

Appendix:

Table SI 1. Features of road segments across different clusters

Road Feature	Values	Share of values in the road types				
		RT1	RT2	RT3	RT4	RT5
Road Functions	Motorway	2%	1%	84%	6%	25%
	Primary	14%	6%	4%	10%	26%
	Secondary	4%	9%	8%	3%	43%
	Tertiary	67%	47%	5%	70%	3%
	Ramp	13%	37%	0%	11%	3%
Land uses	Agriculture	0%	0%	0%	0%	0%
	City Center	21%	0%	0%	24%	7%
	Conservation	0%	1%	7%	2%	0%
	Industry	2%	27%	46%	4%	25%
	large public infrastructure	0%	2%	6%	0%	1%
	Mixed Activities	17%	19%	15%	13%	27%
	Park	4%	7%	1%	8%	1%
	Residential area	56%	44%	25%	49%	39%
Speed Limit (km/h)	30	32%	0%	0%	20%	0%
	40	18%	12%	0%	66%	0%
	50	50%	24%	0%	14%	55%
	70	0%	64%	12%	0%	45%
	100	0%	0%	88%	0%	0%
Number of Lanes	1	10%	24%	2%	6%	0%
	2	53%	65%	16%	44%	27%
	3	26%	8%	67%	44%	67%
	4	11%	3%	15%	6%	6%
Gradient (%)	Equal or less than -5	0%	0%	0%	14%	0%
	-4	0%	0%	0%	6%	0%
	-3	0%	0%	0%	15%	0%
	-2	0%	1%	0%	65%	0%
	-1	12%	16%	10%	0%	0%
	0	58%	75%	84%	0%	0%
	1	24%	8%	3%	0%	2%
	2	5%	0%	3%	0%	45%
	3	1%	0%	0%	0%	28%
	4	0%	0%	0%	0%	5%
	Equal and more than 5	0%	0%	0%	0%	20%
Density of Signalized	0	0%	42%	71%	0%	23%

Intersections	1	0%	23%	15%	8%	21%
	2	12%	26%	9%	16%	27%
	3	17%	9%	0%	20%	14%
	4	12%	0%	0%	40%	6%
	5	14%	0%	0%	13%	2%
	Equal and more than 6	45%	0%	0%	3%	2%
Accessibility	Min: 0.1, Average: 0.42, Max: 1.5	-	-	-	-	-
Radius of curvatures (m)	Min: 102, Average: 455, Max: 1587	-	-	-	-	-

Table SI 2. Distribution of weather features in different weather types

Weather factors	Weather types							
	WT1	WT2	WT3	WT4	WT5	WT6	WT7	WT8
Temperature (°C)	Min: 10 Mean: 14 Max: 26 NHs: 1511	Min: -13 Mean: -3 Max: 6 NHs: 2541	Min: 12 Mean: 19 Max: 37 NHs: 1706	Min: 0 Mean: 11 Max: 21 NHs: 2276	Min: -22 Mean: -16 Max: -7 NHs: 2081	Min: -4 Mean: 0 Max: 10 NHs: 2432	Min: -8 Mean: -1 Max: 3 NHs: 2871	Min: -25 Mean: -12 Max: -7 NHs: 1876
Precipitation (mm)	Min: 0 Mean: 0 Max: 0 NHs: 1511	Min: 3 Mean: 2 Max: 10 NHs: 2541	Min: 0 Mean: 1 Max: 4 NHs: 1706	Min: 0 Mean: 3 Max: 8 NHs: 2276	Min: 4 Mean: 7 Max: 13 NHs: 2081	Min: 7 Mean: 18 Max: 32 NHs: 2432	Min: 2 Mean: 3 Max: 4 NHs: 2871	Min: 5 Mean: 9 Max: 25 NHs: 1876
Humidity (%)	Min: 18 Mean: 36 Max: 50 NHs: 1511	Min: 21 Mean: 30 Max: 42 NHs: 2541	Min: 35 Mean: 55 Max: 75 NHs: 1706	Min: 30 Mean: 45 Max: 54 NHs: 2276	Min: 23 Mean: 35 Max: 50 NHs: 2081	Min: 26 Mean: 40 Max: 51 NHs: 2432	Min: 33 Mean: 50 Max: 60 NHs: 2871	Min: 62 Mean: 71 Max: 95 NHs: 1876
Wind Speed (m/s)	Min: 5 Mean: 29 Max: 41 NHs: 1511	Min: 28 Mean: 36 Max: 49 NHs: 2541	Min: 20 Mean: 29 Max: 39 NHs: 1706	Min: 40 Mean: 55 Max: 78 NHs: 2276	Min: 23 Mean: 32 Max: 38 NHs: 2081	Min: 35 Mean: 40 Max: 62 NHs: 2432	Min: 30 Mean: 37 Max: 39 NHs: 2871	Min: 45 Mean: 50 Max: 69 NHs: 1876

