The Health Foundation

NPC
New Philanthropy Capital

INSTITUTE of HEALTH EQUITY

8

**OUR
SURROUNDINGS**

VOLUNTARY SECTOR ACTION ON THE
SOCIAL DETERMINANTS OF HEALTH

CONTENTS

NAVIGATING THIS DOCUMENT

Throughout this document boxes are used to highlight specific information.

Key messages:

In the Executive Summary and at the beginning of each section on the social determinants of health these boxes are used to highlight key points from the research.

Strength of evidence:

At the beginning of Sections 2–9 these boxes are used to highlight the most recent research that examines the strength of evidence relating to links between the specific social determinants and health outcomes.

Example interventions:

A variety of case studies demonstrating action on the social determinants of health are presented in these boxes at the end of each section.

Key terms are identified and explained in these boxes throughout the document

Each section is followed by a number of evaluations and evidence reviews of interventions that address specific determinants of health.

8.   OUR SURROUNDINGS

Our surroundings – key messages:

Our surroundings operate through a number of pathways and impact on health. Economic, geographical and social factors influence these pathways and the health outcomes of local populations.

Health-promoting surroundings are important for retaining people, place attachment, encouraging community engagement, and for thriving communities with improved health outcomes.

People who have inadequate economic resources are more likely to live in areas that have health-damaging characteristics. This can include poor-quality housing, obesogenic environments (encouraging people to eat unhealthily and do insufficient exercise), lack of good quality green and natural spaces, poor air quality and affordable transport availability, high levels of crime, or fear of crime and certain areas, and a lack of recreational and community facilities and opportunities for community participation. However, multiple interventions can be used to encourage good place-making and place attachment that promotes improved health outcomes, including:

Green infrastructure: Good quality green infrastructure (including parks, gardens and street planting) increases the likelihood of physical exercise, lowers the risk of obesity, and offers a restorative environment for mental fatigue. It can also create a sense of place and civic pride, and be used for social activities that promote social cohesion. It also combats climate change, which has associated health impacts.

Walkability and cycle-ability: Streets that are safe and easy to navigate increase the likelihood of using environmentally sustainable modes of transport, such as walking and cycling. This can also promote the spontaneous social interaction needed for social cohesion and improved mental health.

Community safety: Crime and fear of crime have direct and indirect impacts on health and can limit social behaviour and physical activity.

Feelings of safety are critical for community wellbeing and economic vibrancy. 'Crime prevention through environmental design' is an intervention that uses a number of approaches to reduce crime and fear of crime and focuses on territoriality, encouraging ownership and community cohesion and improving the physical fabric of communities, encouraging natural surveillance.

There is consistent and strong evidence demonstrating that the maintenance and upkeep of local areas decreases crime and the fear of crime (the broken window theory). Neglected spaces that have been repurposed have been shown to improve perceptions of safety and create economic and job opportunities.

Food outlets: Areas of high deprivation can experience a proliferation of fast food outlets, and this can have direct and indirect impacts on health.

'Food deserts' areas that have little access to healthy food, increase the risk of food poverty, obesity and malnutrition, in turn increasing the risk of cancer, diabetes and coronary heart disease.

Initiatives that promote independent food and other retail outlets, featuring locally-sourced food for example, and that limit the number of fast food, payday lender and gambling outlets, will support the local economy and promote improved health outcomes.

