

Children's places:

How they can shape health and influence social and economic outcomes



Authors

Daniela Fecht & Weiyi Wang

MRC Centre for Environment and Health, School of Public Health, Imperial College London

Franco Sassi & Veronica Toffolutti

Centre for Health Economics and Policy Innovation, Imperial Business School, Imperial College London

Mauricio Barahona, Jonathan Clarke & Lan Wang

Department of Mathematics, Imperial College London

Background

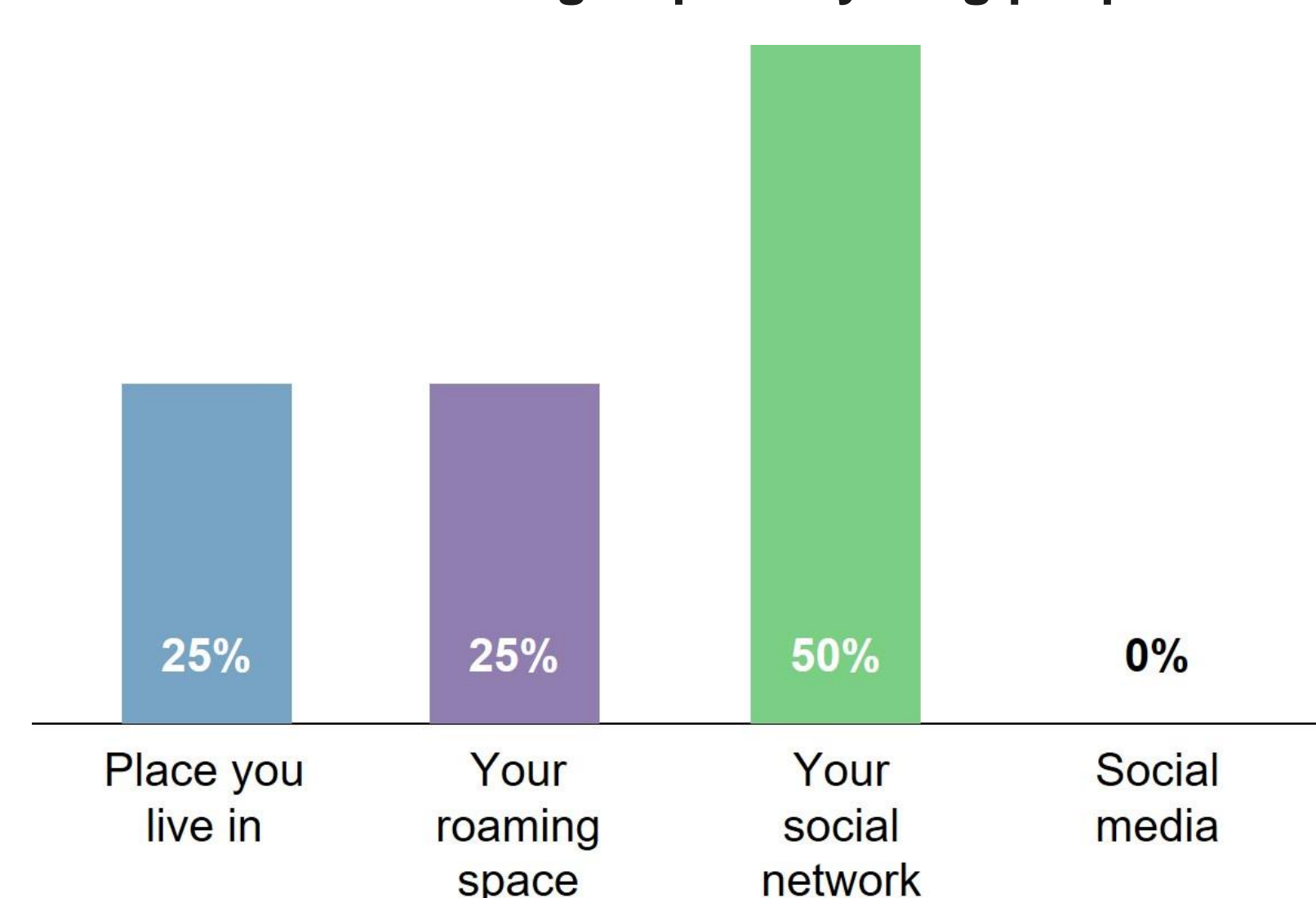
Childhood is a critical stage in life for health and human capital development. Places and communities in which children spend their time have important influences, through social norms driving behaviours, exposure to pollutants, access to substances, environments conducive to unhealthy eating and sedentary lifestyles.

Aims

- To advance our understanding on how the health of secondary school children is influenced by the characteristics of the physical and online places in which they spend their time and how this translates into educational outcomes.
- To develop methods for assessing the degree of social and economic progress of those places, starting from the skills and productivity (human capital) of the communities that populate those places.

