

Inequalities in physical activity and active travel:
Could the physical environment have a role to play?



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Places aren't just 'containers' in which individuals live...
places actively shape lives (for better and worse).



Individual-level attributes explain only between 20 and 40% of the variance in physical activity. How does the local environment promote or hinder engagement in physical activity?



Lots of research has explored the association between physical activity levels and the 'built' environment. Street connectivity, aesthetics, lower crime rates, mixed land use, street lighting, and public open space have all been found to have a positive influence on physical activity levels.



Less consideration of the 'natural' environment. Research has found negative associations between physical activity levels and air pollution, cold temperatures and inclement weather. Positive associations have been found with green space and more moderate weather.

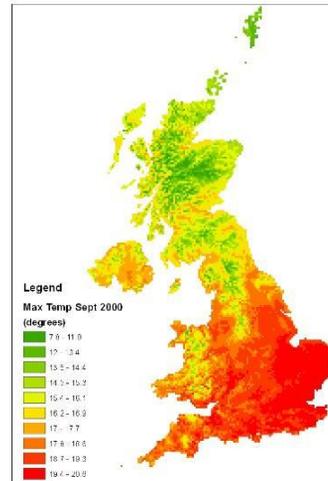


Why are people more physically active in certain areas?
Evidence for whether green space, on its own, encourages walking is very mixed, for example.

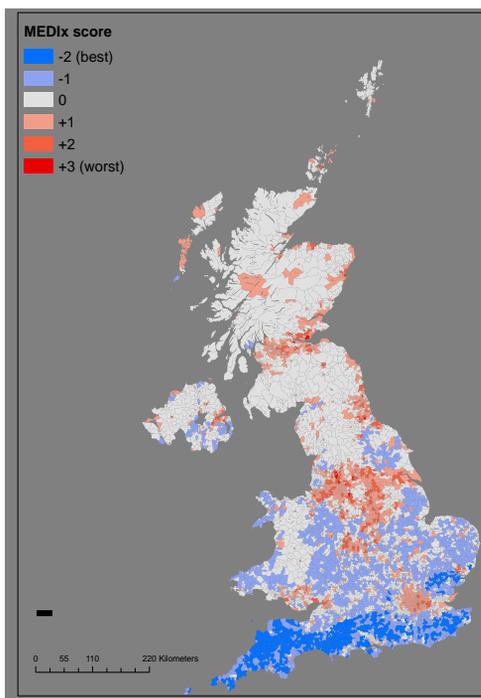


Multiple environmental dimensions

- Air pollutants
- Climate (temperature)
- Solar UV radiation
- Green space
- Industrial facilities



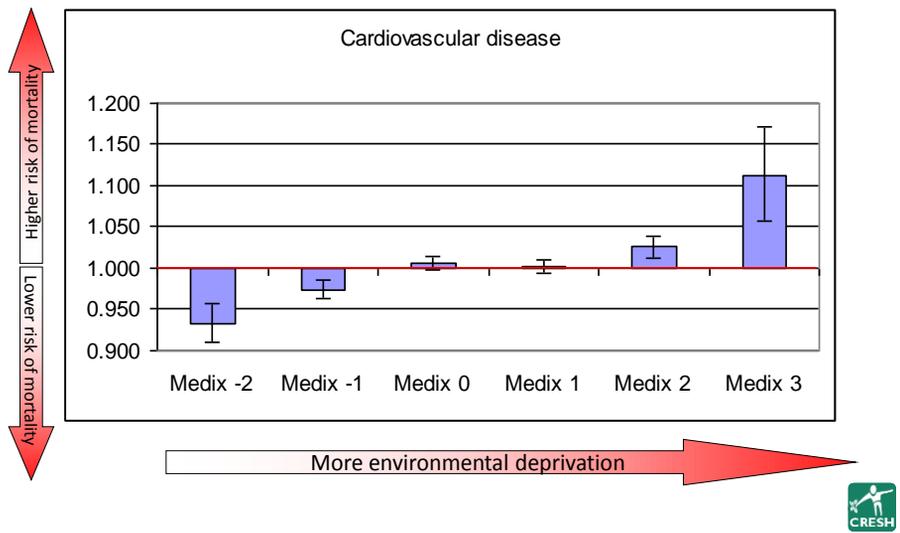
Richardson EA, Mitchell R, Shortt NK, Pearce J, Dawson TP. Developing summary measures of health-related multiple physical environmental deprivation for epidemiological research. *Environment and planning A*. 2010;**42**(7):1650-68.