Accessible, affordable and sustainable public transport: This type of transport can provide access to education, employment and essential goods and services, including health and social care. Transport systems, including well maintained roads and pavements, encourage active travel and help reduce pollution and climate change.
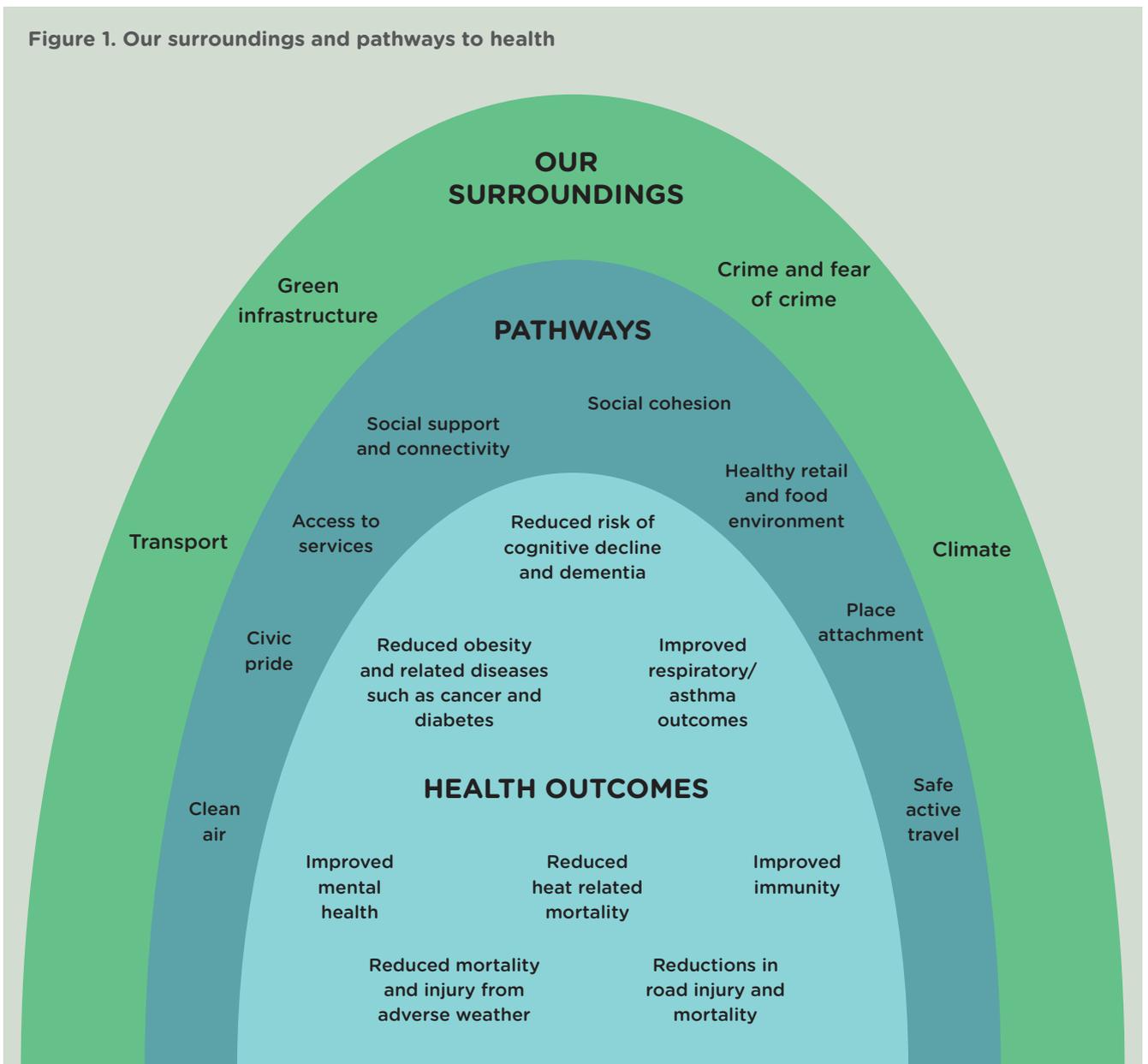
8.1 Our surroundings and health

Our surroundings are important for our health and operate through a number of pathways that have direct and indirect impacts. Factors such as adequate levels of green infrastructure, the local climate, levels of crime and fear of crime, and access to services and community resources all influence the health outcomes of local populations.

Local neighbourhood surroundings also influence the ability of local populations to develop a unique sense of place. Successful place-making is important for communities to thrive and can promote and maintain levels of place attachment, which is important for retaining people in a place and encouraging community engagement and participation,[6] particularly in areas of deprivation, and it is especially important for improving health outcomes, as shown in Figure 1 below.

Place attachment: The emotional or affective bonds that an individual feels to an area or place

Figure 1. Our surroundings and pathways to health

OUR SURROUNDINGS

Green infrastructure

Crime and fear of crime

PATHWAYS

Social cohesion

Social support and connectivity

Healthy retail and food environment

Transport

Access to services

Reduced risk of cognitive decline and dementia

Climate

Place attachment

Civic pride

Reduced obesity and related diseases such as cancer and diabetes

Improved respiratory/ asthma outcomes

HEALTH OUTCOMES

Safe active travel

Clean air

Improved mental health

Reduced heat related mortality

Improved immunity

Reduced mortality and injury from adverse weather

Reductions in road injury and mortality

8.2 Green infrastructure and health

Green infrastructure helps to 'offset' the health impacts of income deprivation and decreases the risk of heat island effects (where the air temperature in urban areas is higher than in surrounding suburban and rural areas), intense microclimates and high concentrations of air pollution. Air pollution is damaging to health, contributing to cardio-respiratory mortality and morbidity[7, 8] being linked to diseases such as cancer, childhood and adult asthma, heart disease, obesity and diabetes[9] and an increased risk of dementia.[10]

