

Appendix
Life Expectancy and Built Environments in the U.S.: A Multi-Level Analysis
Kim et al.

Appendix Table 1. Multi-level* regression model results without covariate adjustment. High- and low-density urban areas

	High density urban (n=15,120)		Low density urban (n=23,480)	
	beta	95% CI	beta	95% CI
Limited healthy food (z) ^a	-0.20	(-0.27, -0.13)	-0.11	(-0.15, -0.07)
Liquor store/1000 (z)	0.00	(-0.06, 0.07)	-0.01	(-0.05, 0.03)
Tobacco store/1000 (z)	0.03	(-0.04, 0.09)	-0.02	(-0.06, 0.01)
Convenience store/1000 (z)	-0.14	(-0.21, -0.08)	-0.27	(-0.31, -0.23)
Gas station/1000 (z)	-0.01	(-0.07, 0.05)	-0.06	(-0.09, -0.02)
Fast-food/1000 (z)	-0.05	(-0.13, 0.02)	-0.01	(-0.05, 0.03)
Bar/1000 (z)	-0.05	(-0.13, 0.03)	-0.09	(-0.13, -0.05)
Intersection Density (z)	0.08	(0.01, 0.15)	0.01	(-0.02, 0.05)
Transit stop coverage (z)	0.29	(0.2, 0.37)	0.15	(0.11, 0.19)
Count of open park (z)	0.14	(0.07, 0.21)	0.17	(0.13, 0.2)
Percent green space (z)	0.34	(0.25, 0.42)	0.11	(0.06, 0.17)
CO (z)	0.14	(0, 0.28)	-0.06	(-0.11, 0)
NO2 (z)	0.61	(0.42, 0.81)	0.19	(0.11, 0.28)
O3 (z)	0.08	(-0.14, 0.31)	-0.02	(-0.18, 0.13)
PM10 (z)	-0.43	(-0.59, -0.27)	-0.36	(-0.46, -0.26)
PM2.5 (z)	-0.09	(-0.3, 0.12)	0.12	(-0.01, 0.25)
SO2 (z)	-0.45	(-0.61, -0.29)	-0.61	(-0.69, -0.53)
Renter (z)	-0.53	(-0.65, -0.42)	-0.31	(-0.38, -0.25)
House pre-1979 (z)	-0.14	(-0.22, -0.07)	-0.44	(-0.49, -0.39)
Crowding (z)	-0.23	(-0.34, -0.13)	-0.30	(-0.35, -0.25)
Excessive housing cost (z)	-0.57	(-0.67, -0.48)	-0.56	(-0.61, -0.5)
Null-model ICC	0.411		0.355	
Conditional ICC	0.162		0.167	
Marginal R ²	0.407		0.430	
Conditional R ²	0.569		0.597	

* Four hierarchical geographic boundaries, county, state, census division, and region were included as random effects. Multivariable models adjusted for age groups, unemployment rate, proportion of foreign-born residents, and proportions of households with children and without vehicles. ^a ½ mile buffer for high density urban areas, 1 mile for low density urban areas. ^a R_s were calculated from Pearson correlation test. Bold indicates p-value less than 0.05 in multivariable models

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Appendix Table 2. Multi-level* regression model results without covariate adjustment. Suburban/small town and rural areas

	Suburban/small town (n=10,680)		Rural (n=15,952)	
	beta	95% CI	beta	95% CI
Limited healthy food (z) ^a	-0.06	(-0.12, 0)	0.19	(0.14, 0.24)
Liquor store/1000 (z)	0.04	(-0.01, 0.1)	0.02	(-0.03, 0.06)
Tobacco store/1000 (z)	-0.04	(-0.09, 0.01)	-0.06	(-0.1, -0.01)
Convenience store/1000 (z)	-0.27	(-0.33, -0.22)	-0.19	(-0.23, -0.14)
Gas station/1000 (z)	-0.02	(-0.07, 0.03)	0.01	(-0.03, 0.05)
Fast-food/1000 (z)	-0.09	(-0.14, -0.03)	-0.02	(-0.07, 0.02)
Bar/1000 (z)	-0.09	(-0.15, -0.04)	-0.02	(-0.06, 0.03)
Intersection Density (z)	-0.06	(-0.13, 0)	-0.24	(-0.29, -0.19)
Transit stop coverage (z)	0.05	(0, 0.1)	0.00	(-0.04, 0.05)
Count of open park (z)	0.24	(0.18, 0.29)	0.10	(0.05, 0.15)
Percent green space (z)	0.10	(0.02, 0.18)	-0.19	(-0.27, -0.11)
CO (z)	-0.11	(-0.18, -0.04)	-0.11	(-0.18, -0.03)
NO2 (z)	0.14	(0.05, 0.24)	0.22	(0.12, 0.31)
O3 (z)	-0.10	(-0.24, 0.03)	0.04	(-0.06, 0.15)
PM10 (z)	-0.12	(-0.23, 0)	-0.07	(-0.18, 0.05)
PM2.5 (z)	-0.08	(-0.23, 0.07)	-0.50	(-0.64, -0.37)
SO2 (z)	-0.37	(-0.47, -0.27)	-0.24	(-0.32, -0.15)
Renter (z)	-0.45	(-0.54, -0.35)	-0.46	(-0.53, -0.39)
House pre-1979 (z)	-0.73	(-0.81, -0.65)	-0.34	(-0.4, -0.27)
Crowding (z)	-0.33	(-0.4, -0.26)	-0.11	(-0.17, -0.05)
Excessive housing cost (z)	-0.28	(-0.35, -0.21)	-0.17	(-0.23, -0.11)
Null-model ICC	0.466		0.449	
Conditional ICC	0.188		0.292	
Marginal R ²	0.399		0.196	
Conditional R ²	0.587		0.488	

* Four hierarchical geographic boundaries, county, state, census division, and region were included as random effects. Multivariable models adjusted for age groups, unemployment rate, proportion of foreign-born residents, and proportions of households with children and without vehicles. ^a ½ mile buffer for high density urban areas, 1 mile for low density urban areas. ^a R_s were calculated from Pearson correlation test. Bold indicates p-value less than 0.05 in multivariable models