Geographies of Health: Looking to the Future

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Institute of Hazard, Risk and Resilience

How will environmental changes (both physical and social), impact on human health in the future?

How can knowledge from geographical research 'make a difference' to our response to these changes?

How can investing in geographical knowledge and skills that young people learn in school contribute to promotion of good health, now and in the future?

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‘Health’ can be considered as
“a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”

World Health Organization (1946)

Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, 19-22 June, 1946. WHO Geneva.

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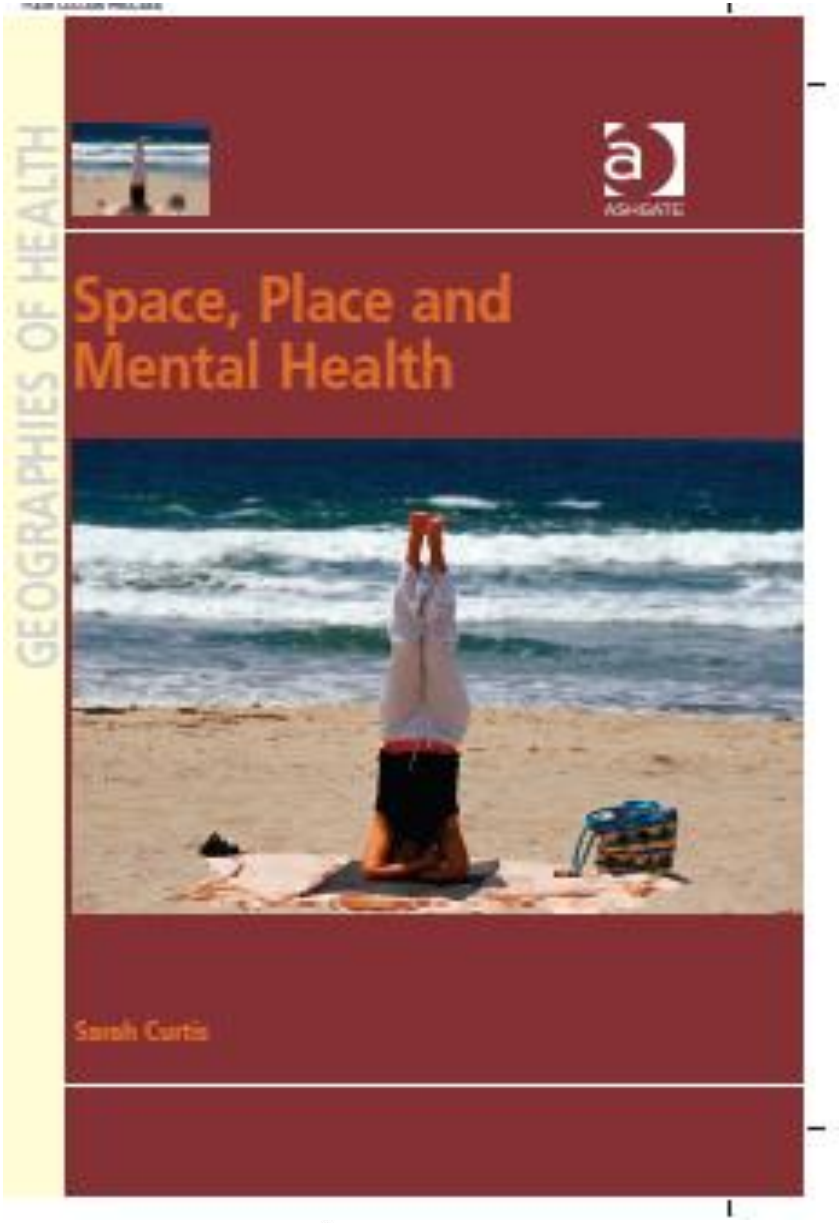
The ‘wider’ (social/environmental) determinants of health (Dalgren and Whitehead, 1991, Barton and Grant, 2006)

emphasises key geographical ideas:

- **Local community and economy;**
- **Urban and natural spaces;**
- **Ecosystems and biodiversity;**
- **Climate change**



Interactions* of *people* and *places* *matter for* *mental* and *physical* *health

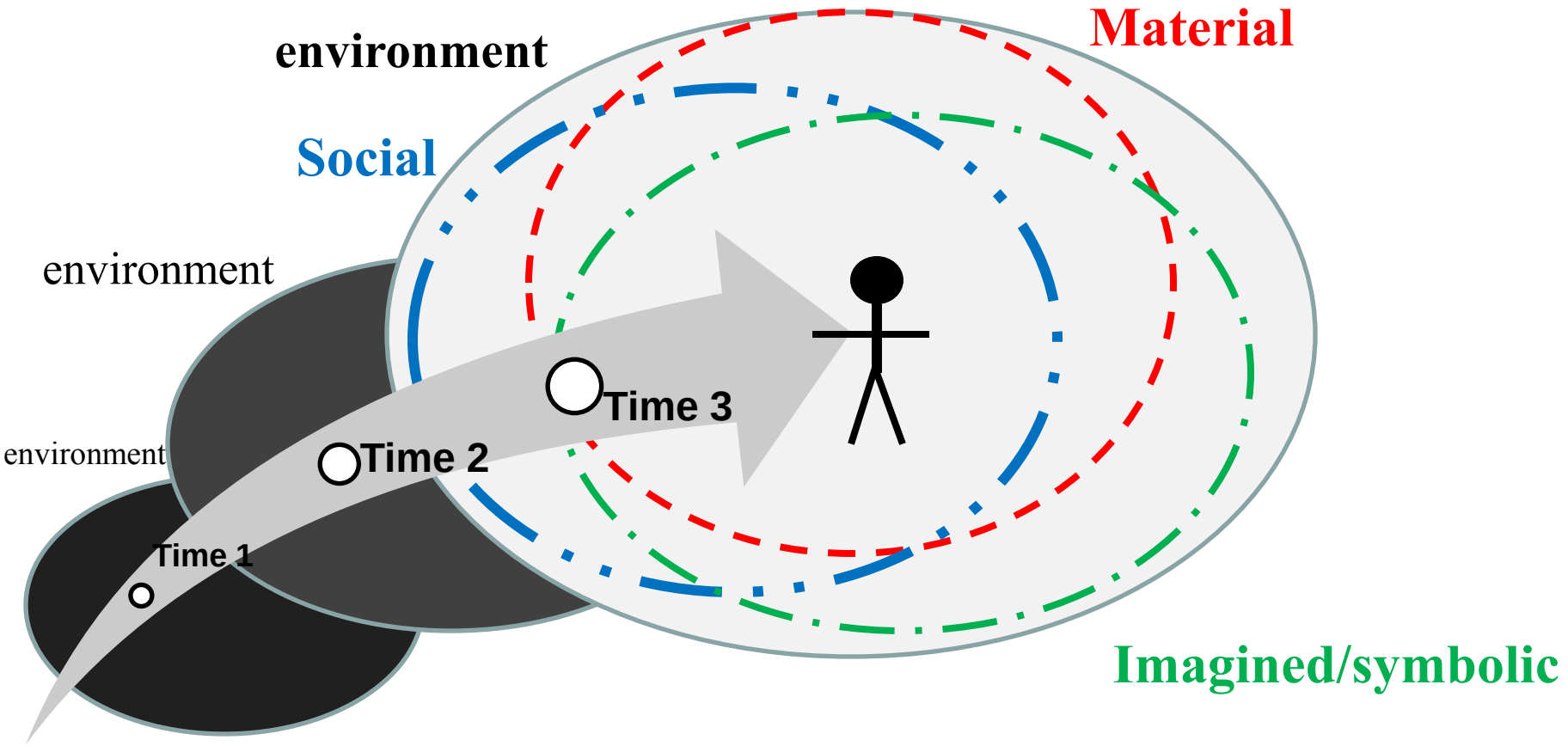
(Curtis, 2010, *Space, Place and Mental Health,* Ashgate)