Communities living in the greenest environments have been shown to have the lowest health inequality related to income deprivation.[11-15] Green infrastructure is linked to multiple improved health outcomes including lower levels of obesity[16] and improved immunity in children, reducing the risk of premature mortality, and reducing the risk of and helping to manage long-term conditions including hypertension, asthma and coronary heart disease.[15, 17-20]

Proximity to green space can also offer a restorative environment to those who live or work in highly stressful or stimulating environments.[21] It offers opportunities for coping with stress, reducing hospital admissions for mental health conditions,[22, 23] and lowering blood pressure.[24-26]

Importantly, green infrastructure encourages active travel and civic pride, as environments become more attractive and less polluted. This encourages social interaction and cohesion, and reduces antisocial behaviour and other crime.[27]

Green open space also provides a platform for community activities, recreation and physical activity, reducing the risk of social isolation and loneliness and increasing social capital. Higher levels of social capital, including community volunteering, community trust and local safety, have been linked to improved health outcomes, including reducing the risk of dementia and cognitive decline.[28-33]

> **Green infrastructure:** Parks, gardens and street planting, green corridors including canals, river banks and cycle ways, and natural and semi-natural urban green spaces.

8.3 Transport systems

Local transport systems are both significant determinants of health and also influencers of a number of other important determinants.

Walkability and cycle-ability

Levels of physical activity are influenced by the walkability and cycle-ability of the local environment. Improving the walkability or cycle-ability of roads and footpaths can reduce the risk of obesity and overweight, and cardiovascular and respiratory disease, and can strengthen bones, increase mental alertness and creativity. [27-29]

Improving the walkability of roads and pavements can also impact on health indirectly, as it increases opportunities for social interactions and improved mental health, as pedestrians tend to congregate in areas that have positive walking environments.[34-40]

Conversely, street environments with multiple barriers, including a lack of disabled access built into street design, street clutter, busy roads without safe crossing points, and poorly maintained pavements, make travel difficult and dangerous. In 2000 the Department for Transport highlighted that some UK highstreets are not safe for pedestrians.[34, 35] This is particularly true for older people, parents and children, carers and people with disabilities including wheelchair users and people who are blind or partially sighted.[36-39]

Traffic and pollution

With the prioritisation of motorised transport and car ownership over pedestrians, many roads are having a direct negative impact on health. Emissions from large numbers of cars add to a significant air quality problem.[40] Diesel car emissions are particularly harmful, and have been placed in the strongest class of carcinogenic groups, Group 1, the same class as tobacco. More than 40 per cent of new car sales in the UK are of diesel vehicles, and there are around 12 million diesel cars on UK roads.[41]

Access to employment, goods and services

Transport systems also impact on health through providing access to other determinants of health, such as employment, education, social and healthcare services. Accessible, affordable and sustainable transport systems can ensure that local populations, and particularly those who do not own a car and are vulnerable to social exclusion,

can participate in cultural, social and leisure activities, and have access to essential goods, services, education and employment opportunities, all of which are important for improving health outcomes.

Inequalities in access to safe and sustainable transport systems

There are inequalities in access to safe, affordable and adequate transport systems. The social gradient in the risk of road casualties is a clear illustration of this.[12] Rates of fatal and serious injuries on the road involving children and young people are nine times higher for 5- to 9-year-olds and 3.7 times higher for 10- to 14-year-olds living in the 20 per cent most deprived areas. There are also inequalities in injuries and fatalities among cyclists and 10- to 14-year-olds. Ten out of every 100,000 cyclists killed or seriously injured come from the 20 per cent most deprived areas, compared with four out of 100,000 in the least deprived.[42] Inequalities also exist depending on the employment status of parents,[43] and family ethnicity.[44, 45]

Additionally, research demonstrates that the poorest and most disadvantaged communities experience transport disadvantage disproportionately.[46] This can contribute to and compound social exclusion. Issues such as poorly designed, non-inclusive public transport, remote or peripheral areas that are not serviced by public transport, the high cost of public transport, and fears for personal safety all exclude specific groups from using public transport and from essential goods and services.[46]

