

Supplemental Material

Neighbourhood Built Environment and Transport and Leisure Physical Activity: New Zealand Findings Using Objective Exposure and Outcome Measures

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Neighbourhood exposure	Odds ratios for any self-reported PA versus none ^{a b} (95% CI)		
	Transport	Leisure	Walking
1. Adj. demographics	n=2017	n=2018	n=2015
Streetscape	1.12 (0.98-1.28)	1.03 (0.89-1.18)	1.08 (0.89-1.29)
NDAI	1.37 (1.14-1.65)	1.10 (0.90-1.35)	1.40 (1.11-1.78)
Street connectivity	1.38 (1.16-1.63)	1.04 (0.85-1.26)	1.23 (0.98-1.54)
Dwelling Dens	1.32 (1.09-1.60)	1.05 (0.85-1.30)	1.22 (0.97-1.55)
Mixed land use	1.10 (0.87-1.39)	1.19 (0.96-1.49)	1.09 (0.83-1.44)
2.Plus adj. individual-level socioeconomic factors	n=1804	n=1806	n=1803
Streetscape	1.12 (0.97-1.29)	1.02 (0.88-1.17)	1.09 (0.90-1.31)
NDAI	1.29 (1.07-1.56)	1.15 (0.95-1.37)	1.37 (1.08-1.72)
Street connectivity	1.30 (1.11-1.54)	1.08 (0.90-1.29)	1.23 (0.99-1.53)
Dwelling Dens	1.25 (1.04-1.50)	1.09 (0.90-1.32)	1.22 (0.98-1.53)
Mixed land use	1.02 (0.81-1.27)	1.20 (0.98-1.47)	1.00 (0.77-1.31)
3. Plus adj. for neighbourhood deprivation	n=1804	n=1806	n=1803
Streetscape	1.13 (0.98-1.30)	1.03 (0.89-1.18)	1.10 (0.93-1.31)
NDAI	1.39 (1.15-1.69)	1.28 (1.06-1.54)	1.45 (1.17-1.79)
Street connectivity	1.41 (1.18-1.68)	1.21 (1.00-1.47)	1.30 (1.05-1.62)
Dwelling Dens	1.36 (1.10-1.67)	1.22 (0.99-1.50)	1.25 (0.99-1.57)
Mixed land use	1.03 (0.82-1.29)	1.23 (1.01-1.50)	1.02 (0.80-1.28)

Supplemental Material, Table 1: Odds ratios (95% CI) for any self-reported transport, walking (all purposes), or leisure related physical activity (versus no self-reported physical activity), for a one standard deviation change in each neighbourhood exposure

^a From models of ln[IPAQ-minutes] on neighbourhood exposures (transformed to have standard deviation of 1.0) and covariates, whereby the exponential of the coefficient of the neighbourhood exposure is the ratio change in any minutes of self-reported physical activity.

^b Estimates were generated using multi-level logistic regression models with covariates age (categories of Age bands: 15-29yrs, 30-44yrs (reference group), 45-54yrs, 55-65yrs), ethnicity (Māori, non-Māori (reference group)), sex (male (reference group), female), qualifications (No Qualification, School, Post School, Tertiary (reference group)), marital status (Never married, Married (reference group), Previously married), household income (<\$ 40,000, \$ 40,001-60,000, \$ 60,001-80,000, \$ 80,001-100,000, >\$ 100,000 (reference group)), employment (Fulltime work (reference group), Part-time/not working), car access (Un restricted (reference group), Restricted, No car access), neighbourhood deprivation (New Zealand Deprivation Index 2006 Quintiles 1 (less deprived) (reference group) to 5 (most deprived) and neighbourhood preferences (Strongly prefer walkable, Moderately prefer walkable, Neutral (reference group), Moderately prefer less walkable, Strongly prefer less walkable).

