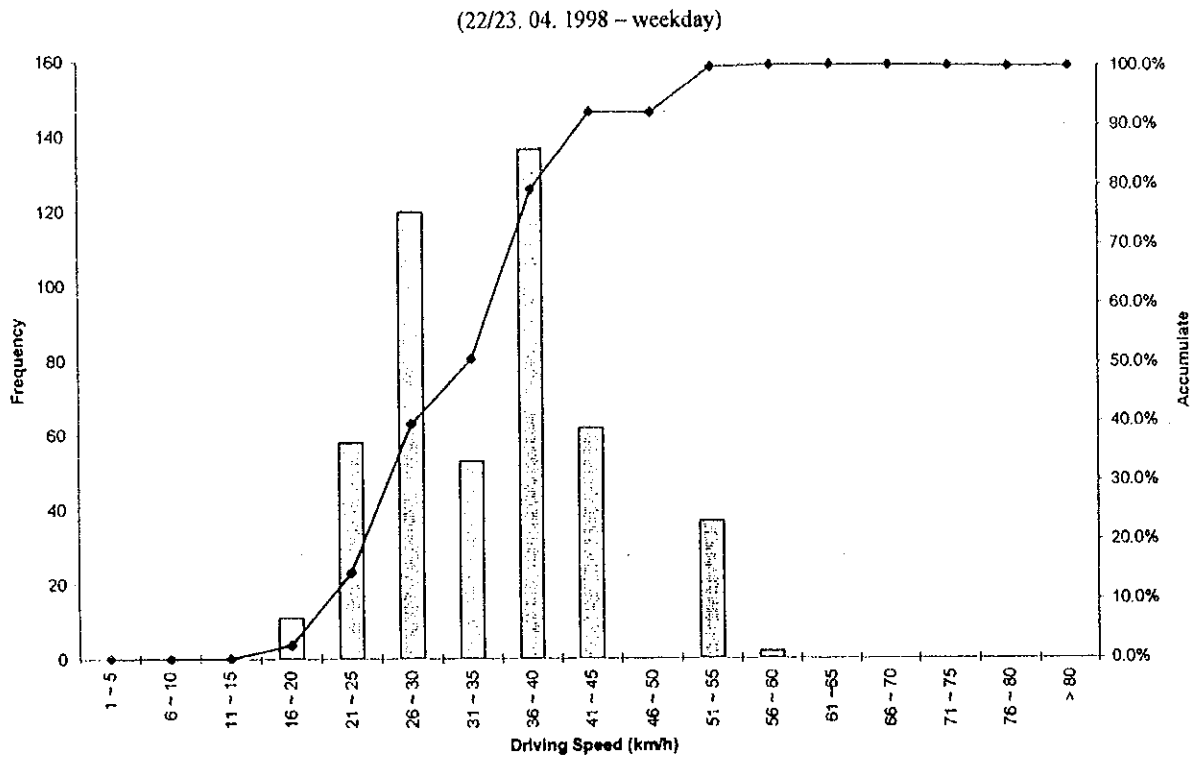


Figure 4-28(36) Distribution of Frequency of Speeds – Measuring Point No. 51ac

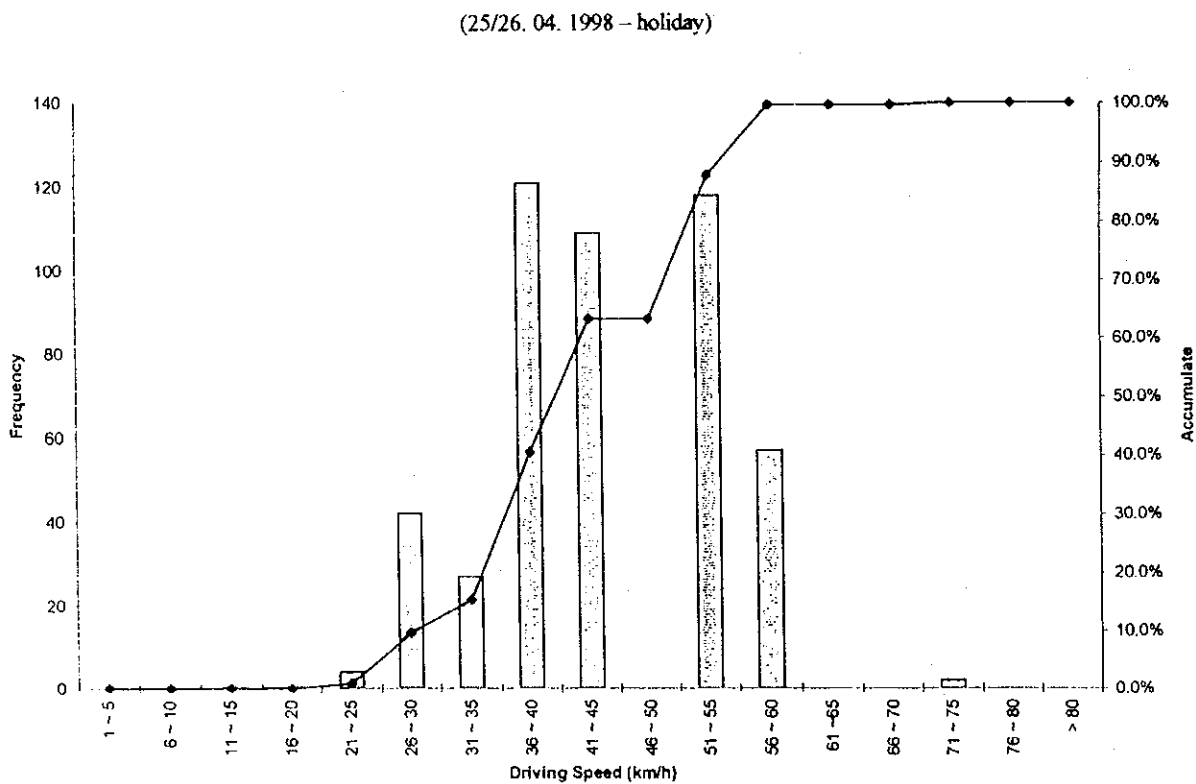
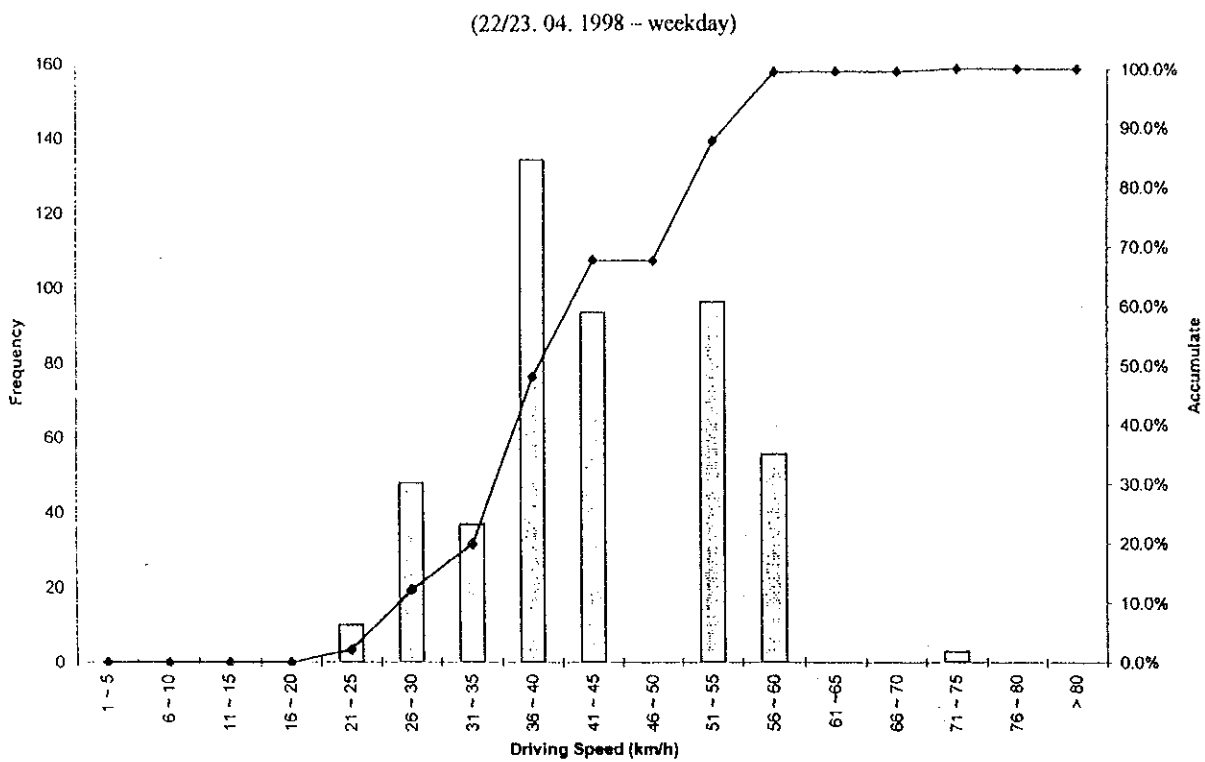


Figure 4-28(37) Distribution of Frequency of Speeds – Measuring Point No. 51bd

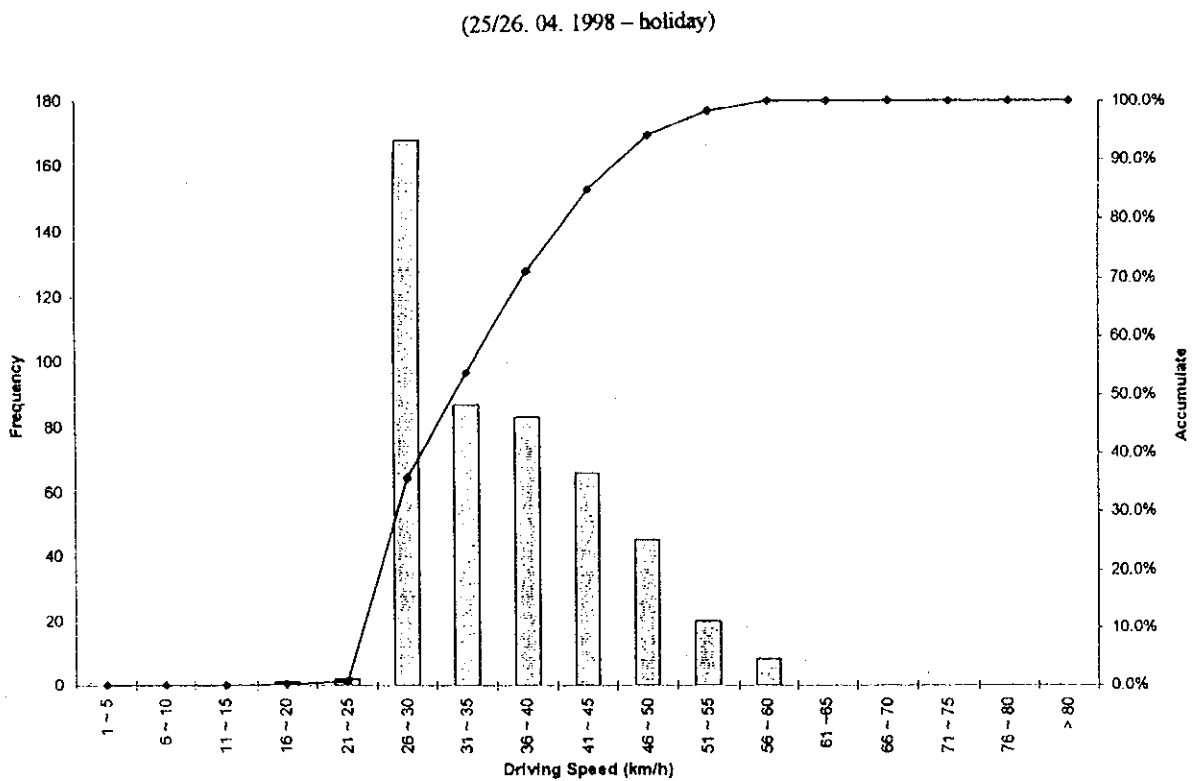
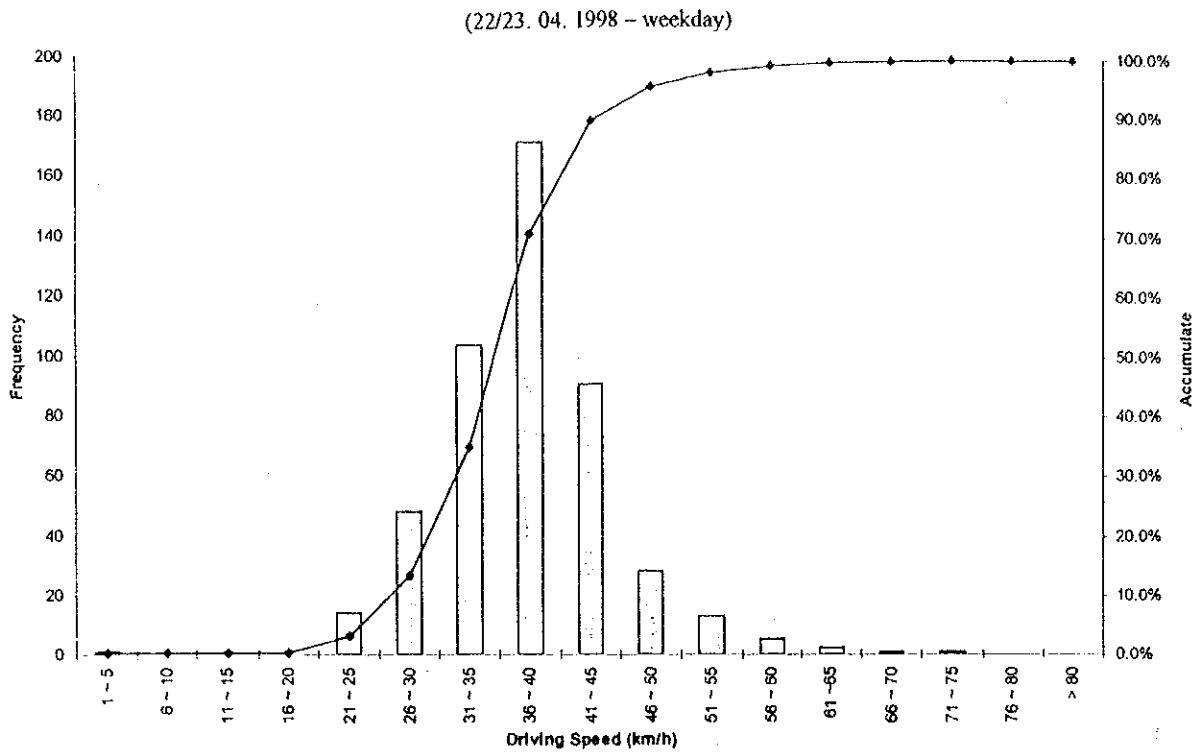
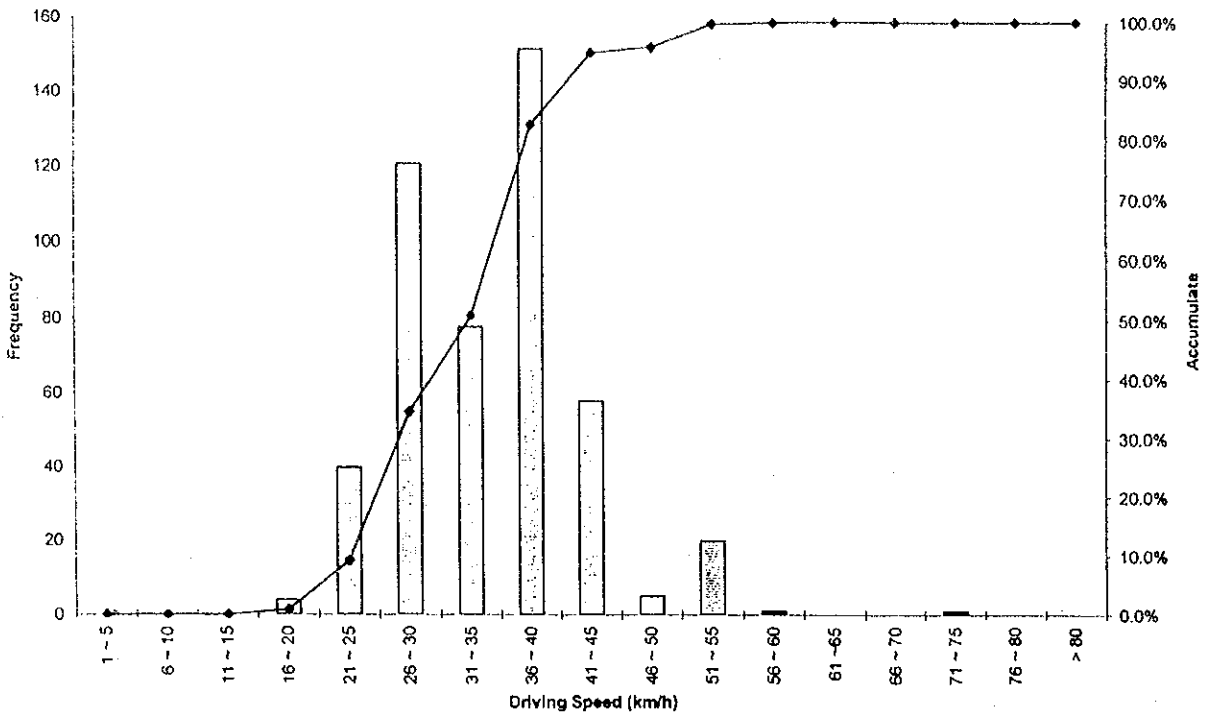