8.4 Climate change

Climate change represents a significant risk to health and wellbeing[47] and is predicted to increase the number of deaths, disability and injury resulting from extreme weather, floods and storms.[48, 49] Heat-related mortality is expected to increase steeply in the UK, from around a 70 per cent increase in the 2020s to around a 540 per cent increase in the 2080s, in the absence of any physiological or behavioural adaptation.[50] The increase in surface ozone levels is expected to result in an additional 1,500 deaths per year, and an increase in skin cancer and cataracts.[51, 52]

People who are already vulnerable due to the quality of their local environments, their homes, or their level of income are more likely to be vulnerable to the adverse impacts of climate change and its causes,[53-55] as they have fewer resources with which to prepare, respond or recover from adverse climatic conditions.[56]

8.5 Unhealthy retail environments

Areas of high deprivation can experience a proliferation of fast food outlets, and this can have direct and indirect impacts on health.[57-61]

Fast food restaurants that serve food high in fat and salt cluster in areas of deprivation.[60] 'Food deserts', where there is a lack of available healthy produce, impact disproportionately on low income, older or less mobile customers, increasing the risk of obesity and malnutrition.[15, 62,12,63] Food poverty, the lack of accessible healthy food can increase the prevalence of dental caries in children, the risks of trips and falls in older people, the risks and incidence of low birthweight, and childhood morbidity and mortality.[63] Over 2 million people in the UK are estimated to be malnourished, and 3 million are at risk of becoming malnourished.[64]

Malnutrition: A serious condition that occurs when a diet does not contain the right amount of nutrients; includes undernutrition, and overnutrition.

8.6 Crime and fear of crime

Crime, and fear of crime, negatively affects levels of footfall in local community spaces, the experience of visitors once they get there, and the likelihood of return visits. This reduces levels of physical activity, community cohesion and social interaction. For example, crime and fear of crime on local highstreets can lead to withdrawal from streets, contributing to highstreet degradation and increasing the number of vacant properties. These factors are known to increase the risk of antisocial behaviour and more serious crime.[65, 66] Therefore, feelings of safety are critical for community wellbeing, and for the economic vibrancy of local communities.[67]

Broken window theory: Degradation of the physical fabric of communities leads to people's withdrawal from streets, increasing their fear of crime, and increasing the opportunities for crime.

Crime and fear of crime have direct and indirect impacts on health outcomes. Direct impacts include mortality, lasting physical injury and disability, psychological distress and post-traumatic stress disorder, depression, anxiety, suicidal ideation and attempts, substance misuse, difficulties sleeping, and limited social behaviour and physical activity.[68, 69]

Neighbourhood crime also affects health through psychosocial pathways including increasing the risks of all-cause mortality,[70] coronary heart disease,[71] pre-term birth and low birth weight,[72] and reduced physical activity. There is clear evidence that this particularly impacts on black and minority ethnic communities, young people, older people and women.[73-77]

'Crime prevention through environmental design' (CPED) is an approach that has been proven to reduce levels of crime and fear of crime. It uses interventions such as improving a sense of ownership (territoriality) in local communities, through care and maintenance of the physical area, improving natural surveillance (eyes on the street) through glazing and well maintained green infrastructure, and through adequate lighting.[78-82]

8.7 Inequalities in access to good quality environments

People who have inadequate economic resources are more likely to live in areas that have health-damaging characteristics. This includes environments that have conditions that tend to make people obese (obesogenic environments), including inadequate access to quality green space, few places for children to play and be physically active, unhealthy food environments, inadequate walkable and accessible public spaces with poor public transport access, and a proliferation of major roads with poor road crossings. Other conditions such as poor air quality, high levels of crime and fear of crime, and high risk of road traffic injury all have direct impacts on health and are all more likely to occur in urban areas with high levels of deprivation than in other areas. Figure 2 below demonstrates some of the inequalities experienced in areas of deprivation:

Figure 2. Inequalities in access to health-promoting environments

40,000 deaths in the UK are attributed to air pollution

British heat wave of 2003 resulted in around 2,000 excessive deaths

Poorer communities experience higher levels of pollution

People living in deprived inner city areas have access to 5 times less good quality green space

The density of fast food shops selling produce that are high in fat, salt and sugar content increases by level of deprivation

Betting shops tend to cluster in some of the most deprived areas

Payday lenders are more likely to open premises in disadvantaged inner city and urban area

Higher levels of crime and fear of crime have been recorded in areas of deprivation including violence, burglary, theft and criminal damage

Fatal and serious injuries on the road are 9 times higher for 5-9 year olds and 3.7 times higher for 10-14 year olds living in the 20% most deprived areas.

