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Protecting and improving the nation's health



*National Institute for
Health Research*

National Public Health Policy and Land Cover

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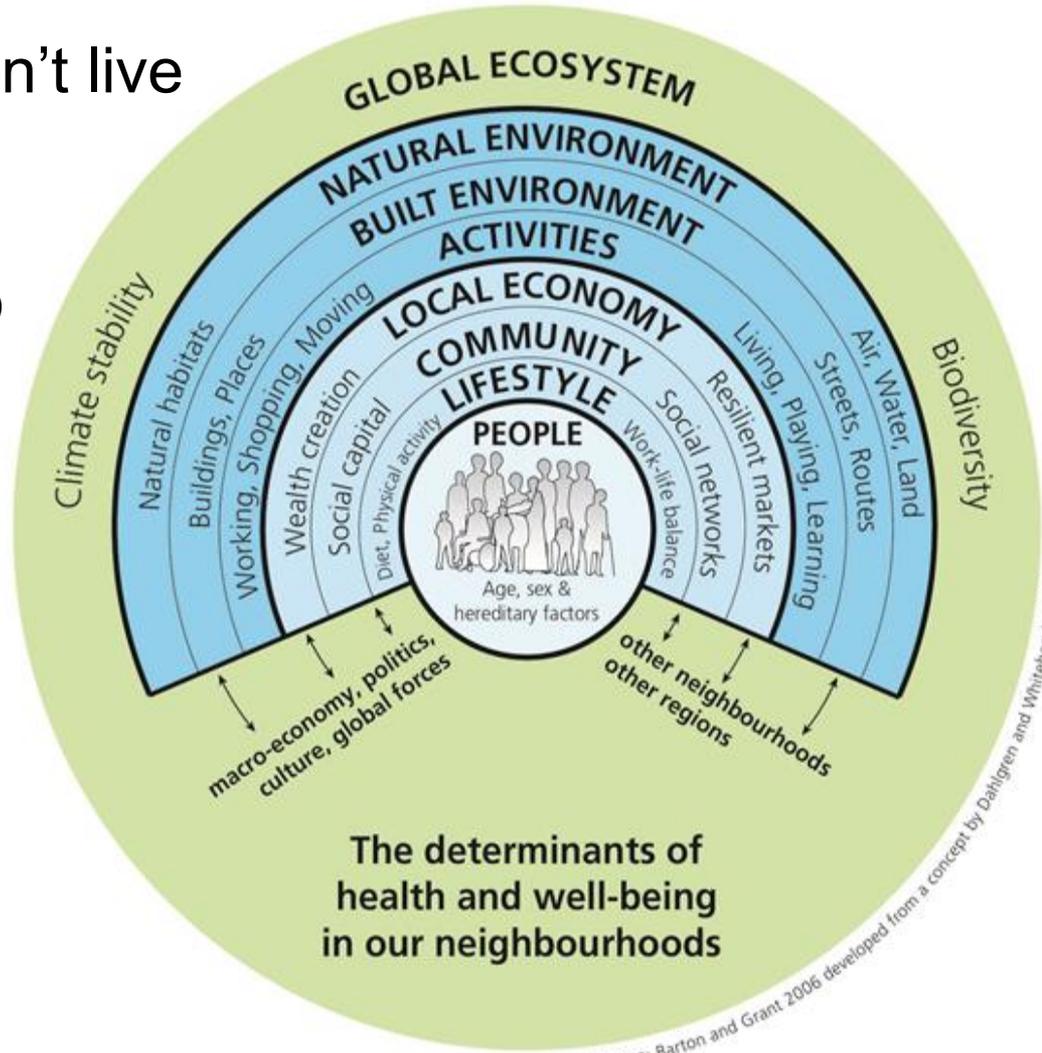
Your health is determined by:

where you don't live

where you live

what you do

who you are



The determinants of health and well-being in our neighbourhoods

The health map: Barton and Grant 2006 developed from a concept by Dahlgren and Whitehead 1991



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Why place matters to health and wellbeing?