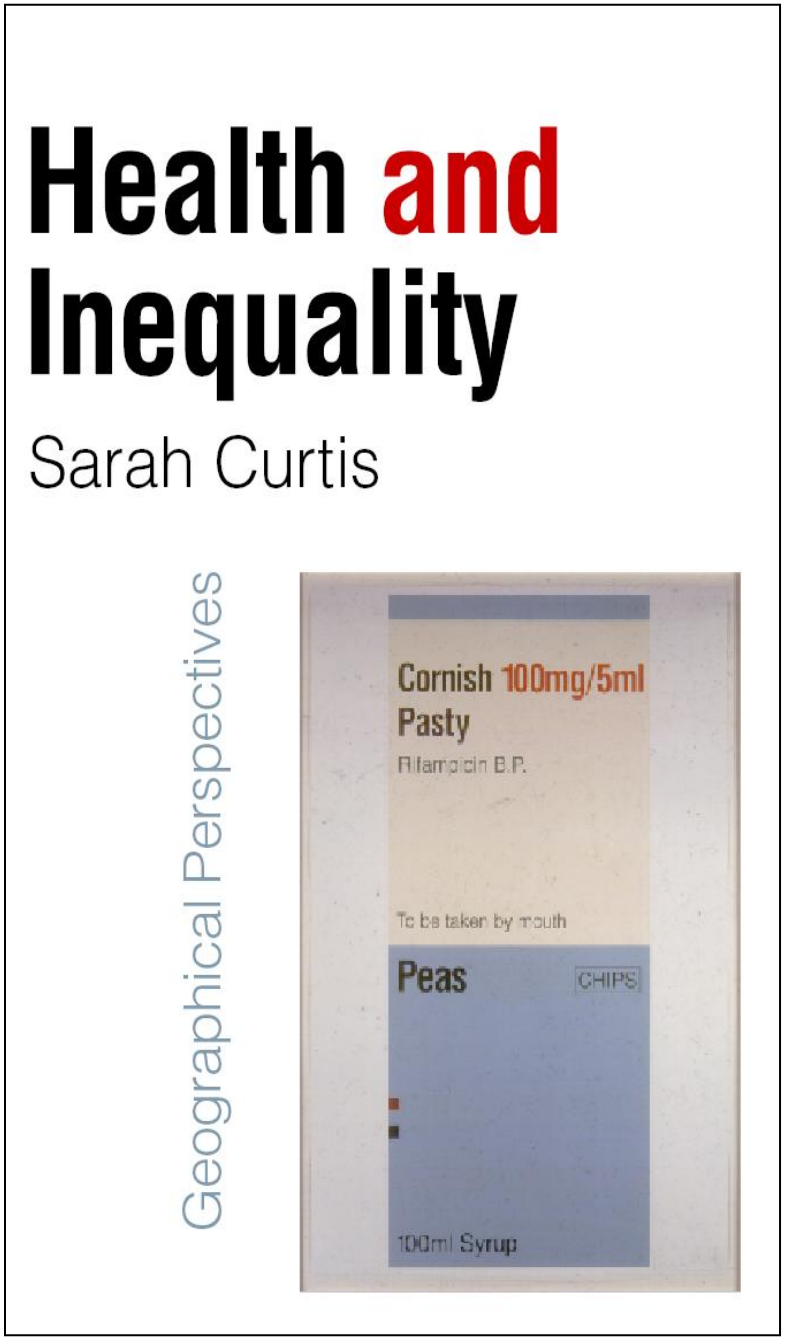
***material*, *social* and *symbolic* aspects of places are important**

(Gesler, W. (2003). *Healing Places*. Lanham, Maryland, US: Rowman and Littlefield)

...during our lives, we move through a series of changing landscapes influencing our health…

(Curtis, 2010, *Space, Place and Mental Health;*





The wider determinants of health are experienced unequally ...

...contributing to health inequalities that would be avoidable

...if societies placed more priority on maximizing beneficial determinants ...

...and reducing/mitigating damaging conditions for everyone

... people interact with their physical and social environments ,

….throughout their lives….

in ways that matter for physical and mental health...

Also environmental conditions are constantly changing…

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e.g. Durham University Institute of Hazard Risk and Resilience: reports research on potential hazards including:

- ***Environmental change*** **(climate change; geo-hazards)**

-***Economic and social change*** **(economic cycles; migration)**

- ***Infrastructure and resources*** **(buildings; technologies; energy sources)**

See: http://issuu.com/_ihrr/docs/ihrrmaghighres

Geographical knowledge helps us understand how these processes work in different settings....

So is important for individual behaviour and for policy

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For example...
the power of maps…

Using cartographic tools to understand how place and space relates to mental and to physical health has a long history.....

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See this link to a video from the Wellcome Collection:

http://www.wellcomecollection.org/explore/time--place/topics/london/video.aspx?view=mike-jay-on-john-snow-and-the&gclid=CMDZ5pai0bYCFSXLtAodbScAIw

And this for a modern take on John Snow's map:
http://www.guardian.co.uk/news/datablog/interactive/2013/mar/15/cholera-map-john-snow-recreated

John Snow aimed to demonstrate,

by mapping the spatial proximity of cholera deaths to the pump,

that the water source was related to the disease

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Source: McLeod, 2000, p 928

See this link for images of Booth's maps : http://booth.lse.ac.uk/

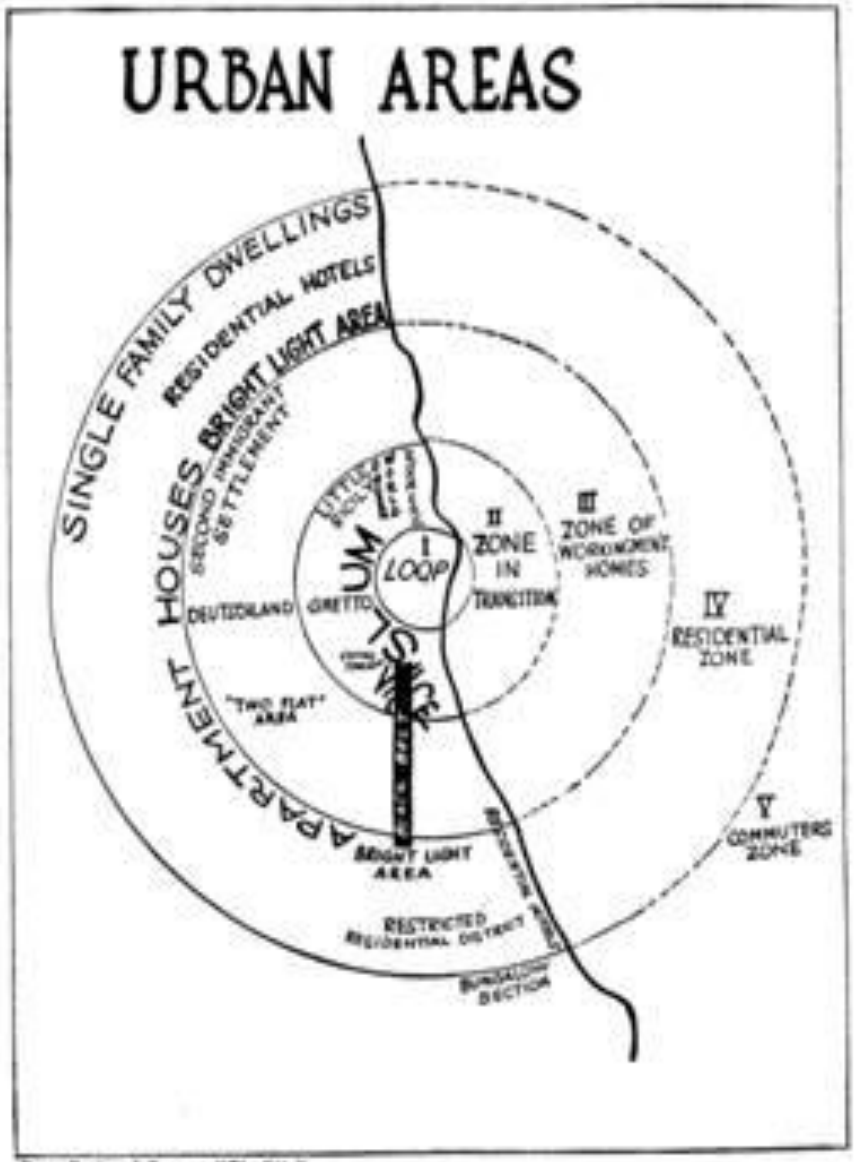
The legend for the maps reads as follows:

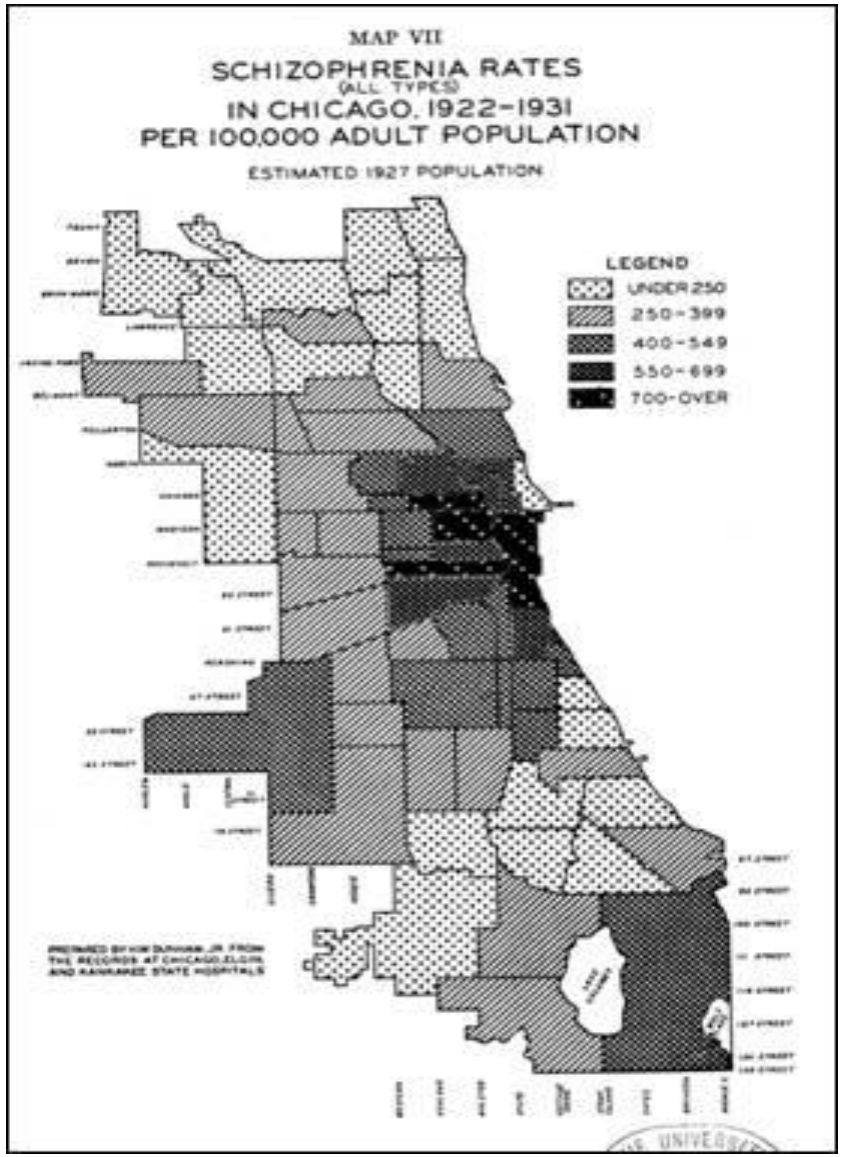
BLACK: Lowest class. Vicious, semi-criminal.
DARK BLUE: Very poor, casual. Chronic want.
LIGHT BLUE: Poor. 18s. to 21s. a week for a moderate family
PURPLE: Mixed. Some comfortable others poor
PINK: Fairly comfortable. Good ordinary earnings.
RED: Middle class. Well-to-do.
YELLOW: Upper-middle and Upper classes. Wealthy.
Charles Booth. *Life and Labour of the People in London* Volume 1 (London: Macmillan, 1902) pp.33-62