Figure 4-28(38) Distribution of Frequency of Speeds – Measuring Point No. 52

(22/23. 04. 1998 -- weekday)



(25/26. 04. 1998 - holiday)

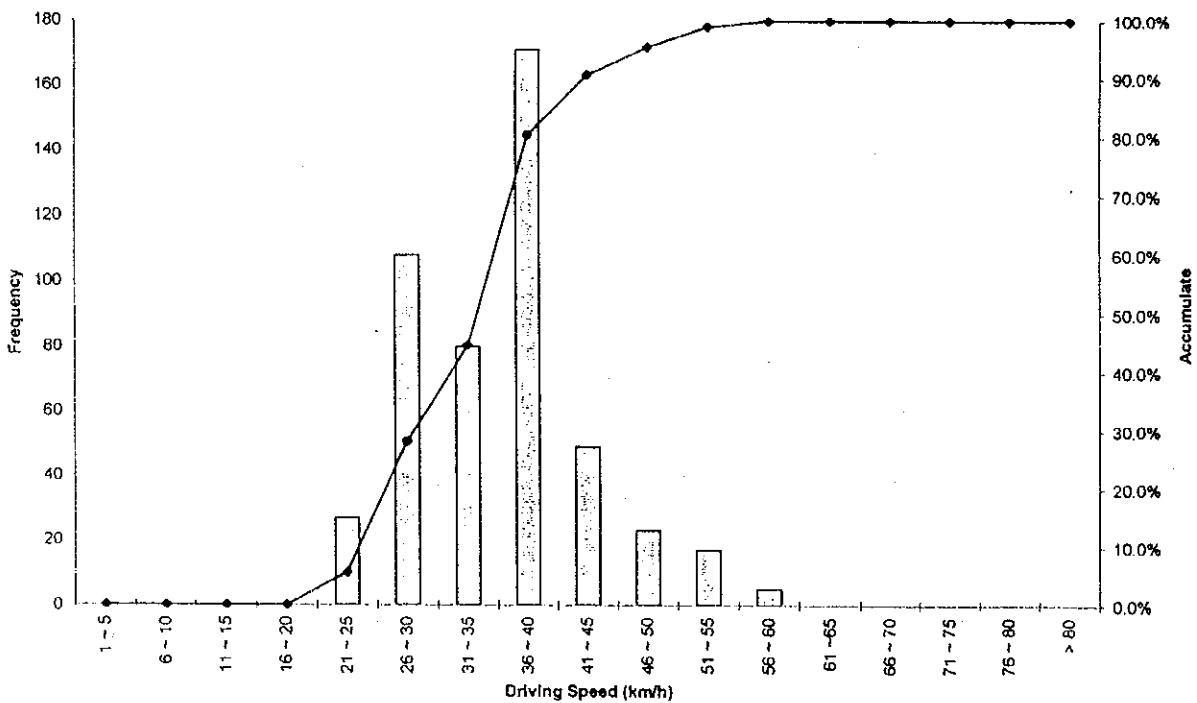


Figure 4-28(39) Distribution of Frequency of Speeds – Measuring Point No. 53



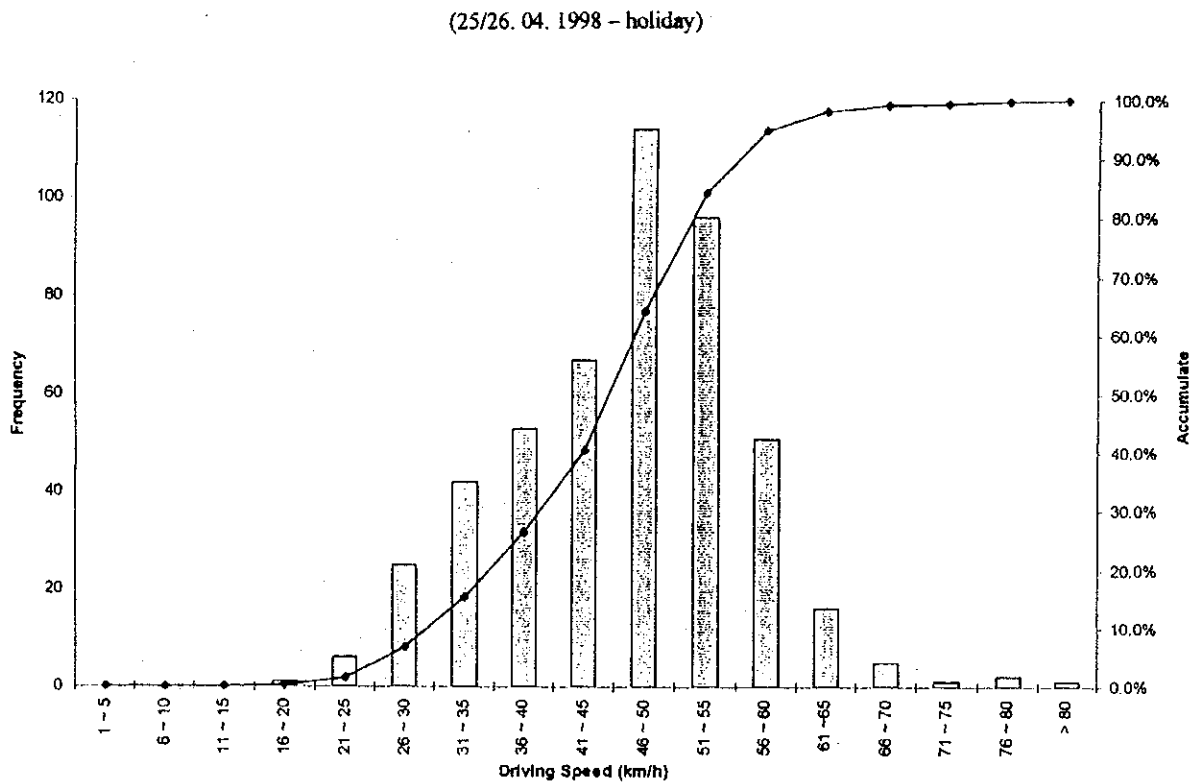
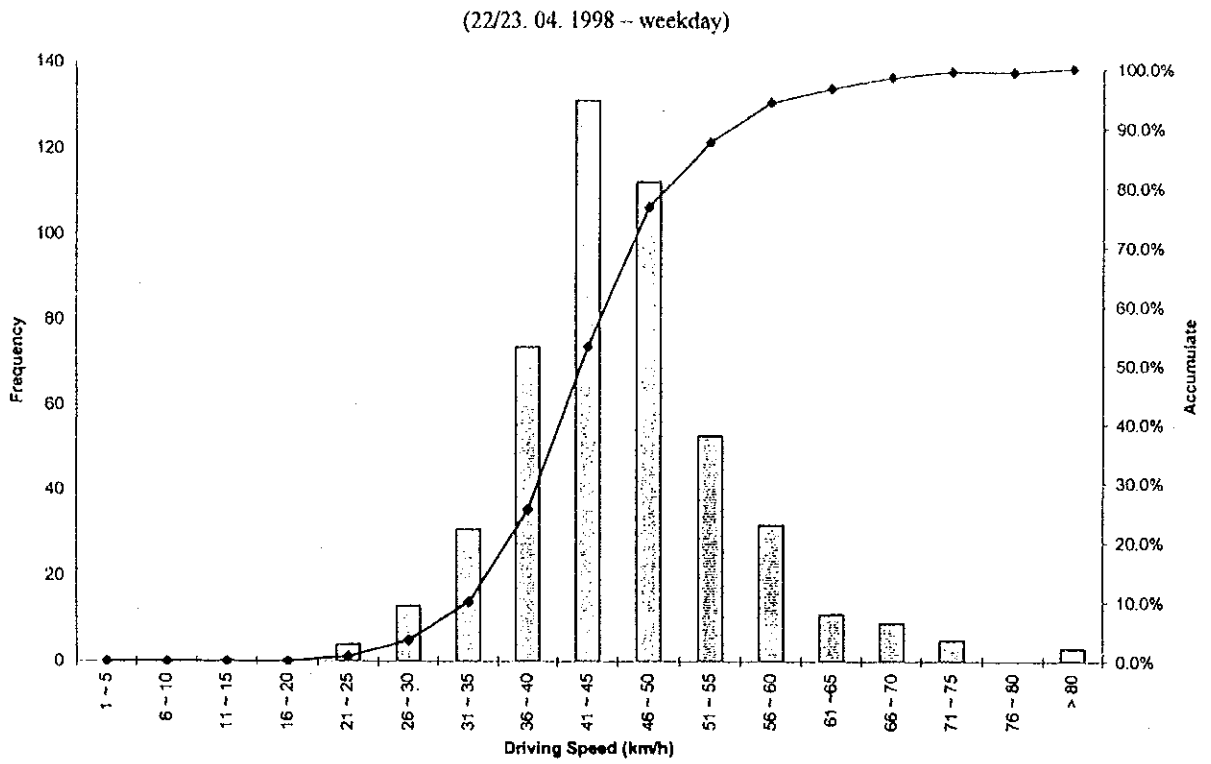
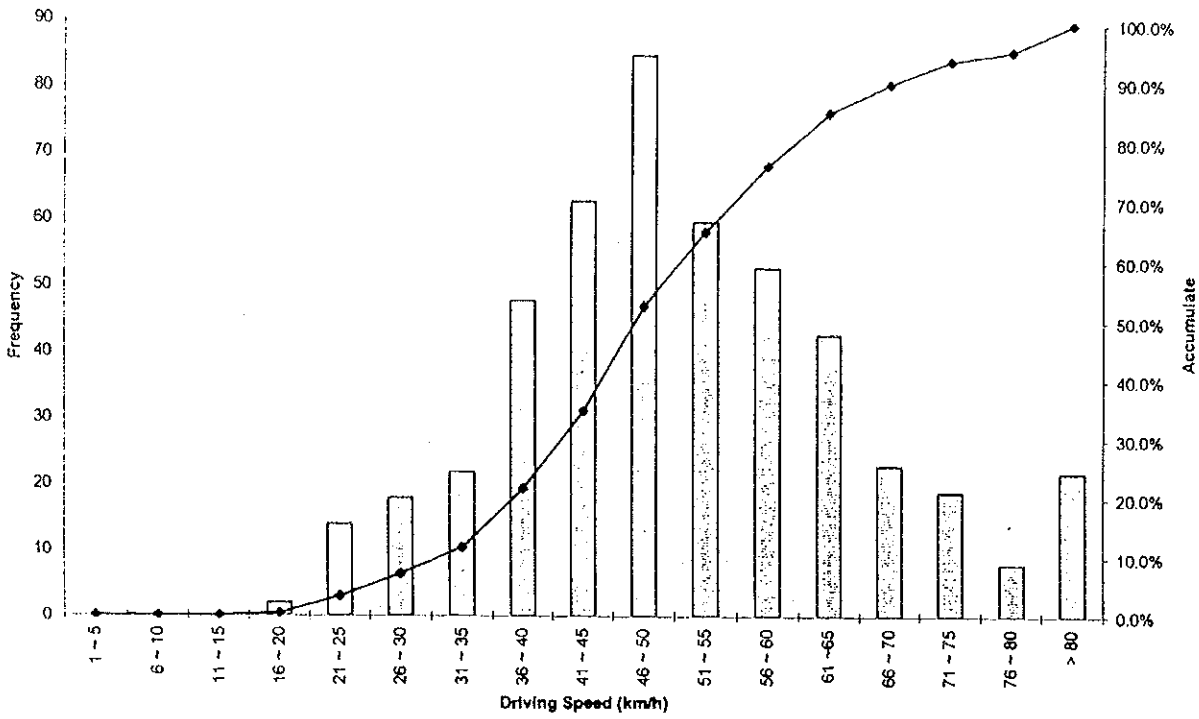


