

APPENDIX 1. The interaction between environmental factors and morbidity on the onset of restricted mobility outside the home in older adults with osteoarthritis, adjusted odds ratios with 95% confidence intervals.

	Walking disability	Anxiety	Depression	Cognitive impairment	Obesity
	Adj OR (95% CI)	Adj OR (95% CI)	Adj OR (95% CI)	Adj OR (95% CI)	Adj OR (95% CI)
Hills	<b>0.47 (0.24-0.93)</b>	<b>0.45 (0.22-0.96)</b>	<b>0.25 (0.09-0.61)</b>	<b>0.46 (0.23-0.92)</b>	0.82 (0.36-1.84)
Public buildings	1.53 (0.50-4.71)	0.72 (0.24-2.15)	0.71 (0.20-2.57)	0.43 (0.14-1.29)	0.74 (0.20-2.67)
Pavement	0.60 (0.24-1.47)	<b>0.37 (0.15-0.94)</b>	0.52 (0.16-4.49)	0.50 (0.20-1.25)	1.56 (0.55-4.40)
Access to parks	0.91 (0.28-2.98)	0.34 (0.10-1.12)	0.47 (0.13-1.78)	0.55 (0.17-1.85)	2.19 (0.46-10.33)
Weather	0.50 (0.25-1.01)	0.79 (0.39-1.60)	1.23 (0.51-2.99)	0.54 (0.27-1.08)	0.50 (0.22-1.12)
Traffic	1.55 (0.37-6.50)	0.39 (0.09-1.60)	<b>0.14 (0.02-0.88)</b>	0.27 (0.07-1.07)	0.29 (0.05-1.56)
Crime	0.52 (0.22-1.22)	0.59 (0.25-1.39)	0.86 (0.31-2.37)	0.84 (0.35-2.03)	0.64 (0.24-1.73)

Adj OR – Adjusted odds ratio for confounders: age and gender, socioeconomic factors, and all other health exposures.  
The referent group for all interactions no health condition and absence of an environmental barrier.

NOTE: The interactions were analysed using a logit model (in Stata) together with the `or` option, and the dependent variables are measured in the odds metric rather than in the probability metric (Buis, 2010). The interaction value indicates how much the effect of environmental factor differs between not having or having the health condition or walking disability in multiplicative terms and these multiplicative effects are relative to the baseline odds for each variable.

Taking the interaction between walking disability and the presence of hills and slopes (adj OR 0.47; 95% CI 0.24-0.93), the baseline odds of the onset of restricted mobility outside the home differ substantially between those with and without walking disability. Even though the odds of association with new onset of restricted mobility increase in those with a health condition (from 3.60 to 7.66), they do not increase as much as for those that do not have health condition/walking disability (1 to 4.55). Therefore the value for the interaction is less than 1 ( $(3.60/7.66:1/4.55)$  and hence not multiplicative) because the increase in the association is greater in those without the health condition/walking disability than for this with the health condition/walking disability. The 95% confidence interval does not include 1, and indicates that there is significant difference between the association of the health condition and onset of restricted mobility when stratified by the presence/absence of environmental barriers than when both are absent (outlined in Table 3). The marginal (Table 3) and multiplicative effects (appendix 1) are both accurate representations of the effect of environmental barriers.

Buis M, Interpretation of interactions in nonlinear models, *Stata Journal* 2010;10:2:305-8.