...Meanwhile, a little later in the 19th Century, Charles Booth was collecting information on poverty and variation in living conditions house by house across central London

Note the stigmatising description of the lowest class!

Faris and Dunham, 1939: inner city concentrations mental disorders





Bringing the same arguments up to date.....

...Explaining patterns of psychiatric admissions to hospital in London.....

Curtis, S., Copeland, A., Fagg, J., Congdon, P., Almog, M., & Fitzpatrick, J. (2006). The ecological relationship between deprivation, social isolation and rates of hospital admission for acute psychiatric care: a comparison of London and New York City. *Health & Place,* 12(1), 19-37.

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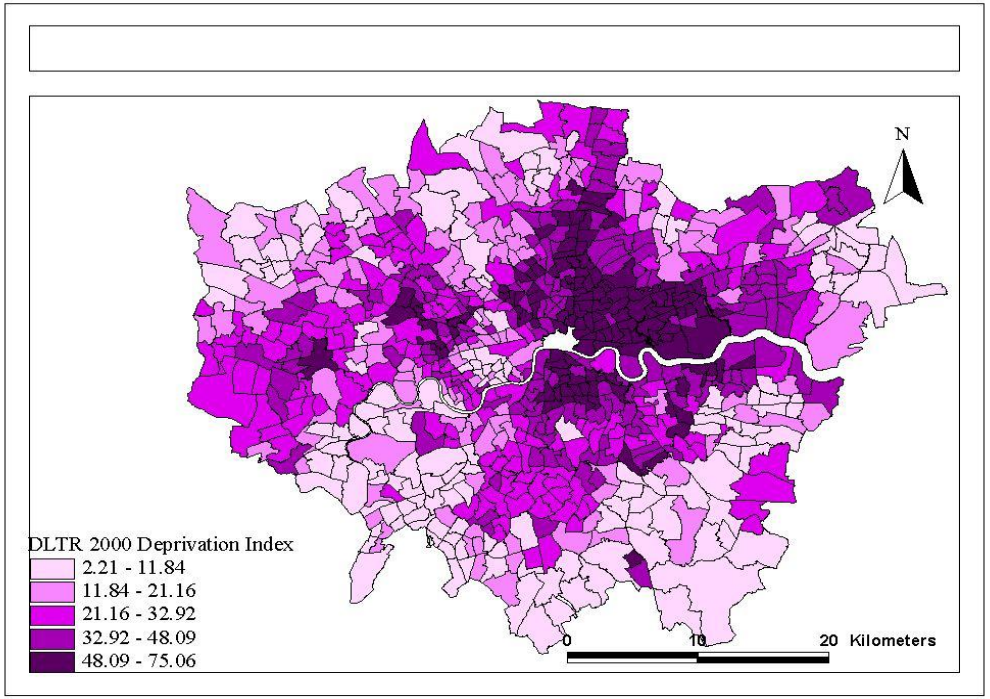
Inpatient admissions are especially common for people living in more deprived areas....

Curtis, Copeland et al, 2006:

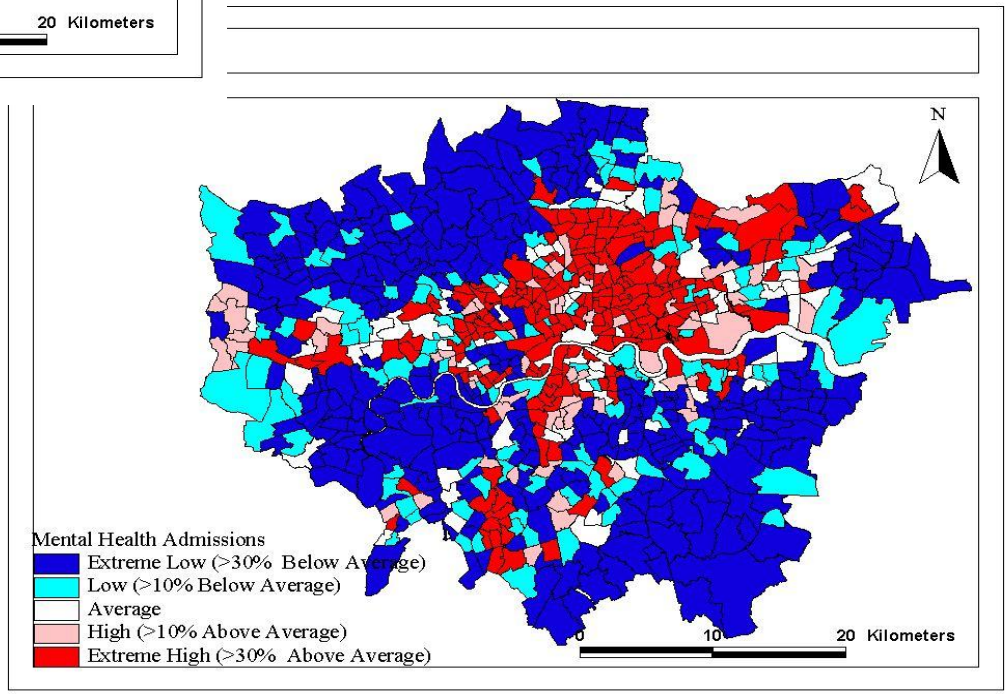


Index of multiple Deprivation 2000

(dark=more deprived)

Hospitalisation rates for all psychiatric causes; males 15-64 1996-1999

(red= high, blue=low)



The visual impression from the map is supported by statistical analysis of the attributes of the small areas in London...

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Geographical research shows that:THREE processes help to explain these maps:

The 'misery' hypothesis - economic deprivation and material poverty damage health;

The 'anomie' hypothesis - lack of social support and social cohesion depress health;

The 'drift' hypothesis (selective migration/'entrapment') – people in worse health are more likely to move to (or stay in) more deprived areas.

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3 examples of research in Health Geography
that look to the future
focussed on .....

1. **Health impacts of economic conditions;**
2. **Adaptation to climate change;**
3. **Helping young people become more physically active (by improving their skills and knowledge in geography!)**

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Example 1:

health and long term conditions in local labour markets

Mylene Riva and Sarah Curtis

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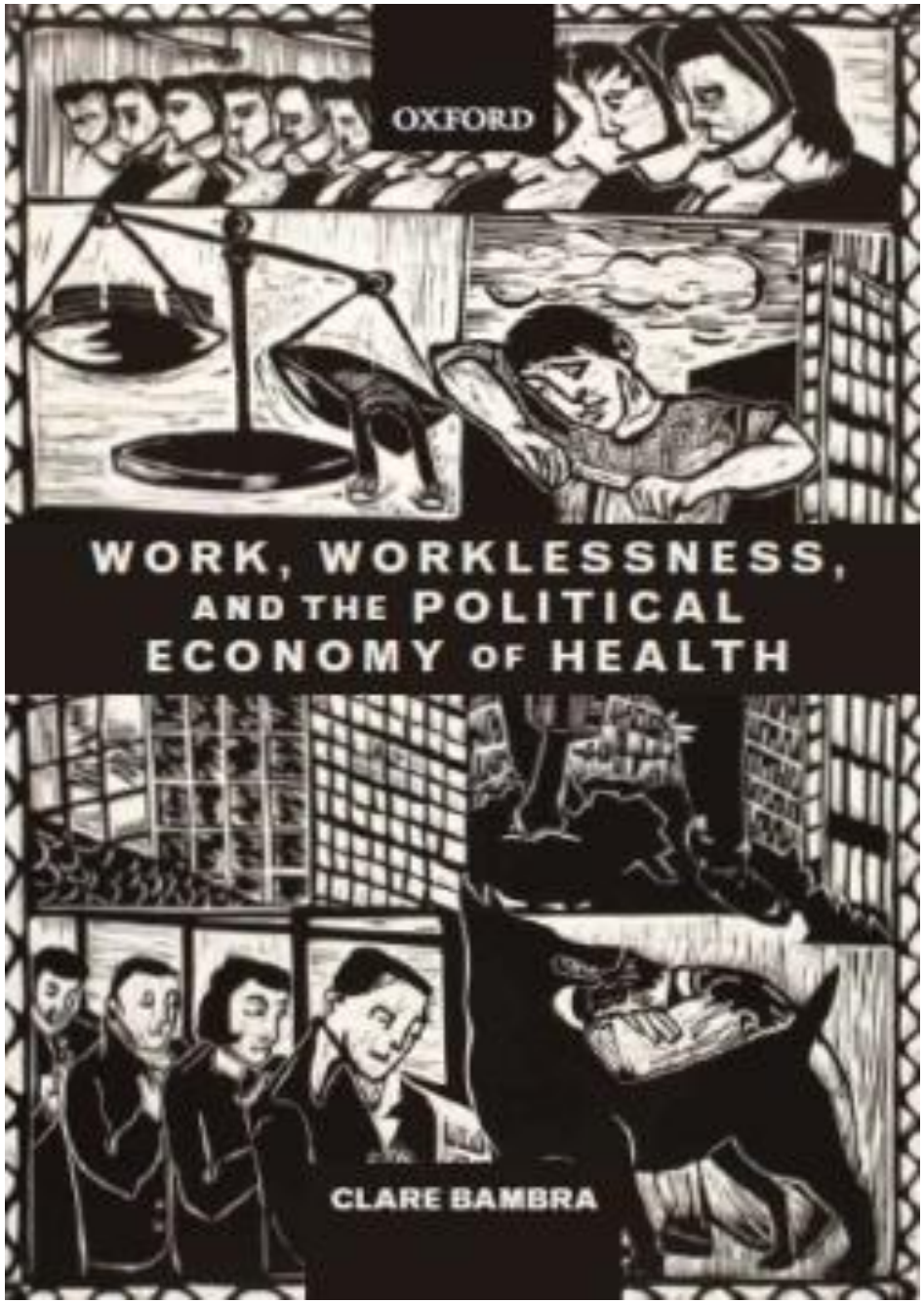
UNIVERSITÉ LAVAL

CHUQ CENTRE HOSPITALIER UNIVERSITAIRE DE QUÉBEC

IRSC CIHR Instituts de recherche en santé du Canada Canadian Institutes of Health Research



…a contemporary issue worldwide…

Employment (work & worklessness) matters for health:

Eg. Clare Bambra, *Work, Worklessness and the Political Economy of Health*

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Why employment levels in local communities are important for health of all members of the community...

Example: the Durham Miners' Gala – see

http://durhamminers.org/

-income levels and community resources

- social support through work places

- sense of purpose and 'structure' to life

- reputation and collective sense of identity

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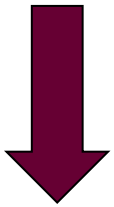
Trends in local employment rates (relative to national average) 1981-2001



predict death/illness for people in the local population 2001-2007

...and important for future health..

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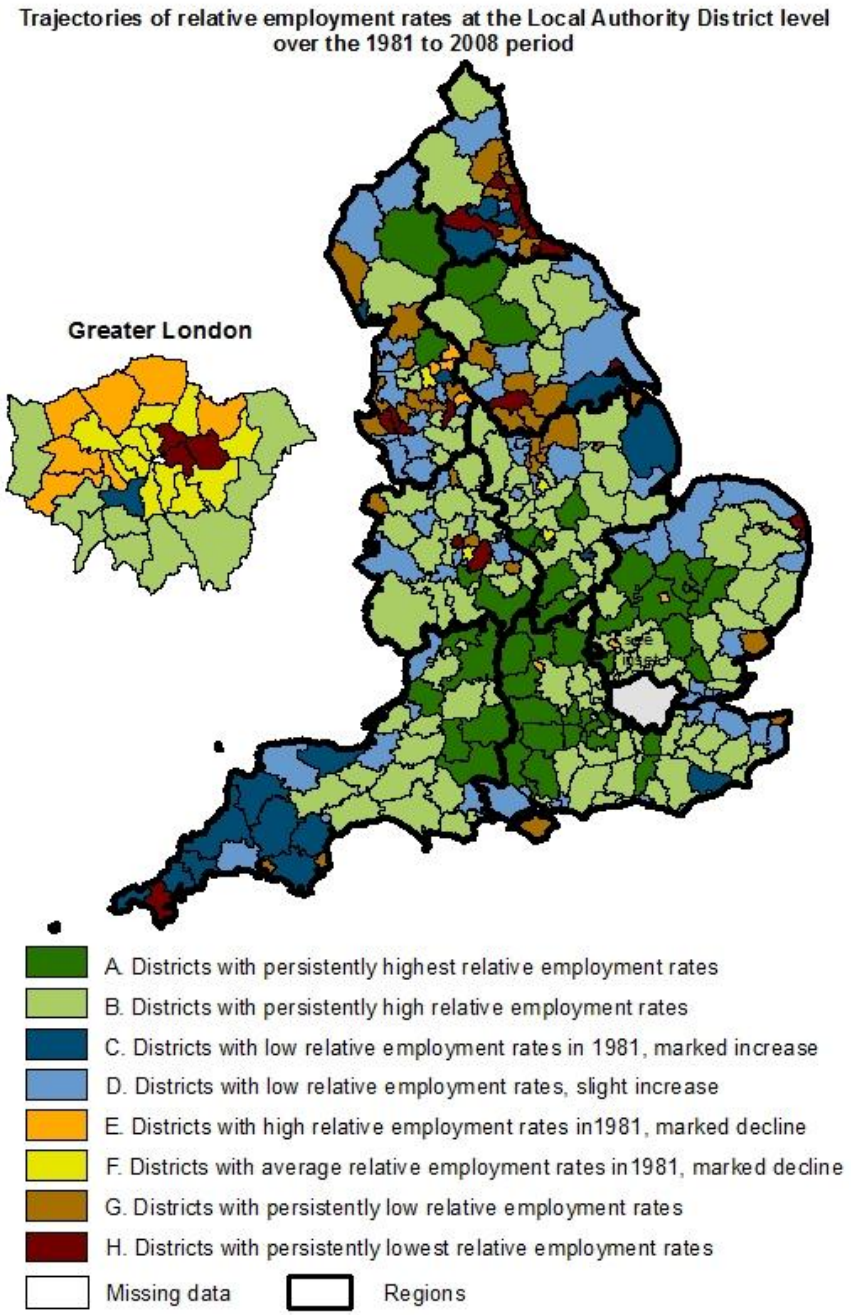
Local Authorities grouped According to trends in employment rate relative to the National average

Always relatively High (A)

Improvement from low initial level in 1981 (C)

Deterioration from initial level in 1981 (E)

Always relatively low (H)



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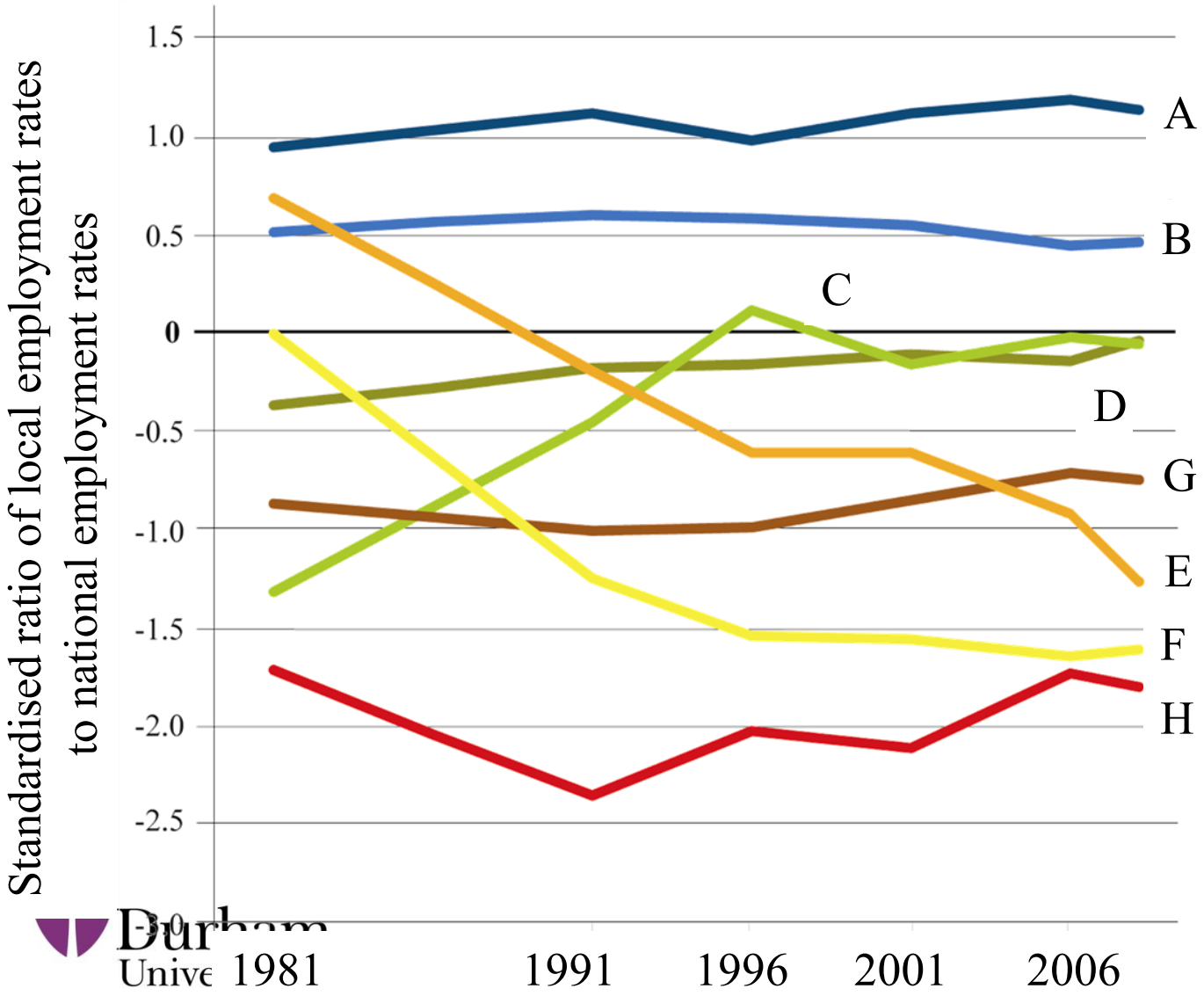
local authority districts grouped by trends in employment rates (compared with national average)