Figure 4-28(40) Distribution of Frequency of Speeds - Measuring Point No. 55ac

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

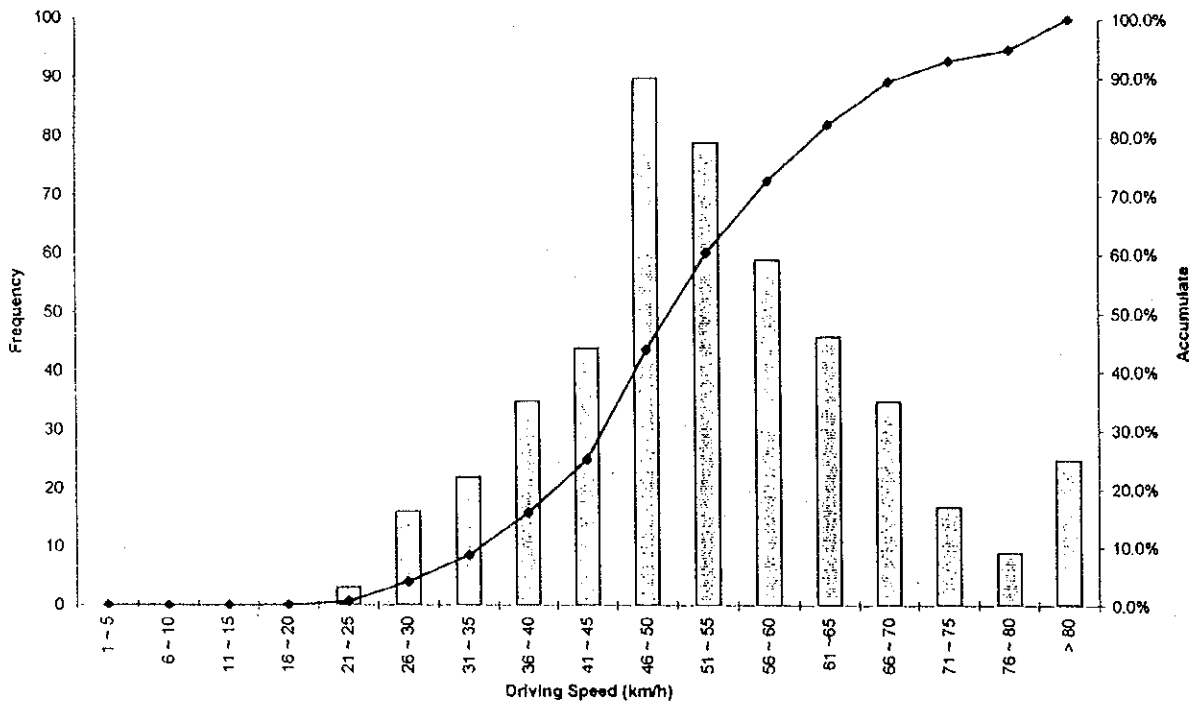
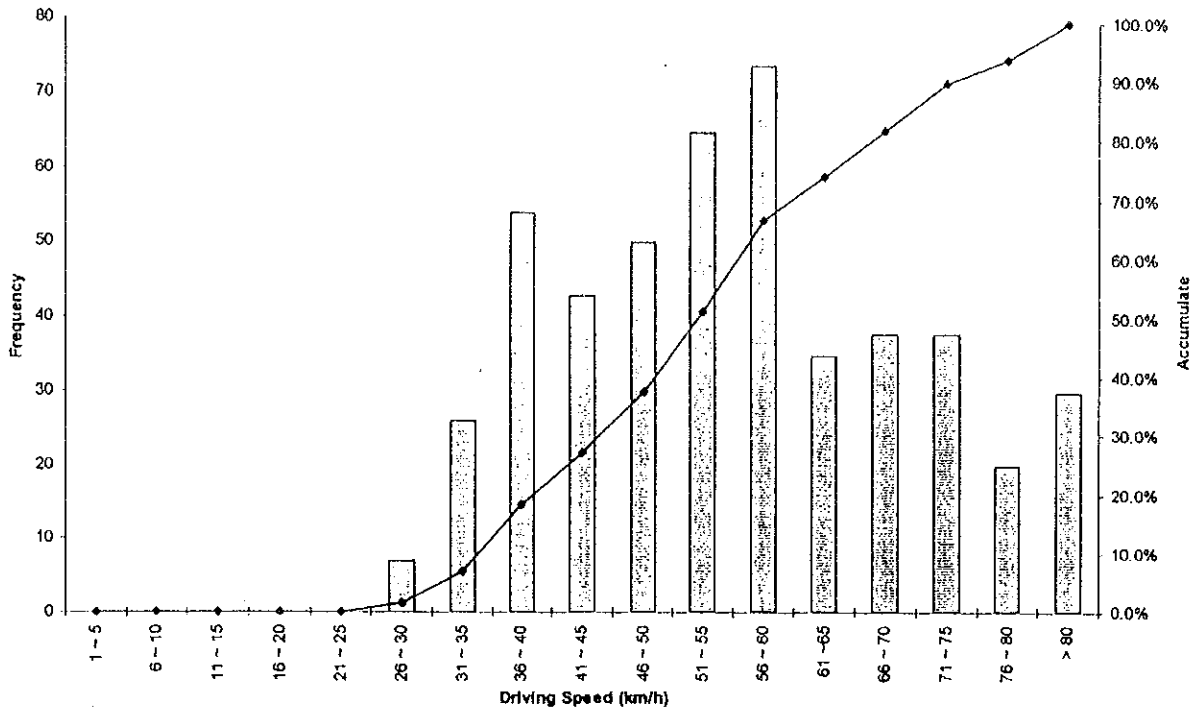


Figure 4-28(41) Distribution of Frequency of Speeds – Measuring Point No. 55bd

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

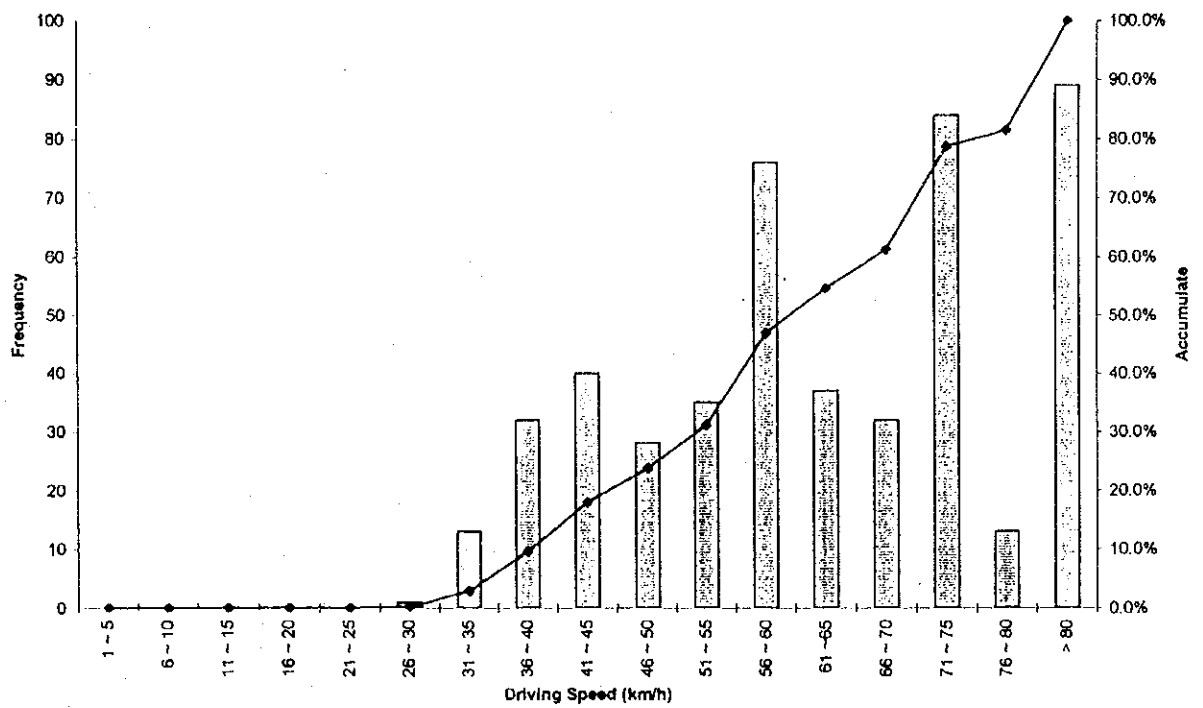
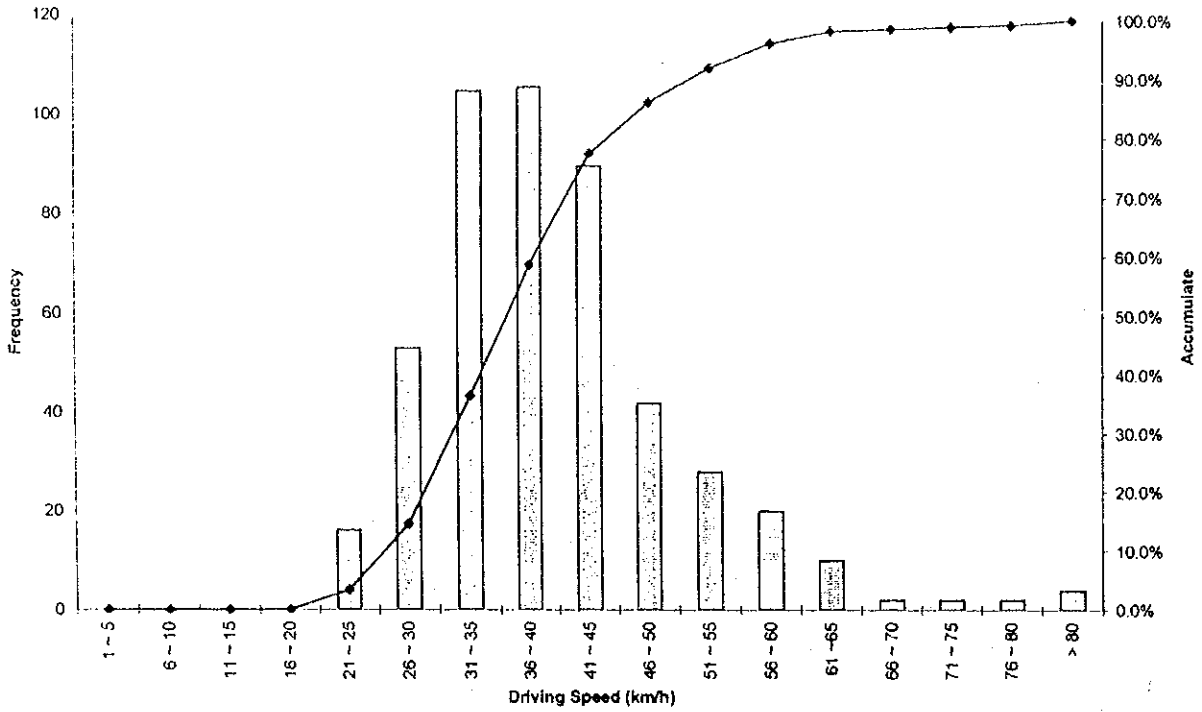