Higher levels of traffic, degradation of pavements, and prioritisation of vehicle movement make British roads unsafe for older people, carers, people with children, and people with disabilities

People who live further away from urban green space are less likely to visit them, meet the recommended daily requirements for exercise, and more likely to be over weight or obese.

8.8 Our surroundings – interventions

Example: Bristol Independents campaign .[83]

Bristol has around 180 specialist independent food shops that are owned by 140 businesses. Around 10 out of 35 of Bristol's wards have no greengrocer, and half of wards have no independent food retailers. In recent years many of the specialist small independent shops have disappeared.

In 2011, the Bristol Food Network, Bristol Food Policy Council, Bristol Green Capital and Destination Bristol launched a campaign highlighting the history of independent and diverse high street and shopping centres. This campaign built on initiatives developed by the Food Policy Council and acted on recommendations of the Who Feeds Bristol report, commissioned by Bristol Green Capital, NHS Bristol and Bristol City Council. A clear recommendation of the report was to safeguard the diversity of food retail in the city. A pilot project was launched in eight local shopping centres including recipe cards that could be purchased in local independent shops.

Businesses joining the campaign are locally owned and operated, are run from the individual shop, stall or farm and not from a centralised head office and must demonstrate that products are sourced locally[83]

Example: Tree Carers and Tree Champions, Hackney [84-87]

During November 2007 and March 2008 over 500 trees were planted across 28 roads in the London borough of Hackney.[84] Embedded in the street tree planting programme were initiatives to encourage local communities to collaborate in the selection, management and care of street trees once planted. Programme aims also included reducing air pollution, transforming harsh urban landscapes (over 50 per cent of streets in Hackney had no trees), and increasing the biodiversity of the area through creating green chains for wildlife, habitats and food sources.

Tree Champions were recruited who engaged local residents. Turkish community members who became involved in the scheme opted to plant almond trees due to their 'long cultural and emotional connection with Turkey'.[85] Tree Champions and Carers were encouraged to care for the trees after planting. In some areas it was found that additional planting was initiated by local residents in the newly available planted tree sites, and to date there has been minimal loss (less than 1 per cent) of trees due to damage and disease.[86][87]

8.9 Our surroundings – further reading and resources

Physical activity for children and young people (2009), published by NICE, offers guidance on promoting physical activity for children and young people under the age of 18. It includes awareness raising, listening to the views of children and young people and helping families to build physical exercise into their daily activities, and planning and providing spaces and facilities. The guidance is aimed at a range of statutory and non-statutory organisations and providers, including the voluntary and community sector.

Promoting and creating built or natural environments that encourage and support physical activity (2008), published by NICE, provides evidence-based recommendations on how to improve the physical environment to encourage and support greater levels of physical activity.

Design for Play (2008), developed by Play England, provides guidance around the design and implementation of play areas in both urban and rural settings.

Small area and individual level predictors of physical activity in urban communities: A multi-level study in Stoke on Trent, England (2009), by Cochrane et al., examines the links between individual and environmental characteristics and levels of physical activity in deprived urban areas. The study demonstrates that factors such as access to shops and green space, work, and fast food outlets, plus traffic, criminal damage, age and gender, impacted on levels of physical activity.

Crime prevention through environmental design (CPTED): A review and modern bibliography (2005), by Cozens et al., critically reviews the core findings from place-based crime prevention research. The paper found that there is a growing body of research that supports the premise that crime prevention through environmental design is effective in reducing crime and fear of crime in local neighbourhoods.

National Institute for Health and Care Excellence Review 4: Community engagement – approaches to improve health: map of the literature on current and emerging community engagement policy and practice in the UK (2015), published by Leeds Beckett University, provides a mapping review of the current evidence base for UK local and national policy and practice for community engagement and identifies current and emerging community engagement policy and practice in the UK.