8 groups:

LADs per group

A=46

B=131

C=20

D=64

E=14

F=16

G=40

H=21

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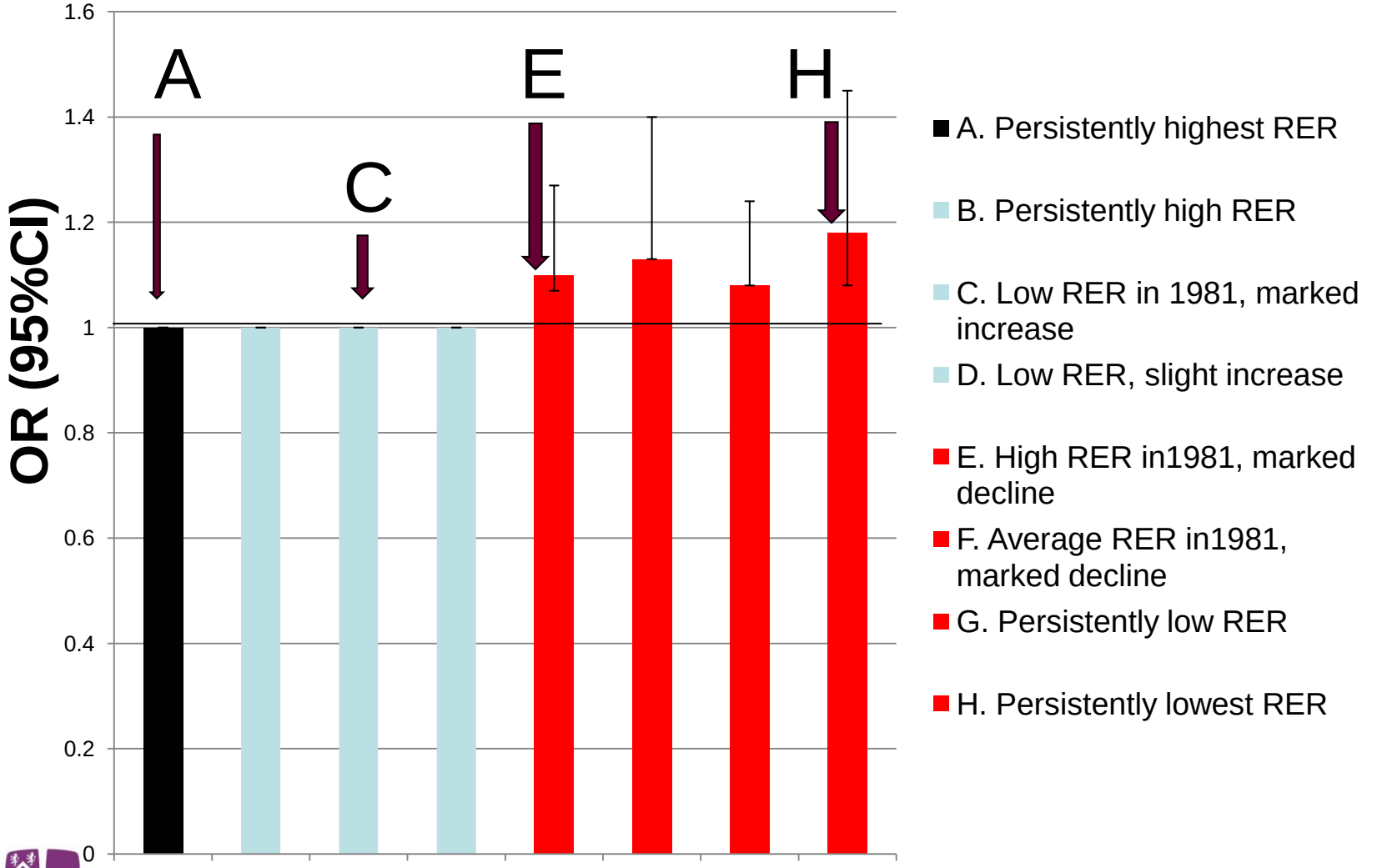
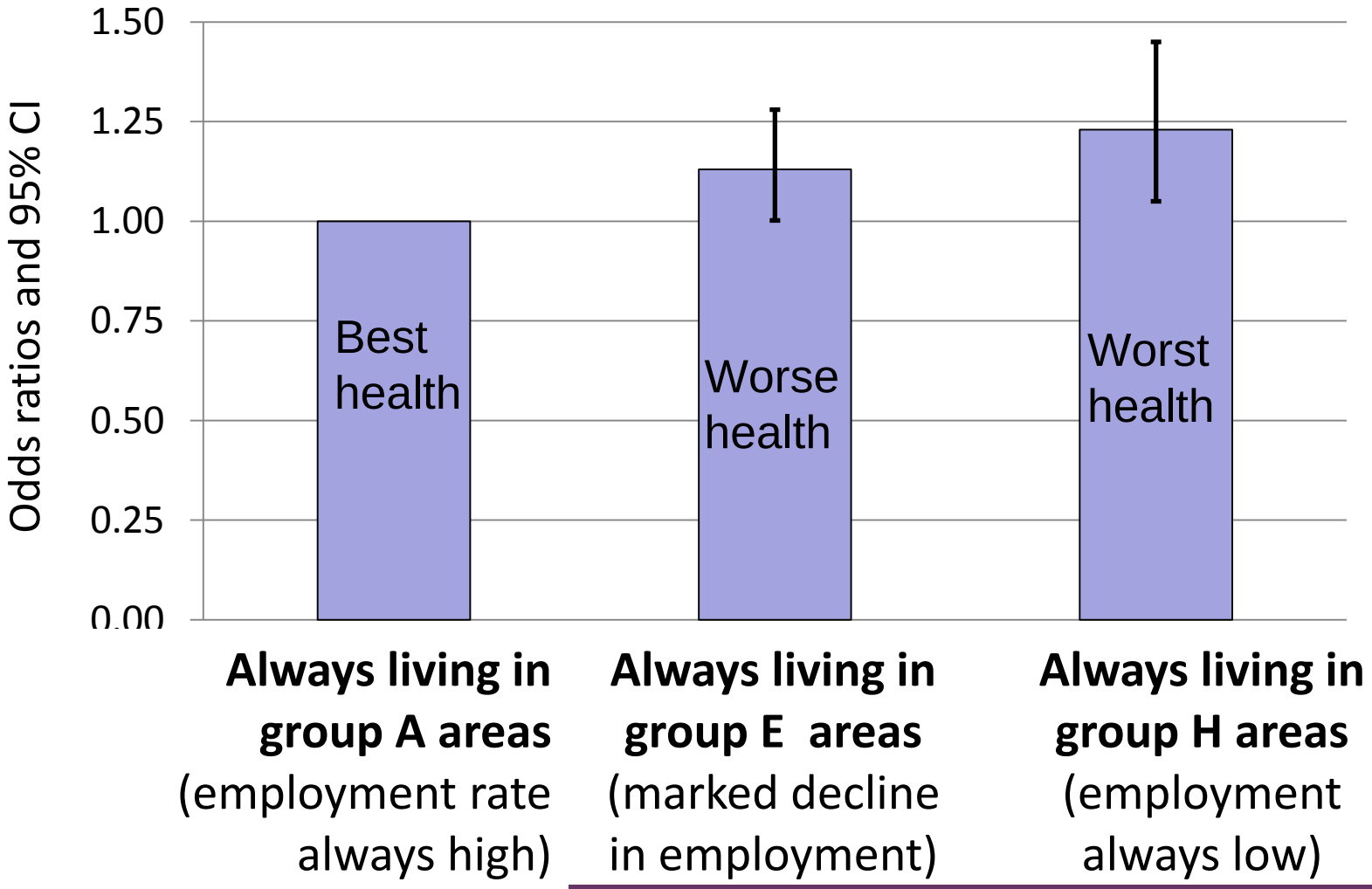
Risk of death higher for people living in area groups E,F,G,H, than in area group A



(allowing for individuals' socio-demographic characteristics in 1981 and residential mobility 1981-2001)

Reporting long term illness: those always living in areas classed ‘E’ or ‘H’ are more likely to report an illness than residents of group ‘A’



Key Messages for Policy

- Especially poor health was found for people in our sample living in areas where employment was persistently low over time.