Environments can:

- promote physical activity in everyday life (walking, cycling): can help maintain healthy weights
- facilitate easy access to healthy, affordable food
- promote active travel, fewer injuries, connected neighbourhoods, cleaner air, economic development





Government Planning policies on Sustainable Development of Land

Economic role: ensuring that sufficient land of the right type is available in the right places and at the right time to support growth and innovation;

Social role: providing housing required to meet the needs of present and future generations; and by creating a high quality built environment, with accessible local services that support health, social and cultural well-being;

Environmental role: helping to improve biodiversity, use natural resources, minimise waste and pollution, and mitigate and adapt to climate change including moving to a low carbon economy.

DCLG, National Planning Policy Framework, 2012



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Government guidance on sustainable development of land for health

Planning for an environment that supports people of all ages in making **healthy choices** (e.g. opportunities for play, sport and recreation)

Potential pollution and other **environmental hazards** are accounted for in the consideration of new development proposals

Access to the whole community by all sections of the community, whether able-bodied or disabled, has been promoted

Healthcare infrastructure implications of any relevant proposed local development have been considered

DCLG, National Planning Policy Guidance, 2014



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Foresight – Land Use Futures: key challenges

Demographic change: increase in the demand for land for housing, recreation, transport, water, food and energy in the face of uncertain demographic change. Manage the potential for uneven distribution.

Economic growth: altered consumption patterns, demand for additional living space, pressures on land use in the South East of England. Rising global demand for food.

Climate change: use of land for climate change mitigation and for supporting the transition to a low-carbon economy, as well as managing the impacts of changing climatic conditions.

New technologies: new energy, water and waste treatment technologies can lessen the environmental footprint of urban development.

Societal preferences and attitudes: on land use interacting with other drivers of change, rising incomes and the drive towards a lower-carbon society, sometimes resulting in conflicting demands.

Policy and regulatory environment: Government policies and regulatory measures relating to development control (Town & Country Planning Act 1947). DAs approaches and EU legislation.



Key Evidence for Healthy Places

Built Environment

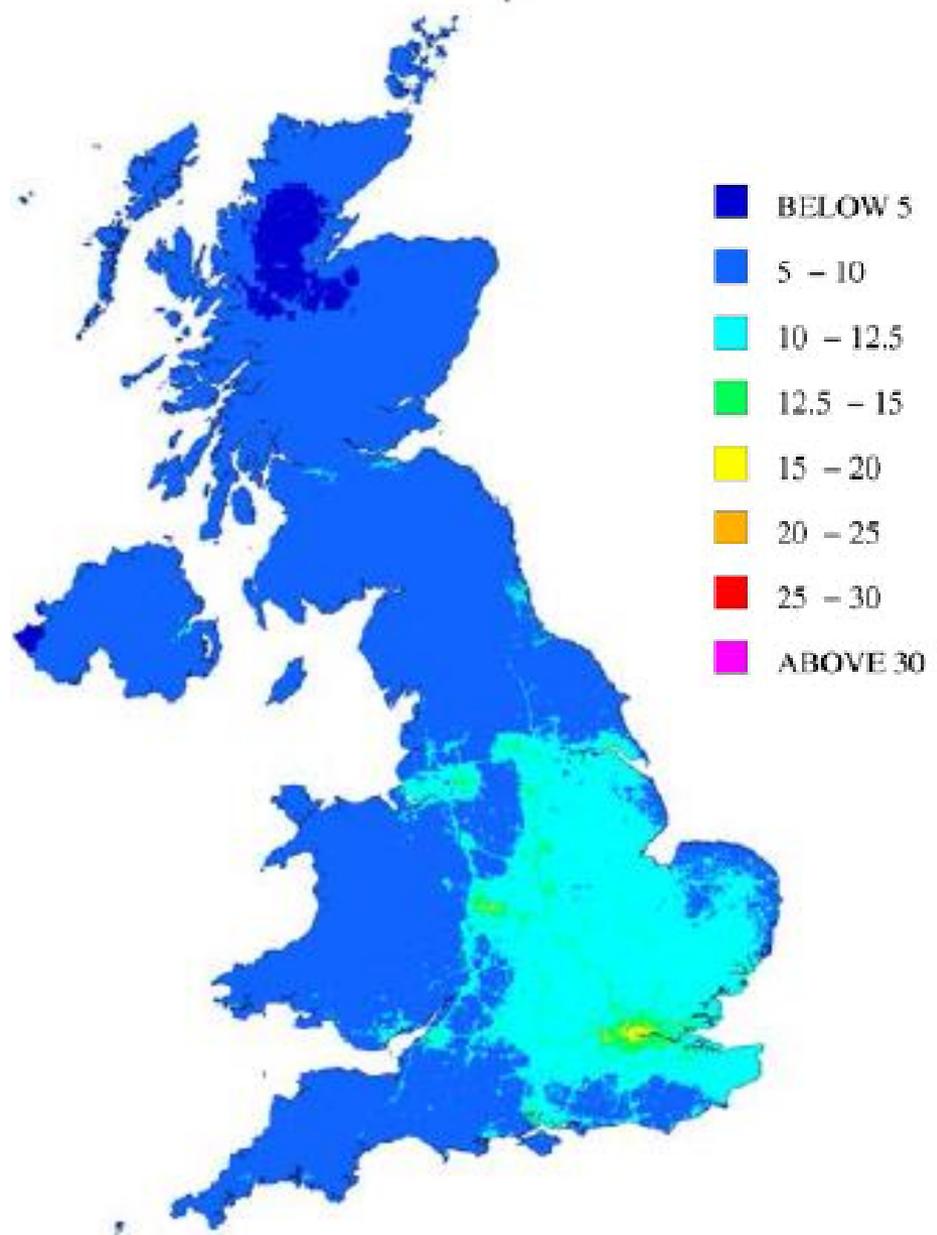
- Density and mix of land use
- Housing quality, supply and affordability
- Street layout and connectivity
- Active and public transport
- Open space, play space, green space and community space
- Access to public services, employment and other services
- Access to fresh food
- Access to alcohol
- Air quality and noise
- Mitigation of extreme weather events and changing climate