- Multiple Environmental Deprivation Index or MEDix
- Ward level
- Available for the UK
- Based on 2001 data
- Free, from our website



MEDix holds independent association with health measures, including mortality



Does environment, as captured by MEDix, seem to affect physical activity and inequalities in active travel?



Shortt, N. K., Rind, E., Pearce, J., & Mitchell, R. (2014). Integrating environmental justice and socioecological models of health to understand population-level physical activity. *Environment and Planning A*, 46, 1479–1495

Rind, E., Shortt, N.K., Mitchell, R., Richardson, E.A. and Pearce, J. (2015) Are income related differences in active travel associated with physical environmental characteristics? A multi-level ecological approach. *International Journal of Physical Activity and Behavioural Nutrition*, 12,73.



The Active People Survey (APS) is the largest annual (telephone) survey series of self-reported recreational physical activity in Europe. It covers England. We used pooled data from waves 2007–08, 2008–09, and 2009–10, with a final sample of 496,582. A ward-level identifier was obtained to link APS individuals to MEDix.

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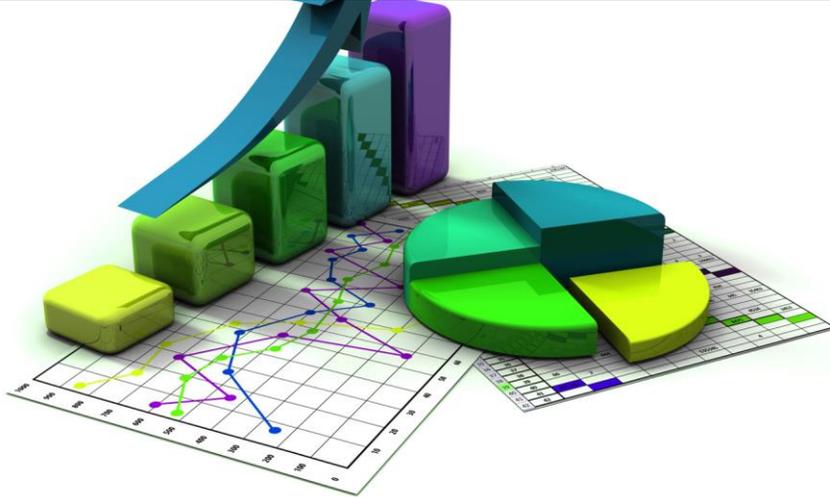
We had four outcomes of interest: whether the respondent met RPAL (30 minutes of moderate PA on at least five days/week) through (1) total physical activity; (2) total walking; (3) recreational walking; and (4) non-recreational walking.



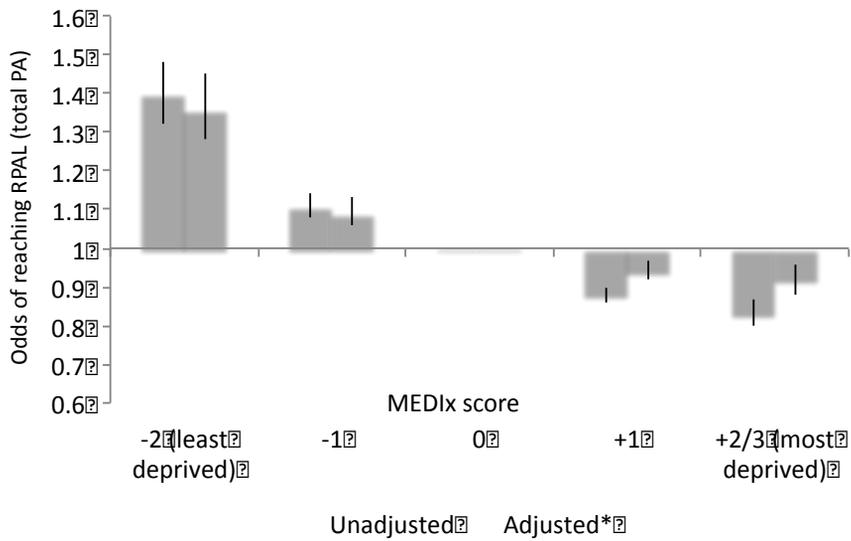
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As the outcome variables were binary, we fitted logistic random effects regression models with maximum-likelihood estimation.