Research questions and study design have been informed by systematic reviews of the literature and focus groups with young people.

Figure 1. Which places are most important to you? Outcome from focus group with young people.

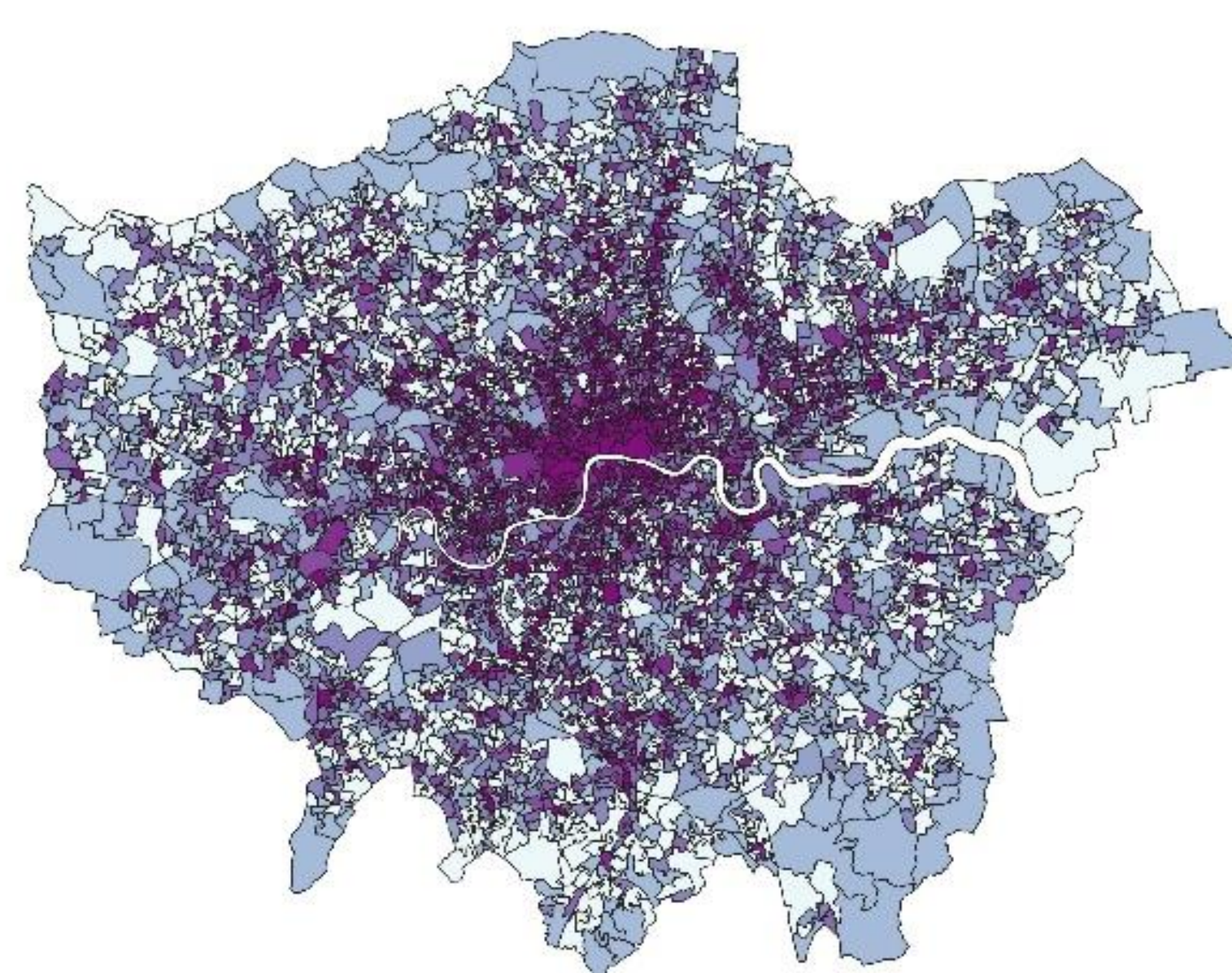


Characterisation of places

The built and social environment are important health determinants. We focused on the following policy-relevant measures:

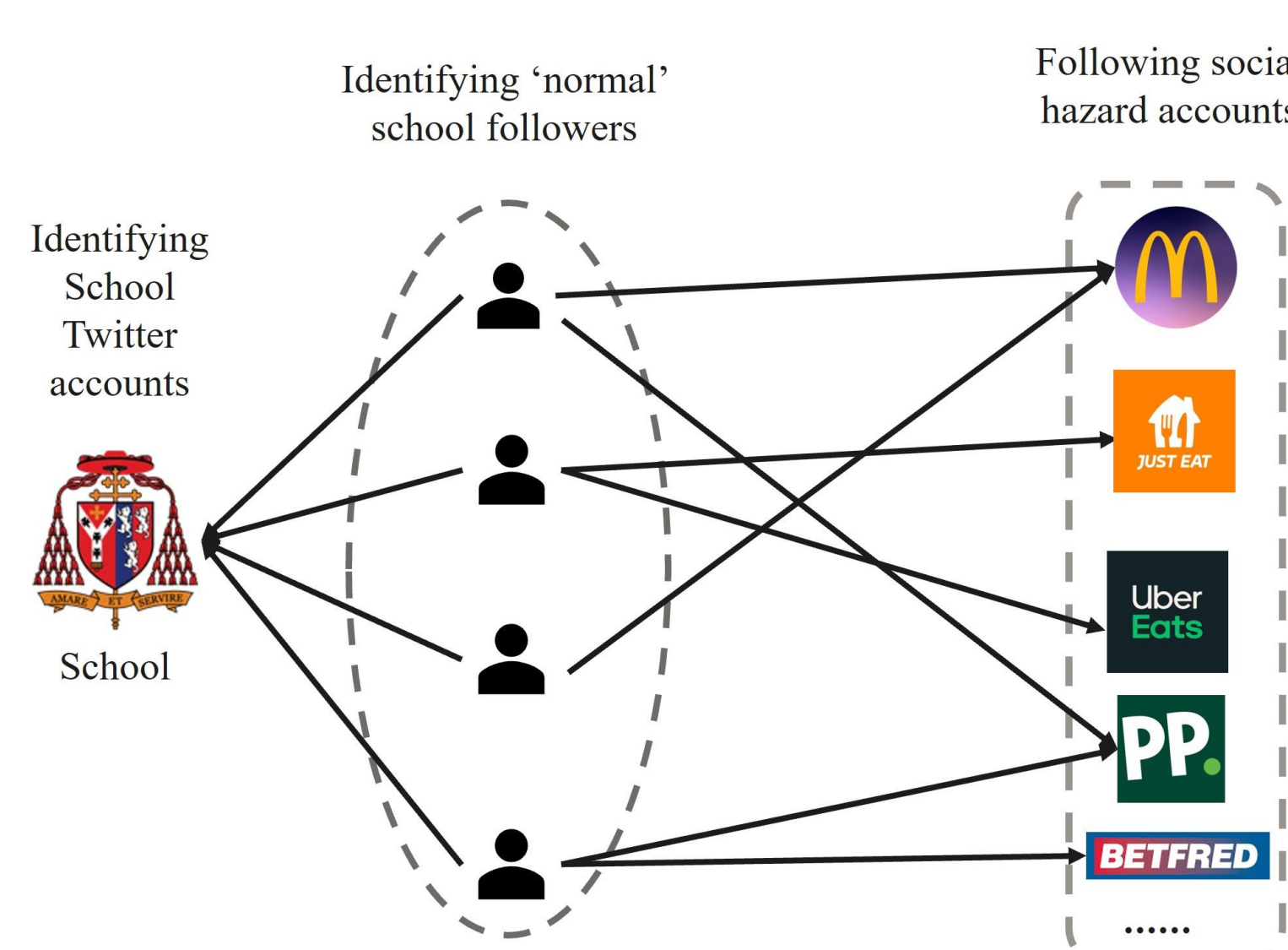
- Environmental pollution:** annual air pollution concentrations (NO₂, PM_{2.5})
- Physical environment:** walkability
- Food environment:** availability of unhealthy food outlets
- Social hazards:** availability of betting shops, corner shops, alcohol outlets

Figure 2. High-resolution geospatial information to characterise places. Example social hazard: spatial distribution of betting shop, corner shop and alcohol outlet density in Greater London.



Conceptualisation of place

- Static:** neighbourhood of residence
- Dynamic:** roaming space accounting for time spent in places such as home, school, and tertiary places
- Social:** use of Twitter data to construct online profile based on schools as follows:



Effect of place characteristics on educational attainment

Study population: 510 secondary schools (~180,000 pupils) in our two focus cities London and Newcastle

Outcome: i) percentage of days absent from school; ii) achievement of Level 2 at GCSE (5 or more Grade 4-9), Data source: National Pupil Database, DoE, 2018/2019