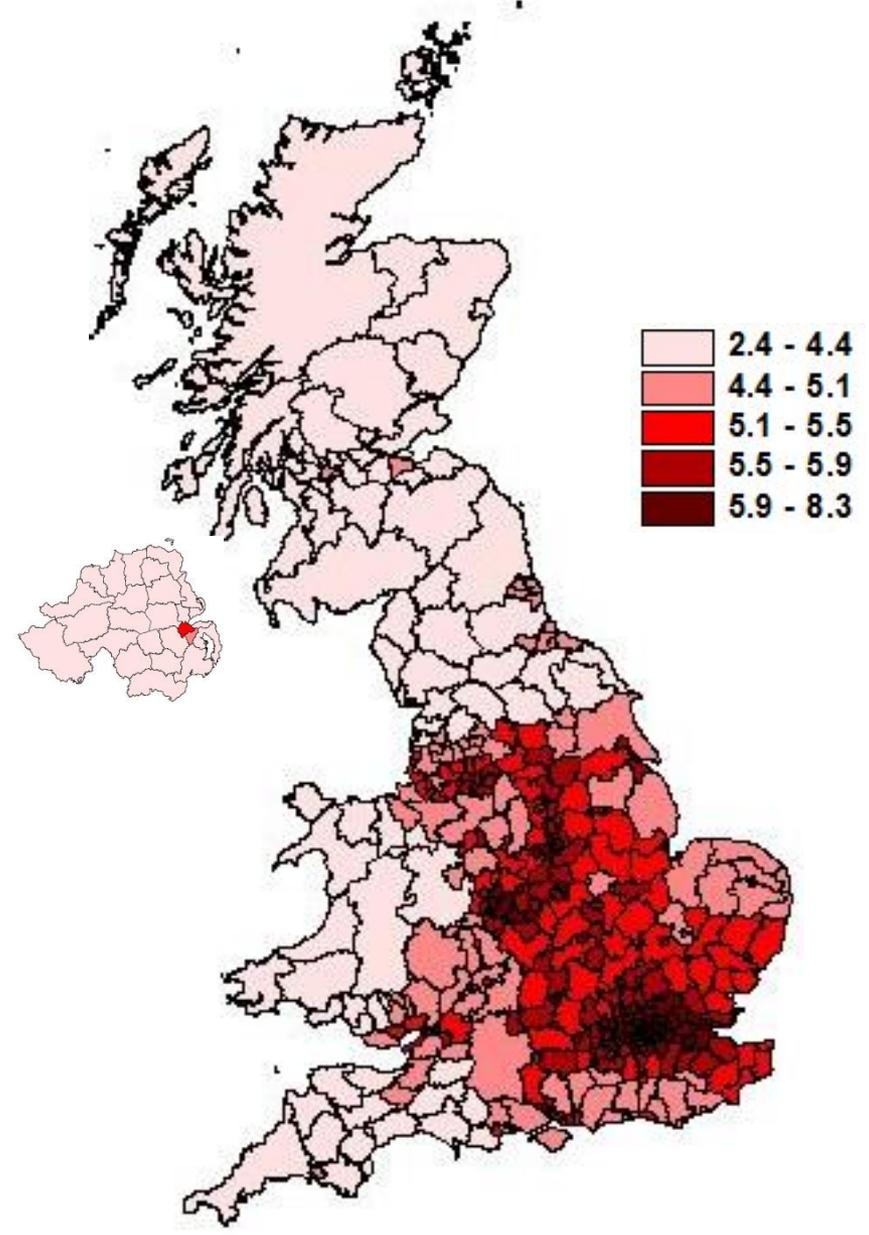
Health

- Fitness, cardiovascular health and obesity
- Diabetes
- Cancer
- Safety
- Mental health
- Respiratory health
- Accidents and falls
- Wellbeing and community participation
- Premature mortality

Annual mean background PM_{2.5} (µg/m³) in 2010