Figure 4-28(42) Distribution of Frequency of Speeds - Measuring Point No. 59

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

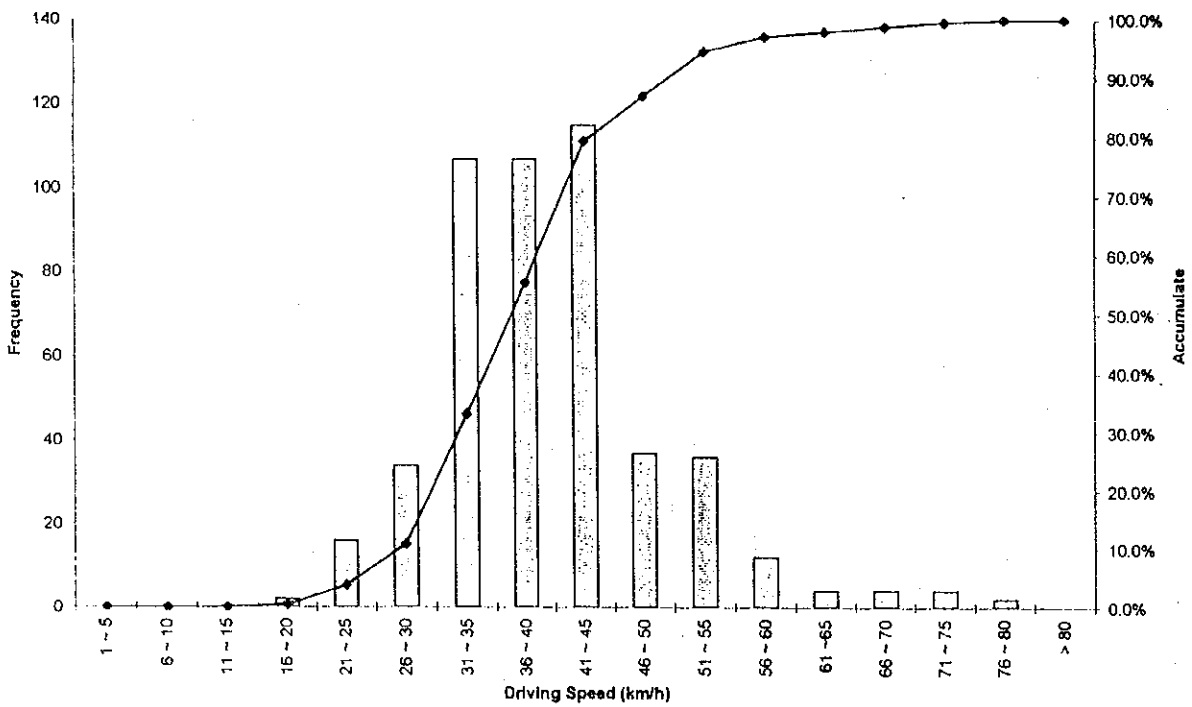


Figure 4-28(43) Distribution of Frequency of Speeds - Measuring Point No. 61

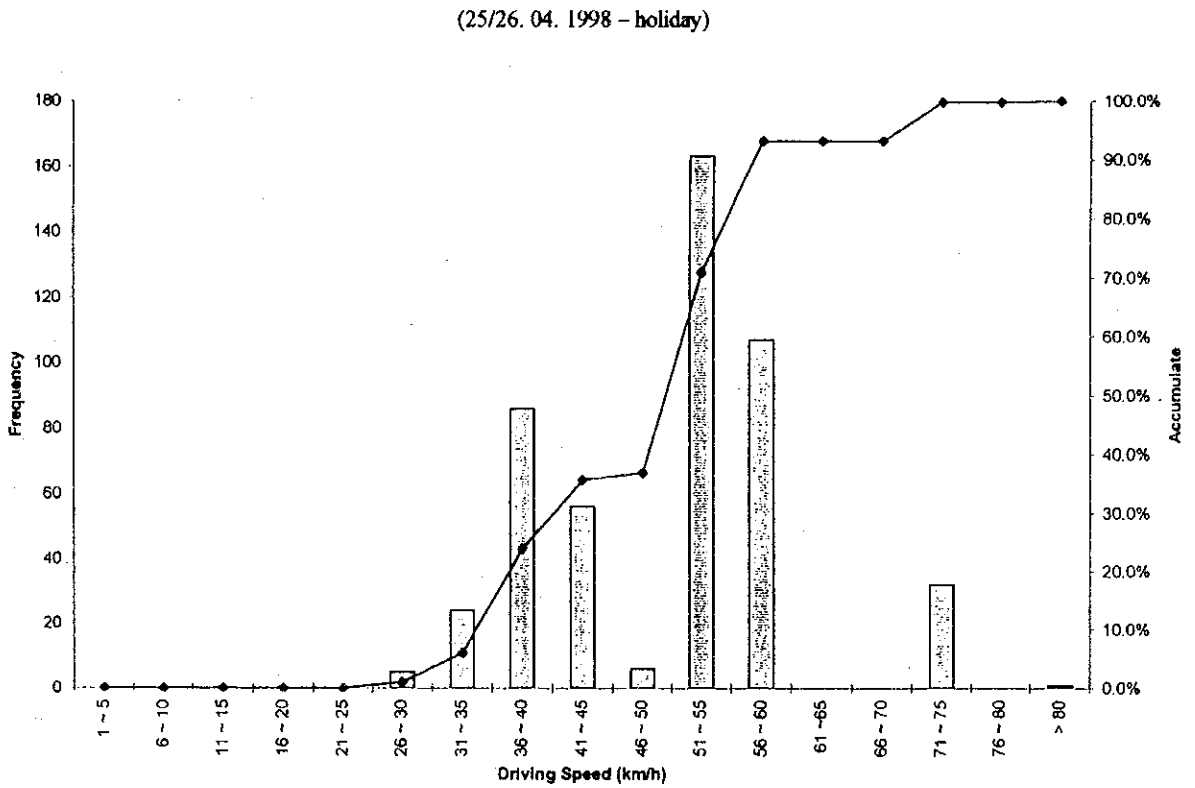
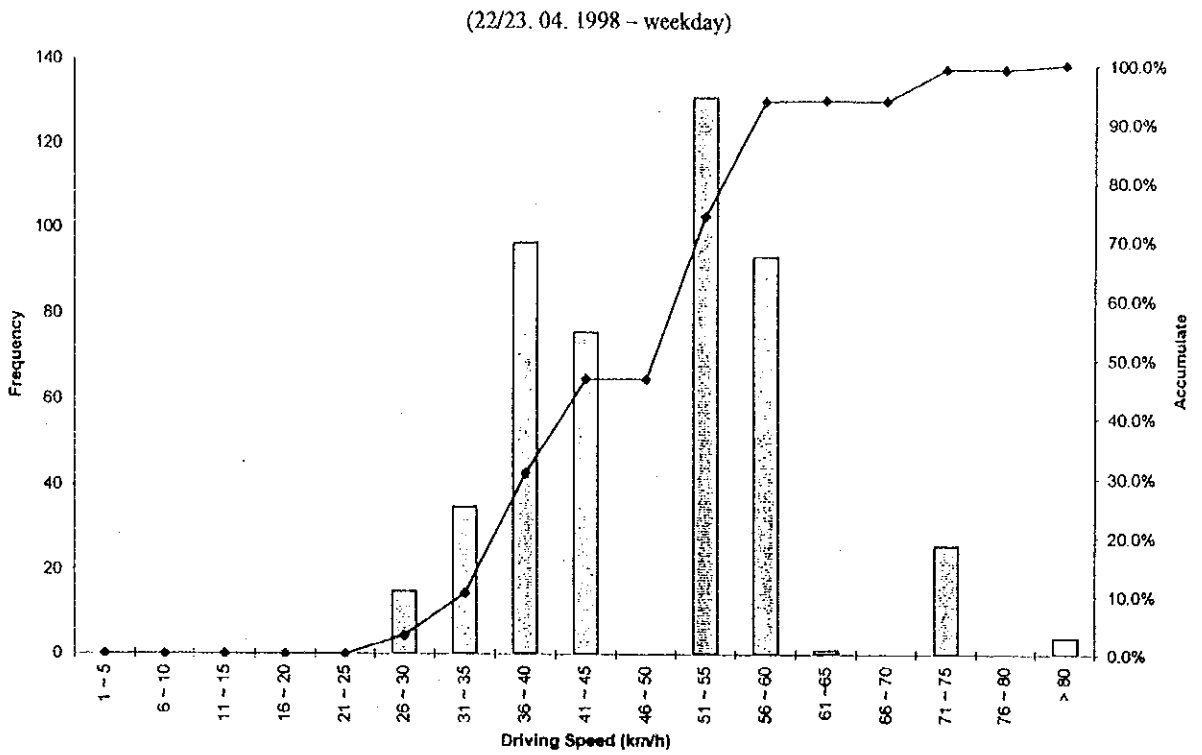
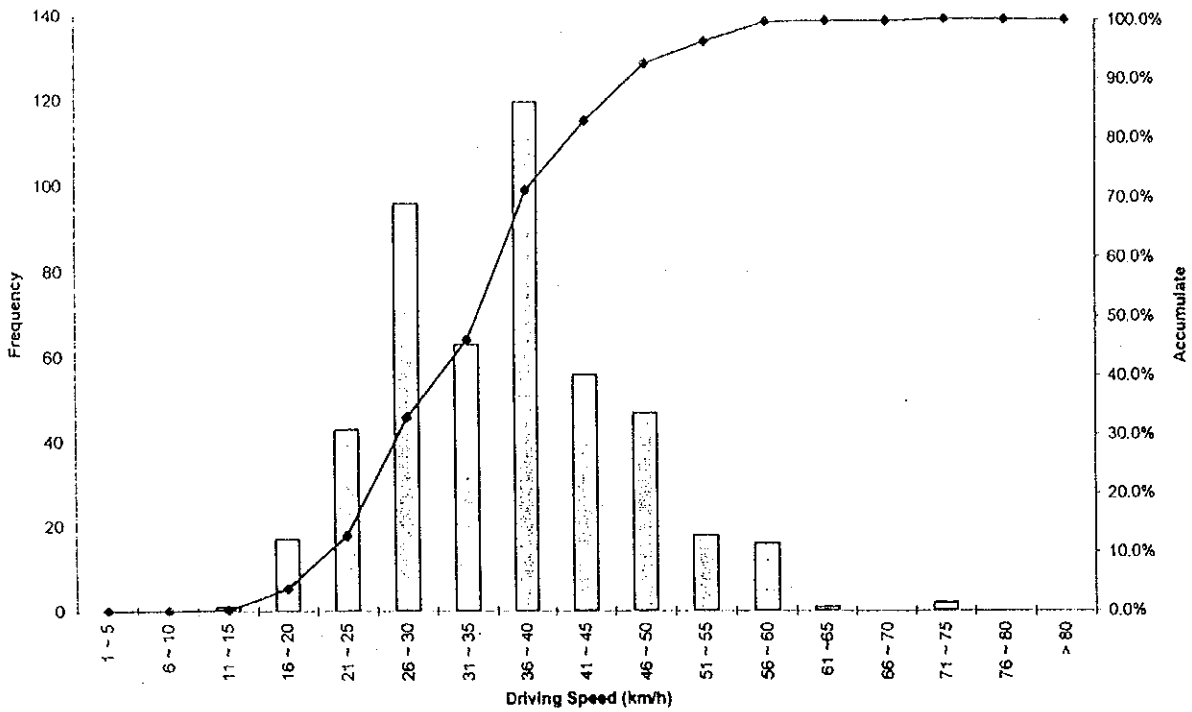


Figure 4-28(44) Distribution of Frequency of Speeds – Measuring Point No. 64

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

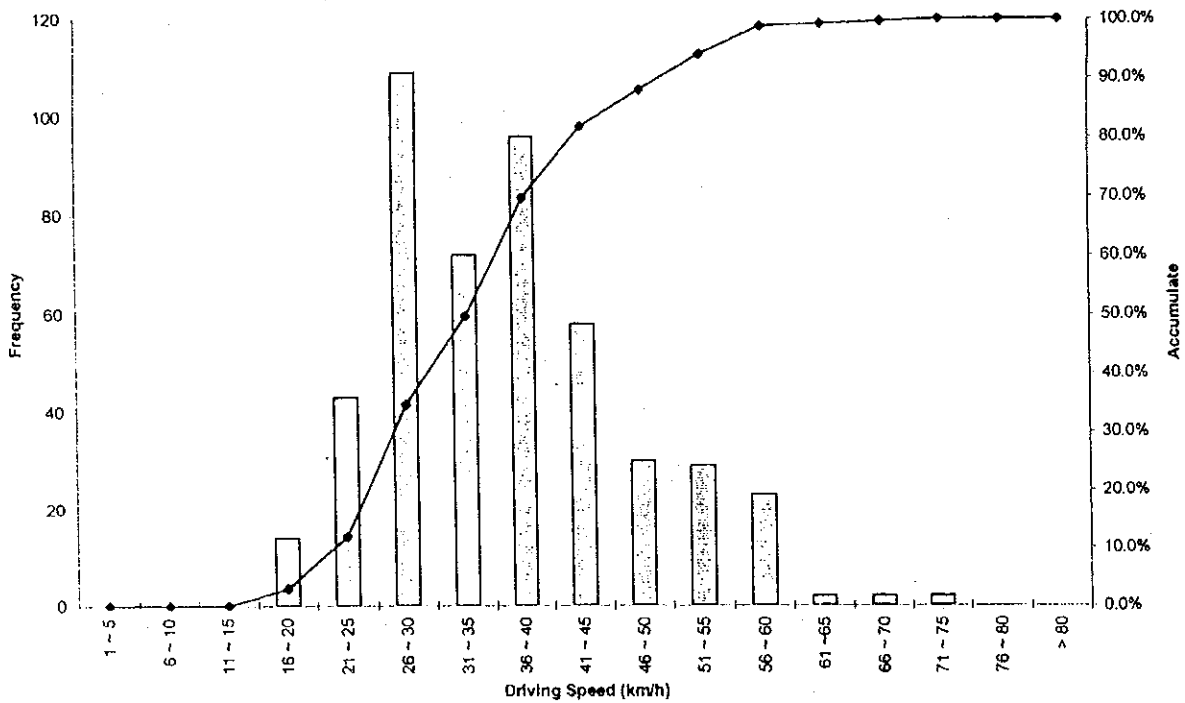
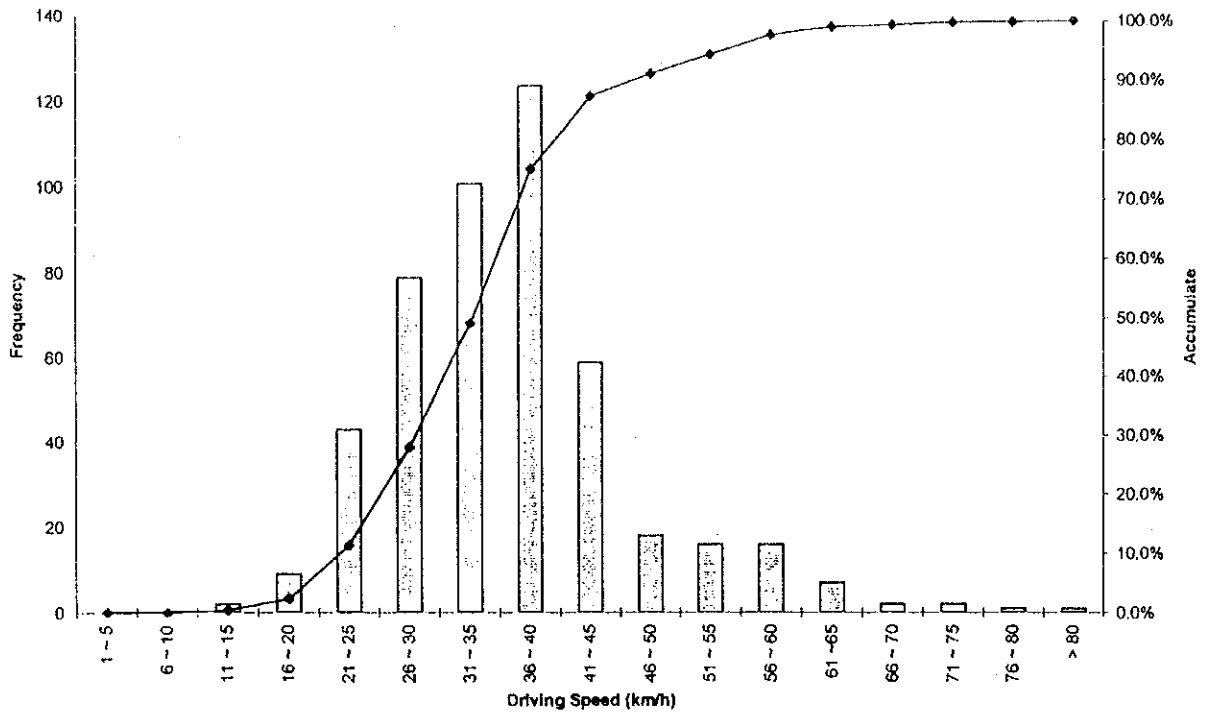


Figure 4-28(45) Distribution of Frequency of Speeds – Measuring Point No. 66

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

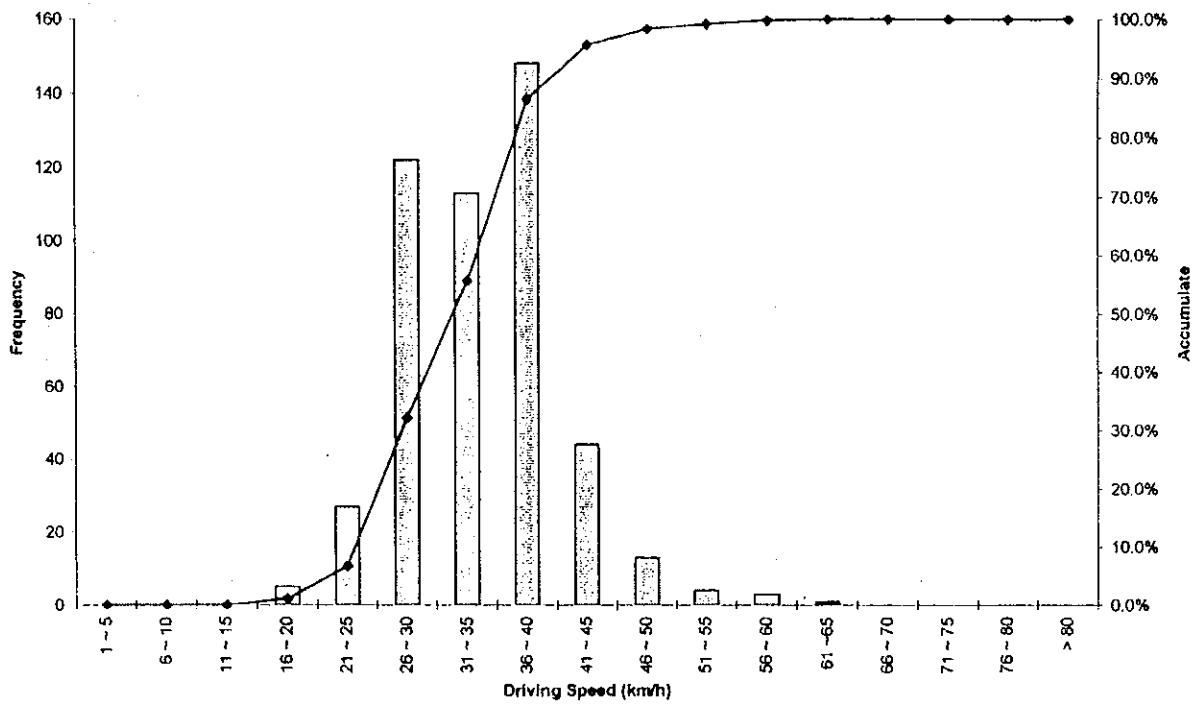
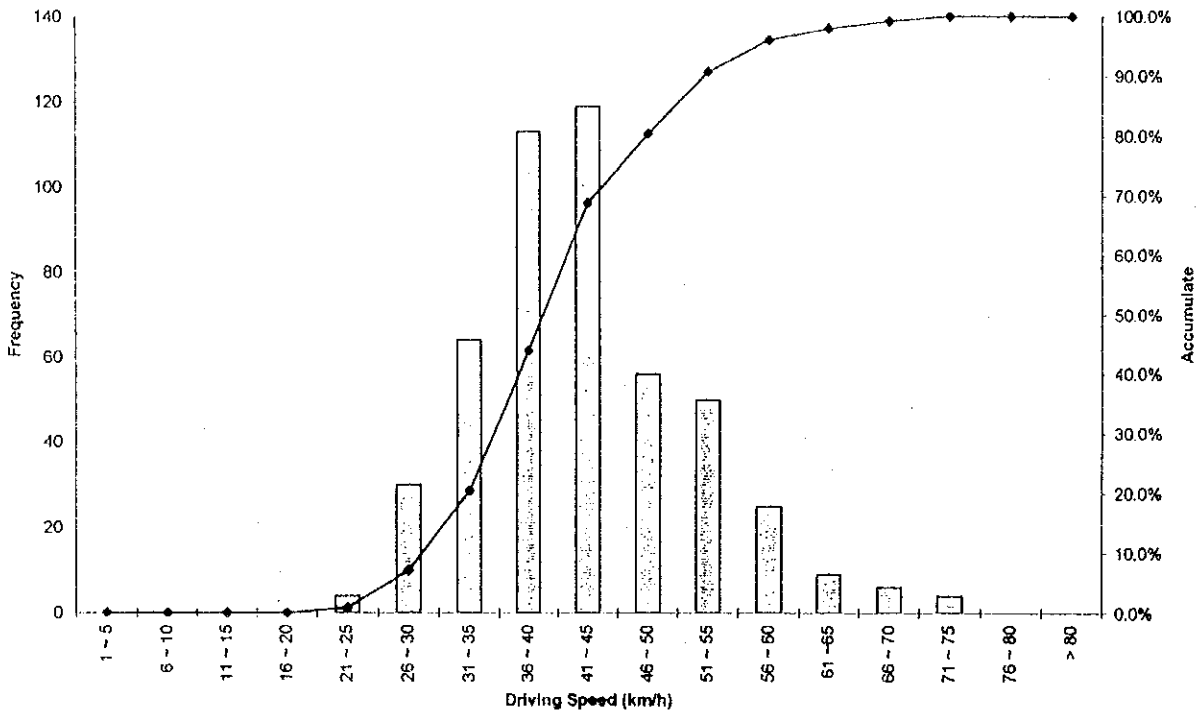


