Supplementary Materials: The Influence of Urban Land-Use and Public Transport Facilities on Active Commuting in Wellington, New Zealand: Active Transport Forecasting Using the WILUTE Model

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Table S1. Summary statistics of exposure measures.

Measure	Home meshblock				Start traffic zone				End traffic zone			
	mean ± sd	min	25–75 percentile	max	mean ± sd	min	25–75 percentile	max	mean ± sd	min	25–75 percentile	max
population density	24.00 ± 19.69	0.56	13.41–28.45	118.75	31.35 ± 11.84	0	0.15–2.56	111.84	22.24 ± 15.16	0.11	14.45–29.58	84.51
housing density	7.31 ± 4.42	0.10	4.95–9.05	24.17	4.07 ± 2.99	0	0.90–6.08	11.14	2.82 ± 2.69	0	0.47–4.99	11.14
apartment density	0.03 ± 0.17	0	0.00–0.07	1.04	0.62 ± 0.55	0	0.31–0.70	3.67	0.69 ± 0.71	0	0.39–0.70	3.67
land-use mix	0.21 ± 0.70	0	0–0.08	6.73	0.04 ± 0.06	0	0.00–0.05	0.23	0.06 ± 0.07	0	0.00–0.12	0.23
distance to CBD	21.08 ± 14.82	3.19	8.53–26.94	72.73								
frequency bus	765.46 ± 969.22	0	90.00–1069.00	4700	8242.50 ± 2,257,950	0	0–4226	228,883	10,311 ± 9672.50	0	1522–20,290	26,005
pairs of bus stops	1.31 ± 1.05	0	0-2	4	23.37 ± 11.93	0	16–30	58	22.27 ± 11.14	0	14–30	58
frequency of trains					136.23 ± 229.68	0	0–190	1297	151.72 ± 256.62	0	0–266	1297
number rail stations					0.52 ± 0.73	0	0–1	2	0.71 ± 0.79	0	0–1	2
job accessibility					0.62 ± 0.71	0	0.10–1.24	3.94	0.90 ± 0.85	0	0.15–1.46	3.94
Material deprivation	4.25 ± 2.58	1	2–6	10								
parking price									0.68 ± 0.68	0	0–1.30	1.90
walkability	36.82 ± 17.13	0	24.00–48.40	81								
transit score	37.60 ± 11.27	10.00	27.60–45.67	70.3								

Population density, housing density, apartment density and land use mix were densities per hectare. We originally used the number of bus stops and number of rail stations per traffic zone, but as traffic zones varied in size, we calculated the number of bus stops per hectare, and the number of rail stations per square kilometer.

Table S2. Association between level of income and duration of active commuter trips (in minutes).

		B	95% CI	*p*-value	N
					476
Model 1	high income (ref)	1			
	medium income	−5.13	−9.79; −0.46	**0.031**	
	low income	−2.43	−7.64; 2.78	0.360	
					476
Model 2	high income (ref)	1			
	medium income	−3.77	−8.12; 0.58	0.148	
	low income	−3.54	−8.11; 5.32	0.089	
					476
Model 3	income (continuous)	0.66	−0.03; 1.35	0.062	

Active commuting was defined as a walking trip to work of at least 10 min of duration. **Bold values** represent statistically significant coefficients on the 0.05 level. Estimates were generated using mixed multilevel linear regression models. Model 1 is an unadjusted model. Model 2 included the following covariates: age; sex (male (reference group), female); household income (low, medium, high (reference group)); household type (with children (reference group), alone, with adult family members, with non-family adults). In model 3, income is analyzed as a continuous variable and adjusted for all covariates.

Table S3. Correlation of land use and transport variables at the level of the home meshblocks.

	bus stops	bus frequency	land use mix	Distance to CBD	population density	housing density	apartment density	deprivation	walkability	transit score
bus stops	1									
bus frequency	0.17 **	1								
Land-use mix	0.04	0.09 **	1							
Distance to CBD	−0.25 **	−0.53 **	−0.18 **	1						
population density	0.15 **	0.41 **	−0.15 **	−0.43 **	1					
housing density	0.09 **	0.38 **	−0.19 **	−0.36 **	0.87 **	1				
apartment density	0.02	0.32 **	−0.09 **	−0.21 **	0.78 **	0.47 **	1			
deprivation	−0.03	0.03	0.06 *	0.09 **	0.14 **	−0.03	0.17 **	1		
walkability	0.11 **	0.44 **	0.30 **	−0.55 **	0.58 **	0.46 **	0.43 **	0.21 **	1	
transit score	0.14 **	0.38 **	0.21 **	−0.54 *	0.62 **	0.43 **	0.49 **	0.38 **	0.71 **	1