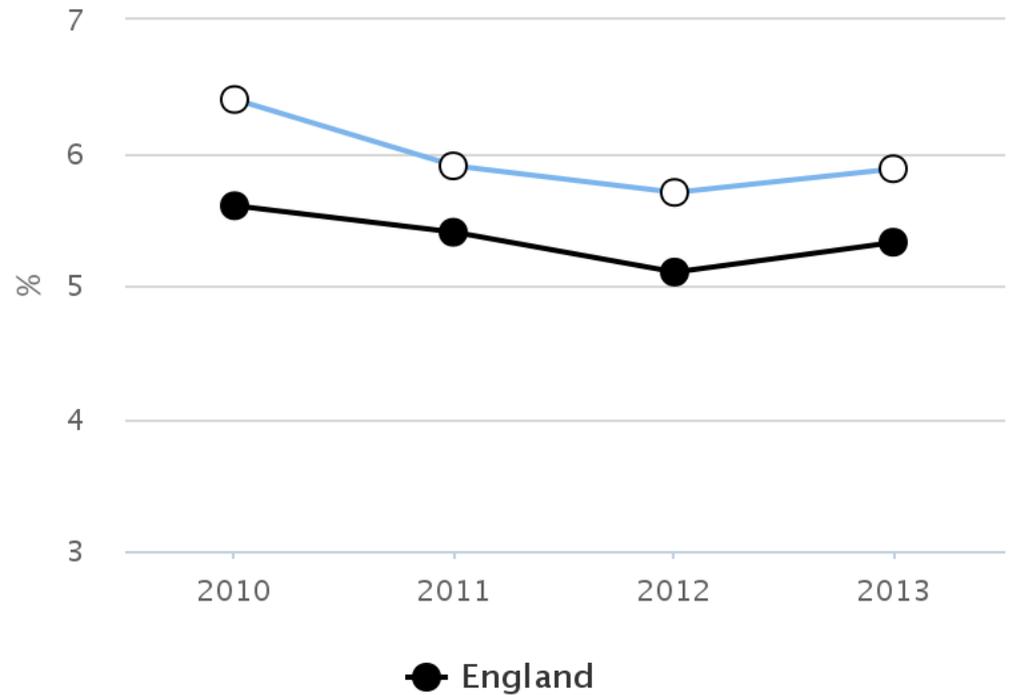
Fraction of mortality (%) attributable to anthropogenic PM_{2.5}





Public Health Outcome Framework indicator for air pollution

3.01 - Fraction of mortality attributable to particulate air pollution - Birmingham