At the heart of health. Realising the value of people and communities (2015), published by the Realising the Value programme, examines the value of people and communities in terms of health promotion and consolidates the evidence regarding a wide range of person- and community-centred approaches for health and wellbeing. It provides an overview of the existing evidence base with a particular focus on the potential benefits of adopting person- and community-centred approaches.

Our surroundings – references

1. Sampson, R.J., J.D. Morenoff, and T. Gannon-Rowley, Assessing "neighborhood effects": Social processes and new directions in research. Annual review of sociology, 2002. 28(1): p. 443-478.

2. Yen, I.H. and S.L. Syme, The social environment and health: a discussion of the epidemiologic literature. Annual review of public health, 1999. 20(1): p. 287-308.

3. Pickett, K.E. and M. Pearl, Multilevel analyses of neighbourhood socioeconomic context and health outcomes: a critical review. Journal of Epidemiology & Community Health, 2001. 55(2): p. 111-122.

4. Robert, S.A., Socioeconomic position and health: the independent contribution of community socioeconomic context. Annual review of sociology, 1999. 25(1): p. 489-516.

5. Roberts Woods Johnson Foundation. Where We Live Matters for Our Health: Neighborhoods and Health ISSUE BRIEF 3: NEIGHBORHOODS AND HEALTH 2008; Available from: http://www.commissiononhealth.org/PDF/888f4a18-eb90-45be-a2f8-159e84a55a4c/Issue%20Brief%203%20Sept%2008%20-%20Neighborhoods%20and%20Health.pdf.

6. Livingston, M., N. Bailey, and A. Kearns, People's attachment to place: The influence of neighbourhood deprivation. 2008.

7. Heinrich, J., et al., Studies on health effects of transport-related air pollution. 2005.

8. Committee on the Medical Aspects of Air Pollutants (COMEAP), The air quality strategy for England, Scotland, Wales and Northern Ireland: Volume 1. London: TSO;. 2009.

9. The Royal College of Physicians, Every breath we take: the lifelong impact of air pollution. 2016.

10. Oudin, A., et al., Traffic-Related Air Pollution and Dementia Incidence in Northern Sweden: A Longitudinal Study. Environmental Health Perspectives (Online), 2016. 124(3): p. 306.

11. House of Commons Environmental Audit Committee, Adapting to Climate Change Sixth Report of Session 2009 - 10 2010.

12. Power, A., et al., Strategic Review of Health Inequalities in England post-2010 Task Group 4: The Built Environment and Health Inequalities Final Report 2009.

13. Ellaway, A., S. Macintyre, and X. Bonnefoy, Graffiti, greenery, and obesity in adults: secondary analysis of European cross sectional survey. Bmj, 2005. 331(7517): p. 611-612.

14. Prescribing and Primary Care Team and Health and Social Care Information Centre, Quality and Outcomes Framework Achievement, prevalence and exceptions data, 2012/13. London: HSCIC. 2013.

15. Kaplan, R. and S. Kaplan, The Experience of Nature. A Psychological Perspective. 1989.

16. Ward Thompson, C., et al., More green space is linked to less stress in deprived communities: Evidence from salivary cortisol patterns. Landscape and Urban Planning, 2012. 105(3): p. 221-229.

17. ClarePerkins, C.P.E.E.S. and H. Bellis, Returning urban parks to their public health roots.

18. Ulrich, R., View through a window may influence recovery. science, 1984. 6143402(420): p. 224.

19. Newton, J. Wellbeing and the Natural Environment: A brief overview of the evidence. in Unpublished report toDEFRA. www. surrey. ac. uk/resolve/seminars/Julie% 20Newton% 20Paper. pdf. 2007.

20. Allen, J. and M. Allen, Improving Access to Green Space 2014.

21. Geddes, I., et al., The Marmot Review: implications for spatial planning. London: The Marmot Review Team, NICE, 2011.

22. CABE, Future health: sustainable places for health and wellbeing - Summary 2009 2009.

23. Fabrigoule, C., et al., Social and leisure activities and risk of dementia: a prospective longitudinal study. Journal of the American Geriatrics Society, 1995. 43(5): p. 485-490.

24. Bassuk, S.S., T.A. Glass, and L.F. Berkman, Social disengagement and incident cognitive decline in community-dwelling elderly persons. Annals of internal medicine, 1999. 131(3): p. 165-173.

25. Piachaud, D., et al., Social inclusion and social mobility. Report of task group 9. Marmot review: First phase report. Department of Health, London, 2009.