Figure 4-28(46) Distribution of Frequency of Speeds – Measuring Point No. 67

(22/23. 04. 1998 – weekday)



(25/26. 04. 1998 – holiday)

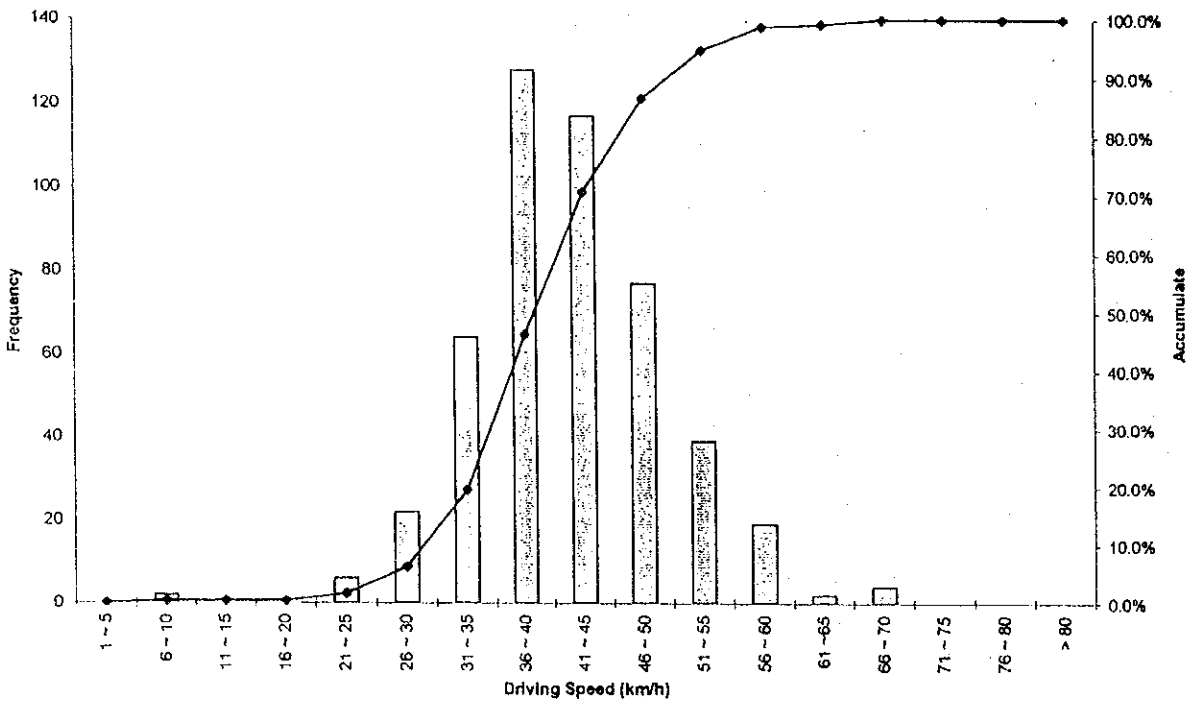
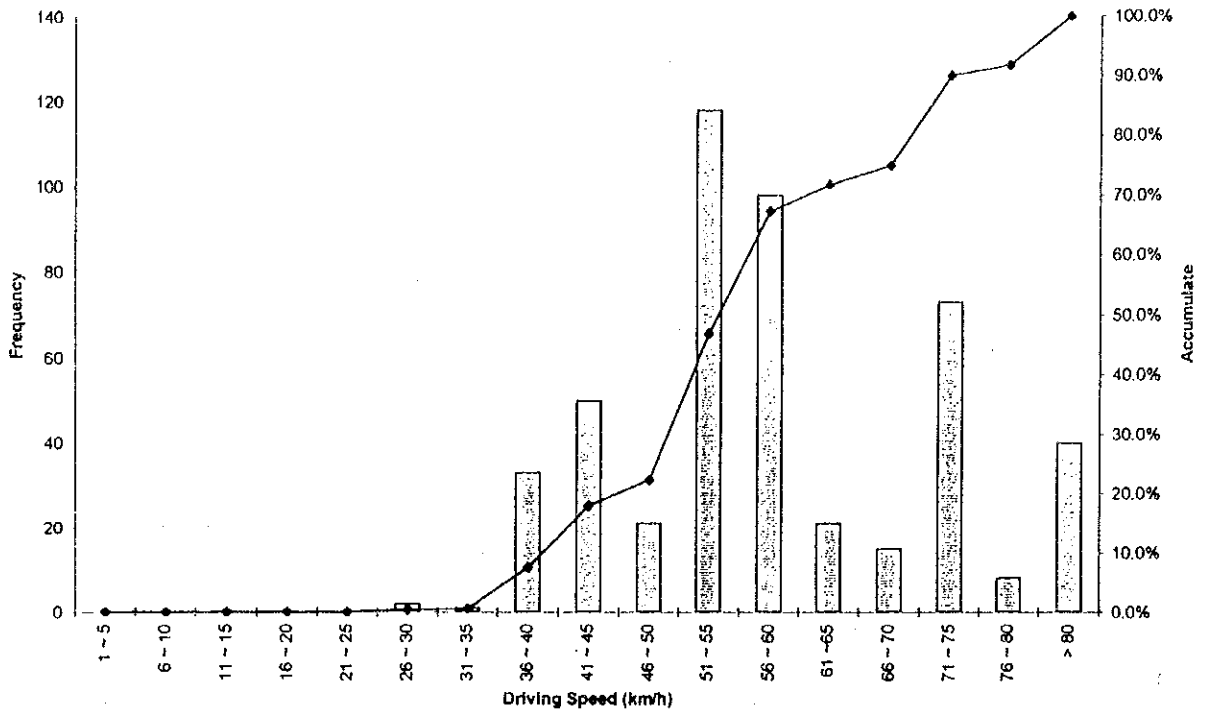


Figure 4-28(47) Distribution of Frequency of Speeds – Measuring Point No. 69



(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

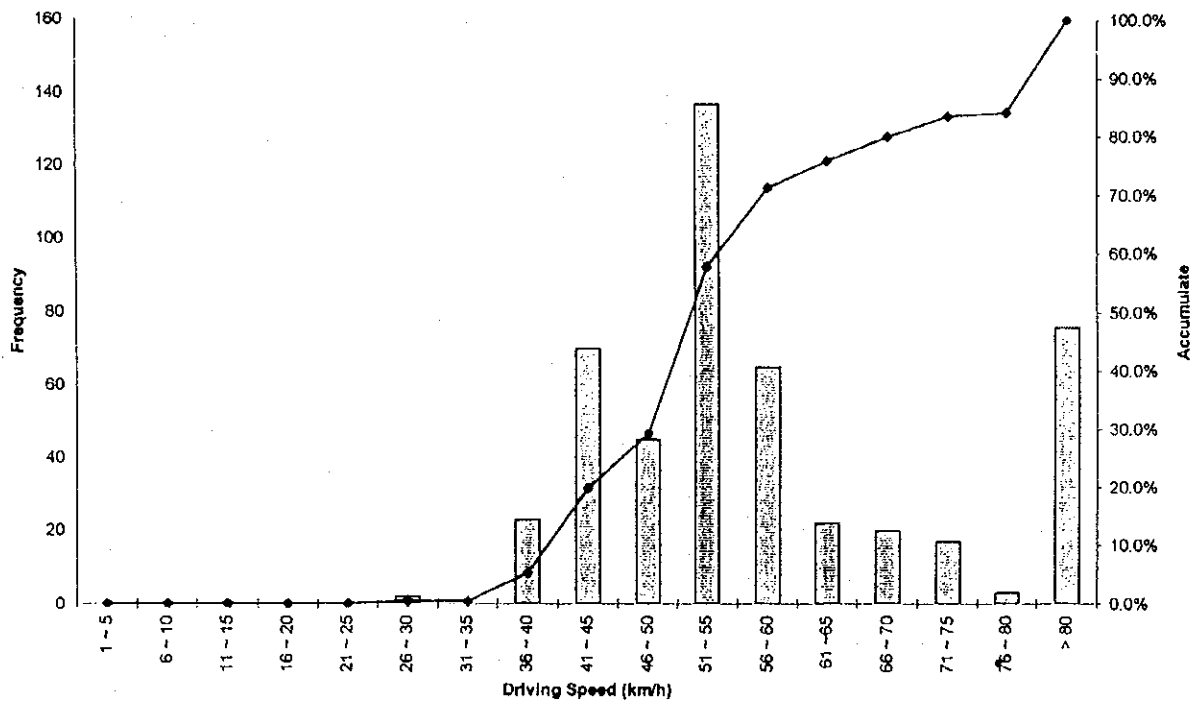


Figure 4-28(48) Distribution of Frequency of Speeds - Measuring Point No. 70

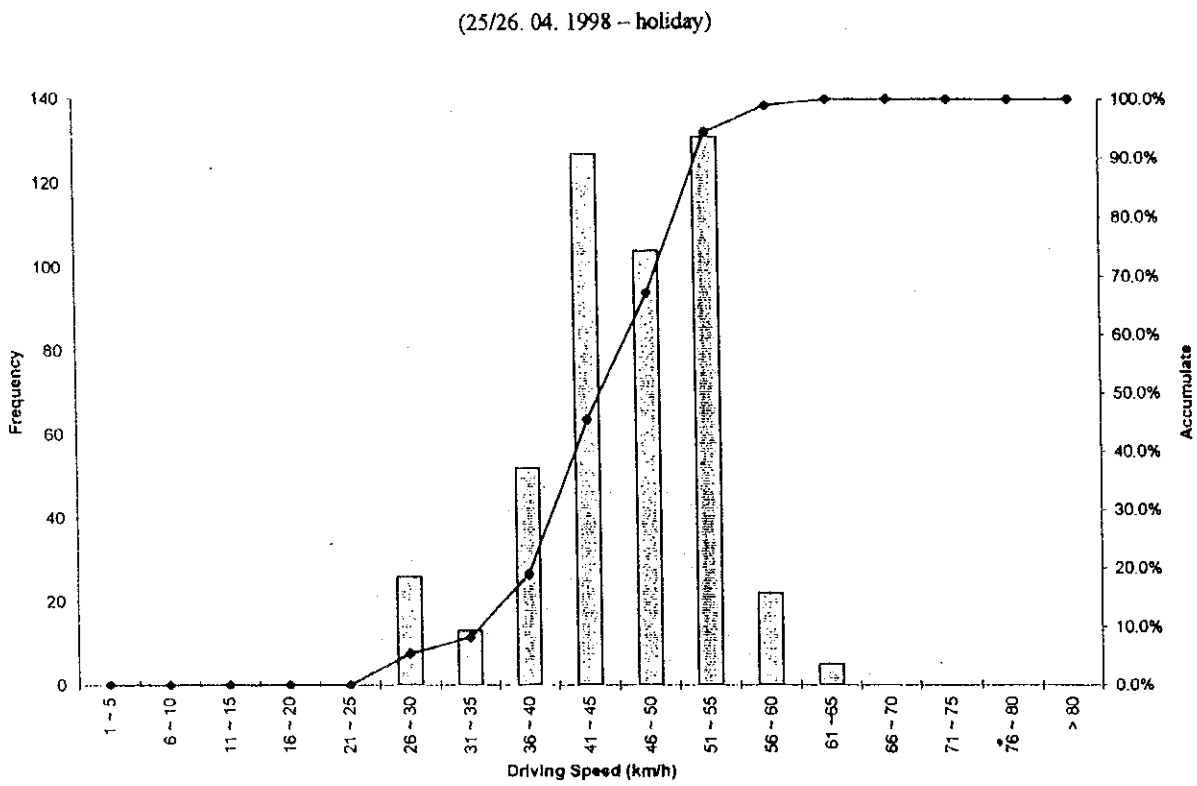
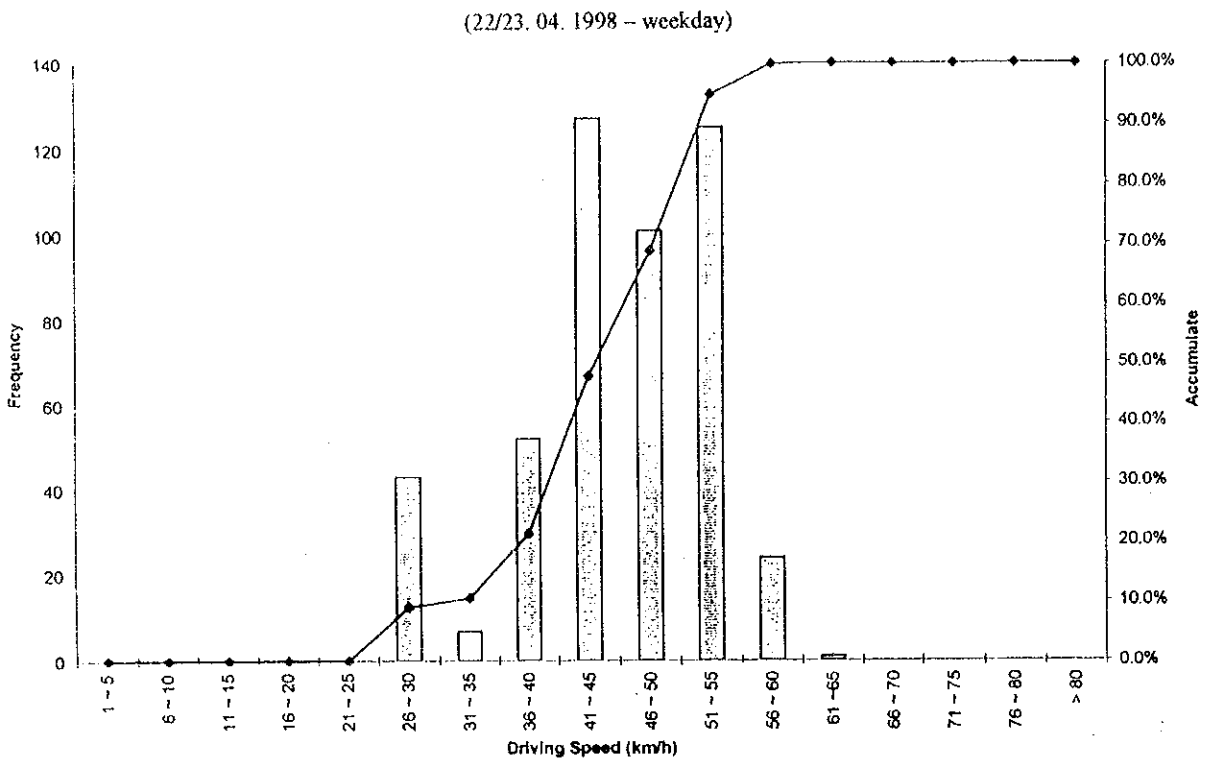
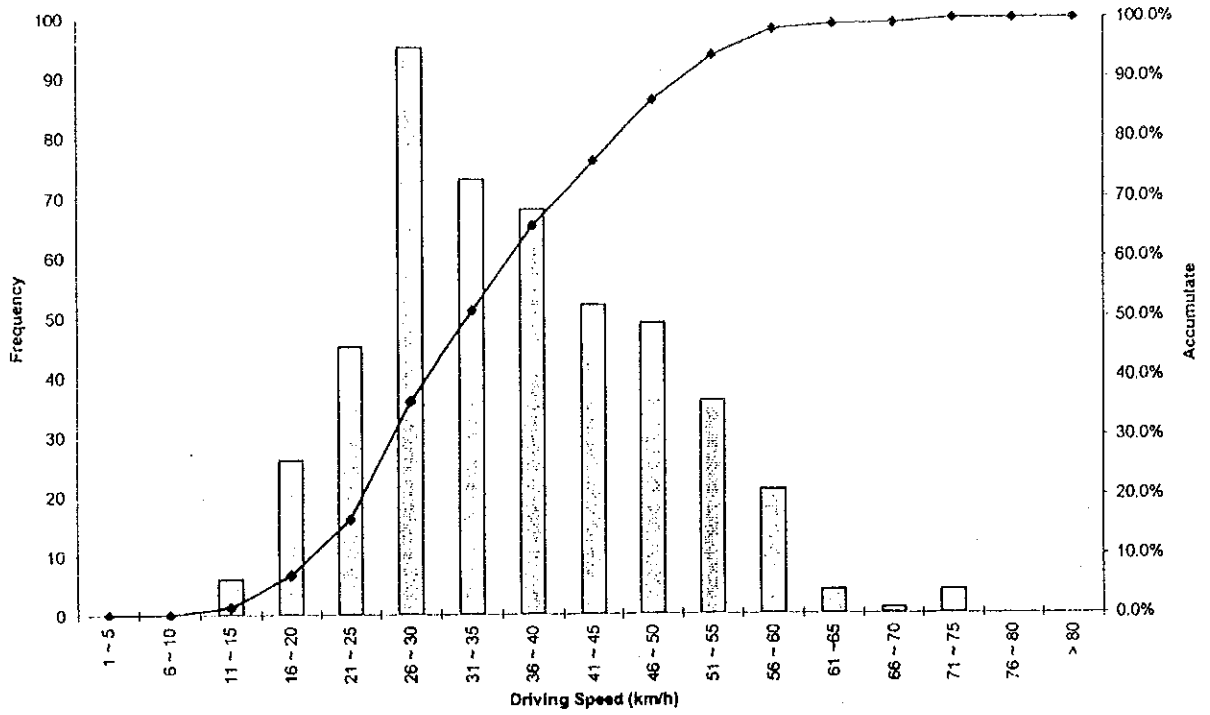