Period	Count	Value	Lower CI	Upper CI	West Midlands	England
2010	○	6.4	-	-	5.7	5.6
2011	○	5.9	-	-	5.3	5.4
2012	○	5.7	-	-	5.1	5.1
2013	○	5.9	-	-	5.4	5.3

Irish Sea

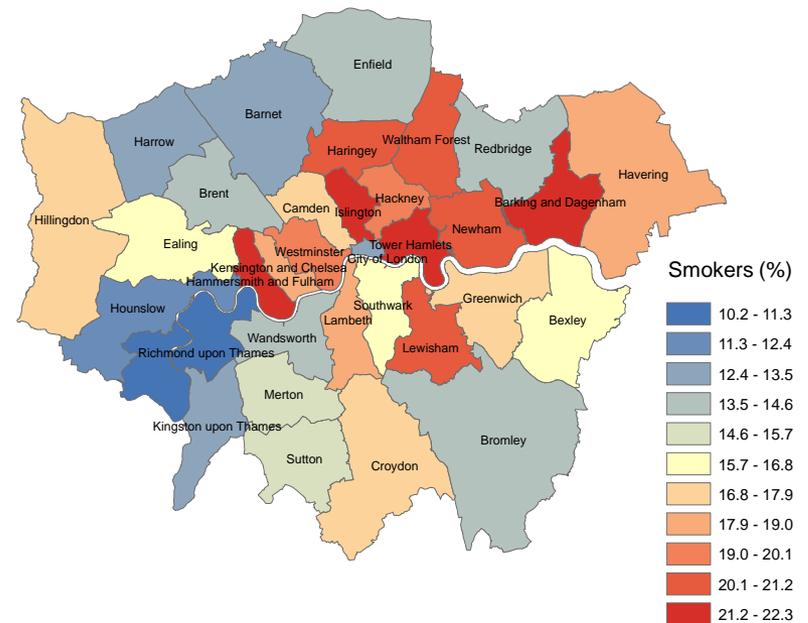
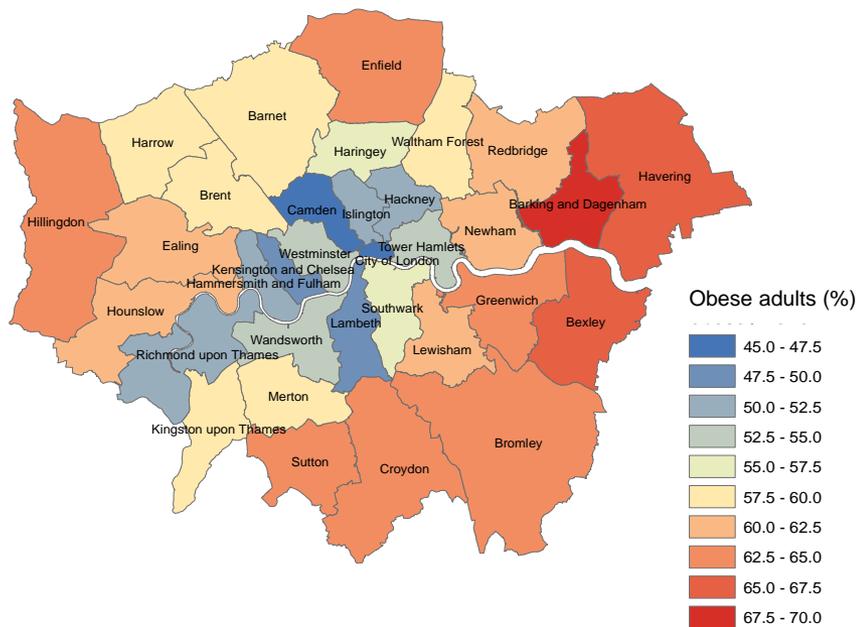
Birmingham
5.9%

English Channel

English Channel



Lifestyle and health behaviour



Public Health Outcomes framework (PHOF)

PHOF – Smoking prevalence in 2014

Excess weight in adults: Adults classified as overweight or obese (2012-2014)



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East London Green Grid



A network of interlinked, multi-functional and high quality open spaces

- Better environmental context for development
- Improve air quality
- Improve flood risk management
- Enhance biodiversity and ecological values
- Secondary health benefits (e.g. mental health, physical activity)