- These are areas with especially ‘deep seated’ economic and health disadvantage. To ‘reverse’ these conditions is likely to require intensive and sustained policies and interventions.

- Health disadvantage was less pronounced for people in areas with low employment levels in 1981 but showing marked improvement over time.

- Health impacts of current economic recession likely to be greatest for those already most advantaged

Example 2: Climate Change and Health Care for Older People

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Built Infrastructure for Older People's Care in Conditions of Climate Change (BIOPICCC)

Making infrastructure for older people's care more resilient to climate change: joining up environmental, social and engineering perspectives

(Durham University): Sarah Curtis ;Dr Sim Reaney, Dr Ralf Ohlemuller, Dr Chris Dunn, Dr Mylene Riva, Professor Lena Dominelli, Dr Jonathan Wistow, Dr Katie Oven, Jonathan Erskine.

(Heriot-Watt University): and Professor Dimitri Val Dr Roland Burkhard, Dr Richard Holden and Sarah Nodwell
(Kings College) Dr Karen Bickerstaff

funded by the **Engineering and Physical Sciences Research Council, UK**

http://www.dur.ac.uk/geography/research/researchprojects/biopiccc/

Research Context

Projected climate change

increase in the ***frequency*** and ***intensity*** of weather-related hazards in the UK including:

- **floods**
- **heat waves**

(Also cold spells continue to occur)

Population ageing

Proportion of people aged 65+ in the UK will increase:

- **16% in 2006**
- **22.2% in 2031**

Implications for the functioning of ***health and social care systems***

and the ***infrastructures supporting them***

What counts as a heat wave from the perspective of older people's health?

No 'standard' definition of a heat wave

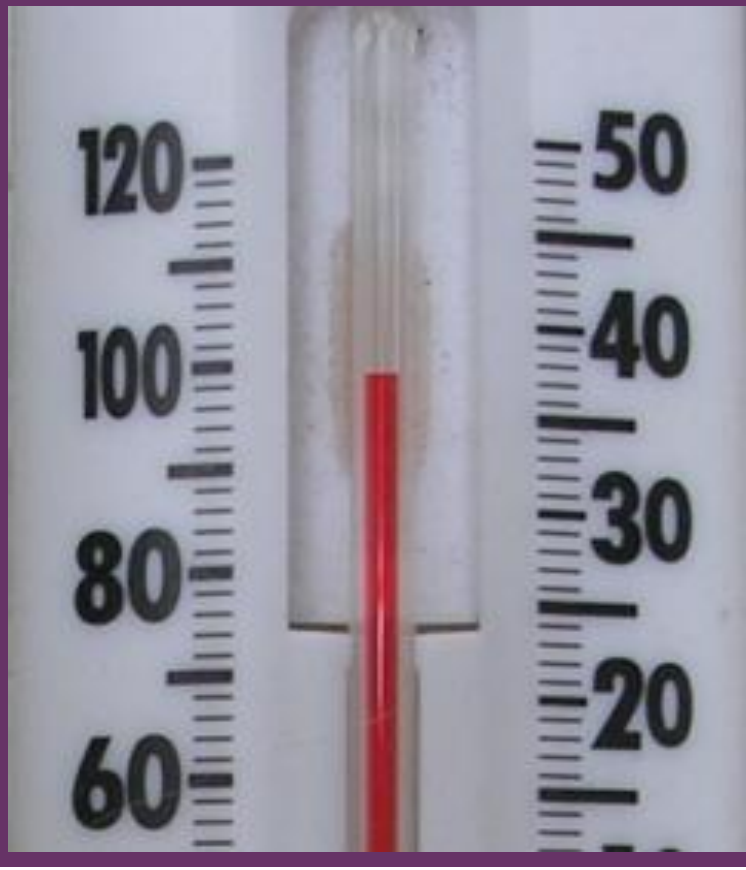
Older people's health outcomes and healthcare use are affected by:

1. ***Persistent temperatures exceeding a threshold (+5/+9°C) above the typical level***

   Fouillet *et al.* (2006) – 2003 heat wave in France

2. ***Extreme events in the top 5-10% of the temperature range, over several days***

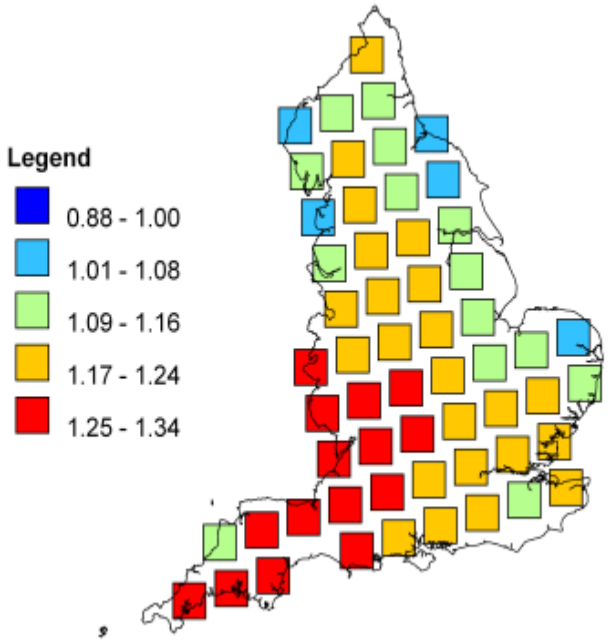
   Hajat *et al.* (2002) and Armstrong *et al.* (2010) – UK



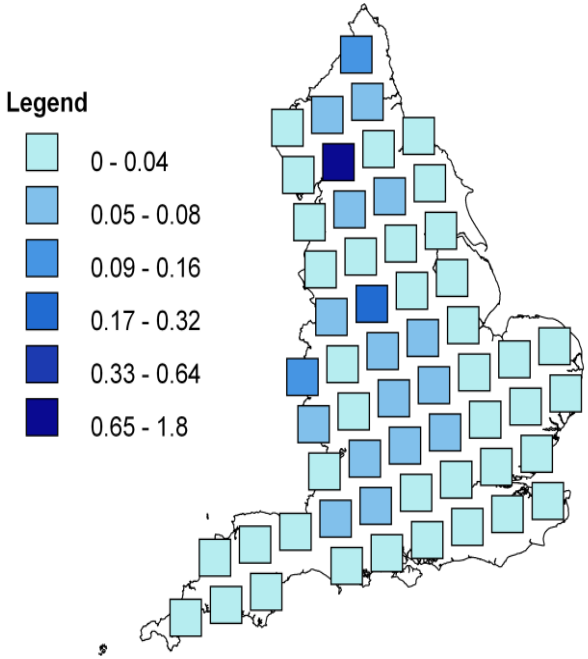
Definition should take account of ***future increases in temperature*** and ***spatial variability*** in heat wave hazard

Mapping projected future climate hazards: heatwave, coldwave and flood in England up to 2050 (source: Oven et al. Journal of Applied Geog. 2011)

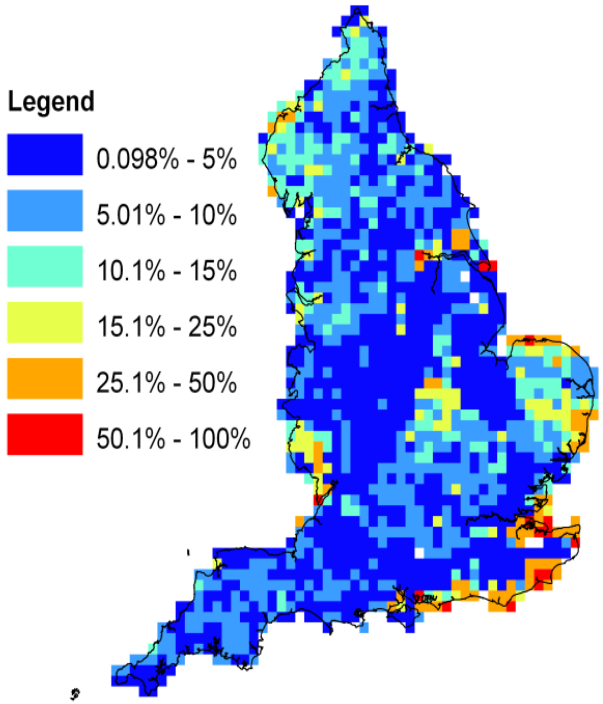
Projected annual number of 'heatwave' events in a year, around the 2030s