Figure 4-28(49) Distribution of Frequency of Speeds – Measuring Point No. 71

(22/23. 04. 1998 - weekday)



(25/26. 04. 1998 - holiday)

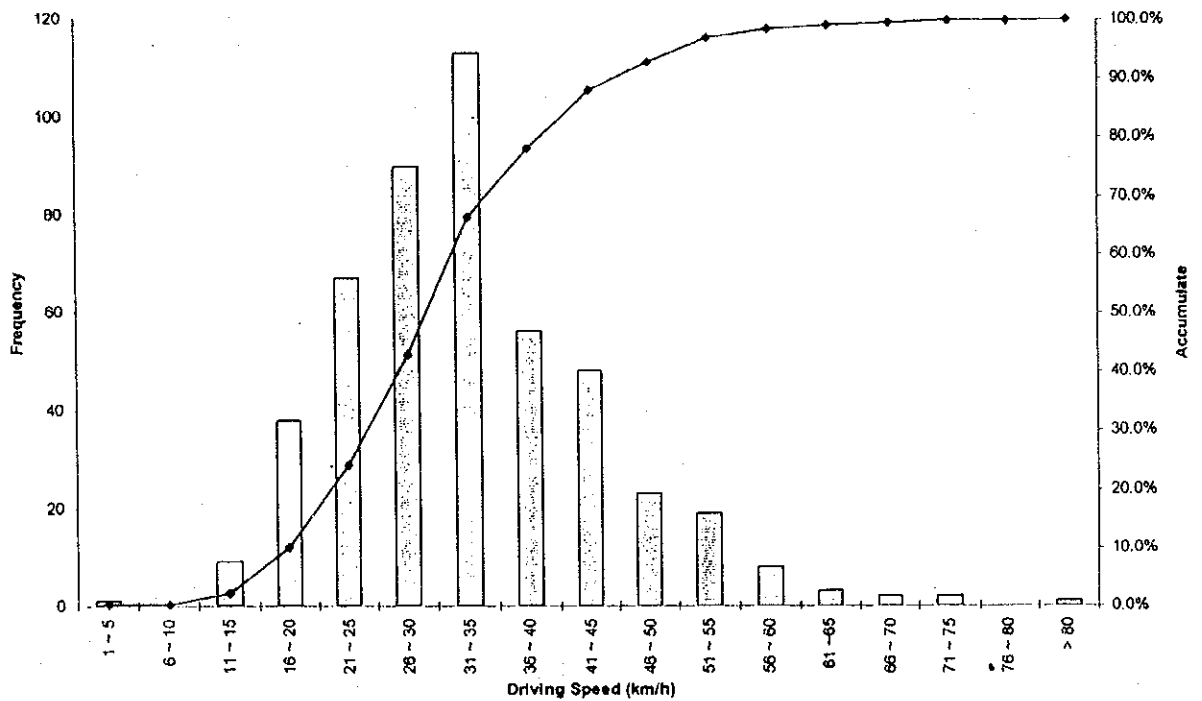


Figure 4-28(50) Distribution of Frequency of Speeds - Measuring Point No. 72

Table D4.54(1) The Results from NO, NO<sub>2</sub> and NO<sub>x</sub> Determination on 6 Measuring Points in Skopje

M. point/ direction	NO				NO <sub>2</sub>				NO <sub>x</sub>			
	22/23.04		25/26.04		22/23.04		25/26.04		22/23.04		25/26.04	
	ppm	µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>	ppm	µg/m <sup>3</sup>
11. Bul. Partizanski odredi (Karpos III)												
a - 0 m	53	67	170	213	19	37	35	67	73	103	205	279
a - 10 m	41	51	119	149	16	30	29	56	57	81	148	205
a - 20 m	31	38	90	112	20	38	26	50	51	77	116	162
a - 40 m	34	42	73	91	16	30	27	52	50	73	110	143
a - 100 m	-	-	69	86	-	-	20	38	-	-	89	124
b - 0 m	-	-	55	69	-	-	20	39	-	-	75	108
b - 10 m	32	40	53	66	29	55	17	33	60	94	70	99
b - 20 m	28	35	40	50	21	41	16	31	50	76	56	80
b - 40 m	16	20	25	31	25	49	18	35	41	69	60	66
b - 100 m	25	31	30	37	19	37	13	28	44	68	43	63
40. Bul. Partizanski odredi - Bul. Sv. Kliment Ohridski												
a - 0 m	135	169	92	115	53	101	30	58	183	270	122	173
a - 20 m	77	96	97	121	30	57	30	57	107	153	127	178
a - 50 m	73	91	83	104	40	77	34	64	113	168	117	168
a - 100 m	-	-	87	109	-	-	30	58	-	-	116	167
a - 150 m	65	81	52	65	38	73	39	74	103	154	91	139
b - 0 m	81	101	104	129	46	101	35	66	126	188	139	196
b - 20 m	-	-	-	-	-	-	-	-	-	-	-	-
b - 50 m	-	-	-	-	-	-	-	-	-	-	-	-
b - 100 m	-	-	-	-	-	-	-	-	-	-	-	-
b - 150 m	118	147	-	-	40	147	33	63	159	224	-	-
c - 0 m	210	262	173	215	52	99	38	73	262	362	211	288
c - 20 m	81	101	85	105	41	79	33	63	122	180	134	169
c - 50 m	83	103	89	111	34	65	34	65	117	168	137	176
c - 100 m	61	76	88	110	42	81	30	57	104	158	106	167
c - 150 m	-	-	-	-	-	-	-	-	-	-	-	-
d - 0 m	193	241	175	218	50	95	39	74	243	336	214	291
d - 20 m	160	200	154	192	46	87	33	63	206	287	187	253
d - 50 m	121	150	110	136	30	95	24	46	170	246	134	182
d - 100 m	136	170	-	-	44	83	-	-	180	253	-	-
d - 150 m	164	204	130	162	48	91	37	70	211	295	167	232
44. Bul. Makedonija - Bul. Sv. Kliment Ohridski												
a - 0 m	153	193	142	177	51	97	45	87	206	290	137	264
a - 20 m	132	164	148	185	44	83	53	102	175	248	201	287
a - 50 m	142	177	162	202	42	81	45	87	185	258	207	289
a - 100 m	153	191	132	165	42	81	36	70	196	272	166	234
a - 150 m	141	176	116	145	44	83	50	95	184	259	166	240
b - 0 m	159	198	189	236	49	93	40	76	208	292	229	312
b - 20 m	135	169	125	156	48	91	41	79	183	260	166	234
b - 50 m	95	119	-	-	-	-	-	-	95	119	-	-
b - 100 m	139	173	110	137	39	75	47	89	178	248	157	226
b - 150 m	126	157	120	149	48	91	50	95	174	249	170	244
c - 0 m	147	183	100	125	42	81	35	67	189	264	135	192
c - 20 m	72	89	111	138	33	63	37	71	105	152	148	209
c - 50 m	73	91	84	105	33	63	31	60	106	154	115	165
c - 100 m	-	-	-	-	-	-	-	-	-	-	-	-
c - 150 m	66	82	94	117	35	67	33	63	101	149	127	179
d - 0 m	149	186	188	234	46	87	-	-	195	273	-	234
d - 20 m	125	156	116	144	35	67	35	68	160	223	151	212
d - 50 m	117	146	141	175	37	71	38	73	154	217	179	248
d - 100 m	115	143	114	142	40	77	39	75	155	220	153	217
d - 150 m	110	137	129	161	42	81	38	72	153	219	167	233
46. Bul. Krste Misirkov - Bul. Goce Delcev												
a - 0 m	-	-	-	-	-	-	-	-	-	-	-	-
a - 20 m	174	217	-	-	44	83	-	-	217	300	-	-
a - 50 m	118	147	-	-	51	97	-	-	169	245	-	-
a - 100 m	168	210	-	-	44	83	-	-	212	293	-	-
a - 150 m	140	174	-	-	41	79	-	-	181	253	-	-
b - 0 m	92	115	145	180	35	67	36	70	127	182	181	250
b - 20 m	76	95	-	-	40	77	-	-	116	172	-	-
b - 50 m	76	95	-	-	35	67	-	-	111	162	-	-
b - 100 m	74	92	-	-	44	83	-	-	117	175	-	-
b - 150 m	40	50	-	-	32	61	-	-	72	110	-	-
c - 0 m	117	146	184	230	38	73	42	80	155	219	226	310
c - 20 m	-	-	-	-	-	-	-	-	-	-	-	-
c - 50 m	161	201	-	-	38	73	-	-	200	274	-	-
c - 100 m	93	116	76	95	35	67	30	58	128	183	106	153
c - 150 m	111	139	95	118	36	69	31	59	147	208	126	177

Table D4.54(2) The Results from NO, NO<sub>2</sub> and NO<sub>x</sub> Determination on 6 Measuring Points in Skopje

d - 0 m	111	139	-	-	47	39	-	-	158	228	-	-
d - 20 m	121	150	-	-	44	33	-	-	164	233	-	-
d - 50 m	103	129	-	-	38	73	-	-	142	202	-	-
d - 100 m	135	169	-	-	31	97	-	-	186	266	-	-
d - 150 m	191	126	-	-	39	75	-	-	140	201	-	-
49. Bul. Koco Racin - Bul. 11 Oktomvri												
a - 0 m	160	200	185	231	30	95	47	90	210	293	232	321
a - 20 m	189	235	161	200	50	95	41	78	239	331	202	279
a - 50 m	108	135	-	-	49	93	-	-	157	228	-	-
a - 100 m	92	115	114	142	42	81	38	72	135	196	132	215
a - 150 m	67	84	80	100	39	75	33	62	106	159	113	162
b - 0 m	122	152	139	173	42	81	40	77	164	233	179	250
b - 20 m	105	130	157	195	50	95	47	90	154	226	204	285
b - 50 m	76	95	124	155	38	73	38	73	114	168	163	228
b - 100 m	73	91	108	135	49	93	35	66	122	184	143	201
b - 150 m	97	120	112	140	46	87	37	71	142	208	149	211
c - 0 m	81	101	110	137	39	75	41	78	120	176	151	215
c - 20 m	70	88	-	-	36	69	-	-	107	157	-	-
c - 50 m	109	136	110	137	46	87	37	70	155	223	146	207
c - 100 m	90	112	134	167	39	75	40	77	129	187	175	245
c - 150 m	70	88	119	149	38	73	38	73	109	161	158	222
d - 0 m	204	254	201	251	44	83	46	88	247	337	247	338
d - 20 m	191	238	225	280	42	81	46	88	233	319	171	368
d - 50 m	176	220	159	198	39	75	46	88	215	295	204	285
d - 100 m	141	176	150	187	38	73	39	75	179	249	189	262
d - 150 m	127	159	146	181	40	77	40	77	168	236	186	259
64. Bul. Aleksandar Makedonski (H. Continental)												
a - 0 m	68	85	-	-	37	71	-	-	105	156	-	-
a - 10 m	35	44	97	120	28	53	35	66	63	97	132	187
a - 20 m	33	41	36	45	21	41	13	26	54	82	49	70
a - 40 m	25	31	-	-	20	39	-	-	45	70	-	-
a - 100 m	7	3	34	42	24	47	16	31	31	55	50	73
b - 0 m	149	186	65	69	22	43	19	36	171	228	84	106
b - 10 m	90	112	37	46	28	53	16	31	117	165	53	77
b - 20 m	82	102	40	50	21	41	18	34	103	143	58	83
b - 40 m	57	71	42	52	21	41	15	29	78	111	57	81
b - 100 m	69	86	-	-	24	47	-	-	94	133	-	-