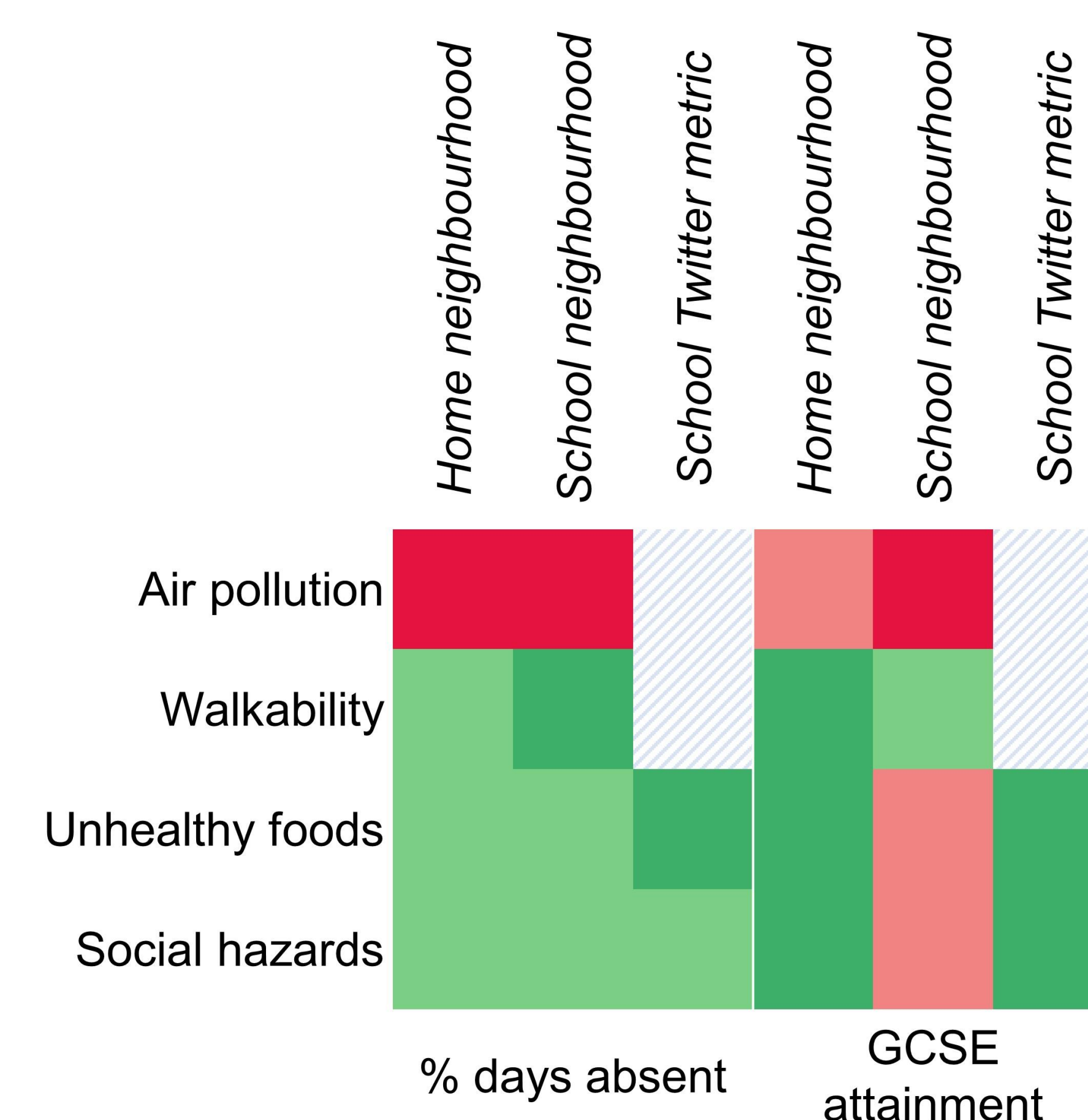
Exposure: Place characteristics for residential neighbourhoods, school neighborhoods and school Twitter profile

Statistical analysis: Linear mixed effects models, adjusting for area- and individual level socio-economic status

Results:

We found evidence for a link between place-based and online exposure and absenteeism, results for GCSE attainment not conclusive.

Figure 3. Associations of exposures and educational attainment. Expected direction in green, unexpected direction in red. Statistically significant results ($\alpha = 0.05$) in bright, statistically non-significant results in pale colours.



Effect of educational attainment on human capital

We assessed if the average level of human capital (i.e., education) in a neighbourhood affects the earnings of individuals in that neighbourhood.

Study population: Understanding Society participants, 2009 – 2019

Key findings:

- Negative effect of neighbourhood-average educational attainment on gross annual earnings.
- Effect not observable for London, potentially due to high proportion (>51%) of workforce with degree.
- Place characteristics (e.g., air pollution) do not attenuate results.

Take home message

Characteristics of physical and online places, in particular food environment and social hazards, are linked to absenteeism. Some evidence of human capital spill-over, but not in areas with high education.