<http://www.pureframework.org/>

(Tiwary et al. 2012)

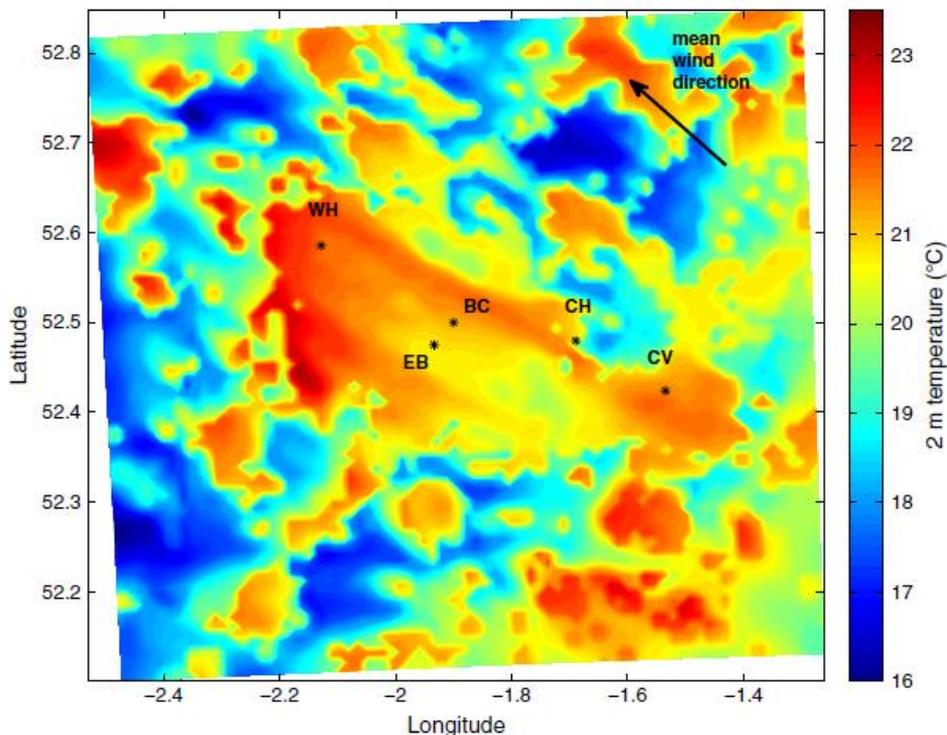


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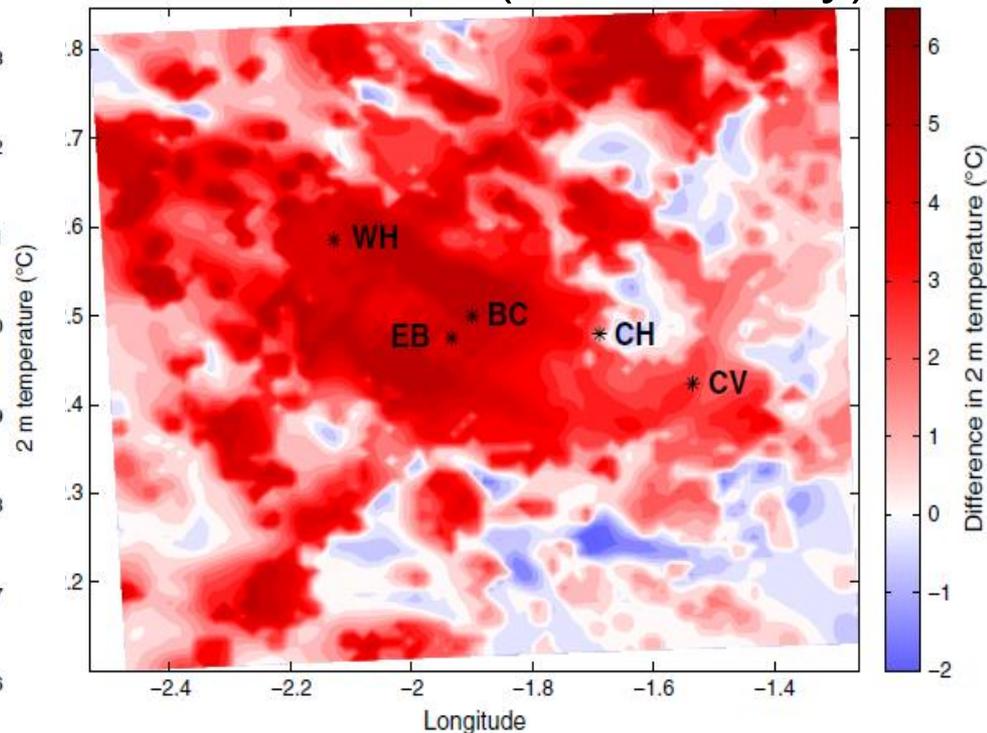
Attribution of mortality to the Urban Heat Island during heatwaves in the West Midlands, UK.