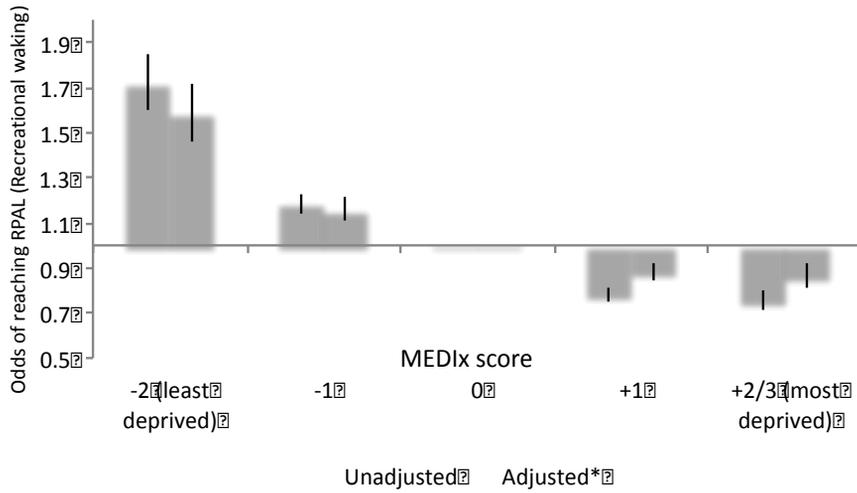
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*Adjusted for age group, gender, ethnicity, limiting longterm illness, social class, household income band, season, Carstairs index quintile

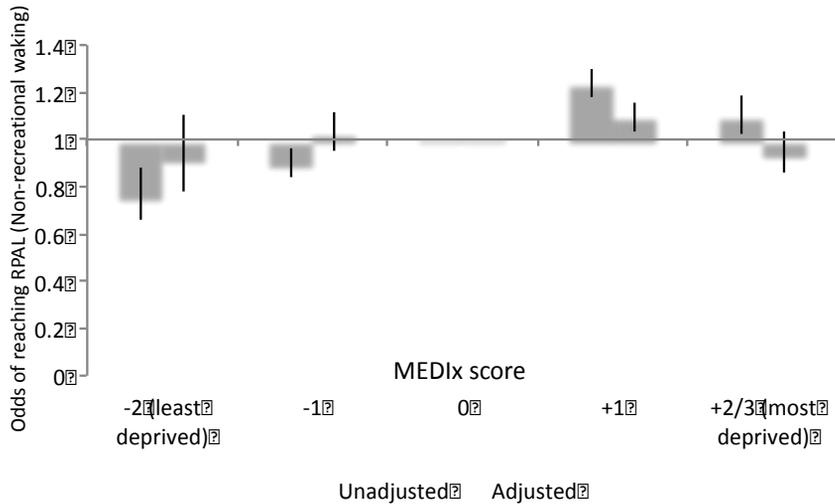
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Physical environment was related to overall levels of physical activity, total walking, and recreational walking. Populations in the least deprived physical environments are more likely to achieve recommended physical activity levels through these activities. Associations between non-recreational walking and physical environmental deprivation ran in the opposite direction.



The relationship between social class and physical activity is complex. Lower levels of leisure time physical activity amongst the most deprived populations, with possible explanations including: lack of knowledge of the health benefits; low cultural capital; low financial capital; time constraints; social norms; lack of facilities etc.



We hypothesise that some places are *equigenic*; features of their social, physical or service environments act to create health equality. We are interested in finding, defining and using the notion of *equigenesis*

<http://cresh.org.uk/2013/11/08/what-is-equigenesis-and-how-might-it-help-narrow-health-inequalities/>



Does the socio-economic gradient in active travel vary by environmental circumstances?