Table D4.55 Wind Speed and Wind Direction Determination on 6 Measuring Points

During Traffic Measurement in Skopje

Measuring Point/ Direction	22/23 April 1998				25/26 April 1998			
	Wind Speed (m/s)		Wind Direction		Wind Speed (m/s)		Wind Direction	
	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
11	0.41	2.41	ESE	E	0.10	1.32	SE	ESE
a	0.14	0.74	ESE	SE	0.22	0.48	SW	ESE
b	0.50	0.45	ENE	-	0.01	0.78	SW	ESE
40	0.38	0.80	SW	N	0.19	0.40	SW	ESE
a	0.04	1.18	ENE	W	0.13	0.14	NNE	SW
b	0.22	0.39	S	ESE	0.18	0.43	WNW	S
c	0.22	0.21	W	NW	0.00	0.76	-	SSE
d	0.01	0.00	S	-	0.59	0.21	NW	S
44	0.67	1.63	ENE	NNE	0.50	0.63	NE	SSW
a	0.46	0.72	ENE	S	0.52	0.03	NW	ENE
b	0.30	0.86	SSE	-	0.25	0.63	SW	SSW
c	0.46	0.50	NNW	NNE	0.19	0.97	SE	NNE
d	0.27	1.41	ENE	NNE	0.44	0.49	W	NE
46	0.30	1.63	S	-	0.76	2.39	NE	SE
a	0.28	0.03	NE	-	0.04	1.10	NW	ESE
b	0.04	0.99	S	-	0.45	0.77	W	ESE
c	0.07	0.08	NNW	-	3.43	2.52	ENE	NNE
d	0.41	2.04	N	-	0.45	0.78	NNE	NNE
49	0.45	0.02	W	-	0.92	0.15	WSW	S
a	0.59	0.00	SE	-	0.10	0.04	WSW	SSE
b	1.00	0.26	NE	SW	0.51	0.29	N	WSW
c	0.47	0.65	SW	SW	2.64	0.68	NW	SW
d	0.35	0.05	NW	SSW	0.42	0.82	W	SE
64	1.24	0.35	-	SW	0.82	0.08	E	WNW
a	0.88	0.64	-	SW	0.27	0.00	SSE	-
b	2.34	0.71	E	W	0.03	0.52	SW	SW

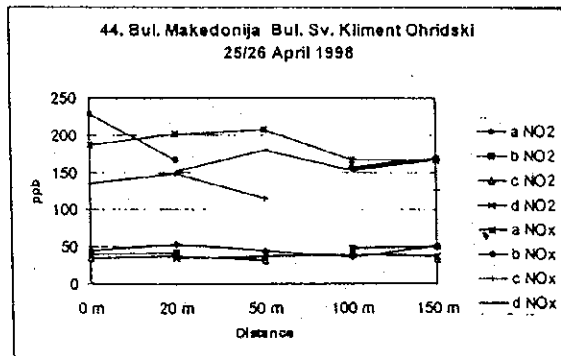
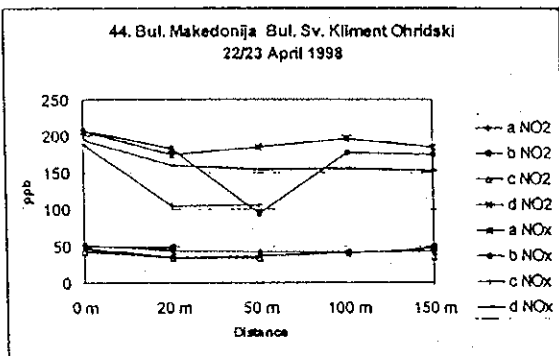
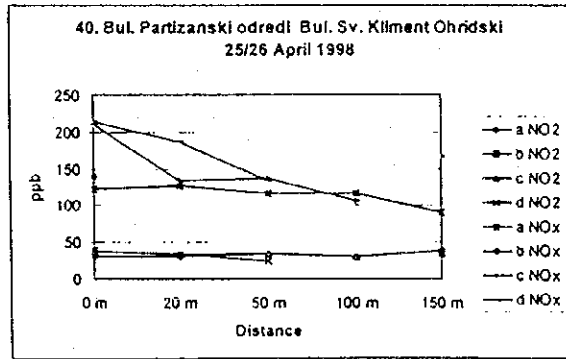
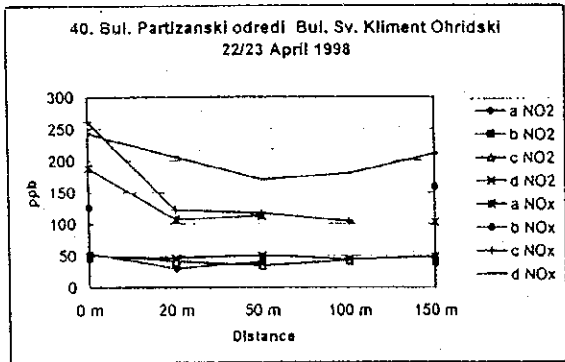
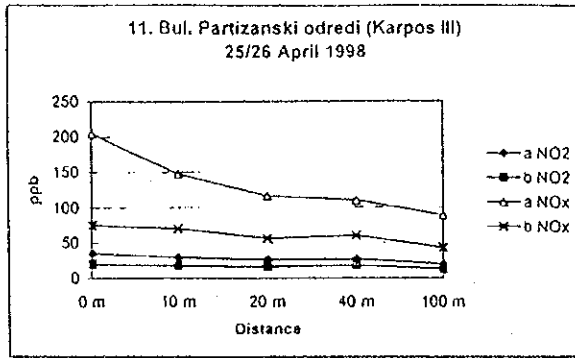
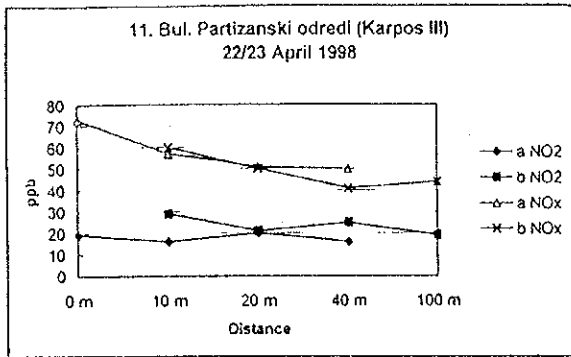


Figure D4.29(1) The Declining Concentrations of NO<sub>2</sub> and NO<sub>x</sub>

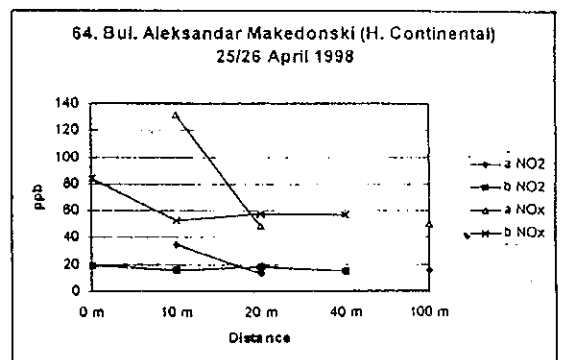
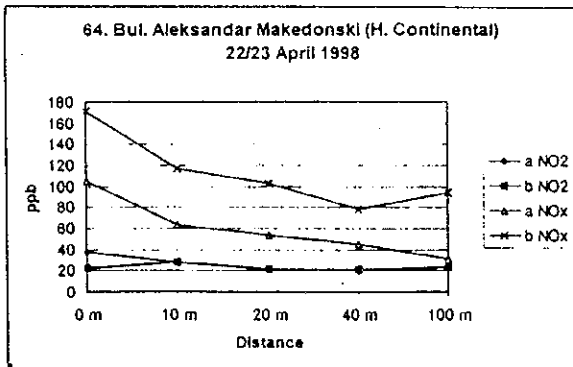
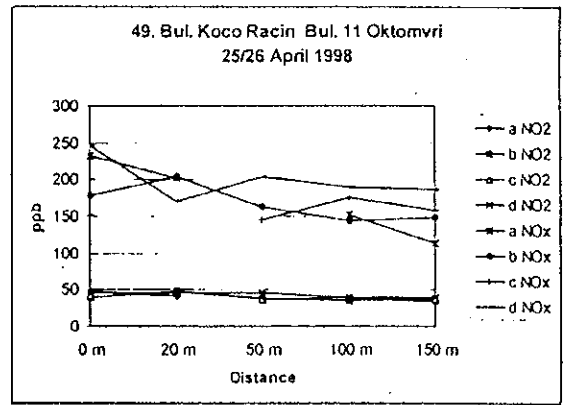
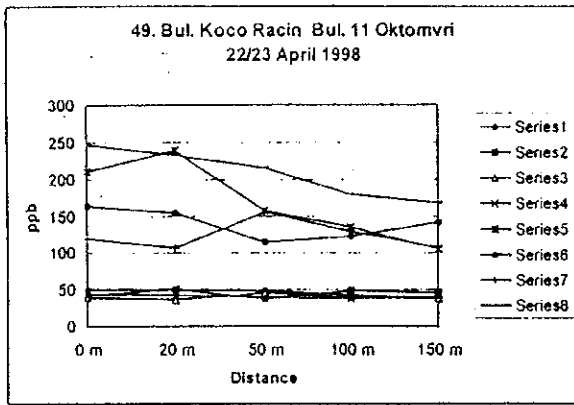
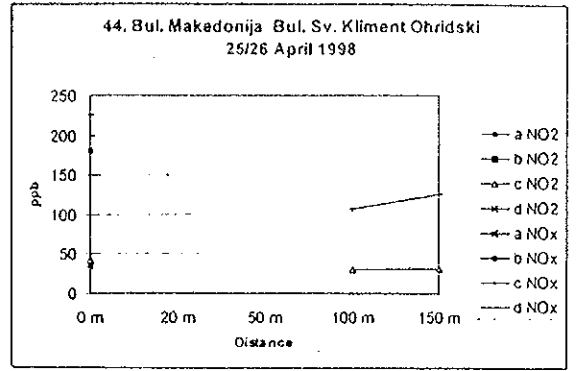
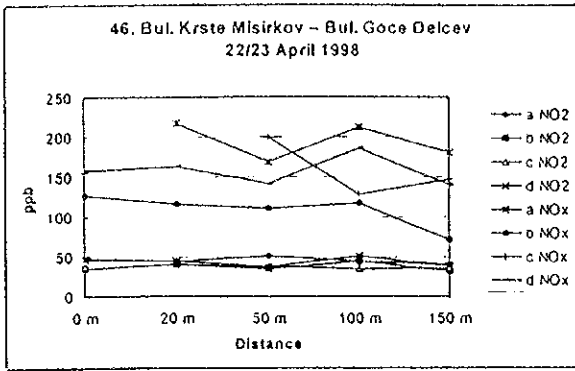


Figure D4.29(2) The Declining Concentrations of NO<sub>2</sub> and NO<sub>x</sub>

*Data for Chapter 5*



1996 Macedonia Metdata

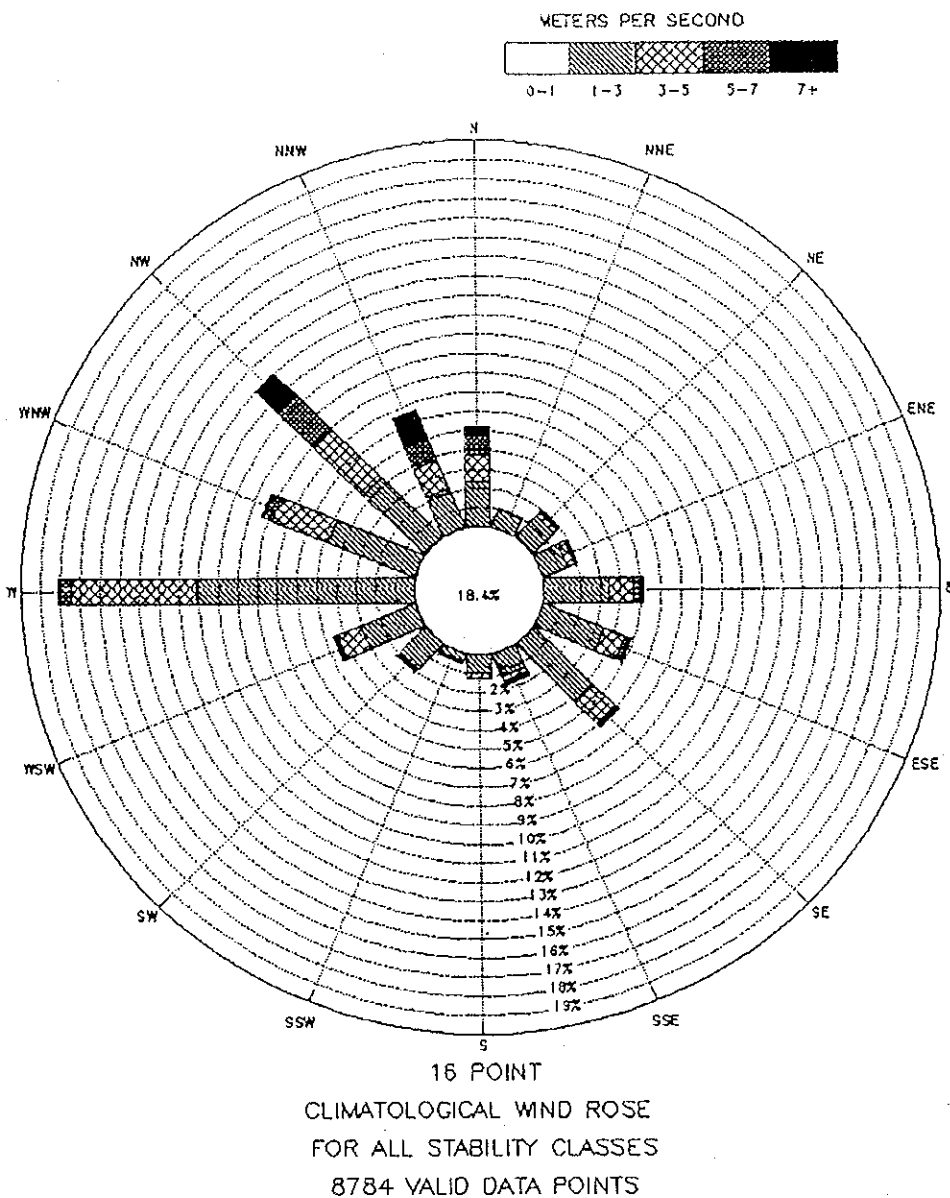
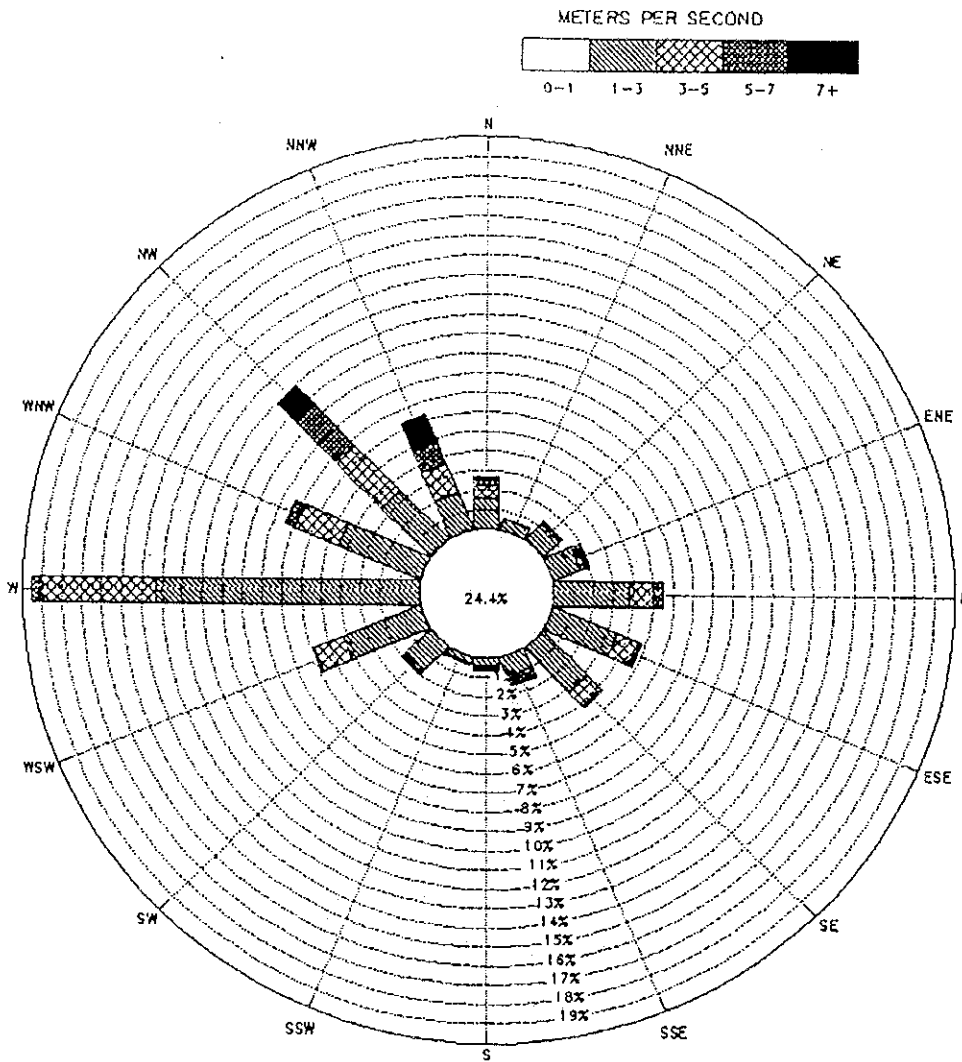