Heaviside et al. (2016)

‘urban’ model run



‘urban’ – ‘rural’ (UHI intensity)



Snapshot: 11pm, 5th August 2003

Health Impact Assessment to attribute mortality to the UHI intensity:
Calculate heat related mortality for the 2003 heatwave based on ‘urban’ simulation
Compare with mortality calculated for the temperatures in the ‘rural’ simulation



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Mitigation of the UHI effect

Range of strategies which may reduce UHI intensity and bring **multiple benefits**, including addressing climate change.

Measures

- Increased vegetation
- Modifications to urban design

Benefits

- Lowering temperatures
- Reduced air pollution and GHG emissions
- Reduced energy demands





Health and climate related ecosystem services provided by street trees in the urban environment.

Salmond et al. (2016)



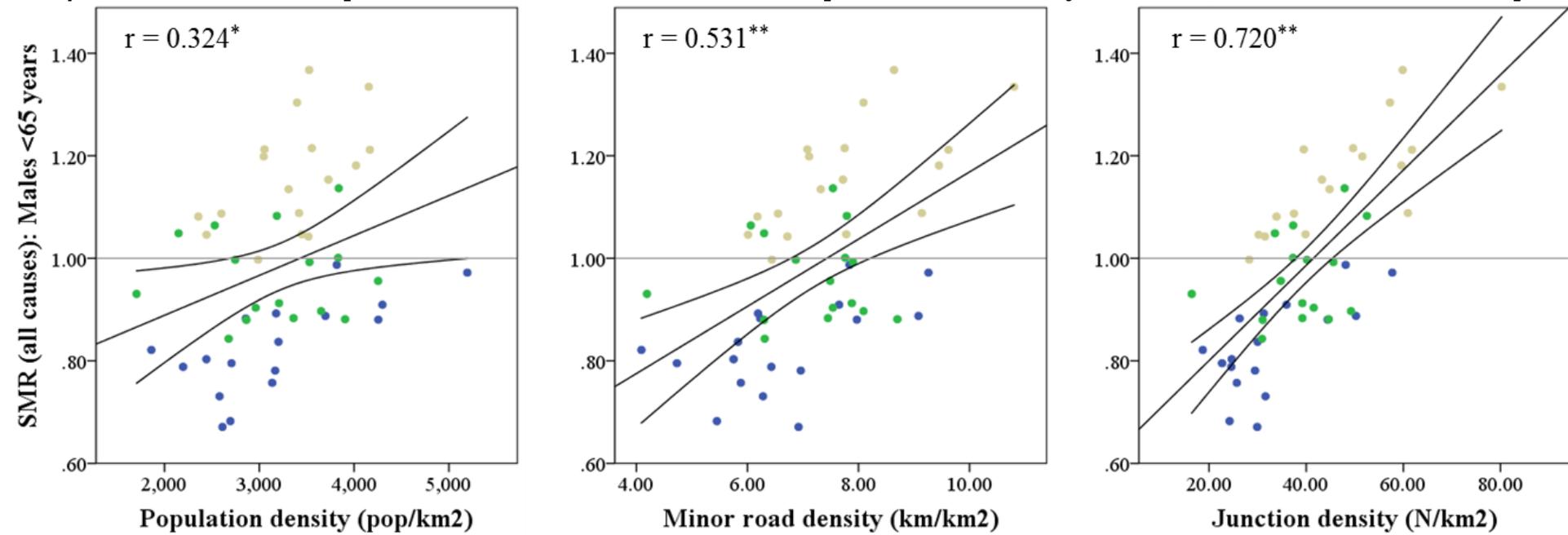
Service class	Specific services
Provisioning services	Food supply, water supply
Regulating services and related health benefits	Urban temperature regulation, noise reduction, air quality improvement, moderation of climate extremes, runoff mitigation, waste treatment, pollination, pest regulation, seed dispersal, global climate regulation
Supporting (habitat) services	Habitat for biodiversity
Cultural services	Recreation, aesthetic benefits, cognitive development, place values and social cohesion