Active travel data were taken from the National Travel Survey (NTS). NTS uses face-to-face interviewing to collect key socio-economic, demographic and travel-related characteristics of participants.

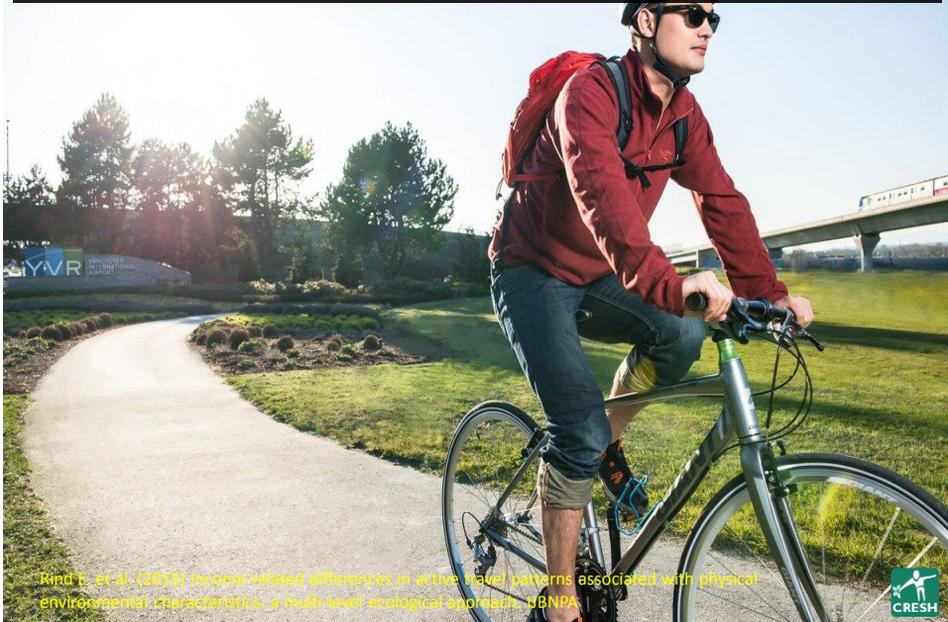
A subgroup of individuals completed a travel diary recording trips undertaken over the course of a week. To boost the sample size for analysis, we pooled data from the survey waves 2002 and 2003. Final sample included all participants of the diary sub-sample (age 16+) with full information on active travel (n = 20,146).



Rind E. et al (2015) Income-related differences in active travel patterns associated with physical environmental characteristics: a multi-level ecological approach. IJBNPA

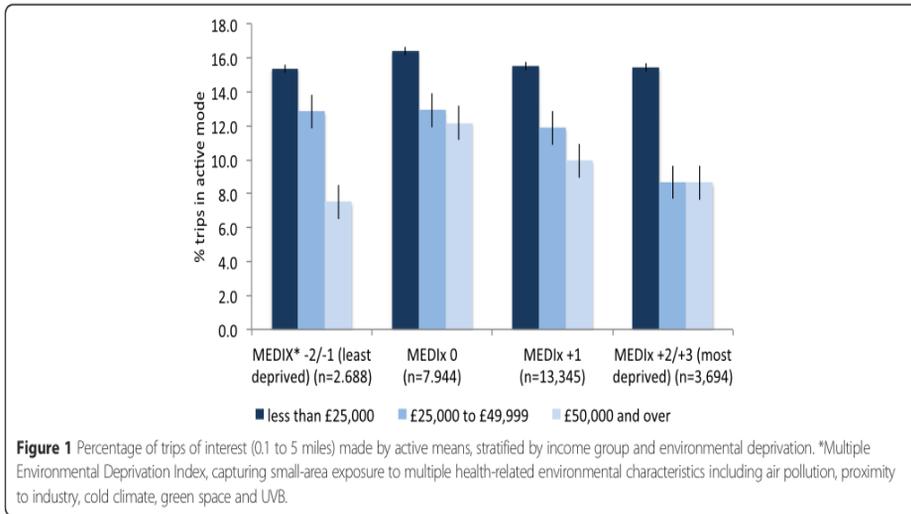


All non-recreational trips (active: bike/walk versus motorised) that are at least a 10th of a mile up to <5 miles. N=205,673 trips, of which 13.4% were active (27,652)