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).
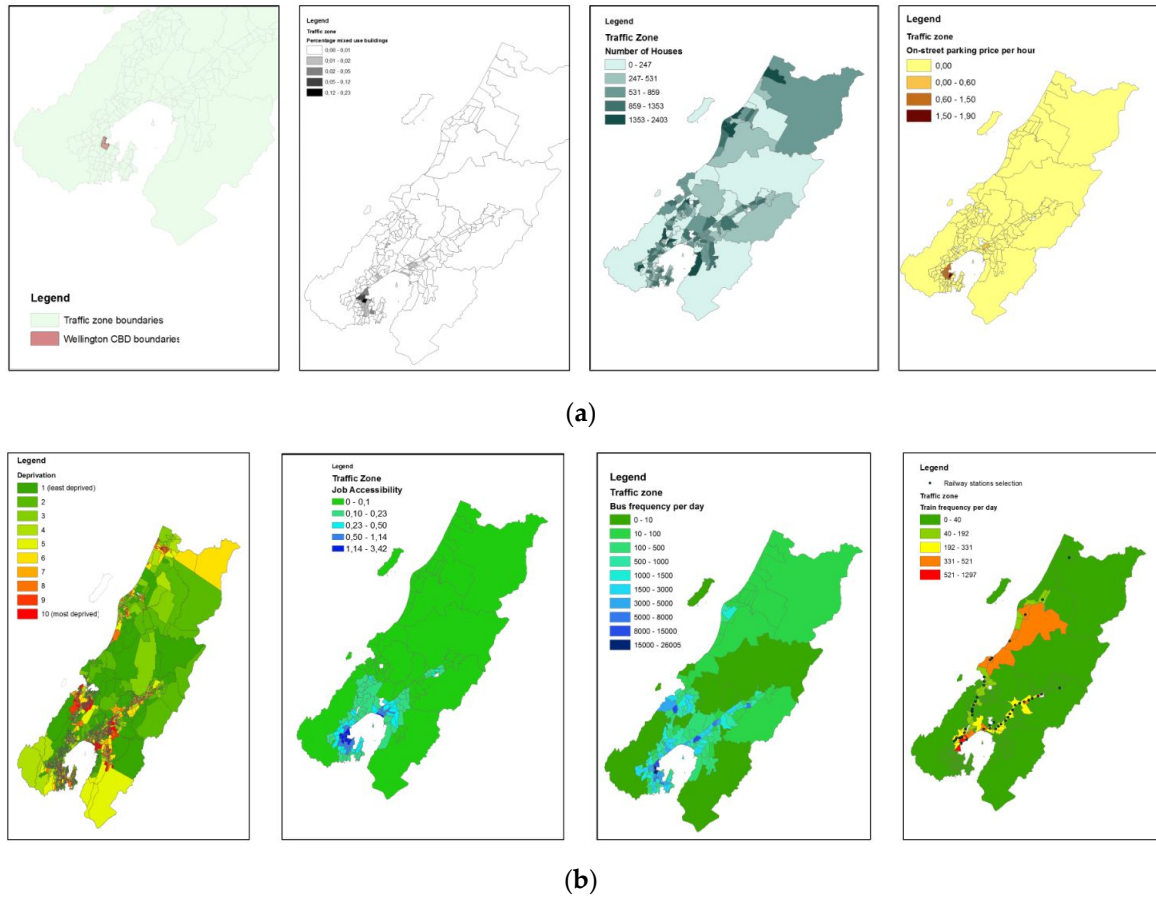
(**a**)

(**b**)

Figure S1. (**a**) Illustration of land-use characteristics within traffic zones in the Wellington region; (**b**) Illustration of public transport characteristics within traffic zones in the Wellington region.

Table S4. Association between home neighbourhood exposures and duration of active commuter trips (in minutes).

Neighborhood Exposure	Home Meshblock
	n = 476
Population density	−0.15 (−0.36; 0.06)
Housing density	−0.56 (−1.37; 0.24)
Apartment density	−13.50 (−34.97; 7.96)
Land use mix	0.57 (−0.99; 2.14)
Number of busstops per kilometer	−5.00 (−12.57; 2.57)
Bus frequency	−0.11 (−0.30; 0.07)
Medium deprivation	0.62 (−6.44; 7.68)
High deprivation	0.56 (−5.42; 6.55)
Walkability	−0.11 (−0.29; 0.08)
Transit score	−0.07 (−0.37; 0.23)

Active commuting was defined as a walking trip to work of at least 10 min of duration. **Bold values** represent statistically significant coefficients on the 0.05 level. Estimates were generated using logistic regression models with repeated measures with the following covariates: age; sex (male (reference group), female); household income (low, medium, high (reference group)); household type (with children (reference group), alone, with adult family members, with non-family adults); trip distance. Walkability and transit score were not adjusted for trip distance, due to high collinearity.