Associations between urban metrics and mortality rates in England.

(Fecht et al. 2016)

Theme	Urban characteristic	Urban metrics
Population	Population density	Population density (pop/km ²):
Road network	Walkability of cities	Minor road density (km/km ²)
	Connectivity of road network	Junction density (N/km ²)





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Natural Environment White Paper and green infrastructure

Healthy natural environment is the foundation of sustained economic growth, prospering communities and personal wellbeing.

Commitments include:

- **Local Nature Partnerships** – gain from a healthy natural environment
- **Green Infrastructure Partnership**
- **Nature Improvement Areas (NIA)** to create joined up and resilient ecological networks at a landscape scale



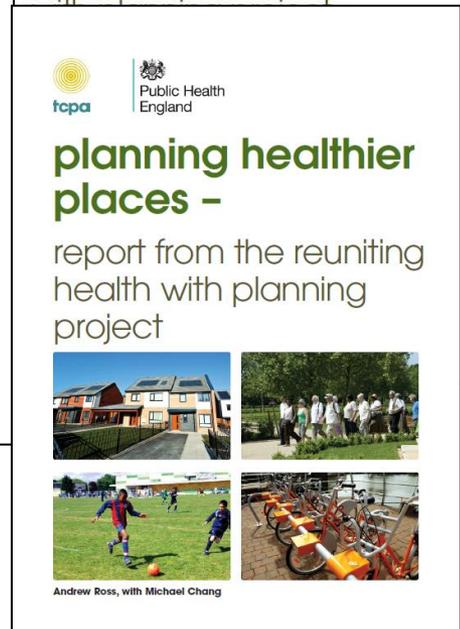
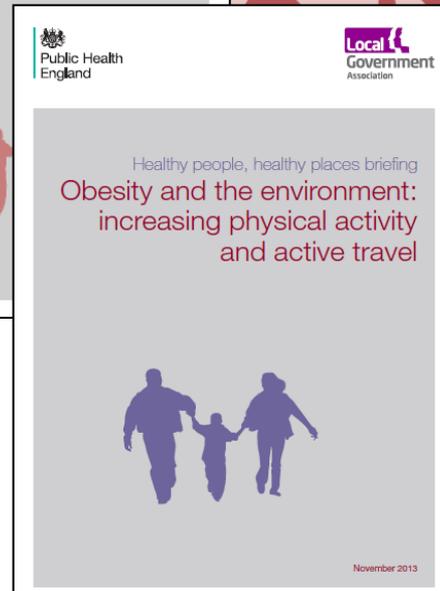
Government initiatives with implications for sustainable development of land

- **NHS England Healthy New Towns** – 10 demonstrator sites: avoid obesogenic environments and innovation in health and social care
- **DCLG Estate Regeneration Programme** – 100 estates: regeneration and physical redevelopment for wider socio-economic and health benefit
- **DCLG Garden suburbs, towns and cities** – 12 sites: self-sustaining, infrastructure and green open spaces
- **DCLG Brownfield land redevelopment register** – 73 councils: suitable development sites for new housing



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PHE Briefing and Evidence Reviews



A Memorandum of Understanding (MoU) to support joint action on improving health through the home

December 2014



Conclusions

- Increased expectations / climate change / need to live within environmental limits
- Increasing housing and water consumption demand, land use and flood risk management, air quality management
- Transport services integrated into land use strategies
- Area or catchment-based approach to land use policy rather than through administrative boundaries
- Need for an integrated land use and public health perspective
- Promote multifunctional and sustainable use of land
- Land cover maps a powerful tool for identifying and investigating spatial patterns



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