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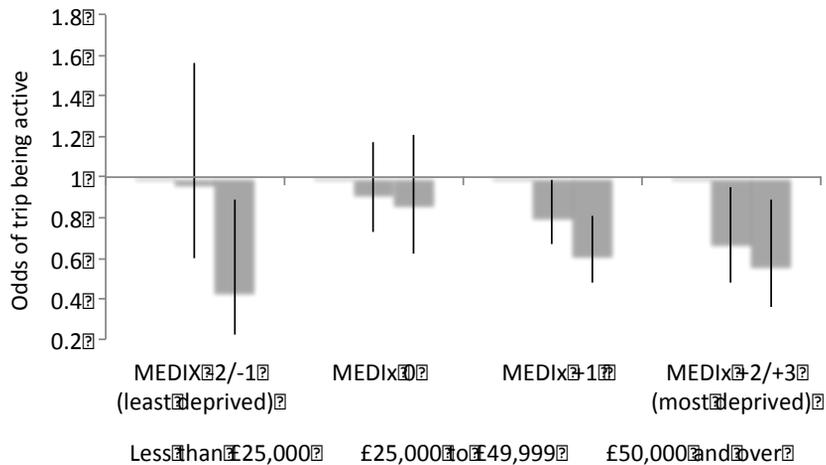




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No straight-forward variation in socio-economic inequality in active travel by environmental deprivation.



Adjusted for age, sex, ethnicity, limits to walking, car access, bike access, journey distance, urbanity/rurality, Carstairs score,

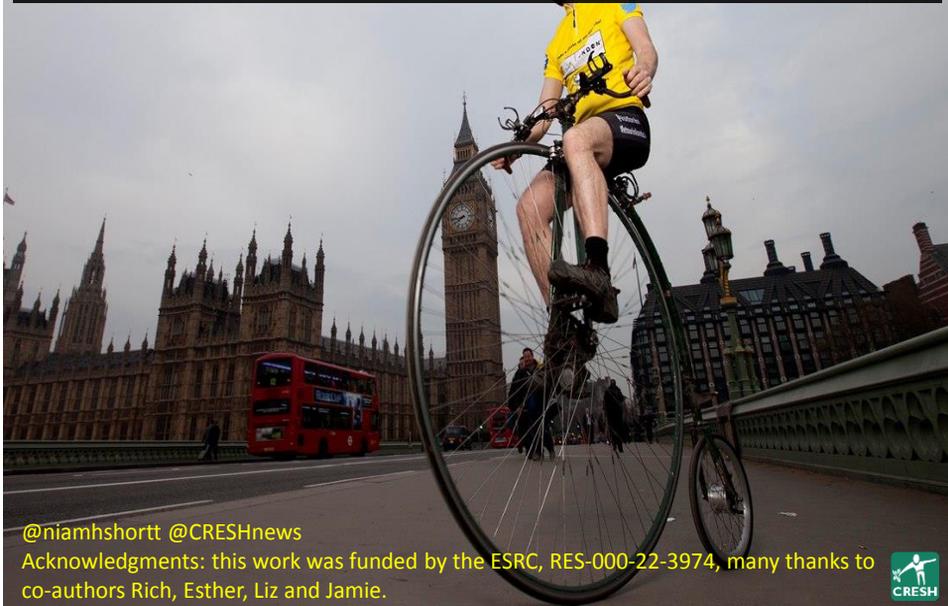
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We did find associations between MEDiX and physical activity, suggesting that 'nicer' physical environments are more supportive, but there does seem to be a difference between leisure activity and active travel.



We found little evidence that 'nicer' or 'nastier' environments affect socio-economic inequalities in active travel. 'Nicer' environments do not seem to be equigenic, largely because the wealthiest, in the nicest environments, do not actively travel!



@niamhshortt @CRESHnews

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