26. Daly, S. and J. Allen, Inequalities in mental health, cognitive impairment and dementia amongst older people. . 2016.

27. Southworth, M., Designing the walkable city. Journal of urban planning and development, 2005. 131(4): p. 246-257.

28. Forsyth, A. and M. Southworth, Cities afoot—Pedestrians, walkability and urban design. 2008, Taylor & Francis.

29. Sallis, J.F., et al., Co-benefits of designing communities for active living: an exploration of literature. International Journal of Behavioral Nutrition and Physical Activity, 2015. 12(1): p. 30.

30. Zook, J.B., et al., Design and pedestrianism in a smart growth development. Environment and Behavior, 2012. 44(2): p. 216-234.

31. The Marmot Review Team, Fair Society, Healthy Lives 2010.

32. Forsyth, A.N.N. and M. Southworth, Cities Afoot—Pedestrians, Walkability and Urban Design. Journal of Urban Design, 2008. 13(1): p. 1-3.

33. Department for Transport, Local Transport Note 1/07. Traffic Calming. 2007.

34. Department for Transport, Tomorrow's Roads Safer for Everyone. 2000.

35. Carmona, M., London's local high streets: The problems, potential and complexities of mixed street corridors. Progress in Planning, 2015. 100: p. 1-84.

36. BBC News. Disabled people's access to High Street 'shocking', audit finds. 2014; Available from: http://www.bbc.co.uk/news/uk-politics-30342957.

37. People, P. BHCC and Street Clutter Accessed on 11 August 2016; Available from: https://getinvolvedgroup.wordpress.com/bhcc-and-street-clutter/.

38. Hanson, J., The Inclusive City: delivering a more accessible urban environment through inclusive design. No Date Provided.

39. Hanson, J., The inclusive city: delivering a more accessible urban environment through inclusive design. 2004.

40. Vehicle Certification Agency. Cars and air pollution. . Accessed on 13 September 2017 Available from: http://www.dft.gov.uk/vca/fcb/cars-and-air-pollution.asp.

41. Frieds of the Earth. 20 Shocking Facts about Air Pollution. 2017; Available from: https://www.foe.co.uk/clean-air/20-shocking-facts-about-air-pollution.

42. Public Health England, Reducing unintentional injuries on the roads among children and young people under 25 years. 2014.

43. Edwards P, et al., Deaths from injury in children and employment status in family: analysis of trends in class specific death rates. . BMJ : British Medical Journal, 2006. 333(7559):119. doi:10.1136/bmj.38875.757488.4F.

44. Lawson S and E. P., The involvement of ethnic minorities in road accidents: Data from three studies of young pedestrian casualties. . Traffic Eng Control. , 1991. 32:12–19.

45. Steinbach, R., et al., Race' or place? Explaining ethnic variations in childhood pedestrian injury rates in London. . Health Place. , 2010.

46. Lucas, K., Transport and social exclusion: Where are we now? Transport policy, 2012. 20: p. 105-113.

47. Porritt, J., et al., Sustainable development task group report: Health impacts of climate change. Task group submission to the Marmot Review 2009.

48. NHS Confederation, Taking the temperature: Towards an NHS response to global warming; Department of Health and Health Protection Agency (2008) The Health Effects of Climate Change in the UK. 2007.

49. Ayres, J., et al., Climate change and respiratory disease: European Respiratory Society position statement. Eur Respir J, 2009. 34(2): p. 295-302.

50. Vardoulakis, S. and C. Heaviside, Health Effects of climate change in the UK 2012. London: Health Protection Agency, 2012.

51. IPPC, Climate change 2007: Synthesis report of 4th assessment. Geneva: Intergovernmental Panel on Climate Change. . 2007: p. 53.

52. Department of Health and Health Protection Agency, The Health Effects of Climate Change in the UK. 2008.

53. Power, A., et al., The built environment and health inequalities. Task group submission to the Marmot Review. . 2009.

54. Stern, N., Built environment report. 2006.

55. Cabinet Office and HM Treasury, The economics of climate change. The Stern Review. . 2006.

56. Lindley, S., et al., Climate change, justice and vulnerability. Joseph Rowntree Foundation, York, 2011.

57. new economics foundation, Clone Town Britain 2005.

58. Lim, Y. The Geography of Payday Lending: Living in the Path of a Payday Lender. in 2015 Fall Conference: The Golden Age of Evidence-Based Policy. 2015. Appam.