Projected annual number of 'coldwave' events around the 2030s



The annual probability of flooding, around the 2050s

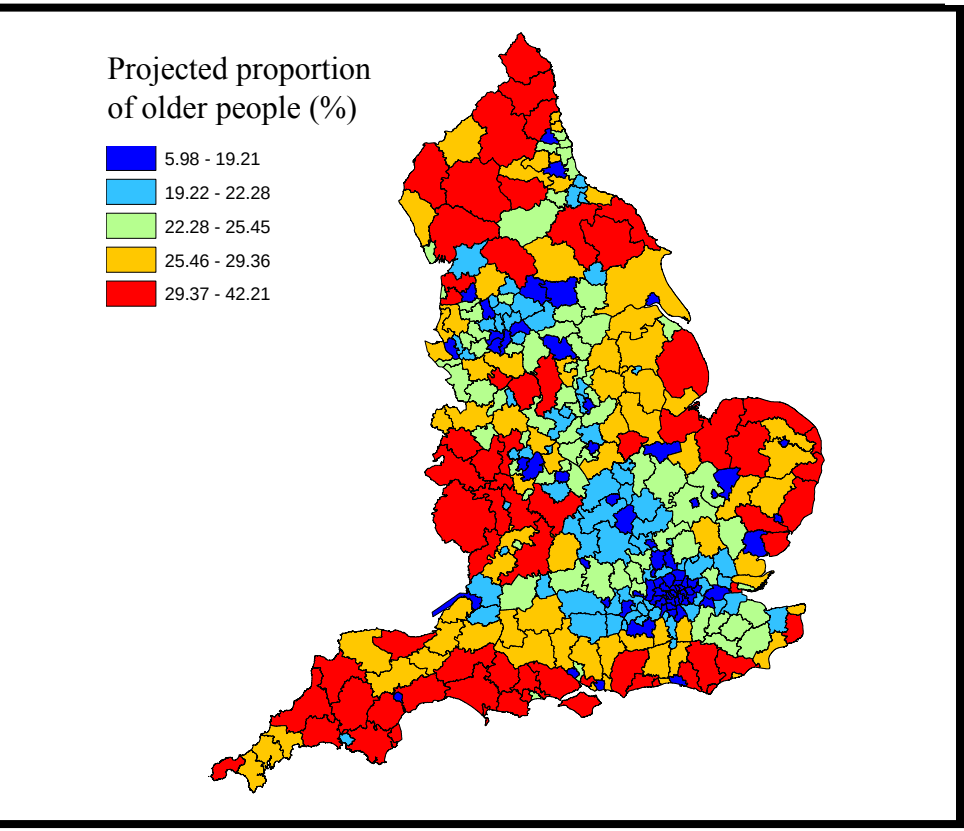


Derived using daily minimum and maximum temperature data derived from the UKCP09 Weather Generator

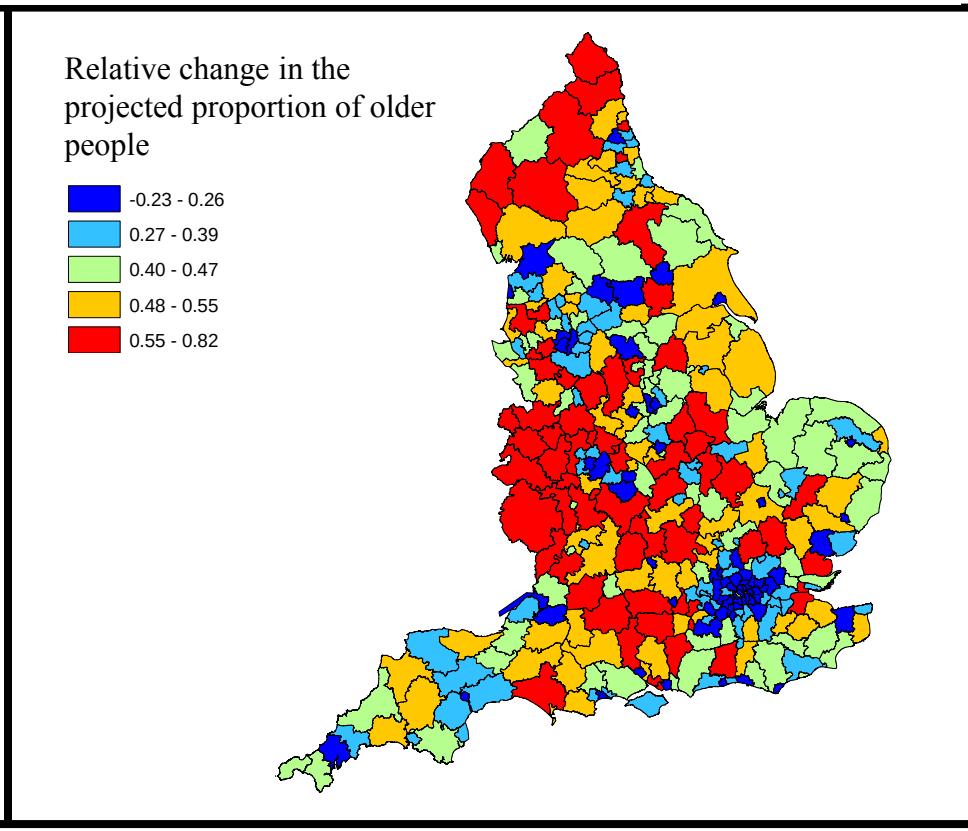
Source: UK Government Foresight Project, Environment Agency, 2004

Mapping future vulnerability: distribution of the older population up to 2031: English Local Authorities

projected proportion of older people in the population by 2031



relative <u>change</u> in the projected older population 2006-2031



based on 2006-subnational population projections by age group at local authority level (GAD 2007). **The older population has been weighted** by age-related differences in the likely need to use health care.

Identification of local areas of special interest

case study research in areas with :
greatest projected change in **flood and heat/cold wave** hazard
large and growing older populations.

- discussions with local stakeholders (using participative mapping);
- local analysis of hazard and vulnerability;
- modelling of how infrastructure is effected by floods.

Relevance for on the ground planning

***Being smart**

- **Delivering together**
- (a multi-agency approach: Local strategic planners, Adult Social Care, Emergency Planning Units, ulitilites providers AND communities.....)

- ***BIOPICCC toolkit supporting local level decision-making***

(and can support teaching!)

http://www.dur.ac.uk/geography/research/researchprojects/biopiccc/toolkit/

Getty Images

Example 3

Can lessons concerned with geography, of health and wellbeing help students be healthier?

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Geography of health and wellbeing in the classroom

- working across curricula concerned with geography/wellbeing/environmental studies

- Creating maps that prompt discussion and creative thinking about places, health and wellbeing

- focusing on some aspects of health important for young people in their own communities

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Collaboration with 'Groundwork' on their *Safe Routes to School* programme (2000)

Cave, B., **Curtis, S.** (2001) http://www.apho.org.uk/resource/view.aspx?RID=47660

Pupils described and discussed their route to school

Discussed places on the route that they thought were 'good' and 'bad' for their health;

Figure 11 Poster produced by Business Studies pupils

Reproduced with kind permission of Groundwork

One business studies group took part in a poster competition...

..demonstrating how young people might have more influence over their environment...

The MOVE project: School-based interventions for increasing physical activity and well-being:

Major new research project at Durham University
In collaboration with over 50 schools

Katie Thomson, Sarah Curtis and Chris Dunn (Geography) on behalf of the MOVE project team (Principal Investigator Prof Peter Tymss)

MOVE

Durham University

Supported by: E·S·R·C ECONOMIC & SOCIAL RESEARCH COUNCIL

Bringing research into teaching.....

For children in England today, declining levels of physical activity are a problem for health for their sense of wellbeing.

There is now a large geographical literature on physical activity and health.

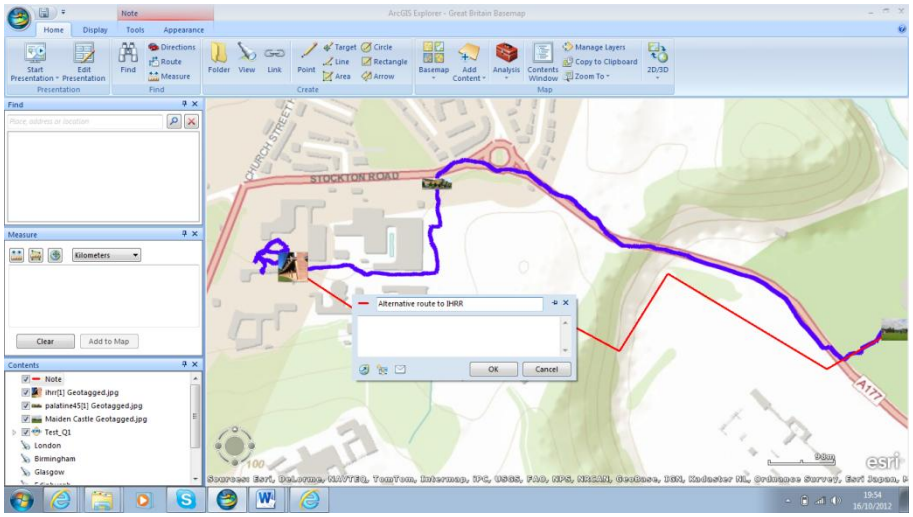
This suggests that children's PA depends partly on their environment and ways they can use it to be active.

The Participative Learning intervention:
participative learning about PA in Geography classes

Series of 6 Geography lessons; Students learn about:

- **GPS and GIS; produce their own activity and GPS data***
- **physical and social environment and its effect on physical activity;**
- **environmental barriers to being active, plan how to overcome and use space more effectively to promote physical activity.**

* Students use GIS to map their route to school and learn about spatial mapping techniques.