Table SI 3. Microtrip segmentation characteristics

Seg	DateTime	Lat	Long	V	Vm	Vr	Vstd	Acc	Dcc	Acc_std	Acc_2	Idle_p	Acc_p	Cru_p	Cre_p	Dcc_p
0	2020-08-07 19:44:59	45.49	-73.70	8.4	16.2	8.4	6.2	0.1	-0.2	0.2	0.0	30%	30%	60%	10%	10%

Table SI 4. Parameters of chosen driving cycles

DC	V	Vr	Vm	V_std	Acc	Dcc	Acc2	Acc_std	Idle_p	Acc_p	Dcc_p	Cru_p	Cre_p
1	43	43	90	6	0.1	0	0	0.2	75%	6%	7%	0%	87%

2	44	44	85	6	0.1	-0.1	0	0.2	60%	18%	15%	0%	67%
3	44	44	88	5	0.1	-0.1	0.1	0.3	40%	17%	20%	0%	63%
4	42	44	88	5	0.1	-0.1	0	0.1	79%	10%	6%	0%	84%
5	46	46	91	6	0.2	-0.2	0.1	0.4	36%	23%	20%	0%	56%
6	44	44	81	4	0.1	-0.1	0	0.1	38%	25%	20%	0%	55%
7	42	42	87	3	0.1	-0.1	0	0.2	58%	11%	13%	0%	76%
8	44	44	95	6	0.1	-0.1	0.1	0.3	68%	8%	14%	0%	78%
9	40	40	70	0	0	0	0	0	70%	10%	7%	0%	83%
10	44	44	82	4	0.1	-0.1	0	0.2	40%	19%	18%	0%	63%
11	50	50	95	8	0.5	-0.7	0.8	0.9	22%	43%	29%	1%	27%
12	43	43	99	7	0.1	-0.1	0	0.2	78%	7%	8%	0%	85%
13	47	47	81	4	0.1	-0.1	0	0.1	16%	16%	16%	0%	69%
14	46	46	83	5	0.1	-0.1	0	0.1	30%	15%	33%	0%	52%
15	20	20	45	4	0.1	-0.1	0	0.1	0%	22%	24%	0%	53%
16	16	16	42	4	0.1	-0.1	0	0.2	26%	26%	28%	0%	46%
17	16	16	47	4	0.1	-0.1	0	0.1	11%	15%	11%	0%	74%
18	13	13	36	1	0.1	0	0	0.1	17%	4%	4%	0%	92%
19	17	17	49	6	0.2	-0.2	0.1	0.3	41%	22%	24%	0%	54%
20	21	21	55	8	0.2	-0.1	0.2	0.4	32%	15%	22%	1%	63%
21	14	14	49	6	0	-0.1	0	0.2	72%	0%	30%	0%	70%
22	14	14	51	6	0.1	-0.1	0.1	0.3	75%	10%	11%	0%	80%
23	21	21	50	6	0.1	-0.1	0.1	0.2	5%	20%	28%	4%	47%
24	16	16	42	4	0.1	-0.1	0	0.2	28%	25%	27%	0%	48%
25	21	21	52	7	0.3	-0.3	0.2	0.5	19%	29%	28%	1%	42%
26	15	15	47	6	0.2	-0.2	0.1	0.3	60%	18%	20%	0%	63%
27	15	15	54	7	0.1	-0.1	0.1	0.2	48%	12%	10%	0%	78%
28	15	15	45	5	0.1	-0.1	0	0.2	49%	27%	20%	0%	53%
29	23	23	51	6	0.1	-0.1	0	0.2	16%	14%	11%	0%	75%
30	12	12	16	3	0.1	-0.2	0	0.2	0%	17%	21%	60%	1%
31	14	14	18	5	0.3	-0.3	0.4	0.6	25%	19%	23%	15%	43%
32	13	13	22	6	0.1	-0.1	0	0.2	2%	5%	13%	79%	2%
33	16	16	31	3	0.2	-0.1	0	0.2	0%	24%	26%	45%	5%
34	14	14	21	7	0.6	-0.6	0.9	1	0%	32%	38%	30%	1%
35	17	17	31	8	0.2	-0.2	0.2	0.4	0%	20%	25%	30%	25%
36	16	16	35	8	0.4	-0.3	0.6	0.8	0%	21%	24%	31%	24%
37	16	16	17	4	0.2	-0.1	0.3	0.5	0%	14%	10%	76%	0%
38	14	14	16	4	0.2	-0.1	0.2	0.5	0%	19%	20%	60%	1%
39	13	13	39	4	0.2	-0.2	0.3	0.5	0%	20%	27%	53%	0%
40	16	16	19	6	0.4	-0.6	0.7	0.9	0%	32%	31%	36%	1%
41	15	15	19	7	0.6	-0.6	1.2	1.1	0%	27%	29%	44%	0%