Figure D5.1 Annual average (1996) wind rose for Skopje, Macedonia

1996 Macedonia Metdata (1 Oct. - 31 March)



16 POINT  
CLIMATOLOGICAL WIND ROSE  
FOR ALL STABILITY CLASSES  
4392 VALID DATA POINTS

Figure D5.2 Winter Season Wind Rose (1996) for Skopje, Macedonia

1996 Macedonia Metdata (1 April - 30 Sept.)

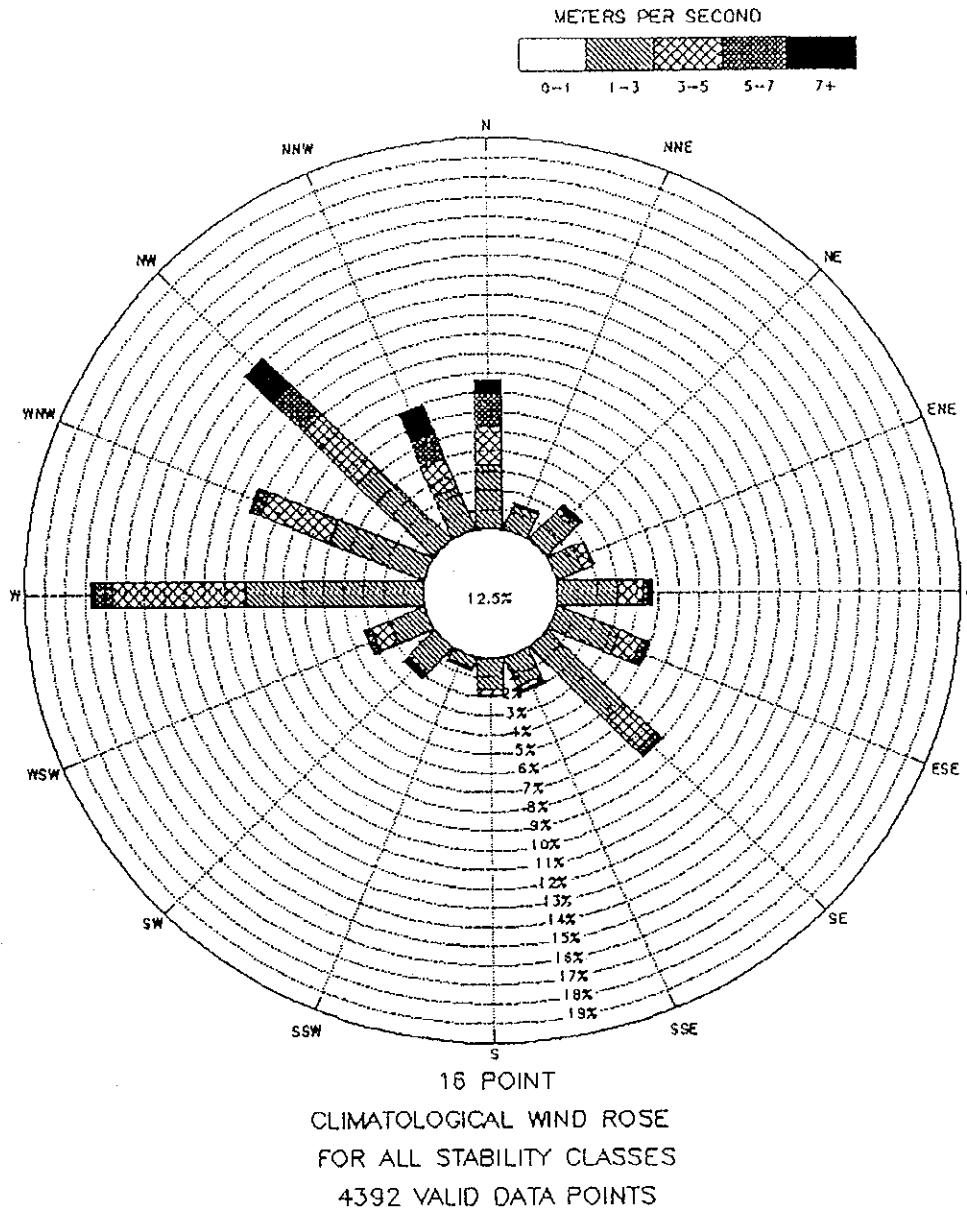


Figure D5.3 Summer Season Wind Rose (1996) for Skopje, Macedonia

Table D5.1 Comparisons of 1996 annual average SO<sub>2</sub> concentrations (in µg/m<sup>3</sup>): ISCLT3 predictions vs. observed values

Receptor Name	UTM X	UTM Y	Predicted	Observed
<b>RHI Point</b>				
AMSM	535.18	4650.15	61.94	31.08
Fruit Farming Institute - K. Voda	537.45	4648.25	56.86	18.00
HMI - Karpos	533.65	4652.60	40.81	12.37
Dracevo - K. Voda	541.50	4647.00	72.29	17.84
Avtokomanda - G. Baba	538.80	4651.00	84.73	28.06
Karpos IV - Karpos	532.80	4651.25	42.30	9.91
University Lib - Center	536.85	4650.55	88.50	39.60
J. B. Tito	535.90	4650.20	89.71	NA
Novo Lisice	539.60	4648.85	68.06	16.57
<b>IPH Point</b>				
Pivara	538.40	4650.10	90.29	NA
Jane Sandanski (Kinder Galten)	538.70	4649.25	79.47	NA
Cement Factory	538.30	4647.40	56.91	NA
Hotel Panorama (Recreation Zone)	535.40	4648.95	37.52	NA
Elementary School Dimo Hadzi Dimov	531.50	4651.35	42.65	NA
DDD Station	537.50	4652.75	43.65	NA
Municipal Health Institute	536.85	4649.30	127.81	NA

Table D5.2 Comparisons of 1996 annual average SPM concentrations (in µg/m<sup>3</sup>): ISCLT3 predictions vs. observed values

Receptor Name	UTM X	UTM Y	Predicted	Observed
<b>RHI Point</b>				
AMSM	535.18	4650.15	46.86	45.78
Fruit Farming Institute - K. Voda	537.45	4648.25	45.92	25.74
HMI - Karpos	533.65	4652.60	43.10	23.33
Dracevo - K. Voda	541.50	4647.00	61.01	15.09
Avtokomanda - G. Baba	538.80	4651.00	49.56	29.29
Karpos IV - Karpos	532.80	4651.25	43.72	38.40
University Lib - Center	536.85	4650.55	47.95	40.06
J. B. Tito	535.90	4650.20	47.46	NA
Novo Lisice	539.60	4648.85	48.48	29.04
<b>IPH Point</b>				
Pivara	538.40	4650.10	48.53	NA
Jane Sandanski (Kinder Galten)	538.70	4649.25	47.71	NA
Cement Factory	538.30	4647.40	63.13	NA
Hotel Panorama (Rec. Zone)	535.40	4648.95	44.27	NA
Elementary School Dimo Hadzi Dimov	531.50	4651.35	41.28	NA
DDD Station	537.50	4652.75	45.34	NA
Municipal Health Institute	536.85	4649.30	45.88	NA

## CALMET - Modeling Options and Development of Model Inputs

### 1) Upper-Air Data

Upper-air data from Petrov, Macedonia for the SO<sub>2</sub> episode was prepared by SAI for input to the CALMET model. Data from Petrov is only taken once per day at the 0000 GMT upper-air sounding. Data measured includes the geopotential height, pressure, temperature, wind speed and direction up to and including the 500 mb level for the episode. Data for the afternoon sounding was developed using the 1200 GMT surface temperature, pressure, wind speed and direction and the sounding from earlier in the day. The 1200 GMT sounding was assumed to remain the same as the 0000 GMT sounding from 925 mb up to 500 mb. The surface was assumed to change based on the surface measurements measured at Zajcev (RHMI) with an adjustment for the pressure difference between the two sites because of elevation differences. During the episode the mean surface pressure difference between

Zacjev and Petrov was 8.8 mb. Table D5.3 shows the morning and afternoon soundings used in modeling the episode.

Table D5.3(1) Morning Soundings for the 13-15 January 1998 SO<sub>2</sub> episode

13.01.98					14.01.98				
P	Height a.s.l	temperate	wind direction	wind speed	P	height a.s.l	temperate	wind direction	wind speed
mb	m	deg. K	degrees	m/s	mb	m	deg. K	degrees	m/s
999	233	271.9	0	0	993	233	270.1	0	0
925	863	282	320	2	925	816	280.6	300	1
850	1563	283.4	260	3	850	1540	282	60	1
700	3160	271.5	260	4	700	2920	273.2	280	4
500	5690	251.9	30	8	500	5690	251.1	320	11

15.01.98					16.01.98				
P	height a.s.l	temperate.	wind direction	wind speed	P	Height a.s.l	temperate	wind direction	wind speed
mb	m	deg. K	degrees	m/s	mb	m	deg. K	degrees	m/s
996	233	271.7	0	0	997	233	274.8	0	0
925	832	280.2	310	2	925	851	280.6	350	1
850	1522	278	230	1	850	1537	276.4	310	2
700	2830	271.9	190	9	700	2930	268.1	310	2
500	5680	252.7	190	11	500	5660	251.5	230	11

Table D5.3(2) Afternoon Soundings (constructed) for the 13-15 January 1998 SO<sub>2</sub> episode

13.13.98					14.13.98				
P	height a.s.l	Temperate	wind direction	wind speed	P	Height a.s.l	temperate	wind direction	wind speed
Mb	m	deg. K	degrees	m/s	Mb	M	deg. K	degrees	m/s
995	233	281.3	112	1.3	993.4	233	282.2	135	1.1
925	863	282	320	2	925	816	280.6	300	1.
850	1563	283.4	260	3	850	1540	282	60	1
700	3160	271.5	260	4	700	2920	273.2	260	4
500	5690	251.9	30	8	500	5690	251.1	320	11

15.13.98					16.13.98				
P	height a.s.l	Temperate	wind direction	wind speed	P	heigh a.s.l	Temperatur e	wind direction	wind speed
Mb	m	deg. K	degrees	m/s	Mb	m	deg. K	degrees	m/s
997	233	280.8	202	0.7	997.1	233	283.2	135	1.4
925	832	280.2	310	2	925	851	280.6	350	1
850	1522	278	230	1	850	1537	276.4	310	2
700	2830	271.9	190	9	700	2930	268.1	310	2
500	5680	252.7	190	11	500	5660	251.5	230	11

## 2) Surface Data

Hourly surface data as collected by the RHMI during the episode was prepared by SAI in a format for direct input to the CALMET model. This included measures of surface pressure, wind speed and direction, temperature, relative humidity, surface pressure, opaque cloud cover and ceiling height. Based on this data and the upper-air data the model internally computed the Pasquill-Gifford stability classification for use in the simulation.

## 3) Geophysical Data

Terrain data was prepared from the 100- m horizontal resolution terrain height provided by Macedonia Ministry's Department of GIS and ADP. Digitized land-use information was unavailable and was estimated from terrain and land-use maps of Macedonia. Land-use was estimated for 1km x 1km areas for each grid of the modeling domain. Four land-use categories were used: urban, agricultural/cultivated land, rangeland/pastures, and forested land. Other geophysical parameters (surface roughness, albedo, Bowen ratio, soil heat flux, leaf area index, anthropogenic heat flux) used default specification using land-use as the surrogate. The ground was assumed to be clear of snow during the episode and no adjustments were made to the albedo parameter.

## 4) Number of Vertical Layers

The model uses eight vertical layers to define the vertical distribution of winds and temperature. The vertical layer structure is: 0-20., 20.-50., 50.-100., 100.-200., 200-400., 400-800., 800.-1600., 1600-3000. This proposed structure balances the computation demands of the model within the needed resolution of the wind profile. This resolution and vertical layer structure permits SO<sub>2</sub> emitted from elevated point sources to be transported and diffused within the appropriate layers of the model.

## 5) Wind Field Options

The diagnostic wind module (DWM) is used in this study. The DWM uses terrain information and atmospheric stability to parameterize treatments of slope flows, kinematic terrain effects and terrain blocking effects. Also included is an objective analysis and divergence minimization procedure.

Other wind field modeling options used in the study were:

- Use of the O'Brien scheme to minimize the loss of mass through the top of the model.
- Use of similarity theory to vertically extend the use of hourly surface data within the mixed layer.
- If no stations were found within the maximum radius of influence then the closest station was used.
- The maximum radius of influence over land within the surface layer was 10 km.
- The maximum radius of influence over land within the upper layers was 100 km.
- The minimum radius of influence within the surface layer was set at 0.5 km.
- The radius of influence of terrain was set at 4.0 km.
- Relative weighting of the first-guess field and observations in the surface and aloft layers set at 10 and 100 km.
- No barriers were used in wind field development.

#### 6) Other Modeling Options

- Mixing heights were not spatially averaged.
- Minimum and maximum mixing heights were set at 100 and 2500-m, respectively.