MOVE

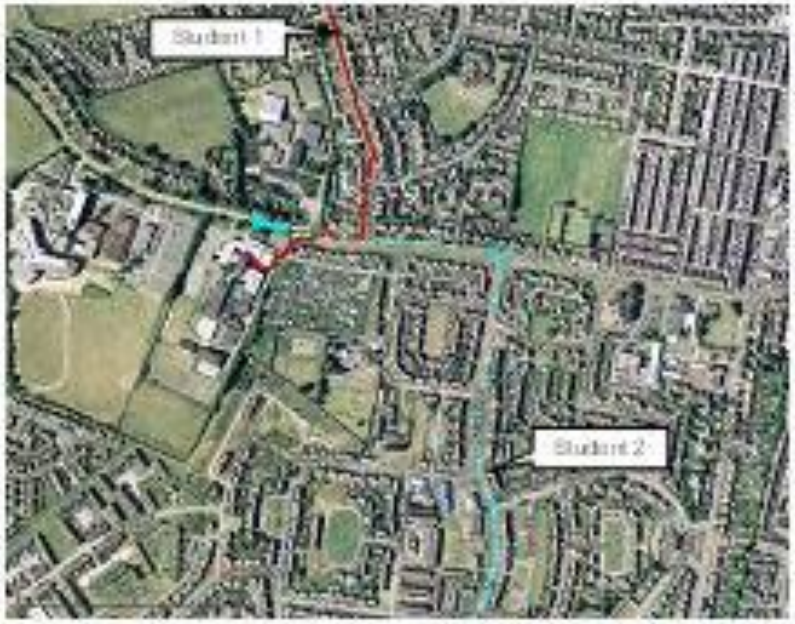
Measuring and recording activity and movement

Accelerometry and GPS

...Students issued with GPS monitors and accelerometers to record and plot their way to and from school and levels of activity en route....
(NB parental consent was obtained!)

MOVE

Stage 2:
Discussion about what routes show and what they tell us about modes of transportation/physical activity

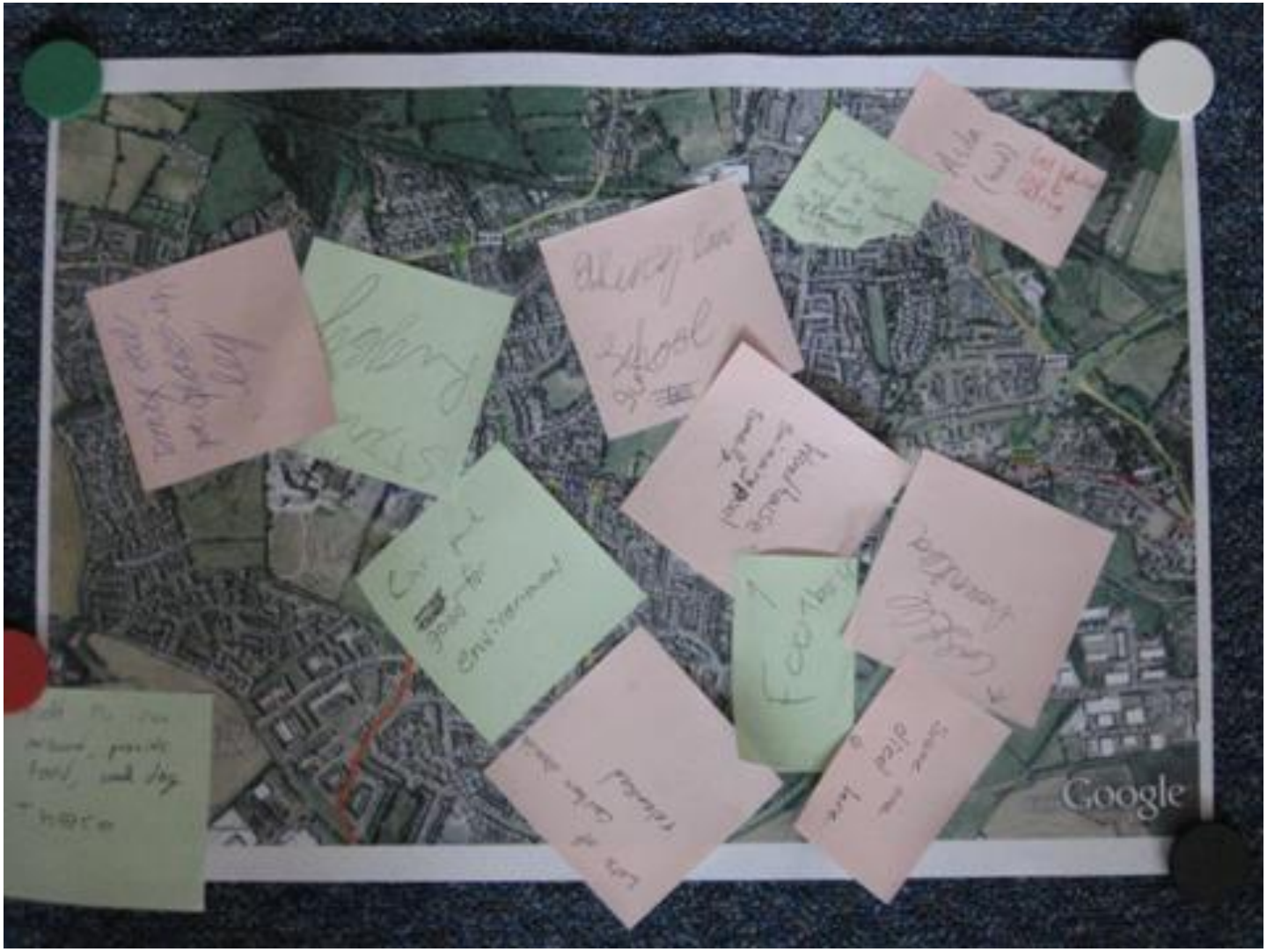


"How could we increase our physical activity when we're on a bus, Miss?"

MOVE

Stage 3:

Linking space to health and wellbeing. Different coloured post-its for things/places that are good/bad for health and wellbeing



What we think may change as a result of this intervention

Students participate in measuring their own level of physical activity and movement in space using accelerometers and GPS units, and map these using GIS;

Students *learn about the technologies* used and develop their thinking about *cartographic methods and interpretation*....

Students think about where they are most physically active and how and where they could be more active...

Students develop understanding of how their environment may influence their health and well-being...

Students feel more informed and knowledgeable about how they could change their physical activity – *enhanced self efficacy/wellbeing*?

Concluding Comments:

Links between place, health and wellbeing are an important theme in geography;

Innovative use of GIS can help to bring these issues to life in the classroom;

These kinds of geographical learning have relevance for other parts of the school curriculum and help young people develop key life skills.

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...and beyond the classroom....

... Knowledge exchange to help us look to the future and address environmental changes

...growing interest among planners and policy makers in how ‘place shaping’ policies and actions are important for our health and wellbeing

....underlines the relevance of geography for human health.

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Thanks!

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Examples of publications:

Curtis, S. (2004) *Health and Inequality: Geographical Perspectives*. Sage, London.

Curtis, S. (2010) *Space, Place and Mental Health*. Farnham, Ashgate. 299pp

Riva, M. And Curtis, S. (2012) Long term local area employment rates as predictors of individual mortality and morbidity: a prospective study in England spanning more than two decades. *Journal of Epidemiology and Community Health,* 66 (10), 919 –926

Oven, K., Curtis,S., Reaney, S., Ohlemuller, R., Riva, M., and Dunn, C. for the BIOPICCC Team (2012) *Climate Change and Human Health: Defining Future Hazard and Vulnerability Relevant to Older People's Health Care in England*. in special issue of the on the "Health Impacts of Global Climate Change: A Geographic Perspective." *Journal of Applied Geography, 33*, *16-24*

Curtis, S. & Oven, K. (2011) Progress Report: Geographies of Health and Climate Change. *Progress in Human Geography*, Published online October 2011 at http://phg.sagepub.com/content/early/2011/10/29/0309132511423350.full.pdf+html.

Riva, M., and Curtis, S. (2011) Policy responses and the physical environment. In Pearce, J., and Witten, K. (eds). *Geographies of Obesity*: *Environmental understandings of the obesity epidemic*. Farnham, Ashgate. *In press*

Fagg, J., Curtis, S., Congdon, P,, Clark, C., and Stansfeld, S. (2008) Neighbourhood perceptions among inner-city adolescents: relationships with their individual characteristics and with independently assessed neighbourhood conditions.. *Journal of Environmental Psychology*, 28, 2, 128-142

Pabayo, R., Belsky, J., Gauvin, L., and Curtis. S. (2011) Do Area characteristics predict change in moderate-to-vigorous physical activity from ages 11 to 15 years? *Social Science and* Medicine 72, 3, 2011, 430-438

Curtis, S., Setia, M. and Quesnel-Vallee, A. (2009) Socio-Geographic Mobility and Health Status: a longitudinal analysis using the National Population Health Survey of Canada. *Social Science and Medicine*, 69, 12, 1845-1853

Curtis, S**.,** Copeland, A., Fagg, J., Congdon, P., Almog., M, Fitzpatrick, J. (2006)The ecological relationship between deprivation, social isolation and rates of hospital admission for acute psychiatric care; a comparison of London and New York City, *Health and Place*, 12,1, 19-37.