Neighbourhood exposure	Relative change in self-reported minutes of PA (95% CI) ^{a,b}			Relative change in accelerometer count	
	Transport	Leisure	Walking	Weekday	Weekend
1. Adj. demographics	n=1404	n=1498	n=1793	n=1823	n=1704
Streetscape	1.04 (0.97-1.12)	1.07 (1.00-1.14)	1.06 (0.98-1.15)	1.03 (1.00-1.06)	1.02 (0.98-1.06)
NDAI	1.16 (1.06-1.27)	1.06 (0.97-1.15)	1.19 (1.07-1.32)	1.04 (1.00-1.08)	1.01 (0.96-1.06)
Street connectivity	1.13 (1.03-1.24)	1.06 (0.97-1.15)	1.12 (1.00-1.24)	1.04 (1.00-1.08)	1.03 (0.98-1.08)
Dwelling Dens	1.15 (1.04-1.27)	1.03 (0.94-1.13)	1.14 (1.02-1.28)	1.04 (1.00-1.08)	1.02 (0.97-1.08)
Mixed land use	1.08 (0.97-1.22)	1.09 (0.98-1.20)	1.08 (0.95-1.24)	1.04 (0.99-1.09)	1.04 (0.98-1.10)
2. Plus adj. individual-level socioeconomic factors	n=1253	n=1339	n=1600	n=1641	n=1534
Streetscape	1.05 (0.98-1.13)	1.06 (0.99-1.13)	1.07 (0.99-1.16)	1.03 (1.00-1.07)	1.01 (0.97-1.05)
NDAI	1.13 (1.03-1.24)	1.07 (0.98-1.17)	1.15 (1.03-1.28)	1.04 (1.00-1.08)	1.01 (0.97-1.06)
Street connectivity	1.12 (1.03-1.23)	1.08 (1.00-1.18)	1.09 (0.98-1.22)	1.04 (1.00-1.08)	1.03 (0.99-1.07)
Dwelling Dens	1.14 (1.04-1.25)	1.05 (0.95-1.15)	1.12 (0.99-1.26)	1.04 (1.00-1.08)	1.03 (0.98-1.07)
Mixed land use	1.07 (0.96-1.19)	1.08 (0.98-1.19)	1.07 (0.94-1.22)	1.03 (0.99-1.08)	1.03 (0.98-1.08)
3. Plus adj. for neighbourhood deprivation	n=1253	n=1339	n=1600	n=1641	n=1534
Streetscape	1.05 (0.98-1.13)	1.06 (0.99-1.13)	1.07 (0.99-1.16)	1.03 (1.00-1.07)	1.01 (0.98-1.05)
NDAI	1.09 (0.99-1.21)	1.11 (1.01-1.22)	1.13 (1.00-1.28)	1.07 (1.03-1.11)	1.05 (1.00-1.10)
Street connectivity	1.08 (0.98-1.19)	1.13 (1.03-1.25)	1.06 (0.93-1.21)	1.07 (1.02-1.11)	1.07 (1.02-1.11)
Dwelling Dens	1.10 (0.98-1.23)	1.09 (0.98-1.21)	1.09 (0.95-1.25)	1.07 (1.03-1.12)	1.07 (1.02-1.12)
Mixed land use	1.05 (0.94-1.17)	1.10 (0.99-1.22)	1.08 (0.94-1.24)	1.04 (0.99-1.09)	1.04 (0.99-1.09)

Supplemental Material, Table 2: Predicted relative change (95% CI) in self-reported (among those with some self-reported activity) and accelerometer-measured physical activity, for a one standard deviation change in neighbourhood exposures

IPAQ=International Physical Activity Questionnaire, PA=Physical Activity NDAI= Neighbourhood Destination Accessibility Index

^a From models of ln[IPAQ-minutes] or ln[accelerometer count] on neighbourhood exposures (transformed to have standard deviation of 1.0) and covariates, whereby the exponential of the coefficient of the neighbourhood exposure is the ratio change of increase in accelerometer count.

^b Estimates were generated using multi-level linear regression models with covariates age (categories of Age bands: 15-29yrs, 30-44yrs (reference group), 45-54yrs, 55-65yrs), ethnicity (Māori, non-Māori (reference group)), sex (male (reference group), female), qualifications (No Qualification, School, Post School, Tertiary (reference group)), marital status (Never married, Married (reference group), Previous married), household income (<\$ 40,000, \$ 40,001-60,000, \$ 60,001-80,000, \$ 80,001-100,000, >\$ 100,000 (reference group)), employment (Fulltime work (reference group), Part-time/not working), car access (Un restricted (reference group), Restricted, No car access), neighbourhood deprivation (New Zealand Deprivation Index 2006 Quintiles 1 (less deprived) (reference group) to 5 (most deprived)) and neighbourhood preferences (Strongly prefer walkable, Moderately prefer walkable, Neutral (reference group), Moderately prefer less walkable, Strongly prefer less walkable).