42	15	15	32	4	0.1	-0.1	0.2	0.4	0%	8%	9%	66%	18%
43	17	17	33	8	0.9	-0.8	1.8	1.3	0%	34%	38%	27%	1%
44	29	29	41	3	0.3	-0.2	0.4	0.6	0%	17%	21%	61%	0%
45	26	26	62	2	0.1	-0.1	0	0.1	75%	9%	11%	0%	80%
46	14	14	75	4	0.1	-0.1	0	0.2	42%	11%	13%	0%	76%
47	27	27	67	3	0.1	-0.1	0	0.1	58%	10%	10%	0%	81%
48	23	23	58	7	0.1	-0.1	0.1	0.2	43%	9%	12%	3%	76%
49	27	27	72	4	0.2	-0.2	0.1	0.3	46%	23%	20%	0%	57%
50	21	21	65	7	0.1	-0.1	0.1	0.4	33%	15%	18%	1%	67%
51	17	17	66	9	0.3	-0.2	0.4	0.6	50%	17%	19%	1%	63%
52	28	28	71	6	0.1	-0.1	0.1	0.3	45%	13%	17%	3%	67%
53	28	28	65	5	0.1	-0.1	0.1	0.2	44%	11%	17%	0%	72%
54	26	26	67	4	0.1	-0.1	0	0.2	72%	10%	12%	0%	78%
55	28	28	68	2	0.1	-0.1	0	0.1	43%	9%	7%	0%	84%
56	26	26	66	6	0.2	-0.2	0.1	0.4	49%	22%	23%	0%	55%
57	26	26	68	6	0.1	-0.1	0	0.2	62%	13%	10%	0%	77%
58	25	25	63	3	0.1	-0.1	0	0.2	25%	15%	19%	0%	66%
59	29	29	73	3	0.1	-0.1	0	0.1	0%	9%	22%	0%	69%
60	29	29	41	6	0.2	-0.2	0.1	0.3	36%	25%	24%	0%	52%
61	48	48	56	6	0.1	-0.2	0	0.2	30%	21%	7%	0%	42%
62	49	49	55	3	0.2	-0.1	0	0.2	0%	20%	30%	0%	50%
63	41	41	57	2	0	0	0	0.2	70%	0%	1%	0%	9%
64	46	46	55	5	0.1	-0.1	0	0.2	40%	12%	12%	0%	36%
65	48	48	60	6	0.2	-0.2	0.1	0.3	20%	32%	16%	0%	32%
66	47	47	55	6	0.2	-0.1	0.1	0.2	30%	14%	14%	0%	42%
67	44	44	69	6	0.1	-0.1	0.1	0.3	60%	4%	4%	0%	32%
68	58	58	71	5	0.8	-0.6	1.5	1.2	0%	20%	30%	0%	50%
69	43	43	57	2	0.1	-0.1	0	0	70%	0%	5%	10%	15%
70	63	63	67	2	0.1	-0.2	0	0.2	0%	20%	30%	50%	0%
71	55	55	70	9	0.2	-0.1	0.1	0.4	20%	16%	16%	24%	24%
72	51	51	72	10	0.3	-0.2	0.3	0.6	30%	14%	14%	21%	21%
73	45	45	50	3	0.1	-0.1	0	0.1	20%	16%	16%	0%	48%
74	51	51	58	7	0.2	-0.1	0.1	0.3	20%	16%	8%	0%	56%
75	47	46	66	8	0.1	-0.1	0	0.2	20%	8%	8%	8%	56%
76	29	29	41	3	0.3	-0.2	0.4	0.6	0%	17%	21%	61%	0%