59. Mosley, P. and P. Lenton, Financial Exclusion and the Poverty Trap: overcoming deprivation in the inner city. Vol. 17. 2012: Routledge.

60. Fraser, L.K., et al., The geography of fast food outlets: a review. International journal of environmental research and public health, 2010. 7(5): p. 2290-2308.

61. Murphy, S., Escape from Gambling Hell, in Guardian 2012: London.

62. The Food Commission UK and Sustain, How London's planners can improve access to healthy and affordable food. No date provided. .

63. Faculty of Public Health of the Royal Colleges of Physicians of the United Kingdom, Food Poverty and Health. Briefing Statement 2005.

64. Oxfam. Food poverty in the UK. Web Page Accessed June 2017.

65. Baker, E.A., et al., Measuring the determinants of physical activity in the community: current and future directions. Res Q Exerc Sport, 2000. 71(2 Suppl): p. S146-58.

66. Department of Environment, Vital and Viable Town Centres. Meeting the Challenge 1994.

67. Prevention Institute for The California Endowment, Community Safety by Design. Preventing Violence trhough Land Use. . 2015.

68. Robinson, F. and J. Keithley, The impacts of crime on health and health services: A literature review. 2000.

69. Jones, T., B. MacLean, and J. Young, The Islington Crime Survey: Crime, Victimisation and Policing in Inner-city London. . 1986.

70. Wilkinson, R.G., I. Kawachi, and B.P. Kennedy, Mortality, the social environment, crime and violence. Sociology of Health & Illness, 1998. 20(5): p. 578-597.

71. Sundquist, K., et al., Neighborhood violent crime and unemployment increase the risk of coronary heart disease: a multilevel study in an urban setting. Social science & medicine, 2006. 62(8): p. 2061-2071.

72. Messer, L.C., et al., Violent crime exposure classification and adverse birth outcomes: a geographically-defined cohort study. International journal of health geographics, 2006. 5(1): p. 1.

73. Gomez, J.E., et al., Violent crime and outdoor physical activity among inner-city youth. Preventive medicine, 2004. 39(5): p. 876-881.

74. McDonald, N., The effect of objectively measured crime on walking in minority adults. American journal of health promotion: AJHP, 2007. 22(6): p. 433-436.

75. Foster, S. and B. Giles-Corti, The built environment, neighborhood crime and constrained physical activity: An exploration of inconsistent findings. Preventive Medicine, 2008. 47(3): p. 241-251.

76. Roman, C.G. and A. Chalfin, Fear of walking outdoors: a multilevel ecologic analysis of crime and disorder. American journal of preventive medicine, 2008. 34(4): p. 306-312.

77. Office for National Statistics. Towns and Cities Analysis, England and Wales, March 2016. 2016; Available from: https://www.ons.gov.uk/peoplepopulationandcommunity/housing/articles/townsandcitiesanalysisenglandandwalesmarch2016/2016-03-18.

78. Paul Michael, C., S. Greg, and H. David, Crime prevention through environmental design (CPTED): a review and modern bibliography. Property Management, 2005. 23(5): p. 328-356.

79. Stokols, D. and I. Altman, Handbook of environmental psychology. Vol. 2. 1987: Wiley.

80. Brown, B. New Homes/Old Homes: Physical Environment and Residential Psychology Predicting Crime. in Proceedings of the International CPTED Conference. 2001.

81. Brown, B.B. and D.D. Perkins, Disruptions in place attachment, in Place attachment. 1992, Springer. p. 279-304.

82. Perkins, D.D., et al., The physical environment of street crime: Defensible space, territoriality and incivilities. Journal of Environmental Psychology, 1993. 13(1): p. 29-49.

83. Bristol Independents Site accessed on 21/01/2017; Available from: http://bristolindependents.co.uk/about/.

84. Hackney Council. Hackney's street trees growing in numbers. 2008; Available from: http://news.hackney.gov.uk/hackneys-street-trees-growing-in-numbers.

85. Lacey, S. Why we should plant more urban trees. 2015; Available from: http://www.telegraph.co.uk/gardening/problem-solving/why-we-should-plant-more-urban-trees/.

86. Walls, R.B. Street Trees in Hackney. None Given 02 November 2016]; Available from: http://www.barchampro.co.uk/sites/default/files/trees_in_the_townscape_tdag_26_sept_2013_0.pdf.

87. Walls, R.B. in The Big Meet 2016. UCL London.